COLLISION REPAIR AND REFINISH
PROGRAM STANDARDS

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Contents

BACKGROUND

COLLISION REPAIR & REFINISH TECHNICIAN TRAINING ACCREDITATION PROGRAM

The Board of the National Institute for Automotive Service Excellence (ASE) is responsible for accreditation of automotive (automobile, collision repair & refinish, medium/heavy truck) programs at secondary and post-secondary levels. ASE will grant accreditation to programs that comply with the evaluation procedure, meet established standards, and adhere to the policies in this document. Program accreditation is under the direct supervision of the Board of Trustees and such personnel designated or employed by the ASE Education Foundation.

History

The ASE standards for automobile program certification were introduced in 1982. Standards for collision repair & refinish programs were launched in 1989 and truck standards followed in 1992. The ASE Education Foundation's role in the process was to work with industry and education to update the standards on a regular basis and evaluate programs against those standards. Based on a positive evaluation, programs are accredited by ASE for a period of five (5) years.

Effective January 1, 2021, all programs that held current NATEF program accreditation, were grandfathered as accredited by ASE until such time that they were due to renew their accreditation.

The cost to each program for accreditation will be as reasonable as possible to encourage program participation. This cost will include program evaluation materials, application (processing) fee, and on-site team evaluation materials. The honorarium and expenses of the Evaluation Team Leader (ETL) are paid directly to the ETL from the program being accredited.

COLLISION REPAIR & REFINISH PROGRAM STANDARDS

STANDARD 1 – PURPOSE

THE COLLISION REPAIR AND REFINISH TECHNICIAN TRAINING PROGRAM SHOULD HAVE CLEARLY STATED PROGRAM GOALS, RELATED TO THE NEEDS OF THE STUDENTS AND EMPLOYERS SERVED.

Standard 1.1 – Employment Potential
The employment potential for collision repair and refinish technicians, trained to the level for the specialty or general areas outlined in the program goals, should exist in the geographic area served by the program.

Standard 1.2 – Program Description/Goals
The written description/goals of the program should be shared with potential students and may include admission requirements if applicable, employment potential, area(s) of specialty training offered, and the cost of all tuition and fees. Technical qualifications of the faculty and the overall goal(s) of the program should also be included.

STANDARD 2 – ADMINISTRATION

PROGRAM ADMINISTRATION SHOULD ENSURE THAT INSTRUCTIONAL ACTIVITIES SUPPORT AND PROMOTE THE GOALS OF THE PROGRAM.

Standard 2.1 – Student Competency Certification
The certificate or diploma a student receives upon program completion should clearly specify the area(s) of demonstrated competency.

Standard 2.2 – Chain of Command
An organizational chart should be used to indicate the responsibilities for instruction, administration, and support services.

Standard 2.3 – Administrative Support
Positive administrative support from institutional and local governing bodies should be demonstrated. Indicators of administrative support would include: support for staff in-service and update training; provision of appropriate facilities; up-to-date tools, equipment, training support materials, and curriculum; and support of continuing program improvement.

Standard 2.4 – Written Policies
Written policies should be adopted by the administration and policy board for use in decision-making situations and to provide guidance in achieving the program goals. Policies regarding safety, liability, and lab/shop operation should be written and prominently displayed as well as provided to all students and instructors.

Standard 2.5 – Customer Vehicle Work
A systematic method of collecting, documenting, and disbursing customer vehicle work repair receipts should be used. Instructional staff should not be required to collect payment for customer vehicle work repairs. (This applies only to programs that accept customer vehicles for instruction.)

Standard 2.6 – Legal Requirements
The training program should meet all applicable local, state, and federal requirements.

Standard 2.7 – First Aid
Rate the availability of a written policy approved by the school administration on First Aid administration and procedures.

STANDARD 3 – LEARNING RESOURCES

SUPPORT MATERIAL CONSISTENT WITH BOTH PROGRAM GOALS AND PERFORMANCE OBJECTIVES SHOULD BE AVAILABLE TO STAFF AND STUDENTS.

Standard 3.1 – Service Information
Service information with current manufacturers' service procedures and specification data for vehicles manufactured within the last ten (10) years should be available. This information should be accessible to students in the lab/shop area.

Standard 3.2 – Multimedia
Appropriate up-to-date multimedia materials and technology should be readily available and utilized in the training process.

Standard 3.3 – Periodicals
Current general and technical collision repair and refinish media should be available for student and instructor use.

Standard 3.4 – Student Resources
Pertinent instructional texts, resources, and e-learning materials should be available for each student to satisfy the objectives of the mode of instruction used. Basic and specialty learning resources should have copyright dates that are not over six (6) years old.

STANDARD 4 – FINANCES

FUNDING SHOULD BE PROVIDED TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 4.1 – Budget
An adequate annual budget should be developed, allocated, and used for the operation of the program. The budget should be prepared by the institutional administration in conjunction with the program faculty with input from the advisory committee. Budget status reports should be made available to program staff at least quarterly.

STANDARD 5 – STUDENT SERVICES

SYSTEMATIC SKILLS ASSESSMENT, INTERVIEWS, COUNSELING SERVICES, PLACEMENT, AND FOLLOW-UP PROCEDURES SHOULD BE USED.

Standard 5.1 – Learning Assessment
For students to develop the skills and knowledge required to service today's automobiles, each student must possess, or be given the opportunity to develop, essential foundation skills in reading, mathematics, and science. To this end, a formal skills assessment instrument (process) for these fundamental skills should be used to evaluate students to determine if each student has a reasonable probability of success as a collision repair and refinish technician. Testing procedures and how the test results will be used (e.g., placement, assessment of student's developmental needs, etc.) should be stated in program explanatory material, and justification for all requirements should be available.

Standard 5.2 – Pre-admission Counseling
Prior to program admission, a student should be counseled regarding automotive careers.

Standard 5.3 – Placement
A systematic student placement system should be used to assist program graduates to obtain employment in the collision repair and refinish industry.

Standard 5.4 – Annual Follow-up
A follow-up system should be used to determine graduates' employment location and for feedback regarding the efficiency, effectiveness, and appropriateness of training. The follow-up procedure should be designed to assure feedback regarding needed additions to or deletions from the training curriculum, program, and tools and equipment. Follow-up of graduates employed outside of the collision repair and refinish industry should indicate reasons for non-collision repair and refinish service employment. When applicable, this information should be used to modify the training quality and/or content.

STANDARD 6 – ADVISORY COMMITTEE

AN OFFICIALLY SANCTIONED PROGRAM ADVISORY COMMITTEE MUST BE USED TO PROVIDE INPUT ON PROGRAM GOALS.

Standard 6.1 – Membership
An Advisory Committee of at least five (5) members (not including school personnel), must convene at least two (2) working meetings a year to provide information, counsel and recommendations on behalf of the community served by the training program. This Committee should be broadly based and include former students, employed technicians, employers and representatives for consumers' interests. All members of the Advisory Committee should not be from the same business.

Standard 6.2 – Review of Budgeting Funds
The Advisory Committee should provide input and review budgeted funds.

Standard 6.3 – Annual Follow-up
Information gathered from the annual follow-up of program graduates and employers should be reviewed by the Advisory Committee to assess employment potential and provide input on program modifications.

Standard 6.4 – Review of Curriculum
The Advisory Committee should provide guidance and approve all tasks added to the mandatory task list required for the program accreditation areas being sought.

Standard 6.5 – Evaluation of Instruction, Tools and Equipment, and Facilities
The Advisory Committee should provide input in the evaluation of the instructional process to assure that the program goals are met. The Committee should also conduct annual inspections of tools and equipment to assure that they are up-to-date and comparable to industry standards for quality and safety.

The Advisory Committee should review information from safety inspections and conduct an annual evaluation of the facilities to assure compliance with local, state and federal safety and environmental rules and regulations. Additionally, the committee should review all safety practices for appropriateness in meeting program goals.

STANDARD 7 – INSTRUCTION

INSTRUCTION MUST BE SYSTEMATIC AND REFLECT PROGRAM GOALS. A TASK LIST AND SPECIFIC PERFORMANCE OBJECTIVES WITH CRITERION REFERENCED MEASURES MUST BE USED.

Standard 7.1 – Program
The training program should progress in logical steps, provide for alternate sequences, where applicable, and be made available to each student.

Standard 7.2 – Student Training Plan
A training plan for each student should be developed and used, indicating the student's training goal(s) and specific steps needed to meet that goal. Students should be given a copy of their training plan.

Standard 7.3 – Preparation Time
Adequate time should be provided for teacher preparation and program development.

Standard 7.4 – Teaching Load
The instructor/student ratio and class contact hours should allow time for interaction on a one-to-one basis. A safe working environment should be considered when determining teacher/student ratio.

Standard 7.5 – Curriculum
All tasks have been given a priority rating. At least Ninety-five percent (95%) of the High Priority – Individual (HP-I) and Ninety percent (90%) of the High Priority – Group (HP-G) items in the Task List must be taught in the curriculum.

Instruction on the legal aspects and responsibilities of the collision repair and refinish technician in areas such as Environmental Protection Agency regulations, safety regulations, OSHA regulations (including the ruling on respiratory protection), and other appropriate requirements must be included in the curriculum. Instruction and practice in filling out work order forms, ordering parts, and basic record keeping should be a part of the training program.

Tools and equipment must be available to perform the tasks in each of the areas for which accreditation is requested.

Standard 7.6 – Student Progress
A record of each student's progress should be maintained through the use of a progress chart or other method. The record should indicate tasks required for program completion.

Standard 7.7 – Performance Standards
All instruction should be performance based, with an acceptable performance standard stated for each task. These standards should be shared with students and potential employers. Students should demonstrate competency of a task.

Standard 7.8 – Safety Standards
Safety instruction must be given prior to lab/shop work and be an integral part of the training program. A safety test must be included in the training program. Students and instructors should comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

Standard 7.9 – Personal Standards
All training activities and instructional material should emphasize the importance of maintaining high personal standards.

Standard 7.10 – Work Habits/Ethics
The training program should be organized in such a manner that work habits and ethical practices required on the job are an integral part of the instruction.

Standard 7.11 – Provision for Individual Differences
The training program should be structured in such a manner that students with different levels of cognitive and psychomotor skills can be accommodated.

Standard 7.12 – Related Instruction
Instruction in related mathematics, science, communications, and interpersonal relations should be provided and coordinated with ongoing instruction in the training program. This instruction should be provided by a qualified instructor.

Standard 7.13 – Testing
Both written and performance based tests should be used to validate student competency. Students should be encouraged to take industry recognized certification tests, such as the ASE Entry-Level test or ASE Professional Certification test.

Standard 7.14 – Evaluation of Instruction
Instructional procedures should be evaluated in a systematic manner. This evaluation should be through regular reviews by students and the administration. Program evaluation of instruction should also be utilized on a systematic and regular basis. This system should include input from former students and the Advisory Committee members. Instructional procedures should show responsiveness to the feedback from these evaluations.

Standard 7.15 – On-Vehicle Service and Repair Work
On-vehicle service and repair work should be scheduled to benefit the student and supplement ongoing instruction on items specified in the task list. A student should have had instruction and practice on a specific repair task before on-vehicle service and repair work requiring that task is assigned. Vehicles donated by the manufacturers or other sources, customer-owned vehicles, and other training vehicles may be used as the primary source of on-vehicle service and repair work. Training program student-owned vehicles, school buses, and other vehicles owned and operated by the governing body of the school must not be the primary source of on-vehicle service and repair work vehicles. All vehicles in the lab/shop should have a completed industry-type work order attached to or on the vehicle.

Standard 7.16 – Articulation
Agreements between programs with equivalent competencies should be used to eliminate unnecessary duplication of instruction and foster continued study.

STANDARD 8 – EQUIPMENT

EQUIPMENT AND TOOLS USED MUST BE OF THE TYPE AND QUALITY FOUND IN THE REPAIR INDUSTRY AND MUST ALSO BE THE TYPE NEEDED TO PROVIDE TRAINING TO MEET THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 8.1 – Safety
Equipment and tools used in the training program must have all shields, guards, and other safety devices in place, operable, and used. Safety glasses must be worn by all students, instructors, and visitors in the lab/shop area while lab is in session.

Standard 8.2 – Quantity and Quality
The tools and equipment used in the training program should reflect the program goals and performance objectives. Sufficient tools and equipment should be available for the training offered. The tools and equipment should meet industry quality standards.

Standard 8.3 – Consumable Supplies
Sufficient consumable supplies should be readily available to assure continuous instruction.

Standard 8.4 – Preventive Maintenance
A preventive maintenance schedule should be used to minimize equipment down-time.

Standard 8.5 – Replacement
An annual review process should be used to maintain up-to-date tools and equipment at industry and safety standards. Student follow-up and Advisory Committee input should be used in this process.

Standard 8.6 – Tool Inventory and Distribution
An inventory system should be used to account for tools, equipment, parts, and supplies.

Standard 8.7 – Parts Purchasing
A systematic parts purchasing system should be in place.

Standard 8.8 – Hand Tools
Each student should have access to basic hand tools comparable to tools required for employment. Students should be encouraged to purchase a hand tool set during the period of instruction.

STANDARD 9 – FACILITIES

THE PHYSICAL FACILITIES MUST BE ADEQUATE TO PERMIT ACHIEVEMENT OF THE PROGRAM GOALS AND PERFORMANCE OBJECTIVES.

Standard 9.1 – Training Stations
Training stations (bench and on-vehicle service and repair work) should be available in the type and number required for the performance of tasks outlined in the program goals and performance objectives.

Standard 9.2 – Safety
The facilities should meet all applicable safety standards and an emergency plan should be in place and posted in all classrooms and lab/shop areas.

Standard 9.3 – Emergency Maintenance and Repair
A written facilities maintenance program should be used to ensure facilities are suitable when required for instruction.

Standard 9.4 – Housekeeping
The classroom(s), lab/shop, and support area(s) should be kept clean and orderly.

Standard 9.5 – Office Space
An area separate from the lab/shop should be available and convenient for the instructor(s) to use as an office.

Standard 9.6 – Instructional Area
A classroom convenient to, but separate from, the lab/shop area should be available for instruction and other non-lab/shop activities.

Standard 9.7 – Storage
Storage areas for tools, parts, supplies, and autmobiles should be sufficient to support the activities outlined in the program goals and performance objectives. Security should be provided to prevent pilferage and vandalism.

Standard 9.8 – Support Facilities
Restrooms and clean-up areas should be provided for both male and female students and should be convenient to the instructional area.

Standard 9.9 – Ventilation
An exhaust fume removal system should be in place and operational. When appropriate, heating and cooling systems should be used to provide sufficient comfort for learning.

Standard 9.10 – First Aid
A first aid kit should be in place and should be maintained and comply with local regulations and school policy.

STANDARD 10 – INSTRUCTIONAL STAFF

THE INSTRUCTIONAL STAFF MUST HAVE TECHNICAL COMPETENCY AND MEET ALL STATE AND LOCAL REQUIREMENTS FOR ACCREDITATION.

Standard 10.1 – Technical Competency
Instructors must hold current ASE certification to meet the requirements for the areas of program accreditation sought.

Standard 10.2 – Instructional Competency
Instructors should meet all state teaching requirements.

Standard 10.3 – Technical Updating
Faculty members should be provided technical materials required to maintain their competency. Instructors must complete a minimum of 20 hours of technical update training each year.

Standard 10.4 – Substitutes
A written policy regarding the use of “substitute" instructors should be provided to all instructors.

STANDARD 11 – WORK-BASED LEARNING

WRITTEN POLICIES AND PROCEDURES MUST BE USED FOR ALL PROGRAM-SANCTIONED WORK-BASED LEARNING ACTIVITIES. (This applies only to programs that offer work-based/apprenticeship training.)

Standard 11.1 – Standards
The work-based learning component must be an integral part of the automotive program where students spend part of the scheduled time, either on a daily basis or in a block-time configuration, on-site in related classroom instruction and part of the scheduled time off-site in a related and structured work environment.

Standard 11.2 – Agreements
All legally binding agreements should be written and signed by the student, the student's parent (if the student is under 18 years of age), the employer and the program instructor or the institution's designated work-based learning coordinator.

Standard 11.3 – Supervision
A supervising collision repair and refinish instructor or supervising work-based learning coordinator should be assigned responsibility, authority, and time to coordinate and monitor collision repair & refinish work-based learning components.

STANDARD 12 – E-LEARNING

WRITTEN POLICIES AND PROCEDURES MUST BE FOLLOWED WHEN E-LEARNING CURRICULAR MATERIALS ARE USED OUTSIDE OF SCHEDULED CLASSROOM/LAB/SHOP TIME FOR THE PURPOSE OF MEETING INSTRUCTIONAL HOUR REQUIREMENTS. (This applies only to programs that are using e-learning to meet program hour requirements. This is a go/no go Standard that requires validation of a "yes" response to each of the criteria.)

Standard 12.1 – Access
Students must have access to the appropriate technology needed to access e-learning materials.

Standard 12.2 – Curriculum and Student Progress
All content/tasks taught by e-learning must be identified and a record of each student's progress must be maintained through the use of a Learning Management System (LMS).

Standard 12.3 – Advisory Committee Input
E-learning, for the purpose of meeting hour requirements, should be discussed and approved by the Advisory Committee.

[*] A maximum of 25% of the instructional-hours requirement may be met by applicable work-based learning activities, e-learning activities, or a combination of both WBL and e-learning activities

POLICIES
ACCREDITATION PROCESS

Program Evaluation

The accreditation process begins with an extensive program evaluation performed by training program instructors, administrators, and advisory committee members. Members of this group compare the program to national standards, and have the opportunity to make improvements before submitting the application and a summary of the evaluation to the ASE Education Foundation.

Application Review

The application for initial accreditation or renewal of accreditation is sent to the ASE Education Foundation, where it is reviewed to determine if the program qualifies for an on-site team evaluation.

Programs will have a maximum of 12 months to complete the accreditation process from the date their application for Initial or Renewal of Accreditation is received by the ASE Education Foundation (this time frame may be shortened when applying under standards that are in the process of being phased out).

RENEWAL OF ACCREDITATION:

- Programs seeking accreditation renewal must submit renewal application prior to program accreditation expiration date.
- If the program has not renewed prior to the program accreditation expiration date, the program will expire, and be removed from the ASE accredited programs list.
- Programs that have expired will have **60 days** post expiration to submit a renewal application (under current program requirements). **Any program expired beyond 60 days must follow the initial accreditation process.**

On-Site Evaluation

If the program qualifies, an Evaluation Team Leader (ETL), an educator (current or retired), of a an accredited program, trained by the ASE Education Foundation and with current ASE master certification credentials, is assigned to the program and an on-site visit is conducted.

Recommendation for Accreditation

When the standards are met, ASE program accreditation is valid for five (5) years from the official accreditation date issued. If an accredited program successfully completes the accreditation renewal process before the expiration date of the current five year accreditation timeframe, accreditation renewal does not begin until the current expiration date.

If an accredited program fails to complete the accreditation renewal process before the expiration date of the current accreditation timeframe, the program accreditation ends until the renewal process has been successfully completed.

Programs having difficulty in meeting the hours or tools & equipment accreditation requirements should consider the following options:

A. Borrowing equipment needed for instruction from a manufacturer, dealership or independent repair shop.

B. Arranging for instruction on tasks requiring equipment not available in the school program at a dealership or independent repair shop.

Programs choosing option A or B are required to show documentation on where the tasks are taught, by whom, and how students are evaluated.

COLLISION REPAIR & REFINISH MINIMUM REQUIREMENTS

1. The minimum program requirements are identical for initial accreditation and for renewal of accreditation.

2. Programs must meet the following hour requirements based on the areas of accreditation sought.

   Damage Analysis/Estimating/Customer Service
   - **46 hours** combined classroom and lab-shop instructional activities
   - **Required for all accredited programs**

   Painting & Refinishing
   - **300 hours** combined classroom and lab-shop instructional activities

   Non-Structural Analysis & Damage Repair
   - **300 hours** combined classroom and lab-shop instructional activities
   - **75 additional hours** of **Welding, Cutting & Joining is also required**

   Structural Analysis &Damage Repair
   - **185 hours** combined classroom and lab-shop instructional activities
   - **Accreditation in Non-Structural Analysis & Damage Repair is also required**

   Mechanical and Electrical Components
   - **200 hours** combined classroom and lab-shop instructional activities

   To achieve MASTER level of accreditation, programs are required to accredit in all areas.

3. **The average rating on each of Standards 6, 7, 8, 9 and 10 must be a four (4) on a five-point scale.** The program will not be approved for an on-site evaluation if the average is less than four (4) on any of those standards. The program should make improvements before submitting the application to the ASE Education Foundation for review. **A program will be denied accreditation if the on-site evaluation team average rating on Standards 6, 7, 8, 9 or 10 is less than four.**

4. A "YES" response must be achieved on all six (6) criteria in Standard 12 if the program is using it to meet the instructional hour requirements for the purpose of accreditation. The program will not be approved for an on-site evaluation if it cannot support a "YES" response to each criterion on the program evaluation form. **A program will be denied accreditation if the on-site evaluation team does not give a "YES" response to all six (6) criteria in Standard 12. This applies only to programs using the provisions in Standard 12 for the purpose of meeting instructional hour requirements.**

5. A program may not be approved for an on-site evaluation if the average rating on Standards 1- 5 and 11 is less than a four on a five-point scale. **A program may be denied accreditation if the on-site evaluation team average rating on Standards 1 - 5 and 11 is less than four.** Approval for on-site evaluation or accreditation will be made by the ASE Education Foundation, based on the number of standards rated at 4 or 5 as well as the individual rating on any standard rated less than four.

6. All instructors must hold current ASE certifications in the collision repair and refinish area(s) in which he/she teaches.

7. All instructors must attend a minimum of 20 hours per year of recognized industry update training relevant to their program.

8. The program Advisory Committee, consisting of at least 5 members, must conduct at least two working meetings a year. Minutes of the meetings must be provided to the on-site evaluation team for review and must reflect relevant areas of the standards as having been considered by the Advisory Committee.

9. The Program Standards recognize that program content requirements vary by program type and by regional employment needs. Therefore, flexibility has been built into the task list by assigning each task a priority type. Items on the Task List are broken down into two categories:

    - **High Priority - Individual (HP-I)** - is a task that requires students to demonstrate hands-on competency to the instructor on an individual (one-to-one) basis. Competency in HP-I tasks will indicate to employers that the graduate is skilled in that area. **ASE program accreditation requires 95% of the HP-I tasks to be included in the curriculum.**

    - **High Priority - Group (HP-G)** - is a task that can be taught through the use of video, demonstration, team training, etc. Students should be tested on the information presented, but is not required to demonstrate hands-on competency on an individual (one-to-one) basis. Competency in HP-G tasks will indicate to employers that the graduate has been tested on the information, but may not have “hands-on" competency skills. **ASE program accreditation requires 90% of the HP-G tasks to be included in the curriculum.**

10. A program that does not meet the minimum hour requirements may be eligible for accreditation if both of the following conditions are met for the areas of accreditation being sought:

    a. Show evidence that all graduates from the previous academic year have taken the professional level ASE certification examination, and
    b. Show documentation that 75% of those graduates passed the professional level ASE certification tests. **NOTE:** The ASE Entry-Level test cannot be used to meet this requirement.

11. The concern for safety is paramount to the learning environment. Each program has the following safety requirement preceding all related tasks:

    Comply with personal and environmental safety practices associated with clothing and the use of gloves; respiratory protection; eye protection; ear protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

12. In 1998 the Occupational Safety and Health Administration (OSHA) issued a new rule on respiratory protection. The Occupational Safety and Health Standards, Title 29 Labor, Subpart I – Personal Protective Equipment requires employers to establish and maintain a respiratory protection program.

    Since the health and safety of students is a primary concern, all collision programs that seek ASE program accreditation must have their Program Administrator and Program Instructor sign the Application for Accreditation or Renewal of Accreditation, where indicated, that the school is aware of this rule (including respirator fit testing and filter changing) and to the extent required by law, is in compliance with the rule with respect to the students enrolled in the Collision Repair and Refinish Program.

13. The ASE Education Foundation strongly encourages programs to review and comply with the Environmental Protection Agency (EPA) Design for the Environment (DfE) Project publications which can be accessed on the website at www.epa.gov/dfe/pubs/projects/auto.

    1. Best Practices for Auto Refinishers When Spray Painting
    2. Best Practices for the Paint Mixing Room
    3. Supplied-Air Respirators in Auto Shops: Get the Best Protection
    4. User Friendly Supplied-Air Respirators: Options for Auto Refinishers
    5. Choosing the Right Gloves for Painting Cars
    6. Additionally, EPA issued a Final Rule on the National Emission Standards for Hazardous Air Pollutants NESHAP (Subpart HHHHHH) that the ASE Education Foundation recommends programs review: Paint Stripping and Miscellaneous Surface Coating Operations (found separately at http://www.epa.gov/ttn/atw/area/paint_stripb.pdf)

QUALIFICATIONS OF EVALUATION TEAM LEADERS (ETLs)

Evaluation Team Leaders (ETLs) are educators who have been trained by the ASE Education Foundation to lead the on-site evaluation. The ASE Education Foundation will assign an ETL once a program has been approved for an on-site evaluation. Every effort will be made to assign an ETL located close to the school to reduce the cost for the evaluation. Two additional team members, selected by the program and approved by the ETL, are required for a collision repair and refinish program on-site evaluation. (See the following page for additional information about team members and on-site teams.)

Persons selected as ETLs must:

1. have a minimum of six years of combined experience as a collision repair and refinish technician and a current or retired collision repair instructor (at least three years experience as a collision repair and refinish technician is required);
2. have a B.A. or B.S. in Education from a college or university recognized for teacher training by the state; and
3. be a current ASE certified master collision repair and refinish technician (B2-B5).

Or, if a state does not require collision repair and refinish instructors to have a B.A. or B.S. degree, the following qualifications will apply:

1. six years' experience as a collision repair and refinish technician,
2. four years collision repair and refinish teaching experience at the secondary or post-secondary level, and
3. current ASE certified master collision repair and refinish technician (B2-B5).

ETL candidates who are active instructors must be directly associated with an accredited program. ETL candidates who are inactive instructors must have formerly been directly associated with an accredited program.

ETL training is valid for three years. However, an automatic three-year renewal is granted every time an ETL conducts an on-site evaluation. ETLs are required to attend additional training sessions or serve as a team member if they have not conducted an on-site evaluation within three years. This additional training is required even though the individual holds current ASE certification.

Anyone interested in becoming an Evaluation Team Leader should contact the ASE Education Foundation at (703) 669-6650, email - info@ASEeducationfoundation.org, or their state Trade & Industrial Supervisor for more details.

QUALIFICATIONS OF ON-SITE EVALUATION TEAM MEMBERS

The program requesting accreditation is responsible for recruiting and recommending on-site evaluation team members. The ETL must approve individuals recommended by the program. The on-site evaluation team members must be practicing collision repair and refinish technicians, service managers, or shop owners from businesses in the area served by the training program.

Team members must have:

1. a high school diploma or the equivalent (industry or military training may be considered as the equivalent), and
2. at least five years full-time experience as a general collision repair and refinish technician.

ASE collision repair and refinish certification is recommended but not required.

1. The initial and renewal accreditation evaluation team is composed of three individuals: the ETL and two team members. One team member must be from a dealership and one team member must be from and independent repair facility.

2. Each program requesting accreditation must identify their choice for an alternate evaluation team member should one of the other team members be unable to participate on the date(s) of the evaluation. The alternate team member may be from a dealership, an independent repair facility, or a current advisory committee member. If an advisory committee member is selected they **must not** have participated in the program self-evaluation. Only one current Advisory Committee member can be selected as a team member.

Each program must identify their selections on the On-Site Evaluation Team Member List.

Team members for the onsite visit must not be former instructors or graduates of the program within the past three years or relatives of the administrator or instructor.

TASK LIST INFORMATION

An essential element of any curriculum or training program is a valid task list. Collision Repair and Refinish technician instructors need a well-developed task list that serves as a solid base for course of study outlines and facilitates communication and articulation of their training programs with other institutions in the region.

It is a policy that the task list developed by the National Institute for Automotive Service Excellence (ASE) serves as the basis for the ASE Education Foundation task list. Panels of technical service experts from the automotive service industry and career technical education are called upon to develop and validate the task lists.

The ASE Entry-Level tests are based on the ASE Education Foundation task lists. These tests can provide the student with their first industry-recognized certification through ASE.

Tasks may be taught at different times in the program or in more than one area. However, the hours for the tasks may be counted only once. Additional information on the development of the task list can be found in the Task List section.

All tasks have a Priority designation. The Program Standards recognize that program content requirements vary by program type and regional employment needs. Therefore, flexibility has been built into the task lists by assigning each task a priority type. The priority type simply indicates the minimum percentage of tasks that a program must include in the curriculum to be accredited. Items on the Task List are broken down into two categories:

- **Ninety-five percent (95%) High Priority – Individual (HP-I) tasks must be taught.**

- **Ninety percent (95%) High Priority - Group (HP-G) tasks must be taught.**

TOOLS AND EQUIPMENT INFORMATION

The basic tools and equipment that must be available for use in the collision repair and refinish program are listed in the Tools and Equipment section. Many tools and much of the equipment are the same for some or all program areas. However, some equipment is specialized and must be available for use in the selected program areas. The specialized tools/equipment lists for each area are included in the Tools and Equipment section.

The student hand tool list covers all program areas. This list indicates the tools a student will need to own to be successful.

Although no brand names are listed, the equipment and tools must address the following programmatic issues:

1. Safety - Equipment and tools must have all shields, guards, and other safety devices in place, operable, and used.
2. Type and Quality - The tools and equipment used in an accredited program must be of the type and quality found in industry. They must also be adequate and in sufficient quantity to meet the program goals and student performance objectives.
3. Consumable Supplies - Supplies should be in sufficient quantity to assure continuous instruction. Consumable supplies, such as solvents, sandpaper, etc. are not listed.
4. Maintenance - A preventive maintenance schedule should be used to minimize equipment down time.
5. Replacement - A systematic schedule for replacement should be used to maintain up-to-date tools and equipment at industry and safety standards. Information gained from student program evaluations as well as advisory committee input should be used in the replacement process.
6. Inventory - An inventory system should be used to account for tools, equipment, parts, and supplies.
7. Parts Purchasing - A systematic parts-purchasing system should be used from work order to supplier.
8. Hand Tools - Each student should be encouraged to purchase a hand tool set during the period of instruction.
9. Storage - Adequate storage of tools should be provided. Space for storage of the students' hand tools should be provided.

GO/NO GO STANDARDS

The Program Standards for Initial Accreditation and Renewal of Accreditation are identical. Items listed below are considered **Go/No Go** items, and are critical for accreditation and are in **bold** print in the Collision Repair & Refinish Program Evaluation materials.

6.1A	**Does the Advisory Committee, consisting of at least five (5) members, convene a minimum of two working meetings per year?**
6.5C	**Is the Advisory Committee included when conducting an annual evaluation of the facilities to assure adequacy in meeting program goals?**
7.5A	**Does the collision repair and refinish program provide theory and "hands-on" training for 95% of the HP-I and 90% of the HP-G tasks, as evidenced by cross-referencing the course of study, lesson plans, job sheets, and student progress charts?**
7.5B	**Are the tools and equipment available for the tasks taught in the program areas being accredited?**
8.1A	**Are all shields, guards, and other safety devices in place, operable, and used?**
8.1B	**Do all students, instructors, and visitors wear safety glasses in the lab/shop area while lab is in session?**
10.1	**Do instructors hold current ASE certification appropriate for the program areas being accredited?**
10.3B	**Do instructors attend a minimum of 20 hours per year of recognized industry update training relevant to the areas their program is accredited?**

For programs using e-learning for the purpose of meeting accreditation instructional hour requirements, support for a 'YES' response must be provided for each criterion below:

12.1A	**Is there documentation that students have access to appropriate technology for e-learning purposes?**
12.2A	**Are the content/tasks that are to be delivered via e-learning clearly highlighted in the course of study?**
12.2B	**Is there documentation that e-learning is incorporated into the content/tasks in the program plan?**
12.2C	**Do the instructional hours to be credited toward meeting up to 25 percent of the program hour requirements correlate with the vendor's average completion time for each instructional module?**
12.2D	**Is there documentation of the implementation and use of e-learning instructional materials as evidenced in a Learning Management System (LMS)?**
12.3A	**Are Advisory Committee meeting minutes available to confirm that the committee has discussed and approved e-learning?**

Programs must be able to support a yes response for all seven items (thirteen items if using Standard 12 – E-learning). Programs must also meet the hour requirements listed in item 2 of the Collision Repair and Refinish Minimum Requirements appropriate for the areas of accreditation sought. **If these responses are not achieved, do not apply for accreditation at this time.**

In addition, an on-site evaluation will not be scheduled unless the average score on each of Standards 6, 7, 8, 9, and 10 is at least a 4 on the Program Evaluation. Please refer to the Collision Repair and Refinish Program Requirements for more information.

Instructors must be ASE certified in accordance with the requirements for the program areas being accredited. Please refer to item 6 of the Collision Repair and Refinish Minimum Requirements.

RECOGNITION FOR ACCREDITATION

A program approved for accreditation or renewal of accreditation will receive a certificate that includes the school's name and the expiration date of accreditation. A statement will read:

"THE INSTRUCTION, COURSE OF STUDY, FACILITIES AND EQUIPMENT OF THIS INSTITUTION HAVE BEEN EVALUATED BY THE ASE EDUCATION FOUNDATION AND MEET STANDARDS OF QUALITY FOR THE TRAINING OF COLLISION REPAIR AND REFINISH TECHNICIANS IN THE FOLLOWING AREAS:

_____

Institutions receiving ASE program accreditation are encouraged to put the following statement on the graduate's diploma or certificate:

> "The person holding this diploma has participated in a collision repair & refinish technician training program that was accredited by the National Institute for Automotive Service Excellence and has completed instruction in the following areas:

_____

A screened ASE Education Foundation logo may be overprinted with the above statement and placed on the graduate's diploma. A logo is provided in the promotional material a program receives upon accreditation.

Programs granted initial accreditation will also receive a 24"x30" sign indicating that the training program is ASE accredited.

INTEGRATED ACADEMIC SKILLS RECOGNITION

The ASE Education Foundation Board of Trustees and the ASE Board of Directors has initiated a process to recognize accredited programs that are integrating academics and technical skills into the curricula. This effort should be a collaborative effort between the collision repair and refinish instructors and the academic instructors in language arts, mathematics, and science.

The ASE Education Foundation will issue a certificate of recognition to those programs that provide documentation including, but not limited to, student assignments or activities, classroom/lab instructional materials, student performance records, and interviews with academic instructors.

Programs that wish to receive recognition must complete the Integrated Academics Recognition form and return it with the application for accreditation. Documentation on integrated academic activities must be available for the ETL at the time of the on-site evaluation.

Programs may receive recognition in Language Arts, Mathematics, Science, or any combination of the three areas.

The Integrated Academic Skills – Being Relevant Matters book is available on the ASE Education Foundation website at www.ASEeducationfoundation.org

APPEALS AND ACTION FOR REVOCATION

APPEALS: PROGRAMS APPLYING FOR ACCREDITATION

A complaint received from any school concerning the procedures, evaluation or accreditation of the collision repair and refinish technician training program must be made in writing to the ASE Education Foundation in Leesburg, VA. It will be immediately referred to a Grievance Examiner who will acknowledge receipt of the complaint in writing to the complainants. Thereafter, a Grievance Examiner will investigate the complaint and prepare a report. A copy of the report will be given to the complainants and to an Appeals Committee within thirty (30) days of the receipt of the complaint.

The Appeals Committee will review the findings and recommendations of the Grievance Examiner, together with the complaint and any data supplied in connection therewith. The Appeals Committee will be empowered to dismiss the matter or to initiate such action as it may deem appropriate.

If the complainants desire to review the Appeals Committee's evaluation, they may do so at the office of the Grievance Examiner in Leesburg, VA. However, they will not be permitted to make copies of the results.

ACTION FOR REVOCATION: ASE ACCREDITED PROGRAMS

The Appeals Committee will also advise the ASE Education Foundation President of its judgments and recommendations for action in any cases of malpractice or misrepresentation involving the misuse of ASE program accreditation for a technician training program. Upon receipt of a complaint alleging misuse or misrepresentation by an accredited program, a Grievance Examiner will be notified. The Grievance Examiner will notify the parties against whom the complaint has been filed, in writing, indicating the alleged wrongdoing. The parties will be further advised that they may submit a written explanation concerning the circumstances of the complaint within thirty (30) days. After the Grievance Examiner has considered the complaint and received the explanation, if any, the Grievance Examiner will determine whether there is a reasonable basis for a possible wrongdoing. If the Grievance Examiner finds such a basis, the Grievance Examiner will inform the parties of the findings. At that time, the Grievance Examiner will inform the parties of their right to a hearing before an Appeals Committee. The parties will have fifteen (15) days to notify the Grievance Examiner, in writing, of their decision.

In the event the involved parties elect to be bound by the findings of the Grievance Examiner without a hearing, the Grievance Examiner will submit a written report with recommendations to the Chair of the Appeals Committee. This report will be submitted within sixty (60) days of the receipt of the waiver of a hearing. The Chair of the Appeals Committee will mail a copy of the Grievance Examiner's findings and recommendations to the parties. In the event that the involved parties elect to appear at a hearing, the Chair of the Appeals Committee will call a Board of Inquiry. This Board will consist of four ASE Education Foundation and/or ASE Board members. The Board of Inquiry will be convened in Leesburg, VA at a date and time determined by the Chair. The Board will notify the involved parties, in writing, regarding the time and place of the hearing.

The Grievance Examiner will be responsible for investigating and presenting all matters pertinent to the alleged wrongdoing to the Board of Inquiry. The involved parties will be entitled to be at the

hearings with or without counsel. The parties will be given an opportunity to present such evidence or testimony as they deem appropriate.

The Board of Inquiry will notify the Chair of the Appeals Committee of its findings and recommendations in writing within ten (10) days after the hearing is completed.

The Appeals Committee will review the findings and recommendations of either the Grievance Examiner if a hearing was waived, or the Board of Inquiry if a hearing was held. The Appeals Committee will determine if the record on the complaint supports a finding of conduct contrary to or in violation of reasonable practices. If two-thirds of the Appeals Committee so find, the Committee will recommend to the ASE Education Foundation President the appropriate sanctions or courses of action against the parties charged.

DEFINITIONS – EDUCATIONAL TERMS

1. **AREA(S):** Relates to one or more of the following: (1) Structural Analysis and Damage Repair, (2) Non-Structural Analysis and Damage Repair (Body Components), (3) Mechanical and Electrical Components, (4) Painting and Refinishing.

2. **ARTICULATION:** A formal written agreement, usually between a secondary and post-secondary institution that are geographically within a reasonable daily commuting distance of each other. The agreement will clearly denote that students completing specific secondary courses in accordance with predetermined performance criteria will have partially completed commensurate requirements for a completion certificate or diploma awarded by the postsecondary institution. Commensurate requirements could be in the form of credit equivalents, advanced placement, task completion, etc. at the post-secondary institution.

3. **CURRICULUM:** All the objectives of the lesson plan with respect to the content and learning activities, arranged in a sequence for a particular instructional area. An orderly arrangement of integrated subjects, activities, time allocations, and experiences which students pursue for the attainment of a specific educational goal.

4. **COMPETENCY: (Hands On)** - Performance of task to the level or degree specified in the performance standard and curriculum for the task.

5. **COMPETENCY: (Written)** - Understanding of task to the level or degree specified in the performance standard and curriculum for the task.

6. **CRITERION REFERENCED MEASURE(S):** An exercise based on a performance objective for a task, and designed to measure attainment of that objective. (Also called performance test(s) or criterion-referenced test.)

7. **E-LEARNING:** An electronically based, instructor managed, and student driven process that enhances and/or supplements learning—outside the regularly scheduled classroom and lab/shop timeframe—*and includes integrated and scored auditable assessment and reporting* in compliance with the ASE Education Foundation's e-learning general framework criteria.

8. **GOAL:** A statement of the intended outcome of participation in the training program.

9. **LIVE WORK:** The processing, assignment, and student performance of the appropriate tasks on vehicles donated by manufacturers or other sources, customer-owned, and other training vehicles.

10. **LEARNING MANAGEMENT SYSTEM (LMS):** An electronically based, instructor managed, and student driven process that enhances and/or supplements learning—outside the regularly scheduled classroom and lab/shop time frame—*and includes integrated and scored auditable assessment and reporting* in compliance with the ASE Education Foundation's e-learning general framework criteria.

11. **MASTERY:** (See Competency - Hands On and Competency - Written).

12. **OBJECTIVE, PERFORMANCE:** A written statement describing an intended outcome (competent task performance) in terms of student performance. (also called "behavioral" objective or instructional objective).

13. **ON-VEHICLE SERVICE AND REPAIR WORK:** The processing, assignment, and student performance of the appropriate tasks on vehicles donated by manufacturers or other sources, customer-owned, and other training vehicles.

14. **PERSONAL CHARACTERISTIC:** Attributes that are not readily measurable and are generally in the affective or cognitive domains.

15. **PRIORITY RATINGS:** Indicates the minimum percentage of tasks that a program must include in its curriculum to be accredited.

16. **STANDARD:** "...Something established for use as a rule or basis of comparison in measuring or judging capacity, quantity, content, extent, value, quality, etc." Webster's New World Dictionary (1991)

17. **STANDARD – (PERFORMANCE):** A written specification of the results of acceptable task performance.

18. **STANDARD – (PERSONAL):** An attribute or characteristic of an individual that facilitates entry into or advancement within an occupation.

19. **STANDARD – (PROGRAM):** A specific quality or desired characteristic of a training program designed to prepare individuals for employment or advancement.

20. **TASK:** A psychomotor or cognitive entry-level learning activity consisting of one or more measurable steps accomplished through an instructor presentation, demonstration, visualization or a student application.

21. **TRAINING STATION:** An area with appropriate tools and equipment, large enough to allow the development of both safety and competency in task performance.

22. **<u>WORK-BASED LEARNING:</u>** For ASE program accreditation purposes, work-based learning is a formalized and structured credit bearing instructional dimension of the automotive training program that is an integral part of the institution's master schedule, is available to all students at the appropriate grade level, and meets the following criteria:

    a) A written customized training plan and performance standards that each student is expected to meet, to be signed off by the student, the student's parent or legal guardian, the authorized work-based learning site representative, and the work-based learning coordinator.

    b) A written agreement between the sponsoring educational institution and the work-based learning site that it's in compliance with state/federal rules and regulations governing work-based learning programs.

    c) A written plan of oversight and supervision designating who has the authority to coordinate, monitor and evaluate the work-based learning program, including individual student performance.

****

<u>Must</u> or <u>shall</u> is an imperative need, duty or requirement; an essential or indispensable item; mandatory.

<u>Should</u> is used to express a recommendation, not mandatory, but attainment would increase program quality.

<u>May</u> or <u>could</u> expresses freedom to follow a suggested alternative.

POLICIES ON ARTICULATION AGREEMENTS

There is no provision for articulated accreditation for collision repair and refinish programs under the Collision Repair & Refinish program standards. Regardless, ASE Education Foundation Trustee action, as well as language in the Carl D. Perkins Vocational Education Act, encourages articulation between programs at the secondary and post-secondary levels.

Articulation agreements may be entered into between any consenting institutions, and are generally defined by a formal written agreement. This agreement usually defines the terms of the articulation, including, but not limited to, the terms under which a student completing specific coursework at one institution may receive credit* from the other institution. Articulation agreements encourage, but cannot require, graduates of secondary programs to go on to post-secondary education.

* Credit is defined as a form of recognition for work that has been completed at the secondary level. It includes, but is not limited to, granting: academic credit, advanced placement, task completion, etc.

PROCEDURES FOR ACCREDITATION/RENEWAL OF ACCREDITATION

PROCESS OVERVIEW

NOTE: The ASE Education Foundation recommends that programs maintain a file containing copies of all reference and documentation materials developed during all phases of the accreditation process.

1. Application Materials

The program requesting accreditation can download the program evaluation form and application from the ASE Education Foundation website at www.ASEeducationfoundation.org. **Initial accreditation requires the program have at least one graduated class before application submission.**

To begin the accreditation process, the following must be completed prior to application submission:

- An extensive program evaluation must be conducted by school personnel and Advisory Committee members using the Program Self Evaluation form.
- Standards 1 - 10 and 11/12 if applicable must be rated.
- Initial Accreditation - An average rating of 4 for Standards 1 - 10 and 11/12 if applicable is required prior to submitting the application to the ASE Education Foundation for review.

Application for Accreditation or Renewal of Accreditation includes:

- Program Evaluation Summary Sheet
- On-site Evaluation Team Member List
- Instructor Qualifications Forms and Instructor Training Forms
- Advisory Committee List
- Integrated Academics Recognition Forms (optional)
- Payment Worksheet—Purchase Order, Check, or Credit Card Authorization for Base Application Fee and additional fees as applicable (applications will be returned if received without payment)

RENEWAL OF ACCREDITATION:

- Programs seeking accreditation renewal must submit renewal application prior to program accreditation expiration date.
- If the program has not renewed prior to the program accreditation expiration date, the program will expire, and be removed from the ASE Education Foundation accredited programs list.
- Programs that have expired will have **60 days** post expiration to submit a renewal application (under current program requirements). **Any program expired beyond 60 days must follow the initial accreditation process.**

2. Review of Application

The ASE Education Foundation will review the materials within 30 days. Following the review, the Program Administrator and the state Trade & Industrial Supervisor will be notified about the status of the program. The program will be identified as one of the following:

a. Qualified for on-site evaluation for the areas listed on the application.
b. Not qualified for an on-site evaluation at that time. The ASE Education Foundation will indicate specific improvements that must be made before the on-site evaluation can be approved.

3. Evaluation Team Leader (ETL) Assigned, Program Coordinator Makes Contacts

- The ASE Education Foundation will assign an Evaluation Team Leader (ETL) to the program.

- The program administrator and primary contact will be notified of the ETL assignment; and provided with the necessary ETL contact information.

- Included with the notification of ETL assignment will be an On-site Evaluation Agreement. The On-site Evaluation Agreement outlines the required documentation to be provided to the ETL and the costs for the ETL's services and expenses. All costs will be paid by the institution requesting accreditation. This agreement must be completed and returned to the ETL and a copy provided to the ASE Education Foundation after the on-site date has been established.

- The ETL will contact the Program Coordinator to arrange a date for the on-site evaluation. It is acceptable for the Program Coordinator to initiate contact with the ETL.

- With a legitimate reason, the Program Coordinator may contact the ASE Education Foundation to request a different ETL. A request for a different ETL must be in writing and specific as to the reason for the request. (The ETL assigned must NOT be a present or former teacher or administrator, or a member of the Advisory Committee of the program to be evaluated.)

4. Send On-Site Evaluation Agreement, Copy of the Application, Course of Study, List of On-Site Evaluation Team Members, Program Graduate Employer Contact Form, and Necessary Payment Forms to the ETL.

A copy of the items listed below must be received by the ETL at least two weeks prior to the on-site evaluation or the on-site must be rescheduled.

Items required prior to on-site evaluation:

- On-site Evaluation Agreement – signed by the program administrator
- Copy of the Initial or Renewal of Accreditation Application
- Course of Study – which includes:
    a. Syllabus for each class
    b. Tasks to be taught specified according to Priority designations HP-I, HP-G
    c. Number of contact hours
    d. Sequence of instruction to be included in the program
    e. List of training materials used in training
    f. Sample evaluation form used to track student progress
- Advisory Committee minutes
    - One year's worth for initial accreditation
    - Five year's worth for renewal of Accreditation
- Program Graduate Employer Contact form

For programs using e-learning (Standard 12) to meet the hour requirements the following must be included in addition to the above list:

- Tasks and information to be taught using e-learning materials outside of classroom/lab/shop time
- Number of hours allocated to using e-learning instructional materials outside of classroom/lab/shop time correlated with vendor/developer's average completion time for each module
- Sample of the Learning Management System (LMS) used to track student progress

The On-site Evaluation Team Member List must be included for the ETL to review and approve. Once a date has been set and the on-site evaluation team members have been approved by the ETL, the program coordinator must contact the on-site evaluation team members to make arrangements for the evaluation day(s).

Program Graduate Employer Contact form with the names of 6 previous graduates must be provided. The program instructor or administrator should contact the employers prior to the on-site visit informing the employer a representative from ASE Education Foundation will be in contact with them regarding the graduate.

5. On-Site Evaluation

Initial accreditation requires 2 consecutive days while students are in class for the on-site evaluation review of all the standards. However, if more than one program is applying for accreditation (general automotive and GM ASEP, for example), additional team members and additional days may be required to complete the on-site evaluation. The ASE Education Foundation will determine the need for additional team members and days.

Renewal of Accreditation requires a 1-day on-site evaluation while students are in class. The on-site evaluation team reviews Standards 6-10 (and Standard 12 if applicable) as well as all go/no-go (critical) items. However, if the Advisory Committee average on Standards 1-5 or Standard 11 is less than 4, the on-site evaluation team must also review these standards. The ASE Education Foundation will determine whether an additional day or additional team members will be required to complete the evaluation.

6. ETL Reports Results

The ETL will submit all on-site evaluation materials and a final report to the ASE Education Foundation with a recommendation for or against program accreditation.

7. Program Accreditation

The ASE Education Foundation will review the final report and all additional evaluation materials to determine whether the program meets the requirements for accreditation and will make their recommendation to the Board of Trustees. The President will approve accreditation as sanctioned by the Board of Trustees.

Programs that do not earn accreditation will be given a written report specifying improvements that must be made to qualify for accreditation. The decision at the national level will be final unless appealed to the Board of Trustees. Appeals will be heard only at regular meetings of the Board.

The Program Administrator and the state Trade & Industrial Supervisor will be notified of all decisions regarding the approval status of all programs applying for accreditation.

8. Display and Reporting of Accreditation

A wall plaque identifying the accredited areas will be forwarded from the ASE Education Foundation to the program administrator. Schools must accurately report the areas of accreditation.

9. Accredited Technician Training Program List

The ASE Education Foundation maintains a current listing of all ASE accredited programs. The list is made available on the website at www.ASEeducationfoundation. Programs that do not complete the renewal process by their expiration date will be removed from the website list.

10. Annual Report

Each year all accredited programs are required to update all contact information.

11. Compliance Review

A program is accredited for five years. A compliance report is completed by the program Advisory Committee after 2½ years. The compliance report is used to verify that a program is maintaining the program standards. The ASE Education Foundation will notify the program administrator at the 2-year anniversary of accreditation that a compliance review is due. The report is due 6 months after the notification date. If the report is not received within 60 days past the due date, the program's status will be set to "Due to Reaccredit" and the program will be removed from the roster of accredited programs. The program may be required to have an on-site visit conducted by an ETL and ASE Education Foundation Trustees, staff, consultants, or other designated representatives to verify program compliance prior to the program status being restored to "Accredited."

Additionally, the ASE Education Foundation may randomly select programs at the 2½-year period for an on-site compliance review by an ETL and ASE Education Foundation Trustees, staff, consultants, or other designated representatives. Selected programs will be notified, in advance, of the on-site review. Programs should be prepared to provide documentation on how they are maintaining the standards. All costs for this on-site review will be paid by the ASE Education Foundation.

Compliance review forms are available on the website at www.ASEeducationfoundation.org.

12. Renewal of Accreditation

The ASE Education Foundation will contact the program twelve (12) months prior to the accreditation expiration date. Programs can download the accreditation materials at www.ASEeducationfoundation.org and follow the process outlined above.

ON-SITE EVALUATION COST SHEET

	ACCREDITATION FEE	RENEWAL OF ACCREDITATION FEE
Base Accreditation Processing Fee	$950.00	$850.00
Manufacturer Specific Accreditation Processing Fee (if applicable this fee is in addition to the Base Accreditation Fee)	$475.00	$425.00
Honorarium for Evaluation Team Leader (ETL) @ $250/day ***Please see below**	*$500.00	*$250.00
Estimated mileage, hotel, and meal expenses for the ETL ****Please see below**	$300.00	$150.00
ESTIMATED TOTAL COSTS Base program only	$1,750.00	$1,250.00

NOTE: It is anticipated that team members recruited from local independent repair facilities and dealerships will serve without charge to the institution.

The ASE Education Foundation must receive the application fee with the completed application. Applications received without payment will be returned to the program for resubmission with payment.

***ETLs are to receive an additional honorarium of $100 per additional program when evaluating multiple programs at one location.** Example: An ETL evaluates one general program and one manufacturer-specific program during an initial accreditation on-site evaluation. The honorarium paid to the ETL would be $500 for the standard two-day honorarium plus $100 for the additional program, for a total honorarium of $600.

ETLs are paid as independent contractors, not as school employees.

**Mileage is to be reimbursed at the "business purpose" rate specified by the IRS. Please visit IRS.gov for the current mileage reimbursement rate.

Costs of accreditation/renewal of accreditation are subject to change. Contact the ASE Education Foundation for current information.

SPECIAL CONSIDERATIONS FOR RENEWAL OF ACCREDITATION

Evaluation

The renewal of accreditation process requires a one-day on-site program evaluation while students are in class. Team members only evaluate Standards 6-10 unless the ETL is given other instructions by the ASE Education Foundation. The ETL must submit a Final Report Form for each program evaluated.

Conducting an On-Site Program Evaluation when the Program Advisory Committee has rated a Standard Below 4

Renewal of accreditation requires that four members of the Advisory Committee complete the Program Evaluation form. If a rating on one or more standards is below a 4 on the 5-point scale, it will be necessary for the on-site evaluation team to rate those standards in addition to Standards 6-10. The ASE Education Foundation will advise the ETL if it will be necessary to rate additional standards. An additional team member or an additional day may be required for the on-site evaluation. The ASE Education Foundation will make that determination before the on-site evaluation is scheduled.

Renewal of Accreditation for Two or More Programs

It may be necessary to schedule an additional day or add team members if more than one program is due to renew their accreditation at the same time (example: general automotive, GM ASEP, etc.). The ASE Education Foundation will make that determination before the on-site evaluation is scheduled. The ETL must submit a Final Report Form for each program.

EVALUATION GUIDE

AUTOMOTIVE PROGRAM EVALUATION

Everyone associated with an automotive program, whether it is automobile, collision repair & refinish, or medium/heavy truck, should be aware that an extensive program evaluation must be conducted by school personnel and certain criteria must be met to be approved for an on-site team evaluation. Documentation must be available for the on-site team to verify that the program meets all requirements for accreditation. The good news is the on-site team will evaluate exactly the same items the school evaluated.

Both the Program Standards and Program Evaluation form contain helpful hints to assist programs through the accreditation process. These hints were developed by a group of experienced ETLs, ASE Education Foundation staff and Trustees. The result is a collection of suggestions for schools and ETLs alike to be used as a guide for preparing, reviewing, and evaluating the documentation needed for program accreditation. These suggestions are meant as examples but there are many other documents that can be used to show how programs meet the standards for accreditation.

When evaluating the statements on the Program Evaluation form read the statement on the form, review the "Possible Documents" hint, and refer to the Program Standard for additional information on each standard sub-section. It is helpful to make notes of reference materials used to rate the standard. While preparing for the on-site evaluation, make copies of the information, clearly mark the reference, and highlight specific information for each sub-section. For example, Standard 1.2 A. asks to rate program materials available (brochure or catalog) on the inclusion of admission requirements, employment potential, etc. Have a copy of the school catalog available for the team with the section identified with a sticky note and specific information highlighted.

The evaluation team will look at the same statement and will use the information provided to them to rate the items. The evaluation team should make comments on any sub-section that is rated above or less than 4.

ADVISORY COMMITTEE TASKS WITHIN PROGRAM STANDARDS

The Advisory Committee is possibly the most important tool that any automotive technician training program can have, particularly when it is used properly and to its full extent. Regular meetings and good documentation of the meetings in the form of minutes is a must. The following are standards that must specifically be addressed by/with the program advisory committee and be reflected in the minutes. In order to ensure that these items are addressed, this document might be used as a guideline for developing an agenda for an advisory committee meeting. Programs should not limit the use of the advisory committee to only these items, but these items MUST be addressed:

Standard	Contents	Documentation
6.1 A	**Does the Advisory Committee, consisting of at least five (5) members, convene a minimum of two working meetings per year?**	**Meeting minutes from at least two meetings per year (one year for initial accreditation; five years for renewal of accreditation).**
6.1 B	Rate the input of committee members in terms of participation, providing input on program improvement, and attendance as indicated in the minutes.	Meeting minutes
6.1 C	Rate the mix of committee members in terms of being representative of the following groups: technicians, local employers, consumer groups, former students, others (automotive trainers, parents, etc.)	List of all advisory committee members and their affiliations.
6.2A	Rate the Advisory Committee input in reviewing budgeted funds allocated to and used by the program.	Highlight pertinent discussion in Advisory Committee meeting minutes.
6.2 B	Rate the funding in terms of being adequate for program operation.	Provide budget information and highlight pertinent discussion regarding budget in Advisory Committee minutes.
6.3A	Does the Advisory Committee review the information from the annual follow-up procedure and provide input for modifications to the training program?	Highlight pertinent information in Advisory Committee minutes.
6.4A	Rate the use of the Advisory Committee to provide input on additional tasks, and if added, their approval of those additional tasks.	Highlight pertinent information in the Advisory Committee minutes.
6.5A	Rate the use of the Advisory Committee review in the evaluation process (evaluation of instruction).	Highlight pertinent information in Advisory Committee minutes.

6.5B	Rate the use of an annual review process, including the use of student follow-up information and local Advisory Committee input, to maintain up-to-date tools and equipment at industry and safety standards.	Describe the annual review process and provide an example from the annual survey data and Advisory Committee minutes with pertinent information highlighted.
6.5C	**Is the Advisory Committee included when conducting an annual evaluation of the facilities to assure adequacy in meeting program goals?**	**Highlight pertinent information in Advisory Committee minutes.**
9.2E	Rate safety inspections in terms of being regularly held.	Note inspection schedule, show checklist, and highlight pertinent comments in Advisory Committee minutes.
***12.3 A**	**Are Advisory Committee meeting minutes available to confirm that the committee has discussed e-learning?**	**Highlight pertinent information in the Advisory Committee meeting minutes.**

****Standard 12 applies only to programs using e-learning outside of scheduled classroom/lab/shop time to meet instructional hour requirements for the purpose of achieving accreditation.***

COLLISION REPAIR AND REFINISH TASK LIST

TASK LIST AND ASSUMPTIONS

The ASE Education Foundation task list was reviewed and updated in February 2020. A national committee was assembled in Leesburg, Virginia to review the tasks used in the collision repair and refinish accreditation program. The committee consisted of individuals representing collision repair and refinish shop owners and technicians, collision repair and refinish instructors, collision repair and refinish equipment and parts suppliers.

The committee reviewed the standards, task list, tools and equipment list, program hours, and instructor qualifications. The committee had the most current National Institute for Automotive Service Excellence (ASE) collision repair and refinish task lists for reference purposes.

All the tasks are assigned a "High Priority" designation. Accredited programs must include at least 95% of the HP-I tasks and 90% of the HP-G tasks in the curriculum. Please refer to the Task List Information in the Policies section for additional information on the requirements for instruction on tasks.

Theory instruction and hands-on performance of all the basic tasks will provide initial training for entry-level employment in the Collision Repair and Refinish field or prepare the student for further training. Competency in the tasks will indicate to employers that the graduate has the skills needed for entry-level employment in the Collision Repair and Refinish service field.

1. It is assumed that:

    - in all areas, appropriate safety, theory, and support instruction will be required for performing each task;
    - the instruction has included identification and use of appropriate tools and testing and measurement equipment required to accomplish certain tasks; and
    - the student has received the necessary training to locate and use current reference and training materials from accepted industry publications;

2. It is assumed that:

    - all components are steel unless otherwise specified;
    - current manufacturer’s required/recommended repair procedures are available for each vehicle used in instruction;
    - all diagnostic and repair tasks described in this document are to be accomplished in accordance with manufacturer’s recommended procedures/specifications as published;
    - where manufacturer’s required/recommended guidelines are not available, published industry guidelines are used; and
    - all tools and equipment comply with applicable federal, state and local regulations.

3. It is assumed that:

    * individual training programs being evaluated for accreditation should have written and detailed performance standards for each task covered and taught in the curriculum;
    * learning progress of students will be monitored and evaluated against these performance standards;
    * a system is in place that informs all students of their individual progress through all phases of the training program.

4. It is assumed that:

    * individual courses of study will differ across collision repair and refinish technician training programs;
    * development of appropriate learning delivery systems and tests which monitor student progress will be the responsibility of the individual training program.

5. It is assumed that:

    * all students will receive instruction and training on labor, safety, and environmental laws in accordance with Federal, State and Local Regulations.

WORKPLACE EMPLOYABILITY SKILLS

Personal Standards (see Standard 7.9)

1. Reports to work daily on time; able to take directions and motivated to accomplish the task at hand.
2. Dresses appropriately and uses language and manners suitable for the workplace.
3. Maintains personal hygiene appropriate to the workplace.
4. Meets and maintains employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.
5. Demonstrates honesty, integrity and reliability.

Work Habits / Ethic (see Standard 7.10)

1. Complies with workplace policies/laws.
2. Contributes to the success of the team, assists others and requests help when needed.
3. Works well with all customers and coworkers.
4. Negotiates solutions to interpersonal and workplace conflicts.
5. Contributes ideas and initiatives.
6. Follows directions.
7. Communicates (written and verbal) effectively with customers and coworkers.
8. Reads and interprets workplace documents; writes clearly and concisely.
9. Analyzes and resolves problems that arise in completing assigned tasks.
10. Organizes and implements a productive plan of work.
11. Uses scientific, technical, engineering and mathematics (STEM) principles and reasoning to accomplish assigned tasks.
12. Identifies and addresses the needs of all customers, providing helpful, courteous and knowledgeable service and advice as needed.
13. Respectful of tools and property used in school and the workplace environment.

TASK LIST

DAMAGE ANALYSIS, ESTIMATING AND CUSTOMER SERVICE

For every task in Damage Analysis, Estimating and Customer Service the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

I. DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE

A. Safety Precautions

1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. HP-I

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

3. Locate procedures and precautions that may apply to the vehicle being repaired. HP-I

4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components. HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed. HP-I

I. DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE

B. Damage Analysis

1. Position the vehicle for inspection under proper lighting; take photos to identify the vehicle and document damage. HP-I

2. Identify components to be removed to gain access to damaged areas. HP-G

3. Analyze damage to determine appropriate methods for overall repairs. HP-G

4. Determine the direction, point(s) of impact, and extent of direct, indirect, and inertia damage. HP-G

5. Gather details of the incident/accident necessary to determine the full extent of vehicle damage. HP-G

6. Identify and record pre-existing damage. HP-G

7. Identify and record prior repairs. HP-G

8. Perform visual inspection of structural components. HP-G

9. Identify structural damage using measuring tools and equipment. HP-I

10. Perform visual inspection of non-structural components. HP-I

11. Determine parts, components, material type(s) and procedures necessary for a proper repair. HP-I

12. Identify type and condition of finish; determine refinish labor operations as required. HP-I

13. Identify suspension, electrical, and mechanical component physical damage. HP-G

14. Identify safety systems physical damage. HP-G

15. Identify interior component damage. HP-G

16. Identify add-on accessories and modifications. HP-G

17. Identify single (one time) use components. HP-G

18. Identify and document illuminated dash malfunction indicator lamp(s) (MIL). HP-I

19. Perform a pre-repair inspection of the vehicle with the customer. Record fit and finish concerns (color mismatch, factory gaps, unrelated prior damage, and prior repairs). HP-G

I. DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE

C. Estimating

1. Determine and record customer/vehicle owner information. HP-I

2. Identify and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, build data, and assembly plant. HP-I

3. Identify and record vehicle mileage and options, including trim level, paint code, transmission, accessories, and modifications. HP-I

4. Identify safety systems; determine precautions, inspections and replacement items as required. HP-G

5. Apply appropriate estimating and parts nomenclature (terminology). HP-I

6. Determine and apply appropriate estimating sequence. HP-I

7. Utilize estimating procedure pages. HP-I

8. Apply estimating footnotes, headnotes, and line notes as needed. HP-I

9. Identify operations requiring labor value judgment. HP-G

10. Select appropriate labor code for each operation (structural, non-structural, mechanical, and refinish). HP-I

11. Select and price OEM parts; optional OEM parts, aftermarket parts, recyclable/used parts, remanufactured, rebuilt, and reconditioned parts; verify availability, compatibility, and condition. HP-G

12. Determine necessary sublet operations. HP-G

13. Determine included and non-included operations and miscellaneous items. HP-G

14. Recognize and apply overlap deductions. HP-I

15. Determine additional material and charges. HP-G

16. Determine refinishing material and charges. HP-I

17. Apply math skills to establish charges and totals. HP-I

18. Identify differences between computer generated and manually written estimates. HP-G

19. Identify procedures to restore corrosion protection; establish labor values, and material charges. HP-G

20. Recognize the cost effectiveness of the repair and determine the approximate vehicle retail, and repair value. HP-G

21. Recognize the differences in estimating platforms when using different information provider systems. HP-G

22. Verify accuracy of estimate compared to the actual repair and replacement operations. HP-G

23. Determine telematic/connectivity of the vehicle and place vehicle in service mode. HP-G

24. Identify vehicle safety recalls using the vehicle identification number (VIN). HP-I

25. Review damage report and analyze damage to determine appropriate methods for overall repair; communicate with team members to verify accuracy and resolve discrepancies. HP-G

I. DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE
D. Vehicle Construction and Parts Identification

1. Identify type of vehicle construction (unibody, body-over-frame). HP-G

2. Recognize the different collision damage between unibody and body-over-frame vehicles. HP-G

3. Identify impact energy absorbing components. HP-G

4. Identify different types of substrates (steel types, aluminum, magnesium, plastic, composites, etc.); determine repairability. HP-G

5. Identify vehicle glass components and repair/replacement procedures. HP-G

6. Identify add-on accessories. HP-G

I. DAMAGE ANALYSIS, ESTIMATING, AND CUSTOMER SERVICE
E. Customer Relations and Sales Skills

1. Introduce yourself, acknowledge and greet customer/client/visitor; offer assistance. HP-I

2. Listen to customer/client; collect information and identify customers/client's concerns, needs and expectations. HP-I

3. Establish cooperative attitude with customer/client. HP-I

4. Deal with dissatisfied customer/client; seek resolution. HP-I

5. Identify customer/client preferred communication method; follow up to keep customer/client informed about parts and the repair process. HP-G

6. Recognize basic claims handling procedures; explain to customer/client. HP-G

7. Project positive attitude and professional appearance. HP-I

8. Provide and review warranty information. HP-G

9. Provide and review technical and consumer protection information. HP-G

10. Estimate and explain duration of out-of-service time. HP-G

11. Demonstrate negotiation skills to obtain a mutual agreement. HP-G

12. Interpret and explain estimate to customer/client. HP-I

DAECS Tasks	
HP-I	29
HP-G	38
	67

PAINTING AND REFINISHING

For every task in Painting and Refinishing, the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

II. PAINTING AND REFINISHING
A. Safety Precautions

1. Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (gloves, suits, hoods, eye and ear protection, etc.); take necessary precautions with hazardous operations and materials according to federal, state, and local regulations. HP-I

2. Identify safety and personal health hazards according to OSHA guidelines and the "Right to Know Law". HP-I

3. Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards. HP-I

4. Select and use a NIOSH approved supplied air (Fresh Air Make-up) respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed. HP-I

II. PAINTING AND REFINISHING
B. Surface Preparation

1. Inspect, remove, store, protect, and replace exterior trim and components necessary for proper surface preparation. HP-I

2. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants. HP-I

3. Inspect and identify type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system. HP-I

4. Remove paint finish as needed. HP-I

5. Properly sand areas to be refinished. HP-I

6. Identify and select appropriate sandpaper to featheredge areas to be refinished. HP-I

7. Apply suitable metal treatment or primer in accordance with total product systems. HP-I

8. Mask and protect other areas that will not be refinished. HP-I

9. Demonstrate different masking techniques (recess/back masking, foam door type, etc.). HP-I

10. Mix primer, primer-surfacer and primer-sealer following paint manufacturers technical data sheet instructions. HP-I

11. Identify a complimentary color or shade of undercoat to improve coverage. HP-G

12. Apply primer onto surface of repaired area; demonstrating control of primer application by keeping the areas small as possible. HP-I

13. Apply two-component finishing filler to minor surface imperfections. HP-I

14. Guide coat and block sand area with correct grade/grit sandpaper to which primer-surfacer has been applied. HP-I

15. Dry sand area to which two-component finishing filler has been applied. HP-I

16. Remove dust from area to be refinished, including cracks or moldings of adjacent areas. HP-I

17. Clean area to be refinished using a recommended final cleaning solution. HP-I

18. Remove, with a tack rag, any dust or lint particles from the area to be refinished. HP-I

19. Apply suitable primer sealer to the area being refinished. HP-I

20. Scuff sand to remove nibs or imperfections from a sealer. HP-I

21. Apply stone chip resistant coating. HP-G

22. Restore caulking and seam sealers to repaired areas and replacement panels as required. HP-G

23. Prepare adjacent panels for blending using paint manufacturers procedures. HP-I

24. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials needed, preparation, and refinishing procedures. HP-I

25. Identify metal parts to be refinished; determine the materials needed, preparation, and refinishing procedures. HP-I

26. Identify chip resistant coatings and texture match. HP-G

27. Identify caulking and seal sealers that may need replacement. HP-G

28. Identify refinishing guidelines for stationary glass flange areas to be refinished. HP-I

II. PAINTING AND REFINISHING

C. Spray Gun and Related Equipment Operation

1. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, spray environment, and fillers). HP-I

2. Select spray gun setup (fluid needle, nozzle, and cap) for product being applied. HP-I

3. Test and adjust spray gun using fluid, air and pattern control valves. HP-I

4. Demonstrate an understanding of the operation of pressure spray equipment. HP-G

II. PAINTING AND REFINISHING

D. Paint Mixing, Matching, and Applying

1. Identify color code by manufacturer's vehicle information label. HP-I

2. Shake, stir, reduce, catalyze/activate, and strain refinish materials. HP-I

3. Apply finish using appropriate spray techniques (gun arc, angle, distance, travel speed, and spray pattern overlap) for the finish being applied. HP-I

4. Apply selected product on test or let-down panel; check for color match, properly store and maintain a color catalog. HP-I

5. Understand the application of single stage topcoats. HP-G

6. Apply basecoat/clearcoat for panel blending, panel refinishing and cut-in's. HP-I

7. Apply basecoat/clearcoat for overall refinishing. HP-G

8. Remove nibs or imperfections from basecoat. HP-I

9. Identify product expiration dates as applicable. HP-I

10. Refinish plastic parts. HP-I

11. Apply multi-stage coats for panel blending and overall refinishing. HP-G

12. Identify and mix paint using a formula. HP-I

13. Identify poor hiding colors; determine necessary action. HP-G

14. Tint color using formula to achieve a blendable match. HP-G

15. Identify alternative color formula to achieve a blendable match. HP-I

16. Identify the materials equipment, and preparation differences between solvent and waterborne technologies. HP-G

II. PAINTING AND REFINISHING

E. Paint Defects - Causes and Cures

1. Identify blistering (raising of the paint surface, air entrapment); correct the cause(s) and the condition. HP-G

2. Identify a dry spray appearance in the paint surface; correct the cause(s) and the condition. HP-I

3. Identify the presence of fish-eyes (crater-like openings) in the finish; correct the cause(s) and the condition. HP-I

4. Identify lifting; correct the cause(s) and the condition. HP-G

5. Identify clouding (mottling and streaking in metallic finishes); correct the cause(s) and the condition. HP-I

6. Identify orange peel; correct the cause(s) and the condition. HP-I

7. Identify overspray; correct the cause(s) and the condition. HP-I

8. Identify solvent popping in freshly painted surface; correct the cause(s) and the condition. HP-G

9. Identify sags and runs in paint surface; correct the cause(s) and the condition. HP-I

10. Identify sanding marks or sandscratch swelling; correct the cause(s) and the condition. HP-I

11. Identify contour mapping/edge mapping; correct the cause(s) and the condition. HP-G

12. Identify color difference (off-shade); correct the cause(s) and the condition. HP-G

13. Identify tape tracking; correct the cause(s) and the condition. HP-G

14. Identify low gloss condition; correct the cause(s) and the condition. HP-G

15. Identify poor adhesion; correct the cause(s) and the condition. HP-G

16. Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.); correct the cause(s) and the condition. HP-G

17. Identify corrosion; correct the cause(s) and the condition. HP-G

18. Identify dirt or dust in the paint surface; correct the cause(s) and the condition. HP-I

19. Identify water spotting; correct the cause(s) and the condition. HP-G

20. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition. HP-G

21. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition. HP-G

22. Identify die-back conditions (dulling of the paint film showing haziness); correct the cause(s) and the condition. HP-G

23. Identify chalking (oxidation); correct the cause(s) and the condition. HP-G

24. Identify bleed-through (staining); correct the cause(s) and the condition. HP-G

25. Identify pinholing; correct the cause(s) and the condition. HP-G

26. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition. HP-I

27. Identify pigment flotation (color change through film build); correct the cause(s) and the condition. HP-G

II. PAINTING AND REFINISHING

F. Final Detail

1. Apply decals, transfers, tapes, stone guards, moldings, and emblems, etc. HP-G
2. Sand, buff and polish fresh finish to remove defects and texture as required. HP-I
3. Sand, buff and polish existing finish to recondition defects as required, match existing finish. HP-I
4. Clean interior, exterior, and glass. HP-I
5. Clean body openings (door jambs, gaps, and edges, etc.). HP-I
6. Remove overspray. HP-I
7. Perform vehicle clean-up; complete quality control using a checklist. HP-I
8. Measure and record film thickness before and after buffing. HP-I
9. Perform nib sanding to remove small imperfections as required. HP-I

PR Tasks	
HP-I	58
HP-G	31
	89

NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

For every task in Non-Structural Analysis and Damage Repair (Body Components), the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

A. Safety Precautions

1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. HP-I

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

3. Locate procedures and precautions that may apply to the vehicle being repaired. HP-I

4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components. HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed. HP-I

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

B. Preparation

1. Review damage report and analyze damage to determine appropriate methods for overall repair; develop and document a repair plan. HP-I

2. Inspect, remove, protect, label, store, inventory, and reinstall exterior trim and moldings. HP-I

3. Inspect, remove, protect, label, store, inventory, and reinstall interior trim and components. HP-I

4. Inspect, remove, protect, label, store, inventory, and reinstall body panels and components that may interfere with or be damaged during repair. HP-I

5. Inspect, remove, protect, label, store, inventory, and reinstall vehicle mechanical and electrical components that may interfere with or be damaged during repair. HP-G

6. Protect panels, glass, interior parts, and other vehicles adjacent to the repair area. HP-I

7. Soap and water wash entire vehicle; complete pre-repair inspection checklist. HP-I

8. Prepare damaged area using water-based and solvent-based cleaners. HP-I

9. Remove corrosion protection, undercoating, sealers, and other protective coatings as necessary to perform repairs. HP-I

10. Inspect, remove, and reinstall repairable plastics and other components for off-vehicle repair. HP-I

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

C. Outer Body Panel Repairs, Replacements, and Adjustments

1. Inspect/locate direct, indirect, or hidden damage and direction of impact. HP-I

2. Inspect, remove and replace welded steel panel or panel assemblies. HP-G

3. Determine the extent of damage to aluminum body panels; repair or replace. HP-G

4. Inspect, remove, replace, and align hood, hood hinges, and hood latch. HP-I

5. Inspect, remove, replace, and align deck lid, lid hinges, and lid latch. HP-I

6. Inspect, remove, replace, and align doors, latches, hinges, and related hardware. HP-I

7. Inspect, remove, replace and align tailgates, hatches, liftgates and sliding doors. HP-G

8. Inspect, remove, replace, overhaul, and align bumpers, covers, reinforcements, guards, impact absorbers, and mounting hardware. HP-I

9. Inspect, remove, replace and align fenders, and related panels. HP-I

10. Restore corrosion protection during and after the repair. HP-I

11. Replace door skins. HP-G

12. Restore sound deadeners and foam materials. HP-G

13. Perform panel bonding and weld bonding. HP-G

14. Diagnose and repair water leaks, dust leaks, and wind noise. HP-G

15. Identify one-time use fasteners. HP-G

16. Weld damaged or torn steel body panels; repair broken welds. HP-G

17. Inspect, identify labels/decals and replace as necessary. HP-G

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

D. Metal Finishing and Body Filling

1. Prepare a panel for body filler by abrading or removing the coatings; featheredge, refine scratches, and clean the surface before the application of body filler. HP-I

2. Locate and repair surface irregularities and straighten contours on a damaged body panel using power tools, hand tools, and weld-on pulling attachments. HP-I

3. Demonstrate hammer and dolly techniques. HP-I

4. Heat shrink stretched panel areas to proper contour. HP-G

5. Cold shrink stretched panel areas to proper contour. HP-I

6. Identify body filler defects; correct the cause and condition. (Pinholing, ghosting, staining, over catalyzing, etc.) HP-I

7. Identify different types of body fillers. HP-G

8. Shape body filler to contour; finish sand. HP-I

9. Perform proper metal finishing techniques for aluminum. HP-G

10. Perform proper application of body filler to aluminum. HP-G

11. Locate and repair surface irregularities and straighten contours on a damaged panel using Glue-Pulling Dent Repair (GPDR) HP-G

12. Mix and apply body filler. HP-I

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

E. Moveable Glass and Hardware

1. Inspect, adjust, overhaul repair or replace window regulators, run channels, glass, power mechanisms, and related controls. HP-I
2. Inspect, adjust, repair, remove, reinstall or replace weather-stripping. HP-G
3. Inspect, remove, repair or replace, and adjust removable power operated roof panel and hinges, latches, guides, handles, retainer, and controls of sunroofs. HP-G
4. Inspect, remove, reinstall, and align convertible top and related mechanisms. HP-G
5. Identify or recalibrate electrical components that may need to be initialized. HP-G

III. NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

F. Plastics, Adhesives, and Welding

1. Identify the types of plastics; determine repairability. HP-I
2. Clean and prepare the surface of plastic parts; identify the types of plastic repair procedures. HP-I
3. Repair rigid, semi-rigid, and flexible plastic panels. HP-I
4. Remove, replace, or repair damaged areas of rigid exterior composite panels. HP-G
5. Replace bonded rigid exterior composite body panels; straighten or align panel supports. HP-G
6. Repair plastic parts by welding (nitrogen, airless). HP-G
7. Perform a single-sided adhesively bonded cosmetic repair. HP-I
8. Perform a double-sided adhesively bonded repair. HP-I
9. Perform an adhesively bonded or welded tab repair. HP-I
10. Shape and reform damaged plastic. HP-G

NS Tasks	
HP-I	35
HP-G	24
	59

WELDING, CUTTING, AND JOINING

For every task in Welding, Cutting and Joining the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and the use of proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections including but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

IV. WELDING, CUTTING, AND JOINING

A. Safety Precautions

1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. HP-I

2. Locate OEM procedures to identify materials and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.). HP-I

3. Locate procedures and precautions that may apply to the vehicle being repaired. HP-I

4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components. HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed. HP-I

IV. WELDING, CUTTING, AND JOINING

B. Metal Welding, Cutting, and Joining

1. Identify the considerations for cutting, removing, and welding various types of steel, aluminum, and other metals. HP-G

2. Determine the correct GMAW welder type, electrode/wire type, diameter, and gas to be used in a specific welding situation. HP-I

3. Set up, attach work clamp (ground), and adjust the GMAW welder to "tune" for proper electrode stickout, voltage, polarity, flow rate, and wire-feed speed required for the substrate being welded. HP-I

4. Store, handle, and install high-pressure gas cylinders; test for leaks. HP-I

5. Determine the proper angle of the gun to the joint and direction of gun travel for the type of weld being made. HP-I

6. Protect adjacent panels, glass, vehicle interior, etc. from welding and cutting operations. HP-G

7. Identify hazards; foam coatings and flammable materials prior to welding/cutting procedures. HP-G

8. Protect computers and other electronics/wires prior to welding procedures. HP-G

9. Clean and prepare the metal to be welded, assure good metal fit-up, apply weld-through primer if necessary, clamp or tack as required. HP-I

10. Determine the joint type (butt weld with backing, lap, etc.) for weld being made. HP-I

11. Determine the type of weld (continuous, stitch weld, plug, etc.) for each specific welding operation. HP-I

12. Perform the following welds: plug, butt weld with and without backing, and fillet etc., in the flat, horizontal, vertical, and overhead positions. HP-I

13. Perform visual evaluation and destructive test on each weld type. HP-I

14. Identify the causes of various welding defects; make necessary adjustments. HP-I

15. Identify cause of contact tip burn-back and failure of wire to feed; make necessary adjustments. HP-I

16. Identify cutting process for different substrates and locations; perform cutting operation. HP-I

17. Identify different methods of attaching structural components (squeeze type resistance spot welding (STRSW), riveting, structural adhesive, MIG bronze, rivet bonding, weld bonding, etc.). HP-G

Welding Tasks	
HP-I	17
HP-G	5
	22

STRUCTURAL ANALYSIS AND DAMAGE REPAIR

For every task in Structural Analysis and Damage Repair, the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

V. STRUCTURAL ANALYSIS AND DAMAGE REPAIR

A. Safety Precautions

1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations. HP-I

2. Locate OEM procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, etc.). HP-I

3. Locate procedures and precautions that may apply to the vehicle being repaired. HP-I

4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components. HP-I

5. Perform vehicle clean-up; complete quality control using a checklist on operations performed. HP-I

V. STRUCTURAL ANALYSIS AND DAMAGE REPAIR

B. Frame Inspection and Repair

1. Measure and diagnose structural damage using a metric tape measure and a tram gauge. HP-I

2. Properly install vehicle on to a frame bench/rack. HP-G

3. Analyze, straighten and align mash (collapse) damage. HP-G

4. Analyze, straighten and align sag damage. HP-G

5. Analyze, straighten and align side sway damage. HP-G

6. Analyze, straighten and align twist damage. HP-G

7. Analyze, straighten and align diamond frame damage. HP-G

8. Remove and replace damaged structural components. HP-G

9. Remove and replace protective coatings; restore corrosion protection to repaired or replaced frame areas and anchoring locations. HP-G

10. Analyze and identify misaligned or damaged steering, suspension, and powertrain mounting points and components. HP-G

11. Align or replace misaligned or damaged steering, suspension, and powertrain mounting points and components. HP-G

12. Identify heat limitations and monitoring procedures for structural components. HP-G

13. Demonstrate an understanding of structural foam applications. HP-G

14. Measure and diagnose structural damage using a three-dimensional measuring system (mechanical, electronic, laser), etc. HP-G

15. Determine the extent of the direct and indirect damage and the direction of impact; document the methods and sequence of repair. HP-I

16. Analyze and identify crush/collapse zones. HP-I

V. STRUCTURAL ANALYSIS AND DAMAGE REPAIR

C. Unibody and Unitized Structure Inspection, Measurement, and Repair

1. Analyze and identify misaligned or damaged steering, suspension, and powertrain mounting points that can cause vibration, steering, and chassis alignment problems. HP-G

2. Align or replace misaligned or damaged steering, suspension, and powertrain mounting points that can cause vibration, steering and chassis alignment problems. HP-G

3. Measure and diagnose unibody damage using a metric tape measure and tram gauge. HP-I

4. Measure and diagnose unibody vehicles using a dedicated (fixture) measuring system. HP-G

5. Diagnose and measure unibody vehicles using a three-dimensional measuring system (mechanical, electronic, and laser, etc.). HP-G

6. Determine the extent of the direct and indirect damage and the direction of impact; plan and document the methods and sequence of repair. HP-I

7. Attach anchoring devices to vehicle; remove or reposition components as necessary. HP-G

8. Straighten and align roof rails/headers and roof panels. HP-G

9. Straighten and align rocker panels and pillars. HP-G

10. Straighten and align vehicle openings and floor pans. HP-G

11. Straighten and align quarter panels, wheelhouse assemblies, and rear body sections (including rails and suspension/powertrain mounting points). HP-G

12. Straighten and align front-end sections (aprons, strut towers, upper and lower rails, steering, and suspension/power train mounting points, etc.). HP-G

13. Determine structural repair component or replacement recommendations. HP-G

14. Identify proper cold stress relief methods. HP-I

15. Determine sectioning procedures of a steel body structure. HP-I

16. Remove and replace damaged structural components. HP-G

17. Determine the extent of damage to aluminum structural components; repair, weld, or replace. HP-G

18. Analyze and identify crush/collapse zones. HP-I

V. STRUCTURAL ANALYSIS AND DAMAGE REPAIR

D. Stationary Glass

1. Identify considerations for removal, handling, one time use parts, and installation of advanced glass systems (comfort and safety features). HP-G

2. Remove and reinstall or replace modular glass using recommended materials. HP-G

3. Check for water leaks, dust leaks, and wind noise. HP-G

4. Identify considerations for pre-scan, post-scan, and recalibration procedures. HP-G

SA Tasks	
HP-I	13
HP-G	30
	43

MECHANICAL AND ELECTRICAL COMPONENTS

For every task in Mechanical and Electrical Components, the following safety requirements must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing and proper Personal Protection Equipment (PPE); hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations. Identify vehicle system precautions and/or inspections to include but not limited to Supplemental Restraint System (SRS) Inspection, Advanced Driver Assistance Systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.

VI. MECHANICAL AND ELECTRICAL COMPONENTS

A. Safety Precautions

1. Select and use proper personal safety equipment; take necessary precautions with hazardous operations and materials in accordance with federal, state, and local regulations.	HP-I
2. Locate OEM procedures to identify material and composition of the vehicle being repaired (mild steel, high strength steel, ultra-high strength steel, aluminum, etc.).	HP-I
3. Locate procedures and precautions that may apply to the vehicle being repaired.	HP-I
4. Identify vehicle system precautions and/or inspections to include but not limited to supplemental restraint system (SRS), advanced driver assistance systems (ADAS), hybrid/electric/alternative fuel vehicles, locations and recommended procedures before inspecting or replacing components.	HP-I
5. Perform vehicle clean-up; complete quality control using a checklist on operations performed.	HP-I

VI. MECHANICAL AND ELECTRICAL COMPONENTS

B. Suspension and Steering

1. Perform visual inspection and measuring checks to identify steering and suspension collision damage.	HP-G
2. Identify one–time use fasteners.	HP-I
3. Clean, inspect, and prepare reusable fasteners.	HP-I
4. Remove, replace, inspect or adjust power steering pump, pulleys, belts, hoses, fittings and pump mounts.	HP-G

5. Remove and replace power steering gear (non-rack and pinion type). HP-G

6. Inspect, remove, and replace power rack and pinion steering gear and related components. HP-G

7. Inspect and replace parallelogram steering linkage components. HP-G

8. Inspect, remove and replace upper and lower control arms and related components. HP-G

9. Inspect, remove and replace steering knuckle/spindle/hub assemblies (including bearings, races, seals, etc.). HP-G

10. Inspect, remove and replace front suspension system coil springs and spring insulators (silencers). HP-G

11. Inspect, remove, replace, and adjust suspension system torsion bars, and mounts. HP-G

12. Inspect, remove and replace stabilizer bar bushings, brackets, and links. HP-G

13. Inspect, remove and replace MacPherson strut or assembly, upper bearing, and mount. HP-G

14. Inspect, remove, and replace rear suspension system transverse links, control arms, stabilizer bars, bushings, and mounts. HP-G

15. Inspect, remove, and replace suspension system leaf spring(s) and related components. HP-G

16. Inspect axle assembly for damage and misalignment. HP-G

17. Inspect, remove and replace shock absorbers. HP-G

18. Diagnose, inspect, adjust, repair or replace active suspension systems and associated lines and fittings. HP-G

19. Measure vehicle ride height and wheel base according to manufacturer specifications. HP-I

20. Inspect, remove, replace, and align front and rear frame (cradles/subframe). HP-G

21. Diagnose and inspect steering wheel, steering column, and components. HP-G

22. Verify proper operation of steering systems including electronically controlled, hydraulic and electronically assisted steering systems. HP-G

23. Diagnose front and rear suspension system noises and body sway problems; determine necessary action. HP-G

24. Diagnose vehicle wandering, pulling, hard steering, bump steer, memory steering, torque steering, and steering return problems; determine necessary action. HP-G

25. Demonstrate an understanding of wheel, suspension, and steering alignments (caster, camber, toe, SAI etc.). HP-G

26. Inspect tires; identify tire wear patterns, direction of rotation and location; check tire size, identify nitrogen or air, check tire pressure monitoring system (TPMS) and adjust air pressure. HP-I

27. Diagnose wheel/tire vibration, shimmy, tire pull (lead), wheel hop problems; determine needed repairs. HP-G

28. Measure wheel, tire, axle, and hub runout; determine needed repairs. HP-I

29. Reinstall wheels and torque lug nuts. HP-I

30. Perform initialization or calibration procedures following suspension and/or steering system repairs. HP-G

31. Perform a tire pressure monitoring system (TPMS) recalibration. HP-G

32. Lift the vehicle for inspection, service, and repair by properly raising and supporting the vehicle. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

C. Electrical

1. Demonstrate an understanding of Ohm's Law. HP-I

2. Check for available voltage, voltage drop and current, and resistance in electrical wiring circuits and components with a DMM (digital multimeter). HP-I

3. Repair wiring and connectors. HP-G

4. Inspect, test, and replace fusible links, circuit breakers, and fuses. HP-I

5. Perform battery state-of-charge test and slow/fast battery charge. HP-I

6. Inspect, clean, repair or replace battery, battery cables, connectors and clamps. HP-I

7. Dispose/recycle batteries according to local, state, and federal requirements. HP-G

8. Identify programmable electrical/electronic components and check for malfunction indicator lamp (MIL) and fault codes; record data for reprogramming before disconnecting battery. HP-I

9. Inspect alignment, adjust, remove and replace alternator (generator), drive belts, pulleys, and fans. HP-I

10. Check operation and aim headlamp assemblies and fog/driving lamps; determine needed repairs. HP-G

11. Inspect, test, and repair or replace switches, relays, bulbs, sockets, connectors, and ground wires of interior and exterior light circuits. HP-I

12. Remove and replace horn(s); check operation. HP-I

13. Check operation of wiper/washer systems; determine needed repairs. HP-I

14. Check operation of power side and tailgate window; determine needed repairs. HP-I

15. Check operation of motorized sliding doors, lift gates tailgates, running boards, etc.; determine needed repairs. HP-G

16. Inspect, remove and replace power seat, motors, linkages, cables, etc. HP-G

17. Inspect, remove and replace components of electric door and hatch/trunk lock. HP-G

18. Inspect, remove and replace components of keyless lock/unlock devices and alarm systems. HP-G

19. Inspect, remove and replace components of electrical sunroof and convertible/retractable hard top. HP-G

20. Check operation of electrically heated mirrors, windshields, back lights, panels, etc.; determine needed repairs. HP-I

21. Demonstrate self-grounding procedures (anti-static) for handling electronic components. HP-I

22. Check for module communication errors using a scan tool. HP-G

23. Use wiring diagrams, component location, and diagnostic flow charts during diagnosis of electrical circuit problems. HP-G

24. Identify safe disabling techniques of high voltage systems on hybrid/electric vehicles. HP-G

25. Identify potential safety and materials handling concerns associated with high voltage hybrid/electric vehicle battery systems. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

D. Brakes

1. Inspect brake lines, hoses, and fittings for damage or wear; tighten fittings and supports; replace brake lines (double flare and ISO types). HP-G
2. Replace hoses, fittings, seals, and supports. HP-G
3. Identify, handle, store, and fill with appropriate brake fluids. HP-G
4. Bleed (manual, pressure, or vacuum) hydraulic brake system. HP-G
5. Pressure test brake hydraulic system; determine necessary action. HP-G
6. Adjust brake shoes or pads; remove and reinstall brake drums or drum/hub assemblies. HP-G
7. Remove, clean and inspect caliper and rotor assembly and mountings for wear and damage; reinstall. HP-I
8. Inspect parking brake system operation; repair or adjust as necessary; verify operation. HP-G
9. Identify the proper procedures for handling brake dust. HP-G
10. Check for bent or damaged brake system components. HP-G
11. Demonstrate an understanding of various types of advanced braking systems (ABS, electronic parking brake, hydraulic, electronic, traction and stability control). HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

E. Heating and Air Conditioning

1. Identify and comply with environmental regulations relating to refrigerants and coolants. HP-G
2. Maintain and verify correct operation of certified refrigerant recovery and recharging equipment. HP-G
3. Locate and identify A/C system service ports. HP-I
4. Recover, label and recycle refrigerant from an A/C system. HP-G
5. Select refrigerant, evacuate, and recharge A/C system. HP-G

6. Select oil type and install correct amount in A/C system. HP-G

7. Inspect, adjust, and replace A/C compressor drive belts; check pulley alignment. HP-G

8. Remove and replace A/C compressor; inspect, repair or replace A/C compressor mount. HP-G

9. Inspect, repair or replace A/C system mufflers, hoses, lines, fittings, orifice tube, expansion valve, and seals. HP-G

10. Inspect, test, and replace A/C system condenser and mounts. HP-G

11. Inspect and replace receiver/drier or accumulator/drier. HP-G

12. Inspect and repair A/C component wiring. HP-G

13. Demonstrate an understanding of safe handling procedures associated with high voltage A/C compressors and wiring. HP-G

14. Inspect and protect open A/C system components from contaminants during repairs. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

F. Cooling Systems

1. Check engine cooling and heater system hoses and belts; determine necessary action. HP-I

2. Inspect, test, remove, and replace radiator, pressure cap, coolant system components, and water pump. HP-G

3. Recover, refill, and bleed system with proper coolant and check level of protection; leak test system and dispose of materials in accordance with EPA regulations. HP-I

4. Remove, inspect and replace fan (both electrical and mechanical), fan sensors, fan pulley, fan clutch, and fan shroud; check operation. HP-G

5. Inspect, remove, and replace auxiliary oil/fluid coolers; check oil levels. HP-G

6. Demonstrate an understanding of hybrid/electric cooling systems. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

G. Drive Train

1. Remove, replace, and adjust shift or clutch linkage as required. HP-G

2. Remove and replace electronic sensors, wires, and connectors. HP-G

3. Remove and reinstall powertrain assembly; inspect, replace, and align powertrain mounts. HP-G

4. Remove and replace drive axle assembly. HP-G

5. Inspect, remove and replace half shafts and axle constant velocity (CV) joints. HP-G

6. Inspect, remove and replace drive shafts and universal joints. HP-G

7. Demonstrate an understanding of safe handling procedures associated with high voltage powertrain components. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

H. Fuel, Intake and Exhaust Systems

1. Inspect, remove and replace exhaust pipes, mufflers, converters, resonators, tail pipes, and heat shields. HP-G

2. Inspect, remove and replace fuel/DEF tank, tank filter, cap, filler hose, pump/sending unit and inertia switch; inspect and replace fuel lines and hoses. HP-G

3. Inspect, remove and replace engine components of air intake components. HP-G

4. Inspect, remove and replace canister, filter, vent, and purge lines of fuel vapor (EVAP) control systems. HP-G

VI. MECHANICAL AND ELECTRICAL COMPONENTS

I. Restraint Systems

1. Inspect, remove, and replace seatbelt and shoulder harness assembly and components. HP-G

2. Inspect restraint system mounting areas for damage; repair as needed. HP-G

3. Inspect the operation of the seatbelt system. HP-I

4. Disable and enable Supplemental Restraint System (SRS). HP-G

5. Inspect, protect, remove and replace Supplemental Restraint Systems (SRS) sensors and wiring; ensure sensor orientation. HP-G

6. Verify that Supplemental Restraint System (SRS) is operational. HP-I

7. Inspect, remove, replace and dispose of deployed and non-deployed airbag(s) and pretensioners. HP-G

		ME Tasks	
8. Use Diagnostic Trouble Codes (DTC) to diagnose and repair the Supplemental Restraint System (SRS).	HP-G		
9. Demonstrate an understanding of advanced restraint and occupant classification systems (OCS).	HP-G	HP-I HP-G	31 83
10. Identify components of Supplemental Restraint Systems (SRS).	HP-I		114

TASK LIST PRIORITY ITEM TOTALS (by area)

Damage Analysis, Estimating, Customer Service (DAECS)

HP-I =	29	95% =	27 Tasks
HP-G =	38	90% =	34 Tasks

Painting and Refinishing (PR)

HP-I =	58	95% =	55 Tasks
HP-G =	31	90% =	28 Tasks

Non-Structural Analysis and Damage Repair (NS)

HP-I =	35	95% =	33 Tasks
HP-G =	24	90% =	22 Tasks

Welding, Cutting, and Joining

HP-I =	17	95% =	16 Tasks
HP-G =	5	90% =	4 Tasks

Structural Analysis and Damage Repair (SA)

HP-I =	13	95% =	12 Tasks
HP-G =	30	90% =	27 Tasks

Mechanical and Electrical Components (ME)

HP-I =	31	95% =	29 Tasks
HP-G =	83	90% =	75 Tasks

*Required Workplace Employability Tasks = 18

DEFINITIONS – TECHNICAL TERMS

1. ABRADE - (see SAND)

2. ACTIVE SUSPENSION SYSTEM - A continuously controlled self-adjusting suspension system.

3. ADJUST - To bring components or equipment to specified operational settings.

4. AIR PURIFYING RESPIRATOR - Uses a filter, cartridge, or canister to remove specific air contaminates by passing ambient air through the purifying element.

5. ALIGN (REALIGN) - To adjust components to a line or predetermined relative position.

6. ANALYZE - To examine the relationship of components of an operation.

7. ANCHOR - To hold in place.

8. APPLY - To put on, attach, or affix chemicals, components or parts by spraying, brushing, spreading or using hardware.

9. BLEED - To remove air from a closed system.

10. BUFF - To remove fine scratches, usually from a painted surface, using a fine abrasive such as compounds and polishes.

11. CHECK - (SEE VERIFY).

12. CLEAN - To rid component of extraneous matter for the purpose of reconditioning, repairing, measuring, or reassembling.

13. COLD SHRINK - To restore contour, shape, and dimensions to stretched sheet metal areas utilizing appropriate hammer and dolly techniques.

14. CONDITION - To prepare for future action.

15. DENIB - To remove dust/dirt particles in a painted surface.

16. DETERMINE - To establish the type and extent of damage to a component or the procedure to be used to affect the necessary repair.

17. DEVELOP (PLAN) - To identify, arrange or organize the steps or procedural components into a logical sequence of actions.

18. DIAGNOSE - To locate the root cause or nature of a problem by using a specified procedure.

19. EVACUATE - To remove air, fluid or vapor from a closed system by use of a vacuum pump.

20. FEATHEREDGE - To taper and smooth the edges of a damaged area using abrasives.

21. FILL (REFILL) - To bring fluid level to specified point or volume.

22. FLUSH - To use a fluid to clean an internal system.

23. GRIND - To remove material using a motor-driven abrasive wheel, disk or pad.

24. HEAT SHRINK - To restore contour, shape and dimensions to stretched sheet metal areas by applying heat and utilizing appropriate hammer and dolly techniques.

25. IDENTIFY - To establish the identity of a vehicle or component prior to service; to determine the nature or degree of a problem.

26. INSPECT (CHECK) - To verify condition by performing an operational or comparative examination.

27. INSTALL (REINSTALL) - To secure or attach a component in its proper position in a system.

28. LEAK TEST - To check for and/or locate leaks in a component or system.

29. LOCATE - To find by using tools, measuring instruments, equipment or the senses.

30. MASK - To protect a component or area from incidental damage from the application of refinishing materials.

31. MEASURE - To compare existing dimensions to specified dimensions by the use of calibrated instruments and gauges.

32. MIX - To combine or blend into one mass or mixture.

33. PERFORM - To accomplish a procedure in accordance with established methods and standards.

34. PLAN - (see DEVELOP)

35. PROTECT - To take actions to prevent damage to areas of the vehicles adjacent to the repair area.

36. REALIGN - (see ALIGN)

37. REDUCE - To lower the viscosity of a refinishing material.

38. REFILL - (see FILL)

39. REFINISH - To apply cleaners, paint, and other finishing materials to the repair areas.

40. REINSTALL - (see INSTALL)

41. REMOVE - To disconnect and separate a component from a system.

42. REPAIR (RESTORE) - To return damaged areas to acceptable size, dimensions, shape, performance characteristics and condition.

43. REPLACE - To exchange a damaged component with a new or used component.

44. RESTORE - (SEE REPAIR)

45. ROUGH SAND - To remove body filler, primer/substrate, or finish materials using coarse abrasives.

46. SAND (ABRADE) - To abrade or level the surface.

47. SCUFF - To abrade or degloss a surface for the purpose of adhesion.

48. SELECT - To choose the correct part, tool, equipment or setting during an assembly, adjustment or procedure.

49. SETUP - To select and assemble components, assemblies or parts in order or combination to produce desired results.

50. STORE - To organize and put away parts, hardware, and components for future retrieval and use.

51. STRAIGHTEN - To remove bends, creases, and other damage while returning a component to acceptable size, shape, and condition.

52. STRUCTURAL COMPONENTS - Any part of a vehicle's structure that bears loads, provides strength, and when removed or altered would compromise the integrity of the vehicle.

53. SUBSTRATE - A painted, primed or bare surface.

54. TINT - To adjust the color or hiding ability of refinishing materials.

55. VERIFY (CHECK) - To confirm a condition, adjustment or setting.

56. WASH - To clean by spraying, dipping, rinsing, rubbing or scrubbing.

57. WELD - To join metal or plastic pieces together by using a thermal process, often adding filler material to the joint.

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TOOLS AND EQUIPMENT

Local employer needs and the availability of funds are key factors for determining each program's structure and operation. The ASE Education Foundation Program Standards recognize that not all programs have the same needs, nor do all programs teach 100 % of the collision repair & refinish tasks. Therefore, the basic philosophy for the tools and equipment requirement is as follows: *for all tasks which are taught in the program, the training should be as thorough as possible with the tools and equipment necessary for those tasks*. In other words, if a program does not teach a particular task, the tool from the tool list associated with that task is not required.

The tool lists are organized into three basic categories*: Hand Tools, General Lab/Shop Equipment,* and *Specialty Tools and Equipment.* The specialty tools and equipment section is further separated into the four Collision Repair & Refinish Accreditation task categories. When referring to the tools and equipment list, please note the following:

A. The organization of the tool list is not intended to dictate how a program organizes its tool crib or student tool sets (i.e., which tools should be in a student set, if utilized, and which should be in the tool crib or shop area).

B. Quantities for each tool or piece of equipment are determined by the program needs; however, sufficient quantities to provide quality instruction should be on hand.

C. For *Specialty Tools and Equipment by Area*, the program need only have those tools for the areas being accredited.

D. Programs may meet the equipment requirements by borrowing special equipment or providing for off-site instruction (e.g., in a dealership or independent repair shop). Use of borrowed or off-site equipment *must* be appropriately documented.

E. No specific brand names for tools and equipment are specified or required.

F. Although the Program Standards recommend that programs encourage students to begin to build their own tool sets, this is not a requirement. However, many employers require an entry-level technician to provide his/her own basic hand tool set.

HAND TOOLS

(Contained in individual sets or the tool crib in sufficient quantities to permit efficient instruction)

Adjustable Wrenches – 6" and 12"		Punch Set	
Allen (Wrench or Socket) Set – Standard (.050"-3/8")		Screwdriver - Blade Type:	
Allen (Wrench or Socket) Set – Metric (2mm - 7mm)		Stubby	
Chisel Set		6", 9", 12"	
Combination Wrenches:		Offset	
Standard (1/4" - 1") (optional)		Screwdrivers - Phillips:	
Metric (7mm - 24mm)		Stubby #1, #2	
Crowfoot Wrench Set – Metric (optional)		6" #1, #2	
Crowfoot Wrench Set – Standard (optional)		12" #3	
Drill – 3/8" and 1/2" variable speed, reversible		Offset #2	
Flare Nut (tubing) Wrenches:		Torx® Set:	
Standard 3/8" – 3/4" (optional)		T8, T10, T15, T20, T25, T27, T30, T40, T50, T55	
Metric 10mm – 17mm		Torx® External Set:	
Flashlight and batteries		E8, E10, E15, E20, E27, E30, E40, E45, E50, E55	
Hack Saw and blades		Screw Extractor Set	
Hammers:		Screw Starter:	
16 oz. Ball Peen		Phillips	
Brass		Standard	
Dead Blow Mallet		Socket Set - 1/4" Drive:	
Plastic Tip		1/4" - 1/2" Standard Depth (optional)	
Sledge		1/4" - 1/2" Deep (optional)	
Soft Faced		6mm - 12mm Standard Depth	
Rubber Mallet		6mm - 12mm Deep	
Impact Wrenches – 3/8" and 1/2"		Flex/Universal Type - Metric (standard optional)	
Inspection Mirror		Universal Joint	
Pickup Tool – Magnetic and Claw type		3", 6" Extensions	
Pliers:		Ratchet	
Combination			
Hose Clamp			
Locking Jaw			
Needle Nose			
Side Cutting			
Slip Joint (Water Pump)			
Snap Ring Plier Set - internal and external			

Socket Set - 3/8" Drive:	
5/16" - 3/4" Standard Depth (6 point) (optional)	
3/8" - 3/4" Deep (6 point) (optional)	
9mm - 19mm Standard Depth	
9mm - 19mm Deep	
3", 6", 12", 18" Extensions	
Flexhead Ratchet	
Impact Sockets - 3/8" - 3/4" Standard (optional)	
Impact Sockets - 10mm - 19mm	
Ratchet	
Universal Joint	
Socket Set - 1/2" Drive:	
7/16" - 1 1/8" Standard Depth (optional)	
7/16" - 1 1/8" Deep (optional)	
10mm - 25mm Standard Depth	
10mm - 25mm Deep	
5", 10" Extensions	
Flex Handle (Breaker Bar)	
Impact Sockets Standard 7/16" - 1 1/8" (optional)	
Impact Sockets 12mm - 32mm	
Ratchet	
Torque Wrenches (Sound/Click)Type:	
3/8" Drive in. lb. (30 - 250)	
3/8" Drive ft. lb. (5 - 75)	
1/2" Drive ft. lb. (50 - 250)	

GENERAL LAB/SHOP EQUIPMENT

The tools and equipment on this list are used in general lab/shop work but are not generally considered to be individually owned hand tools. A well-equipped, accredited program should have all of these general tools and equipment readily available, in proper working order, and in sufficient quantity to provide quality instruction.

Air Blow Guns - OSHA Standard	
Air System - Air Compressor	
Air Hoses - with quick release couplings	
Air Lines	
Regulator	
Water Extractors	
Air Transformer/Regulators	
Chamois (synthetic)	
Coolant Drain Pan	
Corrosion Protection Application Equipment	
Creepers	
Grounded Extension Cords	
Heat Lamp	
Hood Props	
Infrared Non-Contact Thermometer	
Jack Stands	
Oil Drain/Storage Pan	
Overhead Ventilation - for welding area	
Part Cart	
Pressure Washer (optional)	
Service Jacks	
Shop Brooms	
Dust Pans	
Floor Squeegee	
Floor Mop and Bucket	
Sponges	
Step Ladder	
Storage Cabinets	
Towels	
Trash Cans in accordance with local, state, and federal regulations	
Trouble/Work Lights – non-incandescent	
Wet/Dry Shop Vac	
Water Hose	
Water Hose Nozzle	
Work Benches – steel top with vice	
Work Stands – portable	
Wheel Caster System (Wheel Dollies)	

SPECIAL SAFETY ITEMS

(All equipment must meet or exceed federal, state, and local regulations.)

Bloodborne Pathogen Kit		Lineman Gloves (for use with hybrid vehicles)	
*****Ear Protection - for students, instructors, and visitors		OSHA "Right to Know" Compliance Kit	
Eye Wash Basin		Protective Gloves and Clothing - for handling paint and related chemicals	
Eye Wash Station, portable (saline)		Respiratory Protection Equipment – as required by OSHA	
Fire Extinguishers - by type as required		Safety Cans - for solvents, rags, etc.	
First Aid Kit (per written first aid policy)		*****Safety Glasses, Clear and Tinted Face Shields, and Goggles - for students, instructors, and visitors	
Flammable Material Storage Locker – meeting fire and building codes		*****Safety Shoes - as required	
Hazardous Spill Response Kit		Safety Shower - as required	
Hybrid/Electric Vehicle Safety Kit (optional)		Vacuum System - for air sanders – dust extraction vacuum – stand alone or central system (recommended)	

*** = Individual Student Items**

MISCELLANEOUS TOOLS

Caulking Gun		Tin Snips	
C-clamps – assorted		Tire Pressure Gauge	
Heat Gun		Tire Inflator	
Hole Saw Set – 1/2" to 2"		Twist Drill Sets:	
Oil Can (Pump Type)		Standard - 1/64" - 1/4" by 1/16" and Metric Equivalent	
Panel Splitter (hand held blades/accessories)		Standard - 1/4" - 1/2" by 1/16" and Metric Equivalent	
Pry Bar Set		Wire Brushes - hand and powered	
Putty Knife		Special Removing and Releasing Tools:	
Rivet Guns - heavy duty blind and large for 3/16" and 1/4"		Door handle removing tool	
Sanding Tools - assorted		Miscellaneous interior and exterior trim removing tools	
Scrapers		Moulding removal tools	
Scratch Awl		Spring lock line removal tool set (A/C, fuel line, etc.)	
Tap and Die Sets - Metric (standard optional)		Stationary glass removal tools (optional)	
Tape Measure – Standard and Metric		Windshield wiper removing tool	

BODY WORKING TOOLS

Assorted files - for metal and plastic finishing, including:		Dollies:	
Body Files		Bumping File	
Hand Sanding Pads		Dinging Spoon	
Metal Files		Door skin Dolly	
Mixing Board		Fender Dolly	
Sanding Blocks (short and long)		Inside Heavy Duty Spoon	
Sanding Boards (short and long)		Inside High Crown	
Body Hammers:		Inside Medium Crown	
Cross Chisel		Spoon Dolly (“Dolly on a stick”)	
Door Skin Hammer		Toe Dolly	
General Purpose Pick		Universal Dolly	
Large Face Finishing		Filler Spreaders and Applicators – assorted types and sizes	
Long Pick		Picks – assorted	
Short Utility Pick			
Shrinking			

ALUMINUM REPAIR TOOLS (RECOMMENDED)

Abrasives	
Body Files	
Dedicated (Clean) Repair Station	
Dent Pulling Equipment	
Dollies	
Dye Penetrant	
GMAW Welder Synergic Pulse	
Hammers	
Self-Piercing Rivet Guns	
Stainless Steel Wire Brush	
Wet Mix Technology Dust Extraction System approved for aluminum	

SPECIALTY TOOLS AND EQUIPMENT

FOR EACH ACCREDITATION AREA

This section covers the tools and equipment a lab/shop should have for training in any given specialty area. This equipment is specialized and it must be available in the lab/shop or to the program. No specific type or brand names are identified because they will vary in each local situation.

For all tasks which are taught in the program, the training should be as thorough as possible with the tools and equipment necessary for those tasks. In other words, if a program does not teach a particular task, the tool from the tool list associated with that task is not required.

PAINTING AND REFINISHING

Air Amplifier/Venturi Style Blower used to dry waterborne paint (optional)		Paint Storage Room/Locker in accordance with local, state, and federal regulations	
Air Cap Test Gauge (optional)		Personal Safety Equipment (painting gloves, suits, hoods, respirators, etc.)	
Color-matching Light System		Portable Paint Curing Equipment (infrared)	
Electronic Dry Film Thickness Gauge with a + or - of 1/10th of a mil thickness capabilities (ferrous/non-ferrous)		Positive Pressure Air Respirator	
Enclosed Paint Spray Booth to comply with local, state and federal regulation (downdraft booth recommended)		Power Sanders	
Gun Washer for Waterbase (Optional)		Prep Station - (recommended) in accordance with local, state, and federal regulations	
Hand Sanding Pads		Sanding Blocks (short and long)	
Masking Equipment -		Spray Guns - HVLP (high volume low pressure) or compliant with high air flow fittings	
Car Covers		Spray gun cleaning equipment or disposal liner cup system in accordance with local, state, and federal regulations	
Paper and Tape Dispenser		Ultrasonic film thickness gauge – plastic (optional)	
Wheel Covers		UV Curing Light (optional)	
Paint Mixing Bank with Measuring Equipment		Variable Speed Buffer/Polisher	
Paint Mixing Room (in accordance with local, state, and federal regulations)		Viscosity Cups	
Paint Shaker		Waste disposal/recycle program in accordance with local, state, and federal regulations	
Paint Stand (Assorted)		Waterborne Spray Gun Equipment (Optional)	

NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR
(BODY COMPONENTS)

Abrasive Cut-off Tool and Discs		Panel Splitter	
Anchoring System (recommended)		Slide Hammer - complete with attachments	
Car Lift (capable of totally lifting the vehicle) (recommended)		Stationary Power Tools -	
Glue Hole Equipment (optional)		Bench Grinder	
GMAW Welders and accessories (flow meter, cart, gas cylinder, nozzle cleaner) 180M minimum (recommended)		Drill Press (recommended)	
Heat Shrinking Tool		Welding Safety Equipment - to include:	
Plasma Cutting Torch (recommended)		Aprons	
Portable Hydraulic Ram - with attachments		Face Shields	
Plastic and Adhesives Tools -		Gloves	
Plastic Welder		Goggles	
Die Grinding Tool Set		Helmets	
Disc Grinder - 3"		Jackets	
Structural Adhesives Guns (dispenser) - two-component		Respirators	
Portable Power Tools -		Safety Glasses	
Abrasive Blaster and appropriate personal safety equipment (recommended)		Skull Cap	
Eraser Wheel		Welding Blanket	
Grinders		Welding Pliers	
Hole Punch		And all appropriate safety equipment	
Metal Shears (optional)		Squeeze-type Resistant Spot Welder (STRSW) (9,000 amp/344 deca newton inverter technology) (recommended)	
Mini Belt Sander for Removal of Plug Welds		Weld-on Pulling Tool and Attachments	
Nibbler (optional)			
Power Reciprocating Saw and Blades			
Sanders			
Spot Weld Removal Tool (optional)			

STRUCTURAL ANALYSIS AND DAMAGE REPAIR

Everything listed under Non-Structural Analysis and Damage Repair (Body Components) plus:

Blind Rivet Tool 3/16" – 1/4" (3,822 lbf. Minimum)		Pulling and Holding Equipment Set:	
Body over frame and unibody anchoring systems		Body Clamps (recommended)	
Frame/Unibody Straightening Equipment – Bench/rack system with multiple pull capacity		Safety Chains/Cables	
GMAW (Pulse) Welder and accessories (flow meter, cart, gas cylinder and nozzle cleaner) 220 Volt 180 amps		Sill Clamps (recommended)	
Heat Monitoring Crayons		Three-dimensional Measuring System with the capability to measure the total vehicle.	
		Tram Gauges	

MECHANICAL AND ELECTRICAL COMPONENTS

A/C Recycle/Recovery Machine (optional)		Jumper Wire Set (with various adapters)	
AGM Battery Charger compatible – with boost capability (optional)		Laptop with applicable Diagnostic Software & Tools or Scan Tool with OBDII capabilities	
Battery Post Cleaner		Oil Filter Wrenches	
Battery Terminal Pliers		Plugs and Caps for Hydraulic, Fluid and A/C Lines	
Battery Terminal Puller		Portable Battery Jump Box	
Brake Bleeder - vacuum assisted		Pressure Bleeder/Scan Box for bleeding antilock braking system	
Brake Spoon		Soldering Gun/Iron	
Connector Pick Tool Set		Torx ® Tamper Proof Set: T8, T10, T15, T20, T27, T30, T40	
Coolant Tester		Vac and Fill Equipment to Extract Fluids (oil, transmission, etc.)	
Cooling System Pressure Tester		Wheel Alignment System (4-wheel) (optional)	
DMM (Digital Multimeter)		Wire and Terminal Repair Kit	
Flexible Dial Indicator Gauge (optional)			