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Introduction

In response to numerous requests from valued Collision Advice customers across the US, we have created this tool to help explain, justify and negotiate time for repair operations. The collected information and documentation are intended to help clarify whether or not specific repair processes are considered to be required repair operations and if they are included or not-included within any other repair procedures. Our objective is to help our customers build a complete repair plan and to get paid for the work they do.

To do so, we utilize four negotiation questions and supporting documentation as described below:

1. Is it required to put the vehicle back to pre-accident condition?
   – OEM Position Statements
   – ALLDATA®, TechAdvisor and Other Similar Systems
   – Paint Manufacture Bulletins
   – Material Manufacturer Bulletins (ex. 3M, Wurth, Kent)
   – Equipment Manufacturers
   – Internet (www.YouTube.com)
   – Estimating Systems
   – Scan Tools (Ex. ASTech)
   – The Vehicle

2. Is it included in any other labor operations?
   – Estimating Systems
   – ASA Not-Included Charts
   – www.Degweb.org
   – www.Estimatescrubber.com
   – SCRS Guide to Estimating

3. Is there a pre-determined time in the database?
   – Estimating Systems
   – www.Degweb.org

4. What is it worth?
   – Do a Time Study
   – Print an Invoice
   – OEM Warranty Times
   – Equipment Manufacture Times
   – ALLDATA®, TechAdvisor and Other Similar Systems
   – Internet
Definition
Undercoatings are a category of anti-rust treatments. These compounds are applied to exposed exterior surfaces, like aprons, wheel wells, body underside, lower portion of fenders, doors and quarter panels. They are typically sprayed on before painting.

Some early undercoating products were made from chicken fat or asphalt, which was a flop because its sulfur content made it corrosive.

Tar and tar-like compounds were a vast improvement and were used for many years, beginning around the 1950s, but they did little to prevent bodies from rusting through. As the undercoating chipped and broke away in chunks, water got trapped between the remaining stuff and the body and promoted rust.

Modern rustproofing is generally greases or waxes, and they are far superior to that which has gone before. Wax-based products are self-healing. Because they never become hard, the rustproofing will flow into stone chips and reseal the area.

Undercoating materials adhere to metal, even if painted. Most come in pressurized cans for easy spray-on application, although an even spread may be tough to achieve without professional applicators. Ingredients used in manufacturing include fiberglass, rubber, ceramics, silicone and asphalt, or petroleum. Each has different properties in terms of heat retention and resistance, but all do offer protection against the elements and damage.
Photo Documentation
Photo Documentation
Question 1.
Is it required?
Four Negotiation Questions

1. Is it required to apply corrosion protection undercoating in order to return the vehicle back to pre-accident condition?

   **Answer:** Yes, it may be required to apply corrosion protection undercoating in order to return the vehicle back to pre-accident condition.

   **Answer Documentation:**
   
   1. 3M has documentation showing the process for applying corrosion protection undercoating.
   
   2. The following OEMs have documentation stating that it is necessary to apply corrosion protection undercoating in order to return the vehicle back to pre-accident condition.
      
      - Toyota

   The supporting documents follow.
3M

Corrosion Protection (Undercoating) – Steel Repair Procedures Poster

**Step 1. Pre-Cleaning:** Prewash/clean vehicle prior to disassembly (power wash undercarriage area at repair).

**Step 2. Surface Preparation:** Use Scotch-Brite® Clean N Strip Disc to remove loose coatings from the repair area. Use CRS Scotch-Brite® Belt in hard to reach areas.

**Step 3. Clean and Inspect:** Blow of area with clean dry compressed air to remove dust and loose surface contaminants. Use a VOC compliant surface cleaner to remove any remaining contaminants. **Note:** Coatings must be applied over thoroughly cleaned substrates to maximize corrosion protection.

**Step 4. Coating Application:** Apply appropriate undercoating following local VOC regulations to the area. For maximum corrosion protection apply four medium coats of undercoating allowing flash time between coats.

**3M**

Corrosion Protection (Undercoating) – Aluminum Repair Procedures Poster

**Step 1. Pre-Cleaning:** Prewash/clean vehicle prior to disassembly (power wash undercarriage area at repair).

**Step 2. Surface Preparation:** Use Scotch-Brite® Clean N Strip Disc to remove loose coatings from the repair area. Use CRS Scotch-Brite® Belt in hard to reach areas.

**Step 3. Clean and Inspect:** Blow of area with clean dry compressed air to remove dust and loose surface contaminates. Use a VOC compliant surface cleaner to remove any remaining contaminants. **Note:** Coatings must be applied over thoroughly cleaned substrates to maximize corrosion protection.

**Step 4. Coating Application:** Apply appropriate undercoating following local VOC regulations to the area. For maximum corrosion protection apply four medium coats of undercoating allowing flash time between coats.

**Toyota**

**Undercoating**

To protect the body from damage by flying stones, always apply chip resistant materials to the bottom surfaces of the underbody and inside of the wheel housing.

Apply chip resistant materials to all welded areas and panel joints (Illustration A.); then apply to the entire area (Illustration B.).

To prevent corrosion and reduce interior noise when replacing body panels, always apply corrosion inhibiting and sound dampening materials such as body sealer, cavity wax, undercoating and body foam according to Toyota recommendations.

These recommendations can be found in the Anti-Rust Treatment (AR) section of the model specific Repair Manual for Collision Damage publication. Collision repair manuals can be obtained through a Toyota dealership parts department.

**BODY SEALER**

For waterproofing and corrosion protection measures, always apply body sealer to the seams and hems of the doors, hoods, etc.

Apply body sealer to required areas:
- Door seams (Illustration A.)
- Underhood seams (Illustration B.)
- Wherever body sealer has been removed during a repair

Illustration A.

Illustration B.
ANTI–CORROSION TREATMENT (cont’d)

CAVITY WAX

To provide corrosion resistance, always apply cavity wax to the inside of the hemming areas of the doors and hoods, around the hinges, and to the welded surfaces inside the boxed cross-section structure of the side member, body pillar, etc.

Apply cavity wax to required areas:

Inside of the hems of the doors and hoods (Illustration A.)
Around the hinges of the doors and hood (Illustration B.)
Wherever the original cavity wax was disturbed during a repair

UNDERCOATING

To protect the body from damage by flying stones, always apply chip resistant materials to the bottom surfaces of the underbody and inside of the wheel housing.

Apply chip resistant materials to all welded areas and panel joints (Illustration A.); then apply to the entire area (Illustration B.).
BODY FOAM

Apply body foam to all areas where foam was damaged or removed during a repair. This will restore sound deadening characteristics and corrosion protection.

Apply body foam to all required areas:

- “A”, “B” and “C” pillar
- Rocker panels
- Wherever foam was disturbed or removed during a repair

The information on the application of all anti-corrosion materials is contained in the Anti-Corrosion Treatment section (AR), and throughout the Body Panel Replacement section of the Toyota Repair Manual for Collision Damage Publications. Information on anti-corrosion material application can also be found in the Fundamental Body Repair Procedures manual and the Noise, Vibration, and Harshness manual.

These publications may be obtained through your local Toyota dealership parts department or by obtaining the part number and calling:

1–800–622–2033 Mon–Fri 7:00 a.m. to 4:30 p.m. Pacific Standard Time

This information can also be obtained by attending Toyota Collision Repair and Refinish training courses:

- Non-Structural Body Repair Techniques
- Structural Body Repair Techniques
### MANUFACTURERS LIST

Provided is a list of manufacturers. Call them directly to obtain a list of their products or a product demonstration brochure.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Phone</th>
<th>Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M</td>
<td>1–800–877–9344</td>
<td>N/A</td>
</tr>
<tr>
<td>Kent</td>
<td>1–800–654–6333</td>
<td><a href="http://www.farnell.co.uk">http://www.farnell.co.uk</a></td>
</tr>
<tr>
<td>SEM</td>
<td>1–800–831–1122</td>
<td>N/A</td>
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<tr>
<td>Wurth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western area</td>
<td>1–800–346–4198</td>
<td><a href="http://www.wurthwest.com">http://www.wurthwest.com</a></td>
</tr>
<tr>
<td>All other states</td>
<td>1–800–526–5228</td>
<td><a href="http://www.wurthusa.com">http://www.wurthusa.com</a></td>
</tr>
</tbody>
</table>

To assure repairs and replacement components meet strict factory standards, all corrosion preventive coatings and sound absorbing materials must be replicated to match OE application and purpose. In addition, the use of weld thru primer is strongly recommended during welding operations.

If the following materials are not restored to OE like-kind and quality, road noise may be amplified, and the Toyota new car corrosion warranty may be voided on the affected components, and adjoining parts and systems which are caused to fail or rust by those components. Refer to CPS-Toyota / Scion Policy 4.17 and CPS Lexus Policy 4.15 for details on what is not covered by the new vehicle limited warranty.

- Seam Sealer
- Undercoating
- Cavity Wax
- Frame Finish Coatings
- Sound Absorbing Materials
- ED Primer
- Chip Resistant Coatings

To assure repairs and replacement components meet strict factory standards, all corrosion preventive coatings and sound absorbing materials must be replicated to match OE application and purpose. In addition, the use of weld thru primer is strongly recommended during welding operations.

If the following materials are not restored to OE like-kind and quality, road noise may be amplified, and the Toyota new car corrosion warranty may be voided on the affected components, and adjoining parts and systems which are caused to fail or rust by those components. Refer to CPS-Toyota/Scion Policy 4.17 and CPS Lexus Policy 4.15 for details on what is not covered by the new vehicle limited warranty.

- Seam Sealer
- Undercoating
- Cavity Wax
- Frame Finish Coatings
- Sound Absorbing Materials
- ED Primer
- Chip Resistant Coatings

Please refer to model-specific Collision Damage Repair Manuals (www.techinfo.toyota.com) for specifications, illustrations, instructions, and locations of these coatings.

Question 2.
Is it included?
2. Is applying corrosion protection undercoating included in any other labor operation?

Answer: No, applying corrosion protection undercoating is not included with any other labor operation.

Answer Documentation:

1. According to the Information Providers, applying corrosion protection is not included with any other
   - AudaExplore
   - CCC/MOTOR
   - Mitchell

The original source documents from the leading Information Providers follow.
AudaExplore

Section 4-5 Refinish Operations

Refinish Operations

Audatex refinish labor generally includes time to perform all operations necessary to accomplish refinish for new and undamaged OEM or equivalent panels. Audatex refinish labor begins at 320-400 grit (dry) or 500-600 grit (wet) as this is the starting point for refinish of a new, undamaged panel. Audatex refinish times are for single panels unless otherwise noted.

NOT Included:

- Undercoating

Section 4-5 Refinish Operations

Refinish Operations
Audaexplor refinish labor generally includes time to perform all operations necessary to accomplish refinish for new and undamaged OEM or equivalent panels. Audaexplor refinish labor begins at 320 - 400 grit (dry) or 500 - 600 grit (wet) as this is the starting point for refinish of a new, undamaged panel. Audaexplor refinish times are for single panels unless otherwise noted.

Two-stage

Included Operations:
- Move car
- Review estimate/work order
- Get paint code
- Order paint
- Get paint
- Gather materials, equipment and tools**
- Clean equipment and materials
- De-wax and degrease
- Prepare to sand
- Dual action sand*
- Hand/hot sand
- Mix, apply, and flash primer (for adhesion and sealing)
- Application of guide coat*
- Block sand*
- Water wash and clean panel with solvent
- Blow dry clean panels
- Prepare to spray
- Clean booth
- Booth operations
- Protect exterior of vehicle from overspray utilizing all acceptable methods of taping, masking, masking up to 36 inches surrounding the panel and masking of glass within a panel. This includes using backtaping and/or foam tape to close out the gap between panels. If backtaping and/or foam tape does not adequately prevent overspray from entering the jamb areas, any additional masking to protect the interior and jamb is a not included operation (labor only) See Not Included “masking” operation
- Basic corrosion protection provided by primer/sealer and paint application
- Mix and apply flash; additives
- Tack wipe
- Mix color, spray test panel, compare to vehicle
- Initial tint, spray test panel, let down, compare to vehicle (included in refinish time, not setup)
- Apply and flash; color
- Inspect job and paint
- Clean gun; color
- Add flex additive** (when required, labor only)
- Tack wipe (between color and clear when required)
- Apply flash clear coat
- Mix clear coat**
- Clear; Clean gun**

*Welded panel operations
**Included in setup

NOT Included:
- Body work
- Spot putty
- Panel stripping (see Panel Stripping section, page 151)
- Additional preparation or cleaning of new, unprimed panels (i.e., bumper covers)
- Removal of release agents from raw, unprimed plastic components (i.e., bumper covers)
- Moulding R&I
- Stripes R&I
- Parts R&I
- Painting of stripes
- Adhesive removal
- Masking of interior surfaces/entryways, engine compartment and trunk openings. Interior masking may be performed when necessary to ensure prevention of overspray damage that may not be prevented by adjacent panel perimeter masking (including backtaping or application of foam tape). Interior masking may be considered when exterior panels (doors, hoods, etc.) are removed and refinished See Included “protect interior” operation
- Mask mouldings
- Spray additional test panel
- Blending into adjacent panels (see Blending, page 146)
- Color Sand and Buff (see page 149)
- Chipguard application (see page 147)
- Gravel guard (see Chipguard, page 147)
- Additional time for two-tone (see page 147)
- Additional time for three-stage (see page 145-146)
- Custom finishes
- Tint primer or clear coat
- Application of e-coat equivalent and “EPF” equivalent
- Application of “high build” primer

Undercoating

Metal preparation and corrosion protection beyond those listed in Included Operations (i.e. cavity wax)
- Final wash
- Hazardous waste removal
- Any special coatings applied to luggage compartment
- Second or third bagging or masking of vehicle
- Paint and materials

*Any printed copy of this document may not contain the most current information. For the latest version, please refer to the Database Reference Manual accessed through the Help Menu in the current release of Audaexplor Estimating. AudaExplor Corporation. Current version of the Database Reference Manual may also be found at www.trainings.audaexplor.com*

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LABOR TIME PREMISE
LABOR TIME DOES NOT INCLUDE

SPECIAL NOTATION:
The items listed below apply to all labor procedures

- Undercoating, tar or grease removal

Source: CCC/Motor Guide to Estimating, Rev. 9-14, Page G10
### Labor Time Listings

All operation times are listed in hours and tenths of an hour. A time listed as 3.5 indicates three and one half hours.

#### Labor Time Premise

The times reported in this publication are to be used as a GUIDE ONLY. Reported times include normal align procedure to ensure proper fit of the individual new part being replaced. Reported times include tube/pottered OEM caulking and seam sealer preparation or application on welded replacement panels. Removable seam sealer equipment requires preparation and adjustment before application and is NOT INCLUDED in LABOR TIME.

Times do not apply to vehicles with equipment other than that supplied by the vehicle manufacturer as standard or regular production options. If other equipment is used, the time may be adjusted to compensate for the variables. Removal and replacement of exchanged or used parts is not considered. If additional aligning or repair must be made, such factors should be considered when developing the estimate. Items not listed under the INCLUDED/DOES NOT INCLUDE heading for any given procedure have not been considered in the estimated work-time development for that procedure, unless specified by a footnote. All included/not included items for labor procedures listed between pages G10 and G33 are for component R&I and R&I procedures unless otherwise indicated in operation heading.

**Operation Time Listed ARE BASED ON NEW UNDAMAGED PARTS INSTALLED ON NEW UNDAMAGED VEHICLES AS INDIVIDUAL OPERATIONS. TIME HAS NOT BEEN CONSIDERED FOR ALIGNMENT PULLS, DAMAGE-RELATED ACCESS TIME, DAMAGED, USED, REMANUFACTURED OR AFTERMARKET PARTS. SOME OPERATION TIMES ARE APPLICABLE AFTER BOLTED, ATTACHED OR RELATED PARTS HAVE BEEN REMOVED. REFER TO SPECIFIC FOOTNOTES ATTACHED TO OPERATION TIME LISTING.**

#### Labor Time Does Not Include:

- Special Notation:
  - Align to vehicle
  - Face bar/bumper cover assembly R&I

#### Labor Time Premise - Continued

- Reset electronic memory after battery disconnect
- Road test vehicle
- Rusted, frozen, broken or corrosion damaged components or fasteners
- Scan tool clean/reset electronic module
- Scan tool diagnostics
- Steering Angle Sensor recalibration
- Straightening or align used, reconditioned or non-OEM parts
- Structural damage diagnosis and vehicle set up time
- Structural foam removal or application

#### Front Bumper Assembly - R&I All Types

**Included:**
- Align to vehicle
- Face bar/bumper cover assembly R&I

**Does Not Include:**
- Air bag sensor
- Battery
- Emblems & nameplates
- Energy absorber, all types
- Lamp aiming
- Lamps (when not mounted in bumper)
- Moldings & impact strip
- Strips, tape, decals or overlays
- Valance panel/spoiler (when not mounted to bumper)

#### Front Bumper - R&I Face Bar Type

**included:**
- Align to vehicle
- Emblems & nameplates
- Face bar R&I
- Guard
- Guard cushions
- Lamps (when mounted to bumper)
- Moldings & impact strip

**DOES NOT INCLUDE:**
- Air bag sensor
- Battery
- Distance sensor
- Energy absorber, if mounted to frame rail (all types)
- Lamp aiming
- Lamps (optional equipment, not mounted to bumper)
- License plate bracket
- Strips, tape, decals or overlays
- Valance panel/spoiler (when not mounted to bumper)
**Mitchell**

**Additions to Labor Times**

Due to the wide range of collision damage and vehicle conditions, labor times for the following operations are not included in the Guide.

**Anti-Corrosion Rust Resistant Material**

Removal and/or apply weldable zinc primers, petroleum based coatings, undercoating or any type of added conditioning.

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 10-09. Page 3
Labor Categories

The labor times shown in the Guide fall into various categories (for example, body frame mechanical) as determined by the repair facility’s operating procedures. As a guide, components for which R&I or R&R is commonly considered to be a mechanical operation when performed in a collision repair environment are designated with the letter “M” in the test. These designations are only a guide. They are not necessarily all inclusive, nor do they suggest the application of a labor rate.

Welded Panels

Replacement labor times for new panels that are joined by welding include the necessary use of inserts and accepted sectioning guidelines developed by OEMs, I-CAR, and TECH-COR. The labor times for welded panels include grinding, filler and final sanding with up to 150 grit sandpaper to match the original panel contour. Labor times do NOT include the Feather, Prime and Block refresh operation. See Procedure 28 in Procedure Explanation section, for information on Feather, Prime and Block.

Adhesive Panel Bonding

Replacement labor times for panel bonding include all necessary wet application identified by adhesive material manufacturers and OEM guidelines. Users should reference best practices procedures from bonding material manufacturers and/or OEM guidelines before selecting this replacement method option.

Shop Material

The labor times shown in the Guide do not take into account the cost of any materials, or the cost of hazardous materials recycling or disposal.

Disable and Enable Air Bag System

The labor times shown in the Guide represent the procedures necessary to disable and enable the air bag system in order to replace air bag system components and/or to perform repairs not related to the air bag system, e.g., welding. This procedure includes visually monitoring the air bag warning light during the disable process and system functionality. The allowance does not include troubleshooting of the system if proper system functionality is not present.

Diagnose Air Bag System

The labor times shown in the Guide to diagnose air bag systems include system disable and enable, removal and installation of air bag module(s) (where required), installation of appropriate simulators, and retrieving and clearing of trouble codes. Time for specific troubleshooting of Diagnostic Trouble Codes (DTCs) is not included.

Glass Labor Times

The labor times shown in the Guide for glass listed with the NAGS part numbers are Mitchell times, not times from NAGS. Glass labor times are for remove and replace (R&R), i.e., removal of the existing glass and its replacement with new glass. Some glass labor times are also shown for removal and the labor times for the same glass.

Stripes, Decals and Overlays

The labor times shown in the Guide for these items refer to installation only.

TECH-COR Repair Information

The labor times shown in the Guide for TECH-COR repair procedures supplied by Mitchell, TECH-COR does not endorse, sanction or otherwise approve such times. TECH-COR publications are copyrighted material. However, reproduction of TECH-COR bulletins is permitted as long as the bulletin is reproduced in its entirety, including source attribution. TECH-COR bulletins may be obtained by contacting TECH-COR, Inc., Technical Communications Dept., 105 East Paaline Road, Wheeling, IL 60090; phone 847-687-2341.

Base Model Vehicle

Vehicle with the minimal level of equipment available from the manufacturer.

Types of Vehicles

The types of vehicles covered are regular production models only.

Comprehensive Labor Time

While completeness is strived for in each Guide there will be instances, however, in which a labor time has not been established for an operation at the time of publication. If an item requires replacement and can be replaced as an individual item but shows no time, a time should be agreed upon among all parties and recorded on the damage report. It should also not be inferred that a component with no established Mitchell labor time has been included in another component’s replacement allowance.

Procedure Reference

Throughout each vehicle “service” there are Procedure Explanation reference notes located immediately following the main section headings. Example: BUMPER/FRONT PANEL is followed by “Use Procedure Explanations 1, 3 and 28 with the following text.” This indicates that the text portion and the Procedure Explanations for Front Bumper, Front Panel and Refinish should be used in conjunction with one another when writing a damage report. LABOR RELATED NOTES IN THE TEXT PORTION OVERRIDE THE PROCEDURE EXPLANATION PAGES.

Procedures

The Procedure Explanations on the following pages outline the operations which are or are not included in the labor time listed in each vehicle “service.” You are encouraged to become familiar with these procedure pages to be sure you have a thorough understanding of the Mitchell approach to collision estimating.

The left included Operations column means that the labor time shown in the Mitchell Collision Estimating Guide text includes that particular operation or operations.

The right Not Included Operations column means that the labor time in the text does not include that particular operation or operations. Performance of one or more of these operations may or may not be necessary as determined by the individual job requirements. If an add-on time has been established for any of these operations it will be shown in the text. If a time has not been established or if the add-on time is dependent on conditions that vary due to collision damage (example: access time, free up parts), the additional time should be recorded on the damage report. Labor times relating to the repair of a damaged panel or the use of used parts would come under this category.

Additions to Labor Times

Due to the wide range of collision damage and vehicle conditions, labor times for the following operations are not included in the Guide.

Access Time

Add-on time, debris, damaged panels, body collapse, pushing, pulling, etc.

Anti-Corrosion Rust Resistant Material

Remove and/or apply weldable zinc primers, wax, petroleum based coatings, undercoating or any type of added conditioning.

Broken Glass Clean Up

Clean vehicle of all broken glass.

Detail

Clean vehicle to pre-accident condition.

Drain & Refill

Fuel (see fuel tank)

Electronic Components

- Time to remove and install as necessary; includes wiring and wiring harness and computer module.
- Time to set memory code function (example: seat position, radio presets) when battery has been disconnected to perform repairs.
- Time to complete computer relearn procedures for proper operation of vehicle systems (example: power sunroof, power window) when battery has been disconnected to perform repairs.

Source: Portions Copyright 2012, Mitchell International, Inc. – Mitchell P-Pages, Rev. 10-09. Page 3
Question 3.
Is there a pre-determined time?
3. Is there a pre-determined time for applying corrosion protection undercoating?

Answer: None of the Information Providers provide times for the application of undercoating. However, if there is not a time, it does not mean that it is included. If there is not a time you may need to do a manual entry.
Question 4.
What is it worth?
4. If not, then what is applying corrosion protection undercoating worth?

**Answer:** The Estimator will have to use judgment times on these items since no database times are given by the Information Providers.

Answer Documentation:

- Submit an inquiry to DEG ([www.DEGweb.org](http://www.DEGweb.org)) to prove it is not included only
- Conduct Your Own Time Study:
  - Create a Time Study Form
  - Video of Time Study
- Invoice for materials
Additional Thoughts

- Keep in mind that .1 = 6 minutes
- When determining labor times, remember it should be based on "How long it takes the average technician to gather up their tools, equipment, and supplies and perform the task in a safe manner and return their tools, equipment and supplies back to their storage location."
- TIP: If you save the P-pages as a PDF and search for terms in the document by going to Edit, then Find or by hitting Ctrl+F

<table>
<thead>
<tr>
<th></th>
<th>AudaExplore Labor</th>
<th>CCC/MOTOR Labor</th>
<th>Mitchell Labor</th>
<th>Materials</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace Undercoating Labor and Materials</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Undercoating Materials</td>
</tr>
<tr>
<td>Remove Undercoating on Welded Panels</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Not Included</td>
<td>Eraser Wheels, Roloc Disc, Wire Wheels, Whatever Supplies Needed</td>
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</tbody>
</table>