

COLLISION 2021-22

Body Construction - Canyon & Colorado

BODY CONSTRUCTION (CREW CAB)

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FRONT COMPARTMENT

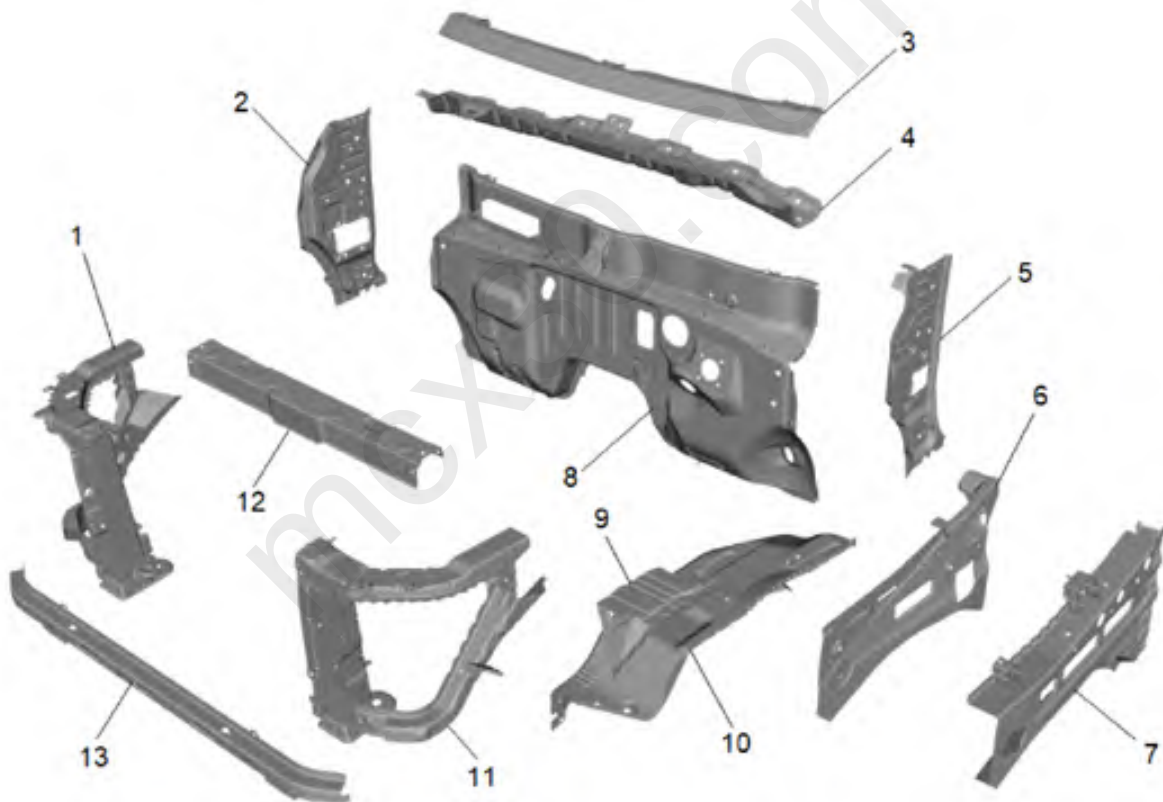


Fig. 1: Front Compartment Structure Identification Materials

Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	RADIATOR SUPPORT REPLACEMENT	Mild Steel
2	Hinge Pillar Inner Panel RH	Dual Phase Steel
3	Plenum Upper Panel	Mild Steel
4	Plenum Front Panel Replacement	Mild Steel
5	Plenum Upper Panel	Dual Phase Steel

Number	Procedure	Material
6	Front Compartment Upper Side Rail (Inner)	<u>Mild Steel</u>
7	<u>FRONT COMPARTMENT UPPER SIDE RAIL REPLACEMENT (OUTER)</u>	<u>Mild Steel</u>
8	Dash Panel	<u>Mild Steel</u>
9	<u>BATTERY TRAY REPLACEMENT</u>	<u>Mild Steel</u>
10	<u>FRONT WHEELHOUSE PANEL REPLACEMENT</u>	<u>Mild Steel</u>
11	<u>RADIATOR SUPPORT REPLACEMENT</u>	<u>Mild Steel</u>
12	<u>Front End Upper Tie Bar Replacement</u>	<u>Mild Steel</u>
13	<u>FRONT END LOWER CENTER TIE BAR REPLACEMENT</u>	<u>Mild Steel</u>

DOORS

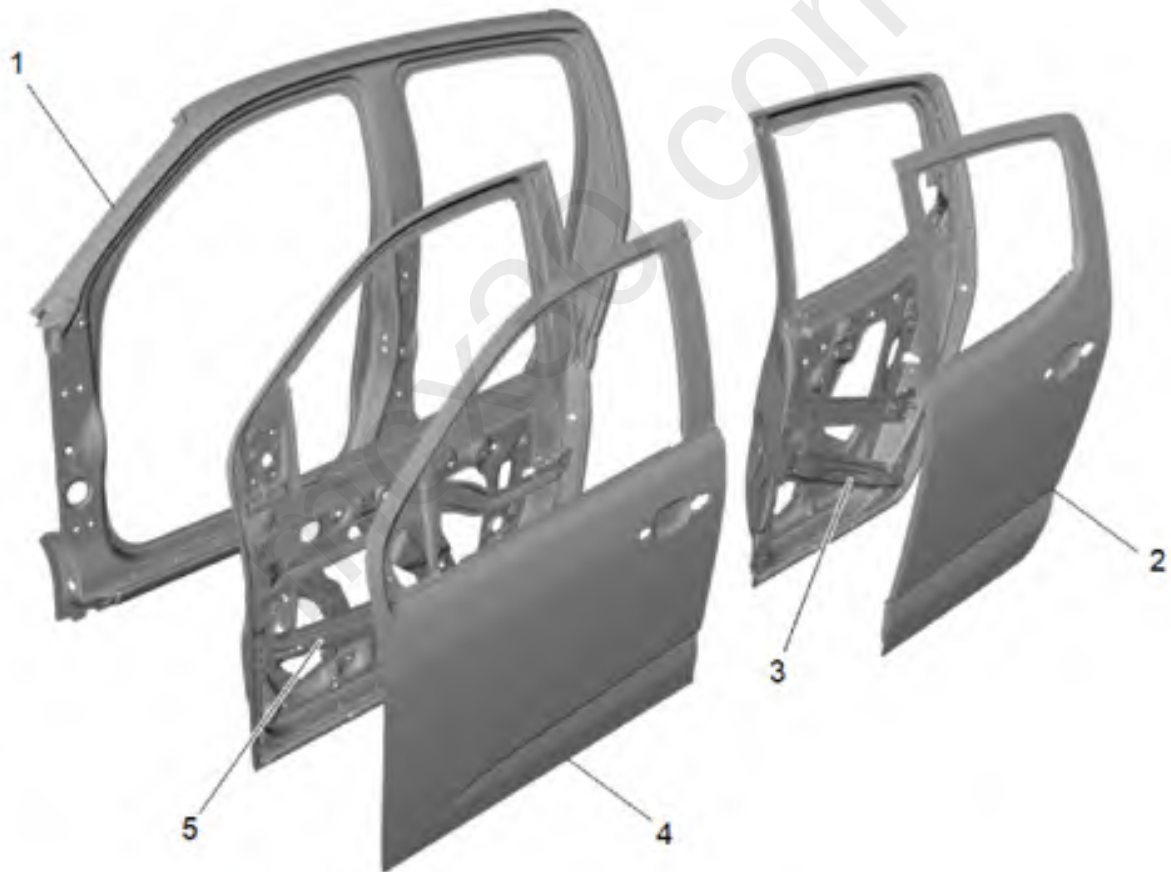


Fig. 2: Doors Structure Identification Materials

Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	<u>OUTER DOOR FRAME SECTIONING</u>	<u>Mild Steel</u>
2	<u>REAR SIDE DOOR OUTER PANEL REPLACEMENT (EXTENDED CAB) REAR SIDE</u>	<u>Mild Steel</u>

Number	Procedure	Material
	<u>DOOR OUTER PANEL REPLACEMENT (CREW CAB)</u>	
3	Rear Door Beam - Not Serviced	<u>Ultra High Strength Steel</u>
4	<u>FRONT SIDE DOOR OUTER PANEL REPLACEMENT</u>	<u>Mild Steel</u>
5	Front Door Beam - Not Serviced	<u>Ultra High Strength Steel</u>

BODY SIDE OUTER

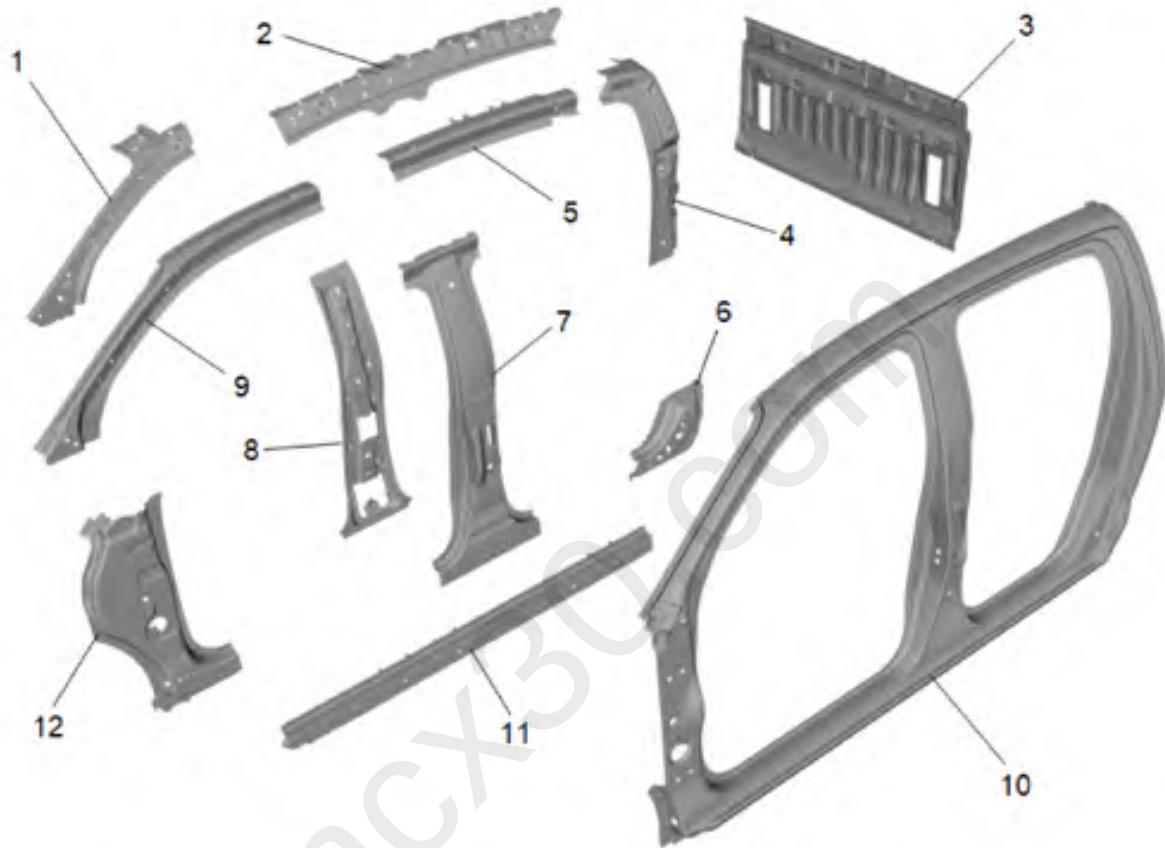


Fig. 3: Body Side Outer Structure Identification Materials
 Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	Windshield Inner Side Frame	<u>Ultra High Strength Steel</u>
2	Roof Inner Side Rail	<u>Ultra High Strength Steel</u>
3	<u>REAR END PANEL REPLACEMENT</u>	<u>High Strength Low Alloy Steel</u>
4	<u>BACK BODY PILLAR INNER PANEL REINFORCEMENT REPLACEMENT</u>	<u>Mild Steel</u>
5	Roof Outer Side Rail	<u>High Strength Low Alloy Steel</u>
6	Lower Lock Pillar Reinforcement	<u>Dual Phase Steel</u>
7	<u>CENTER PILLAR INNER PANEL REPLACEMENT</u>	<u>Ultra High Strength Steel</u>
8	Center Pillar Inner Reinforcement	<u>Ultra High Strength Steel</u>
9	<u>BODY HINGE PILLAR OUTER PANEL REINFORCEMENT REPLACEMENT</u>	<u>Ultra High Strength Steel</u>

Number	Procedure	Material
10	<u>OUTER DOOR FRAME SECTIONING</u>	<u>Mild Steel</u>
11	<u>ROCKER INNER PANEL REINFORCEMENT REPLACEMENT</u>	<u>Ultra High Strength Steel</u>
12	<u>BODY HINGE PILLAR LOWER REINFORCEMENT REPLACEMENT</u>	<u>Dual Phase Steel</u>

BODY SIDE INNER

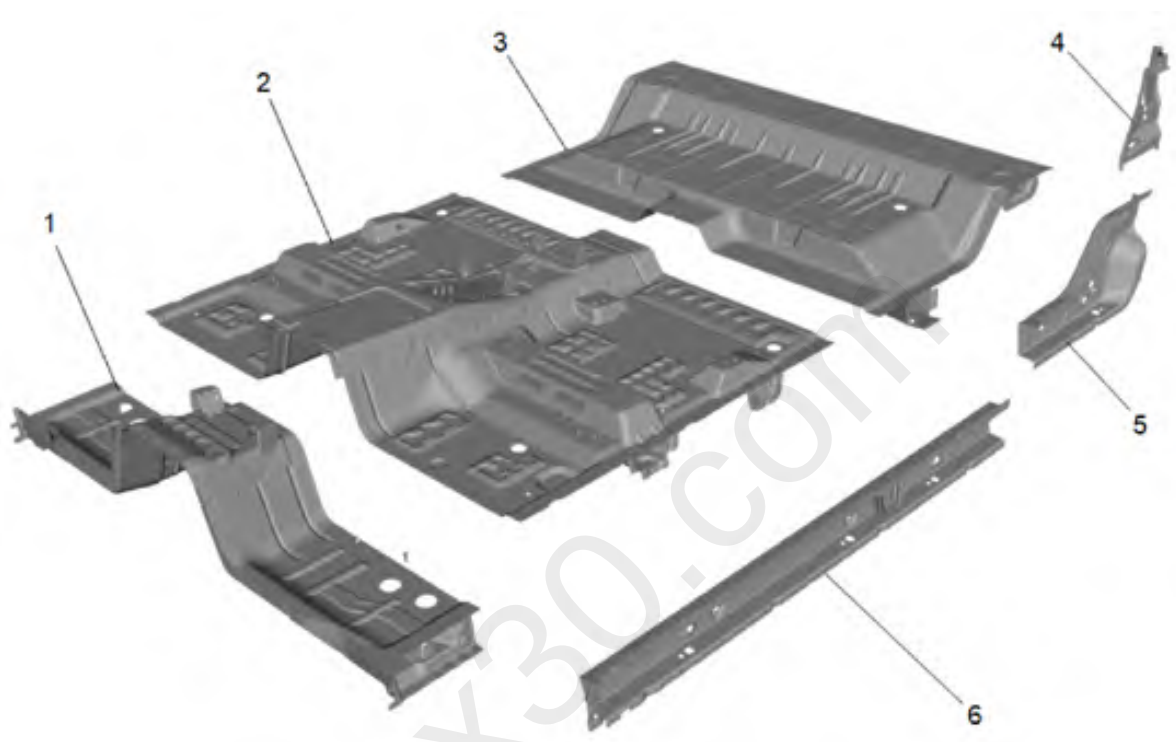


Fig. 4: Body Side Inner Structure Identification Materials
 Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	Dash Lower Extension Panel	<u>Mild Steel</u>
2	Front Floor Panel	<u>Mild Steel</u>
3	Rear Floor Panel	<u>Mild Steel</u>
4	Lower Lock Pillar Filler	<u>Dual Phase Steel</u>
5	Rocker Inner Panel Rear Extension	<u>Dual Phase Steel</u>
6	<u>Rocker Inner Panel Reinforcement Replacement</u>	<u>Ultra High Strength Steel</u>

ROOF



Fig. 5: Roof Structure Identification Materials
 Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	B <u>ROOF OUTER PANEL REPLACEMENT (ADHESIVE WELD BONDING PROCEDURE).</u> <u>ROOF OUTER PANEL REPLACEMENT (WELD ON PROCEDURE).</u>	<u>Mild Steel</u>
2	<u>ROOF REAR HEADER PANEL REPLACEMENT</u>	<u>High Strength Low Alloy Steel</u>
3	Roof Panel Number 2 Bow	<u>Mild Steel</u>
4	Roof Panel Number 1 Bow	<u>Ultra High Strength Steel</u>
5	<u>WINDSHIELD FRAME HEADER FRONT PANEL REPLACEMENT</u>	<u>Ultra High Strength Steel</u>

PICKUP BOX

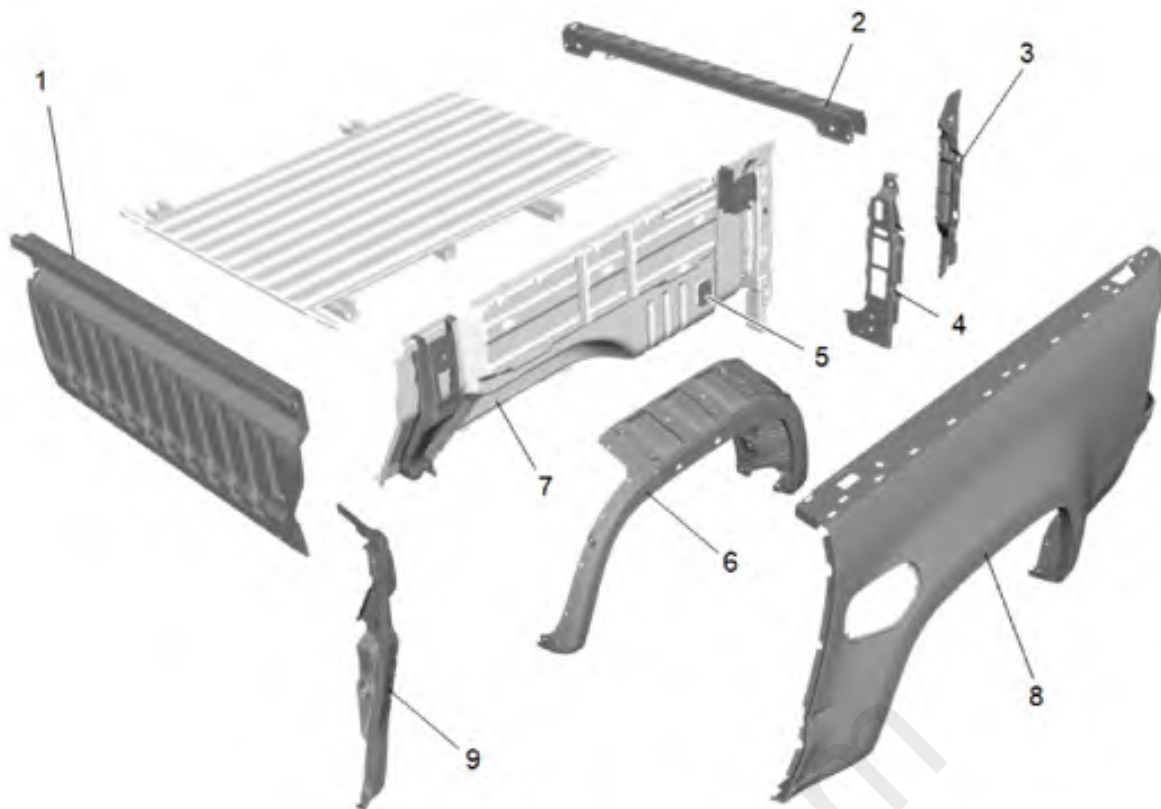


Fig. 6: Pickup Box Structure Identification Materials
 Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	<u>PICKUP BOX FRONT END PANEL REPLACEMENT</u>	<u>Mild Steel</u>
2	Rear Cross Sill	<u>Mild Steel</u>
3	Lamp Pocket Rear Pillar	<u>Mild Steel</u>
4	<u>PICKUP BOX LAMP POCKET REPLACEMENT</u>	<u>Mild Steel</u>
5	Tie Down Hook	<u>Mild Steel</u>
6	Pickup Box Wheelhouse Panels	<u>Mild Steel</u>
7	<u>PICKUP BOX REPLACEMENT - SIDE</u>	<u>Mild Steel</u>
8	<u>ROOF OUTER PANEL REPLACEMENT (ADHESIVE WELD BONDING PROCEDURE).</u> <u>ROOF OUTER PANEL REPLACEMENT (WELD ON PROCEDURE).</u>	<u>Mild Steel</u>
9	Pickup Box Front Filler	<u>Mild Steel</u>

FRAME (CANYON AND COLORADO PICKUP VIN S/T)

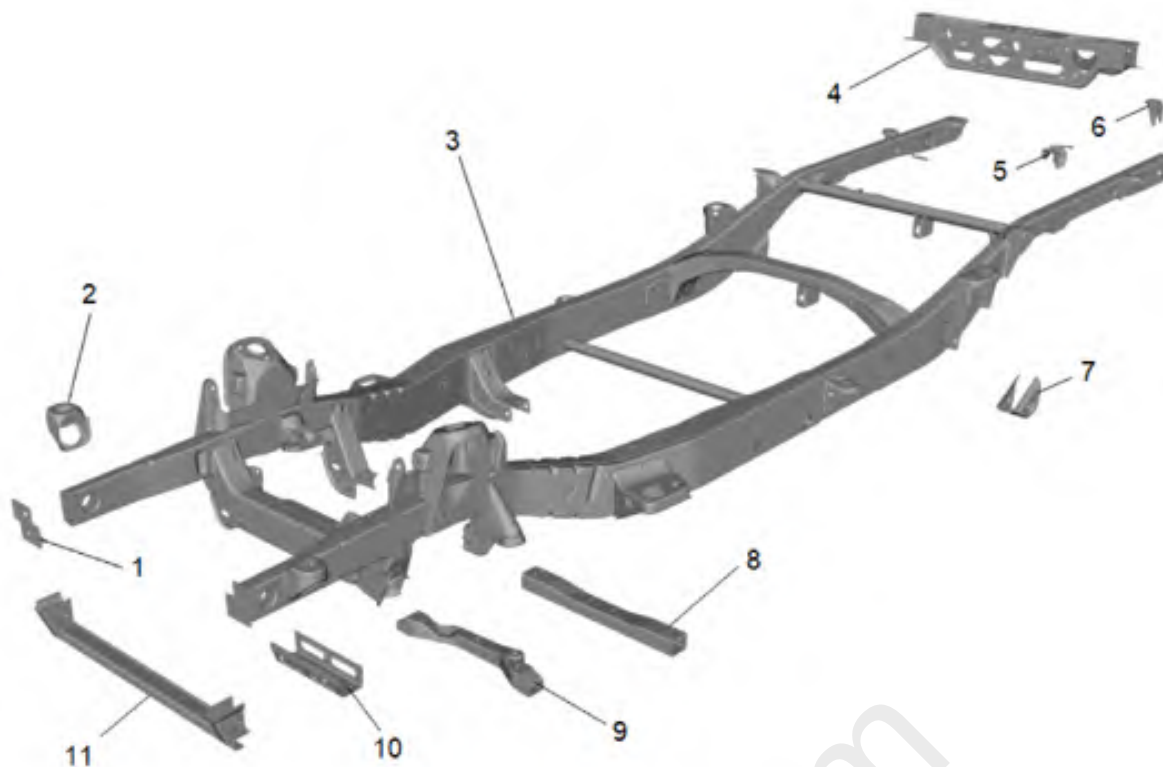


Fig. 7: Frame Structure Identification Materials (Canyon And Colorado Pickup VIN S/T).
 Courtesy of GENERAL MOTORS COMPANY

Number	Procedure	Material
1	Front Bumper Plate	<u>Mild Steel</u>
2	Radiator Bracket	<u>Mild Steel</u>
3	Frame Assembly	<u>High Strength Low Alloy Steel</u>
4	Spare Tire Crossmember	<u>Mild Steel</u>
5	Rear Shock Bracket	<u>Mild Steel</u>
6	Rear Body Bracket	<u>Mild Steel</u>
7	Rear Suspension Bracket	<u>Mild Steel</u>
8	Transmission Crossmember	<u>High Strength Low Alloy Steel</u>
9	Drivetrain Crossmember	<u>Mild Steel</u>
10	Steering Gear Skid Shield	<u>Mild Steel</u>
11	Front Lower Crossmember	<u>Mild Steel</u>

BODY CONSTRUCTION MATERIALS

DUAL PHASE STEEL

This information provides repair recommendations and general guidelines for steel classified as Dual Phase Steel, also known as DP. This type of steel normally has a tensile strength below 780 MPa.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

NOTE: The use of heat to repair damage is not recommended for this classification of steel.

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.

- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
- Welds mentioned in text and shown in graphics are accurate at the time of publication. Use vehicle being repaired for accurate count and location. If count and location of welds cannot be determined, use information provided in Service procedure.

HIGH STRENGTH LOW ALLOY STEEL

This information provides repair recommendations and general guidelines for steel classified as High Strength Low Alloy Steel, also known as HSLA. This type of steel normally has a tensile strength range from 300-700 MPa.

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Recommended Repairs

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.
- Controlled use of heat can be used to repair damage, if the heat does not exceed 650B°C (1200B°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
- Welds mentioned in text and shown in graphics are accurate at the time of publication. Use vehicle being repaired for accurate count and location. If count and location of welds cannot be determined, use information provided in Service procedure.

METAL PANEL BONDING

This information is intended to provide general guidelines for adhesive bonding of steel panels. Panel bonding of steel is only recommended when the panel is originally bonded to the vehicle. In almost every application adhesive bonding is combined with resistance spot welding, rivet bonding or other types of mechanical fastening. Always refer to service procedure for recommended fastening strategy. The only joints that use adhesive only are joints which have no way to introduce a resistance spot weld or rivet or other mechanical fastener. These will always be outlined in their specified procedure.

The adhesives listed in this document are known to meet the General Motors specifications and requirements for bonding of steel body panels.

Bonding procedures in general are applicable only at factory joints.

The use of adhesive to section steel panels is not recommended by General Motors.

Rivets, or other mechanical fasteners, need to be used in combination with adhesive bonding of steel panels. The specified rivets, or fasteners, should be used with adhesive, when replacing the original panel.

Two types of adhesives are listed here. Impact Resistant Adhesive is used in joints in frame rail assemblies and strut tower assemblies and other body structure joints that have critical strength requirements. The factory applied Impact Resistant Adhesive is purple in color when cured. The Impact Resistant adhesives available for servicing these joints are considerably stronger once cured than panel bonding adhesives. The other bonding adhesives are non-impact resistant, offer a lower strength rating and are only used in door outer panel attachment hem joints.

NOTE: Always follow the adhesive manufacturer's instructions for application, handling, and curing for the specific product.

Adhesives currently meeting the performance requirements include the adhesive products listed below meet these guidelines:

Manufacturer and Part Number	Description
Pliogrip 5770P	Pliogrip 5770P Structural Impact Durable Adhesive Available from Ashland 800-PLIOGRIP www.ashland.com/pages/pliogrip-5770
Fusor 2098	Fusor 2098 Impact Resistant Adhesive Available from Lord Fusor 800-234-3876 https://www.lord.com/products-and-solutions/adhesives/fusor-2098-crash-durable-structural-adhesive-%28slow%29
3M 07333	3M Impact Resistant Structural Adhesive Available from 3M www.3MCollision.com/IRSA
SEM 39757 Structural Impact Resistant Adhesive	www.semproducts.com/product/dual-mixtmstructural-impact-resistant-adhesive/39757

Manufacturer and Part Number	Description
GM P/N 12378566 (US)	Fast Set Panel Bonding Adhesive
GM P/N 88901674 (Canada)	
Lord Fusor P/N 110B/111B	
GM P/N 12378567 (US)	Medium Set Panel Bonding Adhesive
GM P/N 88901675 (Canada)	
Lord Fusor P/N 108B/109B	
3M P/N 8116	Panel Bonding Adhesive
Ashland Plio Grip Panel 60	Panel Bonding Adhesive
SEM 39337	Door Skin and SMC Adhesive

MILD STEEL

This information provides repair recommendations and general guidelines for steel classified as Mild Steel. This type of steel normally has a tensile strength less than 270 MPa. This includes the common steel names of:

- Mild Steel
- Bake Hardenable Steel (BH)
- Solid Solution Strengthened Steel

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

Recommended Repairs:

- Cold repairs can be performed on this type of steel, unless the damage includes kinks. If the damage includes kinks, the part should be replaced.

- Controlled use of heat can be used to repair damage, if the heat does not exceed 650B°C (1200B°F). The heat should be applied a maximum of 2 times, for up to 90 seconds.
- Sectioning or partial replacement of this type of steel is recommended only at approved locations, in a specific sectioning procedure.
- When recommended in a specific sectioning procedure, this type of steel can be used as a weld plate for reinforcing the sectioning location.
- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable
- MIG plug welding and MIG stitch welding can be used on this type of steel.
- MIG Brazing can be used on this type of steel.
- Welds mentioned in text and shown in graphics are accurate at the time of publication. Use vehicle being repaired for accurate count and location. If count and location of welds cannot be determined, use information provided in Service procedure.

ULTRA HIGH STRENGTH STEEL

This information provides repair recommendations and general guidelines for steel classified as Ultra High Strength Steel, also known as UHSS. This type of steel normally has a tensile strength of 780 MPa, or greater.

This includes the common steel names of

- Ultra High Strength Dual Phase Steel (DPX)
- Martensitic Steel (M)
- Boron/Press Hardened Steel (B)
- Multi-Phase Steel (MP)
- TRIP Steel (TR)

General Motors recommends the following when repairing or replacing this type of steel during collision repair.

NOTE:

- **Repair of this type of steel is not recommended.**
- **This type of steel should be replaced only, at factory joints. Sectioning or partial replacement is not recommended.**
- **The use of heat to repair damage is not recommended for this type of steel.**
- **Stitch Welding is not recommended for this type of steel (unless replacing a factory installed stitch weld).**
- **This type of steel should not be used as a weld plate for reinforcing the sectioning location.**

Recommended Repairs

- Squeeze Resistance Spot Welding can be used to replace factory spot welds, where applicable.
 - MIG plug welding can be used to replace factory spot welds.
 - MIG Brazing can be used to replace factory spot welds.
 - Welds mentioned in text and shown in graphics are accurate at the time of publication. Use vehicle being repaired for accurate count and location. If count and location of welds cannot be determined, use information provided in Service procedure.
-