

Great Designs in

STEEL 2016

2016 NISSAN TITAN XD

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The 2016 NISSAN **TITAN XD**

TITAN



Nissan Line-up

TITAN'S ROLE IN NISSAN TRUCK/LCV LINEUP

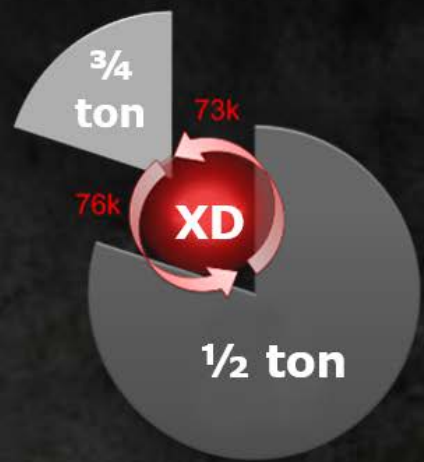


Segment Position

XD POSITIONING

Segment Exclusive

Capability



Price



Titan XD concept

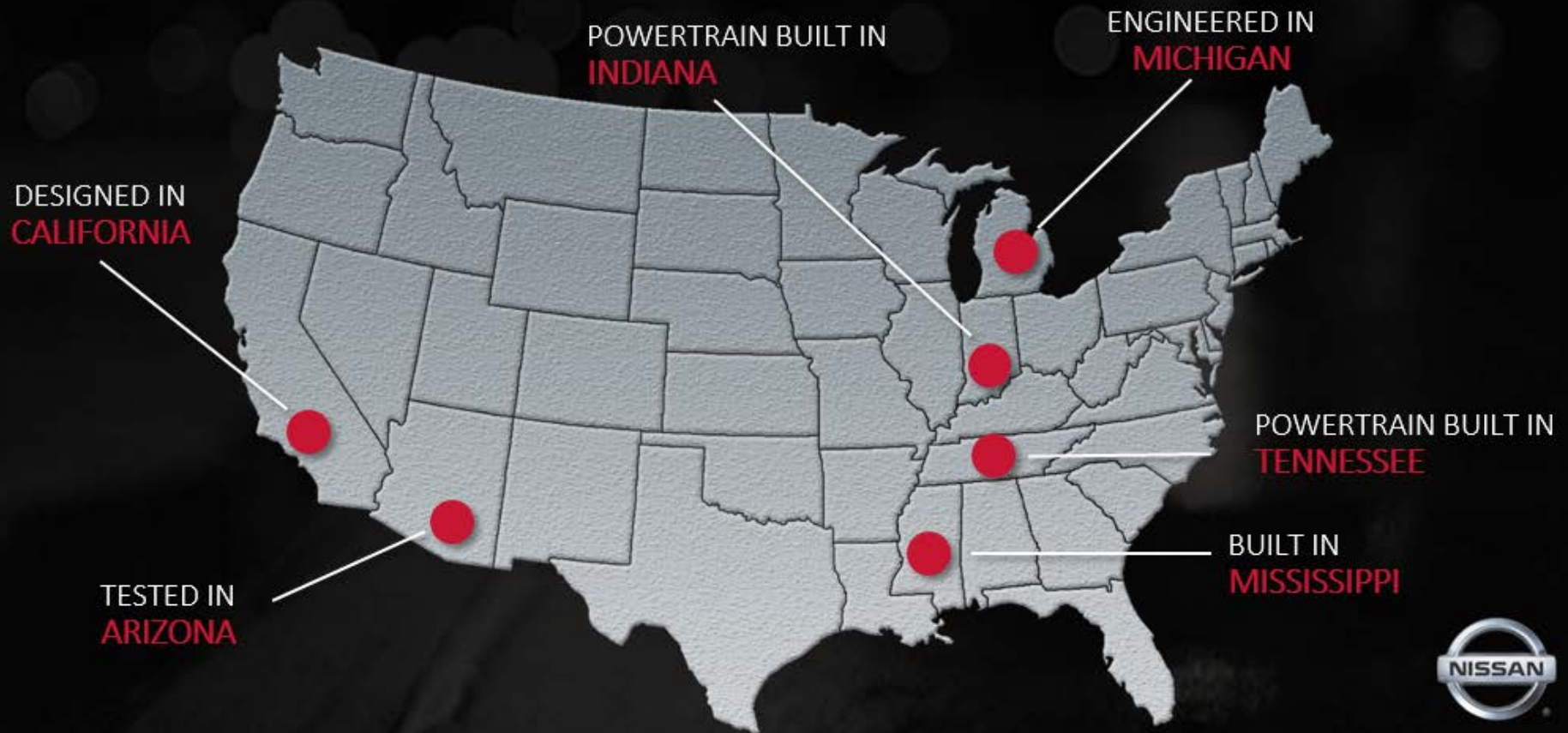
The TITAN XD original concept was to be strong.
How Strong???

They wanted to use **VALYRIAN STEEL**

But that idea was shot down



TITAN footprint



Building on Innovation

2004 Titan Innovations:

- Spray-on bedliner
- Utili-track system with tie-down cleats
- Tailgate lighting
- Dampened tailgate
- 180 degree rear door



2016 Titan XD Innovations:

- First non-HD truck to offer a factory-installed Gooseneck Hitch
- LED bed rail lighting
- Removable, lockable in-bed storage
- 120V Power Point
- Towing aids: trailer light check & backup camera

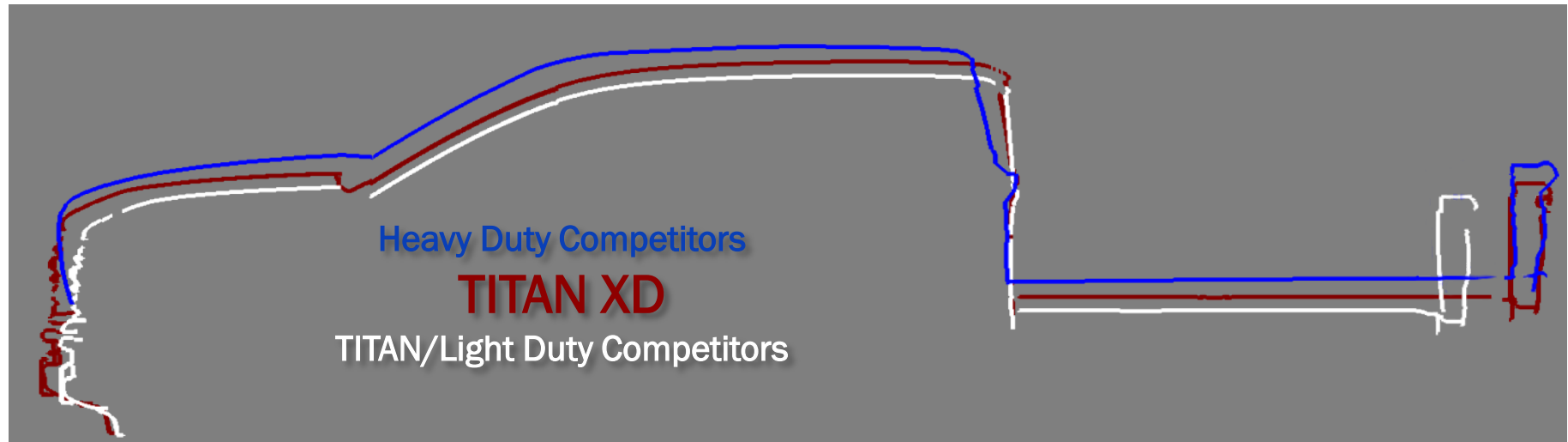


TITAN Lineup

TITAN				
Cab	Bed	Engine	TITAN	TITAN XD
S/C 	8' 	V6G	✓	
		V8G	✓	✓
		V8D		✓
K/C 	6.5' 	V6G	✓	
		V8G	✓	✓
		V8D		✓
C/C 	5.5' 	V8G	✓	
	6.5' 	V8D		
		V8G		✓
		V8D		✓

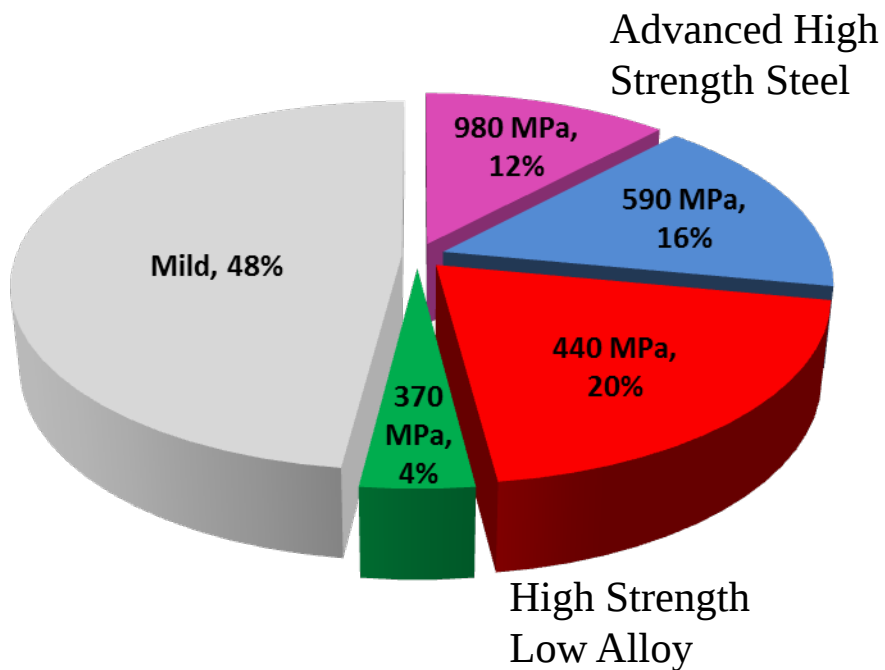
Last-generation Titan's configuration

TITAN XD Dimensions

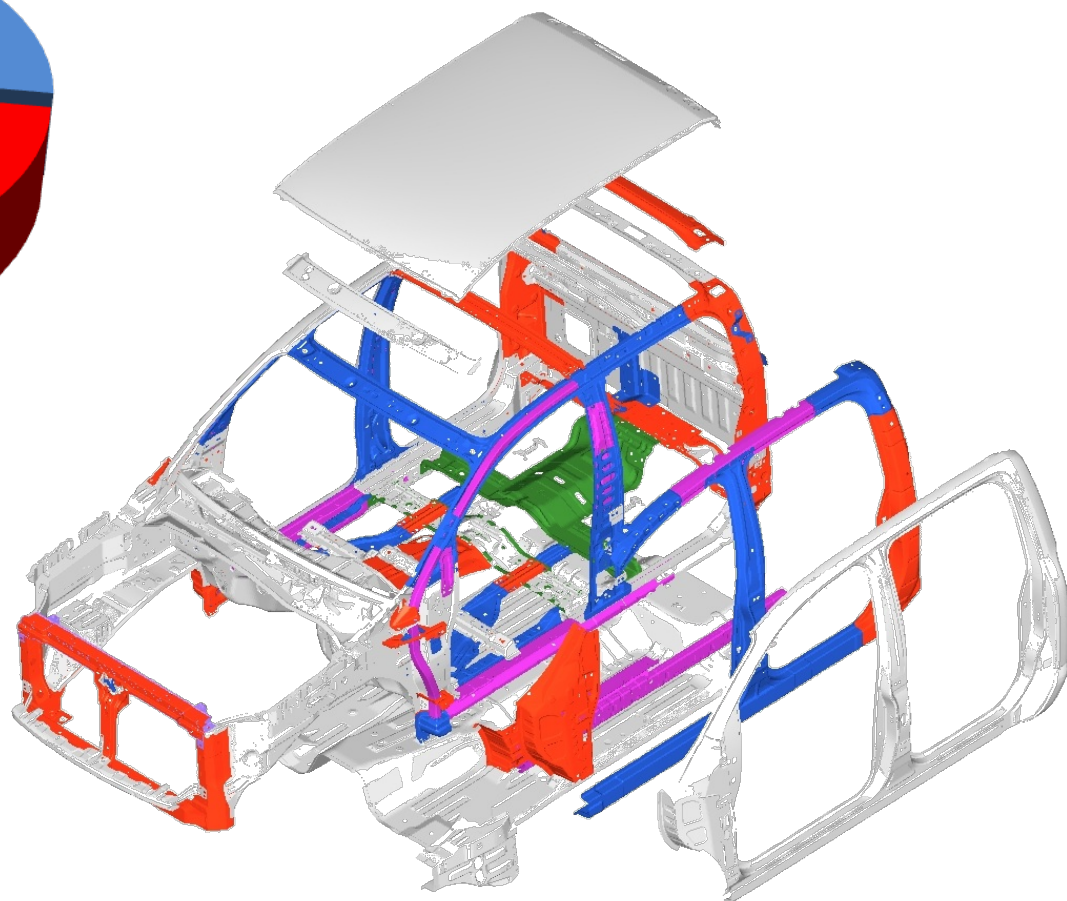


	Ford F250	Chevy 2500	Ram 2500	TITAN XD
Step-in Height	17.3"	16.8"	17.0"	15.3"
Tailgate Height	36.3"	39"	41"	37.5"
Overall length	246.8"	239.5"	248.4"	242.7"
Overall height	79.7"	78.3"	74.1"	78.8"

Steel Usage



Additional 98kg would be required to meet the same structure requirements with mild steel alone!



Yield strength over mild steel

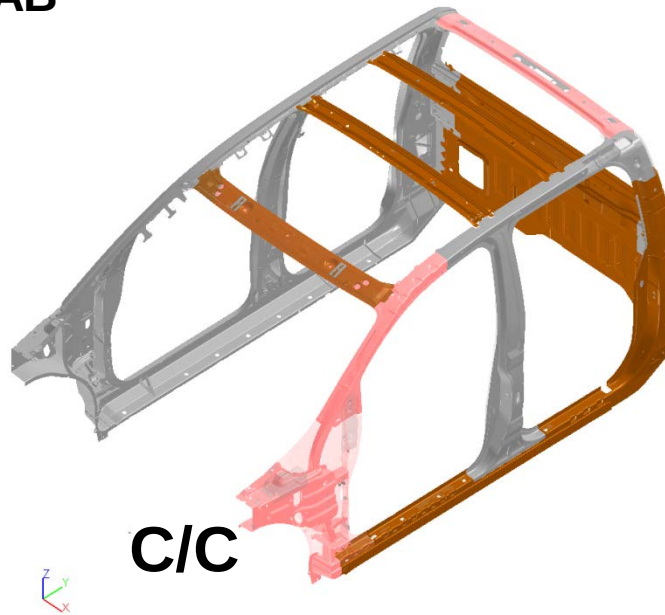
980 MPa	288%
590 MPa	130%
440 MPa	97%
370 MPa	50%

Cabin Variation Concept

Utilized 1st Generation Titan Carryover Content

New FR PLR and ROOF RAILS but Common for all CAB types

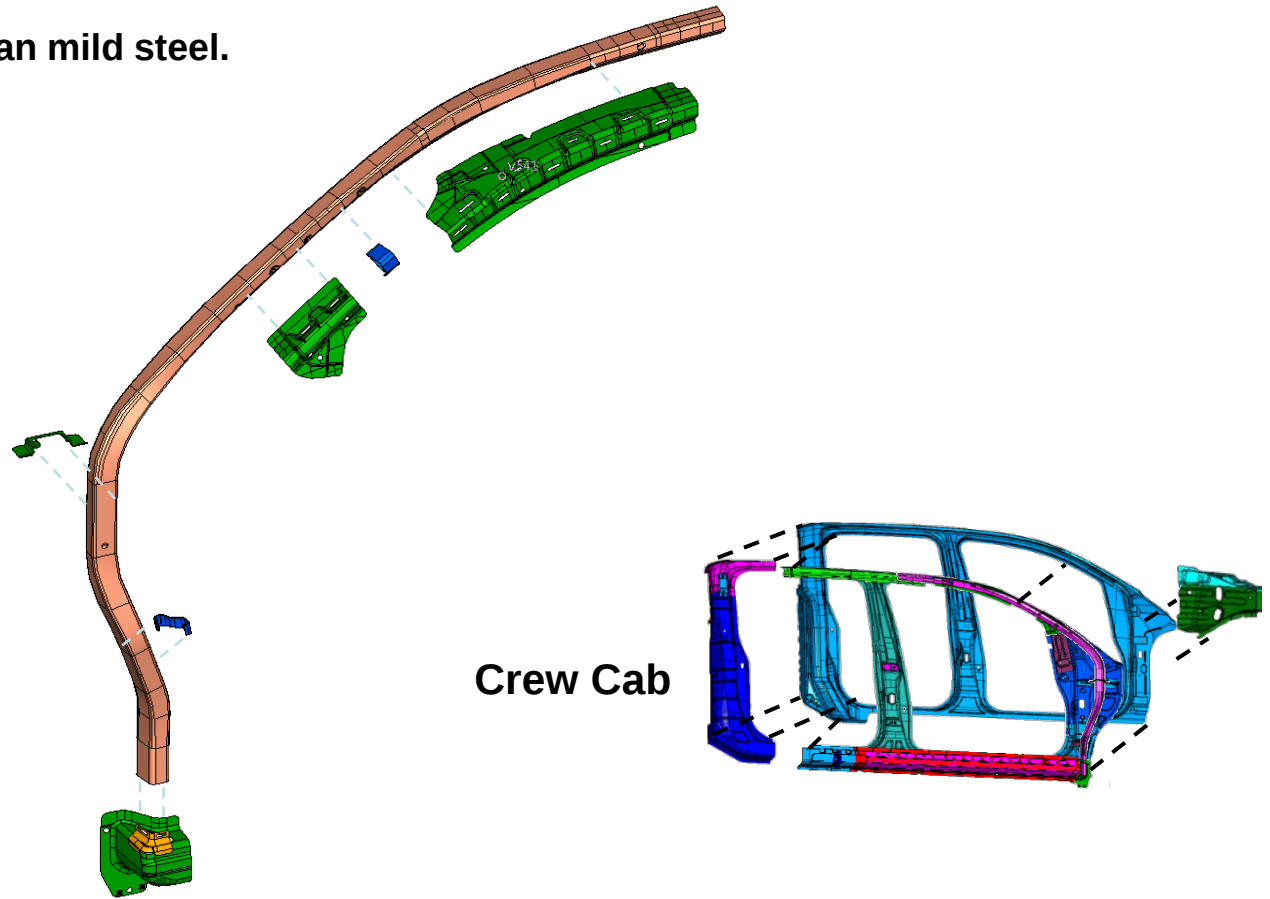
-  Carry Over or Modified Carry over
-  New and common for all
-  New for each CAB



Hydroform Design

To meet min 22% strength increase, 980MPa high strength tube material was used.

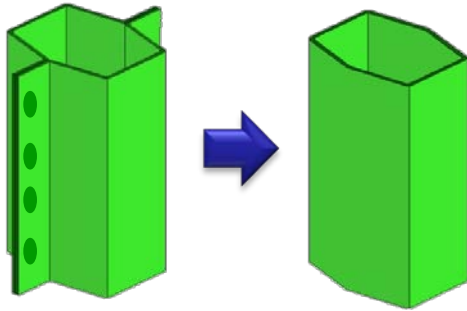
This is >3.5 times stronger than mild steel.
(tensile 270MPa vs. 980MPa)



Hydroform Design

Using Hydroforming in body structure is 1st time usage in Nissan.

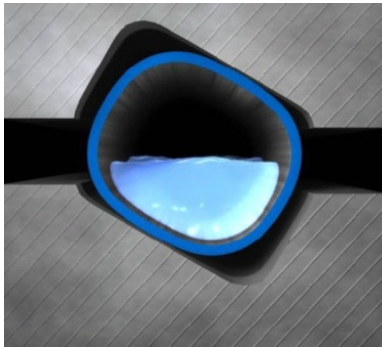
- Approximately 25%-30% section strength improvement allowing for thinner material at same performance



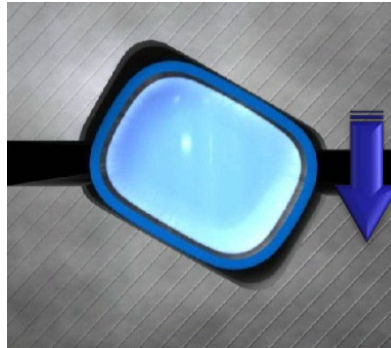
Nissan hydroform design is manufactured using PSH manufacturing because of the lower pressure required and the better control of wall thickness.

Pressure Sequence Hydroforming (8,000psi)

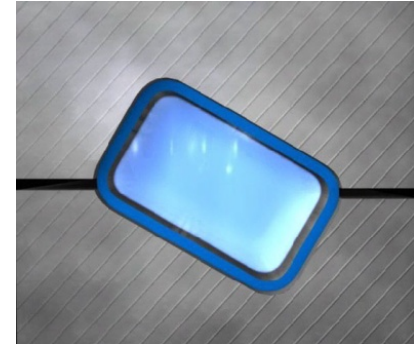
After a tube is placed into the tool, the fluid is pressurized **as the press closes**. This **reshapes** the tube without expansion.



As die closes, tube begins fill



Tube pressurized as die closes



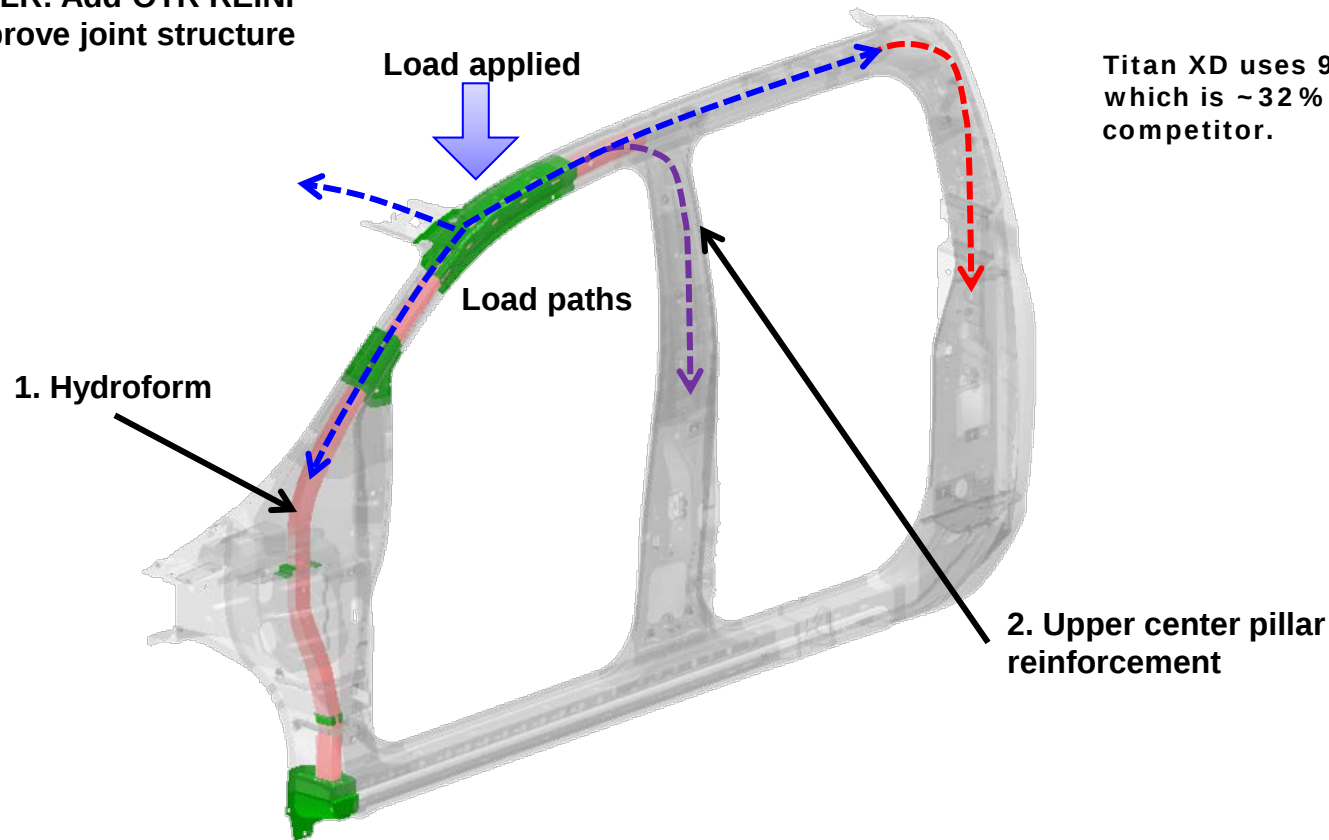
Die closed, pressure increased

Roof Crush

To meet new requirement: At least 22% strength improvement required

Countermeasures used:

1. A PLR : Add Hydroform (new technology for Nissan)
2. B PLR: Add OTR REINF
3. Improve joint structure



Titan XD uses 980MPa strength tubing which is ~32 % higher strength than competitor.

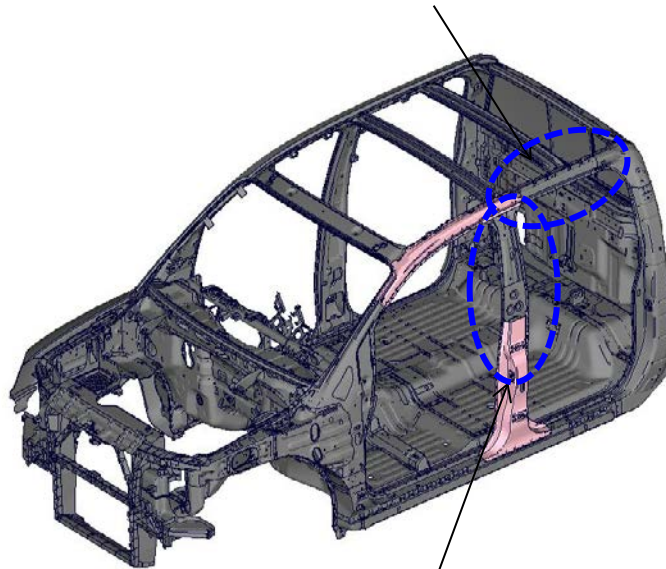
Side Impact

Keep deformation mode as Previous Generation

Improve B PLR bending structure with Roof Crush CM

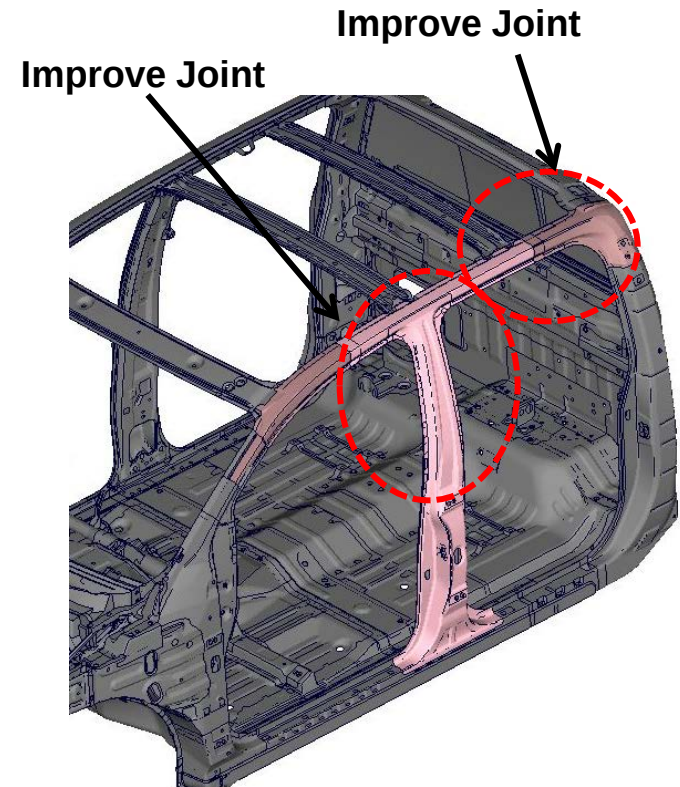
1. Improve Side Roof rail intrusion
2. Improve B PLR UPR bending structure

1. NO SIDE ROOF RAIL RR



2. NO UPR B PLR

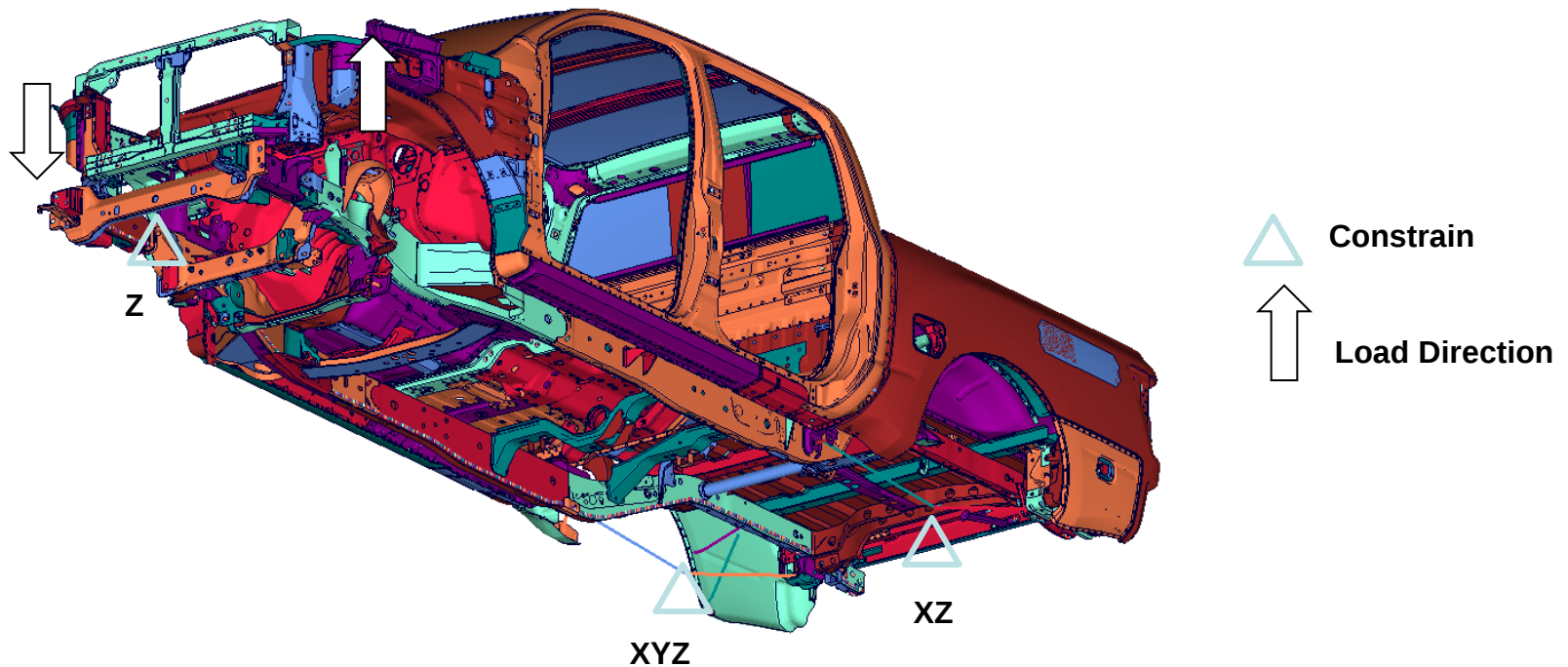
1st Generation Structure



2nd Generation Structure

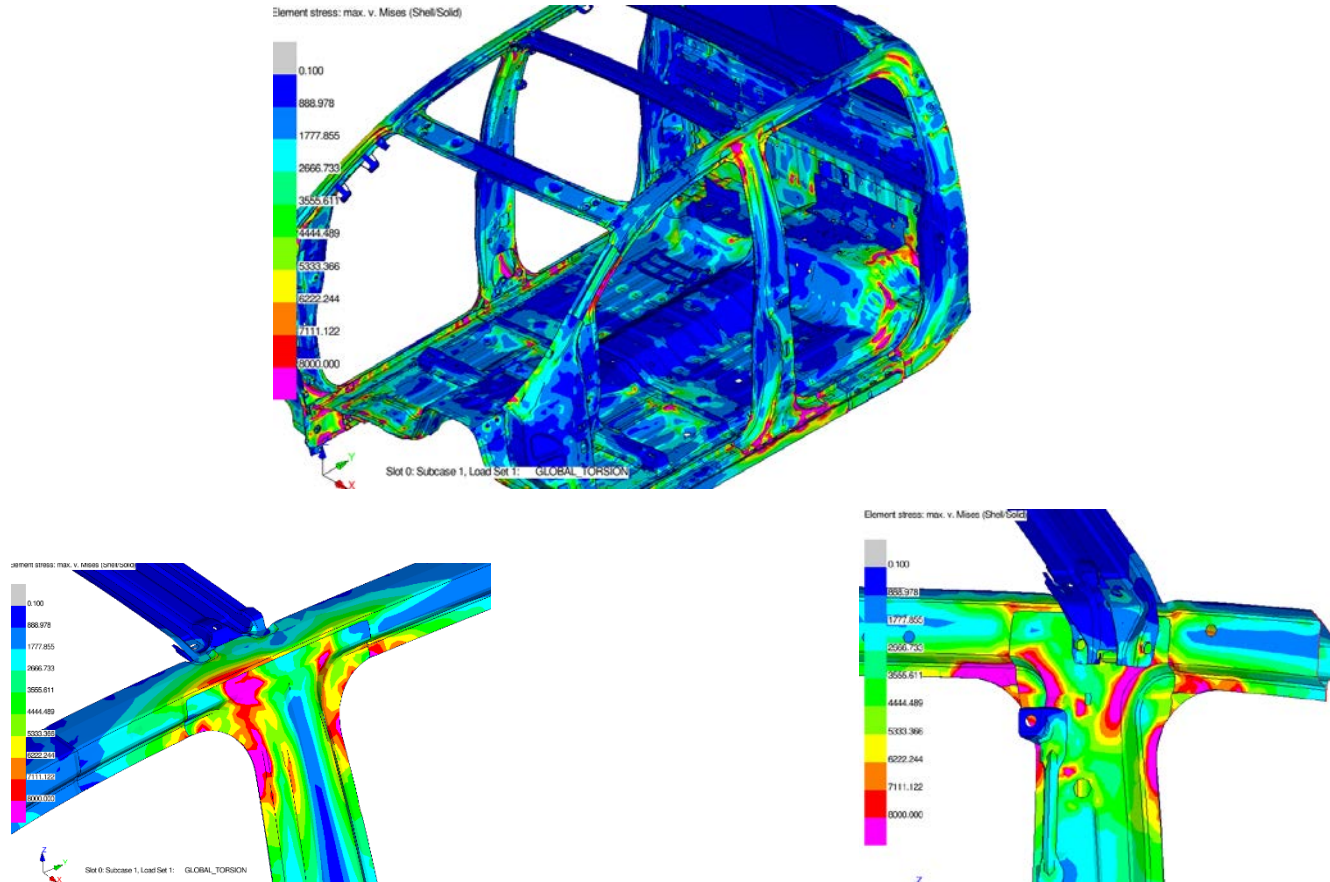
Global Body Torsion

Global torsion stiffness of Body with Frame over-achieved the target
(14% Increase)



Global Body Torsion

SIDE ROOF and B PLR UPR joint structure improved from 1st Generation Titan
Improved Global torsion stiffness also will improve Door & B PLR vibration



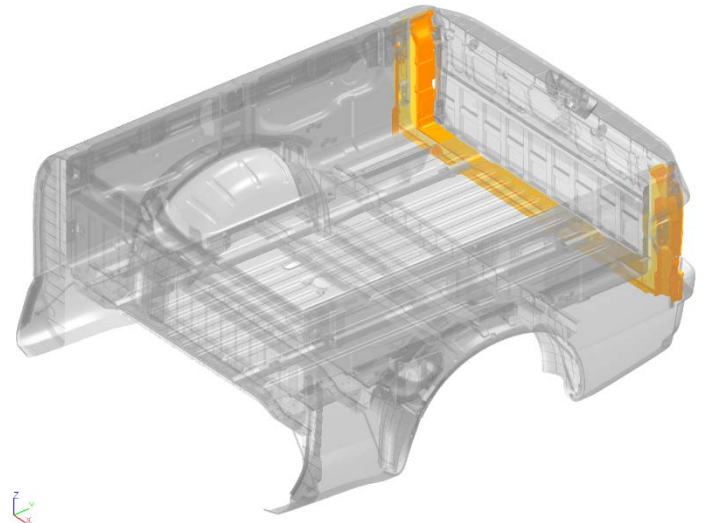
Bed Improvements



- **INCREASED PAYLOAD CAPACITY (C/C)**
37% Payload increase (XD versus 1st gen)
- **IMPROVED DURABILITY PERFORMANCE**
33% Mileage Increase (XD versus 1st gen)

DESIGN CHANGES (FOR THE XD MODEL)

- BED FLOOR PANEL –**UPGAGED BY 10% AND BEAD PATTERN CHANGED TO ENABLE 20% ADDITIONAL WELDING**
- MID-SPAN #3 AND #4 **CROSS MEMBERS UPGAGED BY 65% AND 30% RESPECTIVELY AND #4 SECTION INCREASED BY 30%**
- **ADDITIONAL BOLSTER #7 ON THE FLOOR FOR IMPROVED DURABILITY**
- **8 BOLTS ADDED BETWEEN THE BED AND BOLSTERS FOR IMPROVED DURABILITY**
- TAILBOLSTER MATERIAL UPGRADED TO A **97% HIGHER STRENGTH STEEL(440MPa)**
- REAR STRUT INNER **UPGAGED BY 28% AND UPGRADED TO A 97% HIGHER STRENGTH STEEL(440MPa)**



XD Performance & Frame

Vehicle Performance	Vehicle Target Image	Frame
Towing	Tow 3-Ways • Rear Bumper (factory install) • Gooseneck (factory install) • 5th Wheel (accessory late-offering)	• Under-bed mounted, factory-installed gooseneck hitch
Strength & Durability	250 Class level • Increased mileage (durability) • Increased payload (strength & durability)	• Fully-boxed HSS construction frame • Reinforced NV Commercial Grade Front + Titan Rear
Ride Comfort & Ingress/Egress	250 <-> 150 “white-space” • Heavy tow-load & light-load • Step-in Height leader	• Increased Rear SUSP travel • Stabilizer Bar • Reinforced Titan “kick-up”

XD Towing Capability

- Titan XD SAE J2807 certified up to 12,310 lbs conventional tow rating
 - Cooling (Davis Dam), Acceleration (12% grade), Handling (under steer & trailer sway), Braking, & Structure (SAE J2638)
- 1st Light Duty Truck to offer factory-installed Gooseneck Hitch
 - Key Advantages: improved stability, reduced sway, tighter turning radius, better maneuverability



Gooseneck Hitch

Trailer Sway Control

Trailer Light Check

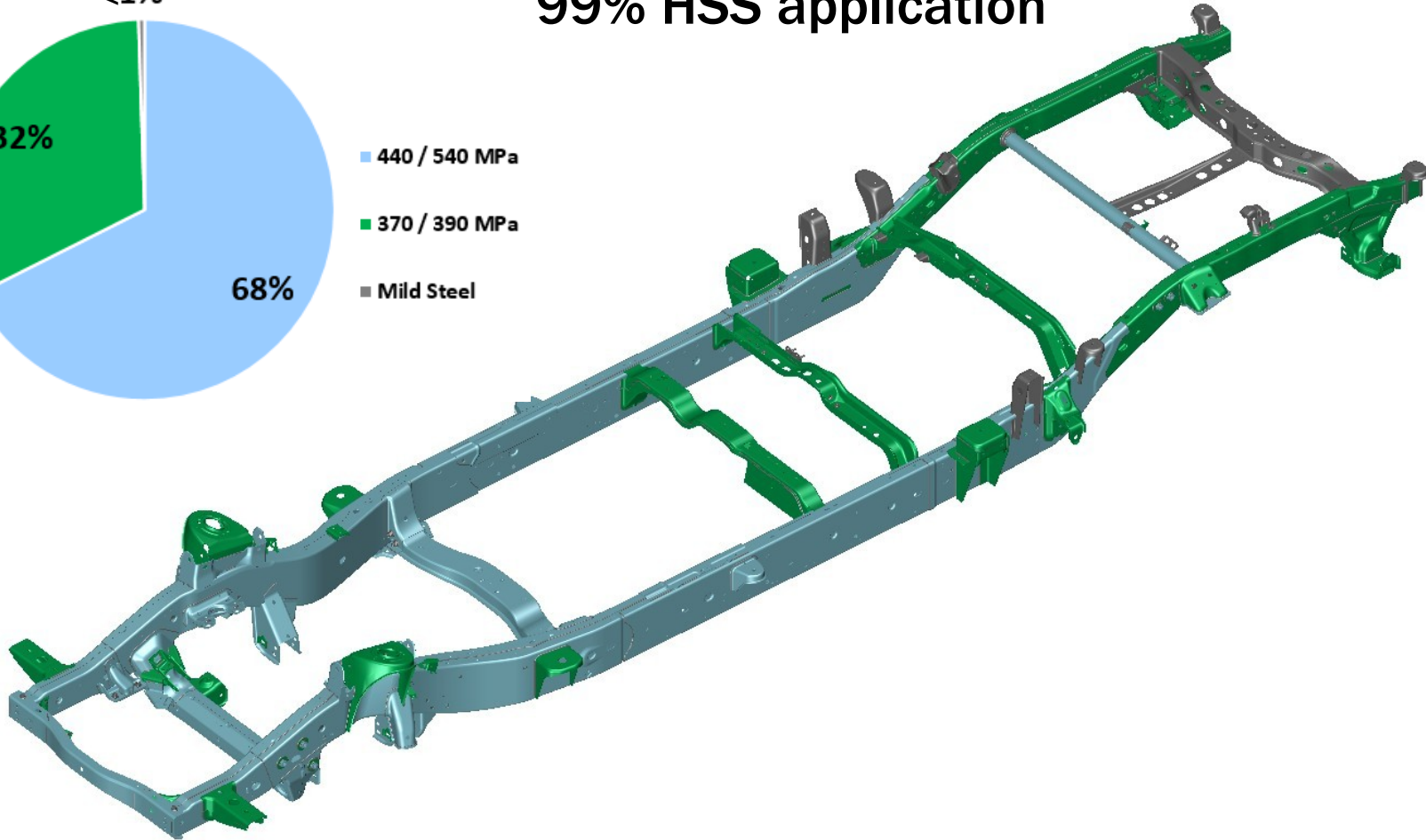
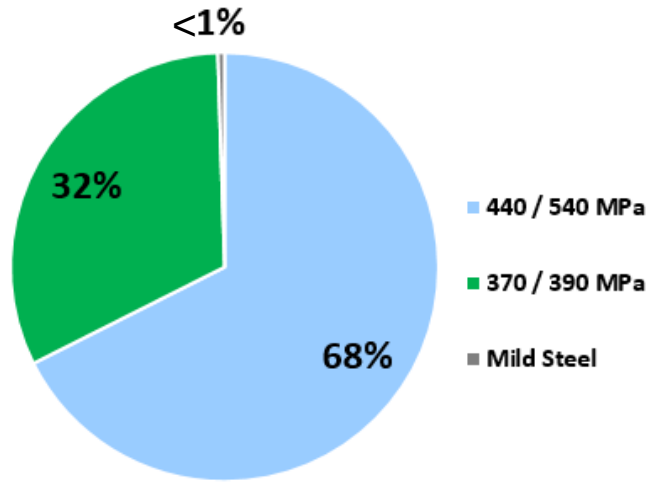
Back-up Camera

Integrated Trailer Brake Controller

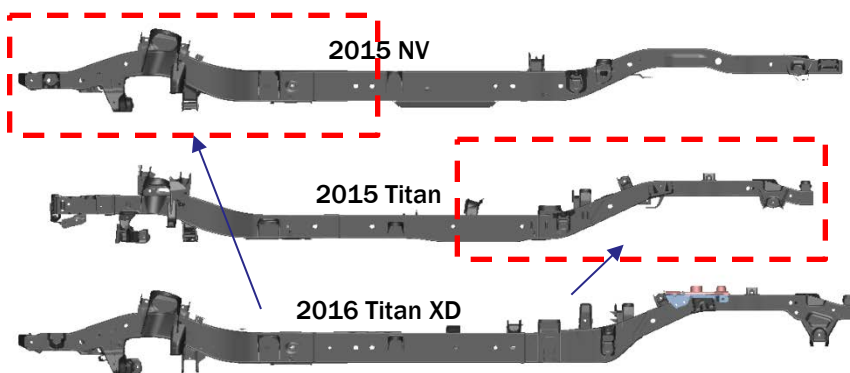
Downhill Speed Control

XD Frame Material Usage

99% HSS application



XD Frame Structure Overview



FR Frame = NV Commercial Grade
RR Frame = Reinforced Titan

Fully-Boxed, Full-Length HSS
Frame Ladder Construction

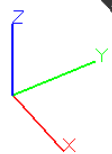
9 Cross Members

8 Cab Mtgs + 8 Bed Mtgs

TOWING
Under-bed mounted, factory-
installed gooseneck hitch
Meets SAE2638

RIDE, COMFORT & DURABILITY
Rear Rail "Kick-up"

- Increased rear susp travel
- Reinforced rear leaf mtg
- Low step-in height



XD Gooseneck Hitch

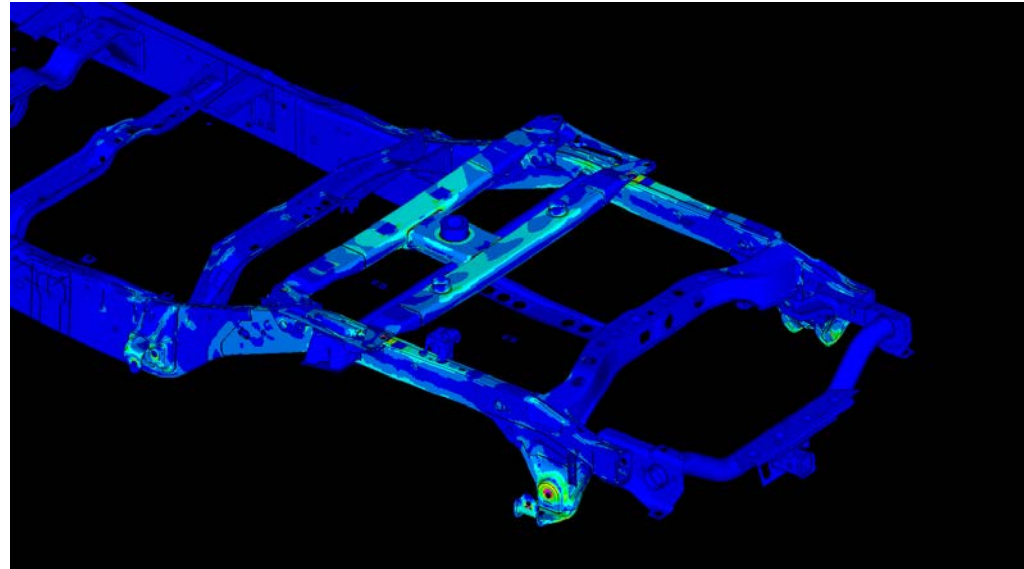
FACTORY INSTALLED

Under-bed mounted gooseneck hitch

STRONG & DURABLE

HSS utilized throughout

Meets SAE2638



Castings:
515MPa

Hitch Receiver Collars:
448MPa

Roll-Forms & Stampings:
400MPa

Brackets:
540MPa

THANK YOU FOR YOUR ATTENTION



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Designs
in

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Seminar

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