

Great Designs in

STEEL 2015!!

2015 Nissan Murano

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Nissan Technical Center North America





Evolution of Murano

CUV Segment Changer



Feature Rich Vehicle

1ST GEN
2003



2nd GEN
2009



3rd GEN
2015



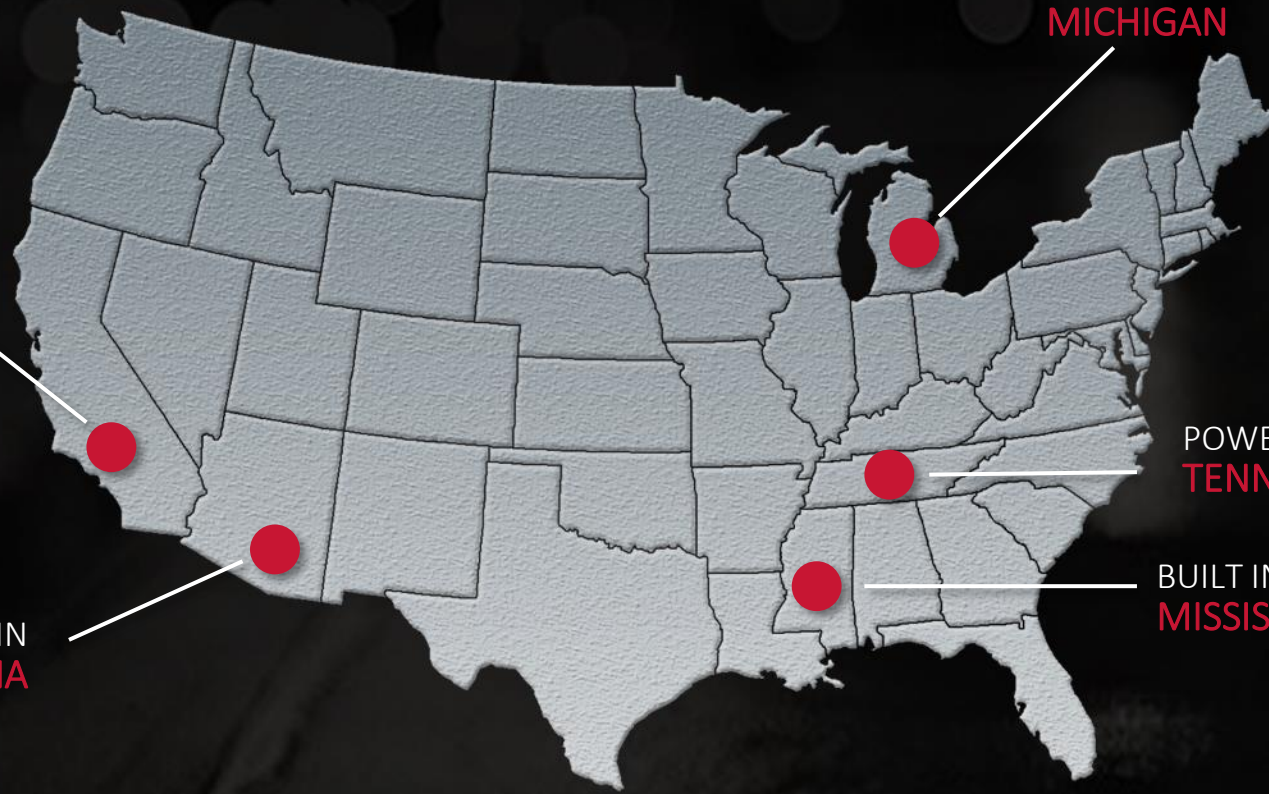
DESIGNED IN
CALIFORNIA

ENGINEERED IN
MICHIGAN

POWERTRAIN BUILT IN
TENNESSEE

TESTED IN
ARIZONA

BUILT IN
MISSISSIPPI



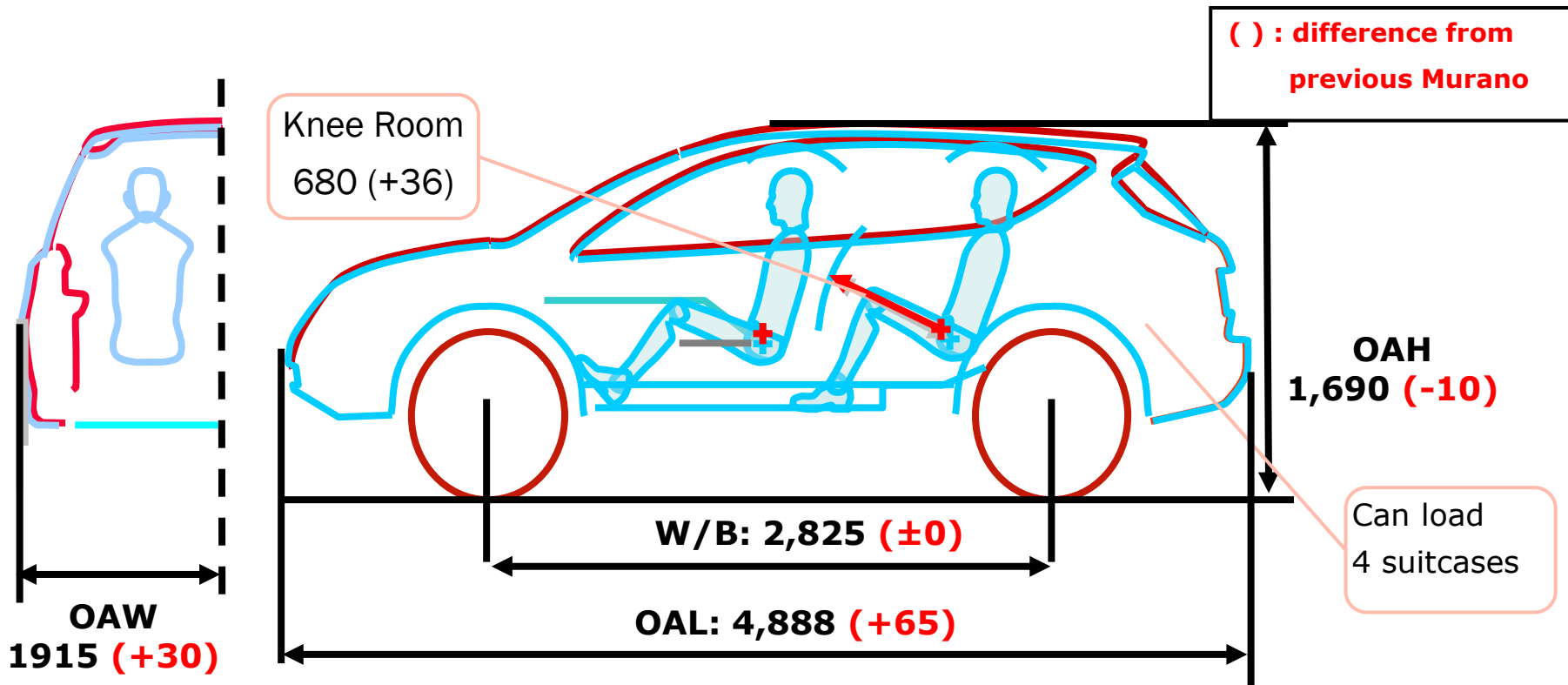
Great
Designs
in **STEEL** Seminar

Steel Matters  Demand Nothing Less
www.autosteel.org



Vehicle Dimensions

Overall vehicle size increased from previous Murano



Tread: 1,640 (+30)

Vehicle Light Weighting



Light weighting was achieved with the following strategies:

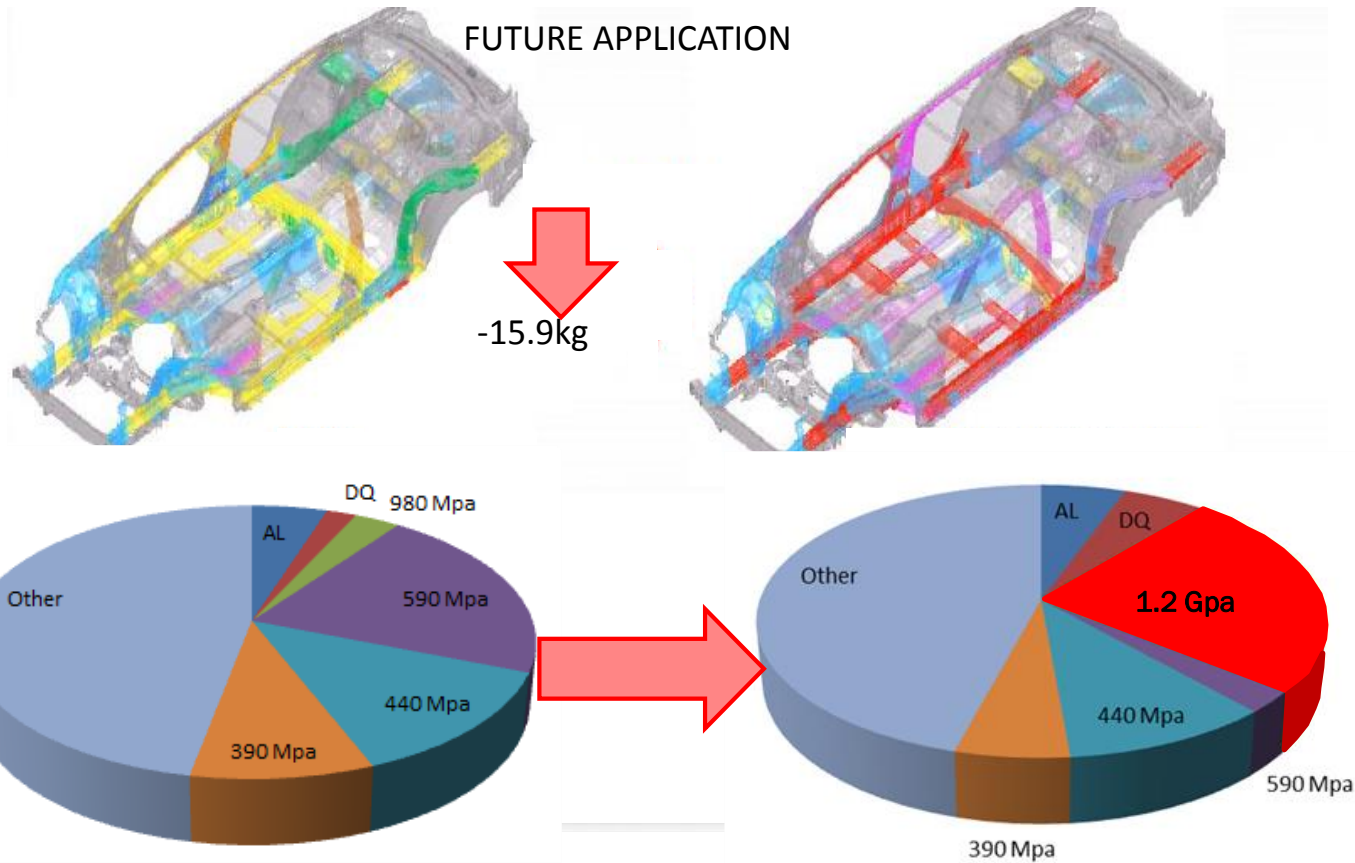
- Material Selection
- Structure Optimization
- Material Removal



Vehicle Light Weighting

Material Selection

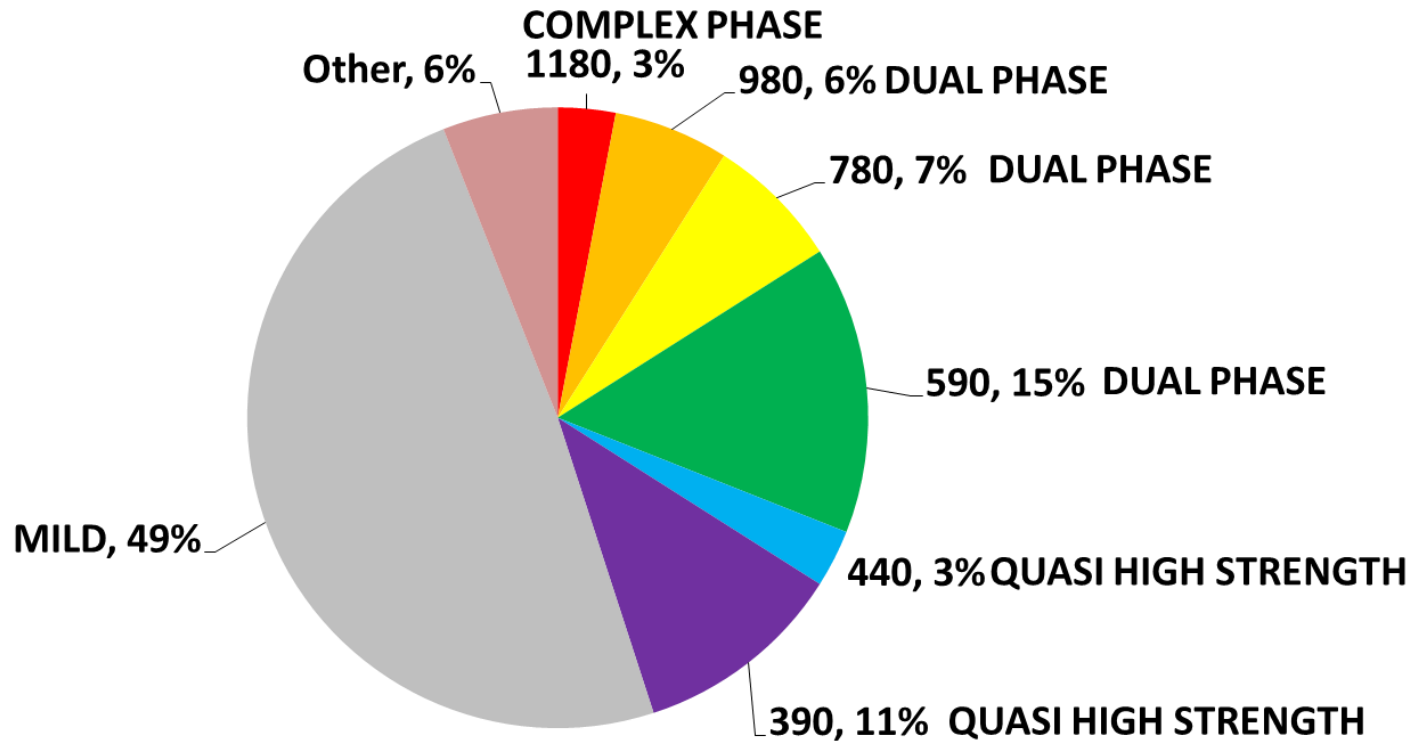
- Increase application of 1.2GPa



Steel Grade by % (Mpa)

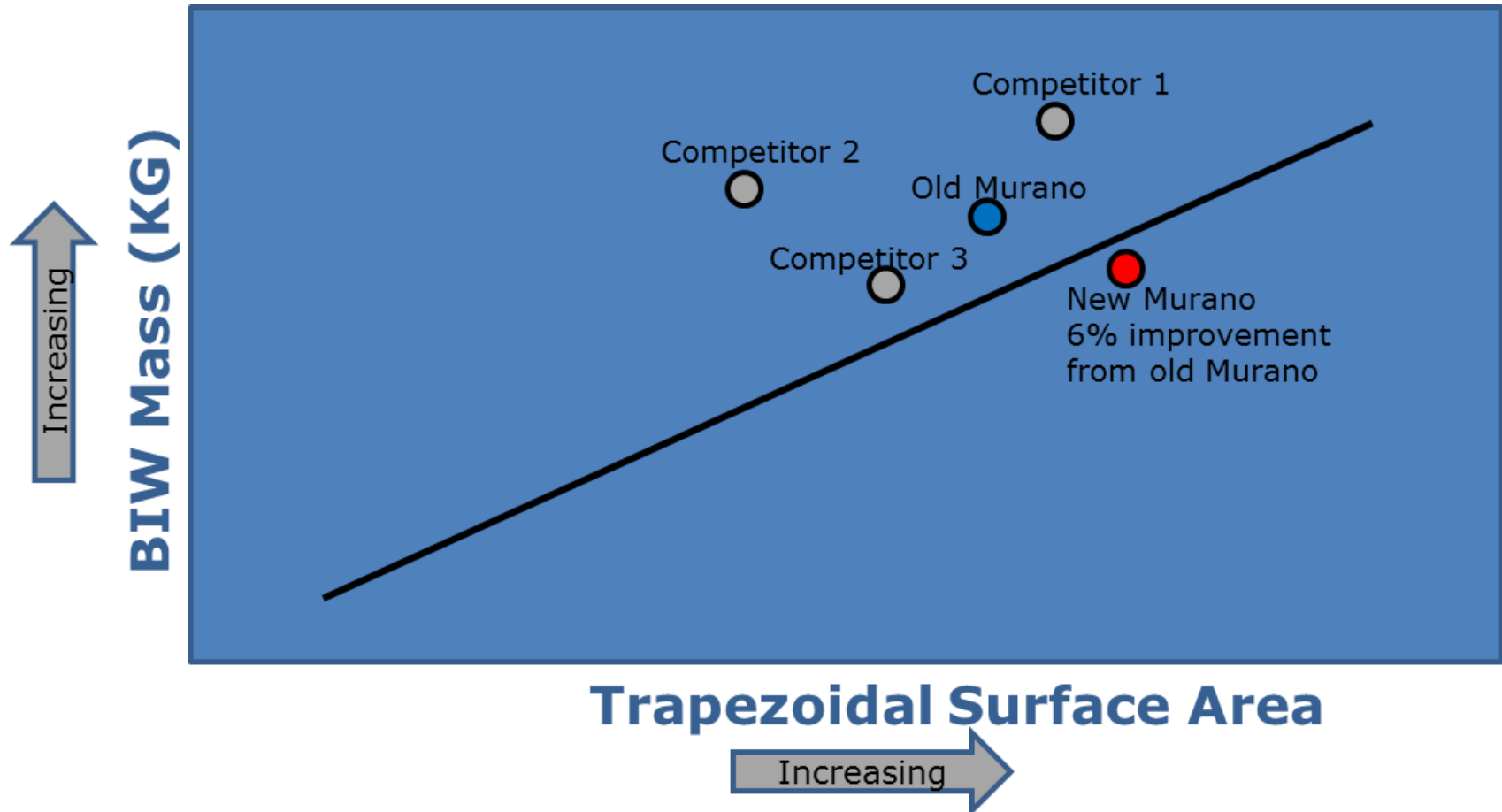


Newly adopted 1180 Mpa Advanced High Strength Steel along with an increased usage of 980MPa allowed Nissan to reduce panel thickness and reduce BIW mass by 6% from previous Murano.



Vehicle Light Weighting

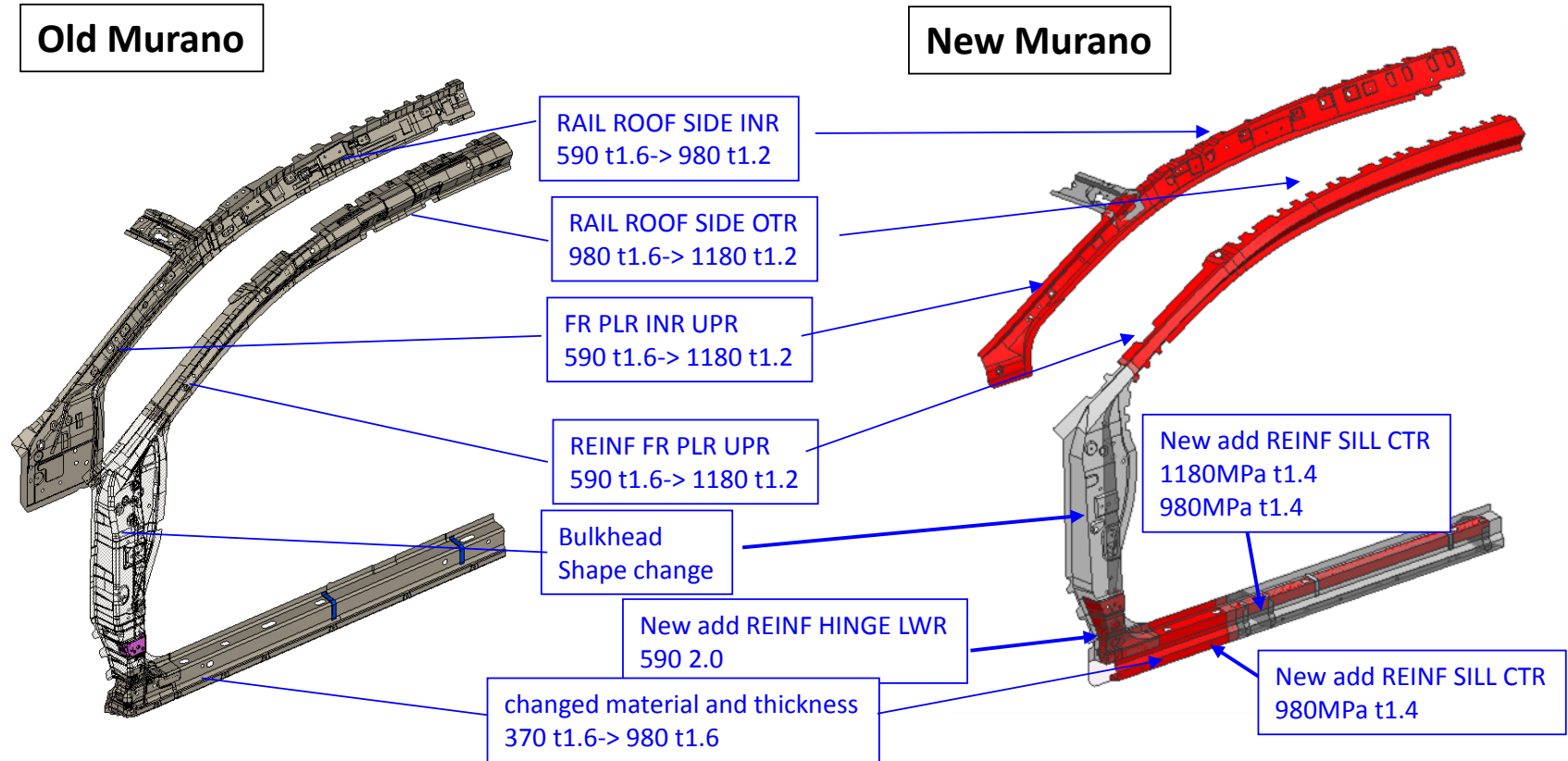
By using AHSS we are able to achieve our BIW mass benchmark



Vehicle Light Weighting

Material Selection

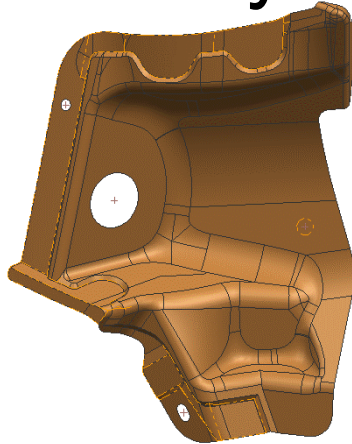
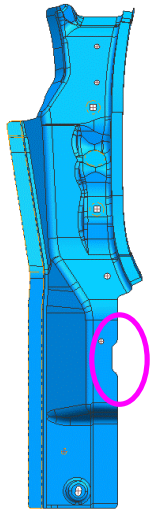
- Increase the YP and reduce material gage



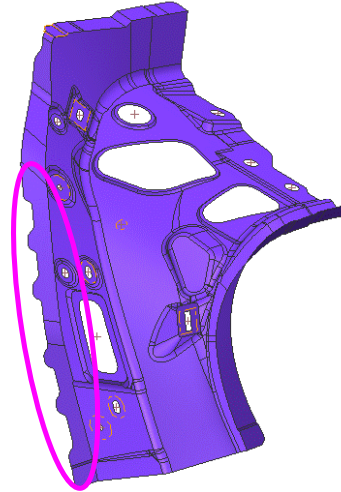
Vehicle Light Weighting

Material Removal

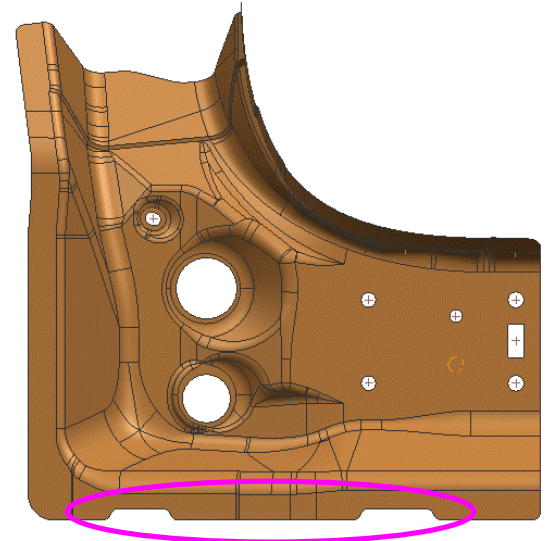
- Remove any unnecessary material



BASE-RR COMB thickness down
 $t=0.7 \leftarrow t=0.8$
▲ 55.8g /Vehicle



BRACE-ROOF RAIL RR
waving shape
▲ 31.6g /Vehicle

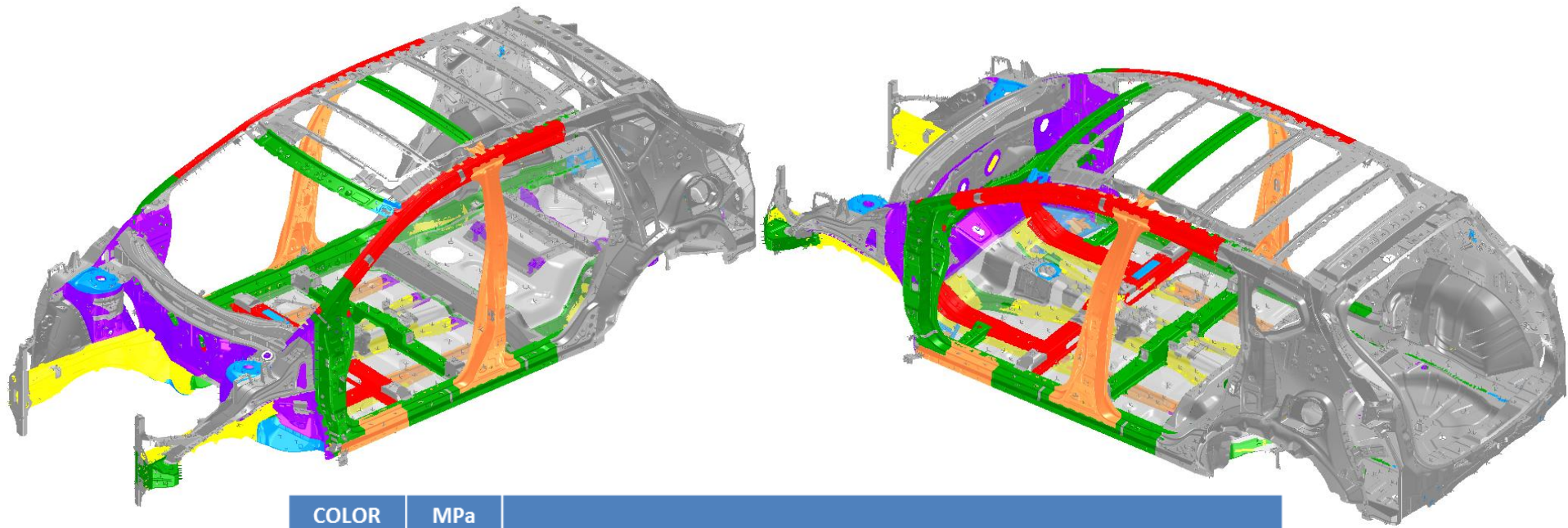


EXT-BASE RR COMB
waving shape
▲ 4.2g /Vehicle

BRACE-RR FDR
waving shape
▲ 10.1g /Vehicle

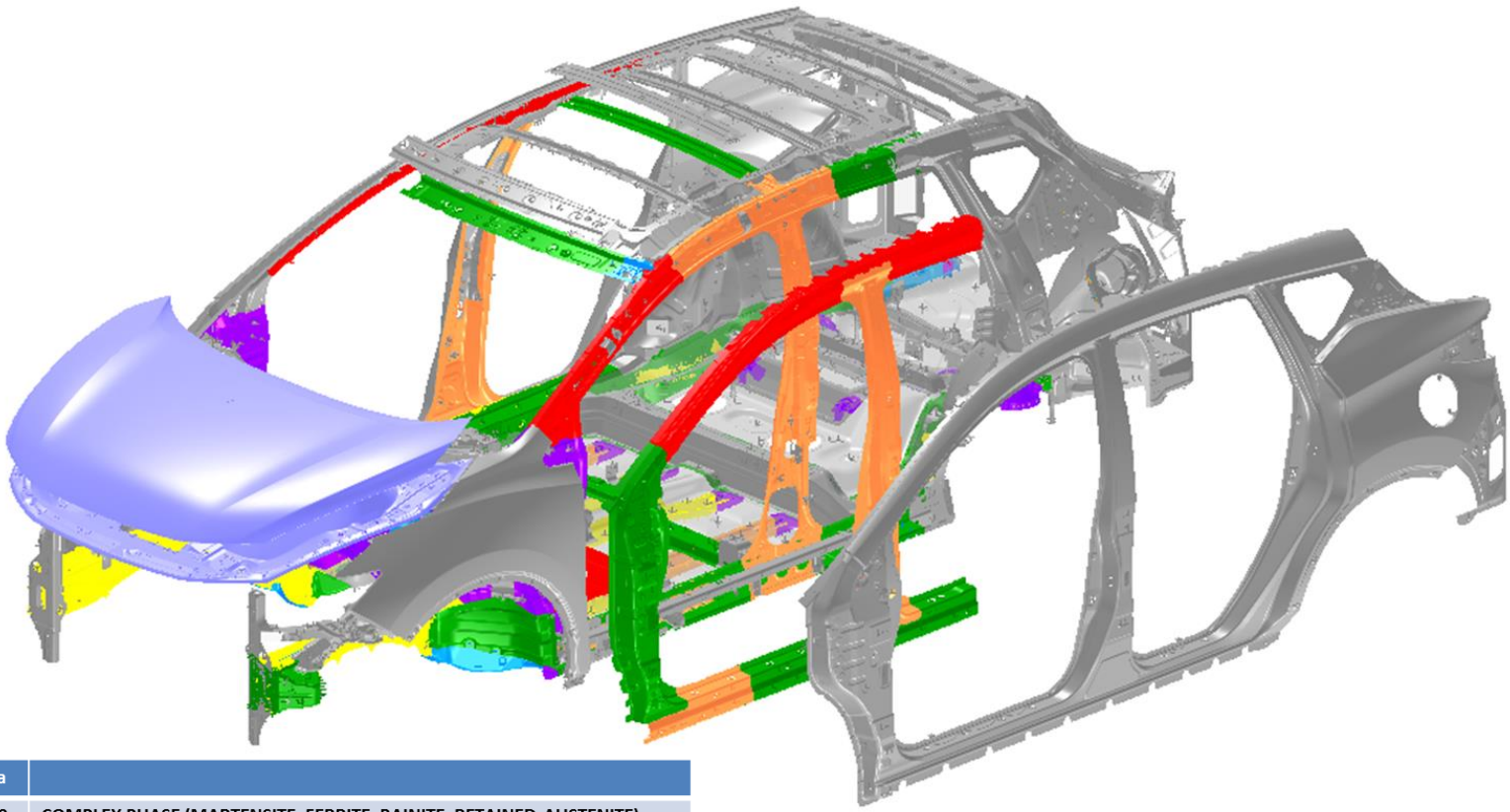


Nissan Murano Steel Grades



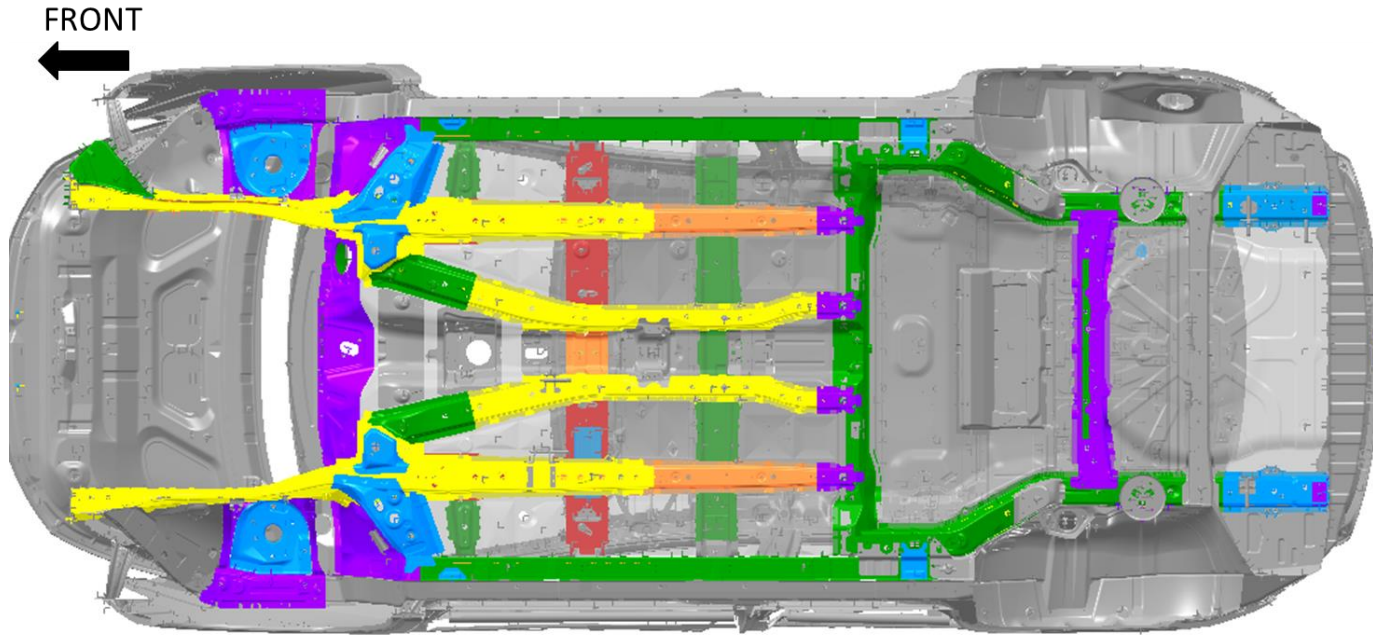
COLOR	MPa	
Red	1180	COMPLEX PHASE (MARTENSITE+FERRITE+BAINITE+RETAINED AUSTENITE)
Orange	980	DUAL PHASE (MARTENSITE+FERRITE)
Yellow	780	DUAL PHASE (MARTENSITE+FERRITE)
Green	590	DUAL PHASE (MARTENSITE+FERRITE)
Blue	440	QUASI HIGH STRENGTH
Purple	390	QUASI HIGH STRENGTH
Grey	MILD	SHOWN IN GREY (IN PICTURE) SHOWN IN WHITE (ON DISPLAY VEHICLE)

Nissan Murano Steel Grades



COLOR	MPa	
Red	1180	COMPLEX PHASE (MARTENSITE+FERRITE+BAINITE+RETAINED AUSTENITE)
Orange	980	DUAL PHASE (MARTENSITE+FERRITE)
Yellow	780	DUAL PHASE (MARTENSITE+FERRITE)
Green	590	DUAL PHASE (MARTENSITE+FERRITE)
Cyan	440	QUASI HIGH STRENGTH
Purple	390	QUASI HIGH STRENGTH
Grey/White	MILD	SHOWN IN GREY (IN PICTURE) SHOWN IN WHITE (ON DISPLAY VEHICLE)

Nissan Murano Steel Grades



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Nissan Murano Safety

IIHS Top Safety Pick +



Insurance Institute for Highway Safety
Highway Loss Data Institute

Highway safety research
& communications

RATINGS

NEWS

TOPICS

VIDEO

STATUS REPORT



HOW IT'S DONE

The 2015 Nissan Murano delivers stellar protection in small overlap crashes, but other midsize SUVs struggle with the test.





Nissan Murano Safety

The Insurance Institute for Highway Safety tested seven midsized SUV's for 2015 model year. Murano was the best performer

The usage of AHSS was a major contributor to the IIHS Good achievement in all tests.

2015 TOP SAFETY PICK+

2015 Nissan Murano

Midsized SUV

CRASHWORTHINESS

- Small overlap front
- Moderate overlap front
- Side
- Roof strength
- Head restraints & seats

FRONT CRASH PREVENTION

SUPERIOR
with optional equipment

Check for recalls

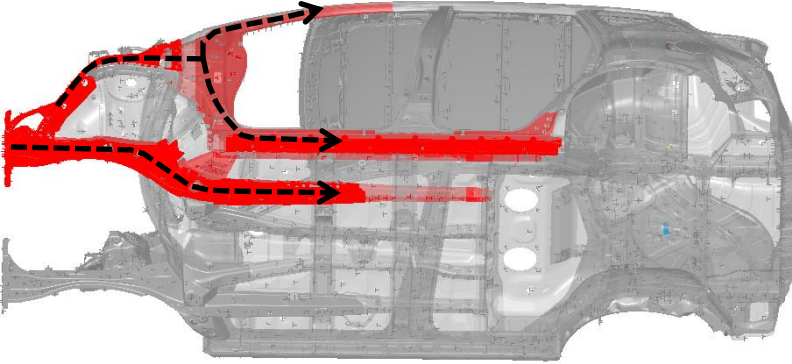


2015 Nissan Murano

IIHS MODERATE OVERLAP

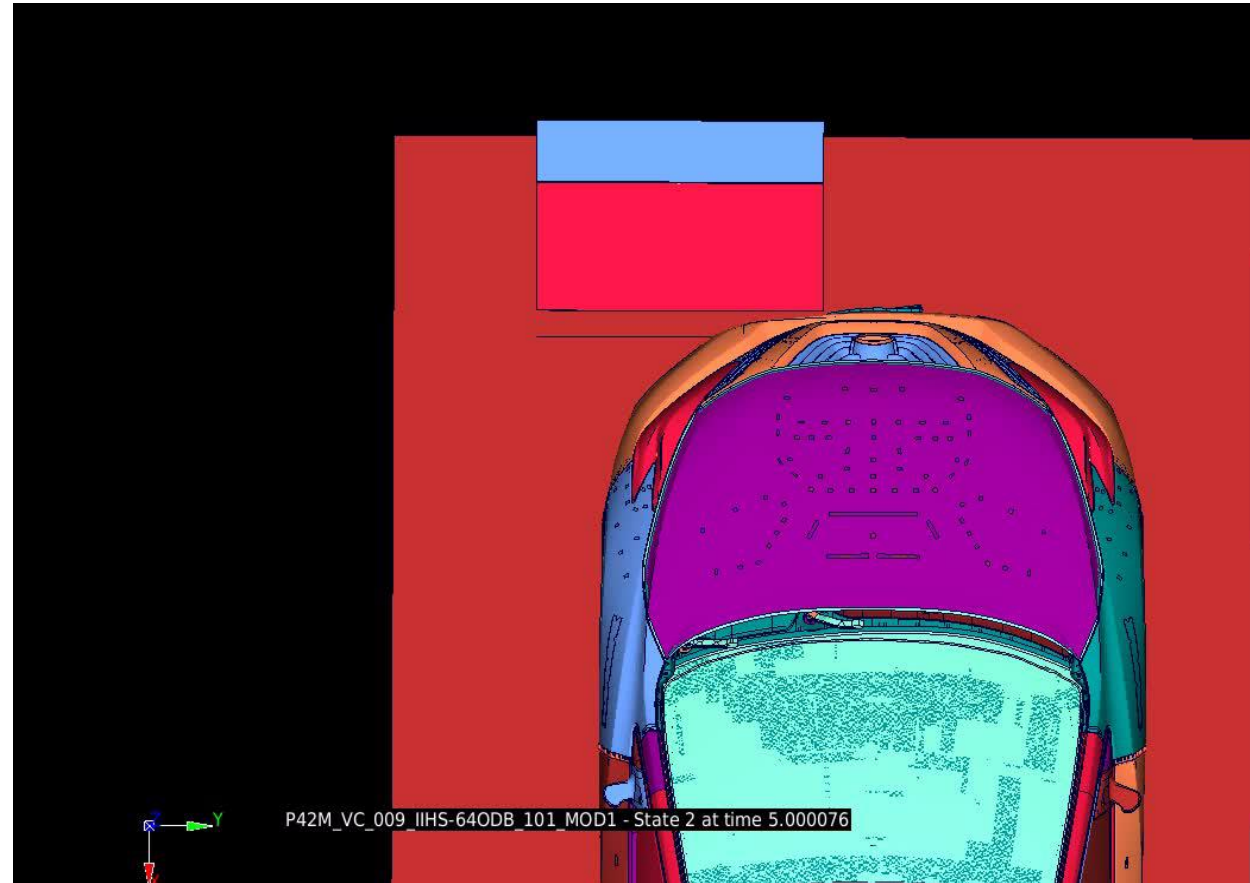
Achievement for Moderate Overlap is **GOOD**

Under View
Load Path



IIHS Moderate Overlap

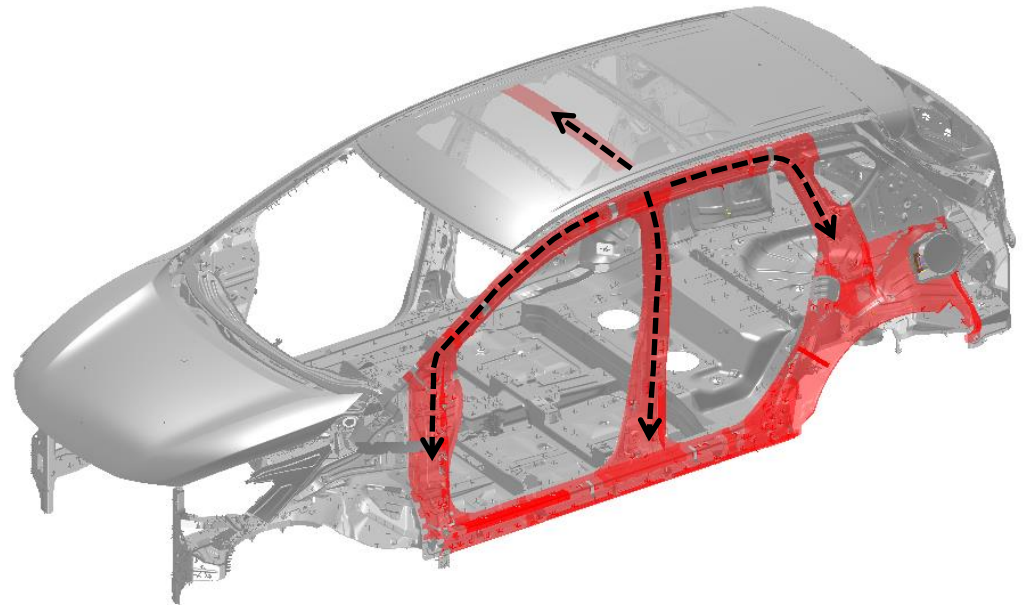
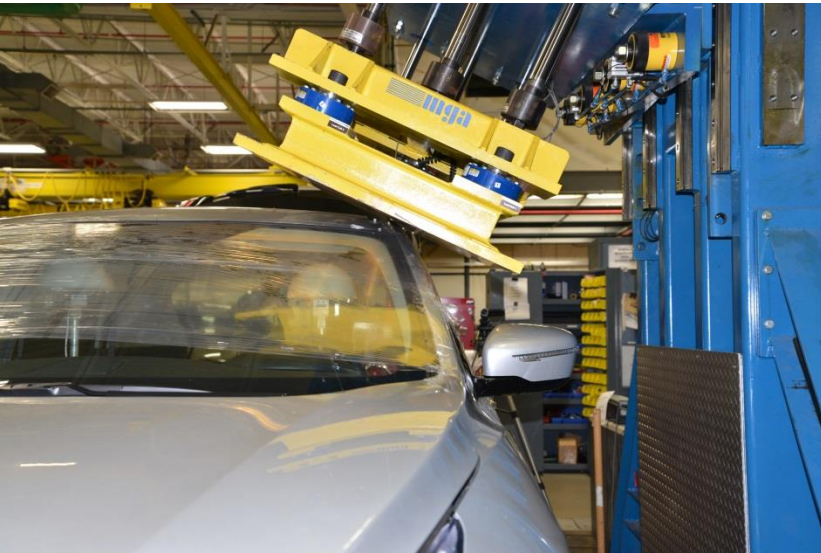
Load distribution through the Front Side Members, Floor Rails, A/Pillar, & Sill allow for optimized structure for steel material grade & thickness selection



IIHS Roof Crush

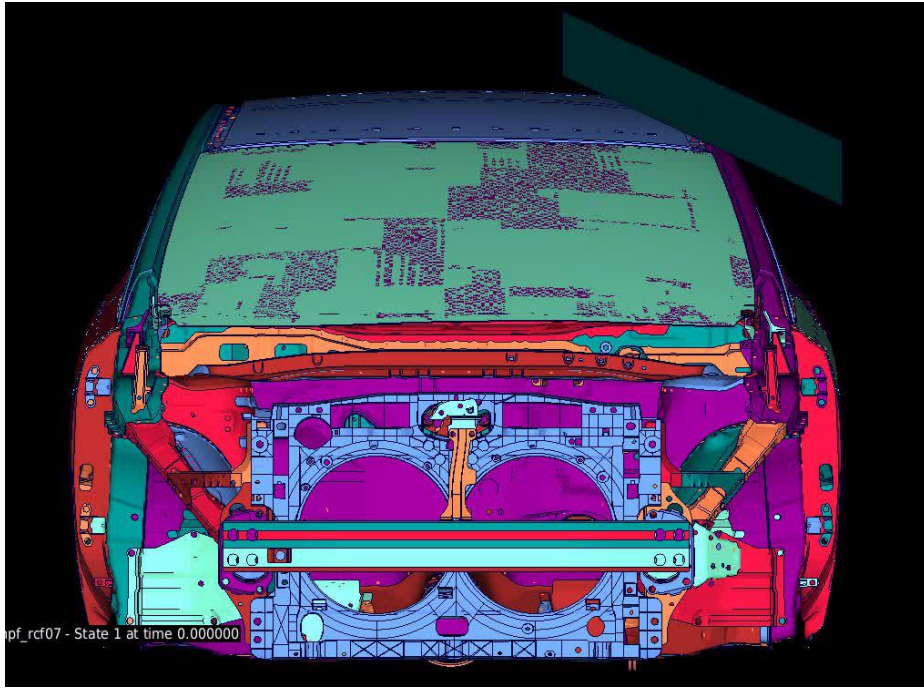
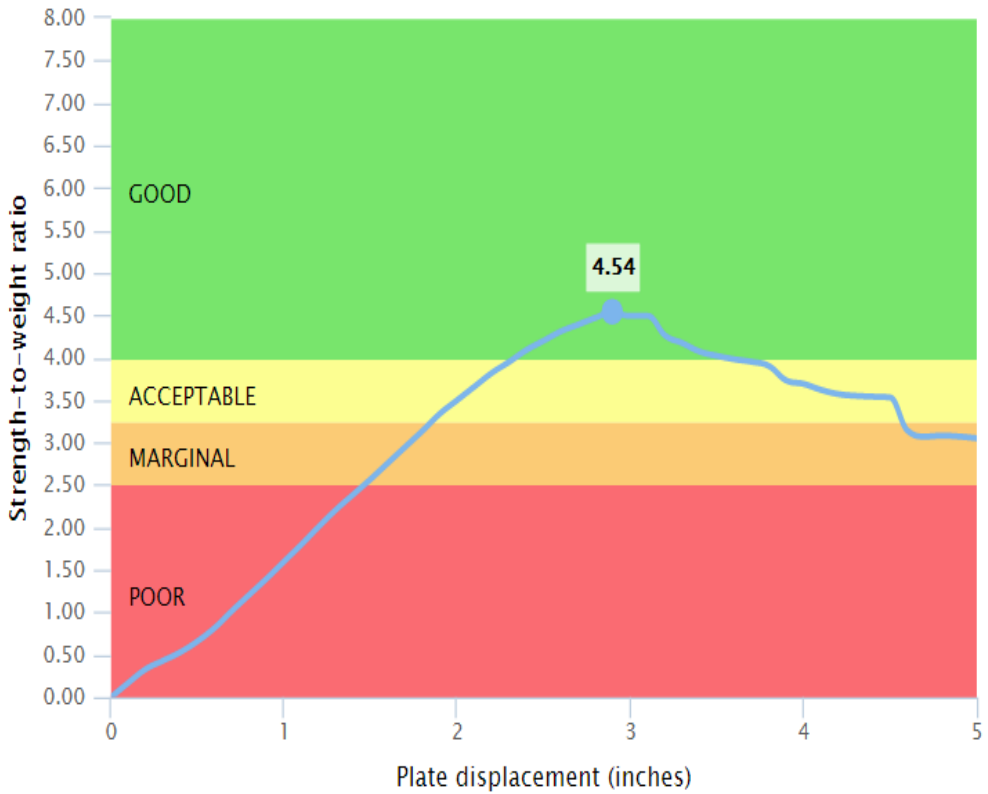
The upper body construction minimizes the intrusion into the occupant compartment through the application of high strength steels.

- Roof strength achievement with smaller section sizes to meet visibility and roominess targets.



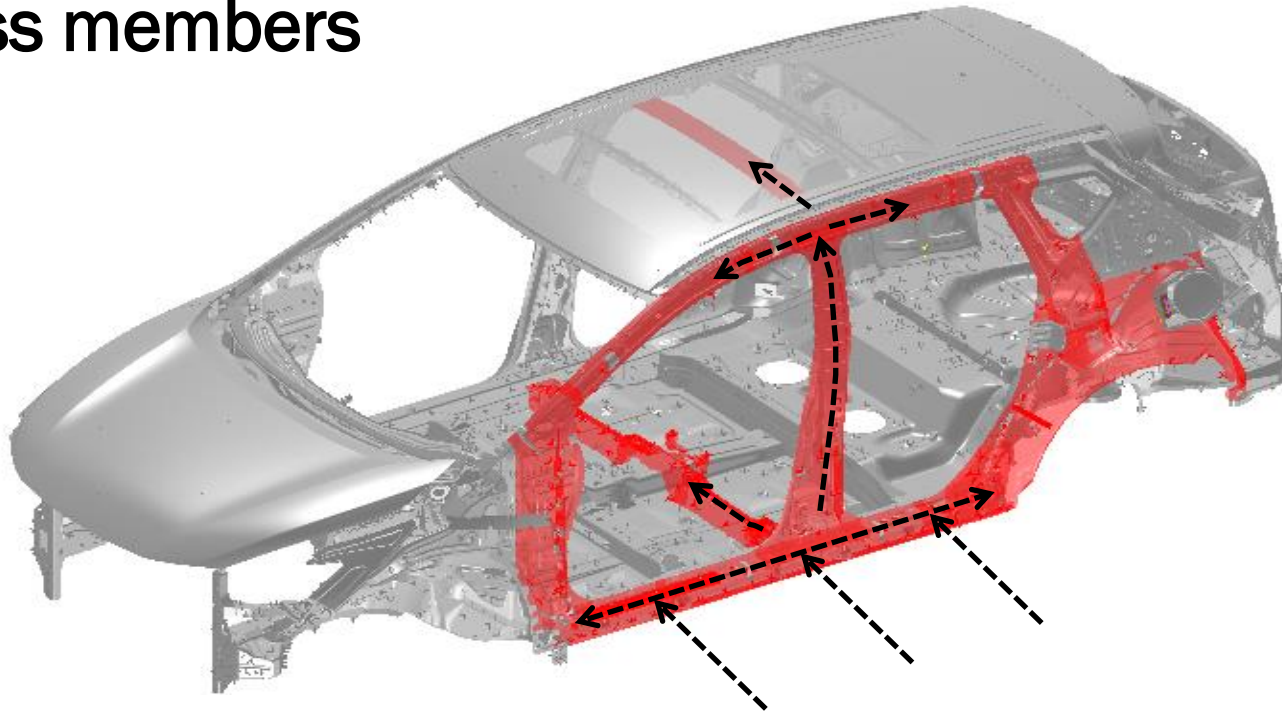
IIHS Roof Crush

Achievement for Roof Crush is **GOOD**



Side Impact

Mult-Load path distribution through the Sill, B/Pillar and Floor cross members

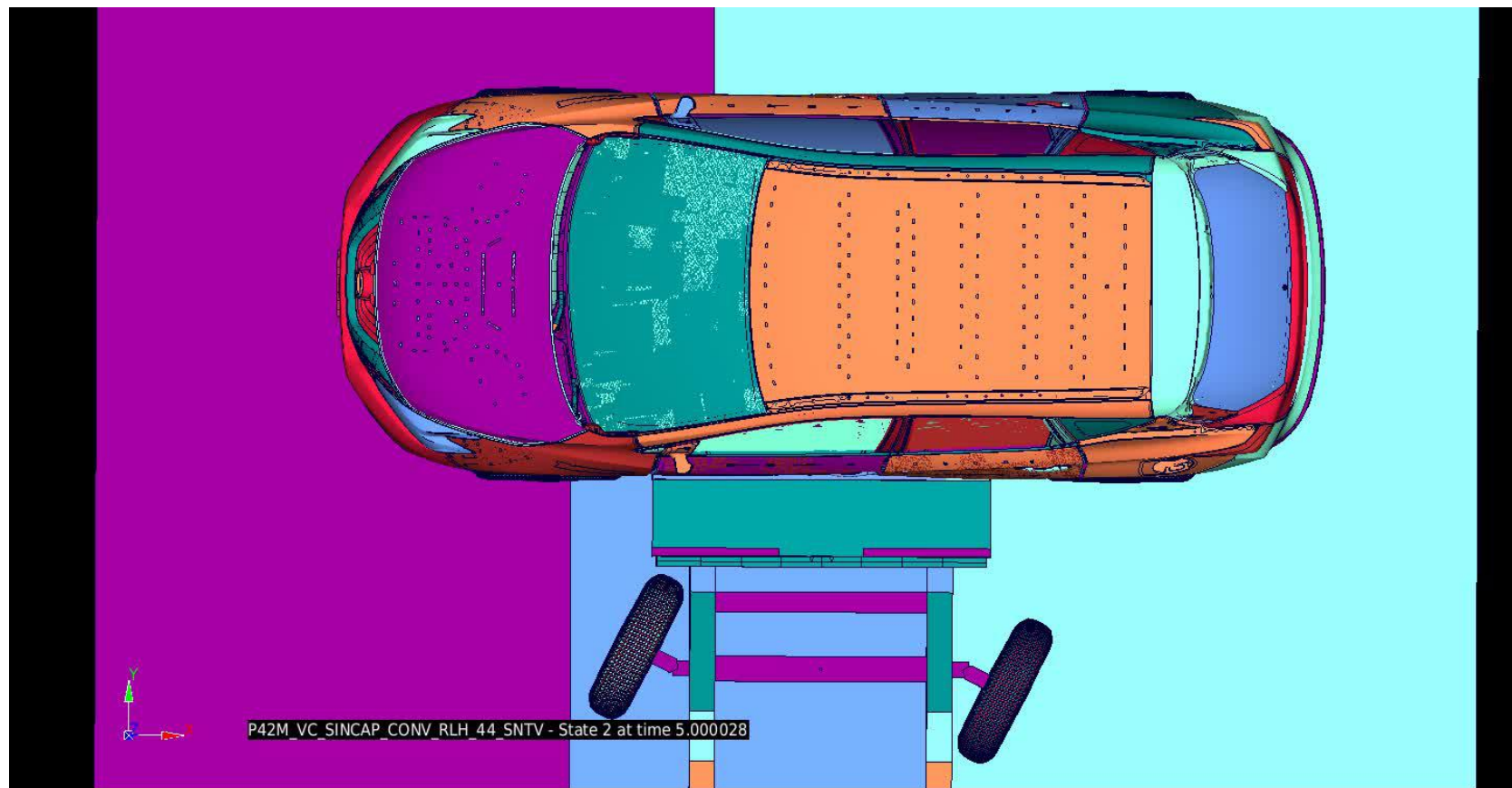


Load Path

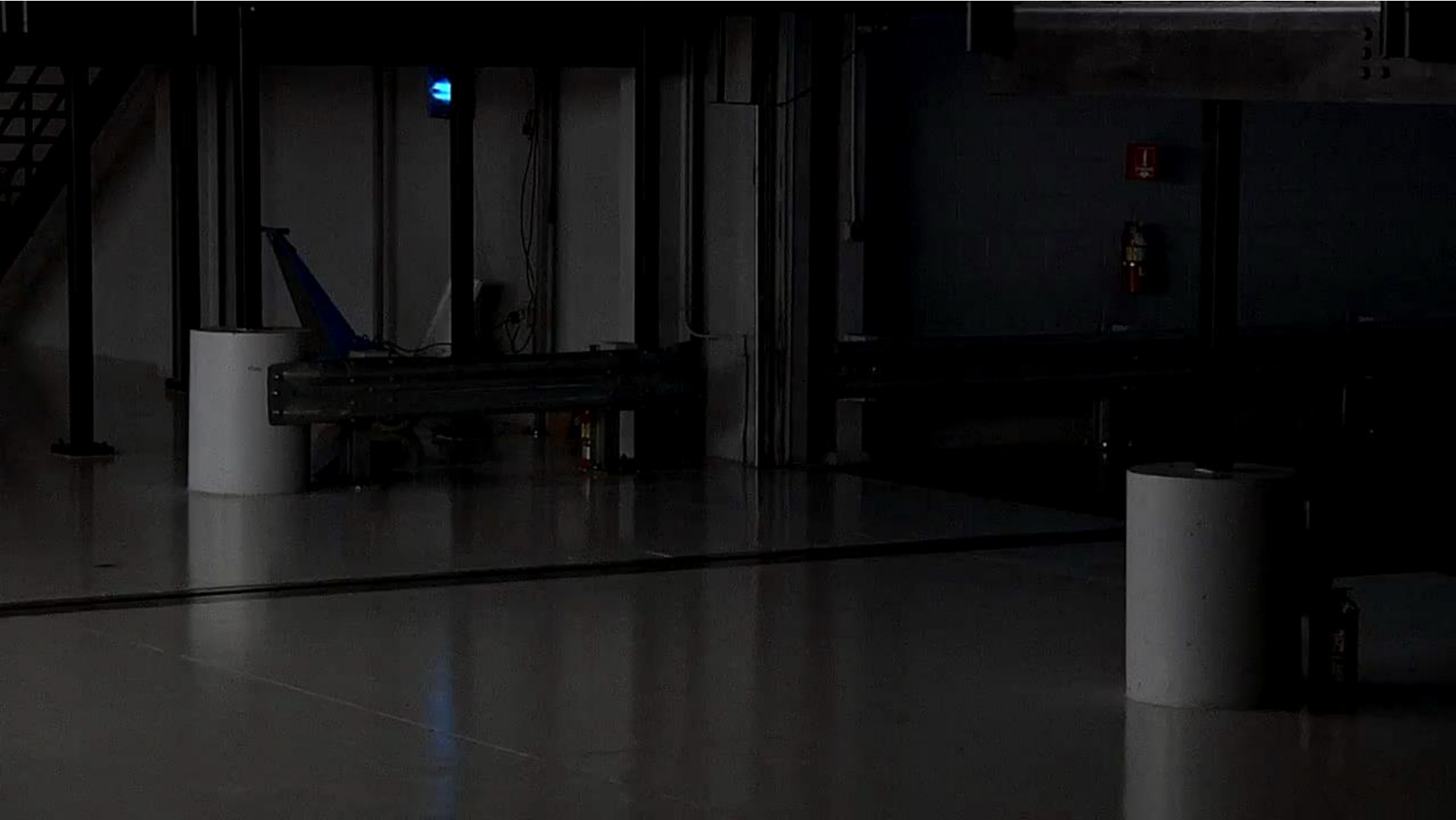
Sincap Side Impact



Achievement for SINCAP Side Impact is **5 Star**

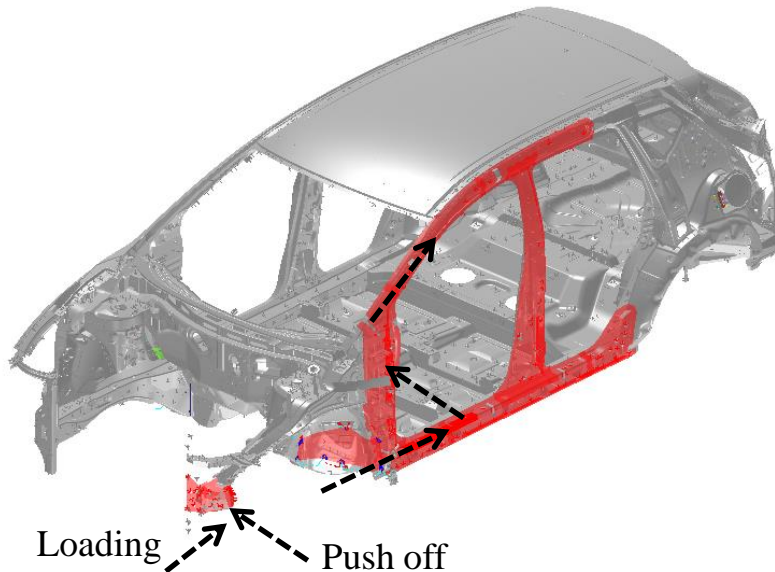


IIHS Small Overlap



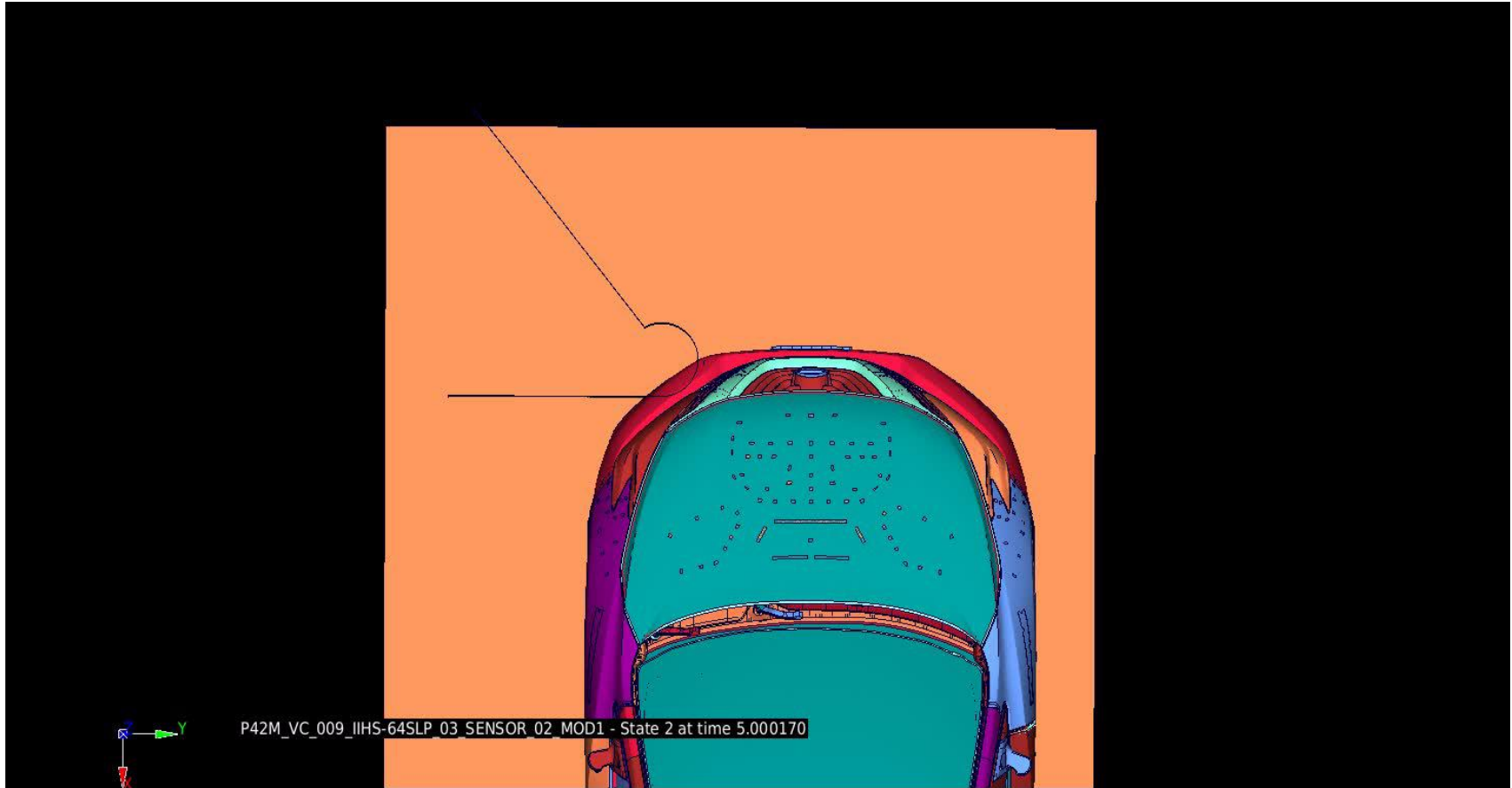
IIHS Small Overlap

Achievement for Small Overlap is **GOOD**



Push off the barrier in the front structure
Manage energy in the Sill & A/Pillar

IIHS Small Overlap



THANK YOU FOR YOUR ATTENTION



Great
Designs
in

STEEL

Seminar

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