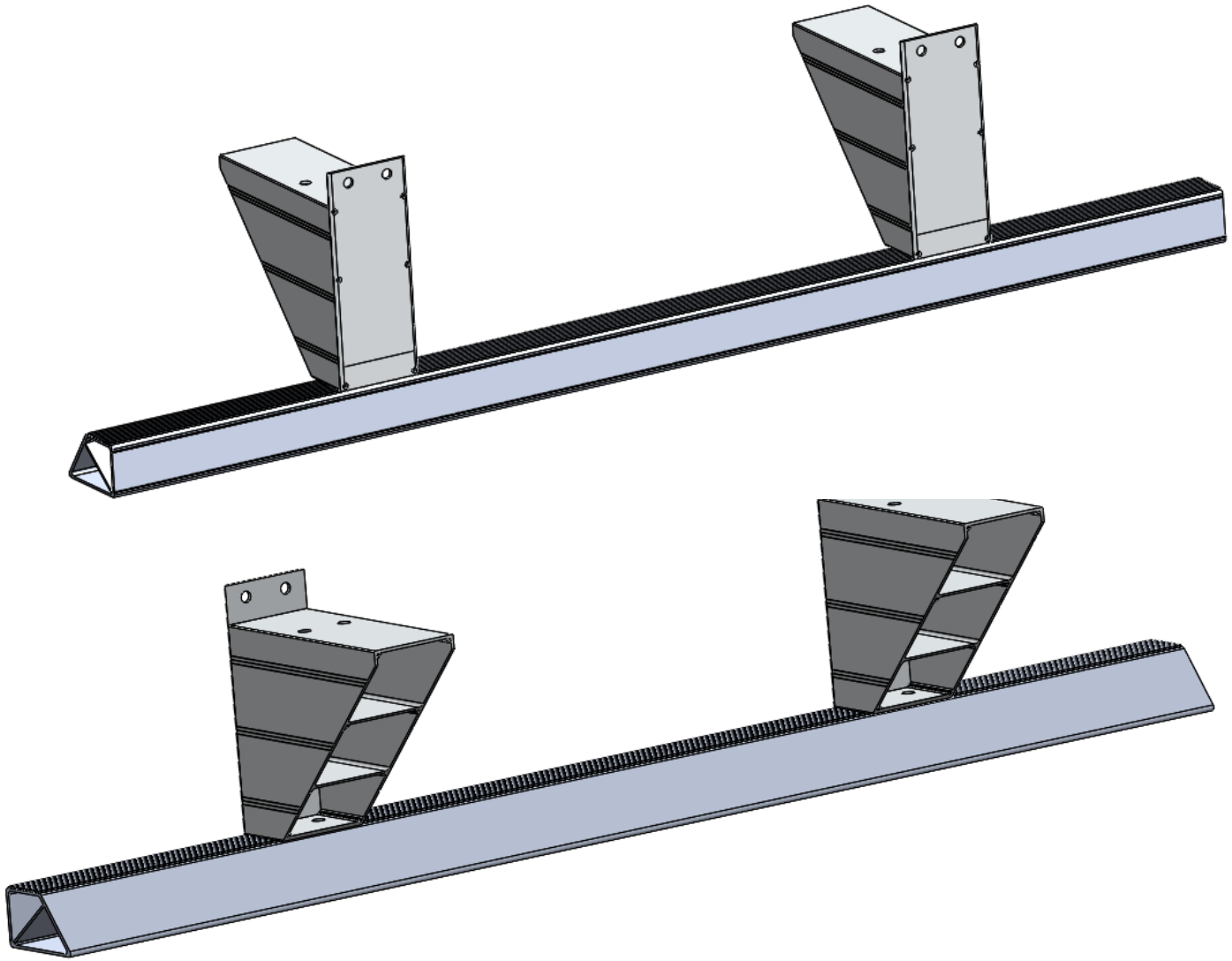
Hydro Concept RIG

SAPA RIG 2017 Testing

Original Goals

2012

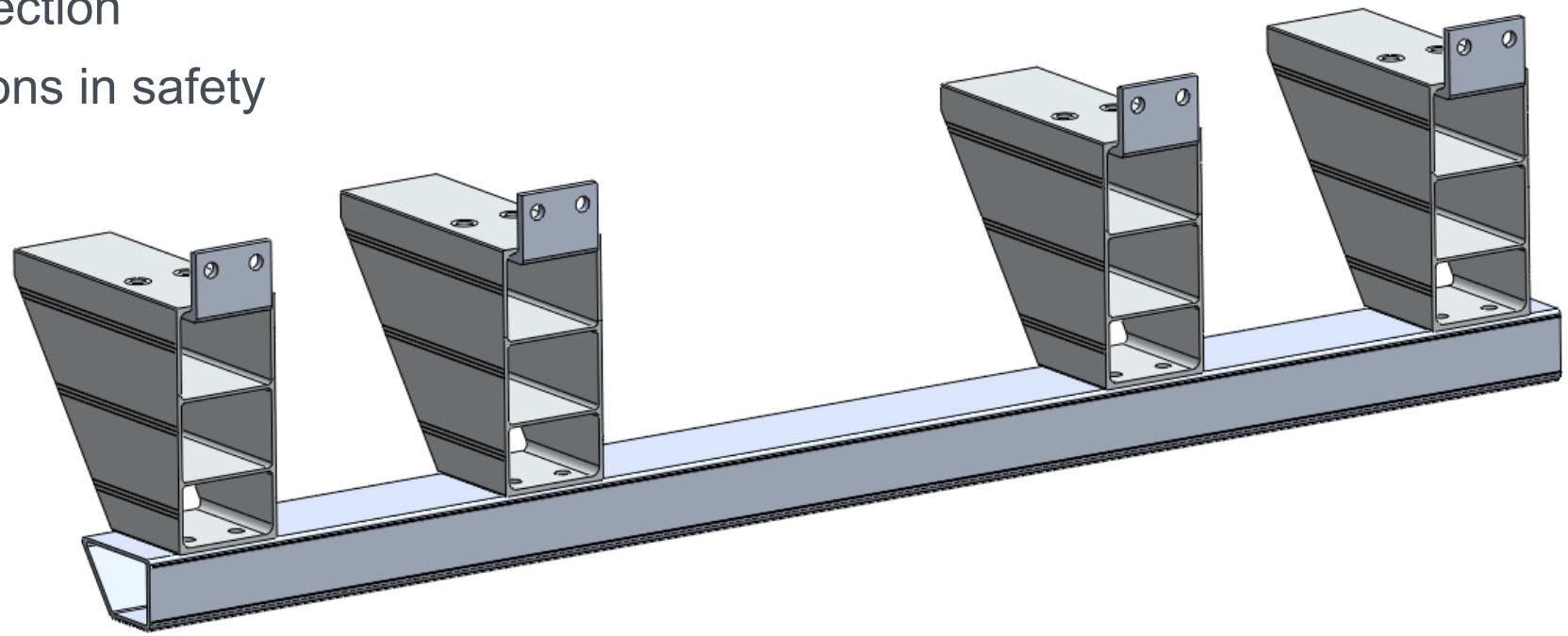
1. Weight reduction
2. Reduce fabrication
3. Eliminate coating
4. Match strength



Priority Change

2015

1. **Safety** – strength, energy absorption, overlap/offset crash protection
2. Exceed all current solutions in safety
3. Reduce fabrication
4. Eliminate coatings
5. Match weight



35-30 RIG Test Specifications

1995 Vanco Outfitted with 35/30 Sapa Aluminum RIG

Vehicle identification number:	1VVW5321S1009997
Body style:	53 ft. dry van semi-trailer

2012 Chevrolet Malibu

Vehicle identification number:	1G1ZD5EU5CF348603
Body style:	Midsize 4-door sedan
Engine/transmission:	Transverse 2.4 liter 4 cylinder, 6 speed automatic front wheel drive

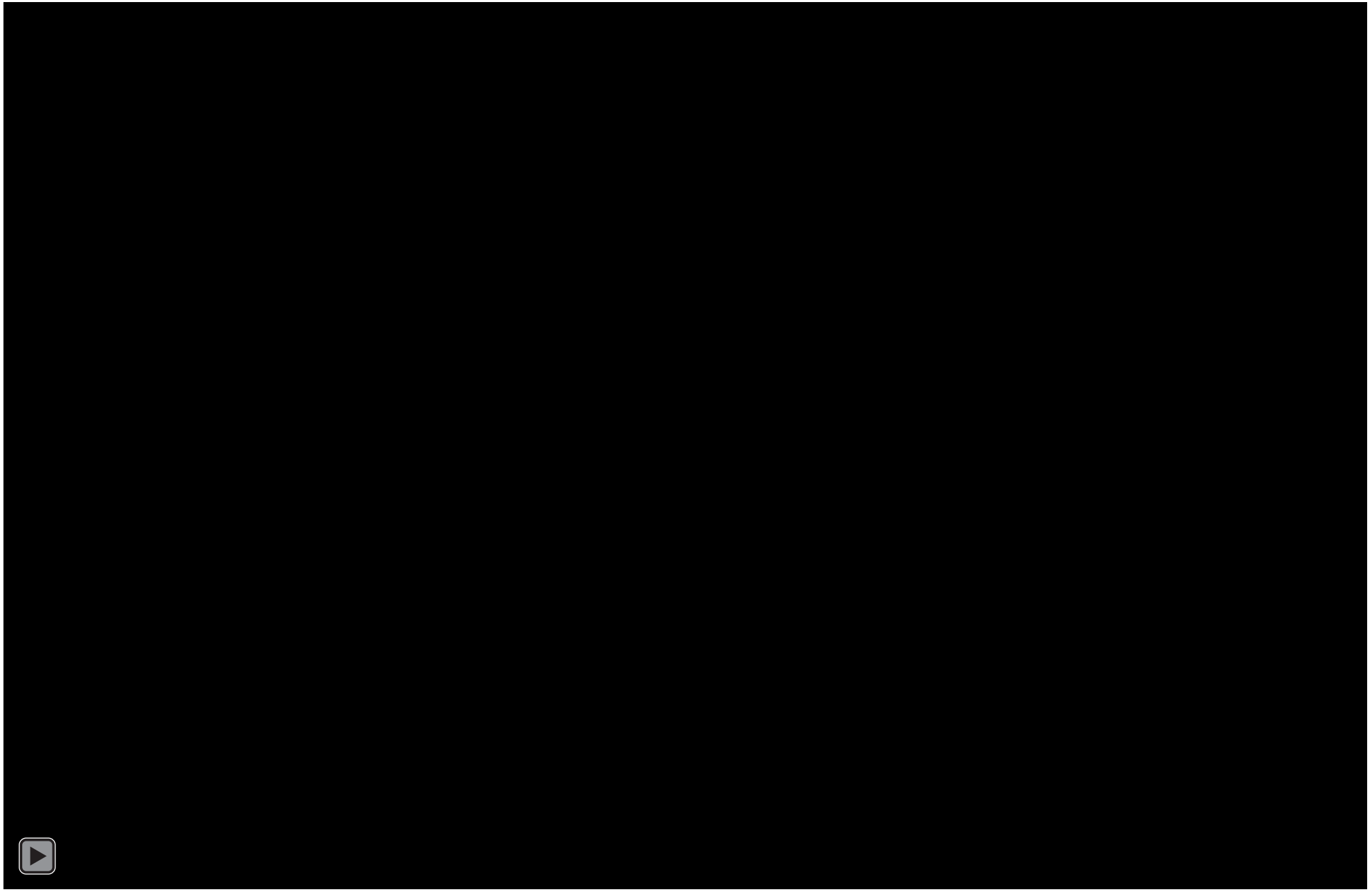
35-30 RIG Test Protocol

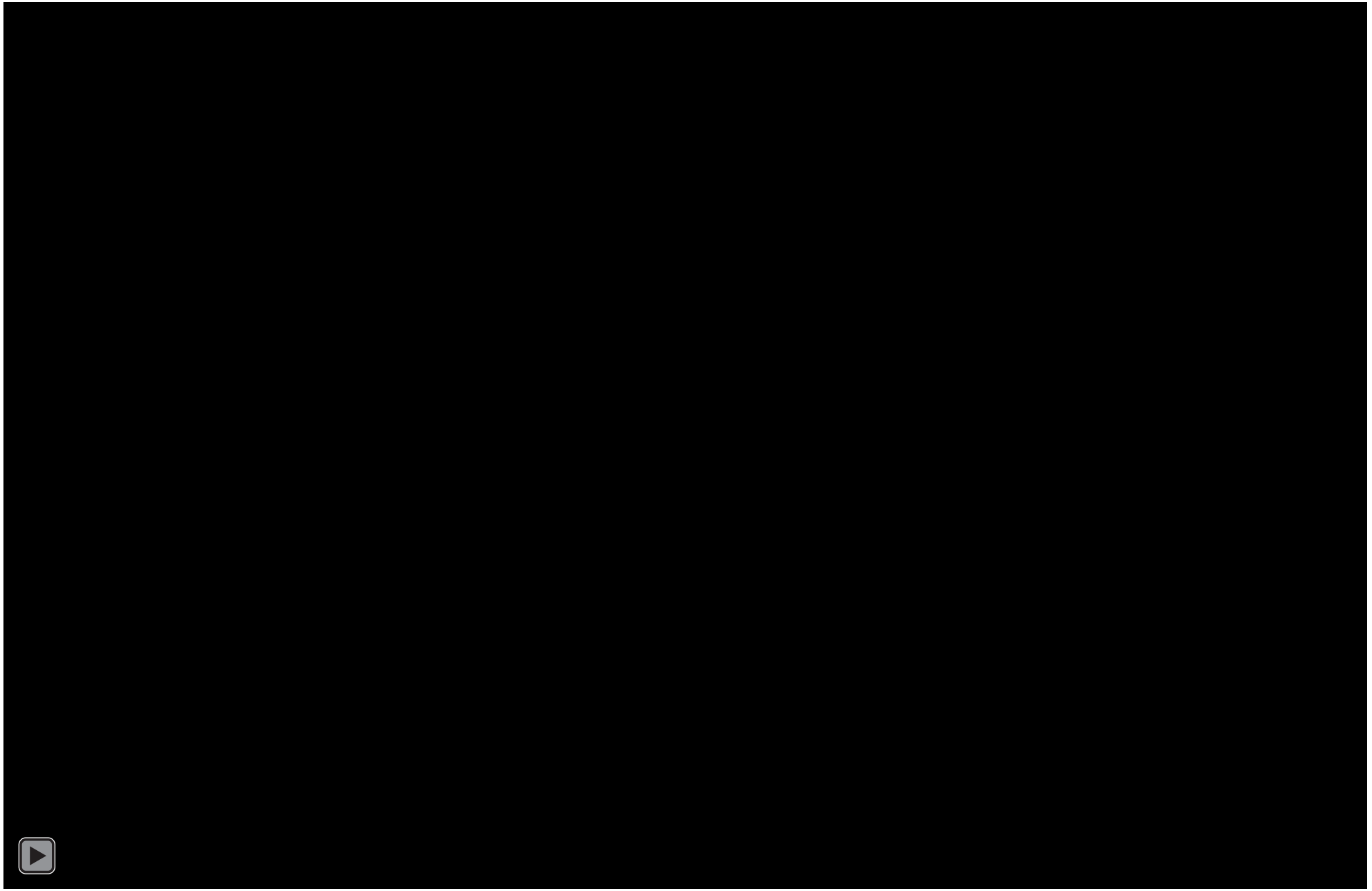
Modified version of the IIHS 30% Overlap Semi-Trailer Underride Evaluation Crash Test Protocol.

Nominal Test Parameters

56.3 km/h (35 mph), *30% overlap of Malibu's width

*Measured from the trailer's outer wall surface, not the outer edge of the RIG horizontal member as in the IIHS protocol. This testing reduced the Malibu / RIG overlap to approximately 44.67 cm (17.59 in) compared to the IIHS 30% overlap protocol which would have been approximately 53.55 cm (21.1 in).





Hydro

Before

After

No PCI

40-30 RIG Test Specifications

1995 Vanco Outfitted with Gen 3 Sapa RIG

Vehicle identification number:	1VVW5321S1009996
Body style:	53 ft. dry van semi-trailer

2012 Chevrolet Malibu

Vehicle identification number:	1G1ZC5EU2CF379178
Body style:	Midsize 4-door sedan
Engine/transmission:	Transverse 2.4 liter 4 cylinder, 6 speed automatic front wheel drive

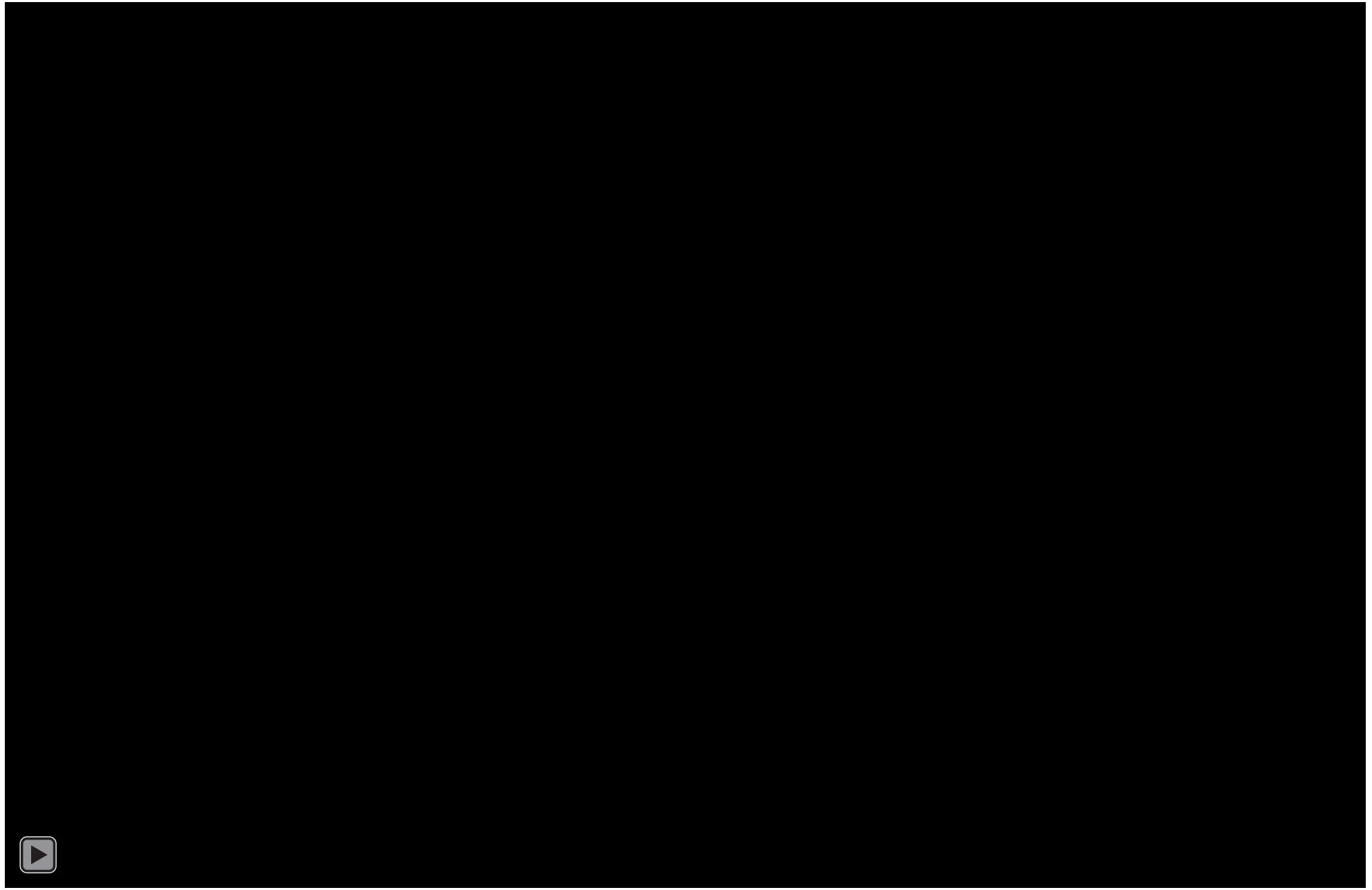
40-30 RIG Test Protocol

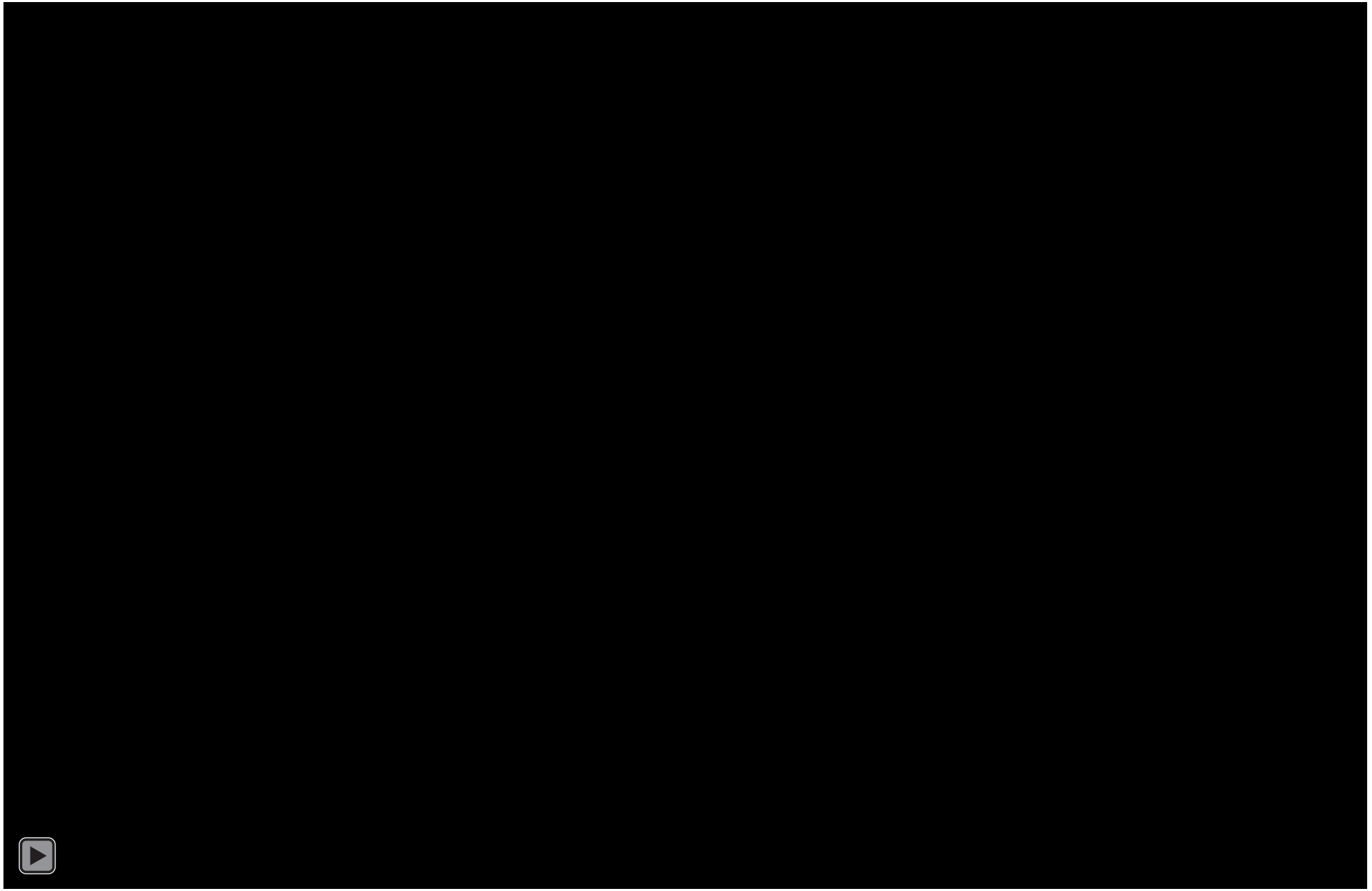
Modified version of the IIHS 30% Overlap Semi-Trailer Underride Evaluation Crash Test Protocol.

Nominal Test Parameters

64 km/h (40 mph), 30% overlap of Malibu's width (measured from the trailer's outer wall surface, not the outer edge of the RIG horizontal member as in the IIHS protocol).

*Measured from the trailer's outer wall surface, not the outer edge of the RIG horizontal member as in the IIHS protocol. This testing reduced the Malibu / RIG overlap to approximately 44.67 cm (17.59 in) compared to the IIHS 30% overlap protocol which would have been approximately 53.55 cm (21.1 in).





Hydro

Before

After

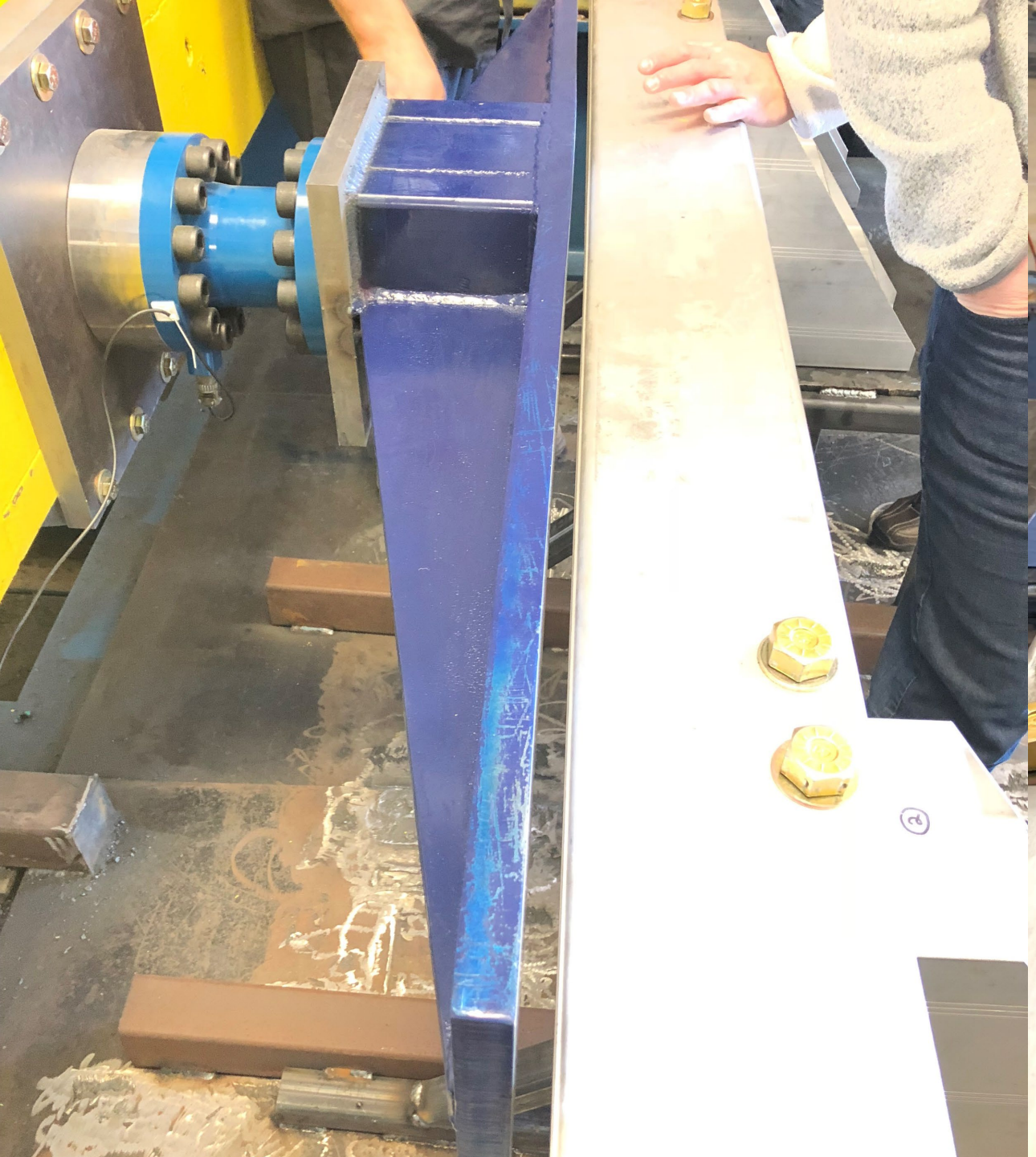
No PCI

Hydro

NHTSA Testing 3530

Karco Engineering 3/15/18

- NHSTA purchases both designs for testing
- Karco eventually completes 3530 RIG testing in all standard configurations
- First test 3530 bends steel fixture pusher plate on 1st test



NHTSA Testing 4030

Karco Engineering 3/15/18

- One test was made on 4030 before irreparably damaging the entire testing fixture
- Canadian overlap 60” centered load
- 665kN (125mm) displacement
- Bent loading plate severely (1.5” each end)
- Bend steel fixture mount .5” down and sideways
- Further testing was not possible with damage to the fixture, pusher, and press floor


sapa:

Hydro

Industries that matter