

# **The New Version of the Monorails for the Drift C3 Area of the Ladder Lab @ Snolab**

The new retrofit design of the mounting adapters to the existing 12 ton lifting hitches.

## **The Main Function of the Monorail:**

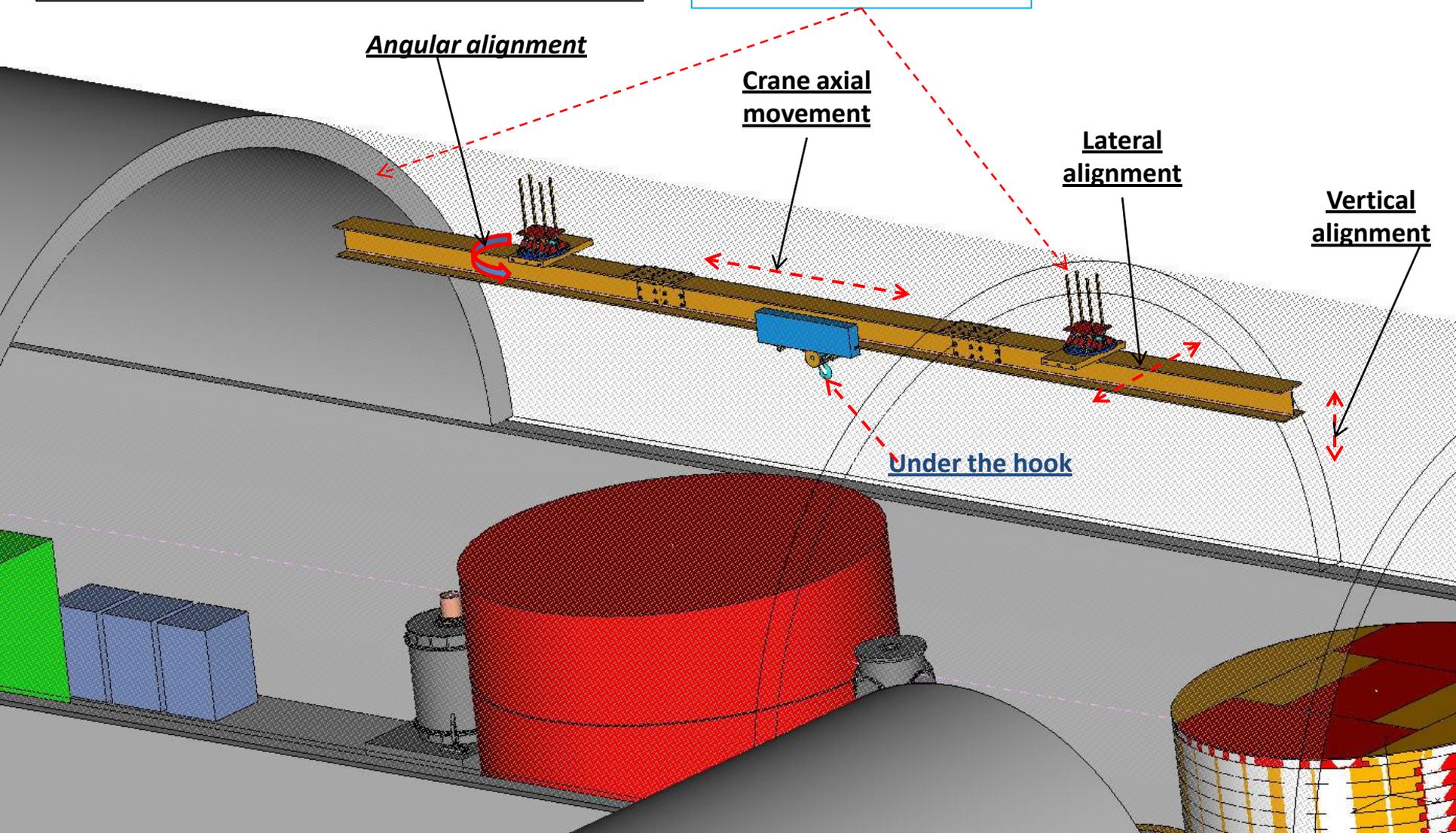
- *As a guide way for the hoist, the crane hoist moves in the axial direction of the Monorail.*
- *As a structural support for the lifting hoist and the lifting objects within its lifting specifications per applicable industrial codes.*

## **The main feature & specification of the Monorail:**

- *Retrofits with the existing 12 ton ceiling lifting hitches*
- *to connect different hitches by the alignment in lateral, vertical and angular dir. through the special design features of the Monorail.*
- *3 ton (metric) lifting capacity, 241" under the hook vertical lifting distance, 39 ft rail axial travel distance.*

## Main features of the new Monorail design

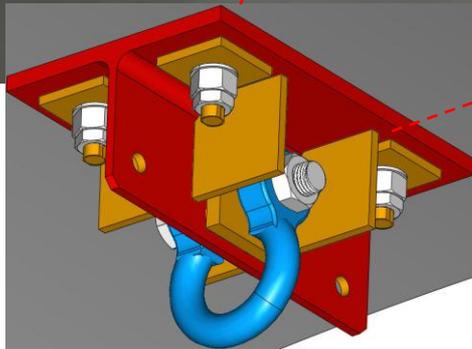
## Ladder Lab Drift C3 ceiling



- **Angular alignment:** +/- 13 deg., see page 11
- **Lateral alignment:** 24", see page 12
- **Vertical alignment:** See page 10 & page 13.
- **Crane hoist movement:** 39 ft, see pages 14 & 15.
- **Under hook net height:** 241", see page 15.



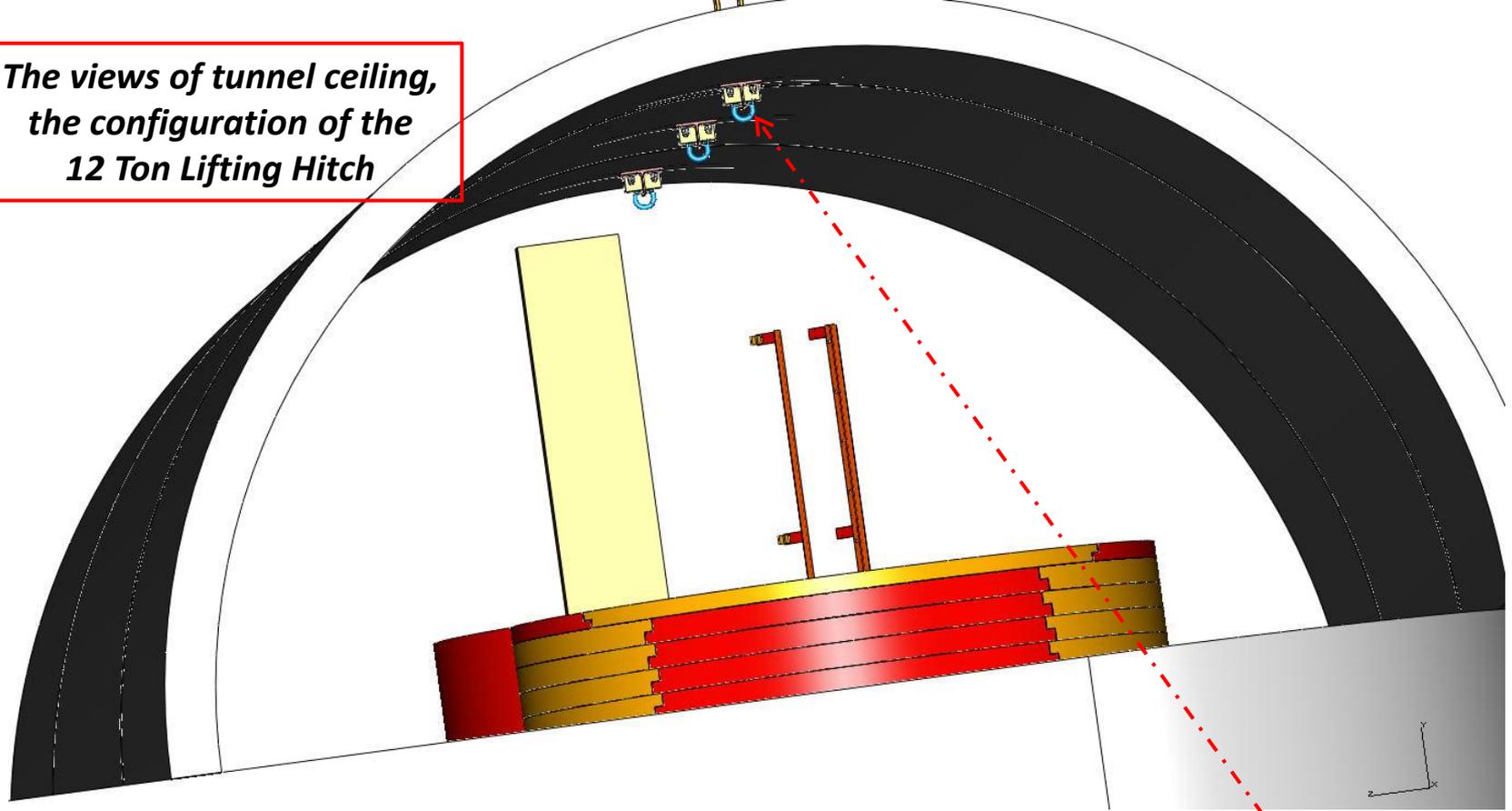
The views of the experimental area



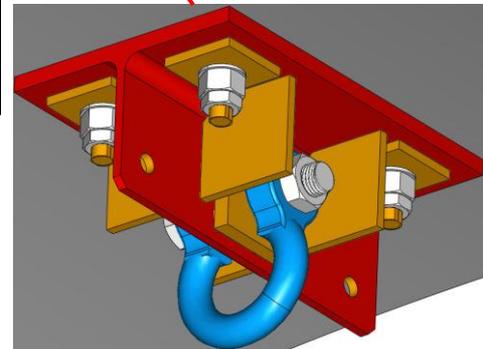
**12 ton lifting hitch**

Edward Chi, 04/28/2011

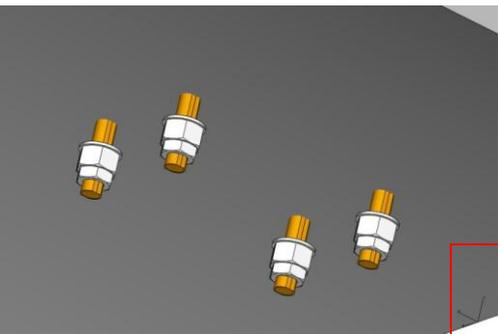
**The views of tunnel ceiling,  
the configuration of the  
12 Ton Lifting Hitch**



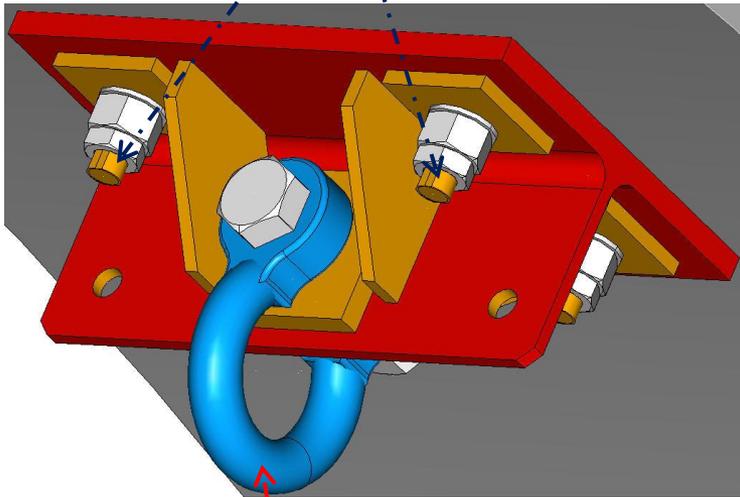
**The view of the existing  
12 Ton Lifting Hitch mounted  
on the ceiling**  
(per dwg. #99-071-E-02649)



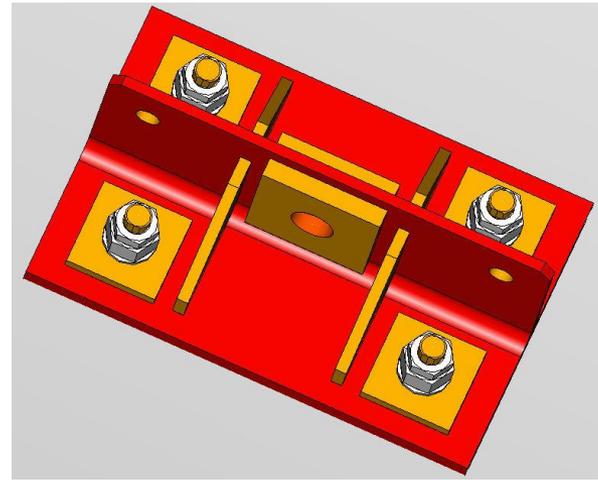
**The view of the existing 4  
Dywidag Threadbar  
From the tunnel ceiling**  
(after removed the existing  
mtg. bracket and the 12 Ton  
anchor shackle)



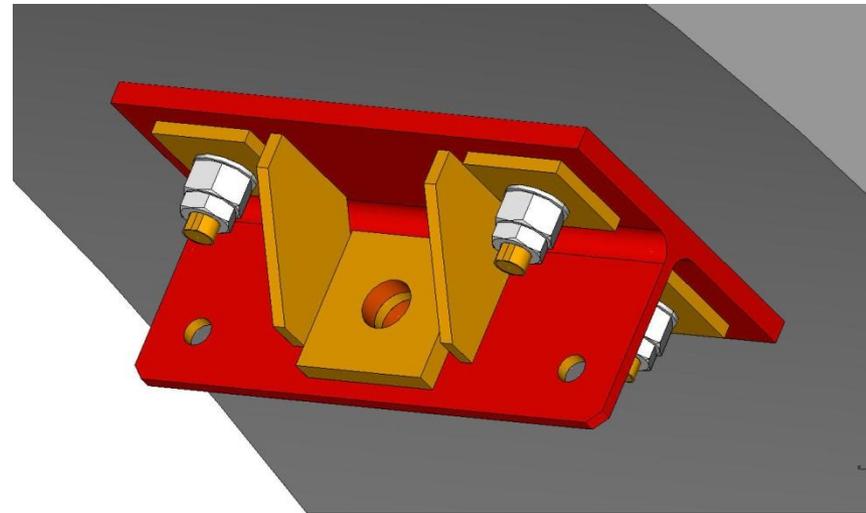
**Split ends of the thread Rebars (4)**  
(Assuming the lifting hitch is not replaceable)



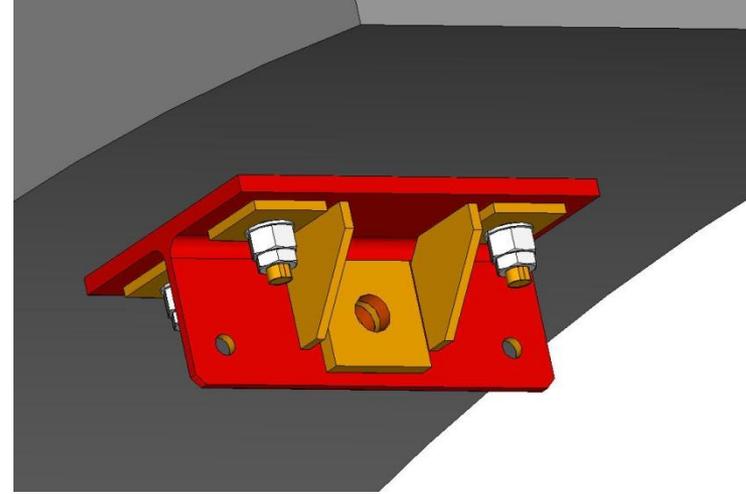
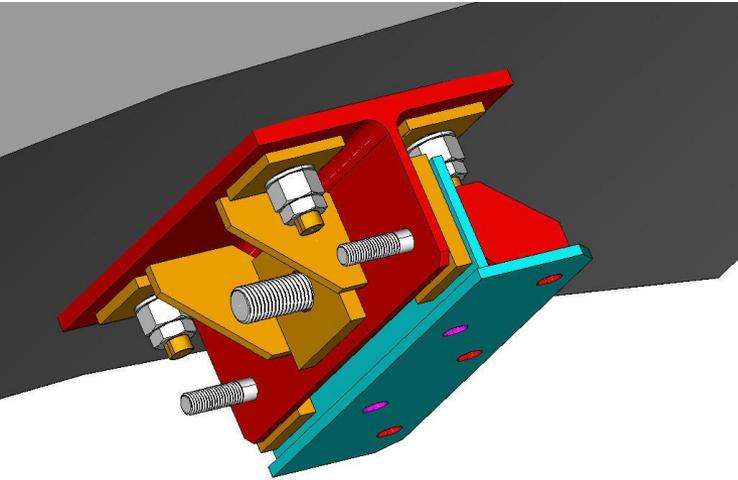
**12 Ton Anchor Shackle with its bolt & nut are replaceable**



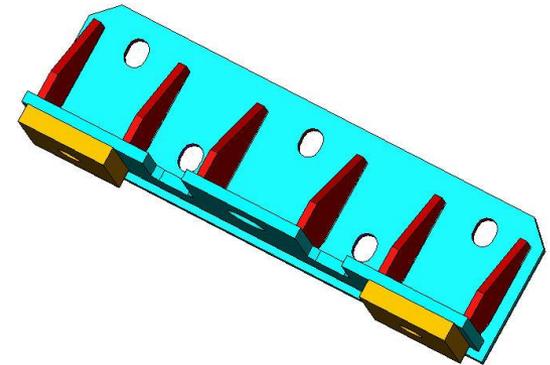
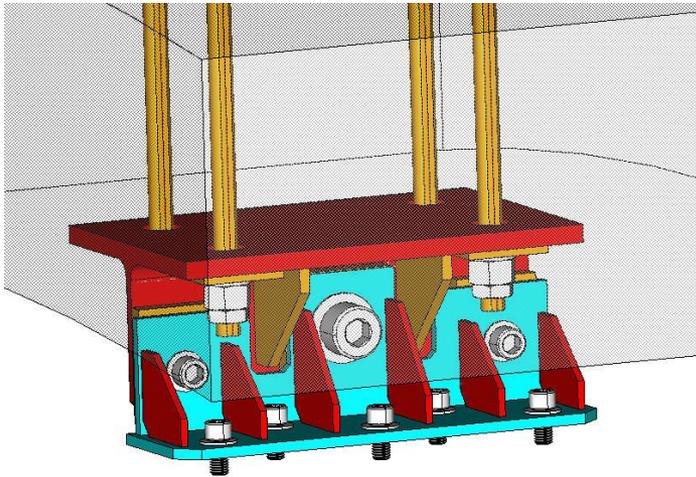
The views after removed the Anchor Shackle & its bolt & nut



**Install the adapter bracket #1**  
(2 views from different angles)

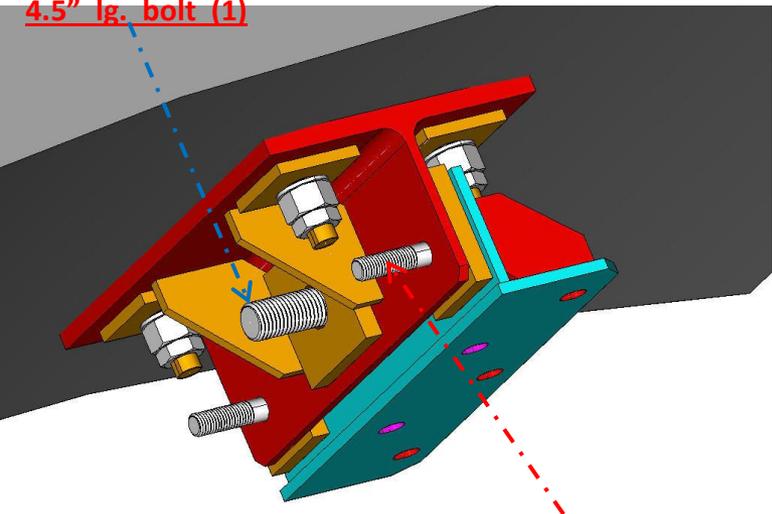


**Lifting Hitch w/o Shackle**



**Adapter bracket 1**  
(~23 lbs)

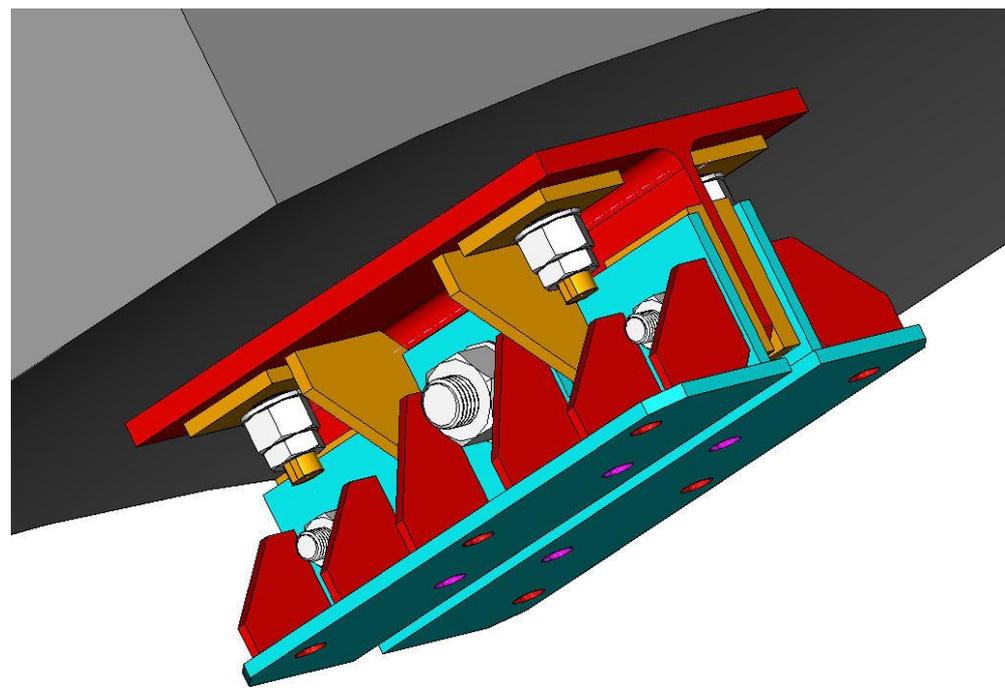
**1.25 x 7 UNC,  
4.5" lg. bolt (1)**



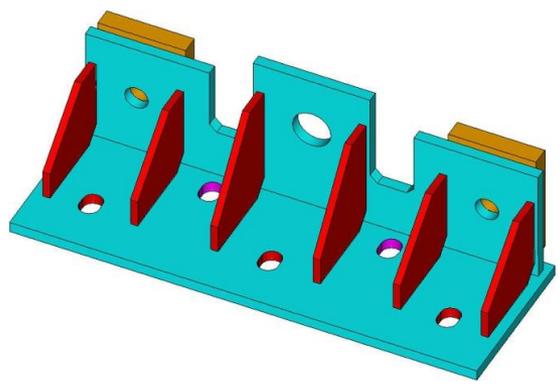
**Lifting Hitch with Adapter  
bracket 1 only**

**3/4 - 10, UNC, 4" lg. bolts (2)**

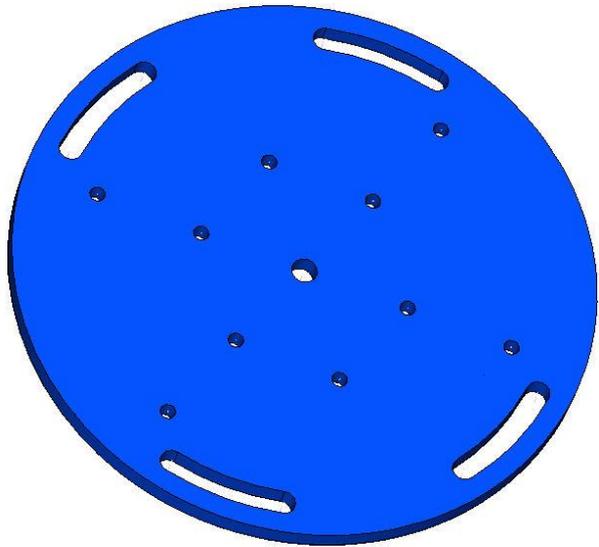
**Install both Adapter brackets with the Lifting Hitch**



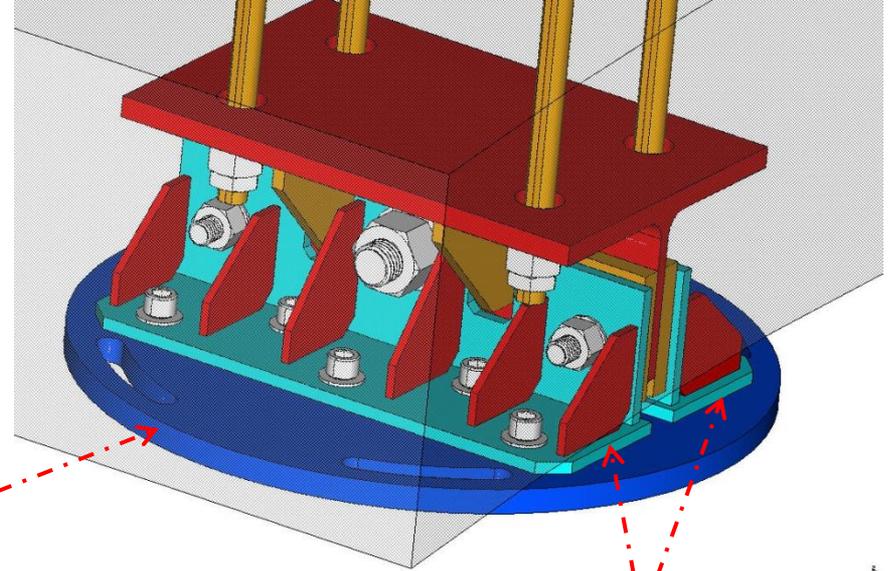
**Lifting Hitch with both Adapter  
brackets installed**



**Adapter bracket #2  
(~ 23 lbs)**

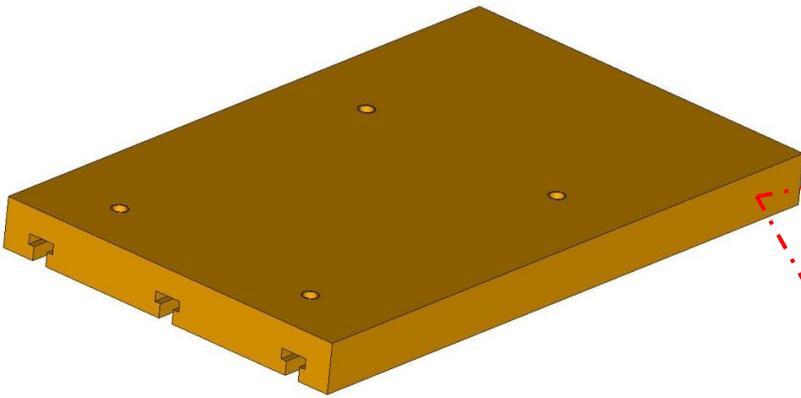


**Install the angular adjust connector underneath of the two adapter brackets (63 lbs).**

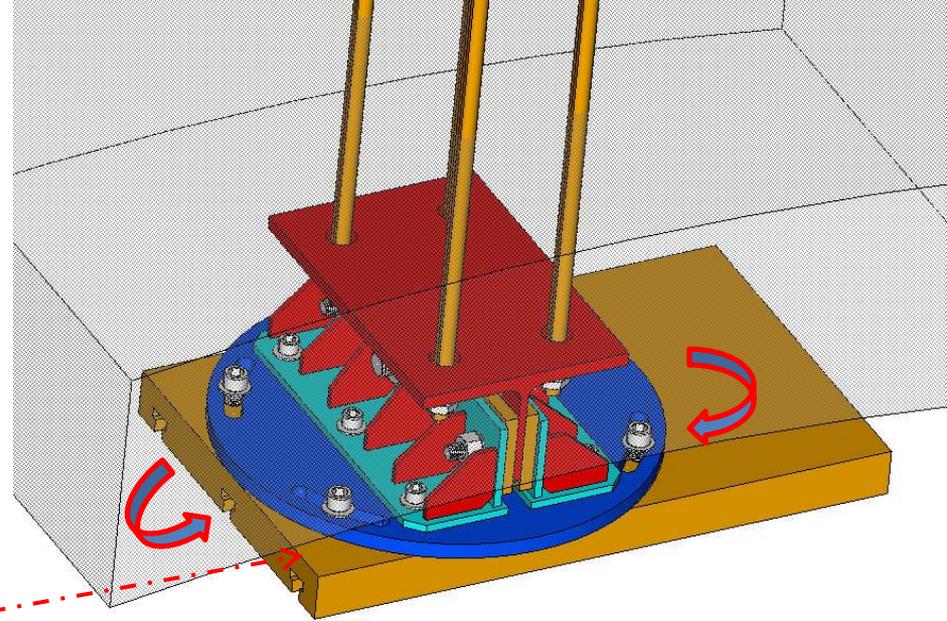


*Adding shims for leveling if it's necessary*

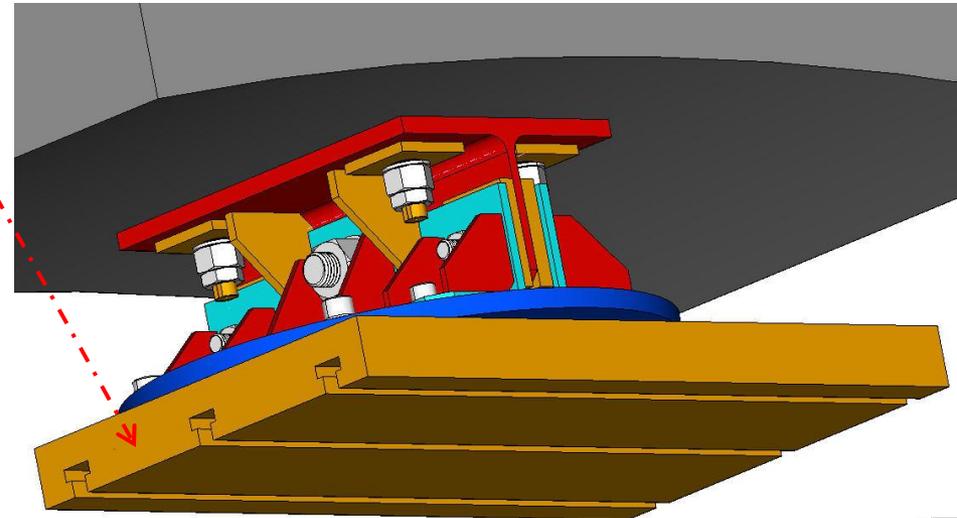




**T-slots beam connector**  
(28" x 17" x 2.25")  
(279 lbs)

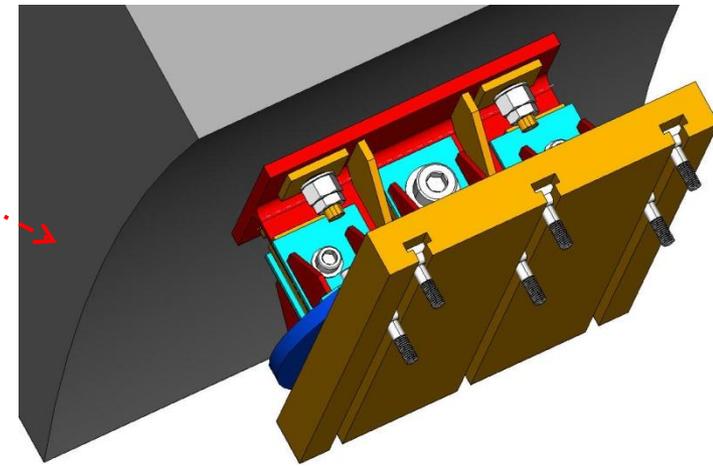


*Angular adjustability ~ +/- 13 deg.*

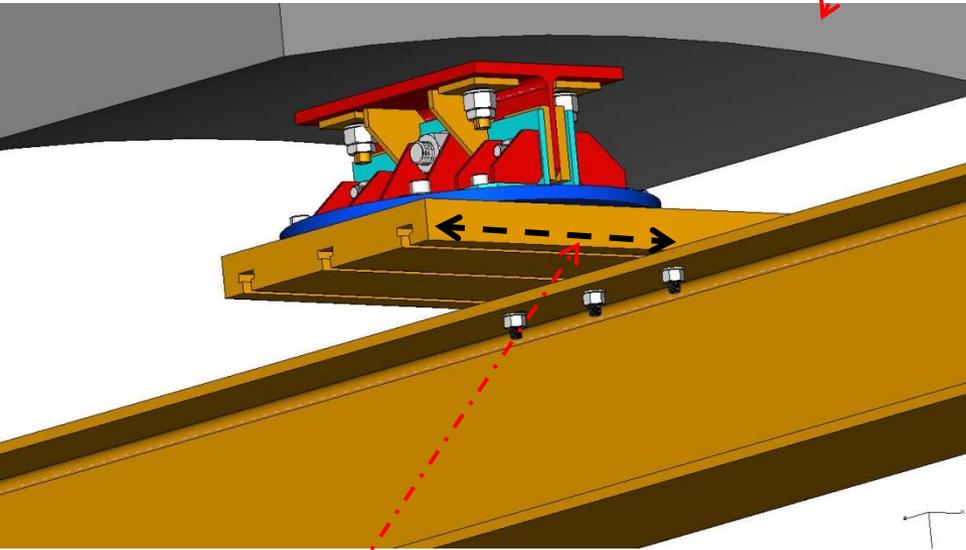


**Install the I-Beam with the new version of mounting Adapter.**

**Ceiling**

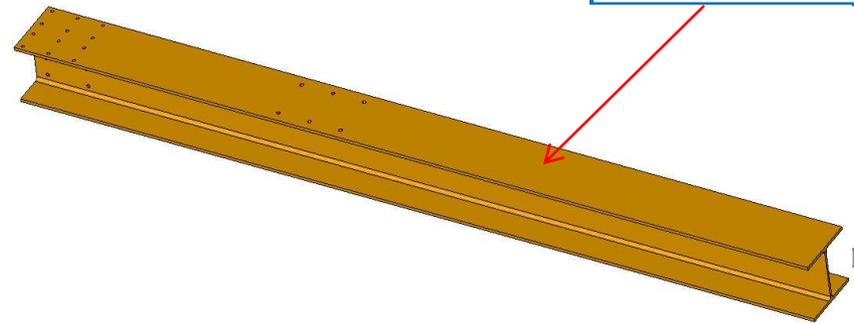


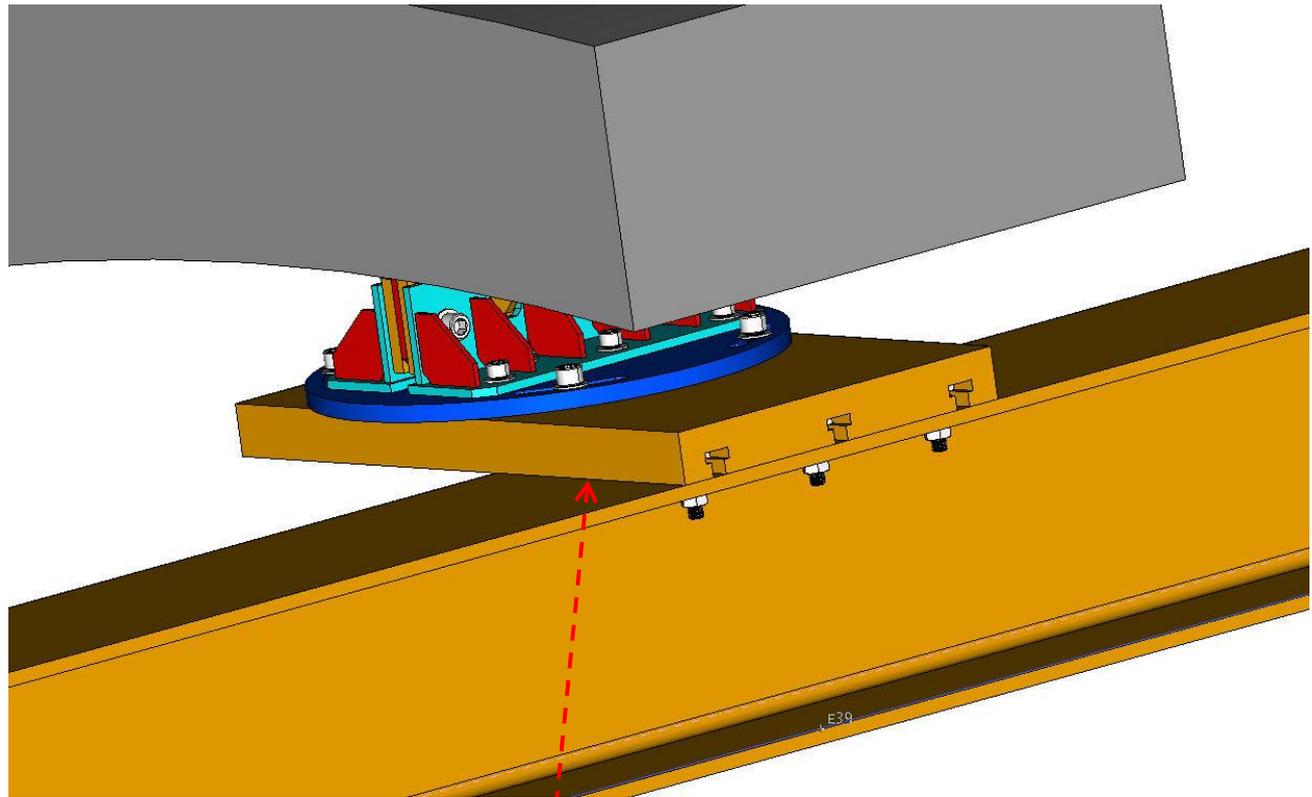
**View from the bottom of the Adapter bracket**



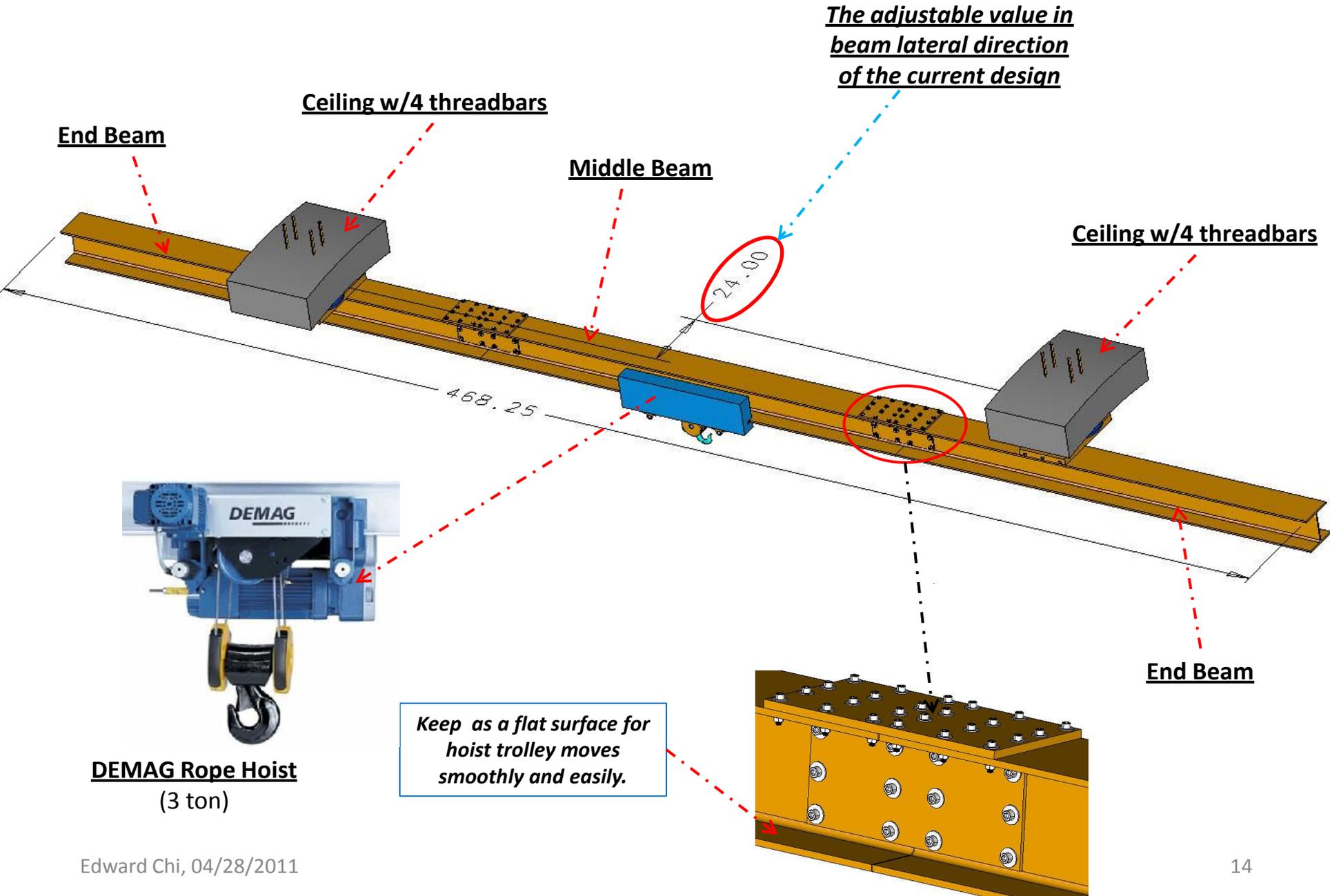
**Adjustability along the T-slots (beam lateral direction)**

***W12 x 65 I-Beam, 156" (13') length, Mounted on the new ceiling bracket.***

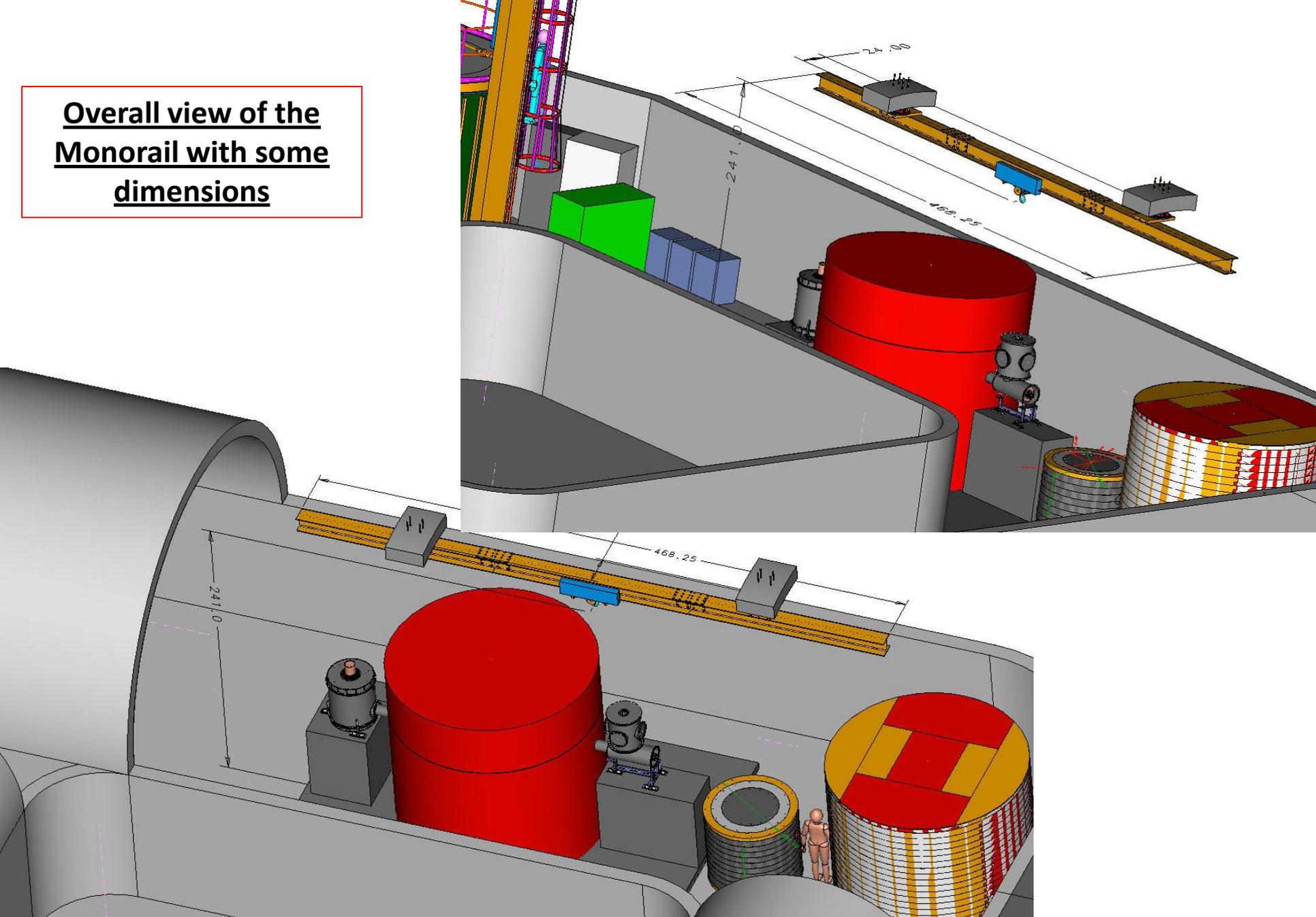




***Adding shims between slot connector & the top surface of the beam for vertical (Y dir.) adjustment if it's required.***



**Overall view of the Monorail with some dimensions**



More view from Drift C3 area with some facilities & utilities.

