1.1 Design Data

Design Pressure	3.9	kg/cm² g
Design Temperature	65	°C
Corrosion Allowance	3.0	mm (Shell)

1.2 Materials

The material of construction (MOC) and mechanical properties of the components used for analysis are as follows:

(Design Temperature 65°C)

Component Name	Material	Young Modulus (MPa)	Y.S (MPa)	T.S (MPa)	Allowable Stress (S) (MPa)
Shell	API 5L Gr. B	2.0e5	206.83	414	137.89
Saddle	C.S	2.0e5	206.8	414	137.89

Y.S. : Yield strength of material at design temperature and 0.2% strain, ref /3/ Table Y1.

T.S. : Tensile Strength of material at mentioned temperature, ref /3/ Table U.

S : Allowable Stress of material at design temperature, ref /3/ Table 1A.

1.3 Geometry

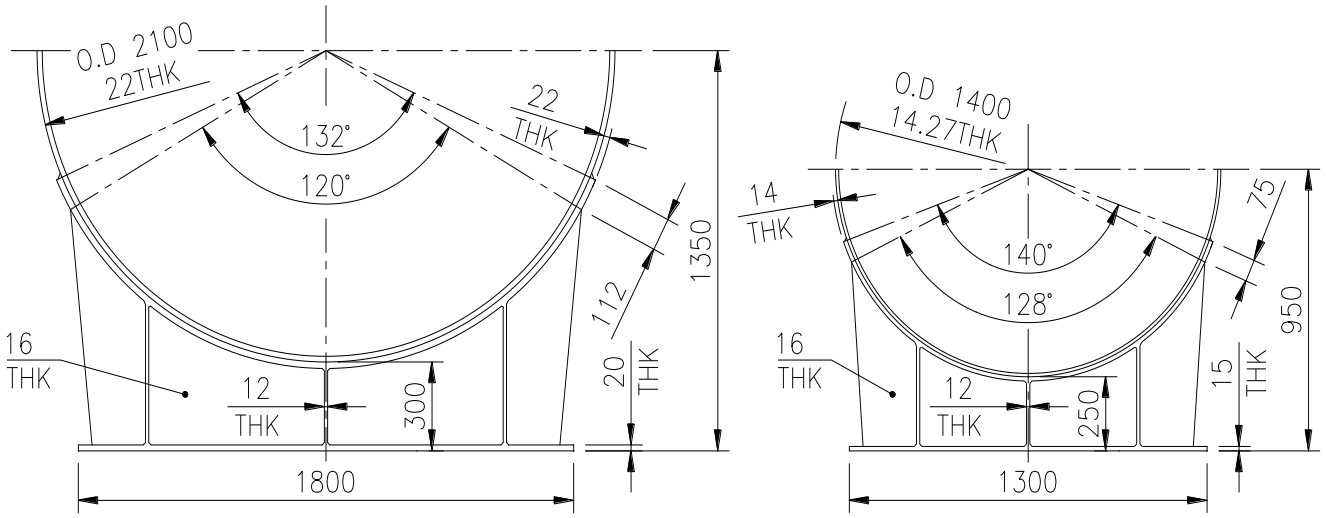
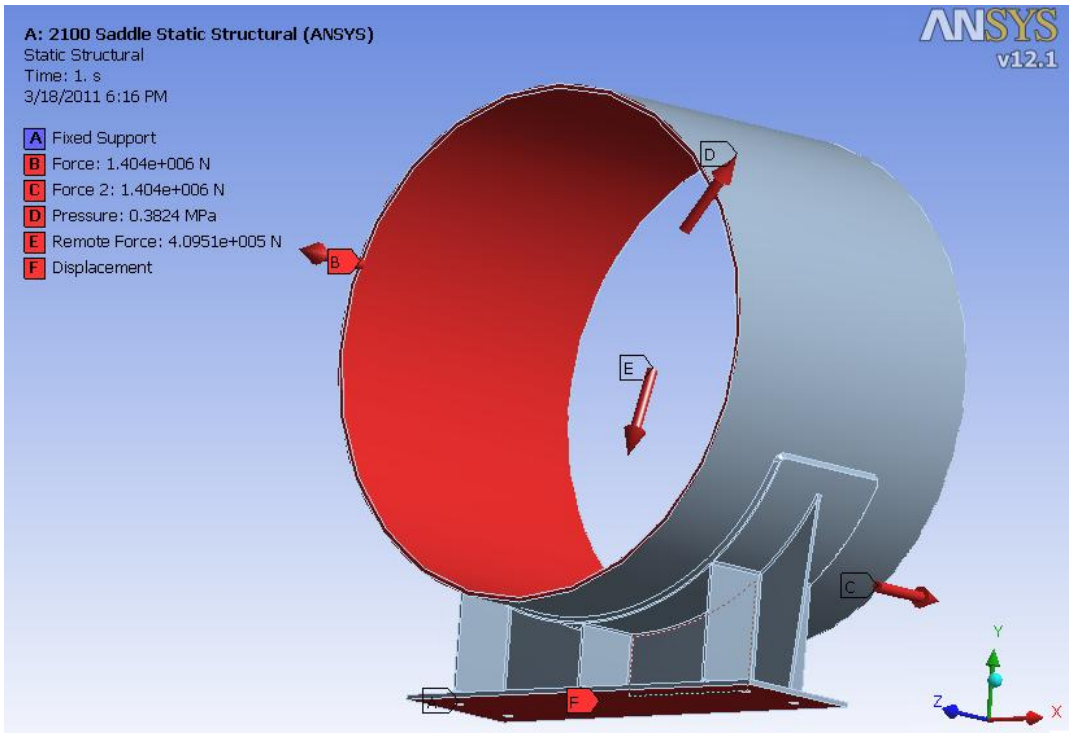
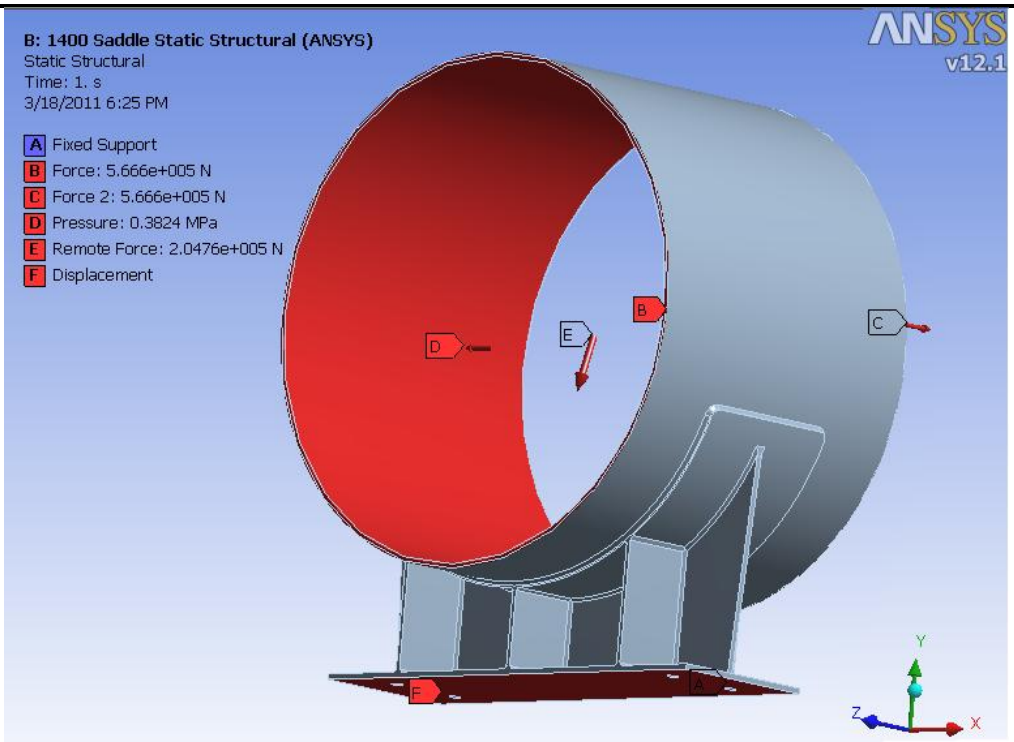


Fig 2: General Arrangement of Sddle

1.4 Loads and Boundary Conditions





Loads and Boundary conditions:

Surface A: Fixed at Anchor Bolts

Surface B & C: Pressure Equiv. Force

Surface D: Int. Pressure

Surface E: Resultant External Load

Surface F: Displacement 0mm in Y-direction

Fig 4: Loads & Boundary Condition Plot

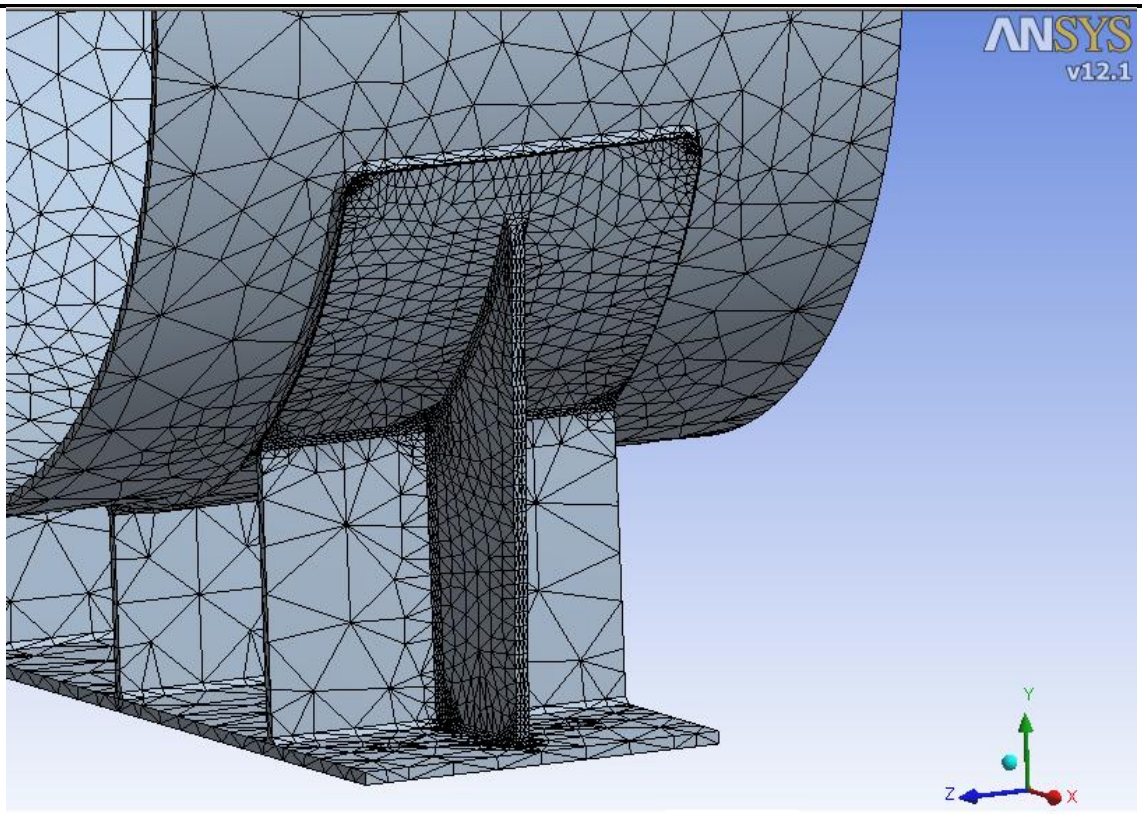
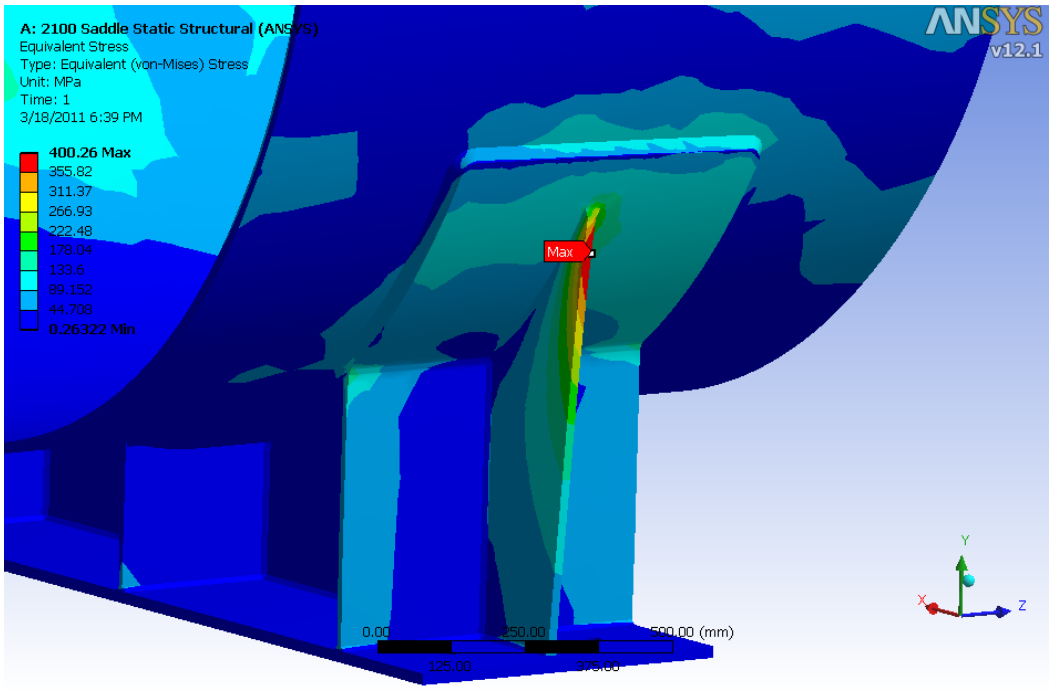


Fig 5: Meshing Plot

Meshing used : Tetrahedral Elements

1.5 Results And Discussions



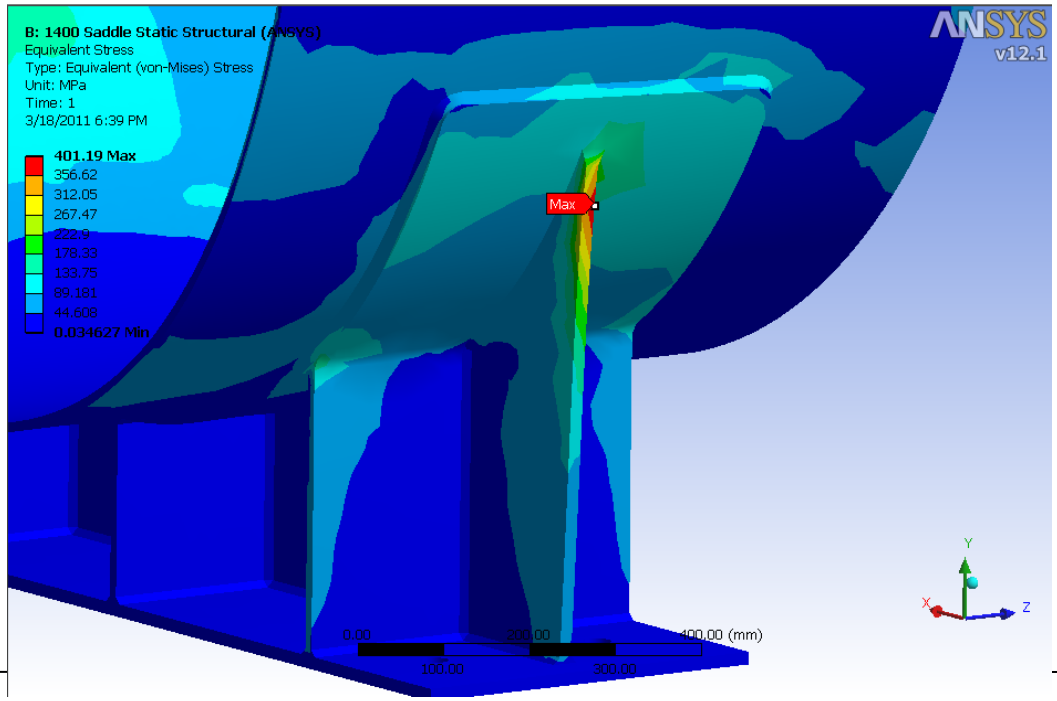


Fig 6: Von Mises Stress Plot

For 2100ϕ Sadddle

Maximum Equivalent Stress (Von-Mises) (400.26 MPa Fig 6) occurs in the web plate near web plate to wear pate junction, this is less than the allowable stress 3 * S i.e 413.67 MPa

Hence provided design is safe

For 1400ϕ Sadddle

Maximum Equivalent Stress (Von-Mises) (401.19 MPa Fig 6) occurs in the web plate near web plate to wear pate junction, this is less than the allowable stress 3 * S i.e 413.67 MPa

Hence provided design is safe

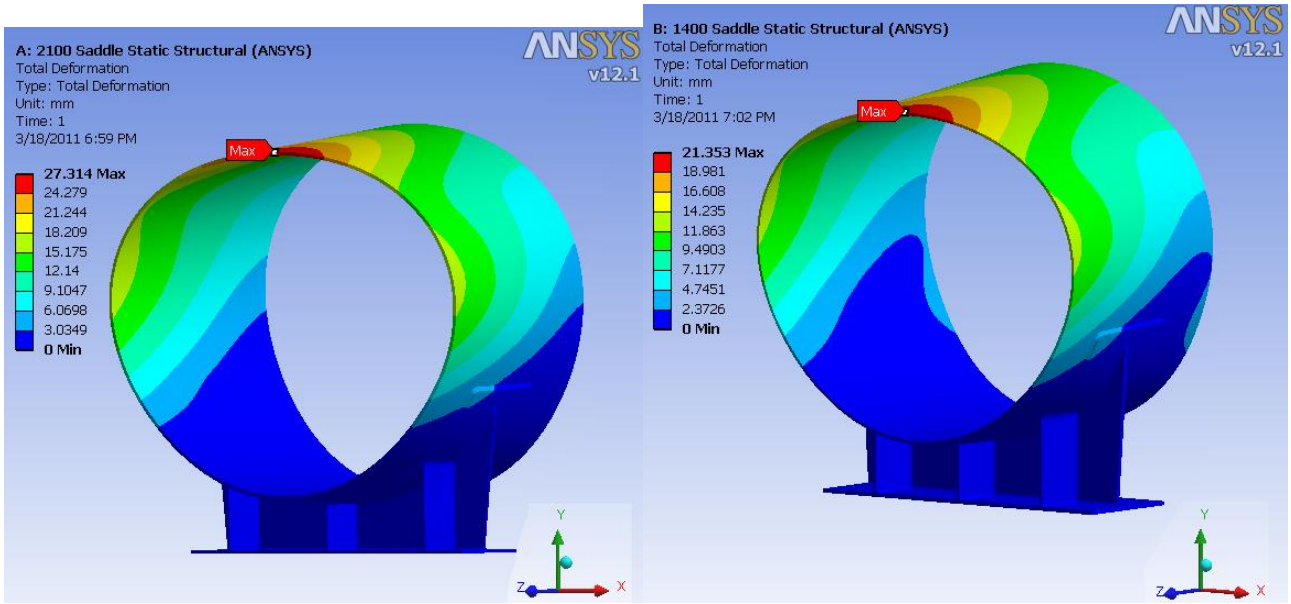


Fig 9: Displacement Plot