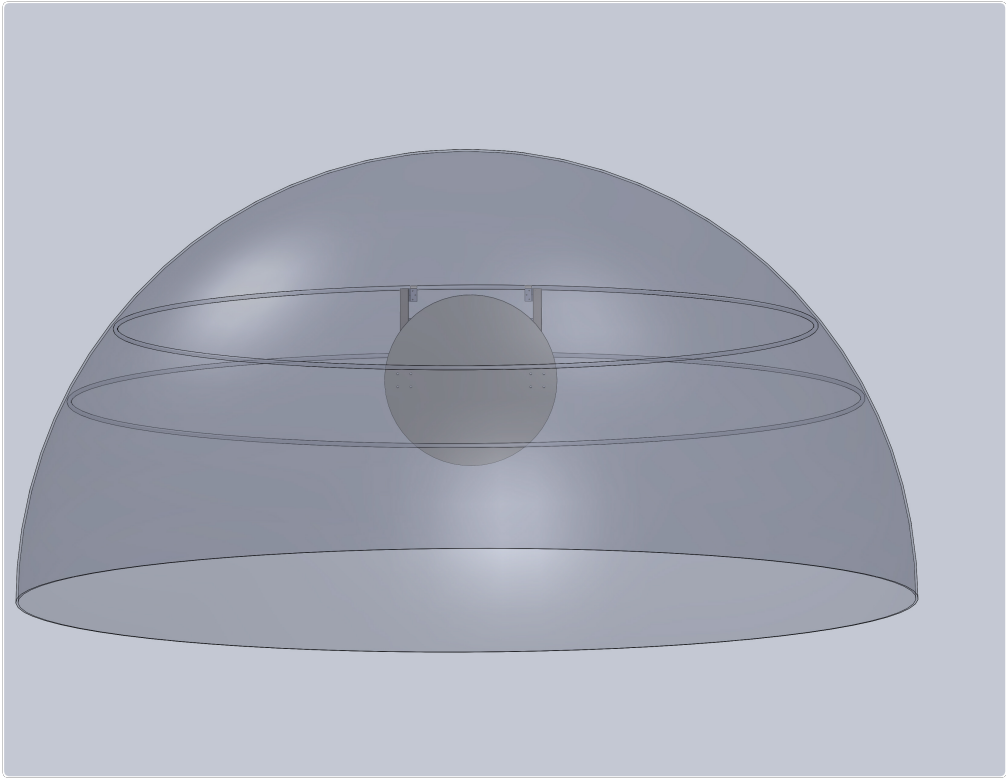Circular calibration screen

Circular Calibration Screen for Texas A&M Observatory

Project by Kris Cabral

Compiled by Emily Boster

Solidworks image of a 17 foot diameter dome with proposed screen attached:

Dome Assembly.SLDASM

- The proposed screen was a circular screen with a 39.4 inch diameter.

- The mounting mechanism included hooks to attach to the 1.25 inch diameter pipering.

- The mounting mechanism allowed for adjustment so that the screen could be positioned perpendicular to the line of sight coming from the telescope.
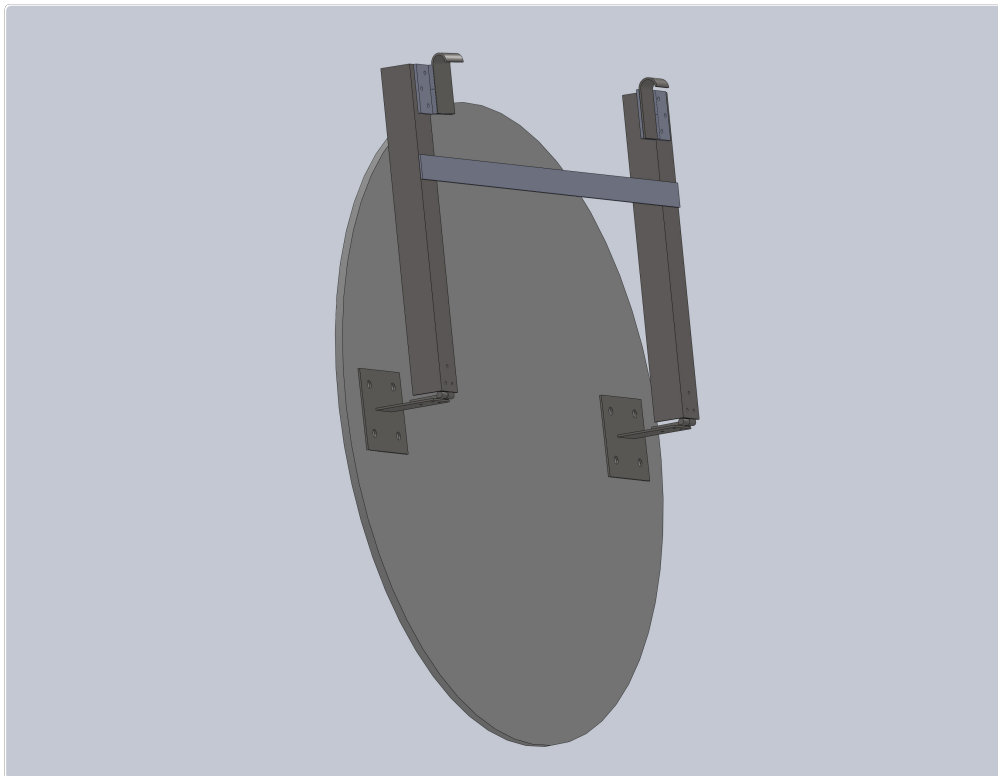
Screen Assembly.SLDASM

Here is a paper containing data from a solidworks analysis of stress, strain, and displacement:
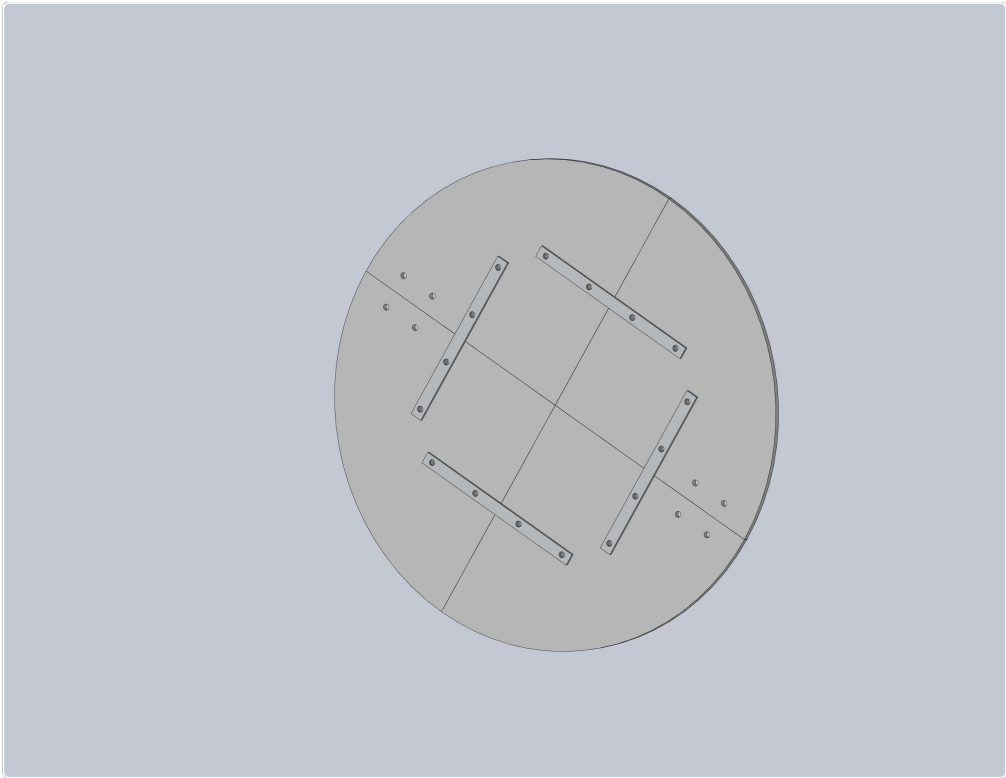
Screen Assembly-Study …

Screen Cost Analysis:

Big Screen Cost Analysi…

Solidworks Drawings and Models

Note: The corresponding files should be underneath each picture.

Segmented assembly

Segment Screen Assembly.S…

Screen assembly with mounting gear

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Bracket Plate		2
2	HingeA	Shelf Part	4
3	Arm		2
4	Eye Screw	Shelf Part	6
5	Screen		1
6	Flat Head Machine Screw	Shelf Part	12
7	Machine Screw Nut	Shelf Part	12
8	Square-Head Bolt	Shelf Part	8/24
9	Square Nut	Shelf Part	8/24
10	Turn Buckle	Shelf Part	4

Kris A. Cabral

TITLE:

FLAT SCREEN
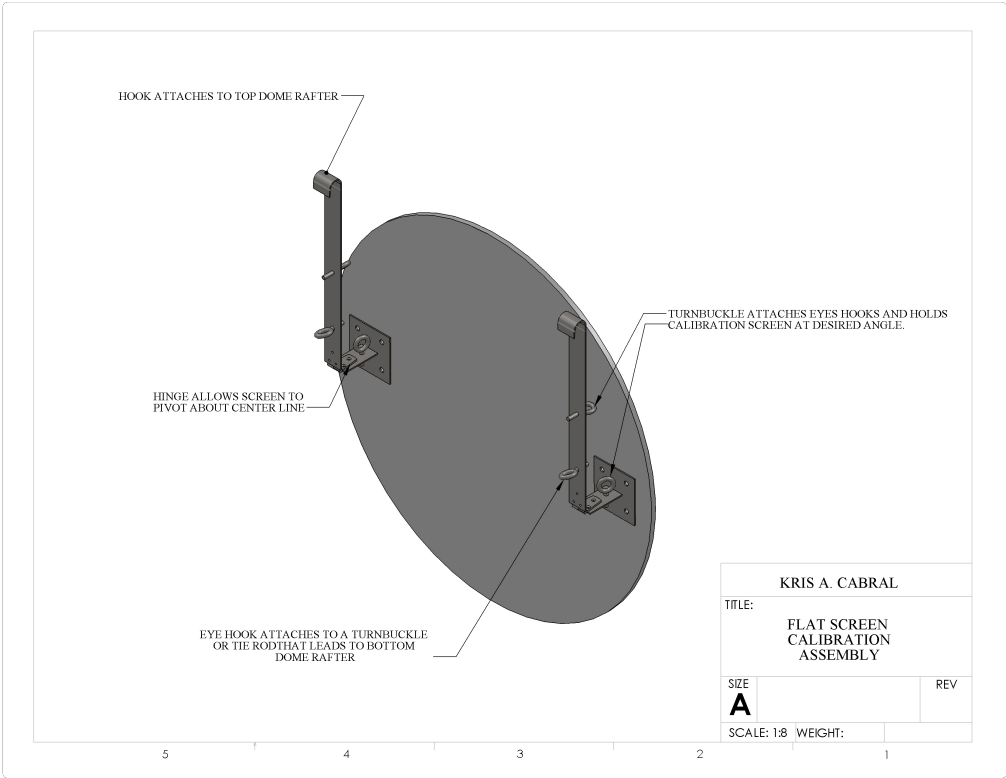CALIBRATION
ASSEMBLY

SIZE **A**   DWG. NO. ASSEMBLY   REV

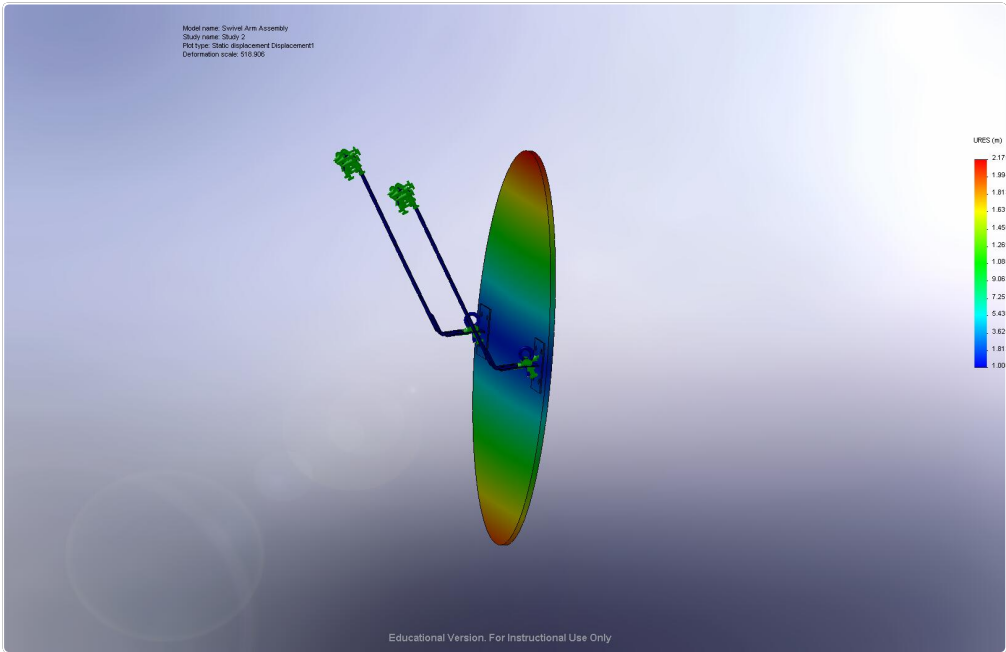SCALE: 1:20   WEIGHT:

Drawing file:
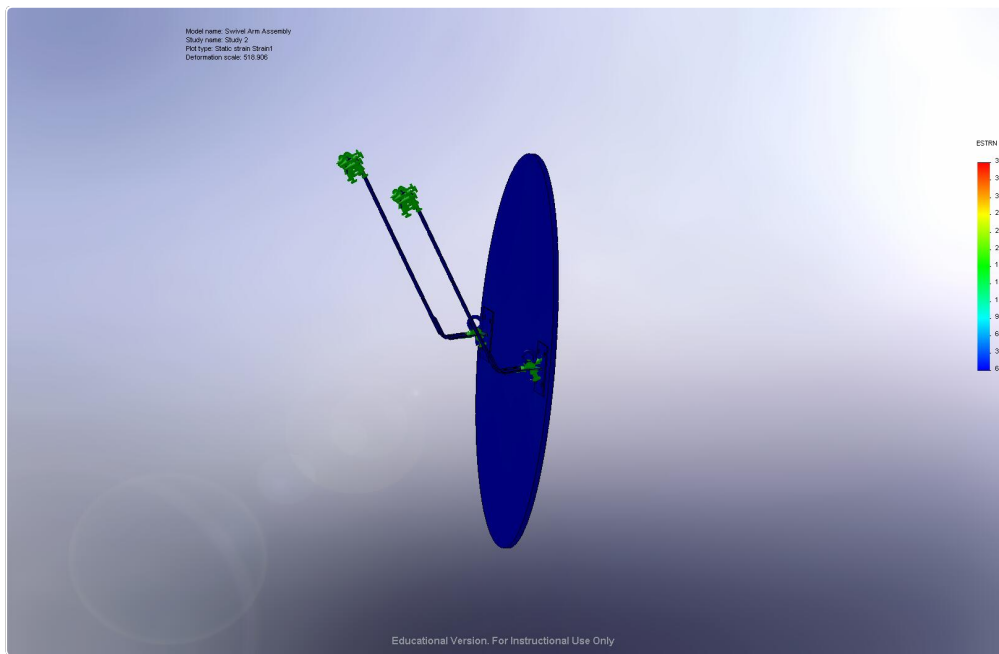
ASSEMBLY.SLDDRW

Model:

Swivel Arm Assembly.SLDASM

HOOK ATTACHES TO TOP DOME RAFTER

TURNBUCKLE ATTACHES EYES HOOKS AND HOLDS
CALIBRATION SCREEN AT DESIRED ANGLE.

HINGE ALLOWS SCREEN TO
PIVOT ABOUT CENTER LINE

EYE HOOK ATTACHES TO A TURNBUCKLE
OR TIE RODTHAT LEADS TO BOTTOM
DOME RAFTER

KRIS A. CABRAL

TITLE:

FLAT SCREEN
CALIBRATION
ASSEMBLY

SIZE
A

REV

SCALE: 1:8   WEIGHT:

5   4   3   2   1

DETAIL ASSEMBLY.SLDDRW

Displacement study

Model name: Swivel Arm Assembly
Study name: Study 2
Plot type: Static displacement Displacement1
Deformation scale: 518.906

URES (m)

2.17
1.99
1.81
1.63
1.45
1.26
1.08
9.06
7.25
5.43
3.62
1.81
1.00

Educational Version. For Instructional Use Only
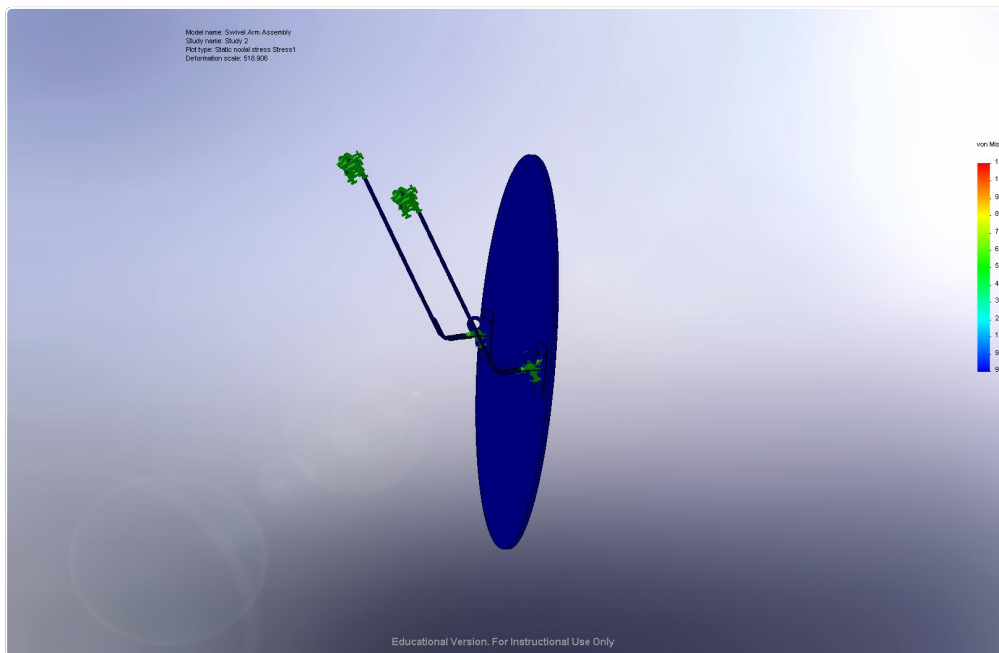
Strain study

Stress study

Here is a paper explaining the assembly studies:

    Swivel Arm Assembly-St…

Shelf part files:

    Eye Screw.SLDPRT

    screw.SLDPRT

    Turn Buckle.SLDPRT

    Assem1.sldasm

HingeB.SLDPRT

HingeA.SLDPRT

Pin.SLDPRT

Assembly.SLDASM

Additional part files:

Arm.SLDPRT

Bracket Plate.SLDPRT

Part1.sldprt

Swivel Arm Assembly.SLDASM

Threaded Inserts.docx

Segment Bracket.SLDPRT

crossbar.SLDPRT

Hinge Assembly.SLDASM