

# Extinction Monitor Entrance Collimator Mounting



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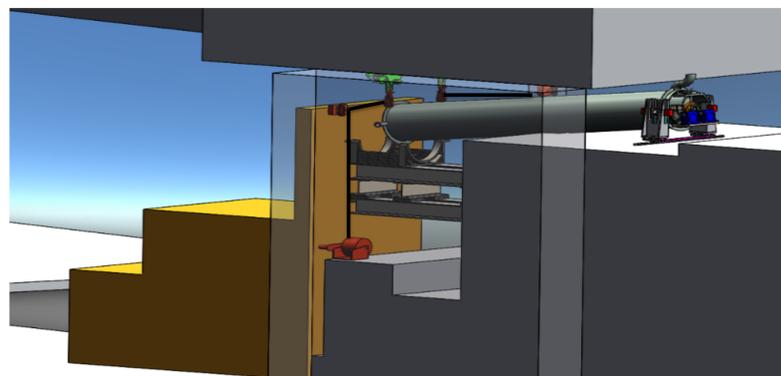
## Abstract

The Mu2e experiment could prove to be a monumental discovery for all of mankind due to the observation of muon to electron conversion. An extinction monitor is necessary to ensure that the proton beam fired is converted completely to muons. Since the proton beam has not been adequately mapped, adjustment and mounting of the entrance collimator component of the extinction monitor is required. The purpose of this project is to provide an engineering note containing a series of detailed drawings and analysis of the mount required for Fermilab to utilize for procurement and installation of the EM entrance collimator

## Introduction

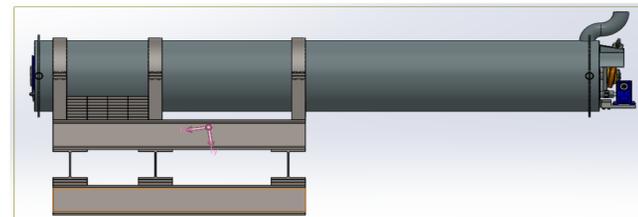
### Objectives:

1. Develop method to lift and move Collimator
2. Create system to provide accurate adjustment mechanism
3. Write a set of engineering notes with associated drawings, analysis, and simulation



## Methods and Materials

**Forklift Lifting Structure:** Using a CGC70 forklift with fork extensions and fork positioner, a structure was created using I-Beams, steel plates, and ringed holders. The structure is used to not only safely deliver the 5,200 lb. Collimator, but the structure also shifts the load center of the Collimator safely under the forks.



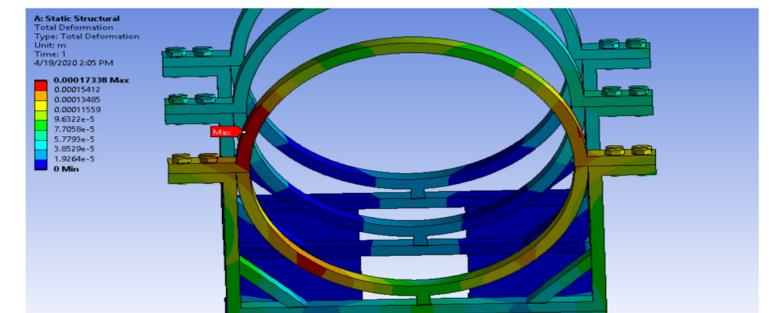
**Horizontal Adjustment Mechanism:** The primary adjustment system of the Collimator is comprised of a series of cables, pulleys, and winches attached to an overhead hoist trolley system. When attached to the downstream end, this system will be capable of vertical; and horizontal adjustment.



**U Pivot:** The secondary adjustment system of the collimator. It is comprised of a rail system, swivel mechanism and is connected by a coupler. This system allows for the simultaneous adjustment of both upstream and downstream ends of the collimator.

## Results

Analyses such as Ansys simulations have been conducted to ensure that the subsystems will be in conjunction with ASME, FESHM and ANSI safety standards. Parts without analysis use the manufacturer's rating for load capabilities.



## Conclusions

Overall, the design was proven to be acceptable for the desired task of critical lifting. All subsystems were accepted by a Fermilab design committee.

## Acknowledgements

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