Request for Quote:
FACET-II PDC/EDC Vacuum Chamber

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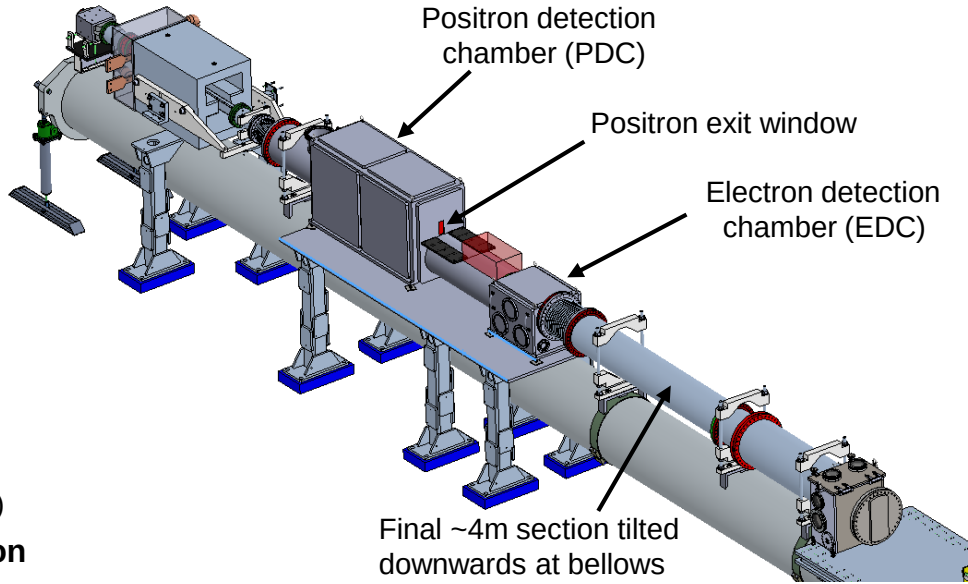
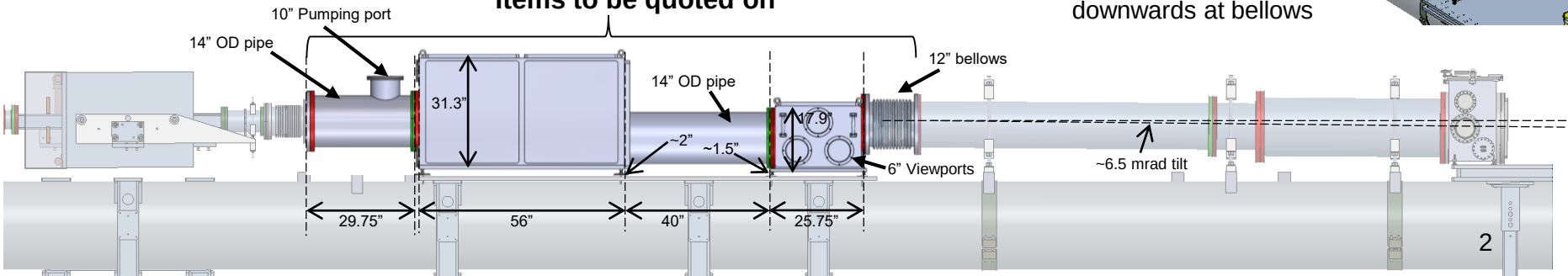
Chamber Overview

- Purpose:
  - Set of chambers that will contain various diagnostic devices.
  - First chamber will have a thin metallic vacuum exit window for positrons to pass through.
  - Chambers will maintain existing apertures in the currently installed beam line.
    - Some dimensions will depend on cover thicknesses and bellows dimensions, etc.
- The chamber shown here was developed on the conceptual level. Detailed engineering of this design is being requested as part of the quote.
  - The CAD model of this concept will be provided.
- Components to quote on shown below (exploded view on next slide)

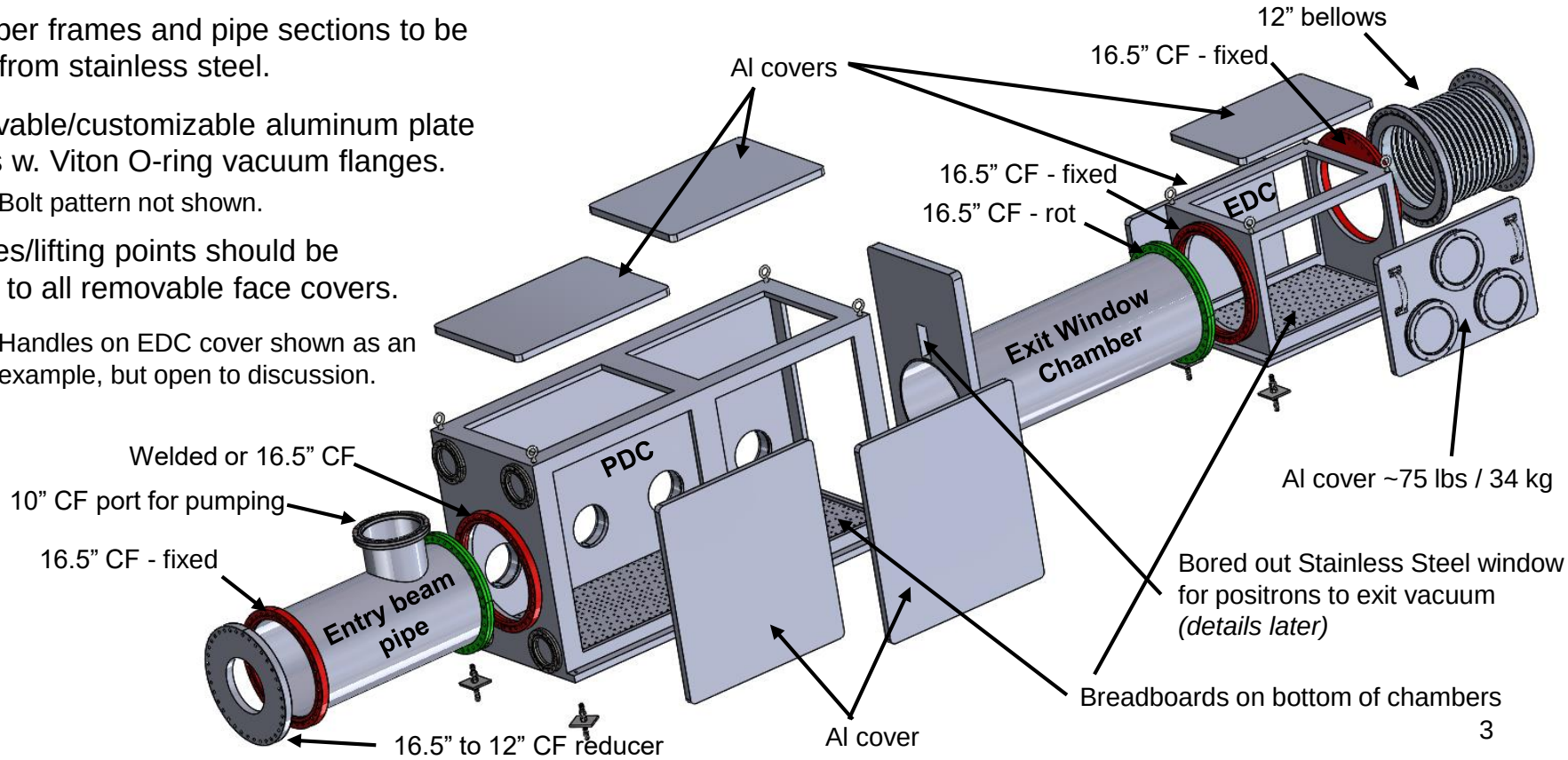


Items to be quoted on



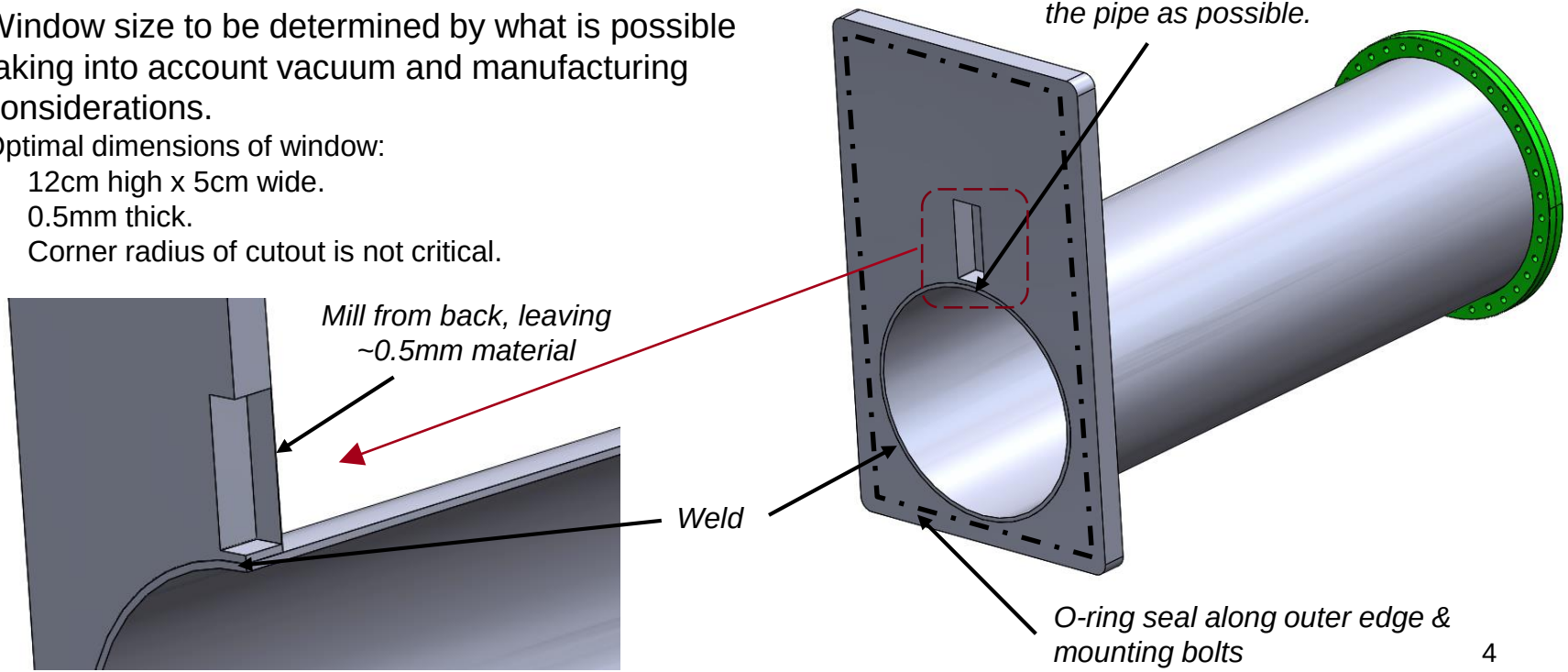
Exploded View – Parts to be quoted on

- Chamber frames and pipe sections to be made from stainless steel.
- Removable/customizable aluminum plate covers w. Viton O-ring vacuum flanges.
  - Bolt pattern not shown.
- Handles/lifting points should be added to all removable face covers.
  - Handles on EDC cover shown as an example, but open to discussion.



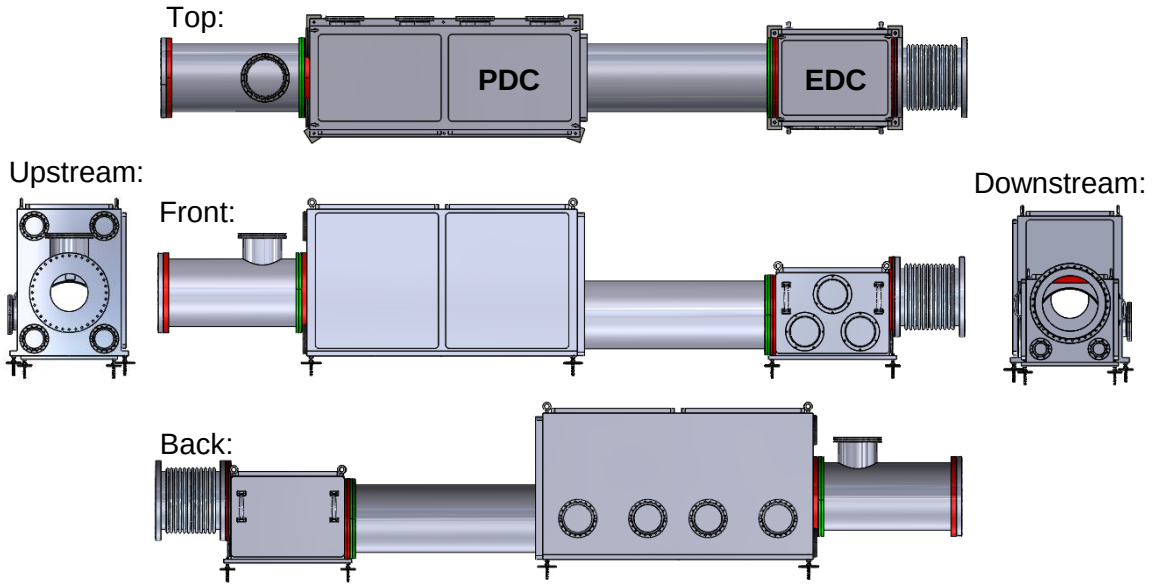
Positron Exit Window

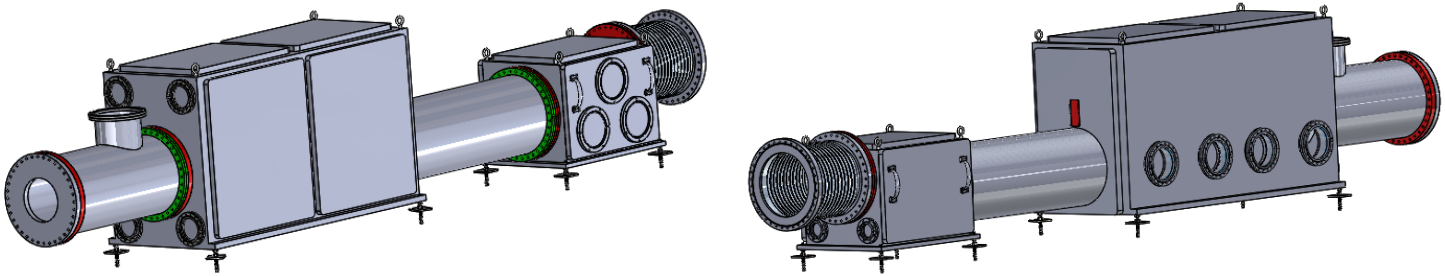
- Exit window for positrons will be milled out of the downstream cover plate of PDC
  - Window size to be determined by what is possible taking into account vacuum and manufacturing considerations.
  - Optimal dimensions of window:
    - 12cm high x 5cm wide.
    - 0.5mm thick.
    - Corner radius of cutout is not critical.



Feedthroughs/Viewports

- Conflat flanges:
  - 4x 6” CF on upstream face of PDC
  - 4x 8” CF on back side of PDC
  - 2x 4.5” CF on downstream face of EDC
- Viewports w. Fused Silica Window & Viton O-ring:
  - 3x ~6” Viewport on EDC side cover
- Removable aluminum covers for future modification, w. Viton O-ring seal



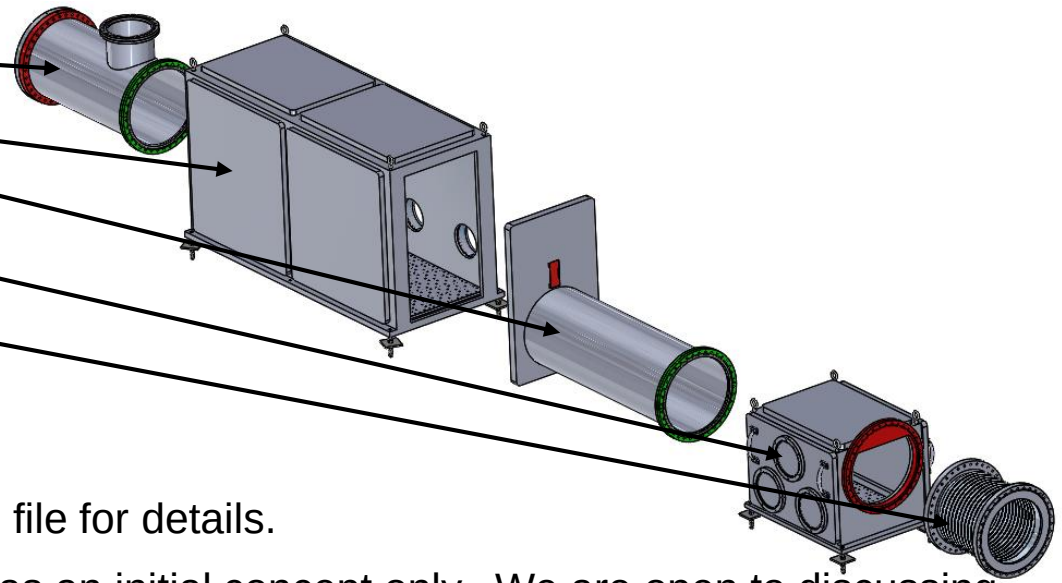


Further requirements

- Vacuum level: aiming for roughly 1e-6 Torr vacuum level here.
- Cleanliness: The completed chamber should be cleaned to UHV standards and double bagged in dry nitrogen gas for delivery.
- Flange angular tolerance: Conflat flanges along the beamline should be mounted to better than 0.1 degree tolerance to maintain aperture clearances.
- Viton seals for all O-Rings seals.

Summary

- Please separate the quote into reasonable sub assemblies, i.e.:
  - Entry beam pipe
  - PDC chamber
  - Exit window chamber
  - EDC chamber
  - 12” bellows
  - Covers
  - Design fee



- Please see the attached .step file for details.
- Note that this was developed as an initial concept only. We are open to discussing better, or more cost efficient ways of fabricating this chamber.
- Please contact me to discuss further – contact info on first page.

Extras

Alignment

- PDC and EDC will be supported by a 1” plate and held up by 6 stands (probably).
  - To be design by SLAC engineer
- Plate to be mounted as close to the light pipe as possible
- Nominal space between chamber and plate:
  PDC – 2” and EDC – 1.4”
- Alignment – ½” threaded rod
  - Vertical: lower nut moves chamber up/down.
  - Horizontal: oversized holes in plate and a large washer on top allows chamber to slide within the mounting hole.
  - Angle: adjust the 4 feet independently.

Stands/table are not to be included in this quote.