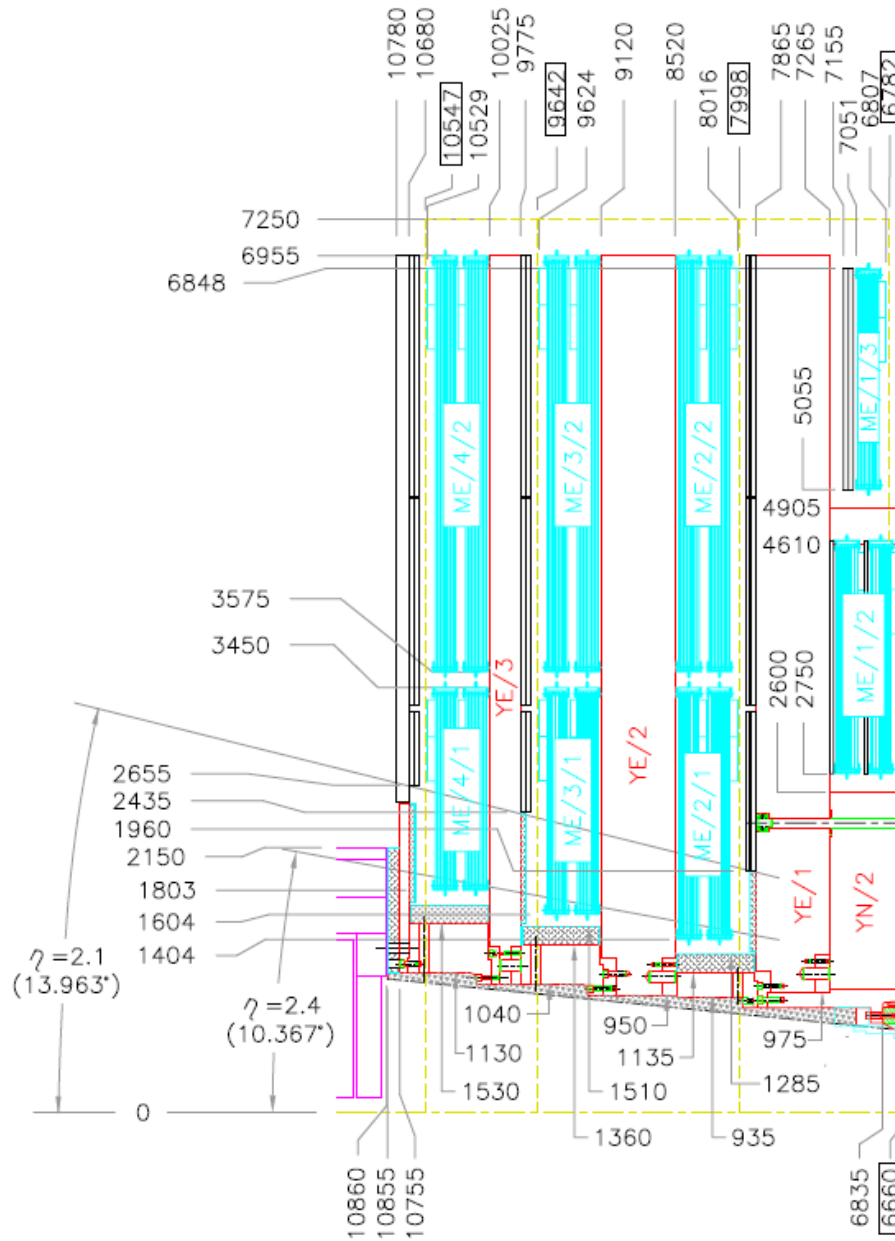


# X section schematic for RE4/1

Proposal for two scenarios for the chamber layout as a function of the chamber body thickness and coverage of "High Eta" versions.

The Integration x-section view of CMS



The tricky high radius mounting under the presently installed RE4/2 & RE4/3 Super Module (SM).

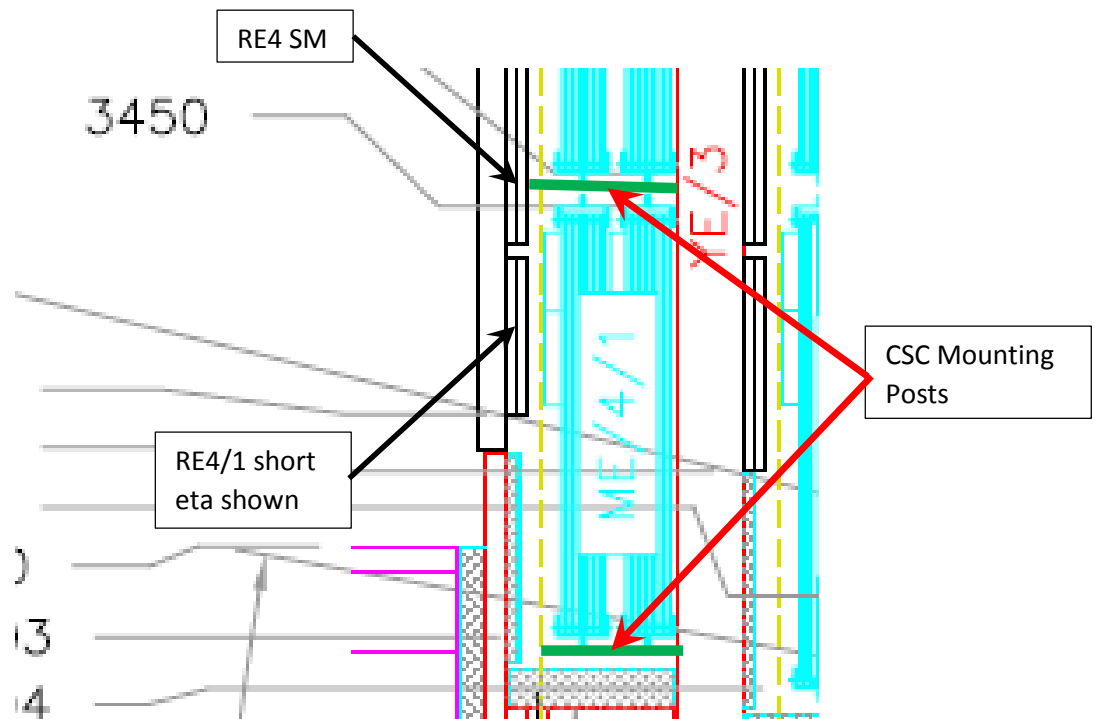
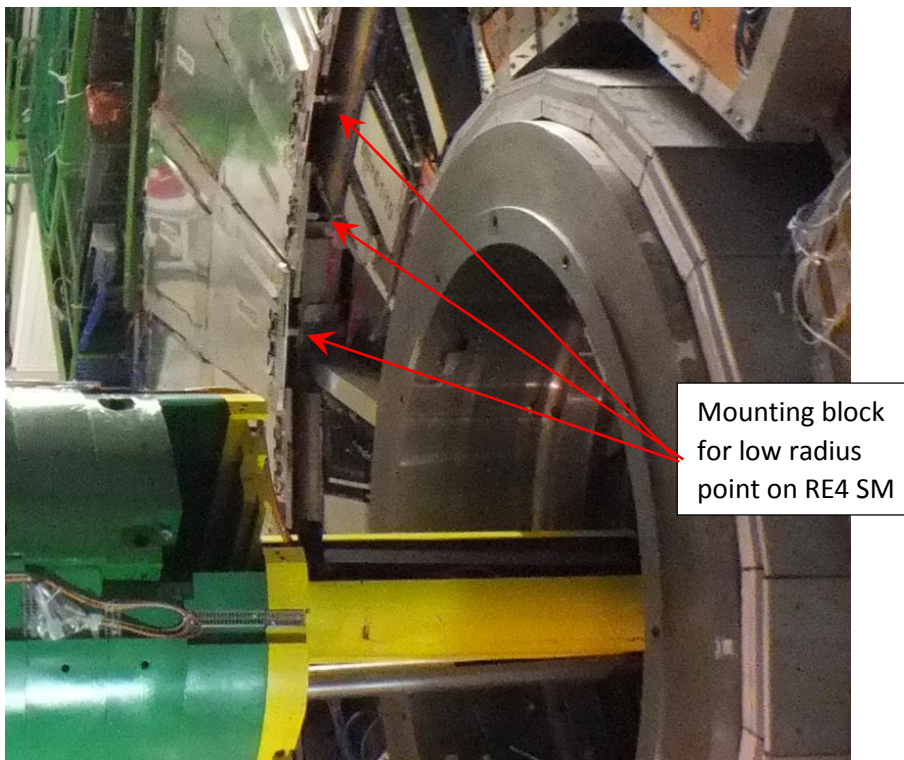
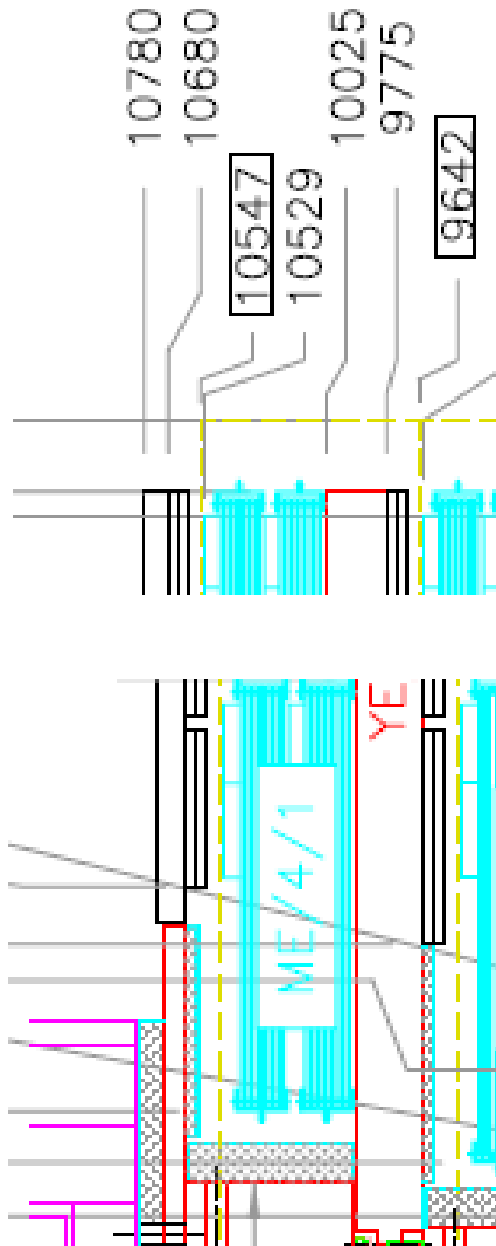


Photo of the RE4 SM mounting blocks (every 10deg) attached to the back of the SM "A" frame. These mounting blocs are visible and it should be possible to attach to them using 2 of the 4 M8 screws that secure the block to the rear of the "A" frame.



**Detail of the area of interest.**



The alignment system at Z= 10547mm is no longer in use and so can be disregarded.

10680 represents the YE4 IP side while 10529 represents the CSC envelope.

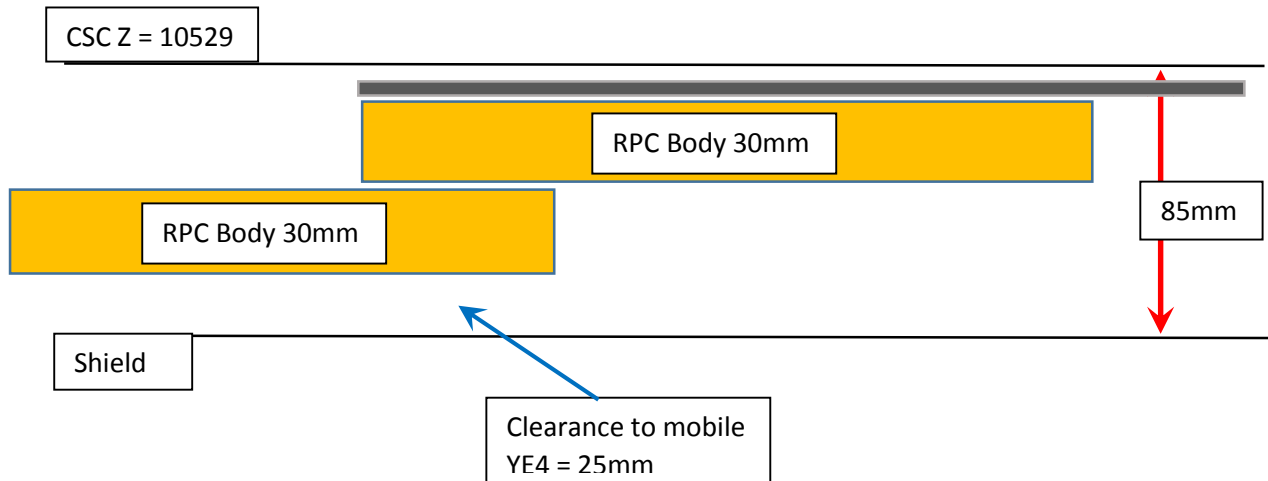
This leaves an envelope in the lower radius below 2508 approx ( extended high eta ) of  $10680 - 10529 = 151\text{mm}$

Minus the shield Z = 63 ( according to the model given to Pino) if heads of the screws (~10mm) attaching the shielding are counter sunk.

Final envelope  $151 - 63 = 88\text{mm}$ . This value is in good agreement with the 85mm as given by the aforementioned model.

### The RE4/1 overlap case

Assuming the electronics are outside this radius



It is assumed that a flat plate, as used in the RE4 SM design, will be necessary to establish a plane to mount the RPCs to as the outer radius mounting post is hidden under the present RE4/2 & RE4/3.

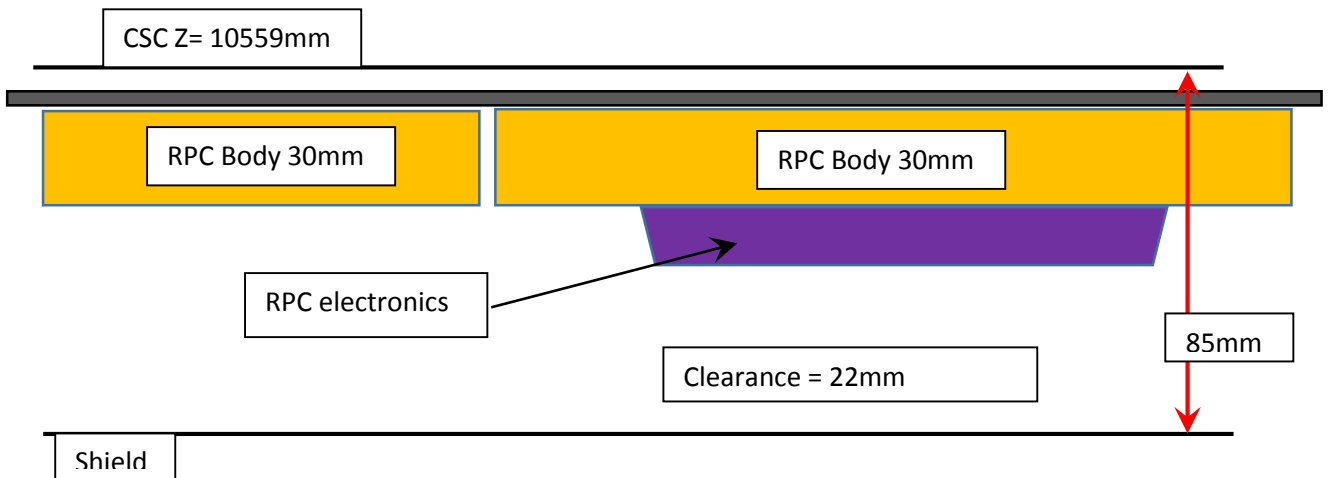
Summing the dimensions in Z

Clearance CSC	5
Alu Frame	8
RPC Body	30
RPC Body	30
Clearance	25
<b>Total</b>	<b>98mm</b>

This value is in excess of the 85mm available with the assumed 30mm for the RPC body. To stick to this layout the RPC body would have to be reduced to 23mm. Given the estimated similar chamber weight to RE type3 (70kg) the mechanics should be kept more or less as they are for reasons of rigidity and so gap integrity.

**The RE4/1 non overlapped case, as per RE1/3.**

Assuming the electronics are inside the shield radius.



It is assumed that a flat plate, as used in the RE4 SM design, will be necessary to establish a plane to mount the RPCs to as the outer radius mounting post is hidden under the present RE4/2 & RE4/3.

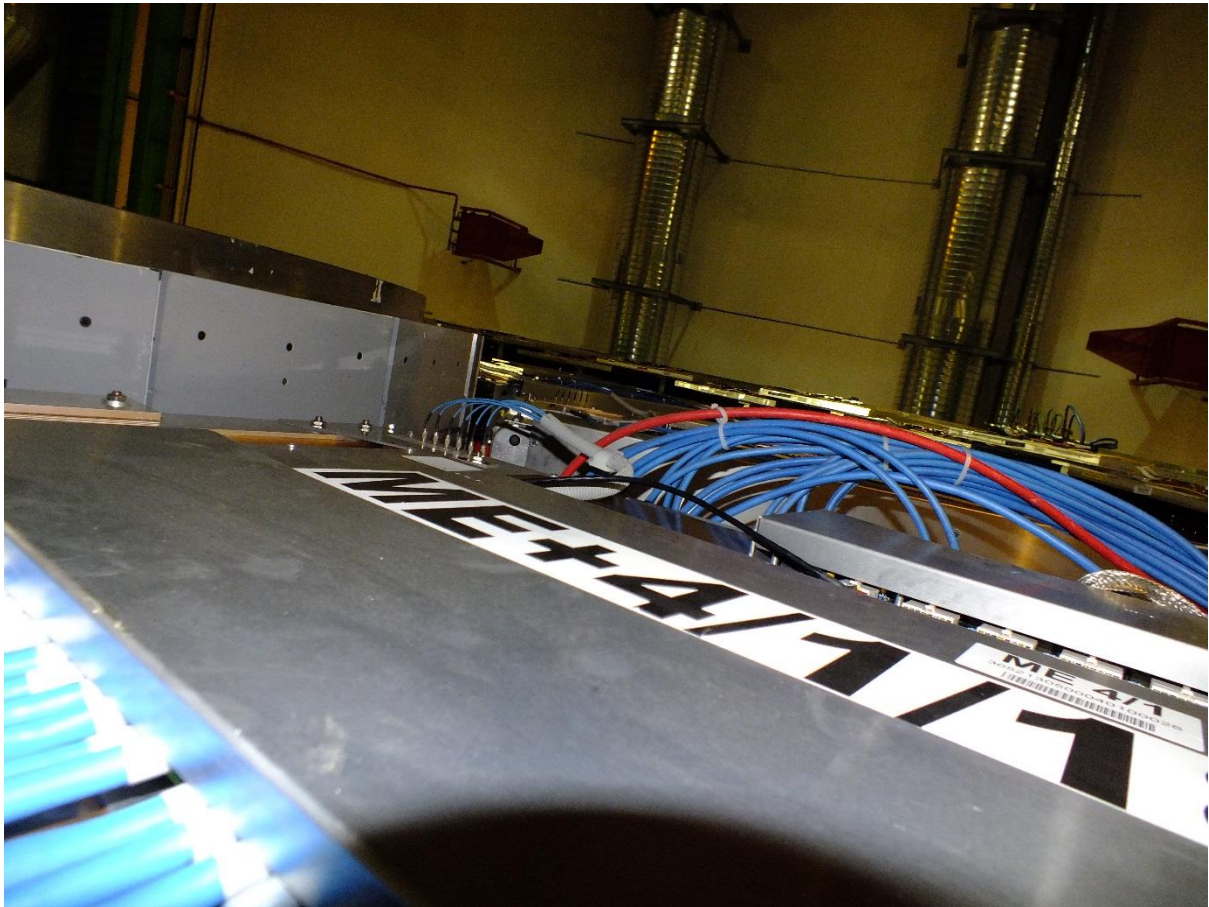
Summing the dimensions in Z

Clearance CSC	5
Alu Frame	8
RPC Body	30
RPC Electronics	20
Clearance	22
Total	85mm

With a clearance of 22mm and with the assumed 30mm for the RPC body the layout fits the 85mm available. Given the estimated similar chamber weight to RE type3 (70kg) the mechanics should be kept more or less as they are for reasons of rigidity and so gap integrity .

The distinction between envelope and as built real dimensions is a tricky subject and will need further investigation in situ. There are questions of cables and other services that will have to be clarified.

An example of cables that may reduce the available space in “Z”



Prepared by I. Crotty with input from Pino (Giuseppe.Passeggio@na.infn.it)

5 Feb 2015