



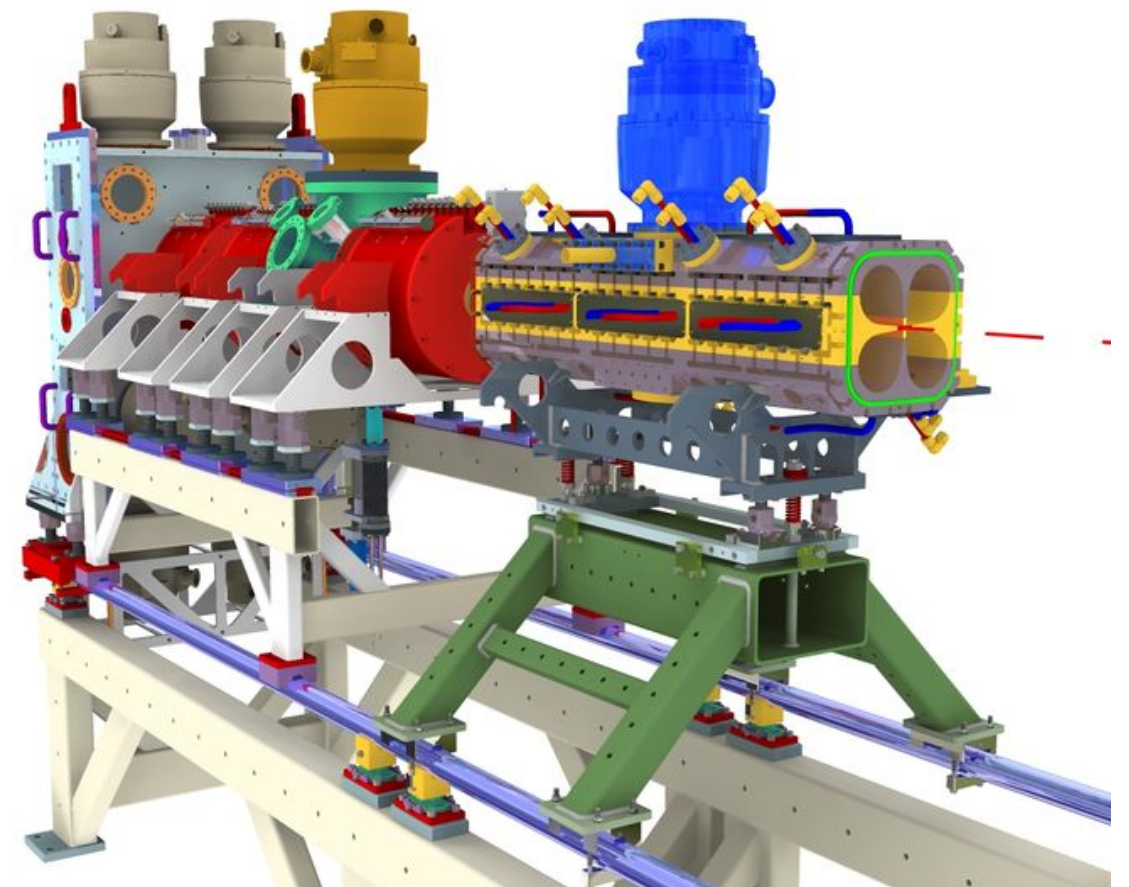
# FETS Schedule: initial thoughts / plans

*Thanks for major contributions from  
Pete Savage & Mike Dudman*

*FETS Meeting, RAL  
17/09/2014*

## Outline

- What use is a schedule?
- Defining success?
- Breakdown
- Draft schedule
- Imminent issues



**What use is a schedule?**

- Recommended by Oversight Committee.
- We have limited time left: FETS grant expires in March 2015. We will apply and hope to be granted an extension to ~Sept 2016 to “complete” FETS.
- A schedule will be essential to help us organize ourselves effectively and progress efficiently:
  - Aims to give an quick, monthly visual overview of the project status:
    - Where do we stand on the different component development / manufacture / readiness? What tasks remain and how best can we use our resources to complete them?
  - Helps each Work Package manager to know when their components will be needed in R8 to integrate with the main installation sequence.
  - Identifies resource constraints / bottlenecks, where our resources are overstretched or duplicated. Aim to suggest ways to improve these.
  - Highlights timeline for key decisions to be made and impact on schedule if decisions are delayed.

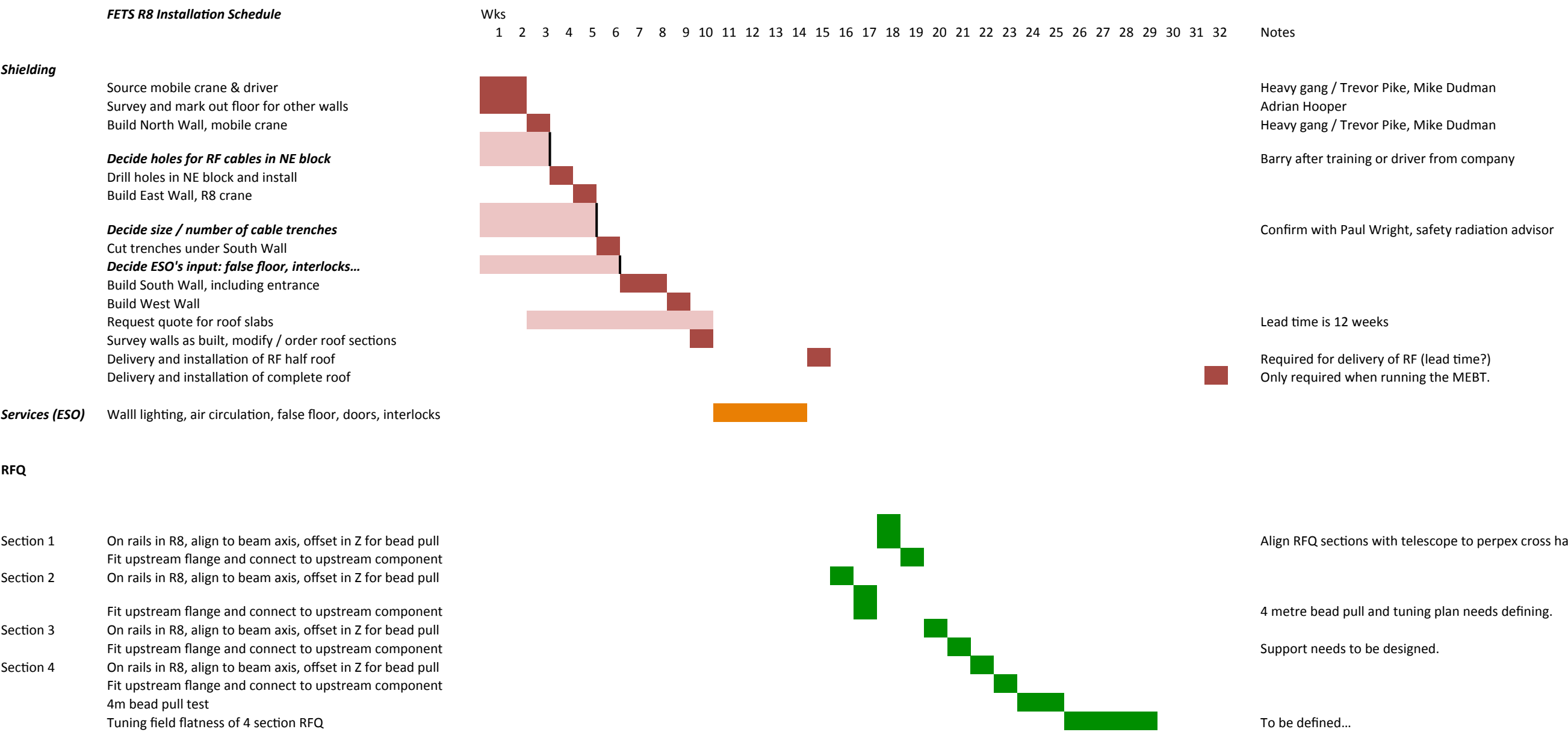
**What does it mean to “complete” FETS successfully?**

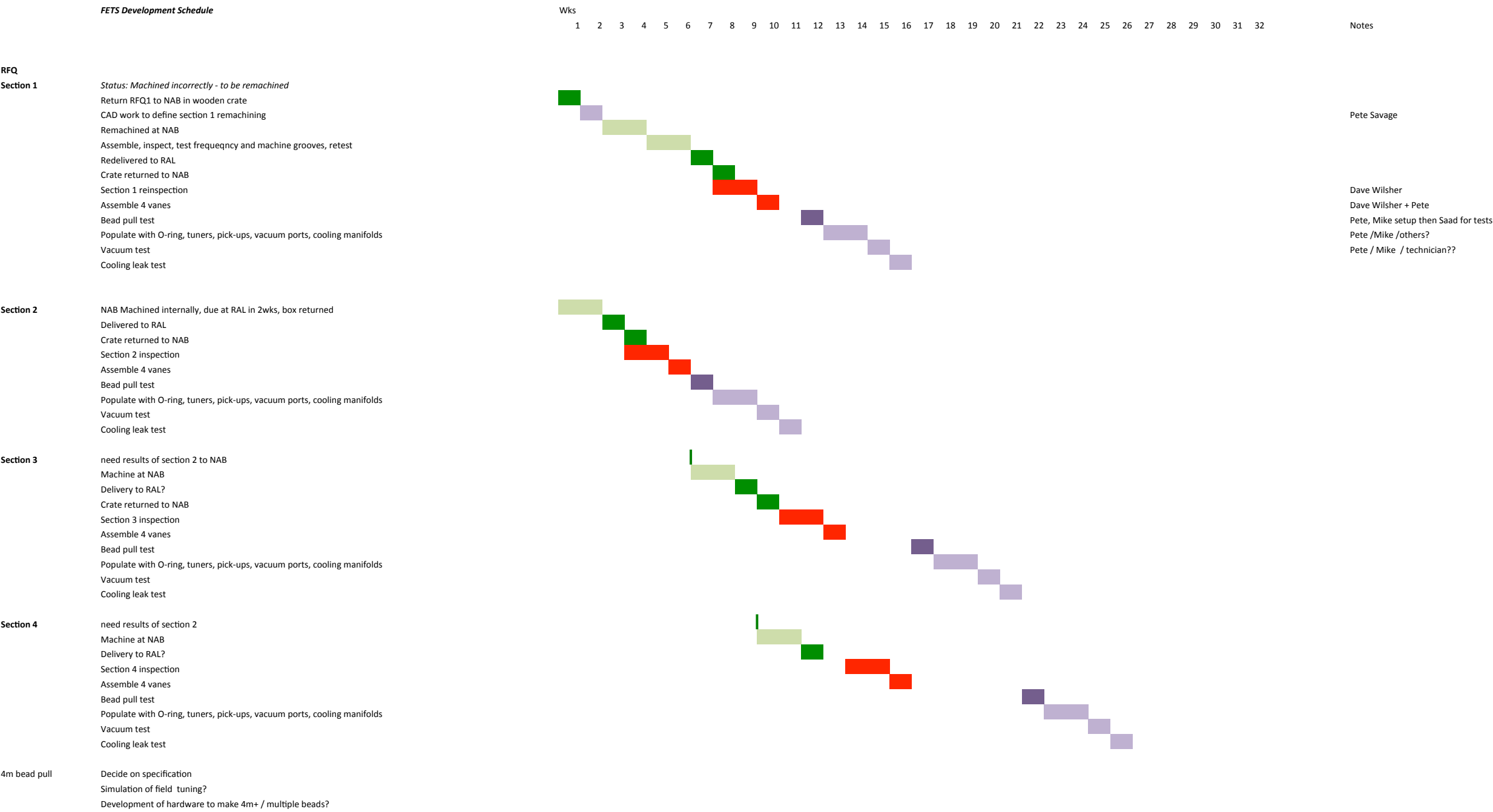
- We really need to define our goals / aims until the end of the FETS project. Essentially:
  - E.g.: by Sept 2016 aim to have RFQ, MEBT and diagnostics installed with first beam through all components.
  - Demonstrate effective beam chopping / first laser diagnostics.
  - What value of key parameters do we aim to achieve?
    - Beam current / duty cycle / RFQ and MEBT transmission efficiency / chopping / diagnostic technique?
    - How will these parameters / goals be measured?
- Definition of clear, realistic goals is critical, so as not to waste effort or time trying to achieve more than is required before the end of the current FETS project. [Advanced aims can be part of PAA].

**Breakdown schedule into two parts:**

- R8 Installation (& Commissioning) Schedule
  - Timeline of infrastructure and components as they will be assembled in R8 and FETS beam line.
- Development Schedule
  - More details list of tasks required to develop / build the components, ready for installation.
- Also have discussed a *Readiness Log*
  - Many components will arrive for storage in R8 prior to assembly in FETS.
  - Suggest to create an organized storage bay in R8: aim to box and log the status of all major items, together with all their components needed for final assembly.







Charles Evans  
Charles Evans?  
Outside Manufacturer  
?  
TBA

## FETS R8 Installation Schedule

Wks

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Notes

## Shielding

Source mobile crane & driver  
Survey and mark out floor for other walls

Heavy gang / Trevor Pike, Mike Dudman  
Adrian Hooper

Build North Wall, mobile crane

Heavy gang / Trevor Pike, Mike Dudman

**Decide holes for RF cables in NE block**

Barry after training or driver from company

Drill holes in NW block and install

Build East Wall, R8 crane

**Decide size / number of cable trenches**

Confirm with Paul Wright, safety radiation advisor

Cut trenches under South Wall

**Decide ESO's input: false floor, interlocks...**

Build South Wall, including entrance

Build West Wall

Request quote for roof slabs

Lead time is 12 weeks

Survey walls as built, modify / order roof sections

Delivery and installation of RF half roof

Required for delivery of RF (lead time?)

Delivery and installation of complete roof

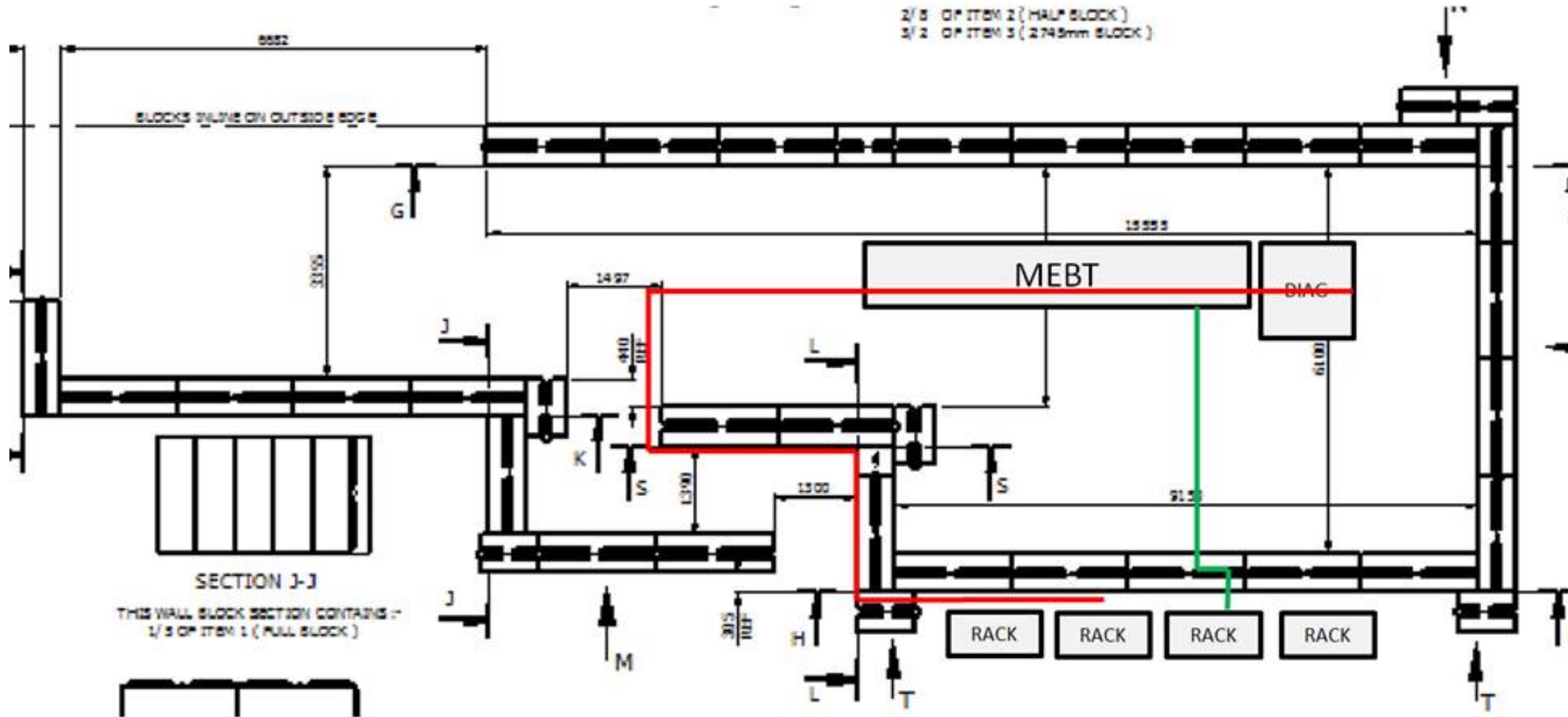
Only required when running the MEFT.

## Key decisions needed this month:

- Train Barry (longer) or preferably hire crane with driver?
- Holes for RF cables in NE block? Needed before East wall can be built.
- Size and number of cable trenches? need to cut before south wall goes up.
- Prompted meeting with Gary to define services cross section + cable lengths



# Cable routing lengths



- BPM electrodes - very low level signals to start with, and we need to limit any further attenuation by having short cables and as low-loss as possible. Cables must be phase matched as far as possible (if we do time-of-flight measurement then we will need phase matching to 1cm or about 3 degrees)
- Quadrupoles - large DC currents are involved. We need very low voltage drop across the cable to reduce the load on the PSUs and drivers. Also lower V drop means less ohmic heating of the cable.
- Fast chopper - I'm assuming the fast chopper pulse generator (FPG) is outside the shielding and not within. This is a very fast signal (t-rise <2ns at 1400V) and will probably generate some stray RF. Long cable can 'smear' the pulse and reduce the effectiveness of the chopper. I will speak to Mike CG about the cable he has in mind for this. Even if the FPG rack is within the shielding we need to think carefully about the cable routing.