

# WA104 – Installation Layout

## 1 March 2017



# Detector Outfitting

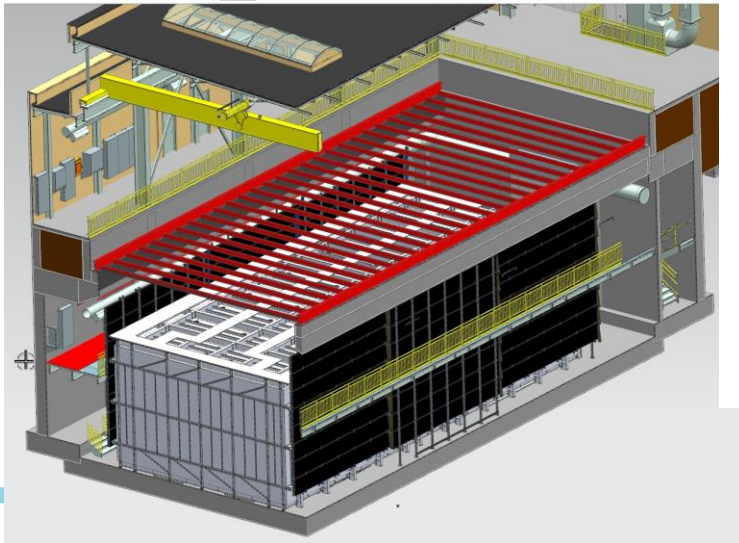
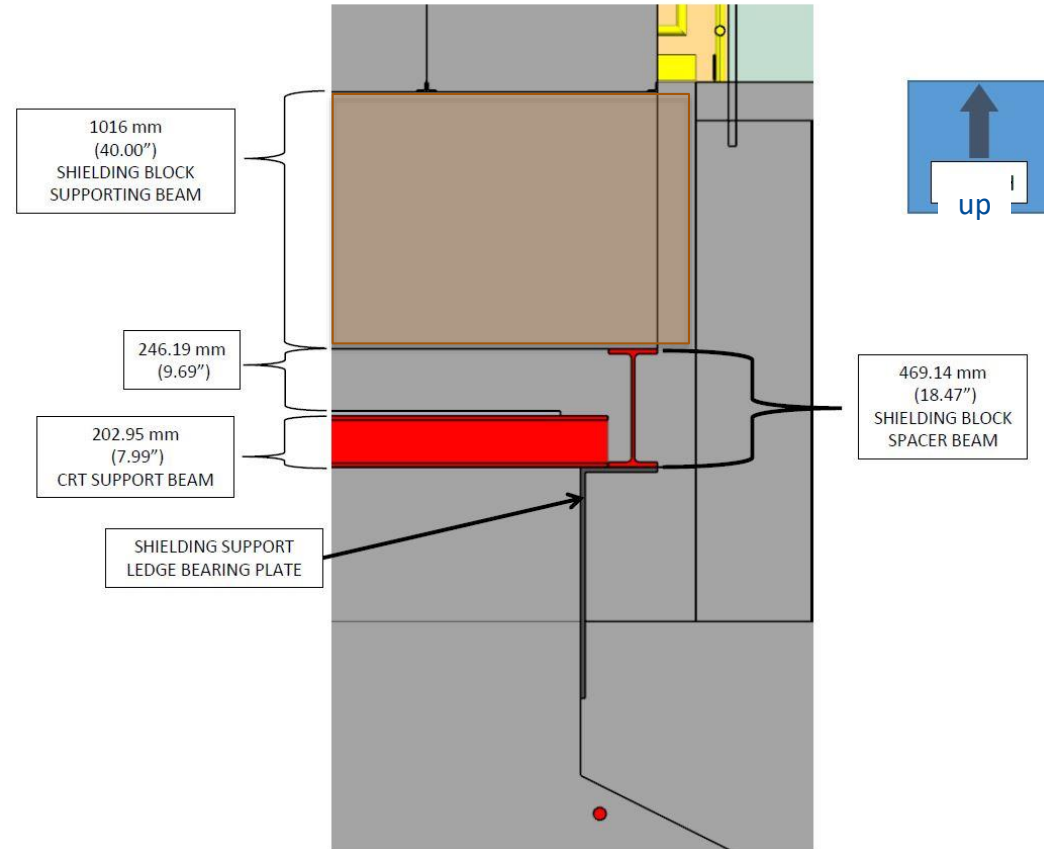
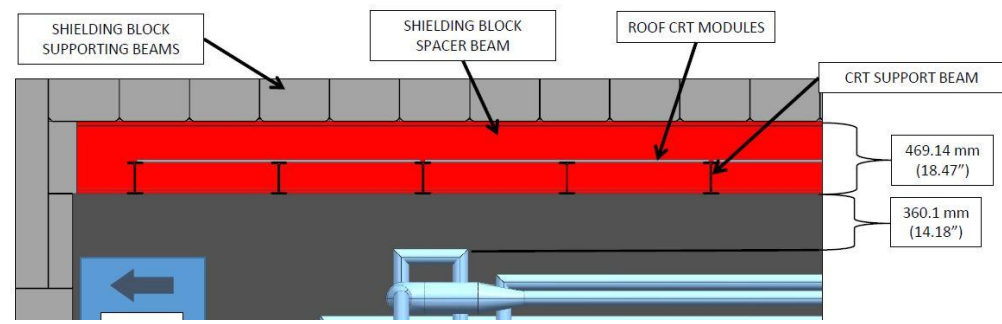
- Formal definition :
  - Infrastructure which is needed to support the installation and operation of the detector, but is not a part of the Building Construction
    - Why not part of the Building Construction?
    - Usually because it is a “chicken and egg” problem : the detector must be in place first, before certain supporting structures can be installed
      - Example : cannot install an electrical outlet next to a rack location if (a) the rack location is not yet known, or if (b) the rack location is on top of the installed detector
- Outfitting is closely tied to Integration
  - Everything has to fit together, no interferences
    - We use CAD layouts as much as possible to anticipate interferences, and solve these well in advance
    - Fermilab holds the master CAD file for installation of ICARUS at Fermilab
      - Justin Tillman is the main editor of this file
      - He gets input from all of us!

# Types of Outfitting Activities

- Mechanical
  - Raising of the overburden ledge, to create more vertical space
  - Support for CRTs
  - Support for cryogenics
  - Bridge between Mezzanine and top of the detector
  - Decking on top of detector; guardrails around the top
- Electrical
  - Extension of electrical AC circuits from circuit panels to rack locations
  - Cable tray – possibly non-metallic
    - Separate cable trays for AC power and detector readout
  - Rack AC on/off switch integrated with the rack protection system
  - Grounding system monitor
- Other (some overlap here with online systems)
  - Detector network infrastructure
    - Fiber termination; network switches; cat5 cables
  - Accelerator timing distribution
  - GPS distribution

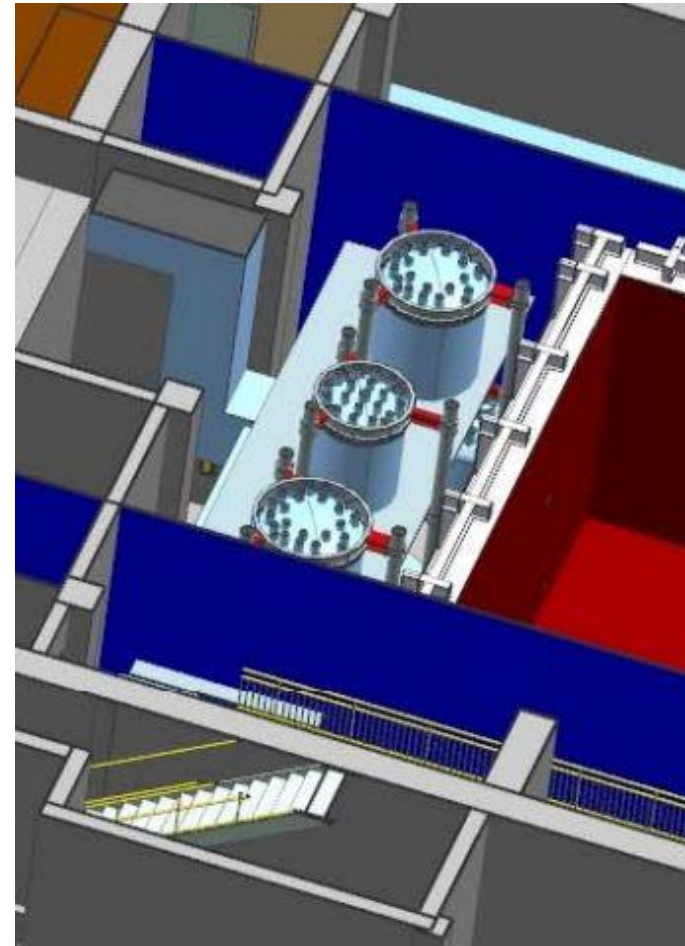
# Status of Outfitting

- Ledge riser
  - Preliminary design exists
  - Final design begins this month
    - Need approval of dimensions!
- CRT Support
  - Preliminary Design exists
    - CRT top support is integrated with the ledge which raises the elevation of the overburden
  - Final design not yet started



# Status of Outfitting

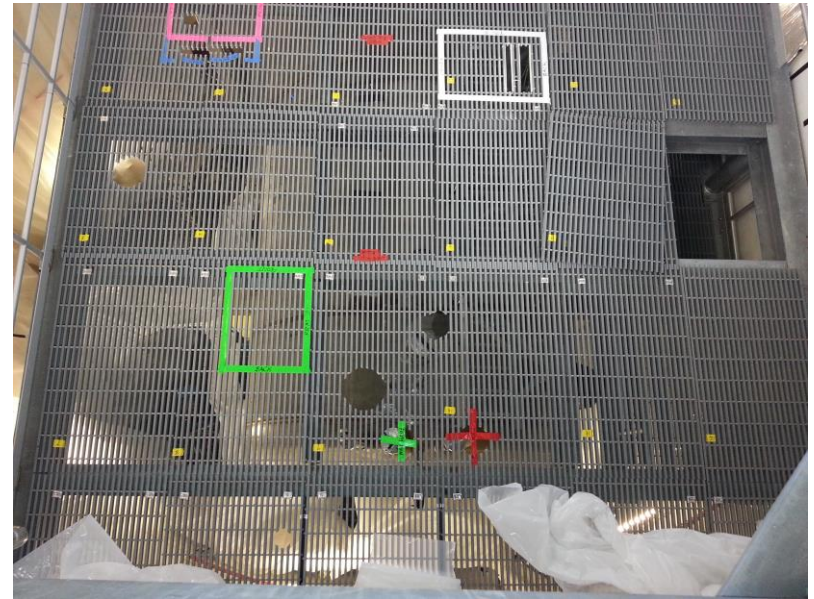
- Cryogenics support
  - Preliminary design exists
    - Extend Mezzanine-level platform around Proximity valve boxes; allows access to valves
    - Posts in diagram at right support the valve boxes, and allow for their interior contents to be accessed from below
    - Would like to see if one access point to the detector top can fit at this end, at a corner
    - Ignore the blue “wall” at right – it indicates crane coverage
  - No further work on this until Demaco has layout proposals to present for review





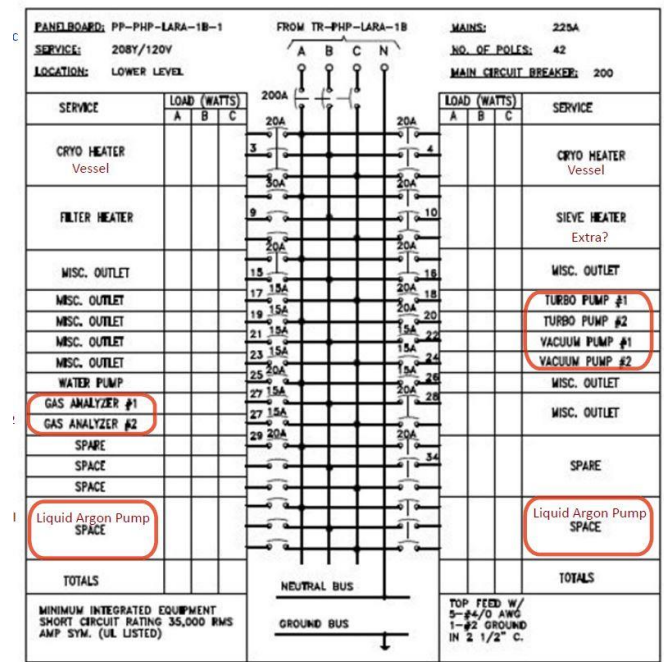
# Status of Outfitting

- Top of detector
  - Planning is just starting
  - Decking, aka walkways
    - I strongly suggest overall decking, and not narrower walkways
    - Make holes where needed for piping and chimneys
    - I also strongly suggest using a non-metallic decking
      - Maintains grounding plan - separation between metal of racks and metal of warm vessel
      - At right, the MicroBooNE platform – fiberglass deck panels
  - Likewise, fiberglass cable tray

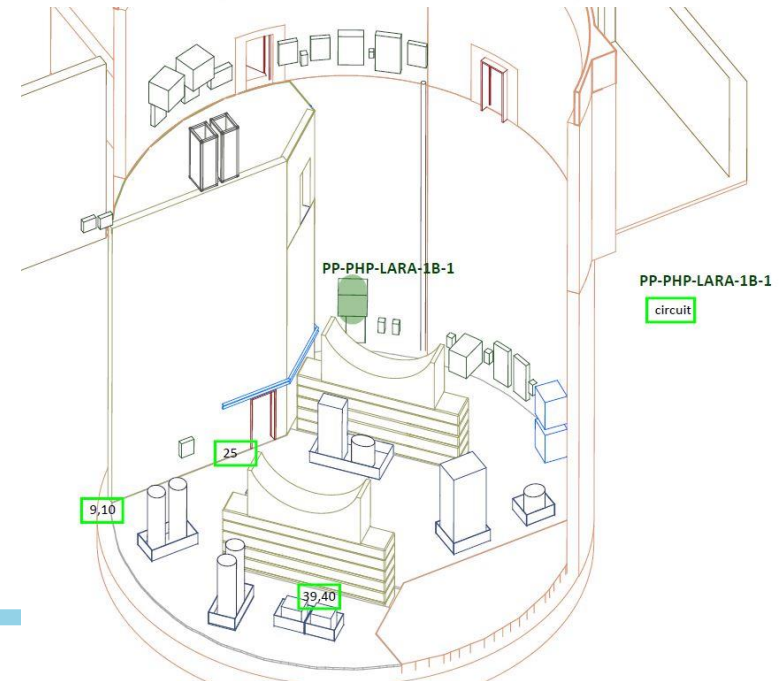


# Status of Outfitting

- Electrical distribution
  - Planning has not started yet
  - Gathering information on racks, their contents and preferred locations
    - DocDB-1383
  - This task includes electrical needs for the cryogenics
    - Example from MicroBooNE - -
      - Identify the circuits in the panel which feed specific devices (eg LAr pump)
      - Create a map which shows the location of the panel and the location of the device
        - This is the amount of detail information needed by the Lab's electrical contract coordinator



**PANELBOARD PP-PHP-LARA-1B-1**



# Status of Outfitting

- Network services
  - Network for the building systems is in progress
    - Part of Construction contract
    - Our network rack is pretty empty (just wait)
  - Detector & DAQ needs are being gathered
    - FNAL Computing will help determine the network switch hardware, and they also perform the installation
    - Eventually our network rack will look more like the one at MicroBooNE
  - AD timing signals – related – as they come in on AD network in the same network fiber bundle
- GPS
  - Bill Badget is looking into the best location for the antenna (which might not be on the FD Building)

