

iTPC Project: Scope of Work for preparation of 3D Solid Model for STAR Inner Sector Strongback

Model issues to make model current with Blue Print 24A368D

(Note, a Rev B hardware prototype is located in Bob Scheetz's lab)

- 1.) Sheet 1: Blue Print zone D17 (Detail 4) and zone D12 – cutout with ¼-20 tapped hole for cooling manifold is modelled incorrectly on the right side. (For clarification, compare right and left cutouts.) Make the same to match Blue Print.
- 2.) Sheet 1: Blue Print zone A12, section FF – callout for 0.375-32 UNEF -2B in 8 places. The drill diameter for tapped hole is incorrect in the model. The model measures 0.332” but should be 0.344” as shown on the Blue Print. (Check information embedded in model notes to see if the notes say something different and/or needs to be updated.)
- 3.) Sheet 2: Blue Print zone C8 & C9, section CC – Starting point for 8x0.5” slot pattern coming off datum B and E, should be 2.312” It is currently 2.298”. All 8 slots on the model need to be shifted towards the narrow end of the sector to match Blue Print.
- 4.) Sheet 2: Slots in front face for electronics, 55 places 2.625x0.75 – Blue Print Zone C5 & Detail 3 – Count from top (wide end). Rows 6, 7 and 8 on right hand side of datum C. 6 holes in the model are in the wrong location according to blue print. (Before executing this task, see item 5.) Note that rows 6, 7 and 8 are *not* uniformly spaced as the eye scans from left to right.

Additions to model for revision E:

- 5.) Move all slots in front face down by 0.221”. Alternatively, start with the solid model without slots and place all 55 slots on the model according to the Blue Print specifications but 0.221” below the nominal position shown on Rev D drawing. (Shift is toward the narrow end of the sector.) See the attached Power Point slides for a conceptual design sketch.
- 6.) 0.070” deep cutout for PCB wall, relief for wires, screws and pins to hold in alignment. Note that a cutout is needed on both the top and bottom faces of the sector. See attached Power Point slides for conceptual design sketch.

Dimensioning Recommendations for Clarity:

- 7.) Sheet 1: Blue Print zone A12, section FF – Tap threads for 0.375-32 UNEF-2B to depth shown should be 0.600”. This is not clear on the rev D drawing. See outer sector drawing 24A392G section FF where similar detail and dimensioning is better illustrated. (Thread depth is 0.600, use 24A392 Blue Print Zone A11, section FF as the style-template for 24A368 Rev E drawings.) See attached Power Point slides for suggested style.
- 8.) Sheet 1: Blue Print zone A13, section EE and Section DD, clarification of dimensioning of steps is needed. Section DD has an unspecified dimension, for example. See outer sector drawing 24A392G section DD and EE where similar detail and dimensioning is better illustrated. When adding dimensions to the 24A368 Rev E drawing, we recommend dimensioning off of datum E (for EE) as was done on 24A392G. Recommend dimension off of datum D (on DD) as was done on 24A392G. See attached Power Point slides for suggested style.
- 9.) Sheet 1: Blue Print zone C11-C12 – Note that 2.267” dimension is correct but difficult to visualize since it is measured along the 15 degree face which is parallel to the 2.250” wide relief cut and, also, the reference point is hidden in this view. It is correct in the model and on the Blue Print. No change required, simply noted here because it is confusing.

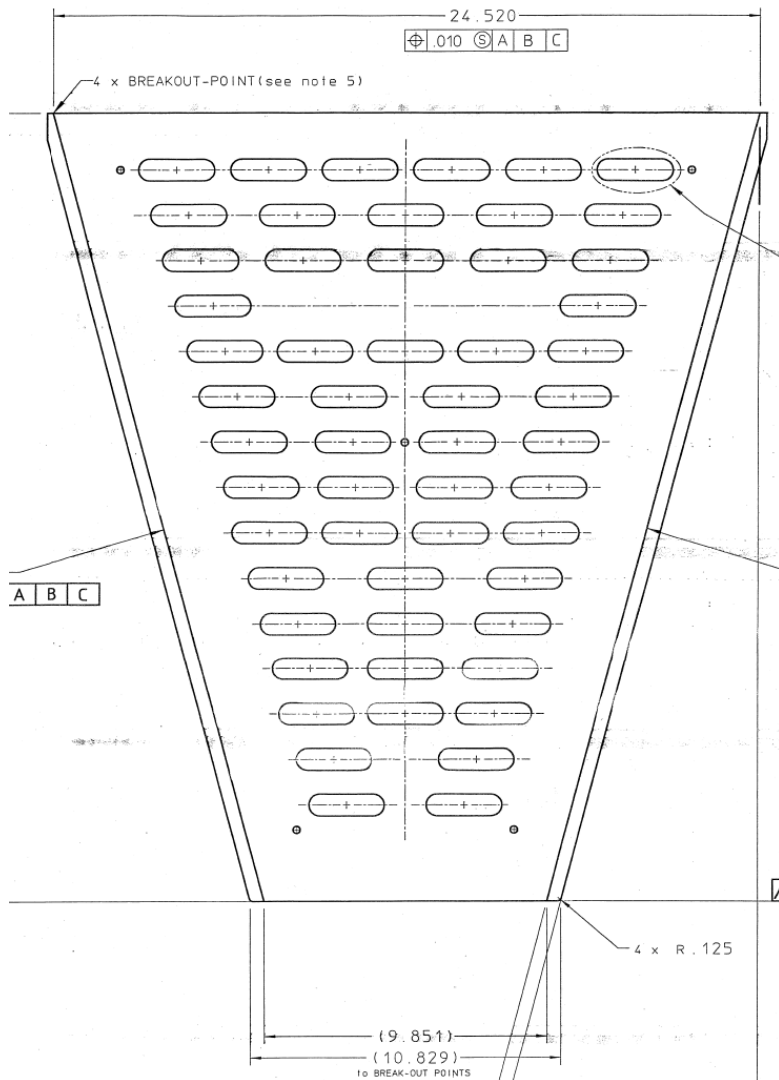
New PadPlane Connector Locations for the FEE electronics cards

Jim Thomas

November 6th, 2015

- Connector locations for the FEE cards are shifted, slightly, compared to the previous (circa 1995) locations
- Change
 - Connector locations remain the same in one dimension, but in the other dimension they all move down by 0.221”
 - “Down” means toward the narrow end of sector

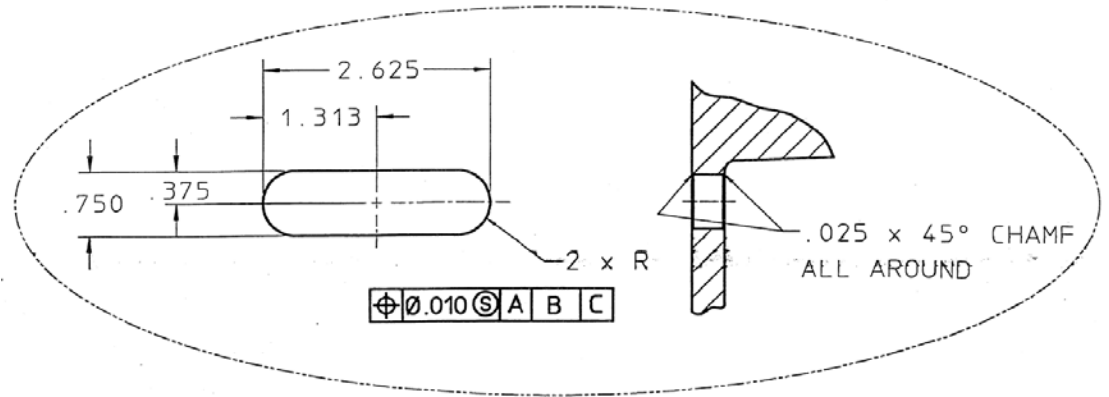
Old Compared to New



- **55 Slots, same number of slots as before**
- **For all 55 slots, Horizontal distance from centerline remains the same**
- **For all 55 slots, move center of slots down by 0.221”**

Slot Detail

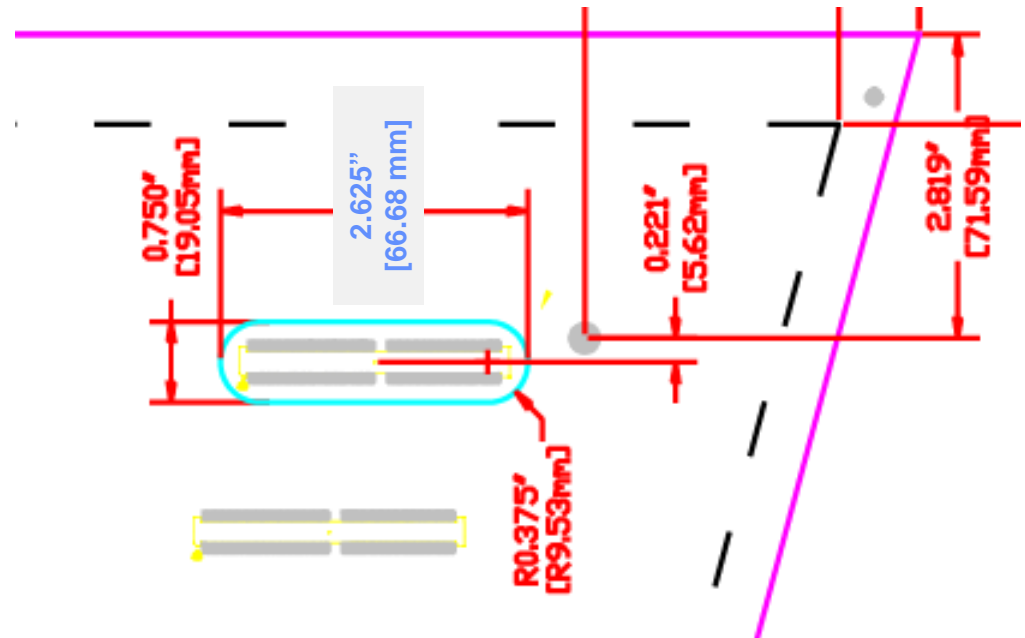
Slot Detail from LBL Drawing 24A368D (circa 1995)



Detail 3

The connectors for the new electronics cards fit in these slots. The old cards had a right angle connector while the new cards will use a card-edge connector. The different style connector means the centerline for the slots must be shifted down slightly.

New Slot Detail

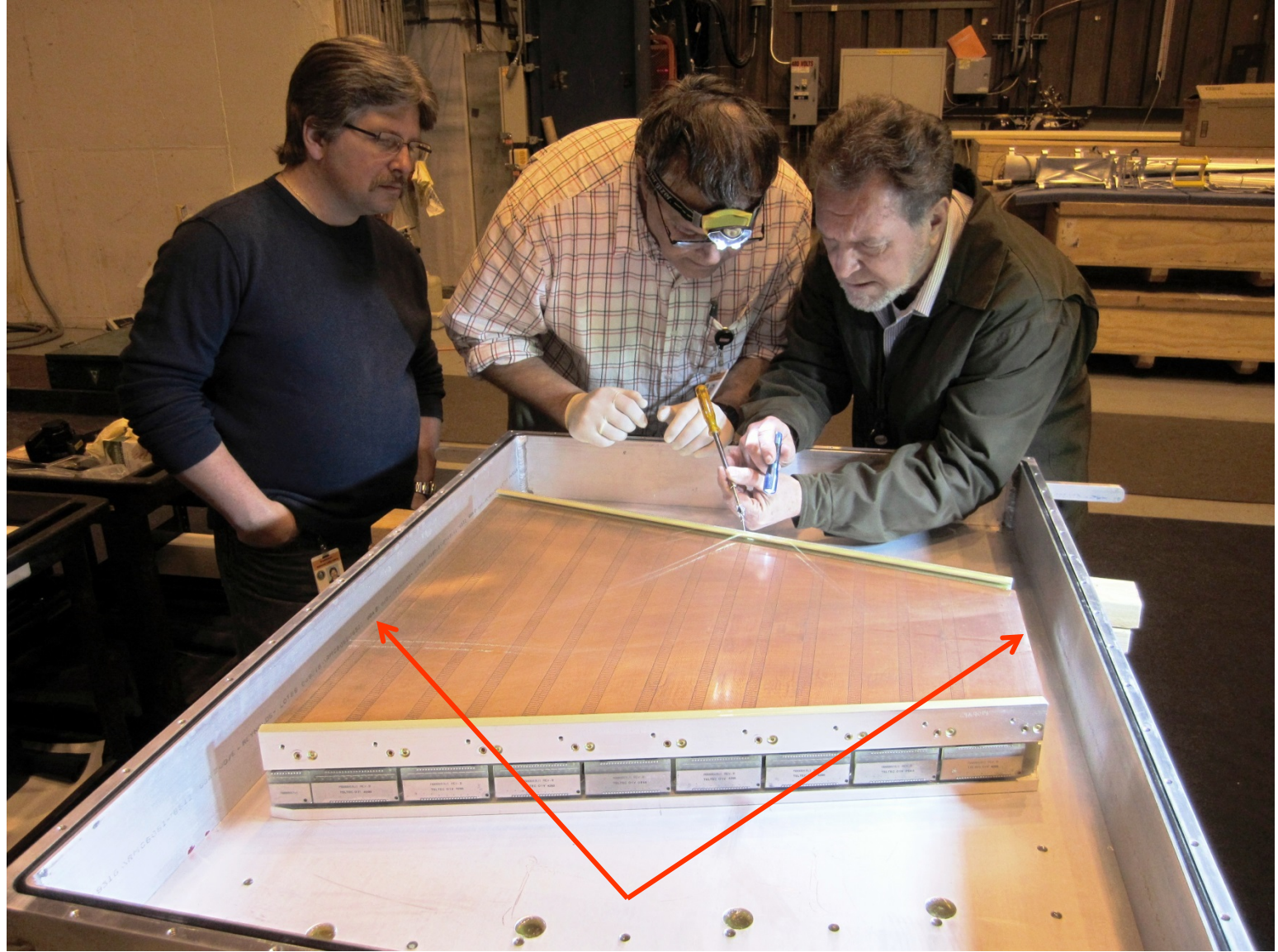


**Changes to the Inner Sector Strongback
to accommodate a wall
between the inner and outer sectors
(and a 2nd wall at the innermost edge of the inner sector)**

Jim Thomas

11/06/2015

Two walls required – same style and technology



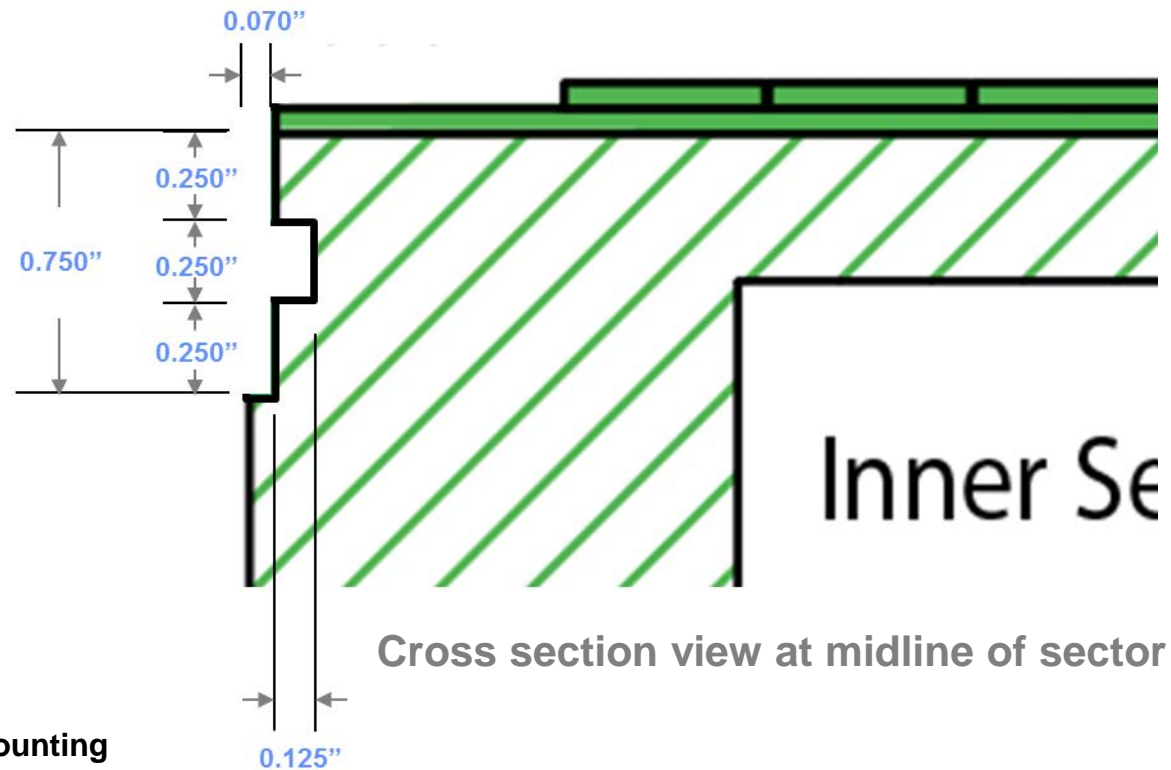
Jim Thomas - LBL

Conceptual Design of Notch to hold PCB Walls



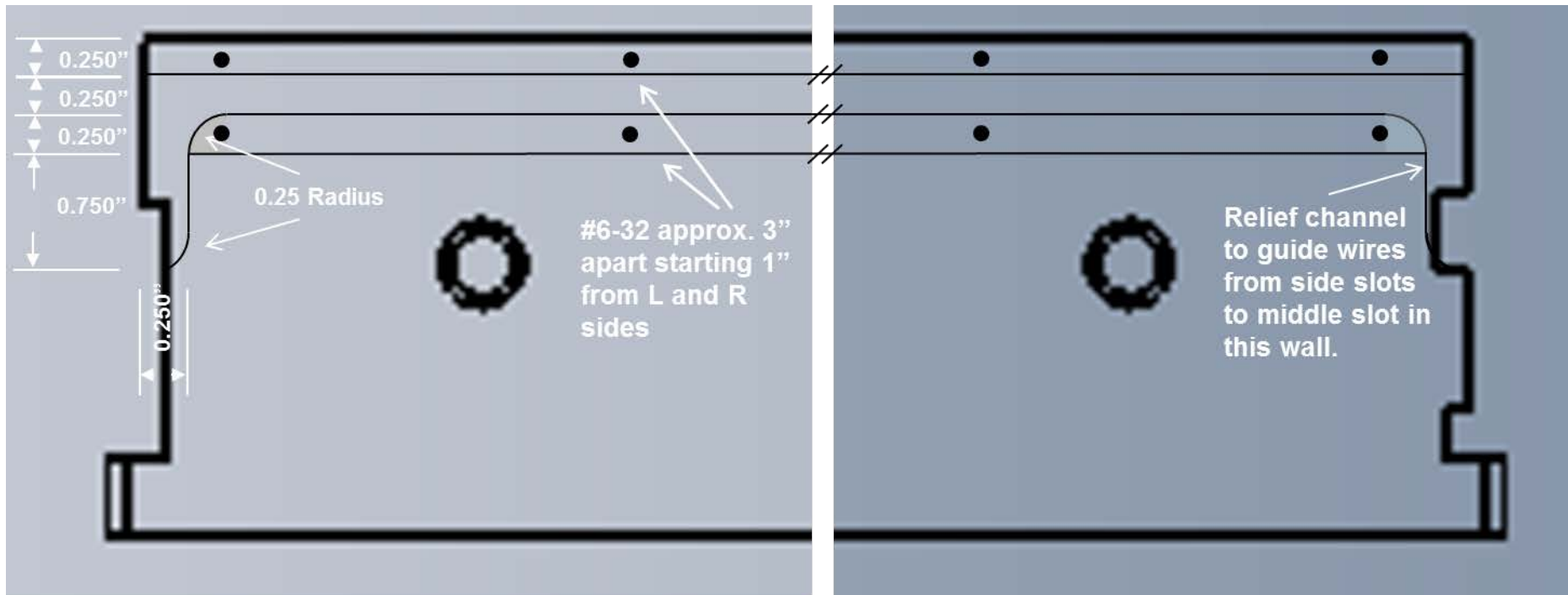
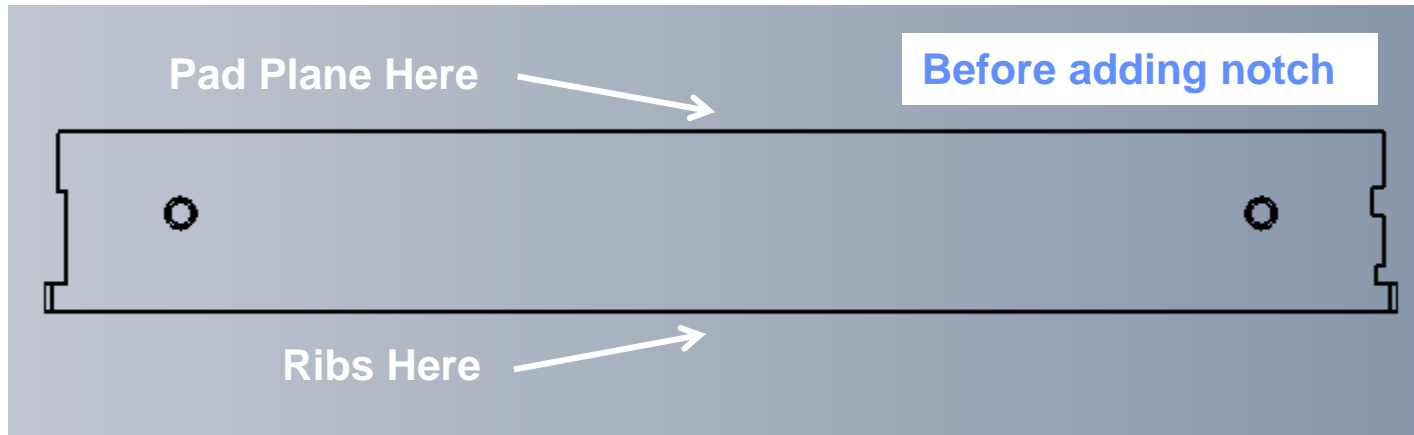
**DRAFT : Not to Scale
Not for Construction**

(dimensions are inches)



- $\frac{3}{4}$ " by 0.070" notch is for mounting PCB board as the wall
- $\frac{1}{8}$ " deep auxillary channel is to carry up to 3 wires (1000V, 18 AWG)

End View detail – note access path for wires



Dimensions - recap



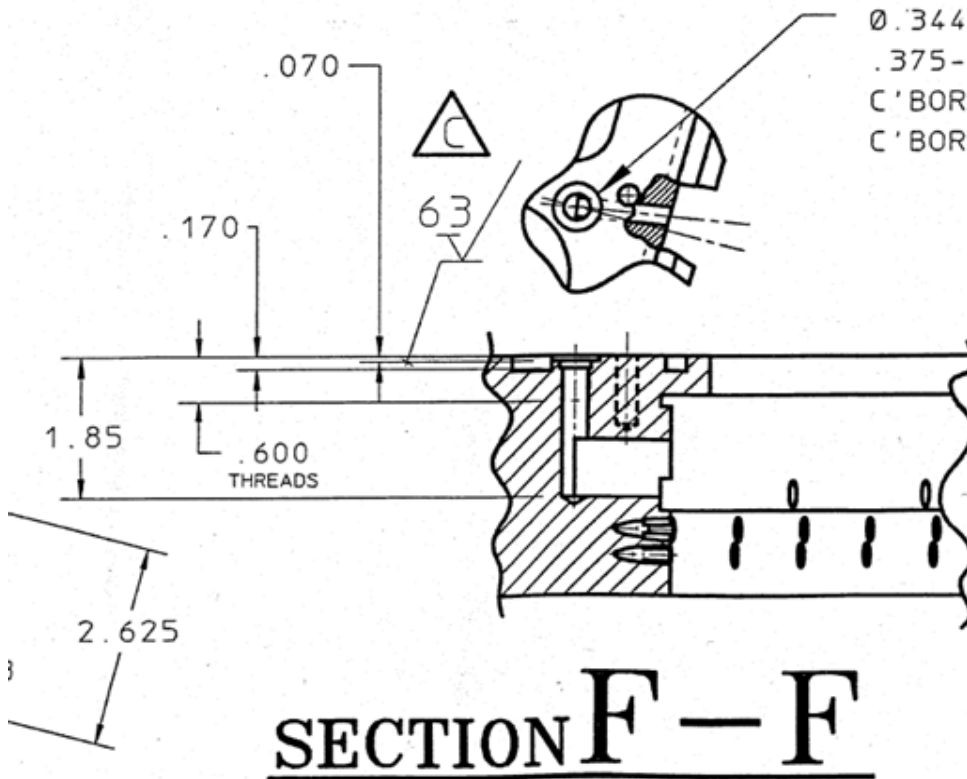
- Notches & Wall are on the same side of the sector as the PadPlane
- Wall will be 1/16" G10 and should fit comfortably into 0.070" notch
- Two walls required: Notch is full width at top and bottom of inner sector
 - Sector is 24.5" full width at top, 9.85" full width at bottom
 - 0.070" deep
 - 0.750" tall
- 1/4" wide channel for wires, 1/8" deep
 - Wires go under the wall
 - So channel is 0.125" deeper than 0.070" cut for wall
 - Note addition of access path for wires ... to go from side of sector, to backside of the wall
- Two rows of screws, first row is 1/8" below padplane surface, etc.
 - Use #6 screws, about 3 inches apart, counter sunk into G10 wall
 - Start with first screw at 1" from left or right edge. 2nd and 2nd to last "screw hole" on lower row should be replaced with a 1/8" Si-Bronze (or Brass?) dowel pin for alignment. End of pin should be flush with top and bottom sides of the inner sector. Probably 1/2" long pin is appropriate.

Better Dimensioning Style and Conventions borrowed from the Outer Sector Drawing 24A392G

Jim Thomas

November 6th, 2015

From OUTER Sector ... good style



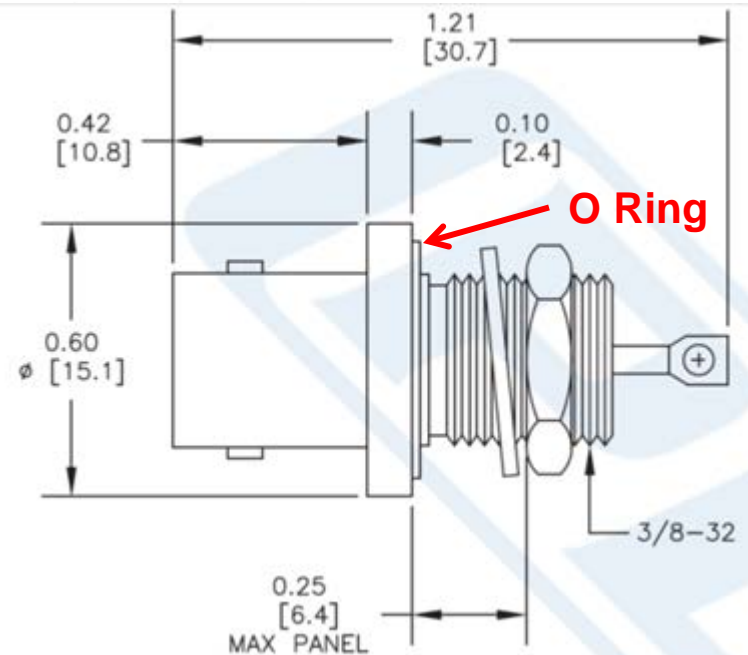
SECTION F - F

SCALE: 1/2

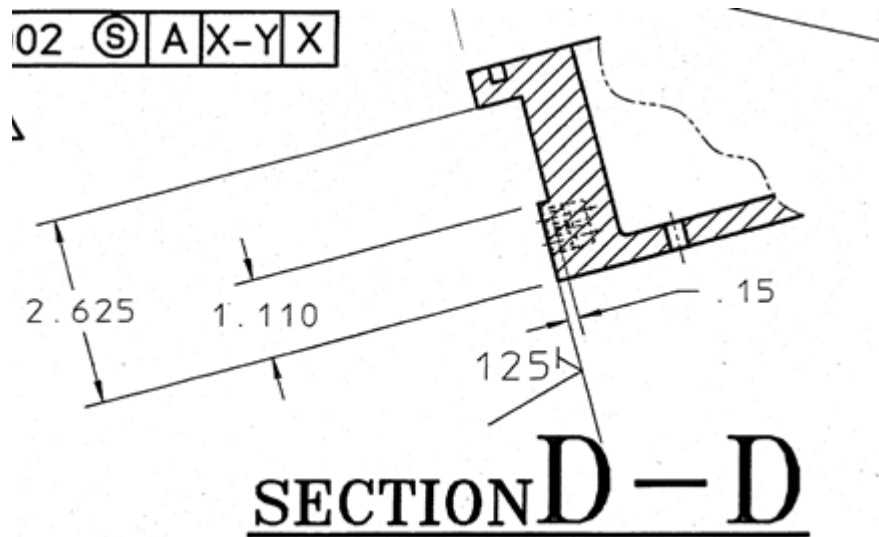
4 PLACES - AS SHOWN

4 PLACES - MIRROR IMAGE

Drawing of BNC connector to go into 3/8-32 hole



From OUTER Sector ... good style



Note that these section details are from the OUTER sector drawing 24A392G. They are not the same as for the inner sector. However, they used a good dimensioning style, and similar dimensions near bottom face (but not top, due to different heights of inner and outer sectors).

