

Microprobe Freezer Features

Required

- Fits in the microprobe
- Vibration free
- Reproducible submicron positioning
- Low fluorescence & scattering background
- Transmission through sample
- Frost free

Desired

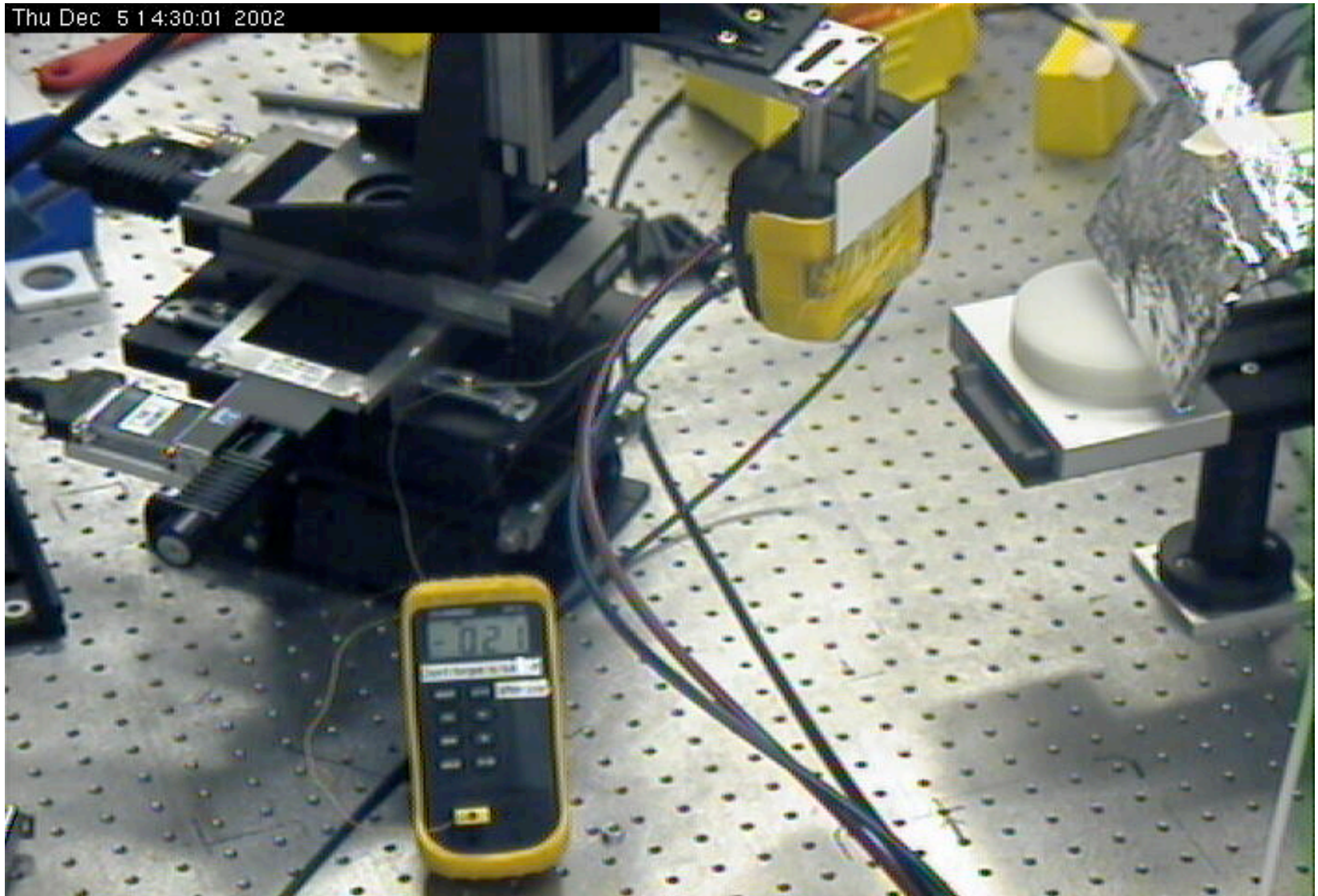
- General User friendly
 - Easy to operate
 - Quick sample exchange
- Beamline Staff friendly
 - Easy to set up/ take down
 - No intervention required during a run
- Sample visible to video microscope
- Inexpensive

TEC Design Guide

<http://www.melcor.com/assmtips.htm>

<http://www.melcor.com/procedl.htm>

Thu Dec 5 14:30:01 2002



Design Considerations

- Thermally isolate hot and cold sides using
 - Spacer block on cold side
 - Closed cell foam around TEC and spacer
- Prevent condensation on TE elements
 - RTV or epoxy layer covering foam insulation
- Mechanical tolerances $\pm 0.0005''$
- Typical thickness of assembly 25 mm

Performance of annular TEC

30 x 30 mm with 14.5 mm aperture

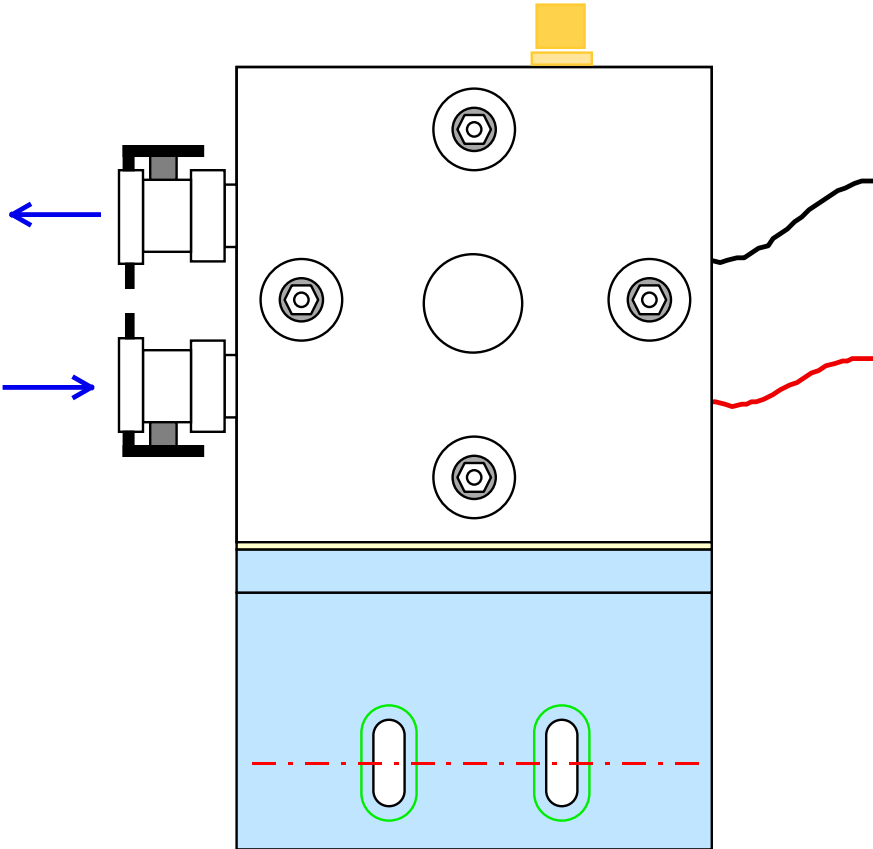
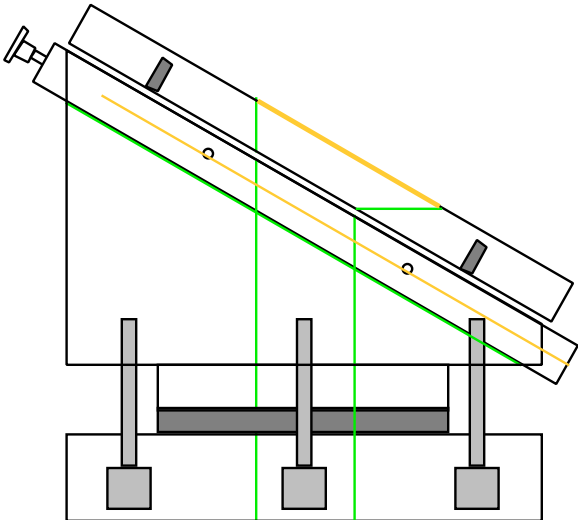
- -40°C using -25°C coolant
- -29°C using +5°C coolant

TEC COLD STAGE: MELCOR SH 1.0-95-05L

PNC-TEC-ASSEMBLY-30 B
15-MAY-2002

ASSEMBLY DIAGRAM

SUPPORTS 30 X 30 MM TEC W/14.5 MM APERTURE

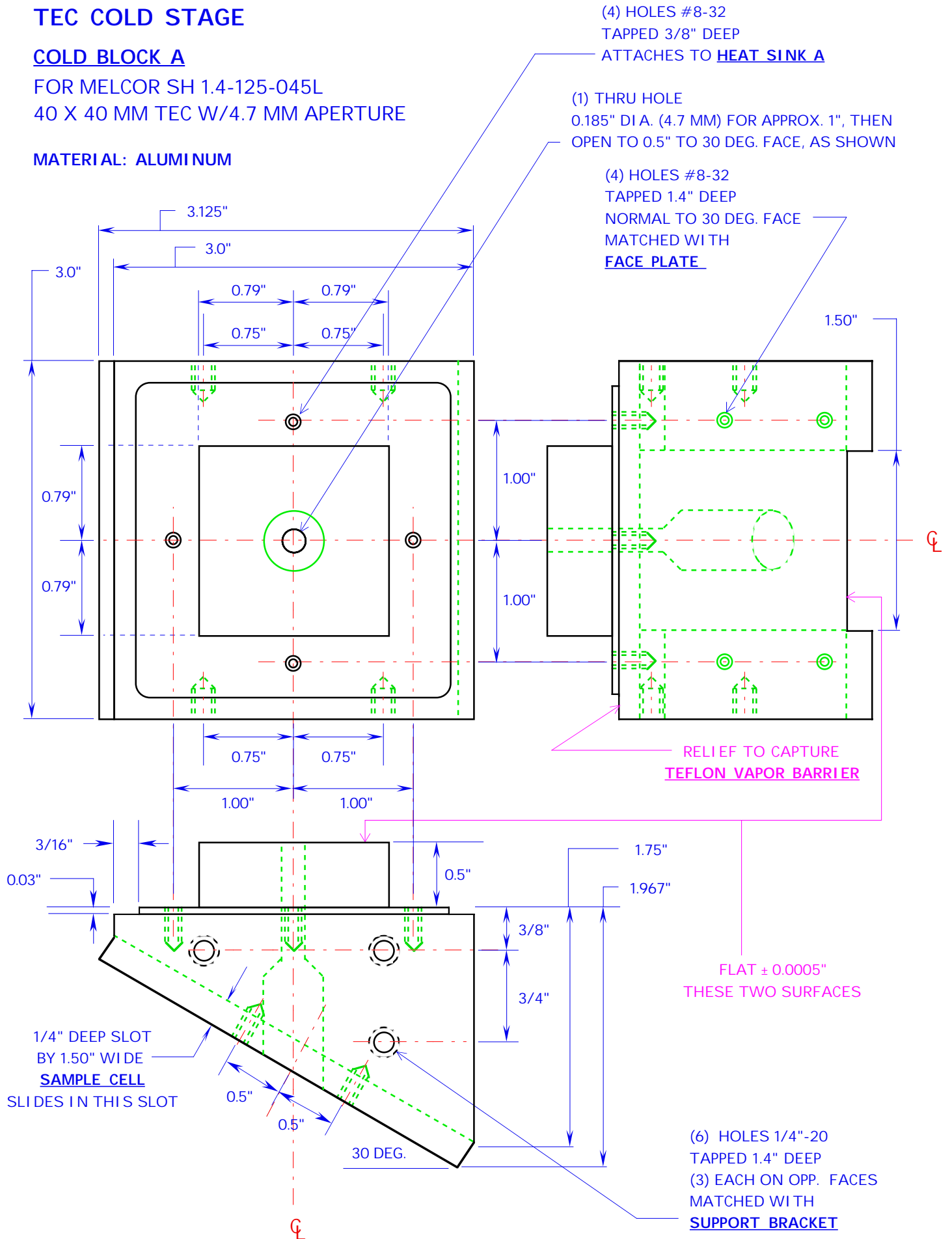


TEC COLD STAGE

COLD BLOCK A

FOR MELCOR SH 1.4-125-045L
40 X 40 MM TEC W/4.7 MM APERTURE

MATERIAL: ALUMINUM



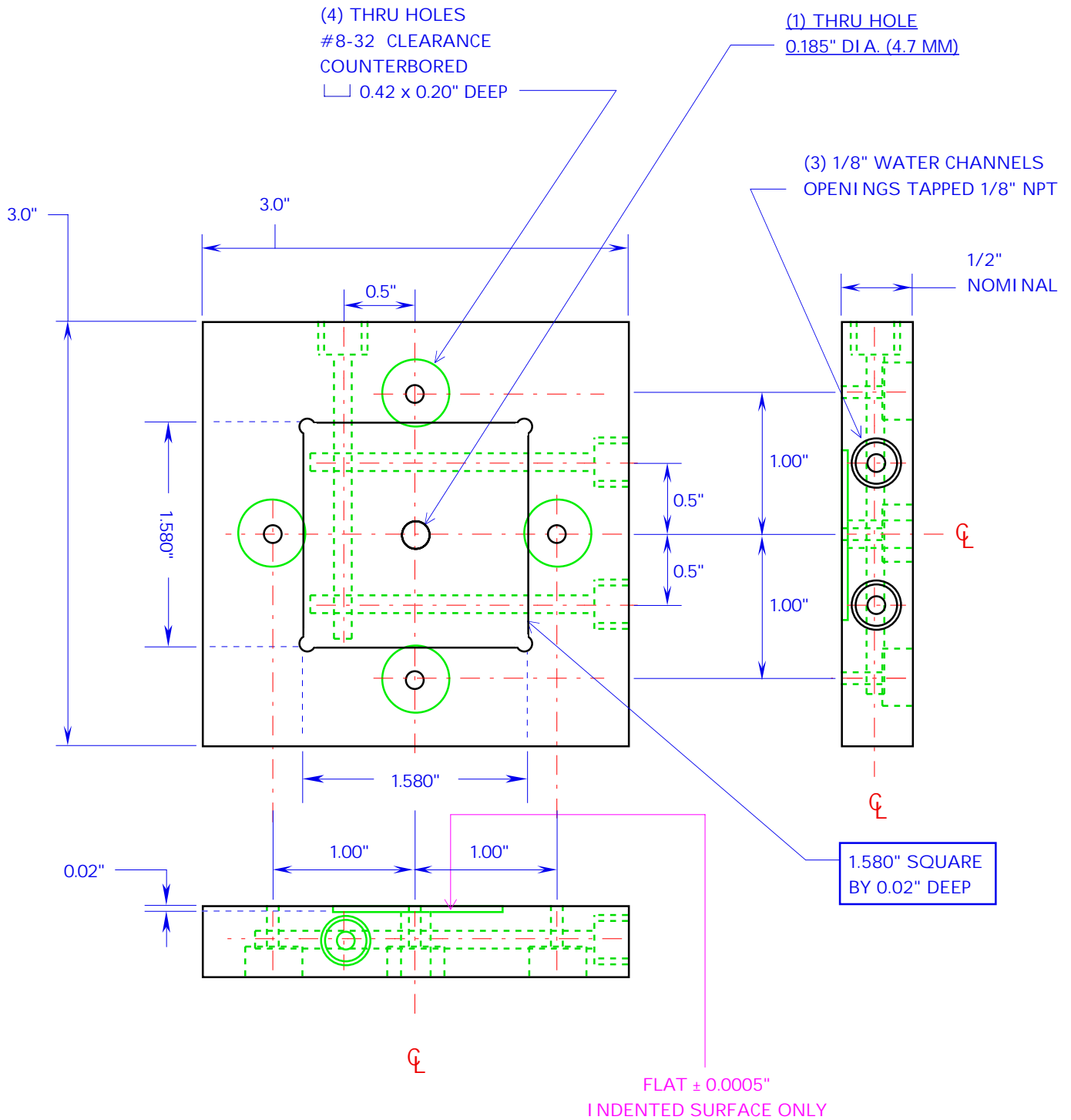
TEC COLD STAGE

HEAT SINK A

FOR MELCOR SH 1.4-125-045L

40 X 40 MM TEC W/4.7 MM APERTURE

MATERIAL: ALUMINUM



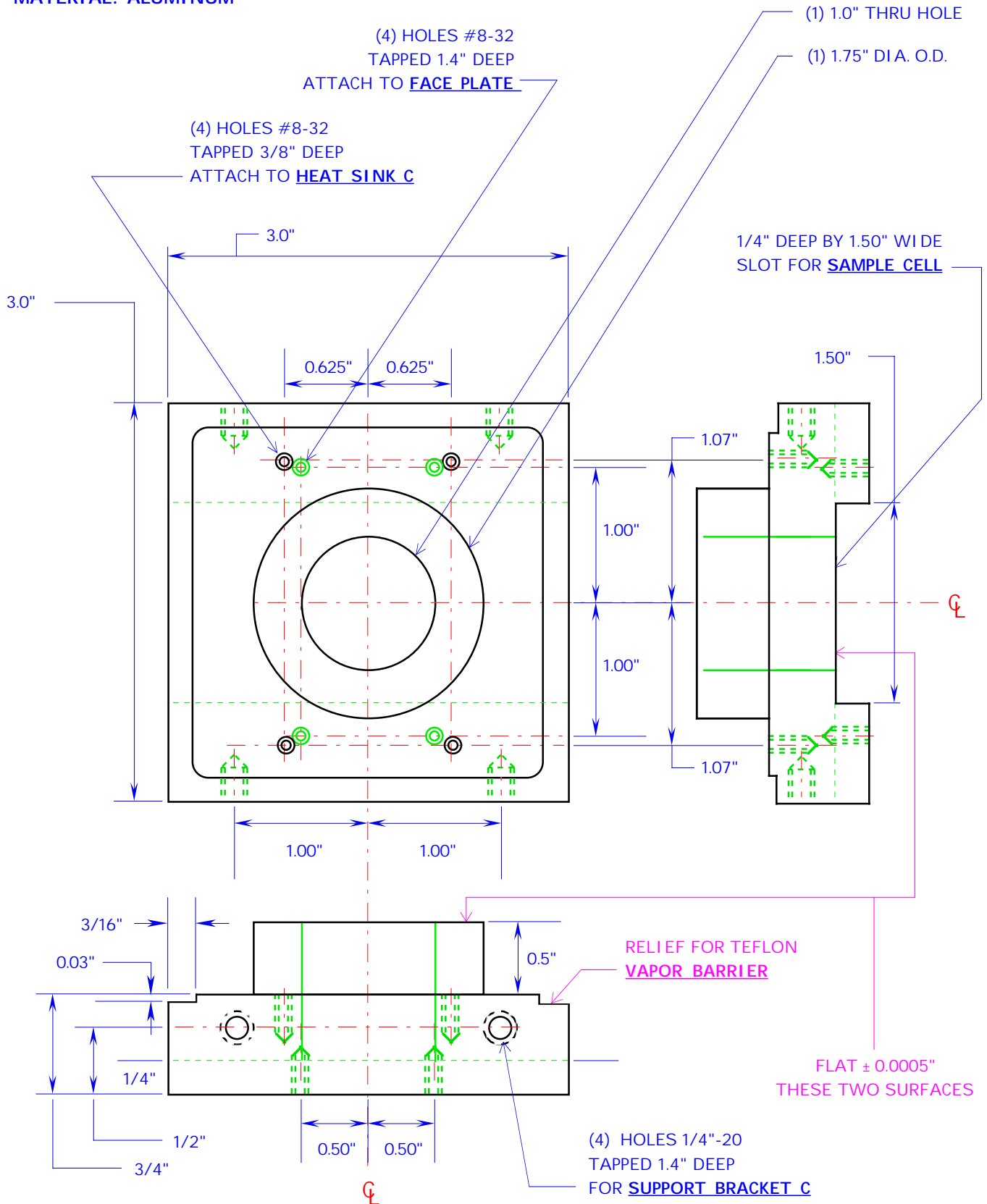
TEC COLD STAGE

COLD BLOCK C

FOR MELCOR RH 1.4-32-045L

55 MM DI A. ANNULAR TEC W/27.5 MM APERTURE

MATERIAL: ALUMINUM



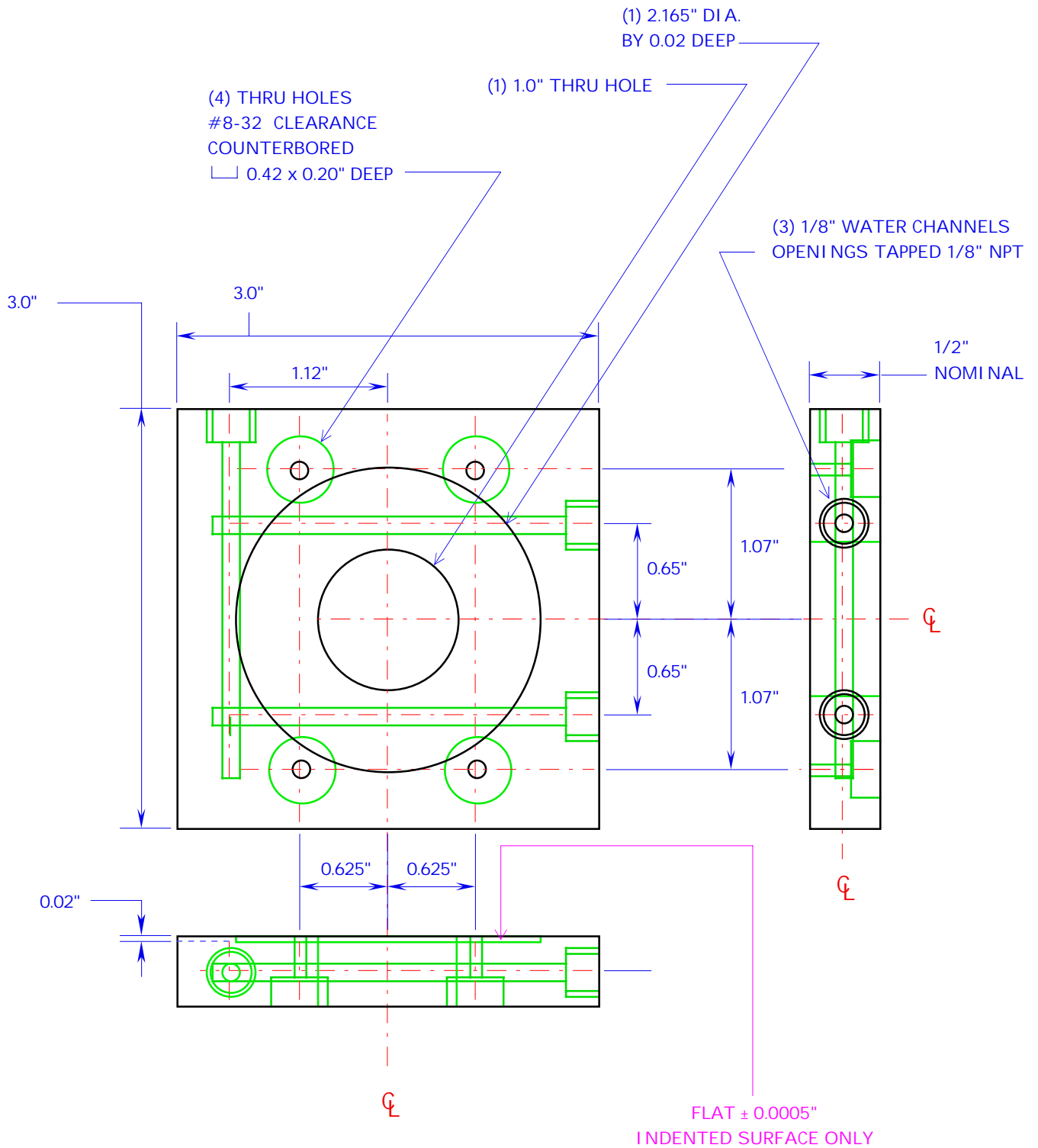
TEC COLD STAGE

HEAT SINK C

FOR MELCOR RH 1.4-32-045L

55 MM DI A. ANNULAR TEC W/27.5 MM APERTURE

MATERIAL: ALUMINUM

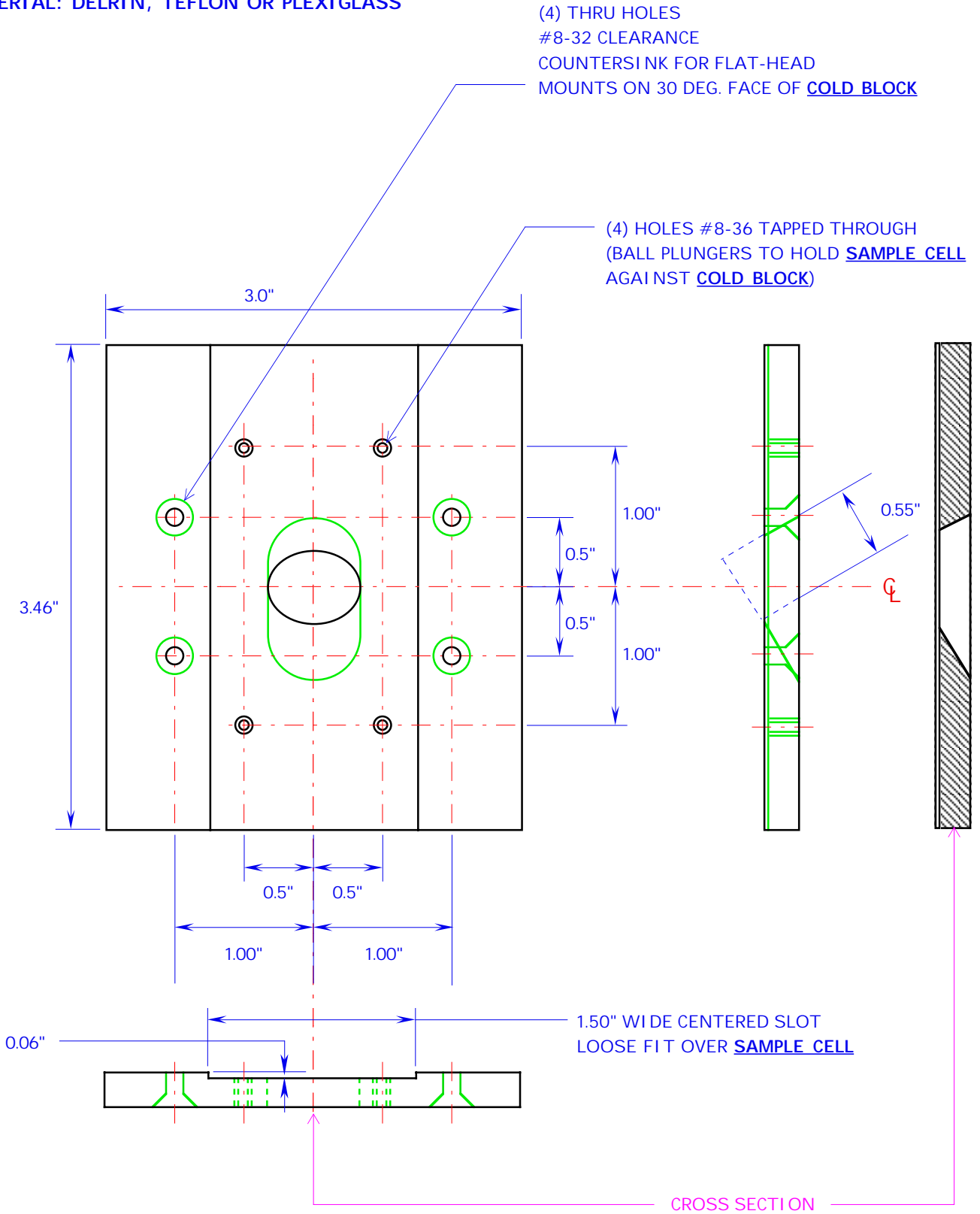


TEC COLD STAGE

FACE PLATE

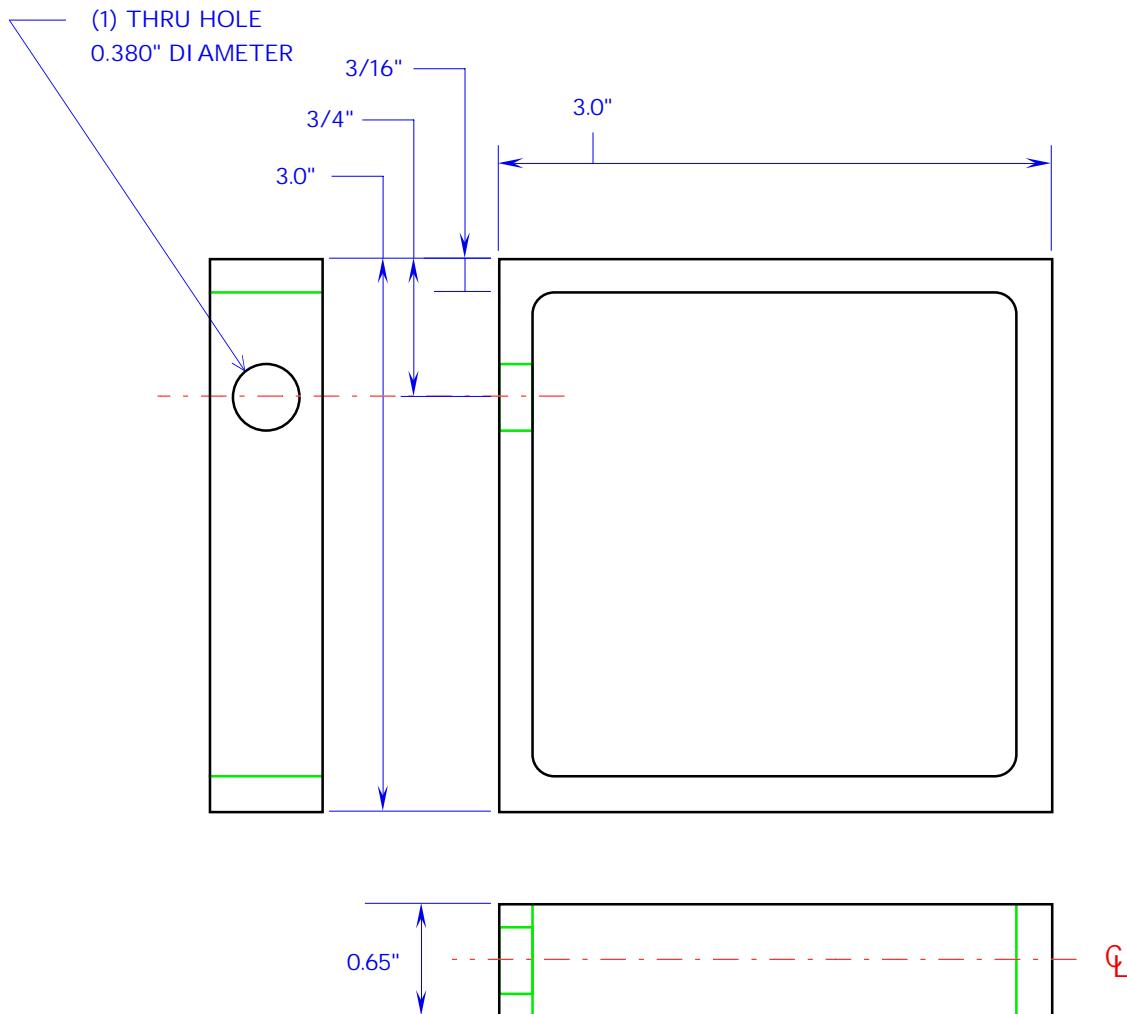
MOUNTS ON 30 DEGREE FACE OF COLD BLOCK

MATERIAL: DELRIN, TEFLON OR PLEXIGLASS



TEC COLD STAGE
TEFLON VAPOR BARRIER

MAKE (6) OF THESE
MATERIAL: TEFLON



TEC COLD STAGE

SUPPORT BRACKET

FOR MELCOR SH 1.4-125-045L
40 X 40 MM TEC W/4.7 MM APERTURE

MATERIAL: ALUMINUM

(3) HOLES 1/4"-20
CLEARANCE TO MATCH
COLD BLOCK

(2) SLOTS 1/4"-20
CLEARANCE BY 3/4" LONG

