

LINAC MAGNETS DESCRIPTION

The APS LINAC typically provides pulsed electron beam with an energy of 325 MeV for injection into the APS storage ring, but is capable of accelerating electrons to 600 MeV. The LINAC is divided into five sectors, L1 to L5, each of which is powered by a klystron. Each sector contains various beamline components, including rf accelerating structures, diagnostic components, and magnetic elements that serve to focus and steer the beam.

L1 contains two thermionic rf guns that inject beam into the LINAC via *alpha* magnets, for use in the storage ring. A laser-driven photocathode gun that injects beam directly into the LINAC supplies beam to the LEUTL FEL. L1 also contains dipole corrector and quadrupole focusing magnets.

L2 contains corrector and quadrupole magnets.

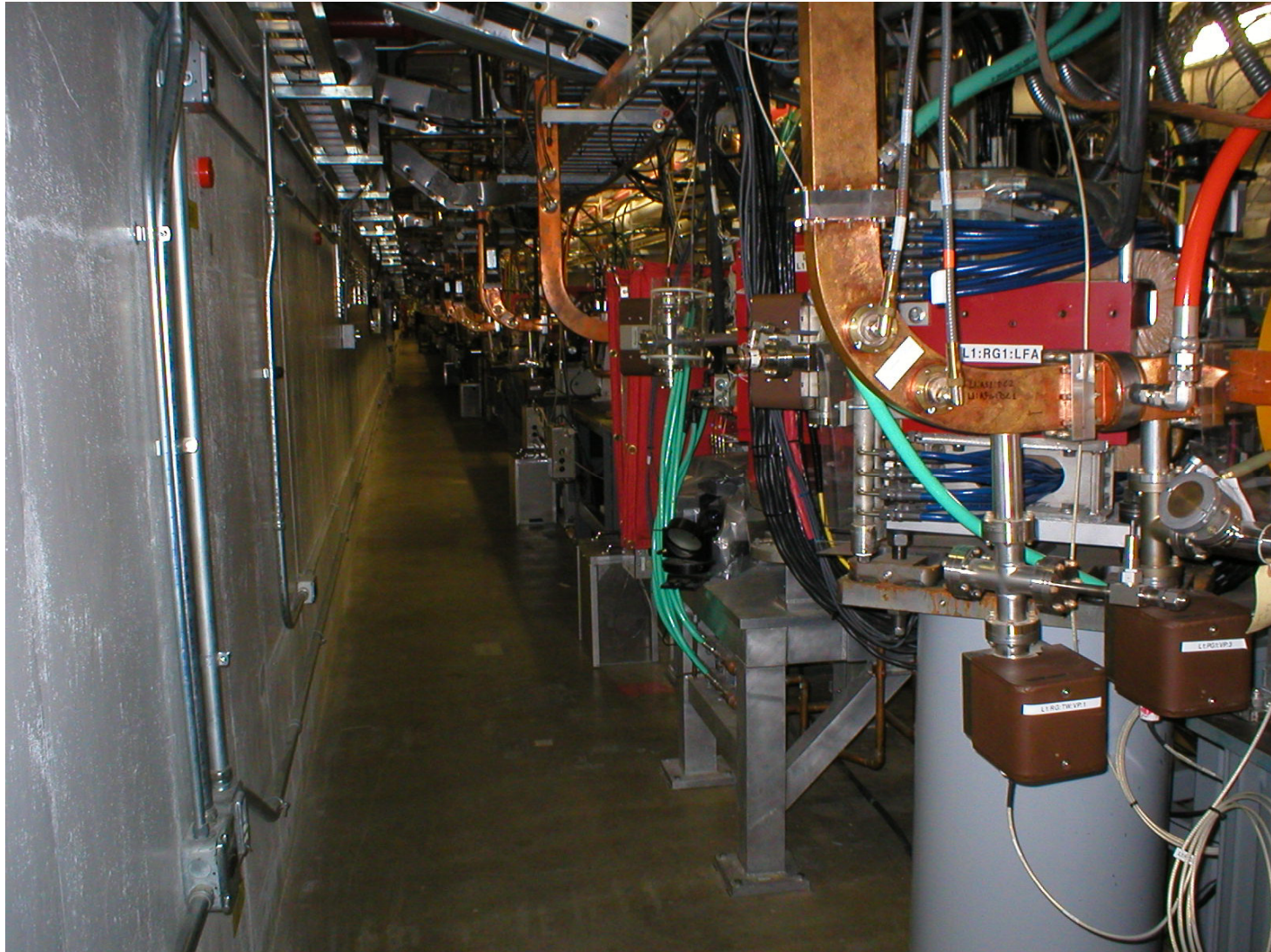
L3 contains corrector, quadrupole, and dipole magnets. The dipole magnets in this sector are called *bunch compressor* or *chicane* magnets.

L4 and L5 contain corrector and quadrupole magnets.

Dipole spectrometer magnets that are located downstream of sectors L3 and L5 allow beam tuning, energy measurement, and related beam experiments to be carried out.

After acceleration in the LINAC, beam is accumulated and compressed in the PAR and then further accelerated to 7 GeV by the Booster; the beam can also bypass the PAR and go directly to the Booster.

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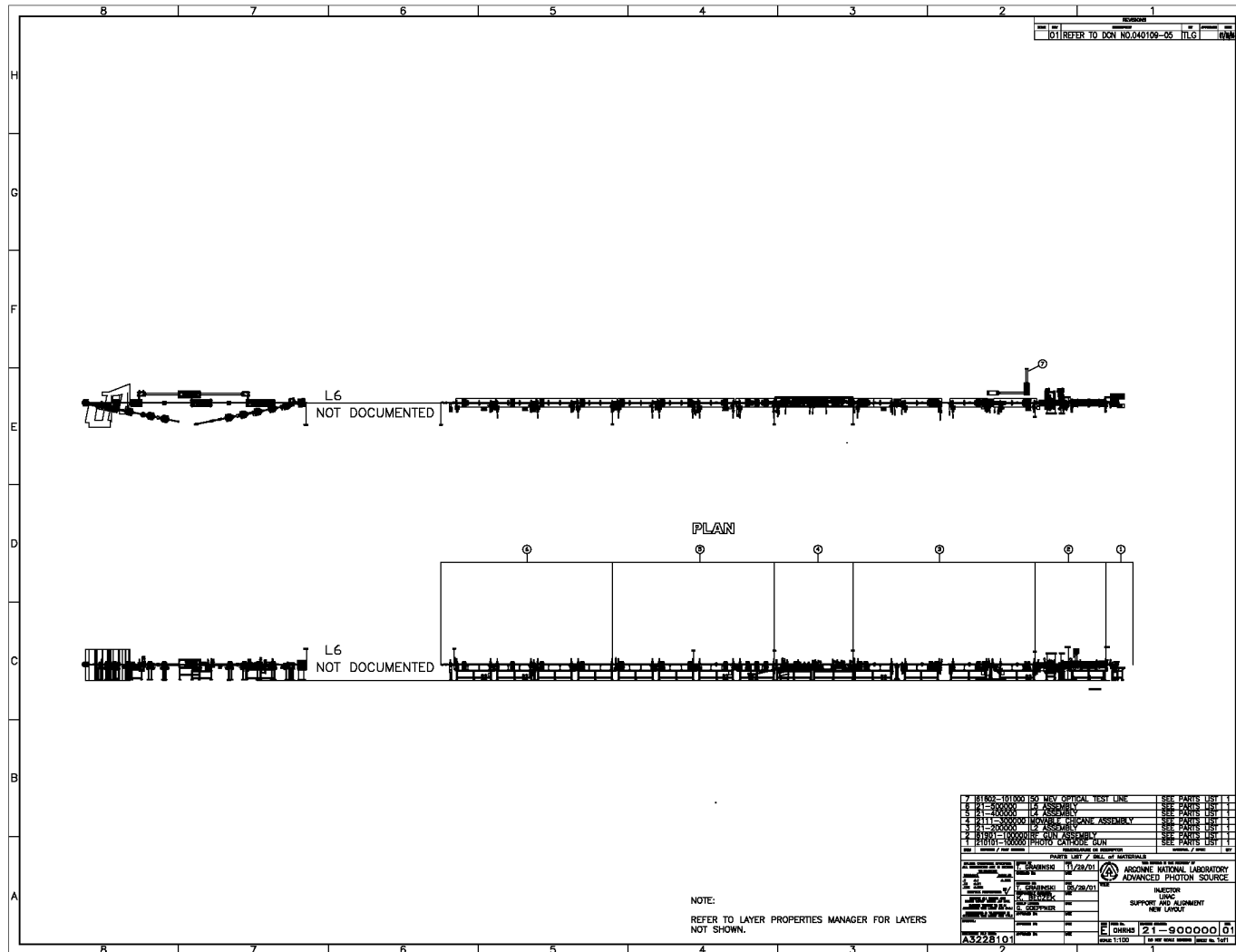


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2/10/2005

MECHANICAL ENGINEERING GROUP
ACCELERATOR SYSTEMS DIVISION

Advanced
Photon
Source
ARGONNE National Laboratory

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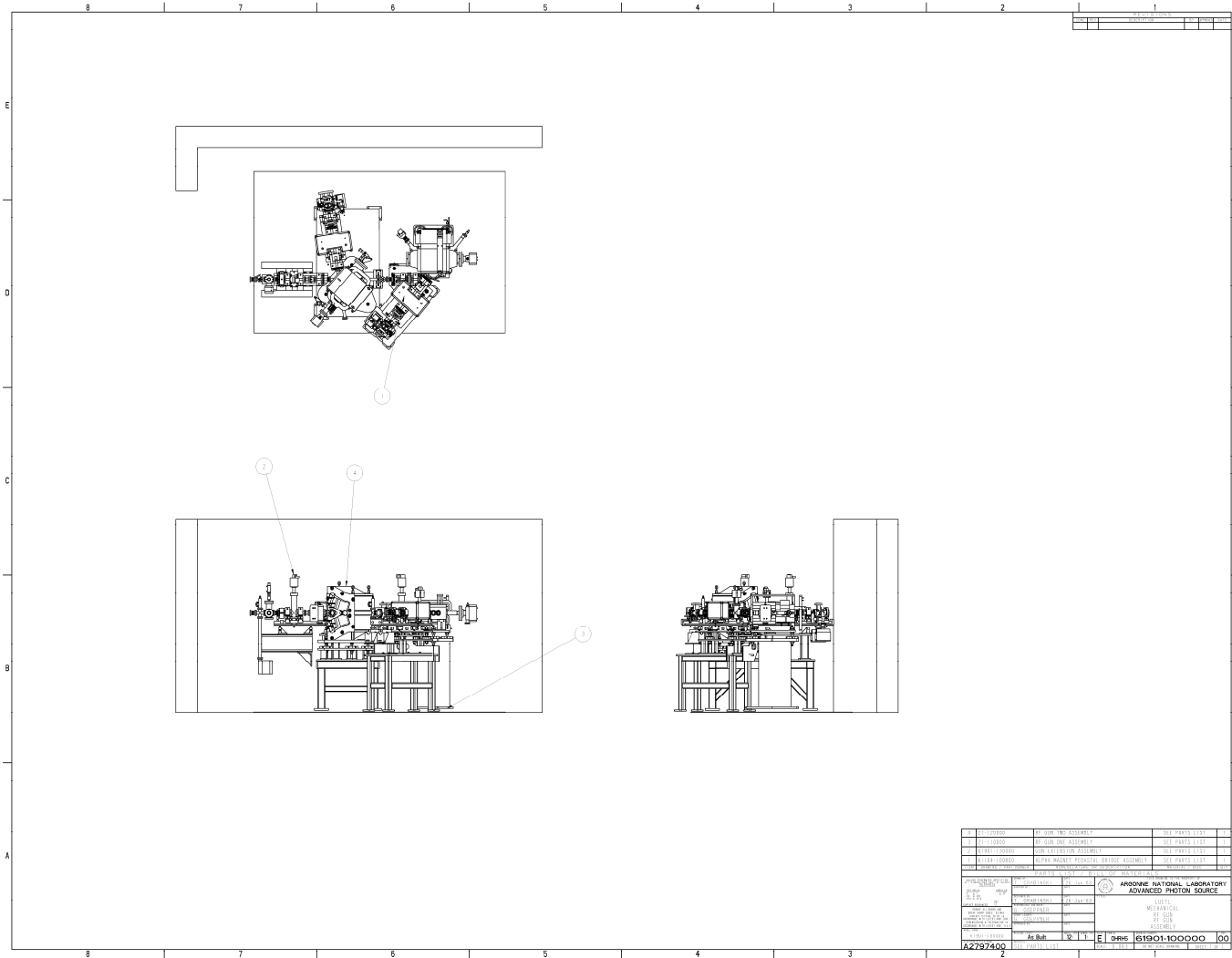


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LINAC MAGNETS DESCRIPTION L1

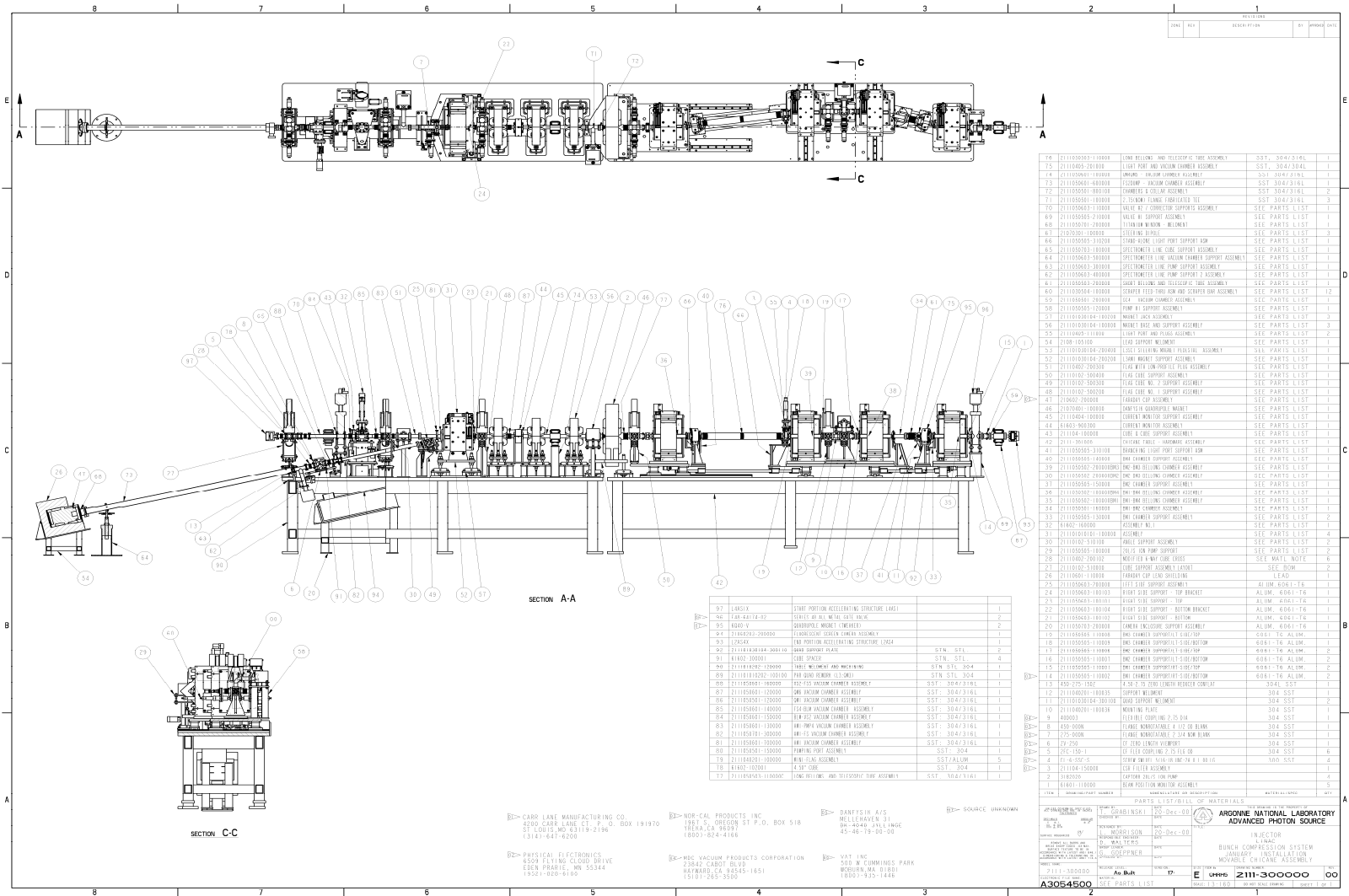


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LINAC MAGNETS DESCRIPTION L3



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