LCLS Engineering Specification Document # 1.9-102	Conventional Facilities	Revision 1

Accelerator Structures Construction Tolerance Specification

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Brief Summary Specifies critical construction tolerances related to the location and form of the accelerator structures.

Change History Log

Rev Number	Revision Date	Sections Affected	Description of Change
000	8-5-2005	All	Initial Version
001	3/1/2005	2.1 Specifications	Revise Shotcrete Wall Tolerance

Check the LCLS Project website to verify that this is the correct version prior to use.

Applicability - This specification is intended to be used as construction tolerances for critical interior surfaces of the accelerator structures to be constructed for LCLS. This specification does not apply to offices, labs, service buildings and other such construction.

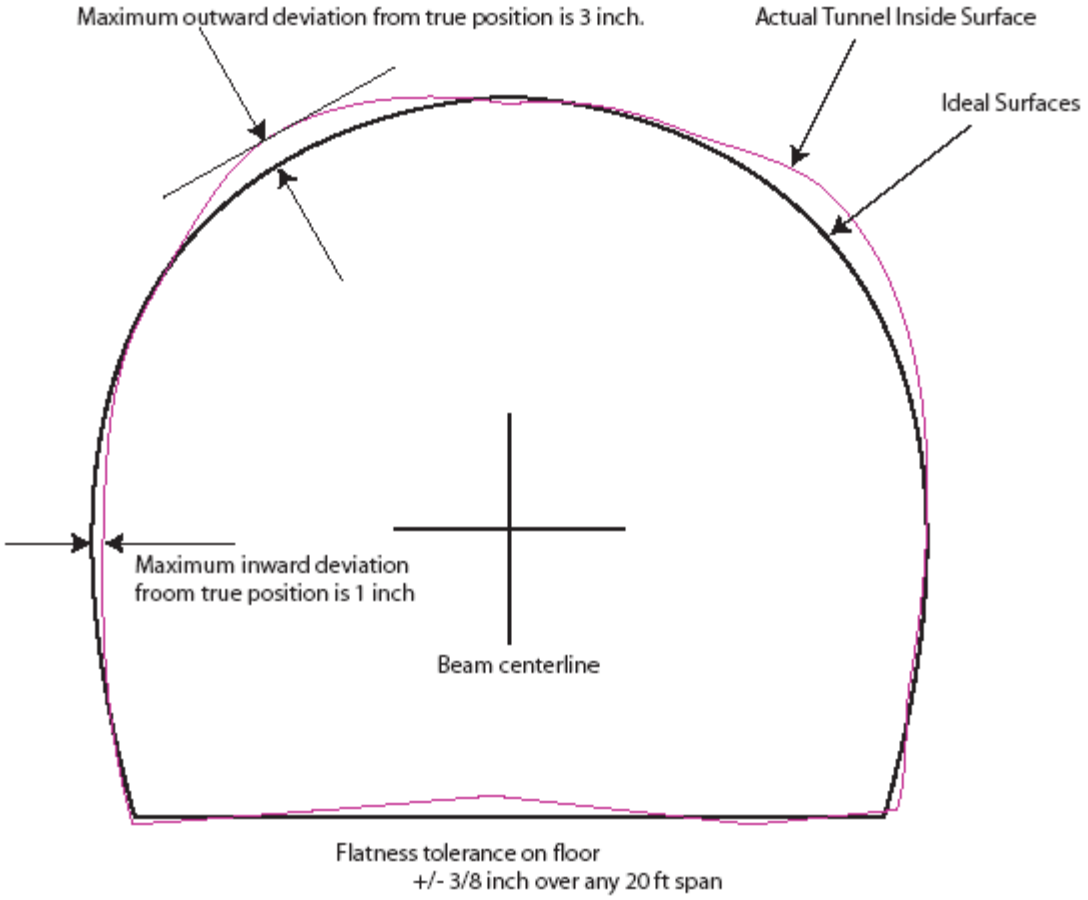
1. Background

1.1 The accelerator structure walls and floor must accurately follow the path of the beamline. The beamline is a precisely determined path along which the high energy electrons travel. Tolerance on the deviation of the structure surfaces from the design is specified to insure proper fit up of, and clearances to, components when installed.

2. Specifications

2.1 The tolerances are: Finished floor +/- 3/8 inch in 20 feet, walls and roof in shotcrete construction + 1 inch, -3 inches, poured-in-place concrete walls and roof +/- ½ inch

2.2 The beam centerline is defined in the LCLS coordinates system. For the section of the beam centerline through the UH, BTH, and Beam Dump it is a straight line along the z coordinate with x coordinate -1.25 m, and y coordinate –0.895305 m.


Maximum outward deviation from true position is 3 inch.
Actual Tunnel Inside Surface
Ideal Surfaces
Maximum inward deviation
froom true position is 1 inch
Beam centerline
Flatness tolerance on floor
+/- 3/8 inch over any 20 ft span