

Specification — Radiation Protection

A&L Shielding's radiation shielding material is designed with customer input to provide the correct level of shielding protection for all applications.

Section 13 49 00 (formerly 13090) - Radiation Protection (page 1)

PART I - GENERAL:

1.1 SUMMARY

A. Section Includes: Sheet lead X-Ray protection, accessories and coordination of radiation protection work.

B. Related Sections:

1. Section 08 14 00 – Wood Doors.
2. Section 08 11 00 – Hollow Metal Doors and Frames.
3. Section 08 71 00 – Hardware.
4. Section 09 29 00 – Gypsum Board Systems.

1.2 SUBMITTALS

A. Submit product data and shop drawings in conformance with submittal procedures.

B. Submit shop drawings for special components and installation conditions which are not fully dimensioned or detailed in manufacturer's product data.

1.3 QUALITY ASSURANCE

A. Radiologist Report: Obtain from Owner a current copy of "Radiation Shielding Study Report". Coordinate recommendations with actual Work. Report any discrepancies to Architect for clarification.

1.4 FIELD QUALITY CONTROL

A. Wherever lead protection is penetrated, cut or punctured for any reason, assure continuity of shielding by use of sheet lead, lead plugs or other approved method.

1.5 REGULATORY REQUIREMENTS

A. National Bureau of Standards: Comply with requirements of National Council of Radiation Protection and Measurement (NCRP) Report No. 49, "Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma Rays of Energies up to 10 MeV," as applicable to this project.

B. Local Regulations: Comply with requirements of local regulator agencies where standards and criteria exceed NCRP Report No. 49.

PART 2 - PRODUCTS:

2.1 ACCEPTABLE MANUFACTURERS

A. A&L Shielding Inc.

1-800-232-5323 (phone)

1-800-329-5320 (fax)

B. Provide products of same manufacturer for coordination and responsibility.

2.2 SHEET LEAD

A. Sheet Lead: ASTM B 749, thickness as indicated (*Insert actual thickness required here*).

2.3 LEAD-LINED GYPSUM WALLBOARD

A. Single unpierced sheet lead factory laminated to not less than 1/2 inch thick gypsum wallboard; thickness of lead as noted on drawings and physicist's report. Use fire rated drywall where required.

B. Fasteners: Use wallboard screws along with manufacturer's standard lead protection device for covering head of screw after installation.

C. Lead Tabs: Not less than 7/8 inch diameter; thickness same as lead sheet on gypsum board.

D. Lead Strips: Required at joints for all lead thickness over 1/16 inch (1.59mm). Thickness same as lead sheet on gypsum board.

2.4 FABRICATION

A. Lead-lined Wood Doors: Fabricate doors of solid core flush construction with 1 or more continuous unpierced lead sheets to make up total lead thickness as indicated. Apply lead sheet continuously from top to bottom and edge-to-edge. Lead lining may be constructed within core or between core and cross banding, at manufacturer's option. Shield cut-outs for locksets with sheet lead lapping lead lining of locksets and door lining, of equivalent thickness to that used in door. Face veneers shall match doors as specified in Section 08 14 00, Wood Doors.

B. Lead-Lined Door Frames: 16 gage CRS material welded for structural strength as specified in Section 08 11 00, lead thickness same as lead thickness in doors. Lead lining to be applied to all surfaces in the frame requiring shielding as determined by swing of door and location of lead in walls of rooms.

C. Hardware: Specified in Section 08 71 00. Line with lead as appropriate.

D. Lead Glass View Window: Fixed design glass



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view window without voice passage and with removable glazing beads and lead glass, factory prime painted for paint finish. Lead thickness as indicated.

PART 3 - EXECUTION:

3.1 INSTALLATION

A. Install materials and equipment in accordance with accepted shop drawings and manufacturer's recommendations, and as required by codes and governing agencies having jurisdiction.

B. Install lead lined drywall vertically, with joints running from floor to ceiling as required by Standards. Install lead lining on shielded room side of partition.

C. Joints: Where batten strips are used, where boards with different thickness of lead abut and where lead-lined board abuts unlined board, shim at studs as necessary to furnish flush surface. Where batten strips are required for lead thickness over 1/16" (1.59mm) install not less than 2 inch wide strips of lead over studs where vertical joints occur. Install strips of continuous lengths, furnishing 1 inch overlap on each side of joint.

D. Fastenings: Fasten boards to studs with screws spaced maximum of 8 inches on center at edges and maximum of 12 inches on center at intermediate studs. Cover screws with lead tab protection devices. Install fastenings in such manner that finish application of joint compound or plaster will completely cover the screws with their protection devices.

1. Predrilling: Drill pilot holes as necessary to prevent deformation of fastener and distortion of board.

E. Where built-in items penetrate lead linings provide lead shields behind those cutouts as required to maintain continuity of radiation protection. Where outlet boxes, junction boxes, ducts, conduit and similar items prevent use of shields, provide sheet lead sleeves or linings as required.

F. Provide lead-lined gypsum board on one side only of control partitions and common partitions between two lead lined spaces, unless otherwise indicated.

H. Lead Lining of Frames: Line or cover hollow metal frames and stops for doors with sheet lead. Weld, glue, and clip into place. Install sheet lead free of waves, lumps, and wrinkles with as few joints as possible. Maintain continuity of radiation protection at joints in sheet lead. Finish joints smooth and neatly. Metal door frames for lead-lined doors are specified under Section 08 11 00, Hollow Metal Doors and Frames.

I. Hardware for Lead-Lined Doors: Consult with the factory or the site physicist regarding attachment of surface-mounted hardware.

J. View Window frames: Fixed hollow metal frames are installed prior to installation of drywall and are secured to studs. Install lead lined drywall, bringing lead in the walls into the frame to overlap shielding surfaces.

3.2 TESTING

A. After radiation protection has been installed and equipment is functioning, the owner will secure the services of a local physicist or shielding integrity contractor to check the installation with appropriate monitoring devices. Correct any work that is found to be deficient in radiation protection.



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