



## Ray-Bar Engineering Corporation

697 W Foothill Blvd

PO Box 415

Azusa California 91702-0415

Toll Free Tel #(800)444-XRAY Ph#(626) 969-1818

E-mail: [sales@raybar.com](mailto:sales@raybar.com)

Website: [www.raybar.com](http://www.raybar.com)

Fax (800)333-XRAY(9729)

## STANDARD LEAD LINED STEEL DOOR SPECIFICATION SECTION 083449 RADIATION PROTECTION METAL DOORS

### PART 1 – GENERAL

#### 1.00 SUMMARY

- A. Doors shall be made of commercial quality, level, hot dipped galvanized steel (HDGS) conforming to ASTM# A527 and door face sheet thickness of 18, 16 or 14 gauge, with no visible seams on either face and sheet lead meeting Federal Specification QQ-L-201f . Doors are available as non-rated, or with UL fire ratings of A, B or C labels up to 3 hour, only as specified in project door schedule.
- B. All doors will be 1-3/4” thickness, strong, rigid, neat in appearance, and free from warpage. Edge bends will be true and straight and of minimum radius for the gauge of metal used.
- C. Lead thickness as specified by a qualified health radiation physicist familiar with local standards and regulations. Lead thickness value will be clearly labeled on door
  1. Must Comply with requirements of National Council on 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”, and NCRP Report No. 147 “Structural Shielding Design for Medical X-Ray Imaging Facilities”.
  2. Must Comply with requirements of local regulatory agencies where standards and criteria exceed NCRP Reports 49 and 147.
  3. Lead thickness value is to be of same or greater value as in wall or partition door opening occurs in.
  4. Visionlites must be lead-lined and require X-Ray Safety Glass labeled as impact resistant meeting the requirements of ANSI Z97.1 and CPSC 16 CFR 1201 Category 2. ( If fire-rated, additional clear ceramic fire-rated glazing is required).

#### 1.01 PRODUCT HANDLING

- A. Follow special storage and handling requirements to prevent warpage. Keep flat until ready to use. Never store in sun or areas where moisture is present.

### PART 2 – PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

Ray-Bar Engineering Corporation, a manufacturer regularly engaged in the successful production of X-Ray Shielding Materials for over 70 years. Contact Toll Free 1(800)444-XRAY Phone (626) 969-1818 or Fax 1(800)333-XRAY(9729) website: [www.raybar.com](http://www.raybar.com), E-mail: [sales@raybar.com](mailto:sales@raybar.com)

#### 2.02 MATERIALS

- A. **Faces:** 18 gauge (unless otherwise specified) thick Hot Dipped Galvanized Steel (HDGS). Prime quality, conforming to ASTM A527. Wilsonart Plastic Laminate may be factory added to faces only, if specified.
- B. **Edges:** 16 gauge thick Hot Dipped Galvanized Steel (HDGS) channel. Prime quality conforming to ASTM A527.
- C. **Core:** 99.9% Pure lead sheet per Federal Specification QQ-L-201f, Grade C. Reference radiation shielding report for thickness of lead.
- D. **Finish:** Galvanized pre-treatment and manufacturer’s standard rust inhibitive primer.

## 2.03 FABRICATION

- A. The vertical edges will be reinforced by 16 gauge minimum continuous steel channel extending full height of the door. The top and bottom edges will be reinforced with 16 gauge channels spot welded to the face sheets.
- B. Internal construction for the door consists of 1/2" cell honeycomb core with single layer unpierced sheet lead bonded to the door skins (lead sheet thickness as indicated on the Lead Protection Schedule). Apply lead sheet continuously from top to bottom and edge to edge, door lead thickness value will be clearly labeled
- C. All doors shall be mortised and reinforced to allow field application of hinges and lock sets in accordance with an appropriate hardware schedule and templates supplied by the hardware contractor.

### **Minimum Hardware Reinforcements**

Hinge Reinforcement	-	7 gauge
Lock Reinforcement	-	12 gauge
Closer Reinforcement	-	14 gauge
Other Surface Mounted Hardware	-	16 gauge
Lock Support	-	20 gauge

- D. Fabricate metal work to required profiles for forming exposed edges straight and sharp or radiused.
- E. Welding in accordance with AWS Standards. All exposed welds will be ground smooth.
- F. All lead lined steel doors are thoroughly cleaned and coated to inhibit corrosion; doors are primed.

## PART 3 - QUALITY ASSURANCE

- A. Doors manufactured by Ray-Bar Engineering Corporation will comply with requirements of National Council on 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", and NCRP Report No. 147 "Structural Shielding Design for Medical X-Ray Imaging Facilities".
  - 1. These doors comply with requirements of local regulatory agencies where standards and criteria exceed NCRP Reports 49 and 147.
  - 2. Lead thickness will be of same or greater value as in partition or wall that door opening occurs in.
- B. Fabricator Qualifications: Fabricator, Ray-Bar Engineering Corporation is experienced in, equipped for and insured for fabrication equal to standards specified herein. The fabricator shall furnish evidence of Fabricator having not less than 20 years experience in successful fabrication of radiation protection materials similar to products specified herein.

**Single Source Responsibility:** Provide X-Ray Protection Materials and accessories produced as standards products of Ray-Bar Engineering Corporation, 697 W Foothill Blvd, PO Box 415, Azusa California 91702-0415, Phone (800) 444-XRAY, a manufacturer regularly engaged in the successful production of X-Ray Shielding Materials for over 70 years.

## PART 4 – EXECUTION

### 4.01 INSTALLATION

- A. Installation shall be by the contractor.

### 4.02 CERTIFICATION

Upon completion of material, manufacturer shall supply a certificate of compliance stating that all materials are in accordance with this specification and the radiation shielding report.