

SECTION 09 29 60, LEAD BACKED DRYWALL

PART 1 – GENERAL

1.01 SUMMARY

- A. Lead Sheet:** In compliance with Federal Specification QQ-L-201f, Grade C, 99.9% pure, and ASTM B749, Type L51121. Thickness as indicated on Lead Protection Schedule and Comply with lead shielding equivalents as specified by the qualified health radiation physicist report for this particular project.
Note: 7'0" is minimum lead height per national standard (NCRP) unless otherwise indicated by radiation physicist.
- B. Lead Backed Gypsum Board:** As manufactured by RAY-BAR ENGINEERING CORPORATION, each board labeled on lead side as type "RB-LBG" and lead thickness value available as follows
- 1. Sheet Size:** Width and length as required for support spacing to prevent cracking during handling. Not to exceed 4'0" X 10'0", Type X Standard (RB-LBG) also available in Abuse Resistant (AR), Mold Resistant (MR), Water Resistant (WR) and High Impact (HI) gypsum panels, where required.
 - 2. Drywall Thickness:** Not less than 5/8" – unless otherwise indicated.
 - 3. Lead Thickness:** Comply with lead shielding equivalents as specified by the qualified health radiation physicist report familiar with local standards and regulations for this particular project and clearly label lead thickness value on lead side of each board.

1.02 REFERENCES

- A. Standards:** Comply with requirements of the National Council on Radiation Protection and Measurements (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".
- B.** Comply with lead shielding equivalents as specified by the qualified health radiation physicist report for this particular project.
- C.** Must Comply with requirements of local regulatory agencies where standards and criteria exceed NCRP Reports 49 and 147.

Lead Backed Drywall must meet or exceed the following specifications or standards:

QQ-L-201f, Grade C, 99.9% Pure – Federal Specification, Lead

ASTM B749 Type L51121, American Society for Testing and Materials- Lead Sheet

ASTM C 36, American Society for Testing and Materials – Gypsum Wall Board, Type "X"

1.03 RELATED DOCUMENTS

- A.** Related Specification Sections: 13 49 00 X-Ray Protection.

1.04 SUBMITTALS

- A.** Shop Drawings: Provide for all doors and other related materials specified for this Section.

1.05 DELIVERY, STORAGE AND 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 APPROVED MANUFACTURERS / SUPPLIERS

Ray-Bar Engineering Corporation, Phone (626) 969-1818 or Toll Free (800) 444-XRAY (9729) · Fax (800)333-XRAY, www.raybar.com, e-mail sales@raybar.com, a recognized domestic manufacturer regularly engaged in the successful production of the x-Ray Protection Materials specified herein for over 70 years.

2.02 MATERIALS

A. RAY-BAR lead backed drywall is furnished as 5/8". Fire code gypsum board, with lead meeting Federal Specification QQ-L-201f, Grade C, 99.9% Pure, and ASTM B749, Type L51121, factory laminated under pressure to the backside of the gypsum panel with lead thickness value clearly labeled on lead side of each board. * Fire Resistant Lead backed plywood also available where required for heavy lead shielded walls or partitions.

B. Fire-rated lead backed drywall (Type RB-LBG) available as U.L. Classified to U.S. and Canadian Safety Standards (See complete marking on product must to be utilized at any fire rated lead lined partitions (such as partition design U430) and must identified with proper yellow U.L Label laminated on actual lead side indicating shielding material manufacturer and current fire resistance listing and U.L. classification per the current U.L. certification directory and as tested in accordance with the standard fire test of building construction and materials per ANSI / UL263 (ASTM E119, NFPA 251). There are absolutely no substitutions allowed.

2.03 ACCESSORIES AND FASTENERS

1. Provide 2" wide lead strips for lapping at vertical joints same height and thickness as lead on boards. Lead strips shall be same height as lead on gypsum board.
2. Provide lead discs or additional batten strips at intermediate studs for shielding of screw penetrations.
3. Accessories and Fasteners: Manufacturers standards, maintaining equivalent protection as entire system.

2.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Fabricator / Manufacturer shall be experienced in, equipped for and insured for fabrication equal to standards specified herein. The fabricator shall furnish evidence of Manufacturer having not less than ten (10) years experience in successful fabrication of radiation protection materials similar to products specified herein.

1. Fabricator shall furnish proof of insurance certifying Fabricator is specifically insured in the fabrication of X-Ray Protection / Radiation Shielding Materials.

Single source responsibility: Provide X-Ray Protection Materials and accessories produced as standard products of Ray-Bar Engineering Corporation, Toll Free (800)444-XRAY (9729) · Phone (626) 969-1818 · Fax (800) 333-XRAY, www.raybar.com · Email: sales@ Raybar.com, a recognized manufacturer regularly engaged in the successful production of X-ray Protection Materials as specified herein for over 70 years.

PART 3 – EXECUTION

3.01 INSTALLATION AT LEAD LINED WALLS

A. Apply gypsum board vertically with long edges parallel to supports and lead lining facing supports and lead lining facing supports. Provide blocking at end joints. Install vertical lead batten strips minimum 1-1/2 inches wide and same height and thickness as gypsum board lead lining to inside of face channel of stud supports and blocking where all vertical joints, inside and outside corners occur. Secure lead batten strips to studs, lead shielding thickness and height as specified in the health radiation physicist report for this project. No untrained persons or trades to occupy room or work area during any lead material installation per Federal OSHA safety requirements.

1. Installation shall be by the contractor specifically per manufacturer's recommendations, MSDS and instructions and in strict compliance with NCRP, the radiation physicist shielding report, safety codes, OSHA, building codes and proper U.L Partition designs where applicable.

2. Lead backed drywall must be installed vertically with long edges parallel to supports.

3. Studs must be a minimum of 20 gauge and set a maximum of 16" on center for vertical installation of lead backed drywall.

B. Secure gypsum board to supports with fasteners spaced as recommended by board manufacturer. Drive fasteners slightly below exposed surface and shield with either lead discs, tabs or internally with 2" wide batten strips, or simply 1-1/4" long steel screws when appropriate per NCRP Report No. 147 and specifically approved by project physicist of record prior to beginning the installation.

1. All penetrations in leadlined walls must be properly backed with sheet lead of same thickness as on surrounding wall with proper overlaps as required.

2. Where outlet boxes, junction boxes, ducts, conduit and similar items prevent the use of shields, provide lead sleeves or lead lining or backing as required with proper overlaps. Provide lead lining, sleeves, shields and other protections of equivalent thickness of lead as used in the wall partition shielding system that each penetration occurs in.
- C. No other trades or persons to occupy room or work area during lead installation.
- D. All lead trimmings must be recycled or disposed of in compliance with applicable health, safety and environmental codes and regulations. Properly and completely clean up and disposal or recycle all sheet lead trimmings and debris. Never dispose of any lead or lead containing materials in general trash or refuse
- E. Refer to Section 09250 for joint treatment and preparation for taping and finishing.

3.02 INSTALLATION OF LEAD BACKED DRYWALL AT CEILINGS

- A. Lead backed 5/8" drywall to be installed on ceiling areas when required to provide shielding for occupancy above on areas where appropriate and indicated on plans per shielding report provided by physicist of record for project. All penetrations and joints between lead backed drywall sheets are to be properly shielded with same techniques as on wall partitions.
 1. Ceiling must be framed for "hard lid" at 12" on center for support and to prevent sagging.
 2. Framing to be of size and gauge of metal as determined and specified by the project structural engineer.
 3. T-Bar, grids and suspended ceilings are not acceptable systems for proper radiation shielding.
 4. All penetrations in leadlined ceilings such as light fixtures, HVAC, fire sprinklers, diffusers, ducts, etc. must be properly backed with lead of same thickness as in ceiling with proper overlaps. Lead Lined access panels to be installed where required to provide continuous radiation protection
- B. No other trades or persons to occupy room or work area during installation of lead backed drywall in ceilings.
- C. All lead trimmings must be recycled or disposed of in compliance with applicable health, safety and environmental codes and regulations. Properly clean up and disposal or recycle all sheet lead trimmings and debris. Never dispose of lead materials in general trash or refuse
- D. Refer to Section 09250 for joint treatment and preparation for taping and finishing.

3.03 CERTIFICATION

Upon completion of material, manufacturer shall supply a certificate of compliance stating that all materials have been produced in accordance with this specification. Contractor / Installer shall supply a certificate of compliance stating that all materials have been installed in accordance with this specification, the project plans and the physicist shielding report for this particular project.

3.04 TESTING

After the X-RAY equipment has been installed and placed in operating condition and prior to use, radiation shielding will be tested by original project radiation physicist or record at owner's expense.

END OF SECTION 09 29 60, LEAD BACKED DRYWALL