

SECTION 13090 – WALL SHIELDING



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PART 1 - GENERAL

Furnish all labor, materials, tools, equipment and services for all linear accelerator room wall shielding as indicated, in accordance with provisions of contract documents.

1.1 ACCEPTABLE MANUFACTURERS

Wall shielding shall be manufactured by, and all accessories and parts supplied by NELCO or approved equal manufacturer regularly engaged in the manufacture of these items and with at least ten (10) years experience in the production and installation of radiation shielding.

1.2 SUBMITTALS

In accordance with conditions of the contract and Division I, submit six (6) copies of shop drawings for each type of wall shielding, including wall elevations, wall sections, and details of typical composite members.

1.3 DESIGN

Wall and supports shall be designed to withstand all loads without deflection that might impair radiation protection. Design radiation shielding to provide equivalent thickness in any straight line with no gaps.

1.4 PRODUCT HANDLING

Lead Brick: Up to 144 each 1" units, 96 each 1 ½" units, and 72 each 2" units are shipped on each skid and stretch-wrapped around all four sides. Deliver lead brick in factory shipping crates. Protect all edges from being damaged until use.

1.5 WARRANTY

The wall shielding is warranted for the 1 year after the original installation.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Structural Steel: Wide flange beam and attachment members designed and sized to specific conditions. Fabricate rigid, neat in appearance and free from defects. Fit and assemble in shop, wherever practical. Assure proper assembly at site. Weld joints continuously, dress exposed joints smooth and flush. Clean off all mill scale and foreign materials and shop prime.

- Steel sheet and strip: commercial quality carbon steel, ASTM A568.
- Steel bars and plates: ASTM A36.
- Roll formed steel members: ASTM A36.

B. Inserts, bolts and fasteners: Hilti Kwik-Bolts sized per application with a minimum of two at each end of support.

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- C. Primer: rust inhibiting paint suitable as base for specified finish paints.
- D. Lead brick: N-series interlocking lead brick as manufactured by NELCO exclusively developed for shielding of high energy x-rays. This material is alloyed with ½% antimony to increase the hardness of the brick.
- E. Polyethylene: 5% boron content, manufactured specifically for neutron shielding.

2.2 LEAD BRICK FRAMING SUPPORTS

- A. Framing: Shall be structural steel tubing 2" square with 1/4" wall for vertical height less than 10'-0, 2 1/2" square with 1/4" wall up to 13'-0.
- B. Expansion Anchors: Hilti Kwik-Bolt 1/2" x 4 1/2" with minimum embedment of 3" or equal.

2.3 FABRICATION: FRAMING SUPPORTS

- A. Fabricate rigid, neat in appearance and free from defects. Fit and assemble in shop, wherever practical. Assure proper assembly at site. Weld joints continuously, dress exposed joints smooth and flush. Clean off all mill scale and foreign materials and shop prime.

PART 3 - EXECUTION

3.1 DELIVERY – NELCO

The shielding will be delivered within 4 weeks, upon receipt of approved drawings and purchase order.

3.2 PREPARED SITE CONDITIONS – GENERAL CONTRACTOR

Concrete wall surface shall be stripped of concrete form work and be free of any protruding concrete ties, rebar or protrusions which might interfere with lead placement. Immediate area should be accessible and clear of materials and equipment. Temporary Facilities are to be provided by the General Contractor.

3.3 PREPARATION – NELCO

Examine structure, substrates and conditions under which work is to be installed for conditions detrimental to correct and timely completion. Installation constitutes acceptance of responsibility for performance.

3.4 INSTALLATION – NELCO

Set all structural steel framing as detailed on approved shop drawings. Install interlocking lead brick N series with staggered vertical and horizontal joints to thickness as detailed on drawings.

Where built-in items penetrate shielding, provide shielding as required to maintain continuity of shielding. Install in accordance with manufacturer's instructions. Touch up metal prime coat with compatible metal primer.