

## SECTION 08346 – DIRECT-SHIELD SLIDING DOOR



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## **PART 1 - GENERAL**

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

### **1.1 ACCEPTABLE MANUFACTURERS**

Sliding door 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 doors.

### **1.2 SUBMITTALS**

- A. In accordance with conditions of the contract and Division I, submit six (6) copies of shop drawings for each type of sliding door unit, including typical unit elevations, sections and details of typical composite members.
- B. Submit six (6) copies of door operating instructions and manufacturer's warranty.

### **1.3 DESIGN**

- A. Design the sliding door, carrying beam, and structural supports to withstand all design loads that might inhibit operation or impair radiation protection.
- B. Design sliding door to have minimum overlaps to insure sufficient radiation shielding.
- C. Provide lead and 5% borated polyethylene thickness in the core of the door as specified by the physicist of record.
- D. Sequence of Operation:
  - OPEN: The door will travel to the full open position. There is a one second delay before the door begins to open. The open button will over-ride both the partial open and close buttons.
  - CLOSE: The door will travel to the full close position. The close button will not over-ride any other buttons. This means the door must be stopped before it can close.
  - STOP: The door will stop from any current position along its path of travel.
  - PARTIAL: The door will travel to the preset partial open position and stop. This button will over-ride the CLOSE operation and has a one second delay before opening. This feature reduces the distance of door travel and amount of time the operator runs, not only saving time but extending the life expectancy of the operator.

### **1.4 PRODUCT HANDLING**

All components are shipped by flatbed truck and are off-loaded by forklift.

### **1.5 WARRANTY**

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New England Lead Burning Co. Inc. (NELCO), subject to ordinary operation, warrants this door and its hardware against defects in workmanship and materials. We will repair this product or replace parts free of charge for one (1) year from the date of invoice. We do not guarantee against defects due to the failure to exercise normal preventive maintenance, nor do we guarantee against the consequence of uses for which our products were not designed. Operator shall be warranted against defects for a period of not less than one (1) year and door systems shall be warranted against defects for a period of not less than one (1) year.

### PART 2 - PRODUCTS

#### 2.1 MATERIAL

- A. Steel
  - 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: Manufacturer's standard units.
- C. Primer: rust-inhibiting paint suitable as base for specified finish paints.
- D. Lead sheet: fed. Spec. QQL-201-f, grade C free from imperfections affecting performance, thickness as indicated.
- E. Polyethylene: 5% boron content, manufactured specifically for neutron shielding.

#### 2.2 SLIDING DOOR AND STRUCTURAL STEEL SUPPORT SYSTEM

- A. Doors: Type A36. 1 1/2" thick steel flat bar around perimeter of door with 1/2" thick steel sheet faces, reinforced internally with 1/2" thick steel flat bar.
- B. Structural Steel Supports: Type ASTM A36 beams and ASTM 500 rectangular tubing size engineering based upon the length, width, thickness, and weight of the door.
- C. NELCO Linear Motion System: System consists of a dual rail with multiple blocks. Rails shall be mounted to the main support beam and bolted with M-10 cap bolts as required. Alignment is controlled by the use of a pre-machined rail alignment bar developed specifically for field application of rails. There shall be a minimum of four (4) blocks per system. The blocks shall be mounted onto a pre-manufactured block mounting plate which is then mounted to the door.

#### 2.3 SLIDING DOOR OPERATORS

NELCO electromechanical door operating system shall use a DC motor so the speed can be adjusted in the field. The operator has a slowdown limit for both open and close directions. The operator also comes with a battery backup system which will allow for the emergency opening of the door during loss of power supply. The operator comes complete with two (2) four-button stations (OPEN, CLOSE, PARTIAL & STOP) and an electric reversing safety edge strip that mounts to the leading edge of the door. Work not included: Electrical supply and conduits.

#### 2.4 STANDARD SAFETY FEATURES

- A. Electric Safety Edges: Five strip switches are on the leading edge of the door. When more than 8 oz. of pressure is applied to a strip switch, an electronic signal will be sent to the operator to stop and then open the door.
- B. Emergency Disconnect: The pin connection between operator track and door. It is possible to disconnect the door completely from the operator, thus allowing the door to be operated manually. A pull handle, stored in a nearby and accessible location is used to pull the disconnect pin.
- C. Emergency Push Rod: A steel rod, stored in a nearby accessible location, to be screwed into the outside face of the door to apply additional physical force in the event of operator failure.
- D. Interlock or Kill Switch: A limit switch that detects the door position when fully closed and prevents the Linear Accelerator from operating when open.

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### **2.4 SAFETY FEATURES**

- A. Presence Sensor: Ceiling mounted device detects people as they pass through the detection field, sending a signal to the operator to stop or preventing operation.
- B. Battery Back-up: In the event of a power failure the battery back-up system will be activated, opening the door a single time during a loss of electric power. The OPEN button functions a "dead man" switch, meaning as long as one pushes and holds the OPEN button the door will open. When the button is released the door will stop. CLOSE, PARTIAL, OPEN and STOP will not be operational.
- C. Emergency Hand Crank: In the event of power operator failure the hand crank will aid in manually opening the door. First release the Emergency Disconnect and then operate the hand crank. The crank is located in a panel near the door.

### **2.5 FABRICATION**

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. Prepare for finish hardware that is not shop installed. Clean off all mill scale and foreign materials and shop prime.

## **PART 3 - EXECUTION**

### **3.1 DELIVERY – NELCO**

The Linear Motion Sliding Door 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 door 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**

- A. Set steel tube column and beam system as detailed on approved shop drawings. Touch up prime coat with compatible primer.
- B. Set door leaf and linear motion hardware as detailed on approved shop drawings. Touch up prime coat with compatible primer. Leave smooth for finish painting.
- B. Electric door operator to be installed and maintained by trained NELCO personnel or a qualified local area door operator contractor.
- D. No attempts should be made at adjusting door operating speed except by authorized operator technicians. All set speeds will meet ANSI standards. (Ref. ANSI / BHMA A156.10-1991).

### **3.6 OPERATIONS**

- A. Any attempt to operate at a faster speed will cause premature wear and damage to the operator and void any warranty. NELCO will not be liable for injuries to any persons, when the door is operating faster than ANSI standard speed.
- B. No attempt should ever be made to disengage frame mounted interlock switches or any safety feature, as this could present a serious health risk.
- C. Objects should be kept clear of door operation area. No objects should ever be placed to keep door in the closed or open position restricting free movement.