



Designation: A 750 – 77 (Reapproved 1994)<sup>ε1</sup>

## Standard Specification for Steel Air Ventilating Grille Units for Detention Areas<sup>1</sup>

This standard is issued under the fixed designation A 750; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

<sup>ε1</sup> NOTE—Section 8 was added editorially in June 1994.

### 1. Scope

1.1 This specification applies to air ventilating grille units for detention areas, assembled in part from materials conforming to Specifications A 627, A 628, and A 629.

1.2 The assemblies described herein are intended to provide two types of security, designated Type A and Type B.

1.2.1 *Type A*—A ventilation unit, utilizing homogeneous TR steel bars for the principal security component.

1.2.2 *Type B*—A ventilation unit utilizing perforated tool-resisting steel plate for the principal security component.

1.3 It is presumed that equipment manufacturers will fabricate and assemble the materials so as not to impair the performance characteristics specified in the applicable material specifications.

1.4 The descriptions herein of certain assemblies are not intended to infer that other assemblies cannot be used to obtain similar results.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling<sup>2</sup>

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for<sup>3</sup>

A 627 Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications<sup>4</sup>

A 628 Specification for Tool-Resisting Composite Steel Plates for Security Applications<sup>5</sup>

A 629 Specification for Tool-Resisting Steel Flat Bars and Shapes for Security Applications<sup>4</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F-33 on Detention and Correctional Facilities and is the direct responsibility of Subcommittee F33.02 on Physical Barriers.

Current edition approved Aug. 26, 1977. Published October 1977.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 01.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 01.05.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol. 04.07.

<sup>5</sup> Discontinued; see 1982 *Annual Book of ASTM Standards*, Vol 01.03.

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *grille unit*—assembly of steel plate, round bars, flat bars, wire mesh, and other steel shapes, suitably fastened by welds, rivets, bolts, or other means in walls and ceilings for the purpose of permitting air to flow in or out of detention areas while preventing ingress or egress of persons confined therein.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *Equipment Manufacturer*—A manufacturer who fabricates and assembles security products, including tool-resisting steel enclosures, for installation in areas requiring security against ingress and egress. This manufacturer processes the semifinished bar to produce a finished bar suitable for fabrication into components and is responsible for all heat treating and other fabricating processes to obtain the performance characteristics specified. The manufacturer is also responsible for fabricating and assembling all ancillary items so as not to impair the performance characteristics of the materials.

3.2.2 *Performance Characteristics*—The response to tests of specific materials as required in Specifications A 627, A 628, and A 629.

### 4. Ordering Information

4.1 Orders for material under this specification shall include the following information:

#### 4.1.1 Description of Bars:

4.1.1.1 Name of material (homogeneous steel, mild steel, or other name),

4.1.1.2 Cross section (double ribbed round, hexagon, or other shape),

4.1.1.3 Dimensions (nominal diameter), and

4.1.1.4 ASTM designation A 627 and date of issue.

#### 4.1.2 Description of Flat Bars and Shapes:

4.1.2.1 Dimensions (thickness, width, web thickness, other descriptions of special shapes), and

4.1.2.2 ASTM designation A 629 and date of issue.

#### 4.1.3 Description of Tool-Resisting Composite Plate:

4.1.3.1 Dimensions (width, length, and thickness),

4.1.3.2 Size and spacing of holes in plate, and

4.1.3.3 ASTM designation A 628 and date of issue.

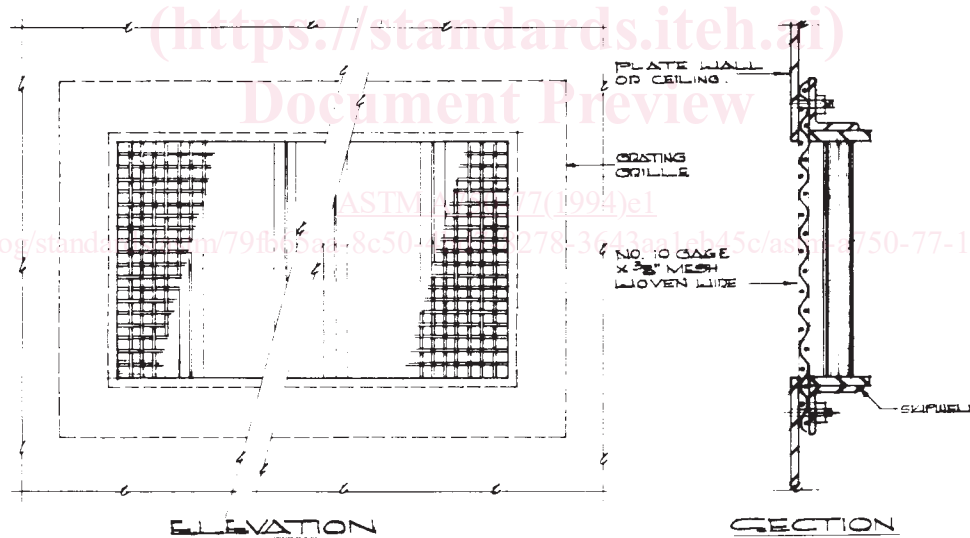
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- 4.1.4 *Description of Wire Mesh:*
  - 4.1.4.1 Material description (welded wire mesh, woven wire mesh), and
  - 4.1.4.2 Free air requirements.
- 4.1.5 *Description of Framing Members:*
  - 4.1.5.1 Material description (thickness, width, length).
- 4.1.6 *Description of Fastening:*
  - 4.1.6.1 Welding where required,
  - 4.1.6.2 Bolting (methods of preventing removal of nuts),
  - 4.1.6.3 Riveting (methods of securing against attack), and
  - 4.1.6.4 Embedding in concrete or masonry construction.
- 4.1.7 Drawings to describe assembly of components into complete grille unit.
- 4.1.8 ASTM designation A 750 and date of issue.
- 4.1.9 Designation of security type—A or B.
- 4.1.10 Exterior dimensions of each grille unit in a series or schedule.
- 4.1.11 Free air requirements of each grille unit in a series or schedule.
- 4.1.12 Whether a certificate of conformance is required (see 7.1).
- 4.1.13 Special requirements, if any.

**5. Physical Requirements**

- 5.1 *Type A (Figs. 1-3):*
  - 5.1.1 *Homogeneous Bars:*

- 5.1.1.1 Homogeneous bars shall be in accordance with Specification A 627.
- 5.1.1.2 The spacing between the homogeneous bars shall be  $4 \pm \frac{1}{16}$  in. ( $101.6 \pm 1.6$  mm) on centers.
- 5.1.2 *Steel Flat Bars:*
  - 5.1.2.1 Non-tool-resisting steel bars, conforming to any of the specifications of Specifications A 6 and A 29, are acceptable. Other steel bars may also be used as agreed upon between the purchaser and the manufacturer.
  - 5.1.2.2 The steel flat bars shall be  $\frac{3}{8}$  in. (9.5 mm) thick by  $2\frac{1}{2}$  in. (63.5 mm) wide.
- 5.1.3 *Wire Mesh*— $\frac{3}{8}$  in. mesh, 10-gage steel wire.
- 5.1.4 *Frame Bar (Figs. 2 and 3):*
  - 5.1.4.1 The frame bars shall be  $\frac{3}{16}$  in. (4.8 mm) thick by the dimensions shown on Figs. 2 and 3.
  - 5.1.4.2 Non-tool-resisting steel bars, conforming to any of the specifications of Specifications A 6 and A 29, are acceptable. Other steel bars may also be used as agreed upon between the purchaser and the manufacturer.
- 5.1.5 *Fastening:*
  - 5.1.5.1 Frame bar shall be bolted to hold wire mesh to the frame of the grille unit (Figs. 2 and 3).
  - 5.1.5.2 Threads shall be battered to prevent nut removal.
  - 5.1.5.3 Steel flat bars shall be welded to the supports (Figs. 1-3).



**FIG. 1 Vent Grille in Plate Wall or Ceiling Supply or Exhaust.**