

**ELLISON BRONZE  
SECTION 08 42 36**

**BRONZE BALANCED DOOR ENTRANCES  
WITH POWER OPERATION**

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**PART 1 – GENERAL**

**1.01 DESCRIPTION**

- A. Work included: All entrance and vestibule doors and frames shall be integral “Balanced Door” units consisting of doors, jambs, frames (sidelight and transoms where applicable), thresholds, operating mechanism, power operation, activation switches, safety sensor, key switch and all finish hardware as shown on the drawings and specified herein.

**1.02 RELATED WORK**

- A. Section [07 92 00], joint sealants; at interface of entrance assemblies and other building components.
- B. Section [08 44 00], curtain wall and glazed assemblies; for surrounding framing.
- C. Section [08 71 00], door hardware; other than hardware specified as part of entrance assemblies, cylinders; coordination with security system.
- D. Section [08 81 00], glass glazing; glass types, quality and requirements.
- E. Section [23 00 00], mechanical and section [26 00 00] electrical; for electrical wiring and connections for electrically operated door, coordination with security, fire alarm systems.

**1.03 QUALITY ASSURANCE**

- A. The manufacturer must have been regularly engaged in the manufacture of “Balanced Doors” for a period of no less than ten (10) years.
- B. All door, frame and balanced hardware must be engineered and fabricated by the same manufacturer.
- C. In order to ensure proper coordination between all elements of the balanced entrance system, the balanced hardware including the hydraulic check must be engineered, cast, machined and assembled in the same facility with the engineering and fabrication of the door and frame material.
- D. The manufacturer must have a quality system registered to the ISO9001 standard including design engineering.

**1.04 SUBMITTALS**

- A. Shop drawings including elevations and plans, one-half size detail sections of typical composite members, hardware arrangement details and interaction with surrounding material.
- B. Two (2) finish samples shall be submitted:
  - 1. Bronze, #4 satin [with] [without] lacquer.
  - 2. Bronze, polished [with] [without] lacquer.
  - 3. Bronze, non-directional (jitterbug) [with] [without] lacquer.
  - 4. Bronze, fine glass bead blasted [with] [without] lacquer.

#### 1.05 WARRANTY

- A. All finished hardware and material not fabricated by Ellison to carry manufacturer's standard warranty.
- B. All Ellison manufactured material furnished and installed to these specifications, including the door operating mechanisms, shall be warranted against defective material and workmanship for a period of ten (10) years from date of substantial completion.
  - 1. This warranty is not intended to cover adjustments made necessary by the shifting or settling of the building structure.
  - 2. This warranty is not intended to cover the breakdown of protective coatings when furnished to the architect's specification and applied as directed. NOTE: Bronze is an extremely difficult material on which to apply a lacquer protective coating that has lasting qualities. Ellison will clean and apply a clear lacquer coating made of the best materials available. Material will be crated and protected against damage during shipment to the job site. Ellison will accept no responsibility for deterioration of protective coating, stain or discoloration of any type after date of delivery to the job site. This responsibility must rest with whoever has control or supervision of areas where this material is stored or installed.
  - 3. All labor to replace warranted parts is by others.

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be packed, unloaded, stored and protected to avoid abuse and damage.
- B. Protect finished surfaces with wrapping and/or strippable coating.
- C. When unloading, remove all paper type wrappings that are wet or which could become wet.
- D. Store inside, if possible, in clean well drained area free of dust and corrosive fumes.
- E. Stack vertically or on edge so that water cannot accumulate on or within materials, using wood or plastic shims between components to provide water drainage and air circulation.
- F. Cover materials with tarpaulins or plastic hung on frames to provide air circulation.
- G. When installing protect materials from lime, mortar, run-off from concrete and copper, weld splatter, acids, roofing tar, solvents and abrasive cleaners.

## PART II – PRODUCTS

### 2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Ellison Bronze, Inc; 125 W. Main Street, Falconer, NY 14733. Phone: (800) 665-6445 Fax: (716) 665-5552  
Web site: [www.ellisonbronze.com](http://www.ellisonbronze.com). Email: [info@ellisonbronze.com](mailto:info@ellisonbronze.com)
- B. Requests for substitutions will be considered in accordance with provisions of section [01 60 00].

### 2.02 MATERIALS AND FINISHES

- A. Material:
  - 1. Bronze (muntz metal, alloy #280) or naval brass (alloy #464).
- B. Finish:
  - 1. Bronze, #4 satin [with] [without] lacquer.
  - 2. Bronze, polished [with] [without] lacquer.
  - 3. Bronze, non-directional (jitterbug) [with] [without] lacquer.
  - 4. Bronze, fine glass bead blasted [with] [without] lacquer.
  - 5. The finish is to be applied after fabrication to ensure a blemish free finish.

### 2.03 BALANCED DOORS AND FRAMES

- A. Doors:
  - 1. Door thickness: 2 inch (51 mm).
  - 2. Stiles: [ ] inch ([ ] mm).
  - 3. Top rail: [ ] inch ([ ] mm).
  - 4. Bottom rail: [ ] inch ([ ] mm).
  - 5. Intermediate vertical and horizontal bronze muntins (for true divided light/multi-light construction):
    - a. Bar material: [ ] inch ([ ] mm).
    - b. Sheet material: [ ] inch ([ ] mm).
  - 6. Bronze door bodies shall be formed from a minimum of .09 inch (2 mm) thick material.
  - 7. Formed bronze doors shall have .09 inch (2 mm) thick continuous tie channel frame spot-welded into door body.
  - 8. Seams between stiles and rails shall be welded and finished to an invisible joint.
  - 9. Door top and bottom rails shall have spot-welded in .09 inch (2 mm) thick reinforcement channels.
  - 10. All reinforcing material to be bronze and welded to door body. Aluminum, plastic or other glued-in reinforcements or stiffeners are unacceptable.
  - 11. Glass stops:
    - a. Applied glass stops (glass molding shall be permanently fixed on exterior side and screw attached type on interior side).
    - b. Flush (pocket) glazed glass stops (with one (1) removable bar stop at interior side of door at top or bottom rail).
  - 12. Glass: as specified in section [08 81 00].
- B. Frames:

1. Frames for door jambs and header (sidelights and transom material where applicable) shall be formed from a minimum of .09 inch (2 mm) thick material.
  - a. Minimum dimension of the door head frame:
    1. 6 inch (152 mm) high x 6 inch (152 mm) deep (required for Stanley Magic Force operator)
    2. 7-1/2 inch (191 mm) high x 6 inch (152 mm) deep (required for Horton 4100LE operator)
  - b. Minimum dimension of the vertical jamb framing (sidelight or transom material where applicable) to be 3 inch (76 mm) face x 6 inch (152 mm) deep bronze.
2. Frames shall be erected without the use of exposed screws where feasible.
3. Hinge shaft configuration:
  - a. Concealed with portion of hinge jamb to be removable for access to operating hardware.
  - b. Exposed with hinge shaft clad in extruded bronze (in matching finish to door and/or frame).
4. Glass stops (at sidelight and transom areas, where applicable):
  - a. Applied to framing.
  - b. Flush glazed formed into framing.
5. Glass: as specified in section [08 81 00].

## 2.04 HARDWARE AND WEATHERSTRIPPING

### A. Balanced hardware:

1. All balanced door hardware, including hydraulic check, shall be cast bronze and shall be cast, machined and assembled by the door and frame fabricator. Exposed hardware shall be finished as specified below.
2. Cast bronze mechanism and other integral parts must be heavy duty and must be designed to allow variation in adjustments to meet this particular job with respect to door size, door weight and varying or internal building pressures.
3. Balanced hardware shall consist of the following items:
  - a. Cast bronze hydraulic check shall be concealed in the head frame and have first and second speed adjustment. The hydraulic check unit must be removable without requiring the removal of the door, head frame or any other hardware. Closer arms are unacceptable.
  - b. Each door to have a heavy duty steel tube hinge shaft 1-3/4 inch (44 mm) diameter with 1/4 inch (6 mm) minimum wall thickness. Hinge shaft to be furnished complete with spring closing mechanism. The spring closer shall be adjustable at the floor to meet varying wind or building conditions. Top and bottom arms shall be one piece bronze castings, welded to hinge shaft. Two piece arms, aluminum arms, or steel painted arms will not be acceptable.
  - c. Hardware shall include a spring-cushioned door roller bumper located in the guide channel. The operating mechanism in the head shall include ball bearing pivots, cast bronze hydraulic check and cast bronze door guide channel with minimum dimensions of

2-3/8 inch (60 mm) by 3/4 inch (19 mm) thick and a minimum wall thickness of 9/16 inch (14 mm).

- d. Means shall be provided which make possible field adjustment for proper perimeter clearance of each door leaf in relation to its finished framework to accommodate on-site conditions.
- e. All doors shall have a semi-automatic hold open device located in the bottom rail.
- f. Doors designated as handicapped entrances shall have a maximum of 8 lbs. spring tension adjustment at pull handle. The clear opening shall be a minimum of 32 inches (813 mm) or greater (depending on local codes). The Ellison hydraulic check shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.
- g. Bronze hardware finish:
  - (1) Cast bronze, satin [with] [without] lacquer.
  - (2) Cast bronze, polished [with] [without] lacquer.

B. Finish hardware by door manufacturer (except permanent master keyed lock cylinders):

- 1. Standard locking hardware:
  - a. Adams-Rite deadlock (for single door).
  - b. Adams-Rite deadlock and flushbolts (for pair of doors).
  - c. Adams Rite dead latch with lever handle or push paddle (for single door).
  - d. Adams Rite deadlatch with lever handle or push paddle and flushbolts (for pair of doors).
- 2. Standard push-pull hardware to be 1 inch (25 mm) diameter offset profile with 12 inch (305 mm) centers, [stainless steel] [bronze] [aluminum] in finish as selected from manufacturer's standards.
- 3. Panic hardware to be furnished by the door supplier. To be equal to Von Duprin touch pad type panic exit device in finish as selected from manufacturers standards:
  - a. Concealed vertical rod type (for pair of doors).
  - b. Rim type (for single door).
- 4. Temporary cylinders with keys to be provided for mechanical locking hardware.
- 5. Permanent master keyed cylinders to be provided by others as specified in separate section.

C. Power Operation:

- 1. The power operator, complete with actuators and safety devices shall be provided by the door manufacturer as part of the door unit package. The operator shall be completely concealed within the door header with no surface attached drive arm. The operator will push the door open (only) by means of an arm/roller assembly concealed when door is in the closed position. The operator arm/roller assembly will not be directly attached to the door top rail. All standard balanced hardware components shall remain (and be operable) to close the door.

- a. Power operator:
  1. Stanley Magic Force (6 inch (152 mm) high minimum door header) extra heavy duty (low energy) concealed overhead electromechanical power operator with control box, conforming to ANSI/BHMA A156.19. Motor permanent magnet, DC 3/16 HP (minimum), 1.25 AMP, 120V, UL listed. Adjustable slow opening speed and adjustable time delay.
  2. Horton 4100LE (7-1/2 inch (191 mm) high minimum door header) extra heavy duty (low energy) concealed overhead electromechanical power operator with control box, conforming to ANSI/BHMA A156.19. Motor permanent magnet, DC 1/8 HP (minimum), 1.25 AMP, 120V, UL listed. Adjustable slow opening speed and adjustable time delay.
- b. Push Plate Actuator Switch: stainless steel 6 inch (152 mm) round wall mounted push plate actuator switch engraved with either handicap insignia and/or "press to open".
  1. Optional wireless, battery operated transmitter that eliminates routing control wires.
- c. On-Off Key Switch: on-off, maintained contact, key switch removes power to push button switches and/or operator(s). Key removable in both positions. A momentary contact switch is available.
  1. Optional wireless, battery operated transmitter that eliminates routing control wires.
- d. Safety Sensor: safety sensor to be mounted on the swing side of the door header. It scans the safety zone (swing door area) and prevents the door from opening when the presence of a person in its safety zone (door swing area) is detected.
- e. Electrical: Requirements for work specified in other sections. The general or electrical contractor shall furnish and install 120 VAC, 60 cycle, 1 phase, 15 AMP service to the operator. Two low voltage wires shall be furnished to connect each of the push plate actuator switches and key switches to the operator.

D. Thresholds:

1. Provide at all doors unless otherwise detailed.
2. Provide woodscrew and rawl plug type fastenings approximately 15 inches (381 mm) on center.
3. Thresholds shall be set on the finished floor and adequately caulked against water seepage.
4. Profile:
  - a. Thresholds shall be 1/2 inch high (13 mm) x 6 inch (152 mm) wide saddle type.
  - b. Thresholds shall be width and configuration as indicated on drawings.
5. Material:
  - a. Extruded aluminum.
  - b. Extruded bronze.
  - c. Extruded nickel silver.

- d. Formed [stainless steel] [bronze].
  - e. Cast bronze.
  - f. Cast white bronze (tombasil).
- E. Weatherstrip:
- 1. Shall be manufacturer's standard polypropylene pile.
  - 2. Shall occur:
    - a. Vertically at meeting stiles on pairs of doors.
    - b. Concealed at door top and bottom rails.
    - c. At door stops at both hinge and strike jambs.
    - d. At both sides of exposed hinge shaft if used.

## 2.05 SHOP INSPECTION

- A. Prior to leaving factory, all balanced doors and immediate framing shall be assembled and "hung". At this time, adjustment shall be made to provide proper perimeter clearance between door and frame and all coordination between door, frame and finish hardware shall be tested.

## PART III – EXECUTION

### 3.01 EXAMINATION

- A. The installer/erector shall examine substrates, supports and conditions under which this work is to be performed and notify contractor, in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.
- B. The floor material shall be solid (not susceptible to either deterioration or heaving), smooth and level and the adjacent work in its proper place prior to the installation of the door and frame system.
- C. Coordination dimensions, tolerances and method of attachment with other work.
- D. Verify electric power is available and of correct characteristics, if required.

### 3.02 INSTALLATION/ERECTION

- A. The installer/erector to install all materials by factory-trained personnel in strict accordance with installation data provided by manufacturer and these specifications.
- B. Provide attachments and shims required to fasten system to building structure.
- C. Install entrances plumb, level, square in alignment and true plane.
- D. Install glass in accordance with manufacturer's instructions.
- E. Install perimeter type sealant, backing materials to installation requirements.

### 3.03 ADJUSTING AND CLEANING

- A. The installer/erector to fit, align and adjust door assembly.
- B. Adjust door installation and hardware so that doors open and close smoothly.
- C. Adjust speed to comply with applicable codes.
- D. Remove protective materials from finished metal surfaces.
- E. Clean exposed surfaces using materials and methods recommended by manufacturer, exercising care to avoid damage to coatings.
- F. Touch-up damaged coatings and finishes.

### 3.04 OPERATOR ADJUSTMENT

- A. Ellison includes having the operator manufacturer's local technician field hook-up and test the power operator(s) and related devices. Note: Local manufacturer's technician must perform the field hook-up and testing, if not, the operator warranty will be void.
- B. The electrical coordination of locking features between the operator(s) and all other electronic devices (if specified) is not by Ellison or the operator manufacturer's local technician.

### 3.05 PROTECTION

- A. The contractor to institute protective measures required throughout the remainder of the construction period to ensure that the balanced door units will be without damage or deterioration, other than normal weathering, at the time of substantial completion.