SECTION 08 41 23.13

BULLET-RESISTANT STEEL ENTRANCES AND STOREFRONT

PART 1 – GENERAL

1.01 DESCRIPTION OF THE WORK

A. Provide all materials, labor, equipment and services necessary to furnish and install:

1. UL 752 Level 3 bullet-resistant steel framing components; entrance doors are specified in Section 08 34 53.13.
2. Miscellaneous sash for punch windows
3. Glass and dry glazing components.
4. All materials and fabrication shall meet test standards and requirements specified in Section 08 34 53.13, unless noted otherwise.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Installer: Minimum 5-years experience in the installation of bullet-resistant steel framing components, doors, doorframes, and related hardware.
2. Manufacturer/Fabricator:
   a. Suitably equipped and regularly engaged in the production of bullet-resistant steel framing, doors, doorframes and related components of the type specified for not less than 5-years
   b. Manufacturer's/Fabricator's components tested by a certified independent testing agency and passed the specified tests.

B. Requirements of Regulatory Agencies: Completed work shall not leak under normal weather conditions for which it has been tested.

C. Allowable Fabrication Tolerances:

1. Deflection: ASTM E330; minimum 0.000958-MPa (20-psf) wind load in direction normal to the plane of the wall up to 4,115-mm (13.5-feet) with a maximum deflection of 1/175 of the span of the members.
2. Air Infiltration: ASTM E283 maximum 0.06-cfm/psf at a differential static pressure of 0.000299-MPa (6.24-psf).
3. Water Infiltration: No water penetration at ASTM E331 test pressure of 0.000479-MPa (10-psf) in accordance with AAMA 501.

D. Allowable Installation Tolerances:

1. Expansion: Provide for 6-mm (¼-inch) expansion at each vertical mullion and 13-mm (½-inch) deflection at head assembly, but not less than that required for proper application of perimeter sealants.

2n E. Mock-Up: Prepare mock-up in accordance with Section 01 43 00 and ASK-AZ19. Test mock-up, including for air and water infiltration in accordance with procedures specified in paragraph 3.04 of this specification. Correct deficiencies and re-test until tests are successful.

1.03 REFERENCES

A. Comply with applicable portions of the standards referenced below.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA/WDMA/CSA 101/I.S.2/A440-05 – *Standard Specification for Windows, Doors, and Unit Skylights*
2. AAMA 501-03 – *Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing*
3. AAMA 503-03 - *Voluntary Specification for Field Testing of Storefronts, Curtain Walls and Sloped Glazing Systems*
4. AAMA 1503-98 – *Voluntary Test Method For Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

B. American National Standards Institute (ANSI):

1. ANSI A224.1-80 – *Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames*
2. ANSI/UL 1784-90 – *Air Leakage of Door Assemblies*
3. ANSI/BHMA A115.1 – A115.11 - *Specifications for Door and Frame Preparation for Hardware*
4. ICC/ANSI A117.1-1998 – *Guide for Accessible and Usable Buildings and Facilities*
5. ANSI/BHMA A156-2000 – *Series for Hardware Standards*
6. ANSI/NAAMM HMMA 801 – *Glossary of Terms for Hollow Metal Doors and Frames*
7. ANSI/NAAMM HMMA 862 – *Guide Specifications for Commercial Security Hollow Metal Doors and Frames*
8. ANSI/NFPA 80-95 - *Standard for Fire Doors and Windows*
9. ANSI/NFPA 252-1999 – *Standard Methods of Fire Test of Door Assemblies*
10. ANSI/NFPA 101-94 - *Life Safety Code*
11. ANSI/SDI A250.3 – *Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames*
12. ANSI/SDI A250.4-94 - *Test Procedure and Acceptance Criteria for Physical Endurance, Steel Doors and Frames*
13. ANSI/SDI A250.6-97 – *Hardware on Steel Doors (Reinforcement Application)*
14. ANSI/SDI 250.10 - *Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames*
15. ANSI/UL 9-00 - *Standard for Fire Tests of Window Assemblies*
16. ANSI/UL 10B-01 - *Standard for Fire Tests for Door Assemblies*
17. ANSI/UL 752 – *Bullet-Resisting Equipment*
18. ANSI/UL 1784-90 – *Air Leakage of Door Assemblies*

C. American Society for Testing and Materials: (ASTM)

1. ASTM A36/A36M-05 *Standard Specification for Structural Steel*
2. ASTM A653/A653M-07 - *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated*

3. ASTM A1008/A1008M-07 – *Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, high Strength Low-Alloy and high Strength Low-Alloy with Improved Formability*
4. ASTM A1011/A1011M-06b - *Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability*
5. ASTM B117-07 – *Standard Test Method for Salt Spray (Fog) Testing*
6. ASTM B117-07 – *Standard Test Method for Salt Spray (Fog) Testing*
7. ASTM C143/C143M-08 - *Standard Test Method for slump of Hydraulic Cement Concrete*
8. ASTM D610-08 - *Standard Practice for Evaluating Degree of Rusting on Painted Surfaces*
9. ASTM D714-02(2009) – *Standard Test Method for Evaluating Degree of Blistering of Paints*
10. ASTM D1735-04 - *Standard Practice for Testing Water Resistance of Coating Using Water Fog Apparatus*
11. ASTM E283-04 - *Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors*
12. ASTM E330-02 - *Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference*
13. ASTM E331-00 - *Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference*
14. ASTM E783-02 – *Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors*
15. ASTM E1105-00 - *Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform and Cyclic Static Air Pressure Difference*
16. ASTM E1300-03 - *Standard Practice for Determining the Load Resistance of Glass in Buildings*
17. ASTM F476-84(2002) - *Standard Test Methods for Security of Swinging Door Assemblies*
18. ASTM F1450-05 – *Standard Test Method for Hollow Metal Swinging Door Assemblies for Detention Facilities*
19. ASTM F1592-05 – *Standard Test Methods for Detention Hollow Metal Vision Systems*

D. National Association of Architectural Metal Manufacturers (NAAMM): Refer to ANSI for jointly issued standards.

E. Society for Protective Coatings (SSPC):

1. SSPC PS9.01 – *Cold-Applied Asphalt Mastic Painting System With Extra Thick Film*

1.04 SUBMITTALS

A. Shop Drawings and Product Data: Submit in accordance with Section 01 33 00.

1. Shop Drawings:
    a. Show wall elevations at 13-mm (½-inch) = 304-mm (1-foot) scale and full size detail sections of every typical composite member.
    b. Show anchors, joint system, expansion provisions and other components not included in manufacturer's data.
    c. Include glazing details.

d. Design calculations made by a professional engineer registered in the State of Arizona, which support the specified requirements.

2. Product Data:
   a. Manufacturer's complete product description.
   b. Manufacturer's installation instructions and recommendations.
   c. Referenced standards.
3. Test Reports: Certified test reports from an independent laboratory showing compliance with performance requirements specified in Section 08 34 53.13 and 08 88 56 and related sections.
4. LEED Data:
   a. Recycled Content: Documentation of recycled content from manufacturer for products with recycled content
   b. Location and Origin: Documentation of manufacturing locations and origins of materials for products *manufactured and sourced* within 805-Km (500-miles) of the building site.
5. Samples:
   a. Complete color range for selection
   b. One 152-mm (6-inches) long section of door corner construction showing profile, size, and method of joining components.
   c. When requested, one sample of each type of hardware

B. Maintenance Data and Operating Instructions: Submit in accordance with Section 01 78 00.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store materials off the ground and protected from exposure to harmful weather conditions.

C. Handle storefront material and components to avoid marring the surface, distorting or racking the fabricated components and all other forms of damage.

D. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and following installation.

1.06 JOB CONDITIONS

A. Environmental Requirements: Coordinate the Work under this Section with the installation of finish materials to ensure that the building is weather protected.

PART 2 – PRODUCTS

2.01 MATERIALS COMPONENTS

A. Steel framing components and assembly shall meet all detail requirements of the drawings and UL 752 Level 3 as described in Section 08 34 53.13.

1. The material used in manufacturing these products and components shall comply with NAAMM HMMA 862, except where noted otherwise.
2. Hardware reinforcing on doors and frames shall comply with ANSI/BHMA A115.1 – A115.11.
3. The physical performance levels shall be in accordance with ASTM F476, Level 3.

B. Anchors, Fasteners and Reinforcing Components:

1. Corrosion-resistant materials of sufficient size and strength to perform their intended function; capable of supporting system and superimposed design loads;
2. Adjustable prior to permanent fastening

C. Glass and Glazing Accessories:

1. Vision Glass: Section 08 81 13.
2. Bullet-Resistant Glass: 08 88 56.

E. Hardware: Refer to Section 08710 for materials and procedures.

D. Shop Primer: Comparable to field primer for exterior ferrous metals.

E. Dissimilar Material Isolation Coating: SSPC-PS-9.01.

2.02 FABRICATION

A. Cut, fit, form, drill and grind all metal work prior to cleaning, preparation and shop priming.

B. Fabricate frame assembly for exterior walls with flashing and weeps to drain penetrating moisture to exterior.

C. Fabricate system to allow for adequate clearances around perimeter of system to enable proper installation and sealing.

D. Fabricate components allowing for accurate and rigid fit of joints and corners.

1. Provide secure attachment and support at mechanical joints, with hairline fit of contacting members.
2. Match components carefully assuring continuity of line, design and accurate relations of planes and angles.
3. Ensure joints and connections will be flush, hairline and will prevent infiltration of air, moisture and/or other elements of weather.

E. Provide structural reinforcing and stiffening within framing members to maintain rigidity under design loads, meet deflection requirements, and to provide secure attachment to building structure.

F. Separate dissimilar materials with isolation coating intended for that purpose or preformed gaskets so as to prevent corrosion. Separate metal surfaces at moving joints with non-metallic gaskets to prevent freeze-ups.

G. Provide glazing system for frames to receive lights of specified thickness as shown on the drawings, as required by glass manufacturer's instructions and as required by specified performance requirements.

H. Provide anchorage and alignment brackets for concealed support of the assembly from the building structure.

I. Allow for thermal expansion of exterior units.

J. Hardware: Refer to Section 08 71 00.

1. Cut, reinforce, drill and tap frames as required to receive hardware, except do not drill and tap for surface mounted items until time of installation at the project site.
2. Comply with hardware manufacturer's recommendations and installation instructions and template requirements.
3. Use concealed fasteners wherever possible.
4. Install all hardware, except surface mounted hardware, at the fabrication plant, making all necessary arrangements with the hardware supplier.
5. Remove only as required for final finishing operations and for delivery and installation of the work at the project site.

K. Finish: Field finish in accordance with Section 09 91 00.

PART 3 – EXECUTION

3.01 PRE–INSTALLATION CONFERENCE AND INSPECTION:

A. Convene in accordance with Section 01 71 00.

3.02 INSTALLATION

A. Execute work in conformance with reviewed shop drawings to achieve water tight, weather tight installation and compliance with UL 752 Level 3.

B. Framing:

1. Erect all members square, plumb, level, free of warp or twist, in true alignment with one another and with adjacent work; maintain dimensional tolerances and alignment with adjacent work.
2. Orient all horizontal elements to the verticals at right angles to ensure components are straight, and so that glazing rabbets will be square, flat and true to dimension.
3. Set sills and other members adjacent to building construction in a bed of compound or with joint fillers or gaskets to provide construction impervious to moisture and air infiltration.
4. Securely anchor framing members to building structure using fastening anchors of sufficient size and strength to provide required safety factor.
5. Isolate dissimilar materials with heavy coating of bituminous paint or gaskets intended for that purpose.
6. Carefully fit and coat intersections with other work such as flashing and coping perimeters to prevent galvanic action and seal to provide framework impervious to weather.

C. Doors: Refer to Section 08 34 53.13

D. Glass: Install in accordance with glass manufacturer's recommendations, standard glazing practices and supplemental requirements specified in Sections 08 81 13 and 08 88 56. Refer to drawings for location of vision glass and bullet-resistant glass.

3.03 CLEANING AND ADJUSTMENT

A. Adjustment: Operate all moving parts (doors and hardware) to ensure that movement is within manufacturer's operating tolerances. Replace or repair defective parts.

B. Cleaning:

1. Clean surfaces promptly after installation of frames and doors exercising care to avoid damage; do not use abrasive materials that can mar or otherwise damage the finish surfaces of aluminum or glass.
2. Remove excess sealants, compounds, and other substances using non-abrasive materials.

C. Finish Surfaces: Uniform appearance, free from scratches, dents, dimples, stains and other visual imperfections.

3.04 FIELD QUALITY CONTROL

A. Architect shall select units to be tested as soon as representative portion of the Project has been installed, glazed, perimeter sealed and cured.

B. Tests for air infiltration and water penetration shall be performed by a qualified independent testing agency with manufacturer's representative present.

C. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract work.

D. Perform tests in accordance with AAMA 503.

1. Air Infiltration Tests: Conduct tests in accordance with ASTM E783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09-cfm/sf, whichever is greater.
2. Water Infiltration Tests: Conduct tests in accordance with ASTM E1105. No uncontrolled water leakage is permitted when tested at a static pressure of two-thirds the specified water penetration pressure, but not less than 10-psf.

E. Glass Manufacturer's Field Services: Provide manufacturer's field service consisting of periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

F. The level of acceptability for the completed work is that it shall not leak water or allow air to infiltrate. Should the installation fail any of the tests, the defective components shall be replaced at no additional cost to the Government.

3.05 WASTE MANAGEMENT

A. Separate packaging materials in accordance with the Waste Management Plan and place in designated areas for recycling.

B. Collect metal cutoffs and scrap and place in designated area for recycling.

END OF SECTION