**PART 1 GENERAL**

1.01 GENERAL REQUIREMENTS

1. Provide all materials, labor, equipment and services necessary to furnish, deliver and install all work under this section as shown on the contract documents, specified herein, and as specified by the job conditions.

1.02 DESCRIPTION

1. Related work specified elsewhere:

1. Metal Fabrication. Section 05 50 00

2. Rough Carpentry. Section 06 10 00

3. Access Panels & Doors: Section 08 31 00

4. Painting: Section 09 91 00

5. Electrical: Division 26

1.03 SUBMITTALS

1. Procedures: Furnish submittals in accordance with the general requirements specified.
2. Shop Drawing: Furnish shop drawings for architect's approval. Include elevations, sections, and details indicating dimensions, materials, finishes, conditions for anchorage and support of each fire and smoke rated curtain.
3. Product Literature: Submit manufacturer's technical literature describing the product to be used under this section.
4. Maintenance and Operating Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in operating and maintaining all of the fire and smoke rated curtains under this section. Include manufacturer's brochures and parts lists describing the actual materials used in the product.
5. Product Approval Reports: Submit copy of manufacturer’s Listing Report and Authorization To Mark clearly detailing the description of product, fire endurance test method, test results and test conclusions of the test criteria as conducted and witnessed by a United States accredited testing laboratory such as Underwriters Laboratories (UL) or Intertek-Warnock Hersey (Intertek). Testing agency’s Listing Report shall clearly state that the fire and smoke rated curtains have been tested and approved to the standards and criteria of UL 10B (90 minutes) with Hose Stream and UL 1784 Smoke & Draft rating without the use of an artificial bottom seal.

1.04 QUALITY ASSURANCE

1. Fire & Smoke Rated Assemblies: Provide all curtain shutters with fire and smoke resistance rating required to comply with governing regulations which are inspected, tested, listed and labeled by UL or Intertek and complying with NFPA 80 for class of opening. Provide units tested, approved and labeled under the UL 10B with Hose Stream and UL 1784 standards. Provide testing laboratory label permanently affixed to each fire curtain bottom bar assembly as evidence of product compliance in accordance with the requirements outlined under NFPA 80.
2. Oversize Assemblies: Where units exceed the testing laboratory’s label size, an Oversize Certificate label issued by either UL or Intertek shall be provided and permanently affixed to each fire curtain shutter bottom bar assembly as evidence of product compliance. Oversize assemblies requiring the joining of curtain sections together on site by the installer must require documented field certification by UL or Intertek.
3. Electric Motor Drives and Control Equipment: Tested, listed and labeled under standards UL 325. Provide testing laboratory label permanently affixed to each fire curtain control panel as evidence of product compliance.
4. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.

1.05 DELIVERY, STORAGE AND HANDLING

1. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand and type. Store materials in a protected dry location off the ground in accordance with manufacturer's instructions.

1.06 WARRANTY

1. Fire & Smoke Rated Curtain Shutter Warranty: Provide Two (2) Year Warranty signed by the manufacturer and installer agreeing to repair or replace work which has failed as a result of defects in materials or workmanship. Upon notification within the warranty period, such defects shall be repaired at no cost to the owner.

**PART 2 PRODUCTS**

* 1. FIRE & SMOKE RATED CUTAIN SHUTTERS
1. Manufacturer: Fire and smoke rated curtain shutters shall be the FireFighter® Series model D400 as manufactured by McKEON.
	1. MATERIALS
2. Assembly Design: Shall be designed requiring a single motor power drive to operate the opening curtain shutter. Fire and smoke rated assemblies requiring more than one motor drive unit to operate the curtain assembly and any overlapping curtain sections are not acceptable.
3. Curtain: Shall be of a reinforced flexible textile curtain, consisting of a fire and smoke resistant light weight textile composition designed to coil and store into a compact housing. Curtain weight shall be no greater than 0.3 pounds per square foot.
4. Bottom Bar: Shall consist of a double angle assembly formed to fit the curtain, provide stiffness, limit deflection and allow for a tight-fitting closure. Bottom bar shall be designed of adequate size and weight to keep the curtain fully extended, taut and level during self-closing while preventing deflection caused by the building’s normal air pressure currents.
5. Guide Assemblies: Each guide assembly shall be fabricated of a steel mounting adjustment angle or tube with integral pressure retaining side guides. The side guides are to be designed and fitted with internally concealed UL approved and classified smoke seals.
6. Endplates: Fabricated of minimum 3/16” thick steel endplates provided to house and support ends of the barrel assembly.
7. Hood: Shall be provided to entirely enclose the curtain and barrel assembly. Hood shall be fabricated of minimum 22 gauge G90 galvanized steel formed to match brackets. Top and bottom shall be bent and reinforced for stiffness. Hood shall be fitted with UL approved and classified smoke seals.
8. Barrel Assembly: Fabricated of structural quality carbon steel seamless pipe of sufficient size and diameter to house operating motor drive, support the curtain assembly and limit horizontal deflection of the fire and smoke rated curtain shutter assembly.
9. Single Motor Drive Unit: Fire and smoke rated curtain shutters shall be powered by a single motor drive design including gearbox assembly, electromechanical distance travel limit switches all linked to an internal electromagnetic brake which allows the draft curtain to operate under normal and fire ready conditions. Motor drive units shall be listed and labeled to test standard UL 325.
10. Control Station: Provide flush mount key switch control station marked open, close and stop.
11. Fail-Safe Release Device: A fail-safe release device shall be built into the motor drive unit as an integral part of the release mechanism. When power is interrupted to the release mechanism by an alarm condition, the fire and smoke rated curtain shutters shall automatically self-close. In the event of power failure a time delay shall prevent the fire and smoke curtain shutters from closing for a period of 30 minutes, unless there is an alarm condition at which point the fire and smoke rated curtain shutters shall immediately self-close. Once power has been restored and the alarm condition has been cleared, the release mechanism shall automatically reset and the fire and smoke rated curtain shutters shall automatically power themselves back to the fully open position and normal operating condition.
12. True Test Panel: Fire and smoke rated curtain shutters shall be provided with a True Test panel. A single True Test panel shall activate and automatically reset all the fire and smoke rated curtain shutters on the project. When activated to close via the True Test panel, the fire and smoke rated curtain shutters shall self-close under gravity, not power, in accordance with the requirements outlined under NFPA 80 Standard for Fire Doors and Other Opening Protectives.
13. Finish: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. Hood, guides and bottom bar shall be of McKEON Sterling Gray finish.

**PART 3 EXECUTION**

3.01 EXAMINATION

1. Examine surfaces and field conditions to which this work is to be performed and notify architect if conditions of surfaces exist which are detrimental to proper installation and timely completion of work.
2. Verify all dimensions taken at job site affecting the work. Notify the architect in any instance where dimensions vary.
3. Coordinate and schedule work under this section with work of other sections so as not to delay job progress.

3.02 INSTALLATION

1. Perform installation using only factory approved and certified representatives of the fire and smoke curtain shutter manufacturer.
2. Install fire and smoke curtain shutter assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.
3. Adjust fire and smoke curtain shutter installation to provide uniform clearances and smooth non-binding operation.
4. Install wiring in accordance with applicable local codes and the National Electrical Code Standard. Materials shall be UL listed.
5. Test fire and smoke curtain shutter closing sequence when activated by the building's fire alarm system. Reset fire and smoke curtain after successful test.

3.03 PROTECTION AND CLEANING

1. Protect installed work using adequate and suitable means during and after installation until accepted by owner.
2. Remove, repair or replace materials which have been damaged in any way.
3. Clean surfaces of grime and dirt using acceptable and recommended means and methods.