SECTION 08 33 00
HORIZONTAL FIRE & SMOKE RATED SHUTTERS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. 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

A. 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

A. Procedures: Furnish submittals in accordance with the general requirements specified.

B. 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 shutter.

C. Certifications:
1. Submit manufacturer’s Underwriters Laboratories, Intertek or Factory Mutual laboratory testing listing report verifying product compliance in accordance with the required fire and smoke ratings.
2. Submit manufacturer’s Code Compliance Research Report published by an independent third-party testing agency that is certified by the International Accreditation Service confirming compliance of the fire door assembly in accordance with the International Building Code.
3. Provide assemblies that have been tested, certified and labeled for a minimum 2-hour fire rating.

D. Product Literature: Submit manufacturer's technical literature describing the product to be used under this section.

E. Maintenance and Operating Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in operating and maintaining all shutters under this section. Include manufacturer's brochures and parts lists describing the actual materials used in the product.

1.04 QUALITY ASSURANCE

A. Fire & Smoke Rated Assemblies: Provide all doors with fire and smoke resistance rating required to comply with governing regulations which are inspected, tested, listed and labeled by Underwriters Laboratories, Intertek or Factory Mutual and complying with NFPA 80 for class of opening. Provide units tested in accordance with the requirements of UL 10B, UL 1784, NFPA 252, ASTM E-152. Provide testing laboratory label permanently fastened to each fire and smoke door assembly.

B. Regulatory Requirements:
1. Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.
2. Listed under a certified Code Compliance Research Report in accordance with the applicable sections of the International Building Code.

C. Manufacturer Requirements: Shutter manufacturer shall have been in the business of and have experience in manufacturing the type of product covered under this specification section as well as

giving credible service for a minimum of five (5) years. Provide list of at least ten (10) completed projects which include the products covered under this section.

1.05 DELIVERY, STORAGE AND HANDLING

A. 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

A. Shutter Warranty: Provide Two (2) Year Warranty, effective as of the date of shipment, 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

2.01 HORIZONTAL FIRE & SMOKE RATED SHUTTERS

A. Manufacturer: Horizontal fire and smoke rated shutters shall be the model H200-SS as manufactured by McKEON.

2.02 MATERIALS

A. General: Each unit shall consist of an interlocking slat curtain designed to travel in a horizontal plane, smoothly and without binding. Curtain shall be driven to the open and close position by a positive action sprocket drive, without the use of cables or counterbalance weights.
   1. Curtain: Shall be fabricated of stainless steel interlocking slats with an approximate cross section not less than 3" wide by 7/8" deep.

B. Leading Edge: Curtain shall be furnished with a single angle stainless steel member designed to provide stiffness, limit deflection and provide for a tight fitting closure.

C. Receiving Edge: Shall be fabricated of a stainless steel member with sufficient depth, designed to accept the leading edge and form a tight fitting closure when the fire shutter is the fully closed position.

D. Tracks: Shall be of not less than 1/8" thick stainless steel and shall be provided with an integral locking bar. The faying surface shall not be less than 38% of the flat plate area when the shutter is in the closed position. Locking bars shall lock and retain the coiling curtain in place.

E. Perimeter Smoke Seals: Provide internal, fully concealed UL Classified smoke seals located within the head track and coil box assembly. Externally mounted smoke seals shall not be acceptable.

F. Counterbalance Assemblies: The fire shutter shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks for attachment of curtain. Torsion springs shall be anchored to the same shaft and held in position by the same adjusting wheel accessible from outside the barrel assemblies.

G. Coil Box: Shall be provided to entirely enclose coiled curtain and counterbalance assemblies. Coil box cover shall be of a rectangular design fabricated of 22 gauge stainless steel.

H. Electric Motor Operator: Fire shutter shall be provided with a compact power unit designed and built by the shutter manufacturer. Operator shall be equipped with an adjustable screw-type limit switch to break

the circuit at termination of travel. High efficiency planetary gearing running in an oil bath, shall be furnished together with a centrifugal governor, magnetic operated brake and a fail-safe magnetic release device, completely housed to protect against damage, dust and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. Operator is to be housed in a NEMA type 1 enclosure.

1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with a class A or better insulation. Horsepower of motor is to be 1/3hp minimum or of manufacturer's recommended size, which ever is greater.
2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
3. Reducer: Planetary gear type, 80% efficiency minimum.
4. Brake: Magnetically activated, integral within the operator's housing.
5. Control Station: Provide flush mount key switch control station marked open, close and stop.

I. Self-Closing Mechanism: The fire shutter is to be designed with a centrifugal governor as an integral part of the operator's construction. The automatic release mechanism shall be activated by smoke detector or fire alarm. When activated the shutter is released and begins to close due to the captured torsion spring force. The speed of the shutter shall be governed by a centrifugal governor, designed to match the normal operating speed of the shutter, at a rate of not greater than 7" per second or less than 4" per second. The fire shutter shall self-close under its own power. Battery back-up systems to achieve self-closing are not acceptable.

J. Magnetic Release with 10 Second Time Delay: A fail-safe magnetic release device shall be built into the operator as an integral part of the release mechanism. When power is interrupted to the release mechanism by the smoke detector or fire alarm, the shutter shall begin to self-close. In the event of power failure the time delay shall prevent the fire shutter from closing for a period of 10 seconds. Once the 10 seconds have lapsed, the fire shutter shall self-close without the aid of electricity or battery back-up systems. Once power has been restored the automatic reset time delay as well as the fire shutter shall reset themselves.

K. Obstruction Sensing Device: The fire shutter shall be designed with a radio activated obstruction sensing safety edge. In the event that the safety edge meets an obstruction during the normal closing operation, the shutter shall stop, reverse and return to the open position. In the event the safety edge meets an obstruction during the self-closing operation, the shutter shall reverse and attempt to close three times. In the event that the obstruction has not been removed during the third attempt, the shutter shall come to rest on the obstruction and once the obstruction has been removed the fire shutter shall continue to the fully closed position.

L. Easy Trip Test Feature: The fire shutter shall be designed so that it may be trip tested simply by cutting power to the operator. By turning the power switch off, the shutter shall self-close. Once the shutter has satisfactorily closed, it shall be reset simply by turning the power back on. No ladders or tools shall be needed to reset the shutter or the time delay unit.

M. Finish: After completion of fabrication, clean all metal surfaces to remove dirt. All steel components shall receive two coats of rust inhibitive primer. All exposed stainless steel components shall be of type 304 with number 4 polish finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. 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.

B. Verify all dimensions taken at job site affecting the work. Notify the architect in any instance where dimensions vary.

C. Coordinate and schedule work under this section with work of other sections so as not to delay job progress.

3.02 INSTALLATION

A. Perform installation using only factory approved and certified representatives of the shutter manufacturer.

B. Install shutter assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.

C. Adjust shutter installation to provide uniform clearances and smooth non-binding operation.

D. Install wiring in accordance with applicable local codes and the National Electrical Code Standard. Materials shall be UL listed.

E. Test shutter closing sequence when activated by the building's fire alarm system. Reset shutter after successful test.

3.03 PROTECTION AND CLEANING

A. Protect installed work using adequate and suitable means during and after installation until accepted by owner.

B. Remove, repair or replace materials which have been damaged in any way.

C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.