**Section 08 34 85**

**Automatic Draft SMOKE curtains**

**PART 1 - General**

## Summary

### Section Includes: Fire protective smoke containment curtain system designed to provide a tight-fitting, smoke- and draft-control assembly as well as fire protection.

### Products Supplied But Not Installed Under This Section:

#### Group Control Panel unit.

#### Emergency Up Buttons

### Related Sections:

#### 09 2200−Non-Load Bearing Wall Framing: Metal backing in housing mounting area.

#### 09 9100−Paints: Field painting of specified components; repainting of existing field painted elevator door frames.

#### 28 3000−Detection and Alarm: Provision of smoke detectors.

#### Division 26 Sections for 120VAC and control circuit power including conduit, boxes, conductors, wiring devices, and emergency power.

#### 08 3100 Access Panels

## References

### ASTM E84-10 test report with calculated smoke development (CSD) of 2 and a smoke developed index (SDI) of 0 and a calculated flame spread (CFS) of 0.

### ICC Evaluation Service ESR-3322 − Legend Report showing compliance with opening force, cyclic force, expansion characteristics

### NFPA Codes and Standards:

#### 70 − National Electrical Code.

#### 105 − Recommended Practice for the Installation of Smoke-Control Door Assemblies.

#### ASTM – E84 Test report with Calculated Smoke Developed (CSD) of 2 and a Smoke Developed Index (SDI) of 0 and a Calculated Flame Spread (CFS) of 0.

### UL Minimum Performance Standards

#### UL 10B Fire test for door assemblies

#### UL10C Positive pressure fire test for door assemblies

#### UL 10D- Fire test for protective curtains

#### UL Oversized Certificate

#### UL 864 − Classified Control Units for Fire Protective Signaling Systems.

#### UL 1784 − Air Leakage Tests for Door Assemblies.

#### Impact test required by independent testing laboratory

#### Gravity fail-safe design. No battery back-up will be required for deployment

#### Certified to ISO 9001 1994 for the design, manufacturing, installation, and commissioning of Automatic Smoke Barriers and Partitions.

#### UL follow up service report required

### California Department of Forestry and Fire Protection and Office of the State Fire Marshal Listing

## Submittals

### Product Data: For each type of product

#### Shop Drawings: Show fabrication and installation details for automatic smoke curtains. Include plans, sections details, attachments to other work and the following:

##### Operating clearances

##### Requirements for supporting automatic smoke curtains, track, equipment.

##### Locations of equipment components, switches, motors and controls. Differentiate between manufacturer-installed and field installed wiring

#### Quality Assurance/Control Submittals:

##### Certifications: Copy of specified items.

##### Manufacturer’s installation instructions and testing procedures

## Closeout Submittals

### Comply Section 01 7700−Closeout Submittals; submit following items:

#### Operation and Maintenance Manual

#### Manufacturer’s Warranties

## Quality Assurance

### Overall Standards:

#### Manufacturer shall maintain a quality control program in accordance with ICC-ES Acceptance Criteria.

#### UL follow up Service Report

#### Product must bear a UL label. “Tested in accordance to” standard not acceptable for fire rated smoke curtains. Intertek label not acceptable.

### Qualifications:

#### Manufacturer Qualifications: Minimum five years’ experience in producing smoke containment systems of the type specified.

#### Installer Qualifications: Factory trained by manufacturer.

### Certifications:

#### Impact test report by independent laboratory

#### California Department of Forestry and Fire Protection and Office of the State Fire Marshal Listing.

#### UL 10B Fire test of door assemblies time temperature curve (no hose stream)

#### UL 10C Positive Pressure fire test for door assemblies time temperature curve (no hose stream)

#### UL Testing Laboratory Label.

#### UL 1784 UL Labeled, listed, classified, certified and marked Smoke & Draft assembly with no more than an air leakage of 3.CFM

#### UL 864 UL Labeled, listed, classified, certified and marked control units and accessories for Fire Alarm Systems

#### UL Oversized certificate labeled, listed, classified, certified and marked

#### UL-10D One Hour Fire Protective Curtain Listing Label.

#### OSHPD Anchorage Pre-Approval No. OPA-2855-10

### Pre-Installation Meeting:

#### Schedule and convene a pre-installation meeting prior to commencement of field operations with representatives of the following in attendance: Owner, Architect, General Contractor, smoke containment system sub-contractor, painting sub-contractor, and electrical sub-contractor.

#### Review substrate conditions, requirements of related work, installation instructions, storage and handling procedures, and protection measures.

#### Keep minutes of meeting including responsibilities of various parties and deviations from specifications and installation instructions.

## Delivery, Storage, and Handling

### Reference Section 01 6600−Product Storage and Handling Requirements.

### Follow manufacturer’s instructions.

## Warranty

### Provide manufacturer’s standard one-year warranty.

### Maintenance and Testing:

#### Perform minimum annual maintenance and testing on each smoke and fire containment system as required by the manufacturer’s warranty, code agency evaluation reports, and as required by local authority having jurisdiction.

#### Provide test documentation.

# Products

## Manufacturer

### Model DSI-D1HR Automatic Draft Curtain

### Manufacturer:

#### DSI Smoke and Fire Curtains

####  [www.doorsysinc.com](http://www.doorsysinc.com) 866-534-3667

### Label each smoke containment system with following information:

#### Manufacturer’s name.

#### Maximum leakage rating at specified pressure and temperature conditions.

#### Label of quality control agency.

## Performance Requirements

### Air Leakage: Not to exceed 3 cfm (0.001416 m3/s) per sf of door opening.

### Fire Rating: UL-10D The enclosure shall be rated at the same rating as the curtain fabric.

## Components

### The curtain head box shall be manufactured from 1.2mm galvanized steel. The enclosure shall be rated at the same temperature as the curtain fabric.

### Removable cover plates shall be incorporated to allow access to the curtain rollers.

### Standard head box sizes shall be 7 ½” x 7 ½ ” for single rollers (maximum width 16’-0”) and 12 ½ ” x 8 ½ ” for multiple rollers (over 16-0” wide). Larger head boxes may be required where the curtain drop is in excess of 9’-10”.

### A weighted bottom bar shall be provided to prevent deflection and ensure correct operation under gravity.

### The roller shall be constructed from an octagonal tube which will incorporate a 24v D.C. motor and gearbox and a sealed heavy-duty ball bearing assembly.

### A motor control circuit housed in a steel enclosure shall be mounted onto the motor end of the head box.

### Provide each motorized curtain with back Electromagnetic force-controlled speed of descent of no less than 6 inches per second and no more than 24 inches per second.

### The fabric curtain shall be woven VG455 glass fiber fabric. The curtain shall have a nominal weight of no less than 455g/square meter and shall be UL listed for one hour.

## Operation

### The smoke curtain shall deploy upon a signal from the fire alarm system in an emergency situation.

### The system must be proven to “fail safe” to the operational position on total loss of primary and auxiliary power. The system must contain a housed battery system at the Group Control Panels.

### Under normal operating conditions the curtains would be held in the retracted position via the motors operating at low voltage. The manufacture must be able to confirm that the motor windings are suitable for this type of operation.

### Upon activation of the fire alarm the control panel will remove the supply voltage and the curtain shall descend under the power of gravity in a controlled manner. A dynamic braking system housed in the motor control circuit shall control the speed of the descent of the curtain. The descent shall be electronically synchronized on overlapping curtains with a bottom bar.

### To retract the curtain the control panel shall supply 24v to the motor control circuits and motors will drive the curtains to the upper position. As the bottom bar or stopping bar hits the curtain head box a current limiting circuit will step back the voltage and current and hold the bottom bar in the retracted position.

### Limit switches are not to be used to control the upper position of the curtain.

### An optional braking system is available at the manufacture stage to allow a two-stage descent during gravity deployment. Should the main power fail to the group control panel, the supply is automatically switched to the integral standby battery. The curtain remains in the retracted position for 1 hour (fully retracted loaded system). The curtain will remain fully operational until the battery low voltage cut off facility reads a voltage of 21v; the curtains will then safely descend under the power of gravity to the operational position.

### Group Control Panel: Provide Group Control Panel (GCP) capable of controlling up to 5 motor assemblies. During normal operation, the GCP will provide a 24v AC supply to the curtain motor holding them in the retracted position. Should smoke be detected, the fire alarm contact in the GCP will be opened by the fire alarm control system, the GCP will remove the 24v supply to the curtain motors and the curtains will descend under the power of gravity in a controlled manner.

###  Open on fire- configured to be gravity fail safe

###  Test Facility- key switch required

### All push to exit buttons must contain internal battery back-up power supply for fail safe operation for ICC ES requirements.

### Weight of bottom to be 1.5 pounds per linear foot for curtain to for secondary means of egress for compliance with ICC ES requirements.

# Execution

## Examination

### Examine substrates upon which work will be installed.

#### Verify related work performed under other sections is complete and in accordance with Shop Drawings.

#### Verify wall surfaces and elevator door frames are acceptable for installation of smoke containment system components.

## INSTALLATION

### Install smoke containment system components in accordance with manufacturer’s installation instructions.

## Field Quality Control

### Field Test: Follow manufacturer’s cycle test procedures.

#### Notify Owner’s Representative, local Fire Marshal, alarm sub-contractor a minimum one week in advance of scheduled testing.

#### Complete maintenance service record.

## Demonstration

### Demonstrate required testing and maintenance procedures to Owner’s Representative.

### Maintenance and Testing:

#### Perform minimum annual maintenance and testing on each smoke and fire curtain system as required by the manufacturer’s warranty, code agency evaluation reports, and as required by local authority having jurisdiction.

#### Retain permanent record of tests.

### Qualified Door Systems, Inc Inspector assesses unit(s) after exposure to a fire event.

## MAINTENANCE

### Engage a Door Systems authorized service representative to test, adjust and maintain the system once per annum as required per NFPA 101 and NFPA 80.

End of Section 08 34 85