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ORDINANCE NO. 5485

AN ORDINANCE amending Section 1807 of the 1976 Uniform Building Code, and adding a new Section to K.C.C. 1604, increasing the minimum Special Design Requirements for Fire and Life Safety for Highrise Buildings in King County.

BE IT ORDAINED by the Council of King County:

SECTION 1. Section 1807 of the 1976 Uniform Building Code is hereby amended to read as follows:

Section 1807(a) Scope. These requirements apply to all buildings having floors used for human occupancy located more than 65 feet above the lowest level of approved Fire Department vehicle access. All such buildings shall conform to the requirements of this Section in addition to other applicable requirements of this Code. Sprinkler protection conforming to Section 1807(c) shall be provided.

(b) Certificate of Occupancy. All mechanical and electrical equipment and other required life safety systems shall be approved and installed in accordance with approved plans and specifications pursuant to this section and shall be tested and proved to be in proper working condition to the satisfaction of the building official before issuance of the Certificate of Occupancy.

(c) Automatic Sprinkler System. An automatic sprinkler system shall be provided throughout the building. The sprinkler system shall be designed using the parameters set forth in U.B.C. Standard No. 38-1 and the following:

1. Shutoff valves and a water flow alarm device shall be provided for each floor. The sprinkler riser may be combined with the standpipe riser.

2. In Seismic Zone No. 3, in addition to the main water supply, a secondary on-site supply of water equal to the hydraulically calculated sprinkler design demand plus 100 gallons per minute additional for the total standpipe system shall be provided.

1 This supply shall be automatically available if the principal sup-
2 ply fails and shall have a duration of 30 minutes.

3 (d) Smoke Detection Systems. At least one approved smoke
4 detector suitable for the intended use shall be installed in:

5 1. Every mechanical equipment, electrical, transformer,
6 telephone equipment, elevator machine or similar room.

7 2. In the main return and exhaust air plenum of each
8 air-conditioning system and located in a serviceable area down-
9 stream of the last duct inlet.

10 3. At each connection to a vertical duct or riser serv-
11 ing two or more stories from a return-air duct or plenum of an
12 air-conditioning system.

13 The actuation of any detector required by this section shall
14 operate the voice alarm system and shall place into operation all
15 equipment necessary to prevent the recirculation of smoke.

16 (e) Alarm and Communication Systems. The alarm and communi-
17 cation systems shall be designed and installed so that damage to
18 any terminal unit or speaker will not render more than one zone
19 of the system inoperative.

20 The voice alarm and public address system may be a combined
21 system. When approved, the fire department communications system
22 may be combined with the voice alarm system and the public address
23 system.

24 Three communication systems which may be combined as set
25 forth above shall be provided as follows:

26 1. Voice alarm system. The operation of any smoke de-
27 tector, sprinkler, water flow device or manual fire alarm station
28 shall automatically sound an alert signal to the desired areas
29 followed by voice instructions giving appropriate information and
30 direction to the occupants.

31 The central control station shall contain controls for the
32 voice alarm system so that a selective or general voice alarm may
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1 be manually initiated.

2 The system shall be supervised to cause the activation of an
3 audible trouble signal in the central control station upon inter-
4 ruption or failure of the audiopath including amplifiers, speaker
5 wiring, switches and electrical contacts and shall detect opens,
6 shorts and grounds which might impair the function of the system.

7 The alarm shall be designed to be heard clearly by all occu-
8 pants within the building, but in no case shall it be less than
9 60 db or 15 db above ambient noise levels, as measured in the A
10 scale, within all habitable areas of the building.

11 2. Public address system. A public address communica-
12 tion system designed to be clearly heard by all occupants of the
13 building shall operate from the central control station. It shall
14 be established on a selective or general basis to the following
15 terminal areas:

16 A. Elevators

17 B. Elevator lobbies

18 C. Corridors

19 D. Exit stairways

20 E. Rooms and tenant spaces exceeding 1000
21 square feet in area.

22 F. Dwelling units in apartment houses.

23 G. Hotel guest rooms or suites.

24 3. Fire department communication system. A two-way fire
25 department communication system shall be provided for fire depart-
26 ment use. It shall operate between the central control station
27 and every elevator, elevator lobby and entry to every enclosed
28 exit stairway.

29 (f) Central Control Station. A central control station for
30 fire department operations shall be provided in a location ap-
31 proved by the fire department. It shall contain:

32 1. The voice alarm and public address system panels.
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- 1 2. The fire department communications panel.
- 2 3. Fire detection and alarm system annunciator panels.
- 3 4. Status indicator and controls for elevators.
- 4 5. Status indicators and both automatic and manual
- 5 on-off control switches for the air handling systems used for
- 6 smoke control and pressurization.
- 7 6. Controls for unlocking all stairway doors simultan-
- 8 eously.
- 9 7. Sprinkler valve and water-flow detector display
- 10 panels.
- 11 8. Standby power controls and status indicators.
- 12 9. A telephone for fire department use with controlled
- 13 access to the public telephone system.

14 (g) Smoke Control. Natural or mechanical ventilation for the
15 removal of products of combustion shall be provided in every story
16 and shall consist of one of the following:

- 17 1. Panels or windows in the exterior walls which can be
- 18 opened manually from the fire floor. Such venting facilities
- 19 shall be provided at the rate of 20 square feet per 50 lineal feet
- 20 of exterior wall in each story and shall be distributed around the
- 21 perimeter at not more than 50-foot intervals. Such windows or
- 22 panels shall be clearly identified.
- 23 2. Mechanical air-handling equipment may be designed to
- 24 accomplish smoke removal. Under fire conditions, the return and
- 25 exhaust air shall be moved directly to the outside without recir-
- 26 culation to other sections of the building. Air supply systems,
- 27 other than those required for pressurization, shall stop on a fire
- 28 alarm signal. The exhaust air-handling system shall automatically
- 29 operate in a fire mode and shall have the capacity to provide a
- 30 minimum of one exhaust air change each 10 minutes for the area
- 31 involved.
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1 3. Any other approved design which will produce
2 equivalent results.

3 (h) Elevators. Elevators and elevator lobbies shall
4 comply with the provisions of Chapter 51 and the following:

5 NOTE: A bank of elevators is a group of elevators
6 or a single elevator controlled by a common operating
7 system; that is, all those elevators which respond to
8 a single call button constitute a bank of elevators.

9 There is no limit on the number of cars which may be
10 in a bank or group but there may be not more than four
11 cars within a common hoistway.

12 1. Except for the main entrance level, all elevators on
13 all floors shall open into elevator lobbies which are separated
14 from the remainder of the building as is required for corridor
15 construction in Section 3304(g) and (h).

16 2. Each elevator lobby shall be provided with an
17 approved smoke detector located on the lobby ceiling. When the
18 detector is activated, elevator doors shall not open and all cars
19 serving that lobby are to return to the main floor and be under
20 manual control only. If the main floor detector or a transfer
21 floor detector is activated, all cars serving the main floor or
22 transfer floor shall return to a location approved by the fire
23 department and building official and be under manual control only.
24 The smoke detector is to operate before the optical density reaches
25 0.03 per foot. The detector may serve to close the lobby doors.

26 3. A permanent sign shall be installed in each elevator
27 cab adjacent to the floor status indicator and at each elevator
28 call station on each floor there shall be a blinking light activa-
29 ted by the fire alarm and a similar permanent sign. The permanent
30 sign shall read: "FIRE EMERGENCY, USE EXIT STAIRS, ELEVATOR NOT
31 OPERATING" or similar verbiage approved by the building official.

32 4. Elevator hoistways shall not be vented through an
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1 elevator machine room. Cable slots entering the machine room shall
2 be sleeved at the machine room floor to inhibit the passage of
3 pressurization air into the machine room. Elevator pressurization
4 fans that deliver air through unrestricted ducts shall replace and
5 serve in lieu of the vent required in Section 1706(d).

6 5. At least one elevator car serving all floors shall
7 have a minimum inside car platform of 4 feet 3 inches deep by 6
8 feet 8 inches wide with a minimum clear opening width of 42 inches,
9 unless otherwise designed and approved to provide equivalent util-
10 ity to accommodate an ambulance stretcher having a minimum size of
11 22 inches by 78 inches in its horizontal position. This elevator
12 shall be identified.

13 6. All elevator shafts shall be pressurized with a sup-
14 ply of air from outdoors to a minimum of 0.15 inch of water column
15 in a fire alarm mode.

16 (i) Standby Power, Light and Emergency Systems. 1. Standby
17 power. Standby power generating system conforming to U.B.C. Stand-
18 ard No. 18-1 shall be provided. The system shall be equipped with
19 suitable means for automatically starting the generator set upon
20 failure of the normal electrical supply systems and for automatic
21 transfer of all functions required by this section at full power
22 within 60 seconds of such normal service failure. System super-
23 visions with manual start and transfer features shall be provided
24 at the central control station.

25 An on-premise fuel supply sufficient for not less than two
26 hours full demand operation of the system shall be provided.

27 The standby system shall have a capacity and rating that
28 would supply all equipment required to be operational at the same
29 time. The generating capacity need not be sized to operate all the
30 connected electrical equipment simultaneously.

31 All power sources and control circuits for: standby presuri-
32 zation and smoke evacuation fans, lighting signal and communication
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1 facilities specified in (d), (e), (f), (g), (h), (i) and (j) as
2 applicable; fire pumps required to maintain pressure, standby light-
3 ing and normal circuits supplying exit signs and exit illumination
4 shall be transferable to the standby source.

5 2. Standby lighting. Standby lighting shall be provided
6 as follows:

7 A. Separate lighting circuits and fixtures suffi-
8 cient to provide light with an intensity of not less than one foot-
9 candle measured at floor level in all exit corridors, stairways,
10 smokeproof enclosures, elevator cars, and lobbies and other areas
11 which are clearly a part of the escape route.

12 B. All circuits supplying lighting for the central
13 control station and mechanical equipment rooms.

14 3. Emergency systems. The following are classified as
15 emergency systems and shall operate within 10 seconds of failure
16 of the normal power supply:

17 A. Exit sign and exit illumination as required by
18 Section 3312.

19 B. Elevator car lighting.

20 (j) Exits. Exits shall comply with other requirements of
21 this code and the following:

22 1. All stairways shall extend to the roof.

23 2. All stairway doors opening to the roof shall conform
24 to Section 3303. This door may be locked from the stairway side
25 for security purposes. If a lock is provided, it shall automatic-
26 ally unlock upon activation of any fire alarm, or detection system.

27 3. All stairway doors which are to be locked from the
28 stairway side shall have the capability of being unlocked simultan-
29 eously without unlatching upon a signal from the central control
30 station. All such doors shall also automatically unlock in the
31 event of loss of electrical power.

1 4. A telephone or other two-way communications system
2 connected to an approved emergency service which operates contin-
3 uously shall be provided at not less than every fifth floor in
4 each required stairway where other provisions of this code permit
5 the doors to be locked.

6 5. All enclosed stairways shall be pressurized, as pro-
7 vided for mechanically operated smokeproof enclosures, to a minimum
8 of 0.15 and a maximum of 0.50 inch of water column when the build-
9 ing is in the fire mode. Buildings 10 or more stories in height
10 shall have stair shafts pressurized with a minimum of 2 fans, 1
11 supplying air from a location below the third story and 1 supply-
12 ing air from the roof. Stairshafts in buildings 32 or more stories
13 in height shall be provided with 2 pressurization systems which
14 are separated in an approved manner.

15 6. Corridors shall be provided with supply pressuriza-
16 tion air from outdoors, when the building is in the fire mode,
17 equal to one air change every 10 minutes. Supply ducts shall have
18 an approved smoke detector which will simultaneously signal the
19 fire alarm panel if the fan is used for HVAC purposes and which
20 will stop the fan upon smoke detection. Corridors shall be so
21 designed and constructed as to preclude the propagation of smoke
22 through corridor walls or openings therein.

23 7. All required exit signs shall flash off and on when
24 the building's life safety system is in the alarm mode.

25 (k) Seismic Considerations. In Seismic Zone No. 3 the anchor-
26 age of mechanical and electrical equipment required for life
27 safety systems, including fire pumps and elevator drive and suspen-
28 sion systems, shall be designed in accordance with the requirements
29 of Section 2312.

30 (1) Regardless of U.B.C. Table 38-A, class II standpipes
31 shall be provided as per U.B.C. 3803(d). The class II standpipes
32 may be incorporated into an approved combined standpipe system.
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1 (m) Automatic Sprinkler System Alternatives. Because a
2 complete approved automatic sprinkler system complying with this
3 section is installed in a building, the following modifications of
4 code requirements are permitted:

5 1. The fire-resistive time periods set forth in Table
6 17-A may be reduced by one hour for interior bearing walls,
7 exterior bearing and nonbearing walls, roofs and the beams
8 supporting roofs, provided they do not frame into columns,
9 Vertical shafts other than stairway enclosures and elevator shafts
10 may be reduced to one hour when sprinklers are installed within
11 the shafts at alternate floors.

12 2. Except for corridors in Group B, Division 2 and Group
13 R, Division 1 Occupancies and partitions separating dwelling units
14 or guest rooms, all interior nonbearing partitions required to be
15 one hour fire resistive construction by Table No. 17-A may be of
16 noncombustible construction without a fire resistive time period.

17 3. Smokeproof enclosures are not required but all
18 required stairways shall be pressurized to a minimum of 0.15 inch
19 of water column.

20 4. Spandrel walls, eyebrows and compartmentation are
21 not required; however, the fire resistance of the floors and
22 juncture of exterior walls with each floor must be maintained.

23 5. Fire dampers, other than those needed to protect
24 floor ceiling assemblies to maintain the fire resistance of the
25 assembly, are not required except for those which may be necessary
26 to bypass smoke to the outside, those provided to convert from
27 recirculated air to 100 percent outside air, and those which may
28 be required to protect the fresh air supply intake against smoke
29 which may be outside the building.

30 (n) Clear Roof Area. All buildings shall have a clear area
31 on the roof conforming to U.B.C. 1715 (b) only, for emergency
32 rescue by helicopter.
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1 (o) Pre-fire Planning.

2 1. The management for all buildings shall establish and
3 maintain a written fire and life safety emergency plan, which has
4 been approved by either the Fire Marshal or the Chief of the local
5 fire district responsible for fire suppression activities and
6 copies filed in both offices.

7 2. The management of all buildings shall conduct fire
8 drills for their staff and employees at least every 120 days to
9 familiarize them with the approved emergency plan. Guests or
10 occupants NEED NOT participate. The local fire district shall be
11 advised of all such drills at least 24 hours in advance. A written
12 record of each drill shall be maintained in the building's manage-
13 ment office and shall be made available to the Fire Marshal or
14 Fire Chief for review.

15 (p) Pre-plan Review. Prior to issuance of a building
16 permit, a pre-plan review meeting shall be called by the Manager
17 of Building and Land Development Division to assure minimum fire
18 and life safety design criteria has been incorporated into the
19 building plans. This meeting shall include a representative of
20 King County's Plan Review Section, a representative of the King
21 County Fire Marshal's office, a representative of the local Fire
22 District, a representative of the King County Sheriff's office -
23 Burglary Suppression Unit, and the Architect.

24 (q) Alternate Materials or Methods. No deviations shall
25 be made from the pre-plan review requirements for Highrise
26 buildings without notification of the local Fire Chief who is
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1 responsible for fire suppression services.

2 SEVERABILITY. Should any section, sub-section, paragraph,
3 sentence, clause or phrase of this ordinance be declared
4 unconstitutional or invalid for any reason, such decision shall
5 not affect the validity of the remaining portions of this
6 ordinance.

7 INTRODUCED AND READ for the first time this 13th day
8 of April, 19 81.

9 PASSED this 26th day of May, 19 81.

10 KING COUNTY COUNCIL
11 KING COUNTY, WASHINGTON

12 Paul Bader
13 Chairman

14 ATTEST:

15 Gerald A. Peterson ACTING
16 Deputy Clerk of the Council

17 APPROVED this 5th day of June, 1981.

18 Oliver D. Dwyer
19 King County Executive