



**APPLICABLE CODES AND STANDARDS:**  
 IRC 2009  
 NFPA 101 2006, NFPA 101 2009  
 MSHA DESIGN AND CONSTRUCTION MANUAL  
 ICC/ANSI A117.1 2009

**IBC USE & CONSTRUCTION TYPES**  
 GROUP S-2 PARKING GARAGE CONSTRUCTION TYPE: IB  
 GROUP R-2 RESIDENTIAL CONSTRUCTION TYPE: VA

**NFPA OCCUPANCY & CONSTRUCTION TYPES**  
 STORAGE - PARKING STRUCTURE, OPEN CONSTRUCTION TYPE: II (222)  
 RESIDENTIAL, APARTMENT BUILDING, NEW CONSTRUCTION TYPE: V111

**SUMMARY OF REQUIRED SEPARATIONS**  
 2 HR HORIZONTAL ASSEMBLY BETWEEN STORAGE AND RESIDENTIAL OCCUPANCIES

2 HR FIRE BARRIER SEPARATING THE MEANS OF EGRESS FOR THE UPPER OCCUPANCY AND THE PARKING OCCUPANCY

90 MIN. SELF-CLOSING AND SELF-LATCHING DOORS TO EXIT ENCLOSURE FOR THE RESIDENTIAL OCCUPANCY FROM THE PARKING OCCUPANCY

1 HR FIRE RESISTANCE RATING OF EXIT ENCLOSURES WITHIN RESIDENTIAL OCCUPANCY

60 MIN. SELF-CLOSING AND SELF-LATCHING DOORS TO THE EXIT ENCLOSURE FROM THE RESIDENTIAL OCCUPANCY

1 HR FIRE PARTITION BETWEEN DWELLING UNITS OR SLEEPING UNITS

1 HR HORIZONTAL ASSEMBLY BETWEEN DWELLING UNITS OR SLEEPING UNITS IN THE SAME BUILDING

1/2 HR CORRIDOR FIRE-RESISTANCE RATING

20 MIN. SELF-CLOSING AND SELF-LATCHING DOORS TO EXIT ACCESS CORRIDOR

1 HR FIRE RESISTANCE RATING SEPARATION AND AUTOMATIC SPRINKLERS AT BOILER ROOMS

1 HR FIRE RESISTANCE RATING SEPARATION AND AUTOMATIC SPRINKLERS AT LAUNDRY ROOMS GREATER THAN 100 s.f. OUTSIDE OF DWELLING UNITS

1 HR FIRE RESISTANCE RATING SEPARATION AND AUTOMATIC SPRINKLERS AT TRASH COLLECTION ROOMS

1 HR FIRE RESISTANCE RATING PROTECTION OR AUTOMATIC SPRINKLERS AT STORAGE ROOMS OUTSIDE OF DWELLING UNITS.

1HR SHAFT ENCLOSURES CONNECTING LESS THAN FOUR STORIES

2HR SHAFT ENCLOSURES CONNECTING FOUR OR MORE STORIES

1HR BEARING WALLS - INTERIOR AND EXTERIOR

1HR NON-BEARING EXTERIOR WALLS FOR WHICH THE FIRE SEPARATION DISTANCE IS GREATER THAN OR EQUAL TO 10 FEET AND LESS THAN 30 FEET.

1HR ROOF CONSTRUCTION AND SECONDARY MEMBERS

1HR FLOOR CONSTRUCTION AND SECONDARY MEMBERS

**FIRE SEPARATIONS:**

--- 1/2 HOUR FIRE-RESISTANCE RATING AT CORRIDORS  
 --- 1 HOUR FIRE-RESISTANCE RATING - STC 50 MIN.  
 --- 2 HOUR FIRE-RESISTANCE RATING

**SPRINKLER SYSTEM:**  
 THE BUILDING SHALL BE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM THAT COMPLIES WITH NFPA 13.

**ALLOWABLE BUILDING HEIGHT:**  
 PER IRC 2009 TABLE 503 AND SECTIONS 504.2, 504.3, & 509.4

**GRADE PLANE CALCULATION**  
 NORTH: (11.4+10.8+10.5+12.3) / 4 = 11.26  
 SOUTH: (13.5+17.5+17.3+13.3) / 4 = 15.40  
 EAST: (13.3+12.24) / 2 = 12.77  
 WEST: (11.4+13.5+16.6+17.3) / 4 = 14.70  
 54.13 / 4 = +13.53' AVERAGE GRADE PLANE

MAXIMUM BUILDING HEIGHT = 60'  
 MAXIMUM ALLOWABLE BUILDING ELEVATION ABOVE AVERAGE GRADE PLANE = +73.53'  
 HEIGHT OF ROOF STRUCTURES ABOVE STAIRWELLS NOT TO EXCEED 20' ABOVE ALLOWABLE BUILDING HEIGHT (SECTION 504.3)

MAXIMUM NUMBER OF STORIES ABOVE ONE LEVEL OPEN PARKING = 4 (SECTION 509.4)

**PARKING STRUCTURE**  
 NFPA 3.3.240.6  
 DEFINITION OF OPEN PARKING STRUCTURE:  
 1.4 S.F. WALL OPENING FOR EACH LINEAR FOOT OF EXTERIOR PERIMETER  
 OPENINGS DISTRIBUTED UNIFORMLY OVER TWO OPPOSING SIDES  
 CALCULATIONS:  
 EXTERIOR PERIMETER PARKING AREA = 223' - 10" (427' TOTAL PERIMETER)  
 MULTIPLY BY 1.4 FOR REQUIRED OPEN AREA = 313.67 S.F. ( 597.8 S.F.)  
 OPEN AREA PROVIDED = 844.33 S.F.

**NFPA 101 EGRESS REQUIREMENTS**

42.8.2.5.1 MAXIMUM COMMON PATH OF TRAVEL 50 FT

42.8.2.5.2 MAXIMUM DEAD END TRAVEL DISTANCE 50 FT

42.8.2.6 MAXIMUM TRAVEL DISTANCE TO EXIT 400 FT

**ALLOWABLE BUILDING AREA:**  
 PER IRC 2009 TABLE 503 AND SECTION 506.3  
 24,000 s.f. PER STORY

**SOUND TRANSMISSION:**  
 SEPARATIONS FOR DWELLING UNITS SHALL HAVE A MINIMUM STC OF 50.

GROUND FLOOR AREA: 14,725 SQ. FT.  
 OCCUPANT LOAD: 0  
 PARKING @ 1:200: 74

**PARKING VENTILATION CALCULATION**  
 NFPA  
 B-WING PARKING PERIMETER = 340.1 L.  
 MULTIPLY BY 1.4 FOR REQUIRED OPEN AREA = 476.1 S.F.  
 TOTAL OPEN AREA @ PERIMETER PROVIDED = 892.91 s.f.

IBC  
 A-WING PARKING PERIMETER AREA = 3,542.71 s.f.  
 20% of the total perimeter wall = 708.54 s.f.  
 TOTAL OPEN AREA PROVIDED @ PERIMETER = 813.4 s.f.

**PARKING VENTILATION CALCULATION**  
 NFPA  
 A-WING PARKING PERIMETER LENGTH = 389.42 L.  
 MULTIPLY BY 1.4 FOR REQUIRED OPEN AREA = 545.12 s.f.  
 TOTAL OPEN AREA PROVIDED @ PERIMETER = 813.4 s.f.

IBC  
 A-WING PARKING PERIMETER AREA = 3,861.75 s.f.  
 20% of the total perimeter wall = 772.35 s.f.  
 TOTAL OPEN AREA PROVIDED @ PERIMETER = 813.4 s.f.

