IBC PROJECT – HOW DO I USE PLAN ANALYST?

ALL YOU NEED IS A COPY OF THE PLANS AND A COMPUTER WITH PLAN ANALYST INSTALLED. YOU'RE READY TO GO!

- FIRST YOU SIMPLY FILL IN THE PLAN ANALYST FORMS TO COMPLETE THE BUILDING DESCRIPTION AS SHOWN BELOW.
- PLAN ANALYST WILL THEN SEARCH THROUGH THE CODE, COMPLETE ALL REQUIRED TIME CONSUMING CALCULATIONS AND CREATE A CODE STUDY FOR THIS PROJECT THAT ONLY INCLUDES CODE REQUIREMENTS THAT APPLY TO THIS PROJECT.

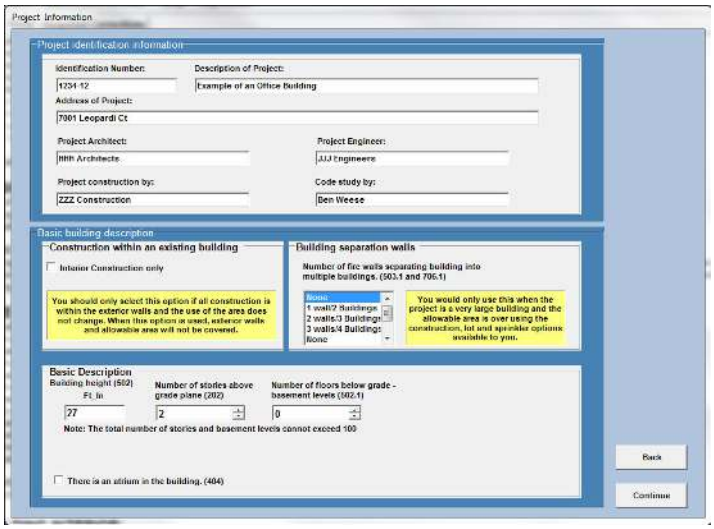
    1. IF YOU ARE IN THE DESIGN PROCESS, THIS REPORT PROVIDES YOU WITH THE CODE REQUIREMENTS NEEDED TO MAKE YOUR PLAN COMPLY WITH THE CODE INCLUDING INSTANT ANSWERS FOR WHAT IF I ADD OCCUPANCY SEPARATIONS, MOVE THE PROJECT ON THE SITE OR ADD SPRINKLERS, ETC. NOW YOU HAVE COMPLETE CONFIDENCE IN CODE COMPLIANCE, PREVENTING DELAYS WHEN THE PLANS ARE SUBMITTED FOR APPROVAL.
    2. IF YOU ARE CHECKING THE PLANS FOR CODE COMPLIANCE, THIS REPORT PROVIDES YOU WITH THE CODE REQUIREMENTS FOR THIS PROJECT. THIS WILL MAKE THE PLAN REVIEW PROCESS FASTER AND MORE ACCURATE.

- NEXT YOU CREATE A CORRECTION REPORT BY REVIEWING THE QUESTIONS IN THE CORRECTION REPORT SECTION. THE QUESTIONS ARE CUSTOMIZED TO INCLUDE ONLY WHAT IS SPECIFIC TO THIS PROJECT. WHEN YOU HAVE REVIEWED AND ANSWERED THE PROMPTED QUESTIONS A CORRECTION REPORT IS CREATED COMPLETE WITH VERIFYING CODE REFERENCES.
- IF YOU ARE CHECKING PAPER PLANS, YOU CAN ATTACH THIS REPORT TO THE PLANS ELIMINATING CLIENT CODE QUESTIONS.
- IF YOU ARE CHECKING PLANS USING AUTODESK DESIGN REVIEW, YOU CAN SIMPLY CUT AND PASTE THE REQUIRED CORRECTIONS FROM PLAN ANALYST TO THE CALLOUTS BOXES AT THE APPROPRIATE PLACES ON THE PLAN. NO PAPER

ENTERING AN IBC PROJECT DESCRIPTION
2012 IBC VERSION

CLICK THE IBC PROJECT BUTTON ON THE LEFT SIDE OF SCREEN OR CLICK PROJECT ON THE PULL-DOWN MENU, THEN CLICK NEW PROJECT AND CLICK ALL OTHER IBC PROJECTS.

PROJECT INFORMATION



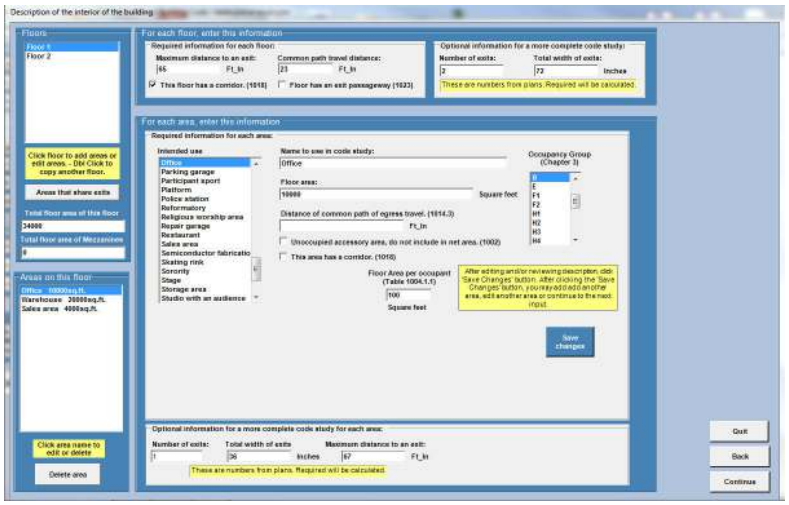
1. ENTER THE INFORMATION ABOUT THE PROJECT.
2. IF THIS IS A LARGE BUILDING REQUIRING FIRE WALLS TO SEPARATE THE BUILDING INTO MULTIPLE BUILDINGS, CLICK ON THE NUMBER OF FIRE WALLS. NOTE: FIREWALLS REQUIRED FOR USE SEPARATION, EXITS, LOCATION ON PROPERTY, ETC. ARE CALCULATED FOR YOU.
3. ENTER THE HEIGHT OF THE BUILDING.
4. CLICK UP-DOWN ARROWS TO SELECT THE NUMBER OF STORIES ABOVE GRADE
5. IF THERE ARE BASEMENT LEVELS, CLICK UP-DOWN ARROWS TO SELECT THE NUMBER OF FLOORS BELOW GRADE.
6. CLICK THE CONTINUE BUTTON.

BUILDING INTERIOR

CLICK ON THE FLOOR THAT YOU ARE ENTERING OR EDITING.

FOR EACH FLOOR

1. ENTER INFORMATION REQUESTED IN TOP 2 BOXES



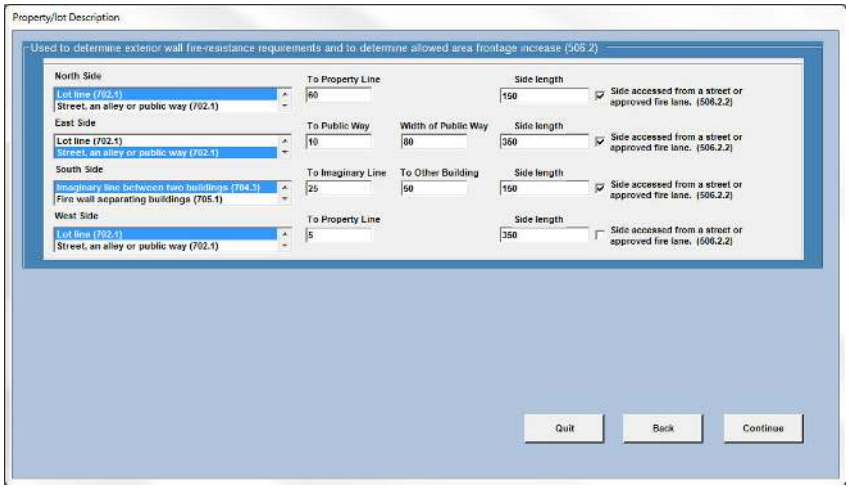
FOR EACH AREA ON THE FLOOR

1. CLICK THE NAME OF THE AREA IN THE INTENDED USE: LIST.
2. ENTER THE FLOOR AREA. NOTE: WHEN A NUMBER IS REQUIRED, PLAN ANALYST HAS A BUILT-IN CALCULATOR. IE. 20_6 x 13 FOR 20'6" TIMES 13'
3. CLICK ANY OTHER OPTION THAT APPLIES TO THIS AREA. NOTE: SOME USES HAVE ADDITIONAL OPTIONS IN THE GRAY AREA BELOW "INTENDED USE" THAT ARE NOT SHOWN IN THIS EXAMPLE.
4. CLICK ADD TO MAIN FLOOR OR ADD TO MEZZANINE **AFTER THE INFORMATION** FOR EACH AREA IS COMPLETED.
5. WHEN ALL AREAS ON ALL FLOORS ARE COMPLETED, CLICK THE CONTINUE BUTTON.

NOTES:

1. THE TOTAL FLOOR AREA IS SHOWN IN THE BOTTOM LEFT CORNER.
2. SOME USES ALLOW YOU TO SELECT FIXED SEATING. WHEN YOU SELECT FIXED SEATING, YOU WILL NEED TO ENTER THE NUMBER OF OCCUPANTS.
3. OPTIONS WILL VARY BASED ON THE SELECTED USE. THIS SIMPLIFIES THE INPUT FOR SPECIAL USES.
4. PLAN ANALYST WILL DEFAULT TO THE CORRECT OCCUPANCY GROUP AND AREA PER OCCUPANT. THERE IS NO NEED TO CHANGE THESE.
5. OPTIONAL INFORMATION FOR THE FLOOR IN THE UPPER RIGHT CORNER AND AREA INFORMATION AT THE BOTTOM MAY BE LEFT BLANK BUT IF YOU ENTER THIS INFORMATION, THE CODE STUDY WILL ALSO SHOW IF THE NUMBER OF EXITS, THE WIDTH OF EXITS, AND THE TRAVEL DISTANCES ARE CORRECT. ENTERING THIS INFORMATION WILL ALSO ALLOW YOU TO ADD THESE PROBLEMS TO THE CORRECTION REPORT AUTOMATICALLY.
6. YOU MAY MOVE BACK AND FORTH THROUGH THE FLOORS AND AREAS BY CLICKING THE NAME OF FLOOR OR AREA IN THE LIST BOXES ON THE LEFT SIDE. WHEN AN AREA IS SELECTED, YOU MAY EDIT OR DELETE IT.

PROPERTY DESCRIPTION

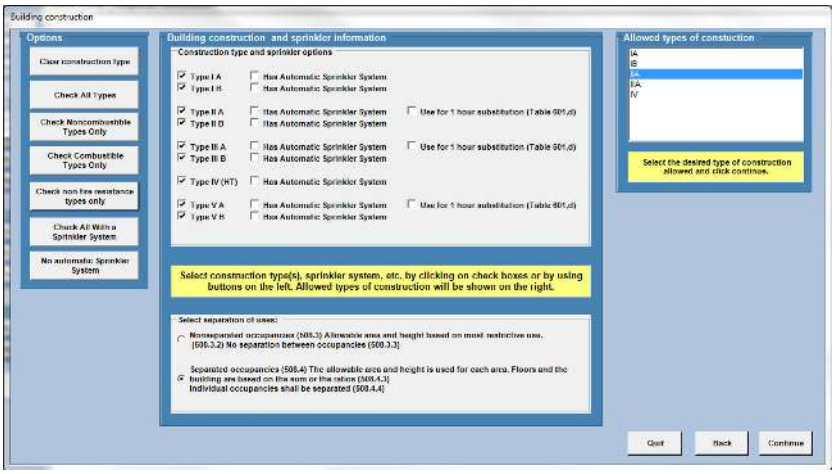


TO ENTER THE PROPERTY DESCRIPTION

FOR EACH SIDE:

1. FOR EACH SIDE, SELECT THE BOUNDARY (LOT LINE, STREET, ETC)
2. ENTER THE DISTANCES REQUIRED BASED ON THE BOUNDARY.
3. ENTER THE LENGTH OF THE SIDE FACING THE BOUNDARY.
4. IF THE SIDE HAS ACCESS TO A STREET OR FIRE LANE, CLICK TO SELECT
5. CLICK THE CONTINUE BUTTON.

SELECTING CONSTRUCTION TYPE

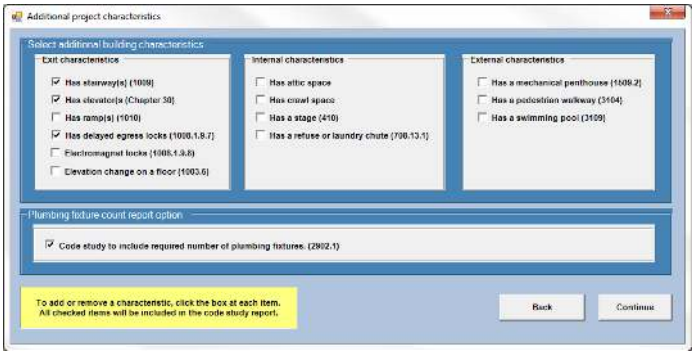


1. You may either click a button to check multiple construction types or click check boxes besides the type of construction that you are checking.
2. If the building has a sprinkler system, you may either click a sprinkler button or sprinkler check boxes.
3. If there is more than one use in the building, select separation of uses.

This screen is interactive. The Allowed types of construction: list box will change to show the allowed types of construction each time you make a change. This allows you to quickly try different options. This will help you quickly determine if you need to separate uses or add a sprinkler system.

The allowed types of construction will show in the upper right corner.
Select the construction type that you are using.
If you want to check only one type, select only one type and then the Continue button. The report will show allowable area, height and stories so you will be able to see if these uses are allowed in this building.

ADDITIONAL COMPONENTS



Click the check box for each component that is included in this project.

If you want the required number of plumbing fixtures to be included in this report, click the box for code study to include required number of plumbing fixtures

click the Next button.

The project description is now complete and the code study will be created.
The report is displayed on the main screen

You may save and or print this report.
If you see something that you want to change, click Project, then click:

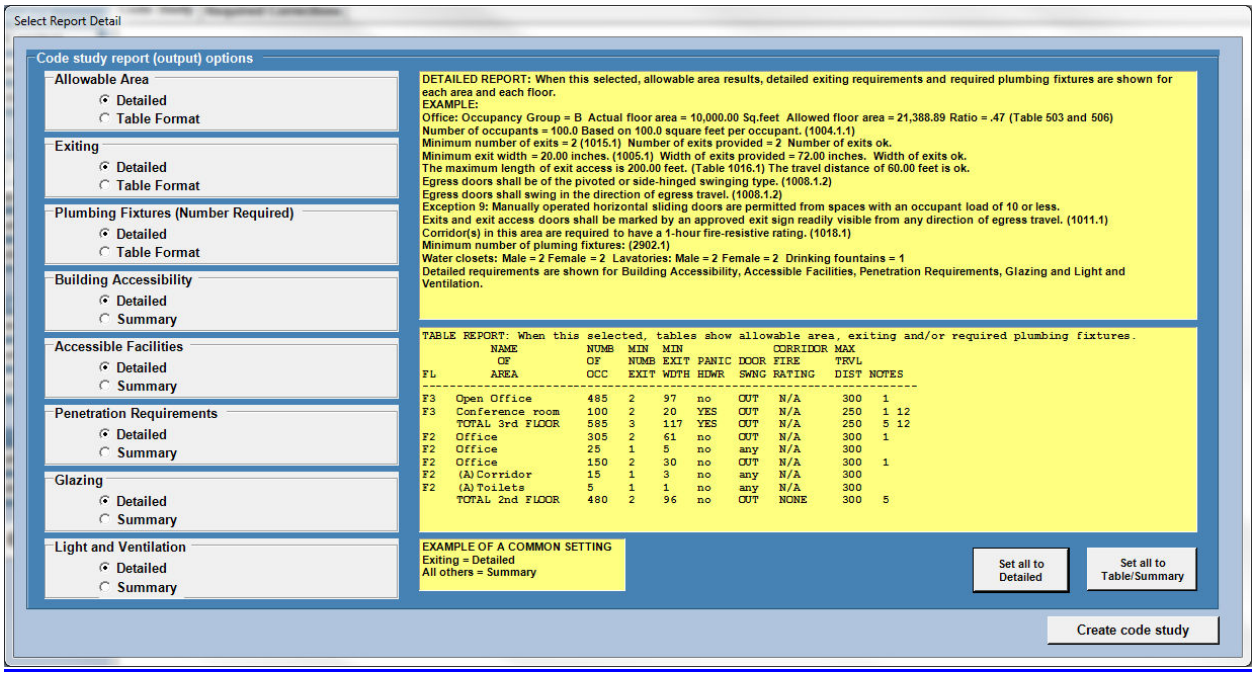
Edit general information (to change project information) or
Edit area information (to change information about floors or area) or
Edit property/lot information (to change perimeter or distance to lot lines) or
Edit construction type (to change const. type, sprinkler info., or use separation) or
Edit additional features (to changes stairs, ramps, locks, penthouse, etc.)

The project description is now complete and the code study will be created.
The report will be displayed on the main screen.

EXAMPLE OF THE IBC CODE STUDY CREATED BY PLAN ANALYST

THIS CODE STUDY WAS CREATED USING THE INFORMATION THAT WAS ENTERED IN THIS EXAMPLE NOTICE HOW SIMPLE THE INPUT WAS AND HOW COMPLETE THE REPORT IS!

THIS SCREEN ALLOWS YOU TO SELECT THE AMOUNT OF DETAIL THAT YOU WANT IN YOUR REPORT.



NOTE: THIS REPORT IS WITH ALL REQUIREMENTS SET TO DETAILED – SEE BELOW FOR EXAMPLE OF REPORT SET TO TABLE/SUMMARY

Your Firm or Jurisdiction Name
Your Department
Your Address
Your City, State Zip Code
Your Phone Number(s)
Project Description: 1234-12 Example of an Office Building Date: Monday, 22 Apr 2013
Project Location: 7001 Leopardi Ct.
Construction by: ZZZ Construction Architect: HHH Architects Engineer: JJJ Engineers
Code Study by: Ben Weese

This code study is based on the 2012 International Building Code by ICC using Plan Analyst. www.plananalyst.com

BASIC BUILDING DESCRIPTION:

Type of Construction = IIA
Building does not have an automatic sprinkler system
Allowable area and height based on different uses being separated by fire barriers. Sum of the ratios. (508.4.2 & 508.4.3)

ADDRESS IDENTIFICATION:
Buildings shall be provided with approved address numbers or letters. Each character shall be not less than 4 inches high and not less than 0.5 inch wide. They shall be installed on a contrasting background and be plainly visible from the street or road. When required by the fire official, address numbers shall be provided in additional approved locations. When access is by a private road and the building address cannot be view from the public way, a monument, pole or other approved sign shall be used to identify the structure. (501.2)

SITE DESCRIPTION:

The north side has a lot line. (702.1) Distance to lot line = 60.0
Length of perimeter facing lot line = 150.0 This side can be accessed from a street or approved fire lane.
The east side has a public way. (702.1) Distance to public way = 10.0 ,width = 80.0
Length of perimeter facing the public way = 350.0 This side can be accessed from a street or approved fire lane.
The south side has an imaginary line between two buildings.(705.3) Distance to building = 50.0 ,the imaginary line = 25.0
Length of perimeter facing other building = 150.0 This side can be accessed from a street or approved fire lane.
The west side has a lot line. (702.1) Distance to lot line = 5.0
Length of perimeter facing lot line = 350.0 This side is not accessible from a street or approved fire lane.
Perimeter of the entire building = 1,000.0 feet.
Perimeter which fronts a public way or accessible open space = 650.0 feet.
Weighted average of the width of public way or accessible open space = 30.0 feet.
Allowable area increased 40.00% due to frontage. - Section 506.2

HEIGHT OF BUILDING:
Actual height of building = 27.00 ft Allowed building height = 65.00 ft The height is within the allowed height. (504.1 and Table 503)

BUILDING INTERIOR:

AREAS ON THE 2nd FLOOR
Office: Occupancy Group = B Actual floor area = 2,500.00 Sq.feet Allowed floor area = 52,500.00 Ratio = .05 (Table 503 and 506)
Number of occupants = 25.0 Based on 100.0 square feet per occupant. (1004.1.2)
Minimum number of exits = 1 (1015.1) Number of exits provided = 1 Number of exits ok.
Minimum exit width = 5.00 inches. (1005.3) Width of exits provided = 36.00 inches. Width of exits ok.
The maximum length of exit access is 200.00 feet. (Table 1016.2) The travel distance of 34.00 feet is ok.
Egress doors shall be of the pivoted or side-hinged swinging type. (1008.1.2)
Egress doors may swing in either direction. (1008.1.2)
Exits and exit access doors are not required to be marked by an exit sign. (1011.1)
Corridor(s) in this area are not required to have a fire-resistive rating. (1018.1 Exception 4)
Minimum number of plumbing fixtures: (2902.1)
Water closets: Male = 1 Female = 1 Lavatories: Male = 1 Female = 1 Drinking fountains = 1

Conference room: Occupancy Group = A3 Actual floor area = 1,000.00 Sq.feet Allowed floor area = 21,700.00 Ratio = .05 (Table 503 and 506)
Number of occupants = 66.7 Based on 15.0 square feet per occupant. (1004.1.2)
Minimum number of exits = 2 (1015.1) Number of exits provided = 1 **Number of exits inadequate.**
The maximum occupant load of this area is required to be posted on an approved sign at 66 occupants in a conspicuous place near the main exit or exit access doorway. (1004.3)
Minimum exit width = 13.33 inches. (1005.3) Width of exits provided = 36.00 inches. Width of exits ok.
The maximum length of exit access is 200.00 feet. (Table 1016.2) The travel distance of 21.00 feet is ok.
Egress doors shall be of the pivoted or side-hinged swinging type. (1008.1.2)
Egress doors shall swing in the direction of egress travel. (1008.1.2)
Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
Means of egress doors from this area require panic hardware or fire exit hardware. (1008.1.10)
There is no corridor in this area.
Minimum number of plumbing fixtures: (2902.1)
Water closets: Male = 1 Female = 1 Lavatories: Male = 1 Female = 1 Drinking fountains = 1

2nd FLOOR RESULTS:
Area on this floor =3,500.0 Sq.feet Floor allowed area = 37,352.5 Floor ratio = .09 (506)
Number of occupants = 91.7
Minimum number of exits = 2 (1021.2) Number of exits provided = 2 Number of exits ok.
Minimum door exit width = 18.3 inches. (1005.2) Minimum stair exit width = 27.5 inches. (1005.2) Width of exits provided = 72.0 inches. Width of exits ok.
Common path of egress travel = 22.0 feet.
The maximum length of exit access travel is 200.0 feet. (Table 1016.2)The travel distance of 55.00 feet is ok.
Egress doors shall swing in the direction of egress travel. (1008.1.2)

Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
Means of egress doors from this floor require panic hardware or fire exit hardware. (1008.1.10)
Corridor(s) in this area are required to have a 1-hour fire-resistive rating. (1018.1)
Minimum number of plumbing fixtures: (2902.1)
When providing fixtures for the entire floor, use these numbers. When areas have their own fixtures, use number of fixtures listed per area.
Water closets: Male = 1 Female = 2 Lavatories: Male = 1 Female = 1 Drinking fountains = 1

AREAS ON THE 1st FLOOR
Office: Occupancy Group = B Actual floor area = 10,000.00 Sq.feet Allowed floor area = 52,500.00 Ratio = .19 (Table 503 and 506)
Number of occupants = 100.0 Based on 100.0 square feet per occupant. (1004.1.2)
Minimum number of exits = 2 (1015.1) Number of exits provided = 1 **Number of exits inadequate.**
Minimum exit width = 20.00 inches. (1005.3) Width of exits provided = 36.00 inches. Width of exits ok.
The maximum length of exit access is 200.00 feet. (Table 1016.2) The travel distance of 67.00 feet is ok.
Egress doors shall be of the pivoted or side-hinged swinging type. (1008.1.2)
Egress doors shall swing in the direction of egress travel. (1008.1.2)
Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
There is no corridor in this area.
Minimum number of plumbing fixtures: (2902.1)
Water closets: Male = 2 Female = 2 Lavatories: Male = 2 Female = 2 Drinking fountains = 1

Warehouse: Occupancy Group = S1 Actual floor area = 20,000.00 Sq.feet Allowed floor area = 36,400.00 Ratio = .55 (Table 503 and 506)
Number of occupants = 40.0 Based on 500.0 square feet per occupant. (1004.1.2)
Minimum number of exits = 2 (1015.1) Number of exits provided = 1 **Number of exits inadequate.**
Minimum exit width = 8.00 inches. (1005.3) Width of exits provided = 36.00 inches. Width of exits ok.
The maximum length of exit access is 200.00 feet. (Table 1016.2) The travel distance of 45.00 feet is ok.
Egress doors shall be of the pivoted or side-hinged swinging type. (1008.1.2)
Egress doors may swing in either direction. (1008.1.2)
Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
There is no corridor in this area.
Minimum number of plumbing fixtures: (2902.1)
Water closets: Male = 1 Female = 1 Lavatories: Male = 1 Female = 1 Drinking fountains = 1

Sales area: Occupancy Group = M Actual floor area = 4,000.00 Sq.feet Allowed floor area = 30,100.00 Ratio = .13 (Table 503 and 506)
Number of occupants = 133.3 Based on 30.0 square feet per occupant. (1004.1.2)
Minimum number of exits = 2 (1015.1) Number of exits provided = 2 Number of exits ok.
Minimum exit width = 26.67 inches. (1005.3) Width of exits provided = 72.00 inches. Width of exits ok.
The maximum length of exit access is 200.00 feet. (Table 1016.2) The travel distance of 67.00 feet is ok.
Egress doors shall be of the pivoted or side-hinged swinging type. (1008.1.2)
Egress doors shall swing in the direction of egress travel. (1008.1.2)
Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
There is no corridor in this area.
Minimum number of plumbing fixtures: (2902.1)
Water closets: Male = 1 Female = 1 Lavatories: Male = 1 Female = 1 Drinking fountains = 1

1st FLOOR RESULTS:
Area on this floor =34,000.0 Sq.feet Floor allowed area = 38,954.3 Floor ratio = .87 (506)
Number of occupants = 273.3
Minimum number of exits = 2 (Table 1021.2) Number of exits provided = 2 Number of exits ok.
Minimum door exit width = 54.7 inches. (1005.2) Width of exits provided = 72.0 inches. Width of exits ok.
Common path of egress travel = 23.0 feet.
The maximum length of exit access travel is 200.0 feet. (Table 1016.2)The travel distance of 65.00 feet is ok.
Egress doors shall swing in the direction of egress travel. (1008.1.2)

Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. (1011.1)
Corridor(s) in this area are required to have a 1-hour fire-resistive rating. (1018.1)
Minimum number of plumbing fixtures: (2902.1)
When providing fixtures for the entire floor, use these numbers. When areas have their own fixtures, use number of fixtures listed per area.
Water closets: Male = 3 Female = 3 Lavatories: Male = 2 Female = 2 Drinking fountains = 2

Total building and fire area of building (502.1 & 505.1) = 37,500.0 sq. feet Building allowed area = 77,908.7 Sq.feet
Building ratio = .5

NOTES ON THE TOTAL NUMBER OF PLUMBING FIXTURES:
The number of fixtures for a floor may not match total number of fixtures per area.
1. Fixtures for accessory areas are not included in the floor total.
2. The number of fixtures for each area are rounded up to the next whole number. Floor totals are not rounded up until the floor total is obtained.
If the fixtures only serve an area, use number shown for each area.
If the fixtures serve an entire floor, use number shown for totals.

DOOR SWING EXCECPTIONS:
Exception 5: Revolving doors complying with Section 1008.1.4.1
Exception 6: Horizontal sliding doors complying with Section 1008.1.4.3
Exception 7: Power-operated doors complying with Section 1008.1.4.2

EXIT WIDTH NOTES:
Exit width is in inches and based on Section 1005.2
Width shown for all areas is based on other egress components. (1005.3.2)
Width shown for 1st floor is based on other egress components. (1005.3.2)
Width shown for other floors & basements is based on stairways. (1005.3.1)
For the minimum width of doors, see Section 1008.1.1.

EGRESS CONTINUITY:
The path of egress travel along a means of egress shall not be interrupted by any building element other than a means of egress component. (1003.6)

EXIT SEPARATION:
In areas where 2 exits are required, the minimum separation is 1/2 of the maximum diagonal of the area or floor measured in a straight line between exits or exit access doorways. (1015.2.1)
Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity by more than 50 percent. (1005.5)

CORRIDOR REQUIREMENTS:
1.Corridors shall have a ceiling height of not less than 7 feet 6 inches. (1003.2)
2.The minimum corridor width is 44 inches. Where the occupant capacity is less than 50, the minimum corridor width is 36 inches. (Table 1018.2)
3.If fire-resistive rating is 1 hour or 1/2 hr, walls shall comply with Section 708 for fire partitions. (1018.1) Walls shall extend to the underside of the floor/roof slab or deck or to the fire-resistance rated floor/ceiling or roof/ceiling assembly above. (708.4)
Exception 2: Where the room-side membrane is carried through to the underside of a fire resistance rated floor or roof, the ceiling of the corridor shall be permitted to be protected by the use of ceiling materials as required for a 1-hour rated system or the ceiling shall be constructed as required for the corridor walls.
4.Door openings are required to be protected with 20 minute (1/3 hour) fire assemblies. (716.5.3 & Table 716.5)
5.Doors shall be self-closing or automatic-closing. (716.5.9)
6.Doors shall have an active latch bolt that will secure the door when closed. (716.5.9.1)
7.Window openings are required to be protected with labeled 45 minute (3/4-fire-hour) fire-assemblies. (716.6 & Table 716.6)
Exception: Glazing in 1/2-hour walls is permitted to have an 1/3-hour rating.
8.The total area of windows shall not exceed 25 percent of the area of a common wall with any room. (716.6.7.2)
9.Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts or plenums. (1018.5), See Exceptions
10.Fire resistant corridors shall not be interrupted by intervening rooms. (1018.6)

Exception: Foyers, lobbies or reception rooms constructed as required for corridors.
11.When more than one exit is required, exit access shall be arranged such that there are no dead ends in corridors more than 20 feet. (1018.4)

MEANS OF EGRESS ILLUMINATION:
1. The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied. (1006.1)
2. The means of egress illumination shall not be less than 1 foot-candle at the walking surface level. (1006.2)
See section 1006.3 for emergency power requirements.

EXIT SIGNS:
Signs shall be placed where the exit or the path of egress travel is not readily visible. No point in a corridor or passageway to be more than 100 feet from an exit sign. (1011.1)
Exception 2: Main exterior exit doors which obviously and clearly are identifiable as exits need not be signed when approved.
A sign stating EXIT in raised characters and Braille shall be provided adjacent to each exit door. (1011.4)
Exit signs shall be internally or externally illuminated. (1011.3)
Exit sign shall be illuminated at all times including during loss of primary power. (1011.5 & 1011.6.3)

ADDITIONAL DOORS:
Where additional doors are provided for egress purposes, they shall conform to the requirements in Section 1008. (1008.1)

LANDINGS AT DOORS:
1. There shall be a floor or landing on each side of a door. (1008.1.5)
2. Such floor or landing shall be at the same elevation on each side of the door. (1008.1.5)
3. The floor or landing shall not be more than 1/2 inch lower than the threshold. (1008.1.7)
4. Landings shall have a width not less than the width of the stairway or width of the doorway, whichever is the greater.
Where a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing dimension to less than one half of the required width. The minimum length in the direction of exit travel is 44 inches. (1008.1.6)
5. The space between two doors in series shall be 48 inches plus the width of door swinging into the space. (1008.1.8)

BOLT LOCKS:
Manually operated flush bolts and surface bolts are not permitted. (1008.1.9.4)
Exception 3: Where a pair of doors serves an occupant load of less than 50, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. The inactive leaf shall contain no doorknobs, panic bars or similar operating hardware.
Exception 2: Where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf.
The unlatching of any door or leaf shall not require more than one operation. (1008.1.9.5)
Exception 2: Where manually operated bolt locks are permitted.
Exception 3: Doors with automatic flush bolts as permitted.

LOCKS AND LATCHES:
Egress doors shall be readily openable from the egress side without the use of a key or any special knowledge or effort. (1008.1.9)
Locks and latches shall be permitted to prevent operation where any of the following exists: (1008.1.9.3)
2. The main door or doors in Group B, F, M and S areas are permitted to be equipped with key operating locking devices from the egress side provided:
2.1 The locking device is readily distinguishable as locked.
2.2 A readily visible durable sign is posted on the egress
side stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED
3. Where egress doors are used in pairs, automatic flush bolts shall be permitted to be used, provided the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.
5. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism.

DELAYED EGRESS LOCK REQUIREMENTS:

1. Ventilation openings are required and shall be placed so as to provide cross-ventilation of the under-floor space. (1203.3)

The minimum area net area of ventilation shall not be less than 1 square foot for each 150 square feet of crawl space area. (1203.3.1)

Exception 2: Vent openings may be reduced to 1/1500 where the ground surface is covered with a Class I vapor retarder material and the required openings are placed so as to provide cross ventilation. Vents may have operable louvers.

Exception 3: Vents may be omitted when continuously operated mechanical ventilation is provides 1.0 cfm for each 50 square feet of crawl space and the ground surface is covered with a Class I vapor retarder.

Exception 4: Ventilation openings are not required when the ground surface is covered with a Class I vapor retarder, the perimeter walls are insulated and the space is conditioned per the IECC.

2. Provide an access opening not less than 18 inches by 24 inches to the crawl space area. (1209.1)

Opening may be required to be larger if mechanical equipment is located in the crawl space. (1209.3)

3. Unless the wood is listed as an approved wood of natural resistance to decay or preservative-treated wood, the minimum clearance between exposed earth and floor joist is 18 inches. The minimum clearance to beams and girders is 12 inches. (2304.11.2.1)

Note: Building must have an automatic sprinkler system or an approved automatic smoke or heat detection system. (1008.1.9.7)

Delayed egress locks are not permitted to be installed on doors in Group A occupancies. (1008.1.9.7)

STAIRWAY REQUIREMENTS:

1. The minimum width of a stairway is 44 inches. (1009.1)

Exception 1 If the occupant load is less than 50, the minimum width is 36 inches.

Check floor exit requirements above to see if minimum width is greater than 44 inches.

When stairways are part of an accessible means of egress, the stairway shall have a clear width of 48 inches. (1007.3)

2. The riser heights shall not be less than 4 inches or greater than 7 inches. The minimum tread depth is 11 inches. (1009.4.2) The maximum variation is 3/8 inch between the largest and the smallest in a stairway flight. (1009.4.4)

Risers shall be solid. (1009.4.5)

Exception 2: Solid risers are not required in areas not accessible to the public. There are no restrictions on the size of the opening in the riser.

3. Provide a handrail on each side of stairways. (1009.12)

4. Handrail height, measured above stair tread nosing, shall be not less than 34 inches and not more than 38 inches. (1012.2)

Type I: Handrails with a circular cross section shall have an outside diameter of at least 1.25 inches and not greater than 2 inches or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6.25 inches with a maximum cross-section dimension of 2.25 inches. (1012.3.1)

Type II: See Section 1012.3.2 for larger handrails. Handrail-gripping surfaces shall be continuous without interruption by newel post or other obstructions. (1012.4)

Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight. (1012.6)

Where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. (1012.6)

5. The minimum headroom clearance is 80 inches (6 ft.- 8 inches.) measured vertically from a line connecting the edge of the nosing. Headroom shall be continuous to the point where the line intersects the landing below. The minimum clearance shall be maintained the full width of the stairway and landing. (1009.2)

6. Enclosed usable space under the stairs is required to be protected by 1-hour fire-resistive construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stair enclosure. (1009.6.3)

7. There shall be a floor or landing at the top and bottom of each stairway. Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the stairway. Such dimension need not exceed 48 inches where the stairway has a straight run. (1009.5)

When wheelchair spaces are required on the stairway landing, wheelchair space shall not be located in the required width of the landing.

8. A flight of stairs shall not have a vertical rise greater than 12 feet between floor levels or landings. (1009.7)

GUARDS:
1. Open sides of walking surfaces, including stairs, ramps and landings, which are located more than 30 inches above the floor or grade below are required to have a guard. (1013.1)
2. Guards and handrails shall be adequate in strength and attachment to resists a load of 50 pounds per linear foot applied in any direction at the top and to transfer this load through the supports to the structure.(1013.1 and 1607.7.1)
Handrails and guards shall be able to resist a single concentrated load of 200 pounds, applied in any direction at any point along the top, and transfer this load through the supports to the structure. (1607.7.1.1)
3. Intermediate rails, balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot, including openings and space between rails. Reactions due to this loading are not required to be superimposed with those of Sections 1607.7.1 or 1607.7.1.1. (1607.7.1.2)
4. The minimum height is 42 inches above the adjacent walking surfaces, adjacent fixed seating or the line connecting the leading edges of the treads. (1013.2)
5. Guards shall not have openings which allow passage of a sphere 4 inches in diameter from the walking surface to the required guard height. (1013.3)
Exception 1: From the height of 36 inches to 42 inches, guards shall not have openings which allow passage of a sphere 4 3/8 inches in diameter.
Exception 2: The triangular opening formed at the riser, tread and guardrail may be 6 inches.
Exception 3: Areas which are not open to the public within I-3, F, H, or S occupancies, balusters, horizontal intermediate rails, or other construction shall not permit a sphere with a diameter of 21 inches to pass through.

AREAS OF REFUGE:
Enclosed stairways shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge or a horizontal exit. (1007.3)
1. Every required area of refuge shall have direct access to a stairway enclosure or an elevator complying with Section 1007.4
2. Each area of refuge shall be sized to accommodate one wheelchair space of 30 inches by 48 inches for each 200 occupants or portion thereof. (1007.6.1)
3. Such wheelchair spaces shall not reduce the required means of egress width. (1007.6.1)
4. A wheelchair space shall not be obstructed by more than one adjoining space. (1007.6.1)
5. Each area of refuge shall be separated from the remainder of the story by a smoke barrier or a horizontal exit. (1007.6.2)
6. Areas of refuge shall be provided with a two-way communication system. (1007.6.3)
See section 1007.8 for two-way communication requirements.

STAIRWAY ENCLOSURES:
Stairways serving only 2 stories are not required to be enclosed. (1009.3, Exception 1)
The openings into the exit enclosure are required to be 1 hour fire assemblies. (Table 716.5)
Openings into enclosure are limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure. (1022.4) Doors shall be self-closing or automatic closing. (716.5.9)
3. Exit enclosure must discharge directly to the exterior of the building. (1022.3 & 1027.1)
Exception: An exit enclosure shall be permitted to terminate at an exit passageway that terminates at an exit discharge or public way.
A maximum of 50 percent of the number and capacity may exit through areas on the level of discharge provided all of the following are met: (1027.1)
Exception 1:
1.1 There is a free and unobstructed way to the exterior that is readily visible and identifiable from the exit enclosure.
1.3 The egress path from the enclosure and all portions of the level of discharge with access to the egress path are protected with an automatic sprinkler system or separated from the egress path as required for an exit enclosure.
Exception 2:
2.2 The depth from the exterior of the building is not greater than 10 feet and the length is not greater than 30 feet.
2.3 The vestibule is separated from the remainder of the level of exit discharge by construction providing at least the equivalent of approved wired glass in steel frames.
2.4 The vestibule is used only for means of egress and exits directly to the outside.
4. An exit enclosure shall not be used for any purpose other than means of egress. (1022.1)
Note: Where interior exit enclosures are extended to the exterior of the building by an exit passage way, fire-resistance of the exit passage way shall be the same as the enclosure. (1022.3, Exception)
1. Stairways are required to be enclosed with 1 hour fire barriers. (1022.2)

ELEVATOR REQUIREMENTS:

1. An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. (3002.3)
Signs shall read: IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE STAIRS
Exception 1: Sign not required for elevators that are part of an accessible means of egress complying with Section 1007.4
Exception 2: Sign not required for elevators that are used for occupant self-evacuation in accordance with Section 3008.
Elevators shall have a fire resistance rating. (3002.1)
Elevator shaft shall have a fire-resistance rating of not less than 1 hours. (713.4)
Exception: Exterior walls shall comply with exterior wall requirements. (707.4)
Openings shall be self-closing or automatic closing by smoke detection. (708.7)
Fire door assemblies are required to have a fire-protection rating of 1 1/2 hour. (Table 716.5)
Penetrations other than those necessary for the purpose of the shaft shall not be permitted. (713.8.1)
Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1/CSA B44 (3003.2)

Elevator lobby:
An enclosed elevator lobby is not required. (713.14.1)

BUILDING ACCESSIBILITY:

1. In addition to accessible entrances required by Sections 1105.1.1 through 1105.1.6, at least 60 percent of all public entrances shall be accessible. (1105.1)
2. At least one accessible entrance shall be provided to each tenant, dwelling unit and sleeping unit in a facility. (1105.1.6)
3. Where parking is provided, accessible parking spaces hall be provided in compliance with Table 1106.1 (1106.1)
   See additional requirements for outpatient and rehabilitation facilities. (1106.3 and 1106.4)
4. At least one accessible route shall connect each accessible level. (1104.4) See exceptions.
5. Accessible routes shall coincide with or be located in the same area as a general circulation path. Where the circulation path is interior, the accessible route shall also be interior. (1104.5)
6. On floors where drinking fountains are provided, no fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons. (1109.5.1)

Exception: A single drinking fountain that complies with both requirements shall be permitted.
Where more than 2 drinking fountains are provided, at least 50% shall be accessible. (1109.5.2)
Exception: Where 50% yields a fraction, the number may be rounded up or down. Total must be equal to 100% or required.

FIRE-RESISTANCE REQUIREMENTS:

FIRE-RESISTANCE RATING FOR EXTERIOR WALLS:

North Side:

Group S1 - Bearing walls = 1-hr Nonbearing walls = 0-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
No limit on unprotected openings. There is no limit on protected openings. (Table 705.8)

Group B - Bearing walls = 1-hr Nonbearing walls = 0-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
No limit on unprotected openings. There is no limit on protected openings. (Table 705.8)

Group M - Bearing walls = 1-hr Nonbearing walls = 0-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)

Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
No limit on unprotected openings. There is no limit on protected openings. (Table 705.8)
Group A3 - Bearing walls = 1-hr Nonbearing walls = 0-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
No limit on unprotected openings. There is no limit on protected openings. (Table 705.8)
If there are projections beyond the exterior wall, they shall be of noncombustible materials. (705.2.1) See Section 1406.3 for balconies.

East Side:
Group S1 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 15% of wall area. Maximum protected openings = 45% of wall area. (Table 705.8)
Group B - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 15% of wall area. Maximum protected openings = 45% of wall area. (Table 705.8)
Group M - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 15% of wall area. Maximum protected openings = 45% of wall area. (Table 705.8)
Group A3 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 15% of wall area. Maximum protected openings = 45% of wall area. (Table 705.8)
If there are projections beyond the exterior wall, they shall be of noncombustible materials. (705.2.1) See Section 1406.3 for balconies.

South Side:
Group S1 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 70% of wall area. There is no limit on protected openings. (Table 705.8)
Group B - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on the inside. (705.5, Tables 601 & 602)

Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 70% of wall area. There is no limit on protected openings. (Table 705.8)
Group M - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 70% of wall area. There is no limit on protected openings. (Table 705.8)
Group A3 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on the inside. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall cannot extend closer to than 24 inches to the fire separation distance line. (Table 705.2)
Maximum unprotected openings = 70% of wall area. There is no limit on protected openings. (Table 705.8)
If there are projections beyond the exterior wall, they shall be of noncombustible materials. (705.2.1) See Section 1406.3 for balconies.

West Side:
Group S1 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
Maximum unprotected openings = 10% of wall area. Maximum protected openings = 25% of wall area. (Table 705.8)
Group B - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
Maximum unprotected openings = 10% of wall area. Maximum protected openings = 25% of wall area. (Table 705.8)
Group M - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
Maximum unprotected openings = 10% of wall area. Maximum protected openings = 25% of wall area. (Table 705.8)
Group A3 - Bearing walls = 1-hr Nonbearing walls = 1-hr rating on both sides. (705.5, Tables 601 & 602)
Parapet or roof/ceiling protection required (705.11, Exception 4)
Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches if they are part of the structural frame and regardless of the span if they are not part of the structural frame. (704.11)
Projections extending beyond the exterior wall are not permitted. (Table 705.2)
Maximum unprotected openings = 10% of wall area. Maximum protected openings = 25% of wall area. (Table 705.8)
If there are projections beyond the exterior wall, they shall be of noncombustible materials. (705.2.1) See Section 1406.3 for balconies.

Parapet walls must extend 30 inches above the roofing.
The parapet wall is required to have the same fire rating as the wall and shall have noncombustible faces for the uppermost 18 inches. (705.11)

If roof/ceiling protection is used instead of a parapet wall:
4.1 Where roof/ceiling framing are parallel to the wall, framing and support shall be not less than 1-hour fire-resistive for a minimum width of 10 feet from the inside of the exterior wall.
4.2 Where roof/ceiling framing are not parallel to the wall, the entire span of framing and support shall be not less than 1-hour fire-resistive.
4.3 Openings in the roof shall not be located within 10 feet of the exterior wall.
4.4 The entire building shall be provided with not less than a Class B roof covering.

FIRE-RESISTANCE RATING REQUIREMENTS:(Table 601 except as noted)
Exterior walls . Minimum fire resistance rating = FIRE-RESISTANCE RATING FOR EXTERIOR WALLS above
Primary structural frame must be noncombustible. Minimum fire resistance rating = 1 hour
Interior bearing wall must be noncombustible. Minimum fire resistance rating = 1 hour
Interior nonbearing wall must be noncombustible. Minimum fire resistance rating = 0 hr
Fire-retardant treated wood shall be permitted in: (603.1)
1.1 Nonbearing partitions where the required fire-resistance rating is two hours or less.
1.2 Nonbearing exterior walls where no fire rating is required.
1.3 Roof construction, including girders, trusses, framing and decking.
Partitions dividing portions of stores, offices or similar places occupied by one tenant only and do not establish a corridor or serve an occupant load of 30 or more may be:
1. constructed of fire retardant treated wood
2. one hour fire resistive construction
3. wood panels or similar up to six feet in height. (603.1, 10)
Floor/ceiling assembly must be noncombustible. Minimum fire resistance rating = 1 hour
Roof/ceiling assembly must be noncombustible. Minimum fire resistance rating = 1 hour
Heavy timber shall be permitted where a 1 hour or less fire rating is required. (Table 601, c)
Fire-retardant-treated wood shall be allowed in buildings including girders and trusses as part of the roof construction. (Table 601, b.)
Shaft Enclosure must be noncombustible. Minimum fire resistance rating = 1 hour
Stairs must be noncombustible. Minimum fire resistance rating = 0 hour

Where columns are required to be fire-resistance rated, the entire column shall be provided individual encasement protection on all sides for the full length. (704.2)
Where the primary structural frame is required to be fire-resistance rated, and supports more than two floors or one floor and a roof, members shall be provided individual encasement protection on all sides for the full length. (704.3)
Secondary members shall be protected by individual encasement protection, by the membrane or ceiling of a horizontal assembly. (704.4)

MARKING AND IDENTIFICATION:
Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified. (703.7)
Identification shall be located in accessible concealed floor, floor-ceiling or attic spaces;
Be located within 15 feet of the end of each wall and at intervals not exceeding 30 feet; and
Suggested wording: 'FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS'

SHAFT REQUIREMENTS:
Openings other than those necessary for the purpose of the shaft shall not be permitted. (713.7.1)
Penetrations other than those necessary for the purpose of the shaft shall not be permitted. (713.8.1)
Shafts that do not extend to the bottom of the building shall:
1. Be enclosed at the lowest level with the same fire-resistance rating as the lowest floor but not less than the rating of the shaft enclosure; or
2. Terminate in a room having a use related to the purpose of the shaft. The room and openings shall have a fire-resistance rating at least equal to the shaft enclosure; or
3. Be protected by approved fire dampers installed at the lowest floor level within the shaft enclosure. (713.11)

FIRE PARTITIONS:
The following wall assemblies shall comply. (708.1)
Corridor walls.
Fire partitions shall have a fire-resistance rating of not less than 1-hour. (708.3)
See exceptions.
Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistive-rated floor/ceiling or roof/ceiling assembly above. (708.4)

The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported. See exceptions.

A 1-hour fire-resistive rating is required for smoke barriers. (709.3)
Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces. (710.4)
The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported.
See Section 710.5 for opening requirements.

PENETRATIONS OF FIRE RESISTIVE ASSEMBLIES:

WALLS ASSEMBLIES:
Through penetrations of walls shall comply Section 714.3.1.1 or 714.3.1.2.
1. Penetrations shall be installed as tested in the fire resistance rated assembly. (714.3.1.1)
2. Penetrations shall be protected by an approved penetration firestop system. (714.3.1.2)
Exception:
Steel, ferrous or copper pipes or steel conduits. See IBC for limitations.
Membrane penetrations of walls:
The requirements are the same as for through penetrations. (714.3.2)
Exceptions:
1. Steel electrical outlet boxes that do not exceed 16 square inches provided that the area of such openings does not exceed 100 square inches for any 100 square feet of wall area. Boxes on opposite sides of the assembly shall be separated by a horizontal distance of not less than 24 inches.
2. Listed electrical boxes.
3. Sprinklers with metal escutcheon plates.

FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES:
Through penetrations of floor/ceiling and roof/ceiling assemblies shall comply Section 714.4.1.1 or 714.4.1.2.
1. Through penetrations shall be installed as tested in an approved fire resistance rated assembly. (714.4.1.1)
2. Penetrations shall be protected by an approved penetration firestop system of not less than 1 hour but not less than the required rating of the floor penetrated. (714.4.1.2)
Exceptions:
1. Steel, ferrous or copper conduits, pipes, tubes and vents through a single concrete floor. See IBC for limitations.
2. Electrical outlet boxes that have been tested for use in fire-assemblies.
Membrane penetrations of fire-resistive horizontal assemblies:
The requirements are the same as for through penetrations. (714.4.2)
Exceptions:
1. Steel, ferrous or copper conduits, electrical outlet boxes, pipes, tubes and vents through concrete or masonry. See IBC for limitations.
2. Electrical outlet boxes that have been tested for use in fire-assemblies.
3. Sprinklers with metal escutcheon plates.

DUCTS AND AIR TRANSFER OPENINGS:
Dampers shall be accessible for inspection and servicing. (717.4)
Where required. (717.5) , Fire walls (717.5.1), Fire barriers (717.5.2), Shaft enclosures (717.5.3), Fire partitions (717.5.4) and Smoke barriers (7175.5)

REQUIRED SEPARATION OF OCCUPANCIES: (508.4.4 & Table 508.4)

Between occupancy S1 and A3, a 2-hour fire barrier is required. (Table 508.4)
Openings in this fire barrier are required to be protected with 1 1/2 hour fire assemblies. (Table 715.4)

Between occupancy B and A3, a 2-hour fire barrier is required. (Table 508.4)
Openings in this fire barrier are required to be protected with 1 1/2 hour fire assemblies. (Table 715.4)

Between occupancy M and A3, a 2-hour fire barrier is required. (Table 508.4)
Openings in this fire barrier are required to be protected with 1 1/2 hour fire assemblies. (Table 715.4)

Accessory occupancies shall not occupy more than 10% of the area of the story where they are located and shall not exceed the values in Table 503 without increases. (508.2.1)

No separation is required between accessory occupancies or the main occupancy. (508.2.4)

SEPARATION OF INCIDENTAL USE AREAS: (Table 509)
Furnace rooms where any piece of equipment is over 400,000 BTU per hour input = 1 hour
Rooms with any boiler over 15 psi and 10 horsepower = 1 hour
Refrigerant machinery rooms = 1 hour
Hydrogen cut-off rooms not classified as Group H = 1 hour
Incinerator rooms = 2 hours and an automatic sprinkler system is required
Paint shops not classified as Group H = 2 hours
Stationary storage battery systems having a liquid capacity of more than 50 gallons of flooded lead-acid, nickel cadmium or VRLA or more than 1,000 pounds for lithium-ion and lithium medal polymer used for facility standby power, emergency power or uninterrupted power supplies = 1 hour

Areas containing high piled combustible stock or rack storage in any occupancy group require smoke and heat vents. Design to comply with the International Fire Code. (910.2.3)

ROOFING REQUIREMENTS:

1. The roofing on this building is required to be Class B or better. (Table 1505.1)

AUTOMATIC SPRINKLER SYSTEMS:

If openings are not provided in each 50 feet on at least one exterior wall or there is floor area more than 75 feet from an exterior opening, an automatic sprinkler system is required. Openings shall have a minimum dimension of 30 inches. There must be at least 20 sq.ft. of opening in every 50 lineal feet of wall or fraction thereof. The height of the bottom of the opening shall not exceed 44 inches measured from the floor. (903.2.11.1)

An automatic sprinkler system is required where a fire area containing Group S-1 exceeds 12,000 square feet or the combined fire area on all floors exceeds 24,000 square feet. (903.2.9 #1, #3)
Note: The size of the fire area may be reduced using fire barriers. See section 707.3.10 for requirements.
The fire-resistive rating for the fire barrier assembly is 3 hours. (Table 707.3.10)
An automatic sprinkler system shall be provided when the area exceeds 2,500 square feet and is used for the storage of upholstered furniture or mattresses. (903.2.9 #5)
Note: The size of the fire area may be reduced using fire barriers. See section 707.3.10 for requirements.
The fire-resistive rating for the fire barrier assembly is 3 hours. (Table 707.3.10)
An automatic sprinkler system shall be provided in accordance with the IFC in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays. (903.2.7.1)
An automatic sprinkler system is required in the A-3 fire area when the fire area has an occupant load of 300 or more. (903.2.1.3, #2)
An automatic sprinkler system is required in the A-3 fire area when the fire area is located on a floor other than the level of exit discharge. (903.2.1.3, #3)

FIRE PUMPS:

When provided, fire pumps shall be located in rooms that are separated from all other areas by 2-hour fire barrier construction. (913.2.1)

PORTABLE FIRE EXTINGUISHERS:

Portable fire extinguishers are required. (906.1)
See Section 906.1 and Table 906.1 for location requirements.
See Section 906.3 for size and distribution requirements.

STANDPIPE AND HOSE SYSTEMS:

A standpipe system is not required. (905)

Areas containing high piled combustible stock or rack storage in any occupancy group require smoke and heat vents. Design to comply with the International Fire Code. (910.2.3)

ACCESSIBLE FACILITIES:

Except as noted, section numbers listed below are from ICC/ANSI A117.1-2009
WATER FOUNTAINS AND WATER COOLERS:
Accessible units must comply with the following:

1. Spout outlets for wheelchair accessible fountains shall be 36 inches maximum above the floor. Spout outlets for standing persons shall be 38 inches minimum and 43 inches maximum. (602.4)
2. The spout shall be located 15 inches minimum from the vertical support and 5 inches maximum from the front edge, including bumpers. Where only a parallel approach is provided, the spout shall be located 3 1/2 inches maximum from the front edge, including bumpers. (602.5)
3. Spouts shall provide a flow of water 4 inches height minimum. (602.6)

TOILET FACILITIES:
1. A 60 inch diameter turning space or T-shaped space is required in the toilet room. (603.2.1 and 304.3)
Doors shall not swing into the clear floor space for any fixture. (603.2.3) See exception for rooms used for individual use.
2. Water closet shall be mounted adjacent to a side wall or partition. The distance from the side wall or partition to the centerline of the water closet shall be 16 to 18 in. (604.2)
3. When the accessible water closet is not in a compartment:
Clearance around the water closet shall be 60 inches minimum, measured perpendicular to the side wall, and 56 inches minimum, measured perpendicular to the rear wall. (604.3.1)
4. When the accessible water closet is in a compartment:
Wheelchair accessible compartments shall be 60 inches wide minimum measured perpendicular to the side wall, and 56 inches deep minimum for wall hung water closets and 59 inches deep for floor mounted water closets, measured perpendicular to the rear wall. (604.8.2)
Compartment doors shall not swing into the minimum required compartment area. (604.8.3)
5. Grab bars shall have a circular cross section with a diameter of 1 1/4 inch minimum and 2 inches maximum, or shall provide equivalent graspability. (609.2)
The space between the wall and the grab bar shall be 1 1/2 inches. (609.3) Grab bars shall be mounted in a horizontal position 33 inches minimum and 36 inches maximum above the floor. (609.4)
a. Side wall grab bars are required to start within 12 inches of the backwall and extend to 54 inches from the back wall. The minimum length of the bar is 42 inches. (604.5.1)
b. The rear bar shall be 24 in long minimum, centered on the water closet. Where space permits, the bar shall be 36 inches long minimum, with the additional length provided on the transfer side. (604.5.2)
6. The top of the water closet seats shall be 17 to 19 inches above the floor. (604.4)
7. Accessible urinals shall be of the stall type or wall hung with the rim at 17 inches maximum above the floor. (605.2)
8. Accessible lavatories shall be mounted with the rim 34 inches maximum above the floor. (606.3)
9. Sinks shall be 11 inches deep maximum. (606.5)
10. Water supply and drain pipes under lavatories shall be insulated or otherwise treated to protect against contact. (606.6)
11. Mirrors located above lavatories, sinks or counters shall be mounted with the bottom edge of the reflecting surface 40 inches maximum above the floor. (603.3)

ADDITIONAL TOILET REQUIREMENTS:
Customers, patrons and visitors shall be provided with public toilet facilities in spaces intended for public utilization. (2902.3)
The route to the public facilities shall not pass through kitchens, storage rooms or closets. (2902.3.1)
The path of travel to facilities shall not exceed a distance of 500 feet. (2902.3.2)
Directional signage indicating route to public facilities shall be posted. Such signage shall be located in a corridor or aisle at the entrance to the facilities. (2902.4.1)
Where a toilet is provided for use of multiple occupants, the egress door for the room shall not be lockable from the inside. (2902.3.5)
Where a building or tenant space requires a separate toilet facility for each sex and each toilet facility is required to have only one water closet,
two family/assisted-use toilet facilities shall be permitted to serve as required separate facilities. Toilet facilities shall not be required to
be identified for exclusive use by either sex. (2902.2.1)

LIGHT AND VENTILATION:
1. Every space intended for human occupancy shall be provided with natural light by means of exterior glazed openings or shall be provided with artificial light. (1205.1)
When natural light is provided, the minimum net glazed area shall not be less than 8% of the floor area. (1205.2)
Any room is permitted to be considered as a portion of an adjoining room where one half of the area of the common wall is open and unobstructed and provided not less than one tenth of the floor area or 25 square feet, whichever is greater. (1205.2.1)

When artificial light is used, it must provide an average illumination of 10 foot candles over the area of the room at a height of 30 inches above the floor. (1205.3)

2. Buildings shall be provided with natural ventilation or mechanical ventilation per the International Mechanical Code. (1203.1)

Natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. (1203.4)

The minimum openable area to the outdoors shall be 4 percent of the floor area. (1203.4.1)

Any room is permitted to be considered as a portion of an adjoining room where unobstructed openings are provided that have an area not less than 8% of the floor area of the interior room but no less than 25 square feet. (1203.4.1.1)

When openings are below grade, clear space measured perpendicular to the opening shall be one and one half times the depth of the opening. (1203.4.1.2)

3. Rooms containing bathtubs, showers, spas and similar bathing fixtures shall be mechanically ventilated. (1203.4.2.1)

GLAZING REQUIREMENTS:

All glazing in hazardous locations is required to be of safety glazing material. (2406.1)

Locations: (2406.4)

1. Glazing in all fixed and operable panels of swing, sliding and bifold doors. (2406.4.1)
   See exceptions

2. Glazing in fixed or operable panels adjacent to a door where the nearest exposed edge of the glazing is within a 24-inch arc of either vertical edge of the door in a closed position and where the bottom exposed edge of the glazing is less than 60 inches above the walking surface. (2406.4.2)

   Exception: Panels where there is an intervening wall or other permanent barrier between the door and glazing.

3. Glazing in an individual fixed or operable panel, other than those locations described in items 5 and 6 above, than meets all of the following conditions: (2406.4.3)
   1. Exposed area of an individual pane greater than 9 square feet.
   2. Exposed bottom edge less than 18 inches above the floor.
   3. Exposed top edge greater than 36 inches above the floor.
   4. One or more walking surfaces within 36 inches horizontally of the plane of the glazing.

See Exceptions.

4. Glazing in guards and railings, including structural baluster panels and nonstructural in-fill panels, regardless of the area or height above a walking surface. (2406.4.4)

5. Glazing in walls, enclosures or fences containing for facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom edges of the glazing is less than 60 inches above the walking surface. (2406.4.5)

   Exception: Glazing that is more than 60 inches from the water's edge.

6. Glazing where the glass is less than 60 inches above the plane of the walking surface of stairways, landings and ramps. (2406.4.6)

   Exception 1: The side of the stairway, landing or ramp has a guard complying with Sections 1013 and 1607.8 and the glass is greater than 18 inches from the railing.

   Exception 2: Glazing 36 inches or more measured horizontally from the walking surface.

7. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches above the landing and within 60 inches horizontally of the bottom tread. (2406.4.7)

   Exception: The glazing is protected by a guard complying with Sections 1013 and 1607.8 and the glass is greater than 18 inches from the guard.

WALL AND CEILING FINISHES:

1. Wall and ceiling finish materials are required to comply with Sec. 803.9 and Table 803.9.

2. Textile wall and ceiling coverings shall have Class A flame spread index and shall be protected by automatic sprinklers or meet the criteria in Section 803.5, 803.6 and 803.1.4.

3. Expanded vinyl wall coverings shall comply with the requirements for textile wall and ceiling materials. (803.7)

4. Toilet room floors shall have a smooth, hard nonabsorbent surface that extends upward onto the walls at least 4 inches. (1210.2.1

5. Walls within 2 feet of urinals and water closets shall have a smooth, hard nonabsorbent surface, to a height of 4 feet above the floor. (1210.2.2)

CEILING HEIGHTS:

Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches. Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet. (1208.2)

INSULATION NOTES:

1. Insulating materials shall have a flame-spread rating of no more than 25 and a smoke developed index of not more than 450. (720.2) 'concealed installation' and Sec. 720.3 'exposed installation'

Foam plastic insulations are required to be protected. (2603)

NOTE: WHEN TABLE FORMAT IS SELECTED FOR ALLOWABLE AREA, EXITING AND/OR PLUMBING, THAT PART OF THE CODE STUDY LOOKS LIKE THIS:

ALLOWABLE AREA AND HEIGHT:

FL	NAME	OCC	MAX FLR	AREA	ALLOWED	RATIO	STATUS
F2	Office	B	5	2500	52500	0.05	OK
F2	Conference room	A3	3	1000	21700	0.05	OK
TOTAL FOR FLOOR				3500	37352.46	0.09	OK
F1	Office	B	5	10000	52500	0.19	OK
F1	Warehouse	S1	4	20000	36400	0.55	OK
F1	Sales area	M	4	4000	30100	0.13	OK
TOTAL FOR FLOOR				34000	38954.32	0.87	OK
BUILDING TOTAL				37500	77908.65	0.48	OK

Notes:
Allowable area is based on Table 503 and Section 506.
Allowable number of stories is based on Table 503 and Section 504.2.
Allowed area increased 40% for frontage increase. (506.2)

EXIT REQUIREMENTS:

FL	NAME OF AREA	NUMB OF OCC	MIN NUMB EXIT	MIN EXIT WDTH	PANIC HDWR	DOOR SWNG	CORRIDOR FIRE RATING	MAX TRVL DIST	NOTES
F2	Office	25	1	5	no	any	NONE	200	
F2	Conference room	67	2	13.3	YES	OUT	N/A	200	1 12
	TOTAL 2nd FLOOR	92	2	18.3	YES	OUT	1-hr	200	5 12
F1	Office	100	2	20	no	OUT	N/A	200	1
F1	Warehouse	40	2	8	no	any	N/A	200	1
F1	Sales area	133	2	26.7	no	OUT	N/A	200	1 18
	TOTAL 1st FLOOR	273	2	54.7	no	OUT	1-hr	200	5

FOOTNOTES:
1. Two exits are required from this area since the occupant load exceeds allowable in Table 1015.1
5. Number of exits from this floor is based on Section 1021.2
12. Panic hardware is required when the occupant load is 50 or more. (1008.1.10)
18. A required exit from the sales area may not pass through a storage area. (1014.2 #4, See exceptions)

NOTES FOR EXIT TABLE:
Door swing is based on Section 1008.1.2
Occupant load is based on Section 1004 and Table 1004.1.1
Exit width is in inches and based on Section 1005.1 & Table 1005.1
For the minimum width of stairways, see Section 1009.1.
Exits shall be continuous from the point of entry into the exit to the exit discharge. (1003.6)

MINIMUM NUMBER OF PLUMBING FIXTURES: (2902.1)

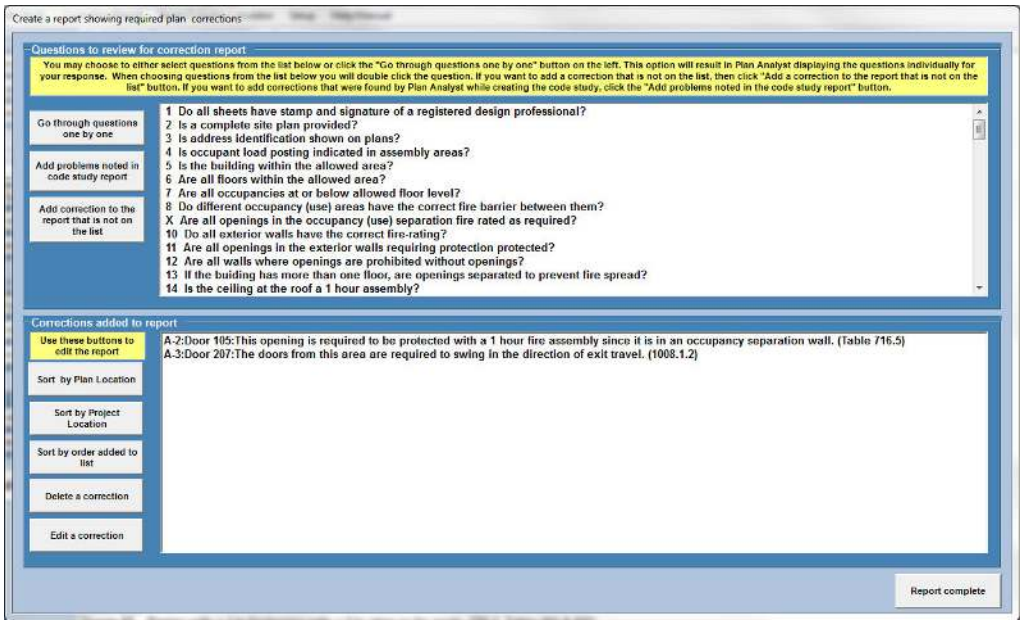
FL	NAME OF AREA	NUMBER OCC	WATER CLOSETS MALE	WATER CLOSETS FEMALE	LAVATORIES MALE	LAVATORIES FEMALE	DRINKING FOUNTAINS
F2	Office	25	1	1	1	1	1
F2	Conference room	67	1	1	1	1	1
TOTAL for 2nd FLOOR		92	1	2	1	1	1
F1	Office	100	2	2	2	2	1
F1	Warehouse	40	1	1	1	1	1
F1	Sales area	133	1	1	1	1	1
TOTAL for 1st FLOOR		273	3	3	2	2	2

NOTES ON THE TOTAL NUMBER OF PLUMBING FIXTURES:
The number of fixtures for a floor may not match total number of fixtures per area.
1. Fixtures for accessory areas are not included in the floor total.
2. The number of fixtures for each area are rounded up to the next whole number. Floor totals are not rounded up until the floor total is obtained.
If the fixtures only serve an area, use number shown for each area.
If the fixtures serve an entire floor, use number shown for totals.

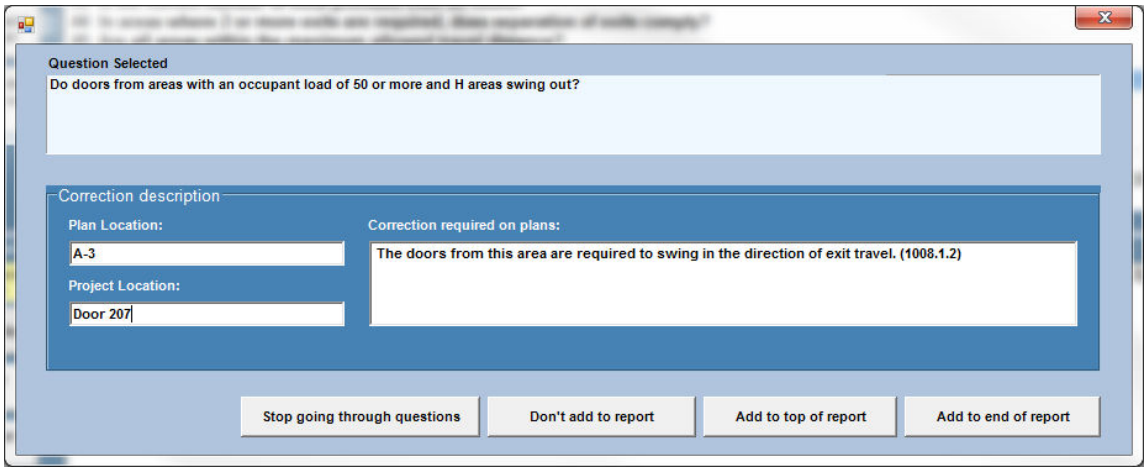
CORRECTION REPORT

Plan Analyst creates a checklist for this project. The questions in the checklist are selected based on the code study so you will not be asked questions that do not apply to this project.

You may either scroll through the list and pick questions based on your review of the plans or click the Go through questions one by one button and Plan Analyst will lead you through each question on the customized list.



When you note a problem on the plans, the following screen is displayed. You enter the problem on the plans and identify the project location.



When you have completed the list of questions, click the Report complete button. This will create the correction report. To review the correction report, click the Required Corrections tab on the main screen to review the report.

Example of an IBC Correction Report

This correction report was created using the information that you saw input in this example – notice how simple the input was and how complete the report is!

Your Firm or Jurisdiction Name
Your Department
Your address
Your City, State Zip Code
Your Phone numbers(s)
Project Description: 1234-12 Example of an Office Building Date: Monday, 22 Apr 2013
Project Location: 7001 Leopardi Ct.
Construction by: ZZZ Construction Architect: HHH Architects Engineer: JJJ Engineers
Code Study by: Ben Weese

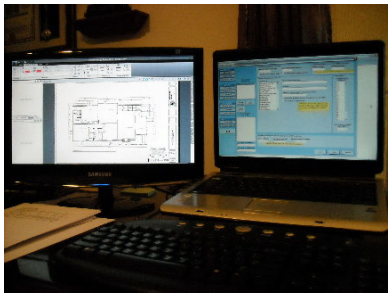
The corrections listed below are required for the plans to comply with the 2012 International Building Code (IBC) by ICC.

1 SD-1 : : All sheets to be stamped and signed by a design professional registered in this state. (107.1)
2 A-2,A-7 : Door 105 : This opening is required to be protected with a 1 hour fire assembly since it is in an occupancy separation wall. (Table 716.5)
3 A-5 : Warehouse Ceiling : This ceiling is required to be a 1 hour assembly. (Table 601)
4 A-4 : Ceiling of corridor 203 : The ceiling of this corridor is required to have a 1-hour fire-resistive rating. (1018.1 and Table 1018.1)
5 S-1 : : Include a copy of the foundation and soils investigation for the site to be built on. (1803.2)

ALL DIGITAL (PAPERLESS) CODE STUDIES

What is needed?

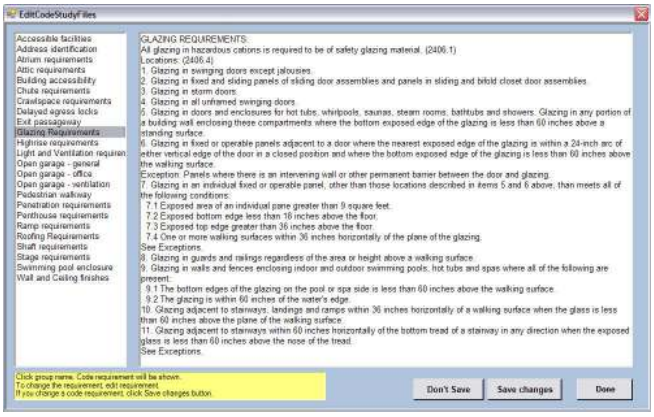
1. **Computer with 2 monitors connected (1 to display Plan Analyst and 1 to display AutoDesk) or 1 large screen that displays both Plan Analyst and AutoDesk Design Review.**
2. **Plan Analyst software**
3. **AutoDesk Design Review software (Currently, free of charge from AutoDesk)**



Use the features of AutoDesk Design Review to get information (dimensions, square feet, etc). Enter the information into Plan Analyst. As you create the correction report, copy and paste required corrections from Plan Analyst to the callout boxes in AutoDesk Design review. Using this system, you have reviewed the plans without handling a paper copy of the plans.
This system speeds up the plan check process, adds convenience and a popular green factor feature.

Adjusting Plan Analyst for local requirements

Edit code study requirements

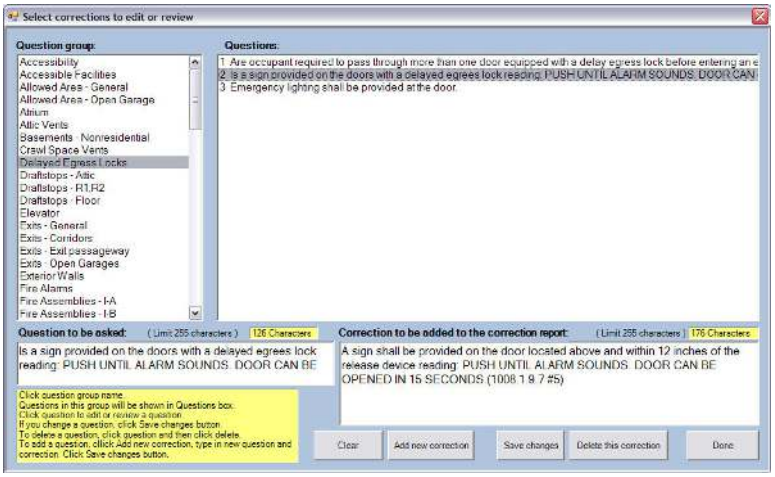


This allows you to review or change code requirements for code studies.
You can change wording to match local requirements or your preferred wording.

Click **requirement name** in left box.
Corresponding code requirements will be shown in the right box. You may edit the requirement before saving.
Click the **Save changes** button after editing each requirement.
Click another requirement **name** or Click the **Done** button.

Edit questions for correction report

You can add, modify or delete questions asked during the creation of each new correction report. This allows you to adjust questions to show local conditions or preferences.



To edit a question

1. Select Question group.
2. Select Question.
3. Edit question/correction in boxes at bottom of screen.
4. Save changes

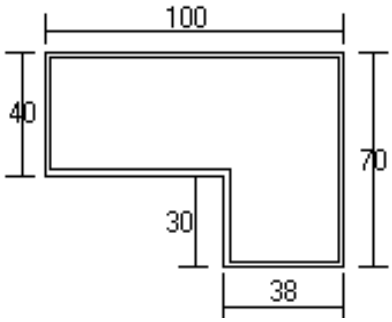
To Add a question

1. Type in new question and correction.
2. Click Add Correction button.

Special calculator feature

Using the calculator

When numbers, such as dimensions and square footage, are required, a four-function calculator is built into Plan Analyst. Use the **+** for addition **-** for subtraction **x** or ***** for multiplication and **/** for division. Algebraic logic is used (i.e. division and multiplication are always done before addition and subtraction)



There is no need to reach for your calculator.
When asked for the floor area enter: 100 x 40 + 30 x 38 and the floor area will be calculated for you.

Entering dimensions

Dimensions may be entered using either decimals of a foot (10.4167) or by using the Feet_inches (10_5) format. For 10 feet 5 inches, you enter either 10.4167 or 10_5.