

[Skip to main content](#)**IBC 2009-2012 Allowable Area Calculator**

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Directions: Enter values for occupancy classification, construction type, materials, and proposed number of stories, as well as building perimeter length and distance from building to property lines. Choose 2006, 2009, or 2012 International Building Code (IBC). Press "Calculate" button.

Based on the selected IBC, values are calculated for allowable area, height, and number of stories. The site plan (Fig. 1) corresponds to the default values indicated below for a proposed 4-story, un sprinkled office building (occupancy classification: O-2). Distance area is measured from the building to the fire side of a "right-of-way" (R.O.W.), as is shown for the building perimeter facing east. In this case, the distance is 35 feet. Some occupancies require sprinklers under certain circumstances; see notes immediately below calculated values for details.

Notes and calculations:

- Building volume, floor area, and distance to property lines may also be controlled by zoning ordinances, which are not considered here.
- "Total allowable area" is calculated based on the "Proposed number of stories" selected. It is the maximum possible allowable area for a given building condition (i.e., for a given geometry, height, sprinkler status, and so on), set the "Proposed number of stories" to the "Maximum allowable stories".
- The "Allowable area per floor" may be compared with the site and building geometry used to compute the building conditions. In other words, computing the allowable area per floor directly guarantees that the proposed floor plan area — used in part to calculate the allowable area — is acceptable. This is done, in part, to the way in which the building code is written: it is intended to be used, not primarily as a design tool, but as a modified tool.

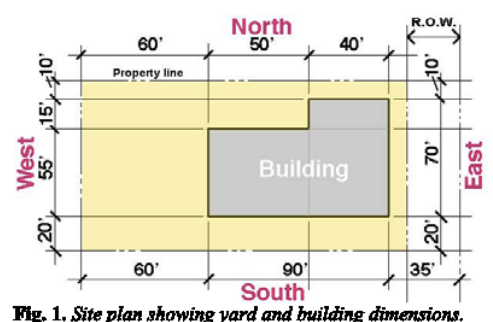
For more information, see my online [building code handbook](#).

Fig. 1. Site plan showing yard and building dimensions.

Building information	
Occupancy classification: O-2	
Construction type: II-B	
Proposed number of stories: 4	

Building perimeter (feet)	Distance to property line (feet)	Allowable area (sq. ft.)
224.0	35.0	838.0
45.0	35.0	158.0
17.0	35.0	59.0

Finding width	Finding height	Finding area
31.3	88.3	2763.0
68.2	238.0	16230.0
13.0	108.0	1404.0

Finding width	Finding height	Finding area
68.2	108.0	7365.6
71.0	108.0	7668.0

Finding width	Finding height	Finding area
108.0	45.0	4860.0
31.3	13.0	406.9

Code version: **2012 IBC**

Allowable area and calculation	
Allowable area per floor: 1623.0 sq. ft.	
Total allowable area: 6492.0 sq. ft.	
Maximum allowable height: 45 ft.	
Maximum allowable stories: 4	

For Group A-3 occupancies, sprinklers are required if the fire area is 1,000 sq. ft. or the occupant load is 500; or the fire area is not on the level of exit discharge.

Notes:

1. NFPA 130 sprinklers may be installed in 1-2 family dwellings per Sec. 903.3.1.3.
2. Unintended area possible with area of 60 ft. x 60 ft. of building per Sec. 903.3.1.3 (not calculated).
3. Unintended area possible with 1-story, A-3 (some restrictions), Type II, NFPA 13 sprinklers, 60 ft. x 60 ft. of building per Sec. 903.3.1.3 (not calculated).
4. Sprinklers required with group A-3, F-1, H-1, H-2, and H-3 occupancies per Section 903.3.1.3 - 903.3.1.3. See notes to the left.
5. Sprinklers required with group A-3 occupancies per Sec. 903.3.1.3.
6. Sprinklers required in buildings with floor level 55 ft. or more above fire dept. vehicle access per Sec. 903.3.1.3.1.
7. Where NFPA 13 sprinklers are required for 1 or more stories, sprinklers must meet NFPA 13 and 13.1.
8. For nonresidential stories or basements, sprinklers may be required per Sec. 903.3.1.1.1.
9. Other limitations and occupancies may apply; see IBC for details.

Disclaimer: This calculator is not intended to be used for the design of actual structures, but only for schematic (preliminary) understanding of building technology and construction proposals. For the design of an actual structure, a competent professional should be consulted.

First posted Aug. 18, 2009 | Last updated Nov. 4, 2014

WALL TYPE (SEE A4-1)
STUD/CMU WIDTH
WALL TYPE MODIFIER
FIRE RATING
A 2 F 3

#	STUD WIDTH	CMU WIDTH
1	1 5/8"	
2	2 1/2"	
3	3 5/8"	
4		3 5/8"
6	6"	5 5/8"
8		7 5/8"
12		11 5/8"

LEGEND - WALL TYPES
1 1/2" = 1'-0"

WALL TYPE MODIFIER

- A. 5/8" GYP BD EACH SIDE (NO SAB; STC 45 / WITH SAB; STC 49)
B. 5/8" GYP BD EACH SIDE U/L# U465, GA FILE NO: WP1200 (NO SAB; STC 45 / WITH SAB; STC 49)
C. 2 LAYERS 5/8" GYP BD EACH SIDE U/L# U411, GA FILE NO: WP1548 (NO SAB; STC 50 / WITH SAB; STC 54)
D. (1) LAYER 1" GYP BD SHAFT SIDE; 2 LAYERS 1/2" GYP BD OTHER SIDE U/L# U438, GA FILE NO: WP 7095 (NO SAB; STC 45 / WITH SAB; STC 49)
E. (1) LAYER 5/8" GYP BD EXPOSED SIDE ONLY (NO SAB; STC 45 / WITH SAB; STC 49)
F. NO SHEATHING
G. 7/8" HAT CHANNELS W/ 5/8" GYP BD EACH SIDE
H. 7/8" HAT CHANNELS W/ 5/8" GYP BD ONE SIDE ONLY
I. NOT USED
J. (1) LAYER 5/8" GYP BD EXPOSED SIDE ONLY; TEMPORARY INFLECTION CONTROL WALL SEAL TO FLOOR AND DECK
K. DOUBLE SIDED FURRING WALL - (1) LAYER 5/8" GYP BD EXPOSED SIDE ONLY OVER TWO LAYERS OF 2 1/2" METAL FRAMING; GYP BD TO BE FLUSH W/ CMU

FIRE RATING

0. NOT RATED
S. PARTITION TO RESIST THE PASSAGE OF SMOKE
B. 1 HOUR RATED SMOKE BARRIER
C. 2 HOUR RATED SMOKE BARRIER
1. 1 HOUR RATED FIRE BARRIER
2. 2 HOUR RATED FIRE BARRIER / FIRE WALL
3. 3 HOUR RATED FIRE WALL
4. 4 HOUR RATED FIRE WALL

SYMBOL DESIGNATION

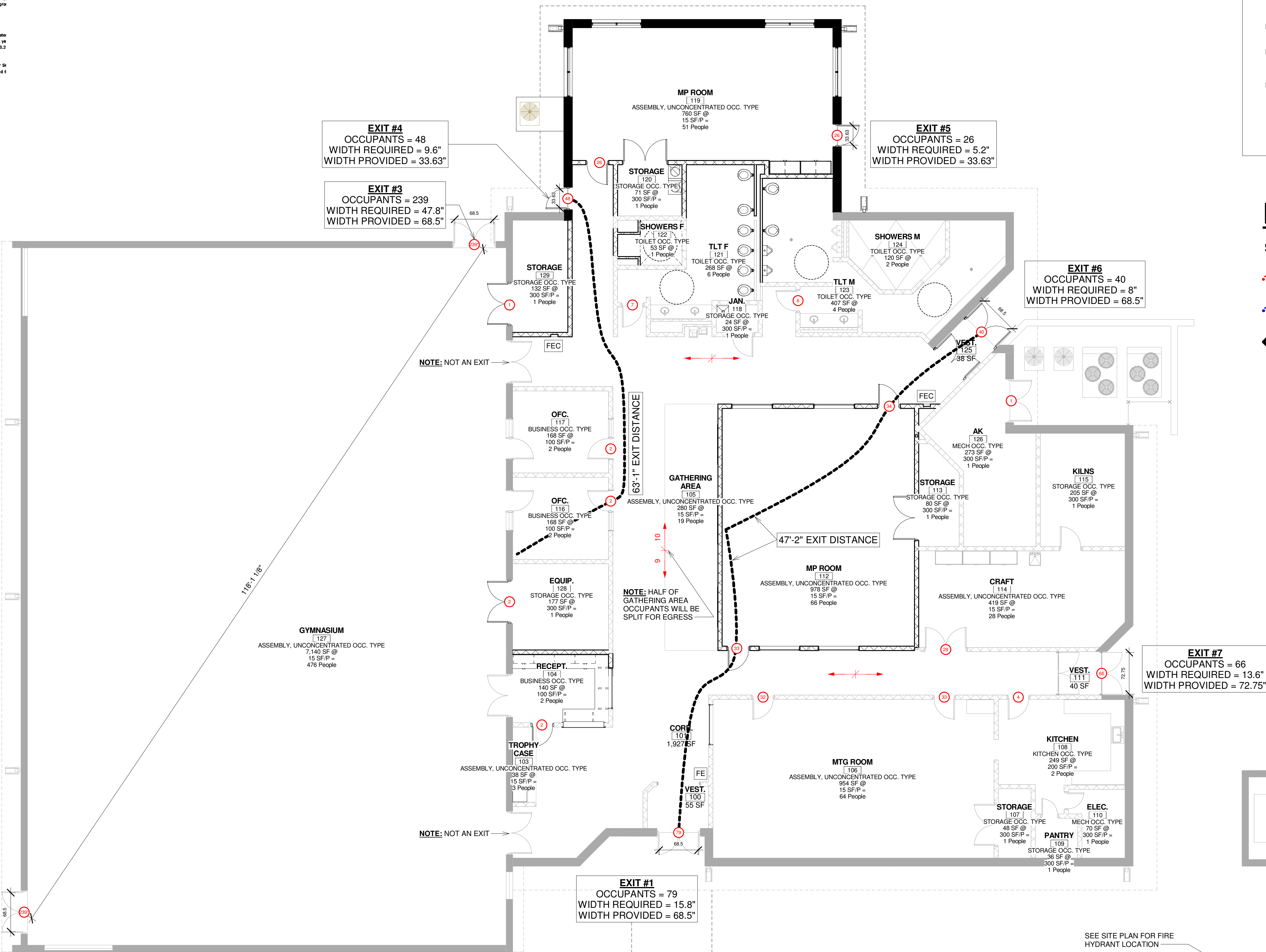
FOR WALL TYPES INDICATED TO RECEIVE SOUND ATTENUATION, EXTEND SOUND ATTENUATION TO FULL HEIGHT OF WALL UNLESS OTHERWISE INDICATED. REFER TO INDIVIDUAL WALL TYPE MODIFIER FOR STC RATINGS.

WITH SOUND ATTENUATION
NO SOUND ATTENUATION

WALL HATCH PATTERN LEGEND

- PARTITION TO RESIST THE PASSAGE OF SMOKE
1 HOUR RATED FIRE BARRIER
1 HOUR RATED SMOKE BARRIER
NON RATED
MASONRY
NON RATED MASONRY
STACKED WALL - CMU BASE & GYP FURRING WALL TOP

ROOMS - 2012 NFPA 101 OCCUPANT LOAD ANALYSIS					
NAME	RM #	AREA	NFPA 7.3.1.2 OCC USE	NFPA 7.3.1.2 OCC. LOAD	ROUNDED OCC'S
ASSEMBLY, UNCONCENTRATED					
CRAFT	114	419 SF	ASSEMBLY, UNCONCENTRATED	15	28
GATHERING AREA	105	280 SF	ASSEMBLY, UNCONCENTRATED	15	19
GYMNASIUM	127	7,140 SF	ASSEMBLY, UNCONCENTRATED	15	476
MP ROOM	112	978 SF	ASSEMBLY, UNCONCENTRATED	15	66
MP ROOM	119	760 SF	ASSEMBLY, UNCONCENTRATED	15	51
MTG ROOM	106	954 SF	ASSEMBLY, UNCONCENTRATED	15	64
TROPHY CASE	103	38 SF	ASSEMBLY, UNCONCENTRATED	15	3
					707
BUSINESS					
OFC.	117	168 SF	BUSINESS	100	2
OFC.	116	168 SF	BUSINESS	100	2
RECEPT.	104	140 SF	BUSINESS	100	2
					6
CIRCULATION					
CORR.	101	1,927 SF	CIRCULATION	0	
VEST.	125	38 SF	CIRCULATION	0	
VEST.	100	55 SF	CIRCULATION	0	
VEST.	111	40 SF	CIRCULATION	0	
					0
KITCHEN					
KITCHEN	108	249 SF	KITCHEN	200	2
					2
MECH					
AK	126	273 SF	MECH	300	1
ELEC.	110	70 SF	MECH	300	1
					2
STORAGE					
EQUIP.	128	177 SF	STORAGE	300	1
JAN.	118	24 SF	STORAGE	300	1
KILNS	115	205 SF	STORAGE	300	1
PANTRY	109	36 SF	STORAGE	300	1
STORAGE	113	80 SF	STORAGE	300	1
STORAGE	107	48 SF	STORAGE	300	1
STORAGE	120	71 SF	STORAGE	300	1
STORAGE	129	132 SF	STORAGE	300	1
					8
TOILET					
SHOWERS F	122	53 SF	TOILET		1
SHOWERS M	124	120 SF	TOILET		2
TLT F	121	268 SF	TOILET		4
TLT M	123	407 SF	TOILET		13
					738

**LIFE SAFETY INFORMATION**

BUILDING INFORMATION :
PROJECT NAME: RENOVATION & ADDITION TO NORTH MACON PARK RECREATION CENTER
ADDRESS: 815 NORTH MACON PARK DRIVE
MACON, GA 31210
USE: GYMNASIUM
OWNER: MACON-BIBB COUNTY RECREATION DEPARTMENT

CODE ANALYSIS :

- I. **APPLICABLE CODES:**
 - NFPA 101 - LIFE SAFETY CODE (2012).
 - RULES AND REGULATIONS FOR THE STATE MINIMUM FIRE SAFETY; CH. 120-3-20 MODIFICATIONS (2014).
 - GEORGIA ACCESSIBILITY CODE FOR BUILDINGS AND FACILITIES; (GAC) - CH. 120-3-20(1997).
 - INTERNATIONAL FIRE CODE (IFC) (2012).
 - INTERNATIONAL BUILDING CODE (IBC) (2012).
- II. **OCCUPANCY TYPE:**
 - ASSEMBLY, GROUP A-3 (LSC 6.1.2, CHAPTER 12)
- III. **EXISTING BUILDING CONSTRUCTION TYPE:**
 - TYPE IIB (IBC TABLE 602.2)
 - TYPE IIB(0.0.0) (LSC TABLE A.8.2.1)
- NEW BUILDING CONSTRUCTION TYPE:
 - TYPE IIB (IBC TABLE 602.2)
 - TYPE IIB(0.0.0) (LSC TABLE A.8.2.1)

- IV. **BUILDING AREA:**
 - ALLOWABLE: 2 STORIES @ 9,500 SF (IBC TABLE 503)
 - TOTAL ALLOWED AREA: 9,500 SF ALLOWED: + 7,125 SF PERIMETER INCREASE (SEE CALCULATION ON LEFT)
 - ACTUAL BUILDING AREA: 1 STORY @ 15,607 SF

V. HOURLY FIRE RATINGS (IBC TABLE 601, LSC TABLE A.8.2.1):

- | BUILDING COMPONENT | RATING |
|--------------------------|---------|
| STRUCTURAL FRAME: | 0 HOURS |
| BEARING WALLS, EXT.: | 0 HOURS |
| BEARING WALLS, INT.: | 0 HOURS |
| NON-BEARING WALLS, EXT.: | 0 HOURS |
| NON-BEARING WALLS, INT.: | 0 HOURS |
| FLOOR CONSTRUCTION: | 0 HOURS |
| ROOF CONSTRUCTION: | 0 HOURS |

VI. FIRE SUPPRESSION SYSTEM:

- PORTABLE FIRE EXTINGUISHERS

VII. FIRE SAFETY CONCEPT:

- APPEND A NON-SEPARATED ADDITION TO A TYPE IIB, NON-SPRINKLED BUILDING. FIRE ALARM & PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED.

VIII. OTHER LIFE SAFETY CONSIDERATIONS (MOST STRINGENT OF APPLICABLE CODES GOVERNS):

- A. OCCUPANT LOAD:** (IBC TABLE 1004.1.2, LSC 7.3.1.2)
REFERENCE FLOOR PLAN & SCHEDULE FOR INDIVIDUAL LOADS
TOTAL OCCUPANT LOAD = 738 OCCUPANTS
- B. EXIT DOOR CAPACITY** (IBC TABLE 1005.3.2, LSC TABLE 7.3.3.1)
- 0-2' EGRESS WIDTH PER OCCUPANT SERVED
SEE LIFE SAFETY PLAN FOR REQUIRED AND PROVIDED EGRESS WIDTHS
- C. EGRESS DOORS** (IBC 1018.1)
- NO RATING REQUIRED
- PANIC HARDWARE REQUIRED AT EXIT DOORS, DENOTED ON FLOOR PLAN WITH AN ASTERISK (*), PER LSC 12.2.2.2.3
- D. DEAD END** (LSC 12.2.5.1.3) - 20 FEET
- LSC TABLE A.7.6.1 ALLOWS 50', THEREFORE IBC 20' LIMITATION GOVERNS
- E. TRAVEL DISTANCE** (IBC TABLE 1016.2) = 200 FEET ALLOWABLE
- LSC 12.2.6.2 ALLOWS 200' FROM ANY POINT IN A ROOM TO EXIT
MAXIMUM ACTUAL EXIT DISTANCE = 65'-1'
- F. INTERIOR FINISH**
 1. INTERIOR WALL AND CEILING FINISH (IBC TABLE 803.5, LSC 12.3.3.2)
INTERIOR WALL AND CEILING FINISH COMPLYING WITH 10.2.3 SHALL BE AT A MINIMUM REQUIREMENT CLASS A IN EXIT ENCLOSURES AND PASSAGEWAYS, CLASS B IN CORRIDORS, AND CLASS C IN OFFICE AREAS.
 2. INTERIOR FLOOR FINISH (LSC 12.3.3.5) - CLASS II

LIFE SAFETY LEGEND

- SM—SM—SM** • PARTITION TO RESIST THE PASSAGE OF SMOKE
- 1HR-1HR-1HR** • 1-HOUR FIRE BARRIER (IBC SEC. 707)
- 1SM-1SM-1SM** • 1-HOUR SMOKE BARRIER (IBC SEC. 709)
- ←-----** • PATH OF TRAVEL
- FEC** • FIRE EXTINGUISHER / CABINET
- • EXITING OCCUPANT LOAD



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RENOVATION & ADDITION TO NORTH MACON PARK RECREATION CENTER

BIBB COUNTY RECREATION DEPARTMENT

815 N MACON PARK DR
MACON, GA 31210

REVISIONS
DATE DESCRIPTION

Date: 05/16/2016

Drawn By: BEJ

Checked By: CG

Project Number: 2016-08

Sheet Name:
LIFE SAFETY PLAN & INFORMATION

Sheet Number:

LS-1