### 1. PROJECT NAME

P1338 MEF SIMULATION TRAINING BUILDING, MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

#### 2. PROJECT DESCRIPTION

THE MEF SIMULATION TRAINING BUILDING CONSISTS TRAINING AREAS, ADMINISTRATIVE OFFICES AND SUPPORTING MECHANICAL, ELECTRICAL AND COMMUNICATION SPACES.

THE FACILITY HAS BEEN ANALYZED FOR LIFE SAFETY AND FIRE PROTECTION REQUIREMENTS USING THE CODES AND STANDARDS LISTED BELOW. THE UNIFIED FACILITIES CRITERIA (UFC) APPLIES TO THE MILITARY DEPARTMENTS, THE DEFENSE AGENCIES, AND THE DOD FIELD ACTIVITIES WHICH PROVIDES TECHNICAL CRITERIA FOR NEW MILITARY CONSTRUCTION. BASED ON UFC 1-200-01 CHAPTER 2 - MODIFICATIONS TO THE INTERNATIONAL BUILDING CODE (IBC) AND UFC 3-600-01, THE IBC WILL BE USED FOR FIRE RESISTANCE REQUIREMENTS, ALLOWABLE FLOOR AREA, BUILDING HEIGHT LIMITATIONS, BUILDING SEPARATION DISTANCE REQUIREMENTS, BUILDING CONSTRUCTION TYPE, AND OCCUPANCY SEPARATION REQUIREMENTS EXCEPT AS MODIFIED BY UFC 3-600-01. NFPA 101 WILL BE USED FOR BUILDING CONSTRUCTION RELATED TO EGRESS AND SAFETY TO LIFE AS WELL AS FIRE RESISTANCE RATINGS OF NON-BEARING PARTITIONS. IF ANY CONFLICTS OCCUR BETWEEN NFPA 101 AND IBC, RELATED TO FIRE RESISTANCE RATING, NFPA 101 WILL TAKE PRECEDENCE AND APPLICABLE CRITERIA CONTAINED IN UFC 3-600-01. OCCUPANCY DEFINITIONS OF NFPA 101 WILL BE USED TO DETERMINE MEANS OF EGRESS REQUIREMENTS.

## 3. APPLICABLE CODES AND STANDARDS

- IBC 2018 EDITION INTERNATIONAL BUILDING CODE
- NFPA 10 2018 EDITION STANDARD FOR PORTABLE FIRE EXTINGUISHERS
- NFPA 13 2019 EDITION STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS NFPA 70 – 2020 EDITION – NATIONAL ELECTRICAL CODE
- NFPA 72 2019 EDITION NATIONAL FIRE ALARM AND SIGNALING CODE
- NFPA 90A 2018 EDITION STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING & VENTILATING
- NFPA 101 2018 EDITION LIFE SAFETY CODE
- UFC 1-200-01 GENERAL BUILDING REQUIREMENTS, 8 OCTOBER 2019
- UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES, 8 AUGUST 2016 WITH CHANGE 4, 7 FEBRUARY 2020
- UFC 4-021-01 DESIGN AND O&M: MASS NOTIFICATION SYSTEMS, 9 APRIL 2008 WITH CHANGE 1, JANUARY 2010
- FC 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES. 1 MAY 2014 WITH CHANGE 4, 14 JUNE

#### 4. OCCUPANCY CLASSIFICATION

NFPA CHAPTER 38: BUSINESS IBC BUSINESS B (IBC – SECTION 304)

IBC FACTORY, A-3 (IBC -SECTION 303) NFPA CHAPTER 12: NEW ASSEMBLY OCCUPANCIES

### 5. CONSTRUCTION TYPE

TYPE IIB IBC 602.2, TABLE 503

#### 6. AREA AND HEIGHT LIMITATIONS (IBC TABLE 504.3, TABLE 504.4, AND TABLE 506.2, AND SECTION 508.4.2)

ALLOWABLE AREA CALCULATIONS CONSTRUCTION TYPE IIB			
OCCUPANCY  ALLOWABLE AREA FOR A SINGLE STORY SPRINKLERED BUILDING (SQ. ACTUAL FIRST FLOOR TOTAL AREA (SQ. FT FT) WITH INCREASE FOR FRONTAGE			
BUSINESS 109,250 12,627		12,627	
ASSEMBLY, A-3	45,125	38,913	

THE BUILDING SHALL BE CLASSIFIED AS SEPARATED, MIXED USE OCCUPANCY

## ALLOWABLE BUILDING HEIGHT: 75 FT., 3 STORIES

ACTUAL BUILDING HEIGHT: 32 FT., 1 STORIES

## 7. FIRE RESISTIVE REQUIREMENTS (IBC TABLES 601 AND 602)

PRIMARY STRUCTURAL FRAME	0 HOUR RATING
EXTERIOR BEARING WALLS*	0 HOUR RATING
INTERIOR BEARING WALLS	0 HOUR RATING
EXTERIOR NON-BEARING WALLS AND PARTITIONS	0 HOUR RATING
INTERIOR NON-BEARING WALLS AND PARTITIONS	0 HOUR RATING
FLOOR CONSTRUCTION AND SECONDARY MEMBERS	0 HOUR RATING
ROOF CONSTRUCTION AND SECONDARY MEMBERS	0 HOUR RATING

\*TAKES INTO ACCOUNT THE FIRE SEPARATION DISTANCE REQUIREMENT OF IBC TABLE 602. THE FIRE SEPARATION DISTANCE IS GREATER THAN 30 FEET. WHERE DISTANCES ARE LESS THAN 30 FEET. TABLE 602 REQUIREMENTS SHALL APPLY.

## 8. PROTECTION FROM HAZARDS (NFPA 101 AND UFC 3-600-01)

PROTECTION FROM ANY AREA HAVING A DEGREE OF HAZARD GREATER THAN THAT NORMAL TO THE GENERAL OCCUPANCY OF THE BUILDING, SUCH AS AREAS USED FOR GENERAL STORAGE, BOILER OR FURNACE ROOMS, OR MAINTENANCE SHOPS SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 101 SECTION 8.7.

# 9. OPENING PROTECTION AND PENETRATION REQUIREMENTS (NFPA 101 CHAPTER 8)

JOINTS MADE WITHIN OR AT THE PERIMETER OF FIRE BARRIERS SHALL BE PROTECTED WITH A JOINT SYSTEM THAT IS CAPABLE OF LIMITING THE TRANSFER OF FIRE. JOINTS MADE WITHIN OR BETWEEN FIRE BARRIERS SHALL BE PROTECTED WITH A FIRE-TIGHT JOINT SYSTEM THAT IS CAPABLE OF LIMITING THE TRANSFER OF FIRE. JOINTS MADE WITHIN OR BETWEEN FIRE RESISTANCE-RATED ASSEMBLIES SHALL BE PROTECTED WITH A JOINT SYSTEM TESTED IN ACCORDANCE WITH ASTM E1966 OR ANSI / UL 2079.

PENETRATIONS AND JOINTS THROUGH SMOKE PARTITIONS SHALL BE PROTECTED BY A SYSTEM THAT IS CAPABLE OF LIMITING THE TRANSFER OF SMOKE.

#### NFPA 101 TABLE 8,3,3,2,2

COMPONENTS	WALLS AND PARTITIONS (HOUR)	FIRE DOOR ASSEMBLIES (HOUR)
FIRE BARRIERS	1	3/4
SMOKE PARTITIONS	-	SELF-CLOSING

FIREBLOCKING AND DRAFTSTOPPING ARE NOT REQUIRED IN NON-COMBUSTIBLE CONSTRUCTION (IBC 718.2. 718.3, AND 718.4)

#### 10. STRUCTURAL ELEMENTS SUPPORTING FIRE BARRIERS AND EXIT COMPONENTS (NFPA 101, CHAPTER 8) STRUCTURAL ELEMENTS THAT SUPPORT FIRE BARRIERS WILL BE PERMITTED TO HAVE ONLY THE FIRE RESISTANCE RATING REQUIRED FOR THE CONSTRUCTION CLASSIFICATION OF THE BUILDING, PROVIDED THAT BOTH OF THE FOLLOWING CRITERIA ARE MET:

- SUCH STRUCTURAL ELEMENTS SUPPORT NON-BEARING WALL OR PARTITION ASSEMBLIES THAT HAVE A REQUIRED 1-HOUR FIRE RESISTANCE RATING OR LESS.
- SUCH STRUCTURAL ELEMENTS DO NOT SERVE AS EXIT ENCLOSURES OR PROTECTION FOR VERTICAL

## 11. MARKING AND IDENTIFICATION OF FIRE BARRIER AND SMOKE PARTITION (IBC 703.7)

FIRE BARRIERS AND SMOKE PARTITIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OF STENCILING. SUCH IDENTIFICATION SHALL:

- BE LOCATED IN ACCESSIBLE CONCEALED FLOOR, CEILING, OR ATTIC SPACE.
- BE LOCATED WITHIN 15 FEET OF THE END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 10 FEET MEASURED HORIZONTALLY ALONG THE WALL OR PARTITIONS.
- INCLUDE LETTERING NOT LESS THAN 3 INCHES IN HEIGHT WITH A MINIMUM 3/8 INCH STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING "FIRE BARRIER AND/OR SMOKE PARTITION - PROTECT ALL OPENINGS" OR OTHER WORDING,

#### 12. INTERIOR FINISHES CLASSIFICATION LIMITS

NFPA 101, TABLE A.10.2.2

INTERIOR FINISH CLASSIFICATION, SPRINKLERED				
OCCUPANCY	ANCY CORRIDORS ROOMS AND ENCLOSED SPACES			
NEW DUCINECO	CLASS A OR B	CLASS A, B, OR C		
NEW BUSINESS	CLASS I OR II	N/A		
NEW ASSEMBLY	CLASS A OR B	CLASS A OR B		
NEW ASSEMBLY	CLASS I OR II	N/A		

CLASS A INTERIOR WALL AND CEILING FINISH- FLAME SPREAD INDEX 0-25, SMOKE DEVELOPED 0-450 CLASS B INTERIOR WALL AND CEILING FINISH- FLAME SPREAD INDEX 26-75, SMOKE DEVELOPED 0-450 CLASS C INTERIOR WALL AND CEILING FINISH- FLAME SPREAD INDEX 76-200, SMOKE DEVELOPED 0-450 CLASS I INTERIOR FLOOR FINISH- CRITICAL RADIANT FLUX NOT LESS THAN 0.45 W/CM2 CLASS II INTERIOR FLOOR FINISH- CRITICAL RADIANT FLUX NOT MORE THAN 0.22 W/CM^2 BUT LESS THAN 0.45 W/CM2

#### 13. INSULATION REQUIREMENTS (UFC 3-600-01, CHAPTER 8)

THERMAL AND ACOUSTICAL INSULATION WITH A FLAME SPREAD (FS) RATING NOT HIGHER THAN 75, AND A SMOKE DEVELOPED (SD) RATING NOT HIGHER THAN 150 SHALL BE USED WHEN TESTED IN ACCORDANCE WITH ASTM E84 UNLESS EXCEPTIONS OF SECTION 8-1 ARE MET.

## 14. FIRE AND SMOKE DAMPERS (NFPA 90A)

AIR-TRANSFER OPENINGS IN A FIRE-RATED ASSEMBLY SHALL BE PROVIDED WITH APPROVED FIRE DAMPERS.

AIR-TRANSFER OPENINGS IN SMOKE PARTITIONS SHALL BE PROVIDED WITH APPROVED SMOKE DAMPERS.

## 15. MEANS OF EGRESS

THE FLOOR PLAN LAYOUT AND CORRIDORS WILL BE DESIGNED TO MEET NFPA 101 REQUIREMENTS FOR FIRE AND LIFE SAFETY AND OCCUPANT EGRESS.

EXITS AND STAIRS SHALL MEET NFPA 101 SECTION 7.3.3. ALL DOORS AND CORRIDORS ARE TO BE SIZED AT 0.2 INCHES PER OCCUPANT, NOT LESS THAN 32 INCHES, USING THE EXIT. STAIRS WILL BE SIZED AT 0.3 INCHES PER OCCUPANT, NOT LESS THAN 44 INCHES, USING THE STAIR.

EGRESS LIMITATIONS - SPRINKLERED FACILITY NFPA 101, TABLE A.7.6				
OCCUPANCY DEAD END (FT) COMMON PATH (FT) TRAVEL DISTANCE (FT)				
NEW BUSINESS	50	100	300	
NEW ASSEMBLY	20	20/75	250	

## 16. OCCUPANT LOAD AND EGRESS CAPACITY CALCULATION

## OCCUPANT LOAD - FIRST FLOOR BUSINESS

USE	OCCUPANT LOAD FACTOR (SQ. FT/PERSON)	AREA (SQ. FT.)	OCCUPANT LOAD
BUSINESS	150	7,159	48
BREAK	15	361	25
MECHANICAL/ELECTRICAL	500	2,932	6
TELECOMM	300	146	1
STORAGE	500	2,029	5
TOTAL OCCUPANT LOAD		12,627	85
EXITS REQUIRED: 2		EXITS PROVIDED: 2	

## OCCUPANT LOAD - ASSEMBLY OCCUPANCY

USE	OCCUPANT LOAD FACTOR (SQ. FT/PERSON)	AREA (SQ. FT.)	OCCUPANT LOAD
BUSINESS	150	8,956	60
CONFERENCE	15	2,296	154
CLASSROOM	20	15,967	799
AUDITORIUM	FIXED SEATING	1,594	125
TELECOMM	300	2,235	8
STORAGE	500	1,799	4
TOTAL OCCUPANT LOAD		36,867	1,150
EXITS REQUIRED: 4		EXITS PROVIDED: 5	

EXIT CAPACITY - SECOND FLOOR (NFPA 101, 7.2.1.2.3)					
EXITS  MINIMUM CLEAR WIDTH ACTUAL CLEAR WIDTH (INCHES)  OCCUPANT CAPAC					
E-5	32	68	340		
E-8	32	46	230		
IRE-1	32	46	230		
IRE-2	32	46	230		
IRE-3	32	46	230		

EXIT CAPACITY - ASSEMBLY (NFPA 101, 7.2.1.2.3)					
EXITS	MINIMUM CLEAR WIDTH (INCHES)	ACTUAL CLEAR WIDTH (INCHES)	OCCUPANT CAPACITY		
	INDIVIDUAL ROOM EXIT				
IRE-4	32	46	230		
	EXIT NUM	MBER			
E-1	32	46	230		
E-2	32	68	340		
E-4	32	68	340		
E-6	32	44	220		
E-7	32	44	220		

### 17. DISCHARGE FROM EXITS (NFPA 101, 7.7)

BUILDING EXITS SHALL TERMINATE DIRECTLY AT A PUBLIC WAY IN ACCORDANCE WITH NFPA 101, SECTION 7.7. STAIRS STB-1 ARE PERMITTED TO DISCHARGE TO THE INTERIOR IN ACCORDANCE WITH NFPA 101 SECTION 7.7.2.

### 18. ILLUMINATION OF MEANS OF EGRESS (NFPA 101, 7.8)

MEANS OF EGRESS SHALL BE ILLUMINATED IN ACCORDANCE WITH NFPA 101 SECTION 7.8.

#### 19. EMERGENCY LIGHTING (NFPA 101, 7.9)

EMERGENCY LIGHTING SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 7.9.

# MEANS OF EGRESS SHALL HAVE SIGNS IN ACCORDANCE WITH SECTION 7.10.

20. MARKINGS OF MEANS OF EGRESS (NFPA 101, 7.10)

21, PORTABLE FIRE EXTINGUISHERS (NFPA 10) FIRE EXTINGUISHER AND CABINETS SHALL BE LOCATED IN ACCORDANCE WITH NFPA 10. IN FINISHED AREAS, THE FIRE EXTINGUISHER CABINETS SHALL BE FLUSH MOUNT CABINETS.

# 22. FIRE DEPARTMENT ACCESS (UFC 3-600-01)

FIRE DEPARTMENT ACCESS SHALL BE PROVIDED IN ACCORDANCE WITH UFC 3-600-01 SECTION 9-1. FIRE DEPARTMENT ACCESS ROADS SHALL BE NO LESS THAN 20 FEET UNOBSTRUCTED AND DESIGNED FOR THE WEIGHT OF APPARATUS.

#### THE ENTIRE BUILDING SHALL BE PROTECTED THROUGHOUT WITH A HYDRAULICALLY CALCULATED AUTOMATIC WET-PIPE SPRINKLER SYSTEM. DESIGN DENSITIES SHALL BE IN ACCORDANCE WITH UFC 3-600-01 AND NFPA 13.

23. AUTOMATIC SPRINKLERS AND OTHER EXTINGUISHING EQUIPMENT (UFC 3-600-01 AND NFPA 13)

24. FIRE ALARM AND MASS NOTIFICATION SYSTEMS (UFC 3-600-01, UFC 4-021-01, AND NFPA 72) FIRE ALARM AND MASS NOTIFICATION WILL BE PROVIDED IN ACCORDANCE WITH UFC 3-600-01, UFC 4-021-01 AND NFPA 72. THE SYSTEM SHALL CONSIST OF MANUAL PULL STATIONS, STROBES, SPEAKERS, SPRINKLER FLOW

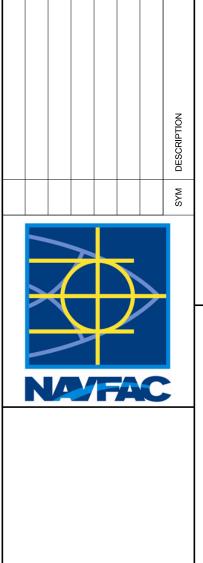
AND VALVE TAMPER SUPERVISION, AND SMOKE DETECTORS WITHIN THE HVAC SYSTEMS AS REQUIRED BY NFPA

# 25. ACCESSIBILITY REQUIREMENTS

THE BUILDING SHALL BE ACCESSIBLE AND CONFORM TO ABA ACCESSIBILITY STANDARD FOR DEPARTMENT OF DEFENSE FACILITIES AS ADOPTED BY THE DEPUTY SECRETARY OF DEFENSE IN LIEU OF IBC CHAPTER 11 PER UFC 1-200-01.

# 26. ANTI-TERRORISM AND FORCE PROTECTION REQUIREMENTS (AT/FP) (UFC 4-010-01 SECTION B-4.3)

AN EMERGENCY SHUTOFF SWITCH IN THE HVAC CONTROL SYSTEM CAPABLE OF IMMEDIATE SHUT DOWN OF THE AIR DISTRIBUTION SYSTEM THROUGHOUT THE BUILDING.





INTERNATIONAI FOR COMMANDER NAVFAC MARINE CORPS BASE CAMP LEJEUNE SATISFACTORY TO DATE

BRANCH MANAGER CHIEF ENG/ARCH FIRE PROTECTION MID-ATLANTIC
JACKSONVILL
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- SIMULATION/TRAINING C REPLACEMENT -E SAFETY - CODE ANALYSIS RING COMMAND FACILITIES E

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