

OCCUPANCY

DESIGN OCCUPANT LOADS FOR EGRESS SYSTEMS DESIGN

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 5- Mezzanine elevation 102.15'							
Mechanical (no roof)	Mechanical	A-3 Incidental	7,410	300	25		
Totals					25	2 exits required ^a	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs			25	0.30	8	2 stairs @ 48"	96
Doors			25	0.20	5	2 doors @ 32"	64

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 4- PAX Security Screening elevation 86.15'							
Mechanical	Mechanical	A-3 Incidental	7,574	300	25		
Fire-Screening Circulation	Assembly	A-3	11,624	100	117		
Screening Queue	Assembly	A-3	4,035	15	269		
Passenger Screening	Actual	n/a	6,018	n/a	56	Actual number of occupants is used. See Note b below.	
Private Screening/TSA Storage	Business	B	662	100	7		
Post-Screening Circulation	Assembly	A-3	6,675	100	67		
Electrical Closet	Elec./IT	A-3 Incidental	80	300	1		
LEO & Office	Business	B	184	100	2		
Storage	Storage	S-1	1,032	300	4		
Generator Room	Electrical	A-3 Incidental	732	300	3		
Totals					552	Minimum of 3 exits required ^c	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs			552	0.30	166	2 stairs @ 48"; 1 stair @ 92"	180
Doors			552	0.20	110	2 doors @ 32"; 1 paired doors @ 68"	132

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 3- Hold Rooms elevation 73.0'							
Hold Rooms	Assembly	A-3	8,310	15	554		
Hold Room Circulation	Assembly	A-3	3,730	100	38		
Concourse	Concourse	A-3	10,545	100	106		
Concessions Type 1	Restaurant	A-2	1,733	15	116		
Kitchen, commercial	Kitchen	A-2 Incidental	966	200	5		
Concessions Type 2	Merchandise	M	1,000	60	17	Conc. #2523: 500sf; Conc. #2524: 500sf	
Concession Seating	Assembly	A-3	3,095	15	207		
Concession Seating Circulation	Assembly	A-3	4,383	100	44		
Concessions Storage	Storage	S-1	410	300	2		
Electrical/Tel.Comm. Closets	Elec./IT	A-3 Incidental	510	300	2		
Totals					1091	Minimum of 4 exits required ^c	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs			1,091	0.30	327	1 stair @ 48"; 4 stairs @ 72"	338
Doors			1,091	0.20	218	1 door @ 32"; 4 doors @ 48"	224

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 2- Curbside Main Electrical Room elevation 62.0'							
Electrical Room	Electrical	A-3 Incidental	1,292	300	5		
Totals					5	Minimum of 2 exits required ^a	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs (Not required, Exit Doors only on grade)			5	0.70	4	n/a	n/a
Doors			5	0.40	2	2 doors @ 32"	64

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 2- Ticketing elevation 62.0'							
Ticketing Queue	Assembly	A-3	3,562	15	238		
Ticketing Circulation	Assembly	A-3	12,960	100	130		
Ticket Counters	Actual	n/a	1,581	n/a	44	Actual number of occupants is used. See Note d below.	
Airline Ticketing Offices (Spaces A & B)	Business	B	5,768	100	58		
Totals					470	Minimum of 2 exits required ^c	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs (Not required, Exit Doors only on grade)			470	0.30	n/a	n/a	n/a
Doors			470	0.20	94	4 doors @ 32"	128

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 2- Loading Dock Area elevation 62.0'							
Shipping/Receiving Office	Business	B	62	100	1		
Concessions Storage	Storage	S-1	1,780	300	6		
Totals					7	Not applicable. One paired door at each Storage Room.	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs (Not required, Exit Doors only on grade)			7	0.30	2	n/a	n/a
Doors (Not applicable, see note above)			7	0.20	2	n/a	n/a

Space	Occupancy Use	Occupancy Classification	Area	SF per occupant	No. of Occupants	Remarks	
Level 1- EDS/Bag Make-up elevation 57.5'							
Airline Ticketing Office (Space C)	Business	B	617	100	7		
EDS	Factory Industrial	F-1	16,441	300	20	Actual number of occupants is used. See Note f below.	
Bag Make-up	Factory Industrial	F-1	18,494	300	16	Actual number of occupants is used. See Note g below.	
Totals					43	Minimum of 2 exits required ^c	
Exit Element			No. of Occupants	Width per occupant	Inches required	Provision (Clear Dimensions)	Inches provided
Stairs			43	0.30	13	n/a	n/a
Doors			43	0.20	9	2 doors @ 32"	64

- GENERAL NOTES:**
- NFPA 101 and IBC 2003 CODE REQUIREMENTS ARE COMPARED. THE MORE RESTRICTIVE REQUIREMENTS APPLY.
 - NEW CONSTRUCTION IS PROTECTED THROUGHOUT BY AN APPROVED, SUPERVISED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 101, SECTION 9.7
 - THE OCCUPANCY USES AND CLASSIFICATIONS ARE DETERMINED BASED ON IBC 2003, SECTION 302.
 - THE OCCUPANT LOADS ARE DETERMINED BASED ON TABLE 1004.1.2.: MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT.
 - EXIT ACCESS TRAVEL DISTANCES ARE DETERMINED PER IBC 2003 TABLE 1015.1
 - EGRESS WIDTHS FOR STAIRS AND DOORS ARE DETERMINED BASED ON THE MORE STRINGENT CODE REQUIREMENT. IN THIS CASE, NFPA 101, TABLE 7.3.3.1. CAPACITY FACTORS: STAIRS: 0.3 in. WIDTH/PERSON; DOORS: 0.2 in. WIDTH/PERSON.

- NOTES:**
- NUMBER OF EXITS DETERMINED BY NFPA 101 SECTION 7.12.1
 - PASSENGER SCREENING AREA: TSA PUT-THROUGH RATE AT THE SECURITY CHECKPOINT AREA IS 150 PERSONS/HOUR, AVERAGED TO 2.5 PERSONS/MINUTE. AN ASSUMED NORMAL OCCUPANT LOAD IS AS FOLLOWS: TYPICALLY 4 TSA OFFICERS AND 3 PASSENGERS. A TOTAL OF 7 OCCUPANTS WILL BE PRESENT AT ANY ONE POINT ALONG A SECURITY CHECKPOINT LANE. MULTIPLY BY 8 LANES = 56 OCCUPANTS
 - NUMBER OF EXITS DETERMINED BY IBC 2003 TABLE 1018.1: MINIMUM NUMBER OF EXITS FOR OCCUPANT
 - 1 AGENT BEHIND EACH TICKETING COUNTER. 44 COUNTERS IN TOTAL.
 - ONLY 50% OF THE 68" PAIRED DOOR ARE REQUIRED FOR EGRESS. BASED ON IBC 2003 SECTION 1005.1, THE LOSS OF THIS MEANS OF EGRESS SHALL NOT REDUCE THE OVERALL CAPACITY TO LESS THAN 50 PERCENT.
 - ACTUAL NUMBER OF OCCUPANTS: MAXIMUM OF 20 OCCUPANTS WILL BE PRESENT IN THE OSR, ETD, BHS CONTROL AND SERVER ROOMS. THE MAJORITY OF THE TIME, THE EDS AREA WILL NOT BE OCCUPIED OTHER THAN THE OCCASIONAL MAINTENANCE STAFF.
 - ACTUAL NUMBER OF OCCUPANTS: MAXIMUM OF 16 OCCUPANTS WILL BE PRESENT AT ANY ONE POINT AROUND THE BAGGAGE CAROUSELS. MAXIMUM OF 2 BAGGAGE TUGS WITH 2 RAMP CREW PERSONNEL AT EACH CAROUSEL.

APPLICABLE CODES/GUIDELINES

ARCHITECTURAL

INTERNATIONAL BUILDING CODE (IBC), 2003 EDITION
 AMERICANS WITH DISABILITIES ACT (ADA) AND ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES, 1994 EDITION
 ANS1 A117.1
 MAINE ACCESSIBILITY CODE
 NFPA 101 LIFE SAFETY CODE, 2006 EDITION
 FAA ADVISORY CIRCULAR 150/5360.13: PLANNING AND DESIGN GUIDELINES FOR AIRPORT TERMINAL FACILITIES
 NFPA 415 - CONSTRUCTION AND PROTECTION OF AIRPORT TERMINAL BUILDINGS

CIVIL-STORM DRAINAGE

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION (MDEP) STORMWATER LAW
 MDEP EROSION AND SEDIMENT CONTROL BMPs
 MDEP STORMWATER MANAGEMENT BMPs
 CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS
 MAINE DEPARTMENT OF TRANSPORTATION (MAINEDOT) STANDARD SPECIFICATIONS

CIVIL-SANITARY SEWER

CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS

CIVIL-WATER

AMERICAN WATER WORKS ASSOCIATION (AWWA)
 PORTLAND WATER DISTRICT STANDARDS AND SPECIFICATIONS
 AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
 CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS
 MAINE STATE FIRE MARSHAL'S OFFICE
 NATIONAL FIRE PROTECTION ASSOCIATION

CIVIL-NATURAL GAS

NATIONAL FIRE PROTECTION ASSOCIATION
 AMERICAN GAS ASSOCIATION
 CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS
 NORTHERN UTILITIES STANDARDS AND SPECIFICATIONS

CIVIL-ROADWAY DESIGN

AASHTO: A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS
 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
 CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS
 MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS

STRUCTURAL

INTERNATIONAL BUILDING CODE (IBC), 2003 EDITION
 NFPA 415 - CONSTRUCTION AND PROTECTION OF AIRPORT TERMINAL BUILDINGS
 AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-02)
 AMERICAN INSTITUTE FOR STEEL CONSTRUCTION, 9TH EDITION
 STEEL JOIST INSTITUTE STANDARD SPECIFICATION FOR JOISTS AND JOIST GIRDER W/ 1994 REVISION
 STEEL DECK INSTITUTE

MECHANICAL

INTERNATIONAL BUILDING CODE (IBC), 2003 EDITION
 NFPA 415 - CONSTRUCTION AND PROTECTION OF AIRPORT TERMINAL BUILDINGS
 BOCA MECHANICAL CODE 1993 ED.
 INTERNATIONAL ENERGY CONSERVATION CODE 2003 ED.
 ASHRAE 90.1 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BLDGS 2001 ED.
 ASHRAE STANDARD 55 THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY 2004 ED.
 ASHRAE STANDARD 62.1 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY 2004 ED.
 ASHRAE 90.1 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS 2001 ED.
 MAINE UNIFORM BUILDING AND ENERGY CODE (SIGNED INTO LAW APRIL 24, 2008)

PLUMBING / FIRE PROTECTION

INTERNATIONAL BUILDING CODE (IBC), 2003 EDITION
 NFPA 415 - CONSTRUCTION AND PROTECTION OF AIRPORT TERMINAL BUILDINGS
 MAINE STATE INTERNAL PLUMBING CODE 2005 ED.
 BOCA MECHANICAL CODE 1993 ED.
 NFPA 54 NATIONAL FUEL GAS CODE
 ASHRAE 90.1 ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BLDGS 2001 ED.
 NFPA 13: STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS

ELECTRICAL

AMERICANS WITH DISABILITIES ACT / MAINE ACCESSIBILITY CODE
 NFPA 415 - CONSTRUCTION AND PROTECTION OF AIRPORT TERMINAL BUILDINGS
 FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULARS FOR AIRPORTS
 ILLUMINATION ENGINEERING SOCIETY OF NORTH AMERICA LIGHTING HANDBOOK
 INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 NATIONAL ELECTRIC CONTRACTORS ASSOCIATION (NECA)
 NATIONAL ELECTRICAL MANUFACTURERS ASSOC. (NEMA)
 NATIONAL FIRE PROTECTION ASSOC. (NFPA)
 NATIONAL ELECTRIC CODE (NEC) 2008
 NATIONAL ELECTRICAL SAFETY CODE
 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
 UNDERWRITERS LABORATORIES, INC. (UL) STANDARD
 AMERICAN NATIONAL STANDARDS INSTITUTE

PLUMBING FIXTURE COUNTS

Plumbing Fixture Counts per Maine State Internal Plumbing Code Table 4-1: New terminal addition only (excludes exist. terminal occupants)

Occupancy	Total occupants	Male occupants	Female occupants	Water Closets			Urinals		Lavatories			Drinking fountains		
				Required	Male Fixtures	Female Fixtures	Required	Fixtures	Required	Male Fixtures	Female Fixtures	Required	Fixtures	
Assembly Public Use (Passenger Terminal) ^{a,c}	1,537	769	769	Note 1	4	Note 2	14	Note 3	5	Note 7	4	4	Note 9	5
Factory Industrial (Baggage Rooms) ^{c,d}	See Notes c & d			-	-	-	-	-	-	-	-	-	Note 10	1
Office (Public Building) ^{b,d,e}	74	37	37	Note 4	1	Note 5	3	Note 6	1	Note 8	1	1		1
Total Required				5		17		6		5		5		7
Actual provided in terminal addition as designed (including rough-ins, see Note e)				7		17		6		9		11		8

NOTES: Plumbing Fixture Counts and Requirements under Table 4.1, Maine State Internal Plumbing Code

- 1 for 400 - 1 for each additional 500
- 11 for 400 - 1 for each additional 125
- 4 for 600 - 1 for each additional 300
- 1 for 1-100
- 3 for 1-50
- 1 for 1-100
- 3 for 750 - 1 for each additional 500
- 1 for 1-200
- 3 for 750 - 1 for each additional 500
- 1 per 150

TOTAL NUMBER OF OCCUPANTS:

- Passenger Terminal**
Sum of the following areas as listed in the Egress Width calculations in Drawing A00.10:
Level 4: Screening Queue, Passenger Screening, Private Screening/TSA, LEO & Office
Level 3: Hold Rooms, Concessions Type 1, Concessions Type 2, Concessions Seating
Level 2: Ticketing Queue, Ticket Counter
Level 1: Airline Ticketing Office, EDS
- Office (Public Building)**
Sum of the following areas as listed in the Egress Width calculations in Drawing A00.10:
Level 2: Airline Ticketing Offices
Level 1: Bag Make-Up

BUILDING CODE ANALYSIS

THE FOLLOWING ANALYSIS IS BASED ON INTERNATIONAL BUILDING CODE (IBC), 2003 EDITION

SEPARATION BETWEEN NEW CONSTRUCTION AND EXISTING TERMINAL
 NEW TERMINAL CONSTRUCTION AND EXISTING TERMINAL WILL BE SEPARATED BY A 3 HOUR RATED FIRE WALL PER IBC TABLE 705.4 AND WILL BE CONSIDERED SEPARATE BUILDINGS ACCORDING TO IBC.
 FIRE SEPARATION ON ASSEMBLY AT LEVEL 1 ROOM 1500 UNDER REVIEW BY CITY OF PORTLAND.

RENOVATED TERMINAL AREAS

3403.1 ADDITIONS OR ALTERATIONS TO ANY BUILDING OR STRUCTURE SHALL CONFORM TO THE REQUIREMENTS OF THE CODE FOR NEW CONSTRUCTION.

NON-RENOVATED TERMINAL AREAS

3403.1 PORTIONS OF THE STRUCTURE NOT ALTERED AND NOT EFFECTED BY THE ALTERATION ARE NOT REQUIRED TO COMPLY WITH THE CODE REQUIREMENTS FOR A NEW STRUCTURE.

ACCESSIBILITY FOR EXISTING BUILDINGS:

3409.4 ADDITIONS: PROVISIONS FOR NEW CONSTRUCTION SHALL APPLY TO ADDITIONS
 3403.5 ALTERATIONS: SHALL COMPLY WITH APPLICABLE PROVISIONS IN CHAPTER 11 AND ICC A117.1 UNLESS TECHNICALLY INFEASIBLE.

BUILDING USE AND CLASSIFICATION (NEW CONSTRUCTION)

302.3.1 NON-SEPARATED USE
 303.1 ASSEMBLY (A-3) MOST RESTRICTIVE FOR MAXIMUM ALLOWABLE HEIGHT AND AREA.

OCCUPANCY SEPARATION (NEW CONSTRUCTION)

TABLE 302.1.1 INCIDENTAL USES:
 NO SEPARATIONS REQUIRED DUE TO AUTOMATIC SPRINKLER SYSTEM, EXCEPT AS REQUIRED BY OTHER PROVISIONS

CONSTRUCTION CLASSIFICATION (NEW CONSTRUCTION)

602.2 TYPE II (NONCOMBUSTIBLE PROTECTED)

MAXIMUM ALLOWABLE STORIES (NEW CONSTRUCTION)

TABLE 503: 180 FEET / 12 STORIES

MAXIMUM ALLOWABLE AREA (NEW CONSTRUCTION)

TABLE 503: UNLIMITED

FIRE RESISTIVE RATINGS (NEW CONSTRUCTION)

EXTERIOR BEARING WALLS: 2 HRS

EXTERIOR NON-BEARING WALLS: 0 HRS

EXTERIOR DOORS AND WINDOWS:
 DOORS:
 DOORS AT 3 HR RATED WALLS: 3 HRS
 DOORS AT 2 HR RATED WALLS: 1-1/2 HR
 DOORS AT 1 HR RATED WALLS: 3/4 HR

WINDOWS:
 WINDOWS AT > 1 HR RATED WALLS: 1 1/2 HR
 WINDOWS AT 1 HR RATED WALLS: 3/4 HR

INTERIOR BEARING WALLS:
 SUPPORTING A FLOOR: 2 HRS
 SUPPORTING A ROOF ONLY: 1 HR

INTERIOR NON-BEARING WALLS: 0 HRS***

SHAFT ENCLOSURES: 1 HR**

FLOOR CONSTRUCTION: 2 HRS

ROOF CONSTRUCTION ASSEMBLY: 1 HR*

STRUCTURAL FRAME:
 COLUMNS, GIRDERS, TRUSSES,
 BEAMS, SPANDRELS / MEMBERS
 CONNECTED TO COLUMNS &
 BRACING FOR GRAVITY LOADS: 2 HRS

SUPPORTING A ROOF ONLY -
 COLUMNS, GIRDERS, TRUSSES,
 BEAMS, SPANDRELS / MEMBERS
 CONNECTED TO COLUMNS &
 BRACING FOR GRAVITY LOADS: 1 HR

OCCUPANCY SEPARATION WALLS: 0 HRS

EXIT STAIR ENCLOSURES: 1 HR**

CORRIDORS: 0 HRS

* FIRE RETARDANT TREATED WOOD ALLOWED AS PART OF ROOF CONSTRUCTION WHEN THE VERTICAL DISTANCE FROM THE UPPER FLOOR TO THE ROOF IS 20 FEET OR MORE.

**CONNECTING LESS THAN 4 STORIES

***BUT NOT LESS THAN FIRE RESISTANCE RATING REQUIRED BY OTHER AREAS OF THE CODE.

EGRESS REQUIREMENTS (NEW CONSTRUCTION)

MAXIMUM EXIT ACCESS TRAVEL DISTANCE FOR OCCUPANCY CLASSIFICATIONS A, F, M AND S-1: 250 FEET WITH SPRINKLER SYSTEM; FOR OCCUPANCY CLASSIFICATION B: 300 FEET
 MAXIMUM COMMON PATH OF EGRESS TRAVEL FOR OCCUPANCY CLASSIFICATIONS A AND M: 75 FEET; FOR OCCUPANCY CLASSIFICATION B: 400 FEET
 MAXIMUM DEAD END CORRIDOR LENGTH: 20 FEET
 MINIMUM CORRIDOR WIDTH: 44 INCHES (OR) 0.1