Site Location

Memorial Dr

W Oglethorpe Hwy

Site Location
Construction Type

- Primary Frame: Steel Wide Flange (Columns, Girders, Beams, Joist)
- Load Beating Walls: None
- Exterior Finish: Brick Veneer
- Interior Walls: 5/8” Gypsum Wall Board
- Roof: Composite Metal Decking w/ Lightweight Concrete
Occupancy Class

- Occupancy Class: B - Business
  - No Operating Rooms
  - No Procedures Requiring Anesthesia
  - All occupants able to exit the facility unassisted

Used for Primary Care, Radiology, and Pathology
B Occupancy, 33,260 sqft. Single Story - Type II B

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TYPE OF CONSTRUCTION</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
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IBC 2012

IBC 506.3 Automatic Sprinkler System Increase

300% Increase for Single Story Building
Type II-B 23,000 Sqft -> 92,000 Sqft

IBC 504.2 Automatic Sprinkler System Increase

Increased Building Height by One Story
Maximum 4 Stories

- Construction: Type II B, Unprotected Sprinklered
## Fire Resistance Rating Requirements

<table>
<thead>
<tr>
<th>BUILDING ELEMENT</th>
<th>TYPE I</th>
<th>TYPE II</th>
<th>TYPE III</th>
<th>TYPE IV</th>
<th>TYPE V</th>
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<tr>
<td>Floor construction and associated secondary members</td>
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<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
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<tr>
<td>(see Section 202)</td>
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<tr>
<td>Roof construction and associated secondary members</td>
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## Fire Resistance Rating Requirements

<table>
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<tr>
<th>FIRE SEPARATION DISTANCE = X (feet)</th>
<th>TYPE OF CONSTRUCTION</th>
<th>OCCUPANCY GROUP H</th>
<th>OCCUPANCY GROUP F-1, M, S-1</th>
<th>OCCUPANCY GROUP A, B, E, F-2, I, R, S-2, U</th>
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<td>Others</td>
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<tr>
<td>10 ≤ X &lt; 30</td>
<td>IA, IB</td>
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<td>1^d</td>
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<td>0</td>
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<tr>
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<td>Others</td>
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<td>1^d</td>
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<td>X ≥ 30</td>
<td>All</td>
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</tbody>
</table>

For SI: 1 foot = 304.8 mm.
Overview

• 33,260 sq ft
  ▫ 333 Person Occupancy

• Exit Capacity
  ▫ 7 exits - 2004 person exit capacity

• Dead End Corridor
  ▫ Longest 34 feet

• Single Story
  ▫ 9 ft standard ceiling
  ▫ 26 ft atrium entryway
Fire and Life Safety Features

- Fully Sprinklered
- Automatic and Manual Fire Alarm System
- Educated Staff in Fire Evacuation
Sprinkler System - Wet System
Hydraulics

- Flow Test:
  - Static: 48 psi
  - Residual: 38 psi
  - Flow: 1095 gpm
Light Hazard

- This Building is Considered a Light Hazard Occupancy barring a few incidental areas.
- Incidentals
  - Electrical Rooms
  - Mechanical Rooms
  - Janitorial
  - Utility
  - Storage Rooms
Sprinkler Design Area - Area Reduction

- Reduction taken based off of ceiling heights
- Entry Way 26ft Ceiling
  - 1500 sqft
- All other Areas 9ft Ceiling Height
  - 900 sqft
Check-In

- Gridded System
- 100 GPM Hose Stream
- System Demand
  - 226.7 GPM
  - 22.4 PSI
- Safety Factor
  - 19.2 PSI
X-Ray

- Tree System
- 100 GPM Hose Stream
- System Demand
  - 211.7 GPM
  - 25.6 PSI
- Safety Factor
  - 16.1 PSI
Atrium

- Tree System
- 100 GPM Hose Stream
- System Demand
  - 279.2 GPM
  - 29.8 PSI
- Safety Factor
  - 11.2 PSI
Notification System

- Manual Pull Stations
- Water Flow Detection
- Audible and Visible Cues
Performance-Based Design

• 1 – Type of fire most likely to occur: Waiting Area

• 2 – Maximum effects of smoke and toxic products in primary means of egress
Required Evacuation Time

• **Waiting Room:**
  ▫ Notification – 15s
  ▫ Reaction – 10s
  ▫ Pre-movement – 20s
  ▫ Travel – 54s
  ▫ **Required Time – 99s**

• **Recyclable Medical Waste**
  ▫ Notification – 30s
  ▫ Reaction – 5s
  ▫ Pre-movement – 10s
  ▫ Travel – 20s
  ▫ **Required Time – 65s**
Scenario 1 - Waiting Room

- Fire
- Egress Path
Scenario 1 - Waiting Room

- Fuel – upholstered chair
  - SFPE Hbk – 2000kW
- Medium Growth Rate
- Autonomous Detection by Sprinkler
  - 226 seconds
- Tenability Reached – 240s
  - Visibility Breached
Upholstered Chair HRR

Figure 11. Effect of specimen padding and fabric on rate of heat release
Scenario 1 - FDS/Smokeview Results

- CO and Radiant Heat not a factor
- 13m Visibility Limit
- Available Safe Exit Time
  - **240s**
- RSET
  - **85s**
  - **99s**
  - Alt. Route
Scenario 2 - Recyclable Medical Waste
Scenario 2 – Recyclable Medical Waste

- Fuel – Plastic Bags
  - Total HRR – 350kW
- Fast Growth Rate
- Autonomous Detection by Sprinkler
  - 40 seconds
- Tenability Reached – 126s
  - Visibility Breached
Burning Bags HRR
Scenario 2 - FDS/Smokeview Results

- CO and Radiant Heat not a factor
- 13m Visibility Limit
- Available Safe Exit Time
  - 126s
- RSET
  - 64s
  - 67s
Summary

• Fire and Life Safety Systems Compliant with Prescriptive Requirements

• Systems Pass Performance-Based design challenges

• Staff Training is Important

• Inspection and Maintenance are Important

• Review for Changes in Use