

One-rdg. _____
P. Hrngs. _____
Pgs. _____
Filed: 03-05-19

Sponsored by: Prater

First Reading: _____
AMENDED
COUNCIL BILL 2019 - 045

Second Reading: _____
GENERAL ORDINANCE _____

AN ORDINANCE

1 AMENDING the Springfield City Code, Chapter 54, 'Fire Prevention and Protection,'
2 Article II, 'Fire Prevention Code,' Section 54-32, to make certain deletions,
3 amendments and additions to Sections 108, 901, 1008, 1010, 1013, 1031,
4 and Appendix T of the International Fire Code; including a savings clause
5 and a severability clause; and establishing an effective date.
6
7

8 WHEREAS, the current City Fire Prevention and Protection Code is based upon
9 the 2018 edition of the *International Fire Code* ("IFC"), published by the International
10 Code Congress ("ICC"), with certain local amendments as adopted in Section 54-32 of
11 the City Code; and
12

13 WHEREAS, the Fire Department regularly identifies opportunities for improved
14 safety and has identified seven areas to be addressed in the adopted IFC.
15

16 NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF
17 SPRINGFIELD, MISSOURI, as follows, that:
18

19 (NOTE: Revisions to Section 54-32 of the City Code, containing local
20 amendments to the International Fire Code, 2018 Edition, are set forth in "Exhibit A."
21 Underlined language is to be added. Language to be removed is ~~stricken~~.)
22

23 Section 1 – City Council hereby amends the Springfield City Code, Chapter 54,
24 'Fire Prevention and Protection,' Article II, 'Fire Prevention Code,' Section 54-32,
25 concerning amendments to the IFC, by amending Section 903, 'Certifications;' and
26 Appendix T, 'Tents and other membrane structures;' which Sections, Subsections and
27 Appendices shall read as set forth in "Exhibit A," which is attached hereto and
28 incorporated herein as if copied verbatim.
29

30 Section 2 – City Council hereby amends the Springfield City Code, Chapter 54,
31 'Fire Prevention and Protection,' Article II, 'Fire Prevention Code,' Section 54-32,
32 concerning additions to the IFC, by adding Section 108, 'Maintenance;' Section 901,
33 'Certifications;' Section 1008, 'Means of Egress Illumination;' Section 1010, 'Doors,
34 Gates and Turnstiles;' 1013, 'Exit Signs;' and Section 1031, 'Maintenance of the means

35 of egress;' which Sections and Subsections shall read as set forth in "Exhibit A," which
36 is attached hereto and incorporated herein as if copied verbatim.

37
38 Section 3 – Savings Clause. Nothing in this Ordinance shall be construed to
39 affect any suit or proceeding now pending in any court or any rights acquired, or liability
40 incurred nor any cause or causes of action occurred or existing, under any act or
41 ordinance repealed hereby. Nor shall any right or remedy of any character be lost,
42 impaired, or affected by this Ordinance.

43
44 Section 4 – Severability Clause. If any section, subsection, sentence, clause or
45 phrase of this Ordinance is for any reason held to be invalid, such decision shall not
46 affect the validity of the remaining portions of this Ordinance. City Council hereby
47 declares that it would have adopted the Ordinance and each section, subsection,
48 sentence, clause or phrase thereof, irrespective of the fact that any one or more
49 sections, subsections, sentences, clauses, or phrases be declared invalid.

50
51 Section 5 – This Ordinance shall be in full force and effect from and after
52 passage.

53
54 Passed at meeting: _____

55
56
57
58 _____
59 Mayor

60 Attest: _____, City Clerk

61
62 Filed as Ordinance: _____

63
64 Approved as to form: , Assistant City Attorney

65
66
67 Approved for Council action: , City Manager
68

SUPPLEMENTAL EXPLANATION TO AMENDED COUNCIL BILL 2019-045

FILED 03-05-19

ORIGINATING DEPARTMENT: Law

At its February 25, 2019, meeting, Council voted to amend Council Bill 2019-045 to delete all references to Section 320 'Landscaping Materials' to allow more time to consider changes to that section of the Fire Code.

EXPLANATION TO COUNCIL BILL 2019-045

FILED 02-19-19

ORIGINATING DEPARTMENT: Fire

PURPOSE: Amending the Springfield City Code, Chapter 54, 'Fire Prevention and Protection,' Article II, 'Fire Prevention Code,' Section 54-32, to make certain deletions, amendments and additions to Sections 108, 901, 320, 1008, 1010, 1013, 1031, and Appendix T of the International Fire Code; including a savings clause and a severability clause; and establishing an effective date.

BACKGROUND INFORMATION: The Fire Department regularly identifies opportunities for improved safety in the community and has identified seven areas to be addressed in the adopted International Fire Code ("IFC"), which include: the efficient notification and recording of fire protection system testing and maintenance; prevention of structure fires resulting from ignition of landscaping materials; providing clarifying and improved code language specific to the maintenance of occupancy safety systems; exiting, and storage of items under exit pathways; and clarifying language relating to the installation of commercial tents.

The Fire Department seeks to amend the following sections of the IFC, a detailed copy of which are attached as "Exhibit A.:"

- Section 108, allowing for the specification that all records associated with the inspection, testing and maintenance of existing fire protection systems shall be provided to the Fire Department through a third-party inspection reporting system that is selected and approved by the Fire Code Official;
- Section 901, allowing for the expansion of the existing fire sprinkler tag system, to include fire alarms, fire suppression pumps, standpipes, and private hydrants, and establishing an efficient and standardized process for identification of system status during routine inspections, and inclusion of associated maintenance and testing records within the third-party inspection reporting system;
- Chapter 3, and the addition of Section 320, specific to the placement of combustible landscaping materials in close proximity to a building or structure, as a result of multiple fires originating in landscaping materials which spread to a nearby building, resulting in property loss exceeding \$695,000 in the last 10 years;
- Sections 1008, 1010, 1013 and 1031, providing clarifying language for the regulation for maintenance and testing of exit lights and exit signs, use of exit security bars, and storage of outdoor cooking devices beneath combustible stairwells in multifamily occupancies; and

- Appendix T, correcting numbering and clarifying language for the installation of commercial tents in the City.

REMARKS: The Fire Department has presented and received feedback for the proposed changes through DIIG, and in coordination with Building Development Services. Fire protection system inspection, testing and maintenance companies have been notified of the proposed changes to the IFC, and afforded opportunity to provide feedback. Training on the use of the third-party records system shall be provided. The Fire Department is unaware of any outstanding concerns associated with the proposed amendments to the IFC.

Submitted by:

Approved by:



David Pennington, Fire Chief



Jason Gage, City Manager

Exhibit A

Section 108 Maintenance

108.3.1 Inspection, testing and maintenance recordkeeping. When required inspection, testing or maintenance occurs on any existing fire protection systems, applicable documentation shall be submitted to the fire code official through an approved third-party inspection reporting system. Reporting parties shall pay any fees associated with that service to the City's third-party provider.

Section 901 General

901.6.1.1 Certifications. Persons performing required fire protection system(s) testing and maintenance on the following fire protection system(s) shall possess a valid certification from The National Institute for Certification in Engineering Technologies. Level II (NICET II) certification will be considered the typical industry standard.

- Sprinkler systems;
- Standpipe systems;
- Fire pump(s);
- Fire alarm systems; and
- Private fire hydrant(s)

901.6.3.2 Inspection, testing and maintenance records. Records of all system inspections, testing and maintenance required by the referenced standards shall be maintained on the premises for a minimum of 3 years and shall be copied to the Springfield Fire Department via the designated third-party records management company as stipulated by the Springfield Fire Department, see section 108.3.1. Records shall include the name of the certified maintenance/testing individual, type of testing or maintenance completed and results of the maintenance or testing. A GREEN, YELLOW, RED tag system will be utilized for all fire protection system(s). All tags utilized in the City of Springfield will be provided by the Springfield Fire Department.

901.6.3.2.1 Green and yellow tag required. Upon completion of the inspection, if the system is found to be fully functional and meets the requirements of the standard(s) in effect at the time of installation, the inspector shall affix a GREEN tag to the system which includes the inspector and inspection company's name and the date of the inspection. If the system is found to be deficient by the standard(s) in effect at the time of installation, or the system needs repair, but the system is still functional then the inspector shall affix a YELLOW tag to the system which includes the inspector and the inspection company's name and a list of the needed repairs. Tags shall be placed in a conspicuous location on the system.

901.6.3.2.2 Notifications. If upon completion of the inspection, a fire protection system is found to be deficient and in need of repairs by the standard(s) in effect at the time of installation but is still functional, the inspector shall indicate all needed repairs or deficiencies to the system on the report sent to the Springfield Fire Department via the designated third-party records management company as stipulated by the Springfield

Fire Department, see section 108.3.1. The report shall be submitted within 7 days of completion of the inspection.

901.6.3.2.3 Red tag required. A RED tag shall be used to indicate a system, or portion thereof, has been removed from service, and/or is not functional and/or does not meet the necessary requirements to validate a functional system. The RED tag shall be placed on a conspicuous place on the system and the Springfield Fire Department shall be notified IMMEDIATELY by phone at 874-2300 during business hours and 911 after business hours. The RED tag notification will also be reported via the designated third-party records management company during the standard report submission.

~~**903.5.1 Certifications.** Persons performing required fire sprinkler testing and maintenance shall have a certification from an approved agency, one that is recognized by national industry standards. The National Institute for Certification in Engineering Technologies (NICET) certification will be considered the industry standard; however, other certifying organizations may be considered on a case-by-case basis by the Fire Chief or his/her designee~~

~~**903.5.2 Records.** Records of all system inspections, testing and maintenance required by the referenced standards shall be maintained on the premises for a minimum of 3 years and shall be copied to the Springfield Fire Department.~~

~~**903.5.2.1 Records information.** Records shall include the name of the installation contractor, type of testing or maintenance completed and results of the testing or maintenance.~~

~~**903.5.3 Tag required.** Upon completion of the inspection if the system is found to be fully functional and meets the requirements of the standard(s) in effect at the time of installation, the inspector shall affix a GREEN tag to the system at the main valve location which includes the inspector and inspection company's name and the date of the inspection. If the system is found to be deficient by the standard(s) in effect at the time of installation, or the system is in need of repair but the system is still functional then the inspector shall affix a YELLOW tag to the system at the main valve location which includes the inspector and the inspection company's name and a list of the needed repairs.~~

~~**903.5.3.1 Notifications.** If upon completion of the inspection a fire protection system is found to be deficient and in need of repairs by the standard(s) in effect at the time of installation but is still functional, the inspector shall prepare a separate report identifying the needed repairs or deficiencies and send it to the Springfield Fire Department in writing within 7 days of completion of the inspection.~~

~~**903.5.4 Red Tag Required.** A RED tag shall be used to indicate that a system, or portion thereof, has been removed from service. The red tag shall be placed on the main valve and a red tag describing the portion of the system which is out of service shall be placed on the fire department connection.~~

Section 1008 Means of Egress Illumination

1008.3.6 Testing and maintenance. Where the means of egress is required to be illuminated as stated in section 1008.2, periodic testing and maintenance of the egress lights shall be performed. Testing shall be conducted on monthly and annual intervals. Monthly testing shall include visual verification that the egress light operates upon actuation of the test button, if provided, to momentarily disconnect the egress light from the primary power source. Annual testing shall include disconnecting the egress lights from the primary power source to ensure egress illumination for a duration of not less than 90 minutes. All deficiencies shall be repaired. Records shall be kept of the testing and maintenance performed including dates and names of personnel performing the tests. Records shall be made available for review upon request of the fire code official.

Exception: If the egress light illumination emergency power source is supplied by a generator or other such means, monthly and annual testing may be completed by visual verification of illumination under normal conditions.

Section 1010 Doors, Gates and Turnstiles

1010.1.4.6 Security Bars. Security bars, commonly referred to as burglar bars, are locking devices designed to prevent the operation of a door typically by means of a bar installed across the doorframe and held by cradles attached to the door(s). Security bar locking devices may be allowed on certain exit doors upon approval by the fire code official. Approval may be granted where all the following conditions are met:

1. The exit is not the primary means of egress for the general public.
2. The exit is limited to an area typically occupied only by staff/employees familiar with the building and locking arrangement (store room, stock room, office, etc.)
3. There may be no locking device on the security bar.
4. The security bar shall be removeable without the use of a key or special knowledge or effort.
5. The security bar must be removed during any period of occupancy by the general public (if the exit serves the public area).
6. A readily visible durable sign is posted on the egress side on, or adjacent to, the door stating: "Security bar must be removed when the building is occupied" (if the exit serves the public area).
7. Not more than one-half of the required exits shall be equipped with a security bar.

8. The use of a security bar shall not be allowed if, in the opinion of the fire code official, it compromises the safety of the public.

9. The use of a security bar is revocable by the fire code official for due cause.

Section 1013 Exit Signs

1013.6.4 Testing and maintenance. Where exit signs are required to be illuminated as stated in section 1013.3, periodic testing and maintenance shall be performed. Testing shall be conducted on monthly and annual intervals. Monthly testing shall include visual verification that the exit sign is illuminated under normal operation and with actuation of the test button, if provided, to momentarily disconnect the exit sign from the primary power source. Annual testing shall include disconnecting the exit signs from the primary power source to ensure exit sign illumination for a duration of not less than 90 minutes. All deficiencies shall be repaired. Records shall be kept of the testing and maintenance performed including dates and names of personnel performing the tests. Records shall be made available for review upon request of the fire code official.

Exception: If the exit sign illumination emergency power source is supplied by a generator or other such means, monthly and annual testing may be completed by visual verification of illumination under normal conditions.

Section 1031 Maintenance of the means of egress.

1031.2.3 Grill or other cooking device storage. For other than one-and two-family dwellings, no grill, hibachi or other similar devices used for cooking shall be stored under a combustibile stairway that is part of a means of egress.

APPENDIX T
TENTS AND OTHER MEMBRANE STRUCTURES

User Note:

About this appendix: *Appendix T provides details for the proper and approved method of installing commercially rented tents. The requirement in Chapter 31 requiring tents to be “adequately roped, braced and anchored to withstand the elements of weather” proved too vague for objective review of submitted plans and site inspection approval. This appendix clarifies the specific requirements for the installer and the installation. It includes amendments/addendums adopted in 2015 Council Bill 2015-294 on November, 23 2015.*

SECTION T101
GENERAL

T101.1 Scope. This appendix sets forth the requirements for the installation of commercial tents within the City of Springfield, Missouri.

SECTION T102
PERMITS

T1024.1 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7 and will be obtained from the Fire Department by the owner of the tent or his designee, except where two or more tents will be used as part of an event with a valid City of Springfield Special Event Permit, then the event organizer may apply for the permit.

T1024.2 Permit application must have a site plan noting the location of the tent and an approved staking/ballasting plan.

T1024.2.1 The tent user will be required to submit a layout plan for the setup within the tent. This must be provided to the *Fire Code Official* no later than at the time of the inspection. The permit holder is required to notify the tent user of this requirement.

SECTION T103
VENDOR REQUIREMENTS

T1032.1 Tent Vendor License.

T1032.1.1 All vendors renting commercial tents for use in the City of Springfield must obtain a one-time no-cost tent vendor license through the Fire Department.

T1032.1.2 To obtain the license, the owner or his designated employee must:

1. Successfully pass a no-cost training course provided by the Fire Department, which will cover the relevant sections of the City's Fire Codes well as the permitting and installation requirements; and

2. Hold a valid business license for the City of Springfield.

SECTION T104 MASTER TENT INSTALLER

T1043.1 Every individual who installs commercial tents greater than 200 square foot must be approved as a Master Tent Installer.

T1043.2 To become approved, the individual must:

1. Successfully complete a tent installation course approved by *the Fire Code Official*;
2. Successfully pass a no-cost written examination provided by the Fire Department, which will cover The Industrial Fabrics Association International (IFAI) Procedural Handbook for the Safe Installation & Maintenance of Tentage, the guidelines for the ballasting of tents commonly referenced as The Clemson Study within the industry, RSMoChapter 310, the current Fire Code as adopted by the City of Springfield, and any other materials deemed appropriate by the *Fire Code Official*. Only those chapters that relate to tent safety will be covered, including but not limited to Chapter 31, exit lighting, fire extinguishers, etc.;
3. Hold a valid business license for the City of Springfield, or operate under the employ of a City of Springfield licensed Tent Vendor; and
4. Carry the minimum General Liability insurance required by the City for Master licenses, or operate under the employ of a City of Springfield licensed Tent Vendor providing the minimum General Liability insurance required.

T1043.3 The approval is valid for three years from the date of issuance, but may be revoked for cause.

T1043.4 An approved master tent installer must be on-site and directly oversee the installation of every commercial tent greater than 200 square foot in size.

T1043.5 Once the tent is installed, the master tent installer must sign the assurance statement on the permit, including emergency contact information, and securely fasten it in a conspicuous place ~~on~~ within the tent.

SECTION T105 TENT INSTALLATION

T105.1 All commercial grade tents must be installed in accordance with one of the following:

1. Wind-rated tents: manufacturer's recommendations – documentation must be provided to the Fire Department
2. Non-rated tents: manufacturer's recommendations that comply with the IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage – Manufacturer's recommendations must be provided to the Fire Department
3. Non-rated tents: The IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage and the provisions contained within this code.
4. Non-rated tents: an engineered study by a professional engineer –engineered study must be provided to the Fire Department. (This is used when the manufacturer does not provide instructions and/or when the instructions for a non-wind rated tent conflict with the IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage.)

SECTION T106 INSPECTIONS

T106.1 All tents, ballasting, and tie-downs will be inspected for defects, wear and tear, and damage prior to the installation of each tent. Those with visible damage will not be erected.

SECTION T107 STAKING

T107.1 All stakes will be installed in accordance with The IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage.

T107.2 Color Coding. All stakes will have the heads painted the following color to indicate the length of the stake in the following manner:

- i. Red: 32" – 39"
- ii. Yellow: >40" but not more than 47"
- iii. Green: 48" or more

T107.3 Embedment. Regardless of actual length, stake embedment will be considered the following based upon color:

- iv. Red: 28 inches
- v. Yellow: 34 inches
- vi. Green: 36 inches

T107.4 Maximum stake exposure. The maximum amount of stake exposed above the ground is:

- vii. Red: 4 inches
- viii. Yellow: 6 inches
- ix. Green: 12 inches

T107.5 Tie downs. Tie downs/guys should be attached within 2 inches of the ground, and in no case, can be more than 4 inches from the ground, regardless of the amount of stake above ground.

T107.6 Diameter. All stakes must be at least 1 inches in diameter.

T107.7 Stakes are to be driven vertically between 0 and 15 degrees.

T107.8 In no case will a stake be less than one-half the height of the upright and no more than the height of the upright from the leg, except as otherwise provided in this code.

T107.9 If heads of stakes are unpainted, stakes will be presumed to be 32 inches (thirty-two inches) in length.

SECTION T108 KNOTS

T108.1 Only knots approved in the IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage will be used, unless the tent is wind-rated or is approved by an engineered study by a professional engineer.

SECTION T109 BALLASTING

T109.1 All tents will be ballasted either according to The Clemson Study provided by the IFAI or by an engineered study by a professional engineer.

T109.2 Unless a tent is certified by its manufacturer as a wind-rated tent and documentation is provided, installations must meet the non-wind rated ballasting.

T109.3 Concrete ballasts must be permanently marked with the weight of the block and must weigh at least 125 pounds.

T109.4 No more than two ballasting blocks may be used to provide the required weight per leg/pole. When two ballasting blocks are used, they must use a load equalizing device. Effective January 1, 2016 x.

T109.4.1 Exception: More than two ballasting blocks may be used when a connecting system approved by *the Fire Code Official* is used where they are positively locked so as to act as a single anchor.

T109.5 Ballasting may not be accomplished by the use of containers using water to create the weight.

SECTION T110 TIE-DOWNS, RATCHET STRAPS AND GUY ROPES

T110.1 Requirements for tie downs, ratchet straps and ropes.

T110.1.1 The working load of tie-downs will be rated as provided in The IFAI Procedural Handbook for the Safe Installation & Maintenance of Tentage.

T110.1.2 The rated strength of tie-downs must meet or exceed twice the ballasting/staking required.

~~**T110.1.3** Tie downs must be rated for at least 3000# working load limit.~~

T110.1.4 Ropes must be at least ½ inches in diameter.

T110.1.5 Ratchet type straps must be clearly marked by the original manufacturer for the approved working load limit rating.

T110.1.6 Ratchet straps must have a positive locking hook system to prevent it from accidentally becoming unsecured from the stake, grommet, or other securing device.

SECTION T111 LEGS/ANCHOR POINTS

T111.1 Every leg/anchor point must have the appropriate staking/ballasting.

T111.2 All jump ropes must be properly secured.

SECTION T112 TENSIONING

T112.1 All non-wind rated tents must be anchored and tensioned to a minimum of 7.5 pounds per square foot of uplift loads and 5 pounds per square foot of lateral loads unless otherwise provided in this code.

**SECTION T113
ADDITIONAL REQUIREMENTS**

T113.1 The owner of the tent will provide all required safety items, including fire extinguishers, exit lighting, and other items required by this code or the Fire Code Official.

T113.2 The owner of the tent will provide any heaters that are used within a tent and their use must be approved by the *Fire Code Official*.

T113.3 Every tent must have the owner’s name and contact information securely fastened in a conspicuous location on the tent.

T113.4 Wind. Tents must be immediately evacuated when wind speeds or gusts are above 45 mph unless, except:

T113.4.1.1 Tents that are erected for a period of 7 days or less and when wind speeds are predicted by the National Weather Service to be less than 45 mph from the time the tent is erected until it is set to be removed, and anchored and tensioned to the following as a minimum rather than Section 3103.9.5(1) and 3103.9.8, shall be evacuated when wind speeds or gusts are above 30 mph.

Ballasting	Without Sidewalls	With Sidewalls
100 sq. ft. or less	4.5 lbs. / sq. ft.	14 lbs. / sq. ft.
>100 sq. ft. – 900 sq. ft.	10.0 lbs. / sq. ft.	18 lbs. / sq. ft.

T113.4.1.2 Tents that are erected for a period of 7 days or less and when wind speeds are predicted by the National Weather Service to be less than 45 mph from the time the tent is erected until it is set to be removed and **staked** to the following as a minimum rather than Section V, paragraph 3h above.

Staking	Without Sidewalls	*	With Sidewalls	*
100 sq ft or less	Red or unpainted	1'	Yellow	3'
101 sq ft to 400 sq ft	Yellow	1'	Yellow	3'

*** = Distance from tent**

SECTION T114 CONSUMER SAFETY AWARENESS CONSULTATION

T114.1 The owner, agent or installer shall review safety requirements, as per event specifics necessitate, with the event manager or end user of the tent or membrane structure. The consultation shall comply with sections T114.2 and T114.3.

T114.2 A safety consultation shall be provided to the event manager or end user of the tent or membrane structure. The consultation shall be documented in written format and shall be signed by both the owner, agent or installer and the event manager or end user and must be provided to the *fire code official* upon request. Safety topics covered in the consultation shall include, but are not limited to, items 1 through 5 below:

1. Maximum occupancy load for each tent or membrane structure.
2. Interior layout. Placement of tables, chairs, stages, decorations or other physical elements with consideration for required aisle and exit widths which must remain unobstructed.
3. Heat sources. Safety requirements regarding cooking, heating, smoking and other open flames items.
4. Potential hazards associated with high winds and other severe weather conditions.
5. Emergency action plan as described in section T114.3

T114.3 An emergency action plan shall be developed specific to each event. The emergency action plan shall be documented in written format and shall be signed by both the owner, agent or installer and the event manager or end user and must be provided to *the fire code official* upon request. Items covered in the emergency action plan shall include, but are not limited to, items 1 through 4 below:

1. Identification of a crowd manager or person responsible for monitoring weather and other hazardous conditions and making notification for an evacuation of the tent(s) or membrane structure(s).
2. Effective and expedient means of crowd notification.
3. Identification of safe location and evacuation procedure.
4. Evacuation parameters including, but not limited to:
 - i. wind speeds in excess of tent or membrane structure design and installation limits.
 - ii. severe weather conditions such as tornado, earth quake, hail, lightning, flash flooding, etc.
 - iii. fire or other hazardous condition posing a threat to occupants of the tent or membrane structure.
 - iv. unstable or unsafe tent or membrane structure condition or partial collapse.