



# City of Chattanooga

INTERNAL AUDIT

City Hall

Chattanooga, Tennessee 37402

Stan Sewell  
Director

Ron Littlefield  
Mayor

May 29, 2012

Mayor and City Council  
City of Chattanooga  
Chattanooga, TN 37402

RE: Fire Inspections, Audit 12-02

Dear Mayor Littlefield and City Council Members:

Attached is the Internal Audit Division's report on Fire Inspections, Audit 12-02.

We thank the management and staff of the Fire Department for their cooperation and assistance during this audit.

Sincerely,

Stan Sewell, CPA, CGFM  
Director of Internal Audit

Attachment

cc: Dan Johnson, Chief of Staff  
Audit Committee Members  
Randy Parker, Fire Chief  
James Whitmire, Fire Marshal  
Daisy Madison, City Finance Officer  
Bobby Dodd, Police Chief  
Gary Hilbert, Director of Land Development Office

**FIRE DEPARTMENT  
FIRE INSPECTIONS  
AUDIT 12-02  
May 2, 2012**

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*M. Petty*

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Auditor

*[Signature]*

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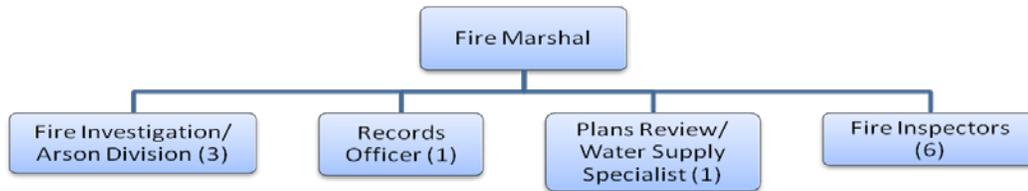
Audit Director

**FIRE DEPARTMENT  
FIRE INSPECTIONS  
AUDIT 12-02**

**INTRODUCTION**

The Fire Department’s mission is “to protect life, property, and community resources through prevention, preparation, response and mitigation.” Services provided by the Fire Prevention Bureau are collectively designed to prevent fires from occurring and mitigate damages from fires. The Fire Prevention Bureau includes fire investigation, building plans review, code enforcement, and fire safety education.

**EXHIBIT 1: FIRE PREVENTION BUREAU ORGANIZATION**



Source: Fire Marshal

**Duties of Fire Inspectors**

Local Fire Marshals in jurisdictions that provide their own fire safety code enforcement (also known as *exempt jurisdictions*) operate as local arms of the State Fire Marshal’s Office (SFMO). Such jurisdictions must enforce minimum standards required by SFMO. For all areas of the state, the State Fire Marshal’s Office reviews building plans and performs initial inspections of newly constructed buildings (called *certificate of occupancy inspections*) for state owned and leased facilities, all types of daycare facilities, and educational occupancies. In addition, the SFMO provides inspections of existing buildings (*periodic inspections*) in areas of the state where local jurisdictions use SFMO for codes enforcement. The following types of facilities are inspected annually by SFMO:

- Schools (public and private)
- Daycare centers
- Group daycare homes
- Family daycares (Annually inspected statewide by SFMO)
- State-owned correctional facilities
- Mental health facilities (upon request from the TN Department of Mental Health)

Chattanooga enforces its own building and fire safety codes in order to expedite construction within the City limits.<sup>1</sup> In 2009, City Council Ordinance #12273 adopted the International

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<sup>1</sup> The State Fire Marshal’s Office allows local jurisdictions to enforce their own building and fire safety codes on the condition that the jurisdictions adopt minimum standards per TCA 68-120-101. Current standards require adoption of IFC 2006 or NFPA 2006 for fire code enforcement.

Fire Code (IFC), 2006 Edition, combined with the 2006 National Fire Protection Association's 101 Life Safety Code in certain existing buildings, as the official Fire Code of the City of Chattanooga. Properties covered by the 101 Life Safety Code include any state building, educational occupancies, and any other occupancy requiring an inspection by the State Fire Marshal for initial licensure. All other properties and new construction are subject to 2006 IFC. In April 2011, City Code was revised to require existing nightclubs to be covered under the 2006 NFPA Life Safety Code, mandating fire sprinkler installations in these facilities.

The Chattanooga Fire Department has six inspectors (certified by the SFMO) performing fire inspections. Inspectors are assigned by geographic districts and are responsible for all existing businesses within the area as well as certificate of occupancy inspections for new construction. In addition to performing inspections, inspectors routinely provide fire prevention education. Upon request, inspectors will attend neighborhood association meetings, visit schools and daycares, or provide fire extinguisher use training to businesses.

**Financial Information**

In fiscal year 2011, the Fire Prevention Bureau's expenditures were approximately \$1.2 million. Expenditures were distributed to the various units within the Fire Prevention Bureau as shown in **Exhibit 2**, below.

**EXHIBIT 2: FIRE PREVENTION BUREAU'S BUDGET AND EXPENDITURES, FY11-12**

Description	FY12	FY11	
	Budget	Budget	Actual
Fire Marshal's Staff	\$167,714	\$157,708	\$152,959
Fire Prevention (Inspectors)	490,168	424,519	560,664
Fire Public Education	168,191	162,664	94,488
Fire Investigation	328,491	334,587	203,129
Records Officer	90,163	85,309	89,208
Plans Review/Water Supply	86,369	71,661	86,137
<b>Fire Prevention Bureau Total</b>	<b>\$1,331,096</b>	<b>\$1,236,448</b>	<b>\$1,186,586</b>

Source: City Financial Records

**STATEMENT OF OBJECTIVES**

This audit was conducted in accordance with the Internal Audit Division's 2012 Audit Agenda. The objectives of this audit were to:

1. Determine the extent to which City of Chattanooga fire inspections enhance public safety.
2. Evaluate the efficiency of the fire inspections process.
3. Determine whether the costs to provide fire inspections are recovered through current inspection fees.

## **STATEMENT OF SCOPE**

Based on the work performed during the preliminary survey and the assessment of risk, the audit covered fire inspections from July 1, 2010 to June 30, 2011 and was expanded as necessary to meet the objectives of the audit. Source documentation was obtained from the Fire Department, the Department of Finance and Administration, the Hamilton County Department of Education, the Tennessee Department of Education, and the Tennessee Department of Human Services. Original records as well as copies were used as evidence and verified through physical examination.

## **STATEMENT OF METHODOLOGY**

To determine the extent to which City fire inspections enhance public safety, we reviewed laws, rules, regulations, and applicable fire codes. We interviewed key Fire Department, Public Works, Finance and Administration personnel involved in the fire inspections process. We also obtained documentation from the Department of Finance and Administration, the Hamilton County Department of Education, the Tennessee Department of Education, and the Tennessee Department of Human Services in order to identify facilities that require annual inspections.

To evaluate the efficiency of the fire inspections process, we observed the daily routine of a fire inspector and conducted additional interviews with fire inspectors. We interviewed Fire Department personnel about the fee collection process to determine whether costs to provide fire inspections are recovered through current inspection fees. We also reviewed all collection reports submitted by the Fire Department to identify the purpose of fees collected in fiscal year 2011.

To develop our recommendations, we reviewed industry best practice documents. We also contacted a selection of similar sized cities' fire departments located in the southeast and interviewed personnel to identify common and best practices among the City's peers. The cities selected for review were: Asheville, NC, Augusta, GA, Charleston, SC, Huntsville, AL, Jackson, MS, Lexington, KY, and Little Rock, AR.

For our audit objectives, we relied on the City's financial system, which was previously determined to be reliable and no additional testing was necessary. We also assessed the reliability of inspections data contained in the FDM system (the Fire Department's information system) and conducted tests of the data. Based on these assessments and tests, we concluded the data was not sufficiently reliable to be used in meeting the audit's objectives and alternative sources were used to reach findings and conclusions presented in this report.

## **STATEMENT OF AUDITING STANDARDS**

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and

conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## **AUDIT CONCLUSIONS**

Based upon the test work performed and the audit findings noted below, we conclude that:

1. Better performance information is needed to evaluate the effectiveness of fire inspections at enhancing public safety.
2. Opportunities exist to streamline the fire inspections process and increase efficiency.
3. Costs to provide fire inspections exceed current revenues due, in part, to the Fire Department's failure to collect all approved fees. Additional fees should be considered in order to cover the cost of the fire inspection services as well as to provide enhanced enforcement of fire codes.

## **FINDINGS AND RECOMMENDATIONS**

### **The Fire Marshal should determine the frequency of fire inspections necessary to mitigate risks to loss of life and property from fires.**

The Fire Prevention Bureau has an overall goal of inspecting every property within City limits every year. We found no ordinance, rule, or regulation that mandated *all* properties be inspected annually, and there is general agreement among inspectors and the Fire Marshal that the goal is unattainable with current staffing.<sup>2</sup>

According to City Code Section 17-24, the Fire Chief and Fire Marshal are tasked with inspecting (or delegating inspections) all buildings and premises, except private dwellings, *as often as they deem necessary* "for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire..." The Fire Marshal was unable to detail properties that are required to be inspected annually or provide reliable evidence that all required annual inspections were performed in the past year. In addition, the Fire Prevention Bureau has not conducted a risk assessment to prioritize occupancies based on susceptibility to fire and severity of fire damage (loss of property or life) anticipated.

To prioritize certain high occupancy facilities for annual inspection, the Fire Marshal adopted a calendar-based system where inspectors focus their time on defined high occupancy facilities for a month or two at a time. For example, in January and February, inspectors prioritize inspections of hotels and motels. The Fire Prevention Bureau does not analyze its information to determine the extent to which its prioritized facilities were covered by fire inspections. The Fire Marshal cited frequent turnover and prolonged vacancy in the Fire Marshal's position as well as a lack of policies and procedures as impairments to strategic direction for inspection activities.

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<sup>2</sup> Information was not available to determine how many inspectors would be required to provide fire prevention coverage at that level of service.

We reviewed City code, state laws and regulations, applicable fire codes, and the State Fire Marshal’s Office duties to identify properties that should be inspected annually. In order to ensure minimum fire prevention coverage, the City would need to annually inspect all properties that would have otherwise been inspected by SFMO if the City did not enforce its own codes. As such, each year the City should inspect schools (public and private), daycare centers and group daycare homes, and any requested mental health facilities. In addition, *City Hotel Permit Procedures* currently require annual inspection by the Fire Marshal in order to approve the permit. (See related finding on page 14.) We identified 285 properties that should be subject to annual inspection, as shown in **Exhibit 3** below.

**EXHIBIT 3: MANDATED ANNUAL FIRE INSPECTIONS BY OCCUPANCY TYPE**

Occupancy Type	Description	Required Inspection Frequency	Number of Properties
<b>Educational</b> (e.g., Schools)	An occupancy used for educational purposes through the 12th grade by six or more persons for 4 or more hours per day or more than 12 hours per week.	TN Department of Education requires schools be inspected at least once annually.  The SFMO inspects public and private schools once annually in non-exempt areas. As an exempt jurisdiction, the City should perform these inspections.	73
<b>Daycare</b> (e.g., Child Care Centers, Adult Day Care Centers)	An occupancy in which four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day.	TN Department of Human Services requires child care facilities providing care for 8 or more children to have annual inspections. Adult care facilities also require annual inspections, unless licensed as a hospital or residential board and care facility through the TN Department of Health.  The SFMO inspects all daycare facilities once annually in non-exempt areas. As an exempt jurisdiction, the City should perform these inspections.	113
<b>Hotels and Dormitories</b>	A building or group of buildings providing sleeping accommodations for more than 16 individuals with or without meals.	City Hotel Permits require inspections annually.  The SFMO has no mandate to inspect hotels and dormitories annually.	99

**Sources:** Hamilton County Department of Education Rules, TN Department of Education Rules, TN Department of Human Services, and City Treasury Hotel Permit Procedures

We compared Chattanooga’s fire inspections process with seven other cities and found varying enforcement mandates among the jurisdictions. However, we found Asheville, NC enforces codes based on a formal risk assessment provided by the State of North Carolina. The State of North Carolina supplements its fire codes with an inspection schedule based on fire risk that allows certain occupancies to have inspections on a two or three year cycle. (See **Appendix A** for North Carolina’s full inspection schedule.) For example, hospitals are inspected every year, but banks and beauty shops are inspected every three years. Each jurisdiction within North Carolina is bound by the inspections schedule as a minimum requirement. Asheville, NC reports its percentage of compliance with the state-mandated schedule as a performance measure.

**Recommendation 1:**

We recommend the Fire Marshal, in conjunction with the Fire Chief, establish a periodic

inspections schedule for properties within the City limits. Such a schedule should be based on a risk assessment of facilities' susceptibility to fire and extent of potential loss of life or property due to fire in each type of occupancy (e.g., industry, hospitals).

**The Fire Marshal should develop a meaningful performance measurement system that reflects the goals and intended results of fire prevention activities.**

Effective performance measures are generally described as relevant to the program, understandable, comparable to internal or external criteria, timely, consistent over time, reliable and replicable, and communicated effectively to users. Additionally, measures should be linked to the department's overall mission and goals, focused on the department's core activities, and free from bias. Collectively, performance measures should allow decision makers to understand the operations and outcomes of the department's activities, how those

outcomes relate to government-wide priorities, and the return-on-investment for public funds.

The results we expect from fire prevention programs include documenting risk reduction where increased safety behaviors or decreased hazard-producing behaviors can be documented and documented reductions in losses (e.g., deaths, injuries, and economic losses).

- *Vision 20/20: National Strategies for Fire Loss Prevention*

Currently, the Fire Department reports a single performance measure related to fire inspections, which is the number of fire inspections performed.<sup>3</sup> While the measure in itself is insufficient to provide context to the Department's effectiveness or efficiency, we also found the measure is not accurately represented. The reported number of inspections includes a number of non-inspections activities such as occupancy checks, attendance at beer board meetings, court appearances, or other meetings and consultations. Inclusion of non-inspections activities significantly inflates the number of

inspections. For example, the Fire Department reported 4,750 inspections for fiscal year 2011 in the Comprehensive Audited Financial Report, while Fire Department activity data would suggest less than 3,500 inspections were performed.

Vision 20/20: National Strategies for Fire Loss Prevention is a project of the Institution of Fire Engineers that includes participation of a large number of stakeholders and advocates for fire prevention efforts. In March 2009, Vision 20/20 released a paper outlining potential model performance measures for local, state, and national fire prevention program managers. Their recommendations drew upon, and added to, prior recommended measures from the National Fire Protection Association. **Exhibit 4, on the following page**, shows a selection of recommended fire prevention measures by the type of measure.

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<sup>3</sup> The Department's ChattResults Performance Overview includes additional information related to fire service performance, to include: firefighter deaths and injuries, civilian deaths and injuries, property damage/loss.

**EXHIBIT 4: POTENTIAL FIRE PREVENTION PERFORMANCE MEASURES BY TYPE**

Type of Measure	Definition	Recommended Measures
<b>Inputs</b>	Resources actually used to produce outputs and outcomes	<ul style="list-style-type: none"> <li>– Number of inspectors</li> <li>– Amount of funds</li> </ul>
<b>Process (workload)</b>	Amount of work that comes into a program but not yet completed	<ul style="list-style-type: none"> <li>– Number of inspectable properties</li> <li>– Percentage of inspections for which time since last inspection is greater than the department's target cycle time</li> </ul>
<b>Outputs</b>	Amount of product or services delivered	<ul style="list-style-type: none"> <li>– Number of annual inspections</li> <li>– Number of permits issued</li> </ul>
<b>Outcomes</b>	Consequences of what the program did; something the program wants to maximize or minimize	<ul style="list-style-type: none"> <li>– Structure fire rate per 1,000 inspectable properties</li> <li>– Estimated monetary value per additional inspection</li> <li>– Total value of property lost in inspectable properties</li> <li>– Percentage of total fire losses occurring in inspectable properties</li> <li>– Fire deaths in inspectable properties per 100,000 residents</li> </ul>
<b>Efficiency and Productivity</b>	Ratio of input to amount of output or outcome and the ratio of output to input or outcome (often in relation to costs)	<ul style="list-style-type: none"> <li>– Number of inspections per inspector</li> <li>– Estimated monetary value per additional inspection</li> </ul>
<b>Impacts</b>	Data that estimates the extent to which the program actually caused the outcomes. Seldom used.	<ul style="list-style-type: none"> <li>– Percentage of code violations noted that were corrected/abated</li> <li>– Percentage of fires that were preventable or could have mitigated by inspection</li> <li>– Percentage of fires where there were pending, uncorrected violations present at the time of the fire</li> </ul>

**Sources:** H. Hatry, *Performance Measurement, 2nd Ed*; Vision 20/20: National Strategies for Fire Loss Prevention, *Model Performance Measures for Fire Prevention Program*

**Recommendation 2:**

We recommend the Fire Marshal revise performance measures related to fire inspections in order to provide decision makers with reliable and accurate measures of program outcomes and impacts. Such measures should be relevant to the Department’s stated mission, goals, and objectives.

**Fire inspections data is inaccurate and incomplete.**

Each day inspectors enter inspections activities into the Fire Department’s information management system (FDM) based on paper reports completed while at the inspection site. Notes are written in the margins of the inspection form to show whether the inspection is an annual or certificate of occupancy inspection, detail re-inspection dates, and record tests the inspector witnessed while on-site. After entering inspection information, paper forms may be filed by the Administrative Assistant. However, according to inspectors, there is no requirement the forms be provided to the Assistant once complete or that they be maintained.

We traced a sample of 20 paper files to the FDM electronic inspections database and traced a sample of 20 inspections records in FDM to paper files as a standard test for data reliability.

In doing so, we noted the following issues:

- *Missing paper files* - We found that for a quarter (25%) of the random sample we selected, no paper files were present to validate data in the information system. The Municipal Technical Advisory Service's *Records Management Guide for Municipal Governments* recommends a minimum retention of current fire inspection reports (until a new report is received). Retention of three years is preferred. The purpose of retaining such records is to ensure enforcement of fire codes and show a history of inspection.
- *Discrepancies among supporting documents* - We found instances where paper files and electronic files did not match. Notes on the paper files indicated re-inspections were performed and not shown in FDM; in other instances, FDM showed re-inspections where notes were not present on associated paper forms. We also noted instances where FDM showed an inspection as a certificate of occupancy when the form did not identify the inspection as such.
- *Blank fields* – Inspections activity data often lacked information in critical fields such as business name (3.5%), occupancy use (14%), and property use (4.3%). In addition, our review of properties data indicated that occupancies listed as Places of Assembly, which require associated occupancy loads (maximum number of people allowed in an area) in order to determine whether certain codes apply, did not include occupancy loads for the vast majority of such properties. We found 135 of over 970 (14%) property records labeled as Places of Assembly had associated occupancy loads within the database.

No policies and procedures exist to provide guidance to inspectors when completing inspection forms or entering the data electronically. As a result, the Department's inspections database is unreliable and incomplete. Due to a lack of reliable data, we were unable to determine whether all mandated properties were inspected in fiscal year 2011. The Fire Department would also have difficulty determining whether it met its goal of inspecting certain properties annually.

The Fire Department should, at minimum, maintain a complete database that includes all properties within City limits, a business name, address, occupancy type, property use, and approved occupancy loads, where appropriate. To ensure data quality, the Department should have documented processes in place to make certain all data captured is collected and stored in a consistent manner. Property information may be entered or edited by plans reviewers, inspectors, or fire company personnel. Because the data may be entered by different sources, it is important that information is always added in a consistent format. The data entry process must ensure all the relevant fields are completed such as the business name, address, occupancy type and property use. If information is missing, it should be checked at each new entry to the record and added to it.

### **Recommendation 3:**

We recommend the Fire Marshal develop policies and procedures to standardize data entry for all staff accessing FDM property and inspection records. In particular, policies and procedures should require each new entry to verify prior entries and ensure data is still correct for the property.

### **Recommendation 4:**

We recommend the Fire Marshal systematically review property information stored in FDM for completeness and accuracy. In doing so, the Fire Marshal should ensure all Places of Assembly have associated occupancy loads entered into FDM.

### **Recommendation 5:**

We recommend the Fire Marshal retain paper inspection forms for the recommended three year period. This requirement should be included in policies and procedures for inspectors.

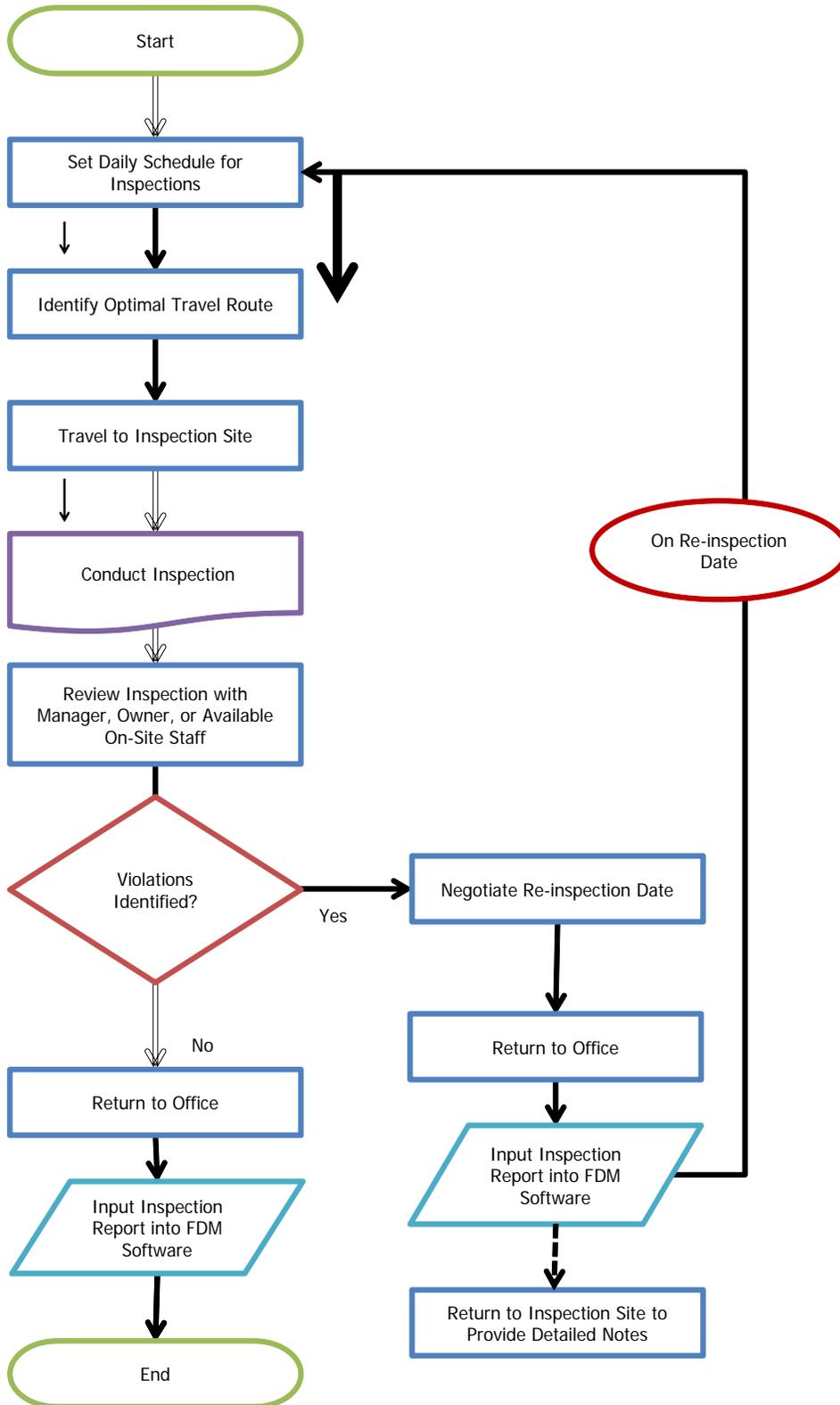
### **Opportunities exist to streamline the fire inspections process and increase efficiency.**

The current fire inspections process is labor and time-intensive. As shown in **Exhibit 5 on the following page**, inspectors begin their day at the office to set their route and handle incoming requests for inspection, re-inspection, or testing. Once their schedule is set, inspectors may print their route and travel to multiple sites to conduct inspections. Upon completion of all inspections, inspectors return to the office to manually enter information from inspections forms into the FDM software.

The Fire Department should consider opportunities for streamlining the inspections process and increasing efficiency. We identified the following areas for potential improvement based on reviews of other cities' methods and auditor-observed weaknesses in the current process:

1. ***Revise the fire inspection form*** – As shown in **Appendix B**, the current Fire and Life Safety Inspection Report form is not formulated based on enforced standards and does not provide sufficient writing space to allow inspectors to provide details of where violations are found and how to remedy them. Inspectors rely on memory and their notes in the margins of the inspection form to input such details into the FDM system at a later time. As a courtesy, inspectors may provide the detailed notes from FDM to owners/managers. While inspectors occasionally use email to provide the notes, often the inspector will return to the site with printed notes. Also, because the forms do not follow the same structure as the software system and inspectors cannot add all of their notes to it, data entry of inspections would currently not be possible for a third-party.

**EXHIBIT 5: FIRE INSPECTIONS FLOWCHART**



**Source:** Auditor Observation and Interviews with Fire Inspectors

- 2. *Develop a certificate of occupancy application and inspection form*** – The Fire and Life Safety Inspection Report form is also used to document certificate of occupancy inspections; however, according to City Code, fire inspections for new occupancies use the International Fire Code rather than the National Fire Protection Associations Codes (upon which the form is largely based). The current form provides no guidance to inspectors in certificate of occupancy reviews. Inspectors rely on notes made in the margins of the current form to demonstrate testing witnessed and issues noted as they inspect the property.

In addition, a certificate of occupancy form could provide an avenue to ensure the Fire Department has all relevant information about a property. As it stands, the Department relies heavily on information in the Building Inspections database maintained by the Land Development Office, which does not store data on whether fire alarm systems, fire suppression systems (such as kitchen hoods and smoke dampers), or hazardous materials are present on the property. The Fire Department should be a single source for fire and life safety information about a property.

- 3. *Acquire mobile technology solution for report submission*** – On average, inspectors spend 1.5 hours per day inputting data from inspection forms into FDM. Combined, the practice results in an average of *45 hours per week* that inspectors are paid to perform routine data entry for inspections that have already occurred. Given the average inspector salary as of June 2011, this practice resulted in an estimated cost in fiscal year 2011 of approximately \$93,000.<sup>4</sup>

A number of vendors offer fire inspection reporting software that allows inspectors to complete inspection forms in the field and automatically integrate the inspection data into the information system. Such systems may also offer other advantages, such as integrated billing, permit issuance and maintenance, GPS navigation and mapping, and scheduling assistance. We estimate the Fire Department could acquire a new system, with modules for mobile inspections, permits, occupancy information, water supply management, and accounts receivable for less than \$35,000. The estimate includes a mobile tablet for inspectors with built-in internet connectivity for mobile report submission. We estimate annual costs for support in subsequent years would be less than \$10,000.

- 4. *Encourage use of email and fax machines*** – Email is accepted as a primary communication tool in business. Detailed inspection write-ups, either used in conjunction with current inspection forms or using a new form, may be emailed to businesses to reduce driving time for inspectors and provide additional documentation that businesses were notified of fire code violations. If a business does not have email, fax machines may be utilized as an alternative to driving to the business. Phone numbers, email addresses, and fax numbers for property managers should be included in the Fire Department's property database.

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<sup>4</sup> This figure is based on an average fire inspector salary of \$47,864 and associated benefits of \$34,925.

5. **Provide cell phone allowance to inspectors** – Currently, inspectors use free phones provided by an in-town only provider. In our conversations with inspectors, the poor quality of their cell phone coverage and devices was consistently cited as an area of concern. Fire Administrators also acknowledged difficulties in accessing inspectors due to poor cell coverage.

In February 2012, the City adopted a cell phone allowance plan that identified employees who spend significant time in the field or who are on-call 24 hours or weekends as eligible. While fire investigators have been provided with cell phone allowances, fire inspectors have not been included in the plan to date. Based on inspectors' job duties, a smartphone allowance could provide additional features that would enhance efficiency, to include a mobile calendar, GPS navigation, and ability for inspectors to respond to business email on the go.

6. **Hire a Public Education Officer** – Current efforts from the Fire Department are based on requests from schools and local businesses and involve participation from fire inspections staff as well as fire company personnel, depending on the nature of requested events. Time commitments from inspections staff may be considerable. The *Tennessee County Fire Handbook* identifies public education as one of the most cost-effective means to reducing property loss and injury/death from fires. It also recommends moving away from viewing public education as visiting schools with fire trucks as this practice does little to educate the public. Rather, it recommends adoption of a year-round, targeted approach to public education using data from fire investigations to identify at-risk communities. In our review of other jurisdictions' inspections practices, we found that 5 of the 7 fire departments we contacted had a dedicated employee for public education efforts.

An effective public education program identifies the community demographics, uses data from fire investigations to determine the most at-risk groups, and delivers year round programs to reduce the occurrence of fire.

- *Tennessee County Fire Handbook*

**Recommendation 6:**

The Fire Department should re-examine its current process for fire inspections and consider the options listed above for increasing efficiency.

**The Fire Marshal should better monitor productivity of inspectors.**

Fire inspectors spend the majority of their work hours in the field with minimal supervision. Management oversight is essential to ensure work is completed timely, efficiently and effectively. Therefore, a proper system for monitoring employee productivity and work quality is necessary to prevent losses or inadequate work. To date, no goals have been adopted for the number of inspections, overall activity generated, or the degree to which inspectors cover their assigned districts.

Currently, the Fire Marshal reviews a weekly activity report for each inspector. This report shows each property inspected, meetings attended, and public education events staffed by the inspector as well as the associated time spent on the activity. The report does not include time off or time spent in training. The Fire Marshal does not review inspection reports from inspectors for quality assurance.

According to the Fire Marshal, historically there has been great emphasis on increasing the number of fire inspections produced, without consideration to the time required for each type of inspection conducted or the quality of those inspections. For example, while an inspector may generate a number of inspections in a relatively short time at a strip mall, inspecting a school may take a full day or longer. As a result, he has been cautious about adopting productivity goals for inspectors.

Our review of other cities found inspectors were generally provided with a goal for the number of inspections produced on an average day or month. Daily goals ranged from 8-10 a day or 40 per month. However, this method does not account for variation in the types of inspections performed. In addition to general daily or monthly goals, a weighted analysis of inspector activities may provide context to the relative efficiency of inspectors. In a weighted analysis, management would determine the average time each type of inspection takes and assign a weighted value to the activity. In this way, the Fire Marshal could measure “productivity units” produced by inspectors during a set period rather than a count of inspections.<sup>5</sup>

#### **Recommendation 7:**

We recommend the Fire Marshal develop goals for inspector productivity and a system for monitoring whether the goals are being met by each inspector.

#### **The Fire Department has not implemented certain permits required by the 2006 International Fire Code.**

IFC Section 105 identifies permits required by the code that are to be obtained from the fire code official along with any permit fees. The code authorizes two types of permits – operational and construction. We found the Fire Department does not issue permits for 43 of the 46 required operational permits and none of the 13 required construction permits. The Department does, however, require inspection of 4 of the 13 systems that require construction permits. A list of the permits required by IFC are provided in **Appendix C**, with check marks indicating permits currently issued and systems inspected by the Fire Department. As a result, the Department does not have record of certain fire hazards present in properties within City limits.

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<sup>5</sup> Based on “work points” system described in David Ammons’ *Tools for Decision Making*, 2<sup>nd</sup> Ed.

### **Recommendation 8:**

We recommend the Fire Department create and issue operational permits required by the 2006 International Fire Code. The Department should determine its costs to provide the permit and seek Council approval to adopt associated permit fees.

### **Procedures for Hotel Permits should be revised to reflect requirements set by City Code.**

All hotels operating within City limits are required to obtain a City Hotel Permit from the Finance Department. City Code Sections 11-187 thru 194 describe the process for obtaining a City Hotel Permit. Hotel permits shall be issued annually and expire the last day of December each year. Applications are to be applied for in person through the Chief of Police, who “shall examine into and investigate the character and qualifications of applicants for permits and report to the city council through the mayor his recommendation as to whether or not a permit should be issued to an applicant.” Permits shall not be issued “unless such person is of ascertained good moral character.” A fee of \$50.00 shall be collected for each hotel permit, and there shall be a charge of \$50.00 for any re-inspections performed. City Council ultimately approves or rejects applications.

Current procedures vary significantly from the process described above. Notable variances are as follows:

1. *Applications taken on fiscal year schedule, not calendar year* – The Finance Department collects permit applications and fees for Hotel Permits by June 30th of each year. Permits expire the following June 30th. According to the Assistant City Treasurer, the Finance Department has collected the permit fees for hotels every June for over 20 years. City Code Section 11-194 establishing the December expiration date has not been updated since 1986.
2. *Procedures require fire inspections* – Finance’s *Hotel Permit Procedures* require a fire inspection prior to approving the permit application. However, we found no requirement in City Code to warrant the inspections prior to approval. The only reference in City Code is to a “re-inspection fee” (City Code Sec. 11-190). Neither the Finance Department nor the Fire Department has charged such a re-inspection fee.
3. *Police Department not involved in process* – According to the Chief of Police, he was not knowledgeable about the provision, and the Police Department is not currently involved in the hotel permitting process.

As a result of variances listed above, businesses are not vetted for good moral character and are instead inspected for fire code violations annually. In addition, we noted fire inspections significantly delayed processing of permit applications in fiscal year 2011. Businesses applied for their 2011 permits (set to expire in June 2012) last June. However, as of February 2012, 91 of the 99 properties had not yet been inspected and therefore the hotels’ 2011 permit had not been approved. Thus, the vast majority of hotels operating in Chattanooga do

not possess a current City Hotel Permit.

**Recommendation 9:**

We recommend the Finance and Administration Department update its procedures to ensure permits expire the last day of December as required by City Code.

***Finance Response:** The permit renewals ran for fiscal year to coincide with the renewal of class 3 business licenses which includes hotel/motels. While we are unsure when the dates were changed, we feel this is the reason. The tax forms and the hotel/motel renewals were mailed in the same envelope and it was easier to track and assure that a business had to pay their business tax in order to have a hotel permit. Since TCA changed in 2010, and business tax collections are now handled by the state, this is no longer an issue.*

*The Finance office (City Treasury) will be updating its procedures to ensure permits expire the last day of December to coincide with the City Code. A letter notifying the hotel/motel owners of the December expiration will be going out in June.*

**Recommendation 10:**

We recommend the Police Chief determine if a review of moral character of hotel applicants is necessary to ensure public safety at these facilities. If not, the Police Department should seek appropriate changes to the City Code to remove such a requirement.

***Police Response:** The Police Department has not been involved in the hotel/motel review process and believes the requirement to review the moral character of hotel applicants to be outdated. The Police Department should approach City Council to request modification of the City Code.*

**Recommendation 11:**

We recommend the Fire Marshal determine if fire inspections should be required prior to approval of a hotel permit, based on an assessment of the City's risk of property damage and loss of life due to fire in such establishments. After such a determination, the Fire Marshal should seek changes to the City Code to reflect its involvement in the hotel permitting process and update any relevant fees.

**The Department lacks an adequate process for systematic fee collection.**

City Ordinance # 12356, passed in March 2010, authorizes the Fire Chief to charge non-refundable fees for certain services, as shown with fiscal year 2011 collections in **Exhibit 6, on the following page**. The Fire Department's Administrative Assistant collects fees when presented at the front office. Payees may also mail in checks, which are processed by the Department's Fiscal Analyst. However, the Department lacks an invoicing system and individuals accepting fees for inspections and plans review activities do not know the total amount due to the Department for services performed.

The Department relies on informal communications from inspectors and plans review staff to provide information about amounts due for inspections and plans review-related fees. Fire Department officials at all levels stated that it was unlikely all fees were collected for these activities. In addition, it was widely acknowledged that certain fees were not charged because inspectors and plans review staff are uncertain as to when they should be used. For example, City Code Section 16-29 states “All charges for re-inspection shall be at the same rate as set forth above and shall be collected by the Fire Marshall’s Office.” Inspections staff were unclear whether re-inspections fees were due at each re-inspection or only at the second inspection. Also, the staff member charged with plans review duties indicated he was unsure when the site review fee would be charged as he may make several trips to the site, and inspectors may also visit the site during the construction phase.

**EXHIBIT 6: FIRE DEPARTMENT FEES AND FY11 COLLECTIONS**

Fee Type	Fee Amount	FY2011 Collections
Fire Report	\$5	\$369
Blasting Permit	50	50
Bonfire Permit	50	200
Fire and Life Safety Inspection for Certificate of Occupancy	50	1,350
Environmental Review	100	1,300
Fire Alarm Acceptance Test	50	650
Fire Pump Test	50	0
Fire Sprinkler Acceptance Test	50	600
Indoor/Outdoor Pyrotechnics Test	50	1,350
Kitchen Hood Suppression Test	50	750
Open Burning Inspections	50	50
Site Plan Review	50	850
Systems Plan Review	50	150
Underground/Above Ground Storage Tank Permits	50	50
	Unidentified Fees Collected <sup>(1)</sup>	2,650
	<b>Total FY11 Collections</b>	<b>\$10,369</b>

*All charges for re-inspections shall be at the same rate as set forth above and shall be collected by the Fire Marshall's office.*

<sup>(1)</sup> We were unable to identify the specific fee collected for \$2,650 in fiscal year 2011 collections.

**Sources:** City Code Section 16-29, Fire Department Receipts, and Collection Reports filed in the Finance Department

**Recommendation 12:**

We recommend the Fire Department develop an invoicing system to notify external parties of amounts due and allow for tracking of amounts due and paid.

**Recommendation 13:**

We also recommend the Fire Department adopt policies and procedures for its fee collection process and ensure all relevant employees are trained on when certain fees are applicable.

**Additional fees should be considered in order to cover the cost of the Department's services as well as provide enhanced enforcement of fire codes.**

Current revenues from all approved permit and inspection fees amounted to \$10,000 in fiscal year 2011, as shown in **Exhibit 6, on the previous page**. While a portion of approved fees were not collected, as noted in the finding above, collections for all permit and inspection activities in fiscal year 2011 would cover less than 2% of the Fire Prevention budget in the same year (\$560,664).

Fire Department inspection fees were not established on annual inspections out of concern that inspections are a basic service that should be provided from tax revenues. However, we found re-inspections resulting from fire code violations for annual inspections to be common. Re-inspections reduce staff time available to provide other initial inspections, causing a reduction in fire prevention coverage.

In addition, the Fire Department is currently constrained in its efforts to enforce fire codes as a result of the Tennessee State Constitution's requirement that no municipal court may charge a fine greater than \$50 for municipal violations. If a fire inspector is required to sit in court for two hours, the fine is usurped by the cost to send an inspector to court.

Our review of similar-sized cities' fire inspection fees revealed that while annual inspection fees are not the norm, three cities had annual inspection fees for certain occupancy types: Augusta, GA - \$75 for business licenses, Little Rock, AR - \$50 for daycares, and Asheville, NC – amount varies depending on occupancy type and count. Both Augusta and Asheville also had re-inspection fees. While Augusta's re-inspection fee was flat (\$25), Asheville's re-inspection fees double each time a re-inspection is required. (See **Appendix D** for excerpts of Asheville's inspection fee schedule.)

It should also be noted that cities located in other states may not have fees for fire services, but may have higher court penalties for fire code infractions, which would provide greater deterrence of repeat violations. For example, in Little Rock, after the third inspection, inspectors issue a citation. The first infraction results in a \$500 fine, the second in a \$1,000 fine, and the third is cause for closing the business. In Augusta, GA, citations result in penalties from \$0 – \$1,500 per judge's discretion, and in Lexington, KY, fire violations taken to court have a minimum of \$100 fine.

**Recommendation 14:**

We recommend the Fire Department seek approval from City Council to implement additional fees to cover the costs of periodic inspections and re-inspections and as a method to reduce repeat fire code violations.

***Overall Fire Response:*** *We have reviewed and agree with the Internal Audit and have started with many of the changes recommended.*

*The Fire Prevention Bureau met with City Attorney's office and is proposing changes to the Hotel/Motel permit process and the revisions to the City Code. These will have to be approved by City Council. We are exploring options recommended to update the process of inspections and streamline data entry to save time by using technology solutions. It appears that the savings in time would offer a quick return for increased efficiency of the Bureau. With the city's growth, new construction, and annexation, future budgets will need to consider additional staffing that would include not only inspectors but a dedicated Public Education Division and additional personnel for Plans Review. The proposal for revising fees will also be presented to City Council.*

*Over the years the Fire Prevention Bureau has never had clear and concise procedures in place to track performance. The recommendations contained in the audit will be examined as part of an overall review to increase productivity. In the past, performance was measured based on the amount of properties inspected, with a considerable amount of these inspections being required by the state. In summary, we have taken action on several of the recommendations and are in progress on several others.*

*The recommendations in this audit will help the Bureau develop efficient policies and procedures related to the many other services expected to be provided by the Fire Prevention Bureau.*

## APPENDIX A: NORTH CAROLINA STATE INSPECTIONS FREQUENCY MANDATE

<u>Frequency</u>	<u>Occupancy Type</u>
Twice a year	Public Schools
Once every year	Hazardous
	Institutional
	High- Rise
	Assembly with occupant load greater than 100
	Residential (except one and two family dwellings)
Once every two years	Industrial
	Educational (except public schools)
Once every three years	Assembly with an occupant load less than 100
	Business
	Mercantile
	Storage
	Churches
	Synagogues
	Miscellaneous Group U Occupancies

Source: North Carolina Fire Codes 2012

**APPENDIX B: FIRE AND LIFE SAFETY INSPECTION REPORT FORM**

**CHATTANOOGA FIRE DEPARTMENT**  
 • 910 Wisdom Street \* Chattanooga, Tennessee 37406 \* (423)643-5602 \*  
**FIRE & LIFE-SAFETY INSPECTION REPORT**

Occupancy Group  
**A B E M H I R S**

Pre-Plan # \_\_\_\_\_ Premise ID \_\_\_\_\_ Business License \_\_\_\_\_ Entered On Computer \_\_\_\_\_

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**Occupancy Address** \_\_\_\_\_ **Business Owner** \_\_\_\_\_ **Property Owner** \_\_\_\_\_

**Business Name** \_\_\_\_\_ **Address-Mailing** \_\_\_\_\_ **Address-Mailing** \_\_\_\_\_

**Phone** \_\_\_\_\_ **City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_ **City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

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Automatic Sprinklers \_\_\_\_\_ Monitored - 24 Hr \_\_\_\_\_ Standpipe System \_\_\_\_\_ Fire alarm System \_\_\_\_\_ Monitored - 24 Hr \_\_\_\_\_ Hood & duct \_\_\_\_\_

Spray Booth \_\_\_\_\_ Key Box \_\_\_\_\_ Monitored \_\_\_\_\_ Special: \_\_\_\_\_

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On (Date) \_\_\_\_\_, the Chattanooga Fire Department conducted a Fire & Life-Safety Inspection at the above address, which produced the following.  
 No Violations Noted - "Thank You"  Violations Noted - Refer Below for Specific Details -

VN	VC	VN - Violations Noted	VC - Violations Corrected	VN	VC	VN - Violations Noted	VC - Violations Corrected
		<b>1. FIRE EXTINGUISHERS</b>				<b>6. OCCUPANCY &amp; AREA SEPARATION</b>	
		(A) NFPA 10 Provide _____ ca 2A:10B:C Extinguisher(s)				(A)	
		(B) NFPA 10 Provide _____ ca _____ Extinguisher(s)				(B) 101 LSC Maintain Integrity/Repair Walls/Etc	
		(C) NFPA 10 Service Extinguisher(s) State Law				(C) 101 LSC Repair Fire Doors/Dampers/Walls	
		(D) NFPA 10 Mount w/Top 3' to 5' from Floor				(D) 101 LSC Smoke Doors/Operable/No Obstructions	
		(O) Other _____				(O) Other _____	
		<b>2. ELECTRICAL</b>				<b>7. FIRE PROTECTION INSTALLATIONS</b>	
		(A) NFPA 70 No Ext. cords In Lieu/Fixed Wiring				(A) State Law 1 Year Service Required	
		(B) NFPA 70 Repair Damaged Wire/Components				(B) NFPA 25 Quarterly/Semi Maintenance Required	
		(c) NFPA 70 No Ext. Cords Thru Walls/Openings				(C) NFPA 25 Service/Maintenance Records Required	
		(D) NFPA 70 No Zip Cords				(D) NFPA 13 Identify Control Valves	
		(E) NFPA 70 Maintain 30" Clearance/Electrical Panel				(E) NFPA 13 Remove Obstruction To System	
		(F) NFPA 70 Maintain Covers/Electrical Boxes				(F) NFPA 13 Sprinkler Heads >50 Reg/Monitoring	
		(O) Other _____				(G) NFPA 13 Remove Attachments/System Components	
		<b>3. STORAGE PRACTICES</b>				(H) NFPA 13 Provide Spare Heads/Wrench/Cabinet	
		(A) NFPA 1 No Storage In Exitways 31-1.2				(I) NFPA 13 "PIV" Locked w/Wrench - {OPEN}	
		(B) NFPA 1 No Comb/Storage Under Stairs/Structure				(J) NFPA 13 "OSY" Chained/Locked - {OPEN}	
		(C) NFPA 1 No Combustibles/Heat Prod Equipment				(K) NFPA 13 Replace Heads/Damaged/Painted/Etc.	
		(D) NFPA 1 Storage --> 18" Below Sprinklers				(L) NFPA 96 Service "Hood & Duct" System	
		(O) Other _____				(M) NFPA 96 Clean Hood System/As Needed	
		<b>4. HOUSEKEEPING</b>				(N) 101 LSC Maintain All Systems Operable	
		(A) NFPA 1 Stor Comb Waste/Non Comb Containers				(O) Other _____	
		(B) NFPA 1 Oily Waste/Metal Cont/Lids Auto Close				(P) 101 LSC Maintain F/A System Operable	
		(C) NFPA 1 Comb Waste Remove Daily / Work Place				<b>8. HAZARDOUS MATERIALS</b>	
		(D) NFPA 1 Maintain Dumpsters 10' From Bldg				(A) NFPA 30 Fl/Comb Liquids/ Prohibited	
		(E) NFPA 1 Dumpsters < 10" Require Auto Sprinklers				(B) NFPA 30 Use-Oil (AGST) Permit Required	
		(O) Other _____				(C) NFPA 30 Class I/Max 5 gal/Inside/Permit Required	
		<b>5. MAINTENANCE OF EXITWAYS</b>				(D) NFPA 30 Class I/II FlashPoint < 110 deg/No Sale/For Clng	
		(A) 101 LSC Repair/Replace Panic Hardware				(E) NFPA 30 Class I/II No Gravity Dispensing	
		(B) 101 LSC Maintain Exit Doors Operable				(F) NFPA 30 Approved Safety Cans/Class I - Disp	
		(C) 101 LFC-5 Openable without Special Knowledge				(G) NFPA 30 Provide Approved (FL) Storage Cabinet	
		(D) 101 LSC-5 Remove Unapproved Locking Devices				(H) NFPA 55 Comp Gas Cylinders/Secure & Identify	
		(E) 101 LSC-5 Provide "Occupant Load" Sign				(I) 101 LSC Open-Flame Devices	
		(F) 101 LSC-5 Provide Sign "This Door To Remain Unlocked During Business Hours"				(J) NFPA 30 Provide HazMat Storage Cabinet	
		(G) 101 LSC Maintain Exit Way Illumination				(K) NFPA 704 Identify HazMat Areas/Per UFC 70-3	
		(H) 101 LSC Maintain Exit Sign Illumination				(L) SARA III Provide MSDS Form	
		(I) 101 LSC Repair Emergency Lighting				(M) NFPA 385 Provide Vehicle/Protection HazMat Tanks	
		<b>COMMENTS:</b>				(N) NFPA 43d Provide I/D for Pesticide Storage	
						(O) Other _____	
						(P) NFPA 54 Provide Vehicle Protection for Gas Meter	
						<b>9. FIRE ALARM SYSTEM ANNUAL TESTING</b>	
						(A) NFPA 72 Smoke Detector/Pull Alarm Required	
						(O) Other _____	

\*On (Date) \_\_\_\_\_ a reinspection has been scheduled at the occupancy. Non-compliance will result in inspection assessments at the current City rate which may culminate through legal avenues.

1<sup>st</sup> Reinspection conducted (Date) \_\_\_\_\_ Pass  Fail  2<sup>nd</sup> Reinspection Due (Date) \_\_\_\_\_

643-5604 643-5602

Inspector Signature & ID \_\_\_\_\_ Copy Left With (Signature) \_\_\_\_\_

Source: Fire Department Records

## **APPENDIX C: FIRE DEPARTMENT COMPLIANCE WITH IFC PERMIT REQUIREMENTS**

**Source:** International Fire Code, 2006 Edition; Fire Department Website

**APPENDIX D: EXCERPT OF THE CITY OF ASHEVILLE FIRE INSPECTION FEE SCHEDULE**

**Ordinary Risk Occupancies (Inspected every 36 months)** - Uses that have an average probability of a fire or other emergency occurring due to type and/or quantity of materials stored, used, or handled on site, or because of processes typically performed in business operations. Additionally, these occupancies would have an average risk of injury or death to the occupants in a fire or other emergency.

Occupancy Group	First Inspection Fee	Reinspection Fee if	Second Reinspection Fee if
		Violations <u>Not</u> Cleared <sup>(1)</sup>	Violations <u>Not</u> Cleared <sup>(2)</sup>
Small Assembly - Capacity 50-99	\$75	\$150	\$300
Business - Varies based on square footage	\$25-500	\$50-1,000	\$100-2,000
Mercantile - Varies based on square footage	\$25-500	\$50-1,000	\$100-2,000
Storage - Varies based on square footage	\$25-500	\$50-1,000	\$100-2,000
Utility - Varies based on square footage	\$25-500	\$50-1,000	\$100-2,000

**Moderate Risk Occupancies (Inspected every 24 months)** - Uses that have an average probability of a fire or other emergency occurring, but due to the type and/or quantity of materials stored, used or handled on site, or because of processes typically performed in their operations, a fire may be more intense or the emergency more severe. Additionally, these occupancies would have a higher than average risk of injury or death to the occupants in a fire or other emergency due to occupants' age and/or presence of higher fire risk processes.

Occupancy Group	First Inspection Fee	Reinspection Fee if	Second Reinspection Fee if
		Violations <u>Not</u> Cleared <sup>(1)</sup>	Violations <u>Not</u> Cleared <sup>(2)</sup>
Factory - Varies based on square footage	\$25 - 500	\$50 - 1,000	\$100 - 2,000
Private Schools - Varies based on square footage	\$25 - 500	\$50 - 1,000	\$100 - 2,000
Public Schools (each site)	\$250	\$500	\$1,000

**High Risk Occupancies (Inspected every 12 months)** - Uses that have a higher than average probability of a fire or other emergency occurring due to type and/or quantity of materials stored, used, or handled on site, or because of processes typically performed in business operations. Additionally, these occupancies would include those that have a higher than average risk for injury or death to occupants due to age, physical or mental abilities, occupant load, or size and complexity of structure.

Occupancy Group	First Inspection Fee	Reinspection Fee if	Second Reinspection Fee if
		Violations <u>Not</u> Cleared <sup>(1)</sup>	Violations <u>Not</u> Cleared <sup>(2)</sup>
Large Assembly - Varies based on capacity	\$125 - 375	\$250 - 750	\$500 - 1,500
Daycare - Varies based on licensed capacity	\$75 - 500	\$150 - 1,000	\$300 - 2,000
Institutional - Varies based on licensed capacity	\$75 - 500	\$150 - 1,000	\$300 - 2,000
Hazardous - Varies based on square footage	\$25 - 500	\$50 - 1,000	\$100 - 2,000
Residential 1 - Varies based on number of sleeping rooms	\$75 - 500	\$150 - 1,000	\$300 - 2,000
Residential 2 - Varies based on number of common areas	\$75 - 325	\$150 - 650	\$300 - 1,300
High Rise	\$250	\$500	\$1,000

**Footnotes:**

<sup>(1)</sup> Re-inspection fees are not charged if all violations are cleared at the time of re-inspection.

<sup>(2)</sup> Subsequent re-inspections beyond the second re-inspection with violations not cleared will result in doubled fees with each necessary re-inspection of continuing violations, with no fee cap.

**Source:** City of Asheville Fire Department Website