

# VIII. FIRE PREVENTION

## A. PROFILE

This section of the report addresses that part of the Fire Department that processes development permits.

Fire Plan Check and Inspections are under direction of the Deputy Chief/Fire Marshal. The Deputy Chief/Fire Marshal reports to the Fire Chief.

There are 31 positions in the Fire Department participating in Plan Check and Inspections for development and construction. The classification of the positions, their annual salaries, and the number of incumbents are shown in Table 40.

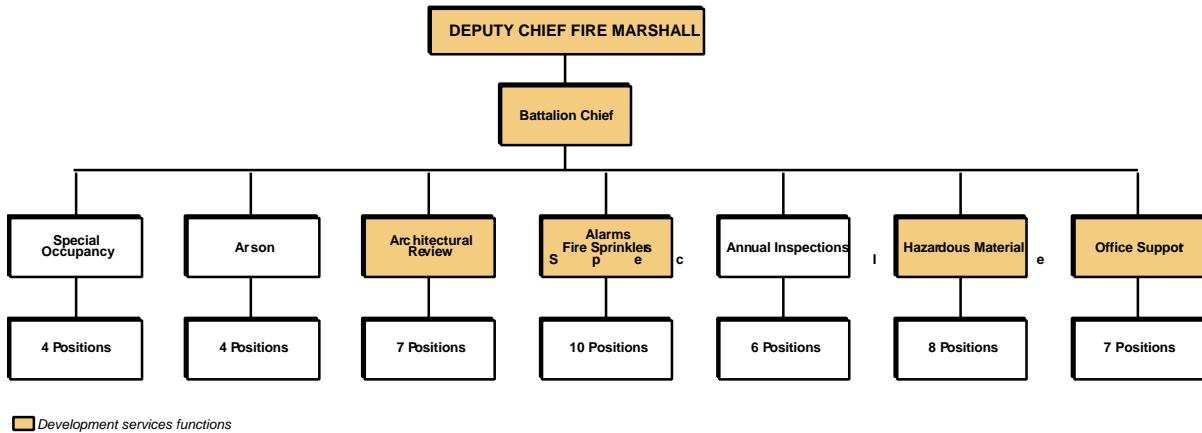
**Table 40**  
**Fire Department Plan Check and Inspection Staffing, and Vacancies**

<b>Classification</b>	<b>Number of Positions</b>	<b>Number of Vacancies</b>
Deputy Fire Chief/Fire Marshall	1	0
Battalion Chief	1	0
Supervising Fire Protection Engineer	2	0
Fire Protection Engineer	10	0
Assistant Fire Protection Engineer	2	0
Inspector (Uniform Personnel) *	4	0
Inspector (Non Uniform) - Haz Mat	7	0
Permit Specialist	2	0
Senior Haz Mat Inspector	2	0
<b>Total</b>	<b>31</b>	<b>0</b>

\*Inspectors who are sworn uniform fighters.

The staff of the San Jose Fire Prevention Bureau consists of 7 functions: Architectural Plan Check, Fire Sprinkler and Alarm Systems Plan Review, Arson Hazardous Materials, Permitted Occupancy Special Inspections, Special Occupancy Annual Inspections, Hazardous Materials, Annual Inspections, and Office Support Staff. The organization is shown in Figure 14.

**Figure 14  
Fire Prevention Bureau Organization**



The Fire Prevention Bureau performs the following basic functions:

- ✍ Takes in applications for fire sprinkler and fire alarm systems.
- ✍ Conducts fire life safety architectural plan check for building permit fire code compliance.
- ✍ Conducts fire inspections on construction projects authorized by building permits.
- ✍ Conducts plan check for hazardous material occupancies.
- ✍ Conducts annual inspections of existing occupancies.
- ✍ Conducts plan review and inspections for fire, alarm systems, and special occupancies.

## **B. DESCRIPTION OF ACTIVITIES**

Some initial findings in regard to activities and functions of the Fire Prevention Bureau involved in the development process are summarized below.

### ✍ **Architectural Plan Check**

This section currently has two Fire Protection Engineers working in the City Building Permit Center, along with other staff located at Headquarters downtown. Oversight is provided by a Fire Protection Engineer Supervisor. The Engineers check all plans received for building permits for fire life safety as required by State law, such as Commercial, Industrial, Apartments/Condominiums and Assembly occupancies in new and remodeled buildings.

When building plans are received, a separate set is required for Fire Department review. Working closely with the Building Division, these plans are coordinated for efficient processing. All permits for construction, except fire sprinklers, alarms, and hazardous materials, are reviewed for code compliance by this unit.

The Fire Protection Engineers also conduct field inspections.

#### **Alarms, Fire Sprinklers, and other systems**

This unit reviews alarms, fire sprinkler systems, and special systems or events. All personnel work out of the downtown office.

Permit applications are received at the Fire Prevention Bureau office downtown. They have a Permit Specialist who operates a permit counter.

Currently, inspections are being conducted by staff of this section separately from new construction, which is inspected by the Architectural section. They are working on a goal to combine all Fire Plan Check and Inspections for 10 Fire Protection Engineers and one uniformed sworn officer to include fire alarms, sprinkler systems and architectural reviews. There are seven Fire Protection Engineers and three uniformed sworn staff in this section, all working under the Fire Protection Engineer Supervisor.

#### **Hazardous Materials Section (Haz Mat)**

This section provides plan check and inspections for occupancies containing or are proposed to have hazardous materials as defined by model codes and State law. State law requires permit applicants to declare all chemicals to be used in their facility. If amounts declared meet the jurisdiction's responsibility to control, plans have to be approved and inspections conducted before that facility can be used. Periodic inspections and enforcement by State law are also conducted.

There are eight Haz Mat Inspectors (7 civilian, 1 sworn) supervised by one Senior Haz Mat Inspector. They also are training to be combined with all other Fire Protection Engineers and Fire Inspectors.

Haz Mat permit applications are received, plan checked, and issued separately at the Fire Prevention Bureau office downtown.

There is an abundance of hazardous materials to be controlled in San Jose due to the "Silicon Valley" firms that use materials and chemicals listed by State law to be monitored and controlled.

### ✍ **Annual Inspections and Arson**

These sections of the Fire Prevention Bureau are not part of the development permitting process.

### ✍ **Fire Code Enforcement Authority**

By law, Fire Codes are adopted through the office of the State Fire Marshal. The State Fire Marshal deputizes the local Fire Departments to enforce the fire codes. In San Jose, this responsibility falls on the shoulder of the Deputy Fire Chief / Fire Marshal.

### ✍ **Permit Computer System**

The Fire Prevention Bureau uses the same permit system used by the Building Division. They are linked together for coordination.

## **Observation**

The Fire Marshal, when interviewed, stated that the goal is to achieve a seamless building permit operation. He is working toward the goal of training all staff as combined specialists versus the current process where it is separated into Architectural, Alarms, and Haz Mat. Individual sections are working only on their specialty. He states that about half the staff is trained for this goal.

## **Permit Types and Volumes**

We reviewed data on the types and volumes of permits processed and inspected by the Fire Department. For each category, the percentage of change between the years being compared is calculated as shown in Table 41.

**Table 41**  
**Fire Department Permit Volumes**

<b>Permits Issued</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Fire Sprinklers	1,161	1,241 6.9%	1,253 1.0%	1,415 12.9%	1,279 -9.6%
Fire Alarms	353	388 9.9%	470 21.1%	517 10.0%	601 16.2%
Above Ground Closures	41	42 2.4%	65 54.8%	95 46.2%	91 -4.2%
Above Ground Installation	258	262 1.6%	256 -2.3%	300 17.2%	313 4.3%
Underground Closure	72	84 16.7%	124 47.6%	54 -56.5%	64 18.5%
Underground Installation	29	50 72.4%	116 132.0%	36 -69.0%	40 11.1%
New Development	256	238 -7.0%	197 -17.2%	286 45.2%	358 25.2%

## **C. FIRE PREVENTION FOCUS GROUP**

Seven fire alarm, sprinkler, and plumbing consultants met for 90 minutes on June 19, at the Horizon Center Conference room. The facilitator for the focus group was Zucker Systems' President, Paul Zucker. No city staff was present. Participants were guaranteed full confidentiality. Issues discussed are described below.

### **One of the Best**

The groups feel that San Jose's Fire Prevention function, compared to other cities in the area, is perhaps the best. One person suggested they are equal to or perhaps even better than Sunnyvale, which is known for good customer service. San Jose is very cooperative and helpful.

### **Alternative Means and Methods**

Some feel the City has been good with alternative means and methods. Others suggest there should be more instances where a standard practice would not require Alternative Means and Methods. An example given was for certain water connections.

Suggestion: Develop more standard practices to reduce the need for Alternative Means and Methods

## **CAD Files**

Suggestion: Allow change orders or progress prints to be sent in by CAD files via email.

## **Combined Plan Check and Inspection**

Over-the-counter plan review is fast and is appreciated by the industry.

## **Communications**

There is no standard way that Fire Prevention connects with the industry. Policies and fees may be changed without industry input or communications.

Suggestion: Email should be used to request industry opinions on new policies or fees.

Suggestion: Give the industry time to react to new policies on fees, or grandfather policies and fees when industry contracts are in place at the time of City adoptions.

## **Consistency**

The area of most concern is obtaining consistent opinions on interpretations from Fire Prevention. One Plan Checker will review the plans differently than another. A second Inspector may differ with prior inspections or add requirements. There may be lack of consistency between Plan Checkers and Inspectors. Inspectors seldom ask for or review plans prior to conducting inspections. There seems to be a need for more employee training and policy clarification. Some employees don't know the City ordinances well.

Suggestion: Whenever possible, assign the same Inspectors to any repeat inspection.

Suggestion: Increase consistency training for Plan Checkers and Inspectors.

## **Coordination**

City Hall and downtown Fire Prevention staff do not coordinate well.

## **Elevator Permits**

The State requires certain sprinklers to obtain elevator permits, but the City does not like these sprinklers and rejects drawings that show the sprinklers. This is a Catch 22 and the contractor puts in the sprinkler irrespective of City comments.

Suggestion: Stop this game.

## **FDIC (Fire Department Initial Comments)**

The FDIC comments are not always available to the contractors and the contractors are required to furnish the FDIC comments, which were a city record to begin with.

Suggestion: FDIC comments should be on the City's permitting system and readily available to all staff as well as contractors.

## **Fire Hydrants**

The process for obtaining fire hydrants is complicated and involves too many people.

Suggestion: Simplify the process for obtaining fire hydrants.

## **Fire Ordinances and Policies**

The Fire Ordinances haven't been updated lately. Also, some of the information packets include policies that have not been adopted.

Suggestion: Update Fire Ordinances and policies.

## **Haz Mat**

Haz Mat review is generally seen as a problem. Haz Mat staff do not coordinate well with other staff and go out of their way to find unusual things. Separate permits may be required on the same project for tools, systems or closure.

Suggestion: Standardize by allowing one permit per project.

## **Inspection**

Inspectors are externally accommodating in getting inspections done. The policy allowing overtime for inspections is highly supported. The industry is used to calling for inspections in advance and the current system, often requiring a week, does not present a problem. When push comes to shove, the Division is accommodating to the industry inspections needs.

## **Over-the-Counter Plan Review**

Over-the-counter plan review is fast and is appreciated by the industry.

## **Permit Issue**

Some projects may require 100 or more TI's for the same site.

Suggestion: Provide for master submittal templates and submitting cut sheets annually.

## **D. FINDINGS**

This review found some exemplary features as well as a variety of opportunities for improvement. Positives include:

- ✍ A positive response to the Business Climate Report conducted in 2001. The Fire Prevention Bureau has responded to each issue identified with accomplishments.
- ✍ A professional staff who have a positive attitude toward their work and a desire to improve.
- ✍ A capable staff.
- ✍ A Fire Marshal and staff who have been responsive to achieving a seamless system in processing Building Permits.
- ✍ A program to consolidate Architectural, Alarms, and Fire Sprinkler plan check and inspections to provide more efficient public service.
- ✍ Their cooperative effort to use the new permit computer system.
- ✍ The professional credentials of their Fire Protection Engineers and Inspectors.

Opportunities for improvement are discussed along with recommendations in the following sections of the report.

## **E. INSPECTIONS**

### **Hazardous Materials in the City of San Jose**

The City of San Jose, the “Capital of Silicon Valley” presents a unique, diversified and challenging environment for hazardous materials storage and use. With nearly 2600 registered facilities employing hazardous materials in the City’s boundaries, there is a constant challenge to provide a safe environment within the City. The City is unique with its three major fuel farms, toxic gas facilities, three of the largest chemical warehouses on the west coast, an international airport, a growing biotechnology presence, multiple major food processing plants, a large water treatment control plant for three major cities, major plating facilities, five hospitals, major communication facilities serving the Internet industry, major semiconductor manufacturers, as well as numerous large R and D facilities serving the semiconductor industry (Novellus, Agilent, IBM, Research). All of these industries, plus the myriad smaller businesses (auto repair shops, service stations, dry cleaning establishments, woodworking facilities, small electronic firms, R&D facilities etc.), present a constant and ever increasing challenge to the Hazardous Materials Division of the San Jose Fire Department. The complexities of tasks and responsibilities presented to the Inspectors of the Hazardous Materials Division are enormous.

## **Haz Mat Information Clearance Form Used at Time of Building Permit Application**

Haz Mat Inspectors are concerned that all Hazardous materials are not identified at the time forms are completed when building permit applications are received. California State law requires that all hazardous materials be identified. A review of the current form used reveals the following:

- ✍ Plan Check Number
- ✍ Chemical Name and Concentration
- ✍ Proposed Occupancy Classification
- ✍ UBC Class
- ✍ Quantity Stored
- ✍ Quantity in Use
- ✍ Stored in Approved Cabinet (Yes or No)

The Uniform Fire Code used in the City of San Jose and all other California jurisdictions contains a list of the name and quantity of known chemicals that are hazardous and affect construction or use. Instead of asking the applicant to fill in the names of their known chemicals, an increase in coverage could be achieved if all known chemicals and substances in the City and Uniform Fire Code were listed. Then, the applicant would be asked to indicate YES or NO if the chemicals were going to be used, and to list the concentration, quantity stored, quantity in use, and whether they would be stored in an approved cabinet. There should also be space for them to list chemicals or substances not on the list.

When the answer is YES or any added chemicals are listed, the form should always be sent to the Haz Mat section of the Fire Prevention Bureau as well as appropriately handled by the Building and Safety Division.

**247. Recommendation: Change the Hazardous Materials Disclosure form used during time of building permit application to list all chemicals or substances listed as hazardous in the Uniform Fire Code. Send all forms marked YES in any category, as well as those with added chemicals not listed, to the Haz Mat section of the Fire Department.**

## **Haz Mat Senior Inspector Responsibilities**

In past years there was a Program Manager assigned to supervise and perform administrative responsibilities for the Haz Mat section. There also was a Senior Inspector who worked directly with the Haz Mat Inspectors. The Program Manager has since been eliminated and the Senior Inspector assigned to perform the Program

Manager's duties as well as inspector supervision. As a result, there has been little supervision and quality control time available due to heavy demands in billing for the CUPA program.

The CUPA program is created by State law whereby an agency has the authority to provide billing and collections to recover costs for inspections, control, and enforcement in facilities that have storage of specified hazardous materials. In San Jose, the designee is the Fire Department. They are woefully behind in current billing and collections. This work has fallen onto the Senior Haz Mat Inspector. He was getting help from one Haz Mat Inspector who is currently out for maternity leave and, when doing this work, another position was taken away from Haz Mat enforcement, a critical program in San Jose. One reason they are behind is related to current computer program deficiencies. It is recommended that an administrative position within the Fire Department be reassigned to assume responsibilities for this work so that the Senior Inspector can return to the work of program quality control and inspections.

**248. Recommendation: Assign an administrative position to assume responsibility for the CUPA program billings, collections, and records.**

### **Concerns of the Non-Uniformed Fire Prevention Bureau Staff**

Most non-uniformed staff feel that they do not have the same reception from department management that is enjoyed by uniformed staff. They feel that their suggestions and concerns are not taken as seriously as those of uniformed staff. Our findings and review of this concern has been shared with management of the Fire Department. They feel that the expertise of the Fire Protection Engineers differs from uniformed staff and that the expertise of each group is equally important. They do not feel that they treat uniformed and non-uniformed staff differently. Nonetheless, it appears that sharing and discussion between the Fire Protection Engineers, Inspectors, and Department management in a "safe place" environment would provide a benefit to achieve understanding, allowing everyone to put issues on the table for resolution.

**249. Recommendation: Conduct meetings between non-uniformed staff and Fire Department management to clear the air of understanding of their reception and roles in the Department.**

### **Fire Department Inspections**

Currently, most fire prevention Inspections are conducted by Fire Protection Engineers who also perform Plan Checks. It would be more productive to create a specific Fire Inspection Group. When a Fire Protection Engineer has to go out to the field, it disrupts concentration on the plans they are working on as well as service to

customers in the office. In our report we are advocating a co-located inspection concept, which includes Fire Inspectors, so that team efforts with building and public works to provide improved services can be accomplished. Creating a specific inspection unit can contribute to efficiencies both with the Fire Department and the delivery of services.

If Fire Protection Engineers are used for inspections, there is the advantage that they could be able to review and approve plan revisions on job sites. This could relieve the customer from having to re-visit City Hall.

**250. Recommendation:** Create a separate Fire Inspection section for the purpose of conducting combined inspections for Architectural, Fire Sprinklers and Alarm installations.

### **Cross Training to Combine Fire Sprinklers, Alarms, and Architectural Review**

Cross training the Fire Protection Engineers began in June 2001 and was implemented November 2001. Currently, 33% of the Fire Protection Engineers have been completely cross-trained. We anticipate that 50% will be cross-trained by 2003, 80% by January 2004, and 100% by May 2004.

**251. Recommendation:** We recommend that completion of cross training be accelerated to complete all cross training sooner than the current goal.

## **F. STAFFING ANALYSIS**

The data used below is based on a full year of records for FY 2000/01.

### **Haz Mat**

The time Haz Mat Inspectors who work in the Haz Mat section have to devote to work on items related to facilities that contain hazardous materials is shown in Table 42.

**Table 42**  
**Available Work Hours for HAZ MAT Inspectors**

<b>Activity</b>	<b>Hours</b>
Available Hours Per Year	2,080
Less:	
Vacations	-120
Holidays	-104
Sick Leave	-98
Code Research	-75
Office Time	-260
Training	-116
Miscellaneous	-62
Subtotal	-835
<b>Total Available Hours for Permit Work</b>	<b>1,245</b>
Less:	
Annual Facility Inspections	-251
<b>Total Available Hours for HAZ MAT Inspectors</b>	<b>994</b>

**Workload**

Table 43 itemizes workload that occurred in year 2001 along with average time expended for each permit and Inspector demand.

**Table 43**  
**Haz Mat Inspection Demand**

<b>Activity</b>	<b>Project Volume</b>	<b>Staff Hours</b>
Above Ground Closures	117	537.5
Above Ground Installation Projects	356	2,951.5
Underground Closure Projects	57	395.0
Underground Installation Projects	34	232.5
Other Required Activities	*	529.5
Complaint Investigation and Enforcement	*	528.0
Building/Planning Related Projects	*	1,216.5
Special Projects	*	511.5
Facility Annual Inspection Activities	*	1,760.0
<b>Total Required Staff Hours</b>		<b>8,662.0</b>
<b>Divided by Productive Hours Per Staff</b>		<b>0.994</b>
<b>Total Required Staff</b>		<b>8.7</b>

\* Staff hours

## Architectural, Fire Alarms and Fire Sprinklers

The time that Fire Protection Engineers and Fire Inspectors devote to permit work is shown in Table 44.

**Table 44**  
**Available Work Hours for Fire Protection Engineers and Fire Inspectors**

<b>Activity</b>	<b>Hours</b>
Available Hours Per Year	2,080
Less:	
Vacations	-120
Holidays	-104
Sick Leave	-40
Training	-40
Office Time	-444
Staff Meetings	-88
Subtotal	-836
<b>Total Available Hours for Permit Work</b>	<b>1,244</b>

The data used in Table 44 is based on a full year from records reviewed for FY 2000/01.

**Table 45**  
**Fire Sprinkler Staff Demand**

<b>Activity</b>	<b>Plan Check Hours</b>	<b>Inspection Hours</b>	<b>Volume</b>	<b>Plan Check Demand Hours</b>	<b>Inspector Demand Hours</b>	<b>Total Staff Hours</b>
Fire Sprinklers	2.0	4.8	1,279	2,558	6,075	8,633
Divided by Total Available Hours for Fire Protection Engineers						Ö 1,244
<b>Total Fire Protection Engineers Demand</b>						<b>6.9</b>

**Table 46**  
**Alarms Plan Check and Inspection Staff Demand**

<b>Activity</b>	<b>Plan Check Hours</b>	<b>Inspection Hours</b>	<b>Volume</b>	<b>Plan Check Demand Hours</b>	<b>Inspector Demand Hours</b>	<b>Total Staff Hours</b>
Fire Alarm Systems	1.5	3.6	601	902	2,164	3,065
Divided by Total Available Hours for Fire Protection Engineers						Ö 1,244
<b>Total Fire Protection Engineers Demand</b>						<b>2.5</b>

**Table 47**  
**Architectural Fire Plan Check and Inspection Demand**

Activity	Plan Check Hours	Inspection Hours	Volume	Plan Check Demand Hours	Inspector Demand Hours	Total Staff Hours
Architectural SFM	13	5	336	4,368	1,680	6,048
Architectural Non SFM	7.1	3.8	1,342	9,528	5,100	14,628
Total Staff Hours						20,676
Divided by Total Available Hours for Fire Protection Engineers						Ö 1,244
<b>Total Fire Protection Engineers Demand</b>						<b>16.6</b>

### **Overview of Staffing Analysis**

The Haz Mat analysis shows a demand of 8.7 Inspectors. They currently have 7 Inspectors. Haz Mat is recommended to continue as a stand-alone function because of the nature of their specialized work and sensitivity required in this area of fire protection.

The Alarm and Fire Sprinkler analysis shows a demand of 6.9 positions for Fire Sprinklers and 2.5 for Alarms Fire Protection Engineers.

The Architectural Plan Check and Inspection unit analysis shows a staffing demand for 16.6 Plan Check and 6 Inspection positions.

There is currently an ongoing effort to train staff to perform combined inspections which, when implemented, should make up for staff shortages that result from the analysis done by specialization of three operating functions. When combined and duties consolidated, staff savings should allow them to perform adequately with realized staff savings.

**252. Recommendation:** Maintain the Haz Mat unit as a separate operating function with Haz Mat specialists conducting plan review and inspections.

**253. Recommendation:** Complete training for Fire Protection Engineers and Inspectors to perform their functions in a combined manner for buildings as soon as possible. Implement a combined section, using the same staff for Architectural, Fire Sprinklers, and Alarm Systems on each job.