PUBLIC SAFETY CONCEPTS AND PRACTICES

DYNAMIC SOLUTIONS
TO COMMUNITY SAFETY NEEDS

CITY OF SUNNYVALE, CALIFORNIA

1973

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Charles H. Hefferlin — Harold C. Shields

FOREWORD

In the last half of the twentieth century, the dominant force in the United States, and society in general, has been rapid change. This has been particularly true in technology, social patterns, service delivery systems and population movement and growth. No single government agency has borne the brunt of change more than the city; and in the city, safety services—police and fire—have been affected the most.

What once served adequately to deter crime or prevent and quell fires no longer performs satisfactorily. Crime incidence rates and fire hazards have increased substantially as new construction, compressed population, and deterioration of the central city have combined to escalate to crisis levels the demand for safety services.

Yet with these burdens have come solutions. Electronic data processing, properly applied, opens new doors to crime prevention and fire protection policies and practices. Real-time data, input non-sequentially, validated and accessed through on-line terminals now makes feasible realistic planning of resources to meet goals and commit forces in a manner never before envisioned.

Besides advances made in collecting and applying data, communications have been vastly improved. Microwave and co-axial cable systems, coupled with ultra-high frequency transitorized transmitters and receivers have revolutionized communication networks. Safety services are in constant and immediate contact with each other internally and externally. Cathode ray tubes portray messages visually in split seconds. Miniaturization supplies the means of contact with each member of the force.

Also with technical improvements in information and communications system has come the ability to plan all activities through programs. Programs are the vehicles of action, the means for noting performance, the main device for control over the disposition of resources. Programs cut through the red tape of archaic control mechanisms and reduce to manageable proportions the ancient conflict between specialization and generalization. All resources are siphoned into given programs—be they skills, services, or supplies. Team effort supplants organization, and within the team, each member is a prime contributor to the success of the program.

This report addresses itself to 22 years of experience of one safety services delivery system in a city of more than 104,000 population. It portrays an attempt to take advantage of the new technology in fulfilling local law enforcement and fire protection requirements. Years of effort are involved, and the standards set are only a beginning.

In accumulating data for the report, reliance was placed on information from other safety operations in the San Francisco Bay Area, in State of California statistical reports, and in data contained in the computerized Safety Information System of Sunnyvale. Acknowledgement is made of the data supplied by the city managers and chiefs of police and fire departments in the respective jurisdictions; and of the efforts of George K. Hansen, Director of Public Safety and his staff; and W. T. Hopkins Assistant City Manager. If this report is to be dedicated to any purpose, the one that would be of utmost interest and value is the improvement of public safety services in general so that today's city can be a safer dwelling place for all its residents.

John E. Dever
City Manager

Section I
INITIAL EFFORT

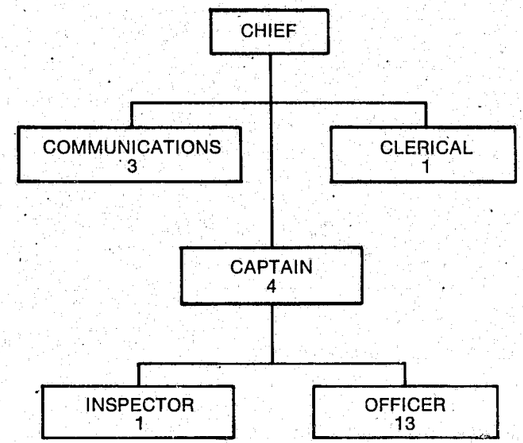
Initiation The Department of Public Safety was established formally in the City of Sunnyvale June 6, 1950 by Council Resolution Number 1040 (See Exhibit A in Appendix). This action initiated an approach to the delivery of municipal safety services that has been the hallmark of safety concepts and practices ever since.

Rationale Prior to the adoption of the resolution, the city was served by a police department and a volunteer fire force. Because of the growth of the community, the need for a regularly constituted full-time fire service soon became manifest. Before the City Council took action to meet this need, two alternatives were considered: the first was to create separate fire and police departments according to the traditional specialization concept; the second, was to train and equip safety personnel to provide both police and fire services as one thus giving the community a generalized approach to its safety requirements. Studies were made of both alternatives, and on the premise that a generalized approach would avoid duplication of effort, be more flexible and responsive to community safety needs and achieve economies in manpower without reduction of service levels, the decision was made to establish a Department of Public Safety.

Enabling Authority Under Article IV, Section 400 of the Charter of 1950, the City was granted the power to exercise *"all rights, powers and privileges"* accorded under the Constitution of the State of California. Any power limited by the charter itself did not affect the city's ability to function as a municipal corporation. Article VII, Section 706 and also Article IX, Section 901 of the Charter authorized the City Council to create or abolish city departments not enumerated in the charter. The authority of the City Council to abolish departments or offices was therefore clearly prescribed in the charter, and council's action to create the Department of Public Safety was found to be within the powers granted the City Council by the charter. An amendment to Section 901, Article IX of the City Charter clarified even further the power of the City Council to create offices and departments. The amendment, which was approved by the electorate on June 4, 1968, is quoted as follows: *"Section 901. Other Appointive Officers. The City Council may provide by ordinance for the creation or abolishment or reorganization of city departments or offices on the advice and recommendation of the city manager. Each department shall be headed by an officer as department head who shall be appointed by the city manager."*

1950 Organization After the department was created, the city manager appointed an interim chief to head the public safety operation. This appointment was made on June 16, 1950. By July 10, a list of eligible candidates was established and the ranks were then filled from the list. Chart A shows what the organization of the department was like at its inception. The chart also lists the basic complement of fire suppression equipment and facilities.

CHART A *Original organization of the Department of Public Safety July 10, 1950*



FIRE EQUIPMENT

1—1935 Ford (500 gallon)
1—1926 Seagrave (350 gallon)
1—1942 Seagrave (500 gallon)
1—1950 Seagrave (1,000 gallon)

FIRE STATIONS

No. 1—Located on Washington Ave. near Murphy (later site of Farry's Hardware Store)
No. 2—Located on Fairoaks near Arques (now vacant area near Central Expressway)

Section II
ENVIRONMENTAL IMPACT

Population Growth When the Department of Public Safety was created, the city's population according to the 1950 federal census was 9,829. This population total was distributed over six square miles of incorporated territory. The ratio of total departmental personnel (23) per 1000 population at the time as 2.34. By 1972 the city's population had increased to 100,777, and the incorporated territory to 22 square miles. The ratio of total departmental personnel (190) per 1000 population was 1.90, a reduction of 19% over the 22 years. A map of the city is supplied as Exhibit B in the Appendix. The map outlines the city limits in 1950 and in 1972.

Housing Development Another change having an impact on safety was the number of housing units constructed since 1950. In 1950 there were 3,100 housing units in the city. A housing unit is defined as a complete accomodation for living purposes. Thus a single family residence or an apartment constitutes one housing unit. By July, 1972 the city had 35,898 housing units.

Cost estimates for the replacement value of each housing unit, using 1972 prices, was $14,800 (Department of Community Development, Building Inspection Division figures.) The total replacement value of these living units, by applying the estimated value per unit, would therefore be $531,290,400. Actual building permit value recorded by the

Pictured above is a typical residence in the city

Department of Community Development as of 1972 was $377,404,643. This is an accumulative figure starting with 1950 as the base year. Table "A" shows permit dollar values of new construction for the period 1950 to 1972.

Of the 16,165 acres within the city limits, 6,291 were zoned for residential development. By 1970, 88.6 per cent of this acreage had been developed. In terms of single family residences only 53 acres remained undeveloped by 1972.

Industrial Development A review of the planning documents of the 1950's shows that the allocation of land for industrial development was also of prime concern to the community. By 1970, the 4,076 acres zoned for industrial purposes totalled 25.2% of all land in the city limits. Of this total industrial acreage, 48% has now been developed. Most of the industrial development has occurred within industrial parks, a concept "... which is designed to insure compatibility between the industrial operations therein and the existing activities and character of the community in which the park is located."*

Major industrial parks developed in the community by 1972 were: East Sunnyvale (48 acres), International Science Center (130 acres), Justin Jacobs (75 acres), Kifer (70 acres), Moffett Park (622 acres), Nearon-Schneider (54 acres), Norris Beggs Simpson Park (256 acres), Oakmead (268 acres), Peery Industrial and Business Center (80 acres), and Pursley (30 acres). Total industrial park acreage developed as of 1972 was 1,901 acres, or 2.97 square miles.

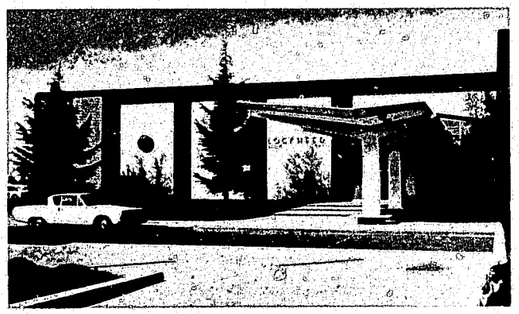
The actual value of construction taken from permits recorded over the years illustrates the extent of industrial development. Using 1950 as a starting point, industrial construction permit value totalled $105,831,556 by 1972 (See Table A, Page 2). Although the type of industries that have located in Sunnyvale are diversified; aerospace, electronics, computer soft and hardware firms and food processing plants dominate the field.

Commercial Development Like residential and industrial expansion, commercial development has followed the same growth pattern. The first significant commercial expansion in the period was in 1954 when the downtown Plaza Shopping Center was opened. Other centers that developed later were Cherry Chase—1955; Rhonda Valley—1957; Dick's Lakewood—1961; La Hacienda—1959; Fair Oaks—1960;

*1966 Info Commentary of the County of Santa Clara Planning Department

TABLE A *New construction permit value 1950–1972 (excludes alterations and repairs)*

Year	Housing Units	Commercial	Industrial	Public, etc.	Total
1950	$ 2,114,186	$ 139,000	...	$ 162,124	$ 2,415,310
51	1,020,300	11,300	$ 938,960	342,260	2,412,820
52	6,335,480	289,250	334,803	190,159	7,149,692
53	7,074,100	1,127,150	655,521	552,921	9,409,692
54	11,963,800	867,400	2,075,405	255,895	15,162,500
55	13,962,542	1,012,815	1,482,984	197,934	16,656,275
56	13,803,400	1,434,000	3,529,252	388,352	19,155,004
57	21,827,000	1,961,600	4,575,271	388,071	28,751,942
58	15,574,100	874,100	17,316,080	699,180	34,463,460
59	20,841,450	2,222,689	4,157,297	1,743,097	28,964,533
1960	16,421,819	1,242,270	5,244,679	2,788,253	25,687,021
61	19,801,637	2,818,094	8,845,212	4,187,118	35,652,061
62	33,108,635	2,112,472	9,702,735	1,442,652	46,366,494
63	37,207,630	2,260,966	6,300,609	3,759,938	49,529,143
64	22,915,266	2,421,110	2,912,971	3,354,752	31,064,099
65	11,636,714	1,599,398	450,800	803,993	14,490,905
66	13,857,758	5,460,256	4,565,427	1,086,500	24,969,941
67	16,687,869	1,578,292	5,303,600	1,141,018	24,710,779
68	28,713,311	2,195,340	15,864,588	2,078,087	48,851,326
69	19,116,085	5,017,340	4,987,578	2,371,014	31,492,017
1970	23,512,804	1,145,182	3,933,919	1,130,776	29,722,681
71	19,908,757	1,266,000	2,653,865	3,118,456	26,947,078.
Total	$ 377,404,643	$ 39,156,024	$ 105,831,556	$ 32,172,550	$ 554,564,773



This is typical of the industrial plants that have been built in the city.

Fremont Corners—1960; Holiday—1961; Westmoor Village—1961; Fremont Shopper—1964; Sunnyvale Shopping—1964; Civic Center, De Anza Square, Sunnyvale Square and Town and Country Village—1964; and Wolfe-Reed Center—1970. The only other major shopping center not listed in the grouping is the Allario Center which opened in 1947. Also not included in the 1950–1972 period is the original downtown business district which has since been expanded by the Plaza Center. In terms of dollar expansion, new construction attributable to commercial development totaled $39,156,024 for this period (Table A, Page 2). Taxable retail sales for the year 1970 as stated in the 1971 Shopping Center Guide published by the San Jose Mercury and News were $126,777,000. For that year Sunnyvale ranked fifth in sales among the cities in Santa Clara County. Of the total of 834 acres zoned for commercial uses, 25.5% or 213 acres remain to be developed.

One of several neighborhood shopping centers built since 1960.

Building Safety Codes Due to the rapid and continuing pace of growth, the need for keeping the city's building standards up-to-date has been an ever present factor. As evidence of this, these revised codes were adopted on October 19, 1971:

Uniform Building Code, 1970 Edition
Uniform Housing Code, 1970 Edition
Dangerous Buildings, 1970 Edition
Uniform Plumbing Code, 1970 Edition
National Electric Code, 1971 Edition
Uniform Mechanical Code, 1970 Edition
Automatic Sprinkler Systems, 1970

The adoption of these codes not only reflects an effort to upgrade the city's safety requirements for building construction, but also to take advantage of the technical changes in building safety as the uniform codes are improved.

Water System A description of the city's water system as it was in the early 1950's is best provided by the 1957 Report of the Board of Fire Underwriters of the Pacific. This report stated that the "supply system is by pumping from deep wells through booster pumps supplemented by a gravity supply; supply is adequate. Pumping capacity together with gravity supply is adequate except in some residential areas where supply is dependent upon single pumps. No elevated storage. Consumption is moderate; all services metered."

Departmental statistics show that in 1957, total water produced was 5.455 acre feet or 1,777,588,955 gallons. At that time Hetch Hetchy supplied 20.5% of the water produced, and wells, 79.5%. Total production capacity of the city's water system operating on a 24-hour basis was 14.1 million gallons per day. Maximum daily consumption for that year was 10,031,100 gallons. Daily average consumption per capita for the same year was 136 gallons.

In contrast to the 1957 figures, growth of the system and the demand by customers required a total production of water in 1972 of 21,063 acre feet or 6,863,990,579 gallons. Hetch Hetchy is now supplying 50.7% of the total water produced. A new source of water from the Santa Clara County Flood Control and Water District accounts for 22.9%. The remaining 26.4% is being produced by local wells. Maximum daily consumption for 1972 was 39,500,000 gallons. Daily average consumption per capita for the year was 185 gallons, a substantial rise over the 1957 figure. Although production and consumption figures alone are sufficient to show the extensive expansion and improvement of the city's water system over the period of the early 1950's to 1972, the value of the system is another factor to be considered in reviewing the changes that have occurred. For example, the 1958 value of the complete water system was $9,084,000. By 1972, it was $23,779,497. Table B below is a statement of the total value of the component assets of the water system.

TABLE B Statement of water system assets

	June 20, 1972
Land	$ 577,407.00
Pumping Plants	1,087,851.81
Mains & Appurtenances	21,496,078.68
Machinery & Equipment	618,159.10
Total Assets	$ 23,779,496.59
	1968
Total Assets	$ 20,674,200.00
	1958
Total Assets	$ 9,084,000.00

In the 1967 American Insurance Association report on Sunnyvale the city's water system was described as "An adequate supply in the municipal system... by gravity from four connections to the San Francisco Bay Pipelines No. 3 and 4 (total capacity 34.49 mgd), supplemented by 22 local wells (total capacity 18.65 mgd)." The present total capacity of 53.14 million gallons per day is to be compared with the 14.1 mgd figure of 1957. In addition to the increased water supply available to the city, the relationship of maximum water used per day to the maximum productive capacity changed moderately from 1957 to 1972. In the former case, the ratio was 1 to 1.4; in the later case, 1 to 1.6.

Street Network Prior to 1959, the street network of the city consisted of 127.7* paved miles of surface. By 1972, the street system had been expanded to 240.0 miles of paved surface, an increase of 87.9% over the pre-1959 figure.

Depicted here is a standard city street.

Fire Insurance Classification Improvement in the fire insurance classification took place during the 1960's. In 1957, the city's classification assigned by the American Insurance Association (previously the National Board of Fire Underwriters), was 5. This was on a graphic scale of 1 to 10, 1 being excellent and 10, very poor. A rating of 5 is fair. The rating system is based on deficiency points which are distributed over six major areas: Water Supply—1,700 points; Fire Department—1,500 points; Fire Alarm—550 points; Fire Prevention—350 points; Building Department—200 points. The less deficiency points a city has, the better its rating. Climatic conditions also affect total points. The 1967 rating placed the city in the number 4 classification, or between fair and good on the 1957 scale. This rating has not been updated as yet. Only 164 points now separate the city from achieving a class 3 rating. A comparison of the city's fire ratings for 1957 is provided in Table C.

Insurance Premiums As to the relevancy of classification rates to fire insurance premiums, the rates are merely an indicator. Variations exist for specific structures. Each commercial and industrial building, for example, is individually rated on the basis of location, quality of construction, and design for fire protection. The classification rating system has no effect on single family residences where the ratings are 4 or 3. A change therefore from 4 to 3 would not benefit the homeowner in terms of reducing the cost of fire insurance. The effect on commercial and industrial structures would, however, be different. There is a moderate reduction in fire insurance premiums and coverage in going from a 5 to 4 classification. The premium is discounted 20% on the average, and the amount of insurable risk under the base rate is extended substantially. The transition from a 4 to 3 rating has a lesser effect, but still represents a further reduction of 10% on the premium. Based on the accumulative building permit value of 1972 (Table A, Page 2), the savings on fire insurance to the commercial and industrial complex of the city (using average rates) would have been $86,993 for the 1972 year had the classification rate been reduced from 4 to 3. This figure is based on calculations shown in Table D, Page 5.

*Street miles reported by Department of Public Works.

TABLE C *Fire rating comparisons*

CITY OF SUNNYVALE	1966 100%=Percent			1956 100%=Percent		
	Max.	Def.	Percent	Max.	Def.	Percent
Water Supply	1700	307	82%		740	56%
Fire Dept.	1500	563	62%		732	51%
Fire Alarm	550	177	68%		266	52%
Fire Prevention	350	85	76%		66	81%
Building Department	200	80	60%		62	69%
Structural Condition	700	246	65%		261	63%
Additional Def. (Including Police)	...	206	4%		240	5%
Total	5000	1664	67%	5000	2367	53%

1972 Fire insurance classification ratings

Campbell	4	Alameda	3
Milpitas	5	Palo Alto	3
So. San Francisco	3A	Hayward	5
Mountain View	4	Richmond	3
San Leandro	3B	San Jose	3
Fremont	4	Santa Clara	3
		Sunnyvale	4

Section III
OPERATIONAL ANALYSIS

Personnel Administration *Job Classification*—Employment standards for safety personnel are stated in the basic classification presented as Exhibit C in the Appendix. The job classification contains a description of police and fire duties, and establishes minimum qualifications in general terms except for height and weight requirements. Since 1959, the city has required every applicant to qualify under each of the following examinations before becoming eligible for appointment: written, oral, medical, psychiatric and background investigation. These standards are recommended for all peace officers in California and are a requirement for those departments who wish to participate in the California State Peace Officers Standards and Training Program (P.O.S.T.). As a side note,

TABLE D *Application of fire classification to insurance rates*

GENERAL PROVISIONS

Residential No distinction in rate structure from 4 to 3

Commercial

1. Every structure is rated
2. Distinctions in rate and insured value
   a. Class 5 to 4
      20% Rate Discount; 30% more insured value by prime carrier
   b. Class 4 to 3
      10% Rate Discount; more insured value by prime carrier

Average Rates

1. Frame Structure: 75¢ per $100 of value
2. Masonry Structure: 40¢ per $100 of value

EXAMPLE

$200,000 *Frame* Structure—Medium Class of Desirability

Class Rating	Prime Insurance	(Re-insured Amount)	Total Value Insured	Prime Insurance Rate Per $100 Value	Total Carriers
5	$25,000	$ 75,000	$100,000	75¢ on $100,000	Several
4	50,000	100,000	150,000	60¢ on $150,000	Two
3	75,000	100,000	175,000	54¢ on $175,000	One

SUNNYVALE COSTS

Assumptions

1. 100% insurability
2. Rate Application
   a. 75¢/$100 on Commercial
   b. 40¢/$100 on Industrial

Computation base

1. Commercial Permit Value	$ 39,156,024
2. Industrial Permit Value	105,831,556
TOTAL	$144,987,580

Class Rating	Commercial Rate	Industrial Rate	Commercial Premium	Industrial Premium	Total Premium
5	75¢	40¢	$293,670	$793,736	$1,087,406
4	60¢	32¢	234,936	634,989	869,925
3	54¢	29¢	211,442	571,490	782,932

Total savings in premiums
5 to 4 = $217,481
4 to 3 = $ 86,993

the department by 1972 had supplied three fire chiefs, one fire marshal, two police chiefs as well as several command officers to other public agencies.

Pay and Benefits—Because of the responsibility of having to perform police-fire functions, the city has always maintained a pay differential for public safety officer classes over prevailing wage scales in the area. In 1967 the differential was set a 7½% over police salaries in comparable jurisdictions. Between 1950 and 1972, the pay at the top of the salary range increased an average of 13.35% per year (See Table E). Wage supplements received by the officers in 1972 included life and accidental death and dismemberment insurance in an amount equal to the officers's annual salary (to the nearest thousand dollars), the premium being paid entirely by the city. The officer has the option of paying for the same amount of insurance at the rate paid by the city. The city also contributed a flat dollar amount (currently exceeding 80% of the premium) for health and dental insurance coverage for each employee. Retirement was provided by the Public Employees Retirement System of California. The plan is not integrated with social security. The officer also received 11 paid holidays a year, and was entitled to the same vacation and disability leave benefits accorded other city employees. The city provided officers with such other supplemental wage benefits as military leave, jury leave and training costs. In addition complete uniform and work clothes as well as bedding at the fire stations were supplied at no cost to the officer. Under the Workmen's Compensation Act, the officer was also entitled to one year of full pay for a job-incurred lost-time injury. The supplemental wage benefit package based on the 1972 payroll was approximately 27% of pay for the officers.

Fiscal and Position Allocation For fiscal 1972–73 the department's operating budget was $4,414,120. Of this amount $3,635,774 was for human resources and $778,346 for other resources. Funds allocated to human resources supported on a full-time basis 165 sworn officers and 25 non-sworn employees. In addition, 4 cadets and 15 crossing guards were assigned to part-time duties.

Assignment Schedule Those individuals assigned to fire station duty were on a 24-hour shift followed by two days off for an average of 56 hours per week over a six week cycle. Officers on police duty, dispatchers and certain clerical

TABLE E *Public safety officer pay increases 1950–1973 (actual salary and percentage increase for first and fifth steps)*

Year	Monthly Salary	
	First	Fifth
1950	$260	$305
1951	290	345
11-1-52	305	365
11-1-53 (Prop.)	325	385
1-2-55	335	395
10-1-55	366	439
7-1-56	383	459
1-1-57	383	480
7-1-57	415	505
7-1-58 (Prop.)	430	523
1959-60	458	556
1960-61	493	598
1961-62	517	626
1962-63	556	676
1963-64	584	710
1964-65	604	735
1965-66	622	756
1966-67	654	797
6-25-67	670	817
11-26-67	687	837
7-1-68	722	880
7-6-69	778	947
1-4-70	797	971
7-5-70	859	1046
7-4-71	919	1119
7-2-72	949	1155
1-14-73	987	1201
1950 to 1-14-73	279.62%	293.77%
Average	12.71% base per year	13.35% base per year

personnel were assigned to a 40-hour week on 8 hour shifts around the clock. Specialists and administrative personnel worked a standard 40-hour week, Monday through Friday. Public safety officers and lieutenants transfer from one service to the other at least annually, except for certain specialist assignments which may run for two to three years.

Facilities and Equipment The physical plant consists of a headquarters building and six fire stations strategically located throughout the 22-square-mile city. Automotive equipment includes 11 pieces of first-line fire apparatus, 36 modern sedans and 3 support vehicles. Operations were aided by a modern communications center, an advanced EDP system, and a records and service office.

Administrative Tools The department has been making full use of such advanced administrative tools as PPBS and computerized information systems which in turn are part of the city's integrated management information system. Within this framework, ultra-modern management methods have been developed and employed.

PPBS System—Much of the planning and management activity centers around the PPBS system. There are eleven programs assigned to the department that fall under the general city goal of providing protection to life and property. They are as follows:

This is a view of the Public Safety Communications Center.

Administration	Investigations
Records	Patrol Services
Communications	Fire Prevention
Training—Police	Fire Suppression
Training—Fire	
Court Liaison	Mobile Community Service Center

Each program has been assigned to a member of the management team who in turn has full responsibility for program planning, direction and control. This method has been made possible by the computerized management information system.

EDP System—The public safety module of the integrated City-wide EDP system is considered one of the most advanced in existence anywhere. The information required is input, on line, over terminals located at key centers of information flow. Reports required for planning, organizing, directing and controlling departmental programs are available on-line from high speed printers.

MBO Method—Management by Objective has been the method used to plan, direct and control all safety operations. Each unit of effort and commitment of resources is guided by clearly stated goals that are made known to every individual in the department. Goals are stated in quantitative terms as are the expected rates of performance for each activity needed to accomplish a particular goal. Periodic reports are distributed throughout the organization comparing planned with actual performance. Using the principle of "management by exception", program managers concentrate their attention on those activities that deviate from planned performance.

While making full use of quantitative techniques and methods, the department recognizes that its most important

resource is its personnel. Every effort therefore is made to develop each individual to capacity so the individual can make a significant contribution to the achievement of departmental goals.

Assignment Rotation—In order to realize the benefits of personal development, personnel are assigned to a broad range of jobs during their careers as part of the personal development program. The level of responsibility and decision making is decentralized to the fullest extent possible. Each officer by rank, is assigned a set of clearly stated objectives some of which the officer has already participated in setting. The officer is given the appropriate amount of responsibility and authority required to achieve those objectives and is then rated in terms of what has been accomplished.

Team Concept—Another device for making greater use of human resources is the application of the team concept to operations. The entire department is divided into teams each of which is responsible for a departmental program either during a given time period or in a certain geographical or functional area. Teams work and train together over a substantial period of time in order to develop the coordination required for effective performance. Also through the team concept personnel gain new perspectives of goals and problems.

Systems Analysis—To ensure efficient operations, on-going systems analysis of all activities is conducted. During this process policy, procedures, and techniques are systematically reviewed and revised. Planning is done in order to anticipate problems, adapt to changing conditions, and provide for the orderly development of departmental activities over a minimum projection period of five years.

Training and Education Training and education are of course the major means of developing human resource potential. The public safety concept places critical demands upon the department's police and fire science training programs. To meet these demands each recruit is given 240 hours of basic fire training in the department's Fire Academy and 480 hours of police training through the Police Academy.

This new headquarters facility, completed in 1971, houses the administrative, investigative and communication functions of the department.

Resource Allocation Plan The department carries out assignments through programs. A description of each of the 11 programs assigned to the department is as follows.

1. *ADMINISTRATION PROGRAM*

Staff	Equivalent Positions
Director of Public Safety	1
Public Safety Commanders	2
Senior Clerk Stenographer	1
Total	4

1972–73 Resource Allocation Plan

Human Resources	$96,755
Other Resources	30,080
Total	$126,835
Net Work Hours	7,201

The Director of Public Safety is responsible for the successful accomplishment of all departmental goals. Public Safety Commanders are responsible for these specific programs: Patrol, Mobile Community Service Center, Fire Prevention and Fire Suppression.

2. *RECORDS PROGRAM*

Staff	Equivalent Positions
Public Safety Captain	(Part time)
Administrative Assistant	1
Public Safety Officers	1
Storekeeper	1
Senior Office Clerk	3
EDP Clerk	1
Clerk Stenographer	1
Office Clerk	8
Total	16

1972–73 Resource Allocation Plan

Human Resources	$175,314
Other Resources	122,352
Total	$297,666
Net Work Hours	27,416

The services provided by this program include:

- Operating Information Systems
  Information is acquired, stored, processed and retrieved for dissemination to authorized personnel. This information includes case records, reports of wanted persons, stolen property, modus operandi information, criminal histories, and personal identification data that are needed by line personnel in the execution of their duties. A rapidly growing proportion of this information is processed under real-time, on line EDP systems. The management information system, a component of the City EDP systems, is operated by records personnel.
- Personnel
  Personnel work at the departmental level is performed under this program. Liaison between the personnel office and the department on payroll, leave, and other routine affairs is maintained. Internal matters such as assignment, vacation scheduling and evaluations, are included here.
- Property
  Responsibility for all property in the custody of the

department, is assigned to the records program. Working in close cooperation with the Departments of Finance and General Services, this section requisitions materials, supplies and equipment; receives and issues material; and is responsible for its safekeeping and appropriate disposition. One of the most critical activities is that of safekeeping physical evidence gathered at crime scenes.

- Fiscal Affairs
  Liaison with the Department of Finance in fiscal planning and control, and other matters relating to finance, is a further responsibility.
- Planning and Research
  Responsibility for fiscal planning, development of information and communications systems, administrative analysis, preparation of manuals, supervision of EDP systems operation, and preparation of statistical and management information reports, is assigned here.

3. *COMMUNICATIONS PROGRAM*

The goal of this program is to provide the communications network for public safety operations.

Staff	Equivalent Positions
Senior Public Safety Dispatcher	2
Public Safety Dispatcher	7
Total	9

1972–73 Resource Allocation Plan	
Human Resources	$157,093
Other Resources	49,530
Total	$206,623
New Work Hours	19,150

The services provided under this program include:

- Radio Network
  Radio communication facilities are operated in order to exercise command and control of field units, provide tactical coordination, maintain a constant display of status and deployment of resources, and relay information to mobile units.
- Telephone System
  The emergency telephone systems include the Emergency Reporting System, 911 lines, and other emergency reporting lines.
- EDP Systems
  The real-time, on-line computerized information systems that make a wide range of information available to patrol units are operated here. Information about wanted persons, stolen vehicles, criminal histories, and wanted or stolen property is contained in the EDP system.

4. *TRAINING PROGRAM - POLICE*

The goal of this program is to provide uniformed personnel with basic and in-service police skills and knowledge needed to perform competently.

Staff	Equivalent Positions
Lieutenant	1
PSO	1
Total	2

1972–73 Resource Allocation Plan	
Human Resources	$128,424
Other Resources	29,718
Total	$158,142
Net Work Hours	16,366

Of the 16,366 hours, 7,722 are for training and the balance for the public safety cadet program.

The cadet program opens to qualified young men the potential of a public safety career. To be eligible for a cadet appointment, the candidate must be enrolled in college and possess all the qualifications required for public safety officers, except age. Cadets work approximately 20 hours per week. The majority of the cadets in the program thus far, have become public safety officers.

Public safety demands that officers be highly trained. Each recruit is given 480 hours of police training in the Basic Police Academy. Major subject areas include traffic, patrol procedures, law, firearms and police community relations. After basic training the officer continues with other training programs. Some of these such as first aid, firearms, supervisory and middle management training are required by law. Other programs are required to support a high level of proficiency. The most demanding of these is the advanced (refresher) training given each year to all department officers. Officers serving on patrol, receive in-service training through roll call training, training bulletins and specialized courses. Special programs, seminars, films and other forms of training are also provided and encouraged. Finally, officers are encouraged to attend college. As an incentive toward that end, the city contributes part or all of the cost of the officers' training.

This is a class of recruits and officers completing specific course requirements.

5. *TRAINING PROGRAM - FIRE*

The goal of this program is to provide every officer with fire prevention and suppression skills and knowledge needed to perform competently.

Staff	Equivalent Positions
Lieutenant	1

1972–73 Resource Allocation Plan	
Human Resources	$205,507
Other Resources	16,623
Total	$222,130
New Work Hours	20,398

Every uniformed member of the department engages in fire fighting activities. In order to maintain a high level of competence, each individual receives continuous training. This training begins with a 240 hour recruit class where the new officer receives instruction in both basic fire fighting knowledge and practical applications at a modern drill tower. Each officer assigned to fire station duty is given a minimum of 200 hours instruction and 72 hours at the drill tower annually. Officers assigned to duties other than at the fire stations, receive 24 hours at the drill tower each year. Patrol teams train as a unit in order to maintain group skills in all assignment categories.

6. *COURT LIAISON PROGRAM*

The goal of this program is to secure the successful prosecution of offenders through the criminal justice system.

Staff	Equivalent Positions
PSO	1

1972–73 Resource Allocation Plan	
Human Resources	$82,996
Other Resources	11,172
Total	$94,168
Net Work Hours	8,253

The public safety officer duties include securing complaints from the District Attorney, scheduling court appearances, and maintaining liaison with the agencies of the judicial system. The balance of hours allocated to human resources is for time spent to testify in court, confer with prosecuting attorneys and perform other duties involved in the prosecution of offenders. A sub-objective of this program is to analyze the time spent in court so that improvements in court procedures can reduce the considerable costs already involved.

7. *INVESTIGATIONS PROGRAM*

The goal of this program is to detect and apprehend perpetrators of major crimes and to engage in crime prevention activities.

Staff	Equivalent Positions
Captain	1
Lieutenant	2
PSO	6
Clerk Office	1
Total	10

1972–73 Resource Allocation Plan	
Human Resources	$170,217
Other Resources	46,687
Total	$216,904
Net Work Hours	17,285

The investigations unit follows up on reports of felonies and other assigned cases. Two officers assigned to investigative work report directly to the chief on background checks of applicants, internal affairs inquiries, intelligence operations, and homicide, vice and organized crime investigations.

The youth referral project is an important activity conducted under this program. Rehabilitation of juvenile offenders who are placed in the juvenile justice system by referral to the probation department is a major departmental concern. By diverting selected youthful offenders from the system the result is more rehabilitation and less recidivism. Juveniles are referred to other agencies, both public and private, best suited to solve their particular problems. This program is carried out at both the local level and in conjunction with a county-wide program in which the department participates.

8. *PATROL PROGRAM*

The goal of the patrol program is to protect life and property around the clock, 365 days a year, by deploying public safety officers in marked vehicles throughout the city.

Staff	Equivalent Positions
Captains	4
Lieutenants	11
PSO	63
Total	78

1972–73 Resource Allocation Plan	
Human Resources	$1,228,808
Other Resources	173,391
Total	$1,402,199
Net Work Hours	132,547

The patrol program also provides 15 crossing guards to assist school children across major traffic carriers during the school year. Public safety officers assigned to patrol perform almost every type of duty in the department in the absence of specialized units. Although the primary objective is to respond to emergency situations and crime prevention, an increasing amount of time is spent in giving diverse services to the public. Within the limits of available resources, on-duty patrol strength is maximized. The Patrol Program utilizes a standard strength of 12 officers on duty to respond to police and fire emergencies and to provide called-for services.

The Patrol team captains are in charge of all operations (including command of fighting operations) in the absence of unit commanders. Patrol personnel also share the responsibility of conducting community relations programs. This is done for two reasons. First, it enables the patrol officer to develop an awareness of community needs. Second, it reduces the credibility gap that frequently develops when specialized personnel give information that does not coincide with actual practice.

9. *FIRE PREVENTION PROGRAM*

The goal of the fire prevention program is to reduce the hazard to life posed by structural fires. A secondary objective is to reduce the number and severity of fires.

Staff	Equivalent Positions
Lieutenant	1
PSO	2
Office Clerk	1
Total	4

1972–73 Resource Allocation Plan	
Human Resources	$146,797
Other Resources	24,729
Total	$171,526
Net Work Hours	15,367

This program provides for (1) the coordination of all fire prevention activities; (2) the inspection of all properties having complex fire hazards; (3) checking building and development plans for fire and life safety features; (4) conducting public education campaigns; and (5) providing technical advice on matters related to fire prevention. A fire prevention module of the department's EDP system aids in the coordination of fire prevention activities.

The program is augmented by fire station personnel who conduct routine fire prevention inspections. Fire suppression personnel are responsible for inspecting and enforcing fire and safety regulations applicable to commercial structures and multiple family dwellings. The results of these inspections are forwarded to the fire prevention staff to follow-up and record permanently.

The station based personnel also conduct a home fire prevention campaign. In-service fire companies inspect 4,000 single family dwellings each year. Home inspections are conducted only with the consent of the occupant. Recommendations for elimination of observed fire hazards are presented at the conclusion of the inspection. Statistical data on the department's fire inspection program for the period 1967–1971 is presented as follows:

Fire prevention program 1967–1971

	1967	1968	1969	1970	1971
Building Inspections	5660	5629	8568	7921	8663
Re-inspections	2744	1891	2632	2474	2710
Company Inspections	185	2790	3486	6006	6665
Complaints Investigated	26	96	145	205	48

10. FIRE SUPPRESSION PROGRAM

The goals of this program are to save life, prevent the spread of fires, and control and extinguish fires.

Staff	Equivalent Positions
Captain	1
Lieutenants	18
PSO	48
Total	67

1972–73 Resource Allocation Plan	
Human Resources	$1,156,345
Other Resources	123,869
Total	$1,280,214
Net Work Hours	113,942

To this program are assigned fire fighting, rescue activities, and fire station maintenance so that all resources are in a constant state of readiness to respond to calls for service. Officers assigned to fire station duty spend considerable time in fire prevention and training programs. The fire suppression force is assigned to 11 companies located in six fire stations. The strength shown is maintained by replacing members on leave with relief personnel assigned to patrol teams. A table of equipment and personnel assigned to each fire station is presented below.

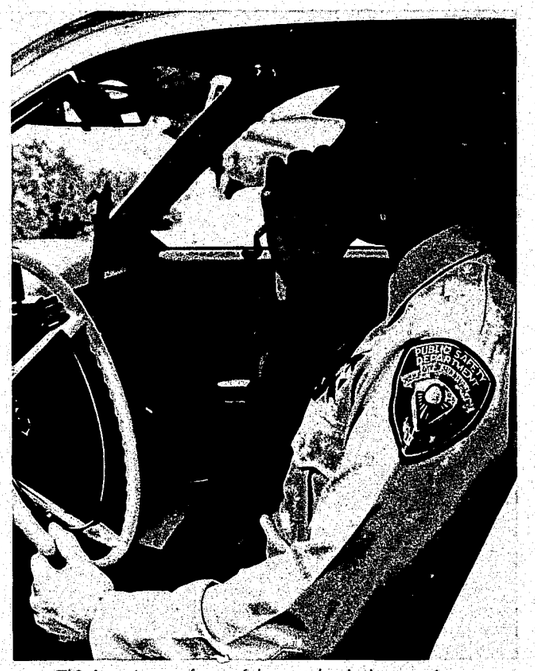
Fire station equipment and personnel complement

Fire Station	Equipment	Personnel on Duty
1	E-1 1000 GPM Pumper	1 Lt., 1 PSO
	T-1 65′ Aerial Platform w/1250 GPM pump	2 PSO
2	E-2 1000 GPM Pumper	1 Lt., 1 PSO
	T-2 100′ Aerial Ladder w/750 GPM pump	2 PSO
3	E-3 1000 GPM Pumper	1 Lt., 1 PSO
	T-3 500 GPM Pumper	2 PSO
4	E-4 1000 GPM Pumper	1 Lt., 1 PSO
	T-4 1000 GPM Pumper	2 PSO
5	E-5 1000 GPM Pumper	1 Lt., 1 PSO
	T-1 75′ Aerial Platform w/1500 GPM pump	1 Lt., 3 PSO
6	E-6 1000 GPM Pumper	1 Lt., 1 PSO

11. MOBILE SERVICE CENTER PROGRAM

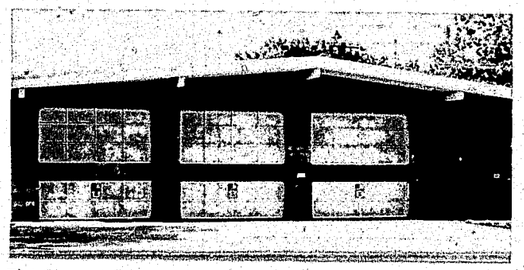
The goals of this program are to extend general safety services to the public and build greater understanding of public safety services by the public.

Staff	Equivalent Positions
PSO	2



This is a picture of one of the patrol units in operation.

1972–73 Resource Allocation Plan	
Human Resources	$53,704
Other Resources	35,485
Total	$89,187
Net Work Hours	5,625



The fire station shown here is one of six in the city. All have the same basic design.

First year funding for this program was through LEAA funds. Continued support is provided by local funds. The Mobile Service Center is designed to provide service to and enlist the support of citizens in community projects. A mobile vehicle, manned by public safety officers and personnel of participating agencies, travels to various parts of the city on a pre-arranged and publicized schedule. The schedule includes regular stops as well as appearances at especially arranged events. While in the neighborhoods personnel in the Mobile Service Center hear complaints, offer aid and advice, and conduct programs contributing to city goals and those of other participating agencies. Services include drug abuse education, property identification, voter registration, bicycle safety, residence security, fire-prevention, traffic safety, and informal dialogue with citizens. One PSO is assigned to the mobile center. The equivalent of one PSO's time is contributed by the regular beat officers who work in the Mobile Service Center when it is in their area.

Thousands of residents have used the Mobile Service Center. It makes pre-announced stops throughout the city.

This piece of fire fighting apparatus was acquired in 1969.

Section IV
AUTOMATED INFORMATION SYSTEM

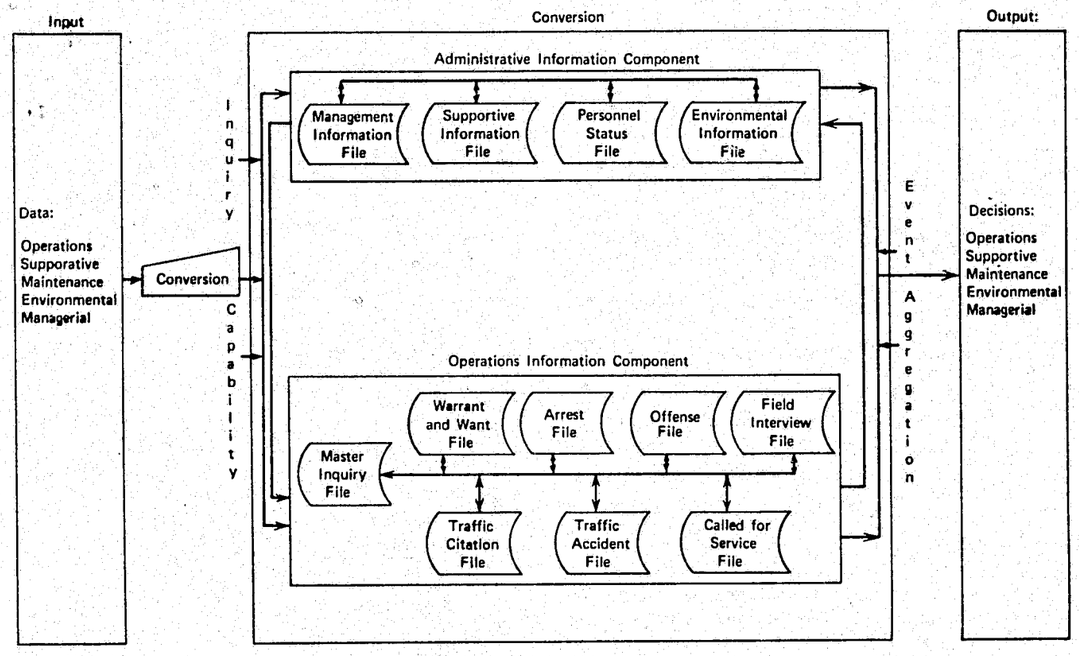
Conceptualization The Safety Information System consists of two major components: administrative and operational. Chart B, a visual conception of the system, is presented below.

Not all the files shown in the drawing are maintained by the department. For example, the supportive, personnel, and environmental information files are maintained by other city departments either through horizontal or integrated subsystems. The data contained in these files, however, are a part of the department's total information system.

The warrant and want file is an example of a different type of systems integration. The information is stored in county, regional, and state systems and is accessed by the department through on-line terminals.

The use of integrated and interfaced files eliminates duplication of data collection and storage, and expands the data base for numerous applications.

CHART B *Safety information system*



Data Acquisition All data elements are entered through on-line teleprocessing terminals within one to two hours after they are generated. The flow of data is depicted by Chart C.

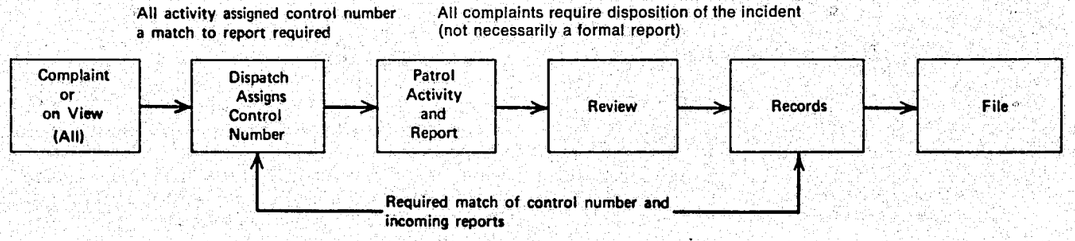
All activity (complaint or on-view) is assigned a unique case number. A dispatch card is completed next. The information on the card, including disposition, is then entered in the computer. If the card indicates that a further report is to be submitted, an exception report is generated if information from the required document is not entered.

Administrative Information Component The administrative information component is a conceptual configuration. The information represented is contained in the same computerized files shown in the operations component and, as mentioned earlier, in other city files. Mangement information is drawn from data in these files, combined into the desired format, and produced in report form on a high-speed printer. The real power of the system as a management tool lies in the intensive cross-reference capability which permits the retrieval of information in numerous combinations. Although the same flexibility exists throughout the system, dispatch information offers an example. Dispatch information may be retrieved in the following modes:

- On the daily log in chronological order
- In categories with total and average time required per case
- By time of day and reporting district, showing time spent in each reporting district on all dispatch activity
- Dispatch information for a single reporting district, sector or beat
- Dispatch information by category of incident
- Dispatch activity by numbers of incidents by time of day
- All dispatch and location activity for a single officer, unit or division
- Dispatch activity by one specific type of activity by officer, unit or division

In the above reports, time may be selected between any combination of time reported, time dispatched, time of arrival and time cleared.

CHART C *Data flow system*



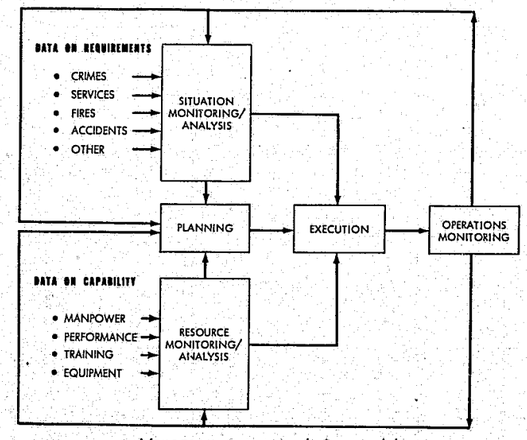
Further information is entered the system from the following reports and documents at the time of submission for recording:

Offense Reports
Accident
Fire
Fire Inspection
Citations
Arrest
Activity
Citizen Contact

High speed teleprinter reports, for early morning delivery, are current to 0000 hour for that day. Data taken from the sources listed above supply management with the basis for the planning, controlling and decision-making processes.

Operations Information Component The operational information component, as the name implies, supplies information to patrol, investigations, fire inspection and other programs. This same information is the basis for management and statistical reports. This component is heavily interfaced with external computerized information systems. Wants and warrants, stolen vehicles, serial numbered property, criminal histories, driver's license information and vehicle registration information come from these sources. In many instances the department has the capability of direct input, update, and deletion of these files. All elements of the operations component function in an on-line, real-time mode. The number of external files which can be accessed presents a mechanical interface problem. Four separate terminals are currently required. A computer switching device that will permit the use of one terminal to access all external systems is now under consideration.

System As a Management Tool The Safety Information System (S.I.S.) is a highly flexible management tool. It is capable of supplying required information for nearly any management strategy. The department uses an approach suited to the city illustrated by the Management Strategy Design Model illustrated below.



Management strategy design model

The system, however, is by no means limited to this particular approach. Public safety agencies must respond to immediate problems as well as make short and long-range plans. Environmental conditions are in a constant state of change, which in conjunction with the nature of public safety operations, has led to the use of the model. This model can be used for solving a wide range of problems which vary from dispatching a patrol unit to operational plans projected five years into the future. It also illustrates how the department uses the management information system to improve on the decision-making, prediction, planning, program development and control processes.

Data On Requirements As previously explained, information acquired from various sources is stored in computerized files. This data is then retrieved in formats that facilitate the identification of needs, requirements and problems.

Situation Monitoring/Analysis—The situation monitoring and analysis portion of the model illustrates the process which is greatly facilitated by a computerized management information system which aggregates a large volume of data into organized summaries. The process aids in the recognition of existing and emerging problems.

Once identified, problems and needs are analyzed and defined in quantitative terms relating to gravity, scope, and relevant characteristics. A real-time system makes possible ongoing monitoring and analysis of current conditions—not those of last week or last month.

Predictions about future environment and conditions are based upon the same set of data presented in historical format. Projections are made over a planning period of several years and revised as new experience is accumulated. Data that is made available may be used for making predictions based on modern statistical techniques.

Data On Capability This is information about the resources available for activities and programs. Solutions to problems identified by analysis of the situations require the capability to identify the resources needed. Such information is illustrated on the model under "Data on Capability".

Resource Monitoring/Analysis—Analysis of "Data on Capability" is a continuous process of evaluating the manpower, equipment and other resources available or needed for deployment to meet current and anticipated conditions. Quantitative analysis is made to ensure that allocations of resources to activities match the requirements. Future requirements for resources may be estimated and allocations projected by programs. This is the basis for resource allocation plans, as well as determining training needs, establishing patterns for career development, and anticipating the use of technological developments.

Planning—Effort devoted to planning depends on the time span involved. Reactions to critical, immediate problems require quick decisions based on available information. Less urgent projects go through the complete planning cycle. In either circumstance, the management information system is designed to aid in problem recognition, definition of needs, establishment and quantifying of goals, development and selection of alternatives, implementation and evaluation of programs results.

Execution—Monitoring, analyzing, and planning result in program design and execution.

Operations Monitoring—Finally, by the time the management cycle has reached the execution state, little success can be anticipated unless a capability to monitor operations is provided. The important capability of a real-time management information system is its ability to provide current operating information. Performance of individuals, units, and divisions may be reported in detail daily or at any desired interval. Progress toward quantified goals can be monitored continuously. The program manager as well as the general administrator is constantly aware of accomplishments in relationship to plans. The contribution of each individual is examined continuously. Programs may be modified in response to changes in situations or resources. Reallocations among programs may be made if changing conditions result in a reordering of priorities.

Section V
COMPARATIVE DATA ANALYSIS

Data Base To compare the generalized public safety approach to police and fire services organized traditionally according to specialties, the use of common data bases is a must. Consequently, data acquired and used for comparative analysis have been adjusted by population or assessed valuation, or taken from reports that already utilize a common denominator. Crime rates for example come from F.B.I. classifications and are based on a 100,000 population index. Property values subject to fire loss have been extracted from official state records. Actual dollar losses per capita have been adjusted to reflect their significance in terms of total fire hazards. Population statistics are tied to the 1970 federal census. Dollar figures are adjusted to include supplemental wage levels to equalize actual cost factors; or conversely, no adjustments where the data have already been included. The raw material itself has been accumulated directly from the cities used in this report. Finally, to present a valid statistical report, averages of five years have been applied where possible. Every effort therefore has been taken to ensure that an accurate, comparable data base has been established for the purpose of making comparisons and arriving at conclusions.

Operational Costs Table F *Summary Data on Police-Fire Activities*, (page 15) presents an analysis of the operating costs of the police and fire functions in twelve cities in the Bay Area on a per capita basis for the 1972 year. At $42.32 Sunnyvale had next to the lowest total cost per capita. Average cost was $58.39 per capita. Sunnyvale's cost was 28% less than the average.

Table G *Comparison of Operating Costs* is a compilation of the operating budgets of the twelve cities including Sunnyvale, selected for comparative analysis for fiscal 1972–73. The information was obtained directly from the cities listed, and is in support of the data contained in Table F, *Summary Data on Police-Fire Activities*.

Service Levels Since the comparison of costs raises the logical question of the level of service being offered, a further analysis of the police and fire activities of the twelve cities reporting comparable data was made and is presented in the tables and charts listed under the following categories.

Crimes Reported and Cleared—Table H is a 5 year average of Part I (F.B.I.) crimes reported and cleared for the period 1967–1971 computed on a population base of 100,000 for comparability. For this period, the average number of Part I crimes reported was lowest in Sunnyvale. As to percentage of reported crimes cleared by arrest, Sunnyvale had the highest clearance record at 36.2%, followed by Fremont at 33.4%. The average clearance percent was 23.2.

Vehicle Accidents—Another indicator of service level is shown in Table I. The table compares on a 100,000 population base the 5-year average of the number of vehicle accidents reported and citations issued in 5 cities for the period 1967–1971. San Jose was highest in vehicle accidents reported and Palo Alto in citations issued. Sunnyvale was third from the bottom in the accidents reported, and second from the bottom in citations issued.

Fire Alarm Responses—As to fire activities, Table J, *Fire Statistics*, shows the five-year average of the number of alarm responses per 100,000 population in 4 cities. Sunnyvale had the least activity, followed by Palo Alto. San Jose had the highest. Factors that affect the number of fires in a community are building standards, age of structures, and general fire protection design.

Fire Inspections—Another indicator of fire prevention effectiveness is the number of fire inspections made annually. The five year average (1967–1971) for four cities and Sunnyvale is given in Chart D. Sunnyvale showed the highest number of inspections made; Hayward the lowest.

CHART D *Fire inspections, five year average per 100,000 population (in thousands) 1967–1971*

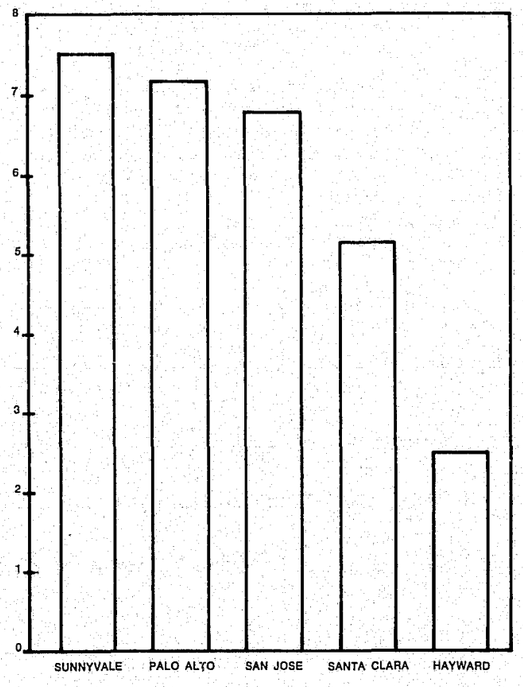


TABLE F *Summary data on police-fire activities and per capita costs*

City	Two Year Avg. Index Crime Rate	Avg. Manpower Per 1st. Line Apparatus	5 Yr. Avg. Fire Loss Per Cap.	Ratio per Cap. A.V. to Avg. Fire Loss	Weighted Police-Fire Cost per Cap.	Fire Cost per Capita	Police Cost per Capita
Campbell	2275.00	2.25	4.48	.315	54.23	22.99	31.24
Milpitas	1522.70	2.43	4.67	.277	46.90	21.60	25.30
So. San Francisco	2347.00	2.66	4.90	.163	71.47	31.45	40.02
Mountain View	2347.40	2.65	11.20	.419	57.06	26.13	30.93
San Leandro	3568.70	2.55	5.51	.214	54.99	22.66	32.33
Fremont	3268.20	2.74	5.10	.340	41.92	18.19	23.73
Santa Clara	2983.80	2.69	3.32	.168	52.03	23.31	28.72
Alameda	2491.60	3.93	3.15	.315	56.49	28.30	28.19
Palo Alto	3464.60	2.72	8.05	.239	78.80	32.94	45.86
Hayward	5085.30	3.11	5.98	.377	55.20	25.45	29.75
Richmond	6639.30	4.43	10.54	.375	90.15	39.40	50.75
San Jose	3630.80	2.14	5.37	.329	43.89	20.50	23.39
Sunnyvale	1863.90	2.00	4.56	.193	42.32	18.37	23.95
Average*	3300.40	2.86	5.72	.294	58.59	26.39	32.20
*Excludes Sunnyvale							
Sunnyvale:	44% less than avg.	30% less than avg.	20% less than avg.	34% less than avg.	28% less than avg.	34% less than avg.	25% less than avg.

TABLE G *Comparison of operating costs, staffing, rigs, and fire stations*

Population	City	Police	Fire	Total	Total Police Pers.	Sworn Pers.	Total Fire Pers.	Field Pers.[1]	Total Field Pers.	First Line Rigs[2]	Fire Stations
24770	Campbell	$666540	$489950	$1156490	33	28 113*	40	25 101*	53	3	2
27149	Milpitas	640746	551586	1192332	41	33 121*	37	36 132*	69	4	3
46646	So. S.F.	1500940	1180976	2681916	77	63 135*	71	69 148*	132	7	4
51092	Mtn. View	1423282	1203806	2627088	73	60 117*	64.5	59 115*	119	6	4
68698	San Leandro	1792779	1254886	3047665	114	84 122*	87	85 124*	169	9	5
100869	Fremont	2137689	1642321	3780010	148	99 98*	123	112 111*	211	11	8
87717	Santa Clara	2084317	1693550	3777867	126	107 122*	117	110 125*	217	11	7
70968	Alameda	1653930	1663550	3317480	103	89 125*	104	102 144*	191	7	4
55966	Palo Alto	2561589	1837818	4399407	109	95 170*	93	91 162*	186	9	5
93058	Hayward	2270597	1946219	4216816	154	114 122*	133	127 136*	241	11	6
79043	Richmond	3232348	2509988	5742336	203	161 204*	151	148 187*	309	9	7
445779	San Jose	9127000	8001000	17128000	679	578 130*	539	476 107*	1054	60	25
95408	Sunnyvale	2413055	1852549	4265604	102	83 87*	88	82 86*	165	11	6
Average						132 per 100,000		133 per 100,000			

* Adjusted per 100,000 population
[1]Fire Work Week—56 hours for all
[2]Does not include reserve apparatus

Fire Losses—Fire losses in dollars per capita for the period 1967 –1971 were obtained from 12 cities and averaged for comparison. There is no question but that one or two severe fires can skew such cost figures out of proportion. Aside from this factor, one which all cities can experience, the average fire loss in dollars per capita (Table F) places Alameda at the bottom of the list for the least loss per capita ($3.15) and Sunnyvale fourth from bottom ($4.56). The average loss for all the cities was $5.72 per capita. Sunnyvale was 20% below this average loss. On a weighted index utilizing actual destructible property values, Sunnyvale was third from the bottom at .193 and South San Francisco was lowest at .163. Under this index, Sunnyvale's fire loss was 34% less than the 12 city average of .294.

Manning Data The total number of sworn police and assigned fire personnel, first line rigs, and hours of work per week in each of the 12 cities was obtained for the 1972–1973 fiscal year for comparative analysis. This information which is detailed in Table G has been extended for making comparisons between the assignment of manpower of both police and fire functions.

Police Assignment—The number of officers assigned to police duty per 100,000 population for 1972–1973 averaged 132 for the twelve cities studies. At 87 Sunnyvale had the lowest per capita figure. The highest figure was Richmond's at 204.

Fire Assignment—In analyzing the fire duty roster, two formulas were applied. The first was to show actual manning

TABLE H *Part I crimes reported and cleared, five year average per 100,000 population 1967–1971*

	Cases Reported	Cases Cleared	% Cleared
Sunnyvale	1612.5	584.5	36.2
Palo Alto	2883.2	426.2	14.8
San Jose	2874.7	544.9	18.9
Santa Clara	5431.0	713.0	13.1
Fremont	6108.5	2041.1	33.4
Mountain View	3586.2	1110.8	30.9
Average*	4176.7	967.2	23.2

*Excluding Sunnyvale

TABLE I *Accidents reported and citations issued, five year average per 100,000 population 1967–1971*

	Accidents Reported	Citations Issued
Sunnyvale	1915.8	22743.4
Palo Alto	2021.4	62046.4
San Jose	3170.3	43238.0
Santa Clara	2298.8	25160.1
Fremont	1903.7	11817.0
Mountain View	1311.8	32535.4
Average*	2141.2	34959.3

*Excluding Sunnyvale

TABLE J *Fire statistics 1967–1971*

	Alarm Responses, Five Year Average per 100,000 population	Fire Inspections, Five Year Average per 100,000 Population	Fire Loss Five Year Average per Capita
Sunnyvale	1494.5	7486.0	$4.39
Palo Alto	1661.2	7140.9	8.05
San Jose	2602.1	6726.9	5.21
Santa Clara	2168.7	5174.0	3.16
Hayward	2543.6	2574.8	5.69

per piece of first line apparatus (See Table F). If a standard of placing 4 men per piece of first line apparatus at the scene of the fire is applied, only one city with separate fire and police departments could possibly qualify: Richmond. Richmond has a station based *gross* manpower of 4.43 per piece of first line apparatus. In contrast Sunnyvale has a station based *net* manpower of 2.00 per piece of first line apparatus —the lowest of any city in the analysis. The average for the 12 cities was 2.86.

Manning Per Capita—A different formula to compare fire manning strength was applied by determining fire manpower per 100,000 population. Under this formula Richmond had the highest at 187 and Sunnyvale the lowest at 86. The average for the 12 cities was 133 (Table G).

A review of manning levels in Table F shows that most cities do not have a station based complement of 4 firemen per piece of first line apparatus. The average of 2.86 per apparatus is 29% less than a 4 man standard. Yet Sunnyvale with its patrol response program has at the scene of the fire on 3 unit responses an average of 4.5 personnel per apparatus. On high risk alarms, the average rises to 4.8 personnel per apparatus, or 20% above the 4 man standard. In both cases Sunnyvale's per unit average at the scene of the fire exceeds the highest complement of *station based manpower* of any of the 12 cities. (See Exhibit D in Appendix).

Manpower Cost and Service Levels Were Sunnyvale to conduct its safety operations under the traditional specialization concept, either of two fire service levels would have to be maintained to assure adequate protection to the public; (1) a minimum level or (2) a standard level.

Minimum Level—A minimum level would require the assignment of 3 men per piece of first line apparatus at the fire station.

Added Cost of Manpower (82 to 114 or 32 more) at $8.78/hr*	$583,264
Less 7½* Salary Saving	284,514
NET ADDED COST PER YEAR	$298,750

*Includes Wage Supplements

This is a standard below that presently being provided and would result in a substantial reduction in the level of service.

Standard Level—A standard Level would require the assignment of 4 men per piece of first line apparatus at the fire station.

Added Cost of Manpower (82 to 146 or 64 more)*	$1,167,660
Less 7½* Salary Savings	328,345
NET ADDED COST PER YEAR	$ 839,315

*Includes Wage Supplements.

City's minimum level is 4.5 men per piece of apparatus at scene of fire (Exhibit D). Only the City of Richmond is able to meet this standard of station-based manpower. In both of the above illustrations, reversion to the traditional

specialization concept would add substantially to the cost of public safety services. At the *minimum* level, the cost would be 10 cents more on the city's property tax rate coupled with a 35% reduction in the service level. To maintain the higher *standard* level of service under this concept would require a *tax rate increase* of 28 cents. This would still mean a *reduction* of the current service level by 11 percent.

Summation Comparative data on police and fire effectiveness indicate that on crime clearance, Sunnyvale compiled the best record of 5 cities; on crime rate, the second lowest of 12 cities; on vehicle accidents reported and citations issued, the lower third of the averages; and on fire inspections, the highest number made. As to fire losses Sunnyvale was fourth from lowest on a per capita basis of 12 cities and third from the lowest on the basis of destructible property assessed value.

Section VI
FUTURE DEVELOPMENTS

Communications Computer technology coupled with improvements in communication hardware is bringing substantive changes to the entire field of communications. Especially affected by this is public safety and all its operations including the emergency call networks and management informations systems. The emergency call network is composed primarily of the 911 system with back-up eventually through digital message and CATV transmission lines.

"911" Emergency Call System—In November of 1972 the city converted its telephone emergency service to the "911" dial system for police, fire and ambulance calls. By dialing the 3 digits, the caller has instant access to the public safety dispatch office and can obtain emergency care quickly. Within two years public pay telephones will be modified so that "911" can be dialed without cost. Within a few years the city will have the capability of automatic address identification in case the call is interrupted or the caller fails to give the location of the emergency. A mini-computer will provide this capability.

Digital Message System—Within several years radio communications will be keyed to a digital transmission system which with the aid of a computer will increase substantially the capacity of assigned frequencies to handle messages. Digital coding will also make possible direct input to the computerized information system thus bypassing one step in the current process. The advantages of a digital system are many: economical use of limited frequencies; immediate status recording and display; direct interface of mobile units with the computer; and greater detail of data entered into and retrieved from the system. Data will be accessed directly and displayed graphically by CRT's located in mobile units and at the dispatcher's console.

CATV—Basic security from fire hazards or criminal activity will be assured each residence by hooking up the television set to the cable television coaxial cable. A device on the set when activated (manually for police assistance, automatically for fire emergencies) will alert the mini-computer which in turn will give the alarm and identify to the dispatcher the location and type of emergency.

Management Information Models Equally important as the improvements taking place in the communications network is the advent through computer programs of modelling capabilities for planning and committing resources to deter crime or prevent fires. The types of projects currently in the design stage are listed by such acronyms as "CAPER", "OCAM", and "ICAM". These programs once completed will become part of the Safety Information System, which in turn is a sub-system of the fully operative Sunnyvale Integrated Management Information System. Management by objectives which emphasizes cost accounting under PPBS will be expanded to link *cost* accounting with *results* accounting.

CAPER—Crime Analysis Project Evaluation and Research is a methodology and data processing system intended to provide law enforcement agencies with the capability for crime analysis, project evaluation and research. The essential elements are (1) a coding scheme and (2) a cross tabulation routine that permits an examination of the relationship between crime and a variety of geographical, social and physical factors.

OCAM—Officer Control and Management program will supply the capability of analyzing patrol activities. Covered will be assignments made by management directly to the officer, and self-initiated activities. Results will be evaluated and appropriate measures taken to maintain stated program objectives.

ICAM—Investigative Control and Management program will apply systems analysis to the crime investigative function. The basic objective of this program is to determine the effectiveness of investigations in clearing assigned cases. The system will also be used to evaluate case work loads.

Eventually, the mini-computer will be the means for integrating all the elements of the safety communication system. Once this occurs, the communication system can be interfaced automatically with the Safety Information System to provide (1) automated command instructions, (2) status display, (3) dispatching of fire and police forces, and (4) display of all applicable data in responding units.

Fire Insurance Rating An in-house fire protection survey involving appropriate city departments is complete and is being enacted to qualify the city for a class 3 rating or better. A class 3 rating would on a general basis save the industrial and commercial community about $87,000 annually under current property values and fire insurance rates (See Table D, page 5). Although a class 3 rating has no direct beneficial effect on fire insurance premiums for residences, the total upgrading of fire protection, prevention and suppression facilities and techniques would increase the level of fire safety for all residents of the city.

Technological Improvements There has been a new effort in the fire fighting technical manufacturing industry to bring to local communities the proven by-products of space technology. In the future the city will have the opportunity to acquire light-weight, relative long-life breathing apparatus for fighting fires. Control of unit pressure at the nozzle instead of at the engine may also be a reality eventually. With

chemical additives more water can be delivered to the site with the same hose. Fire resistant material of high order will give added protection to the fire fighter. Finally, fire resistant and suppression paints will be available to reduce or eliminate fire hazards.

APPENDIX

Exhibit A RESOLUTION CREATING THE DEPARTMENT OF PUBLIC SAFETY RESOLUTION NO. 1040

WHEREAS, it is the desire of the City Council of the City of Sunnyvale to render more economical and efficient fire and police protection to the citizens and residents of this City and,

WHEREAS, a study of ways and means has been completed whereby a more efficient and economical service to the public can be rendered in these important fields and,

WHEREAS, improved hours and working conditions will result from a unification of said services,

NOW, THEREFORE, be it resolved by the City Council of the City of Sunnyvale that there be and is hereby created a Department of Public Safety to be hereafter known and designated by that title, which said department shall be created by a unification or merger of the existing Police and Fire Departments of this City into a single department.

BE IT FURTHER RESOLVED that the City Manager be and he is hereby authorized to take all necessary steps consistent herewith in order to immediately effect the creation of said Department of Public Safety through merger and unification of said existing Police and Fire Departments, and to undertake any other necessary steps, operations or activities in order to effectuate the purposes hereof.

PASSED AND ADOPTED THIS 6th day of June, 1950, by the following vote:

AYES: Councilmen, Gilmore, Stout, Theller and Jones.
NOES: Councilmen, Johnson.
ABSENT: Councilmen, None.

APPROVED:

/s/ Walter L. Jones

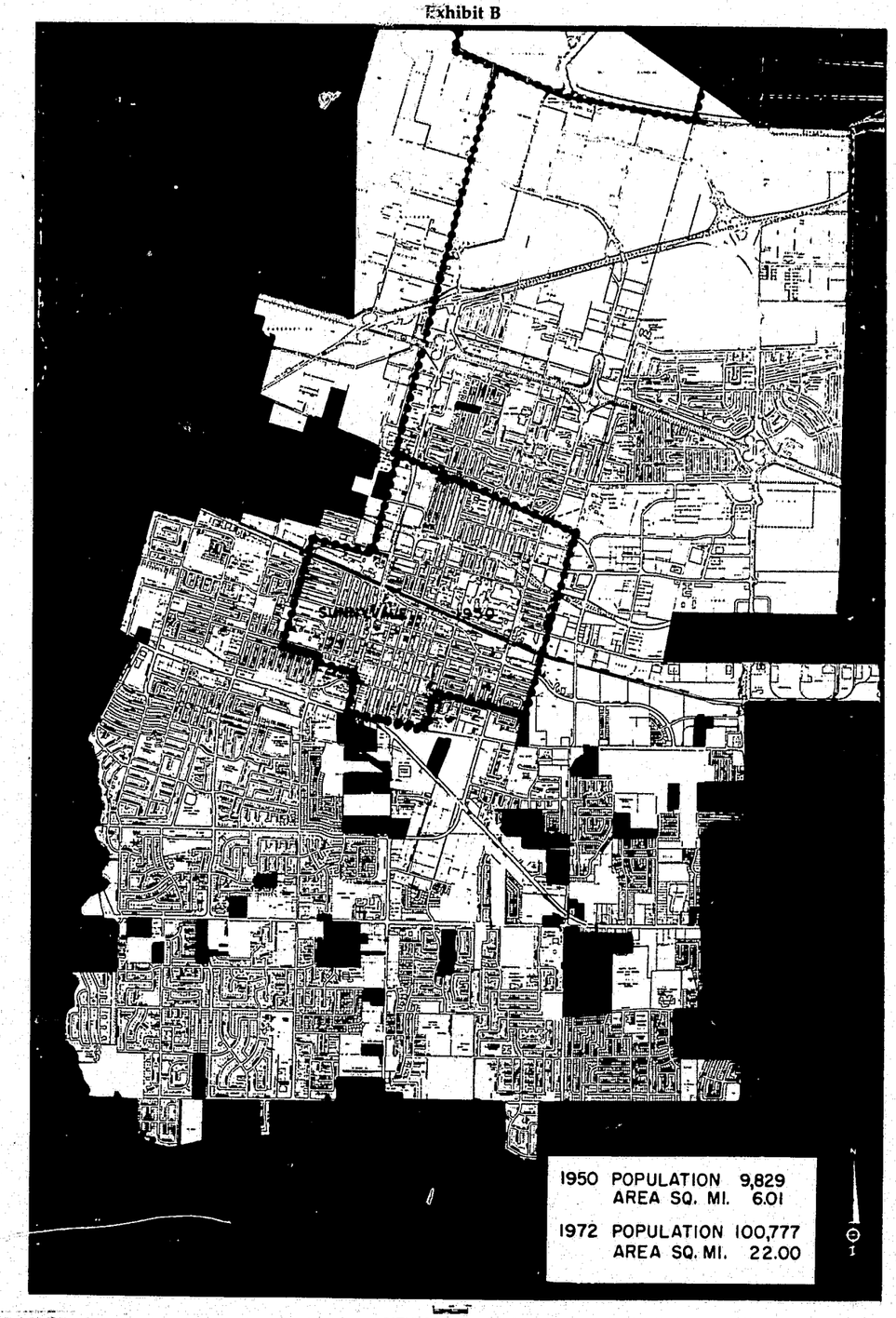
Mayor

ATTEST:

/s/ Ida Trubschenck

City Clerk

Exhibit B



CITY OF SUNNYVALE

Exhibit C PUBLIC SAFETY OFFICER CLASSIFICATION

GENERAL STATEMENT OF DUTIES: Performs general duty police work and engages in fire-fighting and fire prevention activities; does related work as required.

DISTINGUISHING FEATURES OF THE CLASS: This is general duty public safety work consisting of routine police patrol in an assigned area, criminal investigation and crime prevention. A Public Safety Officer is also responsible for performing fire-fighting duties and performing fire prevention and station and equipment maintenance activities. A position in this class requires excellent physical condition and aptitude for public safety work. Orders of superiors must be executed promptly and efficiently. A Public Safety Officer should quickly become familiar with the broad range of modern public safety methods and procedures. Work is performed under close or general supervision depending on the nature of the assignment. A Public Safety Officer is required to exercise initiative and discretion when faced with emergency conditions. The work involves an element of personal danger. Supervision is occasionally exercised over other Public Safety Officers during the absence of a superior officer. A Public Safety Officer may be assigned to serve as a plainclothes detective in the patrol division or conduct fire prevention inspections.

EXAMPLES OF WORK: (Illustrative only)

Patrols a designated area during an assigned shift in motorized equipment;
Enforces pertinent City and State laws and assists in enforcement of Federal laws on request;
Checks doors and windows and examines premises of unoccupied buildings or residences to detect suspicious conditions;
Investigates suspicious conditions and complaints and makes arrests of persons who violate laws and ordinances;
Accompanies prisoners to headquarters, jail or court and appears as witness in court proceedings as required;
Directs traffic and gives violation tickets, or arrests those who break traffic laws;
Checks automobile parking in restricted areas and gives violation tickets when necessary;
Maintains records and prepares reports;
Maintains order in crowds and attends parades, funerals or other public gatherings;
Watches for stolen cars and wanted or missing persons;
Makes investigations and enforces City and State laws pertaining to juvenile offenders;
Gives advice on laws, ordinances and general information to the public;
Operates radio patrol car, patrol wagon, fire pumper or aerial ladder truck as required;
Acts for Public Safety Lieutenants in their absence as directed;
Performs fire-fighting duties by laying and connecting hose lines and operating nozzles and directing water streams;
Makes openings in burning buildings for ventilation and entrance and chops holes in roofs and floors when necessary;
Removes persons from burning buildings;
Operates portable chemical fire extinguishers;
Performs salvage operations at scene of fire such as covering furniture with tarpaulin, mopping floors and clearing debris;
Cleans, maintains and makes minor repairs to fire-fighting equipment;
Participates in periodic drills and individual and group training courses covering criminal detection and apprehension, crime prevention and fire-fighting theory and practices;
Makes periodic inspections of buildings for fire hazards and makes recommendations for improvements;
Gives emergency first-aid treatment to injured persons involving the application of modern first-aid techniques;
Checks fire hydrants for operating and physical condition;
Performs a wide variety of routine tasks in connection with the maintenance of fire station quarters and grounds.

REQUIRED KNOWLEDGES, SKILLS AND ABILITIES: Good social and general intelligence; good knowledge of correct spelling and basic English; good judgment; ability to carry out complex oral and written instructions; ability to read, interpret and apply public safety laws and rules; ability to analyze problems and take effective action in emergencies; ability to drive an automobile and fire-fighting equipment; good powers of observation and ability to retain details; excellent moral character; physical strength and agility; excellent physical condition.

ACCEPTABLE EXPERIENCE AND TRAINING: Completion of the fourteenth school grade or an educational equivalent with course work in criminology, public safety or allied fields.

ADDITIONAL REQUIREMENTS: Minimum height—5'8"; minimum weight—145 lbs. or proportional to height; age—not under 21 or over 34 at date of appointment.

Exhibit D AVERAGE RESPONSE PER UNIT AT SCENE OF FIRE JULY 1, 1972 TO OCTOBER 4, 1972

Single Unit Responses			
Total Alarms	164	Total Patrolmen Responded	100
Total Men on Apparatus	328	Total Off-Duty Men	0
Average Personnel on Apparatus Per Alarm			2.0
Average Patrolmen Responded Per Alarm			.6
Average Total Personnel Per Single Unit Alarm			2.6
Two Unit Responses			
Total Alarms	174	Total Patrolmen Responded	96
Total Men on Apparatus	696	Total Off-Duty Men	0
Average Personnel on Apparatus Per Alarm			4.0
Average Patrolmen Responded Per Alarm			.5
Average Total Personnel Per Alarm			4.5
Average Total Personnel Per Unit			2.25
Three Unit Responses			
Total Alarms	94	Total Patrolmen Responded	583
Total Men on Apparatus	564	Total Off-Duty Men	130
Average Personnel on Apparatus Per Alarm			6.0
Average Patrolmen Responded Per Alarm			6.2
Average Off-Duty Personnel Per Alarm			1.4
Average Total Personnel Per Alarm			13.6
Average Total Personnel Per Unit			4.5
Four Unit Responses			
Total Alarms	3	Total Patrolmen Responded	33
Total Men on Apparatus	24	Total Off-Duty Men	1
Average Personnel on Apparatus Per Alarm			8.0
Average Patrolmen Responded Per Alarm			11.0
Average Off-Duty Personnel Per Alarm			0.3
Average Total Personnel Per Alarm			19.3
Average Total Personnel Per Unit			4.8

END