CHARGE OF THE BALLARDVALE FIRE STATION BUILDING COMMITTEE

The Ballardvale Fire Station is over 100 years old and does not meet the specifications to appropriately house modern-day fire apparatus or the staff to man the equipment. The existing site does not allow for expansion of the facility and restricts Andover Fire Rescue's ability to provide equal fire and emergency services to the Ballardvale community.

The Ballardvale Fire Station Building Committee was formed to conduct a feasibility study and to provide recommendations/alternatives to the Board of Selectmen and Town Manager that address the following topics:

- Existing conditions at the Ballardvale Fire Station.
- Needs analysis for fire and rescue services in the Ballardvale area – presently and in the future.
- Preliminary design options and alternatives for a new fire station.
- Possible sites for a new station.
- Preliminary cost analysis and funding alternatives.

It is anticipated that the feasibility study phase will take twelve to sixteen months. The Committee will have the benefit of a number of reports and studies: Fire Service Organization Study by MRI, October 2006; Fire Department Deployment Study 2007-2012 by Manitou, Inc. December 2007; Protecting Andover, MA: A Strategic Plan for Andover Fire Rescue, August 2008; Town Manager's Recommended Capital Improvement Plan for FY-2010 – FY-2014, etc.

The Committee will provide a report to the Board of Selectmen and Town Manager every four months to track their progress.

November 28, 2008

Establishment Name: Ballardvale Fire Station 1 Clark Rd Date: 6/17/09

Address: Done by T. Carbone / C. Clemente Page ____ of ____

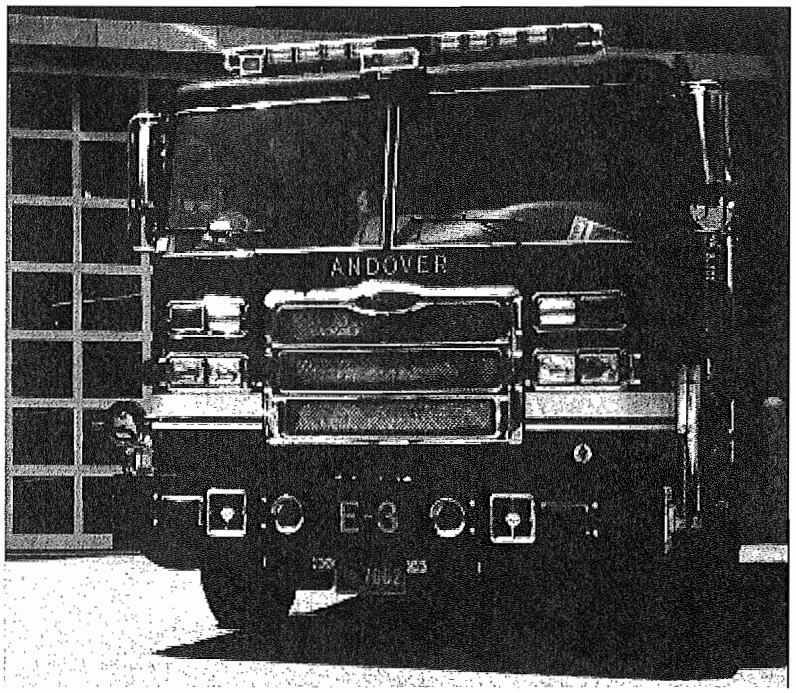
Item No.	In the space below describe all violations checked on front page.
	Basement - Handrail for stairs
	Gaps in window frames
	Does Bay Floor drain go to Oil trap
	Rodent droppings
	Floor Joists undersized / over spaned
	Screw Jacks are designed to be temporary
	Bridging missing / broken
	Bay - Damaged wall / ceiling
	- No fire separation to living quarters
	Upstairs - Front Storage - No fall Barrier
	- Ceiling Light wires frayed
	- Exercise Room - Windows < 18" off Floor
	- Extension cord - unknown source
	-
	- Bedroom - Pealing wall paper / Paint - Rug frayed
	- Mold under paper - Duct Tape on Threshold
	- Bathroom - Missing floor tile
	Not Handicapped Accessibility
	Outside - Pealing Paint - Soffits
	- walls
	- No Soffit Vents
	- Generator too close to building
	- Clapboards - rott
	- Driveway apron - decayed retaining wall
	- No fall protection
	- Back Porch - broken masonry
	- improper hand rail - No ball usters

Discussion with Management:

FINAL REPORT

Andover Fire Rescue
Town of Andover, Massachusetts

Fire Department Deployment Study
2007-2012



October 2007

MANITOU INCORPORATED

DRAFT REPORT

Andover Fire Rescue
Town of Andover, Massachusetts

Fire Department Deployment Study
2007-2012

Submitted by:

Manitou, Inc.
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Acknowledgments

Manitou, Inc. wishes to acknowledge those involved in completing this report. A report of this type, especially one done under a demanding project schedule, requires outstanding cooperation. We are pleased to have received just such cooperation from the Town officials and regional planning agencies we contacted during this study.

Special thanks go to:

Michael Mansfield, Chief, Andover Fire Rescue
Lesley Hewitt, Network Administrator, Public Safety
Lisa M. La Grasse Schwarz, AICP, Community Development & Planning
Laura DeGroot, GIS Coordinator, Public Works
Jackie Byerly, Community Development & Planning
Marcie Jacobsen, Andover Fire Rescue

Gerard Whitten, Merrimack Valley Planning Commission

We would also like to recognize the staff and consultants who produced this report.

Charles Jennings, Ph.D. MIFireE, Project Manager
Thomas Vaughan, GIS Analyst
John Cochran, Consultant

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Background

In recent decades the Andover Fire Rescue (AFR) has experienced a significant increase in the demands for its services. This increase is primarily due the Town of Andover experiencing a significant population and economic growth coupled with the AFR's evolution to a full-service "all hazards" agency. AFR provides not only public fire protection, but is also the primary response agency for incidents including emergency medical calls, vehicle and industrial rescues, hazardous materials spills, and other emergencies for the Town's 33,000 inhabitants. In addition, these services are also provided to the countless number of commuters that travel each day to or through Andover's boundaries via Interstates 93 and 495.

Each year new industries locate to Andover in part due to its quality of life within a semi-suburban setting. With these new businesses come the people who must fill the array of new jobs. Many of these new workers choose to not only work, but also live in Andover. Much of the undeveloped area of the community has scene drastic changes over recent years in the way of commercial, industrial, residential growth, and related socioeconomic shifts. Since 1970 Andover has increased in population by roughly 9,300 persons, a 40 percent increase.

Predictably, the increase in growth will continue to pose an increase demand for municipal services with the AFR being no exception. As an example, the AFR has seen a 47 percent increase in emergency responses over the past 20 years. In order to stay one step ahead of the growth, Andover town officials have initiated studies to determine short and long term initiatives that will insure current level of services are maintained in the most proficient and cost effective way, while addressing increasing demands on programs and services.

One such study was conducted in 2006 to evaluate the management and administration of the AFR. Conducted by Municipal Resources, Inc., the Fire Services Organizational Analysis Study addressed a broad spectrum of objectives including an evaluation of the strengths, weaknesses, efficiencies, of the AFR's overall administration and management. Specifically, the study provided recommendations for improved services in a wide range of programs and services including expanding relations between management and labor, duties and responsibilities of fire company personnel in the areas of fire prevention and level of emergency medical services provided, and improvements in overall organizational efficiency through the creation of additional administrative personnel. In addition, the study suggests the AFR management further the study of replacing current stations and providing an additional fire station in the future to provide acceptable response times, particularly in the southeastern regions of the community.

It is the focus of this Fire Station Feasibility Study to formally address the issue of AFR's station locations with regards to current and future growth and subsequent call volume and response times.

1.2 Scope of Work

The Town of Andover solicited proposals from consultants to perform a study of fire station locations based on a five-year planning horizon. Manitou, Inc. was selected in September for a one month study, focused primarily on technical issues of station location. The AFR had recently completed an outside consultant review by another firm. That study focused on management and organization. The Department is also in the final stages of completing a Five-Year Strategic Plan, which identified the issue of fire stations to be critical.

The quick turnaround for this study and the limited scope made this effort somewhat challenging and unusual. Due to the availability of data and excellent cooperation from Town staff, this project was able to achieve its objectives, of providing guidance to the Town for capital planning for potential new fire stations.

The study's scope of work is based on criteria as defined within the Town's Request for Proposals and discussions during the beginning stages of the project. The scope of work included the following:

1. Evaluate the adequacy of the two existing AFR substations for future growth and make specific recommendations related to the best locations within a geographic area for replacement of the two existing substations.

2. Determine whether there will be a need for a third substation as the Town continues to build out in the future.

3. Evaluate the AFR ability to respond with the appropriate amount of equipment and personnel in the appropriate timeframe based on the location study and in accordance with National Fire Protection Association (NFPA) Standard 1710 to allow for four minute response times for the arrival of the first arriving engine company to all reported fire suppression incidents within the Town.

4. If National Fire Protection Association (NFPA) standards and Insurance Services Office (ISO) requirements [recommendations] differ, provide rationale for specific recommendations and note the differences.

5. Determine what is sufficient for the AFR to provide emergency medical services to meet current NFPA and America Heart Association standards.

6. If the NFPA and AHA requirements differ, provide rationale for specific recommendations and note the differences.

1.3 Community Profile

The Town of Andover, incorporated in 1646, has a long and proud history, beginning as an agricultural outpost in the colonial era, and progressing to the status of a village in the 19th century. Six distinct mills operated in the town, and one of these included a model industrial community established in the area named after the mill –Shawsheen. This mill included some 200 structures, which continue in private use to this day.

The Town's population remained fairly small until the era of suburbanization, as railways and highways improved access to nearby Boston. Farmland came to be used as sites for corporate offices, manufacturing, and research facilities.[1] Population increased from 17,134 in 1960 to 25,000 in 1980 to its present estimated level of 33,300 in 2007.

The community is affluent, and enjoys a high quality of life, blending the appeal of the suburbs with settings ranging from semi-rural, to bustling village. Numerous employment opportunities within the town will continue to attract residents.

The Town, part of the Merrimack Valley region of Massachusetts, is experiencing growth at a higher rate than the State as a whole. The region is growing three times as fast as the rest of the State, according to the Merrimack Valley Planning Commission.[2] This statistic can be misleading, in that the Town, while growing, is not experiencing a dramatic rise in population. Much of the development is commercial in nature, bringing with it employment, and the economic benefits that flow to the Town in terms of taxes and vitality.

The Town's population is expected to plateau near its current level, with the possibility of a major mixed use or commercial development associated with the possible construction of a new interchange from I-93, on the southeastern border of the Town. This development will be discussed later.

1.4 Andover Fire Rescue (AFR)

The AFR is a full service agency providing fire, emergency medical and special operations services to the Town's 33,000 inhabitants. The agency employs a fire chief, four deputy fire chiefs, thirteen lieutenants, forty-four firefighters, one fulltime administrative assistant, and one full-time secretary.

The agency provides its services through the deployment of three engine companies, one aerial ladder truck company, two ambulances, and one chief officer. The six units are housed within three fire stations that are strategically located throughout the community. This includes fire headquarters located on North Main Street, the West Station located on Greenwood Road, and the Ballardvale Station located at Clark Road and Andover Street (see Figure 1.1).

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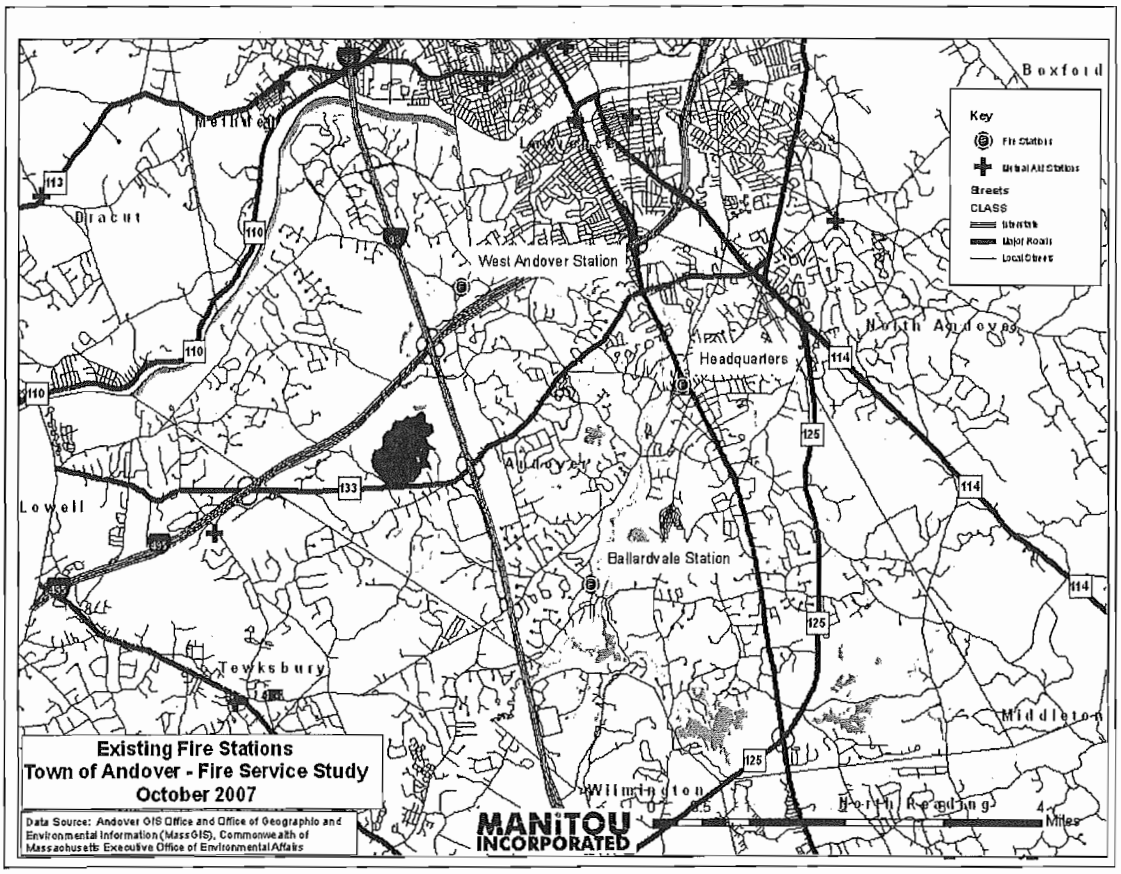
[1] Town of Andover History www.andoverma.gov/about/history.php. Retrieved October 8, 2007.
[2] Merrimack Valley Economic Development Council, Inc. *Report* vol. 2, no. 2, May/June 2001, p. 2.

Additional specialty vehicles, including boats and equipment trucks, are staffed by on-duty personnel when needed.

Figure 1.1 Existing Fire Station Locations



The Town's fire facilities (include pictures and characterize each station).
The Department is headquartered in a 50,000 square foot building constructed in 2002 to house both fire and police functions.

Shift personnel work a four-platoon system. On duty staffing consists of the following deployment shown below (Table 1.1).

Table 1.1: Staffing Pattern, AFR

Station Number	Apparatus	Staffing
1 (Central Station) 32 North Main Street	Engine 1 Ladder 2 Ambulance 91 Car 2 (Deputy Chief)	3 2 2 1
2 (Ballardvale) 1 Clark Street	Engine 2	3-4
3 (West Station) 200 Greenwood Road	Engine 3 Ambulance 92	3 2

The Department will operate with a minimum on-duty staff of 16 personnel, although they consider "normal" staffing to be 17 positions. They anticipate returning to a staff level of 17 personnel on each shift when some vacancies are filled.

A total of 23 vehicles of various sorts make up the agency's emergency response fleet. The agency responded to 8222 emergencies in 2006. Over 50 percent of the emergencies were emergency medical in nature with the remaining being fires or other emergencies. As with most emergency service agencies, the AFR has experienced an ever increasing demand for services which often times can create a strain on existing resources. In 2007 the agency provided its services and programs with a budget of over six million dollars.

A combination of AFR's services along with the capabilities of the community's water distribution system and fire and emergency dispatch services, the Town of Andover retains an overall community-wide Insurance Services Office (ISO) Public Protection Classification of 3. This rating is an excellent rating for a community the size of Andover, especially given the large land area that must be protected by the AFR. The significance of this rating will be discussed in the next chapter.

1.5 Project Approach

Manitou, Inc. has a well-established approach to performing studies of fire and emergency medical services deployment. This approach has been honed through experience in numerous studies in Departments of various sizes and composition. Because of the short time period for this study, several steps were undertaken simultaneously.

A site visit was conducted on September 18, 2007 for purposes of meeting with the Fire Chief and observing operations, facilities, and equipment of the Fire Department. During this visit, each station was toured, the dispatch center visited, interviews held with limited fire department staff, and to follow up on requests for data made prior to the study and arising from the visit.

In addition, meetings were held with representatives of the Town's Community Development and Planning Department, and Public Works Geographic Information Systems Coordinator. Referrals to other agencies with data or information of interest were also made at this time.

The Department of Pubic Safety Network Administrator was also a key person, as she is responsible for administration and extraction of information from the Public Safety records management system software. This project represented the first intensive use of the system for analysis of fire records, and was a learning experience that should make future inquiries easier.

After this basic data is collected, which includes planning studies, population forecasts, incident records, and geographic information, we use geographic information systems

(GIS) to geocode incidents, fire stations, and apparatus. This information is used as a basis for the analytic portion of the project.

2. REFERENCED STANDARDS

Two nationally recognized fire station location and response time guidelines were referenced during the project. The guidelines included is the National Fire Protection Association (NFPA) Standard 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments* and the *Fire Suppression Rating Schedule* as published by the Insurance Services Office. As they relate to this study the guidelines, they were referenced with regard to station location and response times.

Standard Objectives

Ultimately, both guidelines share similar objectives; to insure a sufficient amount of fire department resources arrive on the scene before excess property damage occurs or loss of life due to the extension of fire within a structure. It is important to note that where the rating schedule is primarily focused on property damage due to structure fires, NFPA 1710 focuses on life and property for not only structure fires, but also emergency medical calls and other emergencies today's fire services respond to such as hazardous material spills and rescues requiring specialized response teams including high angle and confined space incidents.

NFPA 1710

Adopted by the NFPA in 2001, the standard contains minimum guidelines relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations of municipalities that are served by a substantially all career fire department. The standard addresses functions and objectives of fire department delivery of services to emergencies including the minimum amount of units and their staffing and response times to emergencies. The standard also contains guidelines for managing resources and systems, such as health and safety, incident management, training, communications, and pre-incident planning.

Structure Fire Response. The standard calls for the fire department to have the capability to deploy a total reflex time within ten minutes for 90 percent of responses. The first arriving engine company should arrive on the scene within six minutes for 90 percent of the responses. The reflex time encompasses call taking and dispatch time, unit turnout time and travel time as described below.

Table 2.1: NFPA 1710 Fire Reflex Time

NFPA 1710 – Structure Fire Reflex Time Sequence				
Notification of fire to dispatch center	**1 minute →**	**1 minute →**	**4 minutes →**	**8 minutes →**
	Dispatch of fire units	**Turnout of fire units**	**Travel time of first arriving engine** **Firefighting operations begins on arrival**	**Travel time of remaining units**

The initial response should provide for the following fire ground functions:

(1) Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial assignment

(2) An uninterrupted water supply of a minimum of 400 gpm for 30 minutes

(3) An effective water flow application rate of 300 gpm from two hand lines, each of which shall have a minimum of 100 gpm

(4) A victim search and rescue team

(5) A structure ventilation team using ground and/or aerial ladders

(6) An Initial Rapid Intervention Crew

It is important to note that the above criteria are based on a response scenario of a two-story 2,000 square foot single-family dwelling with a response of two engine companies and one aerial truck company.

Emergency Medical Response. On all EMS calls, the standard establishes a turnout time of one minute and four minutes or less for the arrival of a unit with basic life support (BLS)/first responder or higher level capability at an emergency medical incident. This objective should occur 90% of the time.

If a fire department provides advanced life support (ALS) services, the standard calls for an arrival of an ALS unit within an eight-minute response time to 90% of incidents. This does not preclude the BLS four-minute initial response.

The standard recommends that a fire department's emergency medical response capability includes personnel, equipment, and resources to deploy at the BLS first responder level with automatic external defibrillator (AED) or higher treatment level. The standard also recommends that all firefighters who respond to medical emergencies be trained at the minimal level of first responder/AED level.

Fire departments can have established automatic mutual aid or mutual aid agreements to meet many of the requirements of the standard. Other emergency medical recommendations found in the NFPA 1710 standard include EMS system components, EMS system functions and quality management.

Table 2.2: NFPA 1710 EMS Reflex Time

NFPA 1710 – Emergency Medical Response Reflex Time Sequence				
Notification of emergency to dispatch center	**1 minute** →	**1 minute** →	**4 minutes** →	**8 minutes** →
	Dispatch of BLS and ALS units	**Turnout of units**	**Maximum travel time of BLS unit.** **Patient care begins on arrival**	**Maximum travel time of ALS units**

American Heart Association and NFPA 1710. As with NFPA, the AHA has implemented guidelines for the response to medical emergencies. Focused on sudden cardiac arrest incidents, the guidelines establish minimum response time criteria for BLS services utilizing an Automated External Deliberator (AED) for the cardiac arrest patients. The goal of the BLS response time criteria is to increase the rate of survival of people who have a sudden cardiac arrest. Their criteria calls for a delivery of an AED shock to a victim within 3 to 5 minutes of collapse. This is based on data showing every minute without immediate CPR and defibrillation, the odds of survival decrease 7% to 10%. In many cases this benchmark may be met using the emergency medical response criteria found within NFPA 1710. A key to patient survival is to provide for an AED program that incorporates not only a response of an AFR ambulance, but the training of citizens throughout the community in public places where stationary AEDs are made readily available to those who are properly trained in their use.

Special Operations. Those emergency responses that do not fall within the criteria of structure fire or emergency medical calls fall within the category of special operations. This normally includes emergencies such as technical rescue, hazardous material spills, man-made disasters and other responses requiring specialized skills and equipment. The standard does not call for specific response times and benchmarks, but do require

standard operating procedures and guidelines and training that provide an adequate and reasonable level of response.

ISO Fire Suppression Rating Schedule

Arguably the most referenced guideline for fire department deployment for over 90 years, practically all aspects of today's municipal fire department owes its origins to the application of the rating schedule by the insurance industry. From the location of fire stations, fire unit staffing and overall fire department organization, fire chiefs across the country for generations have applied the rating schedule's criteria as justification for improvements in their fire departments.

From a fire station location perspective, the rating schedule is straightforward in the criteria used for the location (distribution as referenced in the schedule) of fire stations and the number of needed engine and aerial ladder truck units. Below illustrates the rating schedule's criteria for unit location:

Table 2.3 ISO Fire Response Criteria

Type of Unit	Location Criteria
Engine Companies	1.5 road miles from properties served
Aerial ladder truck companies	2.5 road miles from properties served

The above location criteria are based on an assumption that fire units travel at a constant speed of 35 miles per hour. Using this speed as a constant, units will be able to arrive on the scene within 4 minutes of travel time, a similar benchmark as that which is identified within NFPA 1710. It must be noted, however, that NFPA 1710's 4 and 8 minute benchmarks are not normally measured in the same way as the response distances found within the rating schedule. Whereas the rating schedule response criteria remains the same for all parts of a community, NFPA 1710 assumes that topography, traffic congestion, and other road conditions may alter travel speeds.

Recent ISO Survey. The most recent ISO survey was conducted in 2002. The results of the survey showed the AFR received the following credit for the distribution of engine and aerial ladder truck companies:

Number of Needed Engine and Aerial Ladder Truck Companies: To receive a maximum credit of 10 points the AFR needs a total of five in service engine companies. The needed number was based a basic fire flow of 3,500 gpm and the area served by the agency. The number of in service engines counted during the survey totaled three, one in-service staffed unit at each of the three AFR stations. For the maximum credit of 5 points for the distribution of aerial ladder truck companies, the AFR needs in service one truck. At the time of the survey the AFR had in service one unit in service and thus received 4.21 points. The deficiency in accredited points is due to not the number of units in service, but due to an insufficient amount of equipment carried on the unit.

It is unclear from the survey report exactly where improvements could be made. It is apparent, however, that by using criteria as set forth within NFPA 1710, the community should experience similar results for engine and aerial ladder truck company distributions needs if not make slight improvements in future surveys.

Special Considerations. It is important to note the differences in the two referenced guidelines with regards to their response criteria. Where NFPA 1710 is designed to address the full facet of emergencies a career fire department responds to, ISO's intent is to specifically measure a fire department's response to "structure" and similar type properties. **Communities whose fire stations are strategically located using NFPA 1710's criteria for the arrival of the first due engine company for structure fires and BLS medical response generally experience adequate deployment during an ISO survey** (see Table 2.4).

Table 2.4: Comparison of NFPA1710 and ISO

Response Criteria	1710	ISO
Structure Fire		
1st Due Engine Co.	4 min./90%	1.5 miles/At all times
2nd Due Engine Co.	8 min./90%	3-4 miles/At all times
Aerial Truck Co.	8 min./90%	2.5 miles/At all times
Medical Emergency		
BLS	4 min./90%	N/A
ALS	8 min./90%	N/A
Special Operations		
Hazmat, technical rescue, etc.	Local SOGs	N/A

It is important to remember that however influential these standards are within the fire service, that the ISO standard is specifically not intended to be used as a tool for management of fire departments. Likewise, these standards are not reflective of alternative approaches to managing a community's fire problem and have been sharply criticized by many in the public policy field.

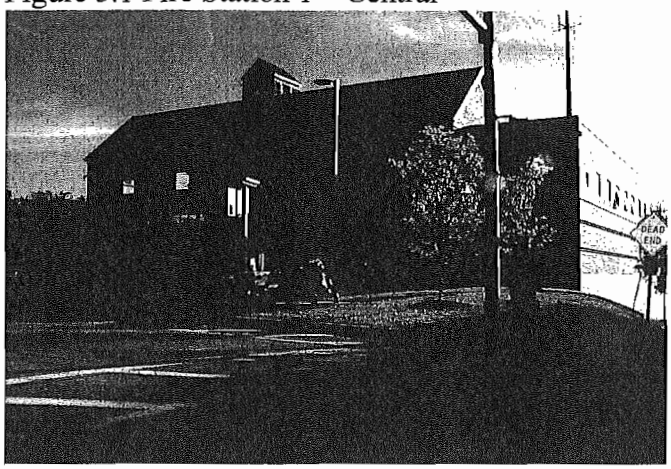
Nonetheless, they each carry weight when evaluating a community's fire defenses.

3. CURRENT SERVICE DELIVERY

3.1 Fire Stations and Apparatus

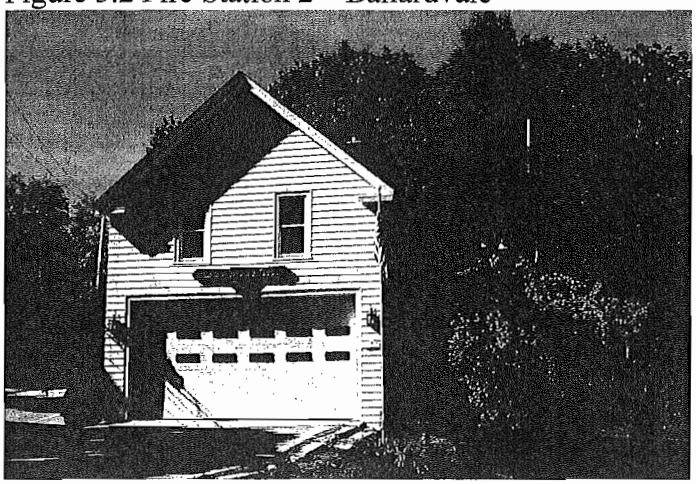
The Andover Fire Department provides services from three facilities, as indicated previously. Of these facilities, one is essentially new, having been completed a few years ago, while the other two are over 40 and over 100 years old, respectively.

Figure 3.1 Fire Station 1 – Central



Fire Station 1 is a modern facility equipped with 5 full-depth bays capable of handling an aerial device and an engine in any bay. This facility, located in the historic center of the Town along its northern border, also houses administrative offices for the Department. It is also the Town police station and dispatch facility.

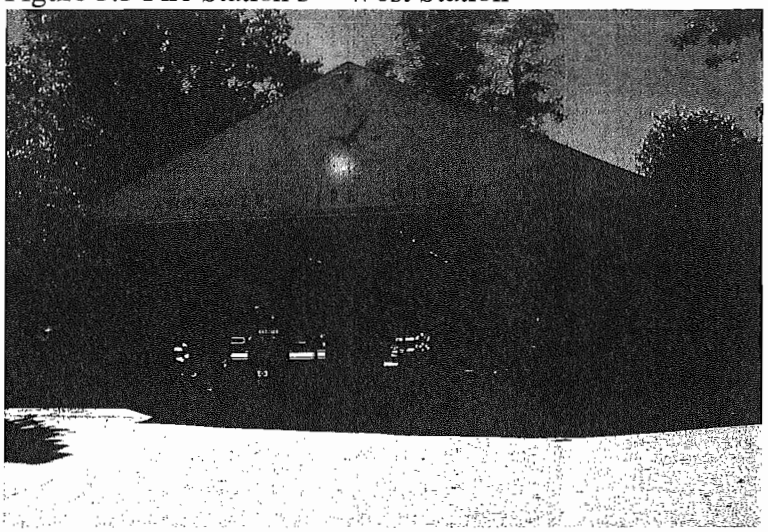
Figure 3.2 Fire Station 2 – Ballardvale



The Ballardvale fire station dates from the era of horse-drawn apparatus. A quaint facility, it serves the historic Ballardvale section of the community. It is only large enough to accommodate a single modern engine company, and is poorly sited for ingress and egress from the facility. It does not meet any modern standards for fire stations, and

is obsolete from the standpoint of the Town's needs. It is located at the intersection of Clark Road and Andover Street.

Figure 3.3 Fire Station 3 – West Station



The third station, located on Greenwood Road, has two full-length bays capable of accommodating modern fire apparatus. The facility, which is 40-years-old, is showing considerable signs of its age, and is marginally suited to continued use as a fire station without some rehabilitation. It is located very near to the Town border, which negates some of its value in terms of servicing the Town.

The Department's rolling stock is in generally good to very good condition, and consists of 4 engines, 2 skid-mounted brush units, three ambulances, four administrative vehicles, a box truck, a pick up truck, two aerial (ladder companies), 4 boats (3 inflatable, 1 aluminum), and associated trailers and a technical rescue equipment trailer.

3.2 Calls for Service

The AFR records incident numbers for all activities, including training, fire prevention inspections, education details, and administrative activities. This is a good management policy, which allows an accurate view of overall activity and productivity within the Department.

Table 3.1 presents the list of incidents taken from the Department's annual reports. The definitions of some incidents changed over the course of these statistics. While they are interesting from a managerial perspective, we are more interested in *emergency* incidents. Emergency incidents are distinguished because 1) they require an immediate response; and 2) they are sensitive to the location of facilities – timeliness is critical. Administrative, inspectional, and training activities can be rescheduled or cancelled as required. Additionally, in terms of staff utilization, these activities do not necessarily have to be performed by on-duty fire suppression or emergency medical services staff members.

Table 3.1 AFR Incidents from Annual Reports 1999-2006

Incident Type	1999	2000	2001	2002	2003	2004	2005	2006
Fires	445	420	420	552	1098	1028	1279	1159
EMS	2427	2770	2753	3038	3094	2514	2632	2743
MVA	249	283	321	403	284	253	365	279
Hazardous Condition					130	109	227	258
False Alarm and False Calls	191	50	207	163	747	744	814	796
Misc. Alarms	404	528	450	554	529	303	192	25
Good Intent					140	117	141	130
Mutual Aid Fire	35	20	47	14	17	21	21	26
Mutual Aid Ambulance	155	61	53	40	57	50	48	41
FP Activities	2040	2343	2224	2030	2204	2135	1730	1658
Service Calls	1501	2265	2958	2597	2460	2231	2421	2159
Training	180	144	177	126	138	121	225	265
CO Activation	48	45	36	24	34	25	57	77
Rescues	16	21	39	95				
Accidental Alarms	175	180	106	171				
Total	7866	9130	9791	9807	10932	9651	10152	9616

In order to better understand the emergency demand for service within the Town of Andover, we eliminated non-emergency incidents from further consideration, leaving us with a set of incidents roughly defined by the National Fire incident reporting System (NFIRS) coding scheme. This set of data is more comparable with other jurisdictions, and is suited for planning use because emergency calls are not subject to fluctuation caused by administrative or policy decisions. For example, a fire code can change, requiring a new set of premises be inspected.

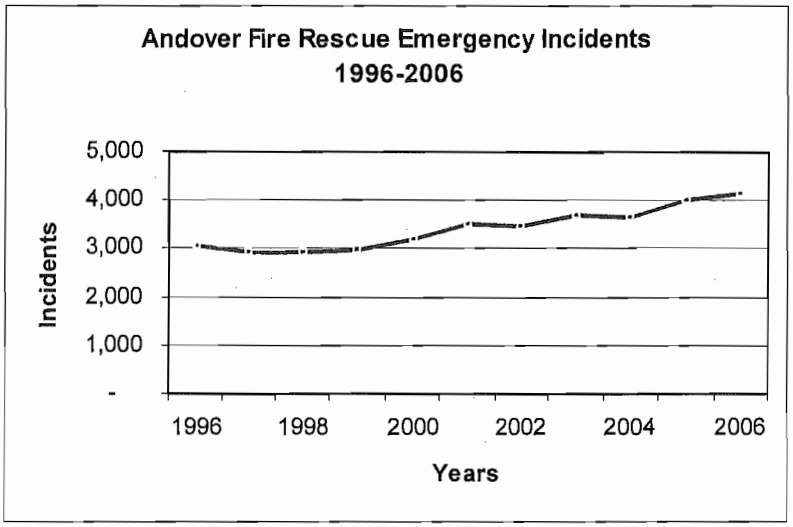
Table 3.2 lists emergency incidents used in this analysis. While this list is consistent with NFIRS categories, a restricted set of classifications was used for ease of analysis and consistency with local data and practice.

Table 3.2 AFR Emergency Incidents

Incident Type	2002	2003	2004	2005	2006
EMS	1300	2394	2379	2491	2583
Haz Cond	49	123	131	168	176
Other	597	963	922	1060	1156
Mutual Aid	20	23	18	22	25
Fire	157	194	190	251	200
Total Emergency	2123	3697	3640	3992	4140

It is important to distinguish between incidents – which are calls for service from the public received via telephone or automatic alarm; and responses – which represent a fire company response to a reported emergency. A single incident can generate multiple responses.

Figure 3.4 AFR Emergency Incidents 1996-2006



The time of day for incidents is also of interest when considering the demand on the emergency response system. Fire services typically staff with the same numbers of staff on a 24-hour basis. In systems with limited staffing or demand for service, uniform staffing is a reasonable practice, because serious fires are rare events which can be argued to occur at random. However, certain types of emergencies do not occur at a uniform rate, and are subject to systematic variation. Typical among these are emergency medical services. Private sector EMS providers often staff based on the historic demand for service.

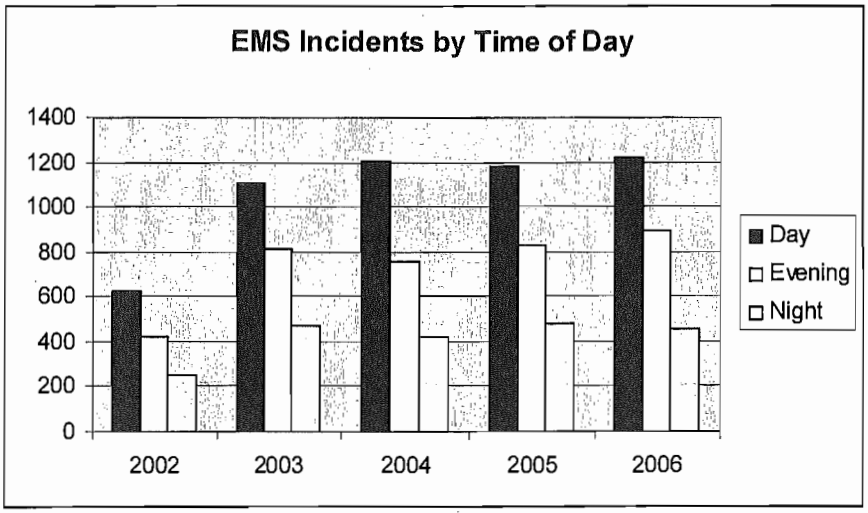
Table 3.3 shows the temporal distribution of incidents on three times of day – day, evening, and night. This distribution of incidents confirms some of our earlier statements about the variation of incidents with time of day. The percentages within the table show the relative number of incidents of each type. We would expect to see 33.3% in each column if incidents were uniformly distributed by time.

Table 3.3 Incidents by Type and Time of Day, 2006

	Day (0800-1700)	Evening (1700-2400)	Night (0000-0800)	Totals % of all alarms
EMS	1225 (47.4%)	899 (34.8%)	459 (17.8%)	2583 (62.4 %)
Fire	89 (44.5%)	85 (42.5%)	26 (13%)	200 (4.8%)
Hazardous Condition	84 (48%)	76 (43%)	16 (9%)	176 (4.3%)
Other	588 (51%)	374 (32%)	194 (17%)	1156 (27.9%)
Mutual Aid	10 (40%)	10 (40%)	5 (20%)	25 (0.6%)
	1996	1444	700	4140

Most incident types are overrepresented during daytime hours. Highest among these are EMS, "Other", and hazardous condition alarms. Other alarms primarily include fire alarm system activations, elevator rescues and hazardous condition alarms include gas leaks, wires down, and related emergencies. Figure 3.1 shows EMS (medical) incidents by time of day.

Figure 3.5 EMS Incidents by Time of Day



3.3 Mutual Aid

The Andover Fire Department participates with other fire departments in the Essex County region in a mutual aid network. A separate agreement is in effect for ambulance mutual aid. Consistent with regional practices, mutual aid is initiated on a special request, and is generally only engaged after a municipality or Department has fully committed its existing fire or EMS response resources.

The mutual aid plan provides for fire responses through the tenth alarm. The AFR recalls its off-duty personnel on the second alarm. They are used to staff reserve apparatus as required, to cover empty Andover Fire Stations or to respond to the scene. For each alarm above the second alarm, units that would otherwise respond to the fire on the next highest alarm (see table) are used to cover Andover Fire Stations. That is, mutual aid companies move to cover Andover stations, and proceed to the fire on the next highest alarm.

Ambulance mutual aid is used more frequently, with North Andover being the most commonly used mutual aid ambulance (27 times in 2006), as opposed to only 7 times for a North Andover engine company. The operation of the current system appears to be satisfactory.

Table 3.4: Mutual Aid Running Fire Response List for Town of Andover

Alarm	Engine	Engine	Engine	Ladder
1	Andover	Andover		Andover
2	Andover	Andover		
3	North Andover	Tewksbury	Lawrence	
4	North Reading	Wilmington	Methuen	Lawrence
5	Reading	Billerica	Lowell	North Andover
6	Haverhill	Middletown	Dracut	Tewksbury
7	Chelmsford	Boxford	Salem, NH	Topsfield
8	Groveland	Woburn	Georgetown	Stoneham
9	Peabody	Burlington	Lynnfield	Ipswich
10	Danvers	Wakefield	Pelham	Newburyport

Automatic aid, or closest unit response is not generally practiced in this region. For purposes of this study, the Town's political boundaries were considered to be serviced on a first-response basis only by Andover's internal resources. The practice of automatic aid could provide economies in scale and potentially improve response times to emergencies, but an evaluation of such a system was beyond the scope of this study.

The Department's use of mutual aid is fairly limited – in 2006 mutual aid was received 57 times and given 100 times. These numbers do not include advanced life support "chase car" services provided to the Town by Lawrence General Hospital.

3.4 Summary of Current Service Level

Response times are a critical measure of service for fire and rescue. Total response time is composed of call processing time, plus turnout time, plus driving time. Call processing time is the time from when a caller dials the fire department to when the call is dispatched to the appropriate units. National standards suggest that this should be done within one minute. Turnout time is the time from when a station is alerted to when they are aboard the apparatus and ready to respond. The final element of response time is the driving time, that time from leaving the station to arriving at the emergency.

We begin by examining the current driving coverage form the existing Andover fire stations. This time is driving only, and does not reflect turnout or call processing. Figure 3.4 shows 4-minute driving times for engine companies. The color contours show 1-minute gradations in driving time from each station. The NFPA 1710 standard requires a 4-minute driving time to 90 percent of incidents, which should be roughly reflected in these maps.

The areas furthest from existing stations – the far southeast and southwest sections of Andover, have driving times of greater than five minutes. This is not exceptional, given the geography of the Town and the relatively low demand for service in some of these areas.

Figure 3.4 Existing Engine Coverage

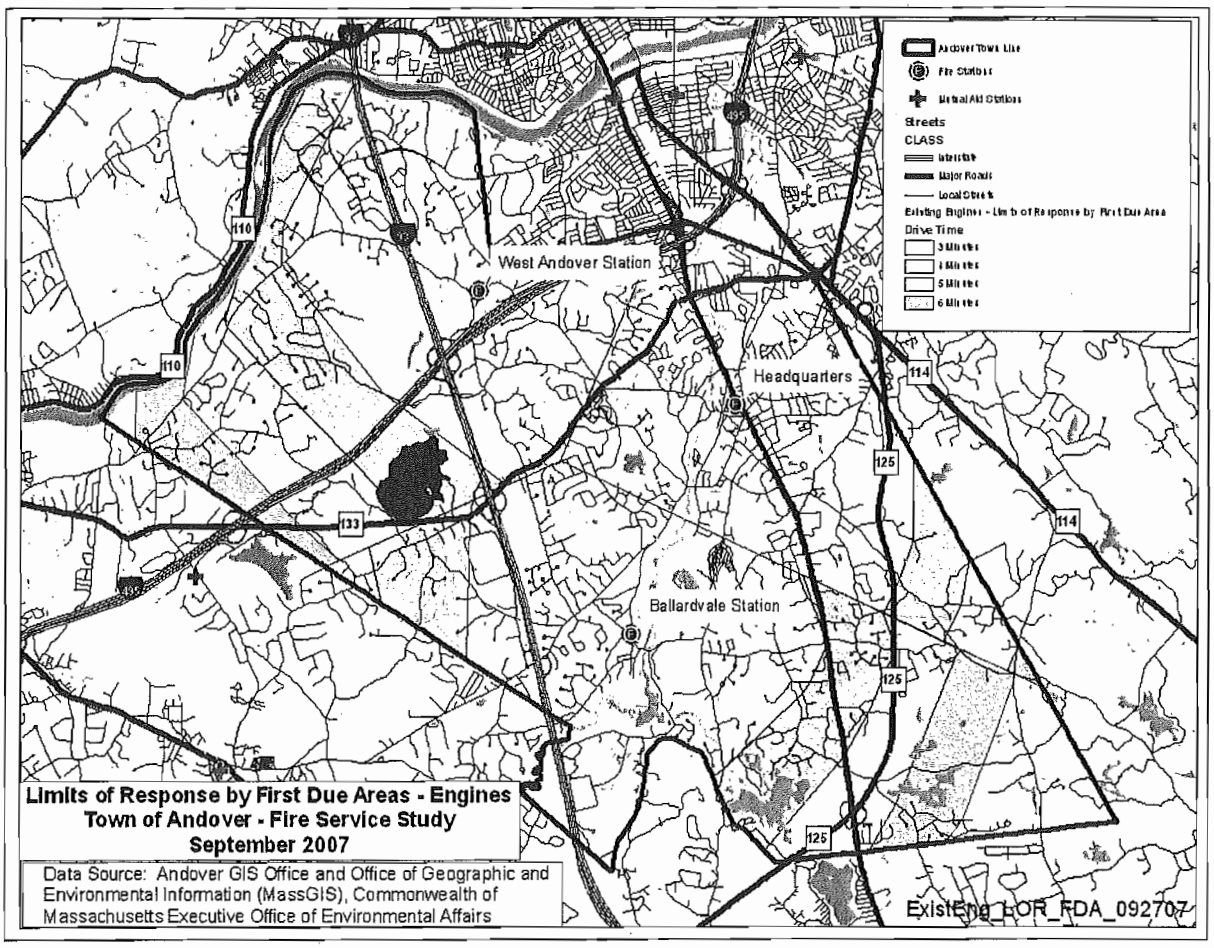


Figure 3.5 shows ambulance coverage using the same time contours. The map shows that significant portions of the Town are beyond the 4-minute response from an ambulance. The use of an engine company as a first-response vehicle mitigates this issue, but does not address the potential time required to wait for a transport unit (ambulance) to arrive, especially when one of the existing units is unavailable.

Figure 3.6 shows ladder coverage in the Town. Not surprisingly, response times are longest for the ladder company because it is covering the entire Town from one location. Generally, it can reach almost any part of the town within 8 minutes, meaning that even if it were the last unit to arrive at an incident, it would meet the requirements of NFPA 1710.

Figure 3.5 Existing Ambulance Coverage

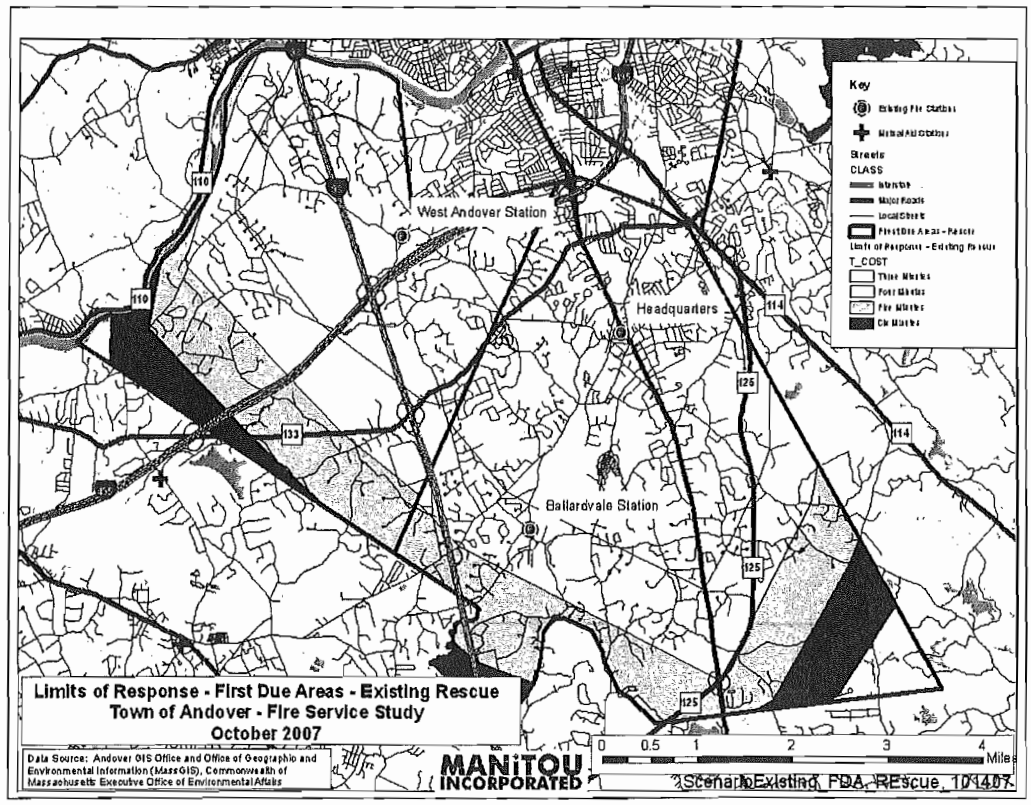
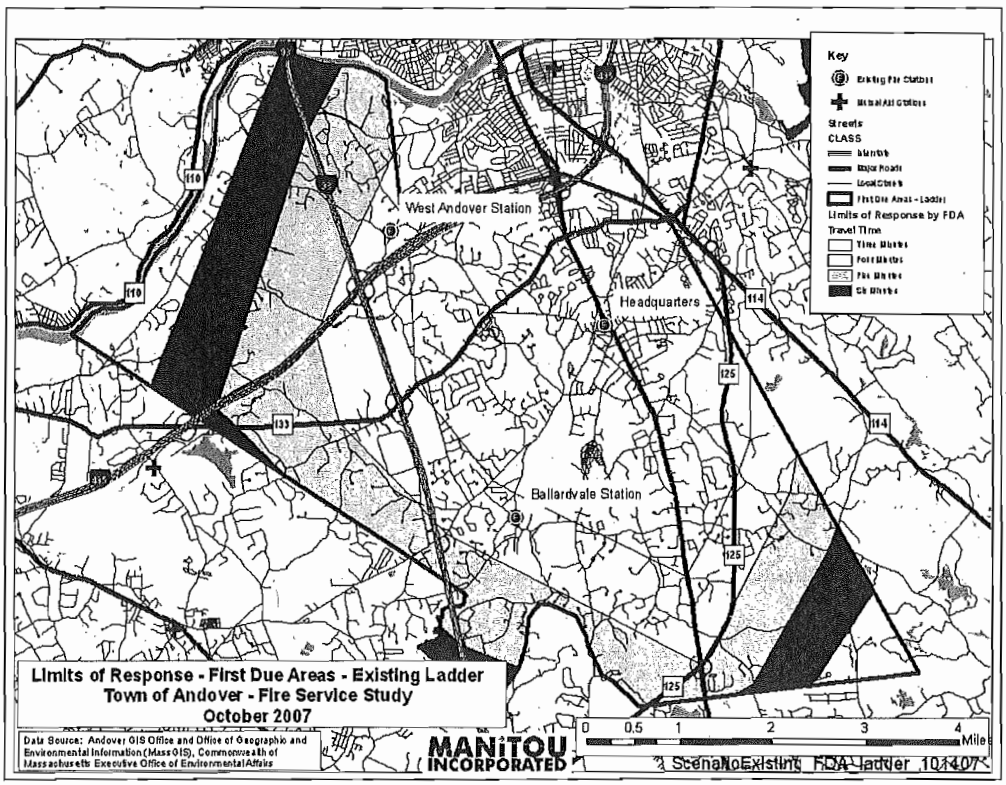


Figure 3.6 Existing Ladder Coverage



For purposes of this analysis, we will confine our discussion to time from when a unit is dispatched to an incident to when they arrive on the scene. Average response times for incidents by type are shown in Table 3.5. These times include what is termed "turnout" time, so we should generally deduct up to one minute from these averages to reflect driving time.

Table 3.5 Average Response Times AFR, 2006

Incident Type	Number of Responses	Average Response Time
EMS	3714	6:22
Fire	3183	5:06
Hazardous Condition	298	6:06
Other	231	6:34

Average response times are only one way to summarize this information. For compliance with NFPA 1710, we need to examine the 90th percentile response times. The 90th percentile times to all incidents in 2006 was 9:00. This is not in compliance with NFPA 1710, which requires a 4:00 response time to 90 percent of incidents.[3]

Given Andover's large area, and the fact that almost 32 square miles are being covered with three stations, this figure should not be surprising. The NFPA 1710 standard is very demanding, and even urban fire departments have difficulty meeting its requirements. The 90th percentile figures appear to be consistent with the average response time numbers that we developed.

To summarize, the Town is covered by a minimal number of units to meet the staffing component of NFPA 1710. This, however, assumes that all units are available. This is not an unrealistic assumption for units with relatively low response volumes (<1000), but as units get busier, they cannot always be assumed to be available.

We can better understand the availability of units by studying the amount of time that they are committed on emergencies and otherwise unavailable to respond. This figure can be referred to as unit hour utilization, meaning the percentage of time that a unit is on an incident divided by the total time that it is in service. For 24-hour staffed units, there are 8760 hours in a year.

We calculate the unit hour utilization by multiplying the number of responses by the average amount of time spent on each response. For ambulances, they spend about 55 minutes out of service on each EMS response. That means, for example, that ambulance 91, which made 1600 EMS responses in 2006, was out of service for 1334 hours, for a 15.2 percent unit hour utilization. Ambulance 92 has a 7.5 percent utilization. What this means is that over 15 percent of the time, one of the ambulances, which are critical to

[3] Our analysis included all incident types. It is possible that we have included some non-emergency incidents which may be skewing the response time data in a higher direction.

making up the necessary staff for firefighting purposes, are unavailable. A complete table of out of service times for emergency calls is included in the appendix.

The situation is most severe for ambulances because of the large number of responses, and the long periods that they spend on calls for service. Average amounts of time spent for calls by type for all units is given in Table 3.6.

Table 3.6 Average Out-of-Service Times by Type of Incident

Type of incident	Average Time OOS (minutes)
EMS	39
Fire	23
Hazardous Condition	32
Other	33

Based solely on unit hour utilization, none of the Andover units is making an excessive number of responses, but overall, it is not safe to assume that all units will be available to respond to a structural fire incident requiring all on-duty personnel.

4.POPULATION AND DEMOGRAPHIC DATA AND FORECAST METHODOLOGY

4.1 Data Sources

The supporting data for the Fire Study was collected from a variety of sources in the Massachusetts area. The primary Geographic Layers used were from the Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs. These files were downloaded from the MassGIS web site and used throughout the project. The layers included were:

i. Image reference File
ii. Ortho Images
iii. Town and political boundaries
iv. Fire Stations
v. Census Boundaries
vi. Street Centerline files
vii. Hydro Files

A second source that was used was the Town of Andover GIS Department. Data included from this source included:

viii. Zoning layers
ix. Parcel information
x. Town boundary

A third source was the Merrimack Valley Regional Council, the local Metropolitan Planning Council. They provided a Layer of Traffic Analysis Zones that contained the baseline census data by small area polygons and the forecasted 2030 values based on their modeling efforts.

4.2 Interstate 93 Interchange Proposal

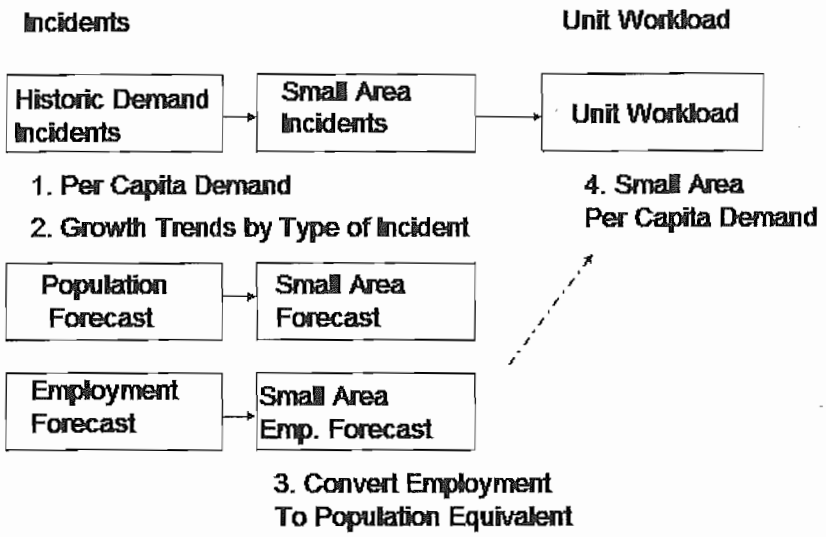
The I-93 Project presents an interesting challenge for services within the Town. On one hand the opportunity for growth of commercial and industrial real estate is great and all three towns adjacent to the proposed location will benefit from this roadway improvement. At the same time the concern is how the new interchange will affect traffic in Ballardvale. Additionally for the Town, the increased traffic puts a strain on the ability of the service to respond to calls for service in this potentially crowded area. The three remaining design options for the interchange - a trumpet, diamond and loop shape - will all be advanced for preliminary design purposes. This study has not taken a preferred design roadwork configuration. Rather the incident projection high forecast covers the projected growth from this interchange and the increase in EMS calls that typically are associated with the type of development that will be associated with the interchange will be addressed in the recommendations chapter.

4.3 Forecast Methodology

Manitou has developed and refined a methodology for forecasting incidents based on empirical information and consistent with theories on relationships between community characteristics and demand for services. The methodology can be adjusted for available data and the planning horizon used, and is very robust.

Conceptually, the forecasting process begins with historic demand for service, population, and employment data. Figure 4.1 illustrates the process. Once information is received or estimated for the entity being studied, the data is disaggregated by smaller areas. These small areas are aligned with existing fire company response districts to produce individualized functions for responses versus incidents.

Figure 4.1 Conceptual Forecast Process



After moving top-down for demand, we build up unit workloads from the bottom up, building from small area forecasts based on population and response information. Change in the forecast is achieved through changes in 1) population and 2) per capita demand for service.

5. INCIDENT AND UNIT RESPONSE FORECAST

One of the key tasks in assessing the Department's long-term capabilities and needs is estimating demand for service. For this project, we produced 5-year forecasts of incidents. These forecasts were produced using a proprietary methodology developed and used over the course of several fire department studies and discussed previously in this report.

We begin by estimating the annual population of the Town, and by using records of fire incidents by type to produce estimates of per capita demand for service by type of incident. This process allows us to differentiate changes in demand for service attributable to growth in population versus changes in the per capita utilization of services. Both characteristics are likely to play an important role.

Several sources of data were used to produce the forecasts. These included long-range population and employment forecasts produced by local planning agencies. AFR incident data was also used.

The starting point for any forecast is to examine the population trends within the Town. Andover, because of its role as an employment center, requires that we also consider employment in demand for service. We do this by attributing some of the demand for service to people employed in the Town. We start with resident population, ad then apply an adjustment based on workers being present for 40 hours a week, or 40 hours divided by 168 hours in a week. This produces an adjusted population, which we use to generate per capita rates of demand by type of incident.

Figure 5.1 Andover Population and Employment 2000-2006

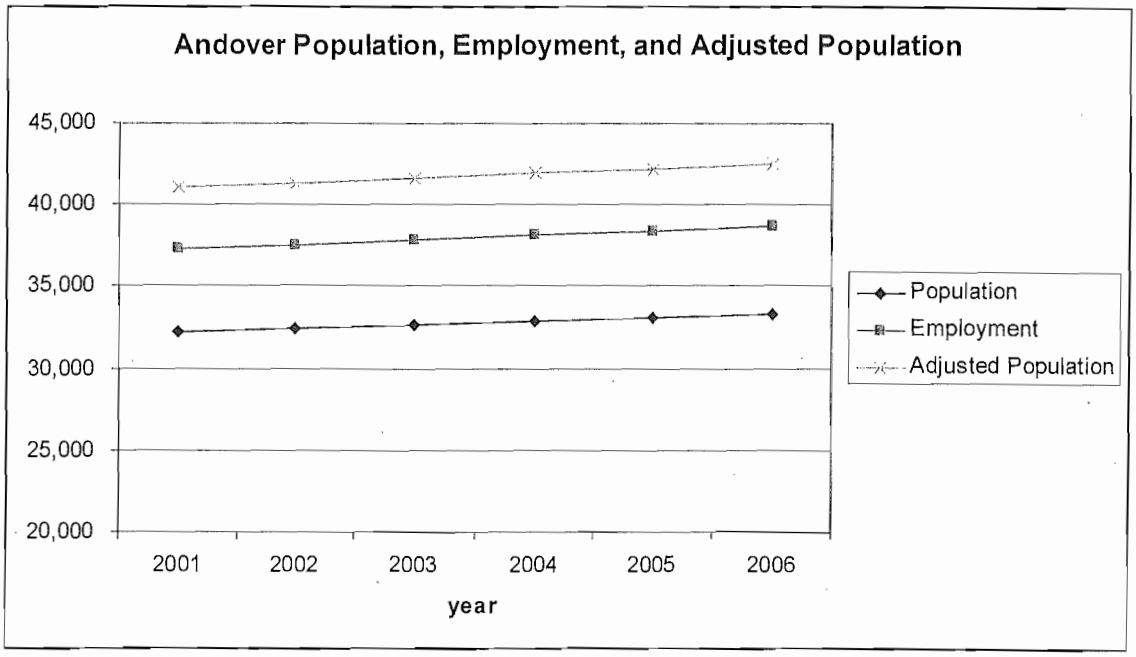


Figure 5.1 shows employment and population from 2000-2006. Both are increasing, with employment consistently larger than population.

Two sets of demand estimates were produced for the period 2007 – 2012. These estimates are dependent on two main characteristics of the Town: its population growth and the utilization rates for fire and other emergency services by the public. The demand forecast therefore was developed in two major steps.

First, the population of the Town was estimated for each forecast period. Due to the availability of good population estimates from the Merrimack Valley Planning Commission and other sources, this step was straightforward. The populations from 2000 and 2020 were used and a straight interpolation was used to estimate intervening years.

The second step in the methodology is to compute the trend in calls per capita by type of call. Figure 5.2 shows the calls per 1,000 population by type of call for 2002-2006, based on the data shown in Table 5.1. We base this table on that of incidents by type presented earlier in the report.

Table 5.1 Per Capita Demand for Service (Adjusted Population)

	2002	2003	2004	2005	2006
BLS	0.0635	0.0575	0.0568	0.0590	0.0608
Haz Cond	0.0012	0.0030	0.0031	0.0040	0.0041
Other	0.0144	0.0231	0.0220	0.0251	0.0272
Mutual Aid	0.0005	0.0006	0.0004	0.0005	0.0006
Fire	0.0042	0.0047	0.0045	0.0060	0.0047
Total	0.0837	0.0888	0.0868	0.0946	0.0974

Next, we determine trends in per capita demand for service by looking at the change in per capita demand from year to year. Because there was a change in NFIRS definitions, and therefore data consistency in 2002, we went form 2003 forward in this phase.

Table 5.2 Annual Percentage Change in Per Capita Rates

Year	2003	2004	2005	2006	Last 3 yrs
EMS	0.9061	0.9869	1.0399	1.0298	1.0189
Haz Cond	2.4930	1.0577	1.2736	1.0404	1.1239
Other	1.6020	0.9509	1.1418	1.0831	1.0586
Mutual Aid	1.1421	0.7772	1.2138	1.1286	1.0400
Fire	1.1202	0.9727	1.3120	0.7914	1.0253
Total Emergency	1.0605	0.9778	1.0892	1.0300	1.0323

Selecting a rate for the forecast is a function of judgment based on stability of the rates, their magnitude, length of forecast, community characteristics and national experience. In this case, we used three year average rates of change. In the low forecast, we assume that per capita rates will remain unchanged. In the high forecast, we apply an annual growth

factor to the per capita rates, which are multiplied by per capita demand to generate a forecast of incidents.

In reality, we expect the actual demand for service to fall somewhere between the low and high forecast. They should be considered as credible lower and upper bounds. Given the five-year nature of the forecast, we would expect the actual demand to be closer to the high forecast.

Table 5.3 shows the Low Forecast of incidents. In the low forecast, EMS remains the predominant source of demand, though increases are only about 30-30 incidents per year. Total incidents increase by less than 200 over the forecast.

Table 5.3 Low Forecast of Incidents

LOW						
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
EMS	2630	2678	2697	2717	2731	2743
Haz Cond	198	201	203	204	205	206
Other	1223	1245	1254	1264	1270	1275
Mutual Aid	26	26	27	27	27	27
Fire	205	209	210	212	213	214
Total Emergency	4282	4359	4391	4424	4445	4465

Table 5.4 shows the high forecast of incidents. In this forecast, overall incidents increase by over 1,000, with EMS and "Other" alarms increasing almost the same amount in absolute terms. Overall demand for service would exceed 5,000 emergency incidents per year by 2012.

Table 5.4 High Forecast of Incidents

HIGH						
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
EMS	2630	2728	2800	2874	2943	3011
Haz Cond	198	226	256	290	327	370
Other	1223	1318	1405	1499	1594	1695
Mutual Aid	26	28	29	30	32	33
Fire	205	214	221	228	235	242
Total Emergency	4282	4514	4712	4921	5131	5351

These incident forecasts are then translated into unit response forecasts (see Tables 5.5, and 5.6). Using a threshold of 3,000 responses to reflect a unit that is becoming overloaded with activity, only Ambulance 91 begins to approach this level of utilization in the high forecast in 2012, with 2800 responses. The next busiest company is Engine 1, with just over 1900 responses annually.

Table 5.5 Low Forecast Unit Responses

LOW	2007	2008	2009	2010	2011	2012
AMB91	2241	2282	2299	2315	2327	2337
AMB92	1192	1213	1222	1231	1237	1242
CAR2	742	755	761	766	770	773
ENG 1	1547	1575	1587	1599	1606	1613
ENG 2	804	818	824	830	834	838
ENG 3	837	852	858	864	869	872
LAD 2	728	741	747	752	756	759

Table 5.6 High Forecast Unit Responses

HIGH	2007	2008	2009	2010	2011	2012
AMB91	2241	2363	2466	2576	2686	2801
AMB92	1192	1256	1311	1369	1428	1489
CAR2	742	782	816	852	889	927
ENG 1	1547	1631	1703	1778	1854	1934
ENG 2	804	847	884	924	963	1004
ENG 3	837	882	921	962	1003	1046
LAD 2	728	768	801	837	873	910

Although we were asked to forecast for five years, there are some long-term trends that will bear upon the Department in the future. The overall population will remain fairly stable, in part due to decreasing household size. Employment may grow, and retailing may attract additional visitors that can have an impact on additional demand for service.

The percentage of population over the age of 65 is projected to increase as a percentage of the town's population from under 10 percent in 1980 to over 12 percent in 2000. This population 65 or over is expected to reach 14 percent by 2010, and continue to increase both in absolute and relative terms. [4]

Tracking this population demographic is important because national data show that seniors are disproportionate users of emergency medical services. This means that even given a relatively stable overall population within the Town, the potential for increasing demand for service exists and is likely.

Overall, we believe that these forecasts paint an orderly future for the Department, presenting ample opportunity for reasoned reflection and anticipation of needs to maintain or improve fire and emergency medical services going into the future.

[4] Massachusetts Institute for Social and Economic Research, Population Estimates, December 10, 2003.

6. RECOMMENDATIONS

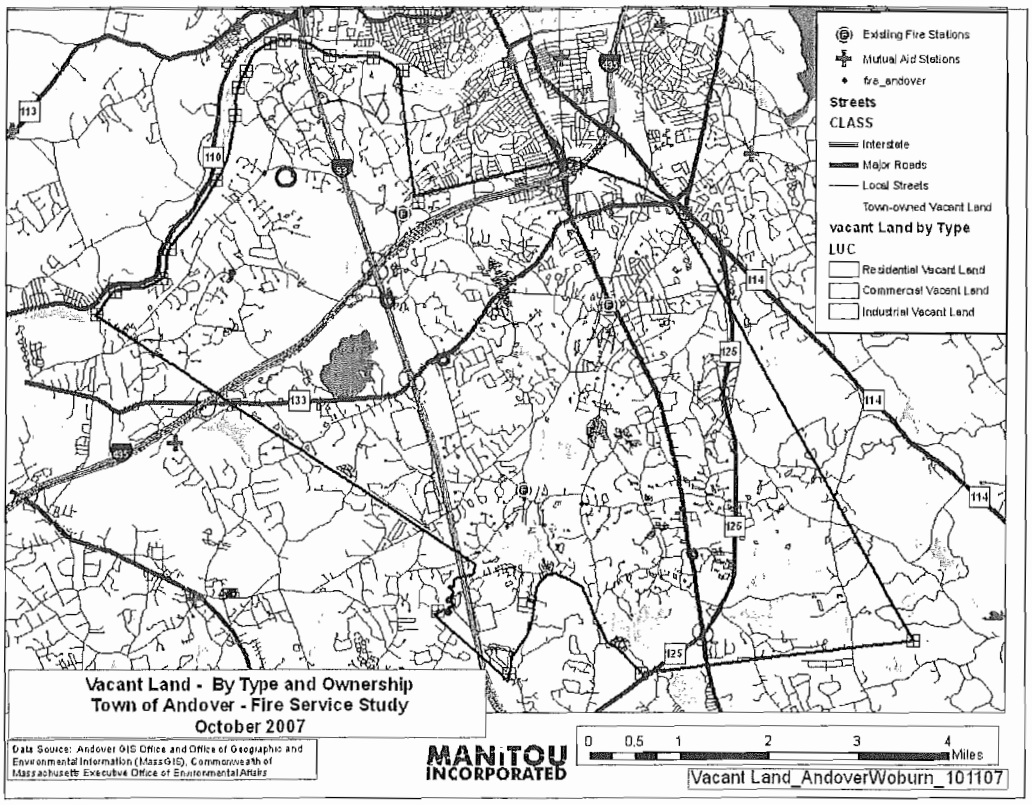
Based on the foregoing discussion and analysis we offer the following recommendations.

1. Relocate Stations 2 and 3

Both Stations 2 and 3 suffer from inadequate space, poor location, or both. Station 2 is too small to accommodate necessary equipment, and Station 3 is poorly located to maximize its impact on serving the Town.

We evaluated several alternatives for stations, aided by a map of vacant and Town-owned land. Like most studies, there are practical limitations to where facilities can be located, and acquisition of built-upon property in an affluent community may be prohibitively expensive and politically infeasible. We attempted to identify locations where there was 1) good street access; 2) vacant property; and 3 not extremely sensitive areas on their face (i.e, adjacent to waterways, on parkland, etc.). Figure 6.1 shows vacant and Town-owned land.

Figure 6.1:Town-owned and vacant land



While specific locations are given for the proposed stations, some variance from these locations (1/4 mile) may be acceptable without having a major impact on their efficacy.

We propose that Stations 2 and 3 be relocated to the intersections of Andover and Woburn Sts. And Bellevue and Lowell Rd., respectively. Figure 6.2 shows the proposed station locations with response time contours. The improvements should be contrasted with Figure 3.5. This alternative moves Station 2 to the east, providing better coverage for more of the Town, and Station 2 is moved southward away from the border of the Town and adjacent to an interchange for I-93, giving it quick access to the interstate highways for response to accidents, and for faster response to the north or south during non-rush hours.

Figure 6.2 Proposed Station Locations, Alternative One

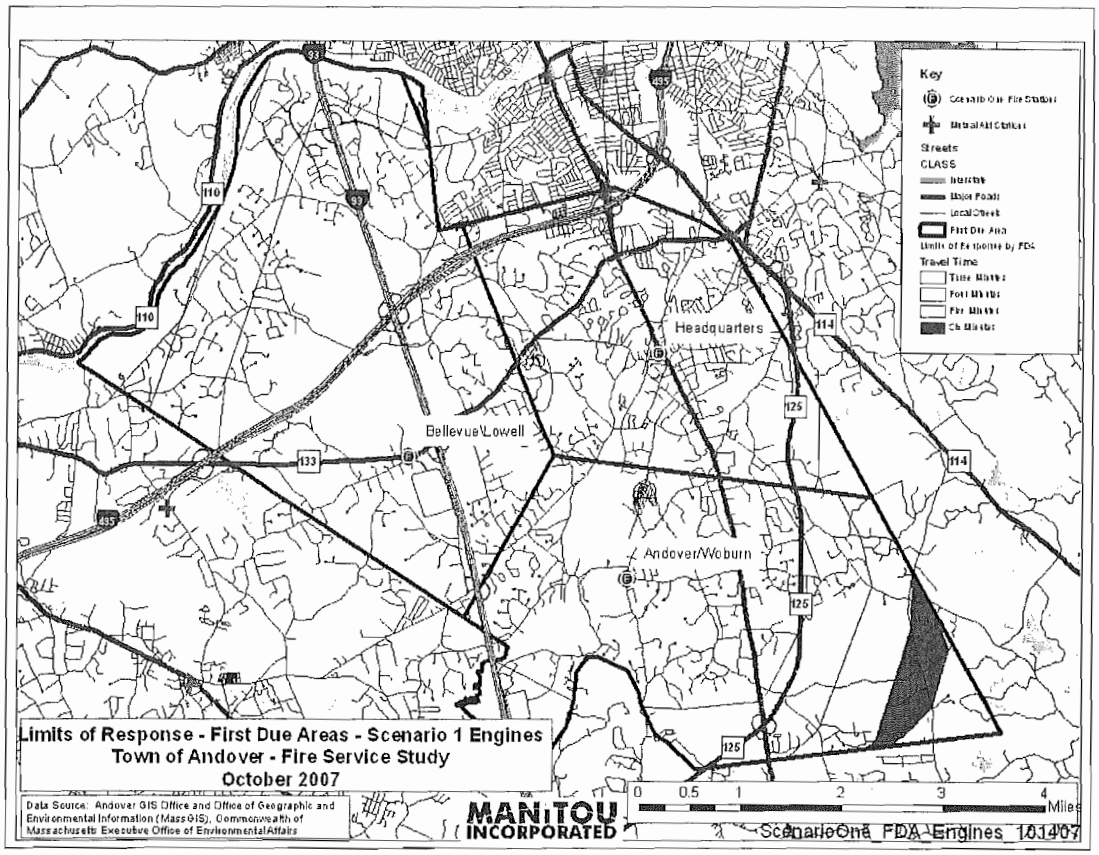


Table 6.1 Change in Coverage with Scenario One

	Existing Station	Scenario One	Difference	Difference Percent
Acres	1551	1737	186	12
Households	11443	12096	653	6
Population	27306	29037	1731	6
Employment	39872	39978	106	<1

These coverage statistics would be even better assuming that there is development in the I-93 interchange area. Increased development in that area might also be better served from a revised location for the Ballardvale station.

Long Term Trends

As demand for service increases, additional staffing will become necessary to maintain the current level of service. As demand for service increases, this increases the amount of time that a fire unit may be out of service. While this is desirable from the standpoint of utilizing resources, the trend will be that on any given time period, the available staffing for a fire emergency may be less than recommended in NFPA 1710. Another concern is that a very productive administrative and fire prevention inspection program is maintained by the AFR. Because emergency incidents take precedence, these duties will begin to suffer as less time is available.

We believe that a gradual approach to increasing staffing be undertaken. This approach is a reflection of the marginal nature of growth in the Town, and an effort to be efficient in allocation of resources.

2. Add an ambulance at Station 2

This ambulance could be phased in as a daytime-only unit. This would add resources when demand for service was highest, and could allow the impact of adding this unit to be demonstrated and monitored in terms of overall system performance and unit workload. We expect that rising demand for service will require that this unit eventually be staffed on a 24-hour basis.

Section 7.4 of the appendix presents a forecast of demand assuming that a third ambulance is placed into service in 2008.

3. Add a third position to the Ladder Company

The existing ladder company staffing limits the effectiveness of this unit, ad requires that an engine be sent with it on most calls for service. In order to increase its ability to function as an independent company, a third position should be added after the ambulance is staffed on a full-time basis.

4. Engine company staffing alternatives

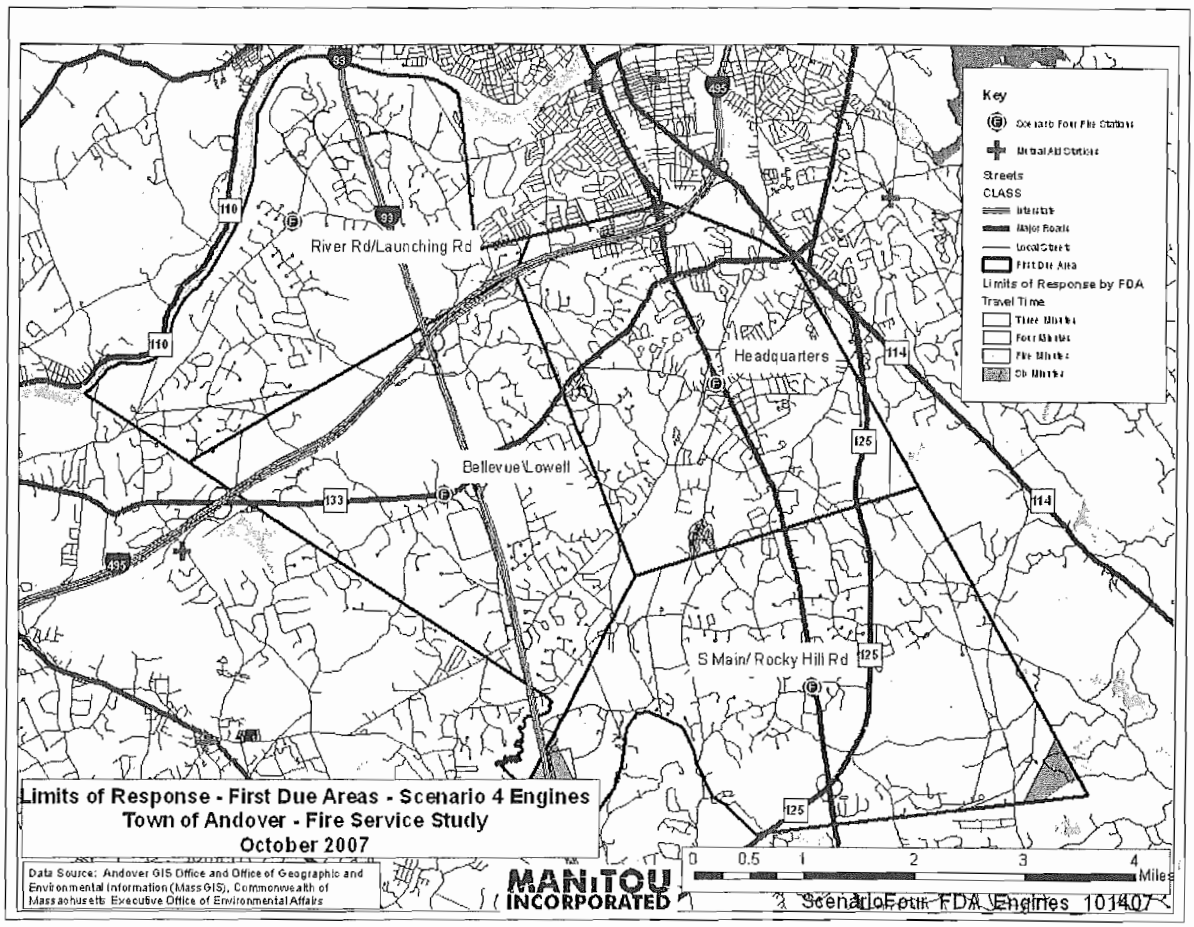
We believe that the addition of a third 24-hour ambulance should decrease workloads for existing engines and ambulances, leading to both better response times and high unit availability. Because of this availability, the need to add a fourth position to outlying engine companies is not acute, in our opinion. In fact, we believe that the expense of adding a fourth position to each of the three engine companies might be better spent on placing an additional company in service to better improve response times.

A four station configuration for the Department's stations was examined, and an alternative was developed. Figure 6.3 shows the resulting response time impact. In this scenario, a station would be located at River Road and Launching Road, while a fourth station would be located at Bellevue and Lowell Roads. Station 2 could be positioned at Andover and Woburn, or at Main and Rocky Hill. We do not see a need for a fourth station by 2012, although we developed a proposed location scheme should a fourth station become necessary in the future.

A fourth station would diminish the workload of existing companies, and add considerable expense. We find the current level of service acceptable, but understand that this is a local political determination, and any decision to formally strive for NFPA 1710 compliance would overrule any judgment by a dispassionate outsider.

One alternative to adding a fourth engine company would be to purchase 2 quints, and place them at Central and the Bellevue and Lowell locations, allowing them to serve either as engines or ladders, depending on their arrival order on the scene of an incident.

Figure 6.3 Four Station Configuration



A quint apparatus, designed to fulfill the role of an engine or ladder company, would require staffing of at least an officer and three firefighters in order to be effective at their enhanced mission.

5. Continue to monitor response time and unit utilization data to fine-tune deployment.

The new Chief has invigorated the planning process within the Fire Department. This study, coupled with numerous internal initiatives, are symbols of an effort to shift the Department's management to locally gathered evidence, rather than reliance solely on doctrine or past practices.

The use and development of management information should continue. Implementation of mobile computer terminals in vehicles should provide another level of sophistication and precision in tracking unit activity and workloads. Planning should be undertaken now to leverage these investments to make sure those data capabilities of these and other investments is maximized.

Summary

In summary, we believe that relocation of two of Andover's fire stations should be undertaken in accordance with the Town's Capital planning process. Additional efficiencies can be gained by developing new, better-located facilities that can provide improved response time coverage and accommodate the needed mix of apparatus and equipment.

While a fourth station was considered and its response time impact modeled, we did not fully elaborate on this scenario because we felt that the demand for service would not justify this change given the planning horizon for the study and the relatively flat growth in population throughout the Town.

7. Appendix

7.1 Discussion of Speeds And Adjustments

INTRODUCTION

The streets file used in the Analysis for this project was taken from the original *MASSGIS* datasets. This ARCGis file was converted to an *ESRI* Shapefile and the network was created to run Network Analyst with the ESRI network extension. This file was used to create limits of response by type of unit based on the speeds contained in this document and revised based on discussions with the AFR.

ALTERATIONS

The file was altered in the following ways: A field called ONEWAY was added to allow for designation of from-to (FT) or to-from (TF) status of the arcs for one way streets. This was verified on the interstates for most of the northern half of the city. Given more time for this project, the remainder would have been completed. Another category for feature code was added to denote represent the code value for speeds.

SPEED ASSUMPTIONS

The following table was used to create a "cost" in seconds for each link in the network. This table was applied to each link with the length of the link determining the time it takes for each type of vehicle to travel the length of the link. Every city has special characteristics which make travel patterns and speeds unique. Manitou has used speed tables that are roughly based on functional classification of the roadway and the historic knowledge of fire operations. Other models use Computer Aided Dispatch (CAD) system data to develop predictive response times for types of incidents. Neither of these methodologies, speed estimation or historical response data, fully explain the travel times of emergencies vehicles. The complexity of city-wide traffic patterns, acceleration and deceleration are extremely volatile and hard to model. CAD data is inherently inconsistent both in the definition of "on scene" and the application of consistent times when a multitude of operators are involved.

We feel that for systemic review of response times and city wide analysis of alternatives, that the speed estimations presented below are well suited to approximate the network coverage expected from certain deployment strategies. The speeds below have been reviewed with regard to Andover and we feel they accurately demonstrate the average travel speeds for the various units traveling at safe speeds.

CLASS (Based on road network Classification)	MPH ENG	MPH LAD	MPH EMS	GIS CODES
Limited Access Highway (LAH)	60	53	81	1
Primary or Major Highways (PMH)	43	38	58	2,3
Secondary or Minor Highways (SMH)	34	30	46	4
Access Ramp Associated with LAH	34	30	46	9
Andover Local Roads	30	26	40	5,6

7.2 Average OOS Time

Average Out of Service Time by Call Type and Unit 2006 Emergency Incidents by Unit Responding			
call Type	Unit	Num of Responses	Avg Out of Service Time
EMS	AMB91	1600	0:50:46
EMS	AMB92	782	0:52:34
EMS	BOATS	5	1:56:44
EMS	CAR 1	1	0:14:22
EMS	CAR 2	40	0:25:35
EMS	CAR 3 & CAR 4	16	0:12:34
EMS	ENGINE 1	389	0:20:19
EMS	ENGINE 2	129	0:27:40
EMS	ENGINE 3	149	0:25:46
EMS	ENGINE 4 +	14	0:46:28
	EMS – Total	**3125**	**0:38:24**
FIRE	AMB91	401	0:14:43
FIRE	AMB92	241	0:18:16
FIRE	BOATS	2	1:23:03
FIRE	CAR 1 & 2	630	0:28:33
FIRE	CAR 3 & CAR 4	26	0:20:58
FIRE	ENGINE 1	803	0:22:16
FIRE	ENGINE 2	520	0:22:01
FIRE	ENGINE 3	450	0:28:21
FIRE	ENG 4,5 6	60	0:35:09
FIRE	LADDER 1 & 2	620	0:17:26
	FIRE – Total	**3753**	**0:22:34**
HAZ	AMB91	15	0:16:56
HAZ	AMB92	11	0:33:34
HAZ	CARS	33	0:36:22
HAZ	ENGINE 1	123	0:26:39
HAZ	ENGINE 2	47	0:34:16
HAZ	ENGINE 3 +	67	0:43:09
HAZ	LADDER	13	0:23:30
	HAZ Total	**309**	**0:31:48**
Other	AMB91	173	0:43:11
Other	AMB92	146	0:36:32
Other	BOATS	3	0:19:44
Other	CARS	48	0:38:48
Other	ENGINE 1	209	0:34:49
Other	ENGINE 2	107	0:27:13
Other	ENGINE 3 +	195	0:30:46
Other	LADDER	38	0:32:03
	Other Total	**919**	**0:32:16**
Note: Out of Service refers to time that a Unit is engaged in responding to an incident from the time dispatched to the time return to their quarters.			

7.3 Average Response Times

Average Response Time by Call Type and Unit 2006 Emergency Incidents by Unit Responding			
call Type	**Unit**	**Num of Responses**	**Average Response Time**
EMS	AMB91	1754	0:04:45
EMS	AMB92	883	0:06:12
EMS	BOATS	7	0:07:58
EMS	CARS	80	0:04:09
EMS	ENGINE 1	493	0:04:22
EMS	ENGINE 2	184	0:05:23
EMS	ENGINE 3	268	0:06:02
EMS	LADDER	45	0:07:01
	EMS – Total	**3714**	**0:06:22**
FIRE	AMB91	45	0:07:01
FIRE	AMB92	354	0:04:21
FIRE	BOATS	2	0:00:02
FIRE	CARS	588	0:04:27
FIRE	ENGINE !	733	0:04:58
FIRE	ENGINE 2	454	0:05:29
FIRE	ENGINE 3+	479	0:05:50
FIRE	LADDER 1 & 2	528	0:05:21
	FIRE – Total	**3183**	**0:05:06**
HAZ	AMB91	11	0:04:41
HAZ	AMB92	11	0:06:56
HAZ	CARS	30	0:06:54
HAZ	ENGINE 1	121	0:05:34
HAZ	ENGINE 2	46	0:05:45
HAZ	ENGINE 3 +	68	0:06:57
HAZ	LADDER	11	0:04:58
	HAZ Total	**298**	**0:06:06**
Other	AMB91	7	0:05:27
Other	AMB92	6	0:03:31
Other	BOATS	1	0:00:01
Other	CARS	15	0:03:06
Other	ENGINE 1	82	0:07:29
Other	ENGINE 2	43	0:07:32
Other	ENGINE 3 +	61	0:06:38
Other	LADDER	16	0:04:09
	Other Total	**231**	**0:06:34**
Note: Response Time refers to time that a Unit is engaged in responding to an incident from the time dispatched to the time "arrive at Scene"			

7.4 Projected Unit Demand Forecasts Assuming Addition of a Third Ambulance in 2008

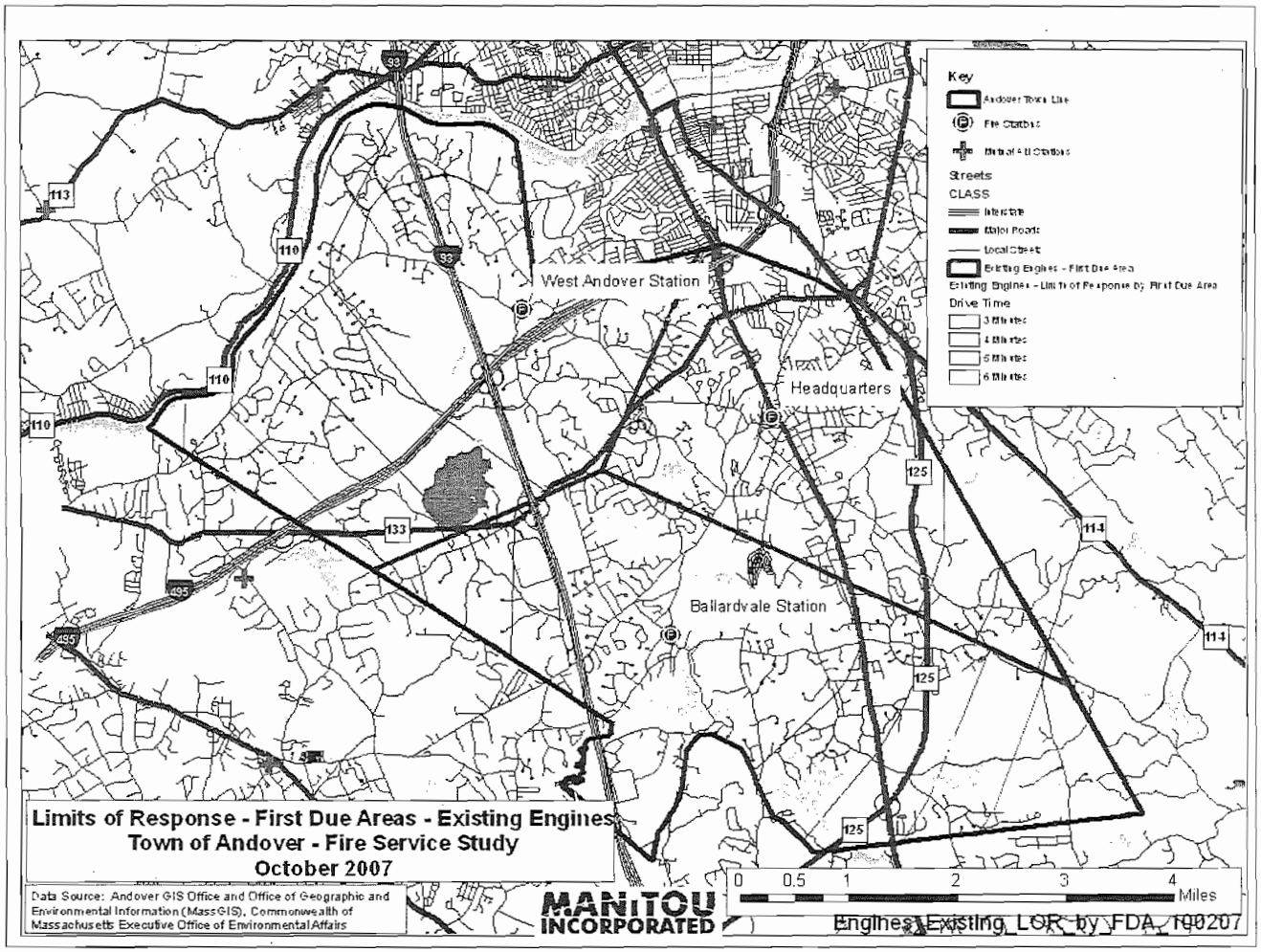
Low Forecast

LOW	2007	2008	2009	2010	2011	2012
AMB91	2241	1694	1670	1646	1617	1587
AMB92	1192	1213	1222	1231	1237	1242
CAR2	742	755	761	766	770	773
ENG 1	1547	1575	1587	1599	1606	1613
ENG 2	804	613	619	625	629	632
ENG 3	837	852	858	864	869	872
LAD 2	728	741	747	752	756	759
AMB93	0	588	629	669	710	750

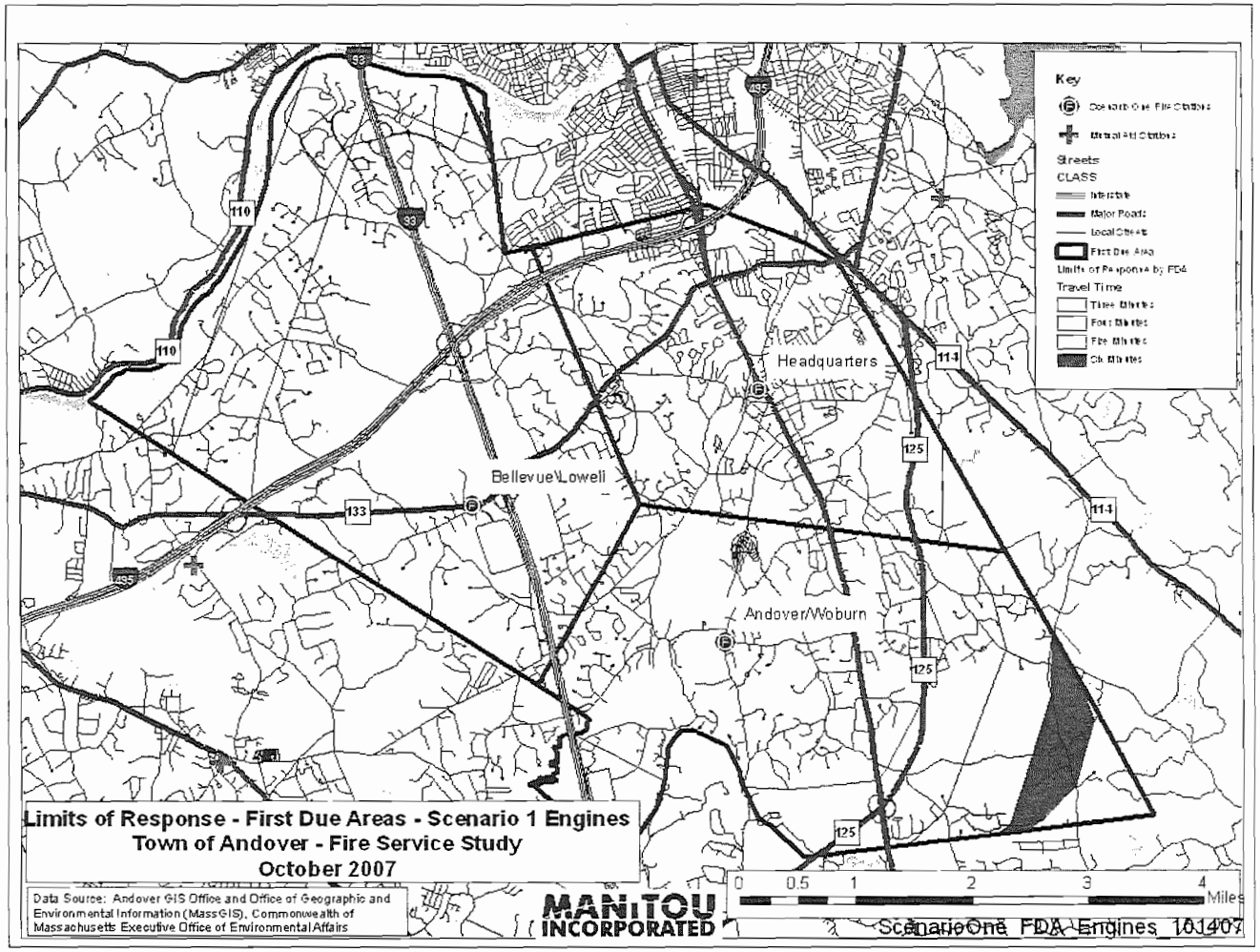
High Forecast

HIGH	2007	2008	2009	2010	2011	2012
AMB91	2241	1649	1676	1709	1743	1782
AMB92	1192	1256	1311	1369	1428	1489
CAR2	742	782	816	852	889	927
ENG 1	1547	1631	1703	1778	1854	1934
ENG 2	804	642	679	718	757	799
ENG 3	837	882	921	962	1003	1046
LAD 2	728	768	801	837	873	910
AMB93	0	714	790	867	943	1019

7.5 Full-Page Format Response Time Maps: Current Engine Coverage



7.6 Full-Page Format Response Time Maps: Scenario One – Two Relocated Stations



Protecting Andover, Massachusetts:
A Strategic Plan for Andover Fire Rescue

August 2008

Protecting Andover, Massachusetts
A Strategic Plan for Andover Fire Rescue
August 2008

Selectman: Chairman Mr. Ted Teichert, Ms. Mary Lyman, Mr. Brian Major
Mr. Gerald Stabile Jr., and Mr. Alex Vispoli

Andover Town Manager
Mr. Reginald "Buzz" Stapczynski

Fire Chief
Michael B. Mansfield

Document Planning Group

Ms. Peggy Campbell
Deputy Chief Lincoln Clark
Deputy Chief Albert DelDotto
Deputy Chief James Dolan
Local 1658 Representative John Gangi
Deputy Chief Richard Hartman
Selectman Brian Major
Fire Chief Michael B. Mansfield
Planning Director Paul Materazzo
Ms. Cynthia Milne
Lieutenant/FPO Todd Pomerleau

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Introduction by Chief Michael B. Mansfield

In 2006, our fire and emergency personnel responded to over 8222 emergency incidents and calls for service. Regardless of the time of day Andover Fire Rescue personnel are prepared to serve the community and its citizens with the utmost respect. In 2004 a national citizen Survey ranked Fire services and Emergency Medical Services/Ambulance in the 88 and 90 percentile respectively.

Many of Andover Fire Rescue's personnel participated in the preparation of the first ever Five Year Strategic Plan for the organization. Through a series of meetings involving many man hours, this team has produced a comprehensive plan that will "chart the course" over the next five years for our organization.

The Mission, Value and Vision Statements of Andover Fire Rescue serve as important reference points in the formulation of the overall Strategic Plan. I would like to take this opportunity to recognize and thank all those who participated in this process for their time, effort and expertise they contributed to the development of the plan.

The committee recognizes that like any plan it will constantly need to be reviewed and revised. This plan will be evaluated, reviewed, and refined each and every year with the end result being a current plan always being in effect.

It is intended that this Strategic Plan be utilized in the preparation of the Annual Andover Fire Rescue budget; as a method of informing the Board of Selectmen of the organizational goals and objectives; and as a conduit to decision making.

Over the last several years of tough economic times and "belt tightening" at the Statehouse, there is always the threat of service reductions, and budgetary reductions or adjustments.

Serving a dynamic and growing community with ever increasing demands on fire and life safety services is becoming and will remain increasingly difficult. Proposition 2 ½ has forced the Andover Fire Rescue work force to be reduced over the last several years even though we are faced with the challenges as they relate to fire codes and regulations, fire prevention, community education, and recruitment and training.

Andover Fire Rescue must be able to respond to change, solve complex problems, collaborate on issues, assess community needs, identify the necessary resources needed to meeting those needs and formulate the plans necessary to provide comprehensive and cost effective services to our customers, the citizens and visitors of Andover.

Respectfully submitted,

Michael B. Mansfield

Executive Summary

This is the first ever, long range planning document to be developed for Andover Fire Rescue. Personnel representing the Andover Board of Selectmen, Andover Fire Rescue Administrators, Finance Committee, personnel representing Local 1658 IAFF, and members of the community devised it.

The document is intended to be a guide for the development of Andover Fire Rescue over the next five (5) years.

It is intended that the content enclosed will be reviewed and refined on an annual basis and should be coordinated in the future to coincide with the Town of Andover budget process.

During the development of this Strategic Plan the Mission, Values and Vision Statements were reviewed and revised to reflect the ideologies believed in and services the organization provides to the community continuously day to day.

Additionally, a complete organizational strengths, weaknesses, opportunities, threats (SWOT) analysis was completed to identify specific issues that exist within each of the four (4) aforementioned areas.

The plan provides historical information about Andover Fire Rescue and demographic details for each of the three fire districts currently serving the needs of the community.

An overview is provided of each of the three (3) bureaus to include Administration, Operations and Fire Prevention.

It is the intent of this document to provide the reader with the necessary information as to where the organization is today and what direction it intends to move in to ensure that all the needs of the community are met in an ever changing society, with rapid and efficient service through the dedication of its personnel.

The organization is actively pursuing grant funding from State and Federal sources and will continue to do so, in an effort to decrease the impact Andover Fire Rescue has on the annual budget. Currently, there are $1,975,000 in grant applications that are outstanding.

Mission, Value, and Vision Statements

Mission Statement

The mission of Andover Fire Rescue is to serve the citizens of the community and its visitors by protecting them from the dangers created by man-made and natural emergencies.

The organization provides professional services such as fire suppression, EMS, technical rescue, and hazardous materials response.

Andover Fire Rescue aggressively attempts to minimize the risks associated with these incidents through effective fire prevention and investigation, code enforcement, public education and injury prevention programs.

We are dedicated to assisting those in need regardless of the severity of the problem.

Value Statement

The values of Andover Fire Rescue are service to those in need and community involvement through the professionalism, integrity, and dedication of its personnel.

Vision Statement

For the next several years, Andover Fire Rescue will be an organization whose personnel function as a cohesive team that are empowered, effective and enthusiastic with the services we provide to our community.

We will be recognized as a regional leader by our community, neighbors and peers and enthusiastically supported by our community, which views us with pride, respect, and confidence.

Our mission will be accomplished by a physically fit, healthy and increasingly diverse workforce, that are well trained in a multitude of core and specialized skills and empowered with a high level of involvement in our success.

Our equipment will be dependable, capable and consistent with the needs of our community that embraces cutting technology with an emphasis placed on firefighter safety.

Vision Statement Continued

Andover Fire Rescue will meet the challenges of the future through:

- The implementation of a unified and functional organizational structure that will include the increasing of staff and incident response personnel.
- A responsive organizational structure that will openly communicate and responsive to the personnel and the citizens within community.
- The development of adequate facilities that are properly located and designed so as to provide optimum response and quality service delivery
- The creation of additional community outreach opportunities through increased public education, public relations and fire prevention programs.
- Embracing training programs that are comprehensive and inclusive of core firefighting and Emergency Medical Service competencies as well as technical rescue skills.
- The utilization of existing information technology to provide access to reliable statistical and safety information in an effort to minimize safety concerns.
- The development of a fully integrated and interoperable radio communications system that will provide increase firefighter safety at all multi-agency responses.
- The development and implementation of a complete wellness program to ensure all personnel are physically healthy and mentally fit.
- Promoting and maintaining a positive work environment.

Andover Fire Department Historical Overview

The fire department in Andover, Massachusetts originated in 1829 with the formation of the "Friendly Fire Society". This society was comprised of twenty-five (25) members who responded to fires, held socials, and provided community work. It was considered a status symbol to be a member of the "Friendly Fire Society". The society held annual elections in order to designate who would serve as its Chief as well as the Officer Corps. The society accepted donations but was primarily an unpaid organization.

In 1862, "The Friendly Fire Society" was renamed the "Shawsheen Steam Fire Engine Company". They had given up their hand tubs and buckets and graduated into the horse drawn steam pumpers.

Sometime in 1864, they also incorporated as part of the Company, a Ballardvale horse drawn steam engine and a horse drawn ladder company. Incidentally this station was originally located on the other side of the Shawsheen River from where it stands today.

The Company membership numbers increased to thirty-five (35) but they still conducted annual elections to determine who would serve as Chief and the other officers.

Andover erected a new fire station in 1886 on Park Street to house this company. They renamed their company "The Andover Steam Fire Engine Company". They continued to accept donations and indeed strongly solicited them but still served as a volunteer group performing firefighting and other civic functions. They purchased the first piece of motorized fire apparatus in 1910, a 1000 gallon per minute (gpm) American Lafrance Pumper.

In 1924, Town Meeting established the Andover Fire Department and appointed Charles F. Emerson as the department's first full time Chief. The department as we know it operated from the original Park Street Station (now razed) and the Ballardvale substation situated where it is today on the corner of Andover Street and Clark Road.

Motorized apparatus continued to replace the horse drawn apparatus and the Fire Department became part full time with four (4) permanent members and the remaining still volunteer.

In 1937 the department purchased its first ambulance and began a first aid and transportation program.

In 1941, Chief Emerson retired and C. Edward Buchan became Chief. Under Chief Buchan, the department purchased its first motorized ladder truck and the ambulance began transporting patients to and from area hospitals as well as performing firefighting activities. Inspections of buildings by fire department personnel also began during this period.

The inspections were only conducted in buildings that State Law required the department to inspect. Chief Buchan was instrumental in having appointed the first two Deputy Chiefs of the

department. He was also credited with beginning the three (3)-platoon system of operation, providing twenty-four (24) coverage. The average hours of work per week went down from eighty four (84) to seventy-two (72).

Unfortunately, Chief Buchan died while still active as Chief in 1956.

In 1956, the Board of Selectmen appointed Henry L. Hilton as Chief. Under his term of office the West Andover substation at Chandler and Greenwood Roads was built. The fire personnel work week was reduced from seventy-two hours per week down to fifty-six hours per week and then to the current average work week that still exists today of forty-two hours. Under the forty-two hour workweek two additional Deputy Chief's were appointed. This allowed for a Deputy Chief to supervise each of the four work shifts.

The concentration on Fire Prevention became a priority with an ever-increasing emphasis on preventing fires from occurring. An emergency for emergency incidents only was instituted during this period as well.

In the early 1960s, the firefighters joined the International Association of Firefighters (IAFF) and became an affiliate of the AFL-CIO. Mutual Aid of fire apparatus assisting neighboring communities became routine. New rescue boats were placed at all three fire stations and the new "Snorkel" aerial platform replaced the aging 1941 ladder truck.

In 1977, Chief Hilton retired and William T. Downs was appointed Fire Chief by the Town Manager and approved by the Board of Selectmen. Chief Downs was able to maintain a reserve ambulance and fire apparatus for use during those times that the first line equipment was out for repair. With the approval of the Town Manager, Chief Downs appointed the first full time day Deputy Chief assigned to Fire Prevention to collaborate with other town departments on issues such as building codes, fire regulations, and permitting.

A new aerial ladder, ambulance, two additional fire pumpers and hydraulic rescue tools commonly referred to as "The Jaws of Life" were purchased during his term. The Emergency Medical Technician/Firefighter became a reality. The first edition of the rules and regulations was devised and issued to every member of the department.

On August 10, 1986 Chief Downs retired and Harold F. Hayes was appointed Fire Chief by the Town Manager and approved by the Board of Selectmen. Chief Hayes required all newly appointed firefighters to attend and successfully complete the Massachusetts Fire Academy during their first year of employment. In addition, all firefighters hired after 1986 are required to become certified Emergency Medical Technicians and maintain that certification throughout their careers.

New ambulances, fire engines, and sedans were purchased and defibrillation of heart attack victims became routine. The formulation of the Lawrence General Hospital based paramedic vehicle that responds to incidents in Andover following established protocol was developed. A new day Lieutenant's position was added to the now formed Fire Prevention Bureau.

Standard Operating Procedures and Rules and Regulations were developed to improve department operations. The departments first full time female firefighter was employed, computerization of records were realized and Central Dispatch became the responsibility of both the fire and police departments. The total number of personnel on the fire department at this time was forty-four (44) firefighters, thirteen (13) Lieutenants, five (5) Deputy Chiefs, Chief of Department, and one full time and one part time secretary.

On June 2, 1996 Chief Hayes retired and Harold J. Wright was appointed Fire Chief by the Town Manager and approved by the Board of Selectmen. Under Chief Wright the department developed procedures to respond to carbon monoxide alarms and obtained a multi-gas meter. The new Voice Alarm system was placed into operation and Opticom traffic lights were installed to allow for emergency vehicles to change the flow of traffic to create a safe passage through dangerous intersections. The department also purchased three new inflatable boats and outboard motors to be used in water rescues.

On July 6, 2000 Chief Wright retired and Charles H. Murnane, Jr. was appointed Fire Chief by the Town Manager and approved by the Board of Selectmen. Only a few months later the construction of the new Public Safety Center began on the site of the current Police and Fire Stations on Main Street.

During this time West Andover began to see a growth in construction, as a result Chief Murnane moved a full time ambulance to West Station to provide a quicker and more effective EMS response to that area of town. The Fire Department was also able to procure, through donations, three Thermal Imaging Cameras to be used for search and rescue operations.

In 2002 a major accomplishment was that the Insurance Service Organization (ISO) had upgraded Andover from a Class 4 to a Class 3. The direct result of this upgrade was a savings in property insurance.

In 2003 and 2004 the Fire Department was able to procure several State and Federal Grants allowing for purchases of equipment and specialized training to respond to acts of terrorism. Chief Murnane retired on January 16, 2007.

Today

The fire department renders the following services:

Fire Protection – As a full service fire protection organization, the Andover Fire Rescue provides services ranging from the education of elementary school children to the rescue of elderly citizens from nursing home fires. Installation and maintenance of all fire alarm wiring of all coded fire alarm boxes is also provided. We hope to break the stereotype of sitting around waiting to respond to a fire, and we are actively seeking public opinion concerning the present and future activities of this department.

Fire Prevention – The Andover Fire Rescue annually inspects three or more family dwellings, schools, theaters, and all public, municipal, commercial and industrial occupancies.

All nursing homes, rest homes, hospitals infirmaries and innholders are inspected on a quarterly basis.

Fire drills are conducted at each and every public and private school every quarter and public sector training is conducted per their request as necessary. Facilities needing assistance in the development of evacuation plans are also afforded the guidance necessary to preparing the plans.

All necessary State and Local permits for storage of flammables, installation of oil burners, fireworks and pyrotechnic displays, storage of gunpowder or blasting agents and the daily blasting or open burning permits are issued by the fire department.

Arson Investigation – The fire department investigates every fire to determine if arson is a cause and employs the use of the State Fire Marshal's office and state forensic laboratory for analysis when needed. The department also utilizes the services of the Andover Police Department and District attorney's Office to prosecute those involved in cases of arson and those committing other fire related crimes.

Specialized Rescues – In addition to fire and emergency medical services, the department performs numerous rescue missions. These could and do include incidents involving stalled elevators, trench collapse rescue, water and ice rescues.

Hazardous Materials Response – The department in cooperation with the District Hazardous Materials Team mitigates all hazardous materials incidents. The District 6 Team is comprised of members of various departments from Billerica to Gloucester.
The Andover Fire Department maintains records of any and all occupancies that store hazardous materials over the threshold amounts established by the Environmental Protection Agency. These records are required to be resubmitted to the department on an annual basis prior to March 31.

Emergency Medical Services – Andover Fire Rescue provides first response to all medical emergencies due to accidents or medical ailments in Andover and several additional Merrimack Valley communities on an as needed mutual aid basis. The surrounding communities of North

Andover, Tewksbury, North Reading, Reading, Billerica, Methuen, and Salem, NH provide back up mutual aid ambulance service to those communities in need.

In addition, the Lawrence General Hospital Paramedic Unit is requested when the emergency dictates the need for Advanced Life Support based on stringent protocols established through collaboration between Andover Fire and Lawrence General Hospital. Andover's ambulance service has recently upgraded its license from a Basic Life Support status to an Enhanced Life Support status as the result of placing Automatic External Defibrillators on all of its emergency vehicles.

Furthermore, Andover Fire Rescue will be seeking to provide additional EMS services to the community by offering Albuterol treatments and Narcan nasal administration to intercede with the affects methamphetamines have on the body once injected or ingested.

In the future Andover Fire Rescue will be exploring the possibilities of elevating the Basic EMS Service to an Advanced Life Support Service which will allow registered paramedics the ability to administer increased treatments through advanced technology and the ability to administer intravenous fluids and drug therapy to those patients requiring it.

Andover Fire Rescue has a proud history that serves as a foundation of strength for its future development. This development will take place by addressing strategic challenges with innovative and effective solutions.

Andover has experienced significant growth over the last three decades and continues to enjoy a modest economic and population growth. Over the last two decades the continued growth has contributed to an increase in incidents that Andover Fire Rescue responded to from 4579 in 1986, to 9616 in 2006, an increase of 47.6%.

These responses include emergency medical service (EMS) structure fires, motor vehicle accidents, hazardous materials, technical rescues and additional calls for service.

There are new threats that Andover Fire Rescue has been asked to respond to in the 21st Century. The threat of terrorism has required today's firefighting and EMS personnel to be prepared to mitigate the hazards associated with nuclear, biological, explosive and chemical incidents. If an incident involving the aforementioned hazards, these types of incidents have required all response personnel to be trained in mass casualty and decontamination for potentially hundreds of victims.

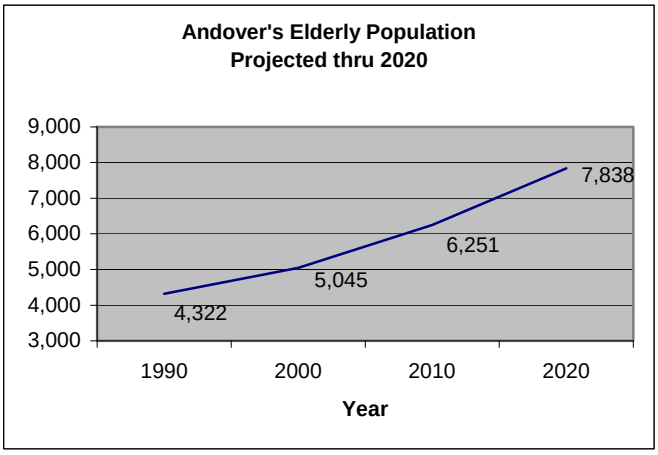
Additionally, natural disasters are more prevalent know than ever. A perfect example of this in and around the community of Andover is the flood of May 2006 and the "near miss" large scale flooding that occurred in May 2007.

Tomorrow

The committee has developed a five (5) year plan and has identified several factors influencing the future direction of the organization. This plan has been divided into seven (7) key areas that influence that outcome. They are Demographics, Organizational, Economic/Financial, Regulatory, Technology, Political and Contract Negotiations. These key issues have given the committee the parameters to ensure Andover Fire Rescue is meeting the communities' needs for the next five years and beyond.

Demographic shifts – Andover is the political and economic hub of Essex County and continues to experience a modest increase in population and building activity. With the approval and development of the I-93 Interchange area, Andover along with Tewksbury and Wilmington will experience explosive growth, thus placing additional burdens on Andover Fire Rescue in the areas of response, fire prevention, and code compliance.

- Elderly population – There is a greater need for services for citizens over 60 years of age. Many elderly people have limited mobility, making it necessary to have additional fire service resources on scene more quickly for rescue and rapid fire suppression. Also, there is an increased need for emergency response to medical emergencies. It is projected that Andover will experience a 20% increase in the elderly population over the next ten years.



*The Research Unit, Executive Office of Elder Affairs, based on MISER 12/2002 projections

- Diverse Community – There has been an increase in Andover's population who speak English as a second language. It is important that we ensure all of our citizens are familiar with the resources available to them.

  Andover Fire Rescue participates in many community events in an effort to contact as many citizens as possible in our increasingly diverse community.

Organizational Outlook

In 2006, Municipal Resources Incorporated (MRI) completed a Fire Services Organizational Analysis on Andover Fire Rescue. The MRI report indicates the need to upgrade/replace the current Ballardvale and West Fire station in the near future.

Additionally, a second study was completed in December 2007 that focused on a fire station location and deployment analysis to determine the best locations for the fire substations and to answer the questions raised in the 2006 Organizational analysis regarding whether or not future growth in Andover will require a third substation.

Increases in call volume:

- Each year, Andover has had commercial and residential growth. This growth will continue according to documents from the Andover community-planning department.
- The town's growth impacts all levels of Andover Fire Rescue's operations.
- The increased use of smoke and carbon monoxide detectors coupled with automatic fire sprinklers should result in early detection and control of fires resulting in fewer fire related injuries and fire loss.
- Increases in traffic densities will create a negative impact on response times. The fire station location study and emergency priority traffic signal systems will work to reduce the impacts of traffic on response times.

As with all municipal services, citizen expectations and outside influences require anticipated future needs and having a plan for the funding of the programs to meet these expectations.

- Terrorism/Homeland Security issues - Place demands on local public safety services and require additional training outside the "traditional" training required by Andover Fire Rescue personnel. There are several facilities within the Town of Andover that have been identified as potential terrorist targets. Our resource needs include additional funding for specialized training to safely respond to, and mitigate these types of incidents.
- Natural/Manmade Disasters – Floods, wildland fires, and specialized incidents create the need for all Andover Fire Rescue personnel to be efficiently trained in Swift Water Rescue, Rope Rescue, Trench Rescue, Confined Space Rescue as well as Hazardous Materials response.

Economic/Financial Factors

Economic challenges are an important factor in providing Fire Rescue and EMS services. The Andover Fire Rescue economic and financial challenges are as follows:

- Establish sufficient revenue streams to offset operational costs.

- Budget reductions in the past have seriously hampered the operational aspects of the organization to include sufficient apparatus staffing, Administrative/Fire Prevention support and training activities.
- Proposition 2 ½ has impacted the entire community due to the fact that property taxes can only be raised 2 ½% annually by state law. An override of proposition 2 ½ has succeeded in the past but not in the recent past.
- Andover Fire Rescue continues to seek out diverse levels of grant funding in an effort to provide additional equipment, training, and services to the community. Some of the current sources of grant revenue are listed below:
  - Massachusetts firefighting equipment grant.
  - SAFE fire prevention/public education grant
  - Ambulance Task Force grant
  - Federal Homeland Security Funding
  - Private Corporations

Legal/Regulatory Outlook

There are several laws, regulations and standards that determine the minimum requirements Andover Fire Rescue must maintain in operations, training, administration and fire prevention/code compliance.

Federal laws and Agencies

- **OSHA – 29 CFR Section 1910** contains federal regulations on training and responses to Hazardous Materials incidents. This section includes respiratory protection requirements that are the basis fir the "Two In – Two Out" ruling.

  A detailed analysis of this ruling and how it relates to Andover Fire Rescue was outlined in the Municipal Resources Incorporated Fire Services Organizational Analysis in October 2006.

- **Office of Homeland Security** – Established new requirements for weapons of Mass Destruction training for all responders.

- **SARA Title III** – Community Right to Know Act: Requires that Andover Fire Rescue become compliant with this regulation and maintain documentation on all chemicals and compounds that fall under this regulation. Furthermore, this regulation requires that all private corporations submit documentation to Andover Fire Rescue in relationship with what chemicals and compounds they store on site on an annual basis.

- **Environmental Protection Agency** – Regulates how contaminants are contained, cleaned up, and disposed of.

- **Title VII** – A portion of the Civil Rights Act of 1964 that requires employers not to discriminate and to eliminate the presence of past discrimination.

- **American with Disability Act** – Places requirements on Andover Fire Rescue to ensure that "reasonable accommodations" are made for its employees.

Massachusetts State Laws and Agencies

- **Massachusetts Civil Service** – Established many employee labor laws that are specific to Firefighters and Police Officers.

- **Massachusetts Uniform Fire and Building Codes** – Andover Fire Rescue has adopted many of these codes to enhance the overall safety to its residents and visitors.

- **Office of Emergency Medical Services** – Establishes training and re-certification examination regulations for all Emergency Medical Technicians and Paramedics. This agency also inspects all of Andover Fire Rescue's ambulances to ensure they meet specific regulations with regards to the equipment inventory and cleanliness.

Standards Organizations

- **Insurance Services Organization (ISO)** – This organization establishes the insurance rates for industrial, commercial and residential properties. These rates are set based upon a complex formula that includes the number of available personnel are on-duty, apparatus, equipment, training, water supply, response times and communications.

- **National Fire Protection Association** – This organization establishes voluntary, industry based national standards that cover every conceivable topic related to the fire service. A sample of theses standards is below:

    - NFPA 1001 Firefighter Professional Qualifications
    - NFPA 1021 Fire Officer Professional Qualifications
    - NFPA 1500 Fire Department Occupational Safety and Health
    - NFPA 1581 Fire Department Infection Control
    - NFPA 471 Responding to Hazardous Materials Incidents
    - NFPA 1670 Technical Rescue Training
    - NFPA 1983 Fire Service Ropes
    - NFPA 1971 Firefighting Protective Clothing
    - NFPA 1901 Apparatus Construction

American National Standards Institute – This organization establishes standards related to Self Contained Breathing Apparatus, protective eyewear, safety shoes and a myriad of other safety items that fire rescue personnel wear in the performance of their duties.

Technology Outlook

Emerging technology has increased the safety and efficiency of the Andover Fire Rescue and the organization will continue to explore new technology avenues to ensure that all of its personnel are provided with the safest equipment available.

- Mobile Data Terminals (MDT's) – Andover Fire Rescue is currently exploring options to outfit MDT's in each of its ambulances and apparatus. This technology will afford the organization the ability to complete EMS patient run reports and electronically submit them to not only the invoice vendor but to the Massachusetts Office of EMS (OEMS). The MDT's will also afford all responding apparatus to link up and receive the dispatch information and other live data that will allow the fire personnel the ability to make decisions quicker and more effectively.

- Thermal Imaging Cameras (TIC) – Andover Fire Rescue has several thermal imaging cameras that utilize infrared technology in smoke filled or dark environments to locate victims and hidden fire in walls, ceilings, and floors.

- Pamet – A computer software system that allows Andover Fire Rescue to track many of its reporting systems for use at a later date. Most recently, personnel have gone through additional training to begin using the system more effectively.

- Aristotek/PEAK – Andover Fire Rescue is reviewing the possibility of field-testing a system that will allow personnel to track hazardous materials and download data related to the response and mitigation of hazardous materials incidents.

- Ambu-Pro EMS – Software package for patient care reporting directly from the ambulances through onboard computers. This system will streamline patient billing and mandatory state reporting requirements. This system should be operational by January 2009.

Political Considerations

Andover Fire Rescue is an integral partner with the Town Manager, Board of Selectmen and all other town departments. We are striving to increase relationships with many of the town departments so that we may collaborate on several projects in an effort to decrease expenses and maximize efficiency.

- Community Development – Andover Fire Rescue has partnered with the planning department in an effort to develop solutions to issues that arise with the development of land and the redevelopment of existing buildings. Efforts are underway to ensure that all projected developments in the community are allowed to proceed only when all potential safety issues have been examined and dealt with. Safety concerns range from the width of egress/access roadways to adequate water supply.

- Continued development of buildings requires additional personnel resources and time to ensure all aspects of the process are thoroughly examined and that due diligence is taken to ensure occupant safety. This increase in plans review decreases the amount of time that personnel can commit to providing equitable prevention services such as public education, smoke detector/carbon monoxide detector inspections and the issuance and compliance of permits.

- Andover Fire Rescue will be aggressively seeking the assistance of the Town Manager and the Board of Selectmen to further additional fire prevention and fire safety initiatives in the future.

Administrative Office

Administrative Overview

The Andover Fire Rescue Administrative Office provides for the overall support for Fire Management, Fire Prevention and Fire Operations. The current staffing includes one (1) Administrative Assistant and the Chief of Department.

General Administration – Duties and Tasks

- Receives and handles public inquiries and provides walk-in and phone communications support each business day at Andover Fire Rescue Headquarters.
- Processes human resource records, new employee paperwork, insurance inquiries, ambulance billing inquiries and all leave forms.
- Maintains records of all contracts and agreements with the Town of Andover, outside agencies consultants, vendors, and other fire districts.
- Processes all contract and purchase requisitions for any purchases. Processes all payment requests for billing as required.
- Generates, edits, maintains all Standard Operating Guidelines, policies and procedures General Orders and Memorandums.
- Maintains all Andover Fire Rescue forms and assists in completing forms such as special Detail requests from the general public.
- Oversees revenue processing and billing, issues and processes annual fire and miscellaneous permits, billings for EMS, fire agreements, and hazardous materials incidents.
- Provides administrative support for the Fire Chief including scheduling meetings, calendars, correspondence, meeting agenda items, and a variety of miscellaneous functions.
- Processes subpoena and legal document requests, workers' compensation and accident reporting.
- Oversees yearly budget and CIP process with monthly reviews. Coordinates the annual budget process with the Town Manager, Board of Selectmen and Finance Committee.
- Reviews weekly payroll submissions and interfaces with the payroll department.
- Maintains and distributes petty cash according to the Town of Andover policy.

- Establishes liaison and interface to other own departments such as Human Resources, Police, Water, DPW, Plant and Facilities, Parks and Recreation and the Town Managers office.

- Develops reporting procedure manuals.

Operations

- Participates in the development of and maintains grant applications and awards.

- Assists in the customization of the Pamet system so that the system can captures statistic required by NFIRS as well as organization specific reporting statistics.

- Audits incident reports for quality assurance.

- Trains personnel on appropriate reporting methods and procedures.

- Attends Pamet Fire User Group meetings to gather information related to the system and to make additional recommendations to improve the system.

- Provide statistical information to internal and external customers when requested.

- Provides fire station support for mail, correspondence, scheduling of appointments, detail organization and general communications.

- Identifies and prepares billing for multiple alarm malfunctions from one facility within the Town of Andover in accordance with the Fire Alarm Systems/False Alarm By-Law 12, 24A

- Oversees weekly attendance and personnel rosters to ensure appropriate staffing for each shift occurs.

- Ensures that Plant and Facilities is aware of mechanical problems with apparatus and staff vehicles and follows-up with repairs.

- Performs fire investigations in collaboration with the state Fire Marshal's Office and the Andover Police Department.

- Recommends specific equipment to increase operational efficiency and effectiveness.

Fire Prevention

- Processes permits for fire prevention code and Massachusetts CMR requirements. These permits include underground storage tank operations and removals, hazardous waste storage, dumpster permits, special events, day and residential care facilities, hotels and motels, and retail spaces.

- Inputs and audits National Fire Incident Reporting System (NFIRS) submissions to the State Fire Marshal's Office.

- Assists the building and planning departments with plans review and makes recommendations for improvements related to the plans related to fire safety.

- Schedules all fire inspections and processes all fire inspection reports. Originates all correspondence related to the inspections.

- Maintains all files related to codes and fire related inspections.

Fire Rescue and EMS Operations

There are two (2) basic divisions within the Operations of Andover Fire Rescue; they are the Fire Rescue and the Emergency Medical Services Division.

The Operations Division operates on four (4) shifts that is lead by a Deputy Fire Chief who has the responsibility of oversight for all activities on a particular shift. Those responsibilities range from incident response and training to ensuring there is adequate personnel coverage to appropriately protect the community on a given day.

The Operations Division has primary responsibility for responding to emergency and urgent calls for help from the public. Services provided include combating all types of fires, providing emergency medical care to the sick and injured, containing and mitigating the effects of leaks and spills of hazardous materials, rescuing those who are physically trapped in such situations as motor vehicle accidents, industrial accidents, or collapsed structures, rescuing persons caught in swift moving water, mitigating the hazards associated from downed power lines or natural gas leaks, and providing aid in situations where those in the community need special assistance such as lock out/in situations, or animal rescues.

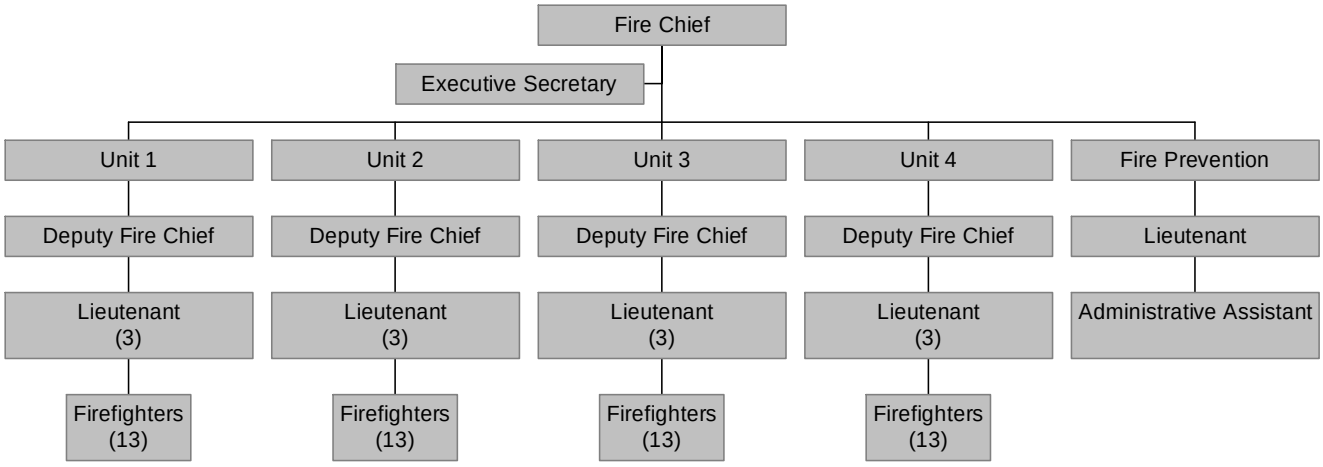
In addition to the aforementioned all the men and women of Andover Fire Rescue participate in presenting public fire safety and emergency preparedness educational programs, safety inspections, maintaining equipment, apparatus and facilities and continually train.

Currently Andover Fire Rescue operates out of three (3) fire stations with three (3) EMT Engine Companies, one (1) EMT Ladder Company and two (2) ambulances providing 24/7 coverage. The fire stations are currently located on North Main Street, Greenwood Road and at the intersection of Clark Road and Andover Street.

Several specialized pieces of equipment (such as boats and a trench rescue trailer) are located throughout the community and are staffed on an “as needed” basis by personnel normally assigned to the engine companies.

Andover Fire Rescue currently has one (1) reserve engine, (1) reserve ladder, and (1) reserve ambulance among its fleet.

There are a total of 68 personnel, including four (4) Deputy Chiefs, twelve (12) Lieutenants, and forty-eight (52) firefighters. Suppression personnel work 24-hour schedule with one of the four groups on-duty each day. The level of staffing can fluctuate slightly and is absence dependent.



One of the Deputy Chiefs serves as the Training Officer for Andover Fire Rescue and has the responsibility for coordinating and/or delivering all training programs related to the myriad of services provided by the personnel of Andover Fire Rescue.
This may range from the review of initial training newly hired recruits have received as a result of attending the Massachusetts Firefighting Academy, specialized rescue training recertification, or continuing education and training to the entire organization.

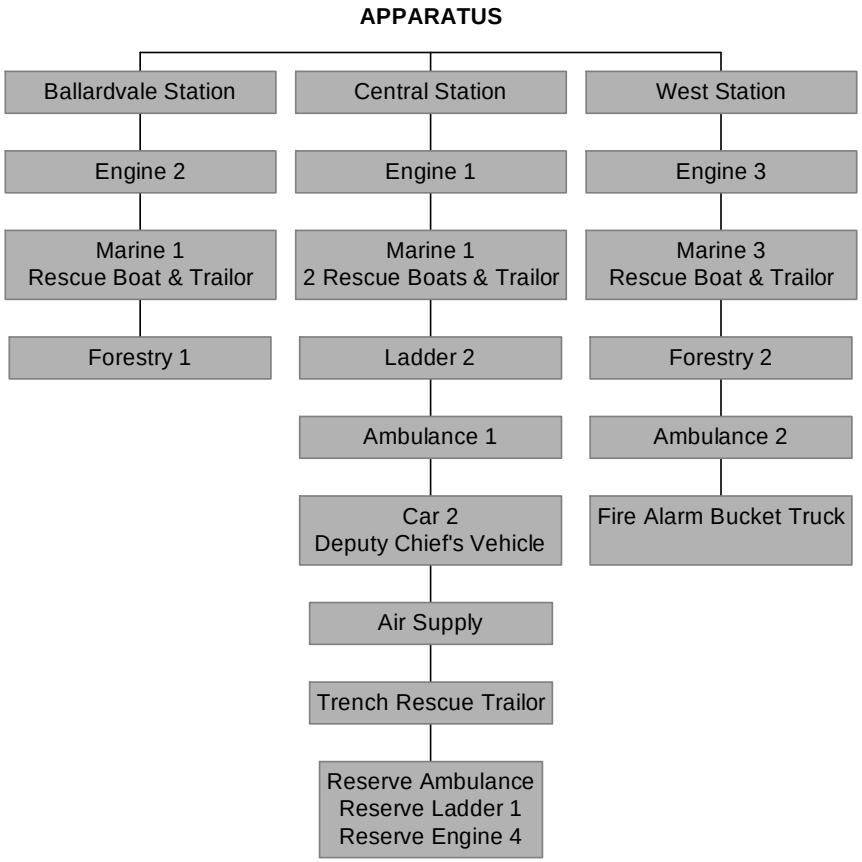
The delivery of Emergency Medical Services training is provided by Paramedic and EMT certified personnel from outside agencies or from within the organization. Extensive federal and state regulations relative to the provision of emergency medical services, and the appropriate documentation and administrative requirements, necessitate special focus and attention.

Fire Rescue, and EMS Resources

Andover Fire Rescue has three (3) fire stations, each of which has one or more staffed companies as well as specialized and/or reserve equipment.

- Station 1, Central Station, 32 North Main Street (Downtown area)
    - Staffed companies: Engine company, ladder company, ambulance, Deputy Chief
    - Specialized apparatus: Forestry Truck, (2) rescue boats, trench rescue trailer, and air support vehicle.
    - Reserve apparatus: engine, ladder truck, ambulance
- Station 2, Ballardvale Station, Clark Road and Andover Street
    - Staffed company: Engine company
    - Specialized apparatus: (1) Rescue boat
- Station 3, West Station, Greenwood Road, (West Andover area)

- Staffed companies: Engine company, ambulance
- Specialized apparatus: Forestry Truck, (2) rescue boats, and fire alarm bucket truck.



Each of the four (4) platoons consists of seventeen (17) positions, with a minimum daily staffing level of 16 Firefighter/EMT's and Command staff.

- **Command staff**: One (1) Deputy Chief
- **Engine companies**: One (1) Lieutenant, one (1) driver/operator, and one (1) firefighter.
- **Ladder company**: One (1) driver operator and one (1) firefighter.
- **Ambulance**: Two (2) Emergency Medical Technicians.

Andover Fire Rescue currently has Memorandums of Understanding (MOUs) with several communities to provide mutual aid, automatic mutual aid and other response needs in the event that the on-duty resources are overwhelmed by an incident. These agreements entail the provision of service by Andover Fire Rescue to other communities in return for service to the community of Andover.

Mutual Aid Responses from other communities:

Lawrence engine	1
Lawrence ladder	1
Methuen engine	1
North Andover engine	1
North Reading engine	1
Tewksbury engine	1
Wilmington engine	2

Reliable and serviceable apparatus and equipment is the cornerstone to the ability of Andover Fire Rescue to deliver effective emergency services.

The fleet of fire apparatus, specialty units and some of the equipment carried on those units are serviceable and met the national standards when constructed or manufactured.

However, over the last decade the lack of a comprehensive fleet replacement program has hindered the acquisition of safer, and cutting edge technology equipment and apparatus that meets the most current of national safety standards.

Andover Fire Rescue has an aggressive fleet and equipment maintenance, testing and repair program. The Plant and Facilities Department has a certified Emergency Vehicle Technician that maintains the fleet in operable condition. Having this certified technician on staff undoubtedly saves the community thousands of dollars by not having to have outside vendors perform the preventive maintenance and repairs to the fire apparatus and equipment and having to send the equipment great distances for the service.

Recently, a more aggressive hose, ladder and equipment annual testing process has been instituted to ensure that the inventoried equipment is up to current standards.

Future plans will also allow having suppression personnel maintain the self-contained breathing apparatus (SCBA) that Andover Fire Rescue currently has inventoried.

Calls for Service

In 2004, Andover Fire Rescue responded to 9651 incidents of which 2767 were Emergency Medical Service or motor vehicle accident responses.

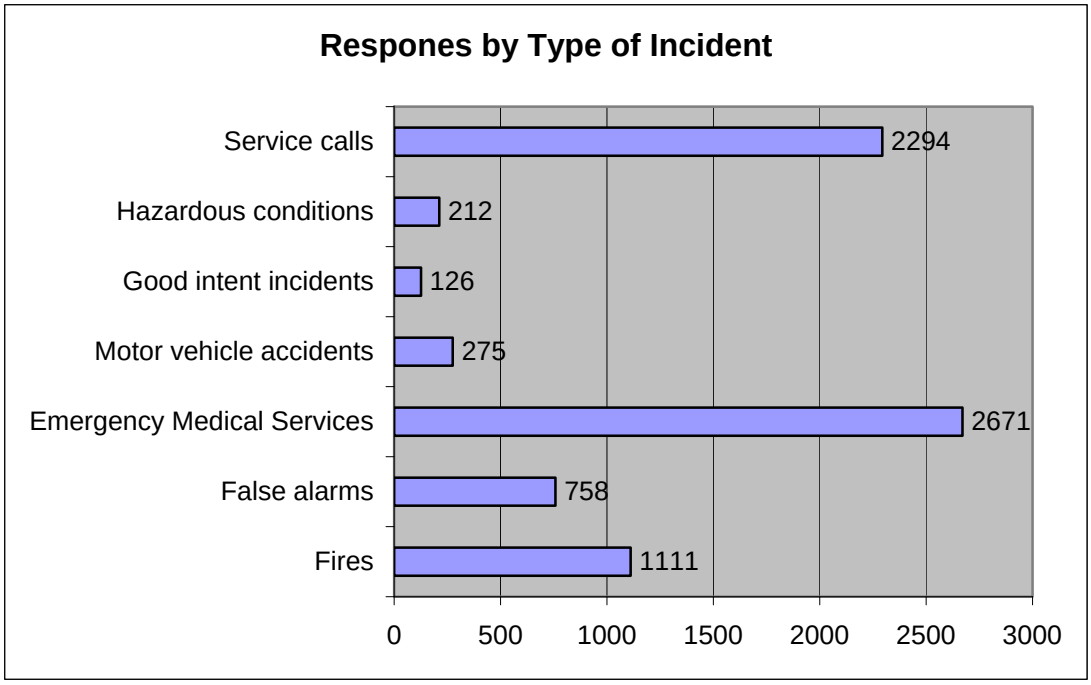
In 2005, Andover Fire Rescue responded to a total of 10,052 incidents of which 2897 responses were Emergency Medical Service or motor vehicle accident related.

In 2006, Andover Fire Rescue responded to a total of 9616 incidents of which 3022 responses were Emergency Medical Service or motor vehicle accident related.

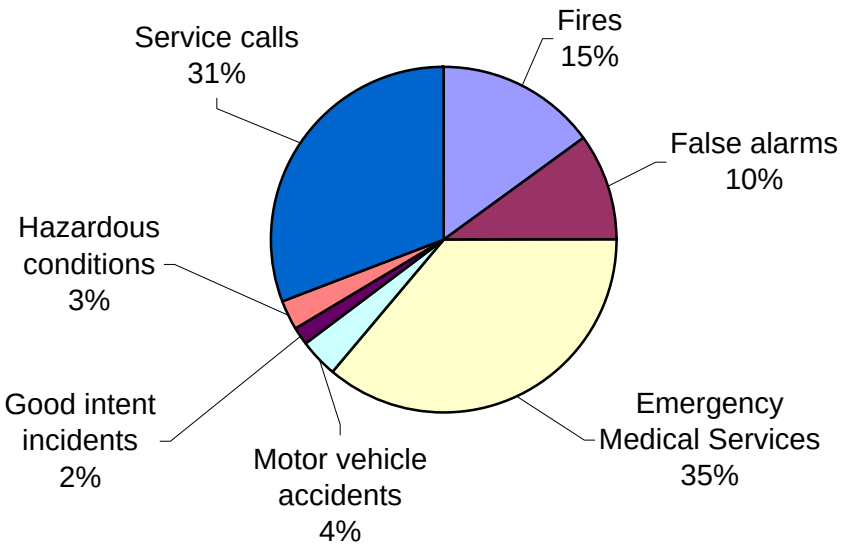
In 2007, Andover Fire Rescue responded to 9019 incidents including 3094 that were directly related to Emergency Medical Services or motor vehicle accidents. An 11.8% increase from 2004.

Responses by Type of Incident
Four (4) year average

Incident classification	Number of incidents	Percentage of total incidents
Fires	1111	11.6%
False alarms	758	7.9%
Emergency Medical Services	2671	27.9%
Motor vehicle accidents	275	2.9%
Good intent incidents	126	1.3%
Hazardous conditions	212	2.2%
Service calls	2294	23.9%

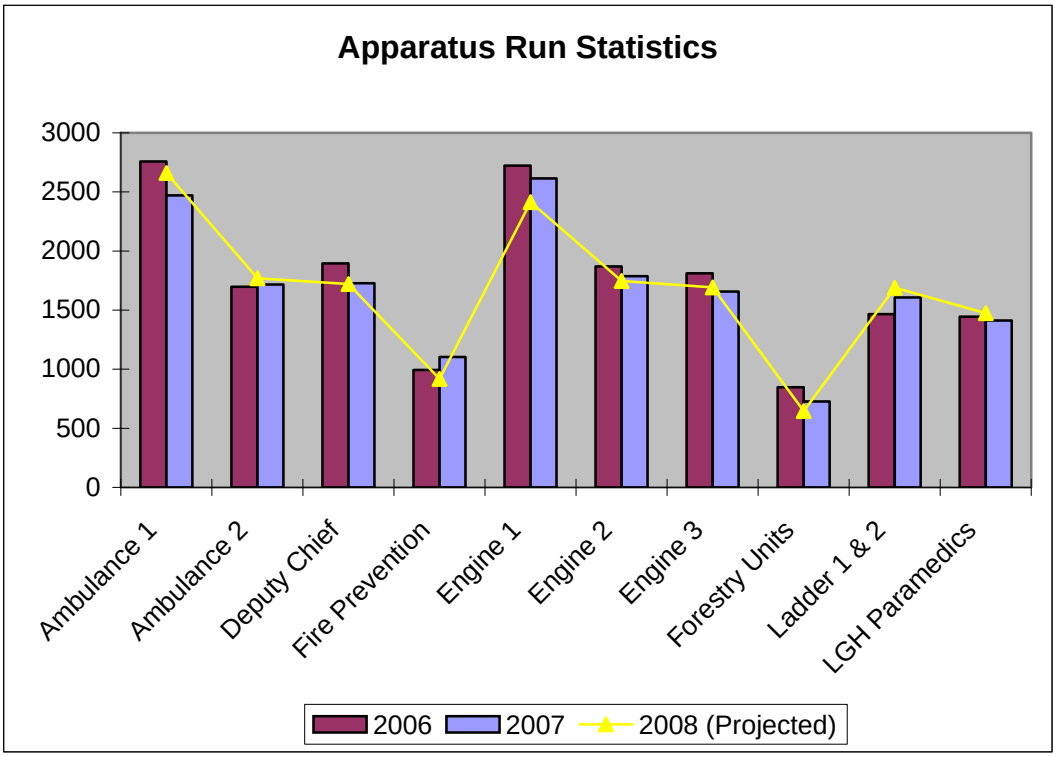


Percentage of total incidents



2006 Apparatus Run Statistics

	2006	2007	2008 (Jan – July)
Ambulance 1	2758	2470	1330
Ambulance 2	1698	1716	885
Ambulance 3	9	213	2
Marine Units	9	6	
Chief	53	72	25
Deputy Chief	1895	1727	860
Fire Prevention	994	1103	459
Engine 1	2722	2614	1207
Engine 2	1869	1787	873
Engine 3	1811	1657	846
Forestry Units	847	727	323
Air Supply Unit	32	22	12
Ladder 1 & 2	1466	1607	845
LGH Paramedics	1444	1412	737



Response time

One of the most critical factors that impact the ability of Andover Fire Rescue to save lives and reduce the loss of property and the effects on the environment is response time.

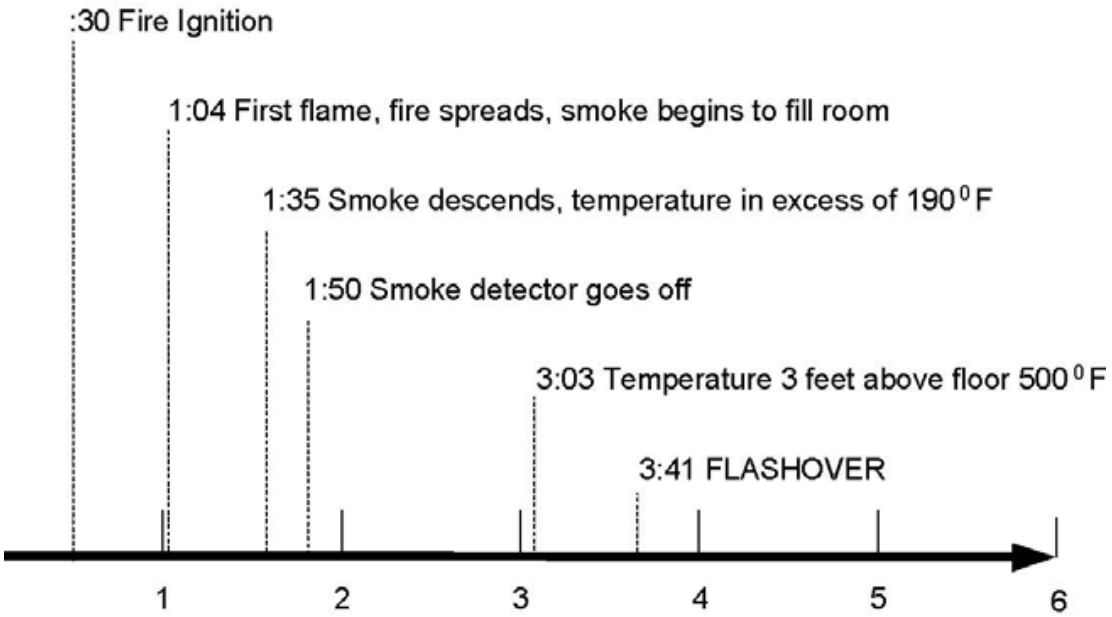
Response time is the time required for the first unit to arrive at the scene of an incident after dispatch has been notified. Response time consists of three (3) components:

1. Alarm processing time by dispatch center.
2. The time it takes for firefighters to initiate the response after being dispatched.
3. Driving time to the scene of the reported incident or emergency.

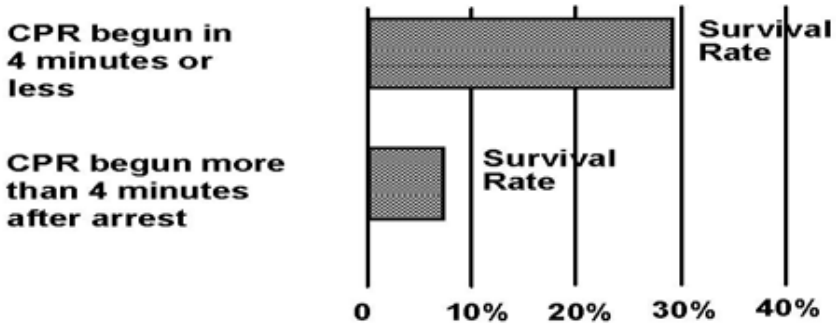
Town-employed telecommunicators who operate from the Public Safety Center on 32 North Main Street and are under the Police Chief's command, dispatch Andover Fire Rescue and the Andover Police Department.

Incidents are dispatched within a fair amount of time; however, Andover Fire Rescue has the sole responsibility for the time it takes for fire and EMS companies to initiate response and driving time to the scene. Many conditions effect driving time such as weather, traffic, detours, and road conditions.

A rapid response by Andover Fire Rescue is critical for both fire/rescue and medical emergencies. Fire growth can expand at a rate of fifty (50) times its volume every minute. The time segment between fire ignition and the start of fire suppression activities is critical and has a direct relationship to the fire deaths, injuries and fire loss as well as the safety of the firefighters initiating search, rescue and firefighting operations. The following illustrates the typical growth sequence for a fire in a single-family residence:



The delivery of Emergency Medical Services by EMT's is time critical. Several publications state that when cardiopulmonary resuscitation (CPR) is started within four (4) minutes for a person whose breathing and heart have stopped, that person's chances of leaving the hospital alive are four (4) times greater than if a person did not receive this procedure until after the four (4) minute mark. The following figure illustrates the importance of emergency intervention in relation to survivability.



Source: Heartsaver Manual, American Heart Association

The Andover Board of Selectmen sanctioned a Fire Services Organizational Study performed by Municipal Resources Incorporated in October 2006 that reported one of the top five (5) challenges for the Fire Chief was going to be to evaluate the Emergency Medical Services provided by Andover Fire Rescue and investigate the option of providing Advanced Life Support. This plan has identified a time frame for the potential to increase the level of EMS services provided by Andover Fire Rescue.

Another recommendation is to assign an ambulance to the Ballardvale Fire Station in an effort to decrease EMS response times to that area of Andover. This recommendation cannot be fulfilled until renovations or a complete station replacement occurs due to space restrictions.

Resource Deployment

The aforementioned study also recommends that an increase in apparatus staffing is necessary to meet the guidelines in the National Fire Protection Association Standard #1710 and the federal government Occupational Safety and Heath Administrations Two/In - Two/Out personnel safety regulations. The personnel recommendations are to boost the current staffing at the West and Ballardvale fire stations as well as Ladder 2 located at the Central fire station.

Updated Feasibility Study

In December 2007, an additional Fire Department Deployment Study was completed by Manitou, Inc that also identified that there is an immediate need to not only replace the two existing Andover Fire Rescue sub-stations but to also relocate them to optimize effectiveness and efficiencies with regards to response personnel and response times to emergencies.

The latter study calls for the relocation of Ballardvale Fire Station from its current location of Clark Road and Andover Streets to an area near Andover and Woburn Streets.

The study also recommends the relocation of the West Fire Station from its current location on Greenwood Road to a location on Lowell Street.

Andover Fire Rescue
Strategic Planning Objectives
Facilities prioritization

- FY 2008 Perform station needs study.
- FY 2008 Perform station location study.
- FY 2008 Develop plan for the construction of fourth fire station (if needed).
- FY 2008 Develop plan to obtain permits for the construction of a boat ramp on Merrimack River.
- FY 2008 Develop plan to obtain permits for the construction of a boat ramp Haggetts Pond.
- FY 2008 Develop station maintenance program in conjunction with Plant and Facilities.
- FY 2008 Perform training facility needs study
- FY 2008 Investigate and report on possibilities of regionalized fire communications center.
- FY 2008 Address all deficiencies with Central Fire Station.
    - Apparatus bay floor
    - Roof drain/underground drainage issues
    - Lobby window leaks
    - Roof leaks
    - Lack of hose reels in bays
    - Lack of intercom in bays
- FY 2009 Build boat ramp on Haggetts Pond
- FY 2010 Build boat ramp on Merrimack River.
- FY 2010 Construction of Ballardvale Fire Station.
- FY 2011 Construction at West Fire Station begins
- FY 2012 Construction of West Station completed.

Andover Fire Rescue
Strategic Planning Objectives
Management, Labor, and Political relations prioritization

- FY 2008 Continue open communications with management, labor and town officials.
- FY 2008 Local 1658 involvement in all Andover Fire Rescue processes.
- FY 2008 Increase number of Andover Fire Rescue advocates public information and programming.
- FY 2008 Develop and deliver political education day.
- FY 2008 Increased involvement in planning process from political leaders.
- FY 2008 Management advocating for firefighters.

- FY 2008 Promoting and maintaining a positive work environment.
- FY 2008 Maintain departmental affairs internally.
- FY 2009 Reorganize Andover Fire Rescue to allow for upwardly mobile chain of command and a higher level of accountability.
- FY 2009 Develop a professional development program for all personnel.

Andover Fire Rescue
Strategic Planning Objectives
Water Supply Prioritization

- FY 2008 Implement a hydrant snow removal program.
- FY 2008 Deliver Hydraulics, Pump, and Water Supply training to all Andover Fire Rescue personnel.
- FY 2009 Increase communications with the Water Department.
- FY 2009 Implement an Adopt a Fire Hydrant Program.
- FY 2009 Implement a hydrant flag program.
- FY 2009 Adopt NFPA hydrant color code system.
- FY 2010 Develop an inspection, testing and flow graph program with Water Department.
- FY 2011 Extend water supply capabilities into areas without sufficient fire protection (ie. Dry Hydrant located on Harold Parker Road @ Field Pond.)

Andover Fire Rescue
Strategic Planning Objectives
Apparatus prioritization

- FY 2008 Develop capitol replacement program for all apparatus and staff vehicles.
- FY 2008 Acquire rescue trailer
- FY 2008 Develop annual pump testing program
- FY 2008 Develop annual ladder testing program.
- FY 2008 Develop annual hose testing program.
- FY 2009 Secure funding and replace Engine 1.
- FY 2009 Secure funding to replace ambulance 93.
- FY 20010 Secure funding to replace staff vehicle Car 4
- FY 2010 Develop and fund full time mechanics position.

Andover Fire Rescue
Strategic Planning Objectives
Emergency Medical Services prioritization

- FY 2008 Investigate additional EMS revenue streams
- FY 2008 Develop EMS Standard Operating Guidelines.
- FY 2008 Acquire funding and purchase equipment to provide data management capabilities in all ambulances.
- FY 2009 Develop and sustain EMS Quality Assurance and Training program.
- FY 2009 Draft and obtain legislation that would allow for the development of an EMS revolving account.
- FY 2010 Develop and execute plan to increase EMS capabilities provided for the Town of Andover. (ALS level 2)
- FY 2010 Secure funding to secure third full time ambulance at Ballardvale Station.
- FY 2011 Begin Intermediate EMS services to the Town of Andover.
- FY 2012 Develop marketing strategy to begin performing non-emergency transports.

Andover Fire Rescue
Strategic Planning Objectives
Health and Safety prioritization

- FY 2008 Apply and acquire grant funding to purchase NFPA compliant EMS garments.
- FY 2008 Perform annual fit testing on all personnel.
- FY 2008 Perform annual flow testing on all Self Contained Breathing Apparatus.
- FY 2008 Reestablish and maintain labor/management safety committee.
- FY 2008 Develop and implement a personnel accountability reporting system to be utilized at all escalating incidents.
- FY 2008 Develop and implement an updated personnel accountability system.
- FY 2009 Apply and acquire grant funding to purchase NFPA compliant personal protective clothing.
- FY 2009 Acquire funding to implement physical fitness and wellness program and perform mandatory annual physicals on all personnel.
- FY 2009 Develop plan for radio communications upgrades and interoperability.
- FY 2010 Implement physical fitness and wellness program.
- FY 2010 Perform mandatory annual physicals on all personnel.
- FY 2011 Acquire funding to appropriately staff fire apparatus.

Andover Fire Rescue
Strategic Planning Objectives
Personnel prioritization

- FY 2010 Establish a full time Training Officer position
- FY 2010 Reorganize Andover Fire Rescue's hierarchy to include Station Captains.
- FY 2010 Reassign mechanic to Andover Fire Rescue from DPW.
- FY 2010 Regain the Asst. Fire Chiefs position.
- FY 2010 Appoint four (4) additional firefighters to the Ballardvale Fire Station
- FY 2011 Appoint four (4) additional firefighters to the West Fire Station
- FY 2013 Appoint four (4) additional firefighters to the Aerial Ladder Company.

Andover Fire Rescue Training

Andover Fire Rescue currently relies on one of the four Deputy Fire Chiefs to coordinate and/or deliver the training to its personnel. Because the Deputy Chief also has the responsibility of supervising a shift of seventeen emergency responders, responds to many incidents as the Incident Commander, and is available only on one of four shifts, training is not consistent from one platoon to the next.

The Deputy Chief oversees the training of entry-level firefighters once they return from the Massachusetts Firefighting Academy and assists in the on-going in-service training and certification programs. Some of the training topics that are covered are as follows:

- Confined Space Rescue
- Trench Rescue
- High Angle/Low Angle Rope Rescue
- Health and Safety
- Report Writing
- Emergency Medical Service
- Basic Firefighting Skills
- Hazardous Materials

Probationary Training

The probationary period for a new firefighter in the Andover Fire Rescue is twelve (12) months. The probationary training program consists of having the new recruit attend the Massachusetts Firefighting Academy for a twelve-week period, followed by several weeks of EMS training. Once the recruit is trained, he/she will assist on one of the EMS units for a period of one (1) month. There is a need for the development of an in-house recruit program that assists the new employee with maintaining the skills recently learned at the MFA.

Recruit Academy

All newly appointed Andover Fire Rescue firefighters are sent to the Massachusetts Firefighting Academy to attend a twelve-week recruit academy. This Commonwealth of Massachusetts Division of Fire Services sponsored program is skills based and is weighted heavily on team building skills and manipulative function skills.
Included in this academy is an orientation, safety, fit testing of SCBA, specialized rescue, engine, truck and rescue company operations, basic firefighting skills and hazardous materials training.

In Service Training

Each month a training notice is developed and released by the Deputy Chief in charge of training. Drills are assigned each month and allow the individual companies to train on the identified monthly topic areas. The topics are varied to ensure that all fire and EMS personnel are well rounded and that many skill sets are reviewed annually.

Currently, the monthly training drills are not delivered on a consistent basis due to the lack of available staff to oversee these drills on all four shifts to maintain consistency. The Fire Services Organization Study completed in October 2006 specifically states that organizational training surfaced as an area of concern and due to the level of inconsistency from one shift to another there is a recommendation to add a full-time Captain to the ranks of Andover Fire Rescue to coordinate, manage, oversee, and document a comprehensive training program.

Additionally, the MRI report states that all Andover Fire Rescue personnel should receive annual training on cultural diversity, sexual harassment, OSHA Hazwoper, and OSHA Communications Right to Know programs.

Furthermore, the report states that Andover Fire Rescue should encourage its personnel to attend specialized training at the Massachusetts Fire Academy, National Fire Academy other institutions and courses taught by certified instructors in various subjects such as instructor methodology, specialized rescue, fire officer certification, and arson/fire prevention topics.

EMS Training

Emergency medical services training has been lax over the last two to three years due to funding availability to have outside subject matter experts deliver programs while the EMS personnel are on duty. Andover Fire Rescue is investigating the possibilities of having instructors from outside medical centers in to review actual emergency scene cases and to cover additional topics so that the personnel are up to date in the current BLS patient care options.

Personnel Safety

Of paramount importance to the Andover Fire Rescue Administration is firefighter health and safety. Emergency scene safety includes pre-incident planning, apparatus placement training, engine, ladder and pump operations training, inspections, development on incident safety plans and scene monitoring to establish that the appropriate risk/benefit management decisions are being implemented and personnel accountability.

Providing the safest of Personal Protective Equipment (PPE) is also being monitored to ensure that deficiencies in the protective clothing worn by the rescue personnel are being corrected. Ongoing improvements to the protective clothing are considered through the preparation and research related to specifications and application in the field.

Currently a $375,000 grant is being considered for approval by the U.S. Department of Homeland Security Assistance to Firefighters Grants to provide all Andover Fire Rescue personnel with new state of the art personal protective clothing.

The presence of a bona-fide wellness and fitness program within Andover Fire Rescue has been non-existent to date. Even though the organization has a certified fitness coordinator amongst its ranks. In the recent past, there have been discussions with the Human Resources Department and the Town Manager in an effort to begin such a program, but all attempts have been futile. In 2006, a FEMA underwritten grant was applied for so that a program could be funded; however, the grant was not approved.

Since February 2007 there have been mini seminars offered by the Andover Public Health department to discuss issues such as the avian flu and the pandemic possibilities.

There are plans to once again pursue grant-funding options for this program in the near future.

Fire Prevention

The Andover Fire Prevention Office has five primary objectives in measuring the success of its work. They are:

- Reduce fire loss and injuries through the administration of risk based community education programs.
- Manage risk associated with fire and environmental emergencies through successful implementation of Engineering, Inspection, Code Compliance, and Hazardous Materials Management.
- Ensure citizens can escape a fire safely, that suppression forces have the means to control a fire with minimal risk of injury, and that damages to physical resources are minimized in an emergency through proactive prevention efforts in new and existing buildings.
- Investigate fire and hazardous materials incidents to understand causes and effects and apply lessons learned to improving our community safety programs.
- Ensure that we are meeting the service demands of our community and are providing excellent customer service. We strive to meet the interests of our Fire Prevention responsibilities while attempting to meet the interests of our customers.

Fire Prevention Resources

Andover Fire Rescue maintains a progressive Fire Prevention Office staffed by a Lieutenant and an Administrative Assistant located at Town Hall. This personnel handles all code and inspection inquiries, inspections, permits, and complaints. The record keeping of all inspections and issued permits is also maintained at this location.

One (1) Deputy Fire Chief handles all local fire investigation responsibilities and may request assistance from the State Fire Marshal's Office if needed. This Deputy retains these responsibilities in addition to the day-to-day responsibilities incurred as a shift commander.

Public Education

The focus of the public education programs is to minimize the risk factors present in the human environment. Some of these programs are formal structured teaching processes, but many are informal, ongoing efforts to increase awareness of risk behaviors and the resources available to protect against potentially dangerous situations.

Community outreach is assisting our community with educational information in the form of seminars, classroom presentations, firehouse tours, public talks, safety fairs, school programs and business group presentations. Each engagement is an opportunity to inform, impress upon and increase the community's awareness to safety and risk issues.

Risk Watch is a comprehensive injury prevention program designed for use in schools to give children and their families the knowledge they need to create safer homes and communities. The program addresses motor vehicle safety, fire and burn prevention, firearms injury prevention,

choking and suffocation prevention, poisoning prevention, fall prevention, water safety, and bicycle safety.

In 2007, Andover Fire Rescue has recently received a $1900.00 grant from the Commonwealth of Massachusetts Executive Office of Public Safety to begin the planning process to bring the NFPA developed Risk Watch program into the Andover School System.

Also in June 2007, nine (9) members of Andover Fire Rescue completed the Student Awareness of Fire Education instructor program so that they may begin the program planning and delivery process. This program will be a first of its kind in Andover and will include the collaboration of Andover firefighters and 4th grade school teachers to bring the Risk Watch injury and risk prevention messages to the students.

Additionally in June 2008, Andover Fire Rescue was the recipient of an additional SAFE education grant in the amount of $5,800.00. This grant will allow firefighters to begin to deliver the Fire Safety and Risk Prevention Program beginning in January 2009 and will continue through the remainder of the school year.

In the Spring of 2009, Andover Fire Rescue will deliver a Citizens Academy where citizens of the community can attend several evening sessions to learn more about the Fire and Rescue services the organization provides. This program will also provide the attendee the ability to receive CPR certification and participation in several mock fire and rescue scenarios.

The Fire Prevention staff with assistance from the Fire Rescue personnel offers public education through responses to questions that are received daily. These questions range from a question from a developer regarding fire department access/egress and water supply requirements, a neighbor's concern about another's debris in their yard, to how a resident may properly dispose of household hazardous materials. These questions and follow-up communications originate from phone calls, fax, Internet website access, and face-to-face meetings.

Andover Fire Rescue has experienced that the best service to our customers is provided when we respond quickly, courteously, and completely to each individual's inquiry.

Fire and Life Safety Plan Review and Inspection

The Fire Prevention office charge is to reduce the possibility of personal injury or property damage in a future emergency situation by ensuring that emergency conditions have been adequately considered in the design of development projects. The programs to achieve this goal focus on controlling risk factors in the planned physical environment through Building and Site Plan Reviews, Fire Permit Reviews, and Hazardous Materials Management programs.

The Office coordinates with the Planning Department, Public Utilities, Engineering, Health Department, and the Building Department to review development projects proposed within the Town. Issues of access, water supply and building construction related to fire and panic safety are our primary concerns.

Among the issues we examine: Can fire apparatus reach the site in a timely manner? Can fire engines get close enough to buildings to perform fire suppression in a timely manner? Are hydrants located close enough to buildings and in places where firefighters will be able to use them? Will enough pressure be available in the local water system to fight a major fire? How will occupants get out of the development at the same time fire apparatus must get in? How will firefighters escape the development if it becomes indefensible in a wildfire? The Prevention Office works with developers and local officials to see that all these concerns are addressed in development proposals, for the safety of our citizens and emergency responders.

The Planning Department reviews in excess of 1400 permit applications every year for compliance with applicable federal, state and local codes, conducts inspections of permitted projects to verify compliance with approved plans and provides consultation to owners, builders, design professionals and other fire officials on projects during the pre-design phase of a project. Plan reviews include reviewing plans for Fire Alarm and Sprinkler Systems, Fire Hydrant Systems and Hydraulic Calculations, Hazardous Materials Use and Storage, Spray Booths, High-Piled Combustible Storage Systems and other Fire Code permitted systems and operations.

Fire Department Information Bulletins are provided online and in print form to address topics ranging from the design of Fire Lanes to the supporting documents required to obtain a High Piled Combustible Storage permit. Information Bulletins are updated regularly to reflect changes in applicable Fire codes and from our experiences during emergency responses.

Fire Code Permits and Inspection

The Prevention Office recognizes that stopping every unintended fire from starting is an impossible task; therefore, we strive to manage risk associated with fire and environmental emergencies. The programs to achieve this goal focus on controlling risk factors in the existing physical environment through Building and Site Inspections, Special Event Inspections, Occupancy Checks and Code Compliance. Fire Prevention data generated by these programs is managed in the Fire Inspection Reporting System (FIRS).

The State Fire Marshal through enforcement by the local Fire Department regulates occupancies with special hazards and risk that include but are not limited to high-rise occupancies, jails, educational facilities, public assembly establishments, care homes for the elderly, hospitals, multi-family residences and daycare occupancies. These are state mandated inspections and must be completed annually. Inspectors insure that sprinkler and fire alarm systems, fire extinguishers, paths of egress, exit signs and emergency lighting are in place and able to operate as they are intended. Inspectors also verify that building addresses, exterior lighting, fire hydrants and emergency access roads are available for the quickest possible responses by fire personnel in the event of an emergency.

The Fire Prevention Office administers a Fire Code Permitting program for certain occupancies and hazardous processes as provided for in the adopted Fire Code. These permitted facilities are inspected on a regular basis to verify permit conditions. Selected businesses and buildings receive an inspection every one to five years by a trained firefighting personnel. The Engine

Company assigned to an individual area of the Town performs most of these fire inspections within their response District.

Public Assembly gatherings such as the events with large tents or canopies, concerts and dances, circuses, carnivals and similar events are inspected each day of the event to maintain the safety of our citizens and vendors.

Working as a team, a Fire Inspector and a Police Officer visit drinking and dining establishments throughout the Town at least monthly during evening and nighttime hours. This program helps insure that assembly facilities are not overcrowded, conducting un-permitted activities, or otherwise compromising the safety of their patrons.

The overall goal of conducting the fire inspections is to gain voluntary compliance of fire and life safety code requirements and to maintain the safety of occupancies. Fire Inspectors evaluate each violation to determine why compliance has not been achieved, then contact the responsible party (business, owner, operator, management company or individual) to find a solution. Inspectors work with the operators to ensure they understand the deficiency, the reason for the requirement and the steps necessary to abate the hazard. This is the resolution to most violations.

When violations are not corrected in a timely manner, Fire Inspectors issue "pre-citation" notices to tenants and owners. This is formal notification of a pending citation. These additional inspections caused by continued failure to comply generate an avoidable workload. When appropriate, owner/operators are billed for the extra inspections required to gain compliance.

Unfortunately, some owners/operators simply fail to comply because of cost or other reasons and this necessitates the issuance of a citation requiring an appearance in court and involuntary compliance through a court directive.

Fire Investigation

The fire investigation function is responsible for conducting fire scene investigations to determine origin and cause. Andover Fire Rescue has a Deputy Fire Chief who is specially trained in performing fire and arson investigations to determine whether the fire was accidental or arson in nature. Fire Investigators thoroughly examine fire scenes, interview victims, witnesses and potential suspects. The investigators are also responsible for collecting evidence and processing the evidence to determine the cause of the fire.

Deputy Chief DelDotto teams up with members of the Andover Police Department, the Massachusetts Fire Marshal's Office, Massachusetts State Police and the Essex County District Attorneys Office in the prosecution of arson cases. All entities involved are required to prepare detailed reports, present evidence and testify in Court for fire cause cases.

Special Assignments and Duties

Fire Prevention personnel are required to participate in periodic suppression related training including the use of Self Contained Breathing Apparatus (SCBA), emergency preparedness, counter terrorism related practices, emergency medical care, CPR and defibrillator certifications.

The Fire Prevention Officer supports the Incident Commander at all escalating fire and rescue incidents by fulfilling the staff function of Safety Officer. The Fire Prevention Officer responds directly to the scene to coordinate and address any safety concerns that may arise during the mitigation of the incident.

Policy Objectives

Over the next year, the Fire Prevention Office of Andover Fire Rescue will propose the adoption of a town bylaw requiring automatic fire sprinkler systems to be installed in all new residential construction and in buildings where a major change in use occurs. Residential sprinkler systems are designed to react quickly and save lives rather than property and are appropriate for installation in residential buildings.

Fire doubles in size every sixty seconds. A small fire can become a major incident in a matter of minutes. Automatic, built in fire suppression systems such as fire sprinklers provide the quickest, most reliable means of minimizing the size of fire emergencies. In locations where access may be limited to poor geography, or at times when an outside response may be delayed by traffic, weather or poor communications, automatic sprinkler systems can and have saved lives, minimize property damage and prevent a minor incident from growing into a major one.

The value of rapid, efficient, automatic fire suppression is becoming more significant as Andover grows in both density and expanse.

Automatic sprinkler systems are estimated to cost $1 to $3 per square foot for residential installations, and up to $5 per square foot for commercial applications. The economic value of installing sprinklers versus replacing an entire building is blatantly obvious and is widely recognized through reduced insurance rates in sprinklered occupancies.

Sprinklers protect more than just the structure, fixtures, finishes, furnishings, artwork, mementos, and most importantly occupants and firefighters all have a better chance of surviving when automatic sprinklers are installed. Reduced replacement costs, reduced insurance costs and reduced “down time” are all direct benefits of installing an automatic sprinkler system.

Andover Fire Rescue
Strategic Planning Objectives
Fire Prevention/Code Enforcement/Public Education prioritization

- FY 2008 Develop public education program with local media.
- FY 2008 Personnel to obtain SAFE certification.
- FY 2008 Revise current inspection program.
- FY 2008 Increase pre-incident planning and includes information technology.
- FY 2008 Develop strategy to implement legislation of plans review.
- FY 2008 Develop strategy to implement SAFE program in school system.
- FY 2008 Maintain and increase station open houses and safety house activities.
- FY 2009 Develop and implement programming for target groups.
- FY 2009 Develop strategy to implement legislation for adoption of sprinkler codes.
- FY 2009 Develop and implement citizens fire academy.
- FY 2009 Increase local fire investigation capabilities.
- FY 2009 Develop strategy for the adoption of MGL 26G within the Town of Andover.
- FY 2010 Acquire funding to appoint Asst. Fire Chief of Fire Prevention and Administration.

Andover Fire Rescue SWOT Analysis / February 07

STRENGTHS	WEAKNESSES
- Personnel - Equipment - Mutual Aid System - Water Supply - Dept. Collaboration - Fire Prevention - Training - Homeowners Valued Property - Lack of Language Barriers - Low turnover - Overall Wellness - Incident Command - Apparatus - Commercial / Industrial Base - Exterior Radio Communications - Community Involvement - Apparatus Maintenance	- Response Times - Manpower / Personnel / Shift - Dispatch - Station Location - Station Maintenance / Upgrades - Hydrants Maintenance / D.P.W - P.D. Collaboration - Water Distribution - Communications - Organization Planning - Pre-Incident Planning - Marketing Strategies - Limited Access (Rail / Highways / Waterways) - Training Resource Inconsistencies - F.F. Experience - Radio Inter-Operability - Record Keeping - Commitment - Accountability - Day to Day Consistency - Replacement Equipment Stock - Discipline - Labor Negotiations
OPPORTUNITIES	**THREATS**
- External Training from Corporations - Legislation - Mass. Fire Academy Training - National Fire Academy - Public Relations / Education - Media Relations - Interdepartmental Meetings - Vacant Buildings Training - Technology Development - Policy Development - Leadership Development - Partnerships / Grants - Succession Planning - Pre-Incident Planning - Fee Structure	- Political - Budgetary Limitations - Accountability / Productivity - Privatization - Internal - New Services / Increased Services - Contract Negotiations - Demanding Populations - Trust Between Elected Officials & Departments - Economy / Development - Codes Inconsistencies - Sustaining Internal Capabilities - State Mandates - Future Turnover – Personnel

SPACE NEEDS PROGRAM

Andover Fire Department

Andover Sub-Station

July 23, 2012
Revised August 10, 2012

Maguire Group Inc.
211 Congress Street
Boston MA 02110

MGI #19362

TABLE OF CONTENTS

	Present		Future	
Personnel, Day Shift	Per Shift	Total	Per Shift	Total
Company Officer	1	4	1	4
Firefighters	2	8	4	16
Total	3	12	5	20

	Present	Future
	Parking per Shift	Parking per Shift
Staff	6	10
Public	20	20

Site Features

Provide space for dumpster, A/C condenser, emergency diesel generator (48 hour service for entire building), and future communications tower.

Provide gated parking for staff

Interior Features

- All wall clocks interwired
- Multiple data and outlet locations in each room
- Security cameras at front door, exterior apparatus doors and building perimeter
- Front door bell

	ITEM	PROPOSED SF
APPARATUS AND SUPPORT		
APPARATUS ROOM	I-4	4,320
HAZMAT AND DISASTER SUPPLY	I-5	100
HOSE STORAGE ROOM	I-6	64
EQUIPMENT STORAGE	I-7	100
FIREFIGHTER'S TOILETS/SHOWERS	I-8	120
DELUGE SHOWER	I-9	36
AIR SUPPLY ROOM	I-10	216
TURN-OUT GEAR ROOM	I-11	300
"CONTAMINATED" WASHER EXTRACTOR	I-12	80
BIOHAZARD/DECON ROOM	I-13	128
FIRST AID STORAGE	I-14	8
READY ROOM/BATTERY CHARGING	I-15	36
PUBLIC/LOBBY/DISPATCH		
PUBLIC LOBBY/VESTIBULE/RECEPTION	I-16	144
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COMPANY OFFICE	I-19	160
SERVER CLOSET	I-20	64
SUPPLY CLOSET	I-21	64
INDOOR TRAINING		
TRAINING EQUIPMENT STORAGE	I-22	64
COMMUNITY ROOM	I-23	500
FITNESS	I-24	400
FIREFIGHTER'S QUARTERS		
FIREFIGHTER'S ROOMS	I-25	819
STUDY ROOM	I-26	120
UNISEX TOILET AND SHOWER	I-27	270
DAY ROOM	I-28	320
KITCHEN/DINING	I-29	316
PANTRY	I-30	140
BUILDING SUPPORT AND SYSTEMS		
JANITOR'S CLOSET	I-31	64
"LINEN" WASHEAR/DRYER	I-32	64
RECORDS ROOM (DEAD STORAGE)	I-33	144
MAINTENANCE AND STORAGE	I-34	168
MECHANICAL ROOM	I-35	240
ELECTRICAL ROOM	I-36	80
TELEPHONE ROOM	I-37	80
POLICE		
VESTIBULE	I-38	60
TOILET ROOM	I-39	70
SATELLITE POLICE OFFICE	I-40	168

	ITEM	PROPOSED SF
GENERAL STORAGE	I-41	14
SUBTOTAL		**10,309**
WALLS, CIRCULATION, STAIRS, CHASES @30%		3,092
TOTAL GROSS BASEMENT		
TOTAL GROSS FIRST FLOOR		
TOTAL GROSS SECOND FLOOR		
TOTAL BUILDING GROSS		**13,401**

APPARATUS ROOM

FLOOR AREA NEEDED	3 double bays @ 18' x 80' = 4,320 SF
ADJACENCY REQUIREMENTS	Adjacent to firefighters' quarters and to support spaces
PUBLIC ACCESS	Controlled by public lobby
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Eye wash, area for printer and radio charging
STATION FRONT LINE RESPONSE	1 Pumper @ 38' 1 Ambulance @ 23'
STATION RESERVE RESPONSE	1 Ladder Truck @48' 3 Trailers
SPECIAL NEEDS	Electric cord reel. Overhead doors 14' x 14', overhead power, overhead water fill, compressed air. Overhead door operations: At door jamb, at office, and on apparatus vehicles. Wide trench drains. Mop sink Acoustic considerations Sand/oil separator Heavy-duty overhead door operators Zetron speakers
FLOOR MATERIALS AND FINISHES	Hardener and sealer concrete slab
WALL MATERIALS AND FINISHES	CMU with epoxy paint
CEILING MATERIALS AND FINISHES	Painted exposed/GWB
LIGHTING	Low-level night lighting, fluorescent rapid-response
HVAC	No A/C, provide vehicle exhaust system (relocate portions of existing), ceiling fans

HAZMAT AND DISASTER SUPPLY STORAGE

FLOOR AREA NEEDED	10' x 10' = 100 SF
ADJACENCY REQUIREMENTS	Off apparatus floor
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	2'-0" deep shelves, 12" apart on 3 walls
FLOOR MATERIALS AND FINISHES	Sealed concrete
WALL MATERIALS AND FINISHES	CMU - epoxy paint
CEILING MATERIALS AND FINISHES	Exposed Structure/GWB
LIGHTING	Fluorescent
HVAC	No A/C

HOSE STORAGE ROOM

FLOOR AREA NEEDED	8' x 8' = 64 SF
ADJACENCY REQUIREMENTS	Next to apparatus floor and hose washing room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Storage for hose coils – 1,500 LF of 4", 1,500 LF of 2½", 1,500 LF of 1½"
SPECIAL NEEDS	Floor drain
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU-epoxy paint
CEILING MATERIALS AND FINISHES	Exposed structure/GWB
LIGHTING	Fluorescent
HVAC	No A/C - mechanical ventilation

EQUIPMENT STORAGE

FLOOR AREA NEEDED	10'' x 10' = 100 SF
ADJACENCY REQUIREMENTS	Next to apparatus room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Storage for hand tools, ropes, spare fire hoses (wall mounted racks 150 lf of 2-1/2" hose and 150 lf of 3" hose), foam canisters, 2 rows of 18" deep metal mesh shelving on one wall
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU-epoxy paint
CEILING MATERIALS AND FINISHES	Painted exposed structure/GWB
LIGHTING	Fluorescent
HVAC	No A/C

FIREFIGHTER'S TOILETS

FLOOR AREA NEEDED	Male and female (2@ 60 SF) = 120 SF
ADJACENCY REQUIREMENTS	Next to apparatus room and gear room
PUBLIC ACCESS	None
FURNITURE, FIXTURES & EQUIPMENT	1 toilet and 1 sink each
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	CMU with ceramic tile wainscot
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	A/C, good ventilation

DELUGE SHOWER

FLOOR AREA NEEDED	6' x 6' = 36 SF
ADJACENCY REQUIREMENTS	Adjacent to Biohazard/Decon Room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	None
FURNITURE, FIXTURES & EQUIPMENT	Overhead, large diameter emergency shower head with pull chain, and eyewash device
FLOOR MATERIALS AND FINISHES	Ceramic tile Recessed slab with curb
WALL MATERIALS AND FINISHES	CMU with ceramic tile
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent, vaporproof
HVAC	No A/C, good exhaust

AIR SUPPLY ROOM

FLOOR AREA NEEDED	12' x 18' = 216 SF
ADJACENCY REQUIREMENTS	Off of apparatus room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	Rack for storage of air tanks, 6' long workbench, tool storage, SCBA air tanks, dive gear storage, SCBA compressor 4' x 10'
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	No A/C, good ventilation

TURN-OUT GEAR ROOM

FLOOR AREA NEEDED	10 SF for each locker (30) = 300 SF
ADJACENCY REQUIREMENTS	Next to apparatus room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	30 steel mesh cubicles 24" x 24" with top and bottom shelves
SPECIAL NEEDS	Zetron speakers Floor drains Electrical outlets in each cubicle
FLOOR MATERIALS AND FINISHES	Concrete with hardener/or rubber flooring
WALL MATERIALS AND FINISHES	CMU with epoxy paint
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	No fluorescent light fixtures
HVAC	No A/C, very good ventilation – Maintain gear room under negative pressure

"CONTAMINATED" WASHER/DRYER

FLOOR AREA NEEDED	8' x 10' = 80 SF
ADJACENCY REQUIREMENTS	Near turn-out gear room and Decontamination Room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	None
FURNITURE, FIXTURES & EQUIPMENT	Heavy-duty, stainless steel, 45 lb. capacity washer extractor and dehydrator with shelving above
SPECIAL NEEDS	Floor drain Thickened floor slab Gravity drain from extractor with air gap
FLOOR MATERIALS AND FINISHES	Concrete with hardener/ or rubber flooring
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	No A/C, good ventilation, dryer vent

BIOHAZARD/DECON ROOM

FLOOR AREA NEEDED	8' x 16' = 128 SF
ADJACENCY REQUIREMENTS	Near deluge shower accessible from the exterior and the apparatus bay
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	3' x 4' floor sink, hose with spray, sink with eye wash device, wall-mounted stainless steel sink with foot controls
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	CMU with ceramic tile wainscot
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	Good ventilation

FIRST AID STORAGE

FLOOR AREA NEEDED	2' x 4' = 8 SF
ADJACENCY REQUIREMENTS	Near apparatus room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	12" metal shelving, spaced at 12" apart
FLOOR MATERIALS AND FINISHES	Sealed concrete
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	Good ventilation, A/C

READY ROOM/BATTERY CHARGING

FLOOR AREA NEEDED	3' x 12' = 36 SF
ADJACENCY REQUIREMENTS	Alcove adjacent to Apparatus Room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Counter with storage cabinets and shelving
SPECIAL NEEDS	Electrical wire mold outlets and data jackets
FLOOR MATERIALS AND FINISHES	Sealed concrete.
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Task lighting
HVAC	No A/C

PUBLIC LOBBY/VESTIBULE/RECEPTION

FLOOR AREA NEEDED	12' x 12' = 144 SF
ADJACENCY REQUIREMENTS	Next to Watch Room. Easy, but not visible access to Admin. Speak-thru and paper slot to Watch Room.
PUBLIC ACCESS	Full access
SECURITY REQUIREMENTS	Moderate; controlled exit from Lobby to the rest of the building. All public must check in w/ Watch Room first.
FURNITURE, FIXTURES & EQUIPMENT	Built-in display case
SPECIAL NEEDS	Surveillance from Watch Room, automatic door operators
FLOOR MATERIALS AND FINISHES	Porcelain pavers
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent plus accept lighting
HVAC	A/C

PUBLIC TOILETS

FLOOR AREA NEEDED	2 @ 6.5' x 7.5' = 100 SF
ADJACENCY REQUIREMENTS	Access from Public Lobby but not visible
PUBLIC ACCESS	High
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Toilet and sink
SPECIAL NEEDS	Handicapped accessible Floor drain
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	Ceramic tile wainscot
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	No A/C, good exhaust tied to light switch

WATCH ROOM

FLOOR AREA NEEDED	12'x14' = 168
ADJACENCY REQUIREMENTS	Direct view to Public/Lobby entrance, view into Apparatus Room.
PUBLIC ACCESS	Limited, controlled
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	30" x 6' desk and return, 1 desk chair, 2 guest chair, 4 LF book shelves, (1) 3' storage cabinets, (1) 3-drawer lateral files with top, wall space for maps, counter with storage for forms under at window to vestibule, 20 LF shelving, white board, cable TV
SPECIAL NEEDS	Window with pass-through and counter to Public Lobby/Reception Controls for VOC-ALARM or ZETRON. CCTV Room darkening shades
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflector, 2 level lighting, task lighting
HVAC	A/C
FURNITURE, FIXTURES & EQUIPMENT	Wall space for maps, counter with storage for forms under at window to Public Lobby, 20 LF shelving, white board, cable TV,

.

COMPANY OFFICE

CURRENT STAFF	1 per shift
FUTURE STAFF	1 per shift
FLOOR AREA NEEDED	Separate area to house 2 cubicles @ 8' x 10' = 160 SF
ADJACENCY REQUIREMENTS	Near lobby, Supply closet
PUBLIC ACCESS	Limited, controlled
FURNITURE, FIXTURES & EQUIPMENT	Each cubicle to house (1) 30" x 6' desk and return, 1 desk chair, 1 guest chair, 4 LF book shelves, (1) 3' storage cabinets, (1) 3-drawer lateral files with top
SPECIAL NEEDS	Coat closet Zetron speakers
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflections
HVAC	A/C

SERVER CLOSET

FLOOR AREA NEEDED	8' x 8' = 64 SF
ADJACENCY REQUIREMENTS	Company Office
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	Desk and chair
SPECIAL NEEDS	USPS system, 4 data ports at desk, 1 filing cabinet
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB/exposed structure painted
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflectors
HVAC	A/C

SUPPLY CLOSET

FLOOR AREA NEEDED	8' x 8' = 64 SF
ADJACENCY REQUIREMENTS	Adjacent to Company Officers Office
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	4 rows of 24" adjustable metal shelving on two walls
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflections
HVAC	A/C

TRAINING EQUIPMENT STORAGE

FLOOR AREA NEEDED	8' x 8' = 64 SF
ADJACENCY REQUIREMENTS	Access from training room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	Shelving, 1½' deep for the storage of training equipment; VCR, TV monitor, slide projector, training tapes, CPR training equipment such as mannequins. Area to store tables and chairs.
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	No A/C

COMMUNITY ROOM

FLOOR AREA NEEDED	25 people @ 20 SF/person = 500 SF
ADJACENCY REQUIREMENTS	Accessible from lobby and adjacent to Training Equipment Storage
PUBLIC ACCESS	Possibly
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Table and chairs to accommodate 25; podium, stand with wheels for VCR, video monitor, and video and slide projectors. White board, fabric covered tackable surfaces. Room darkening shades. Cable data outlets.
SPECIAL NEEDS	Alcove for coffee prep to include small refrigerator, microwave, sink, coffeemaker, and cabinets above. Zetron speakers Sound control to adjacent spaces Exterior access
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent, glare-free; dimmers, or incandescent with dimmers
HVAC	A/C with good exhaust system

FITNESS

STAFF	All
FLOOR AREA NEEDED	400 SF
ADJACENCY REQUIREMENTS	Adjacent to Firefighter living quarters
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Treadmills, stationary bicycles, universal weight, machine and free weights. Equipment will be furnished with FF&E.
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Clock, wall-mounted TV, cable mirrored wall. Sport flooring on concrete slab, sound insulation
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	A/C, good ventilation, separate control

FIREFIGHTER'S ROOMS

FLOOR AREA NEEDED	Single bedrooms, 7 @ 9' x 9' = 567 SF Lockers outside of room, 7 @ 9'x4' = 252 SF TOTAL = 819 SF
ADJACENCY REQUIREMENTS	Good access to Apparatus Room Adjacent to toilet rooms
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Each room to have a chair, extra long twin bed, small built-in desk, (4) 2' x 2' lockers for linen. outside of room. Provide 2 power, 2 data and 2 cable TV outlets on all walls. Room darkening shades.
SPECIAL NEEDS	Zetron speakers Sound attenuation in walls
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent, 2 light levels Task lighting
HVAC	A/C

STUDY ROOM

FLOOR AREA NEEDED	12' x 10' = 120 SF
ADJACENCY REQUIREMENTS	Near living quarters
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Built-in countertop for computer use, along one wall. Two chairs, 60 LF of shelving. Data/ computer outlets.
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	A/C

UNISEX TOILET & SHOWER

FLOOR AREA NEEDED	3 @ 90 SF = 270 SF
ADJACENCY REQUIREMENTS	Near Firefighters Rooms
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Each toilet room to have 1 sink, 1 toilet, 1 shower with drying area. Toilet room does not need to be handicap accessible.
SPECIAL NEEDS	1 full-length mirror, Zetron speakers.
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	GWB with ceramic wainscoting
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	A/C

DAY ROOM

FLOOR AREA NEEDED	320 SF
ADJACENCY REQUIREMENTS	Good access to Apparatus Room near Kitchen/Dining
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Recliners, couch and seating for 6. Table and chairs for four. Provide power and cable TV outlets on all walls.
SPECIAL NEEDS	Zetron speakers
FLOOR MATERIALS AND FINISHES	Carpet
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflectors, multiple TV jacks, task
HVAC	A/C

KITCHEN/DINING

FLOOR AREA NEEDED	Kitchen 14 x 14 = 196 SF Dining 20 SF x 6 = 120 SF TOTAL = 316 SF
ADJACENCY REQUIREMENTS	Near Day Room and pantry Exterior patio with gas grille
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Commercial appliances; (4) 20 CF freezer/refrigerator (1) 6 burner range with oven and hood, ((1) microwave, (1) large deep sink, (1) dishwasher, (1) garbage disposal,
SPECIAL NEEDS	Water tap at range, solid-surface countertop, tables to accommodate entire shift (5), plumbed coffeemaker Zetron speakers
FLOOR MATERIALS AND FINISHES	Ceramic tile, quarry tile
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	A/C, range exhaust

PANTRY

FLOOR AREA NEEDED	10' x 14' = 140 SF
ADJACENCY REQUIREMENTS	Alcove off of Kitchen
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	(4) 24" x 42" lockable storage closets with 36" wide doors, (1 per shift) keyed individually with locks, 1 soda machine, and 1 50-lb. ice maker
FLOOR MATERIALS AND FINISHES	Ceramic tile, quarry tile
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	A/C

JANITOR'S CLOSETS

FLOOR AREA NEEDED	(1 on each floor) @ 8' x 8' = 64 SF 64 x 2 = 128 SF TOTAL
ADJACENCY REQUIREMENTS	Centrally located
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Floor sink, mop racks, shelving
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	GWB with ceramic tile wainscoting
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	No A/C

"LINEN" WASHER/DRYER

FLOOR AREA NEEDED	8' x 8' = 64 SF
ADJACENCY REQUIREMENTS	Near firefighters' quarters
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	None
FURNITURE, FIXTURES & EQUIPMENT	Washer and dryer with shelving above and folding counter
SPECIAL NEEDS	Floor drain and drain pan. Zetron speakers.
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	No A/C, good ventilation, dryer vent

RECORDS ROOM (DEAD STORAGE0

FLOOR AREA NEEDED	12' x 12' = 144 SF
ADJACENCY REQUIREMENTS	None
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	High
FURNITURE, FIXTURES & EQUIPMENT	Rack storage for file boxes 1-Table and chairs 1-Copy machine
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	A/C

MAINTENANCE & STORAGE

FLOOR AREA NEEDED	12' x 14' maintenance, 168 SF
ADJACENCY REQUIREMENTS	First floor, good access to exterior and Apparatus Room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	6' workbench with stool and tool rack above, 30 LF shelving, storage space for lawn mower, trimmer and yard tools
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU, fire rated enclosure
CEILING MATERIALS AND FINISHES	GWB or exposed
LIGHTING	Fluorescent
HVAC	No A/C, ventilation

MECHANICAL ROOM

FLOOR AREA NEEDED	240 SF
ADJACENCY REQUIREMENTS	First floor, Adjacent to electrical and telephone rooms
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	None
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB or exposed
LIGHTING	Fluorescent
HVAC	No A/C, ventilation

ELECTRICAL ROOM

FLOOR AREA NEEDED	80 SF
ADJACENCY REQUIREMENTS	First floor, Adjacent to mechanical and telephone room
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	None
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB or exposed
LIGHTING	Fluorescent
HVAC	No A/C, ventilation

TELEPHONE ROOM

FLOOR AREA NEEDED	80 SF
ADJACENCY REQUIREMENTS	First floor, Adjacent to mechanical and electric rooms
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	None
FLOOR MATERIALS AND FINISHES	Concrete with hardener
WALL MATERIALS AND FINISHES	CMU
CEILING MATERIALS AND FINISHES	GWB or exposed
LIGHTING	Fluorescent
HVAC	No A/C, ventilation

VESTIBULE

FLOOR AREA NEEDED	10' x 6' = 60 SF
ADJACENCY REQUIREMENTS	Entrance shall be remotely located from the Fire Stations main entrance
PUBLIC ACCESS	Limited access
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	None
SPECIAL NEEDS	Small built in display case
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent lighting
HVAC	A/C

TOILET ROOM

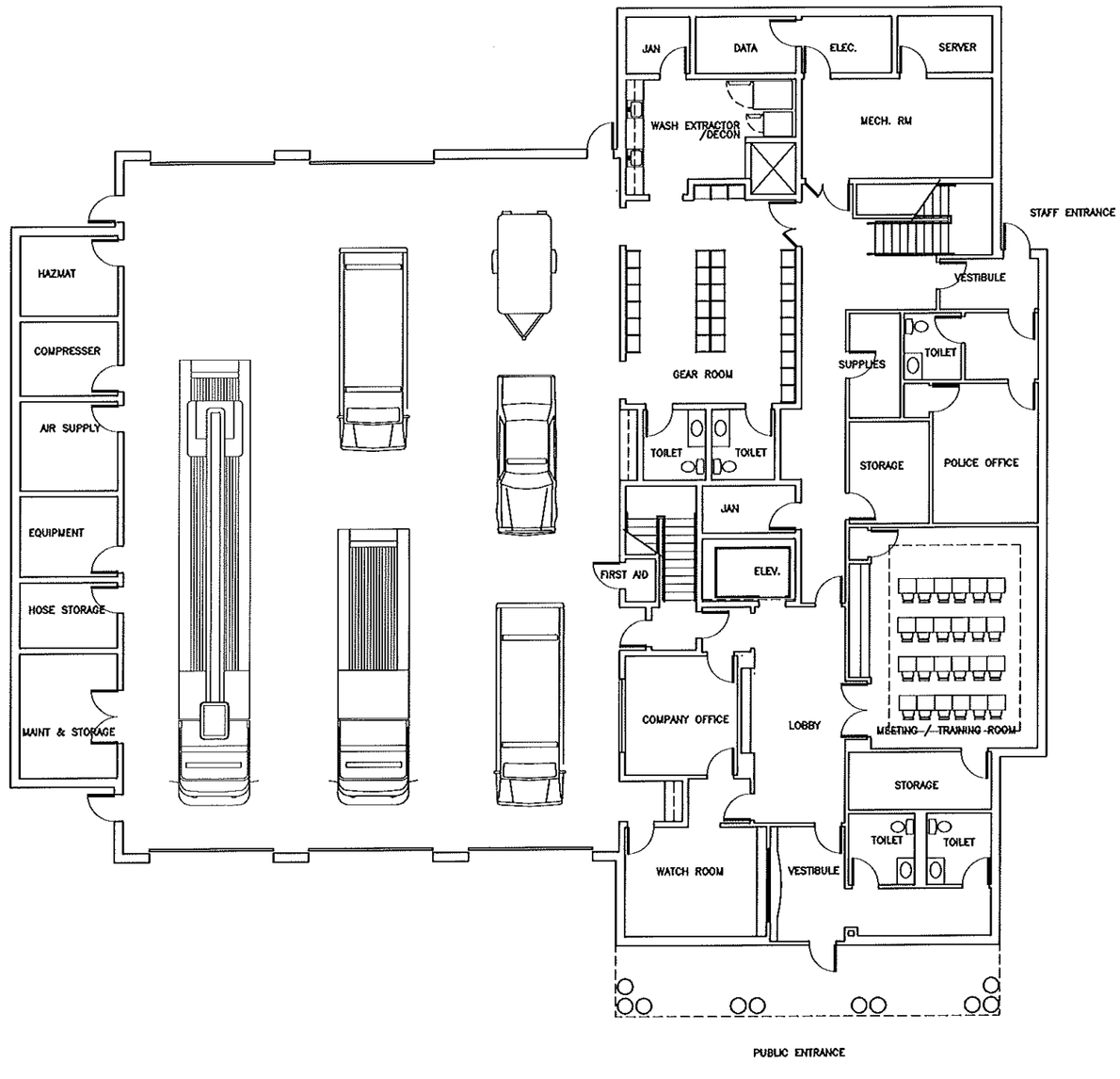
FLOOR AREA NEEDED	10' x 7 ' = 70 SF
ADJACENCY REQUIREMENTS	Access from vestibule
PUBLIC ACCESS	Limited
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Toilet and sink
SPECIAL NEEDS	Handicapped accessible Floor drain
FLOOR MATERIALS AND FINISHES	Ceramic tile
WALL MATERIALS AND FINISHES	Ceramic tile wainscot
CEILING MATERIALS AND FINISHES	GWB
LIGHTING	Fluorescent
HVAC	No A/C, good exhaust tied to light switch

SATELLITE POLICE OFFICE

FLOOR AREA NEEDED	12'x14' = 168 SF
ADJACENCY REQUIREMENTS	Near vestibule
PUBLIC ACCESS	Limited, controlled
FURNITURE, FIXTURES & EQUIPMENT	30" x 6' desk and return, 1 desk chair, 2 guest chair, 4 LF book shelves, (1) 3' storage cabinets, (1) 3-drawer lateral files with top
SPECIAL NEEDS	Coat closet
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent with parabolic reflections
HVAC	A/C

GENERAL STORAGE

FLOOR AREA NEEDED	2' x 7' = 14 SF
ADJACENCY REQUIREMENTS	Next to vestibule
PUBLIC ACCESS	None
SECURITY REQUIREMENTS	Moderate
FURNITURE, FIXTURES & EQUIPMENT	Storage supplies and office equipment
FLOOR MATERIALS AND FINISHES	VCT
WALL MATERIALS AND FINISHES	GWB
CEILING MATERIALS AND FINISHES	ACT
LIGHTING	Fluorescent
HVAC	No A/C



FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"

AREA TABULATIONS

FIRST FLOOR	10,135
SECOND FLOOR	4,628
TOTAL	14,763

Revisions :

Approved :

Maguire Group Inc.
Architects/Engineers/Planners
211 Congress Street
Boston, MA 02110

Proj. Mgr.: F.C.
Designed : F.C.
Drawn :
Checked :
Scale : AS NOTED
Date : 8-17-2012

ANDOVER F.D.

WOBURN STREET SUB-STATION

OPTION A - TWO-STORY STATION

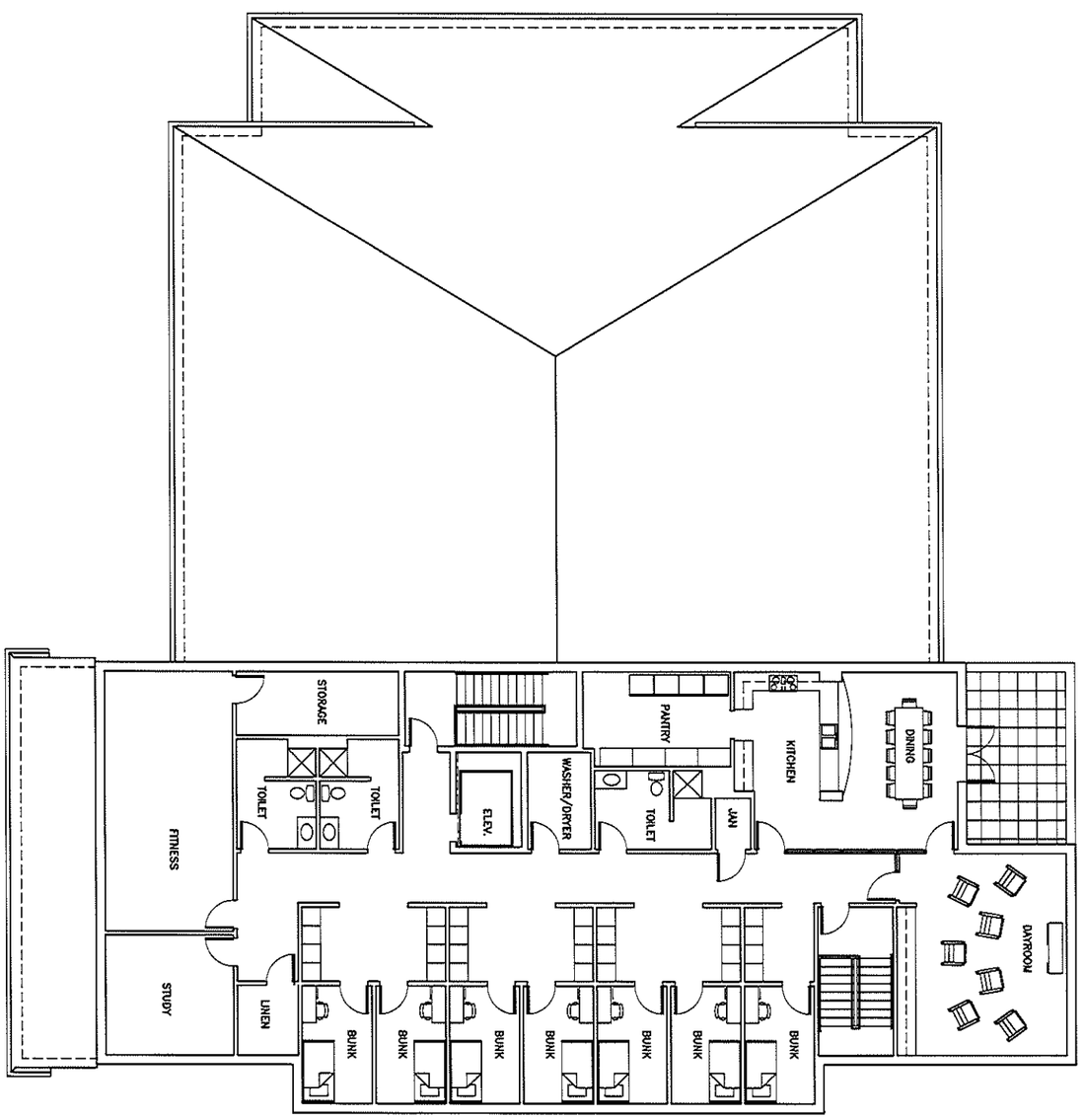
Proj. No.

Dwg. No.

SK.A1

SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



SK.A2	Proj. No. / Dwg. No.	ANDOVER F.D. WOBURN STREET SUB-STATION OPTION A – TWO-STORY STATION	Proj. Mgr.: Designed : F.C. Drawn : F.C. Checked : Scale : AS NOTED Date : 8-17-2012	Maguire Group Inc. Architects/Engineers/Planners 211 Congress Street Boston, MA 02110	Revisions : Approved :

FRONT ELEVATION

SCALE: 3/16" = 1'-0"

Maguire Group Inc.
Architects/Engineers/Planners
211 Congress Street
Boston, MA 02110

Revisions :

Approved :

Proj. Mgr.:
Designed : F.C.
Drawn : F.C.
Checked :
Scale : AS NOTED
Date : 8-17-2012

ANDOVER F.D.

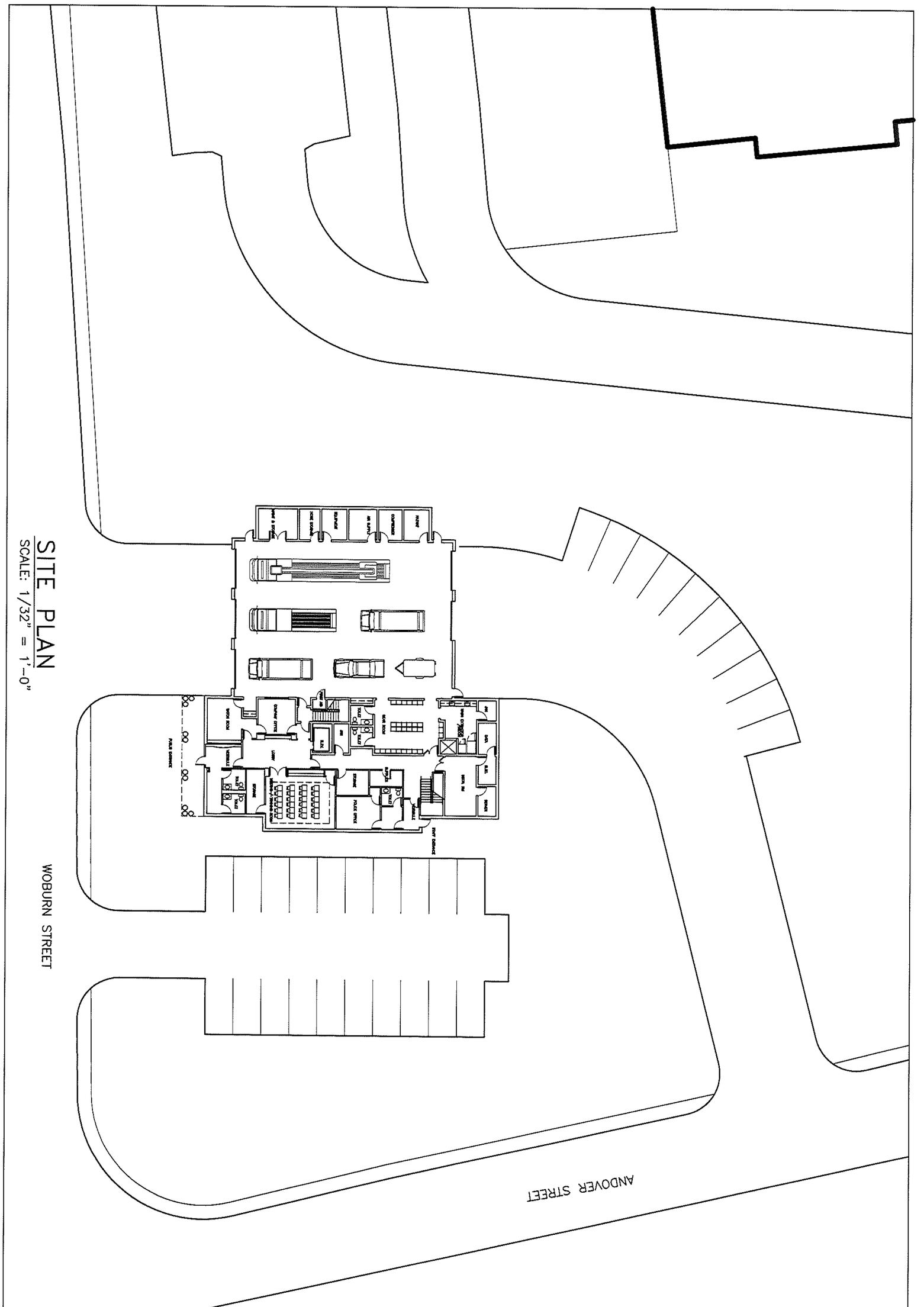
WOBURN STREET SUB-STATION

OPTION A - TWO-STORY STATION

Proj. No.

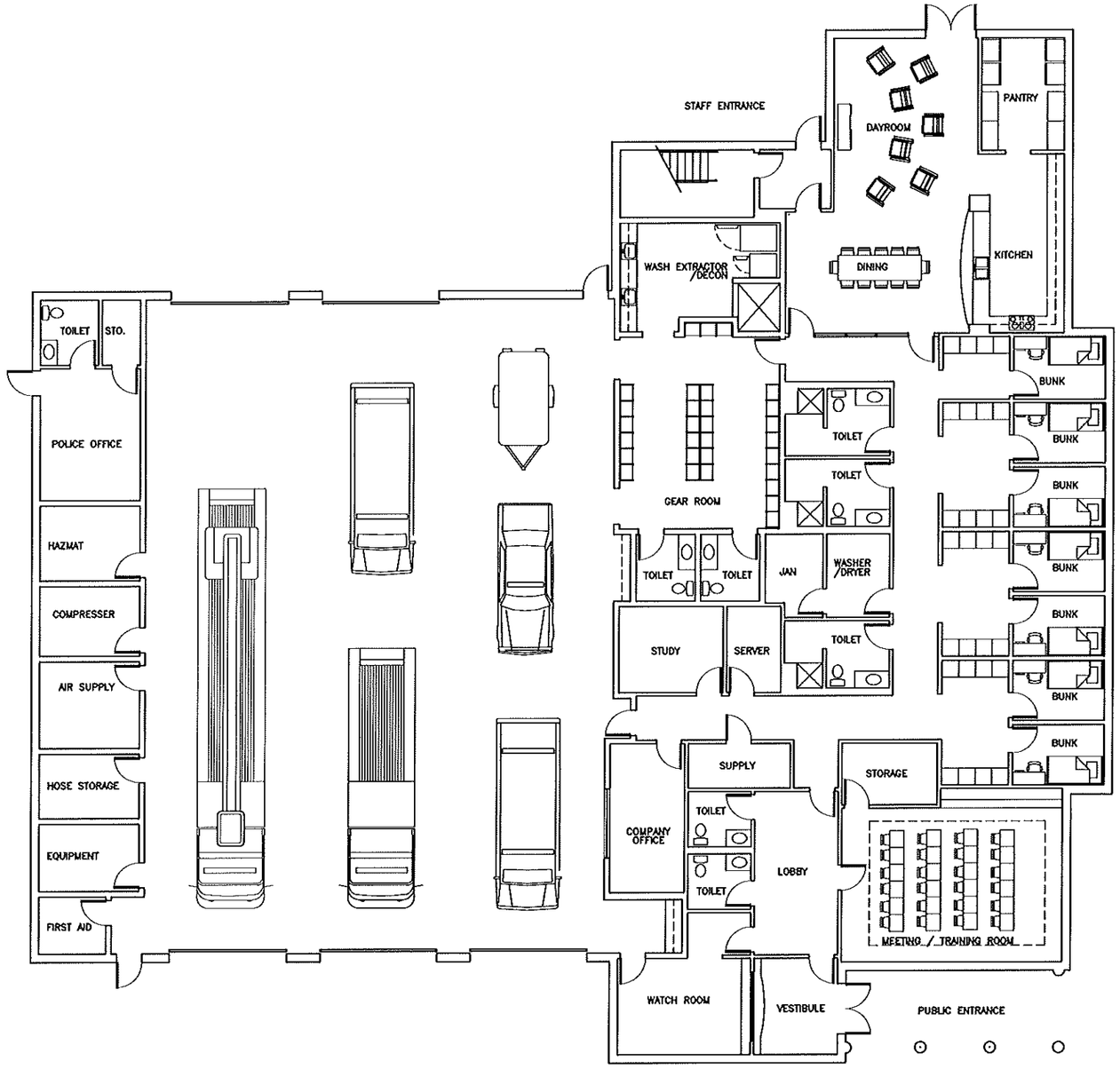
Dwg. No.

SK.A3



SITE PLAN
SCALE: 1/32" = 1'-0"

SK.A4	Proj. No. / Dwg. No.	ANDOVER F.D. WOBURN STREET SUB-STATION OPTION A – TWO-STORY STATION	Proj. Mgr.: Designed : F.C. Drawn : F.C. Checked : Scale : AS NOTED Date : 8-17-2012	Maguire Group Inc. Architects/Engineers/Planners 211 Congress Street Boston, MA 02110	Revisions : Approved :



FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0"

AREA TABULATIONS

FIRST FLOOR	11,975
FINISHED ATTIC	1,341
TOTAL	13,316

Revisions :

Approved :

Maguire Group Inc.
Architects/Engineers/Planners
211 Congress Street
Boston, MA 02110

Proj. Mgr.: F.C.
Designed : F.C.
Drawn :
Checked :
Scale : AS NOTED
Date : 8-17-2012

ANDOVER F.D.

WOBURN STREET SUB-STATION

OPTION B - ONE-STORY STATION

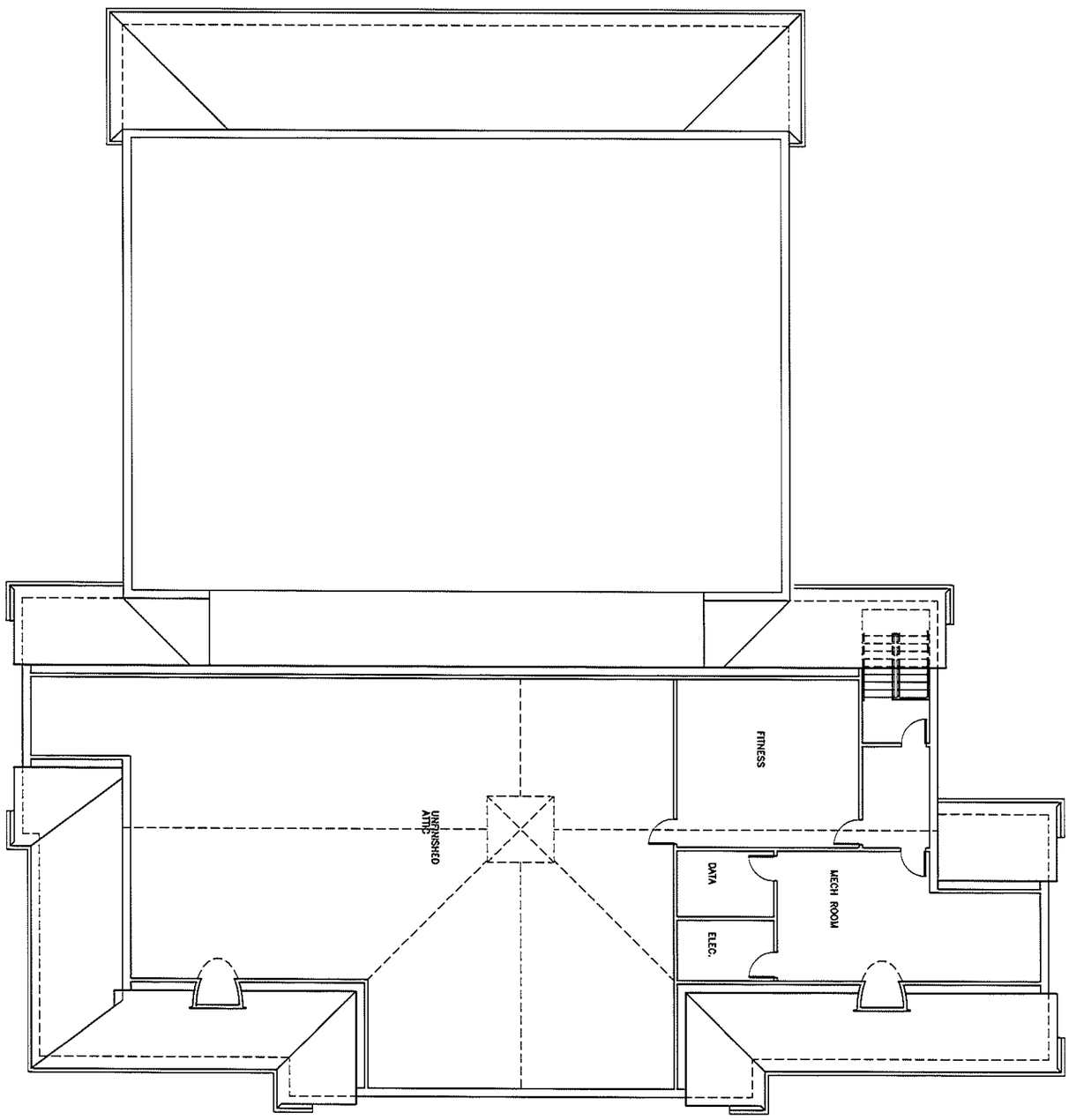
Proj. No.

Dwg. No.

SK.B1

SECOND FLOOR PLAN

SCALE: 1/16" = 1'-0"



Dwg. No. SK.B2	Proj. No.	ANDOVER F.D. WOBURN STREET SUB-STATION OPTION B – ONE-STORY STATION	Proj. Mgr.: Designed : F.C. Drawn : F.C. Checked : Scale : AS NOTED Date : 8-17-2012	Maguire Group Inc. Architects/Engineers/Planners 211 Congress Street Boston, MA 02110	Revisions : Approved :

FRONT ELEVATION

SCALE: 3/16" = 1'-0"

Maguire Group Inc.
Architects/Engineers/Planners
211 Congress Street
Boston, MA 02110

Revisions :

Approved :

Proj. Mgr.: F.C.
Designed : F.C.
Drawn :
Checked :
Scale : AS NOTED
Date : 8-17-2012

ANDOVER F.D.

WOBURN STREET SUB-STATION

OPTION B - ONE-STORY STATION

Proj. No.

Dwg. No.

SK.B3

SITE PLAN

SCALE: 1/32" = 1'-0"

Proj. No. / Dwg. No. SK.B4	ANDOVER F.D. WOBURN STREET SUB-STATION OPTION B – ONE-STORY STATION	Proj. Mgr.: Designed : F.C. Drawn : F.C. Checked : Scale : AS NOTED Date : 8-17-2012	Maguire Group Inc. Architects/Engineers/Planners 211 Congress Street Boston, MA 02110	Revisions : Approved :

Andover Fire Department Preliminary Construction Estimate Option A Two-Story Station	Building SF	Variables	Preferred Option
CONSTRUCTION COSTS			17-Aug-12
First Floor Sq Ft	10135		
Second Floor Sq Ft	4628		
Total Square Footage	**14,763**	$ 240	$ 3,543,120
Construction Costs Sub Total			**3,543,120**
Construction Contingencies		15%	$ 531,468
Green Implementation		5%	$ 177,156
Subtotal			**$ 4,251,744**
Construction Escalation to end of 2013		8%	$ 340,140
Total Construction Costs			**$ 4,591,884**
Construction Cost Per Square Foot			**$ 311**
SOFT COSTS			
Design Engineering Fees (Allowance)		8%	$ 340,140
Owners Project Manager (Allowance)		3%	$ 127,552
Furniture and Equipment (Allowance)			$ 130,000
Communication Technologies			$ 260,000
CommunicationTower			TBD
Additional Project Costs (testing, survey, geotech, etc.)			$ 162,000
Total Soft Costs			**$ 1,019,692**
GRAND TOTAL OPTION A			**$ 5,611,575**

Andover Fire Department Preliminary Construction Estimate Option B One-Story Station	Building SF	Variables	Preferred Option
CONSTRUCTION COSTS			17-Aug-12
First Floor Sq Ft	11975		
Finished Attic Floor Sq Ft	1341		
Total Square Footage	**13,316**	$ 240	$ 3,195,840
Construction Costs Sub Total			**3,195,840**
Construction Contingencies		15%	$ 479,376
Green Implementation		5%	$ 159,792
Subtotal			**$ 3,835,008**
Construction Escalation to end of 2013		8%	$ 306,801
Total Construction Costs			**$ 4,141,809**
Construction Cost Per Square Foot			**$ 311**
SOFT COSTS			
Design Engineering Fees (Allowance)		8%	$ 306,801
Owners Project Manager (Allowance)		3%	$ 115,050
Furniture and Equipment (Allowance)			$ 130,000
Communication Technologies			$ 260,000
CommunicationTower			TBD
Additional Project Costs (testing, survey, geotech, etc.)			$ 162,000
Total Soft Costs			**$ 973,851**
GRAND TOTAL OPTION B			**$ 5,115,660**