UNITY AND DIVERSE FUNCTIONS IN ARCHITECTURE

AN EMERGENCY SERVICES TRAINING FACILITY FOR THE INDIANAPOLIS AREA

BY
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THESIS 1988

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1. PREFACE
1.1 ABSTRACT

UNITY AND DIVERSE FUNCTIONS IN ARCHITECTURE

Throughout architecture there exist many buildings, many complexes housing dissimilar programmatic functions within one entity. Corporate manufacturing headquarters, warehouse and distribution facilities, highrise buildings, schools, and firehouses are examples. Of these combined facilities, individual functions within typically conjure up preconceived images or details of form associated with that function from without. Educational facilities of most types typically share these preconceived notions. Some facilities have a narrow range of functions, while others involve unique, hands-on conditions quite unlike anything found in a typical classroom setting.

Such is the case in the educational hybrid known as the firefighting academy, which is essential for any large community to training its emergency personnel in firefighting, public health and safety; an academy which is a unique fusion of classroom and hands-on practice, reflecting advances in technology, industry, and everyday life which have made firefighting anything but simple.

This thesis is a design experiment in how a multi-dimensional facility (here, a firefighting academy) can come together as one, yet carefully address, delineate, and reinforce its diversity of functions; a model that can successfully integrate the 'hands-on' and 'hands-off' classroom methods of educating those responsible for protecting our lives and property.

This hypothetical project is based on the real, existing needs for the city of Indianapolis and the surrounding area. The site is located on the northwest side of Indianapolis, near Butler University and the Indianapolis Museum of Art.

Design experimentation includes functional zoning/site planning, individual building design, interior and exterior design studies, through emphasis on form, function, grid, light, image and diversity within unity.
1.2 INTRODUCTION

As stated in the Abstract, this is a design experiment that is meant to unite a diverse set of functions that exist within a rather unique educational institution, specifically an Emergency Services Training Facility. For reasons of brevity, history, and primary function, it is often called a fire academy, but in this age of multi-use facilities and responsibilities in the public services, it becomes much more. Because just as firefighters become firefighter/paramedics, Haz Mat experts, and so on, so, too, must their facility be able to train them in every area or situation that they are responsible for.

Such a facility must also be able to expand and change, just as the firefighter’s responsibilities expand and change. Hence, the need for a rather large site becomes obvious. And as long as fires are extinguishable by water, the proximity of such also becomes important, as well as its role in water rescue situations.

Location of such a facility is also integral to its success. It must be secluded enough from its neighbors so as not to offend them during its use, yet centrally located within the greatest population sum, so that getting people (staff and trainees) to and from it is not a major undertaking.
2.
ANALYSIS
2.1 BACKGROUND

Regardless of the department locale or size, paid or all volunteer, cadet members or no, there exists one common denominator among them all that has changed drastically over the years: training. Although the first organized American firefighting companies date back to pre-Revolutionary War times, training of these firefighters remained almost non-existent until the beginning of the twentieth century. Complete training institutes or “fire colleges” did not appear until the 1920's, and even those were not for everybody.

"In cooperation with local universities, cities established programs in which chiefs and firemen could take time off for an intensive course that ranged from two weeks to three months."(1)

Officers attending these ‘colleges’ studied such topics as the construction of buildings, their desirable and undesirable points from the firefighters’ perspective, water supply and distribution, “...and the rudiments of chemistry.”(2)

Today, these topics are but a small portion of the training that all firefighters typically recieve, not just the officers in the department. All firefighters must recieve training in hydraulics, electricity, ever-changing building technologies, flammable and hazardous materials, and how all these affect smoke, heat, and flamespread. In addition, many must have advanced training in rescue and first aid techniques, as departments are required by their communities to operate ambulance and rescue squads, above and beyond the extensive firefighting duties they already have.

From the contacts with firefighters, the interest in firefighting, and the first aid and rescue experience and training that I’ve gained over the years, it is no wonder that I choose some part of firefighting as my topic for thesis study. But it is only from my experience as an Advanced First Aid/CPR/Basic Life Support instructor that I realized the importance of extensive training, and thus realized that a truly complete firefighting academy was noticeably absent from the Indianapolis area. Hence, my desire to design and organize a complete facility considerate of many ideas; considerate of order and function, of inevitable expansion, of common sense functional needs, and of establishing a uniform level of training for all to see and experience. For just as inadequate knowledge in CPR can turn a ‘good samaritan’ into an angel of death rather than an angel of mercy, inadequate training can cost the lives of not only the firefighter, but also of the public he or she is sworn to protect.
2.2 HISTORICAL RESEARCH

A. TRADITIONS, HISTORY AND MYTH.

Traditional methods of architectural history offer only some insights and answers to why fire stations are as they are and why other, ultimately more important aspects of firefighting get lost in the haze; in one word, Romanticism. Not in the style and traditions that we as designers and architects think of, but in the literary and historical sense of the term, the way people look at the fireman. Thoughts of burning buildings, babies rescued, of dalmations, of burly men with handlebar mustaches, on antique trucks in odd-looking helmets.

In the history of styles, 'stations' have ranged from the Victorian taste for warm color and rich, historically inspired ornament, to gingerbread gaudy to horizontal lines and bands of ribbon windows following the simple geometry advocated by twentieth-century architects working in the International Style, and everything in between. But these descriptions do not fully explain the change in attitudes that have affected this building type over the years. Fire stations are not the kind of buildings that histories usually treat; their design and requirements have stayed so simple and so constant over the years that they have offered architects little room for creative manipulations of space and form. Because fire stations are usually modest buildings, commissioned by conservative bureaucrats and designed by lesser-known architects, they rarely display the radical innovation found in more symbolically important structures as skyscrapers, houses, churches, or campus buildings.

Fire stations usually reflect existing architectural trends instead of pioneering new ones. The reasons why these buildings look and have looked the way they do have as much to do with social history as they do with architecture; many factors have contributed to their design.
B. ADMINISTRATION

One important influence is the history of the modern fire department and its administration. Firefighting originally was a community obligation—like night watch and jury duty—that was taken over by private groups at the end of the eighteenth century. By the 1850’s, the volunteer fire company had developed into a fraternity or lodge, and the volunteer’s stations were designed to be clubhouses. When municipal governments took control of the fire service after the Civil War, the fire station became a public building and its design and funding reflected political decisions. Some administrations chose to replace the extravagant houses of the volunteer fire companies with uniform, utilitarian structures. Others regarded fire stations as emblems of civic pride. Ever since that time the history of fire stations has been part of the history of public architecture in America.

C. CLUB TO CITY SERVICE

The shift from private to public fire service also gave rise to the fire station’s peculiar program. Once cities began to hire full-time firemen, they had to provide them with a place to sleep. The fire station’s requirements became different from those of any other building: it had to accommodate both men and machines, to include a heavy-duty garage for fire engines and pleasant living quarters for firemen under the same roof.

Combining aspects of a garage, a barracks, and a home, it had to be public and private, institutional and domestic, ceremonial and functional all at once.
As part of the city government, the building somehow had to look more important than the garages where municipal garbage trucks are stored, yet appear less pompous than a city hall and less solemn than a courthouse. These requirements were made even more complicated by the fire station's location and relation to the buildings around it. Fire stations are the most ubiquitous of buildings—until recently, no community, neighborhood, or section of town could do without one. They had to be designed to serve and fit within areas ranging from suburbs to commercial districts, from upscale residential neighborhoods to industrial parks. A fire station jammed between two office buildings in downtown New York City required a design quite different from one set on the town green in rural Connecticut.

D. TECHNOLOGY

Technology has changed the machinery inside the fire station as well as the shape of the building itself. Two important developments in firefighting equipment—from hand power to horse-drawn and steam-driven fire engines in the mid-nineteenth century, and then to gasoline power before the first World War—have had repercussions on the design of fire stations. When compact automobile engines replaced horse-drawn pumper trucks, the fire station shrank, sometimes to the point where it could be disguised as a house in order to 'blend in' with newly developed suburbs. In keeping with increasing worries about the sliding pole, a change in size often brought a change in floor plan from two stories to one. The telegraph, electric light, and the radio all have affected the workings of fire stations; the periods of greatest change seem to have occurred in the 1880's and after World War II. Technology also has determined the materials and construction techniques available to architects, an especially important factor in the last thirty years.
E. IMAGE, MYTH, AND INSTITUTION

The other factor greatly affecting the design of fire stations is the hardest one to define. It has to do with what people think a fire station ought to look like, and how we think about firemen. Beginning with George Washington, himself an active volunteer, firemen have held a special place in American 'mythology'. The British journalist Charles McKay perhaps best put his finger on it when he visited the United States in 1857:

"Whatever the Americans are proud of--- whatever they consider to be particularly good, useful, brilliant or characteristic of themselves or their climate--- they designate, half in jest, though scarcely half in earnest, as an "institution." Thus the memory of George Washington-- or "Saint" Washington, as he might be called, considering the homage paid to him-- is an institution, "sweet potatoes" are an institution, and pumpkin (or punkin) pie is an institution; canvasback ducks are an institution; squash is an institution; and the fireman of New York, a great institution." (3)
2.3 ARCH 404: FALL RESEARCH

This section represents some of the work done in the fall quarter, and although it may not seem to directly relate to the ultimate goals and topic for my thesis, it represents ideas and understandings about an important part of my thesis—the social, behavioral, and operational details of fire departments and their training facilities. Without this information, developing the truly important ideas, goals, and functions of my project would have been impossible.
"THE IMAGE OF YOUTH IN THE FIRE SERVICES:
PERSPECTIVES FROM WITHIN AND WITHOUT"

A RESEARCH REPORT
SUBMITTED TO THE
DEPARTMENT OF ARCHITECTURE

IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS
FOR
ARCHITECTURAL THESIS

BY

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CHAPTER ONE

INTRODUCTION

By any other expression, we all have some familiarity with the fire service, be it from emulation of the firefighter when we were young, by watching them live and work in our community, or by calling upon them when we needed them the most. We may know these firefighters as our neighbors, people that we grew up with, or we may know them only as a uniform driving an ambulance or other apparatus --- these are all images that our minds conjure up when the word "firefighter", "firehouse", or other associative term is mentioned or seen in print. To anyone questioned, various complete or incomplete ideas or images appear, based on one's degree of interest, concern, or involvement with the fire service or those who serve in it.

From this, we may perceive other similar, associated images when more specific firefighting functions are discussed --- an ambulance or rescue squad, an engine company, an aerial or snorkel crew, and now hazardous materials response teams, water rescue teams, and so on. These terms merely break down or classify some areas of the fire service in which a firefighter may specialize, provided he or she has completed the state or departmental training required for a "First Class Firefighter".
Such are some of the immediate or developed images when the topic of the fire service is discussed. However, there are other aspects to the fire service that are not always evident. There are departments within the community that may be staffed strictly by paid personnel, as with a city department. Others may be made up of all volunteers, and still other departments may be a combination of the two. Within that, there are departments of either combination of staffing that may employ another source of manpower: the cadet. The cadet may range in age from 14 to 18 years of age, and may have a classification of cadet, senior cadet, or cadet officer, depending obviously on participation and training.

It is the cadet's training and participation that has inspired this paper and the thesis project beyond that. At once it seems that, given a youth's proven interest in the fire service, a tremendous resource of manpower exists that can only benefit the department and the community in general. However, it also seems that this resource has been seriously under-utilized for any number of reasons.

With the preceding in mind, then, this paper will informally examine the image, function, and general idea of youth in the fire service, as seen from several points of view.
CHAPTER TWO

VIEWS FROM WITHOUT: A DEPARTMENT WITHOUT A CADET PROGRAM

The Pike Township Fire Department is located in the northwestern corner of Marion County, Indiana, which encompasses the city of Indianapolis. For the past ten to fifteen years, Pike Township has been one of the fastest growing in Marion County in terms of both residential and industrial development. Some of the major development includes The Pyramids office complex, the Rock Island Oil Refinery, Park 100 industrial and warehouse complex, and a myriad of residential development throughout the township, with special emphasis around Eagle Creek Reservoir and Eagle Creek Park.

Pike Township also boasts the fastest growing and perhaps best developed fire department in Marion County. It has recently completed a new firestation/headquarters/training facility that is the most comprehensive in the area, has an addition to the facility already planned, and has an additional station proposed for completion in 1989. It employs eighty full-time, paid firefighters and ambulance personnel, a handful of questionable volunteers, and currently has no cadet or youth program. The fire department is continuing to expand its paid workforce according to current growth, and periodically attempts to reorganize and bolster its volunteer ranks with little success. Its minimum age for a firefighter/recruit is twenty-one.

Reasons for the lack of a cadet program relate at least in part to reasons for the lack of a strong volunteer corps. Residential development in the township has been toward the middle- and upper middle-income range for some time. This brings in primarily white collar income families, usually with children, and as a result an extremely limited amount of free time. Correspondingly, the emphasis of the majority of the people is inward towards the family, the home, and on family recreation.

This reduces much of the community-minded spirit or volunteerism, and furthers the negative bias that firefighting is merely another blue collar job that most people would rather pay someone else to do. Another hindrance to a strong volunteer corps is a certain amount of animosity that develops within the paid ranks that the volunteers are less trained, less skilled, less dedicated and less interested (hence less professional) than the full-time, paid firefighter.
Concerning the idea of a cadet program, some of the preceding problems apply, while some do not. At one time there was a youth-oriented Explorer Scouting program, related directly to the Boy Scouts- and Girl Scouts of America councils. However, as time went on and the department switched more from volunteer to paid firefighters, interest and available time adults had to devote to the program waned, and accordingly, interest on the part of the youth also waned, and the program faded from existence.

Another problem preventing a successful cadet program relates directly to trouble experienced in trying to attract adult volunteers. Just as the emphasis of many of the township's residents focused inward to the family or more recreational activity, so, too, are the youth preoccupied with their family, friends, hobbies and sports. In addition, some concern has been noted involving insurance liability, depending on the extent of training and participation on the part of the cadets.

However, one reason that may have been assumed to be an additional factor in the lack of a cadet program was not any animosity between the adult and the youth. On the contrary, the firefighters were more than happy to spend what time they could the youth, teaching them, showing them, or talking with them. Volunteer and paid firefighters alike were simply falling all over themselves to show the kids what they did and what they knew.

This applied both to the Explorers and to youngsters who would visit the stations on fieldtrips. The firefighters just did not feel that they had the time to successfully manage the program. Nonetheless, it should be noted that interest in reviving the cadet program does exist, but is rather sporadic and limited in nature.
CHAPTER THREE

VIEWS FROM WITHIN: A DEPARTMENT WITH A CADET PROGRAM

The Fire Department of Wayne Township is located in the west central part of Marion County, immediately south of Pike Township. Its eastern borders include both Indianapolis and Speedway. Unlike Pike Township, Wayne Township's growth has been primarily industrial and warehouse in nature; growth has been limited, but adds to an already extensive industrial and warehouse base. Some of the major development within the township includes Indianapolis International Airport, Stout Field (National Guard air base), numerous hotels and office complexes tied directly to the airport, and the previously mentioned industrial and warehouse development. New residential development in the township has been limited and is focused on the northern edge. Existing residential development is extensive but older, smaller, and shrinking somewhat---older houses removed are not being replaced with new homes, but with commercial development in many cases. Those homes that are not demolished do not always remain standing long, at least in certain districts within the township. Some districts experience a disproportionately high number of arson fires to vacant structures, again due at least in part to the often destructive nature of youth in general. This also reflects the primarily blue collar population, which is constantly affected by economic fluctuations, layoffs, and the like.

The fire department has experienced similar reductions, not necessarily in personnel or funding, but rather in a condensing of stations, from a high of nine in 1980 to six stations today. It is important to note that five of these stations are less than five years old, replacing smaller, more antiquated stations and overlapping areas of optimum coverage. The sixth station is scheduled for major remodeling or replacement on an adjacent site within two years. For the most part, however, membership has remained stable and strong.

Also, unlike Pike Township, the Fire Department of Wayne Township is entirely volunteer, with the exception of the top five officers, who are paid. Not only does Wayne Township boast one of the world's largest volunteer departments, but also one of the largest cadet programs known. It is important to note, though, that the department plans to be entirely paid within three years.
The Fire Department of Wayne Township also boasts one of the first comprehensive training facilities in the region. Because it was the first such facility some fifteen years ago, it lacks somewhat in flexibility, though a recent addition helps to correct that. In addition, some portions of the facility to go relatively unused due to a lack of a detailed program, both in terms of initial design and current firefighting training. In the opinion of those interviewed, a few minor additions to the facility would round out the training program quite well.

Because the department has been virtually all volunteer, and the fact that the area is primarily blue collar (which is by no means a drawback), there is a stronger sense of community involvement that reinforces both the family focus, but also the sense of devotion to family and department. This has great deal to do with the status enjoyed by both the cadet program and department as a whole, because firefighting becomes a family affair involving father, son, daughter, brother and sister, and so on. In this way, both family and department are strengthened. When the community sees this, it cannot help but to be more supportive.

As described in the introduction, cadets range in age from 14 to 18, classified either as cadet (14 to 16), senior cadet (17 to 18), or cadet officer. As with all adult officers, cadet officers are elected by their peers. Also, it is important to note that eighty percent of the adult district (station) officers are former cadet officers.

Cadet involvement ranges from the obviously mundane 'grunt' jobs of cleaning the station, waxing the apparatus, and rolling hose to rather extensive training in fire suppression and attack techniques, ladder and rescue techniques, and even some 'unapproved' chauffeur training on the engine and aerial trucks.

And although it is prohibited, this extensive training and interest on the part of the cadets to learn everything possible has led to engine companies and aerial truck crews made up entirely of cadets to respond to and begin attacking the fire because no adult firefighters were available. With this kind of in depth training, interest, and dedication in and of the cadets, it is no coincidence that more than sixty percent of the beginning cadets stay with the program to become probationary First Class Firefighters at age eighteen. Wayne Township uses the state guidelines regarding age and training requirements.
Though the cadet program, and the entire department in general, enjoy such a lofty status, minor problems or disagreements do occur. Much like the 'paid vs. volunteer' animosity in other departments, there is occasionally 'youth vs. adult' conflict that arises, although it is much less severe. These conflicts typically center around the idea of 'teenagers doing a man's job' and other similar misconceptions about youth simply getting in the way. The adult firefighters who voice this bias typically did not go through the cadet program and have had either little or some negative experience with the cadets, and tend to be few in number or with little basis for animosity. As indicated, these difficulties are few and rather short-lived. Other difficulties are typical of high-school aged youth. Some join the program for uninformed or misguided reasons, and as time and training go on, they either realize other interests and drop out or dedicate themselves to the fire service. This accounts for the nearly forty percent drop-out rate, a low figure even by adult standards.

Concerning perceived community image, the Fire Department of Wayne Township enjoys high marks throughout, from cadet to adult. Many people in the community have been surprised that the firefighters they watched worked were actually volunteer and cadet--- they presumed that they were paid, professional firefighters. One problem, however, has seen brought up by the residents in close proximity to the training facility. Neighbors have voiced some displeasure with the noise and artificial smoke created in training sessions. Though Pike Township's facility is even closer to nearby homes, because it is a paid department, training sessions can be scheduled during normal business hours, when residents are at work or in school.

However, since Wayne is currently all volunteer, training sessions normally occur in the evenings or on weekends-- when nearby residents are home. The situation has improved greatly since the station at the training facility was relocated. Another improvement in relations came when the department discontinued use of the county civil defense sirens atop each station as a primary call system for emergency runs. For several years now all members not 'on station' have been required to monitor their radios, although primary response is meant to be from crews 'on station'. Despite these shortcomings, through open houses, community education via public relations programs and personal contact from members, cadets, and their families keeps community support and department image high throughout the township and surrounding area.
CHAPTER FOUR

SUMMARY. CONCLUSION

SUMMARY

The preceding discussion in this paper has informally examined two different fire departments from the inside and out. In this discussion, we have looked at the unique aspects of each one’s operation, function, future, and reasons for all. We have seen particular problems and their respective self-solutions, strengths that may soon become weaknesses, all seen from the inside and out. But the important thing we have also seen is two very unique, very dedicated departments openly discussing these strengths and weaknesses about their respective personnel and methods, with special attention to how youth have or have not been involved with their growth. And they have done so with an honest hope that in one case, youth may one day be an integral part of their future, as in the case of Pike Township, and that in the other case youth will remain an integral part of their future as they make some rather large changes in their methods.
CONCLUSION

Emergency Services, specifically the fire department and emergency medical service within it, are a basic need of every community, every person young and old. Though we all hope we will not have to, we all may need to make that urgent call, in hope that those who respond to the call will be capable, competent, well-educated and well-equipped enough to remedy the problem without delay, no matter what. At the moment we make the call, we may have little or no idea who will receive the call, how old he or she is, or if they are paid or volunteer. And at that particular moment we may not even care. However, once help arrives and we collect our wits, we may notice many things: the uniform, the face, the hands of the technician, the equipment they use and the manner in which they use it—-clumsily or with smooth confidence and speed. Depending on the details we observe, we may begin to wonder about just who this person putting out the fire or rendering medical attention is, how old he is, why he or she does it.

However, provided the assistance is quickly, skillfully, and 'professionally' rendered, does all that really matter? I think not. The point is, it matters not how old or young a firefighter or technician is, or whether they are male or female, black or white. What does matter is the quality of service provided; that whether the firefighter or medic, be he (or she) eighteen or eighty, that he is the best and most professional that he can be. Perhaps something more, but certainly nothing less. Let us hope that this is the case when we need to make that next urgent call to them in the middle of the night.
CHAPTER FIVE

ARCHITECTURAL IMPLICATIONS

The following is a general discussion and outline of ideas, or more accurately, 'Architectural Outline' that have resulted from the informal research for this paper that may or may not have been made clear through its presentation.

It is my intent to address and, hence, provide possible solutions for these implications and ideas through the design process. It is my opinion that these implications can only be successfully addressed, refined, and solved through the design process of what I feel is a comprehensive emergency services training facility.

The central architectural issues that have become evident run contrary to the preconceived notions on which the research was based, hence conclusions and implications resulting do not support the suppositions, specifically the ideas relating to youth and their involvement.

As training is completed and the cadets near age eighteen, they are treated simply as a separate (yet somewhat restricted) division within the department. For this, and obviously pragmatic, financial reasons, no special 'architectural' gestures are made other than sharing of facility space and necessary cooperation in space use and/or scheduling. There are no major image delineations, with the exception of blue helmets and a 'cadet' designation on their badge.
Therefore, the architectural implications or issues become more programmatic or pragmatic in nature, and do not delineate from youth to adult. Hence, these issues become manifest in a few words or expressions which may seem vague in nature, such as:

* Completeness: all issues or areas of training (hence service) addressed by the department should be completely and effectively addressed within the facility. Fitness and wellness, as well as recreational components should be well addressed.

* Context: the facility should reflect, to some extent, its surrounding urban or suburban character, both of buildings and natural surroundings. The facility should be well buffered from its neighbors, however, so as to not interfere with or offend them during its operation.

* Efficiency: of form, of plan, of site use and facility operation as a whole.

* Elegance: functional and pleasant to be in or look at, but pleasing without being elaborate or gawdy: clean, simple, yet enjoyable. This elegance is also manifest in the idea of dignity through the form, its detailing, its function. Again, no games.

* Detail: as it relates to completeness, and as it relates to idiosyncrasies of a particular stress upon the facility itself. To be an effective facility, it must last, burn after burn after burn.

* Flexibility: the facility must not only be complete, but it must also allow for rearrangement and expansion that will occur as time goes on, services change, and equipment charges.

Again, these are (some of) the architectural implications that I intend to address through the design process in the next few months.
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   Chief Richard Pohlman, Jr.

   Assistant Chief Tim Faulk

Fire Department of Wayne Township:
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   District Four Lieutenant James Soule

   Former District Ten Lieutenant
   Randall B. Merritt

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3. PROGRAM
PRELIMINARY PROGRAM
FOR AN
EMERGENCY SERVICES
TRAINING FACILITY

IN
INDIANAPOLIS, INDIANA

BY
MICHAEL D. GORDON

THESIS 1988
PROFESSOR PAUL LASEAU

SPRING 1988
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INTRODUCTION

This facility program is a small but integral part of my thesis project, as described in my original thesis proposal and research paper. Further, it is intended to act more as a guide than it is a list of required spaces and square footages. For as with nearly any project of significant size, with different departments, locales, or organizations, various items are subject to change.

It was intended when first written that this program, in its preliminary stages, would offer some ideas which would initiate further suggestions and responses. As one will see through the design process, it has indeed.
3.1 Building Criteria

ADMINISTRATION/EDUCATION BUILDING

The primary function of such a facility is the classroom training of firefighter trainees. Field practice is also a major part. However, such a facility can also benefit the community which it serves in more ways than just educating its firefighters; this facility can educate the public as well. The U. S. National Commission on Fire Prevention has determined that nearly 70% of all fires are caused by human carelessness, while only 5% of the national firefighter budget is made available for public education.

The inclusion of public education into the program adds a new dimension to the scope of user variety as a whole. By including this in the program, the administration/education building thus more directly serves the public, as well as trainees, staff, administrators, in-house and visiting instructors, and so on, by making all people more aware of fire safety and prevention.

As primary users, the firefighter trainees will be educated in the most contemporary firefighting methods, as well as emergency medical training. This may include classroom or large group lectures, hands-on labs, field training, chauffeur training, and so on. Extensive physical training is also fast becoming a requirement nationally, and thus becomes a recommended part of any training facility program.

Hence, the administration/education building becomes the functional center of the complex, as well as the most important and prominent building on the site.
FIRE STATION

The fire station is the primary symbol of any fire department in any community. It is an exhibition of the firefighters, their equipment, and services. As a part of a training facility it also takes on other roles; it becomes a demonstration model for all trainees, as well as a source of apparatus and equipment for training purposes. It also becomes a model for all visitors who see it, whether they are instructors in other communities or the kid from down the street.

Because of its primary function (housing the equipment) it also takes on the added responsibility of maintenance of this equipment, so it becomes a hybrid instead of just another fire station. However, it must never lose that ability to function as a fire station, or it loses its primary purpose as an educational tool. In addition, the fire station lends itself well to the function of a symbol or gateway to the complex, as well as being able to efficiently and quickly respond to the nearby community's need for fire protection.

Nonetheless, it is of primary importance that the fire station be efficient, so that firefighters (or trainees) may get to their duty as quickly as possible. This is directly reflected in the time it takes to get the equipment in service (turn-out) and more directly in response time.

To further this idea of efficiency, the fire station should have the ability to analyze the emergency prior to the apparatus leaving the station.

This could be accomplished through a watch station computer system which would provide detailed information on the structure in question.

Elements of the fire station should include an apparatus room with adjoining storage and workshop areas, watch station, dayroom and other staff areas, offices, as well as firefighters quarters, exercise and support areas.
PRIMARY DRILL TOWER

The primary drill tower is by its very nature the most physically dominant structure on the site due to its height alone. The tower also becomes the most common and perhaps second busiest structure in any training program because of the variety of training experiences that can be provided for. It gives the trainees experience in the use of ladders, ropes, stairs, elevator shafts, hose attacks, and a variety of rescue and firefighting conditions common in multi-story buildings.

The tower should have a minimum height of 99' (about six stories) to exceed the reach of most aerial ladders. Staying below 100' eliminates the added expense of aircraft warning lights at the top of the structure. The tower should also have enclosed smoke rooms and maze areas for rescue simulation, a parapet roof with chop-out panels for rope and fire venting training, and window openings to further rescue simulations and training. In addition, it should have working sprinkler/standpipe connections for safety and training purposes, and should be surrounded by hard surfaces (concrete) so as to aid in varying the approach and attack techniques.

In general, the tower should provide trainees with a variety of maze and other rescue conditions, smoke simulation or similar breathing chamber, a variety of access conditions (stair, elevator, window, door), and should provide for a minimum of equipment storage, as well as an air scrubber to satisfy E. P. A. pollution control requirements and reduce the unpleasant effects of smoke training on the immediate area.
STRUCTURAL FIRES BUILDINGS

These facilities include the commercial, office, residential and warehouse facilities, etc. These are the buildings in which the trainees get their most extensive experience in fire and rescue simulations.

These buildings should be constructed primarily of non-combustible materials with an attached portion to constructed of replaceable flammable panels, partitions, and furnishings. The primary structure (columns, beams, load-bearing walls, etc.) of each of these buildings should also be protected with fireproofing materials, such as fibrefrax, to help extend the life of the buildings. In regards to the flammable partitions and furnishings, with little or no effort, the community and private sector could and should be enticed into donating materials, all to increase community education and participation, as well as reduce overall operating costs.

The commercial/office/warehouse building will simulate conditions of retail shops, open offices, hotel suites, warehouse and factory spaces, lobby spaces, and so on. The purpose of this building is to duplicate real fire and emergency situations with a variety of configurations capable of being constructed with each different 'burn.' A variety of attack approaches may also be simulated in terms of alleys, side streets, major thoroughfares, etc. For practice and safety reasons, inclusion of a manually-controlled sprinkler system is adviseable.
The residential burn building will simulate a freestanding single-family dwelling and an apartment unit in a suburban setting with barriers commonly experienced, such as landscaping, parked and garaged cars, utility poles and lines and so on. Again, for safety and simulation reasons, a manually-controlled sprinkler system should be considered, at the very least to prevent training catastrophes from occurring.

These buildings will "burn down" repeatedly, with each interior configuration and fire set different from the previous. This will allow trainees to take the call, respond, assess the situation, and perform rescue and firefighting techniques without "memorizing" the building configurations, which is essential to realistic practice and performance of their duties. With the inclusion of a manually-controlled sprinkler system and an instructor following each team in, training can be well supervised and unnecessary risk to the trainees can be avoided.
RESCUE AND HAZ MAT AREAS

These areas are outdoor spaces but include built-in items such as manholes, culverts, rail tracks for tanker and boxcar, and curbing and paving for vehicle rescue and fire simulations. There are also areas for setting controlled pit fires, natural gas leaks, brush fires, and hazardous materials incidents without subjecting trainees or the environment to unnecessary risk. This can be done with paving, berms, and a drainage system to an on-site oil-and-water separation pit. This separator is an E. P. A. requirement.

CHAUFFEUR TRAINING

This area should include several thousand linear feet of paving, preferably reinforced concrete, that may or may not be combined with the access to each training site or burn building. Chauffer trainees will negotiate, among other things, cul-de-sac turnarounds, alley situations, s-turns, straightaways, traffic simulations, and foul weather conditions such as slick pavement, mud, and so on. These situations will prepare trainees for chauffer licensing.

MISCELLANEOUS PAVED SURFACES

All training buildings will or should be surrounded with paving, to facilitate as many attack approaches as possible to simulated in training. These include various street conditions discussed above, as well as specific building-type peculiarities, such as loading docks, parking lots, entries and so on.
### 3.2 Space Summary

**ADMINISTRATION/EDUCATION BUILDING**

<table>
<thead>
<tr>
<th>Room</th>
<th>Area (sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception</td>
<td>200</td>
</tr>
<tr>
<td>Restroom</td>
<td>80</td>
</tr>
<tr>
<td>Chief's Office</td>
<td>200</td>
</tr>
<tr>
<td>Assistant Chief's Office</td>
<td>200</td>
</tr>
<tr>
<td>Instructor's Offices (8@150)</td>
<td>1200</td>
</tr>
<tr>
<td>Open Offices/Clerical</td>
<td>1200</td>
</tr>
<tr>
<td>Conference</td>
<td>300</td>
</tr>
<tr>
<td>Men's Restroom</td>
<td>125</td>
</tr>
<tr>
<td>Women's Restroom</td>
<td>100</td>
</tr>
<tr>
<td>Copier Room/Storage</td>
<td>200</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>4805</strong></td>
</tr>
<tr>
<td>Lecture/Auditorium</td>
<td>4800</td>
</tr>
<tr>
<td>Exhibit/Museum</td>
<td>2500</td>
</tr>
<tr>
<td>Library</td>
<td>2000</td>
</tr>
<tr>
<td>General Classrooms (4@600)</td>
<td>2400</td>
</tr>
<tr>
<td>First Aid Classroom</td>
<td>600</td>
</tr>
<tr>
<td>First Aid Equipment Storage</td>
<td>200</td>
</tr>
<tr>
<td>Building Tech Lab</td>
<td>1200</td>
</tr>
<tr>
<td>Tech Lab</td>
<td>1200</td>
</tr>
<tr>
<td>Investigations Lab</td>
<td>1200</td>
</tr>
<tr>
<td>Demonstration Lab</td>
<td>3200</td>
</tr>
<tr>
<td>Darkroom</td>
<td>600</td>
</tr>
<tr>
<td>Prep Room/Storage (4@300)</td>
<td>1200</td>
</tr>
<tr>
<td>Trainee Lounge</td>
<td>1000</td>
</tr>
<tr>
<td>Kitchen/Vending</td>
<td>200</td>
</tr>
<tr>
<td>Maintenance/Mechanical</td>
<td>1000</td>
</tr>
<tr>
<td><strong>Sub-total (Education)</strong></td>
<td><strong>23,300</strong></td>
</tr>
<tr>
<td><strong>(Administration)</strong></td>
<td><strong>+4805</strong></td>
</tr>
<tr>
<td><strong>Mechanical/Circulation (35% of Bldg)</strong></td>
<td><strong>+9837</strong></td>
</tr>
<tr>
<td><strong>Total (SQ. FT.)</strong></td>
<td><strong>37,942</strong></td>
</tr>
</tbody>
</table>
**FIRE STATION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus, 4 Bays (Maintenance: 2)</td>
<td>6800</td>
</tr>
<tr>
<td>Watch Station</td>
<td>250</td>
</tr>
<tr>
<td>Chief's Office</td>
<td>300</td>
</tr>
<tr>
<td>Conference</td>
<td>400</td>
</tr>
<tr>
<td>Men's Restroom</td>
<td>80</td>
</tr>
<tr>
<td>Women's Restroom</td>
<td>80</td>
</tr>
<tr>
<td>Lobby/Waiting</td>
<td>400</td>
</tr>
<tr>
<td>Lieutenant's Offices (3@150)</td>
<td>450</td>
</tr>
<tr>
<td>Fire Prevention/Inspection Office</td>
<td>300</td>
</tr>
<tr>
<td>Downstairs Study/Station Records</td>
<td>450</td>
</tr>
<tr>
<td>Equipment Storage</td>
<td>600</td>
</tr>
<tr>
<td>Equipment Clean-up/Decontamination</td>
<td>300</td>
</tr>
<tr>
<td>Hose Tower</td>
<td>400</td>
</tr>
<tr>
<td>Emergency Generator</td>
<td>200</td>
</tr>
<tr>
<td>Outdoor Storage</td>
<td>200</td>
</tr>
<tr>
<td>Kitchen</td>
<td>300</td>
</tr>
<tr>
<td>Dining</td>
<td>600</td>
</tr>
<tr>
<td>Dayroom</td>
<td>600</td>
</tr>
<tr>
<td>Exercise</td>
<td>750</td>
</tr>
<tr>
<td><strong>Sub-total (Downstairs)</strong></td>
<td><strong>13,460</strong></td>
</tr>
<tr>
<td>Dormitories (4@600)</td>
<td>2400</td>
</tr>
<tr>
<td>Study</td>
<td>300</td>
</tr>
<tr>
<td>Men's Locker</td>
<td>400</td>
</tr>
<tr>
<td>Women's Locker</td>
<td>200</td>
</tr>
<tr>
<td>Lieutenant's Dormitories (4@225)</td>
<td>900</td>
</tr>
<tr>
<td>Chief's Dormitory</td>
<td>300</td>
</tr>
<tr>
<td>Men's Locker</td>
<td>300</td>
</tr>
<tr>
<td>Women's Locker</td>
<td>200</td>
</tr>
<tr>
<td>Storage</td>
<td>400</td>
</tr>
<tr>
<td>Attic/Future Dormitory</td>
<td>3000</td>
</tr>
<tr>
<td><strong>Sub-total (Upstairs)</strong></td>
<td><strong>8600</strong></td>
</tr>
<tr>
<td><strong>(Downstairs)</strong></td>
<td><strong>+13,460</strong></td>
</tr>
<tr>
<td><strong>Mechanical/Circulation (25%)</strong></td>
<td><strong>+5515</strong></td>
</tr>
</tbody>
</table>
| **Total (SQ. FT.)**                             | **27,575**  | 35
## BURN STRUCTURES:

### RESIDENCE/APARTMENT UNIT

<table>
<thead>
<tr>
<th>Room</th>
<th>Area (sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage</td>
<td>625</td>
</tr>
<tr>
<td>Living</td>
<td>300</td>
</tr>
<tr>
<td>Dining</td>
<td>200</td>
</tr>
<tr>
<td>Kitchen</td>
<td>200</td>
</tr>
<tr>
<td>Bedrooms (2@200)</td>
<td>400</td>
</tr>
<tr>
<td>Bathroom</td>
<td>150</td>
</tr>
<tr>
<td>Storage/Attic</td>
<td>400</td>
</tr>
<tr>
<td>Balcony</td>
<td>200</td>
</tr>
<tr>
<td>Basement</td>
<td>700</td>
</tr>
<tr>
<td>Mechanical/Circulation</td>
<td>+495</td>
</tr>
<tr>
<td><strong>Total (SQ. FT.)</strong></td>
<td><strong>3795</strong></td>
</tr>
</tbody>
</table>

### COMMERCIAL/INDUSTRIAL STRUCTURE

<table>
<thead>
<tr>
<th>Room</th>
<th>Area (sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobby</td>
<td>300</td>
</tr>
<tr>
<td>Offices (5@150)</td>
<td>750</td>
</tr>
<tr>
<td>Restroom</td>
<td>80</td>
</tr>
<tr>
<td>Elevator</td>
<td>80</td>
</tr>
<tr>
<td>Fire Stair</td>
<td>80</td>
</tr>
<tr>
<td>Hotel Suite</td>
<td>450</td>
</tr>
<tr>
<td>Factory Area</td>
<td>2000</td>
</tr>
<tr>
<td>Warehouse Area</td>
<td>3000</td>
</tr>
<tr>
<td>Mechanical/Circulation</td>
<td>+1348</td>
</tr>
<tr>
<td><strong>Total (SQ. FT.)</strong></td>
<td><strong>8088</strong></td>
</tr>
</tbody>
</table>
PRIMARY DRILL TOWER

Enclosed Burn Room.............................500
Maze Areas (4@500)............................2000
Breathing Chamber............................500
Elevator Shaft..................................80
Enclosed Fire Stair..............................100
Exterior Fire Stair..............................100
Storage...........................................500
Air Scrubber.....................................100

(6 Floors @ 2275 SQ. FT.)......................13,650
Mechanical/Circulation.........................+2000
Total (SQ. FT.)..................................15,650

RESCUE AND HAZ MAT AREAS

(6 AREAS @4000 SQ. FT.)

1. Railroad Tanker and Boxcar Area

2. Tanker Truck and Tractor/Trailer,
   Manholes, Culvert Pipe, Burn Pit

3. LP Gas Simulation Area

4. Open Haz Mat Storage Area

5. Vehicle Extrication Area

6. Brush Fire/Open Burn Area
WATER RESCUE STAGING

(2 Areas@ 1500 SQ. FT.)

Open Area/Beach.................................................1000
Dock.................................................................500

1. On River
2. On Pond

CHAUFFER TRAINING/DRIVING RANGE

Acceptable Paved Surface.....................@250,000

PARKING

Public
Staff
Students

Acceptable Paved Surface
(@200 Spaces).................................................@50,000

TOTAL PAVING AREA

Acceptable Paved Surface, In SQ. FT.
(Drives, Access, Parking).................@400,000

TOTAL BUILDING AREA

Approximate Buildable Square
Footage.................................................................92,975
3.3 Site Data

WHITE RIVER PARK
Development Authority
and Five Resource Areas

1. 1000 acres—North end of County
2. 200 acres—Around Art Museum
3. 250 acres—Downtown Urban Park
4. 850 acres—South Central Marion County
5. 2000 acres—At southern most part of County

White River Park Development Commission
4. DESIGN
The following represents a select group of sketches that chronologically follows my design process through my thesis, including additional design schematics after final thesis juries for the administration/education building, and expresses some of the goals, ideas, and themes that I have had or have examined in the past year.

Again, this represents process over final product; an approach to examining needs and functions rather than a scheme or style to design with.

And with the preceding in mind, let the following sketches show some of the ideas that have maintained themselves in my mind. A key is provided below to explain functions on the site schematics that follow. Hopefully all other abbreviations will be self-explanatory.

A. Administration/Education bldg.
B. Burn area: Volatile materials storage
C. Commercial/industrial burn bldg.
D. Docks: water rescue
F. Flammable liquids burn area
G. (LP) Gas burn area
H. Hazardous Materials burn area
O. Oil/water separator for haz mat burn areas
R. Residential burn bldg.
S. Station/maintenance bldg.
T. Tower: smoke/training bldg.
V. Vehicle rescue area
4.1 Site Schematics

These sketches represent an evolution of initial design as it addresses both the general and the specific: overall site schemes and what specific functions should be included and where each should go.
FACTOR/G

- Station to roadway
- Opposing burn blds.
- Added bldg to lake (enjoyment)
- Burn blds to sml. pond (drifting)
- Hot mat sites to themselves to O/W separator away from other areas (extra smoke)
- Openness of remainder of site

Slight closure of open box (resulting triangle)

ONE
1-12-88

TWO
1-12-88
FACTORS

- Separation of all functions
- Axis between "hands-off" buildings ... path, arc
- Maint. bldg as controller of "burn" functions
  ... proximity

Direct link from fronts to back (dock)

- Pulling "hands-off" bldgs closer
- Maint. as separate bldg at end
  - Also an Educ. bldg
Station closer to road?
Ed. bloc providing/project q
an entry/front to axis
Stepping up visually (slight)

- Station as 'hands-on' bloc
- Opening back of site - to additional/possible other functions
- Tower as 'hinge' to 'hands-on' functions
- Build up & build down (in scale/size) of burn blocks
FACTORS

- Station as hands-on lab.
- Hands-on functions as double-loaded street.
- City grid.

- Station opposing hands-on functions.
- Adjacent as receiver to entry -- atop slight hill.
- Tower at opposite end of station, on axis.
FACTOR S

L' shape of 'hands-on' functions
still saying: open box
Off-axis circulation
varied views of A/E
vague then strong
views of A/E

On-axis circ. to A/E
4.2 Preliminaries

These sketches represent design considerations and process leading up to the Thesis Juries of April 19-21, 1988, and what were to be my final boards. However, as noted on page 64 of this book, additional design was necessary to approach the intended design solutions. This section addresses the Administration/Education bldg. & Firehouse.
Relating functions/spaces within a certain area...
4.3 Development

This segment represents development of the Administration/Education building and facade studies of the firehouse after final thesis juries. Look to the slide portfolio (check with the department office or the library if not contained herein) for the base to this development.
reflects plan in balance order

\[ A^2 = B^2 + C^2 \]  

firearms reality 

site survey

\( A/ ceased build wind-off \)

training
Library & Museum

 altre labe

 classroom zone

circulation hub

demo
def zone
tower?

more zones accessing directly hub... greater interaction between staff, student & public, regardless of exterior geometry

entry

 circ. hub

 lib.

 student staff

 lounge switch

 circ. hub

 museum

 sharp lines or curve?
a closer relationship between these blocks
the 45' Shift Returns.

can continue grid layout (expansion)

within the amorphous confines of water forms

museum

ofc

aud.

derm?

expansion

lib.

can expand

exp

museum

ofc

expand

tower pushed forward (entry/tower) or must disappear - becomes awkward
closer relationship between firehouse and station

entry axis DEFINITELY becomes just that...
- winds off on the left (classes) simulation
- hands-on on right (burn pads)
- allows clausus access to rest of site
- fronts of rear access?
- Demo lab
- Rear!
- Insightly garage door access
- Also allows a rear service courtyard
- Allows additional site access. Side of site is visually cut off, but accessible.

Intuitively...
this is it.
- Time to explore.

- 3/4 - - - - -
  1 1 1 1 1 1 1

- rhythm... wants to be
observation tower?

glass tower / brick outline

'sea' light

lowered notch to reduce scale

'open' bell tower / brick outline (above glass cubes)
sky light as before
- to emphasize inner circulation
- spine
- more natural light inside building

light (glass) tower
- reflect form/idea/symbol of hose tower
- more inward
- as with firehouse
- to emphasize inner circulation core
- to reflect functional separations (site to site)
- as with firehouse

front elev

entry
- canopy

side elev.

classrooms
- labs

tower
- corridor
ELEVATION: TYPICAL CLASSROOM
NO SCALE
SAME VIEW AS BELOW

TYPICAL FOLDING PARTITION
CEILING LINE

TYPICAL CLASSROOM

WALL SECTION: TYPICAL CLASSROOM
NO SCALE
5.1 GENERAL CONCLUSIONS

With the conclusion of this project, I am also completing my undergraduate studies in architecture, though this is by no means 'the end.' For even though I may never go on to graduate studies, I do not feel that my learning will, has, or should come to an end, for this thesis does not in any way represent a complete design philosophy; only hopes, goals, ideals that I hope I can hold and develop, as I develop.

My intentions going into thesis were in many ways the loftiest of delusions, the most common-sense of notions. My only true intention, though, was to come as 'full-circle' with the project and my design tendencies (or goals) as possible, and in that respect, I believe that the arc has just begun.

In working with this project I have an increased understanding of taking a design idea 'full-circle' through a detailed evolution and arriving at one (highly questioned) solution. And if I may borrow from another thesis student, it is my contention that the process and means are of importance and not the final product. This does not mean that concepts are more important than the finished building, but that without the means there is no end. And afterall, is not the College of Architecture and Planning the means by which we learn to develop our ideas, rather than just learn one?
5.2 DESIGN CONCLUSIONS

Upon arriving at this point in my thesis project, and in reflecting on my work experience to date, I have suddenly realized one thought: that 'design' does not end with a completed set of drawings, or with a signed contract, or accepted bids. 'Design' for each project does not even end when the last brick is laid, when the last piece of trimwork is attached, the last eave is installed. The simple fact is, 'design' never ends, at least not in the mind of the truly dedicated designer or architect. For no matter how old the project, how long ago it was occupied, or how long ago it was torn down, the truly dedicated designer always looks at ways his work could be improved, whether it would better satisfy or serve the client or the user, but most often to satisfy himself. For whether it is a cause or an effect of our own fragile ego, we always will see ways to improve our work, or better yet, our design skills, but only if we are truly dedicated.

I only hope that I am, and have been.

With the preceding in mind, then, I offer some conclusions that really are meant as advice when dealing not only with this project type, but with any project in particular.

SPACE. What quality of space is appropriate, and how does it vary from space to space? How does the transition occur?

STRUCTURE. Is there an appropriate or optimal system for your building? What has worked well in the past?

CIRCULATION. As with structure, is there a means of circulation that is inherent in your building type? Does your means of circulation make sense?

FORM. Examine the forms that you believe have been most successfully used in the building type. Is there something better, or (again), are there even the smallest of improvements that could be made? Does it appropriately address scale, material, function?

LIGHT. Examine the ways in which the best ones use light, both natural and artificial. Ask both yourself and the user what is best.

IMAGE. Does the image of the building reflect the image of the user, in a positive or negative manner? Again, ask both sides.

GRID. Can the 'grid' be used to organize or accentuate not only the building, but the spaces within and without? How does it affect the factors above?

UNDERSTANDING. Understand not only the project in general, but also its users as well. Understand the spaces within, and the way that they and their users function, taking note of any obvious problems, especially ones that the user points out. Never assume anything, unless it is that this project (type) is to be your last.
There are many other factors in what I would call 'successful design', too numerous to go on listing here. The question is, are the ones used on any one project appropriate at that point in time, the answer to which is totally subjective. Through the course of this project, I have chosen to address certain design ideas in a purely subjective manner, relying less on design dogmas from outside sources, and more on opinions and feelings of my own. It is through the 'outside sources', the books, the teachings, the professors and the students that I arrive at these feelings, that what I am doing above all makes sense. For it is only through the assimilation of all this that there is diversity within unity.
6. SLIDE PORTFOLIO
7.
THESIS
BOARD
8. SELECTED BIBLIOGRAPHY
SELECTED BIBLIOGRAPHY

INTERVIEWS:

Pike Township Fire Department:
Chief Richard Pohlman, Jr.
Assistant Chief Tim Faulk

Fire Department of Wayne Township:
Assistant Chief Neil Huff
District Four:
Lieutenant Robert S. Crouch, Jr.

Master Firefighter James Soule

District Ten:
Former Lieutenant Randall B. Merritt

Fire Service Institute, University of Illinois,
Champaign/Urbana:
Gerald Monigold, Director

BOOKS:


MAGAZINES:


Firehouse Magazine, Firehouse Communications, Inc. (various issues), New York.


This section represents a small but integral part of the resources considered vital to any successful design for this project type and integral to my design process in this thesis. Additional materials of this type could also prove useful to future projects of this type. However, finding these materials may prove as tedious to others as it has to me, if not worse. These items include, but are not limited to, the following:

NFPA 1402:
Guide to
Building Fire Service Training Centers
1985 Edition
National Fire Protection Association, Technical Committee on Fire Service Training

FACILITY PROGRAMS:
Illinois Fire Service Institute Training Facility
University of Illinois, Champaign/Urbana Campus, Urbana, Illinois

Pike Township Fire Department Training Facility, Indianapolis, Indiana

Fire Department of Wayne Township Training Facility, Indianapolis, Indiana