Feasibility and Programming Study For Bloomington Fire Stations

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April 4, 2012

Mr. Michael S. Kimmerling
Fire Chief
City of Bloomington
310 N. Lee Street
Bloomington, IL 61701

RE: Feasibility and Programming Study for Bloomington Fire Stations

Dear Mr. Kimmerling,

Five Bugles Design, a design studio of ADG, LLC was retained to develop and study various options each of which is oriented toward the long-term improvement of the Bloomington Fire Department's Facilities.

Thank you for your assistance in the preparation and development of this Study by providing our firm with relevant data, pertinent background information and critical comments. Please convey our gratitude to Deputy Fire Chief Les Siron and all other participating firefighters for their insights. Their assistance was invaluable.

The primary objectives of Study are as follows:

1. Evaluate the present five fire station locations configuration and provide recommendations regarding possible reconfiguration based upon the results of the property/building assessments, the current Insurance Service Office (ISO) recommendations regarding station placement, and the community growth potential and community comprehensive plans.

   Information required for this evaluation includes the following:

   City of Bloomington Comprehensive plan
   City of Bloomington Transportation plan
   Bloomington fire department station response maps
   Bloomington fire department NFIRS response history information

2. Determine the nature and level of area jurisdictional relations with surrounding emergency services organizations and how to maximize the expenditure of taxpayer dollars for fire/EMS response while minimizing response times throughout the response coverage areas.

3. Conduct property/building conditions assessments for all 5 fire stations with regard to present and future needs, governing OSHA, state, city and ADA rules and requirements, and the station ability to conform to these requirements (Consultant will need to review original building plans for each fire station.

4. Confirm service deficiencies at each station and justify the needs for additional space, if any.

5. Develop rough plans, budget planning cost estimates for any construction, remodeling or building expansion opportunities found.

6. Conduct a programming exercise for each station to determine the existing square feet totals and the need for increased space for present and future needs and community expectations for delivery services.

7. Evaluate existing fire department training facilities and make recommendations for physical improvement.

We believe that, after reviewing the attached document, you will agree that those primary objectives were achieved.

Thank you for allowing us to serve the City of Bloomington.

Sincerely,

Five Bugles Design

Steven A. Gausman, AIA, NCARB
Owner • Principal

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Executive Summary

Background

The city of Bloomington retained Five Bugles Design, a division of ADG Architects, Eau Claire WI, to study its fire station locations and station deficiencies. Our staff conducted architectural programming sessions at each station; confirmed the building envelope, size, and service deficiencies. In addition we evaluated the fire departments existing training facilities and made recommendations for physical improvements. The unoccupied 2008 station located at 2602 Six Points Road was not included within the scope of this study process.

Over several meetings Steve Gausman and Ed Mishefske met with department staff, toured facilities, conducted architectural programming sessions, reviewed response data, and developed recommendations and cost estimates.

Findings and Recommendations

Station Location Finding

Bloomington is adequately served by its five stations in their current location with the exception of the College Ave area N.E. of station #3. Response times to that area can reach 8-10 minutes and exceed the recommendations of NFPA 1710. It is our recommendation that Bloomington consider the addition of a new station to serve this area or reach an acceptable inter-governmental agreement for service.

Estimated cost for a new 12,000 S.F. addition at $200/S.F. would be $2.4 million construction cost; not including site acquisition costs.

Station Analysis and Recommendation

Station #1
Constructed in 1973, station #1 occupies a one block site near downtown. The station location is excellent, but the station suffers from numerous problems:

- An inadequate HVAC System, including no vehicle exhaust.
- Lack of fire fighter classroom training, and wellness areas.
- Crowded dormitory/shower space and lack of gender equity.
- Lack of adequate storage space.
- At nearly 40 years old, the station is nearing the life expectancy for building systems.
- Lack of Fire Suppression Sprinkler System.

It is our recommendation to consider relocating the fire administration staff to a new location, whether it would be an on-site addition (option 1) or a possible off-site location (option 2 with estimated space need of 5,000 S.F.), thus allowing renovation of the existing lower level into firefighter classroom training, distance learning production studio/classroom, and wellness center. The upper level requires a complete phased renovation; including all building systems (windows, HVAC, electrical, plumbing, fixtures, sprinkler system), and a building addition to correct dormitory/shower crowding and gender inequity issues.

- Option 1 - Estimated Cost for Administration on-site Addition:
  At 5000 S.F. @ $200 S.F. + Renovation: $3.7 to $4.3 million
- Option 2 - Estimated Cost: $2.7 to $3.3 million construction cost (relocating administration off site.)

Station #2
Station #2 has been plagued with design and construction problems since opening in 1999. The station lacks both a vehicle exhaust system and automatic fire suppression sprinkler system and we recommend both issues be addressed in the near future.

Unfortunately, given the pressing needs of a future station, and priorities at station #1, #3, and #4 it is our recommendation that Bloomington continue to address the numerous other problems outlined in the body of this report through maintenance projects.

Estimated Costs:
Vehicle Exhaust: $10-15,000 per vehicle drop
Automatic Fire Suppression Sprinkler System: $30,000

Station #3
Station #3, located at 2301 Empire Street was formally a two company station serving both the community of Bloomington and the airport. With the completion of station #5, it no longer provides protection to the airport. With the exception of the noted College Ave area, the location of station #3 is good, with a controlled intersection off of Empire.

Station #3's building shell is in good condition, but like station #1 the building suffers numerous problems.

- An inadequate HVAC system, including no vehicle exhaust.
- Lack of sufficient fire fighter classroom space with no distant learning capability.
- Lack of adequate kitchen and food storage space.
- Lack of a dedicated wellness area.
- Crowded dormitory/shower areas with no gender equity.
- As with station #1, at forty years old the station is nearing the life expectancy of its building systems.
- Lack of automatic fire suppression sprinkler system.

Five Bugles recommends a phased construction project to upgrade station #3 to a state of the art, two company station. Site constraints will allow two 40' x 60' additions; one in front of the station and one to the rear of the station. The additions, along with a complete renovation of the current interior would correct all deficiencies listed and serve Bloomington for decades to come.

Estimated Cost: $2.2 to $2.6 million construction cost

Station #4
The location of station #4 was universally viewed as very good. Unfortunately, the site size is extremely limited, allowing for little room to address current deficiencies through building expansion. Problems include; no space to meet with public visitors, crowded dormitory/shower area with no gender equity, no staff classroom training area, an inadequate kitchen, inadequate EMS storage, and lack of a dedicated wellness area. Station #4 also suffers from an inadequate HVAC system, including no vehicle exhaust, lack of a fire suppression sprinkler system, and an existing attic venting issue causing premature deterioration of roof shingles.

Given the excellent location of station #4, Five Bugles recommends prioritizing the above issues, and addressing the problems as allowed by site constraints. We believe a number of the issues listed above can be successfully addressed in a very cost effective manner with a phased project to selectively renovate portions of station #4, along with 4 small additions to address:

- Public space
- Renovated and enlarged kitchen facilities and new restroom.
- EMS storage, turn out gear, and laundry
- Wellness area

Additionally, the remodel should include a vehicle exhaust system and a fire suppression sprinkler system. Site limitations will not allow sufficiently sized additions to adequately address gender equity without land acquisition.

Estimated Cost: $680,000 to 750,000 construction cost

Station #5

Station #5, constructed largely with FAA funding in 2008, is an award winning station. Five bugles staff did meet with station staff. The building is experiencing fairly typical "commissioning" issues as construction issues are cleaned, and the building is lacking both a vehicle exhaust system and an automatic fire suppression sprinkler system. As a new fire station, it is a beautiful facility.

Estimated Costs:

Vehicle Exhaust: $10-15,000 per vehicle drop
Automatic Fire Suppression Sprinkler System: $35,000

A floor plan of station 5 has been included for reference.

Fire Station Location Criteria

Five Bugles Design staff was requested to review locations of fire station sites within Bloomington. Recommendations of any areas where response could be improved by building a new space station, and the remodeling and/or replacement of certain stations that might not be meeting the response objectives of NFPA 1710. While a total comprehensive review of all response time capabilities of the department could not be completed within the framework of this short study, our final recommendations are based upon both existing conditions as they apply to response AND future considerations regarding community growth and impediments to existing response routes.

There are several existing response guides being used in the fire service. The guide that has been most widely accepted is the National Fire Protection Association Standard (NFPA) 1710. This document describes the sequence of events that lead to a fire response and provides clear and attainable goals for a community to achieve in compliance.

The most effective way to improve outcomes for both fire and medical emergency response is to reduce response time. By understanding the objectives of each step in the response sequence, a fire department can measure its current performance against these objectives. That information provides the necessary framework for assessing the cost of reducing response time during any of these steps. Additionally, GIS programs can provide invaluable assistance in developing response strategies.

Essentially, a community must decide their desired response and travel times. There are a number of factors that influence the selection of a specific response/travel time. All applicable factors must be considered when making a decision on a specific response/travel time for the community. Factors that should be included are:

- *What types of services are delivered by the fire department?* Does the department deliver both fire and emergency medical services, or fire service only? The delivery of emergency medical services is an important factor in selecting a response/travel time because of the need to provide initial service as rapidly as possible. Often times this service gets a lesser priority than fire response. However, if one thinks about the chances of saving a victim suffering a heart attack or other life threatening emergency, time becomes just as important to a successful outcome as it does with fire response.

- *What is a reasonable travel time for the community?* The selection of a response/travel time must be practical. A short response/travel time will enable a department to deliver service within a short period of time but will require more fire stations. Is there a prescription for travel times based upon the type of risk, hazard or demand? Certain hazards or occupancies types may require a faster response time. Response time standards for the community may have to reflect a variation based upon these types of considerations. The time(s) selected must provide a balance between service expectations and the ability of the community to provide the necessary stations and resources.

- *What is the size of the area served and the type and amount of resources that are available?* The community must consider the size of the area being served and the type and amount of resource available. Large rural regions normally have longer response times, larger geographic protection areas and fewer resources than suburban areas. For example, a county wide fire and emergency response service that is operated by volunteer personnel will most likely have longer response times than an urban or suburban area such as Bloomington that is staffed by career personnel.

The demographics of the areas being served and the traffic patterns during peak periods, as well as past fire and EMS activity must all be items of consideration.

The factors that lead up to a decision by a community to establish acceptable response times include (1) the use of historical fire and EMS response data, (2) demand for services, (3) the level of care the community wants to provide, and (4) the level of care that the community can realistically afford. There are three National Fire Protection Association (NFPA) Standards that contain time requirements that influence the delivery of fire and emergency medical services. These are NFPA 1221, Standard for the Installation, Maintenance, and use of Emergency Services Communications Systems; **NFPA 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 NFPA 1720, Standard for the Organization and Deployment of Fire Suppression Operations, and Special Operations to the Public by Volunteer Fire Departments. For the city of Bloomington, **NFPA 1710** contains time objectives that shall be established by career fire departments as follows;

- *Turnout Time*: One minute (60 seconds) for turnout time

- *Fire Response Time*: Four minutes (240 seconds) or less for the arrival of the first arriving engine company at the scene of a fire suppression incident and/or eight minutes (480 seconds) or less for the deployment of a full first alarm assignment at a fire suppression incident.

- *First Responder or higher emergency medical response Time*: Four minutes (240 seconds) or less for the arrival of a unit with first responder or higher level capacity at an emergency medical incident.

- *Advanced life support response time*: Eight minutes (480 seconds) or less for the arrival of an advanced life support unit at an emergency medical incident, where service is provided by the fire department.

The standard states that the fire department shall establish a performance objective of not less that 90 percent for the achievement of each response time objective. NFPA 1710 does contain a time objective for dispatch time by requiring that "all communications facilities, equipment, staffing and operating procedures shall comply with NFPA 1221. For the purposes of **NFPA 1710** the following descriptions apply:

- *Dispatch time:* The point of receipt of the emergency alarm at the public answering point to the point that sufficient information is known to the dispatcher and applicable units are notified of the emergency.

- *Turnout time:* The time that begins when units acknowledge notification of the emergency to the beginning of response time.

- *Response time:* The time that begins when the units are en route to the emergency incident and ends when the units arrive on the scene.

Some communities may elect to adopt several response time standards for the various levels of risk in the community, or they may adopt one single response time standard for all risks. Here a ***risk*** refers to a location where the response may be made and the characteristic (i.e., fire potential, occupant exposure) at that location is at a higher level. Providing response/travel times based on the level of risk means that some areas will be reached in a shorter period of time than other areas. A single response time standard for the community or area served will

provide approximately the same level of initial response to all areas of the community. Some of the risks that may be considered for various response/travel times may be:

- *Sprinklered versus non-sprinklered:* The fully sprinklered building theoretically is at less risk than a non sprinklered building. An industrial park would be an example of an area where the vast majority of building would typically be sprinklered. The community may elect to place fire stations closer to non sprinklers property because of the ability of the sprinklers to put water on the fire.

- *Commercial versus residential:* The community may decide where the greater risk is located. Is there a greater risk in commercial property? At what time of day is the greater risk? Is the risk in residential properties greater in the later hours of the day?

- *Multifamily versus single family residential:* Is there greater risk in multifamily residential areas than single family residential areas? Fire station locations generally are influence by population factors.

Fire Department Site Considerations

If city officials and fire department administrative staff conclude that a new station is required to meet existing and future demands of the Bloomington community, the following information is offered as discussion information to consider. In considering potential sites for the construction of a new fire station within a community acceptable response times within the stations geographic response area, along with many other factors, is one of the most critical factors of a selection. To achieve acceptable response times, a careful analysis should be conducted that includes more than simply evaluating the distance from the proposed site to the borders of its response limits. Certainly this distance factor is very important to response, however, other important factors which should be considered in this review. The following information is offered to assist in evaluating potential sites:

- The site should be located on, or adjacent to, a main travel artery that provides good access, egress, visibility for responding fire department emergency apparatus, and adequate public alerting of the fire department incoming and departing fire equipment;

- Does the site location, and its proximity to a main artery, provide acceptable access to secondary streets that allow the fire department to effectively respond throughout its response areas;

- Does the main response artery have adequate street/shoulder width and shoulder construction for private automobiles, trucks with trailers, over the road truck/trailers, buses, etc. to safely pull off to the side of the road when a fire or EMS apparatus is coming up behind them;

- Is the main response artery a funneling point for industrial traffic or off loading of supplies, products or employees;

- Does the main response artery include an overabundance of traffic controls such as stop signs, or stop lights that could cause delays as a result of local traffic trying to find a safe place to get out of the way of responding fire apparatus;

- Does the site have significant commercial development where consumer traffic congestion could hamper emergency response or commuter safety;

- Does the main artery have schools, churches or other population dense developments that are located on it which may present a safety hazard for fire vehicles and the general public;

- Will the site selected provide rapid response to community "target hazards" that have been identified by the fire department? Target hazards can be defined as buildings which pose extreme threats from significant delays in response such as sites that use, store or handle hazardous materials, building which because of their construction or materials which are stored at the location can lead to rapid fire development, facilities which house community members who have health or age related issues which may require fire department manpower intervention in escape, areas of the community where water shortage or inadequate water volume and/or pressure could overwhelm the fire departments ability to extinguish the fire, and areas of the community where construction of older buildings with common fire walls are located;

    - Downtown building normally fit into this category because they typically share common fire walls which in many cases have been breached in one form or another, and can cause significant flame spread to attached buildings;
    - Generally no early warning fire detection systems with direct tie in to 911 center communications systems or other monitoring facilities exist in these older buildings. This lack of warning provides an opportunity for a fire to expand significantly within a building or to an adjacent building before being reported to a communications center;

- Are there railroad tracks that could impede fire apparatus from using main arteries or which could cause significant "back ups" in traffic when train traffic is present. If so, can private vehicles be able to safely get out of the way of fire apparatus;

    - Another issue that should be discussed is if the usage of the rail line a main line track where trains pass through the area, or is it one that there is a great amount of "switching cars" in industrial facilities that use rail transport systems for loading and offloading supplies or merchandise. The time of the intersection being closed can greatly influence sites desirability.

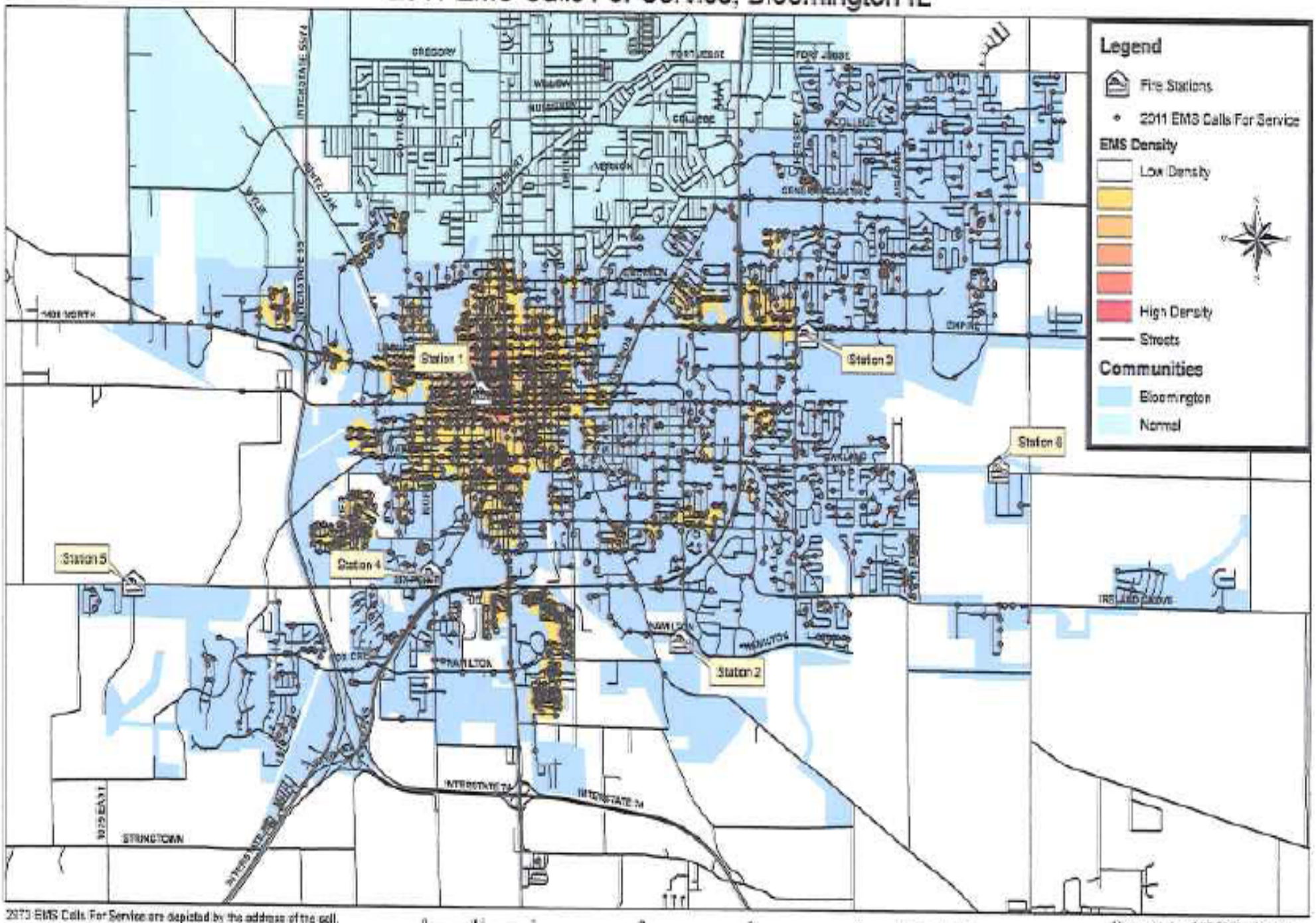
It is safe to say that often times there are no "Perfect" locations in a long established city such as Bloomington, without the arduous task of condemnation proceedings. Thus, a combination of the *majority* of positive station location factors that make a site acceptable may be the best selection alternative.

Conclusions

Based on our review of departmental response times and interviews with staff, it is our opinion that Bloomington, with the exception of the area north & east of station #3, is well served by current station locations and existing stations fall within NVPA 1710 guidelines. The area north and east of Station #3; near College Avenue, falls outside these guidelines with some response times in the 8-10 minute range. Five bugles recommends Bloomington consider serving the area with a new station, or intergovernmental agreements with normal.

We project the construction cost of a new station to be $2.4 million, based on 12,000 S.F. @ $200/S.F. The projected cost does not include site acquisition costs.

2011 EMS Calls For Service, Bloomington IL

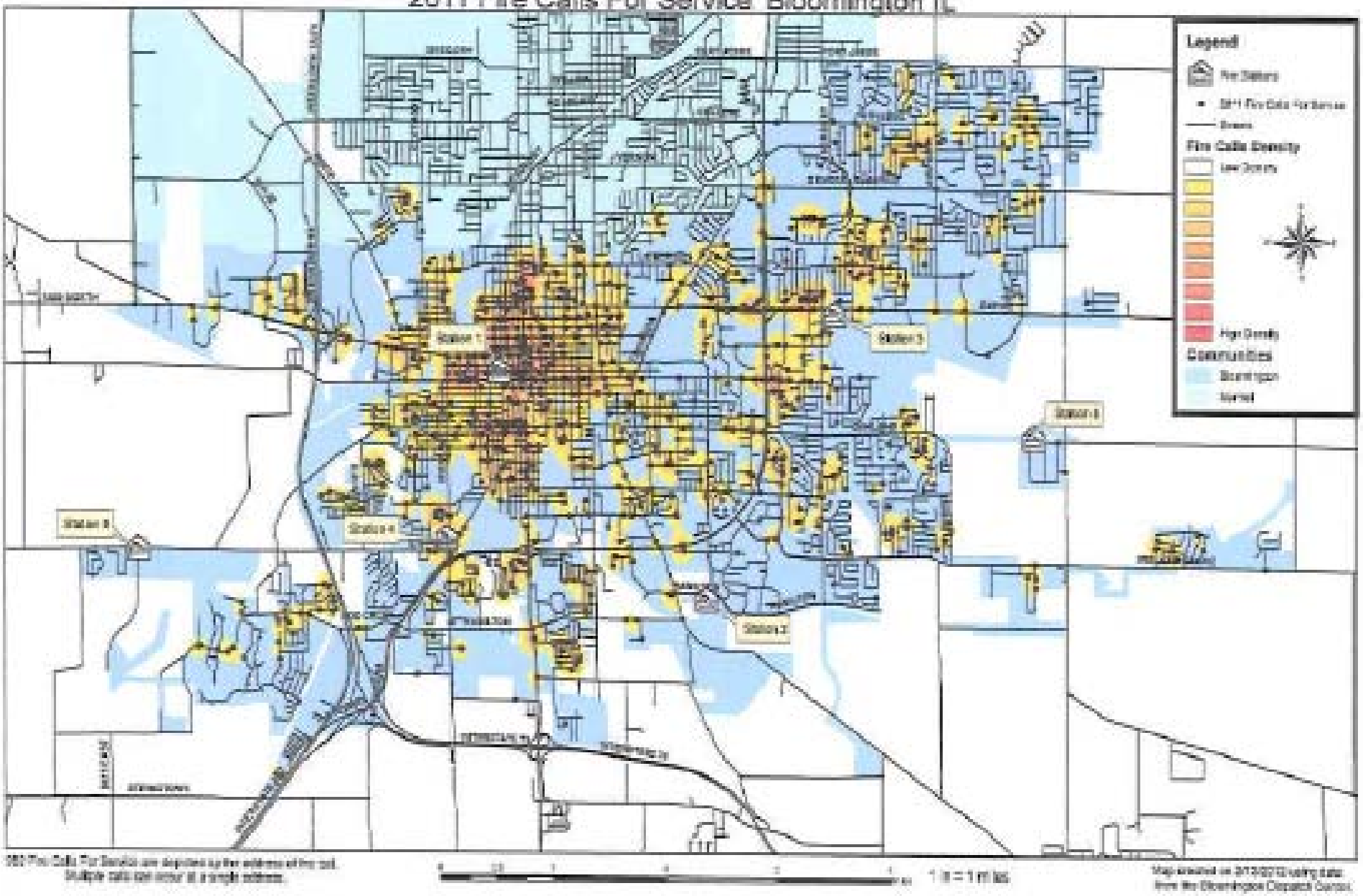


2013 EMS Calls For Service are depicted by the address of the call.
Multiple calls can occur at a single address.

1 in = 1 miles

Map created on 2/13/2012 using data from the Bloomington Dispatch Center.

2011 Fire Calls For Service Bloomington IL



Bloomington Station #1
"The Headquarters Station"

Address:	**310 N. Lee Street**
Year of Construction:	**1973**
Station Size:	**14,469 Sq. Ft.**
Construction Materials:	**Brick Masonry**
Minimum # of Fire Fighters per shift:	**8**

Facility Issues and Considerations

The Two Story 1973 Station #1 houses 8 Fire Fighters per shift as well as the fire departments administrative staff. In the comments of one staff member, the station has been adapted, re-adapted, and adapted again. After nearly 40 years, station #1 continues to serve the community, but does exhibit numerous chronic problems.

1. Building ventilation is the number one concern voiced amongst staff. Temperature control throughout the station is not possible, particularly between the upper and lower levels. Maintaining adequate heat in the lower level results in oppressively warm temperatures in the upper level. Besides the human comfort/distraction factor, the existing system wastes a significant amount of energy.

2. The existing dormitory is extremely crowded, resulting in a number of personnel issues, snoring, etc... Fire Fighters reported inadequate ventilation and temperature control. Station #1 has zero gender equity. A situation, given current space usage conditions that can only be corrected with a building addition to house separate gender sleeping/shower room requirements.

3. Station 1 is not ADA compliant.

4. The apparatus bays are not served by a vehicle exhaust system.

5. The building is not served by an automatic fire suppression sprinkler system.

6. The brick building envelope shows effervesce. The masonry wall systems all show several significant stress cracks.

7. The existing classroom training area has numerous problems. Ventilation is extremely poor; one fire fighter reports fatigue from lack of oxygen after spending several hours in the room. The training room also has inadequate space to function properly. The building's facility Manager's office is located within the training room, causing numerous distractions for both parties.

8. Stairwells need cold air return.

9. Windows in the building are very limited and allow very limited natural lighting. In addition, they are single glazing and energy inefficient.

10. The existing kitchen space is not adequate for three shifts. Food preparation space is extremely limited, a separate pantry and refrigerator is needed for each shift.

11. The P/A Intercom is not distributed throughout the building, with several areas having zero P/A systems.

12. The stations exterior wood deck is deteriorated and in need of replacement.

13. Station #1 does not have an adequate wellness/physical fitness area.

Recommendations

Station #1 occupies 1 sq. block near downtown Bloomington. While the station, at almost forty years old, is nearing the life expectancy of many of its systems, it is our opinion that maintaining station #1 is in Bloomington's best interests. Site replacement with a similar site would likely exceed one million in cost and the process would no doubt require contentious eminent domain. As an alternative example, the national average of central career stations is 26,000 to 28,000 sq. ft. with construction costs of $200/s.f. In short, a replacement to station #1 could easily exceed 6.5 million.

Budgeting to correct the existing deficiencies of station #1 can be prioritized.

- The stations HVAC system should be completely updated, including a vehicle exhaust system for fire apparatus and a new automatic fire suppression sprinkler system.
- The station requires additional space for dormitory/gender equity issues, an upgraded and enlarged training area, a dedicated wellness/physical fitness area, and an enlarged kitchen area. Given the current site usage constraints, it is our recommendation that Bloomington consider renovating the fire department administration area with an addition to house the training/wellness areas option 1, or relocate the administrative group option 2 to an offsite location; either leased or new. Option 1 would require gutting the lower level, remodeling and increasing the size of the administration area with a small addition, along with a lower level addition under the dormitory/shower addition. Estimated total S.F. of new additions would 5000 S.F. Option 2 is relocating the administration group which would allow the renovation of the 4,000 s.f. lower level into a new classroom/training room equipped to produce long distance learning lectures. The lower level would also allow the renovation of a new wellness/physical fitness center. Existing shortfalls of kitchen/dorm/shower spaces could be rectified with a phased remodel of the upper level along with an addition located off the upper level public entry to contain new dormitory housing and shower rooms. The resulting facility would:

    - Provide State of the Art classroom training.

    - Meet current industry standards for housing fire fighters as well as correct gender equity issues.

    - Provide complete renovation of the stations mechanical, plumbing, electrical, and voice/data/I.T. systems.

    - Provide complete window replacement.

    - Provide for wellness/physical fitness.

Estimated Cost:

Option 1: $3.7 to 4.3 million
Option 2: $2.7 to 3.3 million

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department
Location: Central Fire Station, Lee Street
Revisions:
Date: 01/31/12

FIRE DEPARTMENT PROGRAM

Apparatus Room							6828
Number of Bays		3	4	5	6	7	8
		Length					
		80	104	128	152	176	200
Depth	60	4800	6240	7680	9120	10560	12000
	80	6400	8320	10240	12160	14080	16000
	100	8000	10400	12800	15200	17600	20000

15,660	Overall Space Estimate

Fire Department Program	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Engines	40	x	16	=	640	3	1920	
Ambulances	35	x	16	=	560	3	1680	
Ladder/Snorkel	60	x	16	=	960	1	960	
Telesquirt		x	16	=	16	0	0	
Special ops unit		x	16	=	16	0	0	
Boat/trailer		x	16	=	16	0	0	
Arson Unit	35	x	16	=	560	1	560	
Utility/pickup	24	x	16	=	384	2	768	
Haz Mat		x	16	=	16	0	0	
Port. Pump/trailer		x	16	=	16	0	0	
ATV/trailer		x	16	=	16	0	0	
Rehab unit		x	16	=	16	0	0	one will be at one of the other stations
HM-diking/booming		x	16	=	16	0	0	Station #6 with Red Cross supplies
Tanker	40	x	16	=	640	0	0	
Command vehicle	25	x	16	=	400	1	400	
Public Education Storage		x	16	=	16	0	0	
Port.lighting		x	16	=	16	0	0	
Police vehicle		x	16	=	16	0	0	
Vehicle Maint.bay		x	16	=	16	0	0	
Brush Buggy		x	16	=	16	0	0	
Survive Alive Trailer		x	16	=	16	0	0	
Mass Casualty		x	16	=	16	0	0	
Protective gear locker	2	x	2	=	4	35	140	35 firefighters
Chase vehicle	25	x	16	=	400	1	400	
		x	16	=	16	0	0	
Other		x	16	=	16	0	0	

6,828	Subtotal
1,366	Efficiency Ratio of 20%
8,194	Fire Department Program

Space Needs Summary

Project: Bloomington Fire Department

Location: Central Fire Station

Revisions:

Date: 01/31/12

LIVING /ADMINISTRATION/ OFFICE SPACES

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Chief		x		=	0	0	0	
Asst Chief		x		=	0	0	0	
Deputy Chief		x		=	0	0	0	
Lieutenant		x		=	0	0	0	
Work Area	12	x	14	=	168	1	168	Study room or quiet room
Resource Library	8	x	8	=	64	1	64	training and public ed resources
Secretary's Office		x		=	0	0	0	
Communications Office	12	x	12	=	144	1	144	Combine capts office & comunications needs
Pub-Ed Office		x		=	0	0	0	
Training Office		x		=	0	0	0	
Communications/ IT		x		=	0	0	0	
Office/storage		x		=	0	0	0	
Record/report storage		x		=	0	0	0	
Honor guard storage	6	x	6	=	36	1	36	
Conference Room		x		=	0	0	0	
Exercise room	30	x	30	=	900	1	900	free weights, machines, aerobics etc
Day room	24	x	24	=	576	1	576	
Bedroom	10	x	12	=	120	12	1440	Includes future needs
Work Room / SCBA	8	x	10	=	80	1	80	all breathing apparatus needs
Laundry Room	12	x	14	=	168	1	168	Both house and turnout gear
Compressor Room	10	x	14	=	140	1	140	breathing air ans station air
Hose dryer		x		=	0	0	0	
Hose Tower		x		=	0	0	0	
Living space Storage	6	x	8	=	48	1	48	living supplies
Work Maintenance area	12	x	14	=	168	1	168	station and truck maint.
Training Room	30	x	30	=	900	1	900	
Kitchenette/dining		x		=	0	0	0	double of whatit is right now
Restrooms	6	x	6	=	36	3	108	1 dirty rest room, two living qtrs rest rooms
Shower/Locker Room		x		=	0	0	0	For 12 firefghters
Janitor's Closet	6	x	6	=	36	2	72	
Mechanical		x		=	0	0	0	
Entrance Vestibule		x		=	0	0	0	
Lower Level Stairs		x		=	0	0	0	
Maint.Supplies		x		=	0	0	0	
Other storage	20	x	20	=	400	1	400	
Elevator		x		=	0	0	0	
Fire investigations office	10	x	10	=	100	1	100	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

5,512	Subtotal
1,102	Efficiency Ratio of 20%

6,614	Administration/Office Spaces

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Central Fire Station

Revisions:

Date: 01/31/12

EMS PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Ambulance	35	x	16	=	560	1	560	
EMS/Decon Storage	10	x	15	=	150	1	150	
Billing Office		x		=	0	0	0	
Storage Room		x		=	0	0	0	
Laundry Storage		x		=	0	0	0	
Decon Room		x		=	0	0	0	
Bunk Rooms		x		=	0	0	0	
Day Room		x		=	0	0	0	
Kitchen		x		=	0	0	0	
Restrooms		x		=	0	0	0	
regulated storage		x		=	0	0	0	
Administration		x		=	0	0	0	
EMS Protective Gear		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

710	Subtotal
142	Efficiency Ratio of 20%

852	**EMS Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Central Fire Station

Revisions:

Date: 01/31/12

SITE PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Fire Staff Parking	32	x	10	=	320	36	11520	all staff at the station
EMS Staff Parking		x	0	=	0	0	0	
Public Parking	32	x	10	=	320	8	2560	6 public and 2 handicapped
Fire Apparatus Apron	50	x	16	=	0	2	0	
Delivery Apron		x	0	=	0	1	0	
Outdoor Training		x	0	=	0	0	0	
Outdoor Patio	12	x	20	=	0	1	0	
Enclosed Dumpster		x	0	=	0	0	0	
Generator		x	0	=	0	1	0	In basement now, not total load pick up
Storm Water Treatment		x	0	=	0	0	0	
Heliport Pad		x	0	=	0	0	0	

14,080	Subtotal
2,816	Efficiency Ratio of 20%

16,896	**Site Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Depatment

Location: Central Fire Station

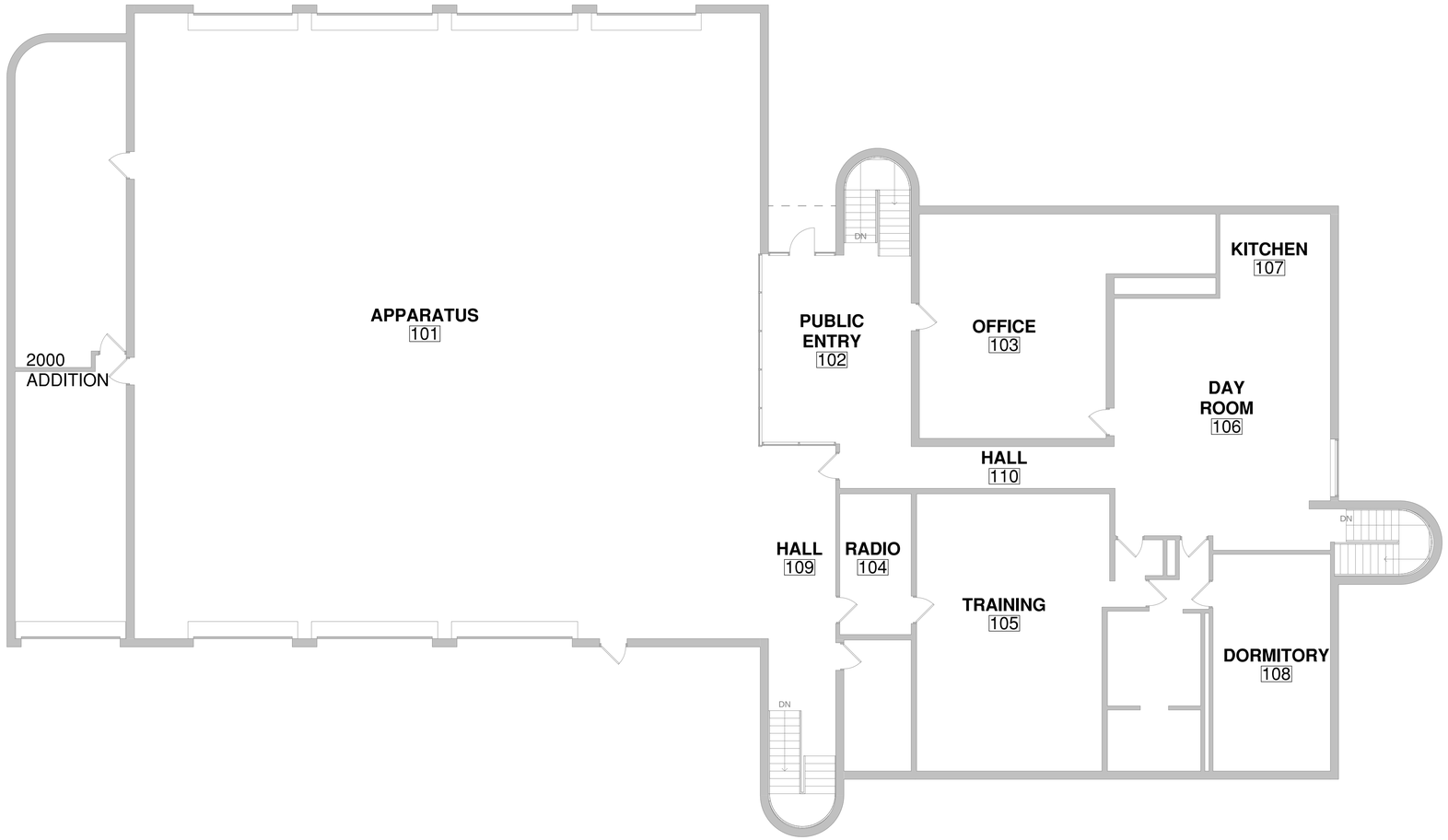
Revisions:

Date: 01/31/12

TOTALS

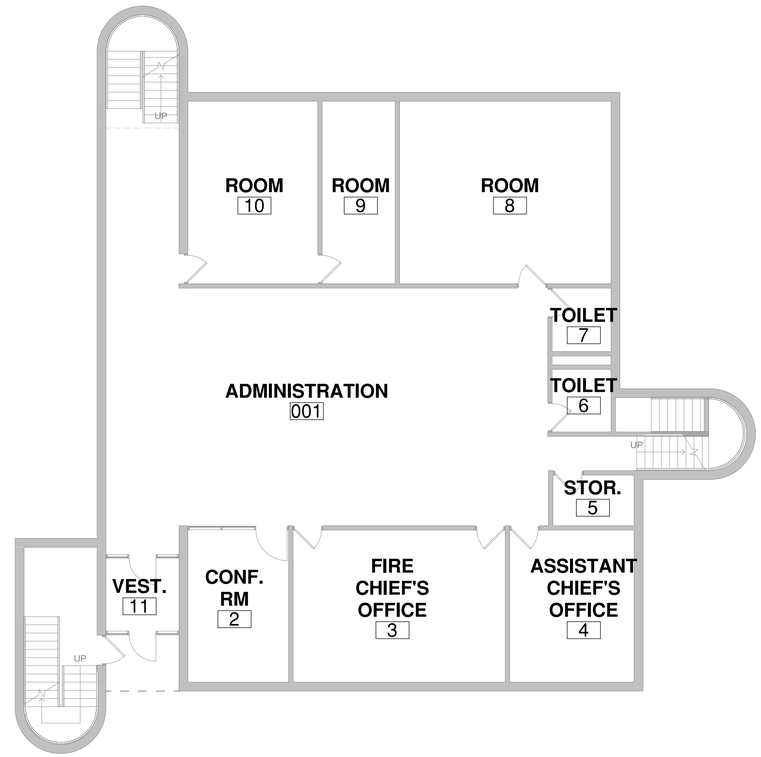
Fire Department Apparatus	8,194
Fire Department Office, Administrative & Living Space	6,614
EMS Program	852
Site Program	16,896

15,660	Station footprint
32,556	Minimum Site Requirements



TOTAL AREA: 10,592 SQ. FT.

1 UPPER LEVEL
1/8" = 1'-0"



TOTAL AREA 4,057 SQ. FT.

2 LOWER LEVEL
1/8" = 1'-0"

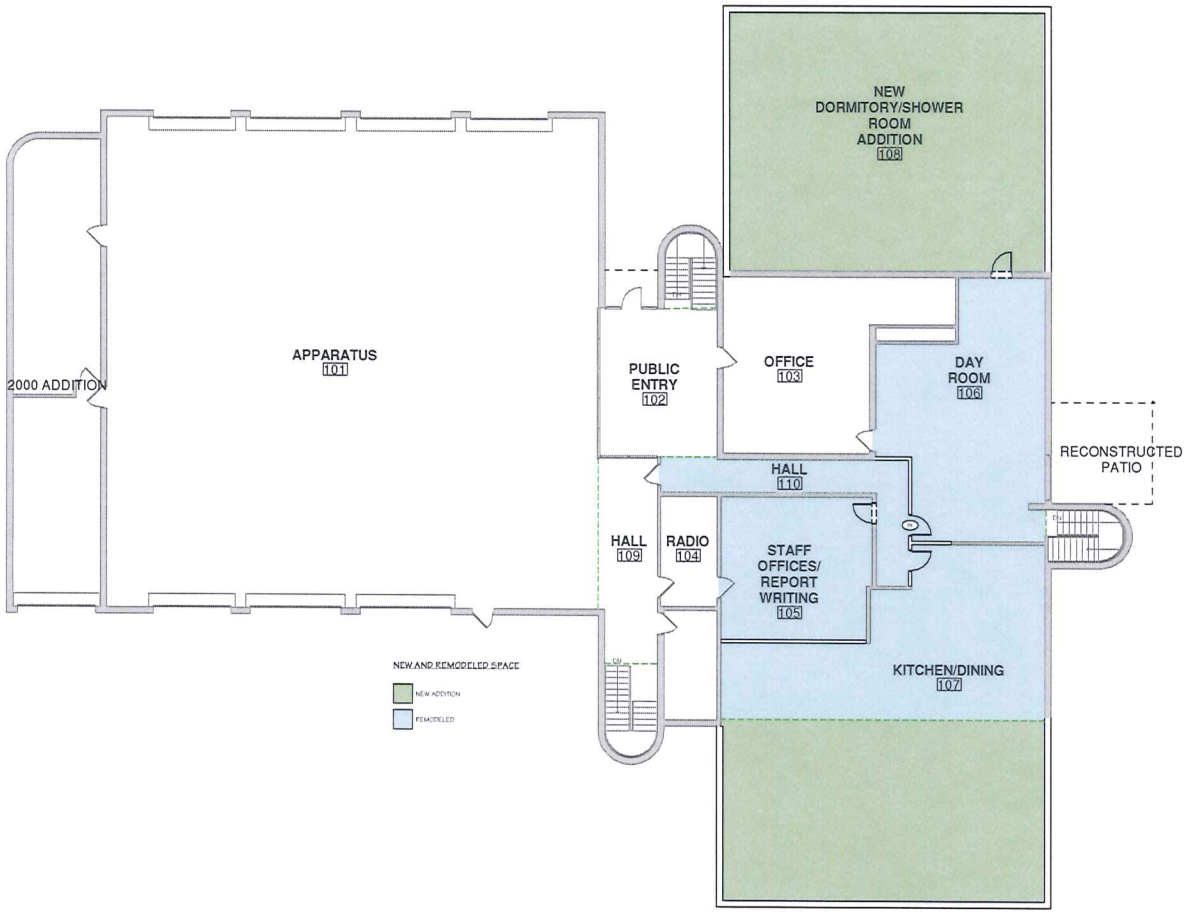
FIRE STATION NO. 1 - EXISTING CONDITIONS

04.12.2012

BLOOMINGTON, ILLINOIS

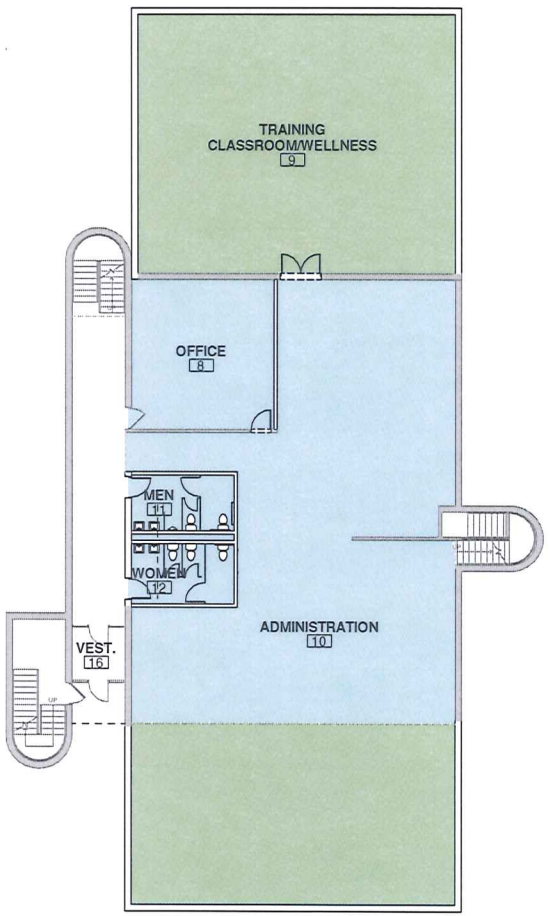
FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106



NEW TOTAL AREA: 14,043 SQ. FT.

1 PROPOSED MAIN LEVEL PLAN



TOTAL AREA 6,829 SQ. FT.

2 PROPOSED LOWER LEVEL PLAN

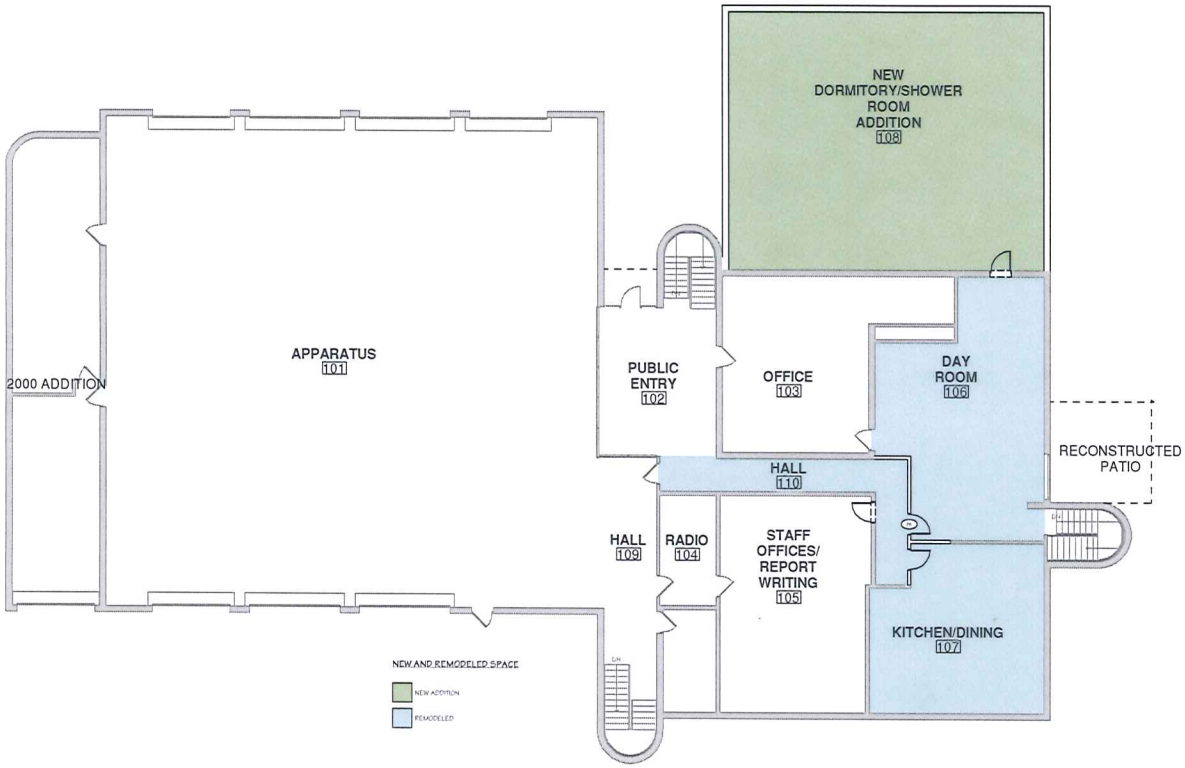
FIRE STATION NO. 1 - PROPOSED RENOVATION/ADDITION - OPTION 1

06.28.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES

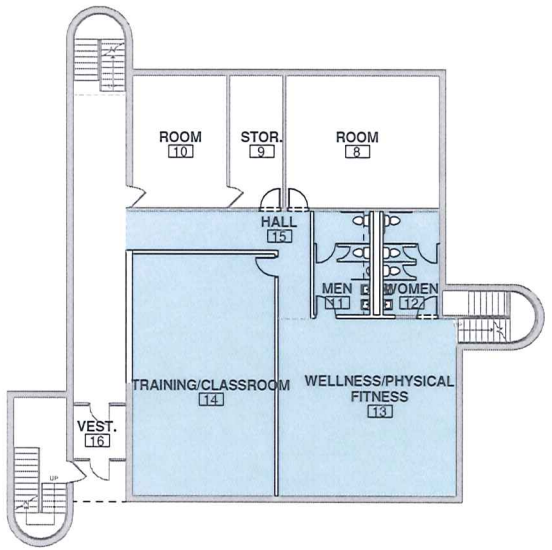
PROJECT NUMBER: 11-106



NEW TOTAL AREA: 13,651 SQ. FT.

*RELOCATE ADMINISTRATION OFFICES OFF SITE

1 PROPOSED MAIN LEVEL PLAN



TOTAL AREA 4,057 SQ. FT.

2 PROPOSED LOWER LEVEL PLAN

FIRE STATION NO. 1 - PROPOSED RENOVATION/ADDITION - OPTION 2

06.28.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES

PROJECT NUMBER: 11-106

Bloomington Station #2
"Southeast Station"

Address:	**1911 Hamilton Road**
Year of Construction:	**1998**
Station Size:	**9,334 Sq. Ft.**
Construction Materials:	**Brick Masonry**
Minimum # of Fire Fighters per shift:	**6**

Facility Issues and Considerations

Station #2 is a relatively new station; with construction in the winter of 1998, unfortunately it has been plagued with design and construction issues during much of its service life.

1. The facility has a history of significant moisture issues resulting from building envelope leaks and condensation.
2. The initial metal roof was poorly insulated resulting in condensation that was collected in 5 gallon buckets located in the attic. This situation resulted in numerous moisture problems corresponding with the building and its history of mold infestation. Abatement procedures were limited to encapsulating contaminated gypsum sheathing within a new metal soffit.
3. The buildings brick masonry continues to show effervesce.
4. The apparatus bays are not equipped with a vehicle exhaust system.
5. The building is not equipped with an automatic fire suppression sprinkler system.
6. The training room does not have long distance learning technology.
7. Public visitors upon entering the station have immediate accessibility to the open radio room.
8. The station is not ADA Compliant.
9. The station has no gender equity, causing staffing issues for future female fire fighters.
10. Building HVAC controls do not provide an adequate level of control.
11. Rest Rooms suffer from poor insulation and poor ventilation.
12. The janitor closet has no ventilation and the light fixture periodically fills with water from leaks.
13. A sliding patio door serves as the primary staff entrance and has suffered deterioration.
14. The station's roof rain gutters continue to be an issue; filling with debris and overflowing in large event storms.

15. The existing patio is too small and functions only to collect windblown debris.
16. The existing kitchen is receiving new cabinetry but no increase in size.
17. The station water cooler does not work.
18. The dormitory suffers from inadequate ventilation.
19. The apparatus room turn out storage area does not drain properly.
20. The apparatus bays are crowded, and the apparatus has to be moved for training.
21. Apparatus metal halide light fixtures require several minutes to warm up and are not appropriate for an emergency response facility.
22. The EMS drug storage does have return air.
23. Staff has requested space for two report writing workstations.
24. A Captains shared office with 3 workstations is needed.

Recommendations

Station #2 has been plagued with design and construction problems since opening in 1999. Unfortunately, given the pressing needs of a future station, and priorities at station #1, #3, and #4 it is our recommendation that Bloomington continue to address the majority of the numerous problems outlined in the body of this report through maintenance projects. The apparatus bay vehicle exhaust system and fire suppression sprinkler system should be addressed immediately.

Estimated Costs:

Vehicle Exhaust: $10-15,000 per vehicle drop
Automatic Fire Suppression Sprinkler System: $30,000

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department
Location: #2 Fire Station
Revisions:
Date: 01/31/12

FIRE DEPARTMENT PROGRAM

Apparatus Room							4526
Number of Bays		3	4	5	6	7	8
		Length					
		80	104	128	152	176	200
Depth	60	4800	6240	7680	9120	10560	12000
	80	6400	8320	10240	12160	14080	16000
	100	8000	10400	12800	15200	17600	20000

12,950	Overall Space Estimate

Fire Department Program	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Engines	40	x	16	=	640	2	1280	
Ambulances	35	x	16	=	560	1	560	
Ladder/Snorkel	60	x	16	=	960	0	0	
Telesquirt	50	x	16	=	800	0	0	
Squad truck	40	x	16	=	640	1	640	
Boat/trailer		x	16	=	16	0	0	
Arson Unit	35	x	16	=	560	0	0	
Utility/pickup	24	x	16	=	384	0	0	
Haz Mat	40	x	16	=	640	1	640	increased elec demands, door on unit opens out from back
Port. Pump/trailer		x	16	=	16	0	0	
Work maintenance spaces	2	x	10	=	20	2	40	
Rehab unit		x	16	=	16	0	0	
haz mat trainng trailer	20	x	16	=	320	1	320	
Tanker	40	x	16	=	640	0	0	
Shelving for haz mat supplies	50	x	3	=	150	1	150	
Public Education Storage		x	16	=	16	0	0	
Port.lighting		x	16	=	16	0	0	
Police vehicle		x	16	=	16	0	0	
Vehicle Maint.bay		x	16	=	16	0	0	
Brush Buggy		x	16	=	16	0	0	
Survive Alive Trailer		x	16	=	16	0	0	
Mass Casualty		x	16	=	16	0	0	
Protective gear locker	2	x	2	=	4	21	84	
Chase vehicle	25	x	16	=	400	1	400	
lawn maint equip	20	x	20	=	400	1	400	
Hose racks	3	x	4	=	12	1	12	

4,526	Subtotal
905	Efficiency Ratio of 20%
5,431	Fire Department Program

Space Needs Summary

Project: Bloomington Fire Department

Location: #2 Fire Station

Revisions:

Date: 01/31/12

LIVING /ADMINISTRATION/ OFFICE SPACES

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Chief		x		=	0	0	0	
Asst Chief		x		=	0	0	0	
Deputy Chief		x		=	0	0	0	
Captains	10	x	20	=	200	1	200	storage off the office space
Work Area	12	x	12	=	144	1	144	report writing etc.
	8	x	8	=	64	0	0	training and public ed resources
Secretary's Office		x		=	0	0	0	
Communications Office	12	x	12	=	144	1	144	Combine capts office & comunications needs
Pub-Ed Office		x		=	0	0	0	
Training Office		x		=	0	0	0	New training tower program may impact station
Communications/ IT		x		=	0	0	0	
Office/storage		x		=	0	0	0	
Record/report storage		x		=	0	0	0	
Honor guard storage	6	x	6	=	36	0	0	
Conference Room	14	x	20	=	280	0	0	training, study room, etc
Exercise room	30	x	30	=	900	1	900	free weights, machines, aerobics etc
Day room	30	x	24	=	720	1	720	
Bedroom	10	x	12	=	120	7	840	Includes future needs
Work Room / SCBA	12	x	10	=	120	0	0	all breathing apparatus needs
Laundry Room	10	x	10	=	100	1	100	Both house and turnout gear
Compressor Room	10	x	14	=	140	0	0	breathing air ans station air
Hose dryer		x		=	0	0	0	
Hose Tower		x		=	0	0	0	
Living space Storage	6	x	8	=	48	0	0	living supplies
Work Maintenance area	12	x	14	=	168	1	168	station and truck maint.
Training Room	40	x	22	=	880	1	880	New training tower program may impact station
Kitchenette/dining	30	x	35	=	1050	1	1050	sep. refrig & food lockers
Restrooms	6	x	6	=	36	3	108	1 downstairs
Shower/Locker Room	12	x	20	=	240	1	240	For 6 firefighters
Janitor's Closet	6	x	6	=	36	2	72	
Mechanical		x		=	0	0	0	
Entrance Vestibule	10	x	10	=	100	1	100	greet public - security issues
Lower Level Stairs		x		=	0	0	0	
Maint.Supplies		x		=	0	0	0	
Other storage	20	x	20	=	400	1	400	
Elevator		x		=	0	0	0	
Fire investigations office	10	x	10	=	100	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

6,066	Subtotal
1,213	Efficiency Ratio of 20%

7,279	Administration/Office Spaces

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Station #2

Revisions:

Date: 01/31/12

EMS PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Ambulance	35	x	16	=	560	0	0	
EMS/Decon Storage	10	x	20	=	200	1	200	
Billing Office		x		=	0	0	0	
Storage Room		x		=	0	0	0	
Laundry Storage		x		=	0	0	0	
Decon Room		x		=	0	0	0	
Bunk Rooms		x		=	0	0	0	
Day Room		x		=	0	0	0	
Kitchen		x		=	0	0	0	
Restrooms		x		=	0	0	0	
regulated storage		x		=	0	0	0	
Administration		x		=	0	0	0	
EMS Protective Gear		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

200	Subtotal
40	Efficiency Ratio of 20%

240	**EMS Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: #2 Fire Station

Revisions:

Date: 01/31/12

SITE PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Fire Staff Parking	32	x	10	=	320	50	16000	training facility may impact requirfements
EMS Staff Parking		x	0	=	0	0	0	
Public Parking	32	x	10	=	320	7	2240	2 handicapped, 2 public, Safe house statis
Fire Apparatus Apron	50	x	60	=	3000	1	3000	
EMS Apparatus Apron	50	x	60	=	3000	1	3000	going to be short with construction
Outdoor Training		x	0	=	0	0	0	
Outdoor Patio	10	x	20	=	200	1	200	
Enclosed Dumpster	6	x	8	=	48	1	48	One is needed or additional space (enclosed)
Generator	6	x	6	=	36	1	36	
Storm Water Treatment		x	0	=	0	0	0	
Heliport Pad		x	0	=	0	0	0	

24,524	Subtotal
4,905	Efficiency Ratio of 20%

29,429	**Site Program Total**

Space Needs Summary

Project: Bloomington Fire Depatment

Location: #2 Fire Station

Revisions:

Date: 01/31/12

TOTALS

Fire Department Apparatus	5,431
Fire Department Office, Administrative & Living Space	7,279
EMS Program	240
Site Program	29,429

12,950	Station footprint
42,379	Minimum Site Requirements

Bloomington Fire Department

Training Class Report Roll Call

Date:	Time:	Description:
01/31/2012	15:00	Operations and Planning

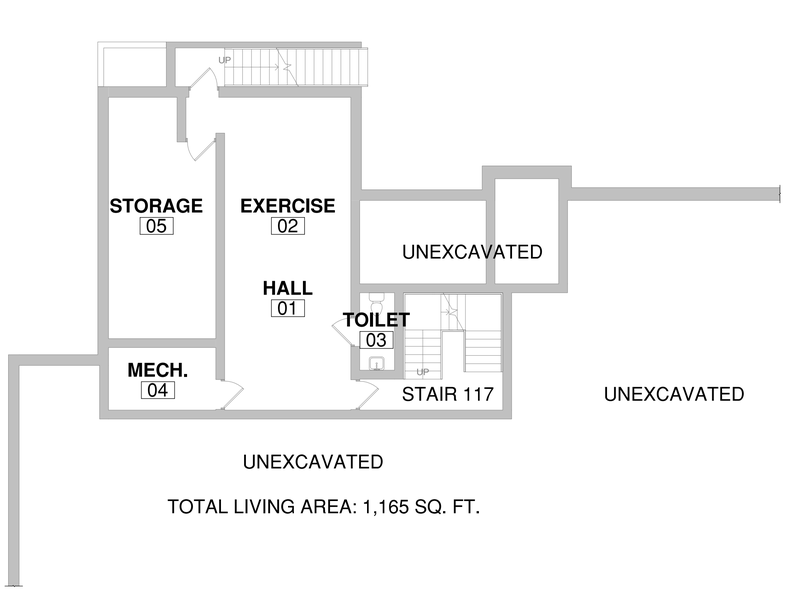
Category: 100.07 Operations and Planning
Method: LP Combined lecture and Practical
Location: 02 2 Station
Agency: BFD Bloomington Fire Dept

Instructors:

Station: 2 **Unit:** **Default Hrs:** 1.00 **Hrs Pd:** 1.00 **Pts:** 0.00

Staff Id	Name	Present
9100	Fisher, Gregory T	Signature
5633	Fry, Michael A	Signature
7663	Hoeniges, Joseph M	Signature
10020	Plese, Joshua P	Signature
4497	Smith, Gary D	Signature
6168	Talley, Thomas D	Signature
4626	West, Eric C	Signature
7819	White, David C	Signature

Notes: Classes that relate to the operation and/or planning of the fire department



TOTAL LIVING AREA: 1,165 SQ. FT.

2 LOWER LEVEL
1/8" = 1'-0"

TOTAL AREA: 9, 334 SQ. FT.

1 MAIN LEVEL
1/8" = 1'-0"

FIRE STATION NO. 2 - EXISTING CONDITIONS

04.12.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106

Bloomington Station #3
"The Northeast Station"

Address:	**2301 E. Empire**
Year of Construction:	**1975**
Station Size:	**10,500 Sq. Ft.**
Construction Materials:	**Reinforced Concrete**
Minimum # of Fire Fighters per shift:	**5**

Facility Issues and Considerations

Prior to the completion of Station #6 in 2009 Station #3 was a two company station serving both Bloomington and the Airport. Currently the station functions as a single company station.

1. Staff reports a considerable delay in response times to portions of the N.E. sectors of Bloomington near the end of College Ave. Response times in this area exceed recommendations of NFPA 1710, and can amount to 8 – 10 minutes.

2. Bloomington is considering the option of converting station #3 back to a two company station.

3. Due to the airport security fence, site parking is limited.

4. The property is jointly owned
   75% Airport
   25% City

5. Station energy conservation is inadequate. The station walls are cast in place concrete with no insulation. Glazing is single pane. Windows are also fixed, inoperable units allowing no ventilation. Maintaining uniform temperatures is not possible. In winter months interior areas next to the un-insulated concrete walls drop considerably.

6. The station is not equipped with an automatic fire suppression sprinkler system.

7. Kitchen facilities are significantly undersized and inadequate.

8. Station #3 has no gender equity in the dormitory or shower rooms.

9. Station #3 has no dedicated exercise/ wellness room.

10. The training room is too small and does not have long distance learning capabilities.

11. Turn out gear storage is not adequate.

12. The stations HVAC and control system is inadequate and is in poor condition. The building was constructed with below grade ductwork that partially fills with water from time to time, resulting in problems with odors and possible health issues.

13. The station was re-roofed in 1996.

14. The station lacks a garbage can enclosure.
15. The station is not equipped with a vehicle exhaust system.
16. Station #3 has no functional SCBA system.
17. The facility has no storage for exterior lawn equipment.
18. EMS needs 2 workstations for report writing.

Recommendations

Station #3 was constructed in 1975 with majority funding by the FAA. The stations design included mandated FAA requirements in the reinforced concrete building envelope. 37 years later the stations shell, while esthetically dated, is in remarkably good shape with the exception of the College Ave area. Staff reports the Empire Street site as a good response location. It is our opinion that with a phased renovation/building addition process that allows continuous occupancy, station #3 can be upgraded to a state of the art facility in a cost effective manner. The site will allow two 40' x 60' additions; one located in the front of the station and one located in the rear. On site vehicle turning radiuses, the airport security fence, and building setback requirements reduce available options for building additions to these two areas. The resulting 4800 sq. ft. additions, coupled with a complete renovation of existing interiors, new HVAC, vehicle exhaust, and fire sprinkler system, would substantially correct the existing deficiencies listed for kitchen space, building energy usage, staff environmental comfort, training space, exercise space, and dormitory/gender equity.

An added incentive would be a general updating and curb appeal of station #3 from Empire Street.

Estimated Cost:

$2.2 to $2.6 million Construction Cost

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department
Location: #3 Fire Station
Revisions:
Date: 01/31/12

FIRE DEPARTMENT PROGRAM

Apparatus Room							4856
Number of Bays		3	4	5	6	7	8
		Length					
		80	104	128	152	176	200
Depth	60	4800	6240	7680	9120	10560	12000
	80	6400	8320	10240	12160	14080	16000
	100	8000	10400	12800	15200	17600	20000

9,396	Overall Space Estimate

Fire Department Program	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Engines	40	x	16	=	640	2	1280	future
Ambulances	35	x	16	=	560	2	1120	newer ambulance require additional space
Ladder/Snorkel	60	x	16	=	960	2	1920	1 for the airport & reserve
Telesquirt	50	x	16	=	800	0	0	
Squad truck	40	x	16	=	640	0	0	
Boat/trailer		x	16	=	16	0	0	
Arson Unit	35	x	16	=	560	0	0	
Utility/pickup	24	x	16	=	384	0	0	
Haz Mat	40	x	16	=	640	0	0	0
Port. Pump/trailer		x	16	=	16	0	0	
Work maintenance spaces	2	x	10	=	20	0	0	minimal repairs
Rehab unit		x	16	=	16	0	0	
haz mat trainng trailer	20	x	16	=	320	0	0	
Driving simulator vehicle	40	x	16	=	640	0	0	not determined where it will go
Shelving for haz mat supplies	50	x	3	=	150	0	0	
Public Education Storage		x	16	=	16	0	0	
Port.lighting		x	16	=	16	0	0	
Police vehicle		x	16	=	16	0	0	
Vehicle Maint.bay		x	16	=	16	0	0	
Brush Buggy		x	16	=	16	0	0	
Survive Alive Trailer		x	16	=	16	0	0	
Mass Casualty		x	16	=	16	0	0	
Protective gear locker	2	x	2	=	4	34	136	
Chase vehicle	25	x	16	=	400	1	400	future consideration
lawn maint equip	20	x	20	=	400	0	0	
Hose racks	3	x	4	=	12	0	0	

4,856	Subtotal
971	Efficiency Ratio of 20%
5,827	Fire Department Program

Space Needs Summary

Project: Bloomington Fire Department

Location: Station #3

Revisions:

Date: 01/31/12

LIVING /ADMINISTRATION/ OFFICE SPACES

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Chief		x		=	0	0	0	
Asst Chief		x		=	0	0	0	
Deputy Chief		x		=	0	0	0	
Captains	10	x	14	=	140	1	140	more storage, bigger work station
Work Area		x		=	0	0	0	
study area		x		=	0	0	0	classroom is used for study
Secretary's Office		x		=	0	0	0	
Watch Office		x		=	0	0	0	need an additional computer station
Pub-Ed Office		x		=	0	0	0	
Training Office		x		=	0	0	0	
Communications/ IT		x		=	0	0	0	
Office/storage		x		=	0	0	0	
Record/report storage		x		=	0	0	0	
Honor guard storage		x		=	0	0	0	
Conference Room		x		=	0	0	0	
Exercise room	30	x	30	=	900	1	900	
Day room	30	x	35	=	1050	1	1050	space is ok but additional staff and config. Is lacking
Bedroom	12	x	10	=	120	5	600	future staffing will impact that number
Work Room / SCBA		x		=	0	0	0	on appataus floor
Laundry Room		x		=	0	0	0	in mechanical room
Compressor Room		x		=	0	0	0	on apparatus room
Hose dryer		x		=	0	0	0	
Hose Tower		x		=	0	0	0	
Living space Storage		x		=	0	0	0	
Work Maintenance area		x		=	0	0	0	
Training Room		x		=	0	0	0	
Kitchenette/dining	12	x	16	=	192	0	0	dining space OK but kitchen way too small
Restrooms		x		=	0	0	0	staff changes will affect, no dirty bathroom
Shower/Locker Room		x		=	0	0	0	
Janitor's Closet	4	x	6	=	24	2	48	apparatus floor & living quarters
Mechanical		x		=	0	0	0	
Entrance Vestibule		x		=	0	0	0	
Lower Level Stairs		x		=	0	0	0	
Maint.Supplies		x		=	0	0	0	
Other storage		x		=	0	0	0	
Elevator		x		=	0	0	0	
Fire investigations office		x		=	0	0	0	
outside storage room	6	x	6	=	36	1	36	
Other		x		=	0	0	0	

2,774	Subtotal
555	Efficiency Ratio of 20%

3,329	Administration/Office Spaces

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Station #3

Revisions:

Date: 01/31/12

EMS PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Ambulance	35	x	16	=	560	0	0	
EMS/Decon Storage	10	x	20	=	200	1	200	lighting is important
Billing Office		x		=	0	0	0	
Storage Room		x		=	0	0	0	
Laundry Storage		x		=	0	0	0	
Decon Room		x		=	0	0	0	
Bunk Rooms		x		=	0	0	0	
Day Room		x		=	0	0	0	
Kitchen		x		=	0	0	0	
Restrooms		x		=	0	0	0	
regulated storage		x		=	0	0	0	
Administration		x		=	0	0	0	
EMS Protective Gear		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

200	Subtotal
40	Efficiency Ratio of 20%

240	**EMS Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Station #3

Revisions:

Date: 01/31/12

SITE PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Fire Staff Parking	32	x	10	=	320	16	5120	future staffing will inpact #
EMS Staff Parking		x	0	=	0	0	0	
Public Parking	32	x	10	=	320	4	1280	2 handicapped, 2 public, Safe house status
Fire Apparatus Apron	50	x	60	=	3000	1	3000	aprons should be wider, curb
EMS Apparatus Apron	50	x	60	=	3000	1	3000	going to be short with construction
Outdoor Training		x	0	=	0	0	0	
Outdoor Patio	10	x	20	=	200	1	200	
Enclosed Dumpster	6	x	8	=	48	1	48	One is needed or additional space (enclosed)
Generator	6	x	6	=	36	1	36	in mechanical room
Storm Water Treatment		x	0	=	0	0	0	
Heliport Pad		x	0	=	0	0	0	

12,684	Subtotal
2,537	Efficiency Ratio of 20%

15,221	**Site Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Depatment

Location: Station #3

Revisions:

Date: 01/31/12

TOTALS

Fire Department Apparatus	5,827
Fire Department Office, Administrative & Living Space	3,329
EMS Program	240
Site Program	15,221

9,396	Station footprint
24,617	Minimum Site Requirements

Bloomington Fire Department

Training Class Report Roll Call

Date:	Time:	Description:
02/01/2012	08:30	Operations and Planning

Category: 100.07 Operations and Planning
Method: LP Combined Lecture and Practical
Location: 03 3 Station
Agency: OTHER Other Agency

Instructors:

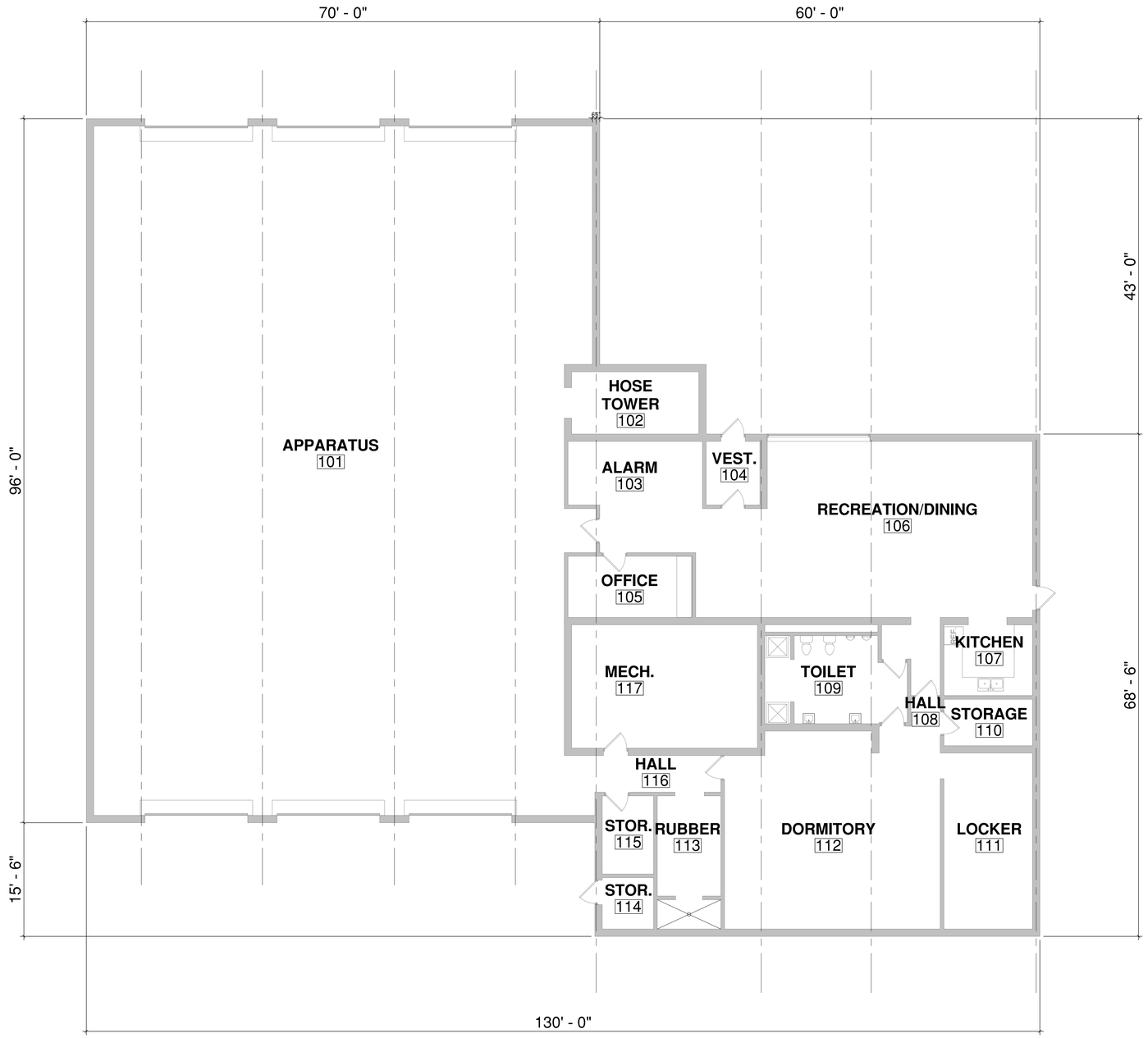
Signature

Station: 3 **Unit:** **Default Hrs:** 1.75 **Hrs Pd:** 1.75 **Pts:** 0.00

Staff Id	Name	Present
7828	Anglin, Jason P	Signature
3746	Berkley, Gene C	Signature
8117	Dowell, Christopher R	Signature
8853	Friend, Frank C	Signature
3747	Pouliot, Kenneth T	Signature
4497	Smith, Gary D	Signature

Notes: Classes that relate to the operation and/or planning of the fire department

Meeting with five bugles design group.
02/01/2012 08:50:39 Gary Smith



TOTAL AREA: 10,500 SQ. FT.

NORTH

1 FIRST FLOOR
1/8" = 1'-0"

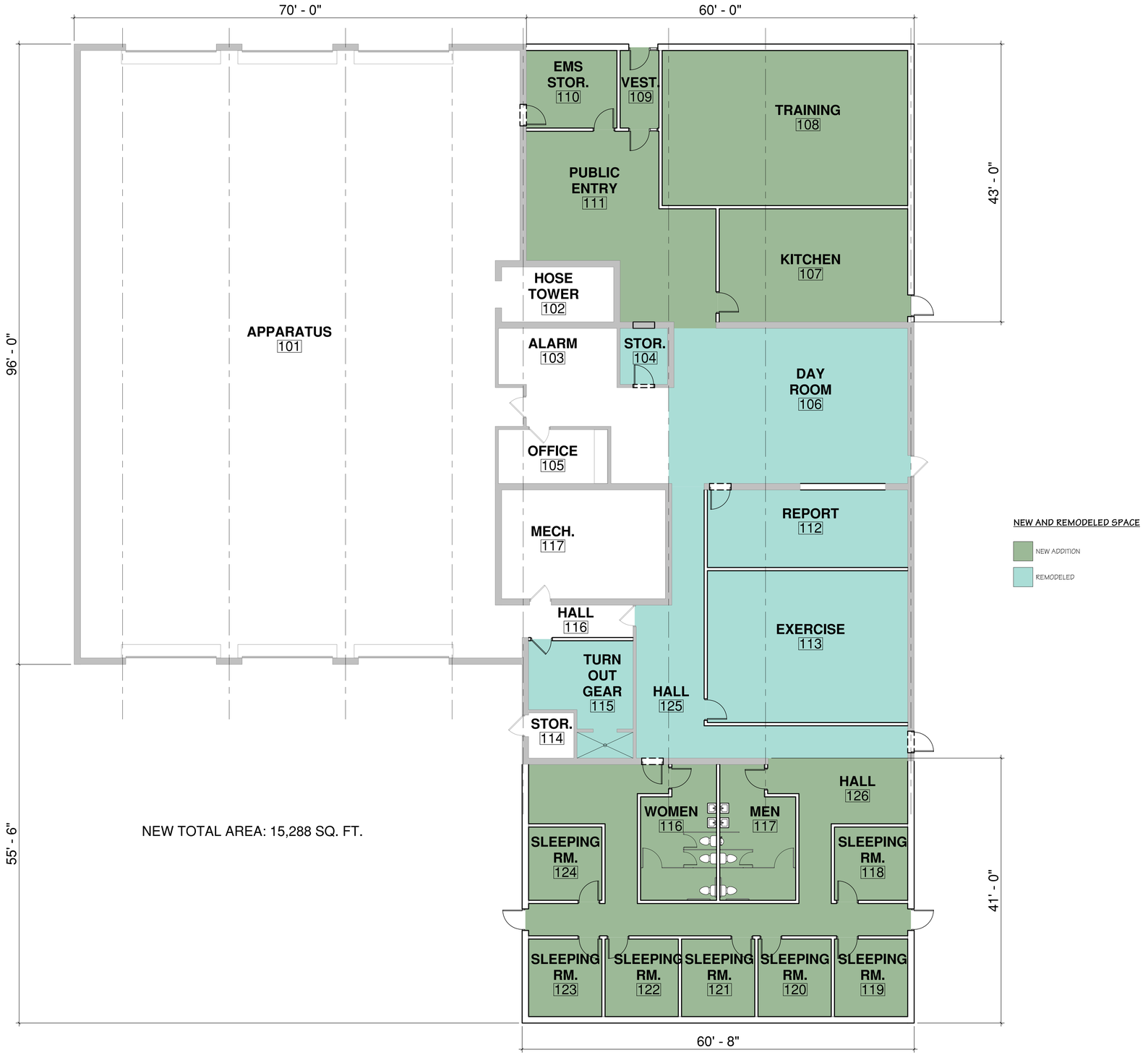
FIRE STATION NO. 3 - EXISTING CONDITIONS

04.12.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106



1 MAIN LEVEL
1/8" = 1'-0"

FIRE STATION NO. 3 - PROPOSED RENOVATION/ADDITION

04.12.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106

Bloomington Station #4
"The Southwest Station"

Address:	**1705 S. Morris Ave**
Year of Construction:	**1991**
Station Size:	**5703 Sq. Ft.**
Construction Materials:	**Brick Masonry/ Wood Framed Roof**
Minimum # of Fire Fighters per shift:	**5**

Facility Issues and Considerations

1. Staff reports that the location of station #4 allows for good response times. There were no negative comments about the station location.
2. Station #4 is served by a sole dormitory that doubles use as an exercise room.
3. The Dormitory and only rest room areas are separated from administrative, living, and kitchen spaces by the drive through apparatus bays.
4. EMS storage is not adequate.
5. The building is not served with an automatic fire suppression sprinkler system.
6. Lawn equipment storage is inadequate.
7. The station needs a dedicated laundry area.
8. Turn out gear storage is inadequate.
9. There is not a training classroom. Long distance learning capabilities do not exist.
10. Public visitors enter immediately into the staff day room, a private area.
11. The kitchen facilities area is dated and too small.
12. The station lacks an adequate SCBA cleaning area.
13. There is no captain's office.
14. There is no gender equity in dormitory or shower areas.
15. Station #4 appears to lack proper attic ventilation, caused by the apparatus bay masonry wall extending to the roof deck. The result is premature deterioration of roof shingles, particularly on the southern exposure.

16. There is no vehicle exhaust system.

17. Apparatus exiting grades are currently hindered by the location and grading of an existing catch basin. This situation is expected to be corrected during the reconstruction of Morris Ave.

Recommendations

Given the available expansion constraint imposed by the existing site, expansion possibilities are extremely limited. In our discussions with station staff, we have prioritized station deficiencies and believe the majority of issues can be addressed in a cost effective manner with small building additions, one at each corner of the building, along with subsequent interior renovation. We would anticipate this would be a phased construction project, allowing continuous occupancy, and accomplishing the following:

1. Installation of a vehicle exhaust system.

2. Installation of an automatic fire suppression sprinkler system.

3. Provide selective demolition of the masonry wall with in the attic space to allow proper attic ventilation in conjunction with re-roofing.

4. The construction of 4 additions:

    - **Addition #1**
      Would provide for a public greeting area, include two dedicated staff workstations, and allow space for staff briefings. Subsequent remodeling of adjacent spaces would allow a public restricted day room, and conversion of the existing workstation to a captain's office.

    - **Addition #2**
      Would provide for exterior storage of lawn equipment. More importantly the addition would allow the remodel of current storage into a new expanded kitchen facility along with an increased mechanical room to house a renovated/upgraded mechanical system, and a new single sex rest room to serve the south side.

    - **Addition #3**
      Would allow a dedicated turn out fear room, a dedicated laundry area, and provide an increased EMS storage area through subsequent remodeling.

    - **Addition #4**
      Would provide for an exercise room.

Gender equity issues cannot be addressed at station #4 in a cost effective manner without additional site size.

Estimated Cost:
$680,000 to $750,000 construction cost

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department
Location: Station #4
Revisions:
Date: 01/31/12

FIRE DEPARTMENT PROGRAM

Apparatus Room							2544
Number of Bays		3	4	5	6	7	8
		Length					
		80	104	128	152	176	200
Depth	60	4800	6240	7680	9120	10560	12000
	80	6400	8320	10240	12160	14080	16000
	100	8000	10400	12800	15200	17600	20000

7,925	Overall Space Estimate

Fire Department Program	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Engines	40	x	16	=	640	0	0	
Ambulances	35	x	16	=	560	1	560	
Ladder/Snorkel	60	x	16	=	960	1	960	
Telesquirt	50	x	16	=	800	1	800	
Special ops unit		x	16	=	16	0	0	
Boat/trailer		x	16	=	16	0	0	
Arson Unit	35	x	16	=	560	0	0	
Utility/pickup	24	x	16	=	384	0	0	
Haz Mat		x	16	=	16	0	0	
Port. Pump/trailer		x	16	=	16	0	0	
ATV/trailer		x	16	=	16	0	0	
Rehab unit		x	16	=	16	0	0	
HM-diking/booming		x	16	=	16	0	0	
Tanker	40	x	16	=	640	0	0	
Command vehicle	25	x	16	=	400	0	0	
Public Education Storage		x	16	=	16	0	0	
Port.lighting		x	16	=	16	0	0	
Police vehicle		x	16	=	16	0	0	
Vehicle Maint.bay		x	16	=	16	0	0	
Brush Buggy		x	16	=	16	0	0	
Survive Alive Trailer		x	16	=	16	0	0	
Mass Casualty		x	16	=	16	0	0	
Protective gear locker	2	x	2	=	4	18	72	
Chase vehicle	25	x	16	=	400	0	0	
lawn maint equip	10	x	14	=	140	1	140	
Hose racks	3	x	4	=	12	1	12	

2,544	Subtotal
509	Efficiency Ratio of 20%

3,053	Fire Department Program

Space Needs Summary

Project: Bloomington Fire Department

Location: Station #4

Revisions:

Date: 01/31/12

LIVING /ADMINISTRATION/ OFFICE SPACES

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Chief		x		=	0	0	0	
Asst Chief		x		=	0	0	0	
Deputy Chief		x		=	0	0	0	
Captains	10	x	10	=	100	1	100	
Work Area	12	x	12	=	144	1	144	report writing etc.
	8	x	8	=	64	0	0	training and public ed resources
Secretary's Office		x		=	0	0	0	
Communications Office	12	x	12	=	144	1	144	Combine capts office & comunications needs
Pub-Ed Office		x		=	0	0	0	
Training Office		x		=	0	0	0	
Communications/ IT		x		=	0	0	0	
Office/storage		x		=	0	0	0	
Record/report storage		x		=	0	0	0	
Honor guard storage	6	x	6	=	36	0	0	
Conference Room	14	x	20	=	280	1	280	training, study room, etc
Exercise room	30	x	30	=	900	1	900	free weights, machines, aerobics etc
Day room	24	x	24	=	576	1	576	
Bedroom	10	x	12	=	120	6	720	Includes future needs
Work Room / SCBA	8	x	10	=	80	0	0	all breathing apparatus needs
Laundry Room	12	x	14	=	168	1	168	Both house and turnout gear
Compressor Room	10	x	14	=	140	0	0	breathing air ans station air
Hose dryer		x		=	0	0	0	
Hose Tower		x		=	0	0	0	
Living space Storage	6	x	8	=	48	1	48	living supplies
Work Maintenance area	12	x	14	=	168	1	168	station and truck maint.
Training Room	30	x	30	=	900	0	0	
Kitchenette/dining		x		=	0	0	0	Steve verify plans
Restrooms	6	x	6	=	36	2 1/2	90	1/2 bathroom on living side, gender issue
Shower/Locker Room		x		=	0	0	0	For 6 firefighters
Janitor's Closet	6	x	6	=	36	2	72	Location? One sink on app.floor
Mechanical		x		=	0	0	0	
Entrance Vestibule	10	x	10	=	100	1	100	greet public - security issues
Lower Level Stairs		x		=	0	0	0	
Maint.Supplies		x		=	0	0	0	
Other storage	20	x	20	=	400	1	400	
Elevator		x		=	0	0	0	
Fire investigations office	10	x	10	=	100	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

3,910	Subtotal
782	Efficiency Ratio of 20%

4,692	Administration/Office Spaces

SPACE NEEDS SUMMARY

Project: Bloomington Fire Department

Location: Station #4

Revisions:

Date: 01/31/12

EMS PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Ambulance	35	x	16	=	560	0	0	
EMS/Decon Storage	10	x	15	=	150	1	150	
Billing Office		x		=	0	0	0	
Storage Room		x		=	0	0	0	
Laundry Storage		x		=	0	0	0	
Decon Room		x		=	0	0	0	
Bunk Rooms		x		=	0	0	0	
Day Room		x		=	0	0	0	
Kitchen		x		=	0	0	0	
Restrooms		x		=	0	0	0	
regulated storage		x		=	0	0	0	
Administration		x		=	0	0	0	
EMS Protective Gear		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	
Other		x		=	0	0	0	

150	Subtotal
30	Efficiency Ratio of 20%

180	**EMS Program Total**

Space Needs Summary

Project: Bloomington Fire Department

Location: Station #4

Revisions:

Date: 01/31/12

SITE PROGRAM

	Length	x	Width	=	Sq. Ft.	Quantity	Totals	Notes
Fire Staff Parking	32	x	10	=	320	12	3840	
EMS Staff Parking		x	0	=	0	0	0	
Public Parking	32	x	10	=	320	3	960	1 handycapped, 2 public
Fire Apparatus Apron		x	0	=	0	0	0	
EMS Apparatus Apron		x	0	=	0	0	0	going to be short with construction
Outdoor Training		x	0	=	0	0	0	
Outdoor Patio	10	x	12	=	120	1	120	
Enclosed Dumpster		x	0	=	0	0	0	One is needed or additional space (enclosed)
Generator	6	x	6	=	36	1	36	
Storm Water Treatment		x	0	=	0	0	0	
Heliport Pad		x	0	=	0	0	0	

4,956	Subtotal
991	Efficiency Ratio of 20%

5,947	**Site Program Total**

SPACE NEEDS SUMMARY

Project: Bloomington Fire Depatment

Location: Station #4

Revisions:

Date: 01/31/12

TOTALS

Fire Department Apparatus	3,053
Fire Department Office, Administrative & Living Space	4,692
EMS Program	180
Site Program	5,947

7,925	Station footprint
13,872	Minimum Site Requirements

Bloomington Fire Department

Training Class Report Roll Call

Date:	Time:	Description:
01/31/2012	12:00	Operations and Planning

Category: 100.07 Operations and Planning
Method: CO Conference/Seminar
Location: 04 4 Station
Agency: OTHER Other Agency

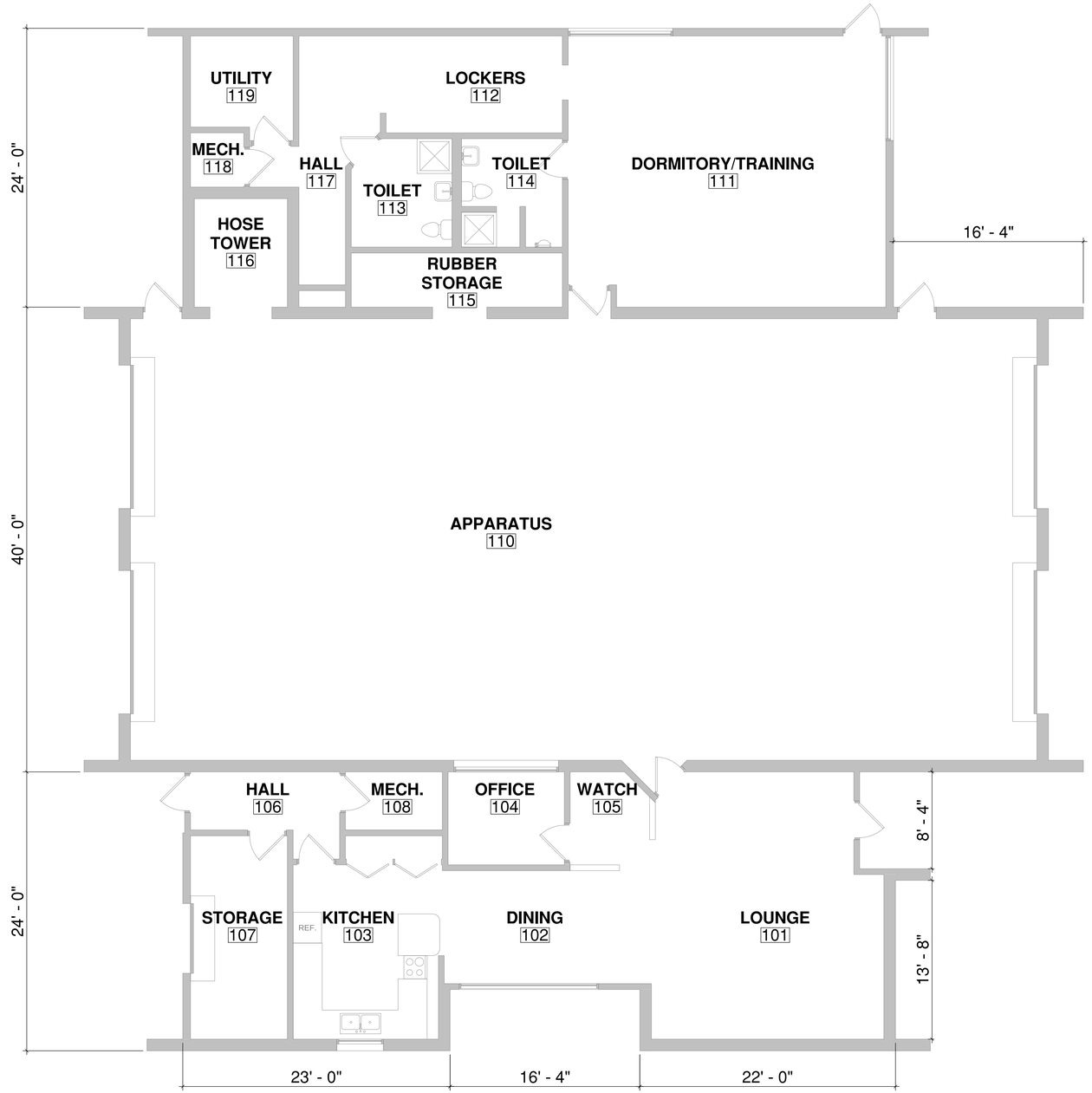
Instructors:

Signature

Station: 4 **Unit:** **Default Hrs:** 1.00 **Hrs Pd:** 1.00 **Pts:** 0.00

Staff Id	Name	Present
4103	Esme, Mark S	Signature
7103	Hartwig, Michael E	Signature
7125	Mahony, Cory R	Signature
6167	Petrovics, Steven	Signature
8282	Purchis, Eric R	Signature
8418	Shultz, Tyson A	Signature

Notes: Classes that relate to the operation and/or planning of the fire department



TOTAL AREA: 5,703 SQ. FT.

1 MAIN LEVEL
3/16" = 1'-0"

NORTH

FIRE STATION NO. 4 - EXISTING CONDITIONS

04.12.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106

NEW AND REMODELED SPACE

NEW ADDITION

REMODELED

TOTAL AREA: 7,521 SQ. FT.

NORTH

1 MAIN LEVEL, PROPOSED ADDITIONS
3/16" = 1'-0"

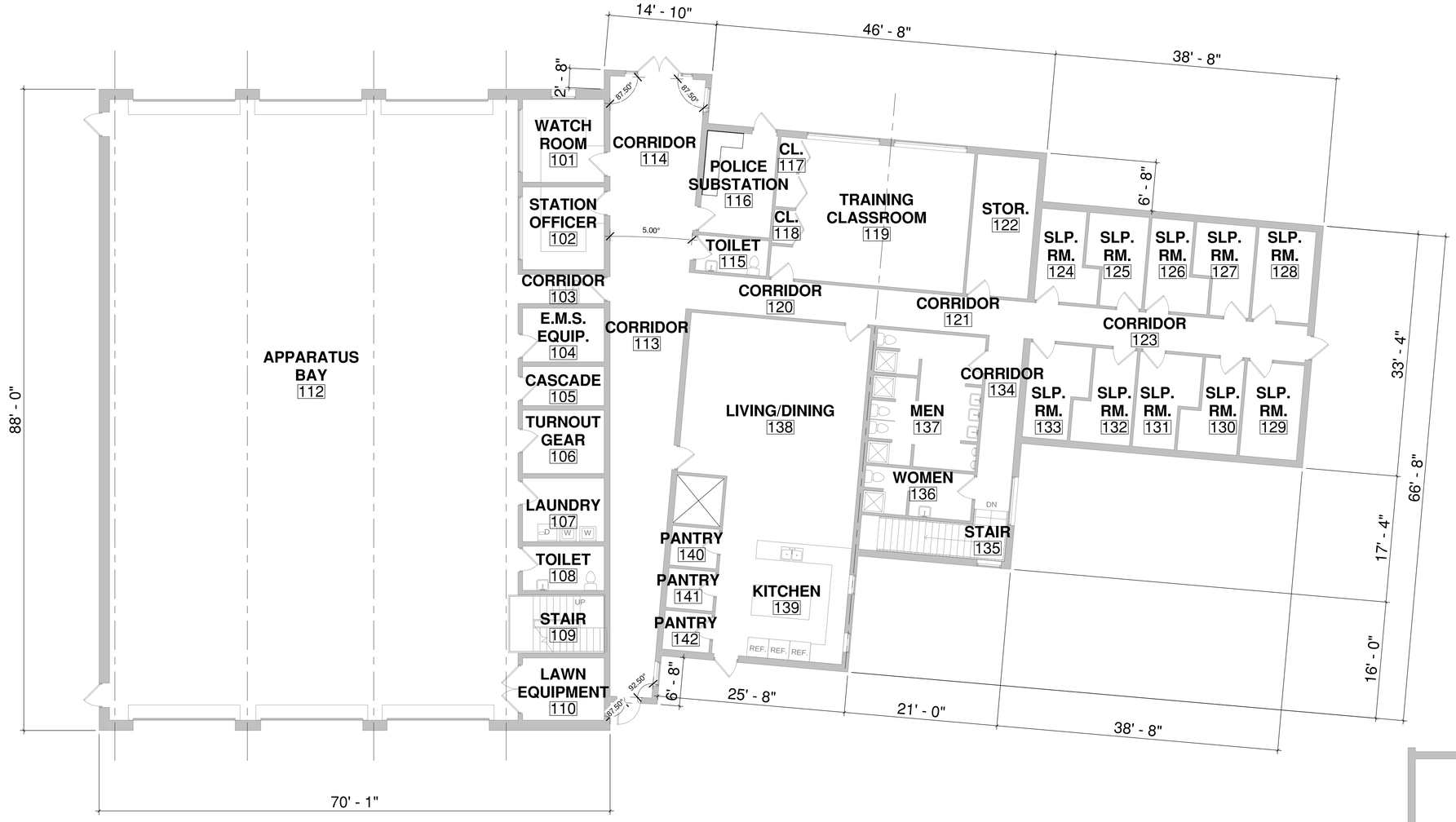
FIRE STATION NO. 4 - PROPOSED RENOVATION/ADDITION

04.12.2012

BLOOMINGTON, ILLIONOIS

FIVE BUGLES DESIGN

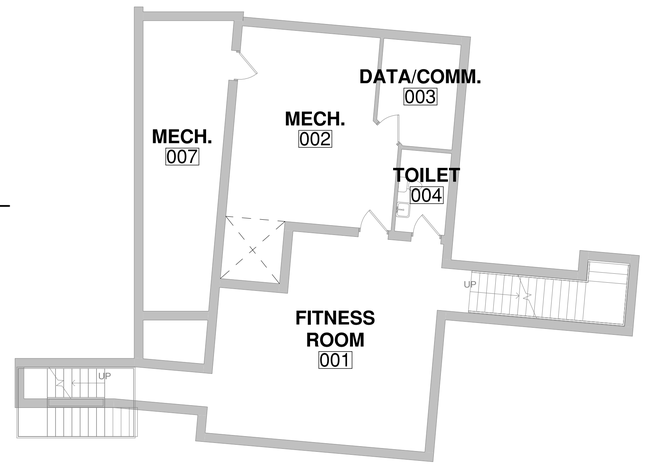
PROJECT NUMBER: 11-106



NORTH

TOTAL AREA: 10,853 SQ. FT.

1 MAIN LEVEL
1/8" = 1'-0"



TOTAL AREA: 1,678 SQ. FT.

2 LOWER LEVEL
1/8" = 1'-0"

FIRE STATION NO. 5 - EXISTING CONDITIONS

04.12.2012

BLOOMINGTON, ILLINOIS

FIVE BUGLES DESIGN

PROJECT NUMBER: 11-106

Bloomington Fire Department

Training

Five Bugles Design staff strongly believes that training, training opportunities and physical training facilities are the cornerstone of an effective fire department. In our initial conversations with city officials and fire department administration staff, the subject of the department's tangible training facilities was held. Lacking a central training facility within the Bloomington Fire Department provided substantial challenges to training staff in providing realistic fire ground situations with condition that would typically be found in fire suppression activities. Five Bugles Design has been a national leader in designing fire station training opportunities into new facilities thereby allowing for station officers the option of "in house" training abilities. It was our intent to include suggestions within this report regarding enhancing the training facilities situation.

Since these initial discussions however, the Bloomington city council has authorized and funded a department training tower and fire simulation facility to be located near the #2 fire station, 1911 Hamilton Road. This training facility will provide the closest simulation to actual fire ground conditions as possible. In a department the size of the Bloomington Fire Department, having such a facility will provide "paybacks" in professionalism, skill and competency that will be experienced throughout the departments Fire and EMS service areas for years to come. The city should be applauded for having the foresight to realize what enormously critical element training has to the effectiveness of its fire department personnel. Single company operations, multi company operations, elevated master stream applications, smoke condition rescue, flash over situations, incident command operations, window rescue, roof top operations, building ventilation, sprinkler system operations, fire stream hydraulic calculations, confined rescue and pump operations are but a few of the important training objectives that this facility will provide.

Department "Wellness" Program

Research has demonstrated the need for high levels of aerobic fitness, muscular endurance, muscular strength, muscular power and flexibility in order to perform safely and effectively in the fire service.

Apparatus Bay Vehicle Exhaust Systems

The EPA recently elevated diesel exhaust to a known carcinogen. It has been accepted throughout the medical community that diesel exhaust emissions contain harmful amounts of particulates that have been proven to be carcinogenic, particularly if employees are subject to long term exposure such as a 30 year full time firefighting career. Thus, any conversations regarding a new apparatus bay, or remodeling an existing apparatus bay, should not be undertaken without spending some serious consideration for some type of vehicle exhaust collection and/or filtration system.

During our on site visits of the existing fire stations within the city of Bloomington, we observed, and had it point out to us by station crews, that there are no such systems installed and that the smell of diesel by-products are detectable throughout the entire station depending upon weather and station conditions such as open or closed apparatus doors, doors leading to living and office areas etc. We strongly urge Bloomington community leaders to include the installation of exhaust emission equipment in any future new construction or remodeling project undertaken by the city.

Choosing an exhaust emissions system can be a very difficult decision. It generally is based somewhat on the overall fire station project budget. In most states the building code mandates certain criteria for air replacement on an apparatus floor and could be considered as the “entry” level, stand alone exhaust ventilation system. These systems however do not specifically deal with direct exhaust emissions, but general air quality throughout the building.

Recent studies however point to a serious health hazard from the exhaust of diesel fire apparatus and ambulance engines. Since these engines have for the most part replaced the gasoline engines that were typically in fire trucks manufactured previously, special consideration on how to best keep the gases from both being breathed by fire fighters and being absorbed in protective equipment stored on the apparatus floor is conversation that all fire station project building committees should conduct.

Just like there are Cadillac’s and there are Chevrolet’s the exhaust emission world has the identical broad range of costs. The conversations regarding exhaust emission systems should include an analysis of the fire departments response activity, fleet maintenance program, and of course, the budget. Because of the costs of these systems often times they are funded at the expense of some other component of the building project. The question of course is which provides the better good to the department.

There are basically three types of fire apparatus exhaust systems manufactured specifically for removing the byproducts of diesel exhaust.

Over Apparatus filtration systems
Exhaust pipe connected filtration systems that permanently are attached
Over the exhaust pipe fully encapsulated systems

The following information was collected from several fire apparatus exhaust manufacturers, there are other manufacturers, but this information will provide a basis to understand the type of systems available for consideration, and is offered to assist building committees with their discussions on how the best system can be selected that falls within the projects budget and accomplishes the safety of the firefighters.

Air Technology Solutions (overhead filtration)

Typical costs is $7200.00 per unit
Recommended that each diesel apparatus have it’s own system overhead

The units are installed directly over each fire apparatus and hung from the structure of the ceiling

They have a dedicated crew that goes throughout the United States installing these systems
They would consider local installers with their guidance

Free standing type units
Automatically opens when doors are opened
Can be manually overridden with a control switch
Electric eye will also trigger the system for a cycle
A cycle is present at the factory but can be changed from 3 minutes to 90 minutes by them owner
The units turn on sequentially
Each individual one can be turned on for maintenance
There is a 3000 CFB blower drafting air into the filtration system
This is the largest CFM blower for equipment of this type on the market for this application
The first level filtration system is a pre-filter to take out the larger particulates in exhaust smoke
The second filter is the final particle filter and brings the exhaust gases into the sub-micron range
The final or third filter is a activated charcoal filter that removes any gas smells or odors
The costs of the filters are;
Pre-filter – good for 1 year and a 6 pack costs $114.00
The second and third filters should last approximately 5 years and cost $750 for the pair
Advantages
No outside discharge meaning no heat transfer of hot or cold air to the outside
No transferring an inside problem to the outside of the building but actually treating and purifying the harmful gases
It will also detect other gases such as CO with a sensor and automatically activate the system for one cycle
A team from the company travels across the United State to do installations, but they would be willing to have a local crew do it under their guidance
It qualifies for the Fire Act Grant

Exhaustomatic Systems

Costs for the a typical system
Tracking system for back in apparatus housing is $6000 per truck
Rail system for back to nose parking is between $9,000 & $10,000 per truck
Filtration systems for $3500.00 per vehicle
Ceramic filtration systems for $7500.00 per vehicle
System design
Works basically the same as most hose systems
Electromagnetic connection or bladder connections available
Install a filter box at the exit point to the system for new regulations
They install filter and line auto-lubrication
They tie a co meter to the building exhausts system that detects CO buildup – at 35PPM it will activate the building exhaust system
Activates on pressure sensor on the apparatus
The company has their own installers based in Indianapolis
They travel all over the United States
Their products are also distributed through Car-Mon Products which is the auto-side of the exhaust system market

Nederman Inc. Exhaust System

Range of costs
For a 4 bay straight back in station between $28,000 to $38,000
For a rail type system in a 2 bay 70’ drive through bay between $35,000 to $48,000
These systems are the most expensive drop hose systems on the market
They have extended warranties greater than most

They provide 100% source capture containment of all exhaust gases and in addition, carbon dioxide, nitrogen dioxide and nitrogen oxide

They have a unique electromagnet disconnect of the hose to the fire apparatus that can withstand a 15 mile per hour disconnect without pulling the system down from the ceiling or severing the hose. It is mounted 24 inches above the tailpipe eliminating the need to bend over to attach and receive the diesel gases in the respiratory system as you connect the hose
The exhaust hose system is a compressible or accordion type hose eliminating much of the bulky hose storage problems with other hose type systems
They put all of what they say the system will do in writing
Two types of systems
Track system for a back in vehicle bay that will allow hose to be pulled to the ramp threshold before disconnecting.
A rail system for drive through apparatus bays, or where two vehicles are stacked front to back.
One exhaust fan assembly for all track or rail system drops
700 to 800 CFM is the highest CFM for these type systems on the market. (other may be between 300 to 500 CFM)
They use a larger source capture hose because of the higher volume
Both systems continue to run for 1 ½ minutes after vehicles have left the station and doors have closed
A transmitter is attached to the ignition system of the vehicles that activate the systems and then the timed disconnect takes over
Maintenance
Electromagnet plate and connector should be checked for salt or other corrosion in Wisconsin winter conditions
All fans need lubricant periodically
Qualifies for the Fire Act Grant

Plymovent Fire House Exhaust Systems

Typical costs for the systems are;
Single lane back-in system is $6000.00 per drop
Drive through system where up to 4 vehicles are parked in tandem is $8000.00 per drop
Features include;
virtually 100% containment of exhaust emissions
completely automatic from the fan activation to automatic release of the hose once the vehicle has left the station
One step connection to the apparatus exhaust pipe when entering the station
The most widely used system on the market

Ward Diesel Exhaust System

Costs for the system are approximately $8674.00 per unit with over 5 units at one time;
The unit is installed on the vehicle, not the station;
All installation is completed at the fire station site;
The unit is installed after the muffler higher than the lowest 2 points on the apparatus underside;
A diverter is actuated by a solenoid in the starting system
The diverter channels the exhaust gases through a ceramic filter on the system;
The gases remain routed through the ceramic filter for a period of between 9 to 90 seconds;
The diverter switched it back to the normal exhaust mode after that;
The diverter doesn't run all the time;
There is a manual override for working on the apparatus inside the station or being in a place where the exhaust; gases could create a problem such as at a car accident scene with trapped patients or outside a hospital etc.;
It can be also trigger to begin when the backup lights are on in stations without drive through bays
Ceramic filter maintenance;
In a department with 200 to 300 responses per year the filters will last around 2 years;

A light on the dash board will come on signaling a call for replacement filter;
There is an exchange program for the filters. It costs around $195.00 each with a return filter.;

Advantages
There are no hoses to attach and un-attach;
Fully automatic, no wall switches or timers or hose or hose connection problems;
No getting rid of heated air in the winter;
Can be reinstalled on a new replacement fire apparatus for a cost of around $4500.00 which includes a new filter.

They are located in Rib Mountain and North Shore Fire Departments;
They are also installed directly at the Pierce and Oshkosh plants;
They have a group of trained installers throughout the United States, not contract installers;
The company is located in New York;
They are acceptable for application to a Fire Act Grant;
Need not meet the existing fire station requirement for funding.

Fire Department Station Alerting & Communications

Everything having to do with both emergency communications and non-emergency information sharing in the fire service and the fire station has drastically changed in the last decade. Modern technology allows firefighters and communications specialists to communicate faster, more effectively, results in a safer environment for firefighters and provides for a system that gets the right people to the right location and in the least amount of time.

The obvious question that communities seeking to improve is "how do you determine what systems we need, when do we need them, why we need them and then to develop a solid plan to bridge the gap between the three".

Since the Five Bugles Design study primarily focused on existing fire station conditions and options for the departments housing future, we haven't specified just what these technology needs are. ***However, we feel very strongly that increased emergency and non-emergency technology is a critical component to the future of the fire service and should be considered in partnership with our recommendations of modifications of existing facilities or new construction.***

Technology issues revolve around three key issues;

- Emergency 911 communications/station alerting/ non-emergency information dissemination systems
- Information management for both internal users (employees) and external (community residents)
- Communication operations technology's effects on architectural/operation design elements

Fire Station architectural design MUST incorporate a long term plan for station technology to meet not just current demands for present effective communications, but for the future development of upgraded systems. For example, the storeroom that contains the station telephone system and a computer server and radio components has traditionally been a small space that never had any consideration given for the HVAC systems required for technology spaces, security, audio visual equipment, etc. Now those small storerooms are designed as larger equipment rooms specifically housing communications equipment.

Another issue in retrofitting an existing station is compatibility. A discussion with communication experts should be conducted to identify what if any interference new equipment can cause with existing communications signals, as well as existing electrical capacities, ceiling wall structure that affect noise and aesthetics.

A few of the benefits of new technology as they affect the fire service are:

- Fire station alerting tones that can be segregated by the communications center to a group of specific firefighters such as ambulance personnel, a single fire station, multiple alarm response, administration personnel, etc.
- Fire alerting tones that can be programmed to make a variety of tones for different parts of the day, such as an accelerated audio alarm that starts from a subtle tone alert and increases in loudness as it is broadcast. Firefighters are awakened to a response in a way that reduces cardiac stress of going from a deep sleep to immediate action.
- Relay systems that shutoff gas appliances in the cooking areas, lock doors to the station, close apparatus bay doors, control vehicle exhaust emissions systems,
- Television systems that display information throughout the departments fire station grid informing them of street closures, emergency medical conditions in their response area, department meetings schedules,

- training opportunity events, new department procedures, fire protection equipment that will be down for maintenance, water distribution disruptions and closures, local emergency alerts, response mapping, etc.

- Classroom audio visual improvements that upgrade and enhance fire department training including station teleconferencing.

- Building and grounds security oversight, including station doors, entry gates, parking lot surveillance, and airport security.

- Building HVAC oversight

To get started with a plan, staff should perform a technology assessment. This plan will identify what the department has at the present time (including software program that may integrate into a new system), what you want to do with technology, and what you will need to accomplish these changes and finally a plan to incorporate your goals.

I common rule to consider as the department pushes forward with their research is that anything that is being done manually and thereby taking time from an emergency response can be done electronically in less time and without conscience thought of responding firefighters whose minds are already on how they will handle the emergency event.

Firefighter Wellness Program

FACT: 44% of *firefighter fatalities* were due to cardiovascular disease, according to CDC data from 1995-2004.

In our conversations with the Chief Kimmerling, Deputy Chief Les Siron, and other senior fire department staff, the issue of instituting a department wide firefighter health and safety program commonly called “Firefighter Wellness Program” was targeted as a future need for the department’s long-term list of goals.

Bloomington Fire Department staff is commended for their attitude and progressive thinking towards wellness programs, which have over the last decade resulted in fewer firefighter injuries and healthier employees.

The prevalence of cardiovascular illness and deaths and work-inhibiting strains and sprains among firefighters illustrates the need for comprehensive health and wellness program in every department. Yet city officials and department leaders often struggle to implement a program due to a variety of reasons, including resistance or lack of motivation from members, the costs associated with implementing a program, and the lack of well-defined requirements and the physical space to offer the fitness tools that are required of any health and fitness program.

With heart attack, overexertion, and strain causing more firefighter deaths and injuries than any other cause, it is critically important for departments and personnel to focus saving health and wellness initiatives and overcome the obstacles to a successful program.

Our design staff toured each fire station in the city of Bloomington and found that each, in some way, had varying amounts of exercise equipment located somewhere within the station. We saw equipment located somewhere within the station. We saw equipment in classrooms, storage spaces, on apparatus floors and in dormitory areas. Firefighters that we talked to from each of the stations stressed to us their hope for adequate space for physical exercise in any new station design OR in any remodeling that the city might undertake as a result of the study. Any physical fitness programs success in part driven by the space requirements.

It is our recommendation that any future new facilities or remodeling projects on existing fire stations include a conversation of how space requirements for the establishment of a dedicated comprehensive employee wellness program can be incorporated into the design process.