

ARCHITECTURAL/ENGINEERING  
**EVALUATION & STUDY**  
— FOR —



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**FIRE STATION**  
**# 1**

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LAWRENCE, KANSAS

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NOVEMBER 22, 2010

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## EXECUTIVE SUMMARY

### INTRODUCTION

Treanor Architects, P.A. is pleased to provide the City of Lawrence, Kansas with this evaluation of existing Fire Station #1. This evaluation reviews the existing building, identified current deficiencies, and evaluates required repairs/renovation/addition, verses new construction options.

Included in this survey are the following:

- Existing Conditions Evaluation
- Building Component Analysis
- Existing Program Space Analysis
- Baseline Program for a new facility
- Baseline Program Diagrams
- Facility Recommendations including:
  - Repairs to the existing facility,
  - Renovation and addition to the existing facility, and
  - New facility.

The Existing Conditions Survey will document, quantify and evaluate the facilities spaces, components and systems; the facility will be evaluated with respect to applicable codes, design and accessibility guidelines and new facilities. Recommendations will be developed to address any identified deficiencies in the current spaces, components and systems.

The recommendations will include the four options outlined in the body of this document. Each option will include an overview, the estimated construction costs and the pros and cons of that option.

### HISTORY AND EXISTING CONDITIONS

The Lawrence fire department, originally a volunteer bucket brigade, was organized in 1859. Fire Station 1, located at 746 Kentucky Street, opened in 1950 and housed the Lawrence Fire Department, Lawrence Police Department, and Veterans of War spaces. Renovation to fire department areas was performed in 1983. This plan remains substantially intact today. Station #1 houses a variety of equipment including 1 ambulance, 1 quint, 1 pumper, and 1 utility pick-up.

The existing facility is a two-story structure that houses the day-to-day operations of the Lawrence Douglas County Fire & Medical units of Station 1. The facility houses the department's apparatus, offices, day/living spaces, fitness, and sleeping spaces.

The building consists of load bearing masonry walls with steel bar joist roof/floor structure. Foundations are cast-in-place concrete. The super structure shows little sign of substantial settlement with only minor cracking noted in existing slabs on grade. The mechanical system consists of the original boiler for heating with the addition of forced air units for cooling. The existing mechanical systems have lived their servicable lives and are in need of replacement. The facility has been reviewed by engineers for both systems and their report is included within.

The exterior flat concrete work is deteriorating in limited locations and should be replaced in part as required. Areas of the building where adjacent grade is above finish floor should be adjusted to insure proper drainage away from the building is achieved, to avoid further water damage.

1 The roof is an assemblage of differing roof types, stacked one on another, and the existing  
2 exposed roof has reached its serviceable life. Perimeter wall flashings have been damaged  
3 by hail. Stone coping joints have failed and are allowing water to penetrate into the exterior  
4 wall assembly. Roof drainage system is poorly installed or has failed and requires  
5 replacement. A report from the roofing consultant is enclosed.  
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#### 8 OVERVIEW BUILDING ANALYSIS

9 The building has been reviewed for a variety of functions, uses, and needs. The following is a  
10 summary of the discoveries of these analyses.

- 11 • The approximate gross square footage of existing Fire Department areas within the  
12 facility is 7,315 gsf.
- 13 • The facility was designed around a single group bunkroom. The plan has been  
14 modified to meet the current sleeping and living needs of today's firefighters,  
15 including the need for separate male and female firefighter sleeping.
- 16 • The apparatus bay is a three-bay, single stack, back-in layout, with an adjacent  
17 smaller garage space to the East, currently housing an emergency response trailer.
- 18 • There does not appear to be significant settlement to the apparatus bay floor and/or  
19 concrete apron suggesting structural stability in these areas.
- 20 • The building mechanical system is shared with non-departmental areas, and these  
21 systems have lived their serviceable lives.
- 22 • The facility is in generally good condition and is structurally sound. Current  
23 deficiencies include level of finish, aesthetics, program space requirements, and  
24 adjacencies of departmental spaces within the existing building.

25  
26 A component analysis of the building indicates that the cost of renovation is likely 71.5%  
27 percent of the cost of new construction of equal quality and scope. This percentage does not  
28 include additions to the scope, or changes in the quality of materials. The major deficiencies  
29 identified are grouping of department spaces, configuration of bunk areas, useful life of the  
30 mechanical systems, deferred maintenance items and yearly maintenance issues.  
31

32 The building is located in Lawrence, Kansas and is subject to the 2006 International Building  
33 Code. This facility has been reviewed under the IBC. The building, when evaluated to these  
34 codes, is not compliant. Any substantial work to the facility would require corrective code  
35 measures to meet currently adopted code.  
36

37 Similar to the IBC the American Disabilities Act (ADA) makes allowances for alterations and  
38 renovations to a facility. The building was analyzed for its compliance with the ADA and the  
39 building does not currently comply with all ADAAG regulations. Modifications could be made  
40 to the parking, approach, entry and restrooms, and vertical circulation to comply with ADA.  
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#### 42 REPAIR/RENOVATION/ADDITION AND NEW BUILDING OPTIONS

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44 Four options were considered for this report. These options are 1) repair and renovate  
45 with an addition to existing Station #1, 2) provide deferred maintenance work to the building  
46 envelope with limited interior remodel, and 3) provide estimate and general building location  
47 for two new building sites. From a list of multiple sites, two sites were selected as most  
48 desirable, when considered for apparatus access and required square footage. Estimates of  
49 cost and a general scaled layout for these two sites are provided and the prototype station for  
50 the department was used as a governing station size and configuration.  
51

52 OPTION 1, RENOVATION & ADDITION: Option 1 repairs and/or replaces existing  
53 building components while providing for a new plan configuration to better suit current  
54 department needs and operational standards. Option 1 also includes a small addition to the  
55 facility to increase site security and observation of the existing apparatus bays. This option



would meet all of the current deferred maintenance issues and any physical or cosmetic issues associated with departmental areas of the building. The repair scope includes the following:

- Exterior (Department areas of the building only)
  - Repair and/or replace all failed sidewalks and parking lots.
  - Adjust all grade elevations to insure positive drainage away from the building.
  - Isolated brick masonry re-pointing in percentage identified in estimate.
  - Stone coping removal, cleaning and replacement with top of wall flashing.
  - Re-caulk all exterior joints.
  - Replace all doors and windows with energy efficient systems. In order for the facility to meet current code requirements the windows in the sleeping rooms would need to be modified to be egress compliant windows.
  - Replace the roof and associated flashings for department areas of the building only. Minor repairs are recommended to the Eastern portions of the building that are experiencing drainage issues.
  - Repair and or replace the roof drainage system.
- Interior
  - Plan reconfiguration per attached schematic plans which groups all department spaces in the Western portion of the building, abandoning basement areas currently used for exercise, conference, and office space.
  - Restoration of original finishes in apparatus bay.
  - Repair floor, wall and ceiling finishes as required by other work.
  - Replace the HVAC system per the recommendations of this report.
- Addition
  - Adds new shift office on the West side of the existing facility to provide better security for on-site visitation parking along Kentucky as well as moving staff closer to the main bay doors facing 8<sup>th</sup> Street.
  - Provides for new public toilet at entry consistent with design of other department stations.
  - Reconfigures approach sidewalks and site plantings to support proposed new addition.

A summary of estimated project costs for these items are as follows:

	Medium \$/S.F.	High \$/S.F.	Sq. Footage	Medium Est.Cost	High Est.Cost
<b>Building Renovation &amp; Addition</b>	\$ 182.00	\$201.00	11,038	\$ 2,010,549	\$ 2,222,185
<b>Totals</b>				\$ 2,010,549	\$ 2,222,185

Costs to temporarily relocate the station operations during construction have not been included in this study. Associated costs can vary significantly depending on whether the existing facility will be occupied during construction or if Station #1 activities are relocated to an alternate facilities. This should be reviewed and anticipated as part of further project planning.

OPTION 2, DEFERRED MAINTENANCE ITEMS: Option 2 provides for the deferred maintenance work on the building envelope, and limited interior remodel work, both estimated as part of and included in Option 1. This option does not include mechanical improvements,

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complete station interior space reconfigurations, or building additions estimated as part of Option #1.

A summary of estimated project costs for these items are as follows:

	Medium \$/S.F.	High \$/S.F.	Sq. Footage	Medium Est.Cost	High Est.Cost
<b>Deferred Maintenance &amp; Minor Interior Renovations</b>	NA	NA	NA	\$ 935,324	\$ 1,033,780
<b>Totals</b>				\$ 935,324	\$ 1,033,780

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Costs to temporarily relocate the station operations during construction have not been included in this study. Associated costs can vary significantly depending on whether the existing facility will be occupied during construction or Station #1 activities relocated to alternate facilities. This should be reviewed and anticipated as part of further project planning.

OPTION 3, NEW FACILITY OPTIONS: The "ideal" program was used as a model for this option and is consistent with Stations #2 & #4, most recently constructed. This option assumes that the land associated with a new Station #1 would be off site from the current location to allow Station 1 to remain fully operational during construction activities. From a list of multiple Owner identified sites, two sites were selected as most desirable, when considered for apparatus access and required square footage. Estimates of cost and a general scaled layout for these two sites are provided and the prototype station for the department was used as a governing station size and configuration.

The estimated costs for both new Station #1 Options are as follows. Two cost ranges have been provided. The medium construction cost reduces slightly the quality of materials in the facility and potentially changes the structure type of the facility. This cost range would include wood or metal stud bearing walls with pre-engineered wood trusses. The high construction range would increase the quality, and in-turn, the durability of materials. The materials associated with the higher cost range, would be longer lasting and more durable. The increased initial construction costs would reduce the maintenance costs of the facility. This range would also include steel frame or concrete masonry bearing walls in lieu of stud construction. The roof would be framed with either metal or wood trusses, but would span farther, allowing for more flexibility in changing the layout in the future.

	Medium \$/S.F.	High \$/S.F.	Sq. Footage	Medium Est.Cost	High Est.Cost
<b>Option 1 (8<sup>th</sup> and Kentucky)</b>	\$ 278.00	\$ 307.00	10,429	\$ 2,901,164	\$ 3,203,392
<b>Totals</b>				\$ 2,901,164	\$ 3,203,392
<b>Option 2 (6<sup>th</sup> and Tennessee)</b>	\$ 278.00	\$ 307.00	10,429	\$ 3,118,534	\$ 3,446,800
<b>Totals</b>				\$ 3,118,534	\$ 3,446,800

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**CONCLUSIONS AND RECOMMENDATIONS**

Overall the exiting building is in good condition. The building requires some immediate site, mechanical, roof, and cosmetic repairs with limited replacement of mechanical systems. With these repairs the life expectancy of the building, with regular maintenance, will be extended another thirty years without major capital improvements, to station areas.

The renovation with addition option addresses, not only the repair and deferred maintenance issues of the facility, but also the functional and programmatic deficiencies inherent in the existing building plan configuration. These options will improve efficiency and provide room for growth in the department for the immediate future making the station operationally similar to a new facility.

There are pros and cons associated with each option that has been outlined within this report. The renovation with addition option is the least expensive option that addresses the program and functional needs of the department. The most significant con associated with this option is the ability to complete this project with the least impact on the day-to-day operations of the station and department. This option will likely require temporary relocation of the station operations during construction. Phased construction could occur, but this will still likely require relocation and would add to the costs of the project. Temporary facility costs have not been accounted for in the estimate of probable costs as this item could range significantly. This factor must be explored prior to any final decision. If temporary facilities can be arranged on site or at adjacent land then this option could in the end prove most viable.

The new construction options represent the more costly solutions, but would allow a new facility to be designed and constructed without disruption to the day-to-day operations of the department. Incorporated into these options are program needs that have been identified by the department that would improve the efficiency of operations and result in reduced operational costs with increased staff morale. As costs are determined for temporary facilities associated with the renovation and addition option, the costs gap between renovation and new options will decrease.

The City of Lawrence should review the attached information and in their best interest make a decision on the most appropriate direction for the project. Both schemes create viable options, maintaining the integrity and presence of the department in the downtown area. As additional costs are developed for the temporary facilities, a better and more thorough evaluation should be made in comparison of the presented options.

**GENERAL**

The building has been reviewed by Treanor Architects, P.A., of Topeka, Kansas. The information presented within this report was gathered from owner surveys, on-site visits, phone conversations, Internet research and/or other sources. The information received from these sources is assumed to be complete and accurate. The facts and conclusions presented are based on the best information available at the time of publication. They represent a good faith attempt to interpret the information provided and to provide calculations free of mathematical, logical or associative errors. Please review all of the numbers, estimates, mathematics and associations illustrated in this report. The report is intended solely for the use of the owner and is not intended to be relied on by any third party.

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## EXISTING CONDITIONS

### Building Evaluation Narrative

#### BACKGROUND

Lawrence Douglas County Fire & Medical, originally a volunteer bucket brigade, was organized in 1859. Fire Station 1, located at 746 Kentucky, opened in 1950. The site is also home to Douglas County Senior Center. This station houses a variety of equipment including 1 ambulance, 1 quint, 1 pumper, a utility pick-up.

#### PROJECT LOCATION

The building is located at 746 Kentucky Street in Lawrence Kansas.



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PROJECT MAP



## **EXISTING CONDITIONS**

### **EXISTING SYSTEM ANALYSIS**

#### **Foundation / Substructure**

- Footings and Foundations: Concrete pour-in-place foundation. Minor indication of settlement. All indications are aesthetic and not structural.
- Excavation and Backfill: Minor settlement primarily along East wall where existing sidewalk now drains towards the building.
- Slab on Grade: Concrete. Some cracking is apparent in the apparatus bay, approach apron, and sidewalks, but primarily appear to be aesthetic not structural in nature. Existing drains in apparatus bay are small area type drains, where department standard is now trench drains.

#### **Superstructure**

- Columns and Walls: Load bearing masonry columns. Minor visual deficiencies primarily surfacing at exterior walls where failing roof is allowing water penetration into wall system and increasing wall deterioration.
- Floor and Roof: Steel bar joists are concealed from view by finish systems, so limited observation of this component was performed.

#### **Exterior Closure**

- Walls: Brick masonry veneer wall finish. Some indication of veneer deterioration is evident in multiple locations. Parapet wall cap stone head joints have failed and are allowing water down into the exterior wall system in multiple locations. This item should be dealt with immediately to stop further deterioration.
- Doors: Combination of hollow metal doors and frames and aluminum doors and frames. Not all hardware meets code or ADA.
- Windows: Aluminum windows.

#### **Roofing**

- Roof Coverings: REF: Roof report for additional detail.
- Insulation: Only visible insulation is on the roof. The quantity is below average and does not meet current energy codes and requirements. REF: Roof report for additional detail.
- Openings and Specialties: Not applicable

#### **Interior Construction**

- Partitions: Combination of masonry and metal stud structure with metal lath and plaster finish coat. Plaster has deteriorated in areas; has been covered with paneling and/or gypsum board. Limited access to interior of walls for MEP upgrades.
- Interior Doors: Wood and hollow metal frames and doors. Doors do not have the

	appropriate fire rating and or closures. Doors do not meet code or ADA.
Wall Finishes:	Majority of finish is paint. All painted surfaces require repair / refinish. Some areas have epoxy, ceramic tile, etc. All finishes require updating.
Floor Finishes:	The corridor spaces are carpet and vinyl composite tile. All flooring should be upgraded.
Ceiling Finishes:	Majority of ceilings are acoustical or gypsum ceilings. The apparatus bay appears to have a suspended plaster ceiling.
Int. Surface / Ext. Wall:	Plaster or gypsum board on the substrate. The apparatus bay interior of exterior wall finish is painted masonry.
Toilet Rooms:	Ceramic floors and wall surfaces. Fixtures are all porcelain.

### Mechanical

Heating:	REF: MEP report for additional detail.
Plumbing:	Copper pipe distribution
Cooling:	REF: MEP report for additional detail.

### Electrical

Service and Distribution:	Desired separation between fire station areas and the remainder of the facility is desirable. REF: MEP report for additional detail.
Lighting and Power:	System is original and utilizes old technology and energy requirements. Variety of interior fluorescent and incandescent fixtures, limited exterior lighting. Desired separation between fire station areas and the remainder of the facility is desirable. REF: MEP report for additional detail.

### Special Construction

Fire Protection:	Fire department portion of the existing facility is fully sprinkled.
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**EXISTING CONDITIONS**  
EXISTING PHOTO DOCUMENTATION

The Existing Photo Documentation is on the following pages.

## EXISTING CONDITIONS

### Existing Photo Documentation

Photo #	Photo Name & Description	Photo
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#### EXTERIOR DOCUMENTATION

- 1 Exterior character is consistent with 1950's era blond brick masonry building. Masonry veneer is deteriorating due to water infiltration at stone wall cap locations
- 2 Stone coping wall caps have mildew growth, deteriorated head joints, and no through wall flashing below cap. This condition should be corrected at entire building perimeter.
- 3 Limited brick veneer repair is required. This area is likely a result of freeze thaw cycle brought on by moisture from the adjacent downspout.



- 4 Stone copings at top of hose tower no longer have mortar joints. Corrective measure required to prevent water infiltration.



- 5 Main stair tower roof ponds water and will increase deterioration of new roof membrane. Roof should be adjusted to drain properly.



- 6 Typical brick masonry veneer deterioration near leaking wall cap stone. Corrective measures required immediately.





- 7 Apparatus Bay front apron appears to be in good repair. Replacement could be considered as optional. Stone pillars between overhead doors show signs of damage apparently due to vehicle collisions. Cleaning, repair or replacement of these stone pillars base pieces should be considered, and bollards installed to prevent similar damage in future.



- 8 Drainage issues at building perimeter should be addressed to prevent further deterioration of building foundations and exterior paved surfaces.



- 9 Brick masonry veneer deterioration below window on West side of building. Stone window sills should be cleaned in place prior to new window installations.



- 10 Brick masonry veneer deterioration is common in the exterior North exit stair. Years of exposure to the elements has increase masonry deterioration in this area. Consider provide open air roof structure to protect again future deterioration.



- 11 North exit stair open to the elements. The stair provides effortless access to the facility roof and thusly posses a security issue for the entire building.



- 12 Glass block window openings and associated steel have deteriorated substantially. Further study will be required to determine if removal and replacement is warranted.





- 13 Replacement of any remaining steel framed windows with aluminum thermally broken window systems is recommended. Sleeping room windows have been replaced previously, but will need to be replaced in proposed new dorm configuration.



- 14 Refer to the attached roofing consultant report for existing roof conditions and recommendations





- 15 Bunker gear, SCBA units and other equipment reduce the available space in an existing apparatus bay. Natural light level is good and structural components of the bay appear to be functioning well.



- 16 Existing bays are limited in width reducing storage options and door type options at bay front.



- 17 Existing floor drains in the bay area, are area type drains. Current department standards would provide for trench drains to ease in floor cleaning and firefighter safety.



- 18 Mechanical system in facility is reaching its servicable life. Refer to attached mechanical engineers report. Current department standard for heating bay areas is radiant gas fired heaters. These would be retrofitted as part of a full mechanical system upgrade.



- 19 Mechanical system in facility is reaching its servicable life. Refer to attached mechanical engineers report. Much of this equipment could be removed cleaning up the bay perimeter is a full mechanical retro fit is undertaken.



- 20 Existing medical storage is located well directly off of the apparatus bay, but is undersized and does not have adequated hvac control.





- 21 Existing configuration of the apparatus bays will likely remain the same in any remodel of the building. Lighting, mechanical, and exhaust systems replacement are proposed as part of any substantial remodel.



- 22 Existing kitchen/dining area is undersized for current staffing and the stove exhaust hood does not appear to have the appropriate overhang required currently by code. Expansion fo this space is recommended.



- 23 Dayroom are is undersized for current staffing and has limited access to natural light. Expansion of this space is recommended.



- 24 The existing restrooms located near the current dayroom area in disrepair, are not accessible, and do not support multi-gender use. It is recommended that these restrooms be relocated and updated as part of remodel activity.



- 25 The existing station office is severely undersized when compared to comparable spaces in newer stations. Currently, the office is positioned well to see the interior of the apparatus bay, but cannot see the apron or the front door for station security. Relocation of this space is recommended to improve station office areas of observation improving overall station security.



- 26 The sleeping areas on the 2nd floor are split into two sleeping dorms. Both dorms are configured as open bunk rooms and do not follow best practice for station design. Reconfiguration of these dorms into individual sleeping rooms is recommended to bring these spaces up to current department standards.





- 27 Existing poles provide access from sleeping quarters on the second floor to the apparatus bay below.



- 28 Deterioration of interior wall finishes is occurring in the Southwest corner of the male sleeping dorm due to roof failure above. Refer to roofing consultant write-up for recommendations.



- 29 Existing apartment style stacked laundry equipment is not adequate for the staffing load using the building at any one time, Replacement with more efficient residential style washer and dryer is recommended.



- 30 Existing tile shower compartments are in good repair. It is the design teams understanding that these showers were constructed by fire fighters as part of the renovation work performed in 1984.



- 31 Existing locker room is in good repair. It is the design teams understanding that these lockers were constructed by fire fighters as part of the renovation work performed in 1984.





- 32 Deterioration of interior wall finishes, in the kitchen serving the Senior Center ballroom, is occurring along the west elevation of the building due to roof failure above. Refer to roofing consultant write-up for recommendations.



**EXISTING CONDITIONS**

**MEP EVALUATION**

The MEP Evaluation is on the following pages.

## EXISTING CONDITIONS

### MEP EVALUATION



#### Mechanical:

##### Existing Conditions:

Heating for the existing facility is provided by two low pressure, gas-fired steam boilers located in the lower level boiler room. Steam is distributed to steam coils, unit heaters and radiant heaters throughout the facility. The condensate return/boiler feedwater system is a gravity system. The majority of the steam and condensate return piping is believed to be original to the building. A portion of the piping is located in inaccessible tunnels at the perimeter of the apparatus bay. Some steam and condensate piping is un-insulated in accessible locations posing possible safety issues.

Cooling is provided by a series of air cooled condensing units and heat pumps serving air handling units distributed through the building. The condensing units are located on grade north and south of the building and on the roof of the dorm. The age and condition of the cooling equipment varies with the equipment serving the east wing of the building appearing to be original to the building with equipment serving the basement meeting room, day room and dorm area being newer vintage.

The air handling units serving the building appear to be single zone, constant volume. Two original units serve the east wing first and second floor while a newer unit serves the meeting room on the lower level. The existing fitness room is not equipped with air conditioning or ventilation. The air handling unit serving the large second floor assembly space is located in a fan room accessible only via the second floor men's restroom. The dayroom and second floor dorm area are served by three air handling units that appear to have been installed during renovations of the spaces served. Access to the main dorm air handling unit is not conducive to maintenance on this equipment.

The existing kitchen exhaust hood serving the day room kitchen does not appear to have adequate overhang of the cooking equipment (assuming Type 1 hood) and is not equipped with a hood fire suppression system.

The apparatus bay is served by steam unit heaters located at the perimeter. The existing apparatus bay is equipped with an automated vehicle exhaust system which appears adequate for current operations.

The existing temperature controls systems are for the most part beyond expected service life and in need of replacement.

Recommendations:

The base recommendation includes the complete renovation of the fire department spaces in the building totaling approximately 8500 square feet. As part of the proposed renovation, removal and replacement of existing air handling and cooling equipment is recommended. This work should include provisions for adequate mechanical space to facilitate maintenance of mechanical equipment. Due to the age, condition and expected remaining service life of the existing steam boilers, this equipment could be retained and reused in the renovated facility if desired. Conversion to a hot water heating system is recommended which would include the addition of a steam to hot water converter and circulating pumps. This would allow existing steam and condensate piping to be removed and or abandoned. The proposed heating equipment would be housed within the existing boiler room. The proposed conversion of the heating system from steam to hot water would necessitate the replacement of the existing steam heating coils and radiant heaters serving the east wing of the building. Alternatively, this portion of the steam system could remain in service until renovated however the condition of existing piping is a concern.

The equipment serving the east wing of the facility is for the most part beyond expected service life and a candidate for replacement.

The expressed desire to separate the building mechanical systems from a maintenance and operations standpoint can be accommodated on the cooling side (existing conditions) however separation the heating systems would require additional equipment and investment. As noted above, the conversion to a hot water system is recommended. Separation of the east and west wing heating systems would likely require replacement of the existing boilers with smaller dedicated boilers (hot water) to serve two independent hydronic systems. This would result in additional first costs and has the potential to reduce redundancy within heating system provided by the two existing boilers.

## Electrical:

### Existing Conditions:

The existing electrical service to the building is fed from an overhead distribution line and pole-mounted transformer bank owned and maintained by Westar Energy, and is located on the north side of the building. Secondary power from the building is routed underground from the pole to the boiler room in the basement of the building. The Westar meter is located in the areaway outside the boiler room, and the metering equipment is located in a cabinet inside the boiler room.

The metered power feeds a 600 amp 208Y/120 volt 3-phase 4-wire main service disconnect switch. From this switch, power is fed to a distribution panel in the boiler room, which feeds the branch circuit panelboards throughout the building, and a distribution panel in the first floor air handler room in the east wing, which serves much of the air handling and air conditioning equipment in the building. This mechanical equipment distribution panel and its feeder do not have adequate overcurrent protection installed at their point of service in the boiler room.

The distribution panel and the two branch circuit panelboards located in the boiler room have been replaced fairly recently, and appear to be in good condition. However, the rest of the panelboards located throughout the building are generally past the end of their expected service life, and for the most part are no longer supported by the manufacturers for replacement parts, breakers, etc.

The scope of this study did not include the removal of panelboard trims or covers to allow review the condition of the existing wiring in the building. However, based on the age and condition of the panelboards and other electrical equipment in the building, it is likely that most of the electrical panel feeder cabling in the building is original to the construction of the building. It is also likely that much of the branch circuit wiring in the building has been replaced during the course of the various building remodels that have occurred, but the condition of that wiring is unknown.

Telecommunications services to the building also appear to enter the building in the basement boiler room, and a large amount of equipment and wiring is located on terminal boards on the south wall of the boiler room. Other telecommunications equipment in the building is located in janitorial and mechanical rooms.

There are two fire alarm systems currently serving the building; one serving the east side, and the other the west. Both appear to be in working order, and no concerns were noted for either of them.

### Recommendations:

The base recommendation includes the complete renovation of the fire department spaces in the building, totaling approximately 8500 square feet. During this renovation, removal and replacement of all electrical equipment and feeders in the area of remodel with the exception of the three newer panels in the boiler room noted above is recommended. The main disconnect

switch should also be replaced with a main distribution panel containing separate breakers to protect the boiler room distribution panel and the mechanical distribution panel, in order to provide proper overcurrent protection for each. The main distribution panel will also provide more flexibility for feeding future loads in the building as needed.

It is our understanding that separate metering of the electric utility for the east and west halves of the building is not desired. It appears that individual branch circuit panelboards in the building only serve either one side of the building or the other, so separation of circuits for division of maintenance responsibilities appears feasible.

If the decision is made to update the systems in the east half of the building, it is recommended that the existing branch circuit panelboards and associated feeders be replaced as well. If the HVAC systems in the east portion of the building are replaced, the mechanical distribution panel and feeder serving that equipment should be replaced as well.



**EXISTING CONDITIONS**

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**ROOF EVALUATION**

**The Roof Evaluation is on the following pages.**

The Garland Company, Inc.

Roof Asset Management Program



City of Lawrence KS/Station #1 Ramp  

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Report

Prepared By:  
William Renick

Prepared For:  
Jay Zimmerschied

June 15, 2010

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# Client Data

**Client:** City of Lawrence KS

## Client Data

<b>Name:</b>	City of Lawrence KS		
<b>Address 1:</b>	746 Kentucky Street	<b>Address 2:</b>	-
<b>City:</b>	Lawrence	<b>State:</b>	KS
<b>ZIP:</b>	66044-2334	<b>Country:</b>	United States

## Contact Info

<b>Contact Person:</b>	Jay Zimmerschied	<b>Title:</b>	Principal
<b>Mobile Phone:</b>	-	<b>Office Phone:</b>	785-235-0012
<b>Email:</b>	jzimmerschied@TreanorArchitects.com		



# Facility Summary

**Client:** City of Lawrence KS

**Facility:** Fire Station #1



## Facility Data

<b>Address 1:</b>	746 Kentucky Street
<b>Address 2:</b>	-
<b>City:</b>	Lawrence
<b>State:</b>	KS
<b>ZIP:</b>	66044-2334
<b>Type of Facility:</b>	-
<b>Square Footage:</b>	14,230
<b>Contact Person:</b>	Jay Zimmerschied

## Roof Sections

Name	Date Installed	Square Footage	Roof Access
Section A Modified	2009	7,333	Stairs
BUR Section A	Unknown	2,800	Stairs
BUR Section B	Unknown	3,422	Stairs
BUR Section C	Unknown	675	Ladder Needed

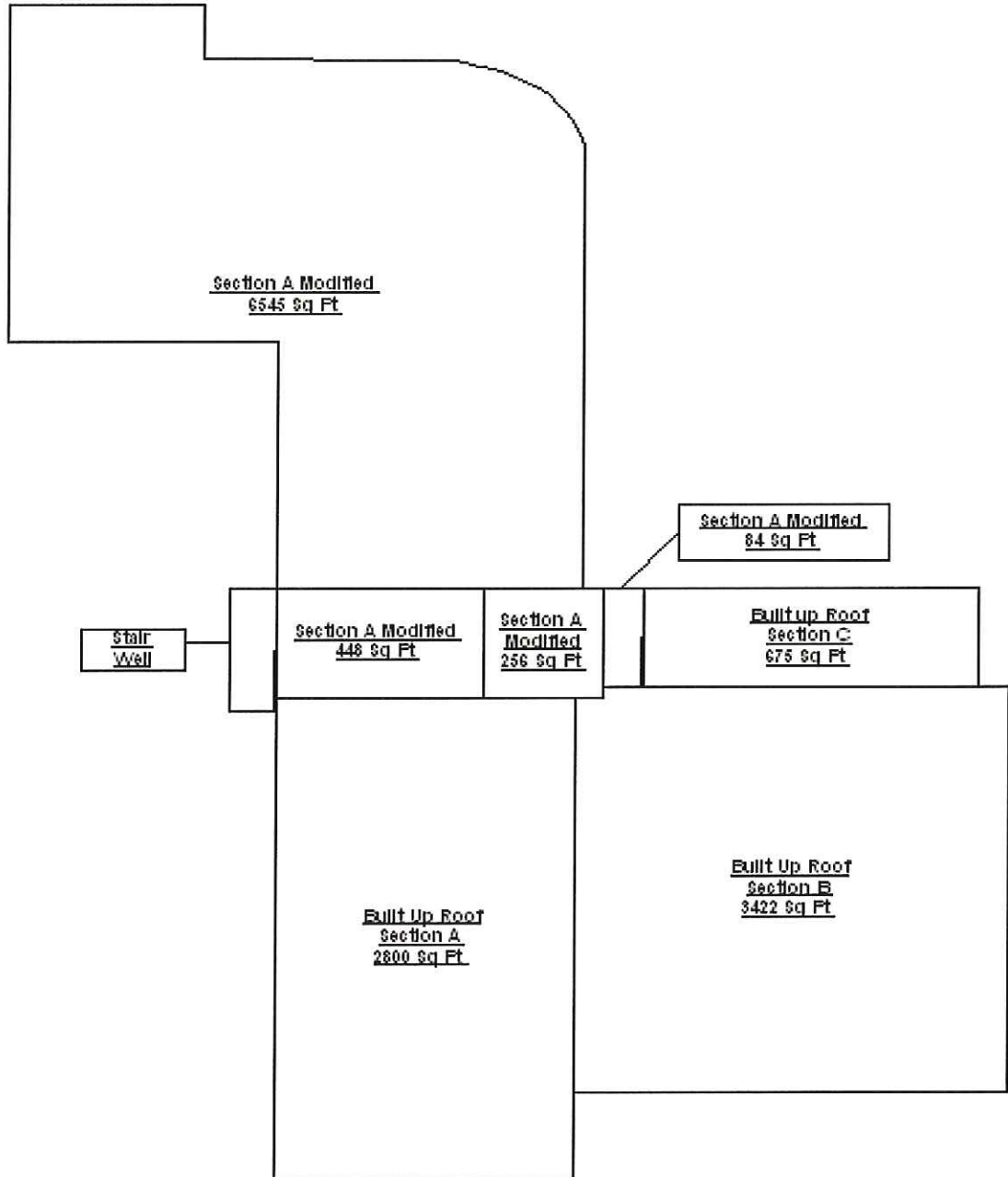




# Facility Drawing

Client: City of Lawrence KS

Facility: Fire Station #1







# Construction Details

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section A

## Roof Info

<b>Year Installed:</b>	Unknown	<b>Square Footage:</b>	2,800
<b>Slope Dimension:</b>	1/4 to 12	<b>Roof Height:</b>	40
<b>Roof Access:</b>	Stairs	<b>System Type:</b>	Gravel Surface BUR

## Roof Assembly

Roof #	Layer Type	Description	Attachment	Insulation R-Value	Insulation Thickness
1	Surfacing	Flood & Gravel	Flood Coat	Nominal	-
1	Membrane	BUR - 3 ply	Hot Mopped	Nominal	-
1	Insulation	Extruded polystyrene	Unknown	17.34	3 Inches

## Details

<b>Perimeter Detail:</b>	Parapet Wall, Wall Flashing
<b>Flashing Material:</b>	Modified Membrane
<b>Drain System:</b>	Gutter System
<b>Parapet Wall:</b>	Brick
<b>Coping Cap:</b>	Metal, Stone

## Notes

Roof access is thru the stairwell on the Northside of the facility.

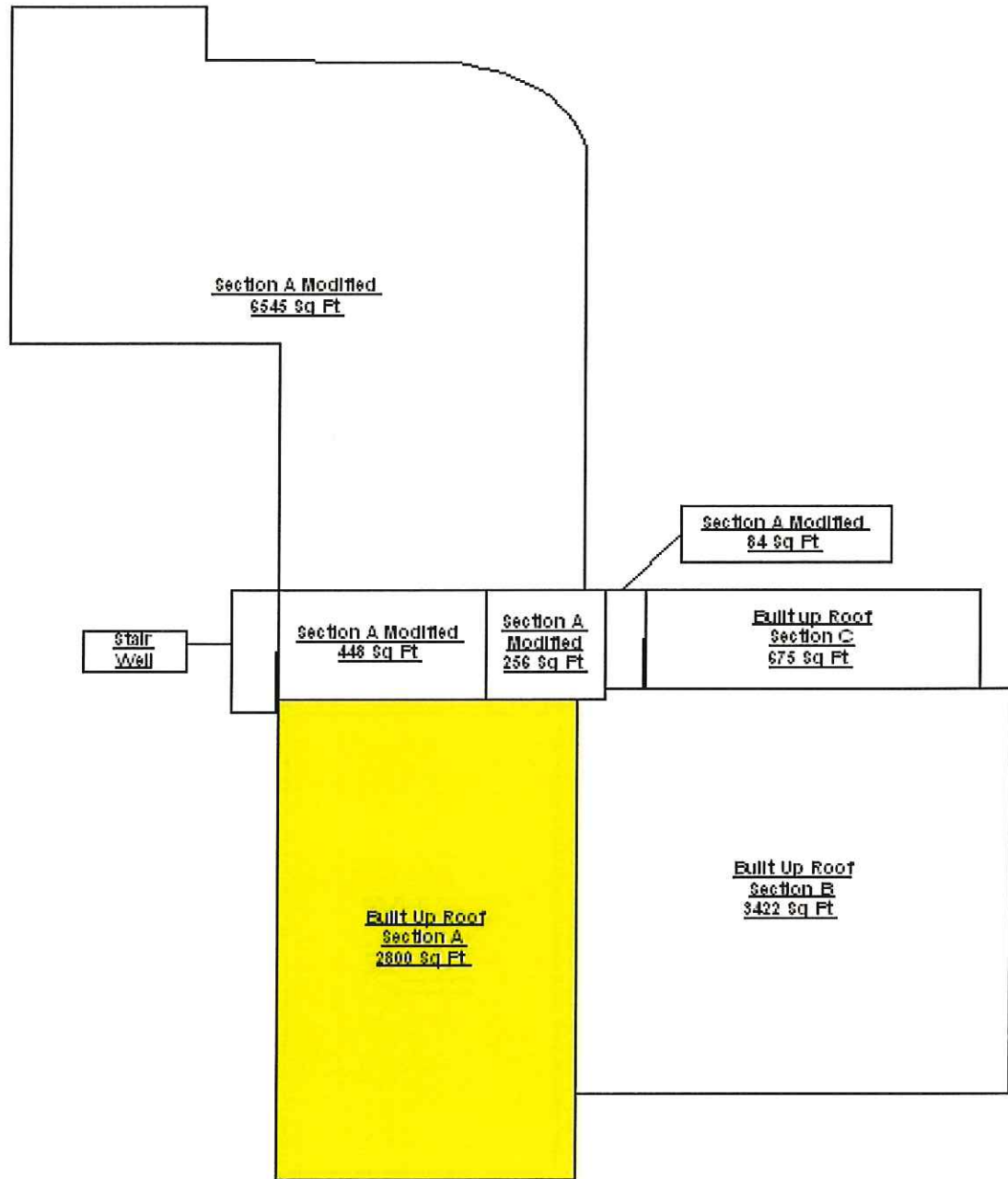


# Roof Drawing

Client: City of Lawrence KS

Facility: Fire Station #1

Roof Section: BUR Section A





# Inspection Report

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Report Date:** 05/21/2010

**Roof Section:** BUR Section A

Inspection Information			
<b>Inspection Date:</b>	05/21/2010	<b>Core Data:</b>	No
<b>Inspection Type:</b>	Core Analysis	<b>Leakage:</b>	Yes
<b>Deck Conditions:</b>	Poor		

Flashing Conditions			
<b>Perimeter:</b>	Poor	<b>Wall:</b>	Fair
<b>Projections:</b>	Fair	<b>Counterflashing:</b>	Poor

Miscellaneous Details			
<b>Reglets:</b>	N/A	<b>Debris:</b>	Yes
<b>Control/Expansion Joints:</b>	Poor	<b>Ponding Water:</b>	None
<b>Parapet Wall:</b>	Poor	<b>Coping Joints:</b>	Poor

Perimeter	
<b>Rating:</b>	Poor
<b>Condition:</b>	There are many areas where the coping caps dont have a good seal between the blocks plus you can see daylight underneath them. The scrim is showing on the base flashing plus cracking in some areas.

Field	
<b>Rating:</b>	Failed
<b>Condition:</b>	The entire field is covered with blisters and should be walked on only if necessary to keep from punturing the blisters.

Penetrations	
<b>Rating:</b>	Poor
<b>Condition:</b>	Flashing detail around the vents are in bad shape.

Drainage	
<b>Rating:</b>	Poor
<b>Condition:</b>	The lack of slope on this roof prevents water to drain from roof properly. There is a lot of ponding water around the edges.

Overall	
<b>Rating:</b>	Failed
<b>Condition:</b>	This roof needs to be replaced as soon as funds are allocated. There are 2 roofs on this building which the previous roof may be keep the interior dry for the most part. There is water sitting between the 2 systems.







Gutters are full of gravel and grass. This should be cleaned out to keep water off the roof



Base flashings appear to be made of Asbestos material. This will need to be checked in a lab to confirm.

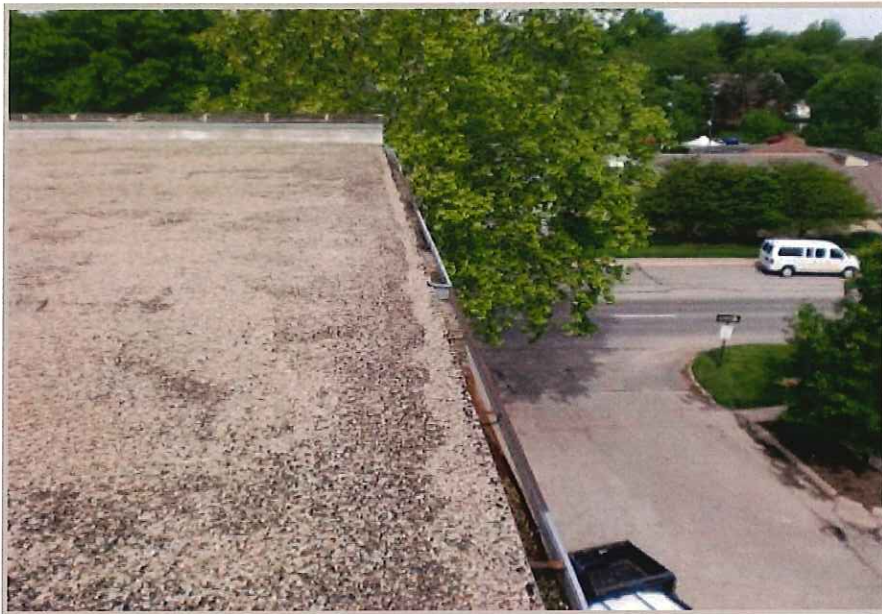


Area between the parapet wall and coping caps needs to be sealed to keep water from penetrating behind the flashings. This area shows where water is getting in behind the termination bar and under the roofing system.



View of coping cap and flashing along Southwest corner of upper roof.





Majority of dark areas along the North wall are blisters.



The joints on the stone coping caps are failing. Water gets between the blocks and runs into the brick wall as well as under the roofing system.





Core sample indicates there are 2 roofing systems on this facility. The roofing system under the Built up Roof with gravel is still in good shape and may be the reason the water is not penetrating the inside of the building.



This section is covered with blisters to the extent you need to be carefull where you walk to keep from breaking the blisters open. Blisters are caused by moisture and gases under the membrane.



Joint on coping blocks do not have any sealant between the blocks.



Bricks are flaking apart caused by water trying to evacuate the inside of the brick.





# Solution Options

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section A

Replace Options			
<b>Solution Option:</b>	Replace	<b>Action Year:</b>	2011
<b>Estimated Cost:</b>	\$39,200.00	<b>Expected Life (Years):</b>	30
<b>Scope of Work:</b>	Samples of this roofing system will need to be sent in to determine if there is Asbestos. This will have an impact on the removal process of this roofing system. After that is done, remove entire roofing systems down to the metal deck and dispose of properly. Inspect all decking for rust and other areas that need to be repaired. Replace with High Performance Roofing system and coat with tar and minimum 3/8 inch gravel for a 30 plus year water tight roofing system.		



# Construction Details

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section B

## Roof Info

<b>Year Installed:</b>	Unknown	<b>Square Footage:</b>	3,422
<b>Slope Dimension:</b>	1/4 to 12	<b>Roof Height:</b>	30 Feet
<b>Roof Access:</b>	Stairs	<b>System Type:</b>	-

## Roof Assembly

Roof #	Layer Type	Description	Attachment	Insulation R-Value	Insulation Thickness
1	Insulation	Extruded polystyrene	Unknown	17.34	3 Inches
1	Membrane	BUR - 3 ply	Coal Tar Pitch	Nominal	-
1	Surfacing	Flood & Gravel	Cold adhesive	Nominal	-

## Details

<b>Perimeter Detail:</b>	Gravel Stop, Parapet Wall
<b>Flashing Material:</b>	Modified Membrane
<b>Drain System:</b>	Scuppers
<b>Parapet Wall:</b>	Brick
<b>Coping Cap:</b>	Stone



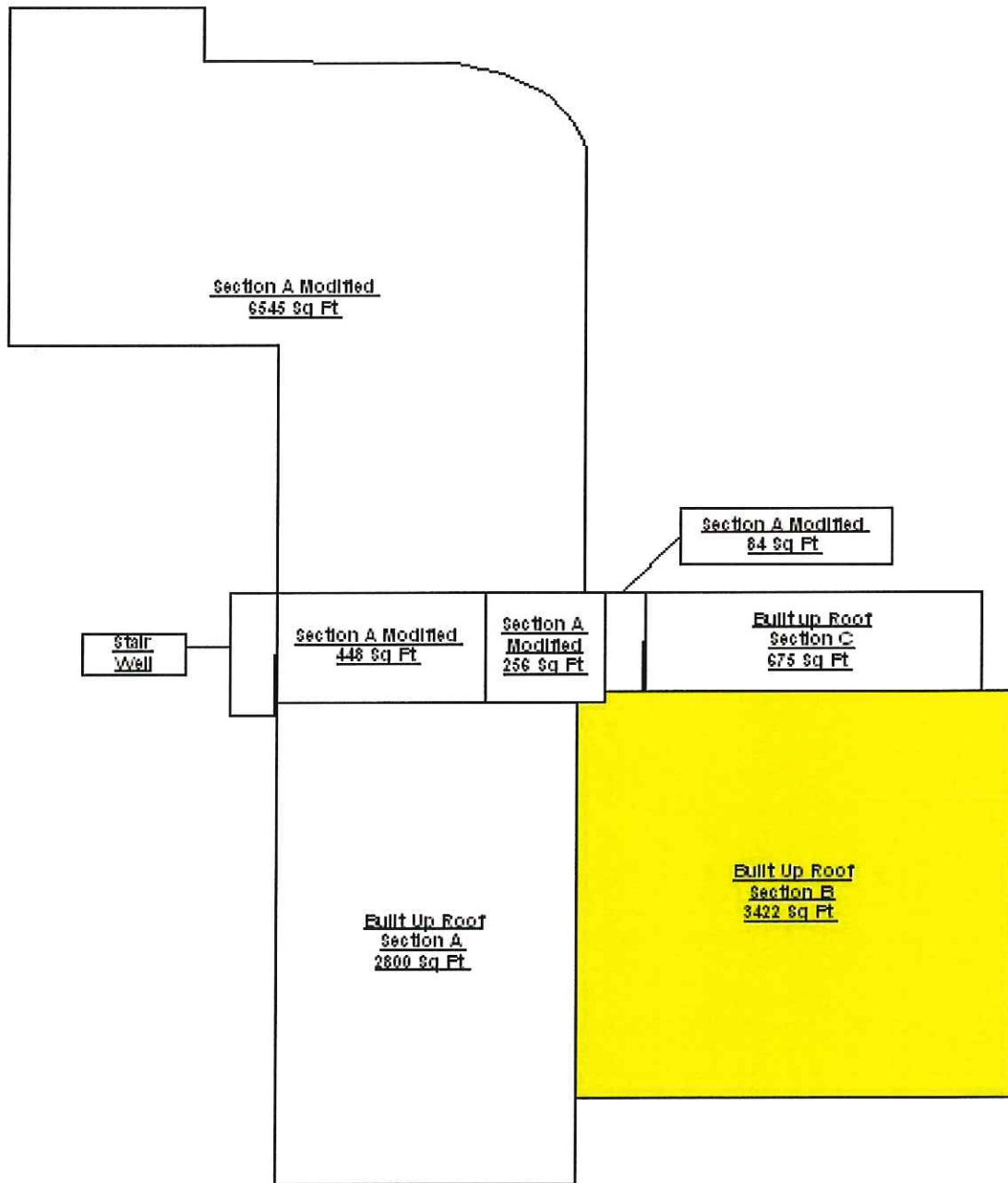


# Roof Drawing

Client: City of Lawrence KS

Facility: Fire Station #1

Roof Section: BUR Section B





# Inspection Report

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Report Date:** 05/21/2010

**Roof Section:** BUR Section B

Inspection Information			
<b>Inspection Date:</b>	05/21/2010	<b>Core Data:</b>	No
<b>Inspection Type:</b>	-	<b>Leakage:</b>	No
<b>Deck Conditions:</b>	-		

Flashing Conditions			
<b>Perimeter:</b>	Poor	<b>Wall:</b>	Poor
<b>Projections:</b>	Poor	<b>Counterflashing:</b>	Failed

Miscellaneous Details			
<b>Reglets:</b>	N/A	<b>Debris:</b>	Yes
<b>Control/Expansion Joints:</b>	N/A	<b>Ponding Water:</b>	Moderate
<b>Parapet Wall:</b>	Fair	<b>Coping Joints:</b>	Poor

Perimeter	
<b>Rating:</b>	Poor
<b>Condition:</b>	The scrim is exposed around the flashing along both sides of roof. Lots of water sitting around the scuppers.

Field	
<b>Rating:</b>	Poor
<b>Condition:</b>	Wood blocks under mechanical units and blisters in the field.

Penetrations	
<b>Rating:</b>	Poor
<b>Condition:</b>	Mechanical units dont sit on the curbs properly and the flashings are failing under the units.

Drainage	
<b>Rating:</b>	Poor
<b>Condition:</b>	Water is ponding at the scuppers.

Overall	
<b>Rating:</b>	Poor
<b>Condition:</b>	There are 2 roofing systems on this facility. The current system is in poor shape and needs to be replaced. The previous roofing system may be what is keeping water out of the building.



Flashings are pulling apart, scrim is exposed.



Flashing is cracked, allowing water in under the membrane.





Bricks are flaking off the wall due to water standing inside the bricks. There needs to be a way for water to drain out to resolve this problem.



Daylight is showing under the bricks.





Flood and Gravel roofs are capable of holding some water although roof should drain better.



Southwest corner, water standing around scupper.



Membrane has worn away leaving the scrim exposed. UV rays are damaging to these types of areas.



Flashings under the vents are in bad shape.





Core cut identifying the roofing elements.



# Solution Options

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section B

Replace Options			
<b>Solution Option:</b>	Replace <input checked="" type="radio"/>	<b>Action Year:</b>	2011
<b>Estimated Cost:</b>	\$47,908.00	<b>Expected Life (Years):</b>	30
<b>Scope of Work:</b>	Samples of this roofing system will need to be sent in to determine if there is Asbestos. This will have an impact on the removal process of this roofing system. After that is done, remove entire roofing systems down to the metal deck and dispose of properly. Inspect all decking for rust and other areas that need to be repaired. Replace with High Performance Roofing system and coat with tar and minimum 3/8 inch gravel for a 30 plus year water tight roofing system.		





# Construction Details

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section C

## Roof Info

<b>Year Installed:</b>	Unknown	<b>Square Footage:</b>	675
<b>Slope Dimension:</b>	1/4 to 12	<b>Roof Height:</b>	20
<b>Roof Access:</b>	Ladder Needed	<b>System Type:</b>	Built Up Roof (BUR)

## Roof Assembly

Roof #	Layer Type	Description	Attachment	Insulation R-Value	Insulation Thickness
1	Surfacing	Flood & Gravel	Cold adhesive	Nominal	-

## Notes

No core cuts were made on this section

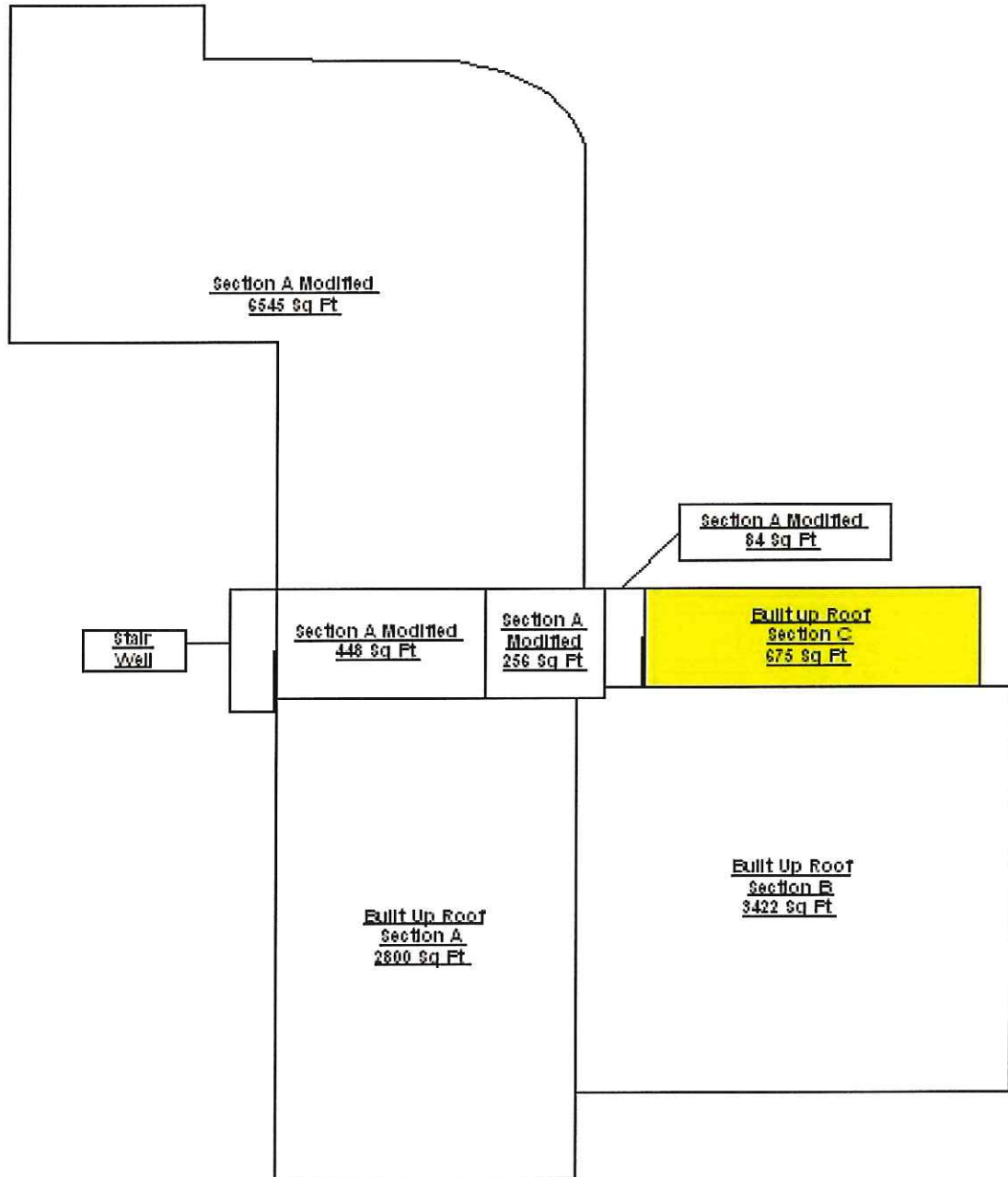


# Roof Drawing

Client: City of Lawrence KS

Facility: Fire Station #1

Roof Section: BUR Section C





# Inspection Report

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Report Date:** 05/21/2010

**Roof Section:** BUR Section C

Inspection Information			
Inspection Date:	05/21/2010	Core Data:	No
Inspection Type:	Visual Inspection	Leakage:	No
Deck Conditions:	Poor		

Flashing Conditions			
Perimeter:	Poor	Wall:	Fair
Projections:	N/A	Counterflashing:	Poor

Miscellaneous Details			
Reglets:	N/A	Debris:	No
Control/Expansion Joints:	N/A	Ponding Water:	Minor
Parapet Wall:	N/A	Coping Joints:	Poor

Perimeter	
Rating:	Fair
Condition:	Assesment was made from roof above this section.

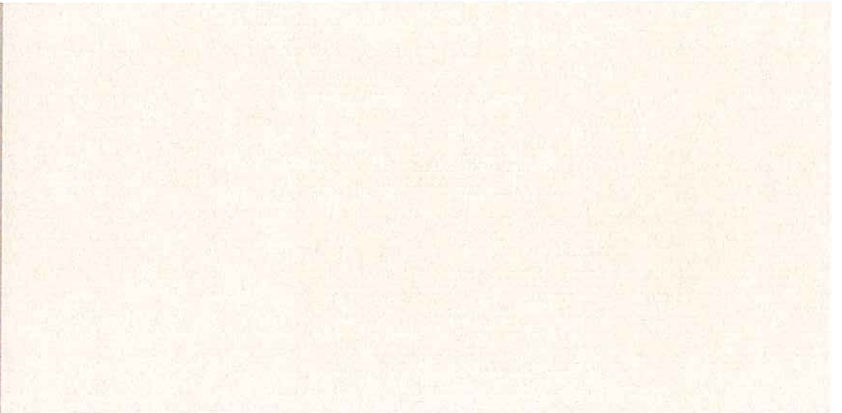
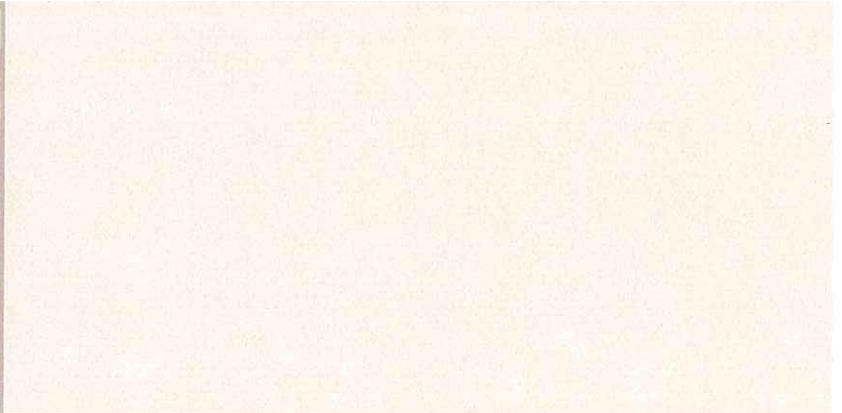
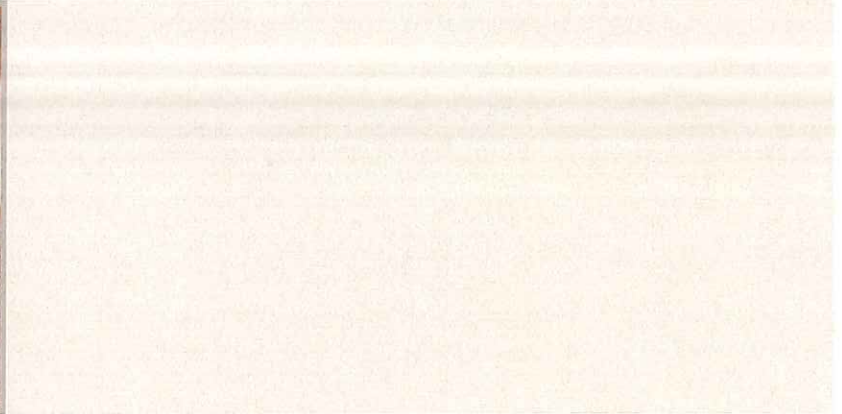
Field	
Rating:	Fair
Condition:	

Penetrations	
Rating:	N/A
Condition:	

Drainage	
Rating:	Fair
Condition:	Some ponding water on this section.

Overall	
Rating:	Fair
Condition:	Visual inspection was done on this section. Looks to be in the same shape as the rest of the facility and should be replaced.









# Solution Options

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** BUR Section C

Replace Options			
<b>Solution Option:</b>	Replace	<b>Action Year:</b>	2011
<b>Estimated Cost:</b>	\$9,450.00	<b>Expected Life (Years):</b>	30
<b>Scope of Work:</b>	Samples of this roofing system will need to be sent in to determine if there is Asbestos. This will have an impact on the removal process of this roofing system. After that is done, remove entire roofing systems down to the metal deck and dispose of properly. Inspect all decking for rust and other areas that need to be repaired. Replace with High Performance Roofing system and coat with tar and minimum 3/8 inch gravel for a 30 plus year water tight roofing system.		



# Construction Details

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** Section A Modified

Roof Info			
<b>Year Installed:</b>	2009	<b>Square Footage:</b>	7,333
<b>Slope Dimension:</b>	1/4 to 12	<b>Roof Height:</b>	30
<b>Roof Access:</b>	Stairs	<b>System Type:</b>	Modified BUR

Roof Assembly					
Roof #	Layer Type	Description	Attachment	Insulation R-Value	Insulation Thickness
1	Membrane	Mod Bit - 2 ply mineral surfaced	Unknown	-	-

Details	
<b>Perimeter Detail:</b>	Parapet Wall, Wall Flashing
<b>Flashing Material:</b>	Modified Membrane
<b>Drain System:</b>	Gutter System
<b>Parapet Wall:</b>	Brick
<b>Coping Cap:</b>	Stone

**Notes**

This section covers all the modified membrane installed in 2009. The drainage on the lower roof is unacceptable, the contractor needs to be held accountable for this.

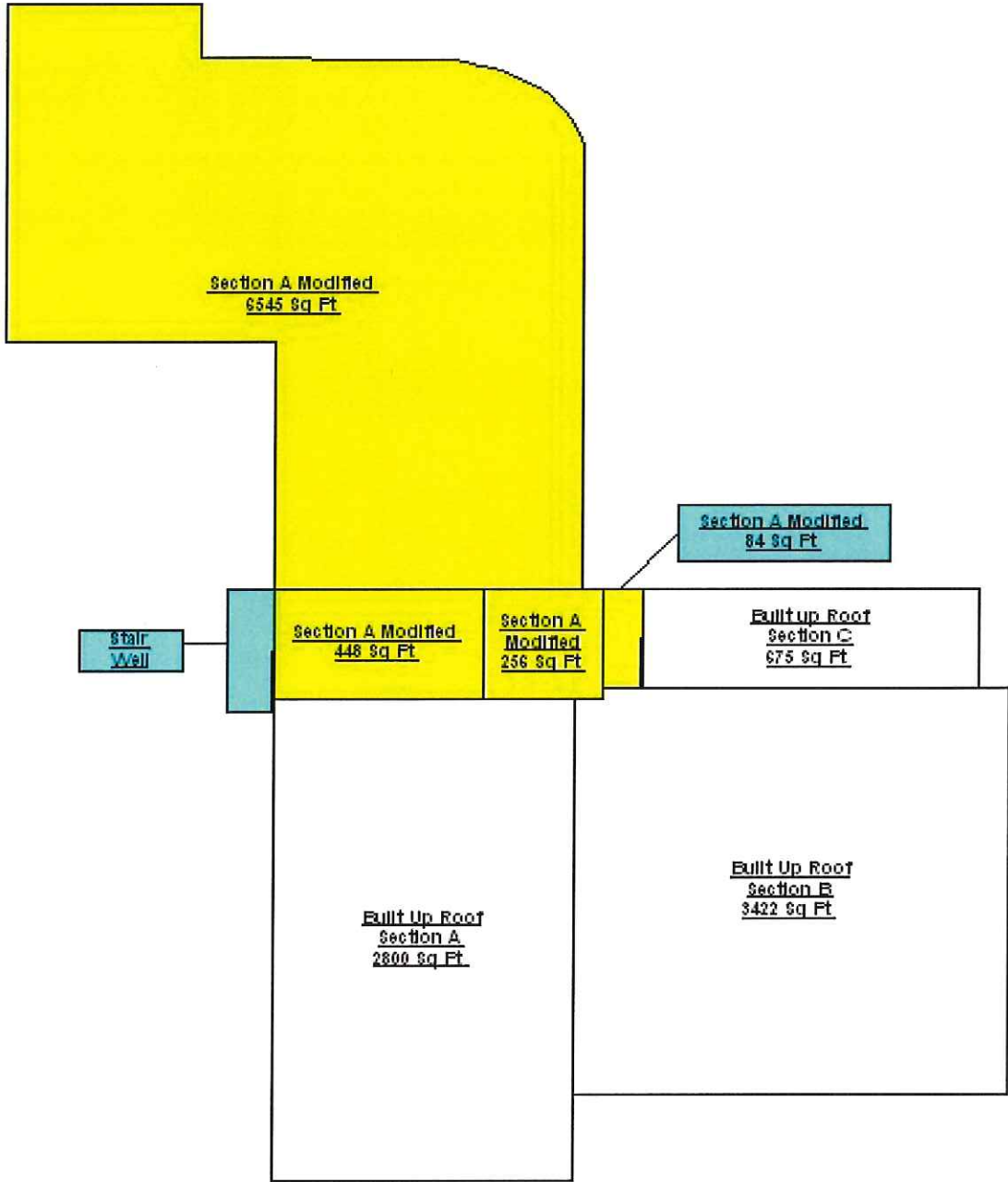


# Roof Drawing

Client: City of Lawrence KS

Facility: Fire Station #1

Roof Section: Section A Modified







# Inspection Report

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Report Date:** 05/21/2010

**Roof Section:** Section A Modified

Inspection Information			
<b>Inspection Date:</b>	05/21/2010	<b>Core Data:</b>	No
<b>Inspection Type:</b>	Visual Inspection	<b>Leakage:</b>	No
<b>Deck Conditions:</b>	Poor		

Flashing Conditions			
<b>Perimeter:</b>	Poor	<b>Wall:</b>	-
<b>Projections:</b>	N/A	<b>Counterflashing:</b>	-

Miscellaneous Details			
<b>Reglets:</b>	N/A	<b>Debris:</b>	No
<b>Control/Expansion Joints:</b>	-	<b>Ponding Water:</b>	-
<b>Parapet Wall:</b>	-	<b>Coping Joints:</b>	-

Perimeter	
<b>Rating:</b>	Failed
<b>Condition:</b>	Due to all the ponding water on the lower level, this section gets a failed rating. The remainder of Section A is in good shape.

Field	
<b>Rating:</b>	
<b>Condition:</b>	The main area on the lower level has failed due to the ponding water. The remainder of Section A is in fair condition and will last 10 plus years if maintained properly.

Penetrations	
<b>Rating:</b>	Good
<b>Condition:</b>	No problems with penetrations on this section.

Drainage	
<b>Rating:</b>	Failed
<b>Condition:</b>	The lower section needs to have 2 Scuppers installed to help drain the water.

Overall	
<b>Rating:</b>	Poor
<b>Condition:</b>	This roofing system was not properly installed and the contractor should be held accountable. There needs to be



at least 2 Scuppers installed in the Southeast corner to drain the water. If something is not done soon, all the water sitting on this roof will be inside the building.



This roof has no drainage at all. All the water runs towards the Southeast corner with no where to go. The roofing system that has been installed on this facility is not designed to hold water and will only shorten the life of the system.



There should be a minimum of 2 Scuppers installed in the corner of this roof to allow water to drain.



This section drains well and is in good shape.



Poor repairs have been made on the Stone Coping Caps. Water is getting under the Stone Caps and draining inside the wall cavity.





# Solution Options

**Client:** City of Lawrence KS

**Facility:** Fire Station #1

**Roof Section:** Section A Modified

Inspection Options			
<b>Solution Option:</b>	Inspection	<b>Action Year:</b>	2010
<b>Estimated Cost:</b>	-	<b>Expected Life (Years):</b>	10
<b>Scope of Work:</b>	Roof inspections need to be done 2 times. During the inspections all drains and scuppers need to be cleaned out as well as trash and debris picked up on the entire roof. Coping caps need to be checked for cracks and damaged stones as well as gutters need to be cleaned out. All flashings need to be inspected for damage or splits in the membrane. The field needs to be checked for blisters and separations in laps		

Repair Options			
<b>Solution Option:</b>	Repair	<b>Action Year:</b>	2010
<b>Estimated Cost:</b>	\$5,000.00	<b>Expected Life (Years):</b>	10
<b>Scope of Work:</b>	Scuppers need to be added to the Southeast corner of the lower roof to drain the water that is currently standing. If this is done soon you can extend the life of the Modified Membrane.		



# Executive Summary

Client: City of Lawrence KS

Facility *	Section *	System Type	Age (Years)	Square Footage	Leakage	Rating	Recommendation	Action Year
Fire Station #1	BUR Section A	Gravel Surface BUR	N/A	2,800	YES	Failed	Replace	2011
Fire Station #1	BUR Section B	N/A	N/A	3,422	NO	Poor	Replace	2011
Fire Station #1	BUR Section C	Built Up Roof (BUR)	N/A	675	NO	Fair	Replace	2011
Fire Station #1	Section A Modified	Modified BUR	1 Year(s)	7,333	NO	Poor	Repair	2010
<b>Facility Total:</b>				<b>14,230</b>				
<b>Client Total:</b>				<b>14,230</b>				



# Cost Estimate

**Client:** City of Lawrence KS

Facility *	Section *	System Type	Square Footage	Recommendation	Action Year	Cost Estimate
Fire Station #1	BUR Section A	Gravel Surface BUR	2,800	Replace	2011	\$39,200.00
Fire Station #1	BUR Section B		3,422	Replace	2011	\$47,908.00
Fire Station #1	BUR Section C	Built Up Roof (BUR)	675	Replace	2011	\$9,450.00
Fire Station #1	Section A Modified	Modified BUR	7,333	Repair	2010	\$5,000.00
<b>Facility Total:</b>						<b>\$101,558.00</b>
<b>Client Total:</b>						<b>\$101,558.00</b>





# Priority Summary

Client: City of Lawrence KS

Facility *	Section *	System Type	Age (Years)	Leakage	Rating
<b>Fair</b>					
Fire Station #1	BUR Section C	Built Up Roof (BUR)	N/A	NO	Fair
<b>Poor</b>					
Fire Station #1	BUR Section B	N/A	N/A	NO	Poor
Fire Station #1	Section A Modified	Modified BUR	1 Year(s)	NO	Poor
<b>Failed</b>					
Fire Station #1	BUR Section A	Gravel Surface BUR	N/A	YES	Failed



# Yearly Budget Summary

Client: City of Lawrence KS

Year:	Facility *	Section *	Recommendation	Cost	Expected Life
2010	Fire Station #1	Section A Modified	Repair	\$5,000.00	10 Year(s)
	<b>Total for 2010:</b>				
	<b>\$5,000.00</b>				
2011	Fire Station #1	BUR Section A	Replace	\$39,200.00	30 Year(s)
	Fire Station #1	BUR Section B	Replace	\$47,908.00	30 Year(s)
	Fire Station #1	BUR Section C	Replace	\$9,450.00	30 Year(s)
	<b>Total for 2011:</b>				
<b>\$96,558.00</b>					

## **BUILDING EVALUATION**

### **COMPONENT ANALYSIS**

#### **OVERVIEW**

1  
2 By analyzing the condition and relative value of the individual components of a building, it is possible to  
3 arrive at an approximate percentage of the building that is acceptable or reusable. Though such an  
4 analysis is not an absolute measure, it does, approximate the extent of renovation work required.

5  
6 The attached tables look at the value of the individual components of the facility and then through a  
7 simple computation an approximate percentage of the building that is deemed acceptable for the final  
8 desired outcome of the building is produced. The goal of this assessment is to illustrate the portion of the  
9 current installation, which may be maintained for future use without alteration.

10  
11 The first table documents the components that were assessed in the survey. A grade and resulting  
12 percentage are documented. The grades and percentages are based upon the experience of the team  
13 members, comparable projects and situations, and the key provided at the top of the table. Comments  
14 concerning each component have been provided for reference.

15  
16 The second table is the component evaluation. The left column, "Building Component" represents the  
17 actual components of the building and seen as major pieces of the overall project. The next column to  
18 the right, "% of Total Building" represents the estimated amount of space given to the building  
19 components from the buildings total square footage. The third column, "Acceptance in this Building"  
20 represents Treanor Architects assigned value to what percentage of the building component that is  
21 acceptable as being kept; 100% being the highest and 0% being the lowest. This column matches the  
22 percentage on the previous table. The last column, "Resulting Value" tallies the percentage of total  
23 building space to give a factor that represents how much of the building component is deemed to be  
24 worth keeping or re-using for the final design.

25  
26 The 28.5% total reflects that there is more than half of the building that is deemed is in need of  
27 renovation.. A significant portion of the unacceptable items are associated with deficiencies in the  
28 program space and need for reconfiguration, aging mechanical, electrical, plumbing, and life safety  
29 systems.

30  
31 Another way of looking at this number is that the cost of renovation should be approximately 71.5% of  
32 the cost of new construction of equal quality. For example, if a project was planned that was of equal  
33 size (square footage,) quality (level of finishes,) and arrangement of spaces and the cost of the project  
34 equaled \$200 per square foot, then the renovation of this current facility to meet current codes, level of  
35 finishes, etc could cost approximately \$143 per square foot. While this format is not an exact science, it  
36 provides a benchmark to evaluate the existing facility.



---

**BUILDING EVALUATION**  
COMPONENT ANALYSIS

The Component Analysis Worksheet and Summary are on the following pages.

1

**COMPONENT ANALYSIS**

Component Worksheet

GRADE: QUALITY OF FINISHES		
1	100%	Excellent, little to no work required
2	75%	Good, Above Average, Minimal Work to appear 'new'
3	50%	Average, 1/2 of room/wall requires work, 1/2 of material or item i
4	25%	Below Average, 2/3 of room/wall requires work, 1/3 of material o
5	0%	Fails, None Salvageable, entire material or item requires replace

ITEM	ANALYSIS	% ACCEPT.	COMMENTS	
<b>A Site</b>			<b>63%</b>	
1	Parking	3	50%	Asphalt is in average condition- requires some repairs. Lot needs to be re-stripped.
2	Security	3	50%	Limited site lighting around building and at parking lot reduces perceived security. Limited number of entry points reduces control problems.
3	Access	2	75%	Vehicular access is limited to alley. Access and circulation is good, but could be improved.
4	Drainage	2	75%	Surface drainage around site is adequate. Run-off from building tied to underground drainage. Grade on east side of building should be modified to create positive drainage away from building
5	<b>B Foundation / Substructure</b>			<b>75%</b>
6	Footings and Foundation	2	75%	Foundations appear to be generally in good condition.
7	Excavation and Backfill	2	75%	Adequate. No visual deficiencies.
8	Slab on Grade	2	75%	Concrete. Limited aesthetic cracking. No visual
9	<b>C Superstructure</b>			<b>75%</b>
10	Elevated Floors	1	100%	Steel bar joists with metal lath plaster finish ceiling in bays. Appears sound and in good condition. No visual deficiencies.
11	Columns and Beams	2	75%	No noted or visible. Floor supported by masonry bearing walls.
12	Roof Structure	2	75%	Steel bar joists & metal deck. Structure appears in good condition. No visual deficiencies.
13	Stairs	3	50%	Primary stair is original to the building and was for access to the original hose tower, now used for training. Stair is unenclosed for connecting 3 or more stories
14				
15				
16				



<b>D Exterior Enclosure</b>		<b>31%</b>		
18	Wall Substrate	3	50%	Combination of masonry and metal studs. Surface is mostly plaster. Additional surface treatments (i.e. paneling, drywall etc.) have been applied on to stucco.
19	Wall Skin	3	50%	Comb. of brick masonry with stone accents and copings. The stone is in good condition, but requires cleaning. Brick masonry veneer is deteriorating due to water penetration.
20	Windows	5	0%	Aluminum window systems with insulated glass.
21	Doors and Frames	4	25%	Combination of hollow metal and wood doors and frames. Hardware does not meet code or ADA.
22				
<b>E Roof</b>		<b>0%</b>		
23	Roof Coverings	5	0%	Refer to roofing consultant written report.
24	Insulation	5	0%	No visual access to areas.
25	Opngs & Specialties	5	0%	Not applicable
26				
27				
<b>F Interior Construction</b>		<b>5%</b>		
28	Partitions	5	1%	Combination of masonry and metal stud structure with plaster finish coat. Plaster has deteriorated in areas; has been covered with paneling and/or gypsum board. Limited access to interior of walls for MEP upgrades
29	Int. Doors and Frames	5	2%	Wood and hollow metal frames and doors. Doors all do not have the appropriate fire rating and or closures. Doors do not meet code or ADA.
30	Ceiling	5	1%	Majority of ceilings are plaster on metal lath hung below steel beam structure. Some areas have been damaged and require repair. Limited access for MEP upgrades. Some areas have acoustical or gypsum ceilings below plaster clg.
31	Wall Finishes	5	1%	Majority of finish is paint. All painted surfaces require repair / refinish. Some areas have wood paneling, ceramic tile, etc. All finishes require updating.
32	Floor Finishes	5	22%	Basement is ceramic/porcelain tile and concrete. First floor main spaces are wd. in good condition. First floor hall is terrazzo. A majority of the remainder floor finish is vct ad/ or carpet that requires complete replacement.
33				
34				
<b>G Heating System</b>		<b>0%</b>		
35	Source	5	0%	Gas fired, steam boilers. RE Mechanical write up.
36	Distribution System	5	0%	Steam piping.
37	Capacity	5	0%	Unknown. System heats facility but has limited control.
38	Control	5	0%	Adequate control is non-existent.
39				



40	<b>H Cooling / Ventilation System</b>		<b>0%</b>	
41	Refrigeration system	5	0%	Air handling units. RE Mechanical write up.
42	Distribution	5	0%	Patched in separate from heat system.
43	Capacity	5	0%	Unknown. System cools facility but has limited control and struggles on design days.
44	Controls	5	0%	Limited.
45	<b>I Plumbing</b>		<b>25%</b>	
46	Primary Service	3	50%	City supply, no noted deficiencies
47	Distribution	4	25%	Copper, owner noted on hard water and potential calcium deposits
48	Capacity	4	25%	No reported deficiencies
49	Fixtures	5	0%	Porcelain; requires upgrading
50	<b>J Electrical</b>		<b>31%</b>	
51	Primary Service	3	50%	Overhead connection to building, recently upgraded
52	Emergency Power	5	0%	No emergency power is provided
53	Panel Boards	4	25%	Refer to electrical write up.
54	Receptacles	3	50%	Limited quantity.
55	<b>K Lighting</b>		<b>31%</b>	
56	Emergency	4	25%	Limited emergency lighting
57	Exit Signs	4	25%	Present, but requires upgrading
58	Interior Lighting	4	25%	Deficient levels, requires upgrade
59	Exterior Lighting	3	50%	Limited, requires additional fixtures
60	<b>L Special Construction</b>		<b>13%</b>	
61	Casework	5	0%	Very limited, requires replacement
62	Signage	5	0%	Non existence
63	Toilet Rms / Access.	4	25%	Requires replacement
64	Kitchen	4	25%	Serves current needs, requires investigation for functionality and code compliance
65	<b>M Life Safety</b>		<b>59%</b>	
66	Fire Alarm System	3	50%	Non existence
67	Pull Stations	3	50%	Non existence
68	Heat/ Smoke Detection	3	50%	
69	Fire Egress	3	50%	Does not meet current code requirements
70	Fire Extinguishers	1	100%	Located throughout facility
71	Sprinkler System	1	100%	Non existence
72	Standpipe	5	0%	Non existence
73	Fire Depart. Conn.	2	75%	Non existence
74	<b>N ADA</b>		<b>40%</b>	
75	Parking	2	75%	Not in compliance with ADA
76	Entry	2	75%	Not in compliance with ADA, but easily modified
77	Horizontal Access	3	50%	ADA Compliant
78	Vertical Access	5	0%	ADA Compliant
79	Toilet Facilities	5	0%	Not in compliance with ADA

**COMPONENT ANALYSIS**

Component Evaluation

	Building Component	% of Total Building	Acceptable in this Building	Resulting Value
1				
2				
3	<b>Foundation / Substructure</b>	<b>4.00%</b>	<b>75.0%</b>	<b>3.000%</b>
4	Footings and Foundation	2.00%	75.0%	1.500%
5	Excavation and Backfill	0.50%	75.0%	0.375%
6	Slab on Grade	1.50%	75.0%	1.125%
7				
8	<b>Superstructure</b>	<b>15.90%</b>	<b>75.00%</b>	<b>11.925%</b>
9	Elevated Floors	8.00%	100.0%	8.000%
10	Columns and Beams	3.20%	75.0%	2.400%
11	Roof Structure	3.90%	75.0%	2.925%
12	Stairs	0.80%	50.0%	0.400%
13				
14	<b>Exterior Enclosure</b>	<b>13.00%</b>	<b>31.3%</b>	<b>4.063%</b>
15	Wall Substrate	6.00%	50.0%	3.000%
16	Wall Skin	3.00%	50.0%	1.500%
17	Windows	2.00%	0.0%	0.000%
18	Doors and Frames	2.00%	25.0%	0.500%
19				
20	<b>Roof</b>	<b>1.55%</b>	<b>0.0%</b>	<b>0.000%</b>
21	Roof Coverings	1.00%	0.0%	0.000%
22	Insulation	0.50%	0.0%	0.000%
23	Openings and Specialties	0.05%	0.0%	0.000%
24				
25	<b>Interior Construction</b>	<b>27.40%</b>	<b>5.5%</b>	<b>1.498%</b>
26	Partitions	6.40%	1.3%	0.083%
27	Interior Doors, Frames, and Hardware	6.50%	2.1%	0.135%
28	Ceiling	4.50%	0.8%	0.034%
29	Wall Finishes	3.00%	1.3%	0.039%
30	Floor Finishes	7.00%	21.9%	1.5%
31				
32	<b>Heating System</b>	<b>4.00%</b>	<b>0.0%</b>	<b>0.0%</b>
33	Source	1.50%	0.0%	0.0%
34	Distribution System	1.00%	0.0%	0.0%
35	Capacity	1.00%	0.0%	0.0%
36	Control	0.50%	0.0%	0.0%
37				
38	<b>Cooling / Ventilation System</b>	<b>4.25%</b>	<b>0.0%</b>	<b>0.0%</b>
39	Refrigeration system	2.00%	0.0%	0.0%
40	Distribution	1.00%	0.0%	0.0%
41	Capacity	1.00%	0.0%	0.0%
42	Controls	0.25%	0.0%	0.0%
43				
44	<b>Plumbing</b>	<b>4.50%</b>	<b>25.0%</b>	<b>1.1%</b>
45	Primary Service	1.50%	50.0%	0.8%
46	Distribution	1.00%	25.0%	0.3%
47	Capacity	1.00%	25.0%	0.3%
48	Fixtures	1.00%	0.0%	0.0%



49				
50	<b>Electrical</b>	<b>4.25%</b>	<b>31.3%</b>	<b>1.3%</b>
51	Primary Service	1.50%	50.0%	0.8%
52	Emergency Power	1.00%	0.0%	0.0%
53	Panel Boards	1.00%	25.0%	0.3%
54	Receptacles	0.75%	50.0%	0.4%
55				
56	<b>Lighting</b>	<b>8.00%</b>	<b>31.3%</b>	<b>2.5%</b>
57	Emergency	1.00%	25.0%	0.3%
58	Exit Signs	1.00%	25.0%	0.3%
59	Interior Lighting	4.00%	25.0%	1.0%
60	Exterior Lighting	2.00%	50.0%	1.0%
61				
62	<b>Special Construction</b>	<b>7.80%</b>	<b>12.5%</b>	<b>1.0%</b>
63	Casework	0.50%	0.0%	0.0%
64	Signage	0.20%	0.0%	0.0%
65	Toilet Rooms / Accessories	2.10%	25.0%	0.5%
66	Kitchen	5.00%	25.0%	1.3%
67				
68	<b>Life Safety</b>	<b>5.35%</b>	<b>59.4%</b>	<b>3.2%</b>
69	Fire Alarm System	0.75%	50.0%	0.4%
70	Pull Stations	0.50%	50.0%	0.3%
71	Heat/ Smoke Detection	0.05%	50.0%	0.0%
72	Fire Egress	1.00%	50.0%	0.5%
73	Fire Extinguishers	0.05%	100.0%	0.1%
74	Sprinkler System	1.50%	100.0%	1.5%
75	Standpipe	1.00%	0.0%	0.0%
76	Fire Department Connections	0.50%	75.0%	0.4%
77				
78	<b>TOTAL FOR BUILDING</b>	<b>100.00%</b>		<b>28.5%</b>

79  
80 Renovation Cost should be **71.5%** the cost of new construction

81  
82 *NOTE: The renovation cost percentage is based on replacement and/or repair of specific items within the current facility. The percentage cost would NOT include significant changes to the structure, mechanical systems, and/or program functions.*

**\*\*Numbers in red indicated below 50% acceptable**



## PROGRAM ANALYSIS

### PROGRAM NARRATIVE

#### OVERVIEW

We have reviewed the current layout and the program needs with the department. Based upon these discussion and current trends an ideal program has been developed. This program has been used to develop options for this study. A major deficiency of this facility is its program efficiency. The needs of the department have significantly changed from the original layout. The department has adapted as they could but has left rooms with no uses or conflicting requirements. A significant change is the addition of female firefighters to the department. This has required modifying the layout to accommodate those fire fighters. Other changes deal with the need for personal spaces and privacy within the sleeping room. Another significant deficiency in this facility is the lack of amenities in the apparatus bay. Current Station 1 lacks adequate storage, space for general maintenance and repairs, and a dedicated areas for decontamination and clean up.

#### CURRENT PROGRAM TRENDS

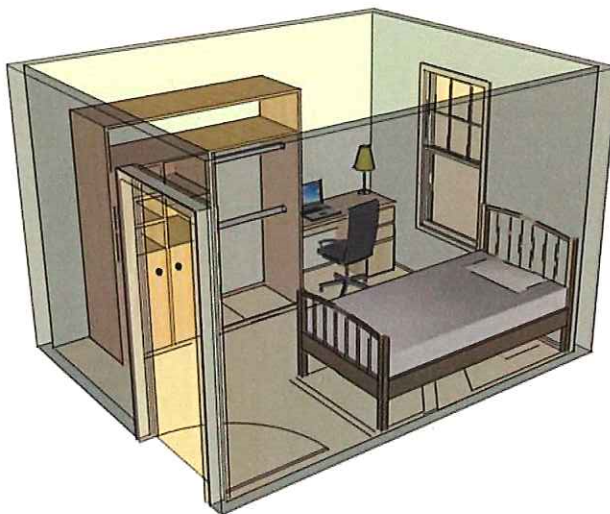
The "ideal" program has taken into consideration current trends in fire station design. These trends include many of the items identified above as deficiencies. Current trends include:

- Separate sleeping rooms
- Separate bathrooms
- "Great room" concept of dayroom and kitchen
- Decontamination room with dedicated laundry
- Training / Classroom
- Resource Room
- Public Meeting Facilities
- On-Site Training opportunities

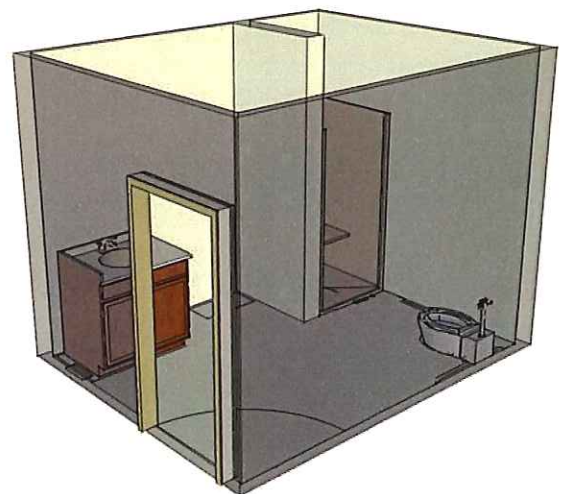
These spaces, along with others have been outlined in the enclosed program diagrams.

#### PROGRAM TRENDS IMAGES

Typical Individual Bunk Room



Typical Unisex Bathroom



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**PROGRAM ANALYSIS**  
Existing Program

The Existing Program is on the following page.

**PROGRAM ANALYSIS**

Existing Program

**1 Program Summary**

2	Gross Square Footage	10,816 sf
3	Approximate Net Square Footage	7,315 sf
4	Grossing Factor (includes mechanical, int and ext walls, misc. items))	32%

8	Item #1	Item #2	Item #3	Item #4
9	Room #	Room Name	Space Type	Existing Square Footage
11				
12	101	Vestibule		104.00
13	102	SCBA Work Area		156.00
14	103	Apperatus Bays		2,710.00
15	104	Shift Office		110.00
16	105	Dayroom		400.00
17	106	Circulation @ Bay		96.00
18	107	Dining Room		165.00
19	108	Corridor		52.00
20	109	Kitchen		143.00
21	110	Toilet @ Dayroom		126.00
22	111	East Office Space		119.00
23	112	Storage		54.00
24	113	Medical Storage		64.00
25	114	Training Room (Basement)		290.00
26	115	Office Area (Basement)		167.00
27	116	Storage (Basement)		84.00
28	117	Fitness Room (Basement)		392.00
29	118	Office Area (2nd Floor)		166.00
30	119	Mapping Office (2nd Floor)		150.00
31	120	Female Dorm/Toilet/Shower		317.00
32	121	Male Dorm (2nd Floor)		680.00
33	122	Male Locker/Shower (2nd Floor)		160.00
34	123	Mechanical (2nd Floor)		130.00
35	124	Storage (2nd Floor)		80.00
36	125	Corridor (2nd Floor)		400.00
43	<b>Level Total</b>			<b>7,315</b>

\*\*\*All square footages are approximate and are based upon as-built documents provided by the owner



**PROGRAM ANALYSIS**

Ideal Program

The Ideal Program is on the following page.

**Lawrence Douglas County Fire & Medical - Station 1 Feasibility Study**  
Ideal Building program

FDS#	ROOM/SPACE	No. Req'd	L	x	W	Program Area Per Room	Total Program Area	Notes
<b>1</b>	<b>Public Areas</b>							
F-1	Lobby & Vestibule	1	12	x	7	84	84	
F-2	Public Toilet	1	9	x	6	54	54	
<b>2</b>	<b>Administration</b>							
F-3	Station Office	1	19	x	14	266	266	
F-4	Storage Closet	1	5	x	8	40	40	
F-5	Study Room	1	14	x	20	280	280	
<b>3</b>	<b>Personnel Areas</b>							
F-6	Typical Bunks	10	12	x	9	108	1,080	
F-7	Captains Bunk/Office	2	22	x	18	396	792	
F-8	ADAToilet/Shower Rooms	4	10	x	7	70	280	
<b>4</b>	<b>Day Quarters</b>							
F-9	Day Room	1	26	x	15	390	390	Includes shift pantries and refrig.
F-10	Kitchen	1	18	x	14	252	252	
F-11	Dining Room	1	18	x	12	216	216	
<b>5</b>	<b>Training</b>							
F-12	Training Room	1	39	x	28	1,092	1,092	
F-13	Training Room Storage	1	12	x	8	96	96	
<b>6</b>	<b>Equipment</b>							
F-14	Apparatus Bays (Existing)	3	18	x	48	864	2,592	
F-15	Maint/Storage/Bunker Laundry	1	18	x	12	216	216	Located adjacent to bays
F-16	Hose Drying/Storage Area	1	20	x	8	160	160	Located in or adjacent to bays
F-17	Gear Storage	1	4	x	20	80	80	Located in or adjacent to bays
F-18	EMS Storage	1	9	x	5	45	45	Located adjacent to bays
F-19	Decon Room	1	11	x	9	99	99	Located in or adjacent to bays
<b>7</b>	<b>Building Support</b>							
F-20	General Storage	1	8	x	8	64	64	
F-21	Laundry/Jan. Closet	1	13	x	9	117	117	Located adjacent to sleeping quarters
F-22	Physical Fitness Room	1	24	x	21	504	504	
F-23	Storage/Maint. Equipment	1	27	x	10	270	270	Lawn Equipment, etc.
<b>TOTALS</b>								
	Sub-Total						9,069	
	Grossing Factor					15%	1,360	
	<b>TOTAL</b>						<b>10,429</b>	

**RENOVATION plus ADDITION OPTION**

**OVERVIEW**

This option explores exterior restoration and interior renovation of the existing facility with a small addition, to bring the current facility up to current day operational needs of the department. This option applies the "ideal" program to the existing station. A schematic layout has been developed for this option illustrating the possibilities. At the same time this option would address all deferred maintenance, ADA and code deficiencies inherent in the current facility plan.

**SCOPE NARRATIVE**

This option would include the following items:

- Exterior (Department portions of the building only)
  - Repair and/or replace all failed sidewalks and parking lots.
  - Adjust all grade elevations to insure positive drainage away from the building.
  - Isolated brick masonry re-pointing.
  - Stone coping removal, cleaning and replacement with top of wall flashing.
  - Re-caulk all exterior joints
  - Replace all doors and windows with energy efficient systems. In order for the facility to meet current code requirements the windows in the sleeping rooms would need to be modified to be egress compliant windows.
  - Replace the roof and associated flashings for department areas of the building only. Minor repairs are recommended to the Eastern portions of the building that are experiencing drainage issues.
  - Repair and or replace the roof drainage system.
- Interior (Department portions of the building only)
  - Plan reconfiguration per attached schematic plans which groups all department spaces in the Western portion of the building, abandoning basement areas currently used for exercise, conference, and office space.
  - Restoration of original finishes in apparatus bay.
  - Repair floor, wall and ceiling finishes as required by other work.
  - Replace the HVAC system per the recommendations of this report.
- Addition
  - Adds new shift office on the West side of the existing facility to provide better security for on-site visitation parking along Kentucky as well as moving staff closer to the main bay doors facing 8<sup>th</sup> Street.
  - Provides for new public toilet at entry consistent with design of other department stations.
  - Reconfigure approach sidewalks and site plantings to support proposed new addition.

**ESTIMATE OF PROBABLE COSTS**

The estimated cost range for this scope item is as follows:

	Medium \$/S.F.	High \$/S.F.	Sq. Footage	Medium Est.Cost	High Est.Cost
<b>Building Renovation &amp; Addition</b>	\$ 182.00	\$201.00	11,038	\$ 2,010,549	\$ 2,222,185
<b>Totals</b>				\$ 2,010,549	\$ 2,222,185



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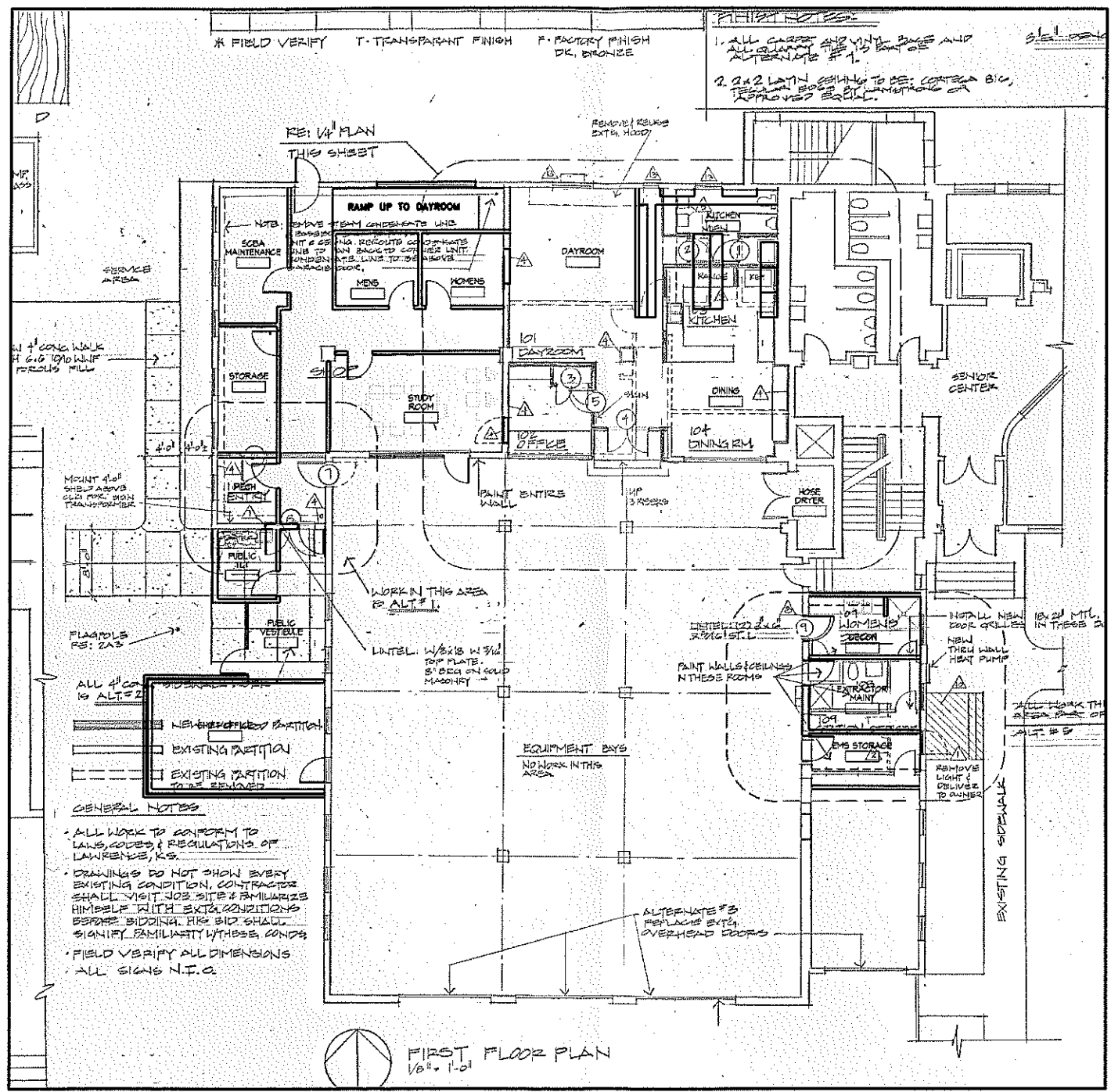
- Costs not included in this estimate
  - Temporary facility housing cost during construction
  
- Construction duration: 9 -11 months  
(dependant upon department temporary housing plan)

Costs to temporarily relocate the station operations during construction have not been included. These costs can vary significantly and some be developed prior to further development.

**PROS AND CONS**

This scope of work will not only extend the life of the facility, with regular maintenance, another 15 to 30 years, but will improve the efficiency of the station and the department. The scope of work provides the configuration of space required to perform the work of the department at today's needs. The costs with this option, while greater than the first option, are reasonable compared to a new facility.

The negatives of this option are similar to the first option and are multiplied by the extent of the program. This option will require phased approach or a complete shut down of the facility. Any phased approach will increase the estimate of cost. In order to achieve this option the station will need to relocate to an alternate location during construction.



**1** FIRST FLOOR PLAN  
**A1** SCALE: 1/8" = 1'-0"



**FINISH NOTES:**  
 1. ALL GUEST AND VINT. BNS AND ALL GUEST ARE TO BE ALTERNATE #1.  
 2. 2x2 LATIN CEILING TO BE CORTECA B/C, TRUSS B/C & LUMINOUS OR APPROVED EQUAL.

**GENERAL NOTES**  
 • ALL WORK TO CONFORM TO LAWS, CODES, & REGULATIONS OF LAWRENCE, KS.  
 • DRAWINGS DO NOT SHOW EVERY EXISTING CONDITION. CONTRACTOR SHALL VISIT JOB SITE & FAMILIARIZE HIMSELF WITH EXIST. CONDITIONS BEFORE BIDDING. HIRER BID. SHALL SIGNIFY FAMILIARITY WITH THESE CONDS.  
 • FIELD VERIFY ALL DIMENSIONS ALL SIGNS N.T.C.

**LAWRENCE DOUGLAS COUNTY FIRE & MEDICAL STATION #1 REMODEL**  
 EIGHT & VERMONT, LAWRENCE KS

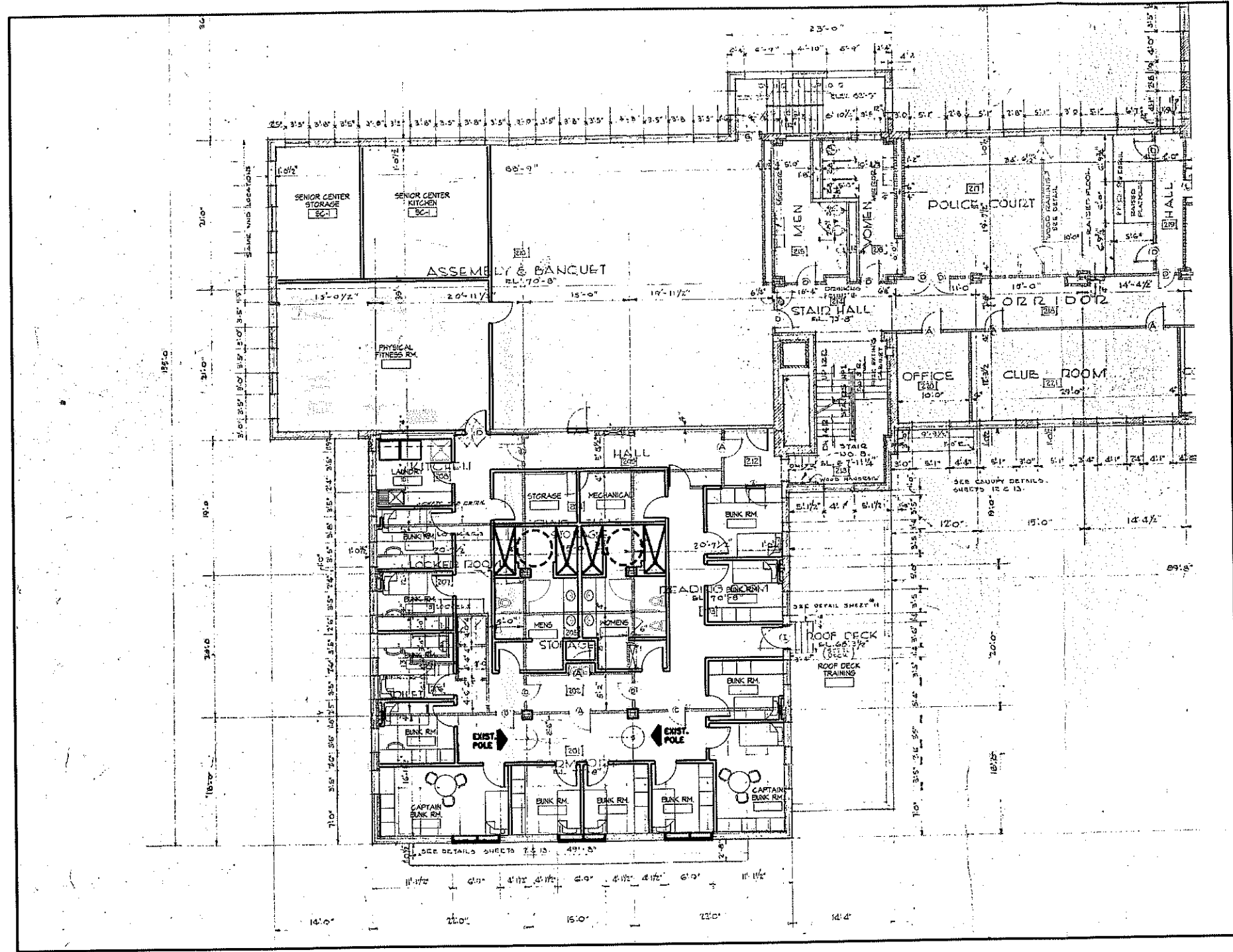
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 Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_

**TREANOR ARCHITECTS P.A.**  
 ARCHITECTS P.A.  
 1715 SW Topoka Boulevard  
 Topeka, Kansas 66612-1410  
 Office: 785.235.0012  
 Fax: 785.235.0013  
 www.treanorarchitects.com

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REVISIONS	
△	Comment: _____ Date: _____
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	Comment: _____ Date: _____
	Comment: _____ Date: _____

Rel. Date: \_\_\_\_\_



**1**  
**A2** SECOND FLOOR DORM PLAN  
SCALE: 1/8" = 1'-0"



**LAWRENCE DOUGLAS COUNTY FIRE &  
MEDICAL STATION #1 REMODEL**  
EIGHT & VERMONT, LAWRENCE KS

APPROVED BY:  
Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**TREANOR**  
ARCHITECTS P.A.  
1715 SW Topeka Boulevard  
Topeka, Kansas 66612-1410  
Office: 785.235.0012  
Fax: 785.235.0013  
www.treanorarchitects.com

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**DEFERRED MAINTENANCE**

**OVERVIEW**

This option explores exterior restoration with limited interior renovation of the existing facility. This option provides for much needed building envelope repairs, but does not make significant plan modifications to support departmental deficiencies. This option does not include much needed building mechanical system improvements.

**SCOPE NARRATIVE**

This option would include the following items:

- Exterior (Department portions of the building only)
  - Repair and/or replace all failed sidewalks and parking lots.
  - Adjust all grade elevations to insure positive drainage away from the building.
  - Isolated brick masonry re-pointing.
  - Stone coping removal, cleaning and replacement with top of wall flashing.
  - Re-caulk all exterior joints
  - Replace all doors and windows with energy efficient systems. In order for the facility to meet current code requirements the windows in the sleeping rooms would need to be modified to be egress compliant windows.
  - Replace the roof and associated flashings for department areas of the building only. Minor repairs are recommended to the Eastern portions of the building that are experiencing drainage issues.
  - Repair and or replace the roof drainage system.
  
- Interior (Department portions of the building only)
  - Limited interior remodel work required to repair existing construction in disrepair as a result of deferred maintenance items.

**ESTIMATE OF PROBABLE COSTS**

The estimated cost range for this scope item is as follows:

	Medium \$/S.F.	High \$/S.F.	Sq. Footage	Medium Est.Cost	High Est.Cost
<b>Building Renovation &amp; Addition</b>	\$ 182.00	\$201.00	11,038	\$ 2,010,549	\$ 2,222,185
<b>Totals</b>				\$ 2,010,549	\$ 2,222,185

- Construction duration: 3-4 months

Costs to temporarily relocate station operations during construction should not be a substantial consideration with this scope of work. The station should be able to function without substantial disruptions to daily operations.

**PROS AND CONS**

This scope of work will extend the life of the facility, with regular maintenance, another 15 to 30 years.

The negatives of this option are that much needed operational modifications, and station updating would not occur, leaving existing Station 1 a better maintained facility that has limited or no improvement to station life and daily operations.

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**NEW BUILDING OPTIONS**

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**OVERVIEW**

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Multiple potential sites for a new Station #1 were identified and reviewed for feasibility as part of this study. Two sites were identified as most desirable and are presented below. The "ideal" program/department standard was used as a model for these options and current cost estimating information was utilized from RSMeans Building Construction Cost Data to inform estimates accordingly.

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**SCOPE NARRATIVE**

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This program and resulting layout incorporate many of the current trends described earlier in this report. This layout meets the apparatus needs, staffing needs, and immediate growth needs of the department. This option would continue to locate the department's SCBA maintenance space requirements at this station.

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**ESTIMATE OF PROBABLE COSTS**

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The estimated costs for the new building options are as follows. Two cost ranges have been presented. The medium construction cost reduces slightly the quality of materials proposed and changes the structure type of the facility. The lower cost range would include wood or metal stud bearing walls with pre-engineered wood trusses. The high construction range would increase the quality, and in-turn, the durability of materials. These materials used will be longer lasting and more durable. The increased initial construction costs would reduce the maintenance costs over the life of the facility. This range would also include steel frame or concrete masonry bearing walls in lieu of stud construction. The roof could be framed with either metal or wood trusses, but could span farther, allowing for more flexibility in changing the layout in the future.

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	Medium \$/S.F.	High \$/S.F.		Medium Est.Cost	High Est.Cost
<b>Option 1</b>					
<b>(8<sup>th</sup> and Kentucky)</b>	\$ 278.00	\$307.00		\$ 2,901,164	\$ 3,203,392
<b>Totals</b>				\$ 2,901,164	\$ 3,203,392

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<b>Option 2</b>					
<b>(6<sup>th</sup> and Tennessee)</b>	\$ 278.00	\$307.00	10,429	\$ 3,118,534	\$ 3,446,800
<b>Totals</b>				\$ 3,118,534	\$ 3,446,800

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- Costs not included in this estimate
  - Site acquisition costs.
- Construction duration: 12-13 months.

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**PROS AND CONS**

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This option will provide a facility that meets the current program and function needs of the department while also providing space for the immediate future growth of the department. With the improved efficiencies in layout and environmental systems, the new buildings will save both operational and annual energy costs.

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These options are the most expensive options presented. These costs should be weighed against the cost of temporarily relocating the existing station during a renovation/addition and the life-cycle cost savings associated with new more efficient building construction.



EXISTING  
STATION

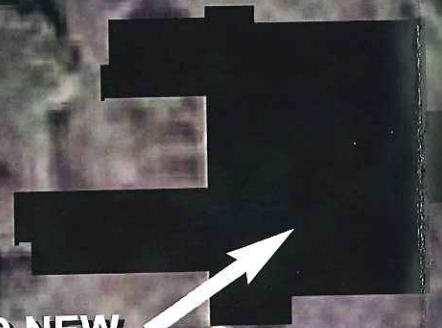
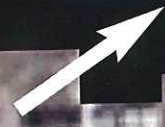
PUBLIC POOL

8TH STREET

KENTUCKY STREET

TENNESSEE STREET

PROPOSED NEW  
STATION LOCATION



8th & Kentucky Site **1**  
1/64" = 1'-0"

JS10.005

Lawrence Douglas County  
Fire & Medical Station #1 Relocation Option A

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1715 SW Topoka Boulevard  
Topoka, Kansas 66612-1410  
Office: 785.235.0012  
Fax: 785.235.0013  
www.treanorarchitects.com

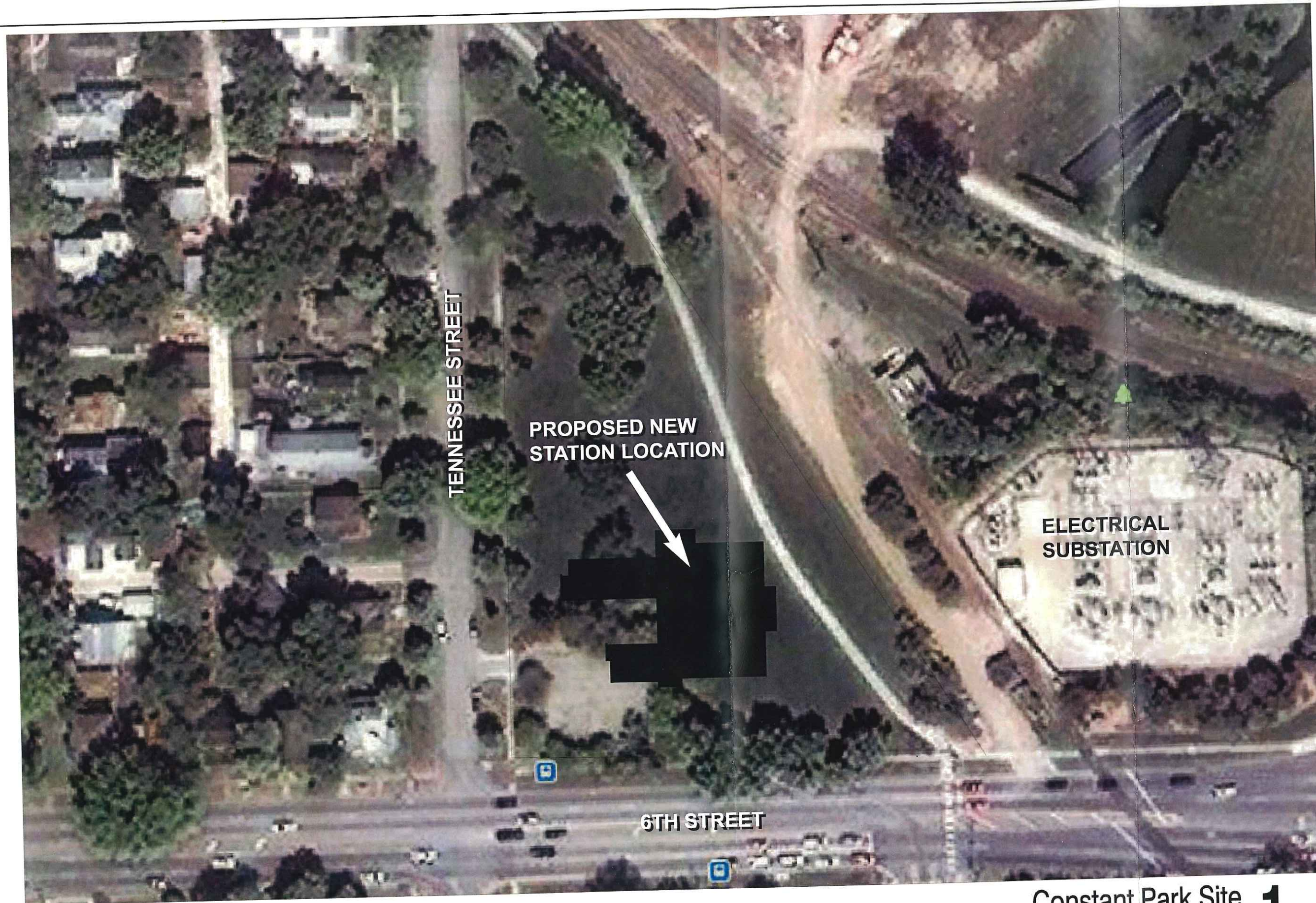
Rel. Date: 10.22.10

**Opt A**

8th & Kentucky

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JS10.005

Lawrence Douglas County  
Fire & Medical Station #1 Relocation Option A

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ARCHITECTURE • INTERIORS • PLANNING • HISTORIC PRESERVATION • GRAPHIC DESIGN  
1715 SW Topoka Boulevard  
Topoka, Kansas 66612-1410  
Office: 785.235.0012  
Fax: 785.235.0013  
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**Opt B**

6th & Kentucky

Constant Park Site **1**  
1/64" = 1'-0"

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