City of Mercer Island

Fire Station 92 Design

Request for Qualifications by the City of Mercer Island, WA for Fire Station 92 Design

Architectural and Engineering Services

Overview and Purpose of Request

The Mercer Island City Council has authorized funding for the design of a new Fire Station 92. The scope of work for this Request for Qualifications (RFQ) includes an assessment of the current programs provided at Fire Station 92, an analysis of the space needs for a replacement facility, schematic design, and design development sufficient to create a detailed preliminary cost estimate. Design development also will include building exteriors, elevations and site layout to be in public presentations. This work will serve as the basis for future key decisions about final design, bidding, possible sources of construction funding and the timing of construction.

Schedule

- Task: Request for Proposal Advertised -- January 11 and 18, 2012
- Deadline for RFQ Submission -- January 27, 2012
- Project Award -- Late February, 2012
- Completion of Work -- Late May, 2012
- City Council Presentation -- June, 2012

Submissions

Qualifications must be submitted addressing the criteria outlined below. A total of four (4) copies of Qualifications must be submitted to:

Assistant City Manager Glenn Boetcher
Mercer Island City Hall
9611 SE 36th St.
Mercer Island, WA 98040

Submissions will be accepted no later than 3:00 p.m. (PST), on Friday, January 27, 2012. Place the copies in a sealed envelope marked with "Request for Qualifications -- Fire Station 92 Design."

More information contact:
Assistant City Manager Glenn Boetcher
Phone: (206) 275-7802
Email: glenn.boetcher@mercer.gov

Qualifications

Submissions should include information that demonstrates clear, concise ideas and relates directly to this project. The successful consultant must have the ability to create a design that fulfills project goals, work with variety of stakeholders and effectively address their interests, and meet project deadlines.

Expertise required includes:
- A strong background in fire station space planning and facility design, and success in designing facilities that are completed within budget.
- The ability to foresee and effectively address potential issues and concerns.
- Creativity in layout and design.
- Site development in coordination with City codes, neighborhood character, and Fire Department needs.
- Roadway and utility coordination.
- Public involvement.

Submissions should also include:
- A statement of proposed project approach, including possible design concepts, challenges and issues of concern.
- The roles and qualifications of key project team members, both in-house and sub-consultants. Identify the project lead and that person's availability. Describe coordination and relationships with sub-consultants.
- Examples of similar projects done by the project team, including references and contact information.
- Examples of recent work that demonstrates the expertise of team members in designing facilities that achieve LEED certification.
- A public involvement plan that anticipates informing the community about the services provided by Mercer Island's Fire Department, the role of Station 92 in service delivery, and contemporary fire station design.

Assumptions

The following should be considered:
- The City Council has determined that the current Station 92 will be the site of a fire station for the foreseeable future.
- It is assumed that this facility will be staffed by 3 firefighters 24/7 for the foreseeable future.
- It is assumed that there will be a need for 4 dorm rooms.
- It is assumed that there will be a need to house three specific fire apparatus at this station (an aid unit, a full size fire engine, and a small fire engine "midy").
- It is assumed that we will continue to conduct city fire extinguisher maintenance and management from Station 92.
- It is assumed that there will be no training tower or training grounds.
- The City recognizes that the current residential zoning of the site is an issue that needs to be addressed.

General Comments

Any costs incurred by respondents in preparing or submitting an RFQ for the study shall be the respondent's sole responsibility.

All responses, inquiries, correspondence, and/or final reports related to the study will become the property of the City of Mercer Island when received.

The City of Mercer Island reserves the right to refuse any and all RFQ's received.

Insurance Requirements

1. Consultant agrees to carry as a minimum, the following insurance, in such form and with such carriers who have a current A.M. Best rating of not less than A:VII or other industry rating which is satisfactory to the City:
   - Workers' compensation and employer's liability insurance in amounts sufficient pursuant to the laws of the State of Washington.
   - Commercial general liability insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 and shall cover liability arising from premises, operations, independent contractors and personal injury and advertising injury. The City shall be named as an additional insured under the Consultant's Commercial General Liability insurance policy with respect to the work performed for the City. Commercial General Liability insurance shall be written with limits no less than $1,000,000.
each occurrence, $2,000,000 general aggregate.

3. Automobile liability insurance covering all owned, non-owned, hired, and leased vehicles. Coverage shall be written on Insurance Services Office (ISO) form CA fire 01, or a substitute form, providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage, with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident.

4. Professional liability insurance appropriate to the Consultant’s profession with limits of no less than $1,000,000 per claim and $1,000,000 per policy aggregate limit.

B. The insurance policies for Commercial General Liability and AutoMobile Liability shall contain the following endorsements or provisions:

1. The Consultant’s insurance coverage shall be primary insurance as respect the City. Any insurance, self-insurance, or insurance pool coverage maintained by the City shall be excess of the Consultant’s insurance and shall not contribute with it.

2. The Consultant’s insurance shall be endorsed to state that coverage shall not be cancelled by either party, except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City. Consultant shall furnish the City with original certificates and a copy of the amendatory endorsements, including without limitation the additional insured endorsement evidencing the insurance requirement of the Consultant before commencement of the Services. Consultant’s failure to maintain such insurance policies shall be grounds for the City’s immediate termination of this Agreement.

Background and Station 92 Historical Timline

The City of Mercer Island Fire Department currently delivers fire, special rescue, and emergency medical services from two fire stations.

Fire Station 92 was originally constructed in 1982. At that time staffing was provided utilizing a volunteer firefighting force. The original facility did not have dorm accommodations and a limited kitchen facility. Station 92 was subsequently staffed with full-time personnel in 1980 with no modifications to the original facility. In 1984, as part of a Fire Department Appliances Bond issue, Fire Station 92 was modified with the addition of a dorm and restroom area on the east side of the existing structure. A slight extension of the apparatus bay to the south side was also included. No other major modifications have been made on the facility since 1984.

In 1991, architectural firm Frank Lawhead and Associates was hired to conduct a programmed and structural analysis of Fire Stations 1 & 92. A number of significant deficiencies were noted relative to Station 92. Over time some of the mechanical deficiencies have been addressed and mitigated.

In 2005, Earthquake Engineering Research Institute (EERI) in conjunction with Washington State’s Department of Emergency Management produced a report on the effects of a modeled magnitude 6.7 earthquake occurring on the Seattle Fault line. The study concluded that the region’s infrastructure, specifically including fire stations, would not perform well in a seismic event due to the age of most fire stations.

In 2005, the Fire Department contracted with TCA Architects to conduct an analysis of the current site of Fire Station 92. The assessment included a recommendation with regards to rebuilding or remodeling; an assessment of the current site and zoning; an assessment of seismic concerns and an update of the structural and mechanical status of the facility. TCA presented their report to the Mercer Island City Council in November, 2009.

Fire Station Operation

The Mercer Island Fire Department currently operates out of two fire stations. Fire Station 91 is located in the Town Center and Fire Station 92 is located at the south end of Mercer Island, adjacent to the south-end business district. Fire Station 92 is staffed 24/7 with three firefighters. Firefighters work a 48 hour shift. There are three Fire Department vehicles housed at this station. Additionally a trailer that carries a large mobile generator is temporarily stored at this site.

Shift change occurs at 0600 every 48 hours. During this period there is a need to facilitate the movement of up to six private vehicles.

Over its life, the building has received one major addition, some minor system upgrades, and structural repairs to keep pace with the functional/operational requirements. With the increase in call volume and service requests, combined with a heightened concern regarding the structural stability, two independent facility assessments, it is believed that there is a need to replace this facility.

Services currently delivered from Fire Station 92 include response to fire, medical, and rescue incidents, response to emergency medical incidents, response to rescue incidents, annual company fire inspections, public services such as blood pressures, public education, limited code enforcement services, administrative support and program management work, and City fire extinguisher maintenance.

Fire Station 92 Assets

Station 92 is staffed with one Lieutenant and two firefighters; personnel are cross-staffed between fire, emergency medical, and rescue equipment.

Station 92 equipment includes one Type 1 (maxi-pumper) fire engine, one medical (BLS) unit, one Type 3 (mid-pumper) fire engine, fire extinguisher maintenance equipment, an exterior generator, physical fitness equipment and a workout room, and UHF radio repeaters.

Statistical Information

- Mercer Island is 6.2 square miles in size.
- Station 92 is the primary station for approximately 3.1 square miles.
- Mercer Island population is approximately 22,500
- Mercer Island Fire Department (MIFD) responds to approximately 2300 incidents per year. Approximately 70% of the requests for service are medical in nature.
- MIFD is part of King County Zone 1.
- MIFD receives dispatching services from NORCOM.
- MIFD complies with National Fire Incident Reporting System (NFIRS) requirements and the statistics are submitted monthly and quarterly.
- MIFD is rated a class 5 by WSRB, a CUP review was completed in 2004 with no change to rating.

Mission Statement

The mission of the Mercer Island Fire Department is to contribute to Mercer Island’s reputation as a safe, friendly, economically thriving community in which to live, work, learn, play and visit. The Fire Department achieves this mission by providing the highest quality local and regional fire prevention, suppression, emergency medical services, rescue disaster preparedness and community education services possible within the resources provided to us. The Fire Department employees are professional, compassionate, highly trained, and committed to state of the art technology to provide services that meet or exceed the expectations of the community.

It was moved by Bassett; seconded by Brahm to:
Authorize the City Manager to execute the agreement with the Human Resources Audit Team to review the City's Human Resources policies and procedures.
Passed 5-2
FOR: 5 (Bassett, Brahm, Grausz, Jahncke, Pearman)
AGAINST: 2 (Cero, Grady)

It was moved by Grausz; seconded by Bassett to:
Amend the previous motion to include:
Which shall include: 1) determination that written policies include all required provisions, 2) determination that management of HR activities is consistent with policies and best practices, and 3) determination that proper checks and balances are in place regarding HR decisions.
Passed 5-2
FOR: 5 (Bassett, Brahm, Grausz, Jahncke, Pearman)
AGAINST: 2 (Cero, Grady)

The amended motion is as follows:
Authorize the City Manager to execute the agreement with the Human Resources Audit Team to review the City's Human Resources policies and procedures which shall include: 1) determination that written policies include all required provisions, 2) determination that management of HR activities is consistent with policies and best practices, and 3) determination that proper checks and balances are in place regarding HR decisions.

AB 4652 Disposition of Sewer Lake Line Project Savings

Finance Director Chip Corder presented information regarding updated staff recommendations for the disposition of $1.6 million of the $2.0 million in Sewer Lake Line Project savings.

It was moved by Bassett; seconded by Jahncke to:
Appropriate $1.6 million of the $2.0 million in Sewer Lake Line project savings as follows:
- $365,000 for the design costs of the South Fire Station replacement project;
- $300,000 to replenish the "revenue stabilization" reserve used in 2009-2010;
- $220,279 to replenish the Contingency Fund reserve used in 2010;
- $100,000 to increase the LEOFF I long-term care reserve;
- $100,000 for PBF plan implementation project in 2012;
- $94,477 for attorney's fees related to a Public Records Act claim award by a federal district court;
- $90,560 for a Public Records Act claim award by a federal district court;
- $84,100 for the I-90 Boat Launch/Police Dock project;
- $70,000 for a Town Center transit oriented development study;
- $60,000 to fund a contract position to support the City Clerk's Office for 18 months;
- $30,000 for sustainability program funding;
- $28,000 for unbudgeted sales and business and occupation taxes estimated to be due to the Washington State Department of Revenue in 2011;
- $25,000 for a community pool study;
- $17,584 transferred to the Youth & Family Service Department to address human services needs; and
- $15,000 for a human resources audit.
Passed 6-1
FOR: 6 (Bassett, Brahm, Grady, Grausz, Jahncke, Pearman)
AGAINST: 1 (Cero)

OTHER BUSINESS

Councilmember Absences
Councilmember Grady will be absent on October 27th.
### South Fire Station Replacement
#### Voted Debt Scenarios

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voter Approval Required</strong></td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Debt</strong></td>
<td>G.O. Bonds</td>
<td>G.O. Bonds</td>
</tr>
<tr>
<td><strong>Term</strong></td>
<td>9 yrs (legal restriction)</td>
<td>20 yrs (typical)</td>
</tr>
<tr>
<td><strong>Average Interest (Coupon) Rate</strong></td>
<td>2.29%</td>
<td>3.40%</td>
</tr>
<tr>
<td><strong>Final Year of Levy and/or Debt Service</strong></td>
<td>2021</td>
<td>2032</td>
</tr>
<tr>
<td><strong>Total Principal (Construction + Bond Issuance Costs)</strong></td>
<td>$5,080,000</td>
<td>$5,080,000</td>
</tr>
<tr>
<td><strong>Total Interest</strong></td>
<td>$596,170 (paid over 9 years)</td>
<td>$1,995,160 (paid over 20 years)</td>
</tr>
<tr>
<td><strong>Total Debt Service</strong></td>
<td>$5,676,170 (paid over 9 years)</td>
<td>$7,075,160 (paid over 20 years)</td>
</tr>
<tr>
<td><strong>Average Annual Levy Amount (Citywide)</strong></td>
<td>$630,686</td>
<td>$353,758</td>
</tr>
<tr>
<td><strong>Annual Property Tax Impact on $950K Home</strong></td>
<td>$73.83</td>
<td>$41.41</td>
</tr>
<tr>
<td><strong>Total Property Tax Impact on $950K Home</strong></td>
<td>$664.47 (paid over 9 yrs)</td>
<td>$828.20 (paid over 20 yrs)</td>
</tr>
<tr>
<td><strong>Levy Rate Per $1,000 AV</strong></td>
<td>$0.07772</td>
<td>$0.04359</td>
</tr>
</tbody>
</table>
Primary and general elections (RCW 29A.04.311 - 321)

Primaries for general elections to be held in November, and the election of precinct committee officers, must be held on the first Tuesday of the preceding August.

All state, county, city, town, and district general elections for the election of federal, state, legislative, judicial, county, city, town, and district officers, and for the submission to the voters of the state, county, city, town, or district of any measure for their adoption and approval or rejection, shall be held on the first Tuesday after the first Monday of November, in the year in which they may be called. A statewide general election shall be held on the first Tuesday after the first Monday of November of each year.

However, the statewide general election held in odd-numbered years shall be limited to (a) city, town, and district general elections as provided for in RCW 29A.04.330, or as otherwise provided by law; (b) the election of federal officers for the remainder of any unexpired terms in the membership of either branch of the Congress of the United States; (c) the election of state and county officers for the remainder of any unexpired terms of offices created by or whose duties are described in Article II, section 15, Article III, sections 16, 17, 19, 20, 21, 22, and 23, and Article IV, sections 3 and 5 of the state Constitution and RCW 2.06.080; (d) the election of county officers in any county governed by a charter containing provisions calling for general county elections at this time; and (e) the approval or rejection of state measures, including proposed constitutional amendments, matters pertaining to any proposed constitutional convention, initiative measures and referendum measures proposed by the electorate, referendum bills, and any other matter provided by the legislature for submission to the electorate.

Special elections (RCW 29A.04.330)

The King County Elections Director, upon request in the form of a resolution of the governing body of a city, town, or district, presented to the director of elections prior to the proposed election date, may call a special election in such city, town, or district, and for the purpose of such special election they may combine, unite, or divide precincts. Such special election shall be held on one of the following dates as decided by the governing body:

a. The second Tuesday in February;
b. The third Tuesday in April until January 1, 2013;
c. The fourth Tuesday in April on or after January 1, 2013;
d. The day of the primary election as specified by RCW 29A.04.311; or
e. The first Tuesday after the first Monday in November.

A resolution calling for a special election on a date set forth in (a) through (c) above must be presented to King County Elections at least 46 days prior to the election date. A resolution calling for a special election on a date set forth in (d) above must be presented to King County Elections no later than the Friday immediately before the first day of regular candidate filing. A resolution calling for a special election on a date set forth in (e) above must be presented to King County Elections no later than the day of the primary election.

In addition to the dates set forth above, a special election to validate an excess levy or bond issue may be called at any time to meet the needs resulting from fire, flood, earthquake, or other act of God. Such county special election shall be conducted and noticed in the manner provided by law.
## 2012 special election calendar

<table>
<thead>
<tr>
<th>Date of election</th>
<th>February 14</th>
<th>April 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution requesting special election</td>
<td>December 30</td>
<td>March 2</td>
</tr>
<tr>
<td>RCW 29A.04.330</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution requesting a local voters’ pamphlet</td>
<td>December 30</td>
<td>March 2</td>
</tr>
<tr>
<td>Explanatory statement for voter pamphlet due</td>
<td>December 30</td>
<td>March 2</td>
</tr>
<tr>
<td>Committee appointments for voter pamphlet due</td>
<td>December 30</td>
<td>March 2</td>
</tr>
<tr>
<td>Pro/con statements for voter pamphlet due</td>
<td>January 3</td>
<td>March 5</td>
</tr>
<tr>
<td>Rebuttal statements for voter pamphlet due</td>
<td>January 4</td>
<td>March 6</td>
</tr>
<tr>
<td>Overseas and service ballots typically mailed</td>
<td>January 13</td>
<td>March 16</td>
</tr>
<tr>
<td>Legal deadline to mail overseas and service ballots</td>
<td>January 15</td>
<td>March 18</td>
</tr>
<tr>
<td>RCW 29A.40.070</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day for mail in and online voter registrations and transfers</td>
<td>January 16</td>
<td>March 19</td>
</tr>
<tr>
<td>RCW 29A.08.140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local voters’ pamphlets typically mailed and available</td>
<td>January 24</td>
<td>March 27</td>
</tr>
<tr>
<td>Mail ballots are typically mailed and available</td>
<td>January 25</td>
<td>March 28</td>
</tr>
<tr>
<td>RCW 29A.40.070</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elections Accessible Voting Center opens</td>
<td>January 27</td>
<td>March 30</td>
</tr>
<tr>
<td>RCW 29A.46.020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal deadline to mail ballots</td>
<td>January 27</td>
<td>March 30</td>
</tr>
<tr>
<td>RCW 29A.40.070</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last day for in-person registration for voters not currently registered in Washington.</td>
<td>February 6</td>
<td>April 9</td>
</tr>
<tr>
<td>RCW 29A.08.140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other accessible voting sites may open</td>
<td>February 13</td>
<td>April 16</td>
</tr>
<tr>
<td>Election certified</td>
<td>February 28</td>
<td>April 27</td>
</tr>
<tr>
<td>RCW 29A.60.190</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2012 primary + general election calendar

<table>
<thead>
<tr>
<th>Date of election</th>
<th>August 7</th>
<th>November 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate filing information available online</td>
<td>early April</td>
<td>-----</td>
</tr>
<tr>
<td>First day candidate filings may be accepted by mail</td>
<td>April 30</td>
<td>-----</td>
</tr>
<tr>
<td>Resolution requesting special election</td>
<td>May 11</td>
<td>August 7</td>
</tr>
<tr>
<td>Resolution requesting not to participate in the local voters' pamphlet</td>
<td>May 11</td>
<td>August 7</td>
</tr>
<tr>
<td>Candidate filing</td>
<td>May 14 - 18</td>
<td>-----</td>
</tr>
<tr>
<td>Explanatory statement and committee appointments for voter pamphlet due</td>
<td>May 15</td>
<td>August 10</td>
</tr>
<tr>
<td>Last day for candidates to withdraw</td>
<td>May 21</td>
<td>-----</td>
</tr>
<tr>
<td>Pro/con statements for voter pamphlet due</td>
<td>May 21</td>
<td>August 15</td>
</tr>
<tr>
<td>Rebuttal statements for voter pamphlet due</td>
<td>May 23</td>
<td>August 17</td>
</tr>
<tr>
<td>Candidate statements and photos for local voters' pamphlet due</td>
<td>May 25</td>
<td>-----</td>
</tr>
<tr>
<td>Overseas and service ballots typically mailed</td>
<td>June 22</td>
<td>September 21</td>
</tr>
<tr>
<td>Legal deadline to mail overseas and service ballots</td>
<td>June 23</td>
<td>September 22</td>
</tr>
<tr>
<td>Last day for mail in and online voter registrations and transfers</td>
<td>July 9</td>
<td>October 8</td>
</tr>
<tr>
<td>Local voters’ pamphlets typically mailed and available</td>
<td>July 17</td>
<td>October 16</td>
</tr>
<tr>
<td>Mail ballots are typically mailed and available</td>
<td>July 18</td>
<td>October 17</td>
</tr>
<tr>
<td>Elections Accessible Voting Center opens</td>
<td>July 20</td>
<td>October 19</td>
</tr>
<tr>
<td>Legal deadline to mail ballots</td>
<td>July 20</td>
<td>October 19</td>
</tr>
<tr>
<td>Last day for in-person registration for voters not currently registered in Washington.</td>
<td>July 30</td>
<td>October 29</td>
</tr>
<tr>
<td>Other accessible voting sites open</td>
<td>August 6</td>
<td>November 5</td>
</tr>
<tr>
<td>Election certified</td>
<td>August 21</td>
<td>November 27</td>
</tr>
</tbody>
</table>
BACKGROUND: At the request of the City Council staff is advancing the plans for the redevelopment of Fire Station 92. In a report to Council on November 2, 2009 (AB 4476) staff noted that the current facility is a legal non-conforming structure under the current development code meaning that the existing station could not be built under the current regulations. Areas of concern in planning for the redevelopment of the station were identified in the staff report to include parking, gross floor area, yard setbacks and impervious surface limitations. The existing non conforming facility has demonstrated that it can operate without significant negative impacts on the neighborhood or on the environment. The site is surrounded by a PSE Substation, a self storage facility and a neighborhood shopping center. Across the street is Pioneer Park.

COMPREHENSIVE PLAN DESIGNATION: The Mercer Island Comprehensive Plan (Land Use, page 21, Figure 1) establishes fourteen (14) classifications of land uses including Town Center, Neighborhood Business, Public Facility and various categories of multi-family and single-family residential. The Plan designates the site of Station 92 as “Public Facility”. The Plan also identifies the South Fire Station (Station 92) as a “current and future” facility (Capital Facilities, page 7, Figure 1).

ZONING DESIGNATION: The Mercer Island Development Code (Zoning Map) contains twelve (12) zone classifications, including Town Center, Business, Public and various categories of multi-family and single family residential. The zoning for Station 92 is “R-9.6”. Public facilities such as Fire Station 92 are permitted within the R-9.6 district with a Conditional Use Permit.

R-6 Conditional Use Permit Requirements:

- All structures shall be located at least 20 feet from any abutting property.
- Off street parking shall be established at a minimum ratio of one space for each 200 square feet of gross floor area.
- Utilities shall be shielded with landscaping.

Other Requirements of the R-6 Zone:

- Lot Area: 9,600 square feet minimum, existing lots allowed to continue.
- Building Height: 30’.
- Impervious Surface: the legally existing impervious surface coverage in existence on May 1, 2006 is allowed to continue.
- Floor to area limitations only apply to residential structures.

OPTIONS:

1. No Change to the Current Rules would require a Conditional Use Permit and Design Review. The redevelopment project would be required to:
a. Structures set back 20’ from abutting property.
b. Parking based upon 1 space per 200 square feet of gross floor area.
c. Landscaping to shield utilities.
d. Maximum building height of 30’.
e. Impervious surface limits as they exist today.
f. Stormwater management would be required.
g. SEPA review may lead to other mitigation measures.

2. Variances. Should any of the numerical standards (20’ setback; parking) present a problem the
city would have the option of seeking a variance from those standards.

3. Amendment of the Site to Public Zoning. The City could amend the zoning designation for this
site from “R-6” to “P”. Under a Public Zone, the following standards would apply:
   a. Design Review is required.
   b. Parking at one space per 200 gross square feet.
   c. Height limit of 36’ or three stories, whichever is less.
   d. Stormwater management is required.

4. Amendment of the Site to Public and amendment of the Public Zoning Standards. Another
alternative for this site would be to amend the zoning for the site from “R-6” to “P” and amend
the development standards to the “P” zone. For example adding a green standard for any
development within the Public Zone.
Report Outline

1. Introduction
2. Executive Summary and Recommendation
3. Programmatic Deficiencies
4. Mechanical and Electrical Assessment
5. Structural Analysis
6. Property and Land Use Summary
7. Discussion of Land Use Code Constraints and Considerations
8. New Station Target Size
9. The Remodel Option
10. Sustainable Design Considerations
11. Rough Order of Magnitude Estimate
12. Sketches
1. Introduction

The purpose of this study is to provide an assessment of the existing condition of Mercer Island Fire Station 92 and to evaluate options for improvement or replacement of the Station. The assessment of the facility is concerned with the construction of the facility, structural observation, systems, and the programmatic function of the station—i.e. the facility’s operational usefulness as a modern fire station. The evaluation of the existing Station 92 considers options for addressing the deficiencies identified in the assessment. Sketches are employed at the conclusion of this report to demonstrate existing conditions, constraints and test-to-fit scenarios for approaches to redevelopment of the site.

2. Executive Summary and Recommendation

Mercer Island Fire Station 92 was built in 1962 with sleeping quarters added in 1984. As previously identified in the 1991 Study by Lawhead Architects and based on the assessment provided in this report, a replacement of the existing Fire Station 92 is recommended. The existing station’s limited size, programmatic deficiencies and structural concerns are the primary considerations that support the recommendation for replacement. Structural concerns are significant; the structural engineers conclude their assessment with the following: “Fire Station #92 is in dire need of a seismic upgrade or replacement.” Space constraints at the existing facility are well documented in the 1991 study and the limited size continues to underserve the Fire Department’s operational needs. New construction will also allow for implementation of current mechanical and electrical technologies, as well as, sustainable design approaches which will yield a more energy efficient facility. A rough order of magnitude estimate suggests a total project cost of $4.6 million based on a new 8500 square foot station with associated site development.
3. Programmatic Deficiencies

The November 1991 study prepared by Lawhead Architects (titled *Program and Site Study of Mercer Island Fire Station No. 1 and No. 2*) identified a number of programmatic deficiencies at Mercer Island Fire Station 92. The deficiencies represent needs and associated areas that were either not served or found to be inadequate in size and/or function. Since that time, codes, regulations, and Fire Department needs have added to the list of programmatic deficiencies. Based on a review of the Lawhead study, the existing facility, current requirements for fire stations and program needs as described by the Fire Department, the following provides a description of current programmatic deficiencies.

**Areas that are inadequate (in size/function/relationship)**

- General storage (limited space, lack of dedicated space for equipment and critical supply storage)
- Workspace (lack of firefighter work space for office and apparatus work)
- Kitchen (undersized to support crews)
- Dayroom (undersized to support crews)
- Physical fitness room (inadequate and does not meet the intent of NFPA 1583)
- Apparatus bay widths are narrow; lack of drive thru bays (WAC 296-305)
- Lack of 1-hour fire resistive construction between the bays and sleeping rooms (not compliant with WAC 296-305-06507)
- Lack of security between public and non-public areas (Dept. of Homeland Security guideline)
- HIPPA Security for records is lacking
- Sleeping Rooms (underserved by RR/Showers, lack of privacy, poor location)

**Areas that are needed**

- Public waiting room (separate area for walk-in public visits)
- Accessible restrooms (IBC, ANSI/ICC A117.1)
- Gender specific restroom/showers
- Aid room
- Office space
- Bunker gear storage (NFPA 1851)
- Decontamination/Clean room (NFPA 1581)
- Hand wash stations (WAC 296-305)
- SCBA storage
4. Mechanical and Electrical Assessment

The November 1991 Lawhead Report provides a review of the Fire Station 92 mechanical and electrical systems. Improvements and routine system maintenance have occurred since the time of the report. During this time, energy and mechanical code requirements and regulations have become stricter which only serves to increase the magnitude of the deficiencies. The following is a general summary of each area based on a review of the Lawhead Report and a description of maintenance and improvements provided by the City.

Electrical Systems

With the exception of the back-up generator, the electrical system was found to be in a poor state in 1991. Code violations were cited and recommendations were provided for new service to the building, as well as, new lighting and receptacles throughout. A larger fuel tank was recommended for the generator and the size and state of the generator should be reassessed for current condition and requirements. Since the time of the report, on-going electrical failures have been addressed; however, the system remains antiquated and in need of updating. Additionally, the low voltage system is surface mounted and out of date, and the station lacks a central fire alarm system.

Mechanical Systems

At the time of the Lawhead report, the gas fired unit heaters located in the apparatus bay were found to be reaching the end of their useful life and inefficient. These inefficiencies only increase when comparing the heating units to systems available today and it is worth noting that based on data from 2006-2008, the City of Mercer Island reports that Station 92 is the most expensive City facility in terms of Kbtu/SF use. Plumbing and ventilation code violations were cited in 1991. Plumbing fixtures were found to be inadequate. The lack of a source capture exhaust system in the apparatus bay was noted. Systems in the 1984 addition to the building were generally found to be adequate; however, a humidity problem with the HVAC was noticed during a recent site visit. Other plumbing and ventilation components were noted as in need of replacement. Additionally, consideration should be given to the existing facility’s lack of a fire suppression system — i.e. sprinklers (a WAC 296-305-06503 requirement for new or remodeled stations). Since the time of the Lawhead study, HVAC and plumbing maintenance issues have been dealt with, a bathroom remodel took place, failing plumbing components and conditions were addressed, and a source capture exhaust system was added to the apparatus bay. While the mechanical and plumbing systems are in need of replacement, newer components should be evaluated for reuse potential.
5. Structural Analysis

The following report prepared by Coughlin Porter Lundeen in June of 2009 is an update to the findings presented in the 1991 Lawhead Study.
June 23, 2009

TCA Architecture
6211 Roosevelt Way Northeast
Seattle, WA 98115

Attn: Mr. Brian Harris

RE: Seismic/Structural Review
Mercer Island Fire Station #92

Dear Brian:

We are pleased to present the findings of our review of the Fire Station #92 structure located in Mercer Island, Washington. The purpose of this assessment is to review past studies and provide an updated general structural assessment for the current condition of the building based on more stringent codes which are now in effect. Moreover, we also provide comment on structural upgrades that could be installed to improve the performance of the buildings from an Immediate Occupancy standpoint as defined by ASCE 31-03. The original construction drawings were not available for our review. Therefore, our assessment is based on a limited amount of information gathered during a cursory walk-through of the site on June 9, 2009. We also reviewed pictures of the 1984 addition obtained by Fire Chief Chris Tubbs.

Scope

In this report, we will discuss the condition of the building’s vertical and lateral load resisting systems. Gravity and wind loads are considered in this structural assessment in addition to the primary risk associated with earthquake. Personal property and economic losses are not considered.

The scope of this review is limited to:

- Observations of the main structure via cursory walk-through of the building.
- Review of the original study, “Program and Site Study of Mercer Island Fire Station No. 1 and No. 2” by Lawhead Architects dated November 19, 1991.
- Update the original seismic evaluation of the structure based on current code and standard ASCE 31-03, Seismic Evaluation of Existing Buildings.
- Identification of any Immediate Occupancy seismic hazards or deficiencies.
- Recommendations for the repair of both vertical and lateral load resisting systems.
- Preparation of this letter stating our findings.

General Description
Mercer Island Fire Station #92 is a one-story wood-framed building with single-wythe concrete masonry (CMU) unit walls. Although no testing on the masonry walls has been completed to date, we anticipate these walls are unreinforced based on construction practices during that time. The building was constructed in 1962 and remodeled with an addition 1984. The center portion of the building consists of a tall apparatus bay with large doors on the north and south ends. The roof steps down over the kitchen and dayroom to the west of the apparatus bay, and over the living quarters and exercise room to the east of the apparatus bay. The three separate roofs are all configured with low slopes.

**Vertical Load Resisting System**

The apparatus bay and west roof are of the original 1962 construction and consist of plywood sheathing over 2x joists spanning north to south. These joists are supported by glulam beams spanning east to west that bear on top of the CMU walls. The east roof is part of the 1984 addition and consists of plywood sheathing over 2x joists. The east end of these joists bear on a wood-frame exterior wall while the west ends are supported off a ledger bolted to the apparatus bay CMU wall. We assume the building has conventional spread footings and a slab-on-grade.

**Lateral Force Resisting System**

The lateral force resisting system consists of plywood sheathing at the roofs that act as horizontal diaphragms. The diaphragms transfer lateral loads to the CMU shear walls that transfer the load through the foundation to the supporting soil. The exterior walls of the 1984 addition are plywood sheathed shear walls.

**Structural Observations and Deficiencies**

Our structural analysis, as it pertains to the primary risk due to earthquakes, is based on ASCE 31-03, which is the current standard recognized by code for evaluating existing buildings. Our analysis consisted of a Tier 1 study for an Essential Facility with Immediate Occupancy criteria. A list of observed deficiencies is shown below. We have also listed the deficiencies stated in the 1991 report for comparison.

<table>
<thead>
<tr>
<th>Deficiencies Pertaining to the Roof Framing</th>
<th>Structural Deficiencies Per ASCE 31-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991 Program and Site Study</td>
<td>Structural Deficiencies Per ASCE 31-03</td>
</tr>
<tr>
<td>• The existing lateral elements do not conform to current code for lateral design nor detailing. (Ira L. Gross, Ratti Swenson Perbix Clark, 1991)</td>
<td>• The plywood sheathed roof diaphragms are likely unblocked and span greater than that recommended by ASCE 31-03 in the east-west direction. These diaphragms will likely become overstressed during a seismic event.</td>
</tr>
<tr>
<td>• Roof detailing at wall juncture is inadequate. (Paul Lukes, Building Envelope Consulting Services, 1991)</td>
<td>• The diaphragm does not have continuous cross ties in the north-south direction. Cross ties help resist out-of-plane seismic forces induced by the CMU walls. The roof diaphragms will likely become overstressed without cross ties.</td>
</tr>
<tr>
<td>• Glulam beams have a negative camber as they were installed inverted. Ira L. Gross, Ratti Swenson</td>
<td>• Wood ledgers supporting the low roof diaphragms at the mid-height of the tall apparatus bay walls are subject to a brittle failure known as cross-grain bending. The ledgers will likely be overstressed and fail during a seismic event causing partial</td>
</tr>
</tbody>
</table>
Perbix Clark, 1991)

### Deficiencies Pertaining to the Shear Walls

<table>
<thead>
<tr>
<th>1991 Program and Site Study</th>
<th>Structural Deficiencies Per ASCE 31-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The exterior masonry walls laid in stacked bond have several vertical cracks in both the block and in mortar joints. (Ira L. Gross, Ratti Swenson Perbix Clark, 1991)</td>
<td>• There are clerestory windows on the east and west sides of the building between the roof diaphragm and the tops of the CMU walls. The windows separate the roof diaphragm from the CMU shear walls prohibiting proper in-plane shear transfer.</td>
</tr>
<tr>
<td></td>
<td>• The CMU walls do not appear to be positively anchored to the roof framing to resist forces perpendicular to the plane of the wall (out-of-plane forces). Positive anchorage is required to keep these walls from “tipping” in a seismic event.</td>
</tr>
<tr>
<td></td>
<td>• There are slender CMU piers adjacent to the apparatus bay doors on the north and south sides. These piers do not have adequate capacity or connections to the foundation to resist in-plane seismic shear forces and overturning forces. Therefore, the north and south sides of the apparatus bay do not have an adequate lateral load path to the foundation.</td>
</tr>
<tr>
<td></td>
<td>• The height-to-thickness ratio of the CMU walls is greater than that recommended by ASCE 31-03. Therefore, these walls are considered slender and likely do not have the capacity to span vertically between the supporting foundation and roof diaphragm during a seismic event.</td>
</tr>
</tbody>
</table>

### Recommendations

The following recommendations address the specific issues identified above, however a cost effective seismic upgrade that includes masonry wall testing will require further analysis. We are making the following recommendations to reduce the potential seismic losses to the building based on the above findings.

**Work to the Roof Framing:**

1. The roof diaphragms require strengthening by installing 2x4 flat blocking at all unframed panel edges at the north and south ends. The blocked areas are roughly 1/3 the length of the diaphragm at each end. Proper installation of the blocking requires the
roofing to be removed, however an attachment to the sheathing from the underside only may be possible. This will require demolishing the ceiling to expose the underside of the roof sheathing in those areas.

2. Diagonal bracing between the tops of the CMU walls and the roof framing is required to support the walls from tipping due to out-of-plane seismic forces. Alternatively, tube steel column “strong-backing” may be installed against the walls and span from the slab to the roof framing. Braces or strong-backs must connect to continuous cross-ties on the north and south ends of the building. The cross-ties consist of 4x material spanning between the existing framing with bolted hardware connecting each cross-tie together.

3. The low roof ledger connections must be tied to the roof diaphragms to prevent cross-grain bending using light gage steel straps. These L-shaped straps are bolted to the CMU walls and nailed to the roof framing normally at 4 feet on-center above the roof sheathing. This requires a portion of the roofing to be removed, however a connection from the underside of the roof framing may also be possible. This will require a portion of the ceiling to be removed.

4. The existing roof beams require a positive connection to the tops of the CMU walls. Such a connection consists of steel angles on each side of the beam with bolts to the beam and lag screws to the sill plate. The sill plate shall be connected to the top of the wall with epoxy grouted bolts.

5. Glulam beams installed upside down will continue to creep over time affecting the overall quality of the roof unless the load imposed on them is reduced. Intermediate glulam beams can be installed to reduce the load on these beams. New beams can be installed from the underside by removing the ceiling and inserting them below the existing joists. These beams receive a bolted connection to the existing CMU walls, or are supported by new steel columns.

6. Increasing the redundancy in the roof framing as described above would preclude installing independent secondary columns to separate the vertical load resisting system from the lateral force resisting system.

Work to the CMU Shear Walls:

1. The clerestories must be infilled at several locations to allow for a proper load path between the roof diaphragm and the CMU shear walls. These infills consist of sawn lumber framing and plywood sheathing bolted to the walls and diaphragms, or grouted and reinforced CMU.

2. As discussed in Item 2 of the section above, diagonal bracing or tube steel strong-backs shall be installed to connect the CMU walls properly to the roof diaphragms. These are required on all sides. The bracing is normally centered at 4 feet along the wall and consists of 4x material or steel angles. The strong-backs, normally 3-inch tube steel columns, are spaced roughly 6 feet on center and get anchored to the slab, CMU walls, and the roof framing.

3. The tall, slender CMU piers on either side of the apparatus bay doors require modifications for resisting in-plane overturning forces. Such modifications include enlarging the footings, connections to adjacent walls at the corners, and strong-backs at the free ends near the opening. The vertical cracks in CMU walls shall also be repaired with an epoxy.

4. The CMU wall slenderness deficiency can be mitigated by installing tube steel strong-backing as discussed in Item 2 of this section. The strong-backing can be designed to mitigate both the out-of-plane connection and wall slenderness deficiencies.
Conclusion

It is our opinion that Fire Station #92 is in dire need of a seismic upgrade or replacement. We found several major deficiencies in the lateral force resisting system merely by performing a cursory on-site review. The most severe of these pertains to the construction of the CMU shear walls; a construction type consisting of stack bond masonry units that is no longer allowed by current code (without special units with substantial grouting and reinforcement). Although no masonry testing has occurred, we would not expect to find much grout or internal reinforcement. Moreover, the shear walls are not connected to the roof diaphragms they are intended to support, and do not appear to have adequate strength to remain standing during a code-level seismic event. Renovating this structure in accordance with the immediate occupancy criteria would be significant and further diminish usable space and necessary clearances.

Furthermore, we understand the station must be expanded if renovated to extend the life of the building. As stated in the Lawhead study, the site is too small to support further expansions and any additions must be constructed vertically (additional stories). The existing structure cannot support vertical or lateral loads from an additional story. Therefore, a separate structural system designed to supplement the original structure is required to support any additional areas. This type of construction tends to be quite tedious, very labor intensive, and generally cost prohibitive. We recommend the City of Mercer Island and the Fire Department compare the cost of renovation/expansion versus complete replacement to choose the best course of action.

Sincerely,
Coughlin Porter Lundeen, Inc.

Jason Marvin
6. Property and Land Use Summary

Property Description

The existing Mercer Island Fire Station 92 is located at 8473 SE 68th Street. The majority of the site as presently developed is impervious (approximately 78%) consisting of paving and the existing 3 bay fire station. The property is approximately 100’ x 150’ with the shorter dimension fronting SE 68th Street. This yields 15,000 SF (0.34 acres) of property. The use east of the fire station site is Utility. Commercial uses exist to the south and west.

Land Use Requirements Summary

The table below summarizes land use code criteria that establish the limits for the development of a new fire station on the Fire Station 92 site.

<table>
<thead>
<tr>
<th>Planning Authority</th>
<th>City of Mercer Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Code</td>
<td>Mercer Island City Code (MICC), Title 19 Unified Land Development Code</td>
</tr>
<tr>
<td>Zoning</td>
<td>R9.6</td>
</tr>
<tr>
<td>Land Use Permits</td>
<td>A Conditional Use Permit (CUP) is required for development of a Fire Station in a Residential Zone (MICC 19.02.010(C)(1)).</td>
</tr>
<tr>
<td>Setbacks:</td>
<td>20'-0” from abutting property (19.02.010(C)(1)(a))</td>
</tr>
<tr>
<td>Building Height Limit</td>
<td>30’-0” above average elevation (19.02.010(D))</td>
</tr>
<tr>
<td>Gross Floor Area</td>
<td>Max. of 45% of lot area for a single family structure (19.02.010(E)(1))</td>
</tr>
<tr>
<td>Allowable Impervious</td>
<td>40% max. for a lot slope &lt;15% (19.02.020(D)(1))</td>
</tr>
<tr>
<td></td>
<td>45% with code official granted deviation (19.02.020(D)(3))</td>
</tr>
<tr>
<td></td>
<td>60% with granted variance – a fire station would need to be considered a “public facility” (19.02.020(D)(4))</td>
</tr>
<tr>
<td></td>
<td>78% (approximately) if present site impervious is found “legally existing” as determined by the code official and a fire station is considered a “public facility” (19.02.020(D)(4*))</td>
</tr>
<tr>
<td>Parking</td>
<td>1 space required for every 200 square feet of gross floor area (19.02.010(C)(1)(b))</td>
</tr>
<tr>
<td>Landscape Area</td>
<td>35% min. for nonresidential use in a single family zone (19.12.040(B)(4)(a)(i))</td>
</tr>
<tr>
<td>Perimeter Screen</td>
<td>Per table (19.12.040(B)(7)(a))</td>
</tr>
<tr>
<td></td>
<td>20’-0” of partial screening for Public Facility adjacent to Public Way (north prop. line)</td>
</tr>
<tr>
<td></td>
<td>10’-0” of partial screening between Public Facility and Commercial or Utility (east, south and west prop. lines)</td>
</tr>
</tbody>
</table>
7. Discussion of Land Use Code Constraints and Considerations

The requirements of the land use code are considerable when looking at the option of building a new Fire Station on the existing Fire Station 92 property which would be a non-residential and conditionally permitted use in a residential zone. The existing station could not be built today without multiple variances from the code.

Construction of a new approximately 8500 SF facility on this site would require variances from the following land use code requirements: parking, gross floor area, setbacks, landscape area, perimeter screening and allowable impervious surface. At the sacrifice of program and requirements based on operational needs, there are options for developing the site with fewer variances, but there is no feasible option for construction a new fire station on the property, as zoned, without variances.

Consideration should be given to pursuing a rezone of the property from R9.6 to the adjacent Planned Business Zone (PBZ). Adjacency and the nature of the present development of the site would seem to support a rezone of the property. With the property zoned PBZ, a new station could be built on this site with little or no need for variances from the land use code. The process for rezoning property in the City of Mercer Island requires further research.
8. New Station Target Size

8500 square feet is identified as the preliminary pre-design target size for a new station. This is the approximate gross square footage that would be required to allow for correction of programmatic deficiencies and to support operational needs. It is worth noting that in 1991 Lawhead Architects provided 8000 square feet as a preliminary design size based on assessed needs and conceptual planning for a new Station 92. The slight disparity with the present day target size can be explained by the standards and regulations impacting program needs (e.g. dedicated bunker gear storage, separation of decon from cleaning) that have come into effect in the 18 year interim between the studies.

A method of scaling the fire station components of the Headquarters Fire Station 91 was employed to determine Fire Station 92 space needs and resulting target size. This method allocates new Station 92 square footage based on area per firefighter and per apparatus found at Station 91. The table below provides the data that was used:

<table>
<thead>
<tr>
<th>Fire Station Area</th>
<th>Gross 91 Area</th>
<th>Scaling Basis</th>
<th>92/91 ratio</th>
<th>Scaled for 92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crew Living Work</td>
<td>8,745</td>
<td>Sta 92 (4) beds:Sta 91 (10) beds</td>
<td>0.40</td>
<td>3,498</td>
</tr>
<tr>
<td>Apparatus Bay</td>
<td>7,415</td>
<td>Sta 92 (2) bays:Sta 91 (3) bays</td>
<td>0.67</td>
<td>4,943</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8,441</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As a check of the target sizing, TCA looked at recent or planned projects both nationally and regionally. This data supports the target size that the scaling method suggests. The comparable projects data is represented below:

<table>
<thead>
<tr>
<th>Station Type</th>
<th>Location</th>
<th>Year Completed</th>
<th>No. of Bays</th>
<th>Staffing</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Sta. No. 3</td>
<td>College Park, TX</td>
<td>2008</td>
<td>2</td>
<td>?</td>
<td>10,762</td>
</tr>
<tr>
<td>Fire Sta. No. 2</td>
<td>Isle of Palms, SC</td>
<td>2007</td>
<td>2</td>
<td>?</td>
<td>12,700</td>
</tr>
<tr>
<td>Fire Sta. No. 185</td>
<td>Goodyear, AZ</td>
<td>2008</td>
<td>2</td>
<td>?</td>
<td>11,000</td>
</tr>
<tr>
<td>Fire Sta. No.2</td>
<td>Bixby, OK</td>
<td>2007</td>
<td>2</td>
<td>?</td>
<td>7,072</td>
</tr>
<tr>
<td><strong>average</strong></td>
<td></td>
<td></td>
<td>2</td>
<td>?</td>
<td>10,384</td>
</tr>
<tr>
<td>Neighborhood Station 20</td>
<td>Seattle, WA</td>
<td>planned</td>
<td>2</td>
<td>4</td>
<td>8,434</td>
</tr>
<tr>
<td>Neighborhood Station 21</td>
<td>Seattle, WA</td>
<td>planned</td>
<td>2</td>
<td>4</td>
<td>8,178</td>
</tr>
<tr>
<td>Neighborhood Station 22</td>
<td>Seattle, WA</td>
<td>planned</td>
<td>2</td>
<td>4</td>
<td>8,178</td>
</tr>
<tr>
<td>Neighborhood Station 30</td>
<td>Seattle, WA</td>
<td>planned</td>
<td>2</td>
<td>4</td>
<td>8,178</td>
</tr>
<tr>
<td><strong>average</strong></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td>8,242</td>
</tr>
<tr>
<td>Fire Sta. 66</td>
<td>Marysville, WA</td>
<td>2008</td>
<td>3</td>
<td>5</td>
<td>10,100</td>
</tr>
<tr>
<td>Snohomish FD 1 Station 18</td>
<td>Brier, WA</td>
<td>under const.</td>
<td>2</td>
<td>4</td>
<td>9,388</td>
</tr>
<tr>
<td>Snohomish FD 1 156th St Sta.</td>
<td>WA</td>
<td>under const.</td>
<td>2</td>
<td>6</td>
<td>11,588</td>
</tr>
<tr>
<td><strong>average</strong></td>
<td></td>
<td></td>
<td>2.33</td>
<td>5.00</td>
<td>10,358</td>
</tr>
<tr>
<td><strong>adjusted</strong></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td>8,516</td>
</tr>
</tbody>
</table>

average bay/total station 0.38%

* adjustment is per ratio to establish an average 2 bay 4 FF station
9. The Remodel Option

A remodel alone of the existing approximately 4600 square foot station would fail to address the programmatic deficiencies, and a significant addition would be required to address operational needs. A structural retrofit of the existing facility would require the insertion of new structural components adjacent to existing structure; this construction would further reduce existing building space limiting the available square footage for remodeling. Given the configuration of spaces and the existing station’s location on the site, an addition would take the form of a second floor. Second floor construction introduces new structural concerns and, as identified in CPL’s structural analysis, new first floor structure and foundations would be required to support a vertical addition. There is little value that the existing construction offers to a remodel/addition solution. It is anticipated that a remodel/addition would cost as much or more than new construction and would limit the opportunities for improvement of the facility.

Other considerations for a remodel/addition approach are:

- Zoning Code requirements that are triggered based on the value of the improvements
- ADA and Building Code issues that will need to be brought into compliance
- WAC fire resistive construction requirements
- Removal of existing mechanical and electrical systems for installation of new systems
- A remodel addition will require working a new scheme around an existing plan and compromises will need to be made in establishing space adjacencies and circulation.
- The location of the existing building limits options for use of the site.
10. Sustainable Design Considerations for the development of a fire station facility.

According to the US Green Building Council, sustainable design encompasses a “design intent on balancing environmental responsiveness, resource efficiency, and cultural and community sensitivity”. In the design of Fire Facilities there are many operational goals that have parallel strategies to sustainable building design.

Sustainable Design       Fire Station Priorities
Meet programmatic requirements efficiently  Support operational criteria
Decrease pollutants, reduce health risks  Firefighter safety within facility
Minimize total cost of ownership  Durable and low maintenance
Utilize “free” services  Ability of facility to accommodate change
Create a sense of community  Responds to contextual circumstances

Taking an operations first approach, using experience and vision in conjunction with an integrated design process will allow the development of holistic strategies which can be incorporated with little premium to capital costs. Building orientation and siting, envelop performance, ventilation approaches, thermal massing concepts, renewable energy, cost benefit analysis and energy budgeting are core concepts that could be explored during the schematic design phase. Using like facilities as a baseline there are strategies that other Departments have incorporated into similar projects around the country that have been tested and can be verified as the conceptual project moves into the design phase. From green house keeping, alternative fueling sources, optimized energy performance, water reclamation, waste management to light pollution reduction, LEED can be used as a performance metric to establish and verify the desired level of green design. In general, LEED certification (Silver level) can add another 2-3% to construction costs.

Select features that could be incorporated into the facility include:

- Water reclamation/gray water systems for apparatus washing, irrigation, etc.
- Daylighting to offset power costs
- Lighting system controls
- Plug load switching to reduce energy demand
- Highly insulated walls and roof systems
- Appropriate plantings to reduce or eliminate irrigation requirements
- Energy modeling to optimize energy performance
- Indirect feedback monitoring device to encourage energy use awareness
- Energy star appliances
- Direct Digital Control system for precise and weather reactive HVAC
- Use low emitting materials for a healthier indoor environment
- Recycled content material to reduce impact to environment
- Bike racks to support alternative transportation and reduction of carbon footprint
- Use of concrete at parking areas to reduce heat island effect
- Minimize foot candles at exterior to reduce light pollution
- Dual flush toilets to reduce water demand
- Commissioning of building energy systems to enhance building performance
- Storage and collection or recyclables to reduce waste
- Incorporate construction waste management plan
- Use of regional materials where appropriate
- Prohibit smoking within and around facility to improve indoor air quality
- Implement a green cleaning program to improve indoor air quality
- Provide educational/informational signage to educate public and occupant on sustainable design.
11. Rough Order of Magnitude Estimate

The following rough order of magnitude estimate provides a relative total project cost based on similar fire stations currently being designed and built. The estimated costs reflect a mid-level quality, wood-frame, slab on grade, neighborhood type facility.
Cost Basis

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost Basis</th>
<th>cost/sf</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUILDING ESTIMATE TOTAL</td>
<td>8,500</td>
<td>$265</td>
<td>$2,252,500</td>
</tr>
<tr>
<td>SITWORK ESTIMATE TOTAL</td>
<td>15,000</td>
<td>$35</td>
<td>$525,000</td>
</tr>
<tr>
<td>OFF-SITE IMPROVEMENTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic Signal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.S. Extension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-site Wetland/Stream Mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESTIMATED CONSTRUCTION COST</td>
<td></td>
<td></td>
<td>$2,777,500</td>
</tr>
</tbody>
</table>

Projected Soft Costs:

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
<th>Base building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington State Sales Tax</td>
<td>9.50%</td>
<td>$263,863</td>
</tr>
<tr>
<td>A/E/Speciality Sub/Printing/Bidding/Reimb</td>
<td>14.00%</td>
<td>$388,850</td>
</tr>
<tr>
<td>Geotechnical/Surveys</td>
<td>0.50%</td>
<td>$13,888</td>
</tr>
<tr>
<td>Testing &amp; Inspection</td>
<td>1.50%</td>
<td>$41,663</td>
</tr>
<tr>
<td>Permits</td>
<td>3.00%</td>
<td>$83,325</td>
</tr>
<tr>
<td>City Administration Cost/Construction Management</td>
<td>4.00%</td>
<td>$111,100</td>
</tr>
<tr>
<td>Enhanced Construction Consultant Services</td>
<td>1.00%</td>
<td>$27,775</td>
</tr>
<tr>
<td>Builders Risk Insurance</td>
<td>0.75%</td>
<td>$20,831</td>
</tr>
<tr>
<td>Commissioning</td>
<td>0.50%</td>
<td>$11,263</td>
</tr>
<tr>
<td>Poor Soil Contingency</td>
<td>2.00%</td>
<td>$55,550</td>
</tr>
<tr>
<td>Construction Contingency</td>
<td>8.00%</td>
<td>$222,200</td>
</tr>
<tr>
<td>Design Contingency</td>
<td>5.00%</td>
<td>$138,875</td>
</tr>
<tr>
<td>Arts (based on 1% of construction cost w/o tax)</td>
<td>1.00%</td>
<td>$27,775</td>
</tr>
<tr>
<td>FF&amp;E Allowance</td>
<td>3.00%</td>
<td>$67,575</td>
</tr>
</tbody>
</table>

Total Project Costs: $1,474,531

Anticipated Project Costs (w/o Land) $4,252,031
Escalation $302,851
LEED certification (2.5% for Silver) $74,383

TOTAL ANTICIPATED PROJECT COSTS $4,629,265

Exclusions:
- Toxic Soil Removal
- Bond Costs
- Special Foundations

Notes:
- Escalated @ 3.5%/Year Until Oct 2011
- Budget based on Rough Order of Magnitude of Fire Station Costs
12. Sketches

The following sketches represent site analysis, constraints and test-to-fit scenarios applicable to the development of a new Mercer Island Fire Station 92 on the existing site.

**Sketch A**  Provides the data on the current development of the Station 92 property

**Sketch B**  Applies land use code constraints applicable to the development of the property

**Sketch C**  Shows that the required parking alone is not feasible on the property

**Sketch D**  Shows development of a new station on the site with the minimum number of variances. The size is inadequate when considering programmatic needs and the established target station size

**Sketch E**  Assumes multi-variances or a rezone of the site and represents development of an 8500SF station arranged as a three story volume next to the apparatus bay structure

**Sketch F**  Provides another configuration: three stories with the third story built over the apparatus bay

**Sketch G**  Represents site requirements for an 8500 SF new station with drive through bays
SKETCH A: EXISTING STATION/SITE

AREA OF SITE  15,000 SF (3.4 ACRES)
APPROX. EXISTING BUILDING FOOTPRINT  4,680 SF
APPROX. TOTAL EXISTING IMPERVIOUS  78% (11,680/15,000)
EXISTING PARKING  3 SPACES

1" = 30'-0"

MERCER ISLAND FIRE STATION 92  OCTOBER 09
SKETCH B: CONSTRAINTS

1" = 30'-0"

AREA OF SITE
ZONE R9.6
ALLOWABLE IMPERVIOUS 45\% (6750 SF), 60\%** (9000 SF), 75\%** (11,680 SF)
ALLOWABLE GROSS FLOOR AREA 45\% (6750 SF)
REQUIRED LOT AREA AS LANDSCAPING 35\% (5250 SF)
MIN. DISTANCE TO ABUTTING PROP. 20'
MAX. HEIGHT 30'
MIN. PARKING REQUIRED 1.200 GROSS (34 SPACES FOR AN 6750 SF BLDG)

*INCLUDES 5\% DEVIATION, **IF STATION USE IS DEFINED AS PUBLIC FACILITY