

FIRE STATION 26

9930 124th AVE NE

Built 1994

General

Fire Station 26 is a 3-bay +/-10,761 square foot building sited on a +/- 4.7 acre parcel. The station is a 2 story split level building which mitigates the challenge of building on a sloped site. Emergency response is onto NE 100th St. to the north and 124th Ave NE to the west. The bays are back-in, the east bay is stacked. Parking is provided to the east and west of the station. Training grounds are to the east of the station.

Architectural

Site: The north and south apparatus bay aprons are concrete paving in good condition. Cracking and deterioration was observed in both the paving and curbs. There is a concrete paved area on the training grounds. Site drives and parking are asphalt cement paved which was found to be in fair condition. Landscaping consists primarily of grass, mulch, hedges, shrubs and trees. The front entry is accessed from a concrete walk which is in fair condition.

Exterior: The exterior finishes are primarily E.I.F.S (Exterior Insulated Finishing System) and wood siding and are in good condition. Concrete walls retain earth at the northwest and southwest corners of the building.

The station has a gabled standing seam metal roof which is in good condition. Gutters and tight-lined downspouts drain the roof.

The exterior envelope is well insulated. The wood framed roof is insulated with R-38 batt insulation and the 2x6 wood framed walls are insulated with R-19 batt insulation. Openings are aluminum windows, aluminum storefront entrances, hollow metal doors and overhead sectional doors.

Interior: The existing materials and finishes exhibit normal signs of wear. The following materials were noted:

- Concrete apparatus bay slab
- Vinyl flooring (good condition)
- Athletic flooring
- Ceramic tile (lobby, kitchen and restrooms –good condition)
- Roll carpet (fair condition)
- Carpet tile (good condition)
- Rubber base
- Gypsum wallboard walls
- Ceramic tile wainscot (restrooms –good condition)
- Plastic laminate wainscot (restrooms)
- Fiberglass reinforced plastic panel wainscot (apparatus bay)
- Painted metal doors
- Wood doors in hollow metal frames
- Kitchen cabinetry and countertops
- Acoustical panel ceilings
- Gypsum wallboard ceilings
- Painted exposed wood structure at apparatus bay ceiling

Programming/Space Planning: The public entry, lobby, a classroom, work areas, and offices are west of the apparatus bay at the lower first level. The apparatus bay and support spaces are at the upper first level. The kitchen, dayroom and exercise room are also at this level. Apparatus bay support spaces include storage, a work shop, and a wash down (decontamination) room. The extractor and SCBA fill station are located in alcoves off of the bay. Bunker gear storage and a decontamination sink are located on apparatus bay walls.

Mechanical and storage space are located in the attic space abutting the east side of the apparatus bay. 8 single occupant sleeping rooms, restrooms, showers, a laundry room, mechanical and storage space are located on the lower level of the second floor. Additional offices are located at the upper level of the second floor.

The station is served by a 4 stop elevator which provides for ADA accessibility.

Code:

The building is sprinklered.

The building lacks a 1 hour fire resistive separation between the apparatus bay and sleeping rooms (WAC 296-305-06507).

For a sprinklered building, the International Building Code (IBC) requires a 1/2 hour fire partition between sleeping rooms. This does not appear to exist.

The gas range is served by the required emergency shut-off and reset. The BBQ does not have an emergency shutoff.

The station appears to be in compliance with ADA accessibility requirements.

The building would not meet the current State Energy Code.

Also noted:

- Sleeping rooms are separated by wardrobe lockers which offer little acoustical separation. The station staff reports that sound transmission between the sleeping rooms is a problem.
- The apparatus bay width does not allow for the 3 foot minimum clearance (with vehicle doors open) at the sides of vehicles required by WAC 296-305-06509.

May 25, 2022

Brian Harris
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Seattle WA 98115

RE *Kirkland Fire Stations – District Study*

Dear Brian:

This is a brief letter outlining our findings from a cursory ASCE 31-03 evaluation of Kirkland Fire Stations 21, 22, 25, 26, and 27. We visited the stations on February 25, 2015 with the design team to tour each facility and observe possible deficiencies.

Analysis and Document Review

These stations were evaluated for general conformance to the requirements of ASCE 31-03, an approved national standard that uses a performance based design methodology for evaluating existing buildings. ASCE 31-03 recommends the use of seismic forces that vary depending on the expected level of performance for the structure. Each station was evaluated to an Immediate Occupancy (IO) performance level, which aims for a very low risk level for life-threatening injuries. In addition, the damage level to the structure is low enough such that only minor repairs are necessary and the building can remain operational following the design seismic event. ASCE 31-03 offers three different levels of analysis, or tiers, to determine a structure's adequacy. We performed a Tier 1 analysis, which is a screening approach that contains a set of conservative evaluation statements that help guide the engineer towards areas of concern.

The evaluation of non-structural items to an Immediate Occupancy performance level was not performed. Non-structural items include, but are not limited to, utilities, fire suppression piping, mechanical and electrical equipment, computer equipment, ceilings, partitions, building contents, hazardous material storage, cladding, glazing, and stairs. All of these items may have significant impacts for the immediate occupancy of the building following a major earthquake.

For your convenience the results of our analysis and associated recommendations for each station below are numbered to correspond with each other. The recommendations could be used to develop preliminary seismic upgrade pricing.

Station Observations and Recommendations

STATION 26

This wood framed station constructed in 1991 has a two story space on the west elevation and a mezzanine on the east. There is a step in the slab-on-grade and level 2 floor along grid 2 which creates split level framing. The apparatus bay is centrally located. The foundation system consists of standard spread footings and a 10 inch basement wall along the slab-on-grade transition. The level 2 floor is framed with 18 inch I-joist joist spaced at 12 inches on center. Connector plate trusses span east to west over the apparatus bay to create a gabled roof.

Results:

1. The level 2 diaphragm is split along grid 2 creating a discontinuity in the floor framing.

2. There is a re-entrant corner in the level 2 diaphragm near grids 2 and B. The existing drawings do not indicate additional reinforcing or straps to transfer shear stress concentrations at this location.

Recommendations:

1. Complete a Tier 2 evaluation to confirm a load path around the discontinuity is present. We anticipate that added joist struts and straps will be required at the step in the level 2 diaphragm.
2. Complete a Tier 2 evaluation to further understand diaphragm stresses. It is anticipated that light-gage straps and wood blocking will be required at the level 2 diaphragm near grids 2 and B.

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Kirkland Fire Station #26

Mechanical Systems Survey

March 10, 2015

We visited Station #26 on Wednesday February 25, 2015 to evaluate existing mechanical systems and discuss issues relevant to remodel possibilities and usable life span. The following is our report of the existing conditions and relevant discussion items.

EXISTING SYSTEMS STATION 26

A. Utilities:

1. Domestic Water and Fire – are served by connections off the Northwest corner of the building. The domestic water PRV is located in the storage room on the 1st floor.



2. Waste – is served by a 6" connection off the South side of the building.
3. Gas – Natural gas is served by a meter on the Northwest corner of the building.

- B. **Fire Sprinklers:** The building has a sprinkler system. Water is supplied by a 4" connection to the sprinkler riser in the apparatus bay.



C. **Plumbing:**

1. 1st Floor Public Restrooms
 - a. Water closets: China, valve type flush, in good condition with ADA grab bars.
 - b. Lavatories: China, wall mounted with single handle faucet, in good condition with ADA trap insulation protection.
2. 3rd Floor Women's Restroom:
 - a. Water closet: China, valve type flush, in good condition with ADA grab bars.
 - b. Lavatory: China, counter mounted with single handle faucet, in good condition with ADA trap insulation protection.
 - c. Shower: Tiled enclosure with shower curtain, single handle mixing valve, hand spray shower head, in good condition with ADA grab bars.
3. 3rd Floor Men's Restroom:
 - a. Water closet: China, valve type flush, in good condition.
 - b. Urinals: China, flush valve, in good condition.
 - c. Lavatories: China, counter mounted with single handle faucet, in good condition with ADA trap insulation protection.
 - d. Shower: Tiled enclosure with shower curtain, single handle mixing valve, hand spray shower head, in good condition with ADA grab bars.
4. Kitchen:
 - a. Sink: Stainless steel, double bowl kitchen sink with insta-hot water supply, single handle faucet and garbage disposal, in good condition.

- b. An under-counter dishwasher is located next to the sink.
5. Apparatus bay:
- a. Drains: A trench drain is located on each side of the bay and is connected to an oil/sand interceptor outside the building on the south side of the apparatus bay.
6. Laundry Room:
- a. Laundry Sink: Fiberglass sink dual handle faucet, in good condition.
 - b. Washer: Residential clothes washer with laundry box.
7. Washdown Room
- a. Shower: Wall mounted, hand spray head in fair condition.
 - b. Service Sink: Stainless steel, double bowl, dual handle faucet in fair condition.
8. Emergency Fixtures:
- a. Emergency eyewash wall mounted in apparatus bay, in good condition.
 - b. No emergency shower.
9. Compressed Air: A 60 gallon horizontal tank with mounted 1 HP compressor rated at 100 PSIG is located in the mezzanine. Air compressor is in good condition.



10. Piping: The domestic water service pipe that was visible is copper and in good condition.

11. Domestic hot water: The washdown room plumbing fixtures are served by a 20 gallon electric water heater. This water heater was manufactured in 2010 and is in good condition. The rest of the plumbing fixtures are served by a 300,000 BTU natural gas fired condensing water heater. This water heater was manufactured in 2010 and is in good condition.

D. Heating, Ventilation and Air Conditioning (HVAC):

1. HVAC Systems: The building has a natural gas fired boiler serving five fan coils. The boiler was manufactured in 2004 and appears to be in good condition. The fan coils have cooling from five condensing units located outside the south end of the building. The fan coils serve the classroom, kitchen/dining, offices/lobby, dormitory, and the storage rooms. These units are in poor condition.



2. Refrigerant: All systems use R-22 refrigerant.

3. Ventilation: All fan coils have outdoor air intake capabilities.

4. Radiant Heating: The apparatus bay is heated by overhead vacuum radiant heating tubes in poor condition.



5. Heat Pumps: A through wall heat pump provides heating and cooling for the fitness area. This unit is in poor condition.



6. Exhaust:
 - a. The public restrooms are each provided with an exhaust fan controlled by the light switch.
 - b. The kitchen range is exhausted by a residential style exhaust hood.
 - c. The laundry room is provided with an exhaust fan switched with the lights.
 - d. General exhaust in the apparatus bay is provided by an exhaust fan that switches with the app. bay door opening.
 - e. No source capture vehicle exhaust is present in the Apparatus Bay.

MECHANICAL IMPROVEMENT DISCUSSION

A. Operational Related:

1. Plan on providing new HVAC systems for any building addition, as the existing systems are not expandable.
2. We recommend that any future building remodel replace the HVAC system with commercial/institutional equipment which can provide:
 - i. Longer equipment life.
 - ii. Additional zoning for comfort and individual control in sleep rooms.
 - iii. Better ventilation (exhaust, outside air supply and filtration) for improved indoor air quality.
 - iv. Quick space temperature adjustment for firefighter recovery and rehab.
3. We recommend providing a Bunker Gear Storage room to extend life and effectiveness of gear by storage in a dark environment. This space should have exhaust to remove odor and moisture and heat to promote moisture evaporation.
4. Plan on providing a vehicle exhaust capture system such a Nederman or Plymovent with overhead rails, trolley and tailpipe nozzle. (Such ventilation would be required in a new station per WAC 296-305-06511(4).)
5. Plan on providing commercial grade kitchen hood and exhaust to capture cooking grease and contain kitchen odors.

B. CODE Related:

1. Provide ventilation for elevator machine room.

C. Maintenance Related:

1. The mechanical systems are of a 1994 vintage and approaching the end of useful life. Replacement or upgrade should be anticipated in the next 3 years.
2. The condensing units which use R-22 refrigerant cannot be directly replaced due to the phase out of that refrigerant. When considering replacement of refrigerant equipment, it will need to be a newer refrigerant like R-410a. This will necessitate replacing not only the exterior

condensing unit but also the indoor fan coil and refrigerant piping all at the same time.

3. The exterior refrigerant pipe insulation is in poor condition and should be replaced and provided with aluminum jacket or galvanized sheet metal cover for protection.
4. While individual restroom exhaust fans can be replaced as necessary, we would recommend common in-line or roof mounted exhaust fan(s) with ceiling grilles in each restroom. This arrangement would provide better ventilation control and a longer equipment life expectancy than residential style exhaust fans.

Fire Station 26

Fire Station 26

Address: 9930 124th Avenue, Kirkland

Built: 1993

General:

Documents reviewed: Record Electrical Drawings, Sheets E1 – E7 (7 sheets total).

Electrical Systems

Assessment

Power

- The service switchboard and branch circuit panels were manufactured by Square D and are in good condition.
- The service voltage to the building is 600A 208Y/120 volts, 3-phase, 4-wire and originates from a 150 kVA, PSE pad-mounted transformer.
- The service switchboard has six main disconnects with no spares.
- The service disconnects are circuit breakers.
- Clearance is maintained in front of electrical panels per the NEC.
- The facility does not contain any step-down transformers.
- The receptacles are grounding-type and were spot-tested. GFCI-type receptacles are present where required by code.

Optional Standby Power

- The generator is original to the building and was built in 1994. It is 50 kW/62.5 kVA diesel genset with a 175A/3P output circuit breaker. The generator is an Onan and is in good condition.
- The generator is classified as an optional standby (NEC 702) system.
- The panels connected to the generator include circuits feeding general lighting, receptacles, overhead doors and selected mechanical equipment.

Lighting

- The majority of the lighting fixtures in the facility have T-8 lamps and are in good condition.

- The lighting fixtures located in grid ceilings are 2'x4' lay-in troffers with prismatic acrylic or parabolic lenses.
- The exterior lighting fixtures have been replaced with LED fixtures and are in good condition.
- Occupancy sensors have been installed in various parts of the facility and function properly.

Data/IT

- The server rack is located in the audio visual room adjacent to the classroom.
- There are Wireless Access Points (WAP's) throughout the facility.
- There is an existing, operational fire alarm system in the building (Edwards EST).

Alerting

- The station receives its dispatch information from a Locution system located in the Workroom.
- The alerting system appears to be operating properly.
- Each sleeping room contains a speaker.
- Compact fluorescent lighting fixtures in the common pathways operate during dispatch.
- There are speakers in the restrooms and common areas that broadcast the dispatch material.
- The range has a shutoff with reset pushbutton in kitchen.
- Dispatch strobes are present in locations with high-ambient noise like the workout room.

Recommendations

- The service and branch circuit panels are in good condition and do not need replacing. Replacement circuit breakers are readily available.
- It is recommended that regular thermal testing be done on the electrical equipment.
- The lighting fixtures are in good condition and provide adequate lighting in general. If alterations to the building are made, it is recommended that the existing lighting fixtures in those areas are changed to fixtures with energy-efficient LED lamps.

Kirkland Fire Department Site Studies - TCA Architecture

Preliminary Civil Engineering Recommendations

KPFF Consulting Engineers is providing a preliminary review of proposed siteplan drawings, prepared by TCA, and providing observations and recommendations to accommodate the proposed site improvements.

Our observations and recommendations below are based on limited information and are approximate (topographic survey information is not available). A detailed site survey is needed to review potential impacts to existing drainage and other site utilities; and to determine the drainage improvements and limits of grading and paving that are needed to meet required/desired slopes to meet ADA and site access needs. A more thorough assessment of sitework and existing conditions will occur at a later date.

Storm Drainage requirements are based on the City of Kirkland Municipal Code that adopts the 2009 King County Stormwater Design Manual (KCSWDM). Requirements of each site are as follows:

- Stormwater quality treatment requirements (per KCSWDM 1.2.8)
 - Projects proposing 5,000sf of pollution generating impervious surface (PGIS) will require enhanced water quality treatment. The current siteplans do not propose outside vehicle access paving that exceed this threshold; therefore water quality systems are not required.
 - If the project constructs or replaces onsite conveyance system elements that receive runoff from pollution-generating impervious surfaces, spill control provisions are required.
- Stormwater flow control requirements (per KCSWDM 1.2.3)
 - Projects proposing more than 2,000 sf of new or replaced impervious surfaces are required to provide flow control facilities. Sites that exceed this area will require an underground detention tank and piping connecting to existing drainage conveyance piping. The volume of detention required is based on historic site conditions, Level 2 flow control standard, which matches historic durations for 50% of 2yr through 50-year peaks and matches historic 2 and 10-year peaks.
 - Flow control will be exempt if the project doesn't exceed 2,000 sf of new or replaced impervious surfaces

Fire Station #26 – 9930 124th Ave NE

Access

- Maneuvering clearance for fire trucks entering proposed vehicle storage building should be evaluated to confirm adequate turning area for specific vehicles.

Grading, Paving, and Drainage

- Proposed building additions at the east side of the station and proposed vehicle storage building will require demolition and removal of existing storage buildings and paving.
- Grading and paving for transitions between building access points and existing site paving will require additional paving as determined by allowable slopes to meet applicable ADA and emergency vehicle access requirements. This will be determined based on specific survey elevation data.
- Proposed building additions are assumed to be connected to the existing building's roof drainage system. The new vehicle storage building will be conveyed to the required detention facility.
- Area of proposed improvements is approximately 7,550sf, including building additions. This requires a flow control (detention) facility as a detention tank or pipe. The existing on-site detention pipe will need to be extended and the control structure modified to accommodate the required flow control function.
- Proposed PGIS is expected to be below the 5,000 sf, therefore, water quality treatment systems are not required. Spill control measures may be needed.

Utilities

- Existing storm drainage piping lies to the east of the proposed storage building. This piping and any potential easements should be surveyed locate and confirm the layout of the proposed building and identify the potential need for utility relocations.
- We understand existing utility services are not impacted by the proposed project scope and improvements will be served adequately with current services.