

CAPITAL FACILITIES PLAN

GIG HARBOR FIRE & MEDIC ONE



RICE*fergus***MILLER**

SEPTEMBER 2021

Sept 15, 2021

Dennis Doan, Fire Chief
Gig Harbor Fire & Medic One
10222 Bujacich Road
Gig Harbor, Washington 98332

RE: Capital Facilities Plan

Dear Chief Doan,

It is with great pleasure that we present this Capital Facilities Plan to you, your Commissioners, and members of Gig Harbor Fire & Medic One.

This report is the culmination of a year-long effort to determine the programming and planning requirements for improving your fire stations and supporting facilities. Included in this report are the programmatic requirements, building assessments, conceptual improvement plans, and cost projections for undertaking these contemplated projects.

Please feel free to give us a call if you have any questions about the information or recommendations in this report. We have enjoyed working with all of you and look forward with enthusiasm to the fruition of these projects.

Sincerely,
Rice Fergus Miller, Inc.

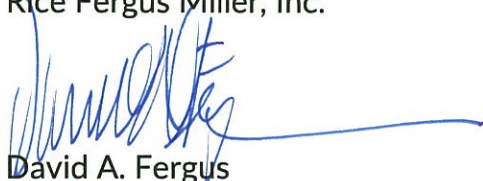

David A. Fergus
Principal

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EXECUTIVE SUMMARY

Introduction and Project Description

The Capital Facilities Plan (CFP) for Gig Harbor Fire & Medic One includes in-depth, district-wide, examinations of all existing stations to better assess which stations should be renovated, and which should be replaced. In the case of new and remodeled structures, floor plans have been prepared to indicate what the facilities might look like. In addition, this Capital Facilities Plan includes the proposed improvements for both the Training Campus and Shop Building. For all improvement projects, detailed cost estimates have been prepared for likely costs.

The planning process has taken place over the past 2+ years, incorporating input from a diverse cross-section of fire district personnel. While it is difficult to predict what the future may hold, district needs were evaluated from a 20-year perspective. To this end, the conclusions reached in this report ensure improvements that will serve the needs of the district and its citizens far into the future.

Program Description

Gig Harbor Fire & Medic One's Capital Facilities Plan includes improvements to the existing Swede Hill Training Campus; renovating eight existing fire stations; replacing one existing fire station with a new fire station at the same location; and an addition to the existing Shop Building. The newest of the stations (six prototype fire stations) were constructed in the late 1980s, and the oldest stations (three fire stations) were constructed approximately 46 years ago. All have been subject to various small interior improvements and in limited cases, minor additions. While the District has done a fine job caring for and maintaining these facilities, operational deficiencies abound. Stations lack certain updated industry amenities, and stations are not compliant with current building codes for new construction. As for fire station 51, it has undergone a comprehensive evaluation for renovation versus replacement to determine the most cost-effective approach. Renovating this station to meet today's building codes and standards, while correcting operational deficiencies was deemed difficult and cost prohibitive at best.

Primary goals and objectives used to define the extent of improvements at each facility included the following:

- Health and safety improvements for the emergency personnel working out of these stations

- Structural measures necessary to preserve the integrity of these fire stations after a significant earthquake, ensure uninterrupted service, and protect the personnel who work out of these facilities
- Training facility improvements to enhance training for district personnel
- Improvements that support care and storage of the district's equipment
- Improvements that bring existing stations into reasonable compliance with current building codes, standards, and modern fire station design practices
- Improvements that support operational efficiency of the stations
- Increased storage capacity, particularly at the district's central Shop Building

General Observations

General observations and conclusions drawn while undertaking this Capital Improvement Plan include the following.

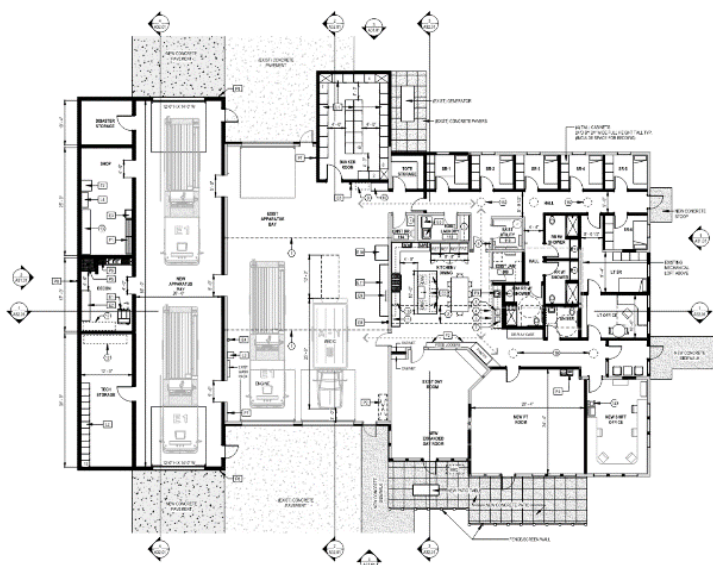
- **Good response locations:** All Stations are in good locations relative to their response areas. This is a great benefit as it makes economic sense to reuse as many existing, developed sites as possible, rather than attempt to purchase and develop new properties.
- **Well-maintained:** GHF&MO has done a good job taking care of its facilities. We encountered very few maintenance issues and those that were observed were largely cosmetic and minor in nature.
- **Seismic issues:** Given the ages of the existing stations and the construction practices at that time, our structural engineer concluded all GHF&MO's fire stations do not meet the Immediate Occupancy standard, and most will suffer damage of some kind in the event of a major seismic event. Stations 53 and 57 would fare better having been remodeled approximately 11 years ago and met the current seismic code at the time of permit and construction.
- **Life safety deficiencies:** All fire stations have fire sprinkler systems. Each system will need to be modified or expanded depending on the proposed improvement. Some of the existing fire alarm panels may need to be replaced depending on the age of the panel and proposed modifications.
- **Electrical systems:** Each station's electrical system should be updated and/or replaced as needed within the context of remodeling or renovation. Important is meeting today's capacity needs and maintaining continuous operations during power outages.

- **Mechanical systems:** Most facilities contain relatively old HVAC systems. These systems will increasingly become more difficult to maintain due to age and changing refrigerant regulations and availability. We would anticipate the majority of these existing systems will need to be replaced in the context of a major remodel or renovation and compliance with current energy codes.
- **ADA/Handicap Accessibility:** In the context of a major renovation, any kitchen and/or bathroom being remodeled would need to be brought up to current codes. Most facilities are accessible to a degree and were compliant at the time of construction.

Conceptual Design

During the planning process, it became very apparent that utilizing a similar improvement approach for the existing six prototype stations would be an efficient and cost-effective approach for improving those existing rural fire stations. The operational needs and for these stations were virtually identical. Adopting a standardized approach would afford cost savings in design and construction and increase standardization across the district. Ultimately, a prototype improvement plan was adopted for Fire Stations 52, 54, 55, 56, 58, and 59.

The proposed improvements to these six fire stations would increase their overall size to 10,622 square feet. The living area improvements would accommodate seven firefighters with private sleeping quarters and an apparatus bay addition that could accommodate two additional vehicles. A planned addition adjacent the apparatus bays would provide space for appropriate decontamination of their equipment and bunker gear, additional storage, and improved facilities for the care and maintenance of their equipment.



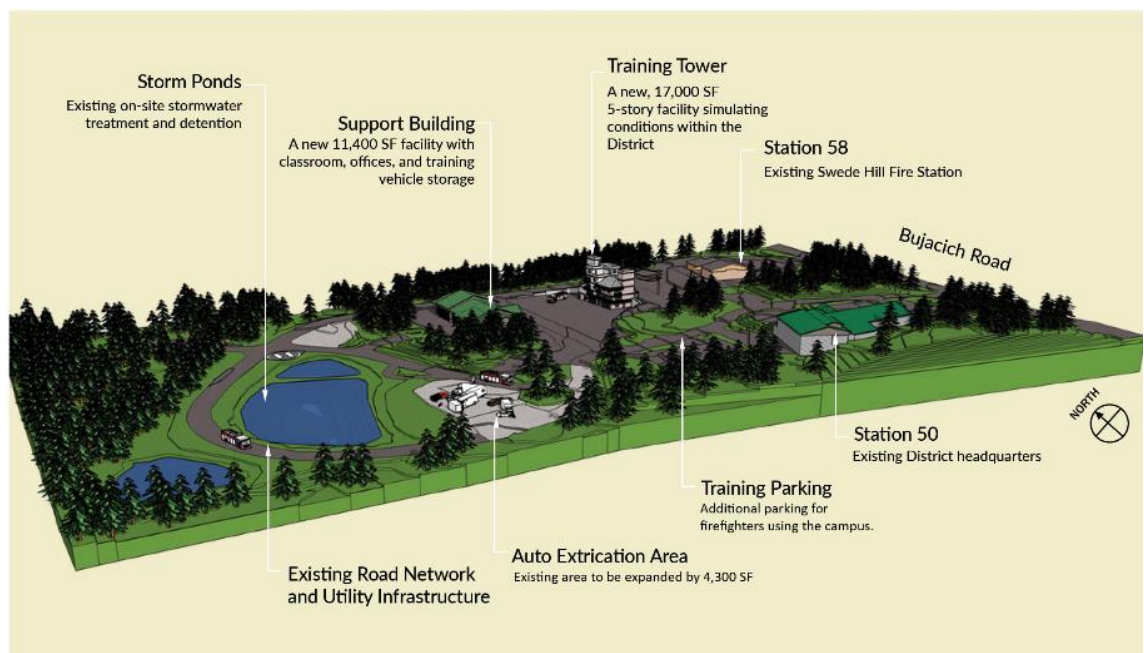
Conceptual Improvement Plan
Fire Stations 52, 54, 55, 56, 58, 59

Fire Station 51 is GHF&MO's busiest station, and consequently possesses the greatest needs in terms of capacity for on-duty personnel and apparatus, support spaces, and operational improvements that meet today's standards in fire station design. While every effort was made to find an economical approach to remodeling the existing station it was deemed too difficult and not cost effective to do so. This station is scheduled to be replaced on its current property. It's program was confirmed on a room-by-room basis utilizing room diagrams that have been included in this report.

Included on the Station 51 property will be a Logistics Support Building. This facility serves as a centralized warehouse for distributing supplies throughout the district and specifically to each fire station. This division of GHF&MO has outgrown its current space in the district's Shop Building.

Proposed improvements to the existing Swede Hill training campus will occur within the existing property boundaries - no additional land purchase is necessary. The concept behind the proposed campus improvements is to utilize the existing road network and utility infrastructure to keep costs at a minimum. These improvements consist of the following:

- A new 17,000 SF five-story training tower to simulate conditions within the district.
- A new 11,400 SF Support Building with training classrooms, training offices and training vehicle storage.
- Auto Extrication Area: existing area to be expanded by 4,300 SF.
- Additional parking for members training at this campus.



Currently, the district has an approved conditional use permit (CUP) issued by Pierce County. This CUP is set to expire August 2024. It is our recommendation that the district move forward with securing the necessary documents to secure construction permits before the CUP is scheduled to expire.

Proposed improvements to Fire Stations 53 and 57 include a modest addition adjacent the apparatus bay for modern decontamination facilities and storage for bunker gear.

Proposed improvements to the Shop Building include a modest building addition and site improvements.

For Station 50, the district's administration headquarters, no improvements have been included in this Capital Improvement Plan with the building's condition and functional spaces deemed acceptable for today's needs.

Materials, Finishes, and Equipment

The planning process included preliminary selection of materials and finishes, identification of equipment needs, and confirmation of performance expectations for each fire station project. This was done to ensure construction cost estimates would match the level of quality expectations for the district. It also established a benchmark for quality which can later be adjusted, if necessary, to match available funding or other financial limitations established by the district.

Anticipated Costs and Project Timeline

Rider Levett Bucknall prepared detailed professional cost estimates for each contemplated project. All projects were estimated in today's dollars for labor and materials. Because construction cost escalation can be significant over time, projects were prioritized, sequenced, and construction dates targeted based on the district's operational priorities and each facility's current condition. Undertaking a maximum of two significant projects per year was determined to be a reasonable pace to complete these projects without overwhelming operations or response capabilities of the district at any one time.

The estimated costs for undertaking these projects, including anticipated project expenses, are as follows:

<u>Station</u>	<u>Total Project Budget</u>	<u>Anticipated Start of Construction</u>
<i>Training Tower</i>	<i>\$6,582,118.00</i>	<i>February 15, 2024</i>
<i>Support Building</i>	<i>\$6,464,948.00</i>	<i>February 15, 2024</i>
<i>Site Improvement</i>	<i>\$2,955,875.00</i>	<i>February 15, 2024</i>
<i>Fire Station 58</i>	<i>\$7,939,961.00</i>	<i>February 2, 2025</i>
<i>Fire Station 59</i>	<i>\$8,293,651.00</i>	<i>November 2, 2025</i>
<i>Fire Station 51</i>	<i>\$28,334,248.00</i>	<i>November 2, 2026</i>
<i>Logistics Building</i>	<i>\$12,280,018.00</i>	<i>November 2, 2026</i>
<i>Fire Station 52</i>	<i>\$9,320,122.00</i>	<i>May 1, 2027</i>
<i>Fire Station 56</i>	<i>\$9,741,511.00</i>	<i>February 2, 2028</i>
<i>Fire Station 53</i>	<i>\$1,193,425.00</i>	<i>July 2, 2028</i>
<i>Fire Station 57</i>	<i>\$1,266,793.00</i>	<i>December 1, 2028</i>
<i>District Shop</i>	<i>\$1,852,645.00</i>	<i>June 2, 2029</i>
<i>Fire Station 55</i>	<i>\$10,732,733.00</i>	<i>October 1, 2029</i>
<i>Fire Station 54</i>	<i>\$11,159,047.00</i>	<i>June 2, 2030</i>
<i>Total for All Projects:</i>		<i>\$118,117,096.00</i>

End of Executive Summary

Gig Harbor Fire & Medic One
Capital Facilities Plan
September 2021

Target Election Date:
April 1, 2022

Project Sequence

Target Bid Date

Professional Cost Estimates - RLB
Building & Site Improvements

Raw Construction Budget

Construction Cost Escalation
Escalation from April 2022 to Bid Date

6% /yr

Construction Budget, including Inflation

Soft Cost Budgets

Washington State Sales Tax	@	8.8%
Architecture and Engineering Fees	@	9%
Specialty Consultants	@	5%
Permits, Testing, Inspections	@	2%
Furnishings and Equipment	@	2%
Temporary Housing / Accomodations	@	4%
Moving Expenses	@	0.5%
Contingency	@	10%

Total Soft Costs

TOTAL ANTICIPATED PROJECT BUDGET

Training Campus			58	59	51	52	
Swede Hill			Swede Hill	Artondale	Gig Harbor		Point Fosdick
TRAINING TOWER	SUPPORT BUILDING	SITE IMPROVE.	MAJOR REMODEL	MAJOR REMODEL	FIRE STATION	LOGISTICS BUILDING	MAJOR REMODEL
1	1	1	2	3	4	4	5
2/15/2024	2/15/2024	2/15/2024	2/2/2025	11/2/2025	11/2/2026	11/2/2026	5/1/2027
\$ 4,313,082	\$ 4,236,304	\$ 1,936,904	\$ 4,761,135	\$ 4,761,135	\$ 15,345,129	\$ 6,844,307	\$ 4,904,569
\$ 4,313,082	\$ 4,236,304	\$ 1,936,904	\$ 4,761,135	\$ 4,761,135	\$ 15,345,129	\$ 6,844,307	\$ 4,904,569
\$ 498,408	\$ 489,535	\$ 223,823	\$ 858,087	\$ 1,108,399	\$ 4,707,417	\$ 2,099,625	\$ 1,691,413
\$ 4,811,490	\$ 4,725,839	\$ 2,160,727	\$ 5,619,222	\$ 5,869,534	\$ 20,052,547	\$ 8,943,931	\$ 6,595,982
\$ 423,411	\$ 415,874	\$ 190,144	\$ 494,492	\$ 516,519	\$ 1,764,624	\$ 787,066	\$ 580,446
\$ 433,034	\$ 425,326	\$ 194,465	\$ 505,730	\$ 528,258	\$ 1,804,729	\$ 804,954	\$ 593,638
\$ 240,574	\$ 236,292	\$ 108,036	\$ 280,961	\$ 293,477	\$ 1,002,627	\$ 447,197	\$ 329,799
\$ 96,230	\$ 94,517	\$ 43,215	\$ 112,384	\$ 117,391	\$ 401,051	\$ 178,879	\$ 131,920
\$ 96,230	\$ 94,517	\$ 43,215	\$ 112,384	\$ 117,391	\$ 401,051	\$ 178,879	\$ 131,920
\$ -	\$ -	\$ -	\$ 224,769	\$ 234,781	\$ 802,102	\$ -	\$ 263,839
\$ -	\$ -	\$ -	\$ 28,096	\$ 29,348	\$ 100,263	\$ 44,720	\$ 32,980
\$ 481,149	\$ 472,584	\$ 216,073	\$ 561,922	\$ 586,953	\$ 2,005,255	\$ 894,393	\$ 659,598
\$ 1,770,628	\$ 1,739,109	\$ 795,148	\$ 2,320,739	\$ 2,424,118	\$ 8,281,702	\$ 3,336,086	\$ 2,724,140
\$ 6,582,118	\$ 6,464,948	\$ 2,955,875	\$ 7,939,961	\$ 8,293,651	\$ 28,334,248	\$ 12,280,018	\$ 9,320,122

Gig Harbor Fire & Medic One
Capital Facilities Plan
September 2021

Target Election Date:
April 1, 2022

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56	53	57	Shop	55	54
Purdy	Fox Island	Cescent Valley	Purdy	Rosedale	Arletta
MAJOR REMODEL	ADDITION	ADDITION	ADDITION & REMODEL	MAJOR REMODEL	MAJOR REMODEL

Project Sequence
Target Bid Date

6	7	8	9	10	11
2/2/2028	7/2/2028	12/1/2028	6/2/2029	10/1/2029	6/2/2030

Professional Cost Estimates - RLB
Building & Site Improvements

\$ 4,904,569	\$ 588,627	\$ 609,835	\$ 863,121	\$ 4,904,569	\$ 4,904,569
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Raw Construction Budget

\$ 4,904,569	\$ 588,627	\$ 609,835	\$ 863,121	\$ 4,904,569	\$ 4,904,569
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Construction Cost Escalation
Escalation from April 2022 to Bid Date 6% /yr

\$ 1,989,636	\$ 258,976	\$ 289,876	\$ 448,022	\$ 2,691,137	\$ 2,992,846
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Construction Budget, including Inflation

\$ 6,894,205	\$ 847,603	\$ 899,711	\$ 1,311,143	\$ 7,595,706	\$ 7,897,415
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Soft Cost Budgets

Washington State Sales Tax	@ 8.8%	\$ 606,690	\$ 74,589	\$ 79,175	\$ 115,381	\$ 668,422	\$ 694,973
Architecture and Engineering Fees	@ 9%	\$ 620,478	\$ 76,284	\$ 80,974	\$ 118,003	\$ 683,614	\$ 710,767
Specialty Consultants	@ 5%	\$ 344,710	\$ 42,380	\$ 44,986	\$ 65,557	\$ 379,785	\$ 394,871
Permits, Testing, Inspections	@ 2%	\$ 137,884	\$ 16,952	\$ 17,994	\$ 26,223	\$ 151,914	\$ 157,948
Furnishings and Equipment	@ 2%	\$ 137,884	\$ 16,952	\$ 17,994	\$ 26,223	\$ 151,914	\$ 157,948
Temporary Housing / Accomodations	@ 4%	\$ 275,768	\$ 33,904	\$ 35,988	\$ 52,446	\$ 303,828	\$ 315,897
Moving Expenses	@ 0.5%	\$ 34,471	\$ -	\$ -	\$ 6,556	\$ 37,979	\$ 39,487
Contingency	@ 10%	\$ 689,420	\$ 84,760	\$ 89,971	\$ 131,114	\$ 759,571	\$ 789,742

Total Soft Costs

\$ 2,847,306	\$ 345,822	\$ 367,082	\$ 541,502	\$ 3,137,027	\$ 3,261,632
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TOTAL ANTICIPATED PROJECT BUDGET

\$ 9,741,511	\$ 1,193,425	\$ 1,266,793	\$ 1,852,645	\$ 10,732,733	\$ 11,159,047
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Total all Projects: \$ 118,117,096

CAPITAL FACILITIES PLAN

CHAPTER 1 OVERVIEW

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Chapter 1: Introduction and Overview

INTRODUCTION

As Gig Harbor Fire & Medic One has grown and evolved, there has been a need to review several of its key existing facilities. This initial report discusses the deficiencies and existing conditions of eleven buildings, discusses programmatic needs and provides initial predesign-level solutions and preliminary costs for consideration of the district and its leadership.

Project Team

Rice Fergus Miller, Inc.

David Fergus, Principal
Howard Struve, Associate
Elaine Liffgens, Interior Designer

Reid Middleton

Corbin Hammer, Principal Engineer
Katherine Brawner, Senior Engineer
Sabina Surana, Project Engineer
Suzie S. Bauer, Project Engineer

Sider & Byers

Carlos Herrera, Mechanical Engineer

BCE, Inc.

Carrie Taylor, Electrical Engineer

MacKay Sposito

Eric Pilcher, Civil Engineer

Rider Levett Bucknall

Emile le Roux, Associate Principal
Kevin Mitchell, Executive Vice President

DISTRICT OVERVIEW AND HISTORY

District History

In the spring of 1944, a devastating fire in north Gig Harbor destroyed several shore side businesses. That fall a petition signed by 15% of the qualified voters living in the Gig Harbor community was presented to the Board of Commissioners of Pierce County asking permission to form a Fire Protection District for the Peninsula. Formal hearings for public comment were held, and on January 6, 1945, Pierce County Fire District 5 became a reality. At that time, Fire District 5 served the unincorporated portion of the Gig Harbor Peninsula and contracted to serve the City of Gig Harbor.

Service to Raft Island began in 1958 after the Raft Island Bridge was completed. The citizens of Fox Island voted to join the district in 1964 after the Fox Island Bridge was constructed to allow fire emergency equipment and personnel access to the island. The City of Gig Harbor merged with the Fire District 5 by a vote of its citizens in 1986. Other areas protected include the eastbound Tacoma Narrows Bridge, added when it was completed in 2007, and the Tacoma Narrows Airport, added in 2008, when ownership of the airport was transferred from the City of Tacoma to Pierce County.

Mission, Vision, and Core Values

Gig Harbor Fire & Medic One Mission Statement

Gig Harbor Fire & Medic One will provide exceptional service to our citizens and our members with dedication, compassion, and respect, while continually striving for improvement.

Gig Harbor Fire & Medic One Vision Statement (draft)

Gig Harbor Fire & Medic One will be an innovative leader in providing emergency medical services, fire suppression, and injury reduction and prevention services. We will lead by responding quickly to our community's needs, acting compassionately, and performing superbly.

Gig Harbor Fire & Medic One Core Values

Accountability: Personal accountability is an integral part of professional growth. Organizational accountability is equally important to

effectively and efficiently respond to the needs of our community.

Continuous Improvement: We recognize and understand that the constancy of change in our community and industry impacts our business daily. We are committed to continuous improvement and progressive thinking to effectively address change to efficiently benefit those we serve.

Customer Service: Our responsibility is to protect life, property, and the environment. We are committed to fulfilling our responsibility and no request or inquiry will go unanswered.

Excellence: We believe the pursuit of peak performance and demonstrated high professional standards are critical to our work. To ensure the best possible service to our community, the fire district supports continuous training and encourages professional development.

Integrity: We understand the trust placed in us by the public and our colleagues is integral to the performance of our duties. We are committed to honest and ethical behavior and will hold ourselves accountable to these values.

Safety: We believe our health and safety are essential to fulfilling the fire district's mission. We are committed to providing the best health and safety programs for our members' well-being and operational readiness.

Teamwork: We know working together is more effective than individuals working separately; our lives depend on it. We believe that our members have the capacity to work in effective teams and our organization values teamwork at all levels.

District Facilities

Gig Harbor Fire & Medic One protects approximately 46,000 residents over an area of 54 square miles in the Gig Harbor Peninsula. The fire district is bordered by South Kitsap Fire & Rescue to the north, Key Peninsula Fire District 16 to the west, and the waters of Puget Sound to the east and to the south. Across the Tacoma Narrows Bridge (waters of the Puget Sound) is the Tacoma Fire Department.

DISTRICT MAP



Map: Gig Harbor Fire & Medic One Service Area with Stations

SCOPE & METHODOLOGY

The scope of the assessment phase was to perform non-invasive field investigations for all GHF&MO facilities. Tier 1 structural assessments were performed by Reid Middleton to evaluate each building's structural resistance to a significant earthquake. Sider & Byers and BCE undertook assessments of each building's mechanical and electrical systems respectively.

The following facilities were reviewed:

- Stations 50, 51, 52, 53, 54, 55, 56, 57, 58, 59
- Swede Hill Training Campus at Station 50
- The Purdy District Shop (Maintenance Facility)

These facilities were toured and reviewed by Ed McManamna, Howard Struve, Gunnar Gladics, and Sarah Gladics from Rice Fergus Miller, along with Suzie Bauer from Reid Middleton, Carrie Taylor from BCE, Carlos Herrera from Sider & Byers, and Eric Pilcher from MacKay Sposito. We were accompanied by Eric Watson, Assistant Chief of Logistics and Dale Togstad from GHF&MO.

All engineering reports and assessments have been bound in this report.

Discussion & Criteria

Apart from determining the optimum response location for a fire station, understanding the condition of the existing facility and determining how well it can accommodate its required program and staffing deployment is a critical aspect of determining a fire station's viability. There are several key criteria that have been considered when evaluating GHF&MO's fire stations.

- **Station Location:** If an existing station is poorly located in relation to its current or projected response area, there is little point in allocating resources to upgrade that station; funds should instead be allotted to replacing the station in a location that will contribute to improved standards of coverage and decreased response times.
- **Apparatus Bay Size and Configuration:** As the operational heart of the station and the single largest space in most stations, if the apparatus bays are not sized, sited, and configured appropriately for the required apparatus deployment it is unlikely the facility can be remodeled in a cost-effective manner to bring the apparatus bay up to current standards. Typically, if an apparatus bay is failing in one or more key

aspects, it is likely that the rest of the station is also failing in terms of seismic safety, staffing accommodations, or other building code or life safety issues.

- Station ability to accommodate required program and staffing: An existing station's viability is relative to the mission asked of it, both current and future. If a station is in a growing area, staffing levels and apparatus deployment are likely to increase as well. If these increases cannot be accommodated easily or cost-effectively by the current facility, it may likely be a candidate for replacement rather than remodeling, especially if the apparatus bay is substantially impacted.
- Additional issues that may preclude remodeling a station at its current location include issues such as: poor or unsafe traffic access, existing sites that are too small or too constrained to accommodate the required program, or seismic upgrades that are cost prohibitive or technically infeasible.

Disclaimers

This Report has been prepared by Rice Fergus Miller (RFM) using a professional standard of care. The contents of this report reflect RFM's knowledge, understanding and belief and is intended only to provide Gig Harbor Fire & Medic One with recommendations for future improvements.

This Report has been prepared solely based on readily available visual observation. No demolition or removal has been accomplished to reveal hidden conditions. No testing of materials, equipment, or systems has been performed to verify current performance or to predict future performance.

Investigations for hazardous materials were not commissioned at this time but are strongly encouraged prior to undertaking any physical improvements to any of the district's facilities.

Background information and other data has been furnished to RFM by Gig Harbor Fire & Medic One and/or third parties, which RFM has been directed to use in preparing this Report. RFM has relied on this information as furnished, is not responsible for, and has not confirmed the accuracy of this information.

CAPITAL FACILITIES PLAN

CHAPTER 2 FIRE STATION 50

CHAPTER 2 FIRE STATION 50

RICE/fergusMILLER

Chapter 2: Station 50 (Administrative Headquarters)

Narrative

An initial assessment of Station 50 was completed by Rice Fergus Miller and its consultant team. In the early planning stages of this Capital Improvement Plan, the fire district strongly considered improvements to the lower floor of this facility to accommodate the lack of dedicated fire training classrooms, restrooms, and shower spaces. After further study and discussion, the district decided to forgo improvements to this facility, at this time. When the Swede Hill Training Campus Support Building is completed, the new Support Building will provide the necessary dedicated training classrooms, restrooms, and shower spaces to serve the fire district's training needs. Consequently, improvements to Station 50 have not been included in the budget summary, as the fire district has elected not to undertake any improvements to this facility at this time.

Chapter 2: Station 50 (Administrative Headquarters)

Architectural Assessment

Scope of Review

Station 50 was reviewed by architectural, mechanical, and electrical consultants on September 4, 2020. Please see the included reports for detailed assessment of the facility.

General Station Information

- **Age and Improvement History:** Originally built in 1996, Station 50 was remodeled in 2009. Second floor improvements provided additional office space and elevator access.
- **Size:** Approximately 19,700 sq. ft.
- **Current and Future Deployment:** Station 50 serves the administrative needs of the district and houses the training, operations, logistics, and fire prevention functions as well. The Board of Commissioners' bi-monthly meetings are held in the large conference rooms. Public use of the meeting rooms is infrequent. Approximately 21 staff are stationed at the headquarters.

Noted Operational Features and Limitations

- **Meeting Rooms:** Station 50 features two sets of three meeting rooms separated by operable panel partitions. These have served the district well and the partitions are in good condition, though they are typically left in a closed position. Separate chair and table storage are located across the hallway, along with a convenient coffee bar.
- **Offices:** The headquarters features individual offices for 15 staff members on the main floor and six staff members are housed upstairs with system furniture at the converted attic space. As the district has grown, some of the smaller conference rooms have been converted to office space.
- **Second Floor Offices:** The existing open office space has worked well for staff that do not require full-time use of their office. However, the open plan of the space limits supervisory functions that require a private office. Improved lighting should

be considered to brighten the space since the only means of introducing daylight are limited by existing rooflines and the attic.

- **Storage:** Minimal storage is available at the headquarters since the conversion of the attic to office space. In particular, the shipping/receiving area has been utilized for recruit PPE storage. Additional space should be provided for logistics and training support, records storage, and disaster preparedness supplies.
- **Accessibility:** Restrooms are ADA compliant for the time of construction. The break room kitchen is not currently ADA compliant as there is no accessible sink or workspace adjacent the range.
- **Finishes:** Interior finishes and concrete floors are in good condition.
- **Secured Lobby:** The lobby is separated from most administrative portions of the station.
- **Break Room:** A 36-inch commercial range is provided in the breakroom and suitable for extended use in an emergency operation event. The range hood does not feature recirculation and may tend to exhaust conditioned air from the space, resulting in some additional heating costs.
- **Training Classroom and Support Areas:** The training classroom functions well. However, training support needs for bunker gear storage, showers, and lockers have put pressure on existing spaces that are currently not large enough to accommodate these support needs. It is anticipated that many of these aspects of training could be moved to a training support building at the training grounds.

Code and WAC Considerations

- Station 50 is generally compliant with codes and is accessible at all floors, though no accessible showers are provided. As an administrative facility it is not subject to the WAC regulations relating to fire stations.

Deferred Maintenance Issues

- Station 50 is in good condition for a facility of its age and routine maintenance has been performed. Some weatherization issues have been noted (and were under repair at the time of writing) at the eave skylights by the main public parking lot.

- Water ponds are noted at the exterior deck adjacent to the training office at the main floor.

Exterior and Site Issues

- Exterior: Station 50 is in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance and the maintenance issue noted above.
- Roof: The existing standing seam metal roof is in good condition and no active leaks are noted. Consider providing fall protection when the roof is scheduled for replacement.
- Site: Paving and site appear in good condition and reasonable parking is available for visitors. The site is flexible and internally connected to both the training grounds and the adjacent Station 58.
- Chief Waters noted there is a puddle outside near the offices on the southwest side of building that should be looked into at some point.
- Utilities: The headquarters is served by a septic drain field and a well for domestic water service. Fire flow is provided by municipal water system.

Engineering Reviews

- Summary of Structural Issues: No formal structural review of Station 50 was performed as part of this study. No apparent structural problems or impairments are noted, and both the original headquarters and subsequent addition and remodels were designed to the building code applicable at the time of construction.
- Summary of Mechanical Issues: The headquarters' mechanical systems are in generally good repair, though several of the condensing units are nearing end of life and will need on-going replacement. The hot water tank should also be scheduled for replacement as it is past its service life. Other improvements such as the addition of upgraded HVAC systems or make-up air to the range hood can be performed as part of a renovation. The Alerton building HVAC control system was replaced recently.
- Summary of Electrical Issues: The headquarters' electrical, life safety, and information systems are in good condition. The facility is served by a diesel generator and has sufficient additional service capacity, though is lacking additional

spare circuit breakers. Existing fluorescent lighting may be replaced with LED-type fixtures as desired or as part of a renovation.

Conclusions and Long-Term Viability

- Summary of Architectural and Operational Issues: Station 50 is an attractive and well-designed facility and is in good condition for a building of its age. As the district has grown, additional staff, training needs and storage requirements have placed added demands on the building for more offices and storage space. However, given the shape and location on the site and property, expansion of the building's footprint will be a challenge. These extra demands over time on Station 50 could be mitigated with the construction of the proposed training support building on the adjacent training grounds.

GIG HARBOR FIRE STATION #50

Mechanical Systems Report

October 30, 2020

We visited Station #50 (Headquarters) on September 4, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single gas water heater with 120 MBH input and 75-gallon storage capacity. The water heater is from the late 1996 and has exceeded its expected lifespan. The system currently has a recirculation line and pump installed. The station is also equipped with a cold-water storage tank and domestic water booster pump for backup only.
 - b. Piping: Copper piping is used throughout and insulated.

- c. Water closets: China, flush valve, in good condition.
- d. Urinals: China, flush valve, in good condition.
- e. Lavatories: China, counter mounted with single handle faucets, in good condition. China, wall mounted with double lever faucet, in fair condition. Fixture supplies in good/fair condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with single lever faucet, in fair condition. Stainless steel, single bowl sink with double lever faucet in fair condition (break room / hallway). Fiberglass utility sink with service sink faucet, in poor condition.
- g. Showers: Open shower configuration with shower heads or hand-held heads, in fair/poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, hi-lo station in fair condition.



- 3. **Natural Gas:** The station has a natural gas service with a gas meter located on the west corner of the north façade. Natural gas is piped to the water heater in the basement and to the gas furnaces that are located throughout the station. Steel piping is used throughout and in fair condition.
- 4. **HVAC**
 - a. **Ventilation:** There are exhaust fans that serve the restrooms and shower room. Fresh air for the station is brought in by the ducted furnaces.
 - b. **Systems:** The station has several ducted split system furnaces with ground mounted condensing units. Most of the gas furnaces are Carrier models from 1996 (R-22 refrigerant based), while one was installed in the 2009 remodel (R-410A refrigerant based). The older Carrier gas furnace and split systems have exceeded their expected lifetime. The newest carrier furnace and split system from 2009 should be serviceable for another 5 to 8 years. The station also has a mini split system serving the server room from the 2009 remodel. The elevator machine room is equipped with an exhaust fan and intake louver that operate based on room temperature.

- c. **Zoning:** The station has several classrooms that each have their own ducted furnace. The other spaces throughout the station are served in groups by ducted furnaces on the corresponding level.
- d. **Refrigerant:** Most of the furnace/split systems utilize R-22 refrigerant while the newer system from 2009 uses R-410A refrigerant. The mini split system for the server uses R-410A refrigerant.
- e. **Range Hood:** A light duty commercial range hood is installed over a commercial gas range without any dedicated make-up air.



Mechanical Improvement Discussion

- 1. **Code Related:**
 - a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for the existing kitchen.

- b. Code does require make-up air be provided for a kitchen hood exhaust system based on the volume of air exhausted. When replacing or upgrading kitchen hood or exhaust fan equipment we recommend installing a dedicated make-up air unit.
- c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.

2. **Maintenance Related:**

- a. Most condensing units use R-22 refrigerant and cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater with a minimum 199 MBH gas input and 120-gallon storage capacity. Note that this upgrade may increase the gas line size to the water heater and require a larger expansion tank. New combustion air and flue venting will need to be installed and coordinated through the building.
- c. Confirm backup domestic water booster pump is operational, replace if necessary.

BY: Carlos Herrera, Engineer



Headquarters

This building was built around 1996 and an addition added on in 2009. This station has 150kW emergency generator that provides back up power to the entire facility.

The building is fed with a 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with a main service disconnect rule. The switchboard is Siemens and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in most of the panelboards. The rest of the electrical system is sufficient for the next 10-years.

There are (2) automatic emergency transfer switches which are 400 amps 120/208-volt, 3 phase, 4 wire each. The generator is located outdoors and fed by a above ground outdoor diesel fuel tank.

The building is sprinkled and has an EST fire alarm system in the existing facility and a Silent Knight – Honeywell system in the newer addition area. The building appears to meet current life safety code requirements. There is smoke detection throughout the facility.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and could be used throughout the entire station for each different space with dimming switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade. The exterior parking lot lights appear to be metal halide.

CAPITAL FACILITIES PLAN

CHAPTER 3 FIRE STATION 51

CHAPTER 3 FIRE STATION 51

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Chapter 3: Fire Station 51

Architectural Assessment

Scope of Review

Station 51 was reviewed by architectural and engineering consultants on September 4, 2020. Please see the included engineering reports for detailed assessment of the facility.

General Station Information

- Age and Improvement History: Built in 1976, latest renovation 2000.
- Size: Approximately 13,050 sq. ft.
- Station 51: Current Deployment: 1 Engine (3FF); 1 Aid (2 FF); 1 BC. Staffing is typically 6 or 7 firefighters/officers and 1 Battalion Chief.

Noted Operational Limitations

- Operational Support and Storage: Minimal storage is provided for firefighting equipment and supplies at the apparatus bay. In addition, the bays are used to accommodate many operational support functions including bunker gear storage, shop space, storage of specialty gear, decontamination, gear washing/drying, equipment storage and vehicle washing supplies. This in turn puts pressure on the apparatus bays and requires use of vehicle space for operational support. Consideration should be given to expanding the station's footprint to create support spaces. This will provide greater flexibility for the bays themselves and increase safety and clearances around vehicles as gear and equipment is placed in new rooms,
- Apparatus Bays: This station features two drive through bays and one back-in bay. Bays are about an engine and a half in depth. Bay doors are 12 feet x 12 feet overhead-type. Bay clearances are tight around vehicles and exhaust point source capture is provided. The apparatus bay portion consists of tilt-up concrete walls.
- Bunker Gear Storage: Gear lockers are currently located in the apparatus bay and are insufficient for the required PPE assigned to each firefighter. Additional gear racks should be provided to accommodate all gear appropriately and racks should be placed within a separate room to prevent deterioration and contamination from the apparatus bays.

- **Decontamination:** The decontamination equipment consists of an extractor, dryer and stainless-steel wash sinks that shares floor space with equipment and storage items. A dedicated decontamination room should be provided in the bay area with room for a bunker gear washer and dryer, a large, scullery-type sink, and a shower area for washing large items. Current decontamination facilities are limited to a tub sink in a restroom adjacent to the apparatus bays.
- **Sleep Rooms:** This station has individual sleep rooms separated by built-in cabinetry. While this configuration provides a degree of privacy, it is recommended for hygiene and code-compliance purposes that rooms be separated with fire-rated walls and doors. Individual heating/cooling is also desirable and should be considered for the new station improvements.
- **Kitchen/Dining:** Existing Casework is in relatively good condition, though hard surfaces such as solid surfacing should be considered in lieu of plastic laminate countertops for hygiene purposes. Current kitchen is undersized given the number of sleep rooms. A larger kitchen area should be considered for better workflow and efficiency as well as ease of access from the dining space to the apparatus bays. Room for additional shift refrigerators and firefighter food lockers is also desirable.
- **PT Room:** The current PT area is a narrow space and crowded for the amount of equipment in the space and the number of people housed in the station. A larger PT would be highly desirable.
- **Lobby:** A separate, secure lobby for visitors should be considered for additional station security.
- **Watch Office:** The current space has desk space for four staff to work and is of reasonable size.
- **Dayroom:** The dayroom currently only accommodates 5 people. It is of acceptable size for the current staffing level but should be increased in size as staffing levels at this station increase.
- **Restrooms:** Crew restrooms are separate from showers and separate Men and Women restrooms are available. Public restrooms are available at the lobby area.
- **Station Laundry:** A washer and dryer is provided within the station for staff use.
- **Alerting System:** This station features a recently installed US Digital alerting system.

Code and WAC Considerations

- Accessibility: The crew kitchen does not meet current accessibility standards. Crew restrooms are generally not ADA accessible to current codes. Any remodels will require adherence to current ADA code requirements.
- Life Safety Systems: A fire alarm and fire sprinkler system is provided.
- Cooking appliances are connected to an emergency shut-off. That system should be tied into any new alerting system.

Deferred Maintenance Issues

- Routine maintenance has been performed and weatherization issues have been addressed as needed.

Exterior Envelope and Site Issues

- Exterior: The exterior condition is in relatively good shape given the age of this facility. It is assumed that the current thermal performance of the building does not meet today's code R-values for walls and roofs. The perimeter walls of the apparatus bay is in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance issues noted above.
- Roof: unknown is the age of the existing asphalt composition shingle roof. Consider providing fall protection for the new station.
- Site: paving will be replaced for the new station with heavy duty pavement sections for apparatus.

Engineering Reviews

- Summary of Structural Issues: Given the age and construction of the stations, neither of these stations meet an Immediate Occupancy level of seismic resistance. Improvements expected to be performed as part of a major renovation or remodel would include strengthening existing masonry shear walls with new concrete shear walls, adding new wood shear walls, upgrading existing wood shear walls, strengthening the roof diaphragm, and improving roof-to-wall and wall-to-wall connections. New concrete shear walls and piers with footings should be installed throughout the apparatus bay, along with additional foundation improvements.

- **Summary of Mechanical Issues:** While HVAC systems have been well maintained, several units are nearing end of life and none will support individual temperature controls at each sleep room. Existing mechanical components will need to be brought up to current energy code requirements as part of any substantial remodel.
- **Summary of Electrical Issues:** These stations' electrical system is in good condition though they lack capacity for additional panels and breakers. The main panel's antiquated design will not meet current codes and should be replaced and upgraded as part of any remodel. The current fire alarm system does not meet current codes and cannot be expanded for remodeling and would need to be replaced. An emergency diesel generator supports only a portion of each facility.
- **Summary of Civil Issues:** Engineering review was not performed.

Conclusions and Long-Term Viability

- **Summary of Architectural and Operational Issues:** The existing Station 51 is not appropriately sized given the call volume, vehicle and staffing levels necessary to support emergency response at this location. Improvements to this existing station are highly suspected to cost more than replacing it with a new fire station at the same location.

GIG HARBOR FIRE STATION #51

Mechanical Systems Report

October 30, 2020

We visited Station #51 on September 4, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a gas water heater with 150 MBH input and 100-gallon storage capacity to serve the majority of the station. The station side has recirculation system and pump however there is no mixing valve downstream of the water heater. The water heater is from 1999 and has exceeded its expected lifespan. The support wing has a separate electric water heater to serve the decon sink, extractor and bathroom. The electric water heater was not accessible during the walkthrough so the age was not verified.
 - b. Piping: Copper piping is used throughout and insulated.

- c. Water closets: China, flush valve, in good condition. Water closet on support side is in poor condition.
- d. Urinals: China, flush valve, in good condition.
- e. Lavatories: China, counter/wall mounted with single handle faucets, in good/fair condition. Fixture supplies in poor condition. Lavatory on support side is in poor condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with pull down faucet, in fair condition. Stainless steel, single bowl kitchen sink with single handle faucet in fair condition. Stainless steel, double bowl decon sink with double lever faucet in poor condition. Fiberglass utility and service sinks with double handle sink faucet, in fair/poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in fair/poor condition. Open showers, lever mixing valve with shower head, in fair condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in poor condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.



- 3. **Natural Gas:** The station does have a natural gas service with the gas meter located by the front parking. Natural gas is piped to the gas furnaces, water heater and gas BBQ. Steel piping is used throughout and is in fair condition.
- 4. **HVAC - Station**
 - a. **Ventilation:** The existing drawings suggest there is a heat recovery unit that exhausts the east side restrooms, shower room and laundry room. The heat recovery unit was not seen during the walkthrough. The central restrooms, copy and storage rooms are exhausted by a fan on the roof. Fresh air for the station is brought in by six ducted furnaces.
 - b. **Systems:** The station has six Carrier ducted split system furnaces with ground mounted condensing units (R-22 refrigerant based). All of the Carrier

- split system furnace units are from 1999 and have exceeded their expected lifespan. The physical training room has a separate Mitsubishi mini split system with a wall cassette indoor unit from 2016.
- c. **Zoning:** The station is comprised of several zones that each with a programmable thermostat. The large zones tend to not provide adequate occupant comfort. As noted by one of the firefighters on staff, the thermostat positioning results in poor response from the ducted furnace systems. This system does not allow for individual sleep room controls.
 - d. **Refrigerant:** All of the ducted split system units utilize R-22 refrigerant. The mini split system serving the physical training room utilizes R-410A refrigerant.
 - e. **Range Hood:** A commercial range hood is installed over a commercial gas range but no make-up air was visible. The gas range has a dedicated reset button.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on a timer switch and appears to be in good condition. Currently, no make-up air is provided and CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 7 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.
- c. **Heat:** The large apparatus bay has four gas radiant tube heaters. The two smaller bays have individual gas unit heaters. There appears to be a few ducts and rails installed under the radiant heaters and within the clearance zone. The radiant heaters could cause damage to the ducts and rails due to the close proximity to the heaters.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Plan on providing new thermostats for the ducted furnace systems to reposition them to more effective locations for better system response.
 - c. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - d. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.

2. **Code Related:**

- a. Code does require make-up air be provided for a kitchen hood exhaust system based on the volume of air exhausted. When replacing or upgrading kitchen hood or exhaust fan equipment we recommend installing a dedicated make-up air unit.
- b. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
- c. Code does not allow systems that may simultaneously heat and cool the same space or zone. This specifically applies to the PT room which has a mini split system installed to handle heating and cooling needs. The PT room is also served from a ducted furnace system which has both heating and cooling capability. Plan on removing the PT room from the ducted furnace system and provide dedicated supply and exhaust fans for ventilation.
- d. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
- e. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.

3. **Maintenance Related:**

- a. Most condensing units use R-22 refrigerant and cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater in-kind and installing a mixing valve to allow for storing at 140 deg. F and mixing down to output temperature of 120 deg. F. New combustion air and flue venting will need to be installed and coordinated through the building.
- c. Plan on replacing the electric water heater in-kind once it has reached 10 years old.

BY: Carlos Herrera, Engineer



Stations 51

This building was built back in 1978 and remodeled in _____. This station has 150kW emergency generator with a 600 gallon fuel tank to serve a major portion of the station.

The building is fed with an 1600-amp; 120/208-volt, 3 phase, 4 wire service to a Square D 1600-amp main switchboard with (6) service disconnect rule. The switchboard has (1) 600 amp breaker that serves a 600 amp automatic transfer switch and a 400 amp – 3 pole spare breaker. Panel D is connected for automatic load shedding. The facility has spare capacity on the electrical service, but lacks breaker space in the panelboards. The rest of the electrical system is sufficient for the next 10-years. It was noted that more power is needed in the Apparatus Bay.

The building is sprinkled and has a Notifier fire alarm system. There are visual appliances, pull stations and smoke detection throughout.

The range/ovens in the kitchen are connected to an emergency shut-off upon alarm.

The lights are 2x4 lensed with 4' long T5 fluorescent lamps, electronic ballasts throughout the majority of the facility with HPS exterior lights. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and could be used throughout the entire station for each different space with dimming switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

This station has the USDD alerting system installed.

GIG HARBOR FIRE AND MEDIC ONE SEISMIC EVALUATIONS

ASCE 41-17 Tier 1 Seismic Evaluations for Fire Station 51, 52, 54, 55, 56, 58, 59

November 2020

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1.0 Executive Summary

Seismic screenings and structural evaluations were performed for seven Gig Harbor Fire and Medic One facility buildings to investigate seismic deficiencies. All buildings evaluated in this study are low-rise structures. Each building is considered critical to Gig Harbor Fire and Medic One's ability to provide post-earthquake emergency services.

The evaluations determined each building's expected structural performance for an Immediate Occupancy (IO) performance objective. After a seismic event, buildings that meet an IO performance objective are expected to be structurally functional but may experience some damage to architectural finishes, mechanical systems, electrical systems, and other nonstructural items. This report includes a description of each building, the identified seismic deficiencies, seismic upgrade concept designs, and recommendations for upgrades. All buildings were found to have seismic deficiencies, and none of the buildings meets the IO performance objective.

Concept-level seismic upgrade designs were completed for the facilities, and concept plans are provided describing options for mitigation of seismic deficiencies. Recommendations consist of strengthening and supplementing the existing lateral systems, improving lateral load paths, and improving connections. Additional factors such as operational use, functionality, and response times should also be considered in the decision-making process for these buildings.

2.0 Introduction and Seismic Evaluation Criteria

The seismic evaluations for the Gig Harbor Fire and Medic One fire station buildings are based on the performance-based earthquake engineering (PBEE) guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings* (American Society of Civil Engineers, 2017). This section provides a general background of PBEE and an overview of seismic retrofit objectives, seismic hazard levels, seismic performance levels, and seismic evaluation and retrofit procedures.

The seismic evaluations do not consider compliance with the seismic requirements of the current building code for new construction. Buildings designed prior to the current building code often include structural configurations and connections detailing that have historically contributed to poor seismic performance in structures, based on post-earthquake evaluations of damaged buildings. Additionally, recent research and studies of regional seismicity have shown that the expected seismic ground motions are higher than was expected in the past. Higher ground motions, structural configurations, and poor connection detailing may result in seismic evaluation deficiencies among buildings constructed to previous building code requirements. Buildings designed to older building code standards are evaluated using evaluation and design guidelines specifically developed for existing structures by the Federal Emergency Management Agency (FEMA) and the American Society of Civil Engineers (ASCE).

The structural findings and recommendations presented in this report are based on visual observations of the buildings and a review of the record drawings. The available record documents do not contain all of the information necessary to confirm the structural configuration of some portions of the buildings, which is typical for older structures.

Reid Middleton participated in a walk-through of multiple stations on August 21, 2020. Visual observations of existing conditions were performed, which did not include destructive or nondestructive testing to confirm or supplement information shown in the record drawings.

The seismic evaluation of the buildings is based on the PBEE guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*. The ASCE 41 Tier 1 evaluations of the stations were completed using the IO performance objective. Buildings that meet the IO performance objective will have similar seismic performance to new buildings that are designed as essential facilities. This section includes a general background of PBEE and an overview of seismic rehabilitation objectives, building performance levels, and seismic evaluation and rehabilitation procedures.

2.1 Background

ASCE 41-17 employs a Performance-Based Design methodology that allows building owners, design professionals, and the local building authorities to establish seismic hazard levels and performance goals for individual buildings. PBEE can be defined as the engineering of a structure to resist earthquake demands while also meeting the needs and objectives of building owners and other stakeholders. PBEE allows for the design and analysis of structures for

different levels of seismic performance and allows the levels of seismic performance to be related to the relative seismic hazard.

Seismic analysis and design of structures traditionally focused on one performance level – reducing the risk for loss of life in a design earthquake. The concept of designing essential facilities, which are needed immediately after an earthquake, to a higher performance standard evolved after hospitals and other critical facilities were damaged in the 1971 San Fernando, California, earthquake. That concept is balanced by the recognition that the cost of retrofitting existing buildings to higher levels of seismic performance may be onerous to both stakeholders and policy makers.

A comprehensive program was started in 1991, in cooperation with FEMA, to develop guidelines tailored to address this variation of performance levels. The first formal applications of performance-based evaluation and design guidelines were the FEMA 310 *Handbook for the Seismic Evaluation of Buildings – A Prestandard* (1998) and FEMA 273 *NEHRP Guidelines for the Seismic Rehabilitation of Buildings* (1997). Following the release of these documents in the 1990s, three additional documents were released in the following years. Another prestandard document, FEMA 356 *Prestandard and Commentary for the Seismic Rehabilitation of Buildings*, was released in the year 2000. Then, the first national standard seismic evaluation document, ASCE 31-03 *Seismic Evaluation of Existing Buildings*, was released in the year 2003. Following the release of ASCE 31-03, the first national standard seismic rehabilitation document, ASCE 41-06 *Seismic Rehabilitation of Existing Buildings*, was released in the year 2007. ASCE 31-03 and ASCE 41-06 superseded the PBEE documents produced in the previous decade. ASCE 31-03 and ASCE 41-06 used the general framework outlined by previous documents but were updated to incorporate the latest standard of PBEE for the time.

ASCE 31-03 and ASCE 41-06 still had flaws; shortly after the release of ASCE 41-06, an effort was undertaken to combine ASCE 31-03 and ASCE 41-06 into a single national standard document, aiming to streamline the documents and eliminate discrepancies. A new PBEE document, ASCE 41-13 *Seismic Evaluation and Retrofit of Existing Buildings*, combined information from all of the previous documents, reflecting advancements in technology and analysis techniques and incorporating case studies and lessons learned from recent earthquakes. The newest PBEE document, ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*, offers more information and instruction on the seismic evaluation process. Significant revisions from the previous edition include nonlinear analysis provisions, nonstructural performance levels, modeling parameters, and more.

ASCE 41-17 provides criteria by which existing structures can be seismically evaluated and retrofit to attain a wide range of performance levels when subjected to earthquakes of varying severity.

2.2 Seismic Hazard Levels

Earthquake ground motions are variable and complicated, and every earthquake is different. An earthquake's intensity and energy magnitude depend on fault type, fault movement, depth to epicenter, and soil strata. In earthquake-prone areas, very small and frequent earthquakes occur every few days or weeks without being noticed by humans, but large earthquakes that occur

much less frequently can have a devastating effect on infrastructure and can result in the temporary displacement of large numbers of people. The precise location, intensity, and start time of an earthquake cannot be predicted. However, earthquake hazards for certain geographic areas are well understood based on historical patterns of earthquakes from the geologic record, measured earthquake ground motions, an understanding of plate tectonics, and seismological studies.

Geologists, seismologists, and geotechnical engineers have categorized the seismic hazard for particular locations using probabilistic seismic hazard levels. Each seismic hazard level describes a different probabilistic earthquake magnitude based on the probability of a certain magnitude earthquake occurring in a given time period. Table 2-1 displays commonly used seismic hazard levels, their corresponding probabilities of exceedance, and mean return periods.

Table 2-1. Probabilistic Seismic Hazard Levels and Mean Return Period.

Seismic Hazard Level	Probability of Exceedance in 50 Years	Mean Return Period (Years)
50%/50-year	50%	72
20%/50-year (BSE-1E)	20%	225
10%/50-year	10%	475
5%/50-year (BSE-2E)	5%	975
2%/50-year (BSE-2N)	2%	2,475

Seismic events with longer mean return periods and smaller probabilities of exceedance are associated with stronger seismic motions, larger ground accelerations, and more potential to damage facilities. Consequently, structures designed or retrofit to a seismic hazard level with a longer return period will generally experience better performance in an earthquake than a structure designed or retrofit to a lower seismic hazard level.

ASCE 41-17 codifies four different Seismic Hazard Levels at which to evaluate or retrofit structures. For voluntary seismic evaluations and voluntary seismic upgrades, the owner of a structure and the structural engineer can decide the Seismic Hazard Level at which it is appropriate to evaluate or retrofit a structure. The codified Seismic Hazard Levels are grouped into two categories: two Seismic Hazard Levels (BSE-1E and BSE-2E) associated with the Basic Performance Objectives for Existing Buildings (BPOE) and two Seismic Hazard Levels (BSE-1N and BSE-2N) associated with the Basic Performance Objectives Equivalent to New Building Standards (BPON).

The ASCE 41-17 defined Seismic Hazard Levels are shown in Table 2-1, along with their respective probabilities of exceedance in 50 years and mean return period; however, the BSE-1N Seismic Hazard Level is not shown in Table 2-1 because ASCE 41-17 defines BSE-1N as being two-thirds of the BSE-2N. The BSE-1N Seismic Hazard Level cannot be directly related to a probability of exceedance or mean return period. Historically (and in previous standards), the BSE-1N Seismic Hazard Level was taken as the 10%/50-year earthquake.

Historically, existing buildings have been seismically evaluated and retrofitted to a lower Seismic Hazard Level than would be typical in new building design. This approach has been historically justified for three primary reasons:

1. It ensures recently constructed structures are not immediately rendered seismically deficient due to minor building code changes.
2. Existing buildings often have a shorter remaining life than a new building would; therefore, lower structural resiliency is tempered by a decreased probability of a major seismic event.
3. Often the burdensome cost of retrofitting historic structures to a “new building equivalence” performance level is disproportionate to the incremental benefit.

2.3 Building Performance Levels and Seismic Retrofit Objectives

A target building performance level must be selected for the design or retrofit of a structure. The target performance levels are discrete damage states selected from among the infinite spectrum of possible damage states that a building could experience during an earthquake. The terminology used for target building performance levels is intended to represent goals for design but not necessarily predict building performance during an earthquake.

Since actual ground motions during an earthquake are seldom comparable to those used for design, the target building performance level may only determine relative performance during most events but not predict the actual level of damage following an event. Even given a ground motion similar to that used in design, variations from stated performance objectives should be expected. Variations in actual performance could be associated with differences in the level of workmanship, variations in actual material strengths, deterioration of materials, unknown geometry and sizes of existing members, differences in assumed and actual live loads in the building at the time of the earthquake, influence of nonstructural components, and variations in response of soils beneath the building.

ASCE 41-17 describes performance levels for structural components and nonstructural components of a structure. The ASCE 41-17 identified Structural Performance Levels can be seen in Table 2-2, and the ASCE 41-17 identified Nonstructural Performance Levels can be seen in Table 2-3. Nonstructural evaluations were not completed as part of the scope of this project.

Table 2-2. Identified Structural Performance Levels.

Performance Level Abbreviation	Performance Level Name
S-1	Immediate Occupancy
S-2	Damage Control
S-3	Life Safety
S-4	Limited Safety
S-5	Collapse Prevention
S-6	Structural Performance Not Considered

Table 2-3. Identified Nonstructural Performance Levels.

Performance Level Abbreviation	Performance Level Name
N-A	Operational
N-B	Position Retention
N-C	Life Safety
N-D	Nonstructural Performance Not Considered

Individual Structural Performance Levels and Nonstructural Performance Levels can be aggregated to form a combined Building Performance Level. Structural performance during an earthquake is related to the amount of lateral deformation or drift of the structure and the capacity or ability of the structure to deform. Any Structural Performance Level can be combined with any Nonstructural Performance Level, although it is not recommended to combine high levels of structural performance with low levels of nonstructural performance and vice versa.

Theoretically, there are 23 different Building Performance Levels that are combinations of different Structural and Nonstructural Performance Levels. However, ASCE 41-17 recommends that only 15 Building Performance Levels be used in practice due to their recommendation of avoiding mismatching high and low levels of nonstructural and structural performance. ASCE 41-17 defines four specific common Building Performance Levels, as shown in Table 2-4. A visual representation of these common Building Performance Levels plotted against lateral deformation can be seen in Figure 2-1.

Table 2-4. Specific Common Building Performance Levels.

Performance Level Abbreviation	Performance Level Name	Structural & Nonstructural Performance Level Combination
1-A	Operational	S-1 & N-A
1-B	Immediate Occupancy	S-1 & N-B
3-C	Life Safety	S-3 & N-C
5-D	Collapse Prevention	S-5 & N-D

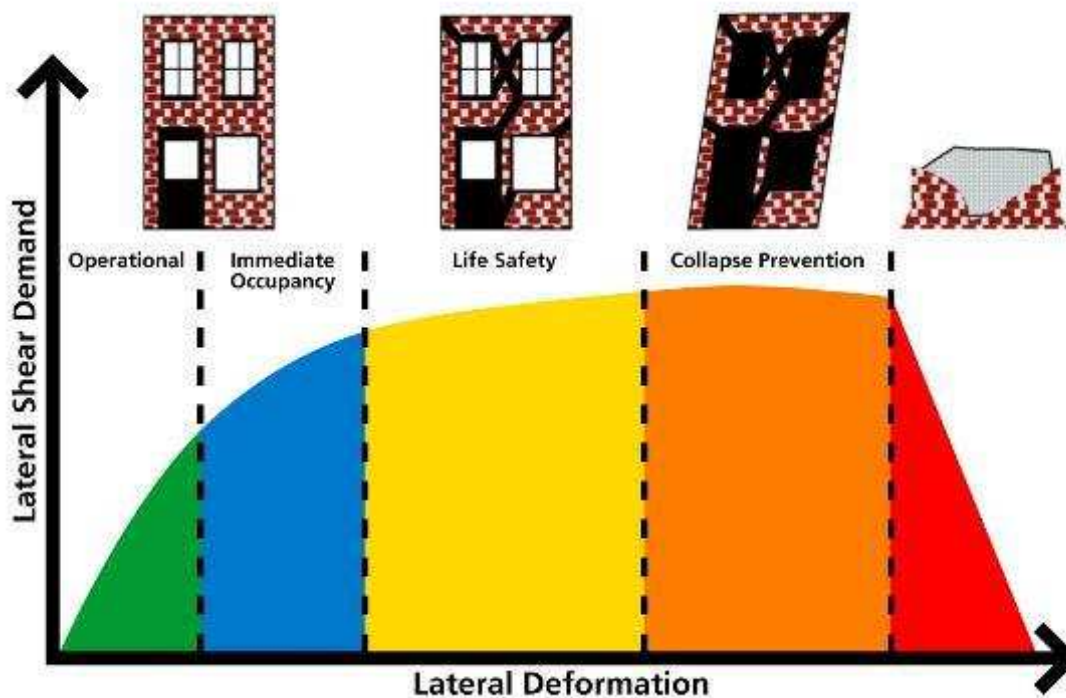


Figure 2-1. Building Performance Levels.

A decision must be made for each structure as to the acceptable behavior for different levels of seismic hazard, balanced with the construction cost of retrofitting a structure to obtain that behavior. ASCE 41-17 defines “baseline” basic performance objectives for structures based on their defined Risk Category. The Risk Category is the same as defined in the International Building Code (IBC) and ASCE 7. For example, for a Risk Category II structure retrofitted to the BPON standards, the structure would need to be retrofitted for the 3-B Building Performance Level at the BSE-1N Seismic Hazard Level and the 5-D Building Performance Level at the BSE-2N (2%/50-year) Seismic Hazard Level. ASCE 41-17 allows for higher (enhanced) or lower (limited) objectives to be selected based on the essential nature of the facility, the expected remaining life of the building, and the associated cost and feasibility. For example, it may not be economically feasible to retrofit historic structures to the BPON standards, and ASCE 41 allows for selection of a limited objective for such situations.

Table 2-5 summarizes the approximate levels of structural and nonstructural damage that may be expected at the damage states that define the structural performance levels.

Table 2-5. Approximate Expected Damage for Different Building Performance Levels¹.

	Building Performance Levels			
	Collapse Prevention	Life Safety	Immediate Occupancy	Operational
Overall Damage	Severe	Moderate	Light	Very Light
Permanent Drift	Large. 1% to 5%.	Some. 0.3% to 1%.	Negligible.	Same as Immediate Occupancy.
Remaining Strength and Stiffness After Earthquake	Little. Gravity system (columns and walls) functions, but building is near collapse.	Some. Gravity system functions, but building may be beyond economical repair.	Significant strength remaining. Minor cracking of structural elements.	Same as Immediate Occupancy.
Examples of Damage to Reinforced Masonry Buildings	Extensive cracking and crushing. Damage around openings at corners. Some fallen units. Transient drift to cause extensive nonstructural damage. Extensive permanent drift.	Major cracking distributed throughout wall. Some isolated crushing. Transient drift to cause nonstructural damage. Noticeable permanent drift.	Minor cracking. No out-of-plane offsets. Transient drift that causes minor or no nonstructural damage. Negligible permanent drift.	Same as Immediate Occupancy.
Examples of Damage to Steel Framing	Extensive yielding and buckling of steel bracing members. Significant connection failures.	Many braces and beams yield or buckle but do not fail totally. Moderate amount of connection failures.	Minor deformation of steel members, no connection failures.	Same as Immediate Occupancy.
Other General Description	Structure likely not repairable and not safe for reoccupancy due to potential collapse in aftershock.	Repair may be possible, but may not be economically feasible. Repairs may be required prior to reoccupancy.	Minor repairs may be required, but building is safe to occupy.	Same as Immediate Occupancy.
Nonstructural Components	Extensive damage. Some exits blocked. Infills and unbraced parapets failed or at incipient failure.	Falling hazards mitigated, but many architectural, mechanical, and electrical systems are damaged.	Minor cracking of facades, partitions, and ceilings. Equipment and contents are generally secure, but may not operate due to lack of utilities.	Negligible damage. All systems important to normal operation are functional. Power and other utilities are available, possibly from standby sources.
Comparison with New Building Design	Significantly more damage and greater risk.	Somewhat more damage and slightly higher risk.	Much less damage and lower risk.	Much less damage and lower risk.

¹ Adapted from American Society of Civil Engineers, "Prestandard and Commentary for the Seismic Rehabilitation of Buildings," FEMA-356, Federal Emergency Management Agency, Washington, D.C., November 2000.

2.4 Performance, Safety, Reliability, and Construction Cost

The seismic performance, safety, and reliability of a facility must be weighed against the relative importance and construction costs associated with a facility. It is impractical for the average building to be seismically designed or retrofit to experience no damage following a major earthquake; however, steps can be taken to mitigate seismic hazards for new and existing structures.

Some facilities have more community importance or pose special risks to a community following an earthquake (for example, hospitals, fire stations, or facilities housing highly toxic substances). It is reasonable that important facilities be designed or retrofit to a higher performance standard than the average structure. The relative importance of a facility must be weighed against the relative construction costs associated with facility construction. There are two types of construction costs associated with seismic hazards: the cost of initial construction or seismic retrofit construction and the cost to repair or replace a facility following an earthquake. The better a structure performs during an earthquake, the faster the structure can be returned to service and the lower the repair costs will be following the earthquake. Expected building damage states during a seismic event can be directly linked to:

- Repair/Replacement Costs – Cost of restoring the facility to pre-earthquake condition.
- Public Safety – Number of critical injuries and casualties to building occupants.
- Downtime – Length of time taken to make repairs to return a structure to service.

Figure 2-2 displays a graphic showing estimated performance-related consequences compared with different increasing post-earthquake structural damage states (which correspond to the design Structural Performance Levels for a given seismic hazard).

Figure 2-3 presents the schematic relationship between different retrofit building performance objectives and probable retrofit program cost.

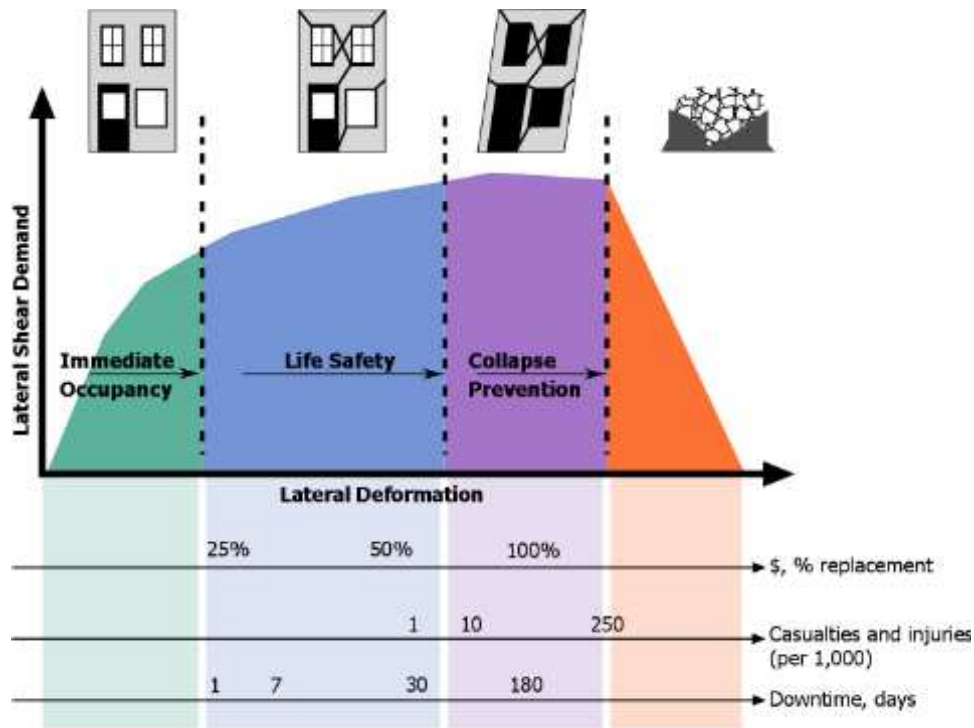


Figure 2-2. Estimated Performance-Related Consequences at Different Structural Performance Levels².

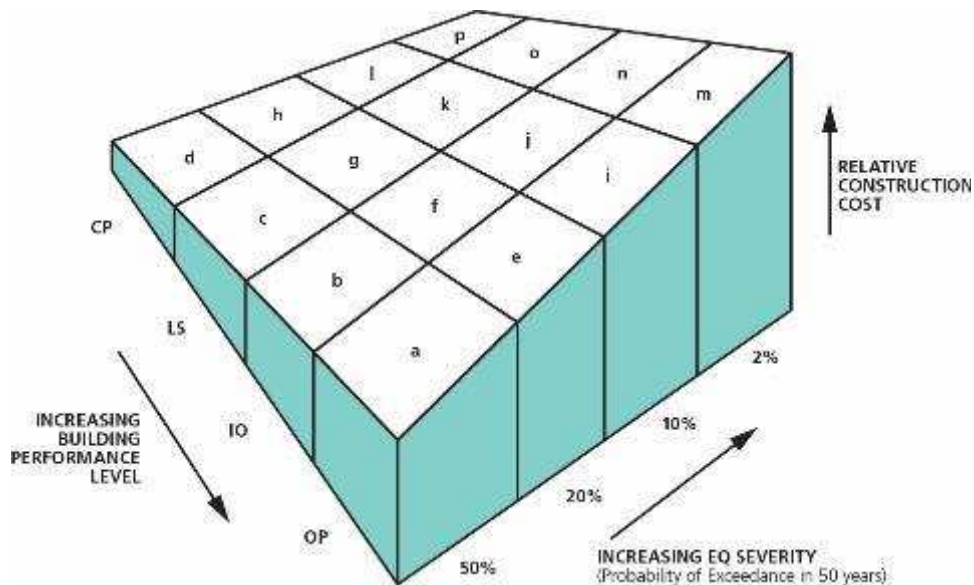


Figure 2-3. Surface Matrix of ASCE 41 Building Performance Levels Compared with Construction Cost³.

² J. Moehle, "A Framework for Performance-Based Earthquake Engineering," *Proceedings from ATC 15-9, 10th US-Japan Workshop on the Improvement of Structural Design and Construction Practices*, Applied Technology Council, Makena, Hawaii, 2003.

³ Adapted from Applied Technology Council, "NEHRP Commentary for the Seismic Rehabilitation of Buildings," FEMA-274, Federal Emergency Management Agency, Washington, D.C., October 1997.

2.5 Seismic Evaluation Procedure

The current standard for seismic evaluation and retrofit of existing buildings is the ASCE 41-17, *Seismic Evaluation and Retrofit of Existing Buildings*. ASCE 41-17 provides screening and evaluation procedures used to identify potential seismic deficiencies that may require further investigation or hazard mitigation. It presents a three-tiered review process, implemented by following a series of predefined checklists and “quick check” structural calculations. Each successive tier is designed to perform an increasingly refined evaluation procedure for seismic deficiencies identified in previous tiers in the process. The flow chart in Figure 2-4 describes the evaluation process.

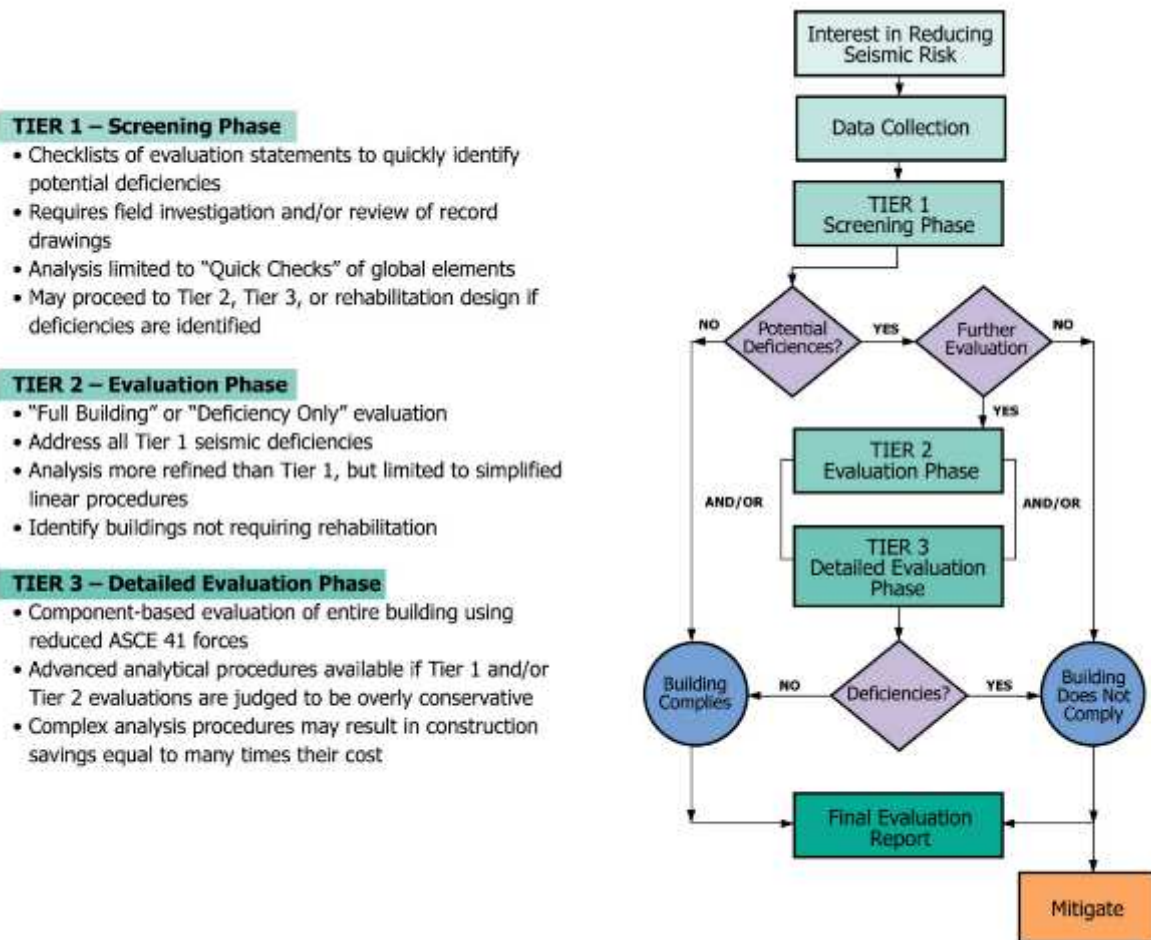


Figure 2-4. Flow Chart and Description of ASCE 41-17 Seismic Evaluation Procedure.

The Tier 1 checklists in ASCE 41-17 are specific to each common building type and contain seismic evaluation statements based on observed structural damage in past earthquakes. These checklists screen for potential seismic deficiencies by examining the lateral-force-resisting systems (LFRS) and details of construction that have historically caused poor seismic performance in similar buildings. Tier 1 screenings include basic “Quick Check” analyses for

primary components of the lateral system. They also include prescriptive checks for proper seismic detailing of connections, diaphragm spans and continuity, and overall system configuration. Tier 2 evaluations then follow with additional calculations and assessments to either confirm the potential deficiencies identified in the Tier 1 review or demonstrate their adequacy. A Tier 3 evaluation involves an even more detailed analysis and advanced computations to review each structural component's seismic demand and capacity. It is similar in scope and complexity to the types of analyses often required to design a new building in accordance with the IBC, with a comprehensive analysis aimed at evaluating each component's seismic performance. As indicated in the Scope of Services, these evaluations include a Tier 1 screening.

2.6 Seismic Retrofit Procedure

If seismic deficiencies are identified in the evaluation process, the owner and design team should review all initial conditions before proceeding with the hazard mitigation. Many conditions may affect the retrofit design significantly, such as results of the seismic evaluation and seismic hazard study, building use and occupancy requirements, presence of hazardous materials, and other anticipated building remodeling. The basic process for performance-based retrofit design is illustrated in Figure 2-5.

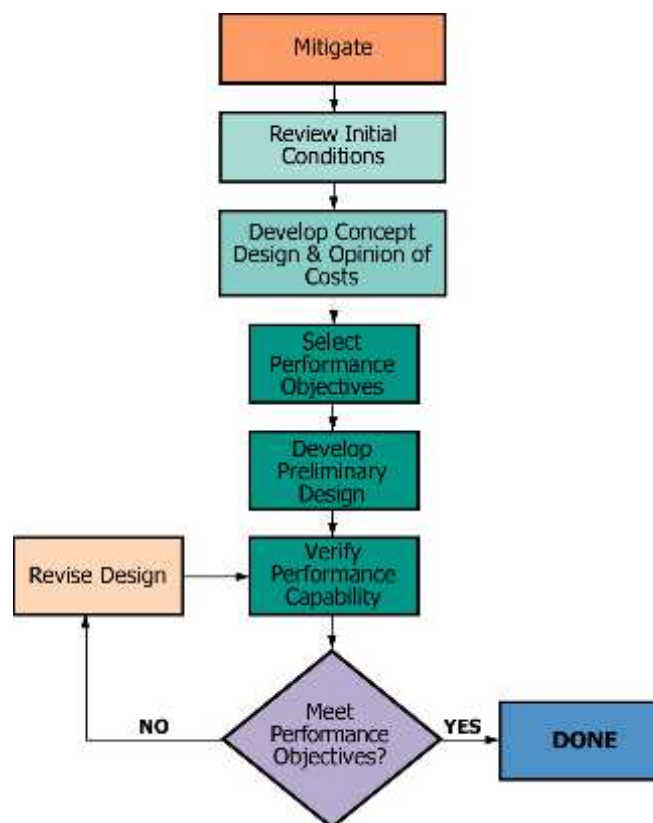


Figure 2-5. Seismic Rehabilitation Flow Diagram.

Following the review of initial conditions, concept designs may be performed to develop rough opinions of probable construction costs for one or more performance objectives. The owner and design team can then develop a rehabilitation strategy considering the associated costs and feasibility. Schematic and final design can then proceed through an iterative process until verification of acceptable building performance is obtained.

LIMITATIONS

The professional services described in this report were performed based on available as-built information and limited observation of the structure. No destructive testing was performed to qualify as-built conditions or verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report provides an overview of the seismic evaluation results and proposed upgrades and does not address programming and planning issues.

This report has been prepared for the exclusive use of Rice Fergus Miller Architecture and Gig Harbor Fire and Medic One. It is not intended for use by other parties, nor may it contain sufficient information for purposes of other parties or their uses. This report does not address any portion of the structure other than those areas mentioned, nor does it provide any warranty, either expressed or implied, for any portion of the existing structure.

3.2 Fire Station 51

3.2.1 Building Description

Year Built: Original: Unknown
Addition and
Remodel: Unknown

Number of Stories: 1

Floor Area: 13,050 SF

Address: 6711 Kimball Drive,
Gig Harbor, WA
98335



Fire Station 51 is a one-story concrete tilt-up and wood-frame structure. The original construction of the building is unknown. The administration area of the building was remodeled to provide additional wood shear walls inside the building and PT room and exterior deck at the east façade. The building has distinct areas: an apparatus bay, and an administration area with dormitory, training room, office rooms, kitchen, dining, and miscellaneous living space. The original building has an approximate area of 12,500 square feet, and an addition added 550 square feet. The building is constructed of reinforced tilt-up concrete walls in the apparatus bay and wood walls in the administration area, supported by concrete foundation walls and continuous concrete footings. The roof diaphragm consists of plywood over timber trusses in both the apparatus bay and administration areas.



Figure 3.2-1. Fire Station 51, Apparatus Bay Exterior looking West.



Figure 3.2-2. Fire Station 51, Exterior looking East.



Figure 3.2-3. Fire Station 51, Hose Tower looking Southeast.

Structural System

Table 3.2-1. Structural System Description of Fire Station 51.

Structural System	Description
Roof	The roof system consists of plywood over timber trusses supported by concrete tilt-up walls in the apparatus bay and wood bearing walls in the administration area.
Floor	The first floor is a reinforced concrete slab on grade at the apparatus bay and a raised wood floor at the administration area.
Foundations	Both wood-framed walls and concrete tilt-up walls are supported by continuous concrete spread footings.
Hose Tower	The hose tower is constructed of tilt-up concrete walls with 2x4 rafters at 16-inch spacing forming a trapezoidal roof, supported by continuous concrete spread footings.

Mezzanine	The mezzanine floor is constructed of 3/4-inch plywood over 2x6 joist at 16-inch spacing and supported by the apparatus bay's tilt-up concrete wall at one end and the wood stud walls of the administration area.
Lateral System	The lateral systems consist of plywood sheathed roof diaphragm and perimeter tilt-up concrete shear walls in the apparatus bay and plywood sheathed roof diaphragm and wood shear walls at the administration area.

3.2.2 Seismic Evaluation Findings

Seismic Deficiencies

The seismic deficiencies identified during the Tier 1 evaluation are summarized below, with commentary provided for each deficiency.

Table 3.2-2. Identified Seismic Deficiencies for Fire Station 51.

Deficiency	Description
Mezzanines	The mezzanine floor framing is anchored to the precast concrete wall with 3x ledger and 3/4-inch-diameter, post-installed anchors along the south end and the wood stud wall along the north. Without adequate seismic ties between the mezzanine and the shear walls, the mezzanine is at risk of separating from the shear walls.
Overturning	The precast concrete wall piers on the front and back of the apparatus bay, as well as the wood shear walls on the south and west of the building, have base/height ratios greater than 0.6Sa. This can create a concentration of force that exceeds the capacity of the existing lateral and gravity systems.
Ties Between Foundation Elements	Foundations are continuous. However, no ties across the building or slab ties are indicated in the record drawings. Soils and liquefaction review should be performed to verify capacity of exterior soils to restrain wall movement.
Wall Anchorage	The roof trusses to wood stud walls and precast concrete walls consist of “Bowman” truss anchors at each truss connecting the 2x plates to the exterior walls. The anchor size is unknown. These connections are critical for resolving out-of-plane wall forces during seismic events. Without adequate wall anchorage, the roof diaphragms are at risk of separating from the exterior walls, creating a loss of support for the floors and a reduction in stability for the walls.
Wood Ledgers	The 3x8 ledger connecting the mezzanine floor joists to precast concrete walls may induce cross-cross grain bending. The wood members in general do not

have capacity to resist tension forces. Tension ties can be added to mitigate the wall anchorage.

Wall Openings	Precast concrete walls along the east and west facades have wall openings more than 50 percent of the length of the walls, and the wall piers have aspect ratio greater than 2-to-1. The precast concrete walls with large openings and narrow piers may be unable to resist lateral forces.
Wall Thickness	Six-inch-thick precast concrete walls are less than 1/25 the unsupported wall height of 16 feet. The slender bearing walls may have limited capacity to carry vertical loads and higher potential for damage due to the out-of-plane forces during an event.
Shear Stress	The wood shear walls along the east-west direction of the building have shear stress exceeding 1,000 lb/ft.
Hold-Down Anchors	The available record drawings do not have information on shear wall hold-down anchors attached to the end studs. Shear walls without adequate end anchorage are susceptible to racking and overturning.
Diaphragm Continuity	The roof diaphragms over the apparatus bay, court, and administration spaces are at different heights. Roofs with different heights create discontinuity in the diaphragms.
Roof Chord Continuity	Roof chords are not continuous between the apparatus bay, court, and the administration area. Without roof chords or continuity, the flexible diaphragm may experience damage during a seismic event around the perimeter.
Diagonally Sheathed and Unblocked Diaphragms	The apparatus bay roof is unblocked and has a span greater than 30 feet. Unblocked diaphragms with large spans can have larger seismic forces that the diaphragm may be unable to resist or transfer to the lateral system.

No geotechnical report was provided for the site, causing checklist items involving soil to be marked as “unknown.” It is expected that the soils on site are compliant with liquefaction, slope failure, and surface fault rupture expectations, but further investigation may need to be completed for verification.

3.2.3 Findings and Recommendations

Fire Station 51 does not meet the IO performance level as determined by the ASCE 41-17 Tier 1 evaluation. Deficiencies include insufficient load path and insufficient shear wall size, detailing, and strength, particularly at the apparatus bay.

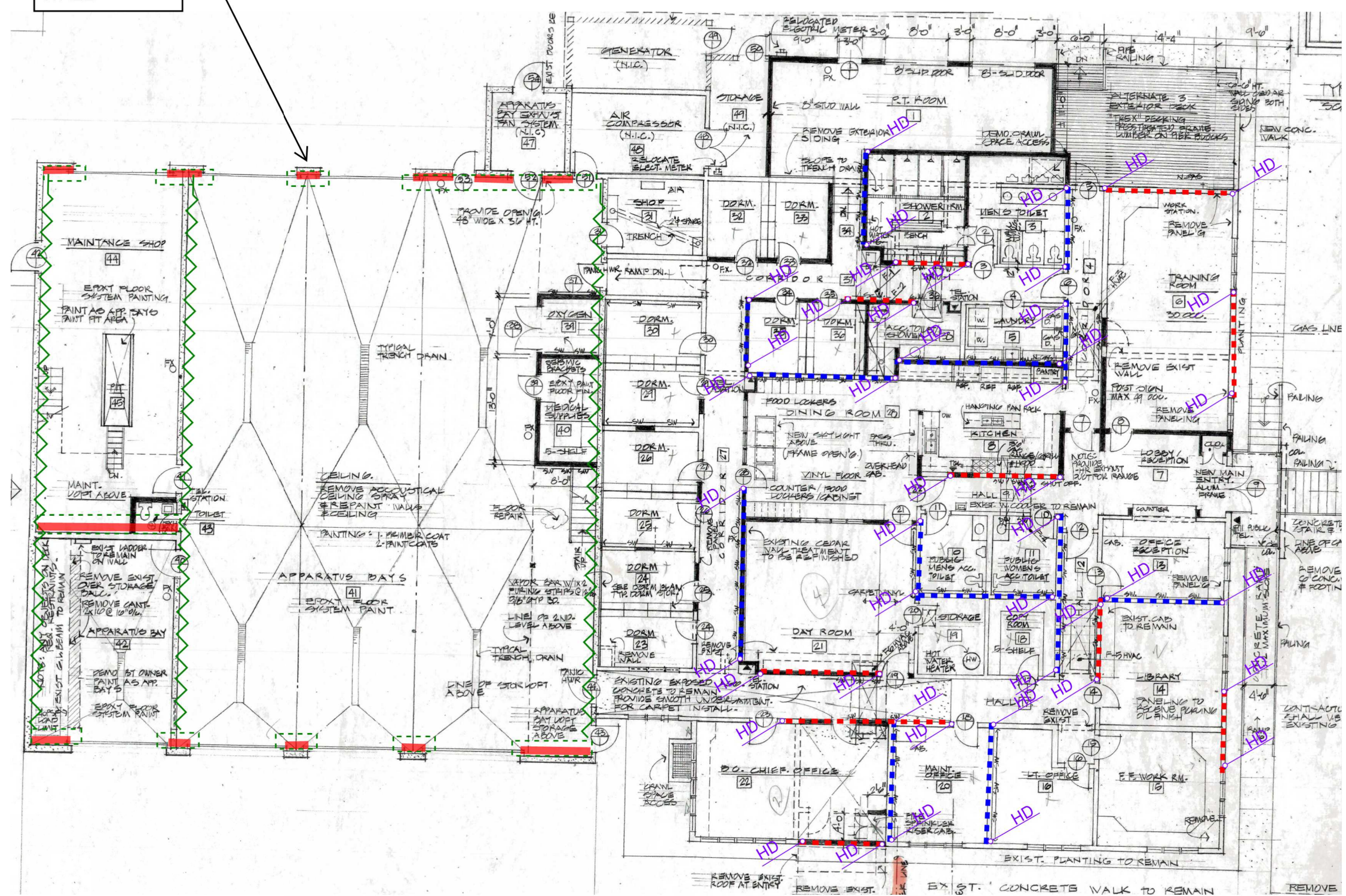
Due to the extent of the deficiencies, extensive damage and potential for failure of the LFRS during a design-level earthquake is possible. A structural upgrade concept design was completed for Fire Station 51. Figures 3.2-4 and 3.2-5 display the concept-level upgrades to improve the LFRS and meet the IO performance objective. The upgrade concept involves strengthening existing wood shear walls, adding new shear walls, improving roof-to-wall connections, and adding drag elements.

Specified interior and exterior walls should be resheathed with structural sheathing, which will strengthen the existing shear walls and increase shear capacity of the LFRS. Hold-downs should also be added to strengthen and stiffen the building. New connections should be added at the roof level to make efficient use of the resheathed wood walls. At all existing and new wood shear walls, existing connections between the walls and crawl space should be supplemented to adequately transfer seismic forces. The connection between the diaphragm and shear walls should also be improved using roof-to-wall ties to ensure the forces are transferred to the shear walls.

Along the east and west apparatus bay sides, existing walls should be thickened with shotcrete. A shotcrete wall should be added near the center of the apparatus bay length to reduce forces to the exterior walls and a drag strut added for lateral load transfer and resistance. Due to the thickness of the existing walls in the longitudinal direction, upgrades may be required. However, additional shotcrete walls are not shown as calculations or a Tier 2 evaluation are anticipated to show that these walls are acceptable and will not require upgrades for thickness. Precast panel to foundation connections should be added at all precast wall panels. Supplementary nailing and blocking should be added to the roof to increase the roof diaphragm's capacity and strength.

The mezzanine should be anchored to the lateral system on all sides, and the existing hose tower should be demolished to the roof diaphragm level.

(E) PRECAST WALL

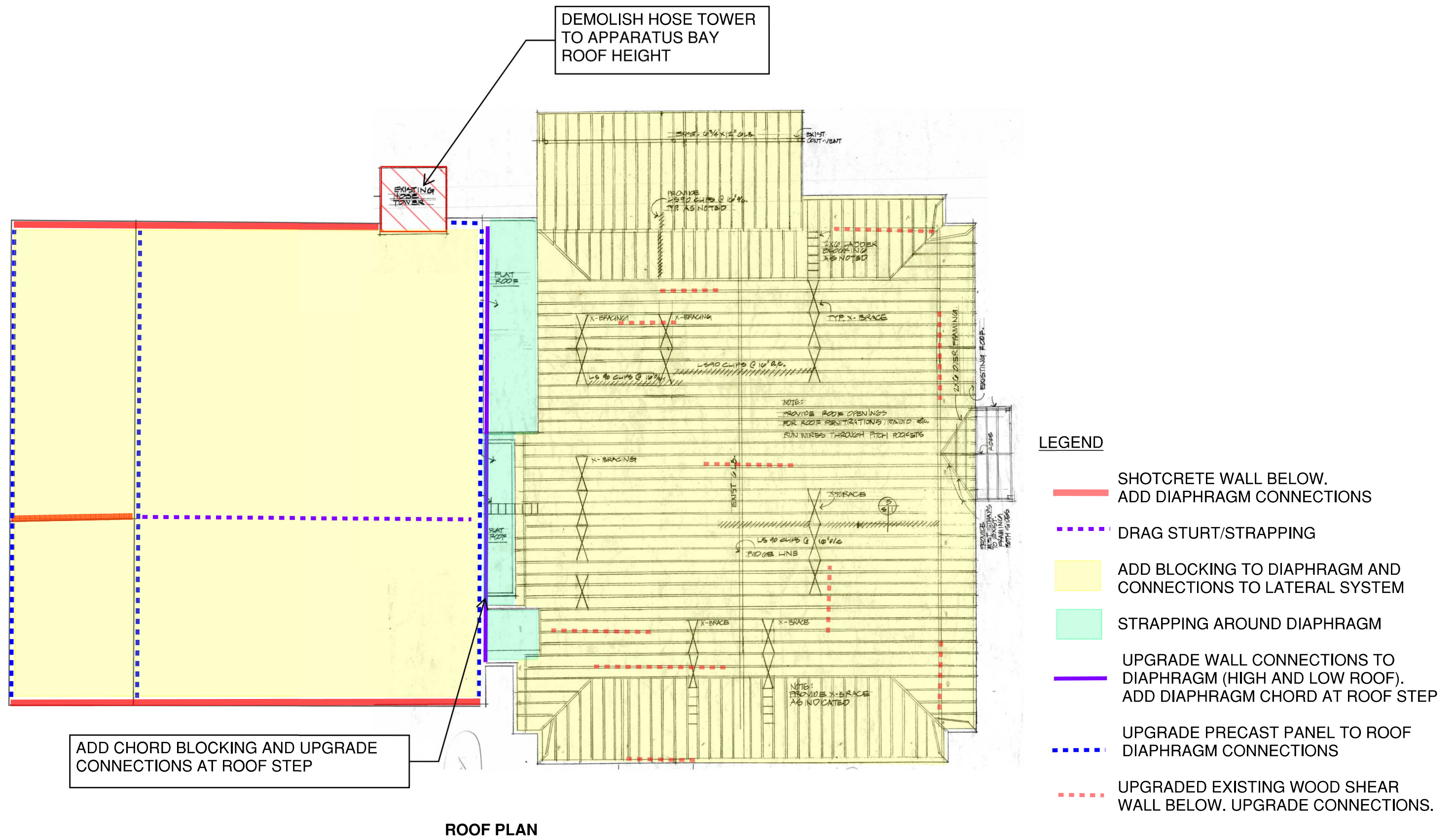


LEGEND

- NEW FOUNDATION
- SHOTCRETE WALL
- UPGRADE EXISTING WOOD SHEAR WALL. INCLUDES ADDED CONNECTIONS FROM FLOOR TO CRAWL SPACE WALL
- EXISTING SHEAR WALL ADD CONNECTIONS FROM FLOOR TO CRAWL SPACE WALL
- HD — HOLDOWN (AT FLOOR LEVEL AND CRAWL SPACE)
- ADDITIONAL PRECAST PANEL TO FOUNDATION CONNECTIONS

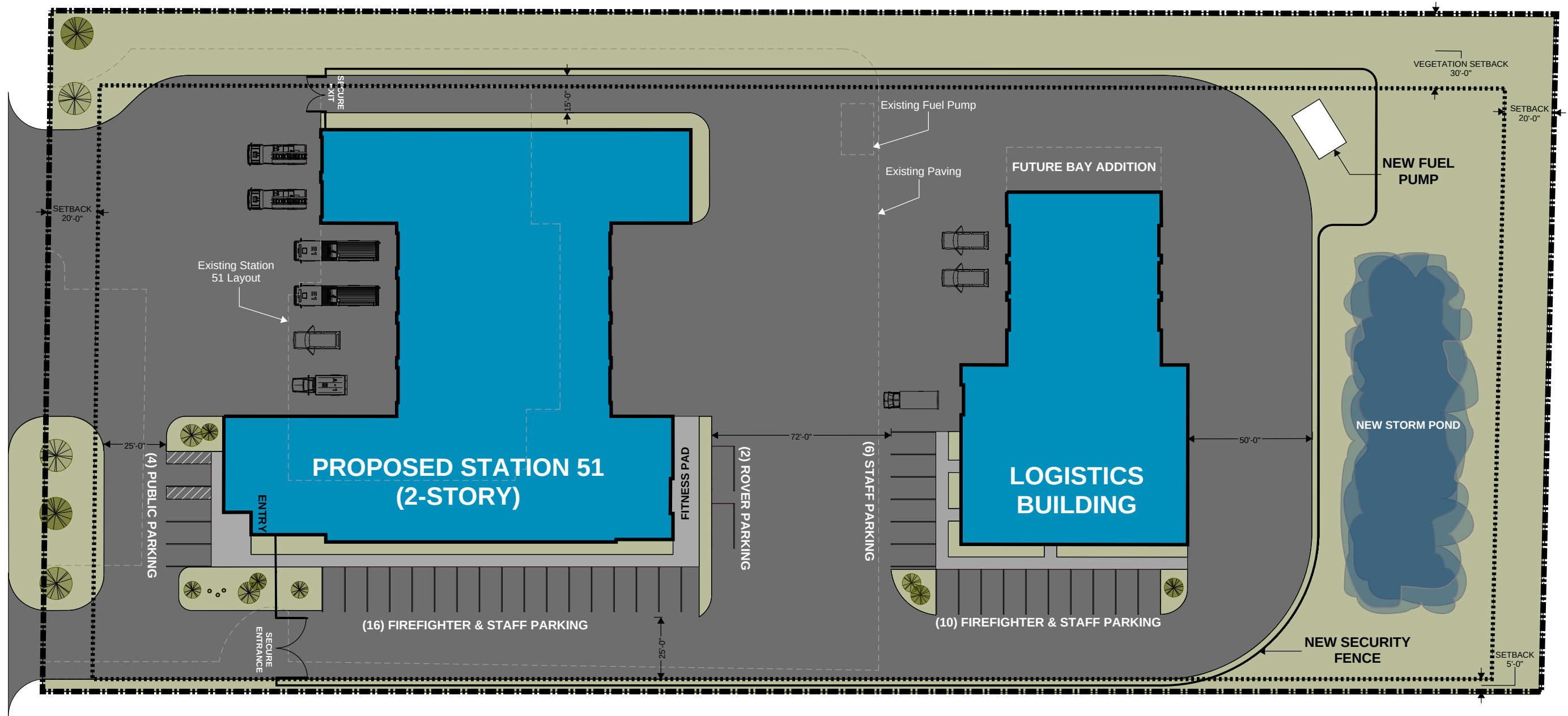
NOT SHOWN: UPGRADE MEZZANINE TO WALL CONNECTIONS SO CROSS-GRAIN BENDING IS RESOLVED

FOUNDATION AND FIRST FLOOR PLAN



KIMBALL DR

MCDONALD AVE

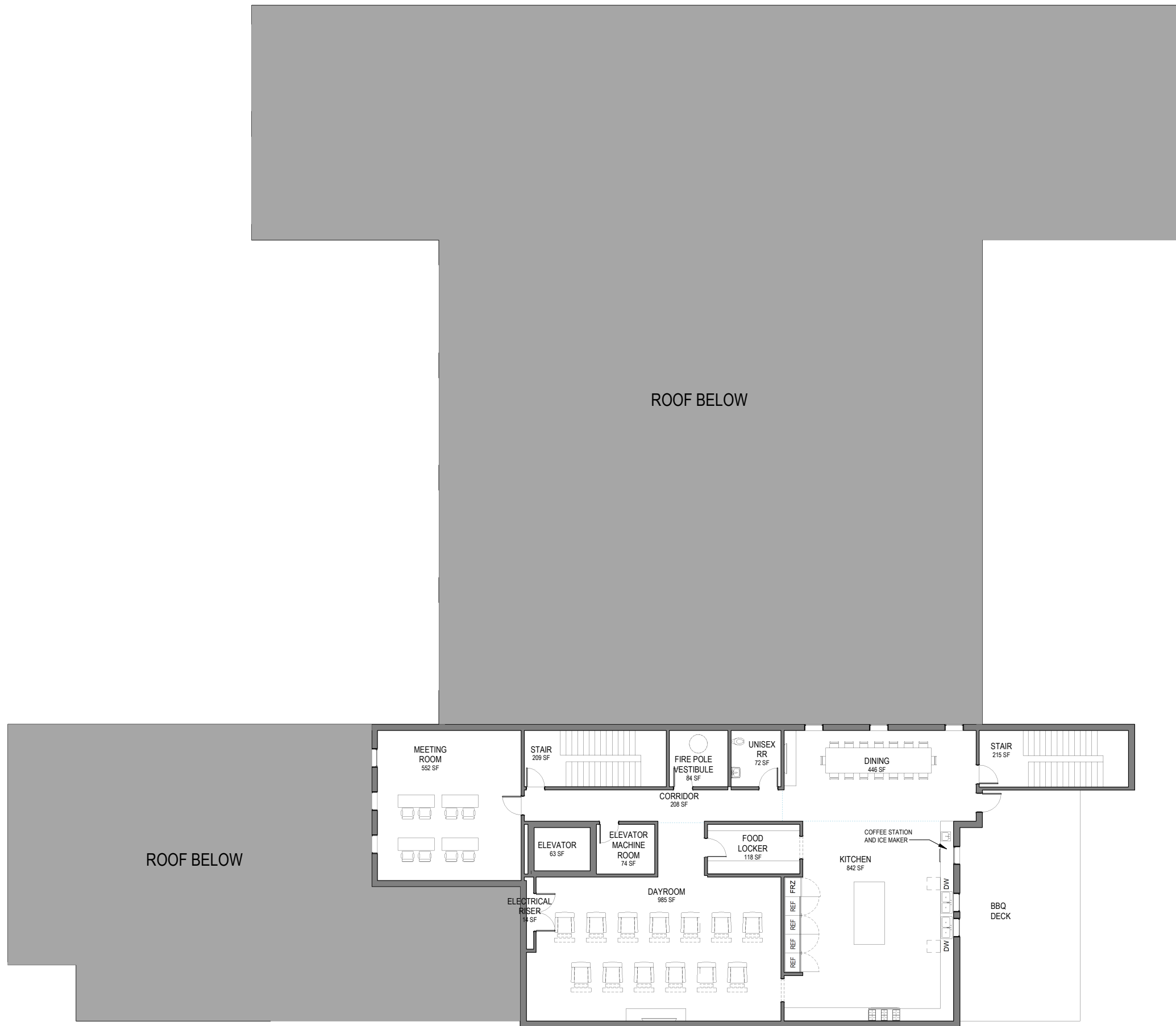


GIG HARBOR STATION 51 - SITE PLAN OPTION 3



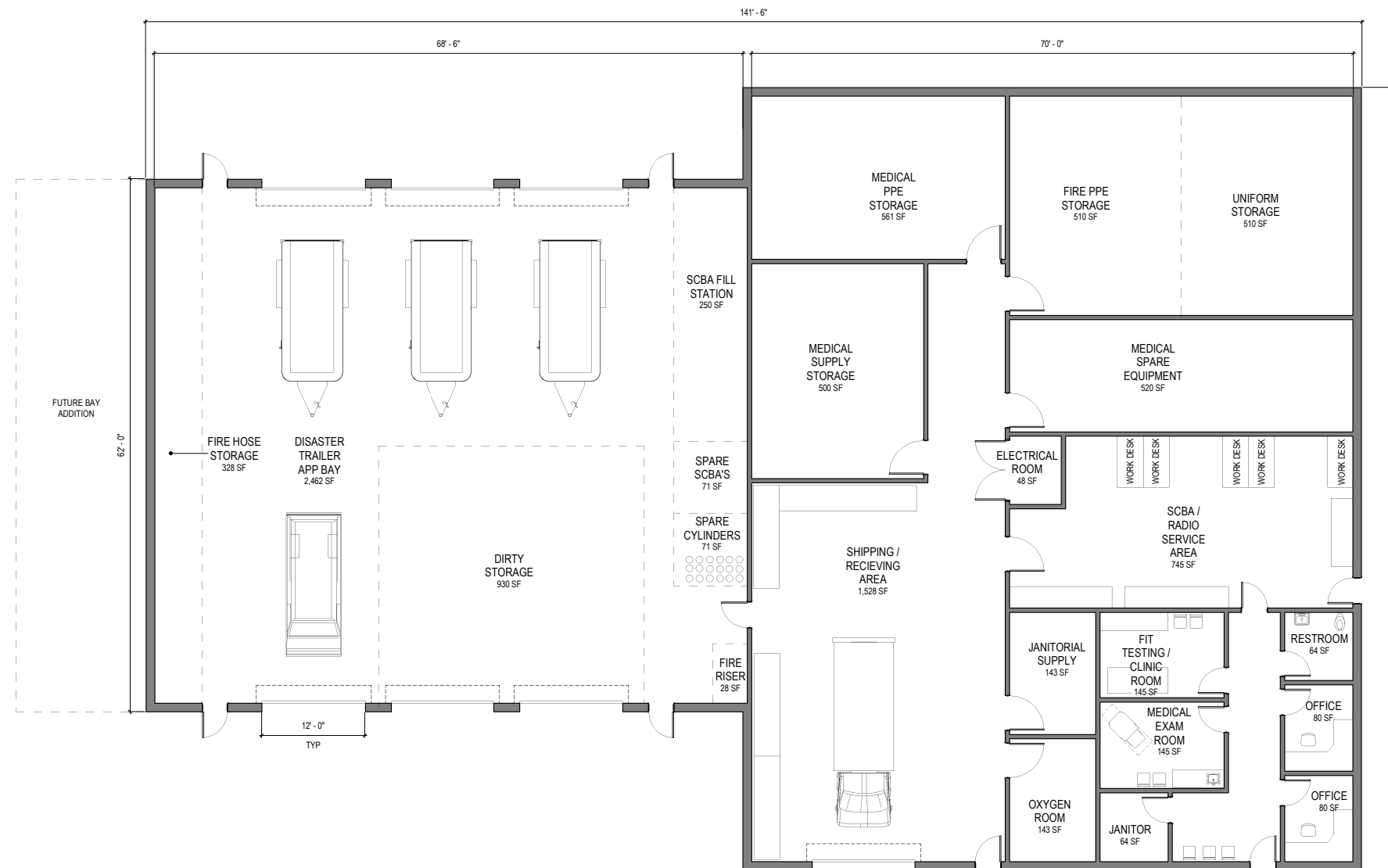
FIRE STATION 51 LEVEL 1 FLOOR PLAN - OPTION 3





FIRE STATION 51 LEVEL 2 FLOOR PLAN - OPTION 3





Gig Harbor Fire & Medic One
Fire Station 51
December 23, 2020

Operations

Apparatus Bay Dimensions (112' x 80'):

Apparatus Bay
Decon
Workshop
IT Room
Air Room
Apparatus Bay Restroom
App Bay Janitorial
Tech Gear Storage
Bunker Gear Storage
General Storage
Bin / Tote Storage
Disaster Storage
EMS / Supply Storage

*Expressed
Needs*

70'x65'

8,960
378
195
216
120
64
64
261
1,100
180
180
120
150

Total Operations

11,988

Living Quarters

of Sleep Rooms:

Sleep Rooms
Battalion Chief Sleep room 1 Total
Restroom W/ Shower 6 Showers
Kitchen
Laundry Room
Dining Room
Dayroom
Fitness
Janitorial

15

1,980
215
576
826
182
540
889
910
64

Total Living Quarters

6,182

Public and Work Areas

Community Room (Y/N):

Public Lobby W/ Security Vestibule
Unisex Restroom
Training Room Restroom
Training Room
Training Room Storage
Shared Firefighter Work Area
Battalion Chief Office
MSO Office
LT Office
Reception
Copy Room

Y

244
64
64
1,247
192
468
216
216
216
100
70

Total Public & Work Areas

3,097

Subtotal All Areas

21,267

Allowance for Circulation

3,190

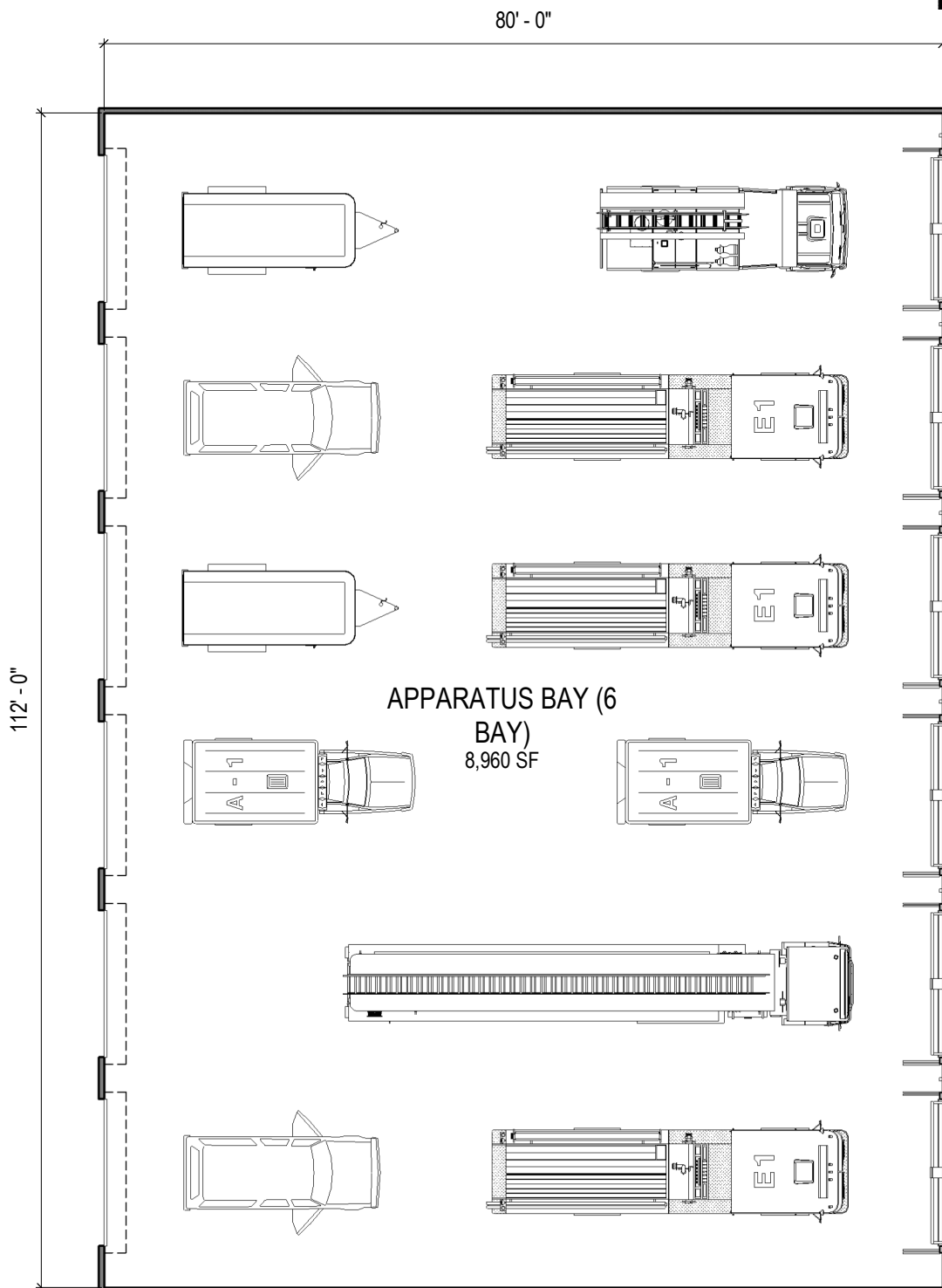
Allowance for Mech., Elec., I.T.

2,127

Total Anticipated Area

26,584

RICEfergusMILLER



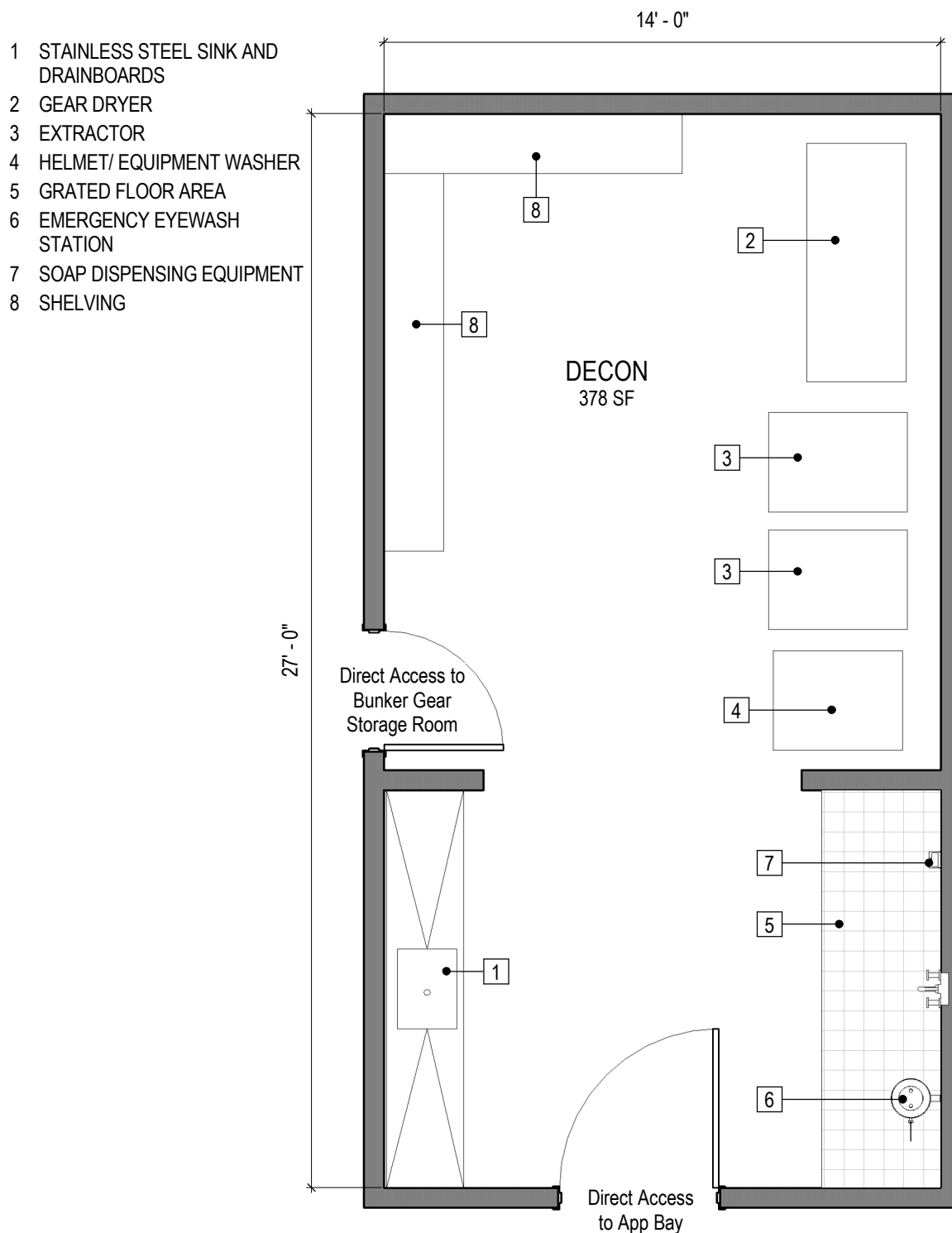
NOTES:

- Diesel exhaust capture system necessary
- WAC 296-305 requires 5' clearance in front, behind, and between apparatus
- Overhead doors: 14' wide x 14' tall
- All bays identical allowing maximum flexibility on vehicle arrangement and stacking
- Apparatus Bay can be used from time to time for indoor training by both Fire and EMS
- Apparatus Bay can be vacated during EOC activation for gathering space
- Apparatus Bay can be used as a shelter during a regional disaster
- Bunker Gear storage along apparatus bay walls

APPARATUS BAY (6 BAY)

3-040 of 89

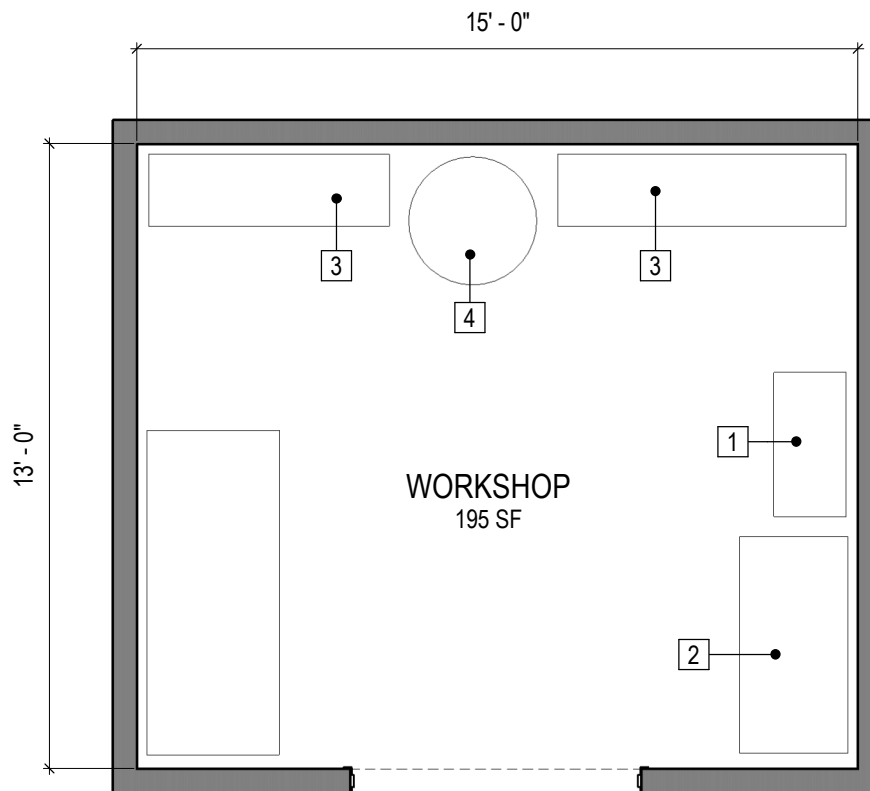
A1-10



NOTES:

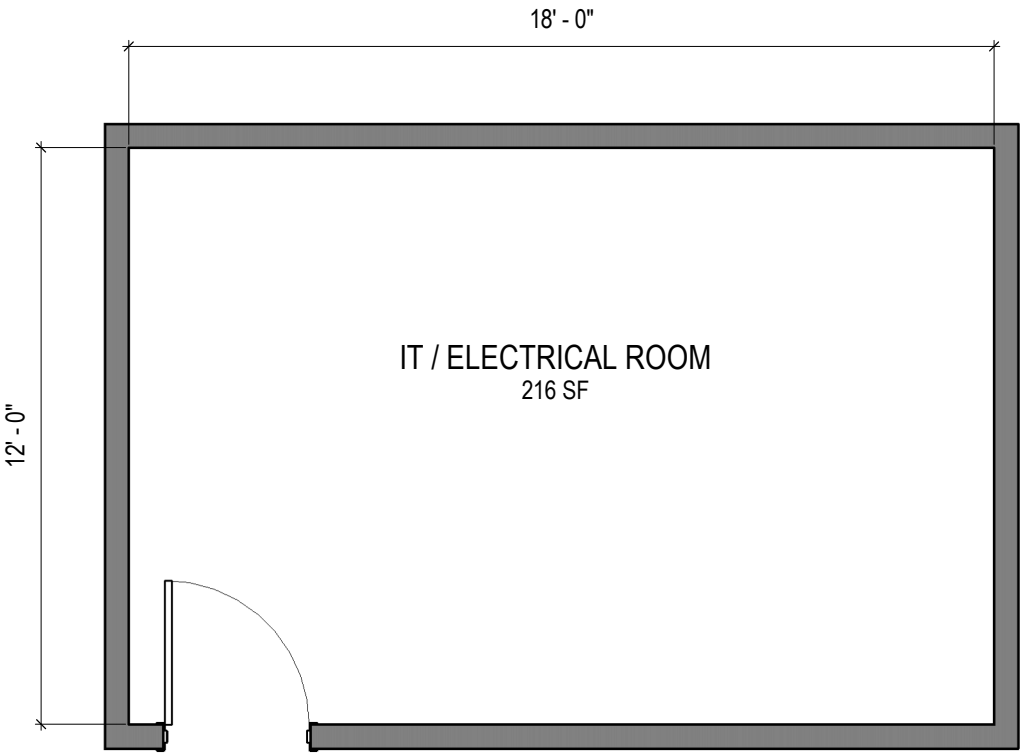
Decontamination area for cleaning equipment, and personal decontamination.
 Extractor for washing bunker gear and contaminated clothing.
 Dryer for drying bunker gear and clothing.
 Steel grated floor with recessed slab at Walk-in Shower
 Barn door to Apparatus Bay
 Adjacent to bunker gear storag
 Decon needs to have negative air pressure
 Room needs hot and cold water

- 1 TOOL CHEST
- 2 FLAMMABLE STORAGE LOCKER
- 3 SHELVING
- 4 SHOP COMPRESSOR



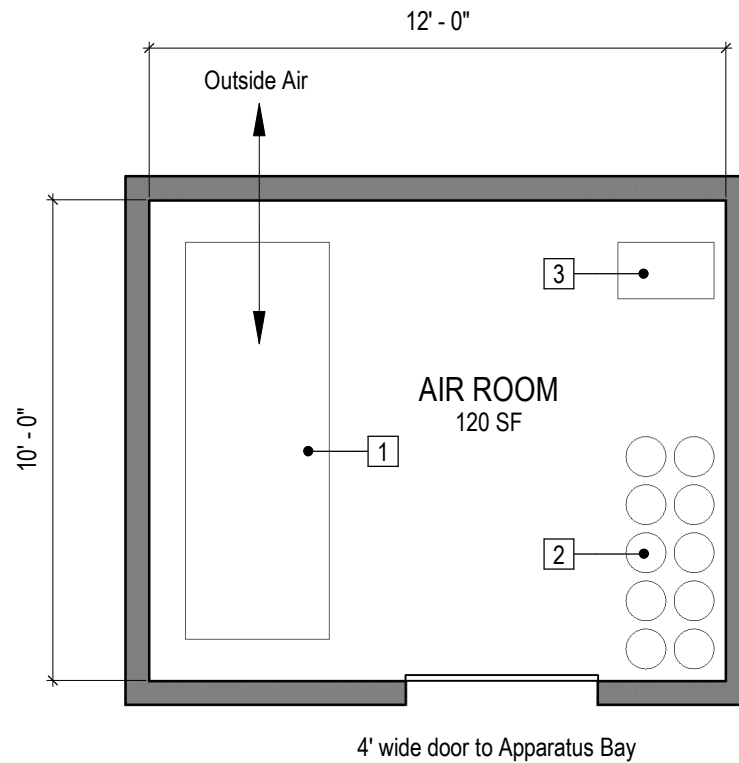
NOTES:

Located along one wall in the Apparatus bay.
 This space is in addition to the area listed for the Apparatus bay.
 Includes a flammable locker.
 6'-0" opening to apparatus bay, maximize wall space for bays.



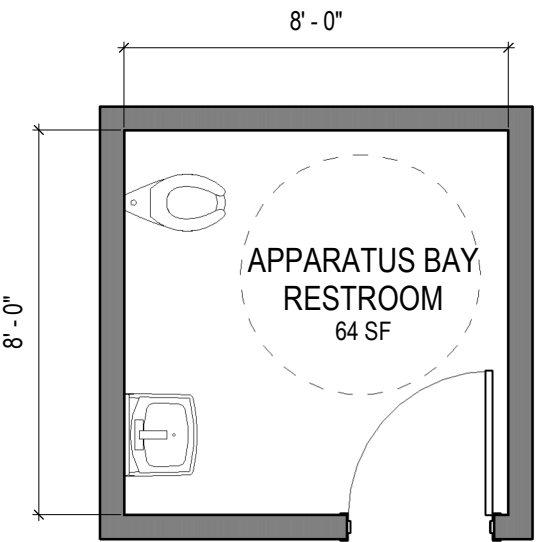
NOTES:

- 1 CASCADE SYSTEM
- 2 FILL BOTTLES
- 3 SCBA BOTTLE STORAGE



NOTES:

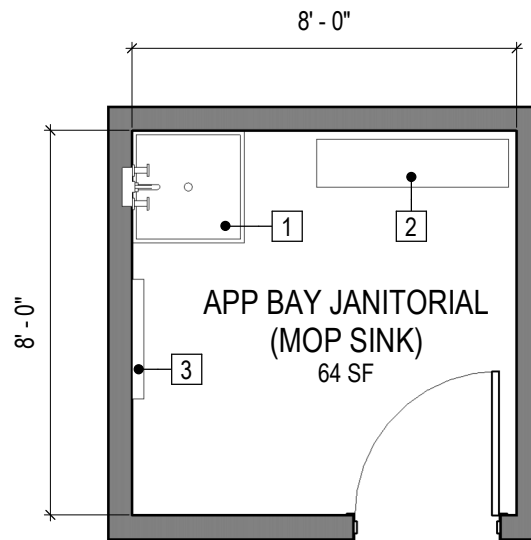
Cascade System.
Direct access to Apparatus Bays.
4'-0" wide roll-up door.



NOTES:

Concrete floor; scrubbable wall panels, floor to ceiling.
Direct access to Apparatus Bays.

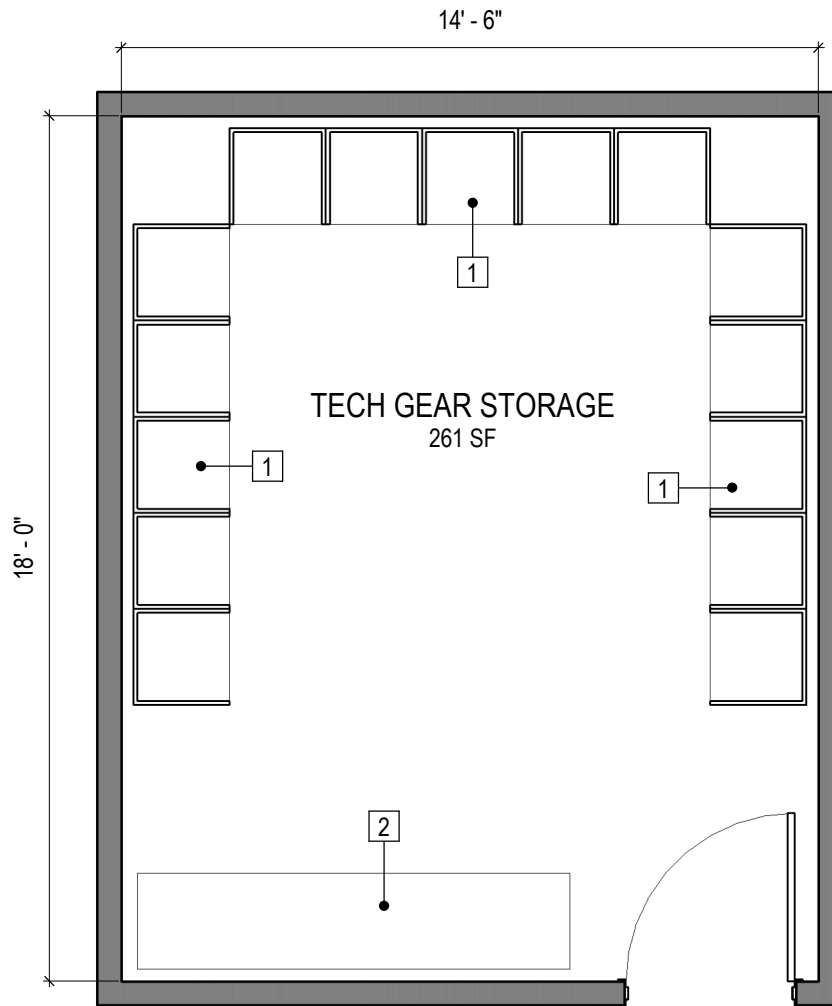
- 1 MOP SINK
- 2 SUPPLIES
- 3 MOP RACK



NOTES:

Concrete floor; scrubbable wall panels, floor to ceiling.
 Direct access to Apparatus Bays.
 Steel floor grate with recessed concrete slab next to mop sink

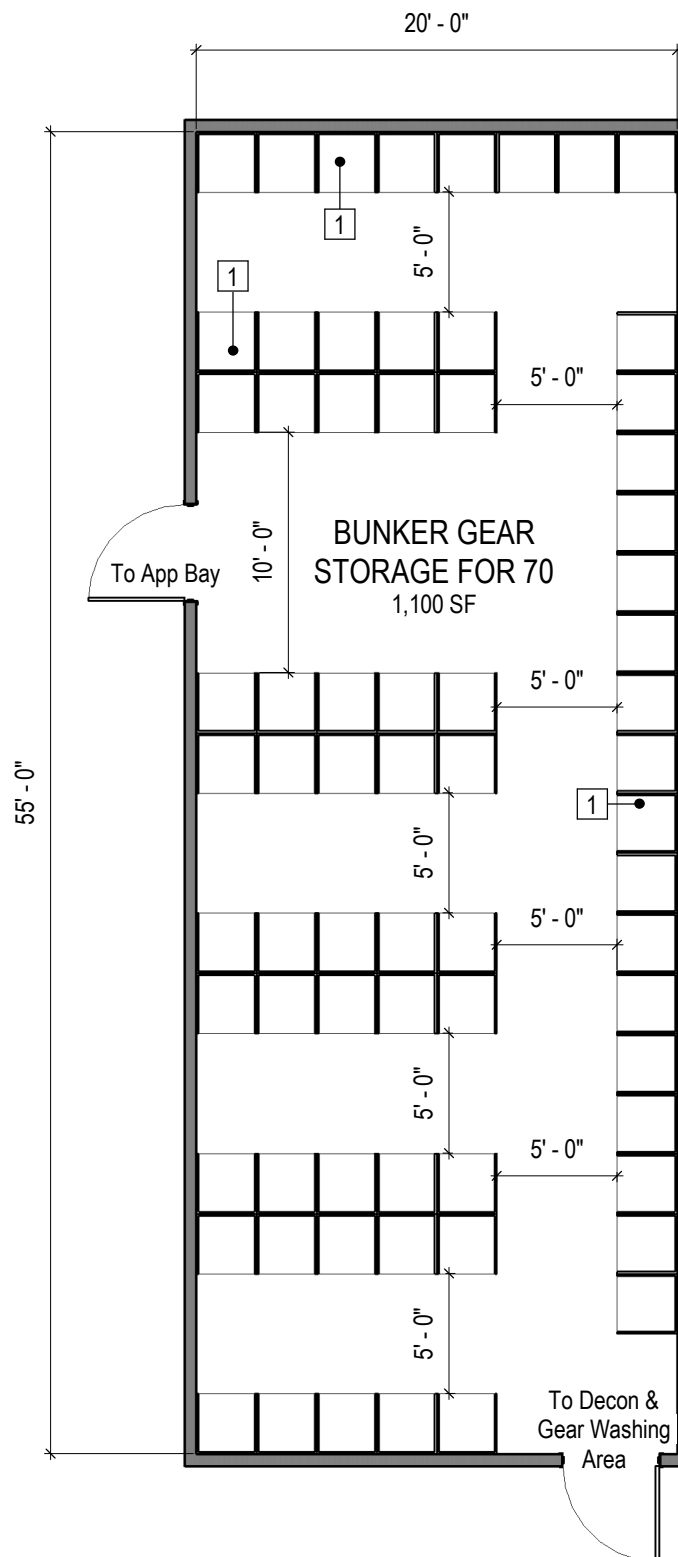
- 1 METAL SHELVING AND/OR RACKS
- 2 SHELVING



NOTES:

Door to be secured
(15) 24" X 24" Racks

1 BUNKER GEAR STORAGE RACK



NOTES:

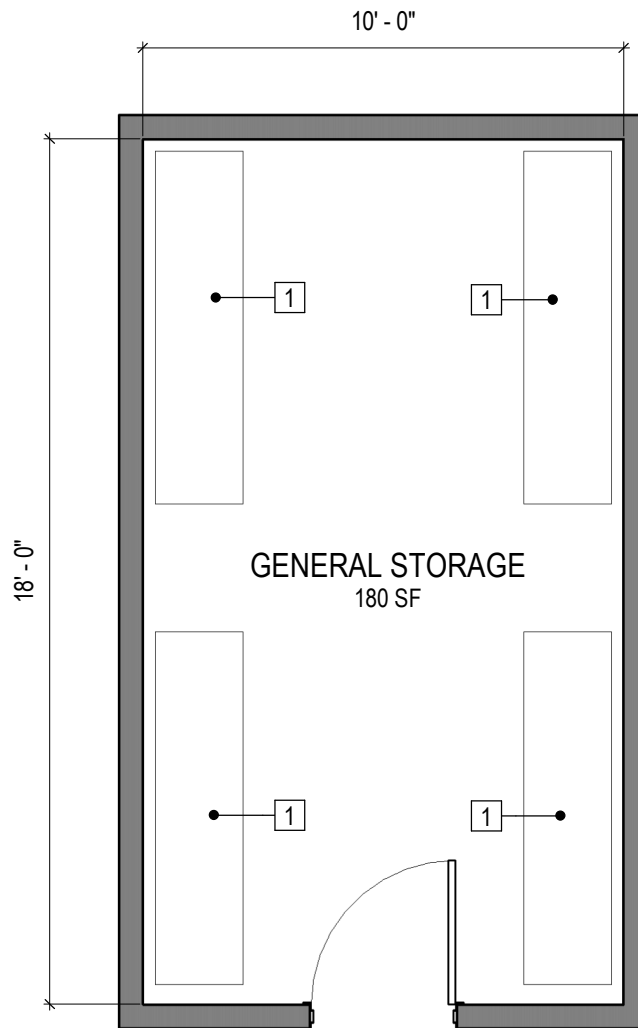
Need to have a separate Turn-out storage room with proper ventilation.
 Personal bunker gear and equipment storage.
 Door direct to gear washing and drying room.
 70 bunker storage units necessary.
 30"x 30" units
 No humidity in the room
 Bunker Gear room needs negative air pressure.

BUNKER GEAR STORAGE FOR 70

3-048 of 89

A8-5

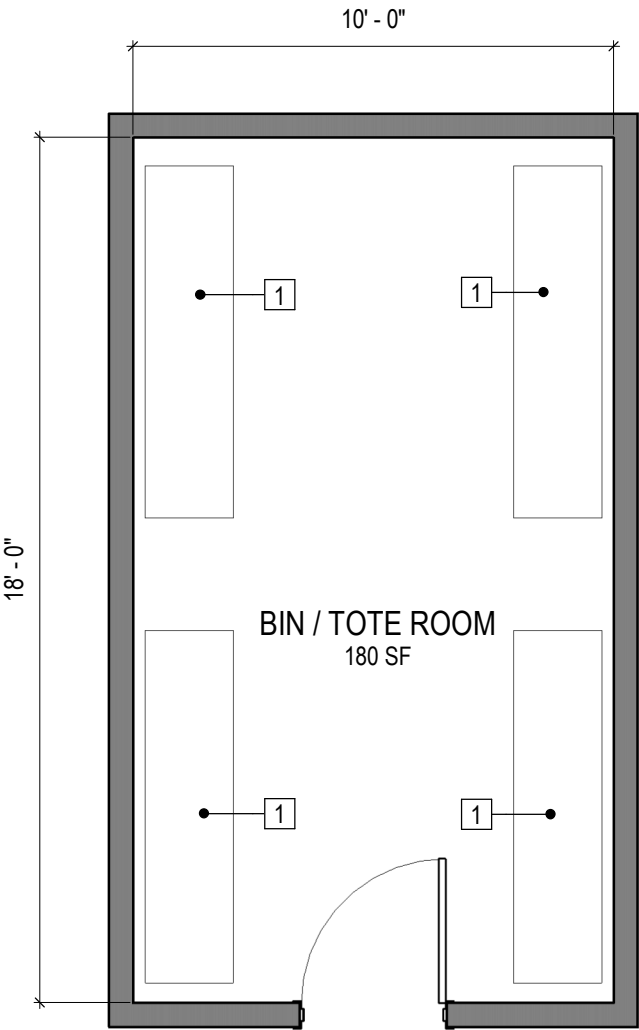
1 METAL SHELVING



NOTES:

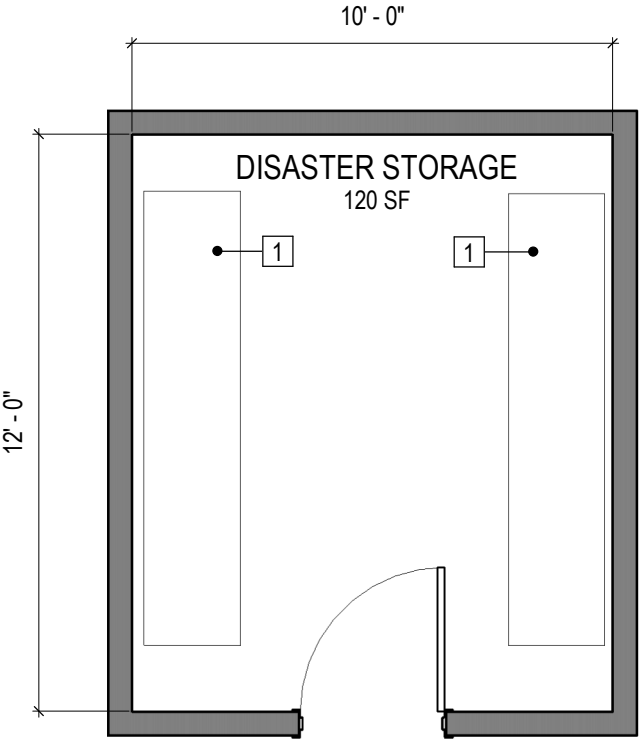
Storage Room for miscellaneous equipment and supplies, such as hose, ropes, rescue equipment, 2nd set Bunker Gear, wildland gear, and extrication equipment.
 Direct access to Apparatus Bays.
 Located adjacent Shop
 Storage for PPE

1 METAL SHELVING



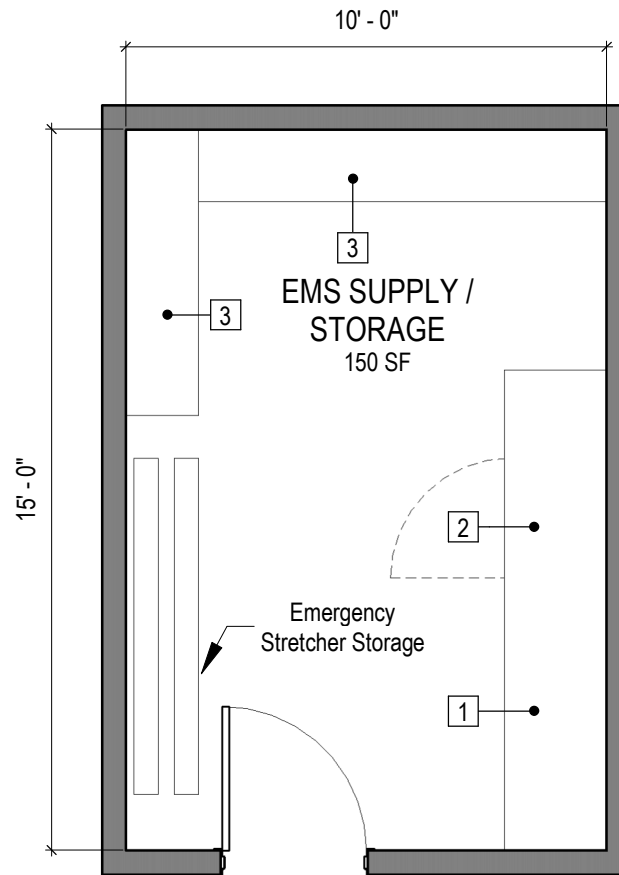
NOTES:

1 SHELVING



NOTES:

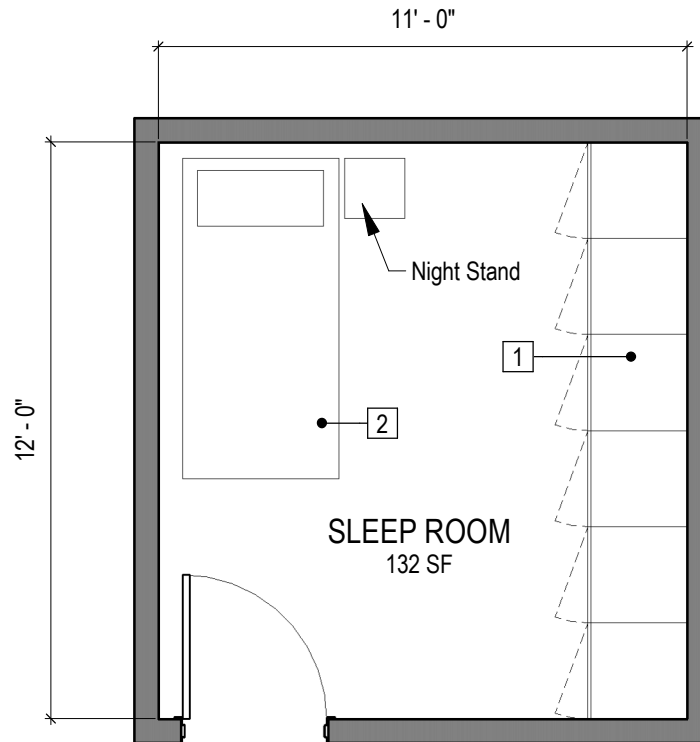
- 1 COUNTER
- 2 REFRIGERATOR, UNDER-COUNTER
- 3 SHELVING



NOTES:

Secure storage room with controlled access for drugs and medical supplies.
 Direct access to Apparatus Bays.
 Do we want lockable narcotics storage?

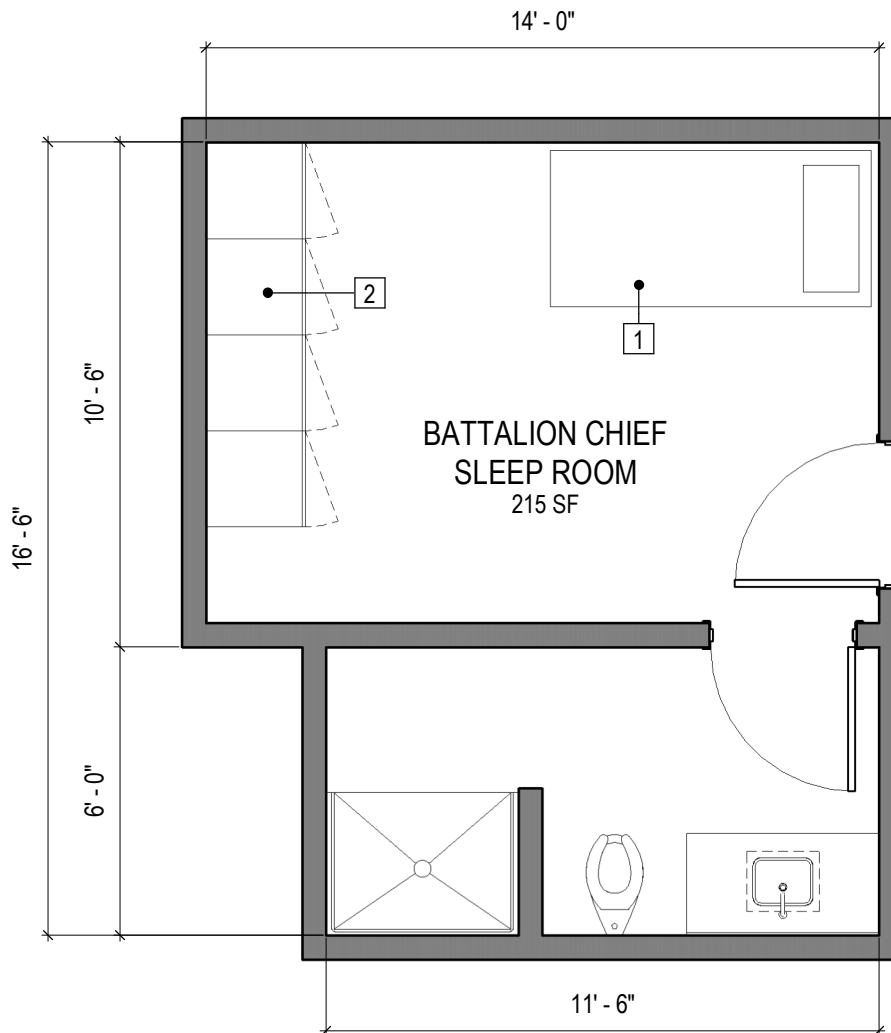
- 1 WARDROBE LOCKER
- 2 BED



NOTES:

Individual climate control for sleeping rooms.
 If officers room is differentiated, it should be closer to the apparatus bay than other sleeping quarters.
 Sleep rooms to have personal space, but limited to minimize hibernating.
 Individual tone control in sleeping rooms.

- 1 BED
- 2 WARDROBE LOCKER



NOTES:

Fixed bed platforms with linen storage containers (tubs) underneath bed
1 sleep room for Battalion Chief (and / or station officer)

Power per code

Built-in lockers to ceiling or soffit

Individual climate control for sleeping rooms.

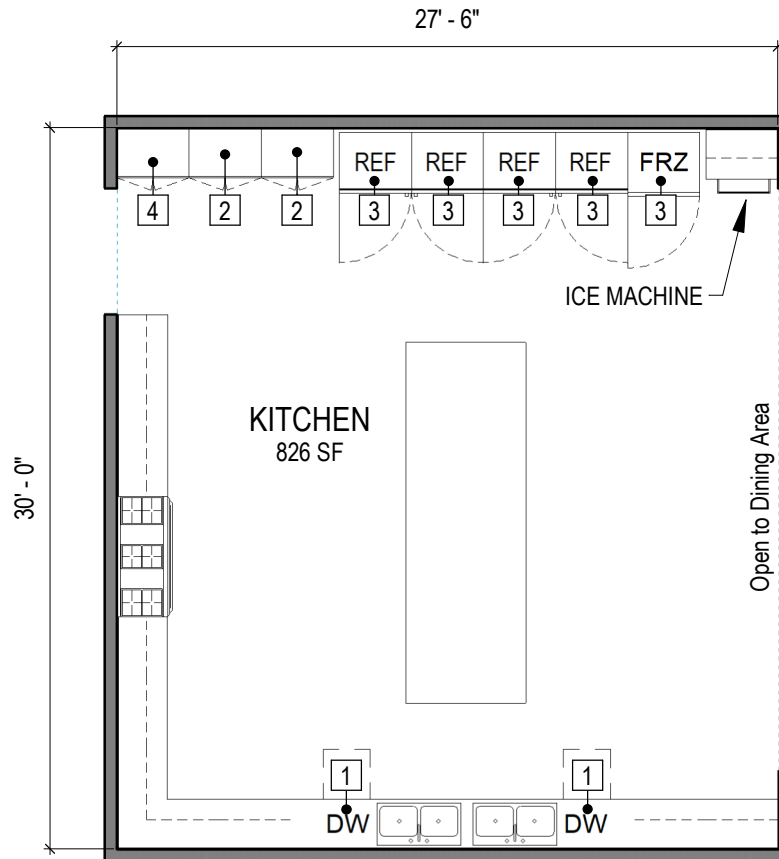
If officers room is differentiated, it should be closer to the apparatus bay than other sleeping quarters.

Sleep rooms to have personal space, but limited to minimize hibernating



NOTES:

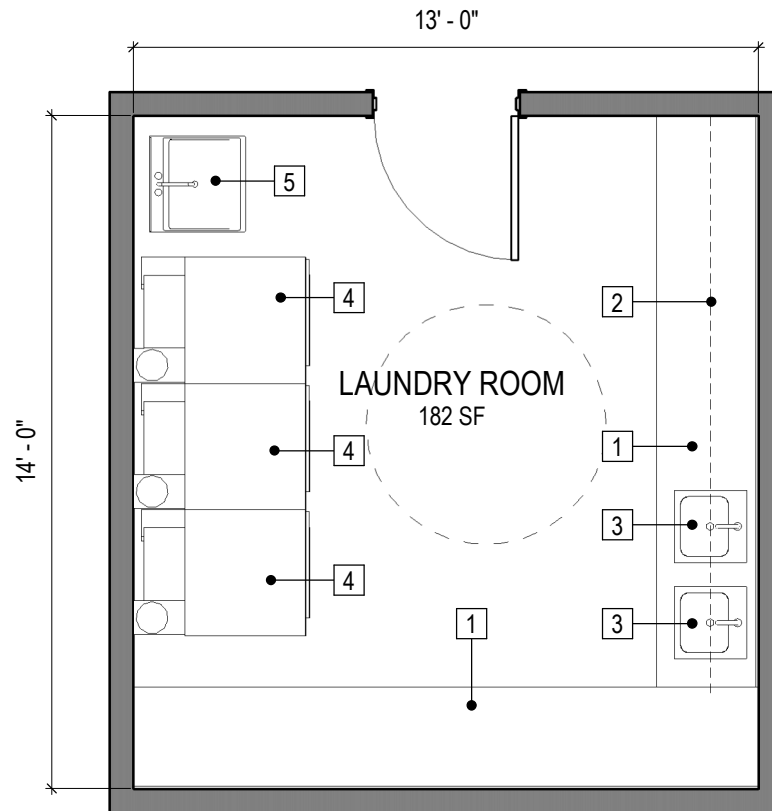
- 1 DISHWASHER
- 2 PANTRY
- 3 REFRIGERATOR / FREEZER
- 4 STORAGE CABINETS



NOTES:

Built-in cabinets to the ceiling or soffit.
 Tall cabinet doors lower with drawers inside the bottom. Smaller upper cabinet doors.
 Adjacent to patio.
 Open to dayroom.
 Typical (2) cooks at a time

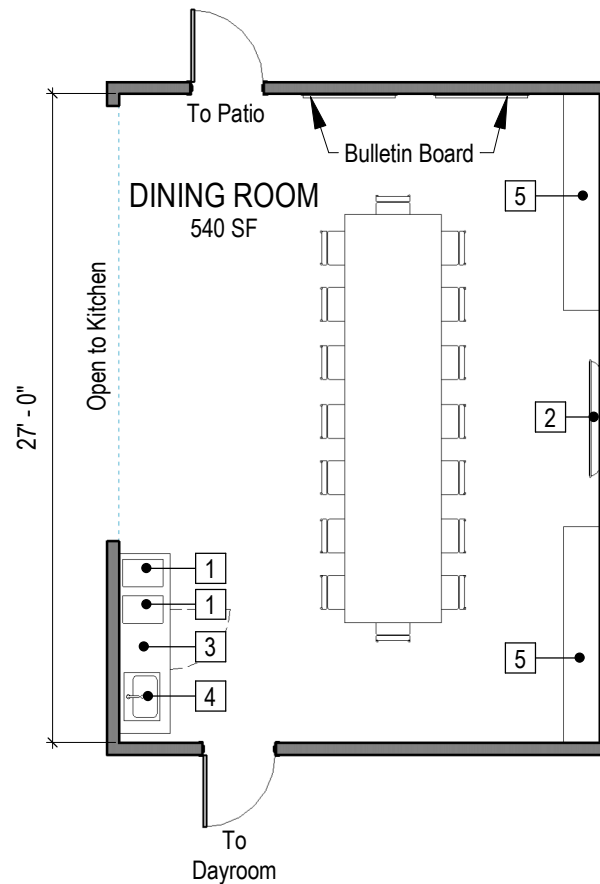
- 1 FOLDING COUNTER
- 2 STORAGE CABINETS
- 3 SINK
- 4 WASHER/ DRYER, STACKING
- 5 DEEP SINK



NOTES:

Laundry for personal items (not for decontamination purposes).
 3 Stacked Washer and Dryers
 Adequate counter space

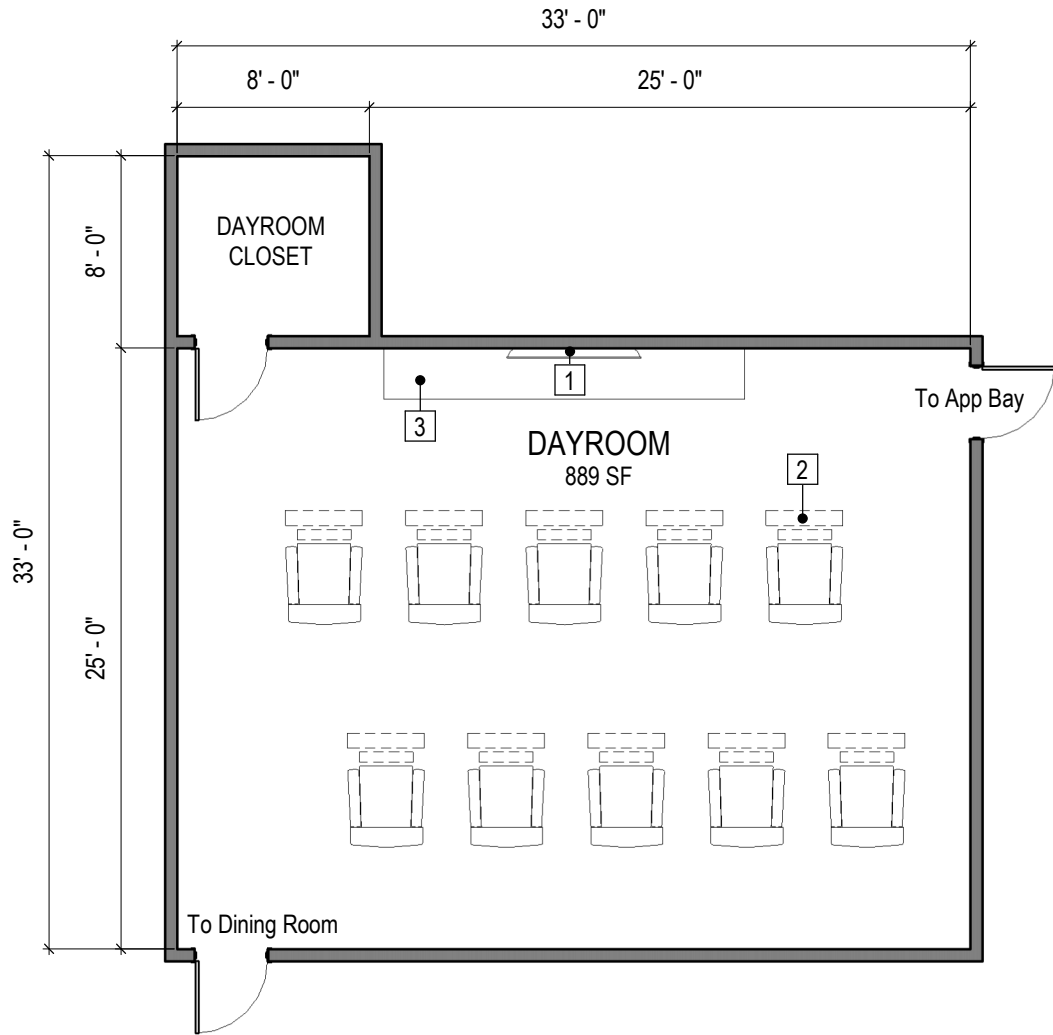
- 1 COFFEE MAKER
- 2 TELEVISION
- 3 REFRIGERATOR,
UNDER-COUNTER
- 4 SINK
- 5 FOOD LOCKER



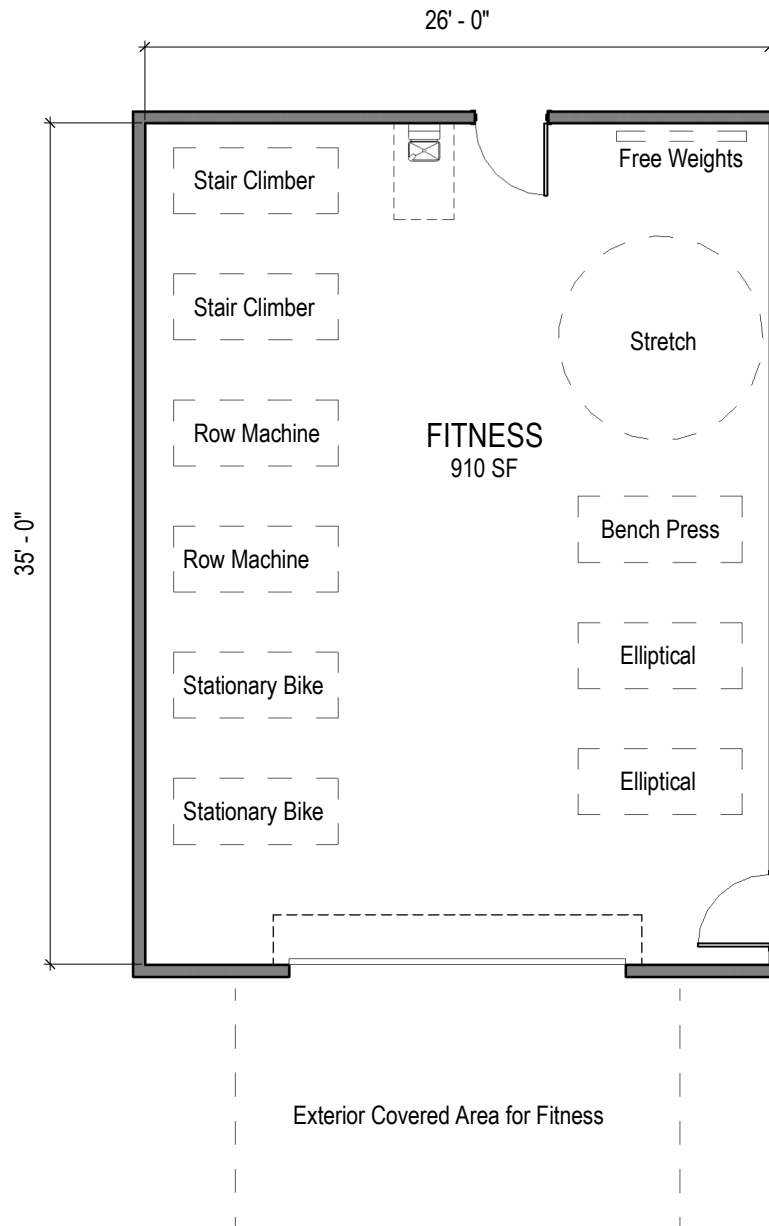
NOTES:

Food locker cabinets to ceiling or soffit.
White board and audio visual connection on one wall adjacent to table.
Sink to be ADA compliant

- 1 TELEVISION
- 2 RECLINER
- 3 STORAGE CABINETS



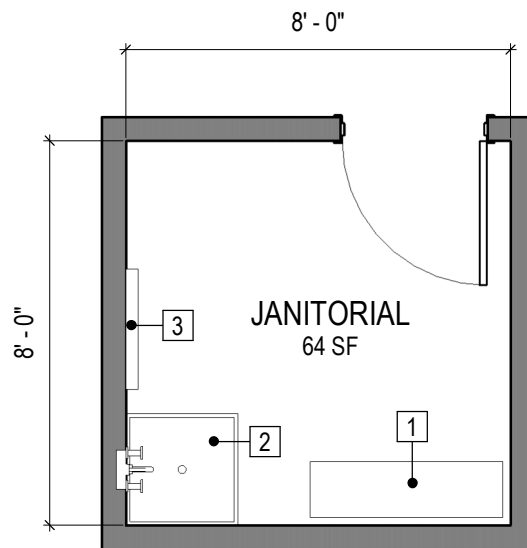
NOTES:



NOTES:

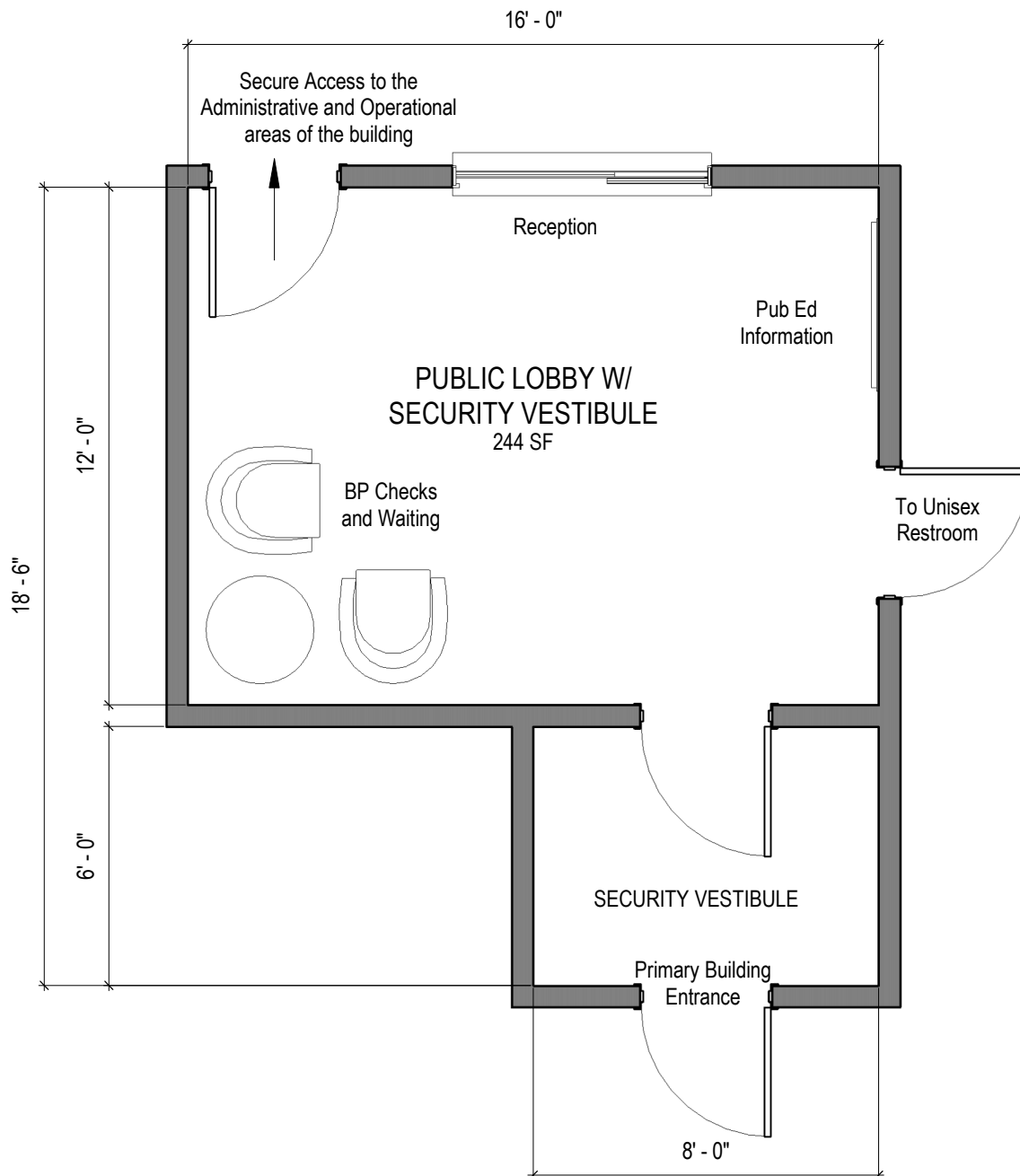
12'-0" minimum ceiling height.
 Adjacent to outside apron.
 Roll-up door.
 Locate away from living quarters.
 Acoustically isolated depending on location
 Desire for large fan above
 Water bottle fill station
 Mirrors on one wall

- 1 SUPPLIES
- 2 MOP SINK
- 3 MOP RACK



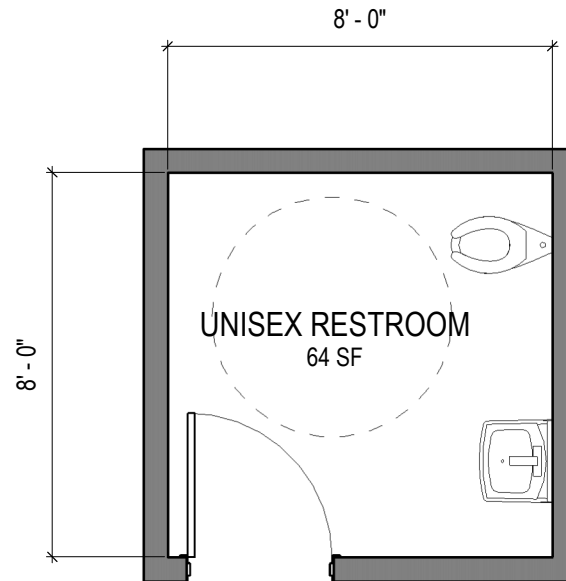
NOTES:

Shared janitorial supplies for administrative areas, living quarters, and training and conference areas.
Steel grate in floor with recessed concrete floor.



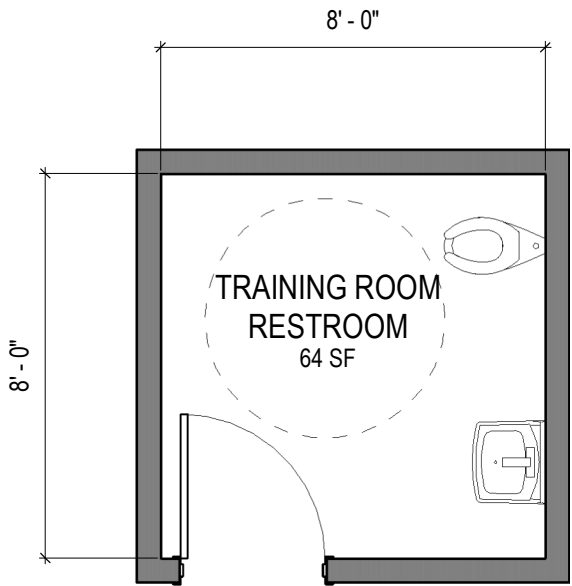
NOTES:

Primary Public Entrance to the facility.



NOTES:

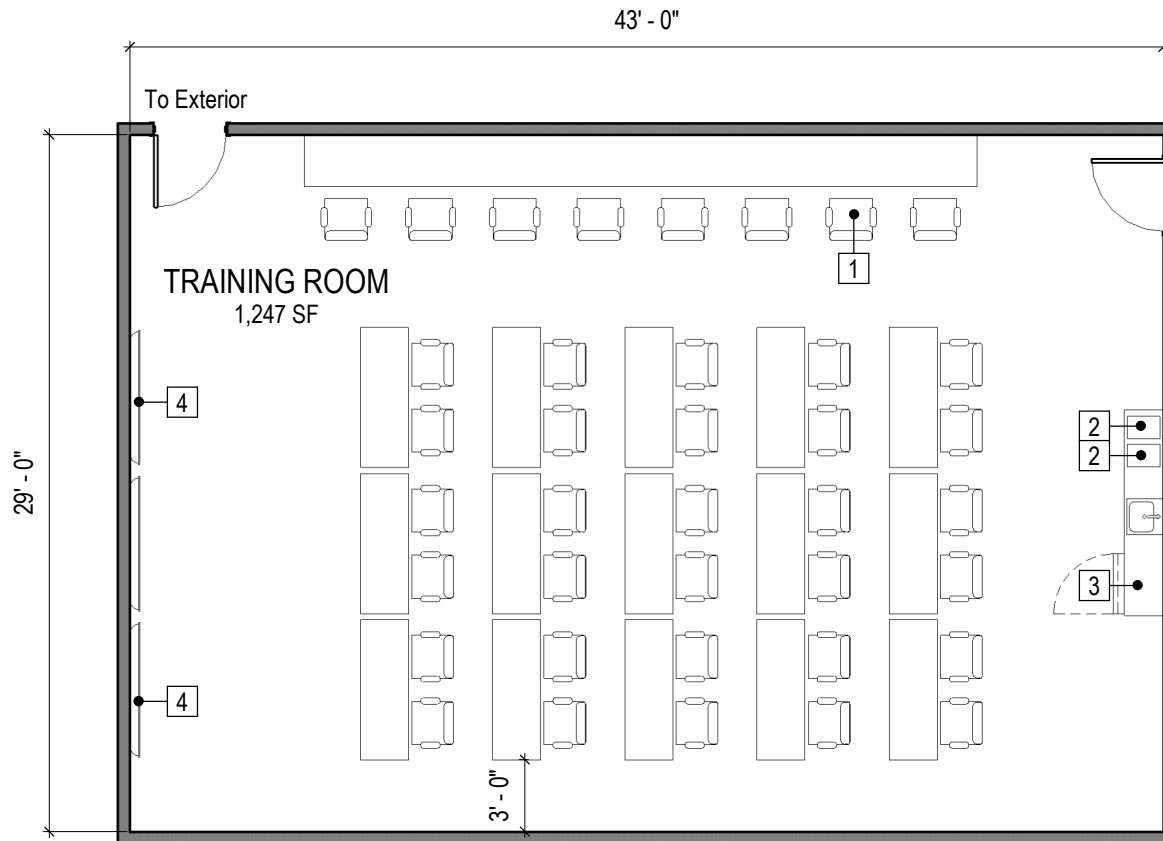
Close proximity to Lobby and Reception.
ADA Compliant



NOTES:

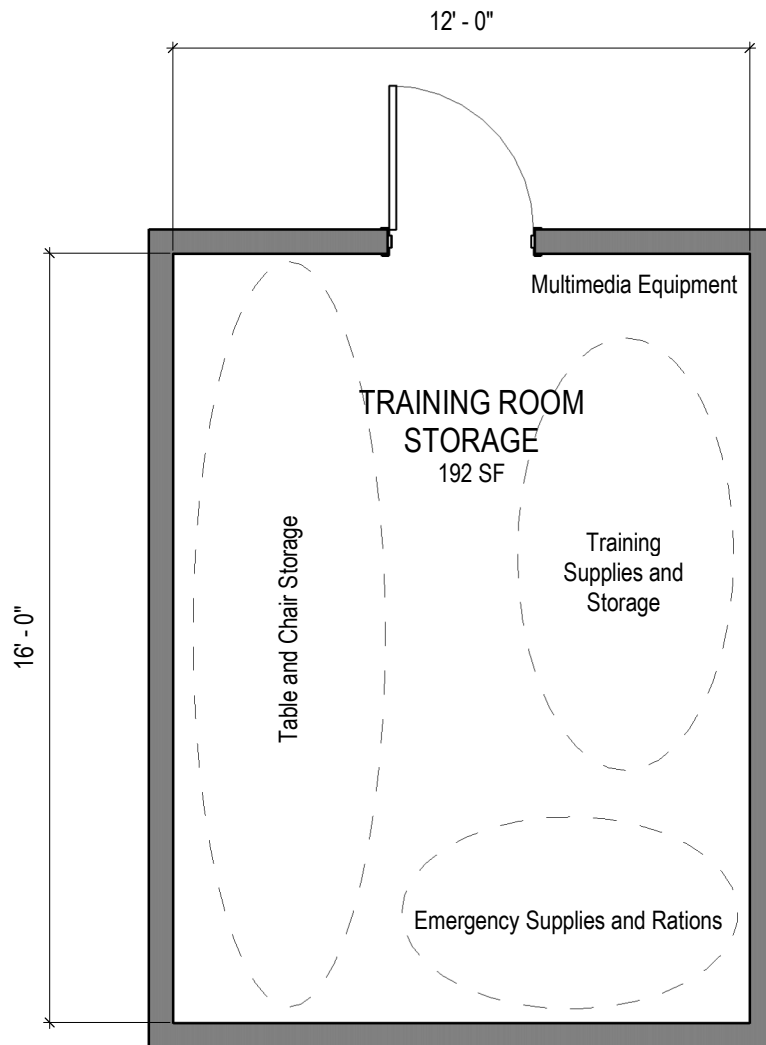
Locate near Training Room

- 1 COMPUTER WORK STATION
- 2 COFFEE MAKER
- 3 REFRIGERATOR, UNDER-COUNTER
- 4 TELEVISION



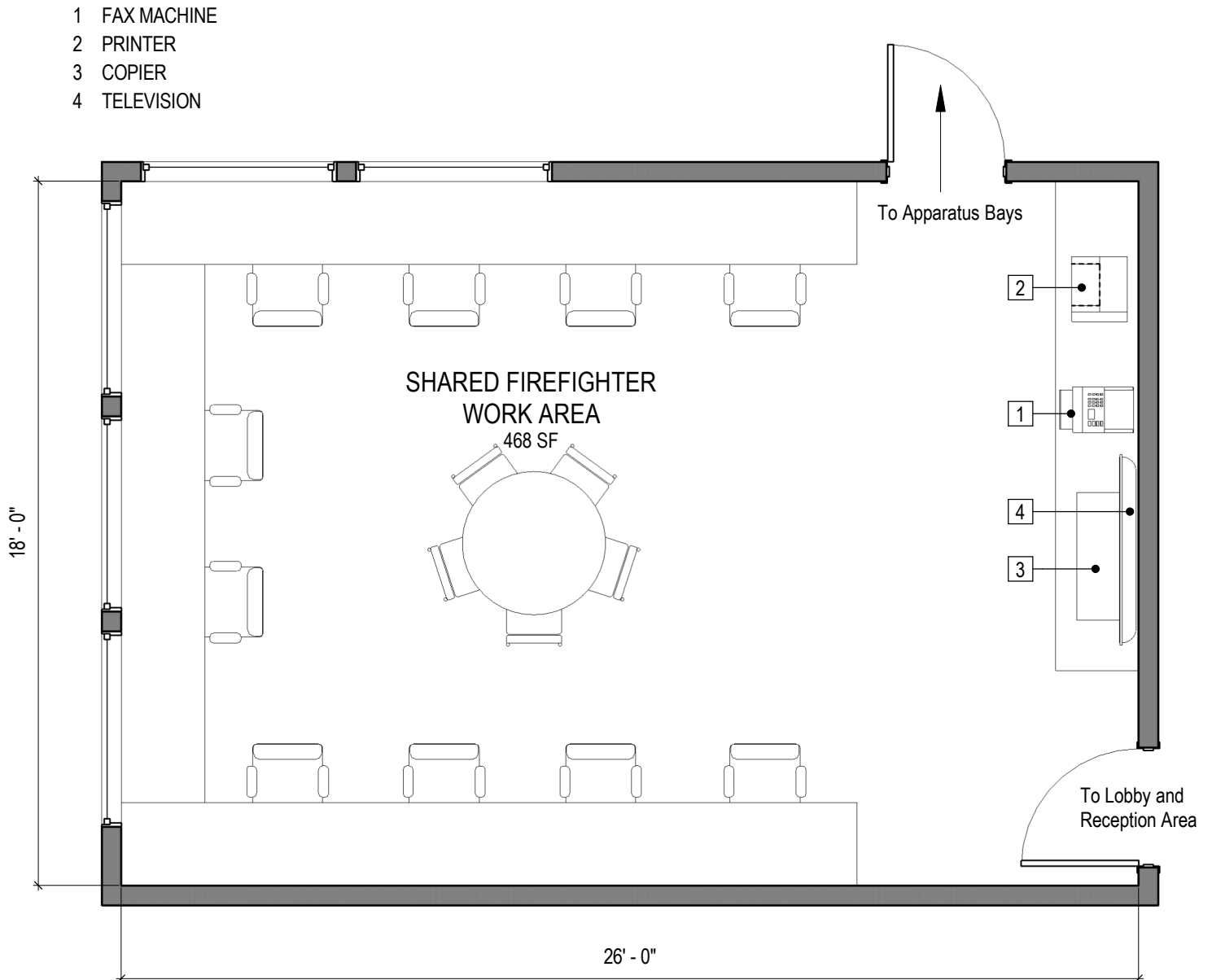
NOTES:

Spaces should have good acoustics and provide opportunities for multiple uses.
Separate from station operations.



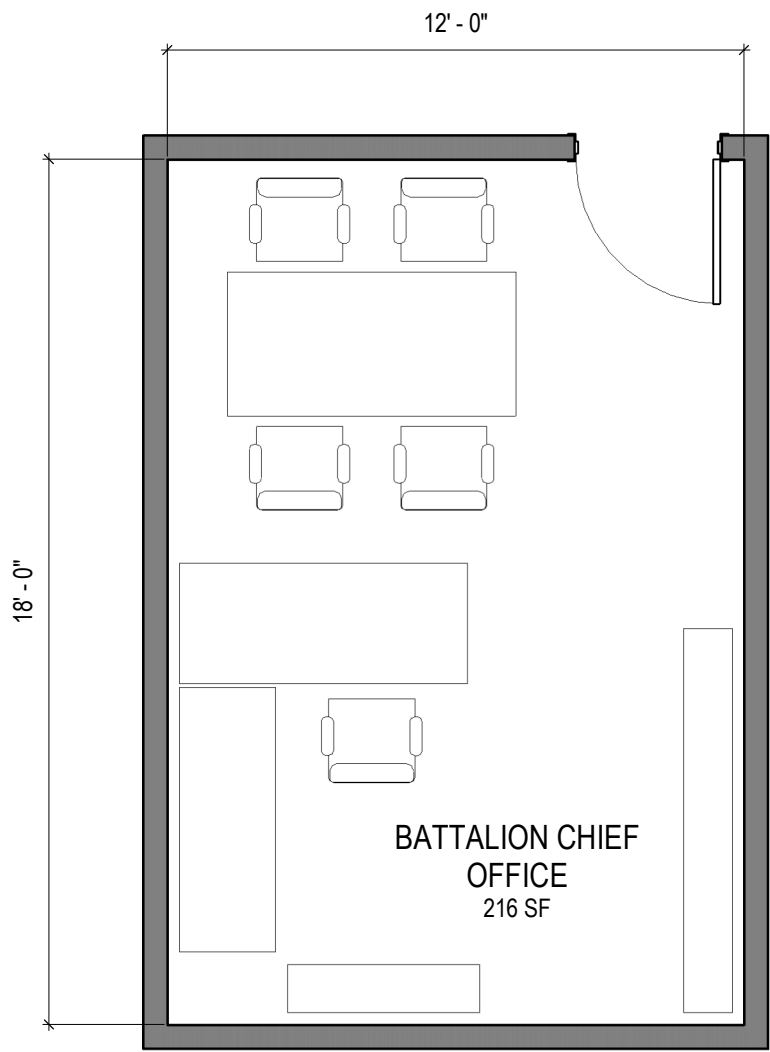
NOTES:

Storage for training equipment and supplies.
Direct access to Training Room

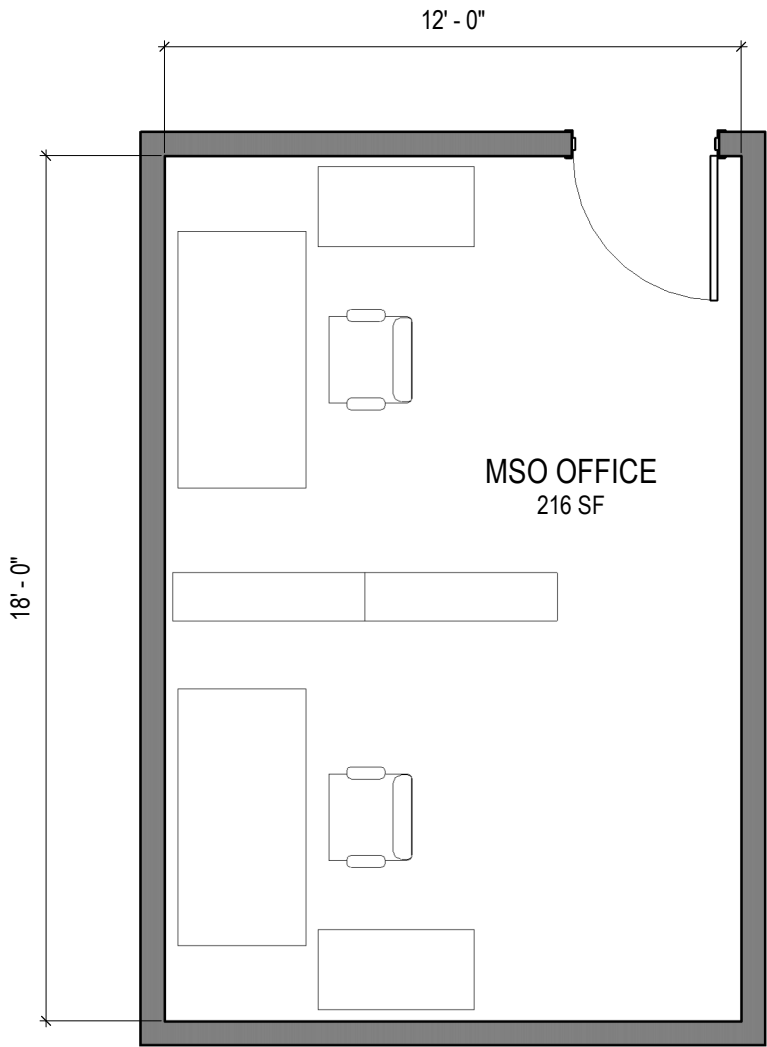


NOTES:

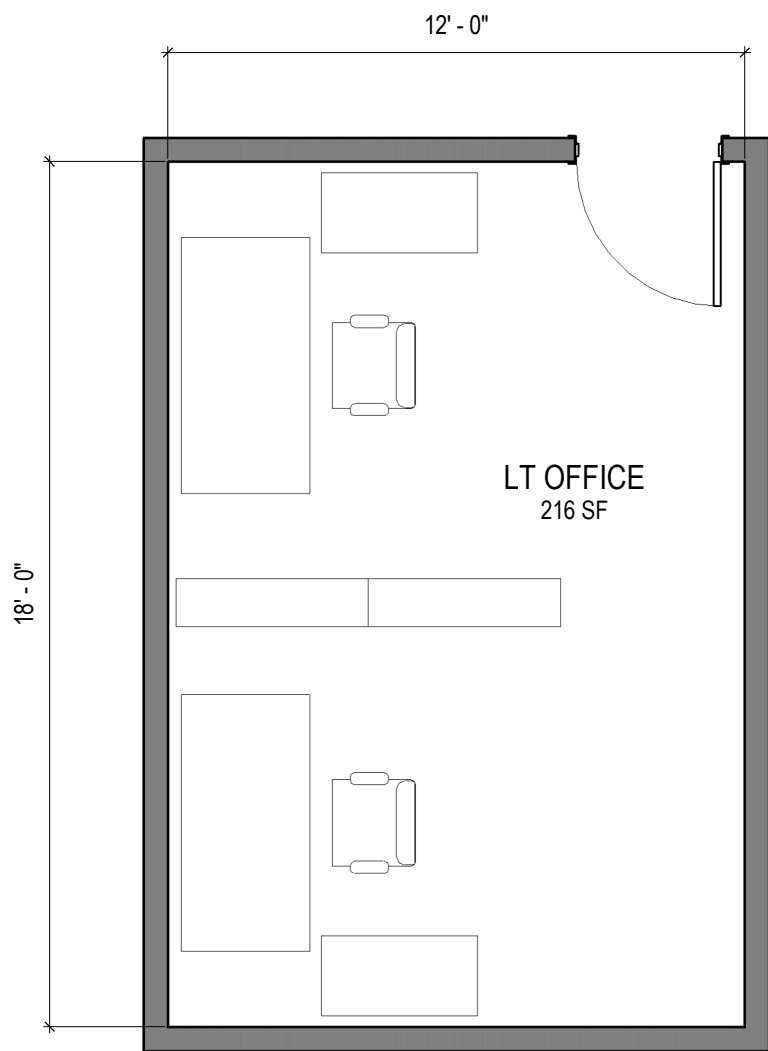
Shared firefighter work area for preparing reports, on-line training, and meetings.
Windows to apparatus bays and to the outside front of the station.
Conference table area is growth space.
Pedestal cabinets underneath workstations



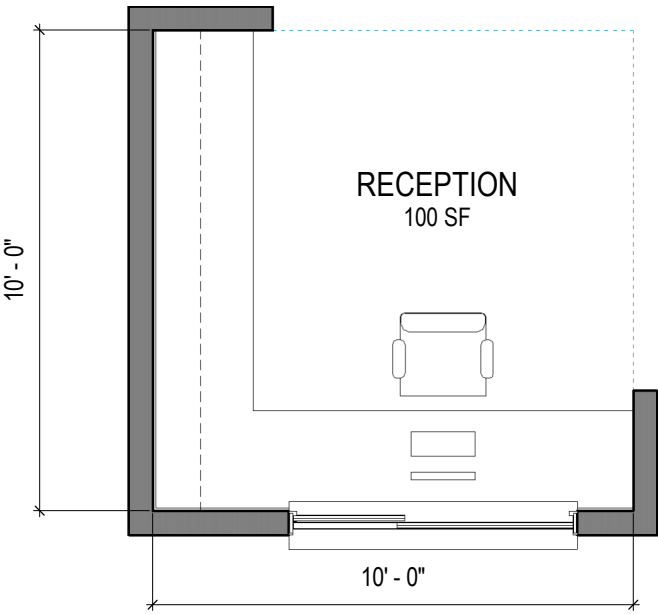
NOTES:



NOTES:

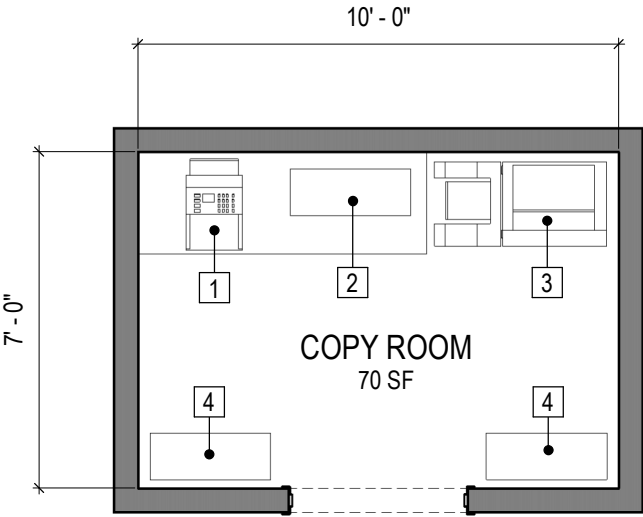


NOTES:



NOTES:

- 1 FAX MACHINE
- 2 SUPPLIES
- 3 COPIER
- 4 SUPPLY CABINETS



NOTES:

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At June 2021

Ref	Location	GFA SF	GFA USD/SF	Total Cost USD
A	New Station 51	23,096	425.53	9,828,103
B	Alternate - Classroom Addition	1,204	352.92	424,910
C	Logistics Building	10,859	375.76	4,080,428
D	Sitework			1,857,896
E	Off-Site Work			49,206
ESTIMATED NET COST		35,159	461.92	16,240,543

MARGINS & ADJUSTMENTS				
GC General Conditions/Requirements (20 months)	7 %			1,136,839
Insurances and Bonds	1.7 %			295,416
GC Overhead and Profit	3 %			530,184
Design contingency	15 %			2,730,448
State Sales Tax				Excl.
Subtotal		35,159	595.39	20,933,430
Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6 %			1,256,006
ESTIMATED TOTAL COST		35,159	631.12	22,189,436

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, various sizes, including earthwork	LF	957.2	60.00	57,432
2	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	957.2	38.00	36,374
3	Cast in place reinforced concrete spread footings, various sizes, including earthwork	EA	29.0	800.00	23,200
4	Foundation dampproofing, bituminous asphalt, including protection board	LF	712.9	14.00	9,981
5	Rigid insulation to foundations, 2" thick	LF	712.9	8.00	5,703
6	Foundation subsoil drain lines, 6", including gravel encasement	LF	752.8	20.00	15,056
Standard Foundations				6.40/SF	147,746
A1030 Slabs on Grade					
7	Cast in place reinforced concrete slab on grade, 4", including slab edge thickenings, base, vapor barrier, under slab insulation	SF	13,153.5	10.00	131,535
8	Cast in place reinforced concrete slab on grade, 8", including slab edge thickenings, base, vapor barrier, under slab insulation	SF	6,745.2	14.50	97,805
9	Premium on concrete slab on grade for smooth troweled finish	SF	7,751.0	1.50	11,626
10	Elevator pit, including waterproofing, protection board, insulation, earthwork	EA	1.0	20,000.00	20,000
Slabs on Grade				11.30/SF	260,966
B1010 Floor Construction					
11	Structural steel/wood columns/posts to floor framing (per floor area)	SF	3,198.0	3.00	9,594
12	Structural steel/wood beams/joists to floor framing (per floor area)	SF	3,198.0	10.00	31,980
13	Steel floor decking, including concrete topping slabs	SF	3,198.0	13.00	41,574
14	Acoustic treatment to floor construction	SF	3,198.0	4.00	12,792
15	Firestopping to floor construction	SF	3,198.0	1.00	3,198
Floor Construction				4.29/SF	99,138
B1020 Roof Construction					
16	Structural steel/wood columns/posts to pitched roof framing	SF	19,898.1	13.00	258,676
17	Structural steel/wood beams/joists/rafters/hold downs/blocking to pitched roof framing	SF	19,898.1	31.00	616,841
18	Wood framing to pitched roof overhangs, 4' wide	SF	3,702.8	18.90	69,990
19	Plywood sheathing to pitched roofs	SF	23,600.9	3.40	80,243
Roof Construction				44.41/SF	1,025,750

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51 (continued)

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
B2010	Exterior Walls				
20	Wood stud wall framing with plywood sheathing, including insulation, sill and top plate connections and anchors (shear and non-shear walls)	SF	15,846.0	22.00	348,612
21	Fiber cement panel and batten siding, including weather barrier, green girt system, rigid insulation 3" thick	SF	6,367.0	42.00	267,414
22	Fiber cement trim, 4" wide	LF	1,037.7	12.00	12,453
23	Brick veneer, including sealer, weather barrier, green girt system, rigid insulation 3" thick	SF	3,112.5	52.00	161,850
24	Phenolic siding, including, weather barrier, green girt system, rigid insulation 3" thick	SF	6,367.0	34.00	216,478
25	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	4,852.3	8.10	39,304
	Exterior Walls			45.29/SF	1,046,111
B2020	Exterior Windows				
26	Aluminum framed windows, 3-lite insulated glazing	SF	1,598.5	150.00	239,775
	Exterior Windows			10.38/SF	239,775
B2030	Exterior Doors				
27	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500
28	Entrance single door, wood framed half glass, 3' x 7', including hardware, finish	EA	3.0	3,700.00	11,100
29	Entrance single door, wood, including narrow view panel, 3' x 7' high, metal frame with top lite, 3' x 3' high, hardware and finish	EA	3.0	4,600.00	13,800
30	Overhead sectional door, anodized aluminum third glazed fixed panels, including frame, hardware, 12' x 12'	EA	1.0	15,000.00	15,000
31	Overhead sectional door, anodized aluminum half glazed fixed panels, including frame, hardware, 14' x 14'	EA	4.0	22,000.00	88,000
32	Motorized insulated sectional glazed fixed panel bi-fold door, 14' x 14'	EA	6.0	40,000.00	240,000
33	Provision for ADA push button door opener	EA	1.0	4,000.00	4,000
	Exterior Doors			16.25/SF	375,400
B3010	Roof Coverings				
34	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-49, blocking, flashing and finish	SF	25,038.4	28.00	701,076
35	Terrace deck waterproofing, including pedestal deck pavers (BBQ deck)	SF	707.0	45.00	31,815
36	Aluminum gutters, enameled, 5" box	LF	784.6	15.00	11,769

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51 (continued)

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
37	Aluminum downspouts, enameled, 4" x 4"	LF	301.0	12.00	3,612
	Roof Coverings			32.40/SF	748,272
B3020	Roof Openings				
38	Skylight, aluminum, including curb	SF	91.0	160.00	14,560
39	Skylight, solar tube, 30" diameter, double glazed acrylic	EA	12.0	2,500.00	30,000
	Roof Openings			1.93/SF	44,560
C1010	Interior Partitions				
40	Partition framing, wood studs, including sill and top plate connections (non-shear walls)	SF	22,699.1	12.00	272,389
41	Partition framing, wood studs, including sill and top plate connections (elevator shaft walls)	SF	863.0	20.00	17,260
42	Premium on partition framing, for shear walls, including plywood sheathing, sill and top plate anchors (shear walls)	SF	9,080.2	5.00	45,401
43	Gypsum board on wood stud framed partitions, including level 5 finish	SF	62,107.1	2.40	149,057
44	Premium on gypsum board on stud framed partitions for additional layer (assumed fire rated walls at sleep rooms, stairwells, corridors and main demising walls)	SF	11,351.3	1.50	17,027
45	Gypsum board elevator shaft liner	SF	863.0	5.00	4,315
47	Interior storefronts, aluminum, fully glazed	SF	75.0	80.00	6,000
	Interior Partitions			22.14/SF	511,449
C1020	Interior Doors				
48	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	12.0	1,600.00	19,200
49	Double door, hollow metal, 6' x 7', including metal frame, hardware, finish	EA	1.0	3,000.00	3,000
50	Single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	25.0	1,900.00	47,500
51	Single door, wood framed half glass, 3' x 7', including hardware, finish	EA	1.0	2,100.00	2,100
52	Rated single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	18.0	3,000.00	54,000
	Interior Doors			5.45/SF	125,800
C1030	Interior Specialties				
54	Specialties, including visual display boards, toilet partitions, corner guards, signage, lockers, mail boxes, toilet and bath accessories (per GFA)	SF	23,096.0	3.50	80,836
55	Plywood wainscot (bay areas)	SF	2,344.5	3.30	7,737
56	Bunker gear metal storage rack, 20" x 21" x 72" high	EA	67.0	500.00	33,500

3-076 of 89

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51 (continued)

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
57	Tech locker, including locker base	EA	15.0	500.00	7,500
58	Tote/disaster storage metal shelving, 24" deep, 3 shelves	LF	34.0	120.00	4,080
59	Decon room metal shelving, 18" deep, 4 shelves	LF	17.0	120.00	2,040
61	Flammable materials locker	EA	1.0	700.00	700
62	Mail boxes	LF	13.0	190.00	2,470
63	Shower doors, sliding, tempered glass, 48" opening	EA	6.0	900.00	5,400
64	Toilet towel dispenser and waste receptacle, 18 gallon capacity	EA	9.0	530.00	4,770
65	Toilet / ADA shower grab bar, 2-wall, 36" x 24"	EA	5.0	170.00	850
66	Bathroom mirrors, unframed, laminated, polished edges, 24" x 36" x 1/4" thick	EA	9.0	180.00	1,620
67	Toilet napkin/tampon dispenser, semi-recessed	EA	4.0	520.00	2,080
68	Toilet soap dispenser, surface mounted, liquid	EA	9.0	120.00	1,080
69	Toilet seat cover dispenser, surface mounted	EA	9.0	87.00	783
70	Toilet tissue dispenser, surface mounted, double roll	EA	9.0	57.00	513
71	Shower seat, wall mounted	EA	1.0	440.00	440
72	Fire pole, 25' long	EA	1.0	3,300.00	3,300
73	Miscellaneous specialties (per GFA)	SF	23,096.0	1.00	23,096
Interior Specialties				7.91/SF	182,795
C2010	Stair Construction				
74	Stairs, wood, prefabricated box type, oak treads, metal pipe rails, 4' wide, 20 risers, two layers gypsum board soffit covering	Flight	2.0	8,000.00	16,000
Stair Construction				0.69/SF	16,000
C2020	Stair Finishes				
75	Rubber tiles on treads, risers and landings of stairs, marbleized colors, including nosing (measured on plan)	SF	430.0	42.00	18,060
Stair Finishes				0.78/SF	18,060
C3010	Interior Wall Finishes				
76	Ceramic tiles on walls, including base	SF	1,834.4	15.00	27,516
77	Fiberglass reinforced panels on walls	SF	2,664.7	9.00	23,982
78	Paint on gypsum board walls	SF	57,608.0	1.80	103,694
Interior Wall Finishes				6.72/SF	155,192
C3020	Interior Floor Finishes				
79	Premium on concrete floors for troweled finish (apparatus bays)	SF	8,086.6	2.00	16,173
81	Polished finish to concrete floors (sealer elsewhere)	SF	13,439.7	8.00	107,517
82	Sealer on concrete floors	SF	21,526.4	1.30	27,985
83	Ceramic tiles on floors (restrooms)	SF	731.1	23.00	16,815

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GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51 (continued)

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
84	Athletic flooring (fitness room)	SF	840.0	12.00	10,080
85	Rubber base, 4"	LF	18,874.3	3.90	73,610
Interior Floor Finishes				10.92/SF	252,180
C3030	Interior Ceiling Finishes				
86	Gypsum board ceilings, including framing, paint	SF	9,602.9	12.00	115,235
87	Acoustical tile ceiling, including suspension system	SF	12,655.7	7.00	88,590
88	Wood ceilings, including suspension system (kitchen)	SF	839.0	40.00	33,560
Interior Ceiling Finishes				10.28/SF	237,385
D1010	Vertical Transportation Systems				
89	Passenger elevator, 2 stops	EA	1.0	110,000.00	110,000
Vertical Transportation Systems				4.76/SF	110,000
D2090	All Plumbing Work				
90	Plumbing (per GFA)	SF	23,096.0	35.00	808,360
All Plumbing Work				35.00/SF	808,360
D3090	All HVAC Work				
91	HVAC (including diesel exhaust fan snorkel system to apparatus bays) (per GFA)	SF	23,096.0	50.00	1,154,800
All HVAC Work				50.00/SF	1,154,800
D4010	Fire Protection Sprinkler Systems				
94	Fire protection (per GFA)	SF	23,096.0	6.00	138,576
Fire Protection Sprinkler Systems				6.00/SF	138,576
D5090	All Electrical Work				
95	Electrical (per GFA)	SF	23,096.0	65.00	1,501,240
All Electrical Work				65.00/SF	1,501,240
E1040	Other Equipment				
96	Washer extractor	EA	1.0	8,000.00	8,000
97	Gear dryer	EA	1.0	9,000.00	9,000
98	Workshop storage units and worktop surfaces (tools and equipment excluded)	LS	1.0	10,000.00	10,000
100	EMS dispenser cabinet	EA	2.0	700.00	1,400
102	Double stack washer and dryer	EA	3.0	2,500.00	7,500
103	Range, including hood	EA	1.0	5,000.00	5,000
104	Microwave oven	EA	2.0	1,000.00	2,000
105	Dishwasher	EA	2.0	3,000.00	6,000
106	Refrigerator	EA	4.0	4,500.00	18,000

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

A New Station 51 (continued)

GFA: 23,096 SF Cost/SF: 425.53
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
107	Freezer	EA	1.0	4,500.00	4,500
109	Ice maker	EA	1.0	2,400.00	2,400
110	Miscellaneous equipment (per GFA)	SF	23,096.0	2.00	46,192
Other Equipment				5.20/SF	119,992
E2010	Fixed Furnishings				
111	Window roller shades, double shade, manual (exterior windows)	SF	1,599.0	30.00	47,970
112	Kitchen base cabinets, including granite countertops	LF	66.9	450.00	30,105
114	Kitchen island countertops, 4' 6" wide, including supporting walls and cabinets	LF	11.0	850.00	9,350
115	Food locker cabinets with locks	LF	30.0	400.00	12,000
117	Dayroom/dining base cabinets, including plastic laminate countertops	LF	19.0	350.00	6,650
118	Vanity base cabinets, including granite countertops	LF	22.0	450.00	9,900
119	Laundry base cabinets, including plastic laminate countertops	LF	58.0	350.00	20,300
120	Laundry wall cabinets	LF	10.0	310.00	3,100
121	Janitor closet wall cabinets	LF	9.0	310.00	2,790
122	Sleep room full height cabinet, 24" x 24"	EA	74.0	450.00	33,300
123	Check-in, check-out cabinets	LF	8.0	620.00	4,960
124	Miscellaneous casework (per GFA)	SF	23,096.0	1.00	23,096
Fixed Furnishings				8.81/SF	203,521
E2020	Movable Furnishings				
125	Walk off mats	SF	125.0	15.00	1,875
Movable Furnishings				0.08/SF	1,875
G1030	Site Demolition and Relocations				
129	Demolish existing fire station 51, including provision for hazardous materials abatement (per building footprint)	SF	15,158.0	20.00	303,160
Site Demolition and Relocations				13.13/SF	303,160
NEW STATION 51				425.53/SF	9,828,103

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

B Alternate - Classroom Addition

GFA: 1,204 SF Cost/SF: 352.92
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
A1010	Standard Foundations				
1	Cast in place reinforced concrete continuous footings, various sizes, including earthwork	LF	99.9	60.00	5,994
2	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	99.9	38.00	3,796
4	Foundation dampproofing, bituminous asphalt, including protection board	LF	100.1	14.00	1,401
5	Rigid insulation to foundations, 2" thick	LF	100.1	8.00	801
6	Foundation subsoil drain lines, 6", including gravel encasement	LF	63.2	20.00	1,264
	Standard Foundations			11.01/SF	13,256
A1030	Slabs on Grade				
7	Cast in place reinforced concrete slab on grade, 4", including slab edge thickenings, base, vapor barrier, under slab insulation	SF	1,204.1	10.00	12,041
	Slabs on Grade			10.00/SF	12,041
B1020	Roof Construction				
16	Structural steel/wood columns/posts to pitched roof framing	SF	1,204.1	13.00	15,653
17	Structural steel/wood beams/joists/rafters/hold downs/blocking to pitched roof framing	SF	1,204.1	31.00	37,327
18	Wood framing to pitched roof overhangs, 4' wide	SF	256.5	18.90	4,855
19	Plywood sheathing to pitched roofs	SF	1,460.5	3.40	4,966
	Roof Construction			52.16/SF	62,801
B2010	Exterior Walls				
20	Wood stud wall framing with plywood sheathing, including insulation, sill and top plate connections and anchors (shear and non-shear walls)	SF	1,080.0	22.00	23,760
21	Fiber cement panel and batten siding, including weather barrier, green girt system, rigid insulation 3" thick	SF	444.8	42.00	18,682
22	Fiber cement trim, 4" wide	LF	63.6	12.00	763
23	Brick veneer, including sealer, weather barrier, green girt system, rigid insulation 3" thick	SF	190.7	52.00	9,916
24	Phenolic siding, including, weather barrier, green girt system, rigid insulation 3" thick	SF	444.8	34.00	15,123
25	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	324.1	8.10	2,625
	Exterior Walls			58.86/SF	70,869
B2030	Exterior Doors				
27	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

B Alternate - Classroom Addition (continued)

GFA: 1,204 SF Cost/SF: 352.92
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
28	Entrance single door, wood framed half glass, 3' x 7', including hardware, finish	EA	1.0	3,700.00	3,700
	Exterior Doors			5.98/SF	7,200
B3010	Roof Coverings				
34	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-49, blocking, flashing and finish	SF	1,588.3	28.00	44,472
	Roof Coverings			36.94/SF	44,472
C1010	Interior Partitions				
40	Partition framing, wood studs, including sill and top plate connections (non-shear walls)	SF	619.0	12.00	7,428
42	Premium on partition framing, for shear walls, including plywood sheathing, sill and top plate anchors (shear walls)	SF	247.7	5.00	1,239
43	Gypsum board on wood stud framed partitions, including level 5 finish	SF	2,318.0	2.40	5,563
44	Premium on gypsum board on stud framed partitions for additional layer (assumed fire rated walls at sleep rooms, stairwells, corridors and main demising walls)	SF	619.1	1.50	929
	Interior Partitions			12.59/SF	15,159
C1030	Interior Specialties				
54	Specialties, including visual display boards, toilet partitions, corner guards, signage, lockers, mail boxes, toilet and bath accessories (per GFA)	SF	1,204.0	3.50	4,214
73	Miscellaneous specialties (per GFA)	SF	1,204.0	1.00	1,204
	Interior Specialties			4.50/SF	5,418
C3010	Interior Wall Finishes				
78	Paint on gypsum board walls	SF	2,318.0	1.80	4,172
	Interior Wall Finishes			3.47/SF	4,172
C3020	Interior Floor Finishes				
81	Polished finish to concrete floors (sealer elsewhere)	SF	1,204.1	8.00	9,633
82	Sealer on concrete floors	SF	1,204.1	1.30	1,565
85	Rubber base, 4"	LF	1,152.9	3.90	4,496
	Interior Floor Finishes			13.03/SF	15,694
C3030	Interior Ceiling Finishes				
87	Acoustical tile ceiling, including suspension system	SF	1,204.1	7.00	8,429
	Interior Ceiling Finishes			7.00/SF	8,429
D2090	All Plumbing Work				
90	Plumbing (per GFA)	SF	1,204.0	35.00	42,140
	All Plumbing Work			35.00/SF	42,140

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GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

B Alternate - Classroom Addition (continued)

GFA: 1,204 SF Cost/SF: 352.92
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
D3090	All HVAC Work				
92	HVAC (per GFA)	SF	1,204.0	25.00	30,100
	All HVAC Work			25.00/SF	30,100
D4010	Fire Protection Sprinkler Systems				
94	Fire protection (per GFA)	SF	1,204.0	6.00	7,224
	Fire Protection Sprinkler Systems			6.00/SF	7,224
D5090	All Electrical Work				
95	Electrical (per GFA)	SF	1,204.0	65.00	78,260
	All Electrical Work			65.00/SF	78,260
E1040	Other Equipment				
108	Under counter refrigerator	EA	1.0	2,000.00	2,000
	Other Equipment			1.66/SF	2,000
E2010	Fixed Furnishings				
112	Kitchen base cabinets, including granite countertops	LF	7.1	450.00	3,195
113	Kitchen wall cabinets	LF	8.0	310.00	2,480
	Fixed Furnishings			4.71/SF	5,675
	ALTERNATE - CLASSROOM ADDITION			352.92/SF	424,910

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

C Logistics Building

GFA: 10,859 SF Cost/SF: 375.76
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, various sizes, including earthwork	LF	520.9	60.00	31,254
2	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	520.9	38.00	19,794
3	Cast in place reinforced concrete spread footings, various sizes, including earthwork	EA	18.0	800.00	14,400
4	Foundation dampproofing, bituminous asphalt, including protection board	LF	461.0	14.00	6,454
5	Rigid insulation to foundations, 2" thick	LF	461.0	8.00	3,688
6	Foundation subsoil drain lines, 6", including gravel encasement	LF	465.0	20.00	9,300
Standard Foundations				7.82/SF	84,890
A1030 Slabs on Grade					
7	Cast in place reinforced concrete slab on grade, 4", including slab edge thickenings, base, vapor barrier, under slab insulation	SF	4,890.4	10.00	48,904
8	Cast in place reinforced concrete slab on grade, 8", including slab edge thickenings, base, vapor barrier, under slab insulation	SF	5,968.8	14.50	86,548
9	Premium on concrete slab on grade for smooth troweled finish	SF	5,667.0	1.50	8,501
Slabs on Grade				13.26/SF	143,953
B1020 Roof Construction					
16	Structural steel/wood columns/posts to pitched roof framing	SF	10,858.8	13.00	141,164
17	Structural steel/wood beams/joists/rafters/hold downs/blocking to pitched roof framing	SF	10,858.8	31.00	336,623
18	Wood framing to pitched roof overhangs, 4' wide	SF	1,859.7	18.90	35,155
19	Plywood sheathing to pitched roofs	SF	12,718.6	3.40	43,243
Roof Construction				51.22/SF	556,185
B2010 Exterior Walls					
20	Wood stud wall framing with plywood sheathing, including insulation, sill and top plate connections and anchors (shear and non-shear walls)	SF	7,838.0	22.00	172,436
21	Fiber cement panel and batten siding, including weather barrier, green girt system, rigid insulation 3" thick	SF	3,228.2	42.00	135,584
22	Fiber cement trim, 4" wide	LF	460.7	12.00	5,528
23	Brick veneer, including sealer, weather barrier, green girt system, rigid insulation 3" thick	SF	1,381.8	52.00	71,854
24	Phenolic siding, including, weather barrier, green girt system, rigid insulation 3" thick	SF	3,228.2	34.00	109,759

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

C Logistics Building (continued)

GFA: 10,859 SF Cost/SF: 375.76
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
25	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	2,351.6	8.10	19,048
	Exterior Walls			47.35/SF	514,209
B2020	Exterior Windows				
26	Aluminum framed windows, 3-lite insulated glazing	SF	672.5	150.00	100,875
	Exterior Windows			9.29/SF	100,875
B2030	Exterior Doors				
27	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500
28	Entrance single door, wood framed half glass, 3' x 7', including hardware, finish	EA	1.0	3,700.00	3,700
29	Entrance single door, wood, including narrow view panel, 3' x 7' high, metal frame with top lite, 3' x 3' high, hardware and finish	EA	5.0	4,600.00	23,000
30	Overhead sectional door, anodized aluminum third glazed fixed panels, including frame, hardware, 12' x 12'	EA	7.0	15,000.00	105,000
33	Provision for ADA push button door opener	EA	1.0	4,000.00	4,000
	Exterior Doors			12.82/SF	139,200
B3010	Roof Coverings				
34	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-49, blocking, flashing and finish	SF	13,753.3	28.00	385,092
36	Aluminum gutters, enameled, 5" box	LF	283.4	15.00	4,251
37	Aluminum downspouts, enameled, 4" x 4"	LF	190.0	12.00	2,280
	Roof Coverings			36.06/SF	391,623
B3020	Roof Openings				
39	Skylight, solar tube, 30" diameter, double glazed acrylic	EA	6.0	2,500.00	15,000
	Roof Openings			1.38/SF	15,000
C1010	Interior Partitions				
40	Partition framing, wood studs, including sill and top plate connections (non-shear walls)	SF	7,504.9	12.00	90,059
42	Premium on partition framing, for shear walls, including plywood sheathing, sill and top plate anchors (shear walls)	SF	3,002.1	5.00	15,010
43	Gypsum board on wood stud framed partitions, including level 5 finish	SF	22,847.9	2.40	54,835
44	Premium on gypsum board on stud framed partitions for additional layer (assumed fire rated walls at sleep rooms, stairwells, corridors and main demising walls)	SF	2,391.6	1.50	3,587
46	Chain link partitions	SF	1,455.0	6.00	8,730
	Interior Partitions			15.86/SF	172,221

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

C Logistics Building (continued)

GFA: 10,859 SF Cost/SF: 375.76
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
C1020	Interior Doors				
48	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	15.0	1,600.00	24,000
49	Double door, hollow metal, 6' x 7', including metal frame, hardware, finish	EA	1.0	3,000.00	3,000
53	Chain link gate, 3' x 7' (per leaf)	EA	6.0	550.00	3,300
	Interior Doors			2.79/SF	30,300
C1030	Interior Specialties				
54	Specialties, including visual display boards, toilet partitions, corner guards, signage, lockers, mail boxes, toilet and bath accessories (per GFA)	SF	10,859.0	3.50	38,007
55	Plywood wainscot (bay areas)	SF	2,280.5	3.30	7,526
60	Fire hose storage racks, 3 shelves	LF	61.0	120.00	7,320
61	Flammable materials locker	EA	1.0	700.00	700
64	Toilet towel dispenser and waste receptacle, 18 gallon capacity	EA	1.0	530.00	530
65	Toilet / ADA shower grab bar, 2-wall, 36" x 24"	EA	1.0	170.00	170
66	Bathroom mirrors, unframed, laminated, polished edges, 24" x 36" x 1/4" thick	EA	1.0	180.00	180
67	Toilet napkin/tampon dispenser, semi-recessed	EA	1.0	520.00	520
68	Toilet soap dispenser, surface mounted, liquid	EA	1.0	120.00	120
69	Toilet seat cover dispenser, surface mounted	EA	1.0	87.00	87
70	Toilet tissue dispenser, surface mounted, double roll	EA	1.0	57.00	57
73	Miscellaneous specialties (per GFA)	SF	10,859.0	1.00	10,859
	Interior Specialties			6.08/SF	66,076
C3010	Interior Wall Finishes				
76	Ceramic tiles on walls, including base	SF	159.6	15.00	2,394
77	Fiberglass reinforced panels on walls	SF	286.3	9.00	2,577
78	Paint on gypsum board walls	SF	22,402.0	1.80	40,324
	Interior Wall Finishes			4.17/SF	45,295
C3020	Interior Floor Finishes				
79	Premium on concrete floors for troweled finish (apparatus bays)	SF	5,667.4	2.00	11,335
81	Polished finish to concrete floors (sealer elsewhere)	SF	5,128.2	8.00	41,026
82	Sealer on concrete floors	SF	10,795.5	1.30	14,034
83	Ceramic tiles on floors (restrooms)	SF	63.9	23.00	1,470
85	Rubber base, 4"	LF	8,806.8	3.90	34,347
	Interior Floor Finishes			9.41/SF	102,212

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

C Logistics Building (continued)

GFA: 10,859 SF Cost/SF: 375.76
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
C3030	Interior Ceiling Finishes				
86	Gypsum board ceilings, including framing, paint	SF	6,078.1	12.00	72,937
87	Acoustical tile ceiling, including suspension system	SF	4,781.2	7.00	33,468
	Interior Ceiling Finishes			9.80/SF	106,405
D2090	All Plumbing Work				
90	Plumbing (per GFA)	SF	10,859.0	35.00	380,065
	All Plumbing Work			35.00/SF	380,065
D3090	All HVAC Work				
93	HVAC (per GFA)	SF	10,859.0	37.00	401,783
	All HVAC Work			37.00/SF	401,783
D4010	Fire Protection Sprinkler Systems				
94	Fire protection (per GFA)	SF	10,859.0	6.00	65,154
	Fire Protection Sprinkler Systems			6.00/SF	65,154
D5090	All Electrical Work				
95	Electrical (per GFA)	SF	10,859.0	65.00	705,835
	All Electrical Work			65.00/SF	705,835
E1040	Other Equipment				
99	SCBA bottle storage	LS	1.0	10,000.00	10,000
101	Radio cabinet with countertop	LF	32.0	450.00	14,400
110	Miscellaneous equipment (per GFA)	SF	10,859.0	2.00	21,718
	Other Equipment			4.25/SF	46,118
E2010	Fixed Furnishings				
116	Medical exam base cabinets, including plastic laminate countertops	LF	7.0	310.00	2,170
124	Miscellaneous casework (per GFA)	SF	10,859.0	1.00	10,859
	Fixed Furnishings			1.20/SF	13,029
	LOGISTICS BUILDING			375.76/SF	4,080,428

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

D Sitework

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
G1020	Site Clearing				
126	Site clearing, vegetation and medium to large tree removal (predominantly to new logistics building part of site)	Acre	3.80	12,000.00	45,600
127	Stripping topsoil and haul off site (predominantly to new logistics building part of site)	CY	3,049.2	20.00	60,984
	Site Clearing				106,584
G1030	Site Demolition and Relocations				
130	Demolish AC pavement	SY	6,894.3	10.00	68,943
131	Demolish miscellaneous structures, site improvements, site utilities	SF	87,428.4	0.50	43,715
	Site Demolition and Relocations				112,658
G1040	Site Earthwork				
132	Mass grading (assume site is relatively balanced with minimal cut to fill and import fill to new logistics building part of site)	CY	6,099.0	20.00	121,980
	Site Earthwork				121,980
G2020	Parking Lots				
133	Asphalt paving, heavy duty, including upgrading base and sub-base courses where existing pavement removed	SY	4,189.8	60.00	251,388
134	Asphalt paving, heavy duty, including base and sub-base courses	SY	3,188.4	120.00	382,608
135	Concrete paving, heavy duty, including upgrading base and sub-base courses where existing pavement removed (bay aprons)	SF	8,404.0	11.00	92,444
136	Concrete paving, heavy duty, including base and sub-base courses (bay aprons)	SF	4,801.0	13.00	62,413
137	Concrete curbs	LF	2,275.8	30.00	68,274
138	Parking stall striping, 4"	LF	822.0	1.00	822
139	ADA parking stall markings and signage	EA	2.0	600.00	1,200
	Parking Lots				859,149
G2030	Pedestrian Paving				
140	Concrete sidewalks	SF	2,793.0	7.00	19,551
	Pedestrian Paving				19,551
G2040	Site Development				
141	Security fencing, chain link	LF	1,122.0	65.00	72,930
142	Security double swing gate	EA	2.0	10,000.00	20,000
	Site Development				92,930
G2050	Landscaping				
143	Planting, including topsoil, irrigation (around buildings and at street fronts)	SF	8,130.8	10.00	81,308

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GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

D Sitework (continued)

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
144	Minimal planting (around parking lots up to property lines)	SY	4,489.0	4.00	17,956
145	Tree, including planting pit and soil	EA	14.0	800.00	11,200
Landscaping					110,464
G3010	Site Water Supply and Distribution Systems				
146	Provision for site water supply and distribution, including connections to existing service	LS	1.0	70,000.00	70,000
Site Water Supply and Distribution Systems					70,000
G3020	Site Sanitary Sewer Systems				
147	Provision for site sanitary sewer system, including connections to existing service	LS	1.0	40,000.00	40,000
Site Sanitary Sewer Systems					40,000
G3030	Site Storm Sewer Systems				
148	Stormwater retention pond, including earthwork, liner, culvert head wall with riprap	SF	6,116.0	5.00	30,580
149	Provision for storm sewer pipelines, structures and appurtenances	LS	1.0	100,000.00	100,000
Site Storm Sewer Systems					130,580
G3040	Site Fuel Distribution Systems				
150	Relocate existing fuel pump and fuel storage tank, including new concrete vehicle apron, canopy over pump and apron, footings, pads, spill containment and bollards	EA	1.0	80,000.00	80,000
Site Fuel Distribution Systems					80,000
G5010	Site Electrical Distribution				
151	Provision for site electrical distribution	LS	1.0	50,000.00	50,000
Site Electrical Distribution					50,000
G5020	Site Lighting Systems				
152	Provision for site lights	EA	8.0	8,000.00	64,000
Site Lighting Systems					64,000
SITWORK					1,857,896

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATION 51



LOCATION UNIFORMAT LEVEL 3 ITEM

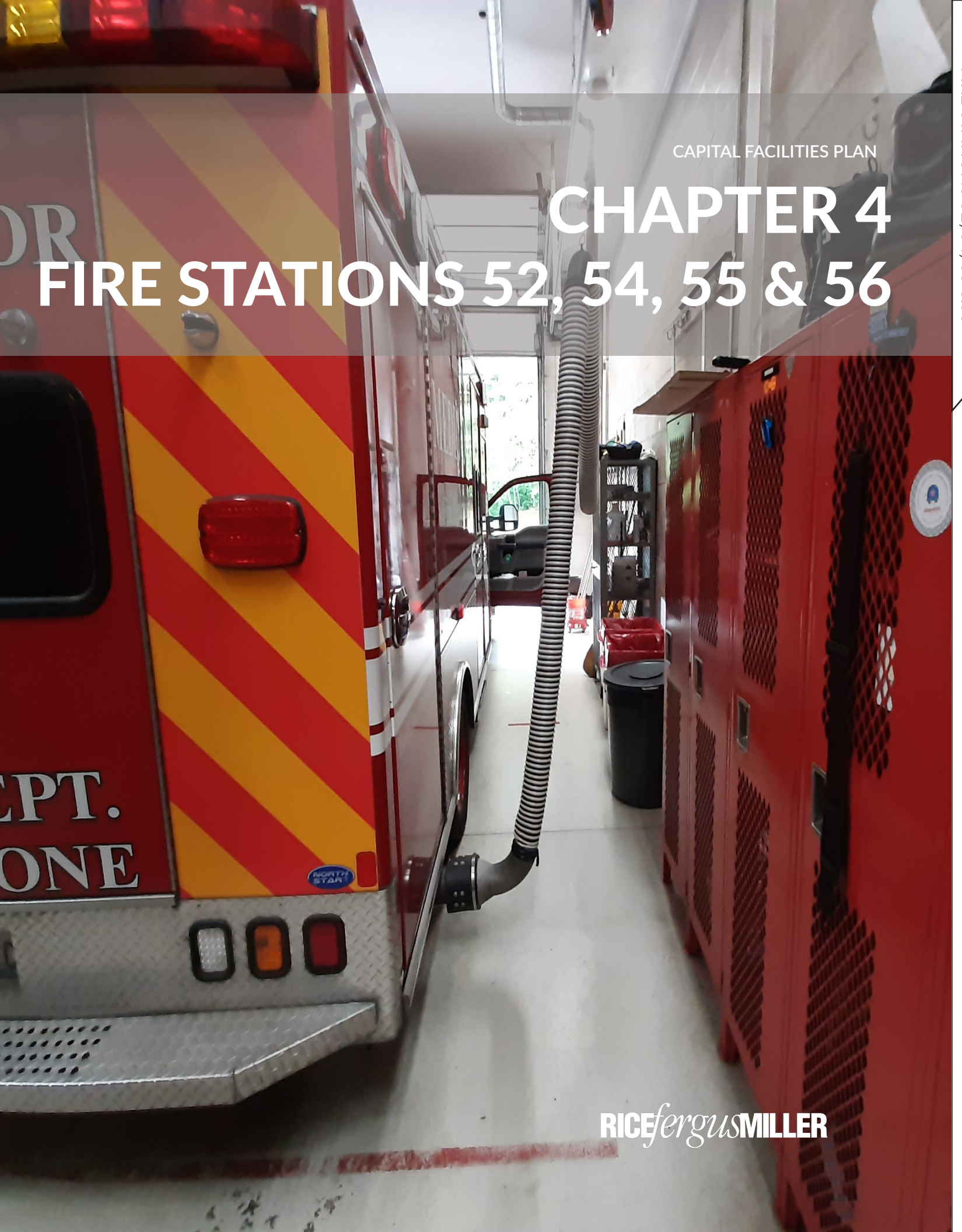
E Off-Site Work

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
G1020	Site Clearing				
127	Stripping topsoil and haul off site (predominantly to new logistics building part of site)	CY	52.8	20.00	1,056
128	Offsite clearing, minimal vegetation removal	Acre	0.10	5,000.00	500
	Site Clearing				1,556
G1030	Site Demolition and Relocations				
130	Demolish AC pavement	SY	152.7	10.00	1,527
131	Demolish miscellaneous structures, site improvements, site utilities	SF	2,862.6	0.50	1,431
	Site Demolition and Relocations				2,958
G2020	Parking Lots				
133	Asphalt paving, heavy duty, including upgrading base and sub-base courses where existing pavement removed	SY	127.2	60.00	7,632
134	Asphalt paving, heavy duty, including base and sub-base courses	SY	134.6	120.00	16,152
137	Concrete curbs	LF	93.2	30.00	2,796
	Parking Lots				26,580
G2050	Landscaping				
143	Planting, including topsoil, irrigation (around buildings and at street fronts)	SF	1,811.2	10.00	18,112
	Landscaping				18,112
	OFF-SITE WORK				49,206

CAPITAL FACILITIES PLAN

CHAPTER 4 FIRE STATIONS 52, 54, 55 & 56



RICEfergusMILLER

Chapter 4: Stations 52, 54, 55, and 56

Architectural Assessment

Scope of Review

Stations 52, 54, 55, and 56 were reviewed by architectural and engineering consultants on August 21, 2020. Please see the included engineering reports for detailed assessment of the facility.

General Station Information

- Age and Improvement History: Originally planned to be volunteer-staffed stations, Stations 56 and 59 were built together as part of a six-station building campaign from 1986-1988. The remaining four stations (52, 54, 55, and 58) were built subsequently in a similar timeframe. All six stations were designed and constructed as prototypes of each other with only minor differences between them.
- Size: Approximately 6,720 sq. ft.
- Station 52: Current and Future Deployment: Staffing is typically 3 firefighters.
- Station 54 Current and Future Deployment: Volunteer staffing.
- Station 55: Current and Future Deployment: Volunteer staffing. Currently, the district's wildlands team is supported at this station.
- Station 56 Current and Future Deployment: Staffing is typically 3 firefighters.

Noted Operational Limitations

- Operational Support and Storage: Minimal storage is provided for firefighting equipment and supplies at the apparatus bays. In addition, the bays are used to accommodate many operational support functions including bunker gear storage, shop space, storage of specialty gear, decontamination, gear washing/drying, equipment storage and vehicle washing supplies. This in turn puts pressure on the apparatus bays and requires use of vehicle space for operational support. Consideration should be given to expanding the station's footprint to create support spaces. This will provide greater flexibility for the bays themselves and

increase safety and clearances around vehicles as gear and equipment is placed in new rooms.

- **Apparatus Bays:** These stations feature two apparatus bays: one drive through and one back-in only. Both bays are about an engine and a half in depth. Bay doors are 12 feet x 12 feet overhead-type. Bay clearances are tight but acceptable around vehicles and exhaust point source capture is provided. The exterior concrete masonry bay walls are not insulated.
- **Bunker Gear Storage:** Gear lockers are currently located in the apparatus bay and are insufficient for the required PPE assigned to each firefighter. Currently all crew receive two sets of bunker gear, 1 set of wildlands gear and additional gear for things such as pandemic PPE. Additional gear racks should be provided to accommodate all gear appropriately and racks should be placed within a separate room to prevent deterioration and contamination from the apparatus bays.
- **Decontamination:** A dedicated decontamination room should be provided in the bay area with room for a bunker gear washer and dryer, a large, scullery-type sink, and a shower area for washing large items. Current decontamination facilities are limited to a tub sink in a restroom adjacent to the apparatus bays. Bunker gear washers or dryers are provided only at Stations 56.
- **Sleep Rooms:** Originally built as open dorm rooms for 3 or 4-person crews, the stations' sleep areas have been subsequently remodeled to provide a total of 4 rooms separated by walls and/or casework. While this configuration provides a degree of privacy, it is recommended for hygiene and code-compliance purposes that rooms be separated with fire-rated walls and doors. Individual heating/cooling is also desirable and should be considered as part of a substantial remodel to the stations.
- **Kitchen/Dining:** Casework is in good condition, though hard surfaces such as tile floors should be considered in lieu of carpet for hygiene purposes. Consider a kitchen remodel to provide better workflow and efficiency as well as ease of access from the dining space to the apparatus bays. Room for additional shift refrigerators and firefighter food lockers is also desirable. Some acoustic issues are noted in the dining and kitchen areas due to the high ceilings. However, the tall space and skylights are generally favored.
- **PT Room:** Currently housed in the former community room, the PT space is of good size. An exterior door is provided for fresh air, though the room lacks windows

otherwise. Station 54's PT room is currently used for storage of PPE/pandemic supplies.

- **Lobby:** A separate lobby for visitors is not provided but should be considered for additional station security.
- **Watch Office:** The current space has desk space for four staff to work and is of reasonable size.
- **Dayroom:** The dayroom currently accommodates 5 people and is an acceptable size.
- **Restrooms:** Crew restrooms are separate from showers and separate Men and Women restrooms are available (except at Station 54 where the women's restroom was never created and is a sleep room in current use). Public restrooms are available at the lobby area.
- **Station Laundry:** A washer and dryer is provided within the station for staff use.
- **Alerting System:** The District is in the process of deploying a US Digital alerting system to all 6 of these stations.

Code and WAC Considerations

- **Accessibility:** The crew kitchen does not meet current accessibility standards. Crew restrooms are generally not ADA accessible to current codes, though most public restrooms have been retrofitted to reasonably meet accessibility standards. Any bathroom remodels will require adherence to current ADA code requirements.
- **Life Safety Systems:** All stations have fire alarm and fire sprinkler systems.
- **Cooking appliances** are connected to an emergency shut-off. That system should be tied into any new alerting system.

Deferred Maintenance Issues

- Routine maintenance has been performed and weatherization issues have been addressed as needed. As with Stations 58 and 59, poor detailing in the original design has contributed to weatherization and siding damage.

Exterior Envelope and Site Issues

- **Exterior:** These stations are in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance and the maintenance issue noted above. The “wing” walls jutting out from the building façade have been problematic over the years due to poor detailing, resulting in weatherization issues and siding deterioration. These should be re-considered and evaluated as part of any remodel and expansion project. Portions of the station area uninsulated and the air barrier at the roof is porous, resulting in relatively poor energy efficiency.
- **Roof:** The existing asphalt composition shingle roofs are in good condition. Some water damage at sleep room ceilings was noted at Station 52. Consider providing fall protection when the roof is scheduled for replacement.
- **Site:** Paving and site appear in good condition and reasonable parking available for visitors.

Engineering Reviews

- **Summary of Structural Issues:** Given the age and construction of the stations, none of these buildings meet an Immediate Occupancy level of seismic resistance. Improvements expected to be performed as part of a major renovation or remodel would include strengthening existing masonry shear walls with new concrete shear walls, adding new wood shear walls, upgrading existing wood shear walls, strengthening the roof diaphragm, and improving roof-to-wall and wall-to-wall connections. New concrete shear walls and piers with footings should be installed throughout the apparatus bay, along with additional foundation improvements.
- **Summary of Mechanical Issues:** While HVAC systems have been well maintained, several units at each station are nearing end of life and none will support individual temperature controls at each sleep room. Existing mechanical components will need to be brought up to current energy code requirements as part of any substantial remodel.
- **Summary of Electrical Issues:** These stations’ electrical system is in good condition though it lacks capacity for additional panels and breakers. The main panel’s antiquated design will not meet current codes and should be replaced and upgraded as part of any remodel. The current fire alarm system does not meet current codes and cannot be expanded for remodeling and would need to be replaced. An emergency diesel generator supports only a portion of each facility.

- Summary of Civil Issues: Engineering review of these four stations was not performed. However, should improvements be kept under 2,000 sf of new or replaced impervious area, no stormwater improvements would likely be required. Should staffing and occupant load increase, septic system design should be reviewed.

Conclusions and Long-Term Viability

- Summary of Architectural and Operational Issues: As with Stations 58 and 59, these facilities do not contain operational support spaces for decontamination, shop, gear storage or operational storage beyond what is available within the apparatus bays. This both limits the efficiency and effectiveness of these routine duties and places a burden on the apparatus bays that prevents them from accommodating additional vehicles when needed. Given that these stations are less intensely used than 58 and 59, it is worth investigating how many of the improvements for 58 and 59 would make sense to invest at the remaining four stations.

GIG HARBOR FIRE STATION #52

Mechanical Systems Report

October 30, 2020

We visited Station #52 on August 21, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single electric water heater with two 12kw heating elements and 120-gallon storage capacity. The water heater is from the late 1980s and has exceeded its expected lifespan.

- b. Piping: Copper piping is used throughout and insulated.
- c. Water closets: China, tank type flush, in good condition. Fixture supplies are in fair/poor condition.
- d. Urinals: China, flush valve, in fair condition.
- e. Lavatories: China, counter mounted with single handle faucets, in good condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, in fair condition. Stainless steel, single bowl laundry sink with single handle faucet in fair condition. Stainless steel, single bowl fitness room sink with single handle faucet, in fair condition. Fiberglass utility sink with double handle sink faucet, in poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in fair/poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in fair condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



- 3. **Natural Gas:** The station does not have a natural gas service.
- 4. **HVAC - Station**
 - a. **Ventilation:** There are two exhaust fans that serve the restrooms. The shower rooms have individual exhaust fans with an integral infrared bulb. Fresh air for the station is brought in by three ducted furnaces.

- b. **Systems:** The station has three ducted split system furnaces with ground mounted condensing units. One system was a full Coleman system (furnace, coil, condensing unit) from the late 1980s. Another system is a Coleman furnace (1980s) with a Trane coil and condensing unit (15 years old, R-22 refrigerant based). The last system is a full Trane system that is 12 years old (R-410A refrigerant based). The full Coleman system has reached its expected lifespan and the Trane systems are nearing their end.
- c. **Zoning:** The station is comprised of three zones each with a programmable thermostat. The first zone includes the dorm and crew area. The kitchen, day room, office and lobby are a separate zone and the last zone serves the fitness room. The large zones for the dorm and kitchen areas do not provide adequate occupant comfort. This system does not allow for individual sleep room controls.
- d. **Refrigerant:** The Trane systems utilize either R-22 or R-410A refrigerant as defined above in the systems section. The Coleman system refrigerant was not identifiable due to fading on the name plate but R-22 refrigerant is likely used.
- e. **Range Hood:** A residential range hood is installed over a residential electric range without any make-up air.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. Currently, no make-up air is provided and CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 3 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.

- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - c. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.

2. **Code Related:**

- a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for existing kitchens.
- b. Kitchen cooking appliances in fire stations are classified by Code as residential which exempts the requirement for a restaurant style Type I grease capture hood. However, since a fire station kitchen typically receives much more use than a normal house, a commercial style kitchen hood with roof mounted exhaust fan is recommended. This provides much better capture of steam and odors. Code does require make-up air be provided based on the volume of air exhausted.
- c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
- d. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.

3. **Maintenance Related:**

- a. Most condensing units use R-22 refrigerant and cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater in-kind due to the age of the unit.

BY: Carlos Herrera, Engineer

GIG HARBOR FIRE STATION #55

Mechanical Systems Report

October 30, 2020

We visited Station #55 on August 21, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single electric water heater with two 4.5kw heating elements and 120-gallon storage capacity. The water heater is around 11 years old and is nearing the expected lifespan.
 - b. Piping: Copper piping is used throughout and mostly insulated.

- c. Water closets: China, tank type flush, in good condition. Fixture supplies are in fair/poor condition.
- d. Urinals: China, flush valve, in fair condition.
- e. Lavatories: China, counter mounted with single handle faucets, in good/fair condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, in fair condition. Stainless steel, single bowl laundry sink with single handle faucet in good condition. Stainless steel, single bowl fitness room sink with single handle faucet, in fair condition. Fiberglass utility sink with double handle service sink faucet, in poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in fair condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



- 3. **Natural Gas:** The station does not have a natural gas service.
- 4. **HVAC - Station**
 - a. **Ventilation:** There are two exhaust fans that serve the restrooms. The shower rooms have individual exhaust fans with an integral infrared bulb. Fresh air for the station is brought in by three ducted furnaces.
 - b. **Systems:** The station has three ducted split system furnaces with ground mounted condensing units. Two of the three systems are full Trane systems (furnace, coil and condensing unit) that are 7 (R-410A refrigerant based) and 14 years old (R-22 refrigerant based). The third system is a Coleman system from the late 1980s. The Coleman system has reached its expected lifespan and the other two systems are nearing their end.

- c. **Zoning:** The station is comprised of three zones each with a programmable thermostat. The first zone includes the dorm and crew area. The kitchen, day room, office and lobby are a separate zone and the last zone serves the fitness room. The large zones for the dorm and kitchen areas do not provide adequate occupant comfort. This system does not allow for individual sleep room controls.
- d. **Refrigerant:** The Trane systems utilize either R-22 or R-410A refrigerant as defined above in the systems section. The Coleman system refrigerant was not identifiable due to fading on the name plate but R-22 refrigerant is likely used.
- e. **Range Hood:** A residential range hood is installed over a residential electric range without any make-up air.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. Currently, no make-up air is provided and CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 3 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.

- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - c. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.
2. **Code Related:**
 - a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for existing kitchens.
 - b. Kitchen cooking appliances in fire stations are classified by Code as residential which exempts the requirement for a restaurant style Type I grease capture hood. However, since a fire station kitchen typically receives much more use than a normal house, a commercial style kitchen hood with roof mounted exhaust fan is recommended. This provides much better capture of steam and odors. Code does require make-up air be provided based on the volume of air exhausted.

- c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
- d. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
- e. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.

3. **Maintenance Related:**

- a. Most split systems use R-22 refrigerant and cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater in-kind within the next 4 years.

BY: Carlos Herrera, Engineer

GIG HARBOR FIRE STATION #56

Mechanical Systems Report

October 30, 2020

We visited Station #56 on August 21, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single electric water heater with two 4.5kw heating elements and 105-gallon storage capacity. The water heater is around 7 years old and appears to be in good condition.

- b. Piping: Copper piping is used throughout and mostly insulated.
- c. Water closets: China, tank type flush, in good condition. Fixture supplies are in fair/poor condition.
- d. Urinals: China, flush valve, in fair condition.
- e. Lavatories: China, counter mounted with single handle faucets, in good/fair condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, in fair condition. Stainless steel, single bowl laundry sink with single handle faucet in good condition. Stainless steel, single bowl fitness room sink with single handle faucet, in fair condition. Fiberglass utility sink with double handle sink faucet, in poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in fair condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



- 3. **Natural Gas:** The station does not have a natural gas service.
- 4. **HVAC - Station**
 - a. **Ventilation:** There are two exhaust fans that serve the restrooms. The shower rooms have individual exhaust fans with an integral infrared bulb. Fresh air for the station is brought in by three ducted furnaces.

- b. **Systems:** The station has three ducted split system furnaces with ground mounted condensing units. Two of the three systems are full Trane systems (furnace, coil and condensing unit) that are 1 (R-410A refrigerant based) and 13 years old (R-22 refrigerant based). The third system is a Coleman system from the late 1980s. The Coleman system has reached its expected lifespan and the other older Trane system is nearing their end.
- c. **Zoning:** The station is comprised of three zones each with a programmable thermostat. The first zone includes the dorm and crew area. The kitchen, day room, office and lobby are a separate zone and the last zone serves the fitness room. The large zones for the dorm and kitchen areas do not provide adequate occupant comfort. This system does not allow for individual sleep room controls.
- d. **Refrigerant:** The Trane systems utilize either R-22 or R-410A refrigerant as defined above in the systems section. The Coleman system refrigerant was not identifiable due to fading on the name plate but R-22 refrigerant is likely used.
- e. **Range Hood:** A residential range hood is installed over a residential electric range without any make-up air.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. Currently, no make-up air is provided and CO or NO₂ gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 3 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.

- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - c. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.
2. **Code Related:**
 - a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for existing kitchens.

- b. Kitchen cooking appliances in fire stations are classified by Code as residential which exempts the requirement for a restaurant style Type I grease capture hood. However, since a fire station kitchen typically receives much more use than a normal house, a commercial style kitchen hood with roof mounted exhaust fan is recommended. This provides much better capture of steam and odors. Code does require make-up air be provided based on the volume of air exhausted.
 - c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
 - d. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.
3. **Maintenance Related:**
- a. Most split systems use R-22 refrigerant and cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.

BY: Carlos Herrera, Engineer



Stations 52

This building was built between 1986 and 1987. This station has 30kW emergency generators to only serve a portion of the station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is GE and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. The rest of the electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 125 amps 120/208-volt, 3 phase, 4 wire fed by a 30kW emergency generator that serves only Panel EA which serves a portion of the facility. The generator is located outdoors and fed by a above ground outdoor diesel fuel tank.

The building is sprinkled and has an analog, zoned fire alarm system that does not currently meet life safety code requirements. There are few visual appliances, pull stations are located at 5'-0" above finished floor and smoke detector spacing exceeds NFPA 13 requirements. There is no AES for transmittal via an antenna system. The fire alarm system will need to be upgraded to meet current code if there are any interior modifications to the facility. The existing system cannot accommodate the code required upgrades and would need to be replaced with an addressable type system.

The range/ovens in the kitchen are connected to an emergency shut-off upon alarm.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and could be used throughout the entire station for each different space with dimming



switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.



Stations 54

This building was built between 1986 and 1987. This station has 30kW emergency generators to only serve a portion of the station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is Square D and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. There were (10) exterior RV plug installed that are currently fed from the main switchboard which exceeds the (6) disconnect rule allowed per the National Electric Code. The rest of the electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 125 amps 120/208-volt, 3 phase, 4 wire fed by a 30kW emergency generator that serves only Panel EA which serves a portion of the facility. The generator is located outdoors and fed by a above ground outdoor diesel fuel tank.

The building is sprinkled and has an analog, zoned fire alarm system that does not currently meet life safety code requirements. There are few visual appliances, pull stations are located at 5'-0" above finished floor and smoke detector spacing exceeds NFPA 13 requirements. There is no AES for transmittal via an antenna system. The fire alarm system will need to be upgraded to meet current code if there are any interior modifications to the facility. The existing system cannot accommodate the code required upgrades and would need to be replaced with an addressable type system.

The range/ovens in the kitchen are connected to an emergency shut-off upon alarm.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and



could be used throughout the entire station for each different space with dimming switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.



Stations 55

This building was built between 1986 and 1987. This station has 30kW emergency generators to only serve a portion of the station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is Square D and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. The rest of the electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 125 amps 120/208-volt, 3 phase, 4 wire fed by a 30kW emergency generator that serves only Panel EA which serves a portion of the facility. The generator is located outdoors and fed by a above ground outdoor diesel fuel tank.

The building is sprinkled and has an analog, zoned fire alarm system that does not currently meet life safety code requirements. There are few visual appliances, pull stations are located at 5'-0" above finished floor and smoke detector spacing exceeds NFPA 13 requirements. There is no AES for transmittal via an antenna system. The fire alarm system will need to be upgraded to meet current code if there are any interior modifications to the facility. The existing system cannot accommodate the code required upgrades and would need to be replaced with an addressable type system.

The range/ovens in the kitchen are connected to an emergency shut-off upon alarm.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and could be used throughout the entire station for each different space with dimming



switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.



Stations 56

This building was built between 1986 and 1987. This station has 30kW emergency generators to only serve a portion of the station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is GE and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. There is currently (7) circuit breakers installed in the main switchboard which exceeds the (6) disconnect rule allowed per the National Electric Code. The rest of the electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 125 amps 120/208-volt, 3 phase, 4 wire fed by a 30kW emergency generator that serves only Panel EA which serves a portion of the facility. The generator is located outdoors and fed by a above ground outdoor diesel fuel tank.

The building is sprinkled and has an analog, zoned fire alarm system that does not currently meet life safety code requirements. There are few visual appliances, pull stations are located at 5'-0" above finished floor and smoke detector spacing exceeds NFPA 13 requirements. There is no AES for transmittal via an antenna system. The fire alarm system will need to be upgraded to meet current code if there are any interior modifications to the facility. The existing system cannot accommodate the code required upgrades and would need to be replaced with an addressable type system.

The range/ovens in the kitchen are connected to an emergency shut-off upon alarm.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and



could be used throughout the entire station for each different space with dimming switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.

GIG HARBOR FIRE AND MEDIC ONE SEISMIC EVALUATIONS

ASCE 41-17 Tier 1 Seismic Evaluations for Fire Station 51, 52, 54, 55, 56, 58, 59

November 2020

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1.0 Executive Summary

Seismic screenings and structural evaluations were performed for seven Gig Harbor Fire and Medic One facility buildings to investigate seismic deficiencies. All buildings evaluated in this study are low-rise structures. Each building is considered critical to Gig Harbor Fire and Medic One's ability to provide post-earthquake emergency services.

The evaluations determined each building's expected structural performance for an Immediate Occupancy (IO) performance objective. After a seismic event, buildings that meet an IO performance objective are expected to be structurally functional but may experience some damage to architectural finishes, mechanical systems, electrical systems, and other nonstructural items. This report includes a description of each building, the identified seismic deficiencies, seismic upgrade concept designs, and recommendations for upgrades. All buildings were found to have seismic deficiencies, and none of the buildings meets the IO performance objective.

Concept-level seismic upgrade designs were completed for the facilities, and concept plans are provided describing options for mitigation of seismic deficiencies. Recommendations consist of strengthening and supplementing the existing lateral systems, improving lateral load paths, and improving connections. Additional factors such as operational use, functionality, and response times should also be considered in the decision-making process for these buildings.

2.0 Introduction and Seismic Evaluation Criteria

The seismic evaluations for the Gig Harbor Fire and Medic One fire station buildings are based on the performance-based earthquake engineering (PBEE) guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings* (American Society of Civil Engineers, 2017). This section provides a general background of PBEE and an overview of seismic retrofit objectives, seismic hazard levels, seismic performance levels, and seismic evaluation and retrofit procedures.

The seismic evaluations do not consider compliance with the seismic requirements of the current building code for new construction. Buildings designed prior to the current building code often include structural configurations and connections detailing that have historically contributed to poor seismic performance in structures, based on post-earthquake evaluations of damaged buildings. Additionally, recent research and studies of regional seismicity have shown that the expected seismic ground motions are higher than was expected in the past. Higher ground motions, structural configurations, and poor connection detailing may result in seismic evaluation deficiencies among buildings constructed to previous building code requirements. Buildings designed to older building code standards are evaluated using evaluation and design guidelines specifically developed for existing structures by the Federal Emergency Management Agency (FEMA) and the American Society of Civil Engineers (ASCE).

The structural findings and recommendations presented in this report are based on visual observations of the buildings and a review of the record drawings. The available record documents do not contain all of the information necessary to confirm the structural configuration of some portions of the buildings, which is typical for older structures.

Reid Middleton participated in a walk-through of multiple stations on August 21, 2020. Visual observations of existing conditions were performed, which did not include destructive or nondestructive testing to confirm or supplement information shown in the record drawings.

The seismic evaluation of the buildings is based on the PBEE guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*. The ASCE 41 Tier 1 evaluations of the stations were completed using the IO performance objective. Buildings that meet the IO performance objective will have similar seismic performance to new buildings that are designed as essential facilities. This section includes a general background of PBEE and an overview of seismic rehabilitation objectives, building performance levels, and seismic evaluation and rehabilitation procedures.

2.1 Background

ASCE 41-17 employs a Performance-Based Design methodology that allows building owners, design professionals, and the local building authorities to establish seismic hazard levels and performance goals for individual buildings. PBEE can be defined as the engineering of a structure to resist earthquake demands while also meeting the needs and objectives of building owners and other stakeholders. PBEE allows for the design and analysis of structures for

different levels of seismic performance and allows the levels of seismic performance to be related to the relative seismic hazard.

Seismic analysis and design of structures traditionally focused on one performance level – reducing the risk for loss of life in a design earthquake. The concept of designing essential facilities, which are needed immediately after an earthquake, to a higher performance standard evolved after hospitals and other critical facilities were damaged in the 1971 San Fernando, California, earthquake. That concept is balanced by the recognition that the cost of retrofitting existing buildings to higher levels of seismic performance may be onerous to both stakeholders and policy makers.

A comprehensive program was started in 1991, in cooperation with FEMA, to develop guidelines tailored to address this variation of performance levels. The first formal applications of performance-based evaluation and design guidelines were the FEMA 310 *Handbook for the Seismic Evaluation of Buildings – A Prestandard* (1998) and FEMA 273 *NEHRP Guidelines for the Seismic Rehabilitation of Buildings* (1997). Following the release of these documents in the 1990s, three additional documents were released in the following years. Another prestandard document, FEMA 356 *Prestandard and Commentary for the Seismic Rehabilitation of Buildings*, was released in the year 2000. Then, the first national standard seismic evaluation document, ASCE 31-03 *Seismic Evaluation of Existing Buildings*, was released in the year 2003. Following the release of ASCE 31-03, the first national standard seismic rehabilitation document, ASCE 41-06 *Seismic Rehabilitation of Existing Buildings*, was released in the year 2007. ASCE 31-03 and ASCE 41-06 superseded the PBEE documents produced in the previous decade. ASCE 31-03 and ASCE 41-06 used the general framework outlined by previous documents but were updated to incorporate the latest standard of PBEE for the time.

ASCE 31-03 and ASCE 41-06 still had flaws; shortly after the release of ASCE 41-06, an effort was undertaken to combine ASCE 31-03 and ASCE 41-06 into a single national standard document, aiming to streamline the documents and eliminate discrepancies. A new PBEE document, ASCE 41-13 *Seismic Evaluation and Retrofit of Existing Buildings*, combined information from all of the previous documents, reflecting advancements in technology and analysis techniques and incorporating case studies and lessons learned from recent earthquakes. The newest PBEE document, ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*, offers more information and instruction on the seismic evaluation process. Significant revisions from the previous edition include nonlinear analysis provisions, nonstructural performance levels, modeling parameters, and more.

ASCE 41-17 provides criteria by which existing structures can be seismically evaluated and retrofit to attain a wide range of performance levels when subjected to earthquakes of varying severity.

2.2 Seismic Hazard Levels

Earthquake ground motions are variable and complicated, and every earthquake is different. An earthquake's intensity and energy magnitude depend on fault type, fault movement, depth to epicenter, and soil strata. In earthquake-prone areas, very small and frequent earthquakes occur every few days or weeks without being noticed by humans, but large earthquakes that occur

much less frequently can have a devastating effect on infrastructure and can result in the temporary displacement of large numbers of people. The precise location, intensity, and start time of an earthquake cannot be predicted. However, earthquake hazards for certain geographic areas are well understood based on historical patterns of earthquakes from the geologic record, measured earthquake ground motions, an understanding of plate tectonics, and seismological studies.

Geologists, seismologists, and geotechnical engineers have categorized the seismic hazard for particular locations using probabilistic seismic hazard levels. Each seismic hazard level describes a different probabilistic earthquake magnitude based on the probability of a certain magnitude earthquake occurring in a given time period. Table 2-1 displays commonly used seismic hazard levels, their corresponding probabilities of exceedance, and mean return periods.

Table 2-1. Probabilistic Seismic Hazard Levels and Mean Return Period.

Seismic Hazard Level	Probability of Exceedance in 50 Years	Mean Return Period (Years)
50%/50-year	50%	72
20%/50-year (BSE-1E)	20%	225
10%/50-year	10%	475
5%/50-year (BSE-2E)	5%	975
2%/50-year (BSE-2N)	2%	2,475

Seismic events with longer mean return periods and smaller probabilities of exceedance are associated with stronger seismic motions, larger ground accelerations, and more potential to damage facilities. Consequently, structures designed or retrofit to a seismic hazard level with a longer return period will generally experience better performance in an earthquake than a structure designed or retrofit to a lower seismic hazard level.

ASCE 41-17 codifies four different Seismic Hazard Levels at which to evaluate or retrofit structures. For voluntary seismic evaluations and voluntary seismic upgrades, the owner of a structure and the structural engineer can decide the Seismic Hazard Level at which it is appropriate to evaluate or retrofit a structure. The codified Seismic Hazard Levels are grouped into two categories: two Seismic Hazard Levels (BSE-1E and BSE-2E) associated with the Basic Performance Objectives for Existing Buildings (BPOE) and two Seismic Hazard Levels (BSE-1N and BSE-2N) associated with the Basic Performance Objectives Equivalent to New Building Standards (BPON).

The ASCE 41-17 defined Seismic Hazard Levels are shown in Table 2-1, along with their respective probabilities of exceedance in 50 years and mean return period; however, the BSE-1N Seismic Hazard Level is not shown in Table 2-1 because ASCE 41-17 defines BSE-1N as being two-thirds of the BSE-2N. The BSE-1N Seismic Hazard Level cannot be directly related to a probability of exceedance or mean return period. Historically (and in previous standards), the BSE-1N Seismic Hazard Level was taken as the 10%/50-year earthquake.

Historically, existing buildings have been seismically evaluated and retrofitted to a lower Seismic Hazard Level than would be typical in new building design. This approach has been historically justified for three primary reasons:

1. It ensures recently constructed structures are not immediately rendered seismically deficient due to minor building code changes.
2. Existing buildings often have a shorter remaining life than a new building would; therefore, lower structural resiliency is tempered by a decreased probability of a major seismic event.
3. Often the burdensome cost of retrofitting historic structures to a “new building equivalence” performance level is disproportionate to the incremental benefit.

2.3 Building Performance Levels and Seismic Retrofit Objectives

A target building performance level must be selected for the design or retrofit of a structure. The target performance levels are discrete damage states selected from among the infinite spectrum of possible damage states that a building could experience during an earthquake. The terminology used for target building performance levels is intended to represent goals for design but not necessarily predict building performance during an earthquake.

Since actual ground motions during an earthquake are seldom comparable to those used for design, the target building performance level may only determine relative performance during most events but not predict the actual level of damage following an event. Even given a ground motion similar to that used in design, variations from stated performance objectives should be expected. Variations in actual performance could be associated with differences in the level of workmanship, variations in actual material strengths, deterioration of materials, unknown geometry and sizes of existing members, differences in assumed and actual live loads in the building at the time of the earthquake, influence of nonstructural components, and variations in response of soils beneath the building.

ASCE 41-17 describes performance levels for structural components and nonstructural components of a structure. The ASCE 41-17 identified Structural Performance Levels can be seen in Table 2-2, and the ASCE 41-17 identified Nonstructural Performance Levels can be seen in Table 2-3. Nonstructural evaluations were not completed as part of the scope of this project.

Table 2-2. Identified Structural Performance Levels.

Performance Level Abbreviation	Performance Level Name
S-1	Immediate Occupancy
S-2	Damage Control
S-3	Life Safety
S-4	Limited Safety
S-5	Collapse Prevention
S-6	Structural Performance Not Considered

Table 2-3. Identified Nonstructural Performance Levels.

Performance Level Abbreviation	Performance Level Name
N-A	Operational
N-B	Position Retention
N-C	Life Safety
N-D	Nonstructural Performance Not Considered

Individual Structural Performance Levels and Nonstructural Performance Levels can be aggregated to form a combined Building Performance Level. Structural performance during an earthquake is related to the amount of lateral deformation or drift of the structure and the capacity or ability of the structure to deform. Any Structural Performance Level can be combined with any Nonstructural Performance Level, although it is not recommended to combine high levels of structural performance with low levels of nonstructural performance and vice versa.

Theoretically, there are 23 different Building Performance Levels that are combinations of different Structural and Nonstructural Performance Levels. However, ASCE 41-17 recommends that only 15 Building Performance Levels be used in practice due to their recommendation of avoiding mismatching high and low levels of nonstructural and structural performance. ASCE 41-17 defines four specific common Building Performance Levels, as shown in Table 2-4. A visual representation of these common Building Performance Levels plotted against lateral deformation can be seen in Figure 2-1.

Table 2-4. Specific Common Building Performance Levels.

Performance Level Abbreviation	Performance Level Name	Structural & Nonstructural Performance Level Combination
1-A	Operational	S-1 & N-A
1-B	Immediate Occupancy	S-1 & N-B
3-C	Life Safety	S-3 & N-C
5-D	Collapse Prevention	S-5 & N-D

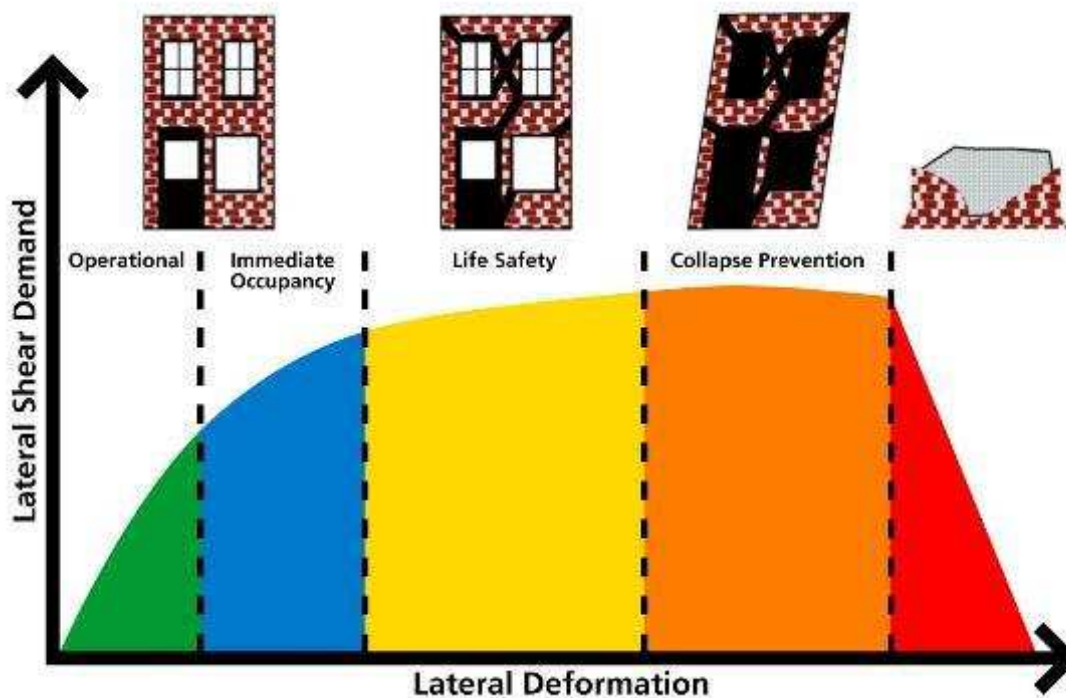


Figure 2-1. Building Performance Levels.

A decision must be made for each structure as to the acceptable behavior for different levels of seismic hazard, balanced with the construction cost of retrofitting a structure to obtain that behavior. ASCE 41-17 defines “baseline” basic performance objectives for structures based on their defined Risk Category. The Risk Category is the same as defined in the International Building Code (IBC) and ASCE 7. For example, for a Risk Category II structure retrofitted to the BPON standards, the structure would need to be retrofitted for the 3-B Building Performance Level at the BSE-1N Seismic Hazard Level and the 5-D Building Performance Level at the BSE-2N (2%/50-year) Seismic Hazard Level. ASCE 41-17 allows for higher (enhanced) or lower (limited) objectives to be selected based on the essential nature of the facility, the expected remaining life of the building, and the associated cost and feasibility. For example, it may not be economically feasible to retrofit historic structures to the BPON standards, and ASCE 41 allows for selection of a limited objective for such situations.

Table 2-5 summarizes the approximate levels of structural and nonstructural damage that may be expected at the damage states that define the structural performance levels.

Table 2-5. Approximate Expected Damage for Different Building Performance Levels¹.

	Building Performance Levels			
	Collapse Prevention	Life Safety	Immediate Occupancy	Operational
Overall Damage	Severe	Moderate	Light	Very Light
Permanent Drift	Large. 1% to 5%.	Some. 0.3% to 1%.	Negligible.	Same as Immediate Occupancy.
Remaining Strength and Stiffness After Earthquake	Little. Gravity system (columns and walls) functions, but building is near collapse.	Some. Gravity system functions, but building may be beyond economical repair.	Significant strength remaining. Minor cracking of structural elements.	Same as Immediate Occupancy.
Examples of Damage to Reinforced Masonry Buildings	Extensive cracking and crushing. Damage around openings at corners. Some fallen units. Transient drift to cause extensive nonstructural damage. Extensive permanent drift.	Major cracking distributed throughout wall. Some isolated crushing. Transient drift to cause nonstructural damage. Noticeable permanent drift.	Minor cracking. No out-of-plane offsets. Transient drift that causes minor or no nonstructural damage. Negligible permanent drift.	Same as Immediate Occupancy.
Examples of Damage to Steel Framing	Extensive yielding and buckling of steel bracing members. Significant connection failures.	Many braces and beams yield or buckle but do not fail totally. Moderate amount of connection failures.	Minor deformation of steel members, no connection failures.	Same as Immediate Occupancy.
Other General Description	Structure likely not repairable and not safe for reoccupancy due to potential collapse in aftershock.	Repair may be possible, but may not be economically feasible. Repairs may be required prior to reoccupancy.	Minor repairs may be required, but building is safe to occupy.	Same as Immediate Occupancy.
Nonstructural Components	Extensive damage. Some exits blocked. Infills and unbraced parapets failed or at incipient failure.	Falling hazards mitigated, but many architectural, mechanical, and electrical systems are damaged.	Minor cracking of facades, partitions, and ceilings. Equipment and contents are generally secure, but may not operate due to lack of utilities.	Negligible damage. All systems important to normal operation are functional. Power and other utilities are available, possibly from standby sources.
Comparison with New Building Design	Significantly more damage and greater risk.	Somewhat more damage and slightly higher risk.	Much less damage and lower risk.	Much less damage and lower risk.

¹ Adapted from American Society of Civil Engineers, "Prestandard and Commentary for the Seismic Rehabilitation of Buildings," FEMA-356, Federal Emergency Management Agency, Washington, D.C., November 2000.

2.4 Performance, Safety, Reliability, and Construction Cost

The seismic performance, safety, and reliability of a facility must be weighed against the relative importance and construction costs associated with a facility. It is impractical for the average building to be seismically designed or retrofit to experience no damage following a major earthquake; however, steps can be taken to mitigate seismic hazards for new and existing structures.

Some facilities have more community importance or pose special risks to a community following an earthquake (for example, hospitals, fire stations, or facilities housing highly toxic substances). It is reasonable that important facilities be designed or retrofit to a higher performance standard than the average structure. The relative importance of a facility must be weighed against the relative construction costs associated with facility construction. There are two types of construction costs associated with seismic hazards: the cost of initial construction or seismic retrofit construction and the cost to repair or replace a facility following an earthquake. The better a structure performs during an earthquake, the faster the structure can be returned to service and the lower the repair costs will be following the earthquake. Expected building damage states during a seismic event can be directly linked to:

- Repair/Replacement Costs – Cost of restoring the facility to pre-earthquake condition.
- Public Safety – Number of critical injuries and casualties to building occupants.
- Downtime – Length of time taken to make repairs to return a structure to service.

Figure 2-2 displays a graphic showing estimated performance-related consequences compared with different increasing post-earthquake structural damage states (which correspond to the design Structural Performance Levels for a given seismic hazard).

Figure 2-3 presents the schematic relationship between different retrofit building performance objectives and probable retrofit program cost.

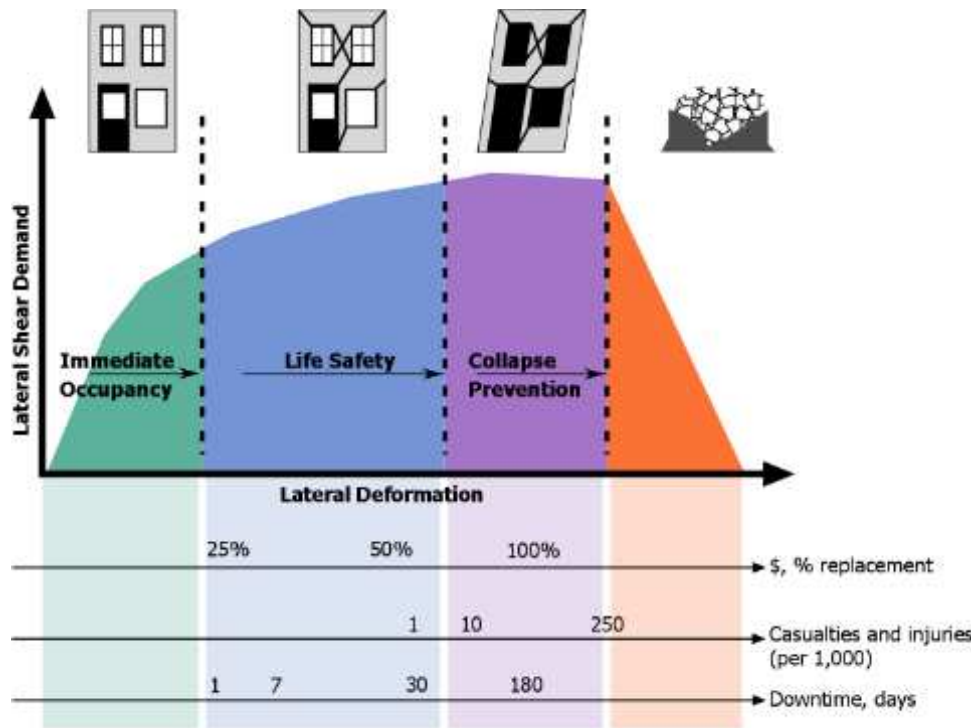


Figure 2-2. Estimated Performance-Related Consequences at Different Structural Performance Levels².

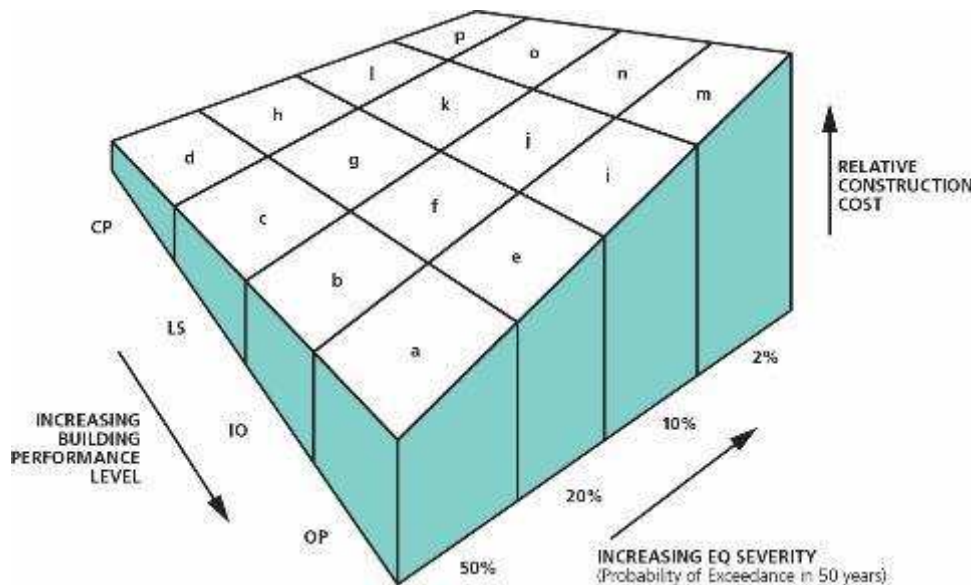


Figure 2-3. Surface Matrix of ASCE 41 Building Performance Levels Compared with Construction Cost³.

² J. Moehle, "A Framework for Performance-Based Earthquake Engineering," *Proceedings from ATC 15-9, 10th US-Japan Workshop on the Improvement of Structural Design and Construction Practices*, Applied Technology Council, Makena, Hawaii, 2003.

³ Adapted from Applied Technology Council, "NEHRP Commentary for the Seismic Rehabilitation of Buildings," FEMA-274, Federal Emergency Management Agency, Washington, D.C., October 1997.

2.5 Seismic Evaluation Procedure

The current standard for seismic evaluation and retrofit of existing buildings is the ASCE 41-17, *Seismic Evaluation and Retrofit of Existing Buildings*. ASCE 41-17 provides screening and evaluation procedures used to identify potential seismic deficiencies that may require further investigation or hazard mitigation. It presents a three-tiered review process, implemented by following a series of predefined checklists and “quick check” structural calculations. Each successive tier is designed to perform an increasingly refined evaluation procedure for seismic deficiencies identified in previous tiers in the process. The flow chart in Figure 2-4 describes the evaluation process.

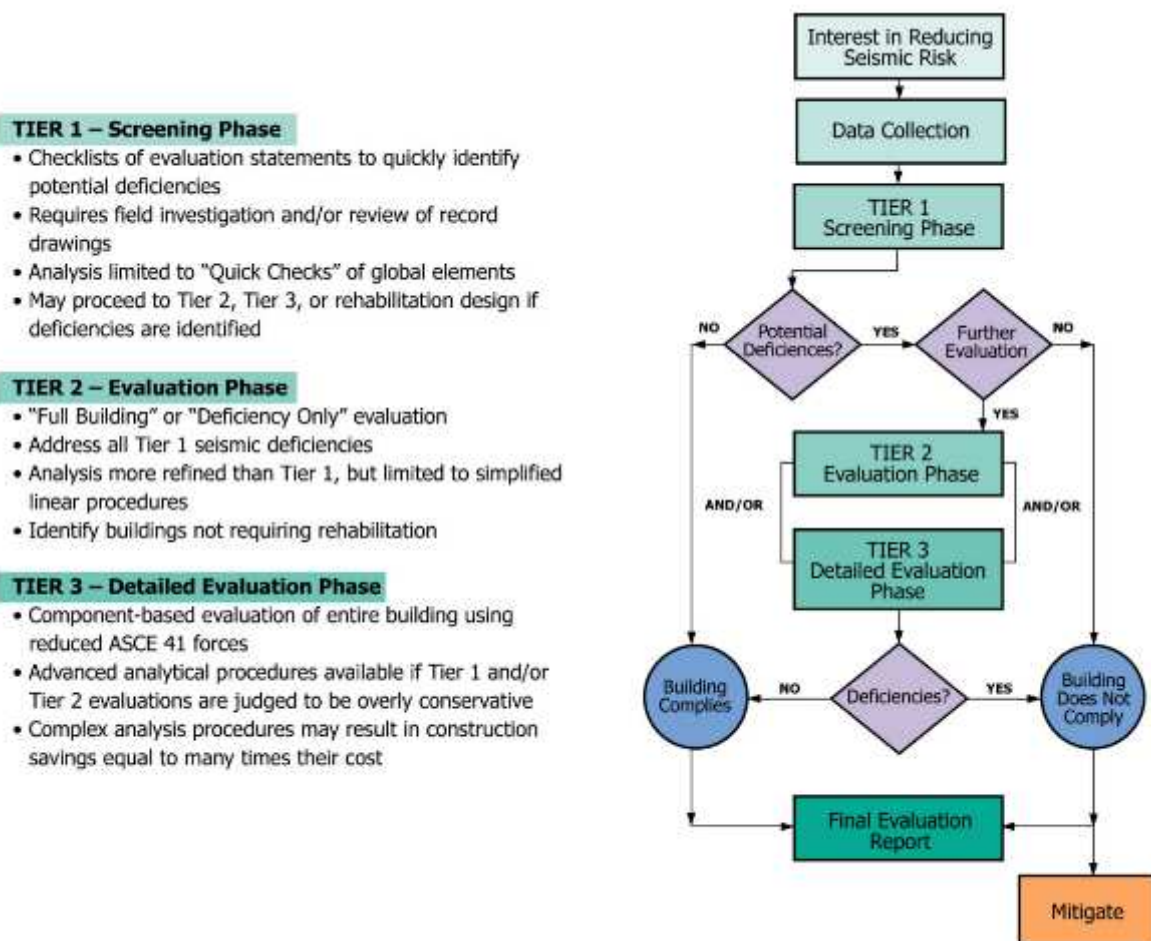


Figure 2-4. Flow Chart and Description of ASCE 41-17 Seismic Evaluation Procedure.

The Tier 1 checklists in ASCE 41-17 are specific to each common building type and contain seismic evaluation statements based on observed structural damage in past earthquakes. These checklists screen for potential seismic deficiencies by examining the lateral-force-resisting systems (LFRS) and details of construction that have historically caused poor seismic performance in similar buildings. Tier 1 screenings include basic “Quick Check” analyses for

primary components of the lateral system. They also include prescriptive checks for proper seismic detailing of connections, diaphragm spans and continuity, and overall system configuration. Tier 2 evaluations then follow with additional calculations and assessments to either confirm the potential deficiencies identified in the Tier 1 review or demonstrate their adequacy. A Tier 3 evaluation involves an even more detailed analysis and advanced computations to review each structural component's seismic demand and capacity. It is similar in scope and complexity to the types of analyses often required to design a new building in accordance with the IBC, with a comprehensive analysis aimed at evaluating each component's seismic performance. As indicated in the Scope of Services, these evaluations include a Tier 1 screening.

2.6 Seismic Retrofit Procedure

If seismic deficiencies are identified in the evaluation process, the owner and design team should review all initial conditions before proceeding with the hazard mitigation. Many conditions may affect the retrofit design significantly, such as results of the seismic evaluation and seismic hazard study, building use and occupancy requirements, presence of hazardous materials, and other anticipated building remodeling. The basic process for performance-based retrofit design is illustrated in Figure 2-5.

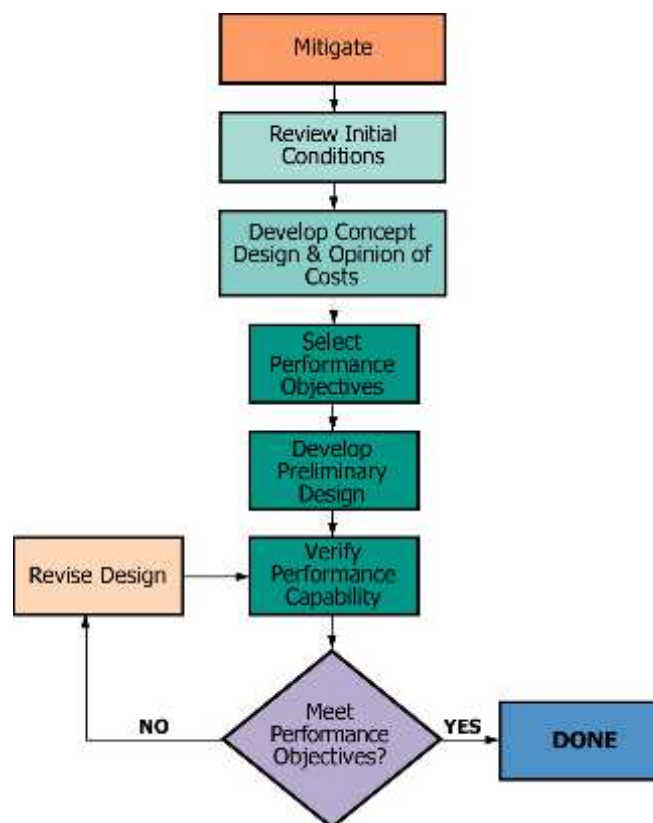


Figure 2-5. Seismic Rehabilitation Flow Diagram.

Following the review of initial conditions, concept designs may be performed to develop rough opinions of probable construction costs for one or more performance objectives. The owner and design team can then develop a rehabilitation strategy considering the associated costs and feasibility. Schematic and final design can then proceed through an iterative process until verification of acceptable building performance is obtained.

LIMITATIONS

The professional services described in this report were performed based on available as-built information and limited observation of the structure. No destructive testing was performed to qualify as-built conditions or verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report provides an overview of the seismic evaluation results and proposed upgrades and does not address programming and planning issues.

This report has been prepared for the exclusive use of Rice Fergus Miller Architecture and Gig Harbor Fire and Medic One. It is not intended for use by other parties, nor may it contain sufficient information for purposes of other parties or their uses. This report does not address any portion of the structure other than those areas mentioned, nor does it provide any warranty, either expressed or implied, for any portion of the existing structure.

3.0 Seismic Evaluation

3.1 Fire Stations 52, 54, 55, 56, 58 and 59

3.1.1 Building Description

Year Built: 1987
Number of Stories: 1
Floor Area: 6,720 SF
Address: Various locations in Gig Harbor, WA



Fire Stations 52, 54, 55, 56, 58, and 59 are one-story masonry and wood-frame structures constructed in 1987. The stations were constructed from the same drawings set and site visits indicate that they were built similarly. The buildings have distinct areas: an apparatus bay and a residence area with sleeping rooms, kitchen, and miscellaneous living space. The apparatus bays and adjacent residence spaces combine for a total building area of approximately 6,070 square feet. The buildings are constructed of reinforced masonry walls in the apparatus bays and wood walls in the residence areas, supported by continuous concrete footings. The roof diaphragms consist of plywood over timber trusses in both the apparatus bays and the residence areas.



Figure 3.1-1. Fire Station 58 Exterior, Public Entrance.



Figure 3.1-2. Fire Station 58 Exterior, Rear of Apparatus Bay.

Structural System

Table 3.1-1. Structural System Description of Fire Station 52, 54, 55, 56, 58 and 59.

Structural System	Description
Roof	The roof systems consist of plywood over timber trusses supported by concrete masonry unit (CMU) bearing walls in the apparatus bays and wood bearing walls in the residence areas.
Floor	The ground floors consist of a 6-inch concrete slab on grade.
Foundations	The foundation systems consist of continuous concrete footings under bearing walls and pad footings under steel and wood columns.
Lateral System	The lateral systems consist of the wood roof diaphragm and perimeter CMU shear walls in the apparatus bays. The lateral systems in the residence areas consist of the wood roof diaphragm and wood shear walls.

3.1.2 Seismic Evaluation Findings

Seismic Deficiencies

The seismic deficiencies identified during the Tier 1 evaluation are summarized below, with commentary provided for each deficiency.

Table 3.1-2. Identified Seismic Deficiencies for Fire Station 52, 54, 55, 56, 58 and 59.

Deficiency	Description
Overturning	The CMU piers on the front and back of the apparatus bays, as well as the wood shear walls on the plan East sides of the buildings, have base/height ratios greater than 0.6Sa. This can create a concentration of force that exceeds the capacity of the existing lateral and gravity systems.
Ties Between Foundation Elements	Foundations are continuous. However, no ties across the building or slab ties are indicated in the record drawings. Soils and liquefaction review should be performed to verify capacity of exterior soils to restrain wall movement.
Shear Stress Check	The wood shear walls in both principle directions of the buildings have shear stress exceeding 1,000 lb/ft.
Narrow Wood Shear Walls	There are narrow wood shear walls near the plan East sides of the buildings that have aspect ratios greater than 1.5-to-1. Narrow walls can be highly stressed and experience damage during a seismic event.

Table 3.1-2. Identified Seismic Deficiencies for Fire Station 52, 54, 55, 56, 58 and 59.

Deficiency	Description
Hold-Down Anchors	It appears that there are shear walls that do not have hold-down anchors attached to the end studs. Shear walls without adequate end anchorage are susceptible to racking and overturning.
Diaphragm Continuity	The roof diaphragm over the apparatus bays is at a different level than the living space.
Roof Chord Continuity	Roof chords are not continuous between the apparatus bays and the residence areas. Without roof chords or continuity, a flexible diaphragm may experience damage during a seismic event around the perimeter and at changes in roof elevations.
Diaphragm Reinforcement at Openings	The skylight openings at the low roof are larger than 50 percent of the building width. Record drawings do not indicate reinforcing or strapping around the opening where high stresses typically occur.
Diagonally Sheathed and Unblocked Diaphragms	The center roof area of the apparatus bays is unblocked and has a span greater than 30 feet. Unblocked diaphragms with large spans can have larger seismic forces that the diaphragm may be unable to resist or transfer to the lateral system.
Wall Anchorage	Masonry walls around the apparatus bay have wood shear walls on top. The masonry walls are dependent upon the wood shear walls and trusses for out-of-plane support. Connections do not have adequate strength to resist calculated forces.
Wood Ledgers	Cross-grain bending is induced at the connection of the mezzanine to the masonry walls and at the low roof step to wall connection.

No geotechnical report was provided for the sites, causing checklist items involving soil to be marked as “unknown.” It is expected that the soils on site are compliant with liquefaction, slope failure, and surface fault rupture expectations, but further investigation may need to be completed for verification.

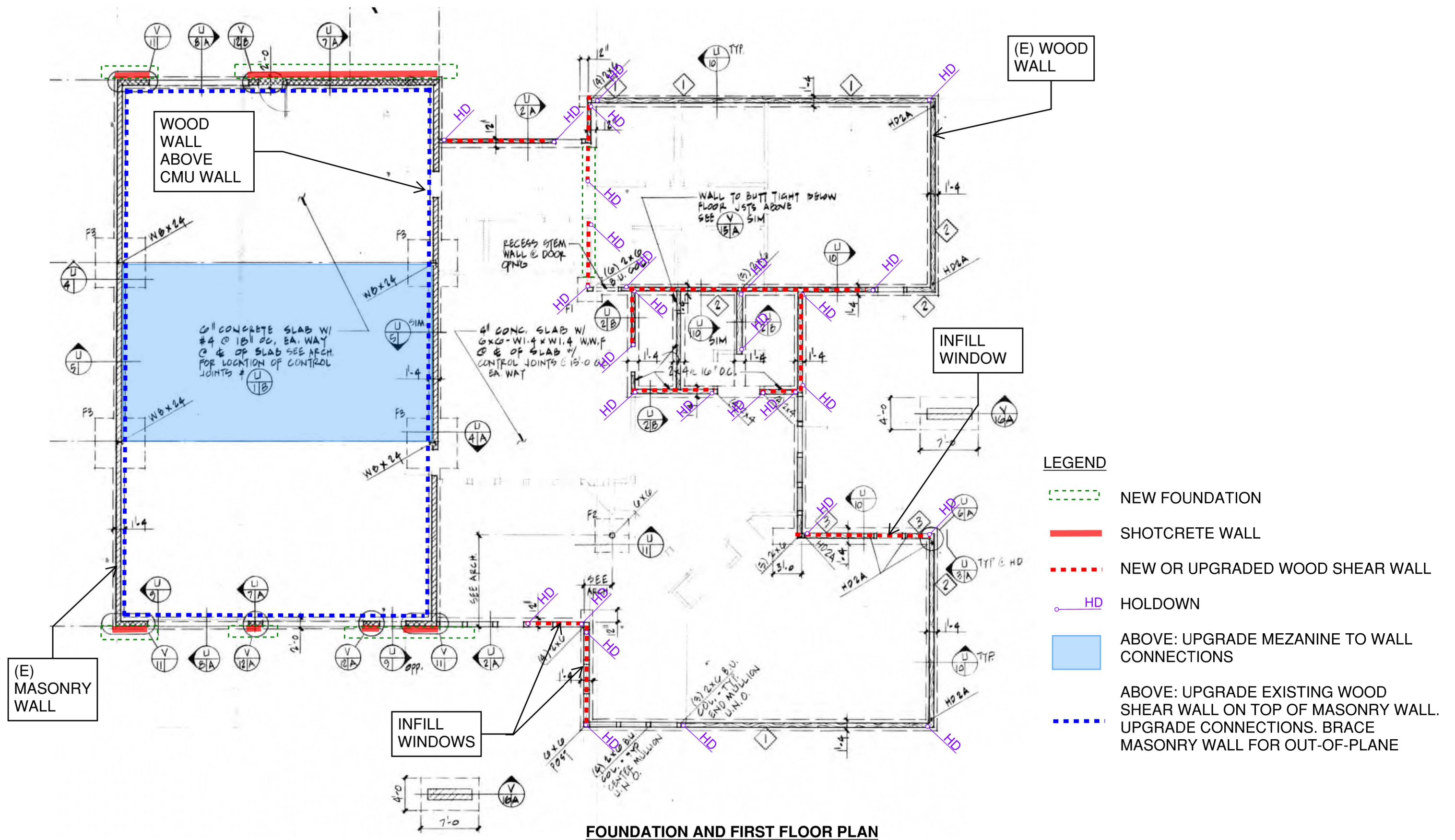
3.1.3 Findings and Recommendations

Fire Stations 52, 54, 55, 56, 58, and 59 do not meet the IO performance level as determined by the ASCE 41-17 Tier 1 evaluation. Deficiencies include overstressed masonry shear walls at the apparatus bays, overstressed wood shear walls at the living quarters, and inadequate diaphragm strengths.

Due to the extent of the deficiencies, extensive damage and potential for failure of the LFRS during a design-level earthquake is possible. A structural upgrade concept design will be completed and forthcoming for the Fire Stations. Figures 3.1-3 and 3.1-4 will display the concept-level upgrade concepts to improve the LFRS and meet the IO performance objective.

The upgrade concept involves strengthening existing masonry shear walls with new concrete shear walls, adding new wood shear walls, upgrading existing wood shear walls, strengthening the roof diaphragm, adding chord and collector elements to the roof, and improving roof-to-wall and wall-to-wall connections. New concrete shear walls and piers with footings should be installed throughout the apparatus bays. Modifications to the foundation systems may be required for the existing upgraded walls.

The roof diaphragms are unblocked with large spans, resulting in an over-stressed condition. These deficiencies create a potential for damage and possible failure of the LFRS during a design-level earthquake. Plywood sheathing and supplementary nailing and blocking are recommended to be added to the roof to increase the roof diaphragm's capacity and strength. The connection between the diaphragm and shear walls should also be improved to ensure the forces are transferred to the shear walls. This upgrade will increase the diaphragm's stiffness and shear capacity.





GIG HARBOR 52 SITE PLAN

1" = 30'-0"

GIG HARBOR STATION 52 - SITE PLAN

4-52 of 79

EXISTING BUILDING NEW ADDITION



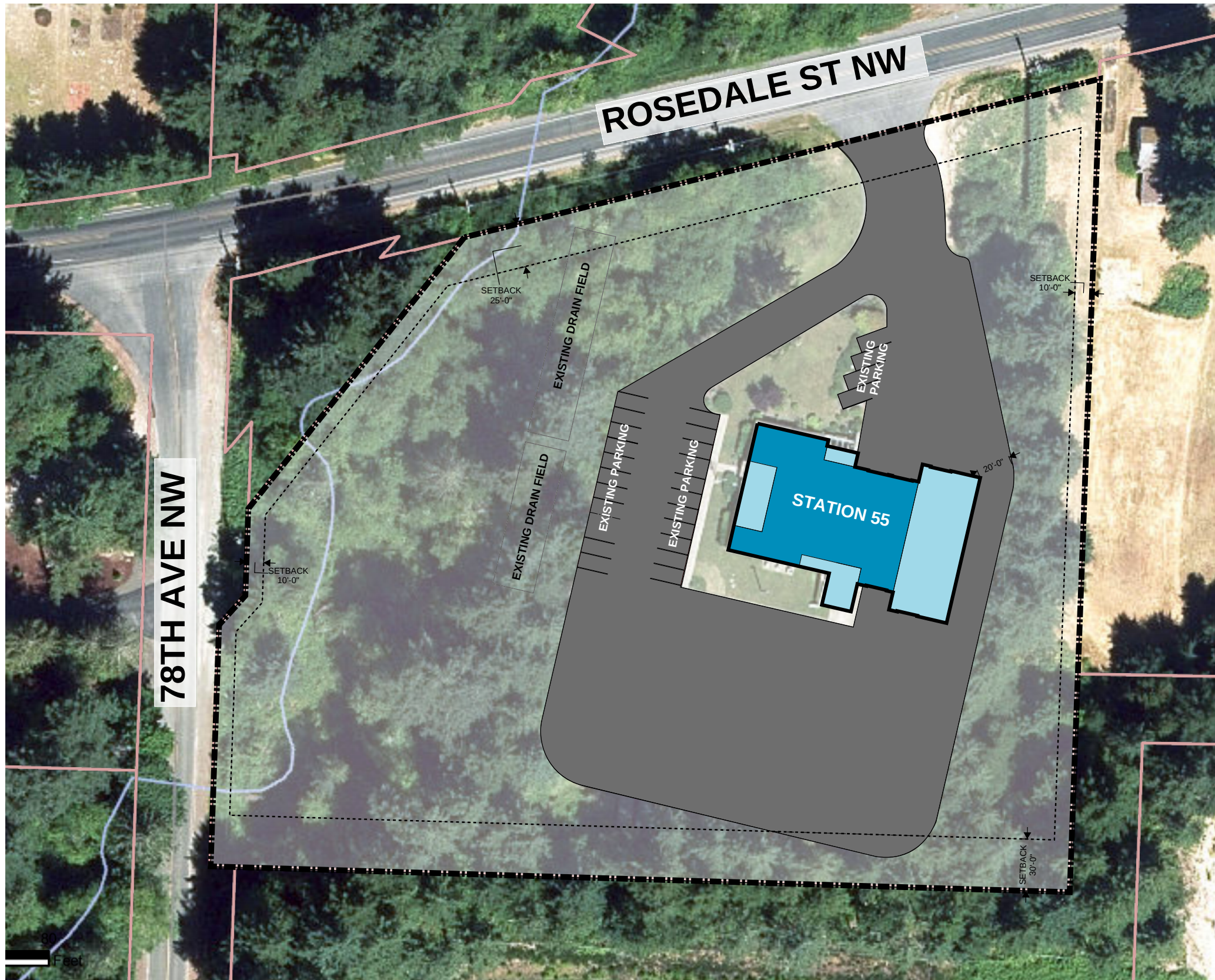


GIG HARBOR 54 SITE PLAN

1" = 30'-0"

GIG HARBOR STATION 54 - SITE PLAN





GIG HARBOR 55 SITE PLAN

1" = 30'-0"

GIG HARBOR STATION 55 - SITE PLAN





GIG HARBOR 56 SITE PLAN

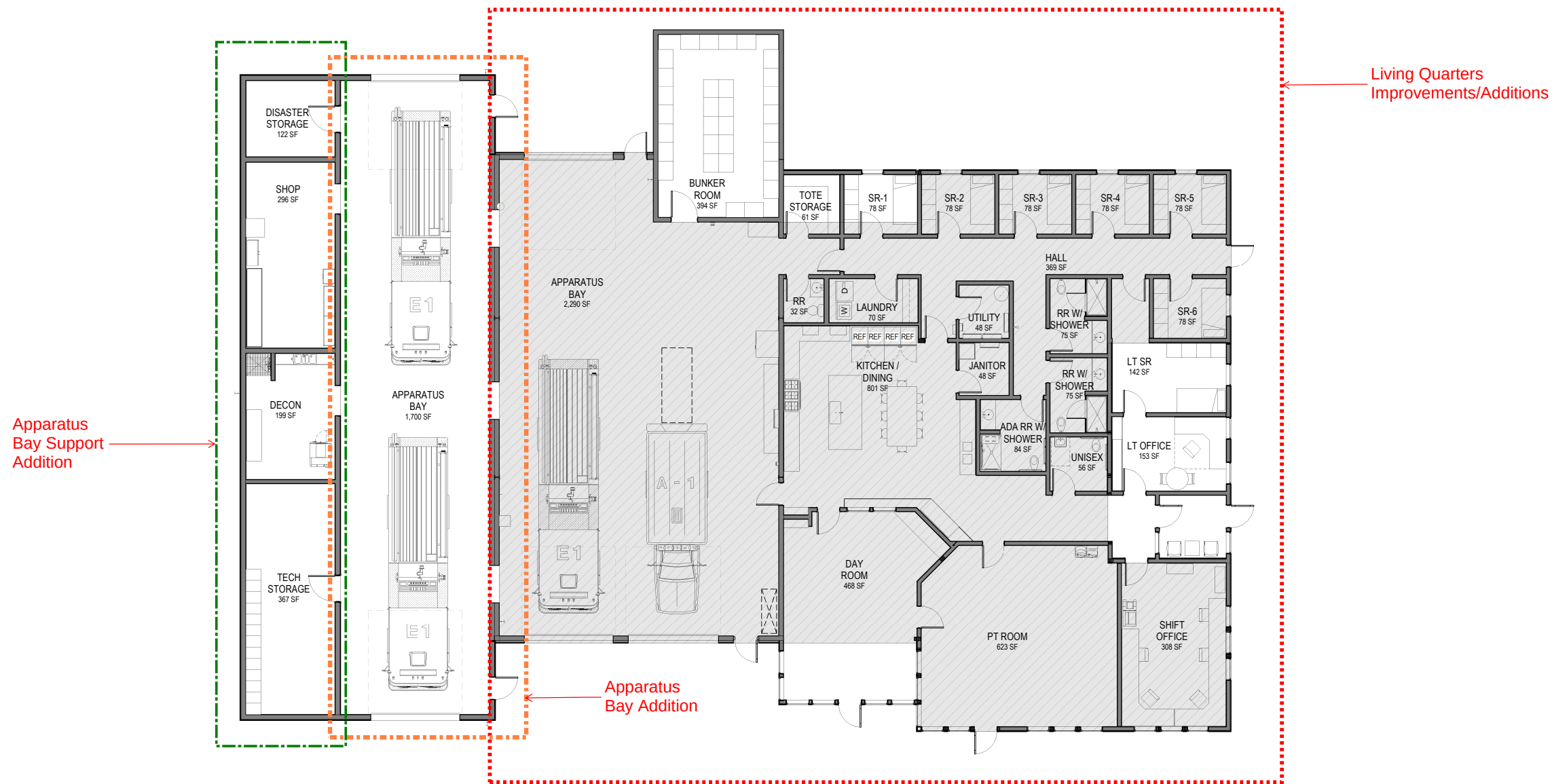
1" = 40'-0"

GIG HARBOR STATION 56 - SITE PLAN

4-55 of 79

EXISTING BUILDING NEW ADDITION





STATION 52, 55, & 56 FLOOR PLAN

1/8" = 1'-0"

EXISTING STATION

FIRE STATION 52, 55, & 56 FLOOR PLAN

4-56 of 79



GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At June 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Stations 52 / 54 / 55 / 56			
A1	Living Quarters / Bunker Room	7,792	248.35	1,935,116
A2	Alternate Siding - Living Quarters / Bunker Room			-7,018
A3	Sitework			96,181
	Stations 52 / 54 / 55 / 56	7,792	259.79	2,024,279
	ESTIMATED NET COST	7,792	259.79	2,024,279

MARGINS & ADJUSTMENTS

GC General Conditions/Requirements (14 Months)	10.0 %		202,428
Insurances & Bonds	1.7 %		37,855
GC Overhead & Profit	5.0 %		113,228
Design Contingency	15.0 %		356,668
State Sales Tax			Excl.
Subtotal		7,792 350.93	2,734,458
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %		164,068
ESTIMATED TOTAL COST		7,792 371.99	2,898,526

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room

GFA: 7,792 SF Cost/SF: 248.35

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	127.7	52.00	6,640
3	Cast in place reinforced concrete continuous footings, enlarge existing footings to, 36" x 12" thick, including chipping, dowels, earthwork	LF	57.0	63.00	3,591
4	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	187.1	36.00	6,735
6	Foundation dampproofing, bituminous asphalt, including protection board	LF	187.1	14.00	2,620
7	Rigid insulation to foundations, 2" thick	LF	187.1	8.00	1,497
8	Foundation subsoil drain lines, 6", including gravel encasement	LF	178.2	20.00	3,564
Standard Foundations				3.16/SF	24,647
A1030 Slabs on Grade					
9	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	1,181.9	6.90	8,155
10	Saw cut and demolish concrete slab on grade, 4" thick, for new slab on grade thickenings under shear walls (thickenings elsewhere)	SF	136.0	39.00	5,304
11	Cast in place reinforced concrete slab on grade, 4" thick in patches, including base, vapor barrier	SF	136.0	10.00	1,360
13	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork	LF	141.9	50.00	7,095
15	Rigid insulation under concrete slab on grade, 2" thick	SF	1,182.1	3.00	3,546
Slabs on Grade				3.27/SF	25,460
B1010 Floor Construction					
16	Wood I-joists roof framing, 14" TJL, 24" on center, in patches	SF	40.0	13.70	548
Floor Construction				0.07/SF	548
B1020 Roof Construction					
17	Demolish roof overhangs and trim roof framing where new roof framing to be added, including roofing, sheathing outriggers, soffit covering	SF	490.0	2.00	980
18	Wood posts to roof framing, 6" x 6"	BF	1,133.2	7.90	8,953
19	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	23.0	160.00	3,680
20	Wood stud sistered to existing wall framing supporting roof construction, 2" x 6"	BF	357.0	5.90	2,107
21	Holdown system, including hole in existing concrete epoxy grouted threaded rod, nuts, washers, bracket, screws	EA	25.0	170.00	4,250

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room (continued)

GFA: 7,792 SF Cost/SF: 248.35

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
22	Structural steel W-section beams and girders to roof framing, including loose and attached connections (drag beams)	T	1.730	6,000.00	10,380
24	Laminated strand lumber blocking to existing wood roof truss struts, 3-1/2"	BF	295.0	5.40	1,593
25	Wood joists roof framing, 2" x 8", 24" on center	BF	530.0	3.90	2,067
26	Wood I-joists roof framing, 11-7/8" TJL, 16" on center	SF	270.2	11.70	3,161
28	Wood outriggers to roof overhangs, 2" x 6"	BF	649.2	4.30	2,792
29	Wood fascia boards to roof overhangs, 2" x 6"	BF	79.2	4.29	340
30	Wood edge boards to roof overhangs, 2" x 10"	BF	134.8	9.60	1,294
31	Roof sheathing, refresh and block existing diaphragm	SF	7,258.0	0.50	3,629
32	Roof sheathing, plywood, 15/32"	SF	1,346.2	3.30	4,442
33	Metal canopies, including finish	SF	35.7	40.00	1,428
Roof Construction				6.56/SF	51,096
B2010	Exterior Walls				
34	Selectively demolish siding systems and trim from exterior walls down to plywood sheathing or stud framing where applicable	SF	5,733.0	2.00	11,466
35	Selectively demolish CMU walls, including temporary support of roof construction above	SF	835.0	6.00	5,010
36	Selectively demolish wood stud framed exterior walls, including exterior and interior finishes, including temporary support of roof construction above	SF	577.0	5.00	2,885
37	Selectively demolish gypsum board interior skin from wood stud framed exterior walls (new gypsum board under interior partitions)	SF	1,598.0	0.60	958
38	Reinforced shotcrete walls, including formwork on one side, smooth finish on inside, 10" (shear walls)	SF	532.5	15.00	7,987
40	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	939.7	15.00	14,096
41	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate connections (non-shear walls)	SF	594.0	14.00	8,316
42	Provision to install shear wall sill plate anchor bolts to existing wall framing, 48" on center	LF	129.0	10.00	1,290
43	Provision to install shear wall top plate connection brackets to existing wall framing, 27" on center	LF	132.0	5.00	660
44	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	3,714.7	38.00	141,159
45	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	293.6	15.00	4,404

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room (continued)

GFA: 7,792 SF Cost/SF: 248.35
Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	879.2	48.00	42,202
48	Phenolic siding, including, weather barrier, rigid insulation, 2" thick, furring	SF	223.0	30.00	6,690
49	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	979.1	8.10	7,930
Exterior Walls				32.73/SF	255,053
B2020	Exterior Windows				
50	Selectively demolish window, 3' x 4', from wood framed walls to remain	EA	16.0	50.00	800
51	Demolish storefronts, from wood framed walls to be demolished	SF	180.0	3.00	540
52	Demolish storefronts, from wood framed walls to remain	SF	343.0	3.50	1,200
53	Aluminum framed windows, 3-lite insulated glazing	SF	225.0	150.00	33,750
54	Aluminum framed storefronts, 3-lite insulated glazing	SF	40.0	120.00	4,800
55	Aluminum framed window walls, 3-lite insulated glazing	SF	393.0	160.00	62,880
Exterior Windows				13.34/SF	103,970
B2030	Exterior Doors				
56	Demolish single entrance door, 3' x 7', including frame, from walls or storefronts to be demolished	EA	3.0	40.00	120
57	Demolish single entrance door, 3' x 7', including frame, from walls to remain	EA	2.0	140.00	280
58	Remove from walls to be demolished, set aside, and later reinstall in same position, overhead sectional door, 14' x 14'	EA	3.0	2,000.00	6,000
59	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500
60	Entrance single door, wood framed half glass, 3' x 7', including hardware, finish	EA	2.0	3,700.00	7,400
61	Entrance single door, wood, including narrow view panel, 3' x 7' high, metal frame with top lite, 3' x 3' high, hardware and finish	EA	2.0	4,600.00	9,200
62	Overhead sectional door, aluminum glazed fixed panels, including frame, hardware and finish, 12' x 12'	EA	3.0	22,000.00	66,000
64	Provision for ADA push button door opener	EA	1.0	4,000.00	4,000
Exterior Doors				12.38/SF	96,500
B3010	Roof Coverings				
65	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-38, blocking, flashing and finish	SF	8,604.4	25.00	215,110
66	Aluminum gutters, enameled, 5" box	LF	212.2	15.00	3,183

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room (continued)

GFA: 7,792 SF Cost/SF: 248.35

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
67	Aluminum downspouts, enameled, 2" x 3"	LF	109.0	12.00	1,308
	Roof Coverings			28.18/SF	219,601
B3020	Roof Openings				
68	Skylight, solar tube, 30" diameter, double glazed acrylic	EA	5.0	2,500.00	12,500
69	Skylight, add strapping to existing skylight (per perimeter)	LF	55.0	5.00	275
	Roof Openings			1.64/SF	12,775
C1010	Interior Partitions				
70	Selectively demolish plywood and gypsum board from wood stud framed exterior walls (to become partitions)	SF	1,298.0	1.10	1,427
71	Selectively demolish wood framed gypsum board covered partitions, including temporary support of roof construction above	SF	4,450.0	5.00	22,250
73	Partition framing, wood studs, 2" x 8", 16" on center, sill and top plate connections (non-shear walls)	SF	5,011.0	12.00	60,132
74	Partition framing, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	1,241.8	15.00	18,627
75	Install shear wall sill plate anchor bolts to existing wall framing, 48" on center	LF	70.0	10.00	700
76	Install shear wall top plate connection brackets to existing wall framing, 27" on center	LF	74.0	5.00	370
77	Install plywood sheathing, 15/32", to existing wood stud partition framing (shear walls)	SF	1,298.0	3.60	4,672
78	Gypsum board on wood stud framed partitions, including level 5 finish	SF	19,550.9	2.40	46,921
79	Interior storefronts, aluminum, fully glazed	SF	41.0	80.00	3,280
	Interior Partitions			20.33/SF	158,379
C1020	Interior Doors				
80	Remove single door from frame in partitions to remain	EA	8.0	40.00	320
81	Demolish single door and frame from partitions to be demolished	EA	11.0	40.00	440
82	Demolish double door and frame from partitions to be demolished	EA	1.0	80.00	80
83	Single door, hollow metal, 3' x 7', installed on existing frame, including hardware, finish	EA	2.0	1,200.00	2,400
84	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	2.0	1,600.00	3,200
85	Single door, wood solid core, plastic laminate, 3' x 7' installed on existing frame, including hardware, finish	EA	5.0	1,500.00	7,500
86	Single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	9.0	1,900.00	17,100

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room (continued)

GFA: 7,792 SF Cost/SF: 248.35

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
87	Single door, wood framed half glass, 3' x 7', including hardware, finish	EA	1.0	2,100.00	2,100
88	Rated single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	7.0	3,000.00	21,000
Interior Doors				6.95/SF	54,140
C1030	Interior Specialties				
89	Provision for signage, including room numbers, code required signs (per GFA)	SF	7,792.0	0.50	3,896
91	Bunker gear metal storage rack, wall mounted, 20" x 20" x 72" high	EA	31.0	500.00	15,500
94	Shower doors, sliding, tempered glass, 48" opening	EA	3.0	900.00	2,700
95	Toilet towel dispenser and waste receptacle, 18 gallon capacity	EA	4.0	530.00	2,120
96	Toilet / ADA shower grab bar, 2-wall, 36" x 24"	EA	3.0	170.00	510
97	Bathroom mirrors, unframed, laminated, polished edges, 24" x 36" x 1/4" thick	EA	4.0	180.00	720
98	Toilet napkin/tampon dispenser, semi-recessed	EA	2.0	520.00	1,040
99	Toilet soap dispenser, surface mounted, liquid	EA	4.0	120.00	480
100	Toilet seat cover dispenser, surface mounted	EA	4.0	87.00	348
101	Toilet tissue dispenser, surface mounted, double roll	EA	4.0	57.00	228
102	Shower seat, wall mounted	EA	1.0	440.00	440
Interior Specialties				3.59/SF	27,982
C3010	Interior Wall Finishes				
103	Ceramic tiles on walls, including base	SF	762.0	15.00	11,430
104	Paint on gypsum board / concrete walls	SF	18,796.3	1.80	33,834
105	Paint on previously painted gypsum board walls	SF	8,201.0	2.00	16,402
Interior Wall Finishes				7.91/SF	61,666
C3020	Interior Floor Finishes				
106	Polished finish to concrete floors including sealer	SF	448.0	8.00	3,584
107	Sealer on concrete floors	SF	277.5	1.30	361
108	Sealer on previously polished and sealed concrete floors	SF	6,057.0	1.50	9,086
109	Ceramic tiles on floors, thin set	SF	280.0	23.00	6,440
110	Resilient sheet flooring flooring	SF	93.0	10.00	930
111	Rubber tiles on floors, including sealer on previously sealed concrete floor finish underneath	SF	639.0	12.00	7,668
112	Rubber base, 4"	LF	360.9	3.90	1,408

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A1 Living Quarters / Bunker Room (continued)

GFA: 7,792 SF Cost/SF: 248.35

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
113	Rubber base, 4", including removing existing base	LF	424.0	4.50	1,908
	Interior Floor Finishes			4.03/SF	31,385
C3030	Interior Ceiling Finishes				
114	Selectively demolish existing ceiling finishes	SF	4,009.0	1.50	6,014
115	Paint on previously painted gypsum board ceilings	SF	3,412.0	2.00	6,824
116	Gypsum board ceilings, including framing, paint	SF	298.3	5.00	1,492
117	Gypsum board ceilings in patches, including framing, paint	SF	40.0	20.00	800
118	ACT ceiling finishes	SF	4,431.7	7.00	31,022
	Interior Ceiling Finishes			5.92/SF	46,152
D2090	All Plumbing Work				
119	Plumbing (per Sider+Byers escalated from November 2020) (per GFA)	SF	7,792.0	26.00	202,592
	All Plumbing Work			26.00/SF	202,592
D3090	All HVAC Work				
120	HVAC (per Sider+Byers escalated from November 2020) (per GFA)	SF	7,792.0	25.00	194,800
	All HVAC Work			25.00/SF	194,800
D4010	Fire Protection Sprinkler Systems				
123	Fire sprinkler (per Sider+Byers escalated from November 2020) (per GFA)	SF	7,792.0	5.00	38,960
	Fire Protection Sprinkler Systems			5.00/SF	38,960
D5090	All Electrical Work				
124	Electrical (per BCE Engineers from January 2021) (per GFA)	SF	7,792.0	23.00	179,216
	All Electrical Work			23.00/SF	179,216
E1040	Other Equipment				
127	Remove miscellaneous equipment (per GFA)	SF	7,067.0	2.00	14,134
131	Double stack washer and dryer (E5)	EA	1.0	2,500.00	2,500
132	Under counter individual food locker (E6) (OFCI)	EA	5.0	40.00	200
134	Wall mounted hand sanitizer (E8)	EA	2.0	150.00	300
135	Remove, set aside, and later reinstall in same but higher location, controls panel (E9)	EA	1.0	300.00	300
136	EMS dispenser machine, 41" x 36" (E10)	EA	1.0	700.00	700
137	Radio cabinet with countertop (E11)	LF	12.0	450.00	5,400
138	Range, including hood	EA	1.0	5,000.00	5,000
139	Microwave oven	EA	2.0	1,000.00	2,000

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

GFA: 7,792 SF Cost/SF: 248.35

A1 Living Quarters / Bunker Room (continued)

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
140	Dishwasher	EA	2.0	3,000.00	6,000
141	Refrigerator	EA	3.0	4,500.00	13,500
142	Freezer	EA	1.0	4,500.00	4,500
Other Equipment				7.00/SF	54,534
E2010	Fixed Furnishings				
143	Selectively demolish casework	LF	90.0	15.00	1,350
144	Window roller shades, double shade, manual (exterior windows)	SF	225.0	30.00	6,750
145	Kitchen wall cabinets	LF	35.0	310.00	10,850
146	Kitchen base cabinets, including granite countertops	LF	33.0	450.00	14,850
147	Kitchen island countertops, 4' 6" wide, including supporting walls and cabinets	LF	10.0	850.00	8,500
148	Kitchen pantry cabinets	LF	6.0	700.00	4,200
149	Kitchen open shelving cabinets	LF	3.0	200.00	600
150	Food locker, 12" x 18" (F2)	EA	10.0	310.00	3,100
151	Day room/corridor full height cabinets	LF	7.0	500.00	3,500
152	Vanity base cabinets, including granite countertops	LF	16.0	450.00	7,200
153	Laundry base cabinets, including plastic laminate countertops	LF	6.0	350.00	2,100
154	Laundry wall cabinets	LF	6.0	310.00	1,860
155	Janitor closet wall open shelving cabinets	LF	5.0	200.00	1,000
156	Sleep room full height cabinet, 24" x 24"	EA	28.0	700.00	19,600
157	Display cases	LF	9.0	1,000.00	9,000
158	Check-in, check-out cabinets	LF	4.0	300.00	1,200
Fixed Furnishings				12.28/SF	95,660
LIVING QUARTERS / BUNKER ROOM				248.35/SF	1,935,116

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A2 Alternate Siding - Living Quarters / Bunker Room

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	-879.2	48.00	-42,202
47	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	879.6	40.00	35,184
	Exterior Walls				-7,018
	ALTERNATE SIDING - LIVING QUARTERS / BUNKER ROOM				-7,018

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A3 Sitework

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2040	Site Development				
160	Sitework resulting from building and pavement reconfigurations and additions	LS	1.0	61,181.00	61,181
	Site Development				61,181
G3020	Site Sanitary Sewer Systems				
163	Provision for sewer piping, and expanding septic tank and leach field	LS	1.0	35,000.00	35,000
	Site Sanitary Sewer Systems				35,000
	SITEWORK				96,181

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At June 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Stations 52 / 54 / 55 / 56			
A4	Apparatus Bay Addition	1,782	385.70	687,325
A5	Alternate Siding - Apparatus Bay Addition			-1,498
A6	Sitework			157,880
	Stations 52 / 54 / 55 / 56	1,782	473.46	843,707
	ESTIMATED NET COST	1,782	473.46	843,707

MARGINS & ADJUSTMENTS				
GC General Conditions/Requirements (14 Months)	15.0 %			126,556
Insurances & Bonds	1.7 %			16,495
GC Overhead & Profit	6.0 %			59,206
Design Contingency	15.0 %			156,894
State Sales Tax				Excl.
Subtotal		1,782	675.00	1,202,858
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %			72,171
ESTIMATED TOTAL COST		1,782	715.50	1,275,029

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A4 Apparatus Bay Addition

GFA: 1,782 SF Cost/SF: 385.70

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	58.3	52.01	3,032
2	Cast in place reinforced concrete continuous footings, next to and joined to existing footings, 18" x 12" thick, including dowels, 12" on center, earthwork	LF	67.0	58.00	3,886
4	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	60.8	36.00	2,189
5	Cast in place reinforced concrete stem walls, 10" thick, 18" high, cast against existing stem wall making thickness 16" thick, including chipping, dowels, earthwork	LF	64.0	41.00	2,624
6	Foundation dampproofing, bituminous asphalt, including protection board	LF	60.8	14.00	851
7	Rigid insulation to foundations, 2" thick	LF	60.8	7.99	486
8	Foundation subsoil drain lines, 6", including gravel encasement	LF	64.2	20.00	1,284
Standard Foundations				8.05/SF	14,352
A1030 Slabs on Grade					
12	Cast in place reinforced concrete slab on grade, 7" thick, including base, vapor barrier	SF	1,778.0	10.70	19,024
13	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork	LF	41.9	50.00	2,095
14	Premium on concrete slab on grade for smooth troweled finish	SF	1,778.0	1.50	2,667
15	Rigid insulation under concrete slab on grade, 2" thick	SF	1,777.7	3.00	5,333
Slabs on Grade				16.34/SF	29,119
B1020 Roof Construction					
18	Wood posts to roof framing, 6" x 6"	BF	781.8	7.90	6,176
19	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	11.0	160.00	1,760
23	Laminated wood roof framing, straight beams, 5-1/8" x 9" (drag beams)	LF	61.0	47.00	2,867
27	Wood I-joists roof framing, 14" TJL, 24" on center	SF	1,794.0	13.70	24,577
28	Wood outriggers to roof overhangs, 2" x 6"	BF	1,351.7	4.30	5,812
29	Wood fascia boards to roof overhangs, 2" x 6"	BF	51.8	4.29	222
30	Wood edge boards to roof overhangs, 2" x 10"	BF	350.8	9.60	3,367
32	Roof sheathing, plywood, 15/32"	SF	2,601.0	3.30	8,584
33	Metal canopies, including finish	SF	100.3	40.00	4,012
Roof Construction				32.20/SF	57,377

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A4 Apparatus Bay Addition (continued)

GFA: 1,782 SF Cost/SF: 385.70

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
38	Reinforced shotcrete walls, including formwork on one side, smooth finish on inside, 10" (shear walls)	SF	388.5	15.00	5,828
39	Reinforced shotcrete walls, including formwork on one side above existing pitched roof decking, smooth finish on inside, 10" (shear walls)	SF	292.0	20.00	5,840
40	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	1,353.7	15.00	20,305
44	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	1,821.4	38.00	69,213
45	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	62.7	15.01	941
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	187.7	48.00	9,010
49	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	612.1	8.10	4,958
	Exterior Walls			65.15/SF	116,095
B2030	Exterior Doors				
61	Entrance single door, wood, including narrow view panel, 3' x 7' high, metal frame with top lite, 3' x 3' high, hardware and finish	EA	2.0	4,600.00	9,200
63	Overhead sectional door, aluminum glazed fixed panels, including frame, hardware and finish, 14' x 14'	EA	2.0	27,000.00	54,000
	Exterior Doors			35.47/SF	63,200
B3010	Roof Coverings				
65	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-38, blocking, flashing and finish	SF	2,600.8	25.00	65,020
66	Aluminum gutters, enameled, 5" box	LF	54.0	15.00	810
67	Aluminum downspouts, enameled, 2" x 3"	LF	42.0	12.00	504
	Roof Coverings			37.22/SF	66,334
C1010	Interior Partitions				
72	Reinforced shotcrete walls against existing plywood sheathing, 10" (shear walls)	SF	1,476.0	15.00	22,140
74	Partition framing, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	771.5	15.00	11,573
78	Gypsum board on wood stud framed partitions, including level 5 finish	SF	2,797.8	2.40	6,715
	Interior Partitions			22.69/SF	40,428

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A4 Apparatus Bay Addition (continued)

GFA: 1,782 SF Cost/SF: 385.70

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
C1020	Interior Doors				
84	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	1.0	1,600.00	1,600
	Interior Doors			0.90/SF	1,600
C1030	Interior Specialties				
89	Provision for signage, including room numbers, code required signs (per GFA)	SF	1,782.0	0.50	891
90	Plywood wainscot (apparatus bay)	SF	748.0	3.30	2,469
	Interior Specialties			1.89/SF	3,360
C3010	Interior Wall Finishes				
104	Paint on gypsum board / concrete walls	SF	2,797.9	1.80	5,036
	Interior Wall Finishes			2.83/SF	5,036
C3020	Interior Floor Finishes				
107	Sealer on concrete floors	SF	1,782.3	1.30	2,316
112	Rubber base, 4"	LF	122.9	3.90	479
	Interior Floor Finishes			1.57/SF	2,795
C3030	Interior Ceiling Finishes				
116	Gypsum board ceilings, including framing, paint	SF	1,731.5	5.00	8,657
118	ACT ceiling finishes	SF	140.0	7.00	980
	Interior Ceiling Finishes			5.41/SF	9,637
D2090	All Plumbing Work				
119	Plumbing (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,782.0	26.00	46,332
	All Plumbing Work			26.00/SF	46,332
D3090	All HVAC Work				
121	HVAC (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,782.0	65.00	115,830
	All HVAC Work			65.00/SF	115,830
D4010	Fire Protection Sprinkler Systems				
123	Fire sprinkler (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,782.0	5.00	8,910
	Fire Protection Sprinkler Systems			5.00/SF	8,910

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A4 Apparatus Bay Addition (continued)

GFA: 1,782 SF Cost/SF: 385.70

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D5090	All Electrical Work				
125	Electrical (per BCE Engineers from January 2021) (per GFA)	SF	1,782.0	60.00	106,920
	All Electrical Work			60.00/SF	106,920
	APPARATUS BAY ADDITION			385.70/SF	687,325

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A5 Alternate Siding - Apparatus Bay Addition

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	-187.7	48.00	-9,010
47	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	187.8	40.00	7,512
	Exterior Walls				-1,498
	ALTERNATE SIDING - APPARATUS BAY ADDITION				-1,498

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A6 Sitework

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2040	Site Development				
161	Sitework resulting from building and pavement reconfigurations and additions	LS	1.0	150,380.00	150,380
	Site Development				150,380
G3020	Site Sanitary Sewer Systems				
164	Provision for sewer piping, and expanding septic tank and leach field	LS	1.0	7,500.00	7,500
	Site Sanitary Sewer Systems				7,500
	SITEWORK				157,880

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At June 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Stations 52 / 54 / 55 / 56			
A7	Support Area Addition	1,048	347.12	363,786
A8	Alternate Siding - Support Area Addition			-2,624
A9	Sitework			95,939
	Stations 52 / 54 / 55 / 56	1,048	436.17	457,101
	ESTIMATED NET COST	1,048	436.17	457,101

MARGINS & ADJUSTMENTS

GC General Conditions/Requirements (14 Months)	20.0 %		91,420
Insurances & Bonds	1.7 %		9,324
GC Overhead & Profit	7.5 %		41,838
Design Contingency	15.0 %		89,953
State Sales Tax			Excl.
Subtotal		1,048	658.05
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %		41,378
ESTIMATED TOTAL COST		1,048	697.53

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A7 Support Area Addition

GFA: 1,048 SF Cost/SF: 347.12

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	109.0	52.00	5,668
4	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	109.1	36.00	3,928
6	Foundation dampproofing, bituminous asphalt, including protection board	LF	109.1	14.00	1,527
7	Rigid insulation to foundations, 2" thick	LF	109.1	8.00	873
8	Foundation subsoil drain lines, 6", including gravel encasement	LF	111.6	20.00	2,232
Standard Foundations				13.58/SF	14,228
A1030 Slabs on Grade					
9	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	1,048.1	6.90	7,232
13	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork	LF	77.2	50.00	3,860
15	Rigid insulation under concrete slab on grade, 2" thick	SF	1,048.2	3.00	3,145
Slabs on Grade				13.58/SF	14,237
B1020 Roof Construction					
18	Wood posts to roof framing, 6" x 6"	BF	277.0	7.90	2,188
19	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	5.0	160.00	800
26	Wood I-joists roof framing, 11-7/8" T.J.L., 16" on center	SF	1,047.8	11.70	12,260
28	Wood outriggers to roof overhangs, 2" x 6"	BF	989.1	4.30	4,253
29	Wood fascia boards to roof overhangs, 2" x 6"	BF	35.0	4.31	151
30	Wood edge boards to roof overhangs, 2" x 10"	BF	175.4	9.60	1,684
32	Roof sheathing, plywood, 15/32"	SF	1,668.8	3.30	5,507
Roof Construction				25.61/SF	26,843
B2010 Exterior Walls					
40	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	1,832.6	15.00	27,489
44	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	1,496.9	38.00	56,882
45	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	109.7	15.00	1,645
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	328.5	48.00	15,768

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A7 Support Area Addition (continued)

GFA: 1,048 SF Cost/SF: 347.12

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
49	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	325.8	8.10	2,639
Exterior Walls				99.64/SF	104,423
B3010	Roof Coverings				
65	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-38, blocking, flashing and finish	SF	1,668.8	25.00	41,720
66	Aluminum gutters, enameled, 5" box	LF	37.8	15.00	567
67	Aluminum downspouts, enameled, 2" x 3"	LF	28.0	12.00	336
Roof Coverings				40.67/SF	42,623
C1010	Interior Partitions				
74	Partition framing, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	1,423.7	15.00	21,355
78	Gypsum board on wood stud framed partitions, including level 5 finish	SF	4,800.3	2.40	11,521
Interior Partitions				31.37/SF	32,876
C1020	Interior Doors				
84	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	1.0	1,600.00	1,600
Interior Doors				1.53/SF	1,600
C1030	Interior Specialties				
89	Provision for signage, including room numbers, code required signs (per GFA)	SF	1,048.0	0.50	524
92	Remove, set aside, and later reinstall in new location, tech locker, including locker base (L2)	EA	13.0	100.00	1,300
93	Remove, set aside, and later reinstall in new location flammable materials locker (L4)	EA	1.0	200.00	200
Interior Specialties				1.93/SF	2,024
C3010	Interior Wall Finishes				
104	Paint on gypsum board / concrete walls	SF	6,877.8	1.80	12,380
Interior Wall Finishes				11.81/SF	12,380
C3020	Interior Floor Finishes				
107	Sealer on concrete floors	SF	1,048.2	1.30	1,363
112	Rubber base, 4"	LF	347.2	3.90	1,354
Interior Floor Finishes				2.59/SF	2,717
C3030	Interior Ceiling Finishes				
116	Gypsum board ceilings, including framing, paint	SF	206.2	5.00	1,031

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A7 Support Area Addition (continued)

GFA: 1,048 SF Cost/SF: 347.12

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
118	ACT ceiling finishes	SF	894.3	7.00	6,260
	Interior Ceiling Finishes			6.96/SF	7,291
D2090	All Plumbing Work				
119	Plumbing (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,048.0	26.00	27,248
	All Plumbing Work			26.00/SF	27,248
D3090	All HVAC Work				
122	HVAC (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,048.0	30.00	31,440
	All HVAC Work			30.00/SF	31,440
D4010	Fire Protection Sprinkler Systems				
123	Fire sprinkler (per Sider+Byers escalated from November 2020) (per GFA)	SF	1,048.0	5.00	5,240
	Fire Protection Sprinkler Systems			5.00/SF	5,240
D5090	All Electrical Work				
126	Electrical (per BCE Engineers from January 2021) (per GFA)	SF	1,048.0	17.00	17,816
	All Electrical Work			17.00/SF	17,816
E1040	Other Equipment				
128	Washer extractor (E1)	EA	1.0	8,000.00	8,000
129	Gear dryer (E2)	EA	1.0	9,000.00	9,000
130	Remove, set aside, and later reinstall in new location tool chest (E3)	EA	1.0	200.00	200
133	SCBA bottle storage, 30" x 30" (E7)	EA	1.0	3,500.00	3,500
	Other Equipment			19.75/SF	20,700
E2010	Fixed Furnishings				
159	Remove, set aside, and later reinstall in new location, bench, 41" x 36" (F1)	EA	2.0	50.00	100
	Fixed Furnishings			0.10/SF	100
	SUPPORT AREA ADDITION			347.12/SF	363,786

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A8 Alternate Siding - Support Area Addition

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	-328.5	48.00	-15,768
47	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	328.6	40.00	13,144
	Exterior Walls				-2,624
	ALTERNATE SIDING - SUPPORT AREA ADDITION				-2,624

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 52 54 55 56



LOCATION UNIFORMAT LEVEL 3 ITEM

A Stations 52 / 54 / 55 / 56

A9 Sitework

Rates Current At June 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2040	Site Development				
162	Sitework resulting from building and pavement reconfigurations and additions	LS	1.0	88,439.00	88,439
	Site Development				88,439
G3020	Site Sanitary Sewer Systems				
165	Provision for sewer piping, and expanding septic tank and leach field	LS	1.0	7,500.00	7,500
	Site Sanitary Sewer Systems				7,500
	SITEWORK				95,939

CAPITAL FACILITIES PLAN

CHAPTER 5 FIRE STATIONS 53 & 57

CHAPTER 5 FIRE STATIONS 53 & 57

RICEfergusMILLER

Chapter 5: Stations 53 and 57

Architectural Assessment

Scope of Review

Stations 53 and 57 were reviewed by architectural and engineering consultants on September 4, 2020. Please see the included reports for detailed assessment of the facility.

General Station Information

- **Age and Improvement History:** Originally built in 1978 Stations 53 and 57 were substantially renovated in 2011 with a living quarters addition, interior remodel, and seismic and life-safety upgrades.
- **Size:** Approximately 4,092 sq. ft.
- **Current and Future Deployment:** The two stations are largely identical and feature two single-deep, back-in apparatus bays suitable for an engine and medic unit. Each station is currently utilized for resident volunteer staffing, though no residents are currently assigned.

Noted Operational Features & Limitations

- **Bunker Gear Storage:** Gear is stored in the apparatus bays. It is recommended to provide a room so that the gear is protected from ultraviolet light and contaminates.
- **Apparatus Bays:** 2 back-in bays present. Point source exhaust capture systems are used at each bay. Clearances are adequate, though tight along the outside wall of the exterior bay.
- **Storage:** Residential and operational storage appears adequate for current station use.
- **Fitness:** The existing fitness space is in good condition and reasonably sized for the station.
- **Laundry and Residential Storage:** Good condition noted, though water damage at Station 53's laundry room was under repair.
- **Kitchen/Dining/Day Room:** Seating, dining and kitchen areas are reasonably sized, and appliances are in good condition.

- Lobby: the lobby space is separated from the remainder of the station, though open to the watch office work area.
- Watch office: Contains desk space for approximately 2 workstations. Fine for current needs, though may be tight should more desk space be needed.
- Lt. Office: The office appears in good condition and no specific deficiencies were noted.
- Sleep Rooms: 4 individual sleep rooms with lockers are provided and appear in good condition for their age. Each room features individual temperature controls.
- Operational Support Spaces: Compact and functional areas are provided for operational storage, shop, and decontamination. These spaces are suitable for current uses of the station.

Code and WAC Considerations

- Decontamination: A decontamination sink is provided in the apparatus bay.
- ADA Accessibility: Both stations were built to the accessibility standards that were applicable at the time of renovation.
- Life Safety: Both stations feature fire alarm and fire sprinkler systems.

Exterior and Site Issues

- Stations 53 and 57 are in good condition and routine maintenance has been performed.
- Exterior: Both stations are in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance.
- Site: Paving and site appear in good condition, with civil improvements completed in 2011.

Engineering Reviews

- Summary of Structural Issues: No formal structural review of these stations was performed as part of this study. Both stations were seismically upgraded as part of

their 2011 renovation and no apparent structural problems or impairments are noted.

- **Summary of Electrical Issues:** All electrical and information systems were replaced as part of the 2011 renovation and as such are in good condition. The stations' fire alarm and life safety systems meet current codes, and a diesel generator serves the facility.
- **Summary of Mechanical Issues:** All mechanical, plumbing, and fire sprinkler systems were replaced with new as part of the 2011 renovation. As such, all are in good condition and no components need replacement at this time.

Conclusions and Long-Term Viability

- **Summary of Architectural and Operational Issues:** In 2011, both stations received substantial additions, interior remodeling, and exterior renovation for all portions of each building. Each station has also received generally light usage of the subsequent years and for that reason, the stations are still in excellent condition with minimal needs for improvements or upgrades. Areas worthy of consideration would be a dedicated room for storing bunker gear and enhanced decontamination facilities.

GIG HARBOR FIRE STATION #53 & #57

Mechanical Systems Report

October 30, 2020

We visited Station #57 on September 4, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet and dry sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single propane water heater with 75 MBH input and 50-gallon storage capacity. The water heater is from the 2012 and has another 7+ years of expected life.
 - b. Piping: Copper piping is used throughout and insulated.
 - c. Water closets: China, tank type flush, in good condition. Fixture supplies are in good condition.
 - d. Lavatories: China, counter mounted with single handle faucets, in good condition.

- e. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, spray and water dispenser, in good condition. Stainless steel, single bowl sink with single handle faucet, in good condition. Fiberglass utility sink with double handle sink faucet, in good condition.
- f. Showers: Fiberglass enclosures with door, single knob mixing valve, in good condition. Single knob mixing valve, handheld shower head, in good condition.
- g. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



- 3. **Propane:** The station has an on-site propane tank. Propane is piped to serve the water heater, range, dryer and BBQ.
- 4. **HVAC - Station**
 - a. **Ventilation:** There is one exhaust fan that serve the restrooms, laundry, fitness and janitor rooms. A separate exhaust fan handles the electrical room. Fresh air for the station is brought in by three ducted heat pumps and two supply fans.
 - b. **Systems:** The station has three ducted heat pump units that serve the offices and common spaces such as the dining, dayroom and fitness room. Each sleep room has an individual wall mounted heat pump. Two outdoor units handle the indoor heat pumps are mounted on concrete pads. All of the HVAC equipment was installed in 2011 aside from the reused electric unit heaters in the app bay. The heat pump systems should have another 6+ years of life.
 - c. **Zoning:** The station is comprised of seven zones each with a programmable thermostat. The first zone includes the two front office spaces. The second zone includes the kitchen, day room and laundry. The third zone handles the fitness room and some of the hall way. The four zones are the individual sleep rooms.
 - d. **Refrigerant:** The Mitsubishi split systems utilize R-410A refrigerant.

- e. **Range Hood:** A light commercial range hood is installed over a commercial propane range. A dedicated supply fan provides make-up air for the kitchen exhaust.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. A motorized damper opens a louver for make-up air when the exhaust fan is running. CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 2 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.
- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - b. Consider providing a Bunker Gear Storage room to extend life and effectiveness of gear by storage in a dark environment. Such a space would have exhaust to remove odor and moisture and heat to promote moisture evaporation.
2. **Code Related:**
 - a. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
 - b. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
3. **Maintenance Related:**
 - a. Consider replacing the domestic water heater in-kind within 5 to 8 years.

BY: Carlos Herrera, Engineer



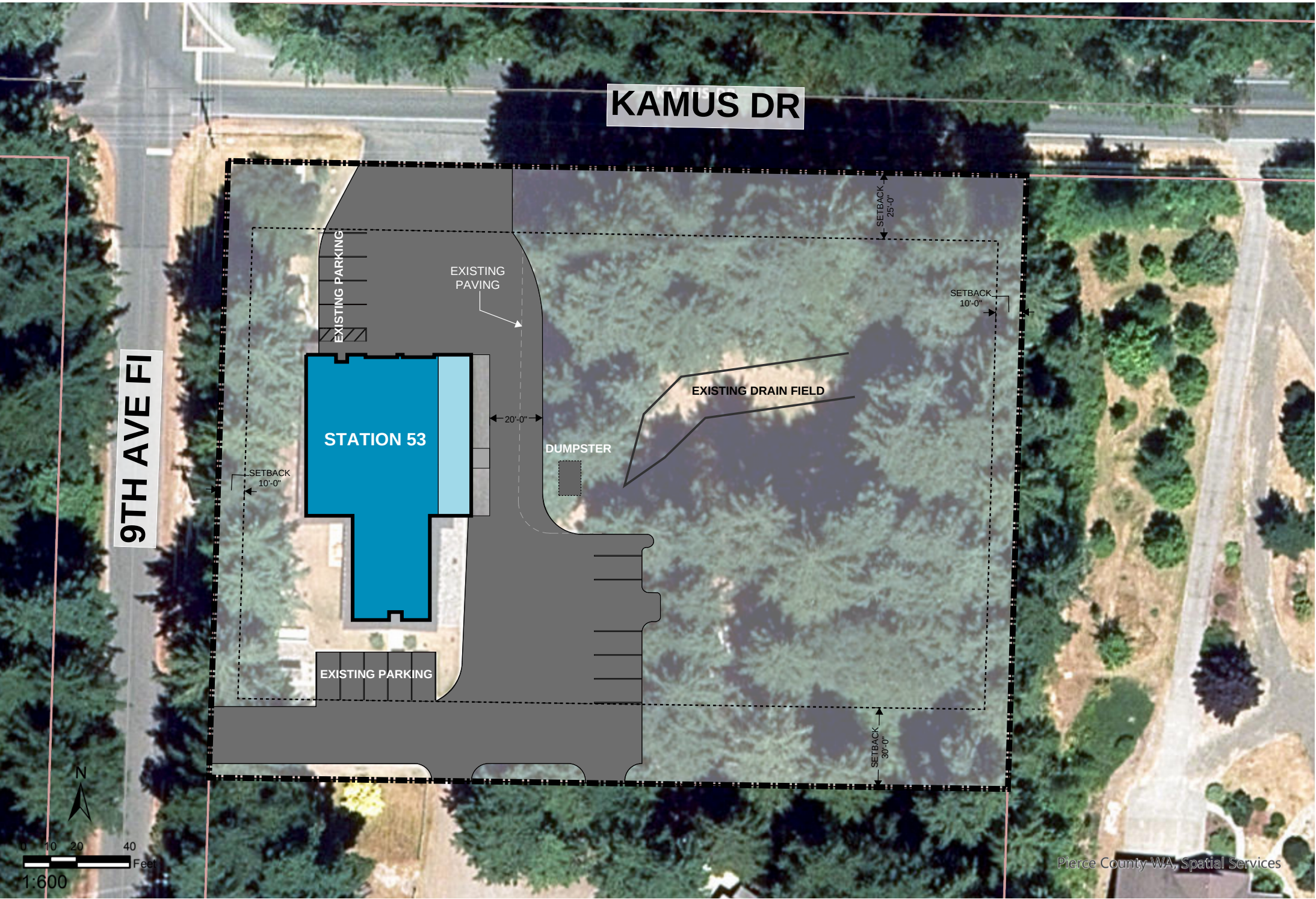
Station 57

This building was remodeled in 2011. The facility has a 80 kW emergency diesel generator that provides back up power to the entire facility.

The building is fed with a 400-amp; 120/240-volt, 1 phase, 3 wire services to (2) 200-amp panelboards with main breakers. There are plenty of spare breaker space in most of the panelboards. The rest of the electrical system is sufficient for the next 10-years.

The building is fully sprinkled and has a Gamewell-Honewell fire alarm system. The building appears to meet current life safety code requirements. There is horn/strobes located throughout the facility and full smoke detection.

The lights are 2x4 lensed with 4' long T5 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. There may be energy rebates available from the local utility for a LED lighting upgrade.

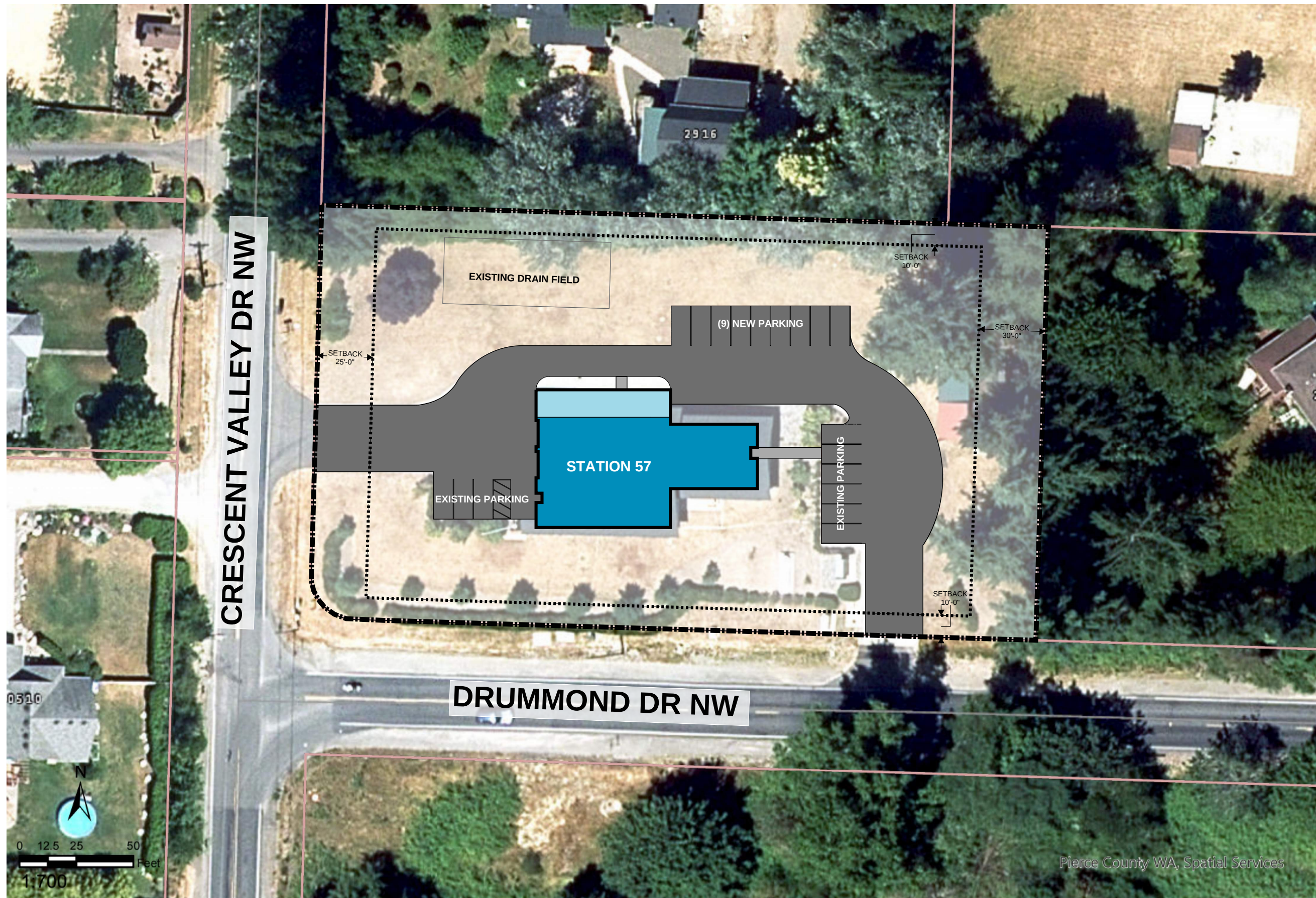


GIG HARBOR 53 SITE PLAN

1" = 20'-0"

GIG HARBOR STATION 53 - SITE PLAN





GIG HARBOR 57 SITE PLAN
1" = 20'-0"

GIG HARBOR STATION 57 - SITE PLAN



 EXISTING STATION

FIRE STATIONS 53 & 57 FLOOR PLAN





 EXISTING STATION

FIRE STATIONS 53 & 57 FLOOR PLAN

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GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At May 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Station 53			
A1	Apparatus Bay Support Addition	748	410.00	306,680
A2	Sitework			61,387
A3	Off-Site Work			Excl.
	Station 53	748	492.07	368,067
	ESTIMATED NET COST	748	492.07	368,067

MARGINS & ADJUSTMENTS

GC General Conditions/Requirements (8 Months)	20.0 %			73,613
Insurances & Bonds	1.7 %			7,508
GC Overhead & Profit	7.5 %			33,689
Design Contingency	15.0 %			72,431
State Sales Tax				Excl.
Subtotal		748	742.39	555,308
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %			33,319
ESTIMATED TOTAL COST		748	786.93	588,627

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A1 Apparatus Bay Support Addition

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	84.0	52.00	4,368
2	Cast in place reinforced concrete continuous footings, next to and joined to existing footings, 18" x 12" thick, including dowels, 12" on center, earthwork	LF	59.0	58.00	3,422
3	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	84.0	36.00	3,024
4	Cast in place reinforced concrete stem walls, 10" thick, 18" high, cast against existing stem wall making thickness 16" thick, including chipping, dowels, earthwork	LF	59.0	41.00	2,419
5	Foundation dampproofing, bituminous asphalt, including protection board	LF	84.0	14.00	1,176
6	Rigid insulation to foundations, 2" thick	LF	84.0	8.00	672
7	Foundation subsoil drain lines, 6", including gravel encasement	LF	86.0	20.00	1,720
Standard Foundations				22.46/SF	16,801
A1030 Slabs on Grade					
8	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	749.0	6.90	5,168
9	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork (interior walls)	LF	34.0	50.00	1,700
10	Premium on concrete slab on grade for thickening under fixed equipment, 12' thick, including earthwork (extractor washer)	SF	9.0	20.00	180
11	Rigid insulation under concrete slab on grade, 2" thick	SF	749.0	3.00	2,247
Slabs on Grade				12.43/SF	9,295
B1020 Roof Construction					
12	Wood posts to roof framing, 6" x 6"	BF	388.0	7.90	3,065
13	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	7.0	160.00	1,120
14	Wood I-joists roof framing, 11-7/8" TJL, 16" on center	SF	667.0	11.70	7,804
15	Wood I-joists roof overframing, 11-7/8" TJL, 16" on center	SF	885.0	12.00	10,620
16	Wood outriggers to roof overhangs, 2" x 6"	BF	704.0	4.30	3,027
17	Wood fascia boards to roof overhangs, 2" x 6"	BF	66.0	4.30	284
18	Wood edge boards to roof overhangs, 2" x 10"	BF	116.0	9.59	1,113
19	Roof sheathing, plywood, 15/32"	SF	1,877.0	3.30	6,194
20	Provision to upgrade existing roof construction (apparatus bay, storage, laundry, electrical/mechanical and janitor rooms, and associated corridors only)	SF	1,989.0	2.00	3,978
Roof Construction				49.74/SF	37,205

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
21	Selectively demolish siding systems and trim from exterior walls down to concrete walls where applicable	SF	1,031.0	2.00	2,062
22	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	1,367.0	15.00	20,505
23	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	1,131.0	38.00	42,978
24	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	86.0	15.00	1,290
25	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	256.0	38.00	9,728
26	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	1,129.0	8.10	9,145
	Exterior Walls			114.58/SF	85,708
B2020	Exterior Windows				
27	Selectively demolish window from walls to remain, 3' x 4'	EA	1.0	50.00	50
	Exterior Windows			0.07/SF	50
B2030	Exterior Doors				
28	Selectively demolish single exterior door from frame to remain, 3' x 7'	EA	1.0	40.00	40
29	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500
	Exterior Doors			4.73/SF	3,540
B3010	Roof Coverings				
30	Selectively demolish roofing for installation of overframing (overframing to change existing building roof slope elsewhere)	SF	1,016.0	2.00	2,032
31	Asphalt shingle roofing, including rubberized asphalt underlayment, insulating sheathing, R-49, blocking, flashing and finish	SF	1,877.0	20.00	37,540
32	Aluminum gutters, enameled, 5" box	LF	30.0	15.00	450
33	Aluminum downspouts, enameled, 2" x 3"	LF	28.0	12.00	336
	Roof Coverings			53.95/SF	40,358
C1010	Interior Partitions				
34	Cut out, opening in existing wood framed and plywood sheathed exterior walls for new single door and frame or plain opening (new door and frame elsewhere)	EA	1.0	250.00	250
35	Build up opening where window removed from existing wall, including stud framing and gypsum board both sides, 3' x 4'	EA	1.0	250.00	250

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
36	Wall framing, partitions, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	656.0	15.00	9,840
37	Gypsum board on wood stud framed partitions, including level 5 finish	SF	3,706.0	2.40	8,895
Interior Partitions				25.72/SF	19,235
C1020	Interior Doors				
38	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	4.0	1,600.00	6,400
39	Wood moldings to existing single door frame where door removed to create plain opening, 3' x 7'	EA	1.0	350.00	350
Interior Doors				9.02/SF	6,750
C1030	Interior Specialties				
40	Provision for signage, including room numbers, code required signs (per GFA)	SF	748.0	0.50	374
41	Bunker gear metal storage rack, wall mounted, 20" x 21" x 72" high	EA	18.0	500.00	9,000
42	Tote/disaster storage metal shelving, 24" deep, 3 shelves	LF	20.0	120.00	2,400
43	Decon room metal shelving, 18" deep, 4 shelves	LF	4.0	120.00	480
Interior Specialties				16.38/SF	12,254
C3010	Interior Wall Finishes				
44	Paint on gypsum board walls	SF	3,706.0	1.80	6,671
Interior Wall Finishes				8.92/SF	6,671
C3020	Interior Floor Finishes				
45	Sealer on concrete floors	SF	748.0	1.30	973
46	Rubber base, 4"	LF	209.0	3.90	815
Interior Floor Finishes				2.39/SF	1,788
C3030	Interior Ceiling Finishes				
47	Gypsum board ceilings, including framing, paint	SF	167.0	5.00	835
48	ACT ceiling finishes	SF	582.0	7.00	4,074
Interior Ceiling Finishes				6.56/SF	4,909
D2090	All Plumbing Work				
49	Plumbing (per GFA)	SF	748.0	10.00	7,480
All Plumbing Work				10.00/SF	7,480
D3090	All HVAC Work				
50	HVAC (per GFA)	SF	748.0	25.00	18,700
All HVAC Work				25.00/SF	18,700

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D4010	Fire Protection Sprinkler Systems				
51	Fire sprinkler system (per GFA)	SF	748.0	7.00	5,236
	Fire Protection Sprinkler Systems			7.00/SF	5,236
D5090	All Electrical Work				
52	Electrical (per GFA)	SF	748.0	15.00	11,220
	All Electrical Work			15.00/SF	11,220
E1040	Other Equipment				
53	Washer extractor	EA	1.0	8,000.00	8,000
54	Gear dryer	EA	1.0	9,000.00	9,000
	Other Equipment			22.73/SF	17,000
E2010	Fixed Furnishings				
55	Check-in, check-out cabinets	LF	4.0	620.00	2,480
	Fixed Furnishings			3.32/SF	2,480
	APPARATUS BAY SUPPORT ADDITION			410.00/SF	306,680

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A2 Sitework

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G1020	Site Clearing				
56	Site clearing, vegetation and medium to large tree removal (parking lot expansion)	Acre	0.10	12,000.00	1,200
57	Stripping topsoil and haul off site (parking lot expansion)	CY	32.0	20.00	640
	Site Clearing				1,840
G1030	Site Demolition and Relocations				
58	Sawcut and selectively demolish flexible/rigid pavement, including curbs	SY	227.0	20.00	4,540
	Site Demolition and Relocations				4,540
G1040	Site Earthwork				
59	Grading to form final levels (building addition and parking lot expansion)	CY	152.0	20.00	3,040
	Site Earthwork				3,040
G2020	Parking Lots				
60	Asphalt paving in patches, including base and sub-base courses	SY	96.0	130.00	12,480
62	Concrete curbs in patches	LF	189.0	30.00	5,670
	Parking Lots				18,150
G2030	Pedestrian Paving				
63	Concrete sidewalks	SF	53.0	7.00	371
	Pedestrian Paving				371
G2050	Landscaping				
64	Landscaping, crushed rock (building perimeter)	SF	372.0	1.20	446
	Landscaping				446
G3020	Site Sanitary Sewer Systems				
65	Provision for sewer piping and expanding leach field	LS	1.0	10,000.00	10,000
	Site Sanitary Sewer Systems				10,000
G3030	Site Storm Sewer Systems				
66	Provision to reconfigure site storm water drainage	LS	1.0	15,000.00	15,000
	Site Storm Sewer Systems				15,000
G5020	Site Lighting Systems				
68	Provision for site lights	EA	1.0	8,000.00	8,000
	Site Lighting Systems				8,000
	SITework				61,387

GIG HARBOR FIRE & MEDIC ONE

STATION 53 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

A Station 53

A3 Off-Site Work

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2050	Landscaping				
67	Provision for street front improvements	LF	535.0		Excl.
	Landscaping				Excl.
	OFF-SITE WORK				Excl.

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At May 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
B	Station 57			
B1	Apparatus Bay Support Addition	748	410.00	306,679
B2	Sitework			74,648
B3	Off-Site Work			Excl.
	Station 57	748	509.80	381,327
	ESTIMATED NET COST	748	509.80	381,327

MARGINS & ADJUSTMENTS			
GC General Conditions/Requirements (8 Months)	20.0 %		76,266
Insurances & Bonds	1.7 %		7,779
GC Overhead & Profit	7.5 %		34,903
Design Contingency	15.0 %		75,041
State Sales Tax			Excl.
Subtotal		748 769.14	575,316
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %		34,519
ESTIMATED TOTAL COST		748 815.29	609,835

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B1 Apparatus Bay Support Addition

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	84.0	52.00	4,368
2	Cast in place reinforced concrete continuous footings, next to and joined to existing footings, 18" x 12" thick, including dowels, 12" on center, earthwork	LF	59.0	58.00	3,422
3	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	84.0	36.00	3,024
4	Cast in place reinforced concrete stem walls, 10" thick, 18" high, cast against existing stem wall making thickness 16" thick, including chipping, dowels, earthwork	LF	59.0	41.00	2,419
5	Foundation dampproofing, bituminous asphalt, including protection board	LF	84.0	14.00	1,176
6	Rigid insulation to foundations, 2" thick	LF	84.0	8.00	672
7	Foundation subsoil drain lines, 6", including gravel encasement	LF	86.0	20.00	1,720
Standard Foundations				22.46/SF	16,801
A1030 Slabs on Grade					
8	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	749.0	6.90	5,168
9	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork (interior walls)	LF	34.0	50.00	1,700
10	Premium on concrete slab on grade for thickening under fixed equipment, 12' thick, including earthwork (extractor washer)	SF	9.0	20.00	180
11	Rigid insulation under concrete slab on grade, 2" thick	SF	749.0	3.00	2,247
Slabs on Grade				12.43/SF	9,295
B1020 Roof Construction					
12	Wood posts to roof framing, 6" x 6"	BF	388.0	7.90	3,065
13	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	7.0	160.00	1,120
14	Wood I-joists roof framing, 11-7/8" TJL, 16" on center	SF	667.0	11.70	7,804
15	Wood I-joists roof overframing, 11-7/8" TJL, 16" on center	SF	885.0	12.00	10,620
16	Wood outriggers to roof overhangs, 2" x 6"	BF	704.0	4.30	3,027
17	Wood fascia boards to roof overhangs, 2" x 6"	BF	66.0	4.30	284
18	Wood edge boards to roof overhangs, 2" x 10"	BF	116.0	9.60	1,114
19	Roof sheathing, plywood, 15/32"	SF	1,877.0	3.30	6,194
20	Provision to upgrade existing roof construction (apparatus bay, storage, laundry, electrical/mechanical and janitor rooms, and associated corridors only)	SF	1,989.0	2.00	3,978
Roof Construction				49.74/SF	37,206

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
21	Selectively demolish siding systems and trim from exterior walls down to concrete walls where applicable	SF	1,031.0	2.00	2,062
22	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	1,367.0	15.00	20,505
23	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	1,131.0	38.00	42,978
24	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	86.0	15.00	1,290
25	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	256.0	38.00	9,728
26	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	1,129.0	8.10	9,145
	Exterior Walls			114.58/SF	85,708
B2020	Exterior Windows				
27	Selectively demolish window from walls to remain, 3' x 4'	EA	1.0	50.00	50
	Exterior Windows			0.07/SF	50
B2030	Exterior Doors				
28	Selectively demolish single exterior door from frame to remain, 3' x 7'	EA	1.0	40.00	40
29	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1.0	3,500.00	3,500
	Exterior Doors			4.73/SF	3,540
B3010	Roof Coverings				
30	Selectively demolish roofing for installation of overframing (overframing to change existing building roof slope elsewhere)	SF	1,016.0	2.00	2,032
31	Asphalt shingle roofing, including rubberized asphalt underlayment, insulating sheathing, R-49, blocking, flashing and finish	SF	1,877.0	20.00	37,540
32	Aluminum gutters, enameled, 5" box	LF	30.0	15.00	450
33	Aluminum downspouts, enameled, 2" x 3"	LF	28.0	12.00	336
	Roof Coverings			53.95/SF	40,358
C1010	Interior Partitions				
34	Cut out, opening in existing wood framed and plywood sheathed exterior walls for new single door and frame or plain opening (new door and frame elsewhere)	EA	1.0	250.00	250
35	Build up opening where window removed from existing wall, including stud framing and gypsum board both sides, 3' x 4'	EA	1.0	250.00	250

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
36	Wall framing, partitions, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	656.0	15.00	9,840
37	Gypsum board on wood stud framed partitions, including level 5 finish	SF	3,706.0	2.40	8,894
Interior Partitions				25.71/SF	19,234
C1020	Interior Doors				
38	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	4.0	1,600.00	6,400
39	Wood moldings to existing single door frame where door removed to create plain opening, 3' x 7'	EA	1.0	350.00	350
Interior Doors				9.02/SF	6,750
C1030	Interior Specialties				
40	Provision for signage, including room numbers, code required signs (per GFA)	SF	748.0	0.50	374
41	Bunker gear metal storage rack, wall mounted, 20" x 21" x 72" high	EA	18.0	500.00	9,000
42	Tote/disaster storage metal shelving, 24" deep, 3 shelves	LF	20.0	120.00	2,400
43	Decon room metal shelving, 18" deep, 4 shelves	LF	4.0	120.00	480
Interior Specialties				16.38/SF	12,254
C3010	Interior Wall Finishes				
44	Paint on gypsum board walls	SF	3,706.0	1.80	6,671
Interior Wall Finishes				8.92/SF	6,671
C3020	Interior Floor Finishes				
45	Sealer on concrete floors	SF	748.0	1.30	972
46	Rubber base, 4"	LF	209.0	3.90	815
Interior Floor Finishes				2.39/SF	1,787
C3030	Interior Ceiling Finishes				
47	Gypsum board ceilings, including framing, paint	SF	167.0	5.00	835
48	ACT ceiling finishes	SF	582.0	7.00	4,074
Interior Ceiling Finishes				6.56/SF	4,909
D2090	All Plumbing Work				
49	Plumbing (per GFA)	SF	748.0	10.00	7,480
All Plumbing Work				10.00/SF	7,480
D3090	All HVAC Work				
50	HVAC (per GFA)	SF	748.0	25.00	18,700
All HVAC Work				25.00/SF	18,700

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B1 Apparatus Bay Support Addition (continued)

GFA: 748 SF Cost/SF: 410.00

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D4010	Fire Protection Sprinkler Systems				
51	Fire sprinkler system (per GFA)	SF	748.0	7.00	5,236
	Fire Protection Sprinkler Systems			7.00/SF	5,236
D5090	All Electrical Work				
52	Electrical (per GFA)	SF	748.0	15.00	11,220
	All Electrical Work			15.00/SF	11,220
E1040	Other Equipment				
53	Washer extractor	EA	1.0	8,000.00	8,000
54	Gear dryer	EA	1.0	9,000.00	9,000
	Other Equipment			22.73/SF	17,000
E2010	Fixed Furnishings				
55	Check-in, check-out cabinets	LF	4.0	620.00	2,480
	Fixed Furnishings			3.32/SF	2,480
	APPARATUS BAY SUPPORT ADDITION			410.00/SF	306,679

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B2 Sitework

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G1020	Site Clearing				
56	Site clearing, vegetation and medium to large tree removal (parking lot expansion)	Acre	0.10	12,000.00	1,200
57	Stripping topsoil and haul off site (parking lot expansion)	CY	55.0	20.00	1,100
	Site Clearing				2,300
G1030	Site Demolition and Relocations				
58	Sawcut and selectively demolish flexible/rigid pavement, including curbs	SY	286.0	20.00	5,720
	Site Demolition and Relocations				5,720
G1040	Site Earthwork				
59	Grading to form final levels (building addition and parking lot expansion)	CY	191.0	20.00	3,820
	Site Earthwork				3,820
G2020	Parking Lots				
61	Pervious concrete paving in patches, including base and sub-base courses, parking stall markings	SY	163.0	145.00	23,635
62	Concrete curbs in patches	LF	186.0	30.00	5,580
	Parking Lots				29,215
G2030	Pedestrian Paving				
63	Concrete sidewalks	SF	30.0	7.00	210
	Pedestrian Paving				210
G2050	Landscaping				
64	Landscaping, crushed rock (building perimeter)	SF	319.0	1.20	383
	Landscaping				383
G3020	Site Sanitary Sewer Systems				
65	Provision for sewer piping and expanding leach field	LS	1.0	10,000.00	10,000
	Site Sanitary Sewer Systems				10,000
G3030	Site Storm Sewer Systems				
66	Provision to reconfigure site storm water drainage	LS	1.0	15,000.00	15,000
	Site Storm Sewer Systems				15,000
G5020	Site Lighting Systems				
68	Provision for site lights	EA	1.0	8,000.00	8,000
	Site Lighting Systems				8,000
	SITework				74,648

GIG HARBOR FIRE & MEDIC ONE

STATION 57 PRE-DESIGN



LOCATION UNIFORMAT LEVEL 3 ITEM

B Station 57

B3 Off-Site Work

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2050	Landscaping				
67	Provision for street front improvements	LF	508.0		Excl.
	Landscaping				Excl.
	OFF-SITE WORK				Excl.

CAPITAL FACILITIES PLAN

CHAPTER 6 FIRE STATIONS 58 & 59

RICE*fergus***MILLER**

Chapter 6: Fire Stations 58 and 59

Architectural Assessment

Scope of Review

Stations 58 and 59 were reviewed by architectural and engineering consultants on August 21, 2020. Please see the included engineering reports for detailed assessment of the facility.

General Station Information

- Age and Improvement History: Originally planned as volunteer-staffed stations, Stations 58 and 59 were built as part of a six-station building campaign from 1986-1988, along with sister stations 52, 54, 55 and 56.
- Size: Approximately 6,720 sq. ft.
- Station 58 Current and Future Deployment: 1 Engine (3 FF); 1 Medic (2 FF); Technical Rescue vehicle. Staffing is typically 5 or 6 FF and 1 Officer.
- Station 59 Current and Future Deployment: 1 Engine (3 FF); 1 Medic (2 FF); Hazardous Materials vehicle. Staffing is typically 5 or 6 FF and 1 Officer.

Noted Operational Limitations

- Operational Support and Storage: Minimal storage is provided for firefighting equipment and supplies at the apparatus bays. In addition, the bays are used to accommodate many operational support functions including bunker gear storage, shop space, storage of specialty gear, decontamination, gear washing/drying, equipment storage and vehicle washing supplies. This in turn puts pressure on the apparatus bays and requires use of vehicle space for operational support. Consideration should be given to expanding the station's footprint to create support spaces. This will provide greater flexibility for the bays themselves and increase safety and clearances around vehicles as gear and equipment is placed in new rooms.
- Apparatus Bays: Both stations feature two apparatus bays: one drive through and one back-in only. Both bays are about an engine and a half in depth. Bay doors are 12 feet x 12 feet overhead-type. Bay clearances are tight but acceptable around

vehicles and exhaust point source capture is provided. The exterior concrete masonry bay walls are not insulated.

- **Bunker Gear Storage:** Gear lockers are currently stored with the apparatus bay and are insufficient for the required PPE assigned to each firefighter. Currently all crew receive two sets of bunker gear, 1 set of wildlands gear and additional gear for things such as pandemic PPE. Additional gear racks should be provided to accommodate all gear appropriately and racks should be placed within a separate room to prevent deterioration and contamination from the apparatus bays.
- **Decontamination:** A dedicated decontamination room should be provided in the bay area with room for a bunker gear washer and dryer, a large, scullery-type sink, and a shower area for washing large items. Current decontamination facilities are limited to a tub sink in a restroom adjacent to the apparatus bays. No bunker gear washers or dryers are provided at Stations 58 or 59.
- **Specialty Gear Storage:** Station 58 houses the district's technical rescue team, and its gear is currently housed in lockers within the apparatus bay. This gear should be moved to a secure storage room. Rated pick points are located within the bays for in-station training exercises.
- **Sleep Rooms:** Originally built as open dorm rooms for 3 or 4-person crew, the stations' sleep areas have been subsequently remodeled several times to provide a total of 5 rooms separated by walls and/or casework. A total of 7 sleep rooms is desired to accommodate current staffing levels. While current configuration provides a degree of privacy it is recommended for hygiene and code-compliance purposes that rooms be separated with rated walls and doors. Individual heating/cooling is also desirable and should be considered as part of a substantial remodel to the stations. Some lockers are currently housed in the lobby due to space constraints.
- **Kitchen/Dining:** Finishes are in good condition, though hard surfaces such as tile floors should be considered in lieu of carpet for hygiene purposes. Consider a kitchen remodel to provide better workflow and efficiency as well as ease of access from the dining space to the apparatus bays. Room for additional shift refrigerators and 24 firefighter food lockers is also desirable. Commercial kitchen appliances are desired. Some acoustic issues are noted in the dining and kitchen area due to the high ceilings. However, the tall space and skylights are generally favored.

- PT Room: Currently housed in the former community room, the PT space is of good size. An exterior door is provided for fresh air, though the room lacks windows otherwise.
- Lobby: A separate lobby for visitors is not provided but should be considered for additional station security.
- Watch Office: The current space has desk space for four staff to work. Additional space should be considered for the remaining staff.
- Dayroom: The dayroom currently only accommodates 5 people. Consider enlarging the space to accommodate the remaining crew members.
- Restrooms: Crew restrooms are separate from showers and separate Men and Women restrooms are available. Public restrooms are available at the lobby area. Better ventilation was noted as an on-going concern.
- Station Laundry: A washer and dryer is provided within the station for staff use.
- Alerting System: The District is in the process of deploying a US Digital alerting system to these two stations.

Code and WAC Considerations

- Accessibility: The crew kitchen does not meet current accessibility standards. Restrooms are generally not ADA accessible to current codes either. Any remodels will require adherence to current ADA code requirements.
- Life Safety Systems: Both stations have fire alarm and fire sprinkler systems.
- Cooking appliances are connected to an emergency shut-off which should be tied into the new alerting system.

Deferred Maintenance Issues

- Stations 58 and 59 are in good condition for buildings of their age. Routine maintenance has been performed and weatherization issues (such as the siding repairs at Station 58) have been performed as needed.

- Interior Finishes: Generally, in good condition though wear and tear is noted at casework plastic laminate, restroom flooring and the epoxy painted apparatus bay floor. Timeless, standardized colors are preferred where possible.

Exterior Envelope and Site Issues

- Exterior: Both stations are in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance and the maintenance issues noted above. The “wing” walls jutting out from the building façade have been problematic over the years due to poor detailing, resulting in weatherization issues and siding deterioration. These should be re-considered and evaluated as part of any remodel and expansion project. Portions of the station area uninsulated and the air barrier at the roof is porous, resulting in relatively poor energy efficiency.
- Roof: The existing asphalt composition shingle roofs are in good condition and no active leaks are noted. Consider providing fall protection when the roof is scheduled for replacement.
- Site: Paving and site appear in good condition and reasonable parking is available for visitors. Station 58’s site is flexible and internally connected to both the training grounds and the adjacent headquarters Station 50.
- Utilities: Both stations are served by a septic drain field and municipal water for domestic water service. Fire flow is provided by municipal water system.

Engineering Reviews

- Summary of Structural Issues: Given the age and construction of the stations, neither 58 nor 59 meet an Immediate Occupancy level of seismic resistance. Improvements expected to be performed as part of a major renovation or remodel would include strengthening existing masonry shear walls with new concrete shear walls, adding new wood shear walls, upgrading existing wood shear walls, strengthening the roof diaphragm, and improving roof-to-wall and wall-to-wall connections. New concrete shear walls and piers with footings should be installed throughout the apparatus bay, along with additional foundation improvements.
- Summary of Mechanical Issues: While HVAC systems have been well maintained, several units at each station are nearing end of life and none will support individual temperature controls at each sleep room. Existing mechanical components will need to be brought up to current energy code requirements as part of any substantial remodel.

- **Summary of Electrical Issues:** The stations' electrical system is in good condition though it lacks capacity for additional panels and breakers. The main panel's antiquated design will not meet current codes and should be replaced and upgraded as part of any remodel. The current fire alarm system does not meet current codes and cannot be expanded for remodeling and would need to be replaced. An emergency diesel generator supports each facility.
- **Summary of Civil Issues:** Should Stations 58 and 59 be substantially remodeled and enlarged, stormwater improvements may be required should more than 5,000 square feet of impervious area be created or replaced. Septic system designs should be confirmed with the increase in building occupants.

Conclusions and Long-Term Viability

- **Summary of Architectural and Operational Issues:** Apart from Station 51, Stations 58 and 59 are the busiest stations in the district. Staffing has slowly increased over the years which is straining the capacity of the building in nearly all aspects. These impacts are most visibly in two areas: crew sleeping quarters and in operational support spaces. Crew sleeping quarters are cramped and becoming more so as staffing increases at each station. Additionally, these stations simply do not contain adequate support space for decontamination, storage for bunker gear, shop space, or operational storage beyond what is available within the apparatus bays. This limits the efficiency and effectiveness of routine duties and places a burden on the apparatus bays that prevents them from accommodating additional vehicles when needed. Fortunately, the site for each station has apparent room to expand and there are logical locations for infill additions.

GIG HARBOR FIRE STATION #58

Mechanical Systems Report

October 30, 2020

We visited Station #58 on August 21, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single electric water heater with 4.5kw non-simultaneous heating elements and 105-gallon storage capacity, in good condition.
 - b. Piping: Copper piping is used throughout and insulated.
 - c. Water closets: China, tank type flush, in good/fair condition. Fixture supplies are in poor condition.
 - d. Urinals: China, flush valve, in fair condition.
 - e. Lavatories: China, counter mounted with single handle faucets, in good condition.

- f. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, in fair condition. Stainless steel, single bowl laundry sink with single handle faucet in fair condition. Stainless steel, single bowl fitness room sink with single handle faucet, in fair condition. Fiberglass utility sink with service sink faucet, in poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in fair/poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in poor condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



- 3. **Natural Gas:** The station does not have a natural gas service.
- 4. **HVAC - Station**
 - a. **Ventilation:** There are two exhaust fans that serve the restrooms. The shower rooms have individual exhaust fans with an integral infrared bulb. Fresh air for the station is brought in by three ducted furnaces.
 - b. **Systems:** The station has three ducted split system furnaces with ground mounted condensing units. All three systems are Trane units that are 8, 12 and 14 years old. The 8 and 12 year old systems use R-410A refrigerant and the 14 year old system uses R-22 refrigerant. The older units are nearing their expected lifespan.

- c. **Zoning:** The station is comprised of three zones each with a programmable thermostat. The first zone includes the dorm and crew area. The kitchen, day room, office and lobby are a separate zone and the last zone serves the fitness room. The large zones for the dorm and kitchen areas do not provide adequate occupant comfort. This system does not allow for individual sleep room controls.
- d. **Refrigerant:** The Trane systems utilize either R-22 or R-410A refrigerant as defined above in the systems section.
- e. **Range Hood:** A residential range hood is installed over a residential electric range without any make-up air.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. Currently, no make-up air is provided and CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 3 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.
- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - c. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.
2. **Code Related:**
 - a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for existing kitchens.
 - b. Kitchen cooking appliances in fire stations are classified by Code as residential which exempts the requirement for a restaurant style Type I grease capture hood. However, since a fire station kitchen typically receives much more use than a normal house, a commercial style kitchen hood with roof mounted exhaust fan is recommended. This provides much better capture of steam and odors. Code does require make-up air be provided based on the volume of air exhausted.
 - c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
 - d. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
 - e. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.

3. **Maintenance Related:**

- a. Split systems that use R-22 refrigerant cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater in-kind within the next 5 to 8 years.

BY: Carlos Herrera, Engineer

GIG HARBOR FIRE STATION #59

Mechanical Systems Report

October 30, 2020

We visited Station #59 on August 21, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire station design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The station has a full coverage wet sprinkler system.



2. **Plumbing:**
 - a. Domestic hot water: The station is currently served by a single electric water heater with 4.5kw non-simultaneous heating elements and 105-gallon storage capacity, in good condition.

- b. Piping: Copper piping is used throughout and mostly insulated.
- c. Water closets: China, tank type flush, in good condition. Fixture supplies are in poor condition.
- d. Urinals: China, flush valve, in fair condition.
- e. Lavatories: China, counter mounted with single handle faucets, in good/fair condition.
- f. Sinks: Stainless steel, double bowl kitchen sink with single handle faucet, in fair condition. Stainless steel, single bowl laundry sink with single handle faucet in fair condition. Stainless steel, single bowl fitness room sink with single handle faucet, in fair condition. Fiberglass utility sink with double handle sink faucet, in poor condition.
- g. Showers: Fiberglass enclosures with door, single knob mixing valve, in fair/poor condition.
- h. Drinking fountain: Stainless steel, refrigerated, single station in poor condition.
- i. Drains: The apparatus bay has small trench drains in each bay. The drains all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The station has an air compressor located in the app bay with piping to outlets for vehicle maintenance.



3. **Natural Gas:** The station does not have a natural gas service.

4. **HVAC - Station**

- a. **Ventilation:** There are two exhaust fans that serve the restrooms. The shower rooms have individual exhaust fans with an integral infrared bulb. Fresh air for the station is brought in by three ducted furnaces.
- b. **Systems:** The station has three ducted split system furnaces with ground mounted condensing units. Two of the three systems are full Trane systems (furnace, coil and condensing unit) that are 9 and 11 years old (R-410A refrigerant based). The third system is comprised of a Coleman furnace from the late 1980s with a Trane coil and condensing unit that are 15 years old (R-22 refrigerant based). The Coleman + Trane system has reached its expected lifespan and the other two systems are nearing their end.
- c. **Zoning:** The station is comprised of three zones each with a programmable thermostat. The first zone includes the dorm and crew area. The kitchen, day room, office and lobby are a separate zone and the last zone serves the fitness room. The large zones for the dorm and kitchen areas do not provide adequate occupant comfort. This system does not allow for individual sleep room controls.
- d. **Refrigerant:** The Trane systems utilize either R-22 or R-410A refrigerant as defined above in the systems section.
- e. **Range Hood:** A residential range hood is installed over a residential electric range without any make-up air.



5. **HVAC – Apparatus Bay**

- a. **Ventilation:** There is general exhaust fan present that runs on an interval timer and appears to be in good condition. Currently, no make-up air is provided and CO or NO2 gas sensors are not present.
- b. **Source Capture Vehicle Exhaust:** The apparatus bay has a vehicle exhaust track system that is set up for 3 vehicles. The exhaust fan is mounted in the apparatus bay and appears to be in good condition.

- c. **Heat:** The apparatus bay has two electric unit heaters. The apparatus bay layout would not accommodate infrared tube heaters due to the low ceiling height.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Plan on providing HVAC capability for individual temperature control in single sleep rooms.
 - b. Consider providing separate dedicated Decon space to contain and separate possible contamination from living and working areas. This space would also provide privacy when personal decontamination is required. Such a space would have high volume exhaust, infrared heat for comfort and drying, personal and equipment cleaning areas and full room drainage.
 - c. Consider providing make-up air louver(s) which would interlock and open when the app bay exhaust fan is operating.
2. **Code Related:**
 - a. WAC 296-305-06503(15) requires new or remodeled kitchens to have cooking appliance disconnects active by alarm for gas and electricity. We recommend this be retrofitted for existing kitchens.

- b. Kitchen cooking appliances in fire stations are classified by Code as residential which exempts the requirement for a restaurant style Type I grease capture hood. However, since a fire station kitchen typically receives much more use than a normal house, a commercial style kitchen hood with roof mounted exhaust fan is recommended. This provides much better capture of steam and odors. Code does require make-up air be provided based on the volume of air exhausted.
 - c. Ventilation: The Energy Code requires that outside air ventilation for fire stations be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
 - d. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the app bay. Consider adding CO and NO2 sensors to control the existing general exhaust fan.
 - e. Code requires drinking fountains in new facilities to be bi-level and ADA compliant. When replacing the drinking fountain, consider upgrading to a bi-level model to comply with the Code.
3. **Maintenance Related:**
- a. Split systems that use R-22 refrigerant cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410A. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
 - b. We recommend replacing the domestic water heater in-kind within the next 5 to 8 years.

BY: Carlos Herrera, Engineer

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Gig Harbor Fire Stations 58 and 59

Mechanical Systems Narrative

November 24, 2020

General Project Description: The existing stations 58 and 59 are identical and were built in 1987, are one story tall, have an App Bay, and are each about 5,800 square feet in total size. The remodel consists of a full gut remodel of about 80% of the station, as well as an approximate 4,100 square foot addition of individual sleep rooms, office, bunker gear, storage, and an extension of the apparatus bay.

Fire Protection Description: The existing building has a wet sprinkler system. Sprinklers will be required to be added to the new app bay, storage rooms and bunker room. Sprinkler head locations will be modified based on the remodeled areas of the building.

Plumbing Description: New plumbing fixtures and piping will be provided in the remodeled and new areas of the station. The existing electric water heater shall be replaced with a gas fired water heater due to the added capacity from fixtures and addition of natural gas to the building.

HVAC Description: The HVAC systems in the station are beyond their service life and will be replaced in full in this remodel. This project will replace the general exhaust ventilation to the app bay due to the expansion. The existing vehicle source capture system will be modified to include the new app bay and will require a larger exhaust fan.

I. Site Work/Utilities

1. Retain fire service to the building.
2. Retain existing water service to the building.
3. Retain existing sewer service to the building.
4. Retain oil/water separator to building.
5. Install natural gas service to the building

II. Fire Protection

A. General:

1. Extend existing wet sprinkler system to serve new and remodeled spaces.
2. Semi-recessed heads in ceilings. Exposed heads with guard covers.
3. Schedule 40 black steel or thin wall steel pipe. Threaded or grooved end fittings.

B. A dry system is not anticipated but would be required for long overhangs or cold attic spaces.

III. Plumbing

A. Piping materials will be as follows.

1. Above grade water: Type 'L' copper.
2. Below grade water: Type 'K' copper.
3. Above grade waste: Cast iron.
4. Below grade waste: PVC plastic pipe.
5. Vent: PVC/ABS.
6. Natural gas: Schedule 40 black steel.
7. Compressed air: Brazed copper or Schedule 40 black steel.
8. Pipe insulation: Preformed fiberglass with white laminated jacket. Molded PVC covers.

B. Plumbing Fixtures will be as follows:

1. Water Closets: Floor mount, vitreous china, open front seats, 1.28 GPF tank type. ADA compliance as required. Note: If flush valve water closets are desired this will likely increase the domestic water service size.
2. Lavatories: Countertop or wall-hung units, vitreous china, manual single handle mixing faucet. Public lavatories shall be 0.5 gpm, non-public shall be 1.0 gpm. ADA compliant as required.
3. Showers: Single piece fiberglass stalls with single lever pressure balancing valve and adjustable water saving 2.0 gpm spray head. ADA compliance with grab bars, fold down seat and hand wand as required.
4. Kitchen Sinks: Single bowl non-ADA, stainless steel 18 gauge, single handle 1.5 gpm faucet at island, pipe hot water to dishwasher(s). Single bowl ADA, stainless steel 18 gauge sink, single handle 1.5 gpm faucet, ADA complaint.
5. Decon Sink: Triple bowl, stainless steel 18 gauge, manual dual handle 2.0 gpm pull down faucet.

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6. Extractor: Provide 1" RPBA's for hot and cold-water supply lines. Provide trench drain and catch basin for extractor discharge (minimum of 3.9 FT³ volume capacity).
7. Eyewash: Deck mount at decon sink with CSA certified mixing valve meeting ANSI Z358.1 providing tempered water.
8. Drinking Fountain: Bi-level station, refrigerated, filtered, with bottle filler, ADA compliant.
9. App Bay Sinks: Wall mount, stainless steel, dual handle 1.5 gpm faucet.

C. Domestic Hot Water:

1. New high efficiency package gas-fired water heater with integral storage tank. Minimum of 199MBH gas input and 119 gallons of storage.
2. Provide a new mixing valve and expansion tank.
3. Install hot water circulation piping with circuit setters to meet the Energy Code requirements.
4. Provide hot water circulation pump with aqua-stat.

D. Plumbing accessories will be provided as follows:

1. Freeze-proof hose bibb: Provide at the south exterior of the building with wheel handle (where the new expansion occurs).
2. Floor drains: Cast iron body, round polished nickel bronze strainer with trap primer. Located in potential wet areas of new rooms (decon, bunker, storage, shop, restrooms).
3. Trench drains: Provide two drains in the new apparatus bay centered on the drive aisle. The new trench drains must tie into the existing oil/water separator on site before discharging to the sanitary sewer.

E. Natural gas systems and piping will be as follows:

1. Earthquake valve installed on main gas line at meter.
2. Piping to water heater, kitchen range, BBQ and infrared tube heaters.
3. Provide gas solenoid and push button reset for kitchen range gas line.
4. Provide gas solenoid and push button reset for BBQ gas line.

F. Compressed air system as follows.

1. Compressed air service piping throughout. Provide service to 5 outlets at each app bay door (coordinate location with architect) and 4 air reels. The air compressor will be furnished by owner and shall be installed in the shop room.

IV. Heating, Ventilation and Air Conditioning

A. Apparatus Bay and Storage

1. Heating only: Minimum space temperature of 55 F. Add gas fired radiant tube heaters to the new app bay if ceilings heights allow for the necessary clearances. If ceiling heights cannot accommodate radiant heaters, then provide electric unit heaters at the new app bay.
2. Ventilation: Remove existing general exhaust fan and provide a new fan to meet the necessary exhaust requirements. General exhaust at 1.5 CFM/FT² controlled manually with a wall timer or automatically activated with CO/NO₂ sensors. Alarm bell warning for high CO/NO₂ levels. Wall louvers with motorized dampers for intake when exhaust fan is operating.
3. Vehicle Exhaust: Extend existing source capture exhaust system to serve the new apparatus bay. This will likely trigger replacement of the existing source capture exhaust fan for the new layout.
4. HVLS ceiling fans: Add 2 HVLS fans at the new apparatus bay.
5. Tech Storage, Disaster Storage and Shop: Provide radiant ceiling panels for space heat.
6. Decon: Provide radiant ceiling panels for space heat. Duct dryer cabinet exhaust to roof.
7. Support spaces (Tech, Decon, Disaster, Shop): Provide common exhaust fan to exhaust all four spaces. Make-up air shall be brought in through a dedicated supply fan with a duct heater to heat outside air to minimum of 65 deg F and ducted to each space.
8. Bunker Gear: Provide radiant ceiling panels for space heat and passive gear drying. Provide dedicated exhaust fan that operates continuously.

B. Station Areas

1. Heating and Cooling: VRF system with single exterior condensing unit, branch controller. Indoor units shall be concealed ducted units or wall-mounted ductless fan coils, and manufacturer's stand-alone controls. R-410A refrigerant system.
2. HVAC Zones: Each zone will be served by a fan coil and outside air with a wall mounted temperature control located in the space served. Each Sleep Room will be a separate zone as will the Kitchen/Dining, Dayroom, Fitness, Lobby, Work Room, Office for a total of 12 zones.
3. Ventilation: Decoupled Dedicated Outside Air (DOAS) unit to supply outside air directly to the sleep rooms, offices, dayroom and kitchen. The DOAS unit will exhaust air from the restrooms, storage rooms, laundry and janitor closets. The station side spaces shall be positively pressurized relative to the maintenance bays. The unit recovers heat from exhaust air through an energy recovery core or wheel. Unit consists of outside air intake, MERV 11 high efficiency filters, supply fan, exhaust fan and heat exchanger. Provide minimum exhaust rate of 150 CFM at each restroom.
4. Dryer Vent: Vent to exterior wall cap.
5. Sleep rooms: Since sleep rooms will be rated, provide fire/smoke dampers on the outside air supply ductwork for each individual sleep room.
6. Kitchen: Commercial exhaust hood with roof mounted exhaust fan. Make-up air shall be brought in through a dedicated supply fan with a duct heater to heat outside air to minimum of 65 deg F. Confirm with AHJ if Type 1 hood system with fire suppression is required.

By: Carlos Herrera, Engineer



Gig Harbor Fire & Medic One – Fire District No. 5

Building Evaluation – Electrical

Evaluation performed on Friday August 21, 2020 by Carrie Taylor with BCE Engineers, Inc.

Station 58

This building was built between 1986 and 1987. The building has the same floor plan design as Stations 54, 55, 56 and 52. This station has been upgraded to 150kW emergency generator to serve the entire station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is Square D and replacement circuit breakers are still available. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. The current electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 600 amps 120/208-volt, 3 phase, 4 wire fed by a 150kW emergency generator that serves the entire electrical system for the facility. The generator is located outdoors and fed by a 595 gallon above ground outdoor diesel fuel tank.

The building is sprinkled and has an analog, zoned fire alarm system that does not currently meet life safety code requirements. There are few visual appliances, pull stations are located at 5'-0" above finished floor and smoke detector spacing exceeds NFPA 13 requirements. There is no AES for transmittal via an antenna system. The fire alarm system will need to be upgraded to meet current code if there are any interior modifications to the



facility. The existing system cannot accommodate the code required upgrades and would need to be replaced with an addressable type system.

The range/ovens in the kitchen are connected to an emergency shut-off. The existing circuits should be intercepted with a relay and connected to the new station alerting system.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. There are still some metal halide and incandescent downlights/track lights. Consideration should be taken to have light fixtures changed out to LED type. LED fixtures are dimmable and could be used throughout the entire station for each different space with dimming switches and occupancy sensors. There may be energy rebates available from the local utility for this upgrade.

The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.



Station 59

This building was built between 1986 and 1987. The building has the same floor plan design as Stations 54, 55, 56 and 52. This station has been upgraded to 150kW emergency generator to serve the entire station.

The building is fed with an 600-amp; 120/208-volt, 3 phase, 4 wire service to a 600-amp main switchboard with (6) service disconnect rule. The switchboard is Square D and replacement circuit breakers are still available. The switchboard currently has (9) circuit breakers and exceeds the 6-disconnect rule per the National Electrical Code. The facility has spare capacity on the electrical service, but lacks breaker space in the main switchboard to accommodate adding more panelboards. The current electrical system is sufficient for the next 10-years.

Recommendation: The main electrical switchboard should be upgraded to an 600 amp; 208V- 3 phase with a 600 amp – 3 pole main breaker. This will allow for additional circuit breaker space to accommodate future changes. The current main lug only boards with the (6) disconnect rule will no longer be allowed in the new NEC 2020 code to be adopted in November 1, 2020.

The automatic emergency transfer switch is 600 amps 120/208-volt, 3 phase, 4 wire fed by a 150kW emergency generator that serves the entire electrical system for the facility. The generator is located outdoors and fed by a 595 gallon above ground outdoor diesel fuel tank.

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The Fire District will be upgrading their alerting system to a USDD for all their stations within the next year or so.

GIG HARBOR FIRE AND MEDIC ONE SEISMIC EVALUATIONS

ASCE 41-17 Tier 1 Seismic Evaluations for Fire Station 51, 52, 54, 55, 56, 58, 59

November 2020

Prepared for:
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1.0 Executive Summary

Seismic screenings and structural evaluations were performed for seven Gig Harbor Fire and Medic One facility buildings to investigate seismic deficiencies. All buildings evaluated in this study are low-rise structures. Each building is considered critical to Gig Harbor Fire and Medic One's ability to provide post-earthquake emergency services.

The evaluations determined each building's expected structural performance for an Immediate Occupancy (IO) performance objective. After a seismic event, buildings that meet an IO performance objective are expected to be structurally functional but may experience some damage to architectural finishes, mechanical systems, electrical systems, and other nonstructural items. This report includes a description of each building, the identified seismic deficiencies, seismic upgrade concept designs, and recommendations for upgrades. All buildings were found to have seismic deficiencies, and none of the buildings meets the IO performance objective.

Concept-level seismic upgrade designs were completed for the facilities, and concept plans are provided describing options for mitigation of seismic deficiencies. Recommendations consist of strengthening and supplementing the existing lateral systems, improving lateral load paths, and improving connections. Additional factors such as operational use, functionality, and response times should also be considered in the decision-making process for these buildings.

2.0 Introduction and Seismic Evaluation Criteria

The seismic evaluations for the Gig Harbor Fire and Medic One fire station buildings are based on the performance-based earthquake engineering (PBEE) guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings* (American Society of Civil Engineers, 2017). This section provides a general background of PBEE and an overview of seismic retrofit objectives, seismic hazard levels, seismic performance levels, and seismic evaluation and retrofit procedures.

The seismic evaluations do not consider compliance with the seismic requirements of the current building code for new construction. Buildings designed prior to the current building code often include structural configurations and connections detailing that have historically contributed to poor seismic performance in structures, based on post-earthquake evaluations of damaged buildings. Additionally, recent research and studies of regional seismicity have shown that the expected seismic ground motions are higher than was expected in the past. Higher ground motions, structural configurations, and poor connection detailing may result in seismic evaluation deficiencies among buildings constructed to previous building code requirements. Buildings designed to older building code standards are evaluated using evaluation and design guidelines specifically developed for existing structures by the Federal Emergency Management Agency (FEMA) and the American Society of Civil Engineers (ASCE).

The structural findings and recommendations presented in this report are based on visual observations of the buildings and a review of the record drawings. The available record documents do not contain all of the information necessary to confirm the structural configuration of some portions of the buildings, which is typical for older structures.

Reid Middleton participated in a walk-through of multiple stations on August 21, 2020. Visual observations of existing conditions were performed, which did not include destructive or nondestructive testing to confirm or supplement information shown in the record drawings.

The seismic evaluation of the buildings is based on the PBEE guidelines presented in ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*. The ASCE 41 Tier 1 evaluations of the stations were completed using the IO performance objective. Buildings that meet the IO performance objective will have similar seismic performance to new buildings that are designed as essential facilities. This section includes a general background of PBEE and an overview of seismic rehabilitation objectives, building performance levels, and seismic evaluation and rehabilitation procedures.

2.1 Background

ASCE 41-17 employs a Performance-Based Design methodology that allows building owners, design professionals, and the local building authorities to establish seismic hazard levels and performance goals for individual buildings. PBEE can be defined as the engineering of a structure to resist earthquake demands while also meeting the needs and objectives of building owners and other stakeholders. PBEE allows for the design and analysis of structures for

different levels of seismic performance and allows the levels of seismic performance to be related to the relative seismic hazard.

Seismic analysis and design of structures traditionally focused on one performance level – reducing the risk for loss of life in a design earthquake. The concept of designing essential facilities, which are needed immediately after an earthquake, to a higher performance standard evolved after hospitals and other critical facilities were damaged in the 1971 San Fernando, California, earthquake. That concept is balanced by the recognition that the cost of retrofitting existing buildings to higher levels of seismic performance may be onerous to both stakeholders and policy makers.

A comprehensive program was started in 1991, in cooperation with FEMA, to develop guidelines tailored to address this variation of performance levels. The first formal applications of performance-based evaluation and design guidelines were the FEMA 310 *Handbook for the Seismic Evaluation of Buildings – A Prestandard* (1998) and FEMA 273 *NEHRP Guidelines for the Seismic Rehabilitation of Buildings* (1997). Following the release of these documents in the 1990s, three additional documents were released in the following years. Another prestandard document, FEMA 356 *Prestandard and Commentary for the Seismic Rehabilitation of Buildings*, was released in the year 2000. Then, the first national standard seismic evaluation document, ASCE 31-03 *Seismic Evaluation of Existing Buildings*, was released in the year 2003. Following the release of ASCE 31-03, the first national standard seismic rehabilitation document, ASCE 41-06 *Seismic Rehabilitation of Existing Buildings*, was released in the year 2007. ASCE 31-03 and ASCE 41-06 superseded the PBEE documents produced in the previous decade. ASCE 31-03 and ASCE 41-06 used the general framework outlined by previous documents but were updated to incorporate the latest standard of PBEE for the time.

ASCE 31-03 and ASCE 41-06 still had flaws; shortly after the release of ASCE 41-06, an effort was undertaken to combine ASCE 31-03 and ASCE 41-06 into a single national standard document, aiming to streamline the documents and eliminate discrepancies. A new PBEE document, ASCE 41-13 *Seismic Evaluation and Retrofit of Existing Buildings*, combined information from all of the previous documents, reflecting advancements in technology and analysis techniques and incorporating case studies and lessons learned from recent earthquakes. The newest PBEE document, ASCE 41-17 *Seismic Evaluation and Retrofit of Existing Buildings*, offers more information and instruction on the seismic evaluation process. Significant revisions from the previous edition include nonlinear analysis provisions, nonstructural performance levels, modeling parameters, and more.

ASCE 41-17 provides criteria by which existing structures can be seismically evaluated and retrofit to attain a wide range of performance levels when subjected to earthquakes of varying severity.

2.2 Seismic Hazard Levels

Earthquake ground motions are variable and complicated, and every earthquake is different. An earthquake's intensity and energy magnitude depend on fault type, fault movement, depth to epicenter, and soil strata. In earthquake-prone areas, very small and frequent earthquakes occur every few days or weeks without being noticed by humans, but large earthquakes that occur

much less frequently can have a devastating effect on infrastructure and can result in the temporary displacement of large numbers of people. The precise location, intensity, and start time of an earthquake cannot be predicted. However, earthquake hazards for certain geographic areas are well understood based on historical patterns of earthquakes from the geologic record, measured earthquake ground motions, an understanding of plate tectonics, and seismological studies.

Geologists, seismologists, and geotechnical engineers have categorized the seismic hazard for particular locations using probabilistic seismic hazard levels. Each seismic hazard level describes a different probabilistic earthquake magnitude based on the probability of a certain magnitude earthquake occurring in a given time period. Table 2-1 displays commonly used seismic hazard levels, their corresponding probabilities of exceedance, and mean return periods.

Table 2-1. Probabilistic Seismic Hazard Levels and Mean Return Period.

Seismic Hazard Level	Probability of Exceedance in 50 Years	Mean Return Period (Years)
50%/50-year	50%	72
20%/50-year (BSE-1E)	20%	225
10%/50-year	10%	475
5%/50-year (BSE-2E)	5%	975
2%/50-year (BSE-2N)	2%	2,475

Seismic events with longer mean return periods and smaller probabilities of exceedance are associated with stronger seismic motions, larger ground accelerations, and more potential to damage facilities. Consequently, structures designed or retrofit to a seismic hazard level with a longer return period will generally experience better performance in an earthquake than a structure designed or retrofit to a lower seismic hazard level.

ASCE 41-17 codifies four different Seismic Hazard Levels at which to evaluate or retrofit structures. For voluntary seismic evaluations and voluntary seismic upgrades, the owner of a structure and the structural engineer can decide the Seismic Hazard Level at which it is appropriate to evaluate or retrofit a structure. The codified Seismic Hazard Levels are grouped into two categories: two Seismic Hazard Levels (BSE-1E and BSE-2E) associated with the Basic Performance Objectives for Existing Buildings (BPOE) and two Seismic Hazard Levels (BSE-1N and BSE-2N) associated with the Basic Performance Objectives Equivalent to New Building Standards (BPON).

The ASCE 41-17 defined Seismic Hazard Levels are shown in Table 2-1, along with their respective probabilities of exceedance in 50 years and mean return period; however, the BSE-1N Seismic Hazard Level is not shown in Table 2-1 because ASCE 41-17 defines BSE-1N as being two-thirds of the BSE-2N. The BSE-1N Seismic Hazard Level cannot be directly related to a probability of exceedance or mean return period. Historically (and in previous standards), the BSE-1N Seismic Hazard Level was taken as the 10%/50-year earthquake.

Historically, existing buildings have been seismically evaluated and retrofitted to a lower Seismic Hazard Level than would be typical in new building design. This approach has been historically justified for three primary reasons:

1. It ensures recently constructed structures are not immediately rendered seismically deficient due to minor building code changes.
2. Existing buildings often have a shorter remaining life than a new building would; therefore, lower structural resiliency is tempered by a decreased probability of a major seismic event.
3. Often the burdensome cost of retrofitting historic structures to a “new building equivalence” performance level is disproportionate to the incremental benefit.

2.3 Building Performance Levels and Seismic Retrofit Objectives

A target building performance level must be selected for the design or retrofit of a structure. The target performance levels are discrete damage states selected from among the infinite spectrum of possible damage states that a building could experience during an earthquake. The terminology used for target building performance levels is intended to represent goals for design but not necessarily predict building performance during an earthquake.

Since actual ground motions during an earthquake are seldom comparable to those used for design, the target building performance level may only determine relative performance during most events but not predict the actual level of damage following an event. Even given a ground motion similar to that used in design, variations from stated performance objectives should be expected. Variations in actual performance could be associated with differences in the level of workmanship, variations in actual material strengths, deterioration of materials, unknown geometry and sizes of existing members, differences in assumed and actual live loads in the building at the time of the earthquake, influence of nonstructural components, and variations in response of soils beneath the building.

ASCE 41-17 describes performance levels for structural components and nonstructural components of a structure. The ASCE 41-17 identified Structural Performance Levels can be seen in Table 2-2, and the ASCE 41-17 identified Nonstructural Performance Levels can be seen in Table 2-3. Nonstructural evaluations were not completed as part of the scope of this project.

Table 2-2. Identified Structural Performance Levels.

Performance Level Abbreviation	Performance Level Name
S-1	Immediate Occupancy
S-2	Damage Control
S-3	Life Safety
S-4	Limited Safety
S-5	Collapse Prevention
S-6	Structural Performance Not Considered

Table 2-3. Identified Nonstructural Performance Levels.

Performance Level Abbreviation	Performance Level Name
N-A	Operational
N-B	Position Retention
N-C	Life Safety
N-D	Nonstructural Performance Not Considered

Individual Structural Performance Levels and Nonstructural Performance Levels can be aggregated to form a combined Building Performance Level. Structural performance during an earthquake is related to the amount of lateral deformation or drift of the structure and the capacity or ability of the structure to deform. Any Structural Performance Level can be combined with any Nonstructural Performance Level, although it is not recommended to combine high levels of structural performance with low levels of nonstructural performance and vice versa.

Theoretically, there are 23 different Building Performance Levels that are combinations of different Structural and Nonstructural Performance Levels. However, ASCE 41-17 recommends that only 15 Building Performance Levels be used in practice due to their recommendation of avoiding mismatching high and low levels of nonstructural and structural performance. ASCE 41-17 defines four specific common Building Performance Levels, as shown in Table 2-4. A visual representation of these common Building Performance Levels plotted against lateral deformation can be seen in Figure 2-1.

Table 2-4. Specific Common Building Performance Levels.

Performance Level Abbreviation	Performance Level Name	Structural & Nonstructural Performance Level Combination
1-A	Operational	S-1 & N-A
1-B	Immediate Occupancy	S-1 & N-B
3-C	Life Safety	S-3 & N-C
5-D	Collapse Prevention	S-5 & N-D

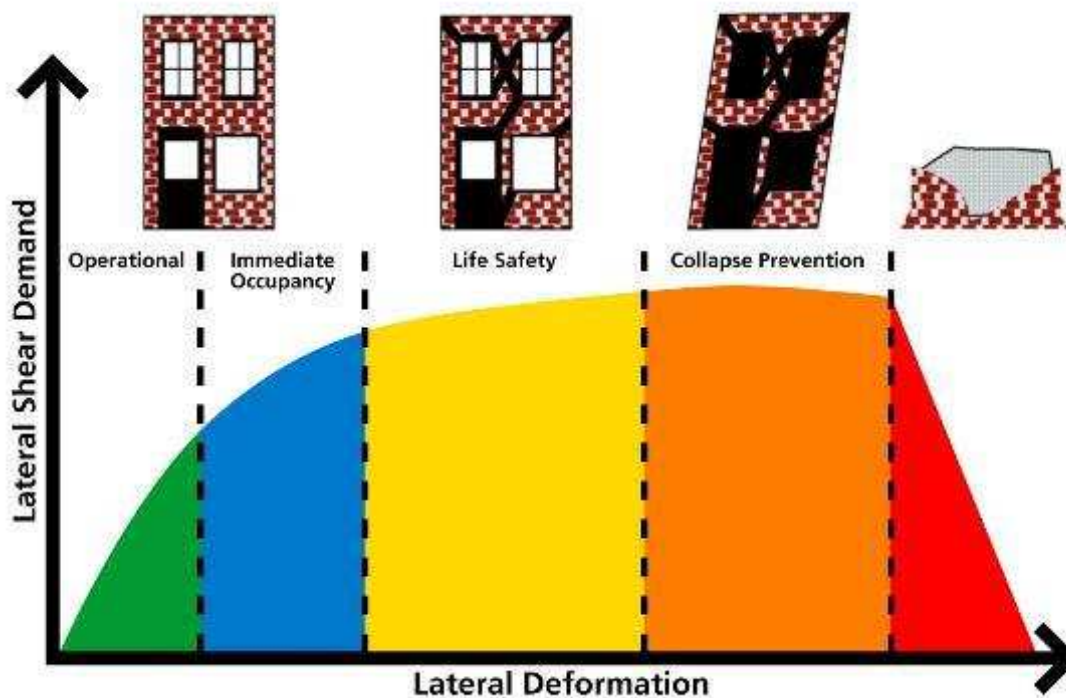


Figure 2-1. Building Performance Levels.

A decision must be made for each structure as to the acceptable behavior for different levels of seismic hazard, balanced with the construction cost of retrofitting a structure to obtain that behavior. ASCE 41-17 defines “baseline” basic performance objectives for structures based on their defined Risk Category. The Risk Category is the same as defined in the International Building Code (IBC) and ASCE 7. For example, for a Risk Category II structure retrofitted to the BPON standards, the structure would need to be retrofitted for the 3-B Building Performance Level at the BSE-1N Seismic Hazard Level and the 5-D Building Performance Level at the BSE-2N (2%/50-year) Seismic Hazard Level. ASCE 41-17 allows for higher (enhanced) or lower (limited) objectives to be selected based on the essential nature of the facility, the expected remaining life of the building, and the associated cost and feasibility. For example, it may not be economically feasible to retrofit historic structures to the BPON standards, and ASCE 41 allows for selection of a limited objective for such situations.

Table 2-5 summarizes the approximate levels of structural and nonstructural damage that may be expected at the damage states that define the structural performance levels.

Table 2-5. Approximate Expected Damage for Different Building Performance Levels¹.

	Building Performance Levels			
	Collapse Prevention	Life Safety	Immediate Occupancy	Operational
Overall Damage	Severe	Moderate	Light	Very Light
Permanent Drift	Large. 1% to 5%.	Some. 0.3% to 1%.	Negligible.	Same as Immediate Occupancy.
Remaining Strength and Stiffness After Earthquake	Little. Gravity system (columns and walls) functions, but building is near collapse.	Some. Gravity system functions, but building may be beyond economical repair.	Significant strength remaining. Minor cracking of structural elements.	Same as Immediate Occupancy.
Examples of Damage to Reinforced Masonry Buildings	Extensive cracking and crushing. Damage around openings at corners. Some fallen units. Transient drift to cause extensive nonstructural damage. Extensive permanent drift.	Major cracking distributed throughout wall. Some isolated crushing. Transient drift to cause nonstructural damage. Noticeable permanent drift.	Minor cracking. No out-of-plane offsets. Transient drift that causes minor or no nonstructural damage. Negligible permanent drift.	Same as Immediate Occupancy.
Examples of Damage to Steel Framing	Extensive yielding and buckling of steel bracing members. Significant connection failures.	Many braces and beams yield or buckle but do not fail totally. Moderate amount of connection failures.	Minor deformation of steel members, no connection failures.	Same as Immediate Occupancy.
Other General Description	Structure likely not repairable and not safe for reoccupancy due to potential collapse in aftershock.	Repair may be possible, but may not be economically feasible. Repairs may be required prior to reoccupancy.	Minor repairs may be required, but building is safe to occupy.	Same as Immediate Occupancy.
Nonstructural Components	Extensive damage. Some exits blocked. Infills and unbraced parapets failed or at incipient failure.	Falling hazards mitigated, but many architectural, mechanical, and electrical systems are damaged.	Minor cracking of facades, partitions, and ceilings. Equipment and contents are generally secure, but may not operate due to lack of utilities.	Negligible damage. All systems important to normal operation are functional. Power and other utilities are available, possibly from standby sources.
Comparison with New Building Design	Significantly more damage and greater risk.	Somewhat more damage and slightly higher risk.	Much less damage and lower risk.	Much less damage and lower risk.

¹ Adapted from American Society of Civil Engineers, "Prestandard and Commentary for the Seismic Rehabilitation of Buildings," FEMA-356, Federal Emergency Management Agency, Washington, D.C., November 2000.

2.4 Performance, Safety, Reliability, and Construction Cost

The seismic performance, safety, and reliability of a facility must be weighed against the relative importance and construction costs associated with a facility. It is impractical for the average building to be seismically designed or retrofit to experience no damage following a major earthquake; however, steps can be taken to mitigate seismic hazards for new and existing structures.

Some facilities have more community importance or pose special risks to a community following an earthquake (for example, hospitals, fire stations, or facilities housing highly toxic substances). It is reasonable that important facilities be designed or retrofit to a higher performance standard than the average structure. The relative importance of a facility must be weighed against the relative construction costs associated with facility construction. There are two types of construction costs associated with seismic hazards: the cost of initial construction or seismic retrofit construction and the cost to repair or replace a facility following an earthquake. The better a structure performs during an earthquake, the faster the structure can be returned to service and the lower the repair costs will be following the earthquake. Expected building damage states during a seismic event can be directly linked to:

- Repair/Replacement Costs – Cost of restoring the facility to pre-earthquake condition.
- Public Safety – Number of critical injuries and casualties to building occupants.
- Downtime – Length of time taken to make repairs to return a structure to service.

Figure 2-2 displays a graphic showing estimated performance-related consequences compared with different increasing post-earthquake structural damage states (which correspond to the design Structural Performance Levels for a given seismic hazard).

Figure 2-3 presents the schematic relationship between different retrofit building performance objectives and probable retrofit program cost.

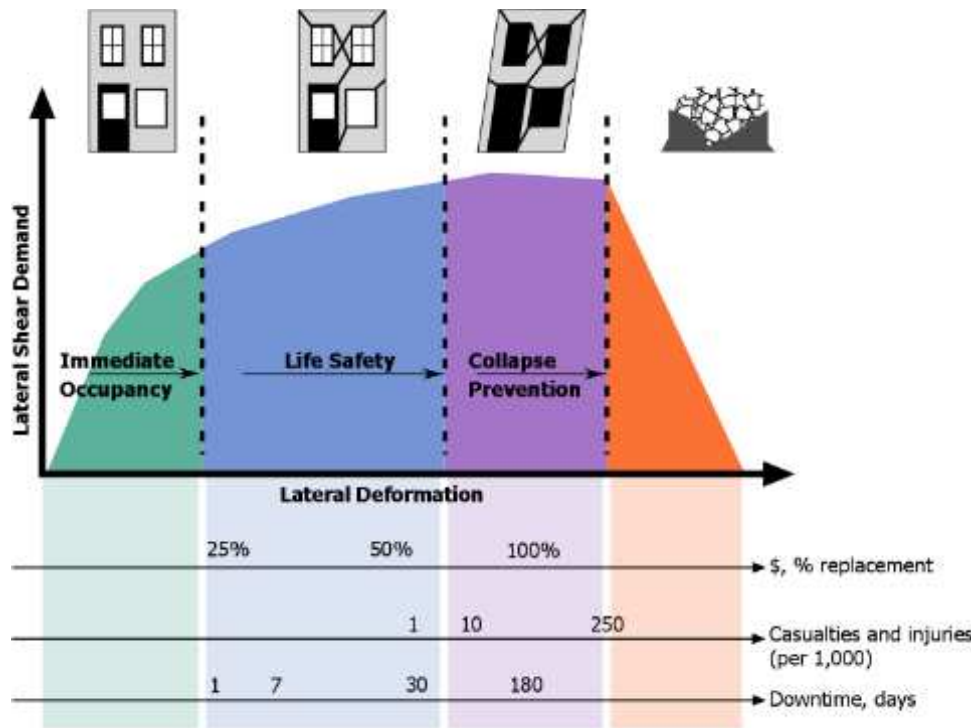


Figure 2-2. Estimated Performance-Related Consequences at Different Structural Performance Levels².

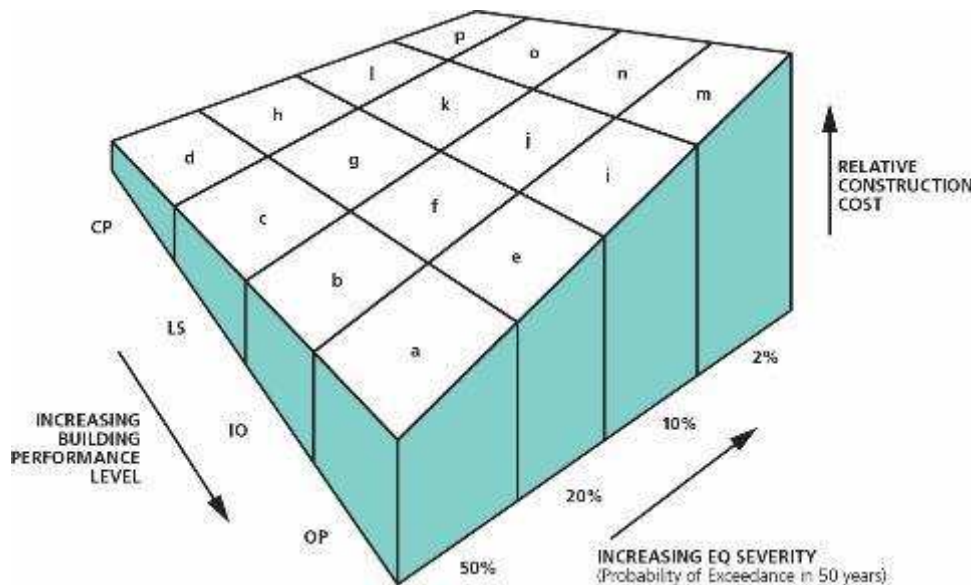


Figure 2-3. Surface Matrix of ASCE 41 Building Performance Levels Compared with Construction Cost³.

² J. Moehle, "A Framework for Performance-Based Earthquake Engineering," *Proceedings from ATC 15-9, 10th US-Japan Workshop on the Improvement of Structural Design and Construction Practices*, Applied Technology Council, Makena, Hawaii, 2003.

³ Adapted from Applied Technology Council, "NEHRP Commentary for the Seismic Rehabilitation of Buildings," FEMA-274, Federal Emergency Management Agency, Washington, D.C., October 1997.

2.5 Seismic Evaluation Procedure

The current standard for seismic evaluation and retrofit of existing buildings is the ASCE 41-17, *Seismic Evaluation and Retrofit of Existing Buildings*. ASCE 41-17 provides screening and evaluation procedures used to identify potential seismic deficiencies that may require further investigation or hazard mitigation. It presents a three-tiered review process, implemented by following a series of predefined checklists and “quick check” structural calculations. Each successive tier is designed to perform an increasingly refined evaluation procedure for seismic deficiencies identified in previous tiers in the process. The flow chart in Figure 2-4 describes the evaluation process.

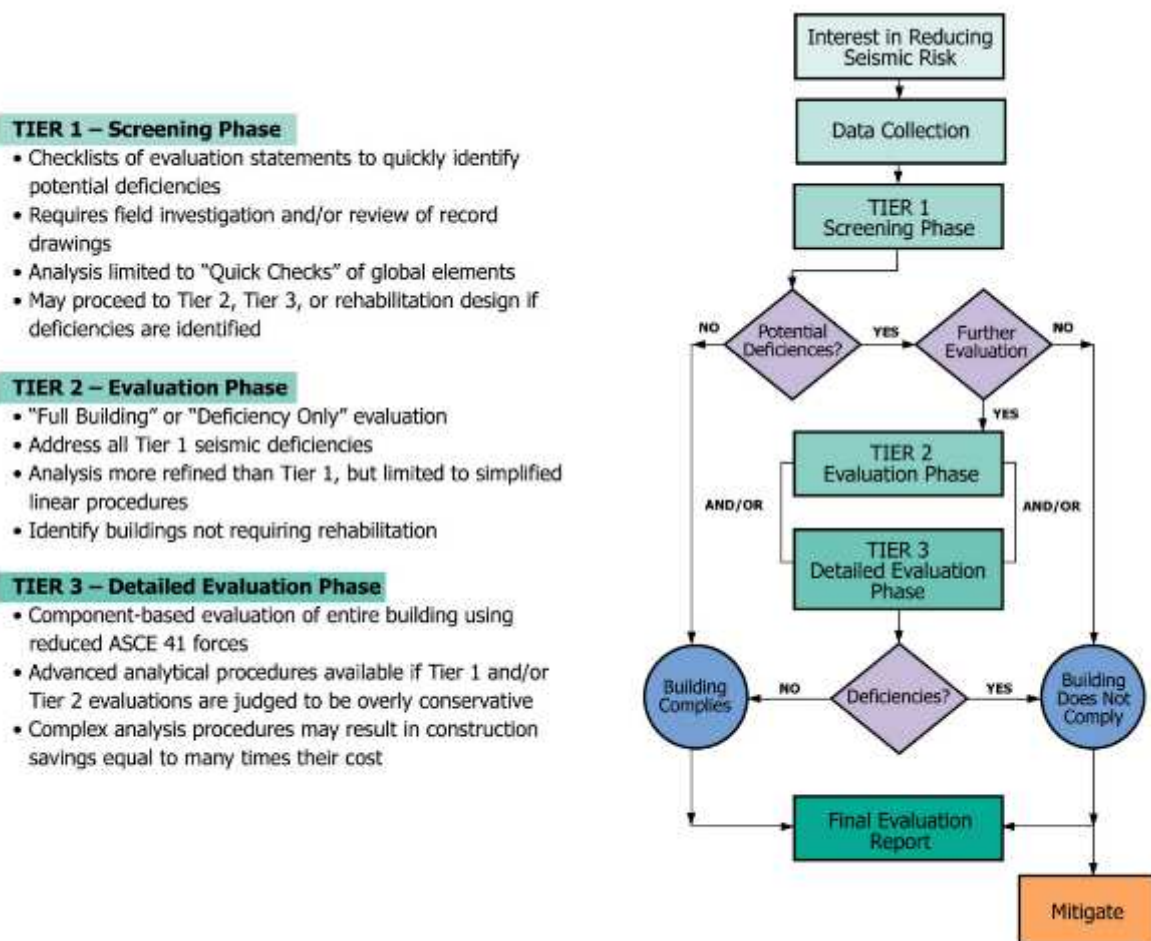


Figure 2-4. Flow Chart and Description of ASCE 41-17 Seismic Evaluation Procedure.

The Tier 1 checklists in ASCE 41-17 are specific to each common building type and contain seismic evaluation statements based on observed structural damage in past earthquakes. These checklists screen for potential seismic deficiencies by examining the lateral-force-resisting systems (LFRS) and details of construction that have historically caused poor seismic performance in similar buildings. Tier 1 screenings include basic “Quick Check” analyses for

primary components of the lateral system. They also include prescriptive checks for proper seismic detailing of connections, diaphragm spans and continuity, and overall system configuration. Tier 2 evaluations then follow with additional calculations and assessments to either confirm the potential deficiencies identified in the Tier 1 review or demonstrate their adequacy. A Tier 3 evaluation involves an even more detailed analysis and advanced computations to review each structural component's seismic demand and capacity. It is similar in scope and complexity to the types of analyses often required to design a new building in accordance with the IBC, with a comprehensive analysis aimed at evaluating each component's seismic performance. As indicated in the Scope of Services, these evaluations include a Tier 1 screening.

2.6 Seismic Retrofit Procedure

If seismic deficiencies are identified in the evaluation process, the owner and design team should review all initial conditions before proceeding with the hazard mitigation. Many conditions may affect the retrofit design significantly, such as results of the seismic evaluation and seismic hazard study, building use and occupancy requirements, presence of hazardous materials, and other anticipated building remodeling. The basic process for performance-based retrofit design is illustrated in Figure 2-5.

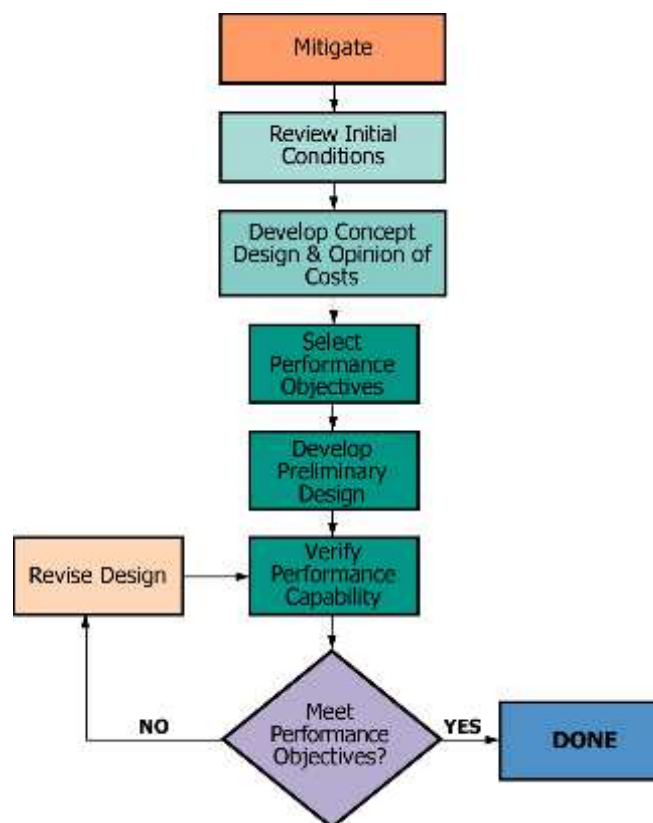


Figure 2-5. Seismic Rehabilitation Flow Diagram.

Following the review of initial conditions, concept designs may be performed to develop rough opinions of probable construction costs for one or more performance objectives. The owner and design team can then develop a rehabilitation strategy considering the associated costs and feasibility. Schematic and final design can then proceed through an iterative process until verification of acceptable building performance is obtained.

LIMITATIONS

The professional services described in this report were performed based on available as-built information and limited observation of the structure. No destructive testing was performed to qualify as-built conditions or verify the quality of materials and workmanship. No other warranty is made as to the professional advice included in this report. This report provides an overview of the seismic evaluation results and proposed upgrades and does not address programming and planning issues.

This report has been prepared for the exclusive use of Rice Fergus Miller Architecture and Gig Harbor Fire and Medic One. It is not intended for use by other parties, nor may it contain sufficient information for purposes of other parties or their uses. This report does not address any portion of the structure other than those areas mentioned, nor does it provide any warranty, either expressed or implied, for any portion of the existing structure.

3.0 Seismic Evaluation

3.1 Fire Stations 52, 54, 55, 56, 58 and 59

3.1.1 Building Description

Year Built: 1987
Number of Stories: 1
Floor Area: 6,720 SF
Address: Various locations in Gig Harbor, WA



Fire Stations 52, 54, 55, 56, 58, and 59 are one-story masonry and wood-frame structures constructed in 1987. The stations were constructed from the same drawings set and site visits indicate that they were built similarly. The buildings have distinct areas: an apparatus bay and a residence area with sleeping rooms, kitchen, and miscellaneous living space. The apparatus bays and adjacent residence spaces combine for a total building area of approximately 6,070 square feet. The buildings are constructed of reinforced masonry walls in the apparatus bays and wood walls in the residence areas, supported by continuous concrete footings. The roof diaphragms consist of plywood over timber trusses in both the apparatus bays and the residence areas.



Figure 3.1-1. Fire Station 58 Exterior, Public Entrance.



Figure 3.1-2. Fire Station 58 Exterior, Rear of Apparatus Bay.

Structural System

Table 3.1-1. Structural System Description of Fire Station 52, 54, 55, 56, 58 and 59.

Structural System	Description
Roof	The roof systems consist of plywood over timber trusses supported by concrete masonry unit (CMU) bearing walls in the apparatus bays and wood bearing walls in the residence areas.
Floor	The ground floors consist of a 6-inch concrete slab on grade.
Foundations	The foundation systems consist of continuous concrete footings under bearing walls and pad footings under steel and wood columns.
Lateral System	The lateral systems consist of the wood roof diaphragm and perimeter CMU shear walls in the apparatus bays. The lateral systems in the residence areas consist of the wood roof diaphragm and wood shear walls.

3.1.2 Seismic Evaluation Findings

Seismic Deficiencies

The seismic deficiencies identified during the Tier 1 evaluation are summarized below, with commentary provided for each deficiency.

Table 3.1-2. Identified Seismic Deficiencies for Fire Station 52, 54, 55, 56, 58 and 59.

Deficiency	Description
Overturning	The CMU piers on the front and back of the apparatus bays, as well as the wood shear walls on the plan East sides of the buildings, have base/height ratios greater than 0.6Sa. This can create a concentration of force that exceeds the capacity of the existing lateral and gravity systems.
Ties Between Foundation Elements	Foundations are continuous. However, no ties across the building or slab ties are indicated in the record drawings. Soils and liquefaction review should be performed to verify capacity of exterior soils to restrain wall movement.
Shear Stress Check	The wood shear walls in both principle directions of the buildings have shear stress exceeding 1,000 lb/ft.
Narrow Wood Shear Walls	There are narrow wood shear walls near the plan East sides of the buildings that have aspect ratios greater than 1.5-to-1. Narrow walls can be highly stressed and experience damage during a seismic event.

Table 3.1-2. Identified Seismic Deficiencies for Fire Station 52, 54, 55, 56, 58 and 59.

Deficiency	Description
Hold-Down Anchors	It appears that there are shear walls that do not have hold-down anchors attached to the end studs. Shear walls without adequate end anchorage are susceptible to racking and overturning.
Diaphragm Continuity	The roof diaphragm over the apparatus bays is at a different level than the living space.
Roof Chord Continuity	Roof chords are not continuous between the apparatus bays and the residence areas. Without roof chords or continuity, a flexible diaphragm may experience damage during a seismic event around the perimeter and at changes in roof elevations.
Diaphragm Reinforcement at Openings	The skylight openings at the low roof are larger than 50 percent of the building width. Record drawings do not indicate reinforcing or strapping around the opening where high stresses typically occur.
Diagonally Sheathed and Unblocked Diaphragms	The center roof area of the apparatus bays is unblocked and has a span greater than 30 feet. Unblocked diaphragms with large spans can have larger seismic forces that the diaphragm may be unable to resist or transfer to the lateral system.
Wall Anchorage	Masonry walls around the apparatus bay have wood shear walls on top. The masonry walls are dependent upon the wood shear walls and trusses for out-of-plane support. Connections do not have adequate strength to resist calculated forces.
Wood Ledgers	Cross-grain bending is induced at the connection of the mezzanine to the masonry walls and at the low roof step to wall connection.

No geotechnical report was provided for the sites, causing checklist items involving soil to be marked as “unknown.” It is expected that the soils on site are compliant with liquefaction, slope failure, and surface fault rupture expectations, but further investigation may need to be completed for verification.

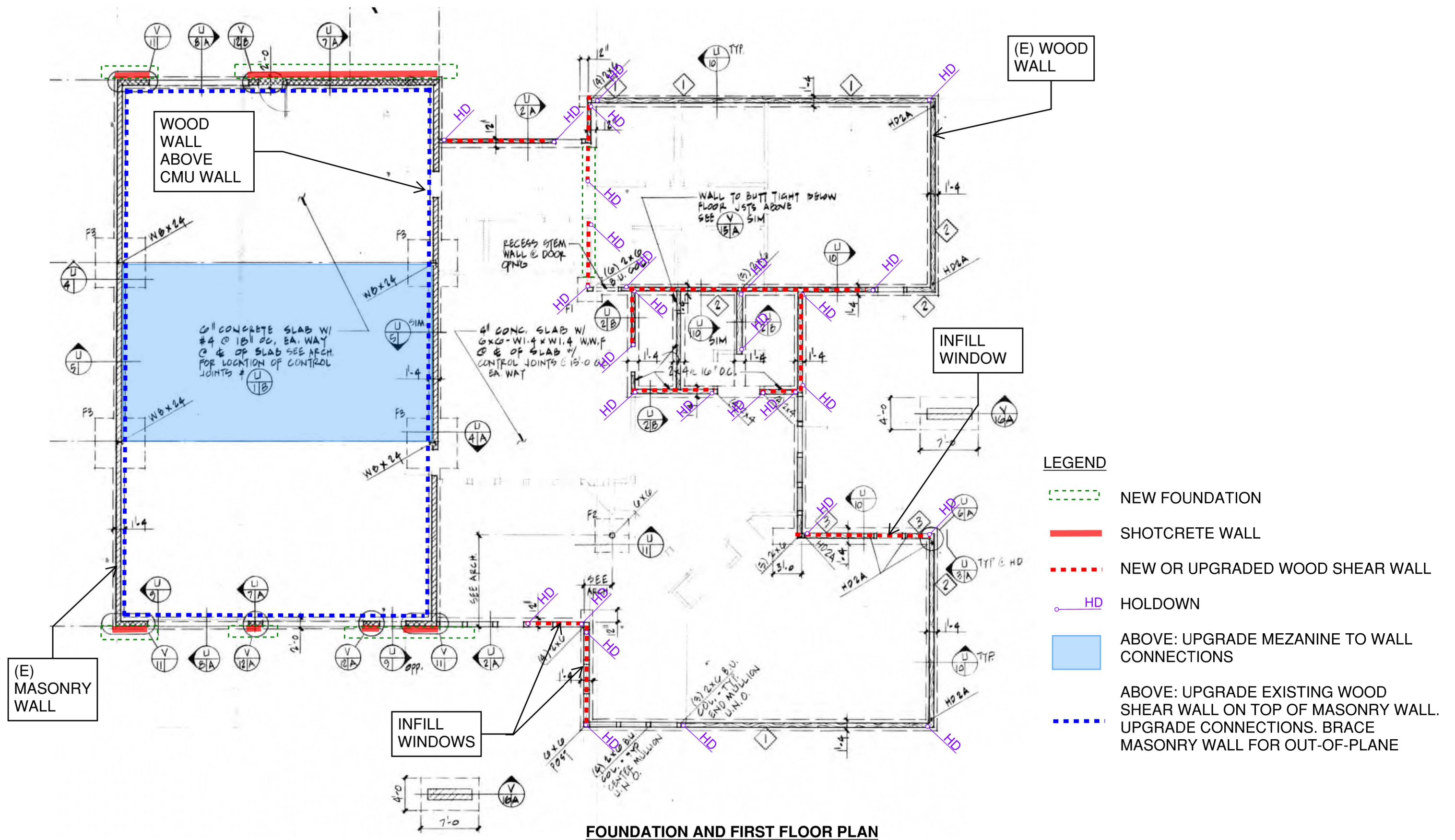
3.1.3 Findings and Recommendations

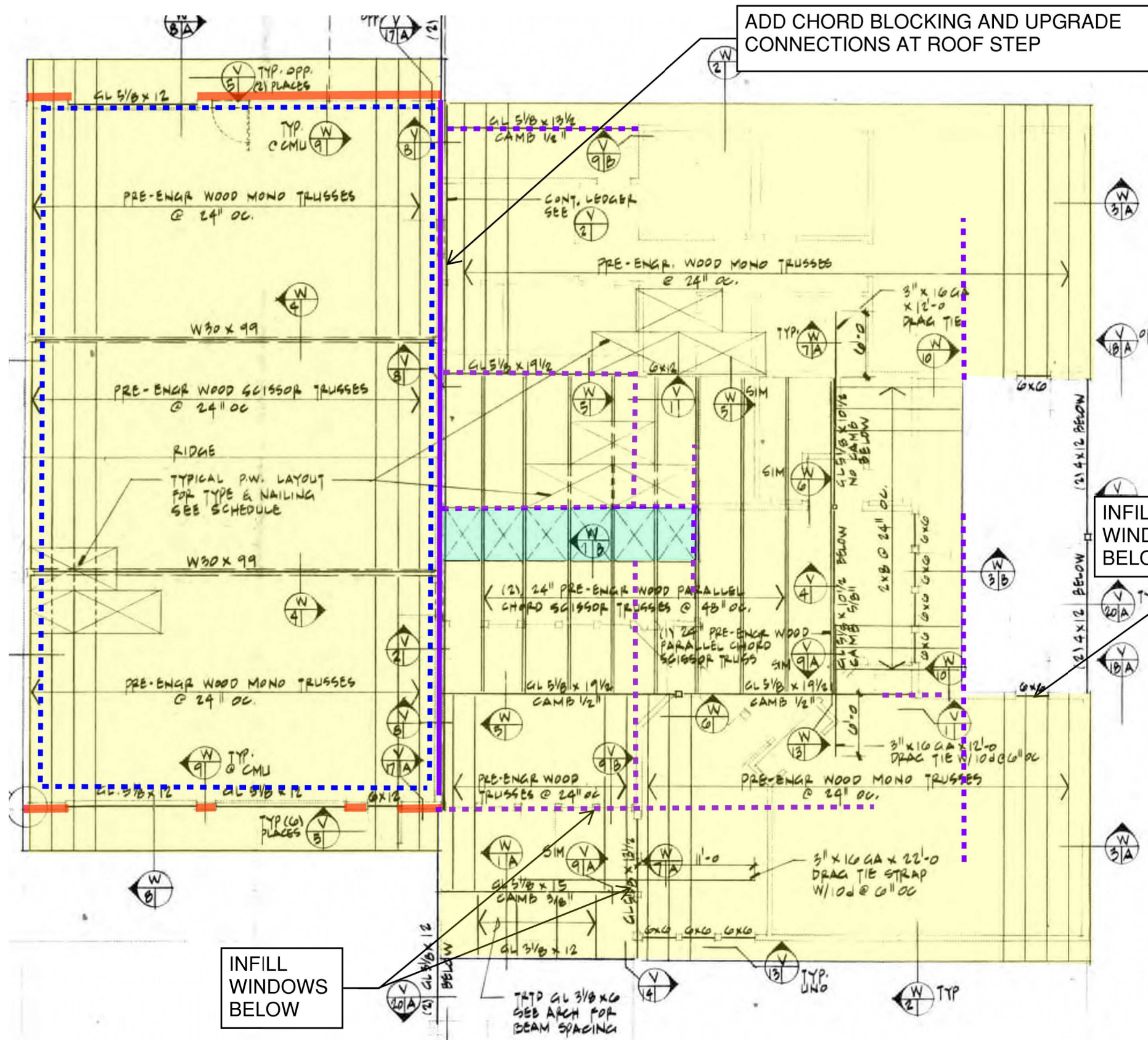
Fire Stations 52, 54, 55, 56, 58, and 59 do not meet the IO performance level as determined by the ASCE 41-17 Tier 1 evaluation. Deficiencies include overstressed masonry shear walls at the apparatus bays, overstressed wood shear walls at the living quarters, and inadequate diaphragm strengths.

Due to the extent of the deficiencies, extensive damage and potential for failure of the LFRS during a design-level earthquake is possible. A structural upgrade concept design will be completed and forthcoming for the Fire Stations. Figures 3.1-3 and 3.1-4 will display the concept-level upgrade concepts to improve the LFRS and meet the IO performance objective.

The upgrade concept involves strengthening existing masonry shear walls with new concrete shear walls, adding new wood shear walls, upgrading existing wood shear walls, strengthening the roof diaphragm, adding chord and collector elements to the roof, and improving roof-to-wall and wall-to-wall connections. New concrete shear walls and piers with footings should be installed throughout the apparatus bays. Modifications to the foundation systems may be required for the existing upgraded walls.

The roof diaphragms are unblocked with large spans, resulting in an over-stressed condition. These deficiencies create a potential for damage and possible failure of the LFRS during a design-level earthquake. Plywood sheathing and supplementary nailing and blocking are recommended to be added to the roof to increase the roof diaphragm's capacity and strength. The connection between the diaphragm and shear walls should also be improved to ensure the forces are transferred to the shear walls. This upgrade will increase the diaphragm's stiffness and shear capacity.





LEGEND

-  CONCRETE WALL BELOW. ADD DIAPHRAGM CONNECTIONS
-  DRAG STURT/STRAPPING
-  ADD BLOCKING TO DIAPHRAGM AND CONNECTIONS TO NEW SHEARWALLS
-  STRAPPING AROUND DIAPHRAGM OPENING
-  UPGRADE WOOD WALL CONNECTIONS TO DIAPHRAGM (HIGH ROOF, LOW ROOF, AND MEZZANINE). ADD DIAPHRAGM CHORD AT ROOF STEP
-  UPGRADE EXISTING WOOD SHEAR WALL ON TOP OF MASONRY WALL. UPGRADE CONNECTIONS. BRACE MASONRY WALL FOR OUT-OF-PLANE

ROOF PLAN

MEMORANDUM

TO: Howard Struve, Rice Fergus Miller

FROM: Eric Pilcher

RE: Gig Harbor Fire and Medic One, Station 58 (Swede Hill)

DATE: December 1, 2020

MacKay Sposito has performed a preliminary design assessment for the above site. We understand that there are plans to modify the existing facility, which will include expansion of the apparatus bay. Please note our findings, below.

Summary

The site is located at 10302 Bujacich Rd, Gig Harbor, WA 98332. It is tax parcel 0122363018, measuring 5.86 acres and located in Section 36, Township 22, Range 01, Quarter 31, Willamette Meridian. Per the Pierce County assessor data, the site contains a 6,258 square foot building and 56,000 square feet of asphalt paving.

The site is immediately adjacent to other Gig Harbor Fire and Medic One property to the south and west (tax parcel 0122363020).

The site is located in unincorporated Pierce County. It has a Reserve 5 (R5) zoning designation, and is within the Gig Harbor Community Plan overlay.

Proposed improvements include conversion of 3,150 square feet of existing asphalt to building area, replacement of 1,690 square feet of asphalt with concrete pads, and the addition of 1,950 square feet of new asphalt. In addition to the above quantities, some existing concrete and pavement will need to be demolished and re-paved to accommodate grading adjustments needed to support the apparatus bay expansion. The total disturbed area is expected to be approximately 0.35 acres.

Critical Areas

There are some delineated wetlands at the extreme northwestern corner of the parcel. Additional wetlands may be present in the western half of the parcel. A formal study would be recommended if

proposed improvements encroach beyond the current western pavement limit. However, this is not expected to be necessary as part of the proposed apparatus bay addition and building improvements.

The site is not within a 100-year floodplain, but it is noted that portions of the adjacent regional stormwater management facility (to which this site drains) are identified as flood areas (FEMA FIRM Panel No. 53053 C 0126 E, eff. 3/7/2017). These areas are confined to the stormwater ponds themselves, which is a reasonable expectation.

Soils

Per the NRCS Soil Survey, site soils consist of Harstine gravelly ashy sandy loam having 6 to 15 and 15 to 30 percent slopes. This soil is described as moderately well drained and has a very low infiltration capacity. For hydrology modelling purposes, it is classified as a glacial till (i.e., hydrologic soil group C).

A geotechnical report is recommended to provide discussion and recommendations on soil and groundwater conditions, seismic site class, site preparation and grading, soil engineering properties for excavations and foundations, infiltration feasibility, and pavement design.

Stormwater Management

The existing building is at the high point of the site, from which runoff drains either east or west. The eastern drainage basin collects runoff in 6-inch and 8-inch private to public storm pipes, which discharge to a small retention basin at the northeast corner of the site. The western drainage basin collects runoff in a 12-inch private to public storm pipe, which discharges to private roadside swales and a regional detention facility on the adjacent Gig Harbor Fire and Medic One property. Runoff within the Bujachic right-of-way is conveyed via a roadside swale and a 12-inch culvert under the existing driveway.

Pursuant to the Pierce County Stormwater and Site Development Manual, different levels of stormwater management are triggered depending on the amount of new or replaced hard surfaces (i.e., rooftops and pavement). In essence, an increase and/or replacement of up to 2,000 square feet requires dispersion and infiltration of runoff to the maximum extent feasible. Increases and/or replacement of 5,000 square feet or more also requires runoff treatment (from pollution generating surfaces) and flow control.

The quantity of roof area and disturbed pavement will require a full drainage report, requiring mitigation measures for runoff treatment and flow control. This can be alleviated somewhat given that the building is on a ridge-line and therefore the site is within two separate threshold discharge areas. Improvements on the western side of the building do not appear to be significant enough to require additional stormwater management upstream of the regional facility. However, some stormwater management is expected required on the eastern side, draining toward Bujachic Rd.

For preliminary design purposes, we are proposing a 30' x 10' x 3.5' underground detention vault, and a 4' x 4' modular wetland filtration device. Discharge from these systems will be routed to the existing storm drainage line draining to the existing detention pond at the northeast corner of the site.

Water

The site is apparently served by the Gig Harbor Water Department. Gig Harbor Fire and Medic One was also identified as a potential purveyor, which may be an indication that the site was once served by a private well. However, no well records were noted on Ecology's website.

The proposed building addition and site improvements do not appear to impact water infrastructure. An underground utility survey is recommended for verification. Any valves or appurtenances within the disturbed area will need to be adjusted to finished grade.

Sanitary Sewer Service

The site is not served by municipal sewer and relies upon an existing on-site septic system. The septic system may need evaluation and expansion to the extent that station staff levels are increased. Evaluation by a septic design specialist is recommended.

The proposed building addition and site improvements do not appear to impact sanitary sewer infrastructure. Any structures within the disturbed area will need to be adjusted to finished grade.

Dry Utilities

The apparent electrical purveyor to this area is Peninsula Light Co. The apparent natural gas purveyor to this area is Puget Sound Energy. We have not made an evaluation of current dry utility service levels or capacities.

The proposed building addition and site improvements do not appear to impact dry utilities. An underground utility survey is recommended for verification. Any valves or appurtenances within the disturbed area will need to be adjusted to finished grade.

Frontage

Bujacich Rd has unimproved shoulders draining to roadside swales. Significant changes to the site may be a regulatory trigger for frontage improvements, such as curb and gutter, and sidewalk. A pre-application conference with Pierce Co. is recommended to determine if any right-of-way improvements will be required. Frontage improvements have not been included in this assessment.

Accessibility

From visual observations made on August 21, 2020, it appeared that existing parking designated as accessible may exceed maximum slopes as required by current accessibility code. In addition, a detectable warning surface along the accessible route is not present. The proposed building expansion may also trigger the need for additional accessible parking spaces. Further review of accessible parking and routing to the building entry is recommended.

A detailed topographic survey of the existing accessible spaces and route to the existing building is recommended. Some demolition and replacement of parking lot and/or on-site sidewalks may be necessary to ensure that accessible grades and standards are met.

Regulatory Requirements

Based on review of the proposed improvements to Station 58, the following regulatory considerations are noted:

- A site development permit from Pierce County will be required.
- The site development permit package will need to include a Full Drainage Report, Stormwater Pollution Prevention Plan, and Maintenance and Source Control Manual.
- Re-certification of the existing septic system through the Tacoma-Pierce County Health Department may be necessary. The proposed building addition and projected FTE staffing levels should be reviewed by a septic specialist.
- Less than 500 cubic yards of excavation is expected; therefore, it does not appear that State Environmental Policy Act (SEPA) checklist review will be triggered.
- Less than 1 acre will be disturbed; therefore, documentation for compliance with the Construction Stormwater General Permit through the Dept. of Ecology is not required.
- Confirmation of the above items through a pre-application Customer Information Meeting is recommended. The meeting should include Planning, Engineering, Building, Fire, and Health.

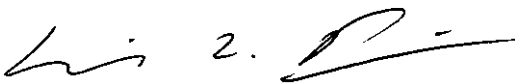
Conclusion

The site should be suitable to support the proposed building upgrades and expansions. A pre-application meeting with Pierce Co. is recommended to determine any additional regulatory requirements that may impact the project. Prior to design development, a detailed topographic survey with private utility locating, boundary survey confirmation and title report review are recommended.

A geotechnical evaluation is also recommended to determine engineering soil properties, pavement design considerations, and the suitability and capacity of native soils to infiltrate runoff from new impervious areas.

Thank you for the opportunity to assist Rice Fergus Miller and Gig Harbor Fire and Medic One. We are pleased to be a valued member of your team. Please let us know if you have any questions or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric L. Pilcher".

Eric L. Pilcher, P.E.
Project Manager

cc: Ed McManamna

MEMORANDUM

TO: Howard Struve, Rice Fergus Miller

FROM: Eric Pilcher

RE: Gig Harbor Fire and Medic One, Station 59 (Artondale)

DATE: December 1, 2020

MacKay Sposito has performed a pre-design assessment for the above site. We understand that there are plans to modify the existing facility, which will include expansion of the apparatus bay. Please note our findings, below.

Summary

The site is located at 3828 62nd Ave Ct NW, Gig Harbor, WA 98335. It is tax parcel 0121243110, measuring 4.01 acres and located in Section 24, Township 21, Range 01, Quarter 31, Willamette Meridian. Per the Pierce County assessor data, the site contains a 6,258 square foot building and 56,000 square feet of asphalt paving.

The site is located in unincorporated Pierce County. It has a Rural 10 (R10) zoning designation, and is within the Gig Harbor Community Plan overlay.

Proposed improvements include conversion of 3,090 square feet of existing asphalt to building area, replacement of 2,100 square feet of asphalt with concrete pads, and the addition of 3,040 square feet of new asphalt. In addition to the above quantities, some existing concrete and pavement will need to be demolished and re-paved to accommodate grading adjustments needed to support the apparatus bay expansion. The total disturbed area is expected to be approximately 0.55 acres.

Critical Areas

There are no wetlands or waterbodies noted in the near vicinity.

The site is not within a 100-year floodplain (per FEMA FIRM Panel No. 53053 C 0136 E, eff. 3/7/2017).

Soils

Per the NRCS Soil Survey, site soils consist of Harstine gravelly ashy sandy loam having 0 to 6 percent slopes. This soil is described as moderately well drained and has a very low infiltration capacity. For hydrology modelling purposes, it is classified as a glacial till (i.e., hydrologic soil group C).

A geotechnical report is recommended to provide discussion and recommendations on soil and groundwater conditions, seismic site class, site preparation and grading, soil engineering properties for excavations and foundations, infiltration feasibility, and pavement design.

Stormwater Management

The existing building is at the high point of the site, from which runoff drains predominantly north and west. The western drainage basin collects runoff in 8-inch private to public storm pipes, which discharge to a small retention trench along the western edge of the paved area. Runoff in the retention trench is known to backup following heavy rainfall events and partially flood the paved area. However, the pavement flooding subsides following the storm events.

A small portion of the site drains northeast to the 62nd Ave Ct right-of-way, which is served by a 12-inch public storm drain. The adjacent neighborhood is served by a regional stormwater detention/retention facility to the west, which is not utilized by Station 59.

Pursuant to the Pierce County Stormwater and Site Development Manual, different levels of stormwater management are triggered depending on the amount of new or replaced hard surfaces (i.e., rooftops and pavement). In essence, an increase and/or replacement of up to 2,000 square feet requires dispersion and infiltration of runoff to the maximum extent feasible. Increases and/or replacement of 5,000 square feet or more also requires runoff treatment (from pollution generating surfaces) and flow control.

The quantity of roof area and disturbed pavement will require a full drainage report, requiring mitigation measures for runoff treatment and flow control. For preliminary design purposes, we are proposing that the existing stormwater retention swale to the west of the existing apparatus yard be elongated and enhanced to provide stormwater bioretention for the existing and expanded facility.

Stormwater runoff will be routed to the modified facility utilizing the existing on-site stormwater infrastructure to the maximum extent feasible. Additional stormwater piping is expected to be necessary to ensure that runoff from new paved areas on the east side of the apparatus bay expansion can be conveyed to the west.

Water

The site is apparently served by the Artondale Water System, which is a subsidiary of the Rainier View Water Co.

The proposed building addition and site improvements do not appear to impact water infrastructure. An underground utility survey is recommended for verification. Any valves or appurtenances within the disturbed area will need to be adjusted to finished grade.

Sanitary Sewer Service

The site is not served by municipal sewer and relies upon an existing on-site septic system. The septic system may need evaluation and expansion to the extent that station staff levels are increased. Evaluation by a septic design specialist is recommended.

The proposed building addition and site improvements do not appear to impact sanitary sewer infrastructure. Any structures within the disturbed area will need to be adjusted to finished grade.

Dry Utilities

The apparent electrical purveyor to this area is Peninsula Light Co. The apparent natural gas purveyor to this area is Puget Sound Energy. We have not made an evaluation of current dry utility service levels or capacities.

The proposed building addition and site improvements do not appear to impact dry utilities. An underground utility survey is recommended for verification. Any valves or appurtenances within the disturbed area will need to be adjusted to finished grade.

Frontage

62nd Ave Ct NW ends at a cul-de-sac, from which Station 59 is accessed. The cul-de-sac edge treatment consists of an asphalt concrete raised edge. No sidewalks are present.

While no right-of-way improvements are expected, significant changes to the site may be a regulatory trigger for frontage improvements, such as curb and gutter, and sidewalk. A pre-application conference with Pierce Co. is recommended to determine if any right-of-way improvements will be required. Frontage improvements have not been included in this assessment.

Accessibility

From visual observations made on August 21, 2020, it appeared that existing parking designated as accessible has reasonably flat slopes that appear to comply with the current accessibility code. However, a detectable warning surface along the accessible route is not present. The proposed building expansion may also trigger the need for additional accessible parking spaces. Further review of accessible parking and routing to the building entry is recommended.

A detailed topographic survey of the existing accessible spaces and route to the existing building is recommended. Some demolition and replacement of parking lot and/or on-site sidewalks may be necessary to ensure that accessible grades and standards are met.

Regulatory Requirements

Based on review of the proposed improvements to Station 58, the following regulatory considerations are noted:

- A site development permit from Pierce County will be required.
- The site development permit package will need to include a Full Drainage Report, Stormwater Pollution Prevention Plan, and Maintenance and Source Control Manual.

- Re-certification of the existing septic system through the Tacoma-Pierce County Health Department may be necessary. The proposed building addition and projected FTE staffing levels should be reviewed by a septic specialist.
- Less than 500 cubic yards of excavation is expected; therefore, it does not appear that State Environmental Policy Act (SEPA) checklist review will be triggered.
- Less than 1 acre will be disturbed; therefore, documentation for compliance with the Construction Stormwater General Permit through the Dept. of Ecology is not required.
- Confirmation of the above items through a pre-application Customer Information Meeting is recommended. The meeting should include Planning, Engineering, Building, Fire, and Health.

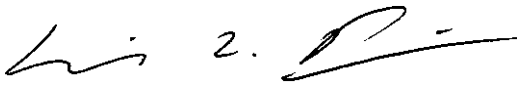
Conclusion

The site should be suitable to support the proposed building upgrades and expansions. A pre-application meeting with Pierce Co. is recommended to determine any additional regulatory requirements that may impact the project. Prior to design development, a detailed topographic survey with private utility locating, boundary survey confirmation and title report review are recommended.

A geotechnical evaluation is also recommended to determine engineering soil properties, pavement design considerations, and the suitability and capacity of native soils to infiltrate runoff from new impervious areas.

Thank you for the opportunity to assist Rice Fergus Miller and Gig Harbor Fire and Medic One. We are pleased to be a valued member of your team. Please let us know if you have any questions or need additional information.

Sincerely,

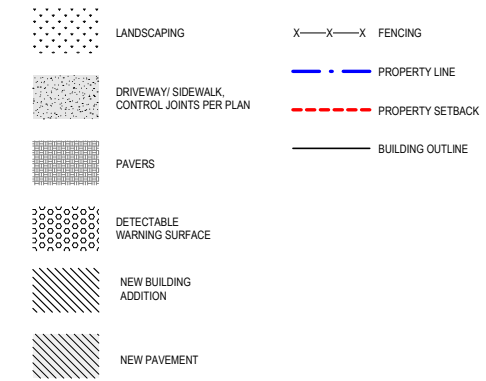
A handwritten signature in black ink, appearing to read "Eric L. Pilcher", with a stylized flourish at the end.

Eric L. Pilcher, P.E.
Project Manager

cc: Ed McManamna

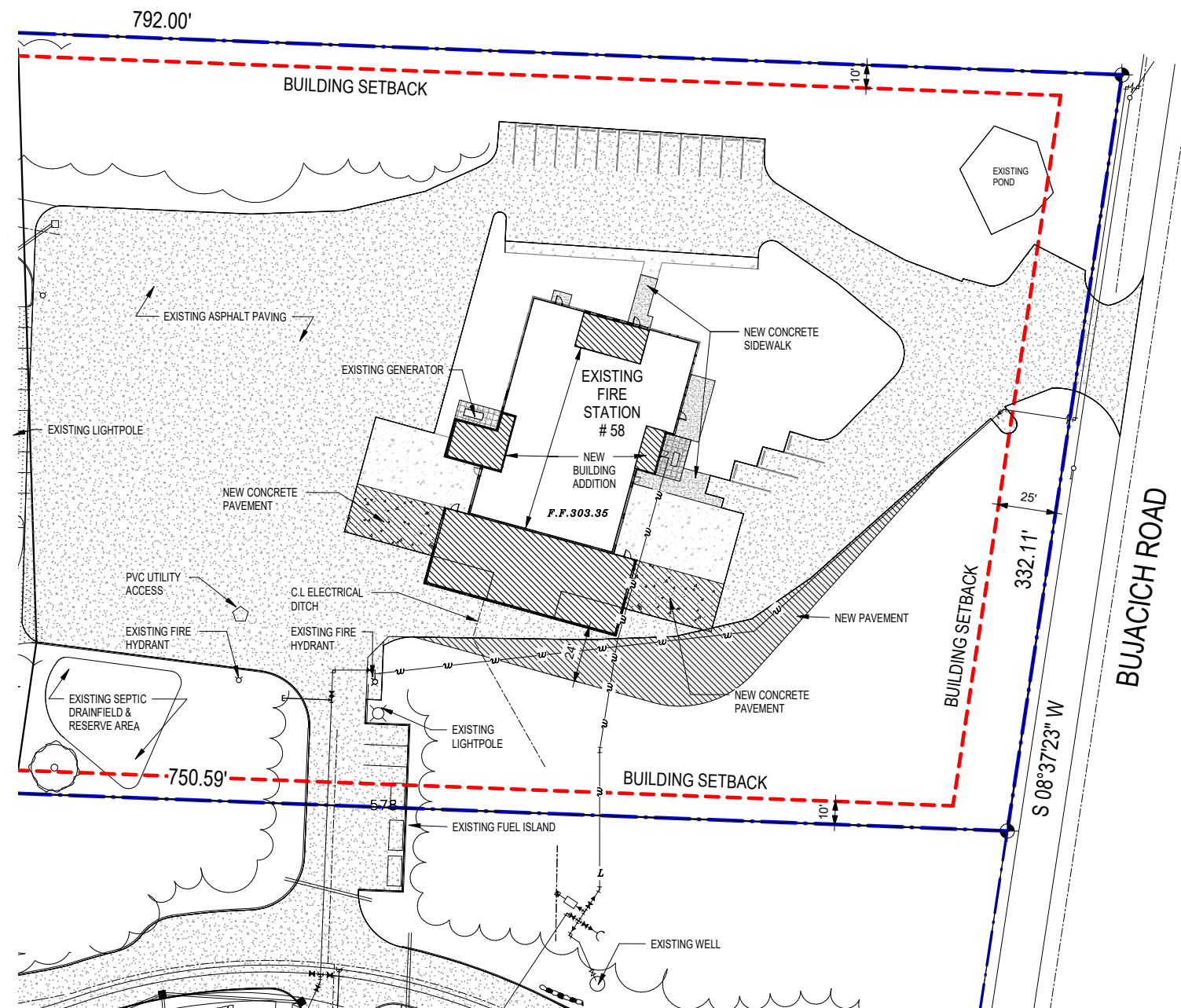
NOTES & LEGEND - SITE PLAN

1. REFERENCE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.



PARCEL NOTES:

ZONING: RURAL 5
ACRES: 5.86
COMMUNITY PLAN AREA: GIG HARBOR COMMUNITY PLAN
ADDRESS: 10302 BUJACICH ROAD NW
PARCEL NO: 0122363018



1 ARCHITECTURAL SITE PLAN FS # 58
1" = 30'-0"

6-57 of 93

GIG HARBOR FIRE MEDIC ONE
FS 58 & 59

[illegible]

ARCHITECTURAL SITE
PLAN STATION # 58

SHEET #

A10.01



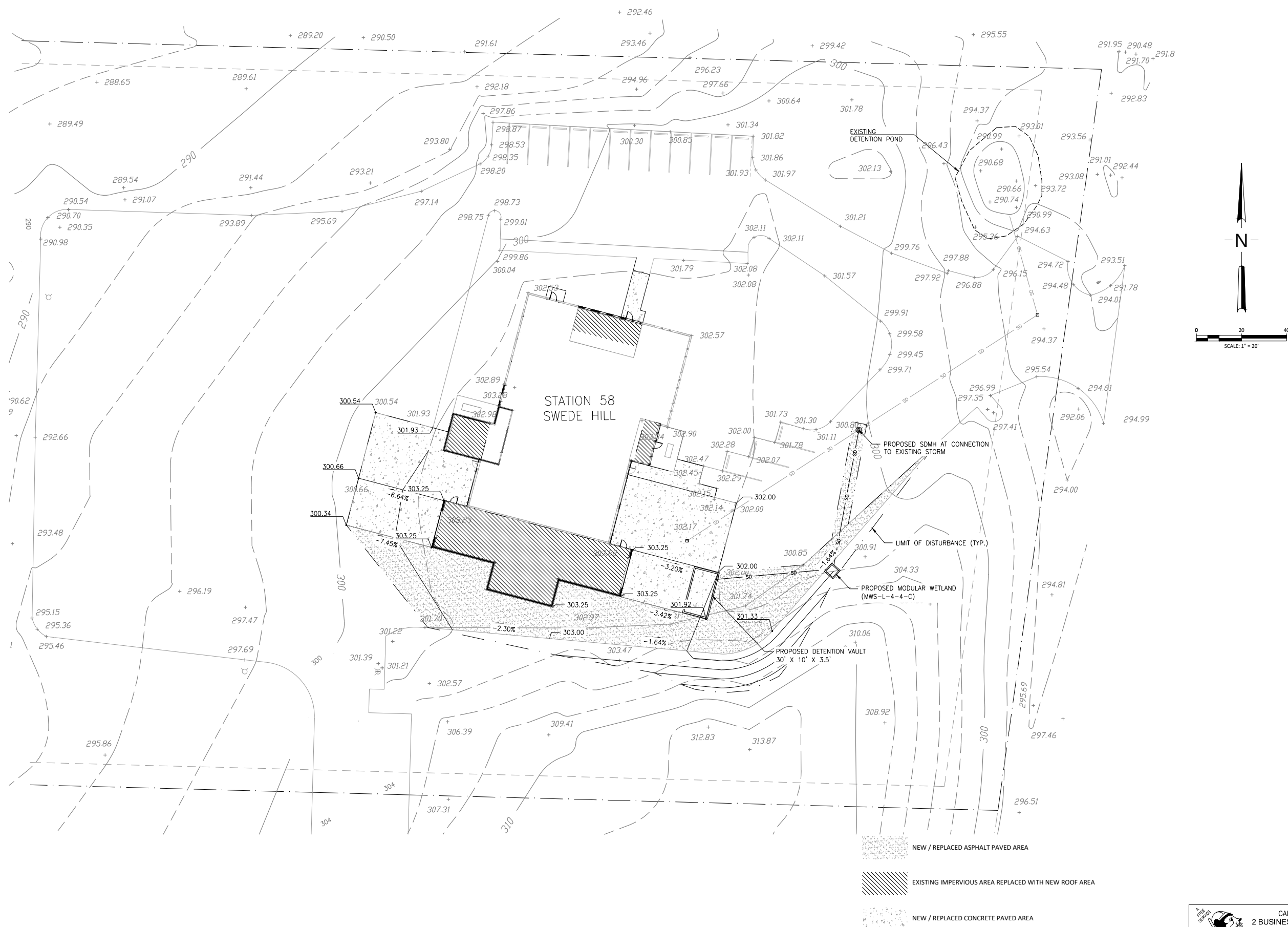
GIG HARBOR FIRE MEDIC ONE
STATION 58 (SWEDE HILL)

[illegible]

SITE PLAN

SHEET #

C01.01



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BM 3801/Gig Harbor Fire Medic One/202028 GHFMOST59-Site.mxd

1 ARCHITECTURAL SITE PLAN FS # 59
1" = 30'-0"

6-59 of 93



NOTES & LEGEND - SITE PLAN

1. REFERENCE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.

- LANDSCAPING
- DRIVEWAY/ SIDEWALK,
CONTROL JOINTS PER PLAN
- PAVERS
- DETECTABLE
WARNING SURFACE
- NEW BUILDING
ADDITION
- NEW PAVEMENT
- FENCING
- PROPERTY LINE
- PROPERTY SETBACK
- BUILDING OUTLINE

PARCEL NOTES:

ZONING: RURAL 10
ACRES: 4.0070
COMMUNITY PLAN AREA: GIG HARBOR COMMUNITY PLAN
ADDRESS: 3828 62ND AVENUE COURT NW
PARCEL NO: 0121243110

RICEfergusMILLER
ARCHITECTURE INTERIORS PLANNING VIZLAB

275 FIFTH STREET, SUITE 100
BREMERTON, WA 98337
360-377-8773
RFMARCH.COM

DRAFT
NOT FOR CONSTRUCTION

GIG HARBOR FIRE MEDIC ONE
FS 58 & 59

PROJECT # 2020028

PREDESIGN

ISSUE DATE JANUARY 4, 2021

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

AHJ APPROVAL STAMP

ARCHITECTURAL SITE
PLAN STATION # 59

SHEET #

A10.02



GIG HARBOR FIRE MEDIC ONE
STATION 59 (ARTONDALE)

[illegible]

SITE PLAN

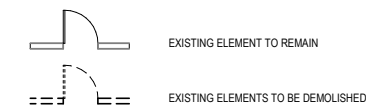
SHEET #

C01.02

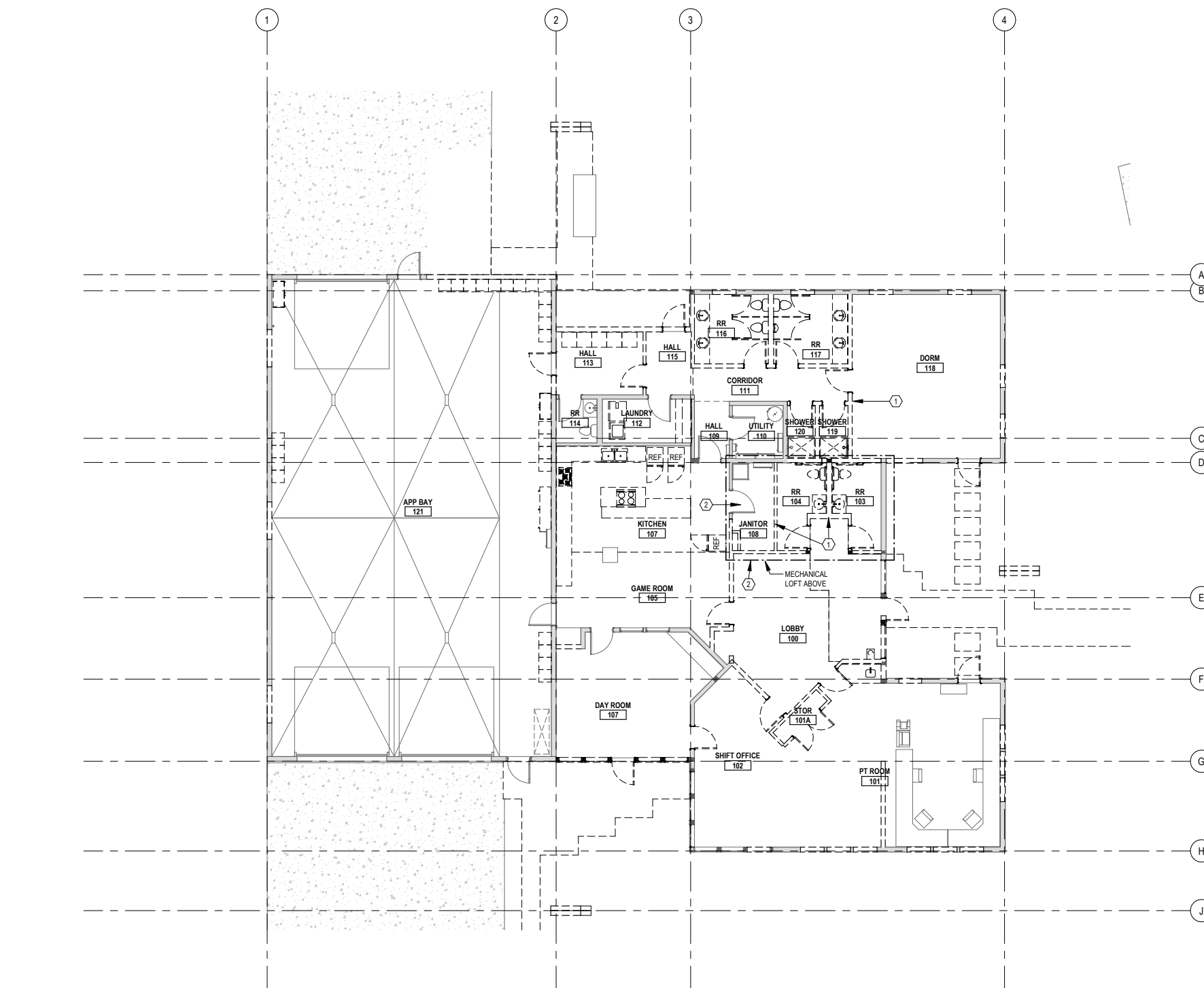


GENERAL PROJECT NOTES

- GENERAL CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS. NOTIFY ARCHITECT OF ANY DISCREPANCY PRIOR TO BEGINNING WORK.**
- B. CONTRACTOR TO PROVIDE TEMPORARY BARRICADES AND OTHER FORMS OF PROTECTION TO PROTECT OWNER'S PERSONNEL AND GENERAL PUBLIC AT AREAS OF WORK.**
- C. CONTRACTOR TO PRESERVE AND PROTECT EXISTING CONSTRUCTION AND LIFE SAFETY SYSTEMS TO REMAIN.**
- D. CONTRACTOR TO COORDINATE REMOVAL AND STORAGE OF EXISTING FURNITURE, FIXTURES, EQUIPMENT AND ASSOCIATED HARDWARE TO BE SALVAGED AND STORED DURING CONSTRUCTION WITH OWNER.**
- E. SURFACES RECEIVING NEW FINISHED SHALL BE PATCHED AND REPAIRED OF ANY HOLES, DEPRESSIONS, AND IMPERFECTIONS THROUGHOUT TO MATCH ADJACENT NON-DAMAGED SURGE LEVEL, FINISH AND TEXTURE.**
- F. CLEAN, REPAIR AND PREP SURFACES TO ACCEPT INSTALLATION OF NEW FINISHED PER MANUFACTURER'S INSTRUCTIONS.**
- G. DIMENSION ARE TO ROUGH FRAMING, UNO.**
- H. DIMENSION INDICATED AS "MIN" OR "CLR" ARE FROM NEAREST FINISH SURFACE, INCLUDING TRIM.**
- I. CONTRACTOR TO PROTECT ADJACENT TENANTS FROM CONSTRUCTION DEBRIS AND DUST.**
- J. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST AND REPAIR OF ALL DAMAGED CAUSED BY THEM AND THEIR SUB-CONTRACTORS, AND SHALL PROMPTLY REPAIR SUCH DAMAGES AT NO ADDITIONAL COST TO THE OWNER.**

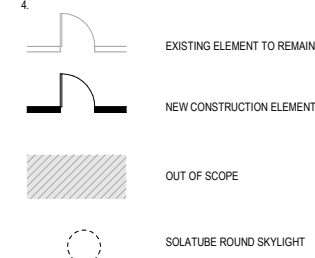


NOTES - DEMO PLAN	
Note#	Note Description#
1	1. REMOVE WALL UP TO UNDERSIDE OF STRUCTURE ABOVE.
2	2. DISAPPEARING STAIRWAY ABOVE TO REMAIN



NOTES & LEGEND - FLOOR PLAN

1. DIMENSIONS ARE TO ROUGH FRAMING OR TO FACE OF EXISTING FINISHES, TYP UNO.
2. DIMENSIONS INDICATED AS "MIN" OR "CLR" ARE FROM NEAREST FINISH SURFACE, INCLUDING TRIM.
3. ROUGH DOOR OPENINGS ARE LOCATED 4" FROM NEAREST INTERSECTING WALL FRAMING, TYP UNO.
- 4.



IMPROVEMENT NOTES

1. REQUIRED WA STATE ENERGY CODE:
 - A. REPLACE EXISTING WINDOWS WITH NEW INSULATED WINDOWS.
 - B. NEW WINDOWS TO BE INSULATED.
 - C. NEW WALL R-15; MINIMUM 2X6 WOOD STUDS
 - D. EXISTING EXTERIOR CMU WALLS: ADD MINIMUM R-10 RIGID INSULATION OVER EXISTING NEW FIBER CEMENT SIDING
 - E. LIGHTING: NEW LED LIGHTING FIXTURES; INTERIOR & EXTERIOR.
 - F. NEW HVAH HEATING & COOLING ENERGY RECOVERY SYSTEM. MULTIPLE ZONES WITH INDIVIDUAL UNITS IN SLEEP ROOMS, OFFICES, ETC. THIS WOULD INCLUDE PRESSURIZING THE LIVING AREA OF THE STATION.
 - G. REPLACE EXISTING ROOF WITH NEW METAL ROOF.
 - H. INSULATED ROOF SYSTEM WITH 2" MIN OVERHANGS OVER EXISTING INSULATION IN ATTIC SPACES AND ADD 2'-0" MIN OVERHANGS.
 - I. NEW HOT WATER TANK HEATER HEAT WITH HOT WATER CIRCULATION LOOP.
 - J. REPLACE EXISTING SIDING WITH NEW FIBER CEMENT SIDING.
2. STRUCTURAL: REPAIR/UPGRADE TO WALL & ROOF SYSTEM WITHIN THE EXISTING STRUCTURE. NEW ADDITION IS REQUIRED TO MEET "ESSENTIAL FACILITY" STATUS.
3. DECOR ROOM: NEGATIVE PRESSURE
4. NEW SEISMIC BRACED AC CEILINGS WHERE INSTALLED.
5. REPAIR INTERIOR WALLS ETC
6. FLOORING TO BE DURABLE, CLEANABLE SURFACES. NO CARPET.
7. PRIVACY LOCKS INSTALLED AT SLEEP ROOMS.
8. KEY LOCK ENTRY AT LT. OFFICE.
9. PROVIDE 100% PORTABLE OUTLETS THROUGHOUT THE STATION
11. DOOR TO BUNKER GEAR ROOM & DISASTER ROOM ARE 3'-6" WIDE.

KEY NOTES BY CATEGORY

EQUIPMENT E

- E1. NEW EXTRACTOR
- E2. NEW GEAR DRYER
- E3. (EXIST) TOOL CHEST
- E4. (EXIST) DIESEL EXHAUST
- E5. NEW DOUBLE STACK WASHER AND DRYER
- E6. NEW INDIVIDUAL FOOD LOCKERS
- E7. 30"x30" SCBA BOTTLE STORAGE
- E8. HAND SANITIZER
- E9. EXISTING CONTROLS PANEL. MOVE UP WALL
- E10. EMS DISPENSER MACHINE (41" W X36" D).
- E11. CABINET / COUNTERTOP FOR RADIOS.

FURNISHING F

- F1. (EXIST) BENCH 96"LX30"W
F2. (28) INDIVIDUAL 12" WIDE BY 18" HEIGHT FOOD LOCKERS

LOCKERS ☐ L

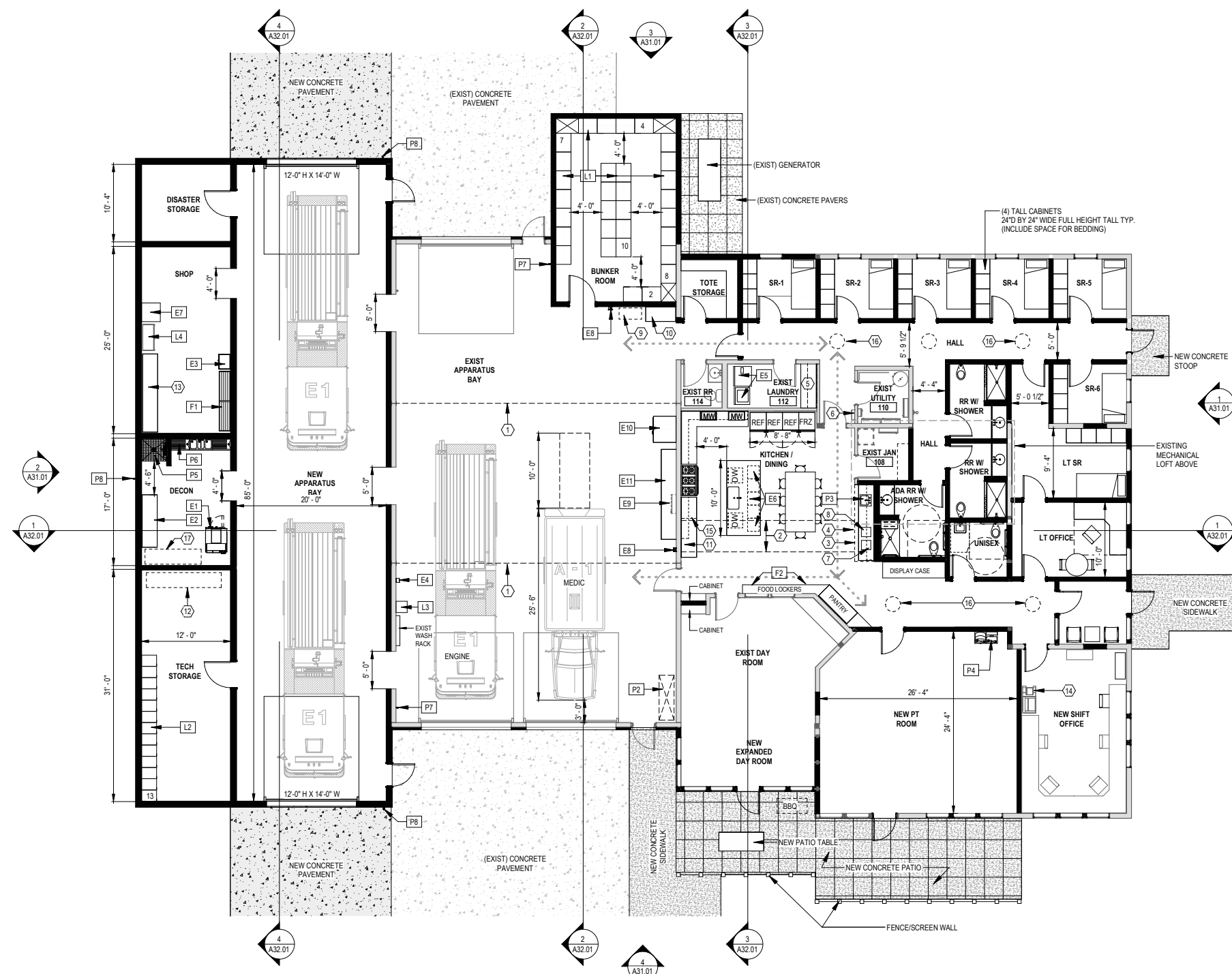
- L1. NEW 30" W X 24" D BUNKER GEAR RACKS
- L2. EXIST TECH. LOCKERS
- L3. (EXIST) WASH LOCKER
- L4. (EXIST) FLAMMABLE LOCKER

PLUMBING P

- P1. NOT USED
P2. (EXIST) FIRE SPRINKLER RISERS
P3. ADA SINK
P4. NEW DRINKING FOUNTAIN W/ BOTTLE FILL STATION
P5. DECON SHOWER
P6. NEW STAINLESS STEEL DECON SINK
P7. NEW HOT/COLD WATER HOSE BIB
P8. NEW COLD WATER HOSE BIB

KEY NOTES - FLOOR PLAN

1. LINE OF EXISTING MEZZANINE ABOVE
2. EXISTING SKYLIGHT ABOVE TO REMAIN
3. LINE OF NEW SOFFIT ABOVE
4. TV MOUNTED ABOVE SOFFIT
5. REMOVE EXISTING CABINETS INSTALL NEW CABINETS
6. EXISTING FIRE CONTROL PANEL
7. COFFEE
8. KEURIG
9. (EXIST) BOOT RACK
10. CHECK-IN / CHECK-OUT CABINET
11. DISPATCH AREA
12. LADDER, RESCUE BOARD STORAGE
13. STATION STORAGE CABINET
14. PRINTER
15. ADA WORKSPACE BELOW COUNTERTOP
16. SOLABUTE ROUND SKYLIGHT (SIMILAR TO FS 53/57)
17. STAINLESS STEEL SHELVING FOR FOLDED BUNKER GEAR, PPE



1 LEVEL 1 - FLOOR PLAN
1/8" = 1'-0"

1. VERIFY EQUIPMENT CLEARANCES WITH MANUFACTURER REQUIREMENTS PRIOR TO INSTALL.
2. FIELD CONFIRM DIMENSIONS AND REPORT DISCREPANCIES, IF ANY, TO ARCHITECT PRIOR TO CONSTRUCTION.
3. DIMENSIONS ARE FROM GRIDLINE, CENTERLINE OF ELEMENTS, OR FACE OF STRUCTURAL FRAMING, UNO.

----- BUILDING OUTLINE BELOW



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NOT FOR CONSTRUCTION

GIG HARBOR FIRE MEDIC ONE
FS 58 & 59

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ROOF PLAN

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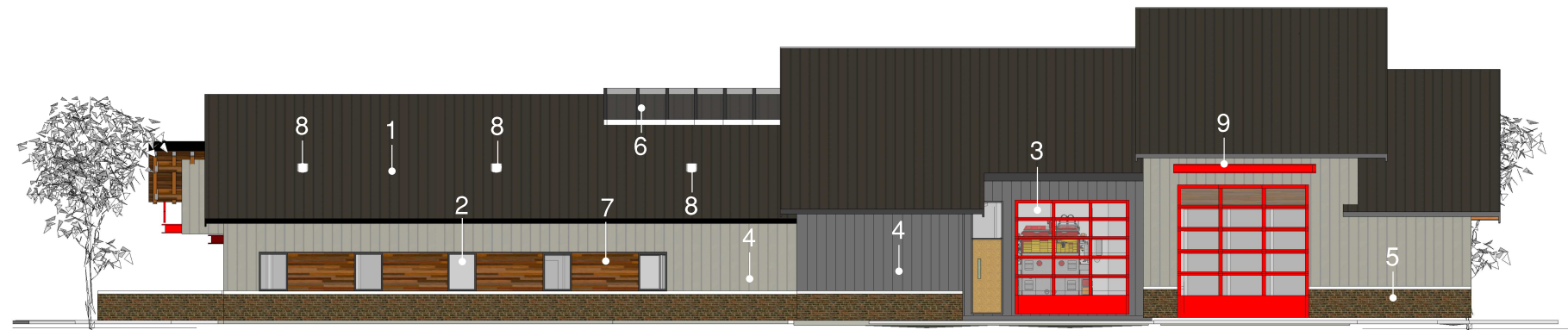
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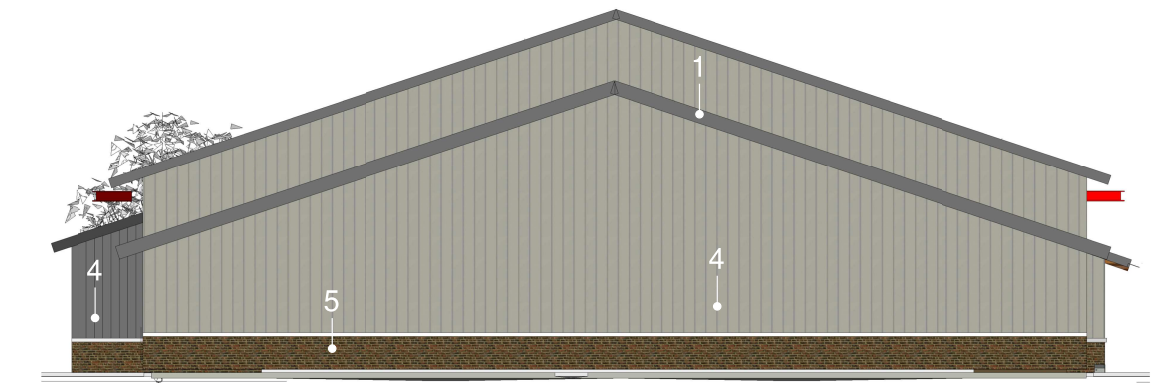
APP. BAY & SUPPORT AREAS ELEVATION



FRONT DOOR ELEVATION



APP. BAY & SLEEP ROOMS ELEVATION



APP. BAY & LIVING QUARTERS ELEVATION

KEYNOTE LEGEND

1. STANDING SEAM METAL ROOF
2. INSULATED ALUMINUM WINDOWS
3. RED SECTIONAL DOORS
4. FIBER CEMENT PANEL BOARD & BATTEN SIDING
5. BRICK VENEER
6. EXISTING SKYLIGHTS TO REMAIN
7. PHENOLIC SIDING (WOOD PATTERN)
8. SOLAR TUBE
9. STEEL CANOPY ABOVE SECTIONAL DOOR



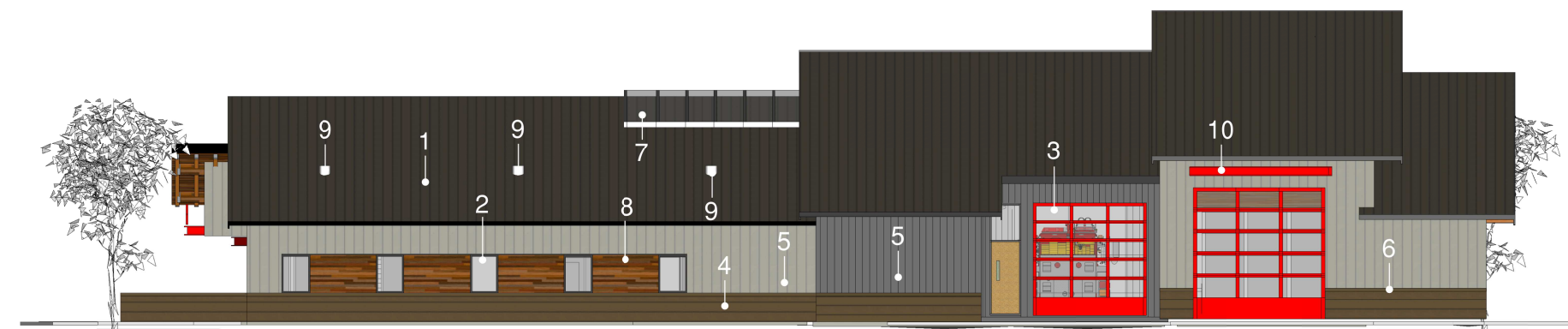
GIG HARBOR 58 & 59 ELEVATIONS - OPTION 1



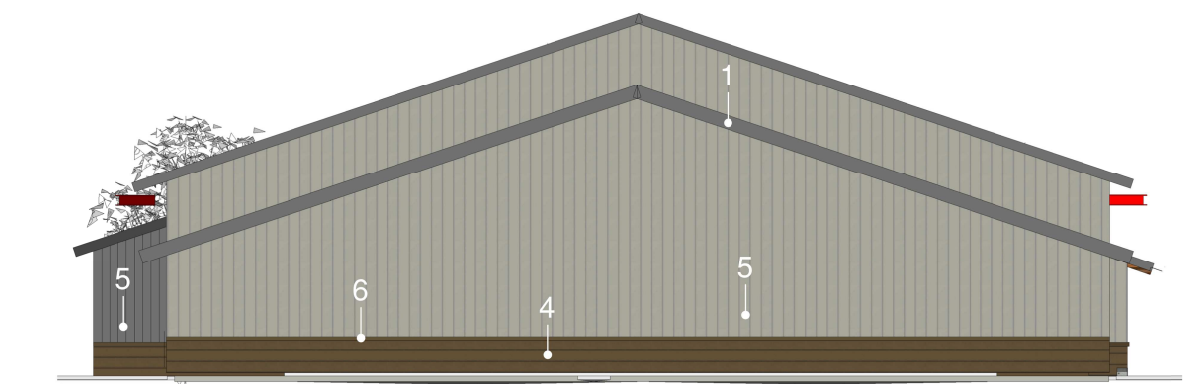
APP. BAY & SUPPORT AREAS ELEVATION



FRONT DOOR ELEVATION



APP. BAY SLEEP ROOMS ELEVATION



APP. BAY & LIVING QUARTERS ELEVATION

GIG HARBOR 58 & 59 ELEVATIONS - OPTION 2

KEYNOTE LEGEND

1. STANDING SEAM METAL ROOF
2. INSULATED ALUMINUM WINDOWS
3. RED SECTIONAL DOORS
4. FIBER CEMENT LAP SIDING
5. FIBER CEMENT PANEL BOARD & BATTEN SIDING
6. FIBER CEMENT TRIM
7. EXISTING SKYLIGHTS TO REMAIN
8. PHENOLIC SIDING (WOOD PATTERN)
9. SOLAR TUBE
10. STEEL CANOPY ABOVE SECTIONAL DOOR



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GENERAL

DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. TYPICAL DETAILS AND NOTES SHOWN ON THESE DRAWINGS ARE PART OF THE CONSTRUCTION CONTRACT AND SHALL BE PROVIDED BY THE CONTRACTOR. TYPICAL DETAILS MAY NOT NECESSARILY BE INDICATED ON THE PLANS BUT SHALL APPLY AS SHOWN OR DESCRIBED IN THE DETAILS AND NOTES. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND ALL OTHER CONTRACT DOCUMENTS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS FOR COMPATIBILITY AND SHALL NOTIFY ARCHITECT OF ALL DISCREPANCIES PRIOR TO CONSTRUCTION.

DISCREPANCIES: IN CASE OF DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS, REFERENCE STANDARDS, OR GOVERNING CODE, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN. CONTRACTOR SHALL NOTIFY THE ENGINEER OF DISCREPANCIES AND OBTAIN DIRECTION PRIOR TO PROCEEDING. NOTES ON INDIVIDUAL STRUCTURAL DRAWINGS SHALL TAKE PRIORITY OVER GENERAL STRUCTURAL NOTES. DIMENSIONS NOTED IN THE DRAWINGS SHALL BE FOLLOWED. DO NOT SCALE DRAWINGS.

SPECIFICATIONS: REFER TO SPECIFICATIONS FOR INFORMATION IN ADDITION TO THESE NOTES AND DRAWINGS.

ARCHITECTURAL: REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATIONS, SLOPES, DEPRESSIONS, NON-BEARING WALLS, FASCIA, ELEVATORS, STAIRS, CURBS, DRAINS, RAILINGS, WATERPROOFING, FINISHES, ETC.

CONTRACTOR-INITIATED CHANGES: SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT FOR APPROVAL AT LEAST 10 WORKING DAYS PRIOR TO FABRICATION AND CONSTRUCTION. CHANGES SHOWN ON SHOP DRAWINGS OR SUBMITTALS ONLY WILL NOT SATISFY THIS REQUIREMENT.

CONTRACTOR RESPONSIBILITIES: DRAWINGS REPRESENT DESIGN OF STRUCTURE IN COMPLETED FORM. CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS, SEQUENCES, AND SAFETY PRECAUTIONS REQUIRED TO PERFORM WORK.

CONTRACTOR SHALL DESIGN AND PROVIDE TEMPORARY SHORING AND BRACING OF ALL STRUCTURAL MEMBERS, EXISTING CONSTRUCTION, AND SOIL EXCAVATION AS REQUIRED. SHORING AND BRACING SHALL NOT BE REMOVED UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS, AND MATERIALS HAVE ACHIEVED DESIGN STRENGTH.

EXISTING CONDITIONS: CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS, MEMBER SIZES, AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS ARE INTENDED AS GUIDELINES ONLY AND MUST BE VERIFIED. EXISTING CONDITIONS SHOWN ON DRAWINGS ARE BASED EITHER ON SITE OBSERVATIONS, ORIGINAL DRAWINGS, OR WERE ASSUMED BASED ON EXPECTED CONDITIONS. IF EXISTING CONDITIONS DO NOT CLOSELY MATCH CONDITIONS SHOWN ON DRAWINGS, OR IF EXISTING MATERIALS ARE OF QUESTIONABLE OR SUBSTANDARD QUALITY, NOTIFY ENGINEER PRIOR TO COMMENCING ANY WORK.

STRUCTURAL OBSERVATION SHALL BE PERFORMED PER IBC SECTION 1704.6

SPECIAL INSPECTION PER IBC SECTION 1704, SHALL BE PERFORMED BY AN AGENCY APPROVED BY THE BUILDING OFFICIAL AND AS OUTLINED IN THE STRUCTURAL INSPECTION SCHEDULE.

CODES

BUILDING CODE: ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS AND THE INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, AS AMENDED BY THE STATE OF WASHINGTON.

RISK CATEGORY: IV (IBC TABLE 1604.5)

THE EXISTING STRUCTURE DOES NOT CONFORM TO PRESENT EARTHQUAKE CODE REQUIREMENTS. IT HAS BEEN REINFORCED IN ACCORDANCE WITH THE INTERNATIONAL EXISTING BUILDING CODE (IEBC), PER SECTION 101.4.7 OF THE INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION, AND IS WITHIN THE CURRENT PRACTICE FOR THE RENOVATION OF EXISTING BUILDINGS OF THIS AGE AND TYPE OF CONSTRUCTION.

STANDARDS: REFERENCE TO ASTM AND OTHER STANDARDS SHALL MEAN THE LATEST EDITION REFERENCED IN THE 2018 IBC, UNLESS NOTED IN THESE DOCUMENTS OR DESIGNATED BY THE GOVERNING CODE.

DESIGN CRITERIA

FLOOR DESIGN DATA:

IN ADDITION TO THE SELF WEIGHT, THE FOLLOWING LOADS ARE USED FOR DESIGN:

	UNIFORM LIVE LOAD (PSF)	CONCENTRATED LIVE LOAD (LBS)	SUPERIMPOSED DEAD LOAD (PSF)	REDUCIBLE (SEE NOTE)
CORRIDORS (UNO)	100	-	[5]	YES
STORAGE, LIGHT	125	2,000	[5]	NO
OFFICES	50	2,000	[5]	YES
OFFICE PARTITIONS	[15]	-	-	NO
SIDEWALKS AND VEHICULAR DRIVEWAYS SUBJECT	250	8,000	[5]	NO
STAIRS	100	300	[5]	YES

WHERE APPLICABLE, LIVE LOADS HAVE BEEN REDUCED PER IBC SECTION 1607.10.2

SNOW DESIGN DATA:

GROUND SNOW LOAD	P _g = [20] PSF (ASCE 7 FIGURE 7-1)
FLAT-ROOF SNOW LOAD	P _f = [20] PSF (ASCE 7 SECTION 7.3); 25 PSF MIN UNIFORM SNOW LOAD IN ACCORDANCE WITH SEAW WHITE PAPER 8-2010
SNOW EXPOSURE FACTOR	C _e = [1.0] (ASCE 7 TABLE 7-2)
SNOW LOAD IMPORTANCE FACTOR	I _s = [1.0] (ASCE 7 SECTION 7.3.3)
THERMAL FACTOR	C _t = 1.0 (ASCE 7 TABLE 7-3)
DRIFT SURCHARGE DRIFT	P _d = [x] (ASCE 7 SECTION 7.7)
WIDTH OF SNOW DRIFT	w = [x] (ASCE 7 SECTION 7.7)

WIND DESIGN DATA:

WIND BASE SHEAR	V _W (N-S) = [] KIPS V _W (E-W) = [] KIPS
ANALYTICAL PROCEDURE	DIRECTIONAL PROCEDURE, ASCE 7 CHAPTER 27
TYPE OF STRUCTURE	RIGID (ASCE 7 SECTION 26.9.2)
BASIC WIND SPEED	V = [] MPH, ULTIMATE 3 SECOND GUST (ASCE 7 FIG 26.5-1A - 26.5-1C) V _{ASD} = [] MPH, NOMINAL 3 SECOND GUST (IBC EQUATION 16-33) B (ASCE 7 SECTION 26.7.3)
EXPOSURE CATEGORY	0.18 (ASCE 7 FIGURE 26.11-1)
INTERNAL PRESSURE COEFFICIENT	ENCLOSED (ASCE 7 SECTION 26.10.1)
ENCLOSURE CLASSIFICATION	

EXISTING STRUCTURE EARTHQUAKE DESIGN DATA:

PERFORMANCE LEVEL	IMMEDIATE OCCUPANCY
EXISTING SEISMIC-FORCE-RESISTING SYSTEM:	WALLS: PLYWOOD SHEATHED SHEAR WALLS ORDINARY REINFORCED CONCRETE SHEAR WALLS DIAPHRAGM: PLYWOOD SHEATHED ROOF AND FLOOR DIAPHRAGM
ANALYTICAL PROCEDURE:	LINEAR STATIC, DYNAMIC, PROCEDURE
PSEUDO SEISMIC BASE SHEAR (ASCE 41 SECTION 7.4.1.3.1)	C ₁ C ₂ C _m S _{DS-1E} = [X] C ₁ C ₂ C _m S _{S-2E} = [X]
SITE CLASS	D (ASCE 41 SECTION 2.5)
LEVEL OF SEISMICITY	HIGH (ASCE 41 SECTION 2.5)
S _{S-1E} = 0.555 (ASCE 41 SECTION 2.4.1.4) S _{I-1E} = 0.17 (ASCE 41 SECTION 2.4.1.4) S _{VS-1E} = 0.752 (ASCE 41 SECTION 2.4.1.6) S _{X1-1E} = 0.385 (ASCE 41 SECTION 2.4.1.6)	
S _{S-2E} = 1.159 (ASCE 41 SECTION 2.4.1.3) S _{I-2E} = 0.398 (ASCE 41 SECTION 2.4.1.3) S _{VS-2E} = 1.391 (ASCE 41 SECTION 2.4.1.6) S _{XS-2E} = 0.757 (ASCE 41 SECTION 2.4.1.6)	

GEOTECHNICAL

SOIL BEARING SURFACES AND FILL SHALL BE PREPARED IN ACCORDANCE WITH THE GEOTECHNICALREPORT AND INSPECTED BY THE OWNER APPOINTED GEOTECHNICAL ENGINEER OR AN APPROVED TESTING AGENCY.

GEOTECHNICAL REPORT REFERENCE: [COMPANY NAME], REPORT # [], DATED []

FOOTINGS SHALL BE FOUNDED AT LEAST 18" BELOW LOWEST ADJACENT EXTERIOR FINISHED GRADE. THE OWNER APPOINTED GEOTECHNICAL ENGINEER SHALL APPROVE FOOTING EXCAVATION / PREPARATION PRIOR TO PLACEMENT OF ALL FOOTINGS. FOOTING DEPTHS AND ELEVATIONS SHOWN ON DRAWINGS ARE MINIMUM AND FOR GUIDANCE ONLY; CONTRACTOR SHALL ESTABLISH ACTUAL ELEVATIONS IN FIELD. BACKFILL BEHIND ALL WALLS AND PROVIDE FOR SUBSURFACE DRAINAGE AS RECOMMENDED IN THE GEOTECHNICAL REPORT.

SOIL PROFILE TYPE	SITE CLASS "X"
ALLOWABLE VERTICAL DESIGN PRESSURE	[] PSF
LATERAL EARTH PRESSURE, LEVEL BACKFILL:	
UNRESTRAINED (ACTIVE)	[] PCF
RESTRAINED (AT-REST)	[] PCF
SEISMIC SURCHARGE	[ENGINEER DEFINE] PSF
ALLOWABLE PASSIVE PRESSURE	[] PCF, FS = [1.5]
ALLOWABLE FRICTION COEFFICIENT	[0.35], FS = [1.5]
PILE CAPACITY	[120/60/18] TONS (COMPRESSION/TENSION/LATERAL)

SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO FABRICATION OR CONSTRUCTION OF THESE ITEMS:

STRUCTURAL STEEL	WOOD I-JOISTS
CONCRETE MIX DESIGN	OPEN-WEB WOOD TRUSSES
CONCRETE REINFORCING	CONNECTOR PLATE WOOD TRUSSES
POST-TENSIONING	GLUED-LAMINATED MEMBERS
STRUCTURAL STEEL	EMBEDDED ITEMS IN CONCRETE

CONTRACTOR SHALL REVIEW AND STAMP SUBMITTALS PRIOR TO SUBMISSION. DIMENSIONS AND QUANTITIES ARE CONTRACTOR'S RESPONSIBILITY AND WILL NOT BE REVIEWED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS PLACED PRIOR TO RECEIPT OF REVIEWED SHOP DRAWINGS. CONTRACTOR SHALL ALLOW A MINIMUM OF 10 WORKING DAYS FOR REVIEW.

SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.

DEFERRED SUBMITTALS: DRAWINGS AND CALCULATIONS FOR BIDDER-DESIGNED COMPONENTS, SEALED BY THE WASHINGTON STATE REGISTERED PROFESSIONAL STRUCTURAL ENGINEER RESPONSIBLE FOR THE DESIGN, SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. DEFERRED SUBMITTALS INCLUDE:

PRE-FABRICATED WOOD TRUSSES
SEISMIC BRACING AND ANCHORAGE
OF MECHANICAL UNITS AND FIXTURES

SUBMITTALS OF BIDDER-DESIGNED COMPONENTS SHALL INCLUDE LOCATIONS, MAGNITUDES, AND DIRECTIONS OF ALL FORCES TRANSFERRED TO THE STRUCTURE. CALCULATIONS SUBMITTED FOR BIDDER-DESIGNED COMPONENTS ARE FOR INFORMATION ONLY AND WILL NOT BE REVIEWED.

SEISMIC BRACING AND ANCHORAGE OF MECHANICAL UNITS AND OTHER MECHANICAL AND ELECTRICAL FIXTURES NOT SPECIFICALLY SHOWN ON THE PROJECT DRAWINGS SHALL BE DESIGNED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. THE MECHANICAL AND ELECTRICAL CONTRACTORS MUST RETAIN THE SERVICES OF A STRUCTURAL ENGINEER AND IS RESPONSIBLE FOR ALL COSTS RELATED TO THE PURCHASE AND INSTALLATION OF SEISMIC BRACING AND ANCHORAGE OF THEIR SYSTEMS.

RENOVATION:

DEMOLITION: CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING ANY DEMOLITION. SHORING SHALL BE INSTALLED TO SUPPORT EXISTING CONSTRUCTION AS REQUIRED AND IN A MANNER SUITABLE TO THE WORK SEQUENCES. EXISTING REINFORCING SHALL BE SAVED WHERE POSSIBLE AND AS NOTED ON DRAWINGS. SAW-CUTTING, IF AND WHERE USED, SHALL NOT CUT EXISTING REINFORCING THAT IS TO BE SAVED. DEMOLITION DEBRIS SHALL NOT BE ALLOWED TO DAMAGE OR OVERLOAD THE EXISTING STRUCTURE. CONSTRUCTION LOADING (INCLUDING DEMOLITION DEBRIS) ON EXISTING FLOOR SYSTEMS SHALL BE LIMITED TO 40 PSF.

- ALL NEW OPENINGS THROUGH EXISTING WALLS, SLABS, AND BEAMS SHALL BE ACCOMPLISHED BY SAWCUTTING WHEREVER POSSIBLE. ALL NEW OPENINGS SHALL BE SAWCUT NEAT AND CLEAN; NO OVERCUTTING AT OPENING CORNERS SHALL BE ALLOWED, UNLESS NOTED OTHERWISE. AS REQUIRED, CORE DRILL CORNERS AND CHIP, GRIND, OR CUT THE CORNERS TO PROVIDE REQUIRED DIMENSIONS.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND LOCATION OF MEMBERS PRIOR TO CUTTING ANY OPENINGS.
- SMALL ROUND OPENINGS SHALL BE ACCOMPLISHED BY CORE DRILLING.

MASONRY RESTORATION: OF ALL EXTERIOR WALLS SHALL BE AS FOLLOWS: SCRAPE ALL LOOSE AND WEAKENED MORTAR OUT TO FULL DEPTH OF THE DETERIORATION. REMOVE AND REPLACE ANY LOOSE MASONRY UNITS. CHECK FOR LOOSE FACING BRICK VENEER AND TUCK-POINT ALL JOINTS SOLID. RESTORATION AND REPAIR SHALL BE PERFORMED SUCH THAT THE EXISTING STRUCTURE IS NOT WEAKENED OR LEFT UNSUPPORTED DURING PROCESS OF WORK. ALL EXTERIOR APPENDAGES, SUCH AS FIRE ESCAPES, CORNICES, AND EYEBROWS, SHALL BE EVALUATED FOR STRUCTURAL INTEGRITY AND THE CONDITION OF CONNECTIONS TO THE STRUCTURE. CONTRACTOR SHALL NOTIFY ENGINEER AS TO THE FINDINGS.

CONTRACTOR SHALL CHECK FOR DRYROT AT ALL EXTERIOR WALLS, EXISTING TOILET ROOM FLOORS AND WALLS, AREAS SHOWING WATER STAINS, AND ALL WOOD MEMBERS IN BASEMENT AND CRAWL SPACES. ALL ROT SHALL BE REMOVED AND DAMAGED MEMBERS SHALL BE REPLACED OR REPAIRED AS DIRECTED BY THE ENGINEER.

CONCRETE:

REFERENCE STANDARDS: CONCRETE SHALL CONFORM TO ALL REQUIREMENTS OF THE FOLLOWING DOCUMENTS, EXCEPT AS MODIFIED BELOW:

ACI 301	"SPECIFICATIONS FOR STRUCTURAL CONCRETE"
ACI 318	"BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
ACI 304	"GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE"
ACI 311	"GUIDE FOR CONCRETE INSPECTION"
ACI SP-15*	"FIELD REFERENCE MANUAL"

*A COPY SHALL BE KEPT IN THE CONTRACTOR'S FIELD OFFICE AT ALL TIMES.

MATERIALS:

CEMENT	ASTM C150, C595
*AGGREGATES	ASTM C33
ADMIXTURES	ASTM C260, C494, C1017
*FLY ASH	ASTM C618, CLASS F OR C

*AGGREGATES THAT EXHIBIT DELETERIOUS ACTIVITY WHEN EVALUATED IN ACCORDANCE WITH ASTM C33 APPENDIX XI SHALL NOT BE USED. THE 'SAND EQUIVALENT' FOR FINE AGGREGATE SHALL NOT BE LESS THAN 75. *MAXIMUM LOSS ON IGNITION SHALL BE 1%.

CONCRETE MIXES SHALL BE PROPORTIONED TO ACHIEVE A WORKABLE MIX THAT CAN BE PLACED WITHOUT SEGREGATION OR EXCESS FREE SURFACE WATER. MIX DESIGNS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW BY ENGINEER PRIOR TO USE. COMPLY WITH IBC SECTION 1904. MIXES SHALL MEET OR EXCEED THE FOLLOWING CRITERIA:

TYPE OF CONSTRUCTION	SPECIFIED COMPRESSIVE STRENGTH (f'c) AT 28 DAYS, UNO	MAXIMUM WATER/CEMENT RATIO	EXPOSURE CLASS (ACI 318-14 TABLES 19.3.1.1 AND 19.3.2.1)
BELOW-GRADE CONCRETE (FOOTINGS)	4,500 PSI	0.55	F1, S0, W0, C1
MISCELLANEOUS EXTERIOR CONCRETE (EXTERIOR SLABS AND SITE WALLS)	4,500 PSI	0.45	F2, S0, W0, C1
INTERIOR SLABS-ON-GRADE	4,000 PSI	0.40* *	F0, S0, W0, C1
COLUMNS AND SHEAR WALLS	4,000 PSI		F0, S0, W0, C0

*MIX SHALL BE PROPORTIONED SUCH THAT POST-TENSIONED SLAB DRYING SHRINKAGE NOT EXCEED 0.035 % AT 28 DAYS (LABORATORY CONDITIONS). SUBMIT STRENGTH AND SHRINKAGE TEST DATA AND MIX DESIGN TO THE ARCHITECT FOR REVIEW BY ENGINEER A MINIMUM OF TWO WEEKS PRIOR TO PLACING ANY CONCRETE.

* "WATER-CEMENTITIOUS MATERIAL RATIO FOR INTERIOR SLABS SHALL BE 0.40 UNLESS OTHERWISE NOTED.

CONCRETE MIXES SHALL MEET OR EXCEED THE REQUIREMENTS SPECIFIED ABOVE. MIXES SHALL BE SUBMITTED TO THE ENGINEER AND BUILDING OFFICIAL FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE AND SHALL INCLUDE THE AMOUNTS OF CEMENT, CEMENTITIOUS MATERIAL, FINE AND COARSE AGGREGATE, WATER AND ADMIXTURES, AS WELL AS THE WATER-CEMENT RATIO, SLUMP, CONCRETE YIELD AND SUBSTANTIATING STRENGTH DATA IN ACCORDANCE WITH ACI 318, CHAPTER 26. REVIEW OF MIX SUBMITTALS BY THE ENGINEER OF RECORD INDICATES ONLY THAT INFORMATION PRESENTED CONFORMS GENERALLY WITH CONTRACT DOCUMENTS. CONTRACTOR OR SUPPLIER MAINTAINS FULL RESPONSIBILITY FOR SPECIFIED PERFORMANCE.

ADMIXTURES: ALL CONCRETE, INCLUDING SLABS ON GRADE, SHALL HAVE A WATER-REDUCING ADMIXTURE COMPLYING WITH ASTM C494 ADDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CALCIUM CHLORIDE OR OTHER CHLORIDE ADMIXTURES SHALL NOT BE USED.

ALL HORIZONTAL SURFACES EXPOSED TO WEATHER SHALL CONTAIN AN AIR-ENTRAINING AGENT COMPLYING WITH ASTM C260. THE AMOUNT OF ENTRAINED AIR SHALL BE IN ACCORDANCE WITH ACI 318-14 TABLE 19.3.3.1. TESTS FOR AIR CONTENT SHALL BE MADE AT THE DISCHARGE END OF THE TRUCK'S PLACING HOSE IN ACCORDANCE WITH ASTM C173.

WATER/CEMENT RATIO SHALL BE MEASURED BY WEIGHT AND BE BASED ON TOTAL CEMENTITIOUS MATERIAL, INCLUDING CEMENT AND POZZOLANS SUCH AS FLY ASH AND SILICA FUME.

RICEfergusMILLER

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GIG HARBOR FIRE MEDIC ONE

FS 58 & 59

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PROJECT # 262020.062

PREDESIGN

ISSUE DATE OCTOBER 20, 2020

REVISION SCHEDULE		

AJH APPROVAL STAMP

GENERAL NOTES

SHEET #

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WOOD

REFERENCE STANDARDS: WOOD SHALL CONFORM TO ALL REQUIREMENTS OF THE FOLLOWING DOCUMENTS:

AITC TCM	"TIMBER CONSTRUCTION MANUAL"
ANSI/AWC NDS	"NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION"
ANSI/AWC SDPWS	"SPECIAL DESIGN PROVISIONS FOR WIND AND SEISMIC"
AWC WCD No. 4	"WOOD CONSTRUCTION DATA - PLANK AND BEAM FRAMING FOR RESIDENTIAL BUILDINGS"
AWC WFCM	"WOOD FRAME CONSTRUCTION MANUAL FOR ONE- AND TWO-FAMILY DWELLINGS"
ANSI/AITC A190.1	"STRUCTURAL GLUED LAMINATED TIMBER"
AITC A117	"STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES"
AWPA C1	"ALL TIMBER PRODUCTS-PRESERVATIVE TREATMENT BY PRESSURE PROCESS"
TPI 1	"NATIONAL DESIGN STANDARD FOR METAL-PLATE-CONNECTED WOOD TRUSS CONSTRUCTION"

ALL WOOD FRAMING DETAILS SHALL BE CONSTRUCTED TO THE MINIMUM STANDARDS OF THE IBC. MINIMUM NAILING SHALL CONFORM TO IBC TABLE 2304.10.1 OR CURRENT ICC-ES REPORT ESR-1539, UNLESS OTHERWISE NOTED. COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS WITH MECHANICAL AND ARCHITECTURAL DRAWINGS. INSTALL WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. INSTALLATION OF LAG SCREWS SHALL CONFORM TO NDS SECTION 12.1.4, AND INSTALLATION OF BOLTS SHALL CONFORM TO NDS SECTION 12.1.3.

WALL FRAMING: TWO STUDS MINIMUM SHALL BE INSTALLED AT THE ENDS OF ALL WALLS, UNLESS OTHERWISE NOTED. INSTALL SOLID BLOCKING FOR WOOD COLUMNS THROUGH FLOOR SPACES TO SUPPORTS BELOW.

ALL STUD WALLS SHALL HAVE THEIR LOWER WOOD PLATES ATTACHED TO WOOD FRAMING BELOW WITH 16d NAILS AT 12" OC STAGGERED OR BOLTED TO CONCRETE WITH 5/8" DIAMETER ANCHOR BOLTS @ 4'-0"oc PER IBC SECTION 2308.3 (EMBED 7"), UNLESS OTHERWISE NOTED. 3" x 3" x 0.229" PLATE WASHERS SHALL BE USED WITH ALL SILL PLATE ANCHOR BOLTS PER IBC SECTION 2308.3.2 AND SDPWS SECTION 4.3.6.4.3. INDIVIDUAL MEMBERS OF BUILT-UP STUD POSTS SHALL BE NAILED TO EACH OTHER WITH 16d @ 12"oc STAGGERED.

FLOOR AND ROOF FRAMING: INSTALL DOUBLE JOISTS UNDER ALL PARALLEL PARTITIONS THAT EXTEND OVER MORE THAN HALF THE JOIST LENGTH AND AROUND ALL OPENINGS IN FLOORS OR ROOFS. INSTALL SOLID BLOCKING AT ALL BEARING POINTS. TOENAIL JOISTS TO SUPPORTS WITH TWO 16d NAILS. ATTACH TIMBER JOISTS TO FLUSH HEADERS OR BEAMS WITH SIMPSON METAL JOIST HANGERS IN ACCORDANCE WITH NOTES ABOVE. NAIL ALL MULTI-JOIST BEAMS TOGETHER WITH 16d @ 12" OC STAGGERED.

DECKS: IN ACCORDANCE WITH IBC SECTION 1604.8.3, DECKS SHALL BE POSITIVELY ANCHORED TO THE STRUCTURE BY MEANS OTHER THAN NAILS SUBJECT TO WITHDRAWAL. ANCHOR WITH MINIMUM (1) CS16 STRAP AT EACH END ATTACHED TO DECK JOISTS AND TO A SOLID BLOCKING MEMBER WITHIN THE BUILDING.

ROOF, FLOOR & WALL SHEATHING SHALL BE APA RATED, EXTERIOR OR EXPOSURE 1 STRUCTURAL I PLYWOOD OR ORIENTED STRAND BOARD (OSB) IN CONFORMANCE WITH IBC SECTION 2303.1.5. SHEATHING SHALL BE MANUFACTURED UNDER THE PROVISIONS OF VOLUNTARY PRODUCT STANDARDS PS 1-09, PS 2-10, OR APA PRP-108 PERFORMANCE STANDARDS AND POLICIES FOR STRUCTURAL USE PANELS. SEE DRAWINGS FOR THICKNESS, SPAN RATING, AND NAILING REQUIREMENTS. UNLESS OTHERWISE NOTED, WALL SHEATHING SHALL BE 1/2" (NOMINAL) WITH SPAN RATING OF 24/0. GLUE FLOOR SHEATHING TO ALL SUPPORTING MEMBERS WITH ADHESIVE CONFORMING TO APA SPECIFICATION AFG-01.

ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH GRAIN PERPENDICULAR TO SUPPORTS AND NAILED AS SHOWN ON THE DRAWINGS. INSTALL APPROVED PANEL EDGE CLIPS CENTERED BETWEEN JOISTS/TRUSSES AT UNBLOCKED ROOF SHEATHING EDGES. ALL FLOOR SHEATHING EDGES SHALL HAVE APPROVED TONGUE-AND-GROOVE JOINTS OR SHALL BE SUPPORTED WITH SOLID BLOCKING. ALLOW 1/8" SPACING AT ALL PANEL EDGES AND ENDS OF FLOOR AND ROOF SHEATHING. TOENAIL BLOCKING TO SUPPORTS WITH 16d @ 12" OC. AT BLOCKED FLOOR AND ROOF DIAPHRAGMS, INSTALL FLAT 2x BLOCKING AT ALL UNFRAMED PANEL EDGES AND NAIL WITH EDGE NAILING SPECIFIED.

FIRE-RETARDANT-TREATED (FRT) LUMBER AND WOOD STRUCTURAL PANELS SHALL BE MANUFACTURED IN ACCORDANCE WITH IBC SECTION 2303.2 AND SHALL BE IMPREGNATED WITH CHEMICALS BY A FIRE-RETARDANT-TREATED (FRT) LUMBER AND WOOD STRUCTURAL PANELS SHALL BE MANUFACTURED IN ACCORDANCE WITH IBC SECTION 2303.2 AND SHALL BE IMPREGNATED WITH CHEMICALS BY A PRESSURE PROCESS OR OTHER MEANS DURING MANUFACTURE, AND SHALL HAVE, WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723, A LISTED FLAME SPREAD INDEX OF 25 OR LESS AND SHOW NO EVIDENCE OF SIGNIFICANT PROGRESSIVE COMBUSTION WHEN THE TEST IS CONTINUED FOR AN ADDITIONAL 20-MINUTE PERIOD. ADDITIONALLY, THE FLAME FRONT SHALL NOT PROGRESS MORE THAN 10.5 FEET (3200 MM) BEYOND THE CENTERLINE OF THE BURNERS AT ANY TIME DURING THE TEST. SEE IBC SECTION 2303.2 FOR ADDITIONAL REQUIREMENTS.FRT LUMBER AND FRT LUMBER USED FOR WOOD TRUSSES SHALL HAVE A CURRENT ICC-ES OR IAPMO EVALUATION REPORT AND SHALL BE LABELED IN ACCORDANCE WITH IBC SECTION 2303.2.4.

THE FOLLOWING FRT STRENGTH ADJUSTMENTS FACTORS HAVE BEEN APPLIED TO THE DESIGN VALUES FOR UNTREATED LUMBER AND WOOD STRUCTURAL PANELS. THE FRT MANUFACTURER'S STRENGTH REDUCTION FACTORS SHALL BE DETERMINED IN ACCORDANCE WITH IBC SECTION 2303.2.5, SHALL BE CLEARLY STATED IN THE PRODUCT SUBMITTAL, AND SHALL NOT REDUCE THE DESIGN VALUES FOR UNTREATED LUMBER AND WOOD STRUCTURAL PANELS MORE THAN THE FOLLOWING STRENGTH REDUCTION FACTORS, UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER.NO EVIDENCE OF SIGNIFICANT PROGRESSIVE COMBUSTION WHEN THE TEST IS CONTINUED FOR AN ADDITIONAL 20-MINUTE PERIOD. ADDITIONALLY, THE FLAME FRONT SHALL NOT PROGRESS MORE THAN 10.5 FEET (3200 MM) BEYOND THE CENTERLINE OF THE BURNERS AT ANY TIME DURING THE TEST. SEE IBC SECTION 2303.2 FOR ADDITIONAL REQUIREMENTS.

FLEXURAL STRESS	Fb: 0.90
COMPRESSION PARALLEL TO GRAIN	Fc: 0.91
HORIZONTAL SHEAR	Fv: 0.94
TENSION PARALLEL TO GRAIN	Ft: 0.87
FASTENER / CONNECTOR DESIGN	0.80
MODULUS OF ELASTICITY	E: 0.98

STRENGTH REDUCTION FACTORS AND MAXIMUM LOADS AND SPANS FOR FIRE-RETARDANT-TREATED (FRT) WOOD STRUCTURAL PANELS SHALL BE DETERMINED IN ACCORDANCE WITH IBC SECTION 2303.2.5.1 AND SHALL BE CLEARLY STATED IN THE PRODUCT SUBMITTAL. MINIMUM SUPERIMPOSED ALLOWABLE UNIFORM LOADS FOR FRT WOOD STRUCTURAL PANELS SHALL EXCEED THE FOLLOWING:

5/8" FRT PLYWOOD PANEL SPAN RATING 40/20:	80 PSF AT 24" OC SUPPORT SPACING
3/4" FRT PLYWOOD PANEL SPAN RATING 48/24:	250 PSF AT 16" OC SUPPORT SPACING

SAWN LUMBER: SAWN LUMBER SHALL BE IDENTIFIED BY THE GRADE MARK OF A LUMBER GRADING OR INSPECTION AGENCY APPROVED BY AN ACCREDITATION BODY COMPLYING WITH US DEPARTMENT OF COMMERCE PS20. FRAMING LUMBER SHALL BE KILN DRIED OR MC-19, AND GRADED AND MARKED IN CONFORMANCE WITH W.C.L.B. STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17. SAWN LUMBER SPECIES AND GRADES SHALL BE AS FOLLOWS:

JOISTS: (2x MEMBERS)	DOUGLAS FIR NO. 2 Fb = 900 PSI, Fv = 180 PSI, E = 1600 KSI
(3x AND 4x MEMBERS)	DOUGLAS FIR NO. 1 Fb = 1000 PSI, Fv = 180 PSI, E = 1700 KSI
BEAMS AND STRINGERS: (INCLUDING 6x AND LARGER MEMBERS)	DOUGLAS FIR NO. 1 Fb = 1350 PSI, Fv = 170 PSI, E = 1600 KSI
POSTS: (4x MEMBERS)	DOUGLAS-FIR NO. 1 Fc = 1500 PSI, E = 1700 KSI

(6x AND LARGER MEMBERS)	DOUGLAS FIR NO. 1 Fc = 1000 PSI, E = 1600 KSI
STUDS, PLATES, LEDGERS & MISCELLANEOUS LIGHT FRAMING:	DOUGLAS FIR NO. 2 Fb = 900 PSI, E = 1600 PSI, Fc = 1350 PSI, Ft = 575 PSI

GLUED LAMINATED MEMBERS (GLULAMS) SHALL BE MANUFACTURED IN CONFORMANCE WITH ANSI/APA A 190.0 AND ASTM D3737. EACH MEMBER SHALL BEAR AN AITC OR APA IDENTIFICATION MARK AND BE ACCOMPANIED BY AN AITC CERTIFICATE OF CONFORMANCE. GLULAMS SHALL BE INDUSTRIAL GRADE WHERE NOT EXPOSED TO VIEW AND ARCHITECTURAL GRADE WHERE EXPOSED TO VIEW. GLULAMS SHALL HAVE THE STRENGTH GRADES AS NOTED BELOW:

SIMPLE SPAN BEAMS:	DOUGLAS FIR 24F-V4 Fb = 2400 PSI, Fv = 265 PSI, E = 1800 KSI
CONTINUOUS OR CANTILEVER BEAMS:	DOUGLAS FIR 24F-V8 Fb = 2400 PSI, Fv = 265 PSI, E = 1800 KSI
COLUMNS, TRUSSES: (2 LAMINATIONS)	DOUGLAS FIR 1-DF-L3 Fc = 1200 PSI, Fbby = 1000 PSI, Fbxx = 1250 PSI, E = 1500 KSI
(3 LAMINATIONS)	DOUGLAS FIR 1-DF-L3 Fc = 1200 PSI, Fbby = 1250 PSI, Fbxx = 1250 PSI, E = 1500 KSI
(4 OR MORE LAMINATIONS)	DOUGLAS FIR 1-DF-L3 Fc = 1550 PSI, Fbby = 1450 PSI, Fbxx = 1500 PSI, E = 1500 KSI

HORIZONTAL GLULAM MEMBERS AND INCLINED MEMBERS OF LESS THAN 1:1 SLOPE SHALL HAVE A RADIUSED CAMBER OF 3,500 FT. UNLESS NOTED OTHERWISE.

GLUED LAMINATED MEMBERS EXPOSED TO WEATHER OR MOISTURE SHALL BE TREATED WITH A NON-CORROSIVE, APPROVED PRESERVATIVE.

ENGINEERED LUMBER: EACH PIECE SHALL BEAR A STAMP OR STAMPS NOTING THE NAME AND PLANT NUMBER OF THE MANUFACTURER, THE GRADE, THE NER OR ICC-ES REPORT NUMBER, AND THE QUALITY CONTROL AGENCY. ALL MEMBERS SHALL BE MANUFACTURED WITH AN APPROVED ADHESIVE.

BEAMS:	LAMINATED VENEER LUMBER (LVL) Fb = 2600 PSI, E = 1900 KSI, Fv = 285 PSI
	LAMINATED STRAND LUMBER (LSL) Fb = 2250 PSI, E = 1500 KSI, Fv = 400 PSI (DEPTH > 9-1/2") Fb = 1700 PSI, E = 1300 KSI, Fv = 400 PSI (DEPTH < 9-1/2")
	PARALLEL STRAND LUMBER (PSL) Fb = 2900 PSI, E = 2000 KSI, Fv = 290 PSI
RIM BOARD & BLOCKING:	LAMINATED STRAND LUMBER (LSL) Fb = 1700 PSI, E = 1300 KSI, Fv = 400 PSI
STUDS:	LAMINATED VENEER LUMBER (LVL) Fb = 2900 PSI, E = 2000 KSI, Fv = 285 PSI, Fc = 2635 PSI
	LAMINATED STRAND LUMBER (LSL) Fb = 2250 PSI, E = 1500 KSI, Fv = 400 PSI, Fc = 1950 PSI (WIDTH > 7-1/4") Fb = 1700 PSI, E = 1300 KSI, Fv = 400 PSI, Fc = 1400 PSI (WIDTH < 7-1/4")
POSTS:	PARALLEL STRAND LUMBER (PSL) Fb = 2400 PSI, E = 1800 KSI, Fv = 290 PSI, Fc = 2500 PSI

DESIGN SHOWN ON THE DRAWINGS IS BASED ON LUMBER MANUFACTURED BY WEYERHAEUSER IN ACCORDANCE WITH ICC-ES REPORT NO. ESR-1387 REDBUILT LLC IN ACCORDANCE WITH ICC-ESR-2993. ALTERNATE ENGINEERED LUMBER MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER. A CURRENT NER OR ICC-ES REPORT AND A LIST STATING THE ITEM-FOR-ITEM SUBSTITUTION MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR ANY PROPOSED SUBSTITUTES.

ENGINEERED WOOD I-JOISTS SHALL BE FURNISHED AND INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL NECESSARY BRIDGING, BLOCKING, BLOCKING PANELS, STIFFENERS, ETC., SHALL BE DETAILED AND FURNISHED BY THE MANUFACTURER. PERMANENT AND TEMPORARY BRIDGING SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS. ALL JOIST HANGERS AND OTHER HARDWARE SHALL BE COMPATIBLE IN SIZE WITH ENGINEERED WOOD I-JOISTS PROVIDED.

DESIGN SHOWN ON THE DRAWINGS IS BASED ON JOISTS MANUFACTURED BY REDBUILT LLC IN ACCORDANCE WITH ICC-ES REPORT NO. ESR-2994. ALTERNATE ENGINEERED WOOD I-JOISTS MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER. A CURRENT NER OR ICC-ES REPORT AND A LIST STATING THE ITEM-FOR-ITEM SUBSTITUTION MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR ANY PROPOSED SUBSTITUTES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING COSTS RELATING TO REVIEW AND/OR RE-DESIGN TO ACCOMMODATE PROPOSED SUBSTITUTIONS.

DESIGN LOADS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

LIVE LOAD	PER DESIGN LOADING CRITERIA
DEAD LOAD	[10] PSF
WIND UPLIFT	[10] PSF (NET)

THE JOIST MANUFACTURER SHALL COORDINATE LOCATIONS AND SUPPORT CONFIGURATIONS OF PLUMBING, MECHANICAL UNITS, DUCTS, AND/OR OTHER MISCELLANEOUS ITEMS WITH THE CONTRACTOR PRIOR TO JOIST FABRICATION. THE JOIST MANUFACTURER SHALL DESIGN JOISTS TO SUPPORT ALL LOADS ASSOCIATED WITH SUCH ITEMS. THE JOIST SHOP DRAWINGS SHALL INCLUDE ALL DESIGN LOADS AND APPROVED HANGER CONNECTION DETAILS TO JOISTS FOR SUPPORT OF HUNG MECHANICAL SYSTEM COMPONENTS

SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. DESIGN SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER, STATE OF WASHINGTON.

ALL I-JOIST HANGERS SHALL BE "MIT" SERIES BY SIMPSON STRONG-TIE, UNLESS OTHERWISE NOTED

PREFABRICATED OPEN WEB WOOD TRUSSES (OR COMBINATION WOOD AND METAL) SHALL BE FURNISHED AND INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL NECESSARY BRIDGING, BLOCKING, PRE-NOTCHED PLATES, ETC., SHALL BE DETAILED AND FURNISHED BY THE MANUFACTURER. ALL HANGERS AND OTHER HARDWARE NOT SHOWN SHALL BE DESIGNED AND SUPPLIED BY THE JOIST MANUFACTURER AND SHALL BE COMPATIBLE IN SIZE WITH THE JOISTS PROVIDED.

DESIGN SHOWN ON THE DRAWINGS IS BASED ON TRUSSES MANUFACTURED BY REDBUILT LLC IN ACCORDANCE WITH ICC-ES REPORT NO. ESR-1774. ALTERNATE TRUSSES MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER. A CURRENT NER OR ICC-ES REPORT AND A LIST STATING THE ITEM-FOR-ITEM SUBSTITUTION MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR ANY PROPOSED SUBSTITUTES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING COSTS RELATING TO REVIEW AND/OR RE-DESIGN TO ACCOMMODATE PROPOSED SUBSTITUTIONS.

DESIGN LOADS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

SNOW/LIVE LOAD	PER DESIGN LOADING CRITERIA
TOP CHORD DEAD LOAD	[10] PSF
BOTTOM CHORD DEAD LOAD	[5] PSF
WIND UPLIFT	[10] PSF (NET)

THE TRUSS MANUFACTURER SHALL COORDINATE LOCATIONS AND SUPPORT CONFIGURATIONS OF PLUMBING, MECHANICAL UNITS, DUCTS, AND/OR OTHER MISCELLANEOUS ITEMS WITH THE CONTRACTOR PRIOR TO TRUSS FABRICATION. THE TRUSS MANUFACTURER SHALL DESIGN TRUSSES TO SUPPORT ALL LOADS ASSOCIATED WITH SUCH ITEMS.

THE TRUSS SHOP DRAWINGS SHALL INCLUDE ALL DESIGN LOADS AND APPROVED HANGER CONNECTION DETAILS TO TRUSS CHORDS FOR SUPPORT OF HUNG MECHANICAL SYSTEM COMPONENTS.

SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS (COMPLETE WITH STRESS DIAGRAM)S TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. DESIGN SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER, STATE OF WASHINGTON. PERMANENT AND TEMPORARY BRIDGING SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURER'S INSTRUCTIONS.

TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, AS SPECIFIED IN THEIR LATEST CATALOG. ALTERNATE CONNECTORS CONFORMING WITH IBC SECTION 2303.5 & 2304.10.3, THAT MEET OR EXCEED THE SPECIFIED CONNECTORS' CAPACITY MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. A CURRENT ICC-ES REPORT AND A LIST STATING THE ITEM-FOR-ITEM SUBSTITUTION AND CAPACITY COMPARISONS MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR ANY PROPOSED SUBSTITUTES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENGINEERING COSTS RELATING TO REVIEW AND/OR RE-DESIGN TO ACCOMMODATE PROPOSED SUBSTITUTIONS. INSTALL NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, CENTER STRAP ON JOINT AND INSTALL NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER, WITH EQUAL NUMBER AND SIZE OF FASTENERS IN EACH MEMBER. ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A307. INSTALL WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. ALL SHIMS SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED. ALL TIMBER JOISTS AND MULTIPLE JOIST BEAMS SHALL BE CONNECTED TO FLUSH BEAMS WITH "HU" SERIES JOIST HANGERS, UNLESS OTHERWISE NOTED.

ALL TIMBER CONNECTORS IN CONTACT WITH PRESSURE-TREATED WOOD THAT USES PRESERVATIVE CHEMICALS SHALL BE MANUFACTURED FROM ZMAX STEEL BY SIMPSON (G185 STEEL PER ASTM A653), OR TYPE 304 OR 316 STAINLESS STEEL. ALTERNATIVELY, CONNECTORS CAN BE POST HOT DIP GALVANIZED PER ASTM A123 OR MECHANICALLY GALVANIZED PER ASTM B695, CLASS 55 OR GREATER. STAINLESS STEEL FASTENERS SHALL BE USED WITH STAINLESS STEEL CONNECTORS, AND HOT DIP GALVANIZED FASTENERS PER ASTM A153 SHALL BE USED WITH GALVANIZED CONNECTORS.

NAILING NOT SPECIFICALLY NOTED IN DRAWINGS SHALL BE AS SHOWN IN IBC TABLE 2304.10.1. NAILS SHALL COMPLY WITH ASTM F1667. MINIMUM NAIL DIMENSIONS SHALL BE AS FOLLOWS:

SIZE	DIAMETER	LENGTH
6d	0.113"	2"
8d	0.131"	2 1/2"
10d	0.148"	3"
12d	0.148"	3 1/4"
16d	0.162"	3 1/2"
20d	0.192"	4"

BOLTS SHALL CONFORM TO ASTM A307. LAG SCREWS SHALL CONFORM TO ASME B18.2.1. INSTALL WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. INSTALLATION OF LAG SCREWS SHALL CONFORM TO 2015 NDS SECTION 11.1.4, AND INSTALLATION OF BOLTS SHALL CONFORM TO 2015 NDS SECTION 11.1.3. PRE-DRILL HOLES FOR LAG SCREWS TO AVOID SPLITTING.

ALL TIMBER FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED OR FIRE-TREATED WOOD SHALL BE POST HOT DIP GALVANIZED PER ASTM A153.

PROJECT #	262020.062
PREDESIGN	
ISSUE DATE	OCTOBER 20, 2020
REVISION SCHEDULE	
AHJ APPROVAL STAMP	

GENERAL NOTES

DRAFT
NOT FOR CONSTRUCTION

GIG HARBOR FIRE MEDIC ONE

FS 58 & 59

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FOUNDATION AND FIRST FLOOR PLAN

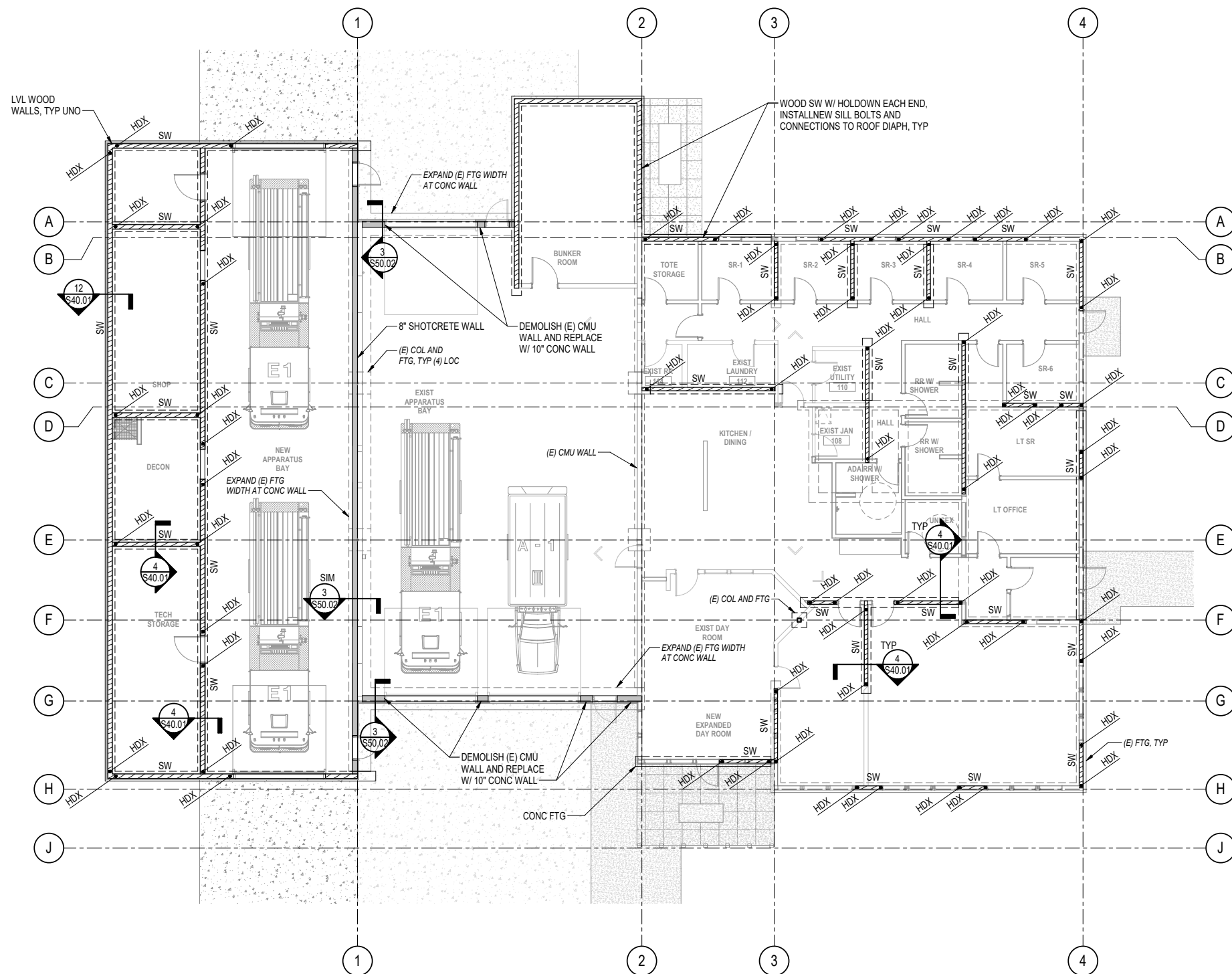
SHEET #

S21.01

1. SEE S00.01 THROUGH S00.03 FOR GENERAL STRUCTURAL NOTES.
2. SEE S00.06 FOR ABBREVIATIONS AND SYMBOLS.
3. SLAB-ON-GRADE SHALL BE 4" THICK CONCRETE REINFORCED WITH #4 @ 16" OC EACH WAY. SEE GENERAL STRUCTURAL NOTES. WHERE SLAB RECESS IS REQUIRED PER ARCHITECTURAL INCREASE SLAB THICKNESS DEPTH OF RECESS FOR 0'-6" BEYOND ALL EDGES. INSTALL MOISTURE BARRIER BELOW THE SLAB AT INTERIOR SPACES OVER FREE DRAINING GRANULAR FILL PER GEOTECHNICAL REPORT.
4. VEHICLE BAY SLAB-ON-GRADE SHALL BE 8" THICK CONCRETE REINFORCED WITH #5 @ 12" EACH WAY AT MID-DEPTH OF THE SLAB. LAP REINFORCING PER 11/S50.01. INSTALL MOISTURE BARRIER BELOW THE SLAB AT INTERIOR SPACES OVER FREE DRAINING GRANULAR FILL PER THE GEOTECHNICAL REPORT.
5. TOPS OF ALL EXTERIOR FOOTING SHALL BE AT ELEVATION -1'-6" MIN TYPICAL. TOPS OF ALL INTERIOR FOOTING SHALL BE AT -1'-0" TYPICAL UNO. ON. COORDINATE WITH FINAL GRADES AND MAINTAIN MINIMUM DEPTH OF FOOTING SHOWN ON THE DRAWINGS.
6. EXTERIOR STUD WALLS SHALL BE 2x8 @ 16" OC UNO. SEE PLAN AND WALL SCHEDULE THIS SHEET WHERE EXTERIOR WALL HEIGHT > 18'-0". INTERIOR STUD WALLS SHALL BE 2x STUDS @ 16" OC, UNO. SEE PLAN AND WALL SCHEDULE THIS SHEET WHERE INTERIOR WALL HEIGHT > 16'-0". SEE ARCHITECTURAL FOR WALL TYPES. SEE 12/S50.12 FOR SPECIAL STUD REQUIREMENTS AT HEAVILY NAILED SHEAR WALLS.
7. WHERE SHEAR WALLS INTERSECT, SEE 2/S50.12 FOR REQUIREMENTS.
8. POSTS OR JAMB STUDS SUPPORTING BEAMS ABOVE SHALL BE (2) STUDS, UNO.
9. AT PLYWOOD SHEAR WALLS, CONTRACTOR SHALL EXTEND SHEATHING TO ACHIEVE FULL COVERAGE OF ENTIRE WALL TO AVOID CONFLICTS BETWEEN VARYING PLYWOOD AND GWB THICKNESS.
10. SEE ARCHITECTURAL AND NOTE 3 FOR SLAB DEPRESSIONS AND SLOPE REQUIREMENTS. PROVIDE CONSTRUCTION JOINTS PER 11/S50.02 AND 12/S50.02. PROVIDE CONSTRUCTION/CONTROL JOINTS IN SLAB-ON-GRADE TO DIVIDE SLAB INTO RECTANGULAR AREAS 144 SQUARE FEET OR LESS. AREAS SHALL BE APPROXIMATELY SQUARE AND HAVE NO ACUTE ANGLES. JOINT LOCATIONS MUST BE APPROVED BY THE ARCHITECT.
11. POSTS OR STUDS BY DOWNBOLT SHALL BE PER 12/S50.13 UNLESS LARGER SIZE IS NOTED ON PLANS.
12. COORDINATE MECHANICAL WALL AND FLOOR OPENINGS WITH MECHANICAL DRAWINGS. PROVIDE STRAPS AT OPENINGS IN SHEAR WALLS PER 4/S50.12.
13. SEE ARCHITECTURAL/MECHANICAL/ELECTRICAL/CIVIL/UTILITIES DRAWINGS FOR UNDER SLAB PIPING. COORDINATE FOUNDATION DEPTHS AND PIPING IN ACCORDANCE WITH 10/S50.01.

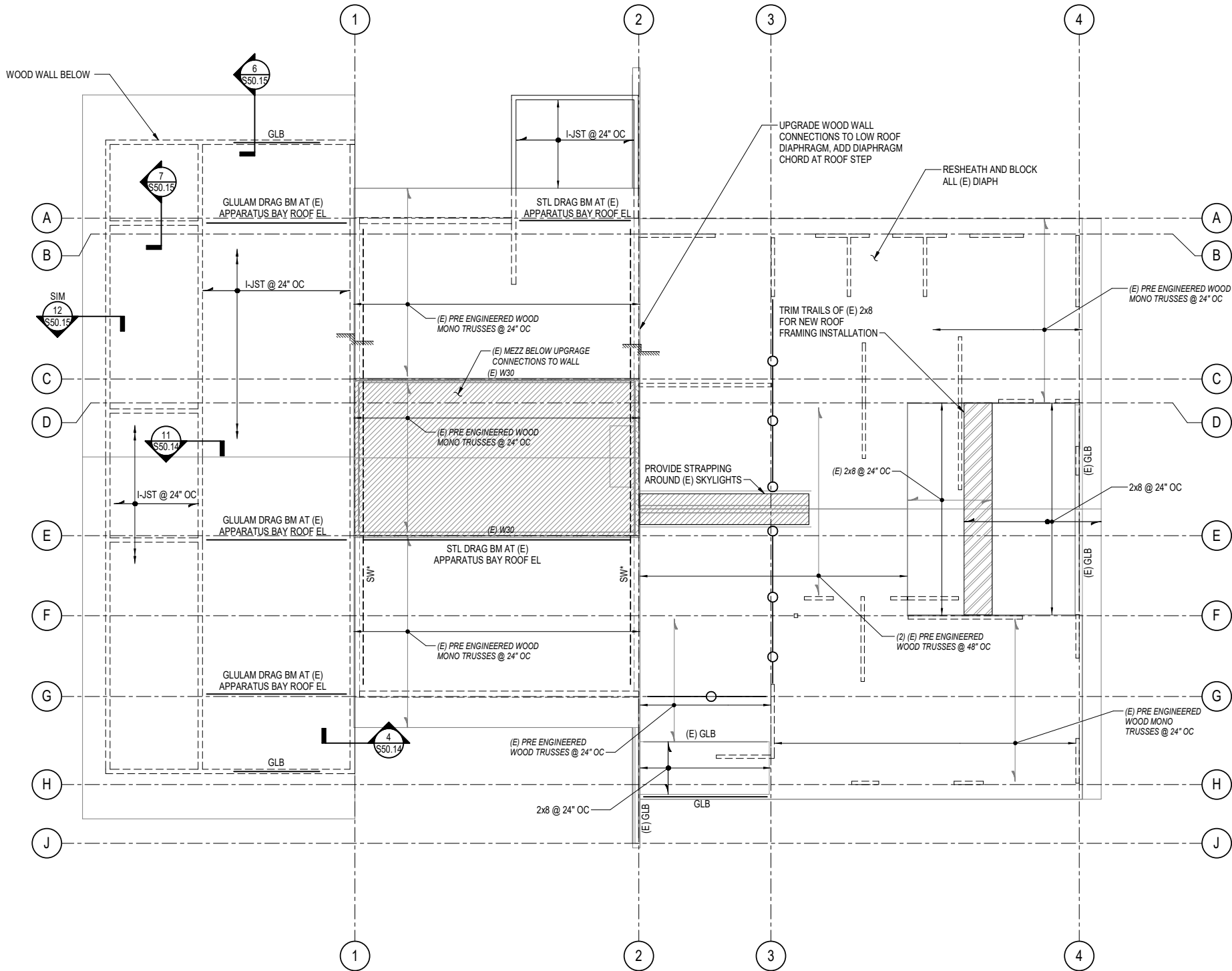
	POST OR COLUMN THIS LEVEL
 SWX	SHEAR WALL THIS LEVEL PER SCHEDULE 12/S50.12
	STRUCTURAL WOOD BEARING WALL THIS LEVEL, SEE NOTE 6
	HOLDOWN PER SCHEDULE 12/S50.13
	CONCRETE SHEAR WALL THIS LEVEL

DOUBLE ARROWHEAD INDICATES CONTINUOUS EXTENTS



01-FOUNDATION AND FIRST FLOOR PLAN
1/8" = 1'-0"

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05-ROOF FRAMING PLAN
1/8" = 1'-0"

PLAN NOTES

1. ROOF SHEATHING SHALL BE 5/8" PLYWOOD SHEATHING (PANEL SPAN RATING 48" OC). NAIL SHEATHING TO ALL FRAMED PANEL EDGES, DIAPHRAGM BOUNDARIES, AND EXTERIOR SHEAR WALLS BELOW WITH 10d @ 6" OC. NAIL SHEATHING TO STRUTS, BLOCKING, STRUT BLOCKING AND INTERIOR SHEAR WALLS BELOW WITH 10d @ 3" OC. NAIL SHEATHING TO ALL OTHER INTERMEDIATE FRAMING WITH 10d @ 12" OC UNO DRAWINGS. SEE NOTE 3 FOR BLOCKED DIAPHRAGM REQUIREMENTS.
2. ALL ROOF AREAS SHALL BE BLOCKED DIAPHRAGMS. INSTALL 3x FLAT BLOCKING AT ALL UNFRAMED PANEL EDGES. NAIL SHEATHING AT ALL PANEL EDGES, DIAPHRAGM BOUNDARIES, STRUTS, BLOCKING AND SHEAR WALLS BELOW WITH 10d @ 6" OC. NAIL SHEATHING AT ALL INTERMEDIATE SUPPORTS WITH 10d @ 12" OC.
3. HEADERS OVER DOORS OR WINDOWS SHALL BE (2) 2x6 AND DROPPED BELOW STUD WALL TOP PLATE PER 2/S50.62, UNO.
4. INSTALL "HU (MAX)" HANGERS AT ALL FLUSH WOOD BEAM-TO-WOOD BEAM CONNECTIONS AND ALL FLUSH SKEWED FRAMING CONNECTIONS UNO. INSTALL "HUC" HANGERS AT ALL WOOD BEAM-TO-POST CONNECTIONS, UNO. "HU" AND "HUC" HANGERS SHALL BE SIZED TO MATCH NOMINAL DEPTH OF SUPPORTED MEMBERS, UNO.
5. STRUCTURAL DRAWINGS DO NOT SHOW ALL LOCATIONS OF MECHANICAL UNITS, PIPING, OR OTHER EQUIPMENT (REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING, ELECTRICAL, AND FIRE PROTECTION DRAWINGS). THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE FINAL WEIGHTS AND LOCATIONS OF THE UNITS AND PIPE RUNS (INCLUDING SPECIFIC SUPPORT LOADS AND SUPPORT CONFIGURATION) WITH THE WOOD JOIST AND TRUSS MANUFACTURER. M / E / P / FP CONTRACTORS AND STRUCTURAL ENGINEER PRIOR TO JOIST OR TRUSS FABRICATION. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

LEGEND

- POST OR COLUMN BELOW
- WALL BELOW
- LSL 3 1/2 STRUT BLOCKING
- ROOF SLOPE PER ARCHITECT
- GL59 GL 5 1/8 x 9
- [H] : [M] : [L] RELATIVE PLACEMENT OF MEMBER OR DETAIL CUT, [H]: HIGH, [M] MIDDLE, [L] LOW
- SW* UPGRADE (E) WOOD SHEAR WALL ON TOP OF MASONRY WALL. UPGRDE CONNECTIONS. BRAACE OP OF (E) MASONRY WALLS FOR OUT OF PLANE

DRAFT
NOT FOR CONSTRUCTION

GIG HARBOR FIRE MEDIC ONE

FS 58 & 59

Enter address here

PROJECT # 262020.062

PREDESIGN

ISSUE DATE OCTOBER 20, 2020

REVISION SCHEDULE

NO.	DESCRIPTION	DATE

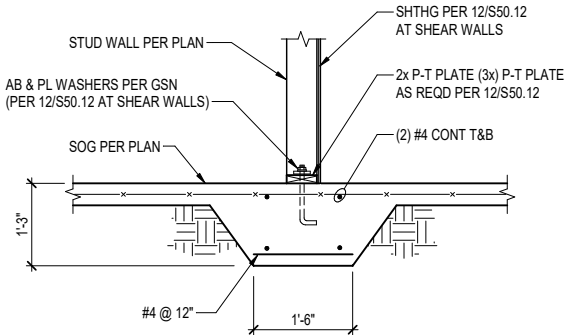
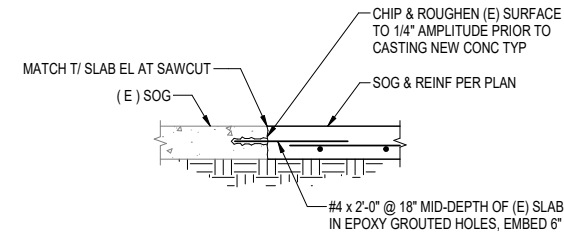
AHJ APPROVAL STAMP

ROOF FRAMING PLAN

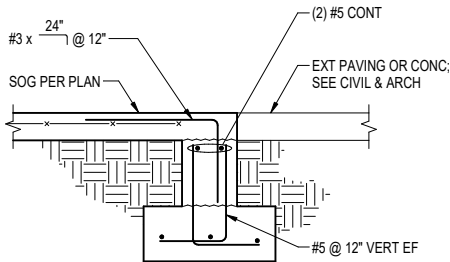
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S21.02

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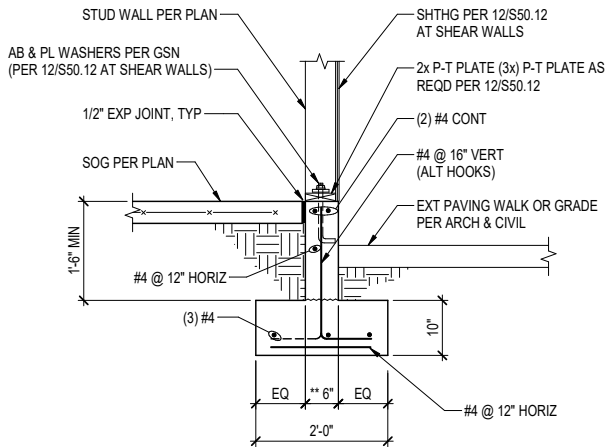


TYPICAL INTERIOR FOOTING
3/4" = 1'-0"



- NOTES:
- SEE 12/S4.01 FOR CALL-OUTS IN COMMON.
 - REFER TO ARCHITECTURAL FOR ADDITIONAL INFORMATION

FOOTING AT DOORWAYS
3/4" = 1'-0"



- NOTE:
- ** STEM WALL SHALL BE 9" THICK AT 2x8 LSL WALLS.

TYPICAL EXTERIOR FOOTING
3/4" = 1'-0"

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GIG HARBOR FIRE MEDIC ONE

FS 58 & 59

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PROJECT #	262020.062
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PREDESIGN

ISSUE DATE	OCTOBER 20, 2020
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REVISION SCHEDULE	

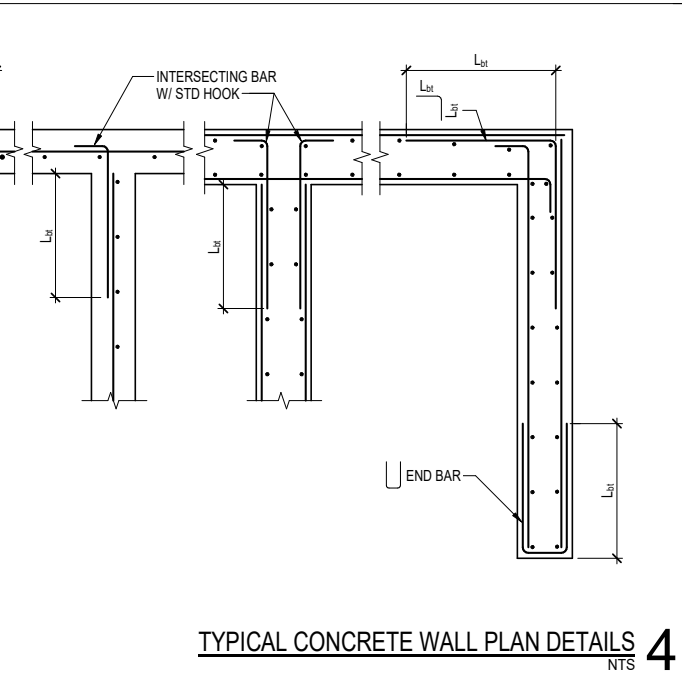
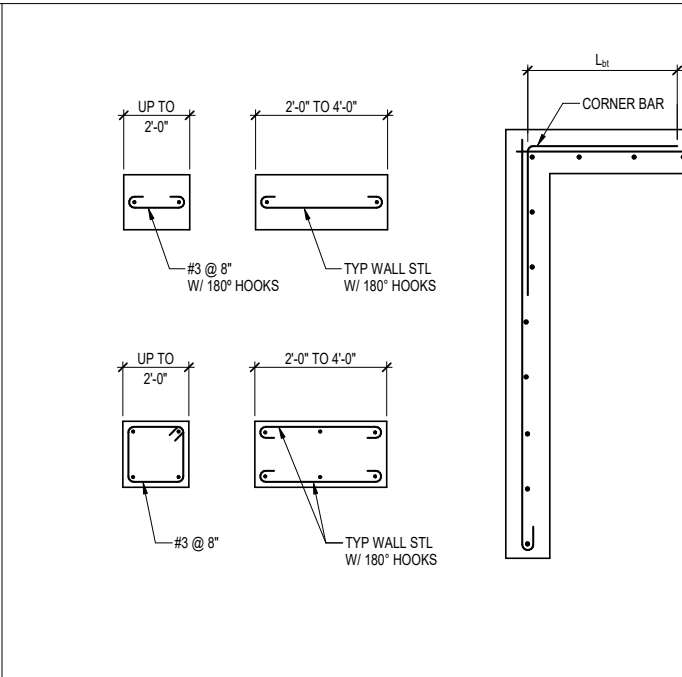
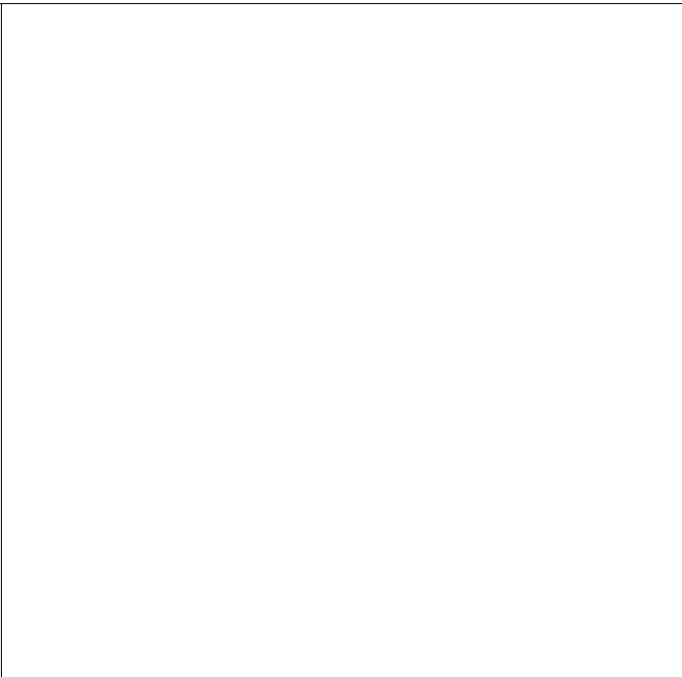
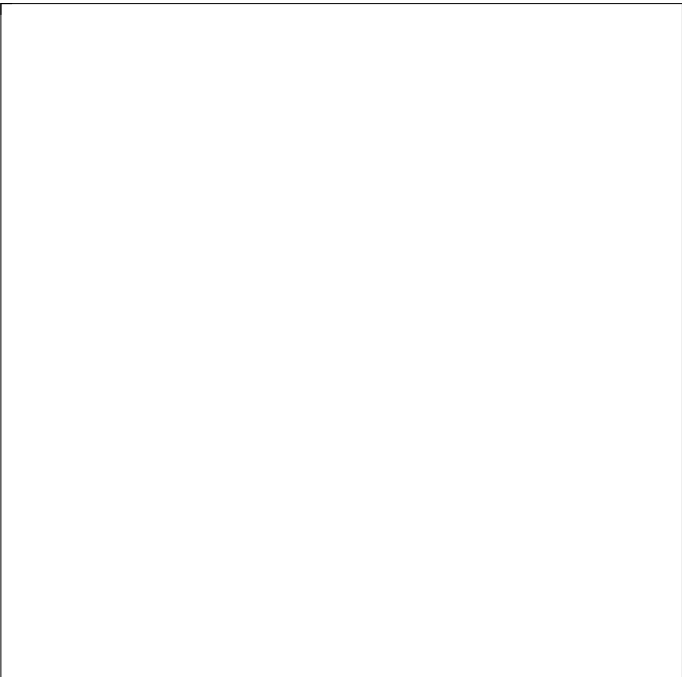


FOUNDATION DETAILS

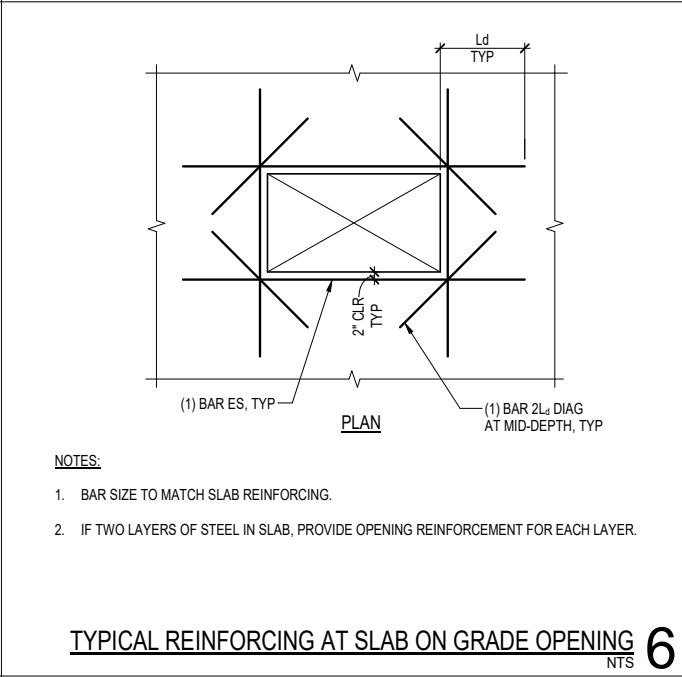
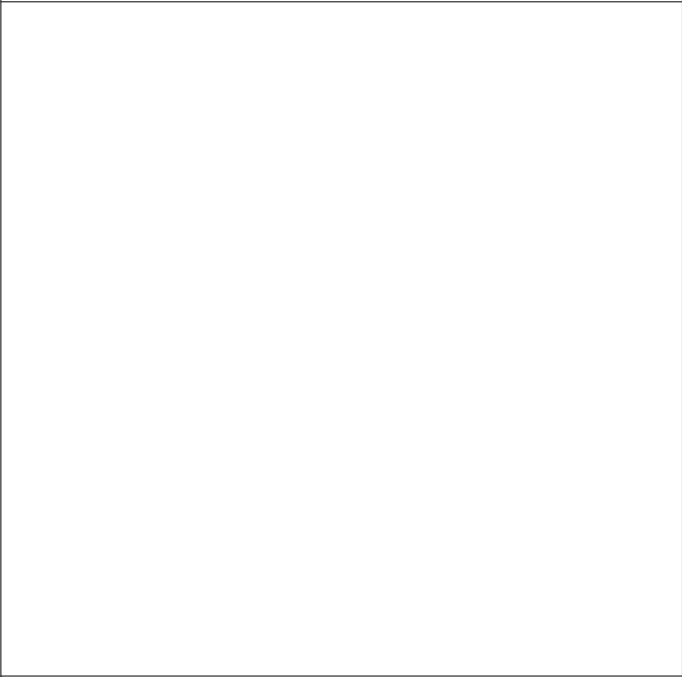
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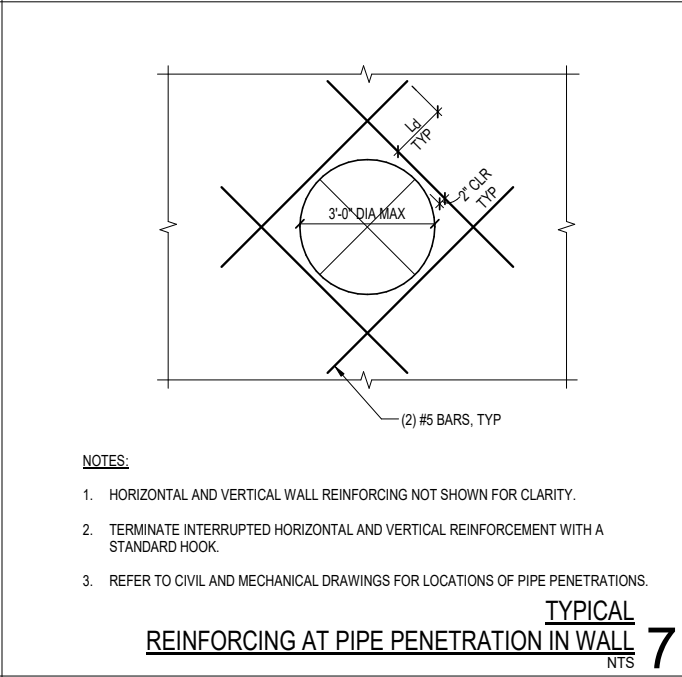
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TYPICAL CONCRETE WALL PLAN DETAILS
NTS



TYPICAL REINFORCING AT SLAB ON GRADE OPENING
NTS



TYPICAL REINFORCING AT PIPE PENETRATION IN WALL
NTS

I

MINIMUM STRAIGHT DEVELOPMENT LENGTH (L_d)

$f'_c = 4,000 \text{ to } 5,000 \text{ PSI}$

BAR SIZE	TOP BARS	OTHER BARS
# 3	19"	15"
# 4	25"	19"
# 5	31"	24"
# 6	37"	29"
# 7	54"	42"
# 8	62"	48"
# 9	70"	54"
# 10	79"	61"
# 11	87"	67"

✚ "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

IF CLEAR CONCRETE COVER IS LESS THAN 1x THE DIAMETER OF THE BAR OR THE CENTER-TO-CENTER SPACING IS LESS THAN (3) BAR DIAMETERS, THEN VALUES SHALL BE INCREASED BY 50%.

II

MINIMUM LAP SPLICE LENGTHS (L_s) (CLASS B)

$f'_c = 4,000 \text{ to } 5,000 \text{ PSI}$

BAR SIZE	TOP BARS	OTHER BARS
# 3	25"	19"
# 4	33"	25"
# 5	40"	31"
# 6	48"	37"
# 7	71"	54"
# 8	81"	62"

DEVELOPMENT AND SPLICE LENGTH TABLES
NTS

TYPICAL PIPE ENCASEMENT AT FOOTING
NTS

TYPICAL REINFORCING BAR BEND AND LAP DETAILS
NTS

PROJECT #	262020.062
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TYPICAL CONCRETE
DETAILS

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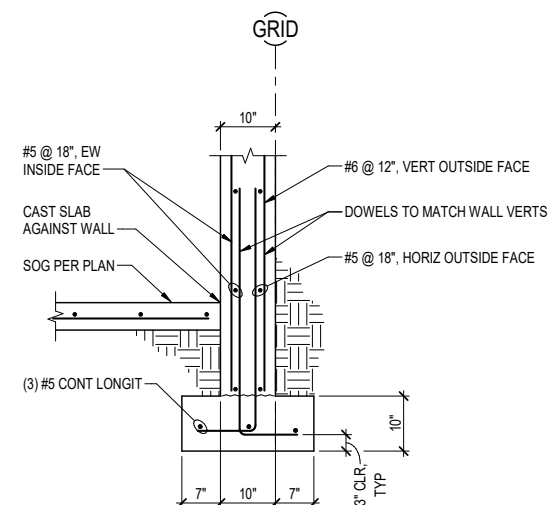
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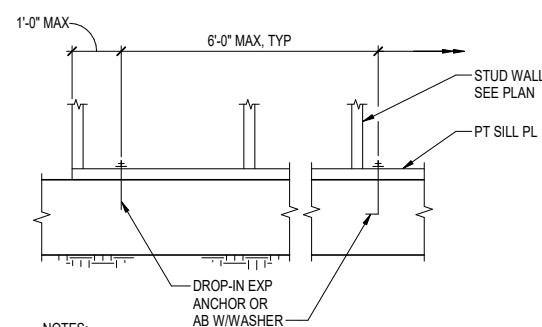
TYPICAL CONCRETE DETAILS

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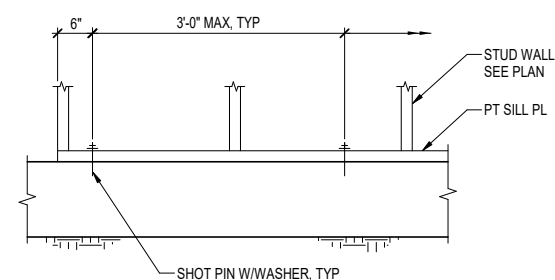


CONCRETE WALL AT FOOTING SECTION 3
NTS



- NOTES:

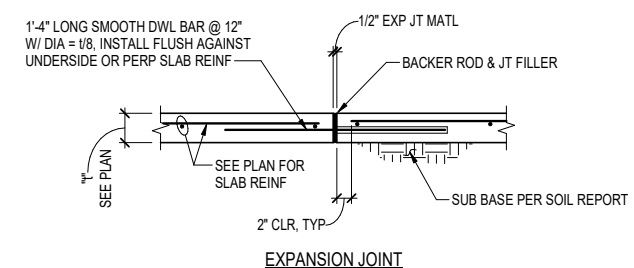
1. USE 5/8" DIAMETER ANCHOR BOLTS WITH 4 1/2" MINIMUM EMBEDMENT INTO CONCRETE OR 5/8" DIAMETER HOLLOW SET DROP-IN EXPANSION ANCHOR WITH 2 1/4" EMBEDMENT.
2. EACH SILL PLATE PIECE SHALL HAVE (2) BOLTS MINIMUM.
3. LOCATE BOLTS WITHIN 12" OF SILL PLATE PIECE ENDS AND AT 6'-0" ON CENTER MAXIMUM.
4. USE 2"x2"x1/8" SQUARE PLATE WASHER AT EACH BOLT.
5. DO NOT OVERSIZE HOLES DRILLED THROUGH SILL PLATE. USE 11/16" DRILL BIT.
6. SEE SHEAR WALL SCHEDULE FOR SILL PLATE THICKNESS AND FASTENING REQUIRED AT SHEAR WALLS.



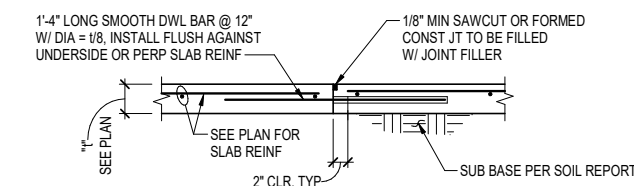
- NOTES:

1. SHOT PINS MAY ONLY BE USED AT INTERIOR NON-SHEAR WALLS.
2. EACH SILL PLATE PIECE SHALL HAVE (2) SHOT PINS MINIMUM.
3. LOCATE SHOT PINS WITHIN 6" OF SILL PLATE PIECE ENDS AND AT 3'-0" ON CENTER MAXIMUM.
4. USE .145 DIAMETER x 3" LONG POWDER DRIVEN SHOT PINS WITH 1 1/2" DIAMETER x .08" SHOT PINS WASHERS, TYPICAL.
5. SHOT PINS MAY NOT BE INSTALLED UNTIL CONCRETE HAS CURED FOR 7 DAYS.
6. SHOT PINS MUST BE LOCATED IN THE CENTER OF THE SILL PLATE.

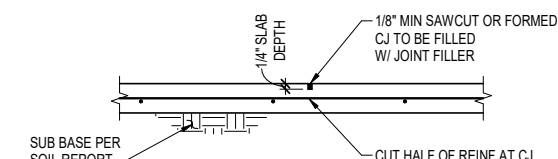
SILL PLATE ANCHORAGE TO CONCRETE 7



EXPANSION JOINT



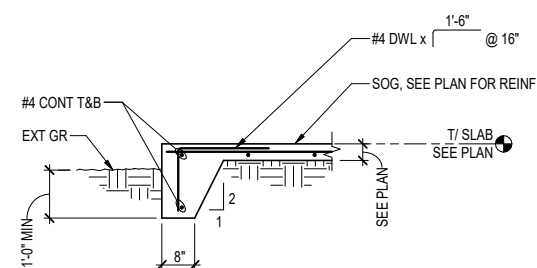
CONSTRUCTION JOINT



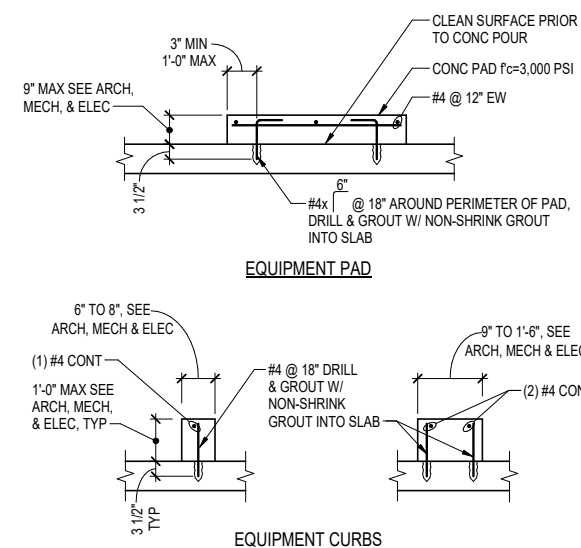
CONTROL JOINT

- NOTES:

1. CONSTRUCTION JOINT MAY BE USED AT ANY CONTROL JOINT SHOWN ON PLANS AT CONTRACTORS OPTION.
2. REFER TO PLANS FOR SLAB THICKNESS AND REINFORCING.
3. CONTROL JOINTS TO BE SPACED AT 20'-0" ON CENTER MAXIMUM, EACH WAY. RATIO OF DISTANCE BETWEEN CONTROL JOINTS IN EACH DIRECTION FOR A SLAB PANEL SHALL NOT EXCEED 1.5. CONSTRUCTION JOINTS PER THIS DETAIL SHALL BE CONSIDERED AS CONTROL JOINTS FOR CONTROL JOINT SPACING REQUIREMENTS.



TYPICAL EDGE OF SLAB ON GRADE DETAIL ^{NTS} 10

EQUIPMENT PAD

EQUIPMENT CURBS

6-76 of 93

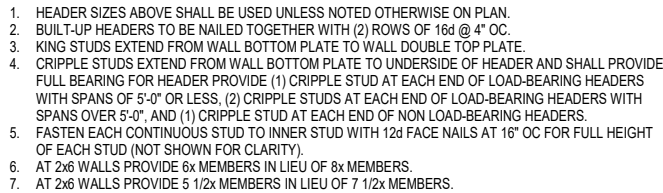
CURB AND PAD ON CONCRETE SLAB DETAILS

TYPICAL

NTS

11





NON LOAD-BEARING HEADER SCHEDULE	
MAX OPENING SIZE	HEADER SIZE AT ROOF, SEE NOTE 6
8'-0"	6x8 OR (3) 2x8

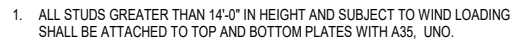
2



UDS **7**
NTS



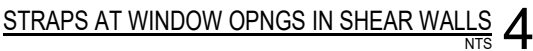
ES 8



ATE 9



12



SHEAR WALL SCHEDULE										
WALL MARK	WALL SHEATHING	PANEL EDGE NAILING	FRAMING AT ADJ PANEL EDGES	(2) 2x FRAMING NAILING	BOTTOM PLATE NAILING	ALT BOTTOM PLATE CONNECTION TO FRAMING BELOW	TOP PLATE CONNECTION A35 OR LTP4	FDN STILL PLATE	ANCHOR BOLTING OF SILL PLATE TO CONCRETE	ALLOWABLE SHEAR (PLF)
	NOTES #1, #10	NOTES #2, #8	NOTES #4, #5	NOTES #5, #8	NOTES #3, #8, #9	NOTE #3, #9	NOTES #7, #8	NOTE #9	NOTE #6	NOTE #8
SW6	15/32" (1) SIDE	0.148 x 2 1/2 @ 6" OC	2x	-	0.148 x 3 1/4 @ 6" OC	1/4" x 5" SDS SCREWS @ 18" OC	@ 2'-3" OC	2x	5/8" DIA @ 48" OC OR 3/4" DIA @ 48" OC	340
SW4	15/32" (1) SIDE	0.148 x 2 1/2 @ 4" OC	2x	-	0.148 x 3 1/4 @ 4 1/2" OC	1/4" x 5" SDS SCREWS @ 14" OC	@ 1'-8" OC	2x	5/8" DIA @ 30" OC OR 3/4" DIA @ 40" OC	510
SW3	15/32" (1) SIDE	0.148 x 2 1/2 @ 3" OC	3x ((2) 2x)	0.148 x 3 1/4 @ 3 1/2" OC	0.148 x 3 1/4 @ 3 1/2" OC	1/4" x 5" SDS SCREWS @ 10" OC	@ 1'-2" OC	2x	5/8" DIA @ 24" OC OR 3/4" DIA @ 40" OC	665

1. WALL SHEATHING SHALL BE APA RATED ORIENTED STRAND BOARD (OSB) OR CDX PLYWOOD, EXPOSURE 1, AND HAVE A PANEL SPAN RATING OF 24/16. WALL PANELS MAY BE INSTALLED VERTICALLY OR HORIZONTALLY.
2. THE SPECIFIED PANEL EDGE NAILING IS REQUIRED AT ALL PANEL EDGES AND ENDS. INSTALL 2x SOLID BLOCKING AT ALL UNFRAMED PANEL EDGES AND ENDS WITH MINIMUM 2x SOLID BLOCKING, UNO (SEE NOTES 4 AND 5 FOR 3x REQUIREMENTS). SPACE NAILS MINIMUM 3/8" FROM EDGES AND ENDS OF WALL PANELS, WALL STUDS, TOP AND BOTTOM PLATES, AND BLOCKING. NAIL INTERMEDIATE FRAMING MEMBERS WITH PANEL NAILING @ 12" OC. WHERE SHEATHING IS 7/16" THICK AND STUD SPACING IS 24" OC, NAIL SHEATHING TO INTERMEDIATE FRAMING WITH PANEL NAILS @ 6" OC.
3. BOTTOM PLATE NAILING SHALL PENETRATE INTO RIMBOARD OR BLOCKING BELOW, WHERE OCCURS. SINGLE ROWS OF NAILING SHALL BE CENTERED IN THE BLOCKING OR RIMBOARD BELOW. WHERE MULTIPLE ROWS OF NAILING IS REQUIRED, OFFSET ROWS AT LEAST 1 1/2" AND STAGGER NAILS AND MAINTAIN 1/2" MINIMUM FROM EDGES. WHERE MULTIPLE ROWS OF NAILS ARE SPECIFIED, BLOCKING OR RIM BOARD BELOW SHALL BE 3 1/2" WIDE MINIMUM.
4. INSTALL 3x WALL STUDS AT ADJOINING VERTICAL PANEL EDGES AND 3x SOLID BLOCKING AT ADJOINING HORIZONTAL EDGES. STAGGER PANEL EDGE NAILING 1/2" AND MAINTAIN SUFFICIENT EDGE DISTANCE TO AVOID SPLITTING OF WD.
5. (2) 2x WALL STUDS AND BLOCKING ARE PERMITTED TO BE SUBSTITUTED FOR RESPECTIVE 3x FRAMING AT ADJOINING PANEL EDGES WHERE SPECIFIED. FASTEN (2) 2x FRAMING TOGETHER WITH 0.148" DIA x 3 1/4" NAILS AT THE SPECIFIED SPACING. WHERE MULTIPLE ROWS OF NAILS ARE SPECIFIED, SPACE ROWS 1 1/2" APART AND STAGGER. MAINTAIN SUFFICIENT EDGE DISTANCE TO AVOID SPLITTING OF WD.
6. AT SILL PLATES, EMBED ANCHOR RODS A MINIMUM OF 7" INTO CONCRETE, SEE DETAILS. INSTALL STEEL PLATE WASHER BETWEEN THE SILL PLATE AND NUT AT EACH ANCHOR ROD. LOCATE PLATE WASHER SUCH THAT EDGE OF PLATE WASHER IS 1/2" MAX AWAY FROM EACH EDGE OF SILL PLATE RECEIVING PANEL EDGE NAILING FROM SHEAR WALL SHEATHING. SEE ENLARGED DETAIL TO THE LEFT. HOLE IN PLATE WASHER IS PERMITTED TO BE DIAGONALLY SLOTTED WITH A MAXIMUM WIDTH 3/16" > BOLT DIAMETER AND MAXIMUM LENGTH OF 1 3/4", PROVIDED STANDARD CUT WASHER INSTALLED BETWEEN PLATE WASHER AND NUT.
7. TOP PLATE CONNECTORS IDENTIFIED AS "A35" AND "LTP4" ARE MANUFACTURED BY SIMPSON STRONG-TIE. WHERE CONNECTORS ARE SPECIFIED ON BOTH SIDES, CONNECTORS SHALL BE STAGGERED TO AVOID INTERFERENCE. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL INFORMATION AND FOR ADDITIONAL REQUIREMENTS WHEN CONNECTORS ARE IN CONTACT WITH PRESERVATIVE TREATED.
8. SHEAR WALL CAPACITIES ARE BASED ON THE USE OF GALVANIZED BOX OR POWER DRIVEN NAILS OF THE DIAMETER AND LENGTH INDICATED. NAILS PENETRATING INTO PRESSURE-TREATED LUMBER SHALL BE HOT-DIPPED GALVANIZED NAILS PER GENERAL STRUCTURAL NOTES.
9. SDS SCREWS ARE MANUFACTURED BY SIMPSON STRONG-TIE. WHERE MULTIPLE ROWS OF SDS SCREWS ARE SPECIFIED, SPACE ROWS 1 1/2" APART AND STAGGER. MAINTAIN SUFFICIENT EDGE DISTANCE..
10. WHERE WALL SHEATHING PANELS ARE APPLIED ON EACH SIDE OF WALL, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS. WHERE WALL SHEATHING PANELS ARE APPLIED ON EACH SIDE OF WALL, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS.

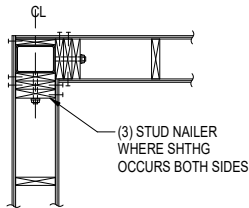
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SHEAR WALL

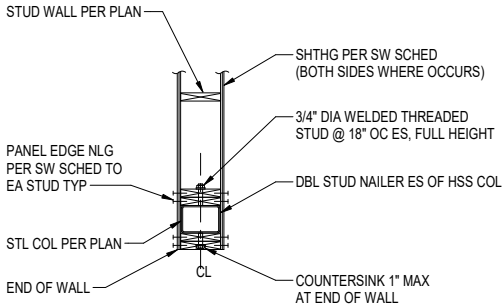
SCHEDULE AND DETAILS

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PLAN AT WALL CORNER

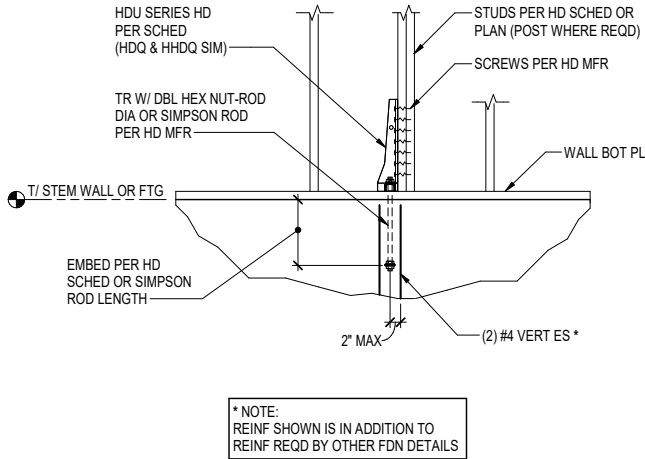


PLAN AT END OF WALL

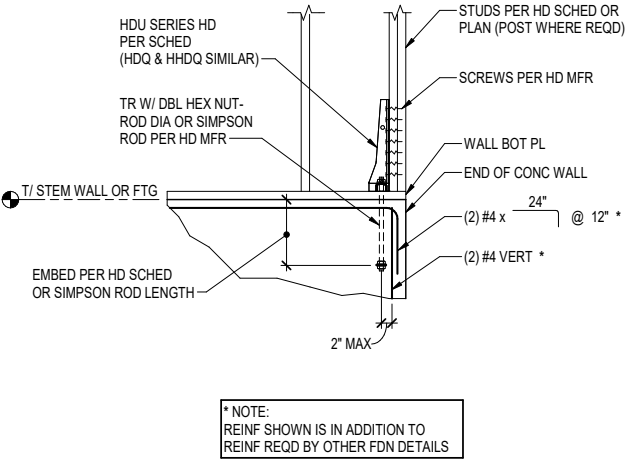


HSS COLUMN TO SHEAR WALL
NTS 4

HOLDOWN MID-WALL CONDITION
NTS 7



HOLDOWN END / CORNER CONDITION
NTS 8



HOLDOWN SCHEDULE							
MARK	MODEL (NOTE 1)	WD POST, UNO PER PLAN OR DETAILS (NOTES 2 & 6)	2x POST NAILING (NOTE 3)	THREADED ROD AT WD FLOOR AND CONCRETE (NOTES 4 AND 5)			DETAIL REFERENCE, UNO
				TR DIA	TR CONCRETE EMBED		
					STEM WALL	FOOTING	
HDA	HDU4-SDS2.5	(2) 2x	12d @ 8"OC	5/8"	12"	9"	7/S50.13, 8/S50.13
HDB	HDU8-SDS2.5	4x	-	7/8"	12"	12"	7/S50.13, 8/S50.13
HDC	HDU11-SDS2.5	6x	-	1"	18"	12"	7/S50.13, 8/S50.13

- NOTES:
- HOLDOWN MODELS REFER TO SIMPSON STRONG TIE CATALOG CALLOUTS. INSTALL FASTENERS PER HOLDOWN MANUFACTURER.
 - SIZES LISTED IN THE SCHEDULE ARE FOR THE NOMINAL THICKNESS OF WD POST PERPENDICULAR TO THE HOLDOWN. WIDTH OF THE POST IS THE SAME AS THE WIDTH OF THE WALL IN WHICH THE HOLDOWN IS LOCATED.
 - FASTEN TOGETHER 2x MEMBERS OF POST AT THE SPECIFIED SPACING. * 12d * NAIL IS 0.148" DIA x 3 1/4" AT (3) 2x POSTS, FASTEN SECOND TO FIRST STUD AND THIRD TO SECOND STUD AT THE SPECIFIED SPACING.
 - * TR * IS A CARBON STEEL STUD (e.g. THREADED ROD) COMPLYING WITH ASTM F1554 GR 36.
 - INSTALL A CARBON STEEL HEX NUT COMPLYING WITH ASTM A563, GRADE A, AT EACH BOLT.
 - NAIL PLYWD OR OSB SHEATHING TO HOLDOWN STUDS OR POST WITH SCHEDULED PANEL EDGE NAILING. STAGGER NAILS SO THAT EACH STUD IS NAILED. AT SOLID HOLDOWN POSTS, NAIL SHEATHING WITH (2) ROWS OF PANEL EDGE NAILING.

HOLDOWN SCHEDULE
NTS 12

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HOLDOWN SCHEDULE
AND DETAILS

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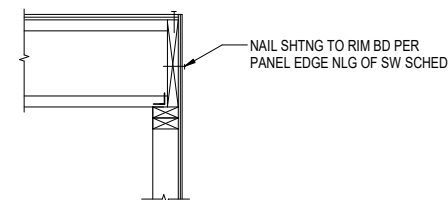
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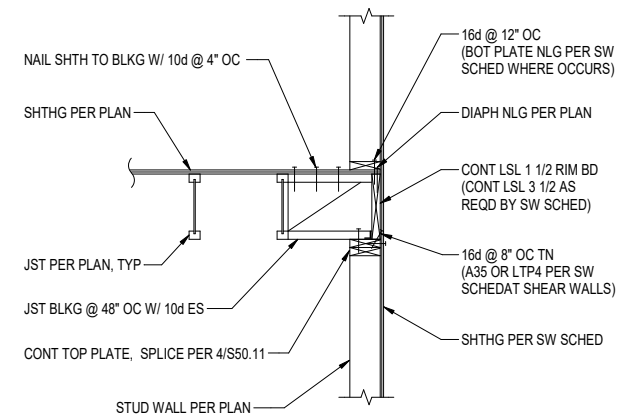
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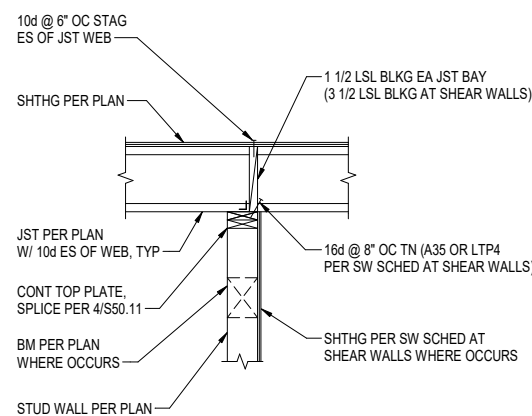
NOTE:

1. FOR ADDITIONAL INFORMATION NOT SHOWN SEE 12/S50.14.

PERPENDICULAR JOIST-TO-WALL 4



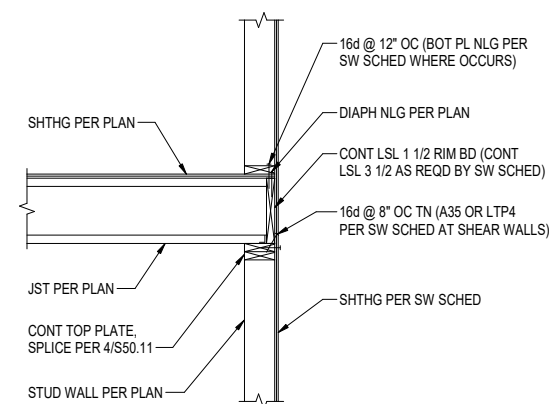
I-JOIST
FRAMING PARALLEL TO EXTERIOR WALL 8
3/4" = 1'-0"



6-80 of 93

I-JOIST FRAMING AT INT BEARING WALL 11

$\frac{3}{4}" = 1'-0"$



I-JOIST FRAMING TO EXTERIOR WALL 12

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ROOF FRAMING DETAILS

SHEET #

\$50.15



GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At August 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Living Quarters / Bunker Room / Apparatus Bay / Support Area	10,622	281.14	2,986,263
B	Alternate Siding			-11,168
C	Sitework			350,000
ESTIMATED NET COST		10,622	313.04	3,325,095

MARGINS & ADJUSTMENTS				
GC General Conditions/Requirements (16 Months)	10.0 %			332,509
Insurances & Bonds	1.7 %			62,179
GC Overhead & Profit	5.0 %			185,989
Design Contingency	15.0 %			585,865
State Sales Tax				Excl.
Subtotal		10,622	422.86	4,491,637
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %			269,498
ESTIMATED TOTAL COST		10,622	448.23	4,761,135

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	295	52.00	15,340
2	Cast in place reinforced concrete continuous footings, next to and joined to existing footings, 18" x 12" thick, including dowels, 12" on center, earthwork	LF	67	58.00	3,886
3	Cast in place reinforced concrete continuous footings, enlarge existing footings to, 36" x 12" thick, including chipping, dowels, earthwork	LF	57	63.00	3,591
4	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	357	36.00	12,852
5	Cast in place reinforced concrete stem walls, 10" thick, 18" high, cast against existing stem wall making thickness 16" thick, including chipping, dowels, earthwork	LF	64	41.00	2,624
6	Foundation dampproofing, bituminous asphalt, including protection board	LF	357	14.00	4,998
7	Rigid insulation to foundations, 2" thick	LF	357	8.00	2,856
8	Foundation subsoil drain lines, 6", including gravel encasement	LF	354	20.00	7,080
Standard Foundations				5.01/SF	53,227
A1030 Slabs on Grade					
9	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	2,230	6.90	15,387
10	Saw cut and demolish concrete slab on grade, 4" thick, for new slab on grade thickenings under shear walls (thickenings elsewhere)	SF	136	39.00	5,304
11	Cast in place reinforced concrete slab on grade, 4" thick in patches, including base, vapor barrier	SF	136	10.00	1,360
12	Cast in place reinforced concrete slab on grade, 7" thick, including base, vapor barrier	SF	1,778	10.70	19,025
13	Premium on concrete slab on grade for thickenings to slabs, 30" average" x 12" thick, including earthwork	LF	261	50.00	13,050
14	Premium on concrete slab on grade for smooth troweled finish	SF	1,778	1.50	2,667
15	Rigid insulation under concrete slab on grade, 2" thick	SF	4,008	3.00	12,024
Slabs on Grade				6.48/SF	68,817
B1010 Floor Construction					
16	Wood I-joists roof framing, 14" TJL, 24" on center, in patches	SF	40	13.70	548
Floor Construction				0.05/SF	548
B1020 Roof Construction					
17	Demolish roof overhangs and trim roof framing where new roof framing to be added, including roofing, sheathing outriggers, soffit covering	SF	490	2.00	980

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
18	Wood posts to roof framing, 6" x 6"	BF	2,192	7.90	17,317
19	Holdown system, including embedded threaded rod, nuts, washers, bracket, screws	EA	39	160.00	6,240
20	Wood stud sistered to existing wall framing supporting roof construction, 2" x 6"	BF	357	5.90	2,106
21	Holdown system, including hole in existing concrete epoxy grouted threaded rod, nuts, washers, bracket, screws	EA	25	170.00	4,250
22	Structural steel W-section beams and girders to roof framing, including loose and attached connections (drag beams)	T	1.73	6,000.00	10,380
23	Laminated wood roof framing, straight beams, 5-1/8" x 9" (drag beams)	LF	61	47.00	2,867
24	Laminated strand lumber blocking to existing wood roof truss struts, 3-1/2"	BF	295	5.40	1,593
25	Wood joists roof framing, 2" x 8", 24" on center	BF	530	3.90	2,067
26	Wood I-joists roof framing, 11-7/8" TJL, 16" on center	SF	1,318	11.70	15,421
27	Wood I-joists roof framing, 14" TJL, 24" on center	SF	1,794	13.70	24,578
28	Wood outriggers to roof overhangs, 2" x 6"	BF	2,990	4.30	12,857
29	Wood fascia boards to roof overhangs, 2" x 6"	BF	166	4.30	714
30	Wood edge boards to roof overhangs, 2" x 10"	BF	661	9.60	6,346
31	Roof sheathing, refresh and block existing diaphragm	SF	7,258	0.50	3,629
32	Roof sheathing, plywood, 15/32"	SF	5,616	3.30	18,533
33	Metal canopies, including finish	SF	136	40.00	5,440
Roof Construction				12.74/SF	135,318
B2010	Exterior Walls				
34	Selectively demolish siding systems and trim from exterior walls down to plywood sheathing or stud framing where applicable	SF	5,733	2.00	11,466
35	Selectively demolish CMU walls, including temporary support of roof construction above	SF	835	6.00	5,010
36	Selectively demolish wood stud framed exterior walls, including exterior and interior finishes, including temporary support of roof construction above	SF	577	5.00	2,885
37	Selectively demolish gypsum board interior skin from wood stud framed exterior walls (new gypsum board under interior partitions)	SF	1,598	0.60	959
38	Reinforced shotcrete walls, including formwork on one side, smooth finish on inside, 10" (shear walls)	SF	921	15.00	13,815
39	Reinforced shotcrete walls, including formwork on one side above existing pitched roof decking, smooth finish on inside, 10" (shear walls)	SF	292	20.00	5,840

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
40	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate anchors (shear walls)	SF	4,126	15.00	61,890
41	Wall framing, studs, 2" x 8", minimum 12' high walls, including plywood sheathing, 15/32", outside, sill and top plate connections (non-shear walls)	SF	594	14.00	8,316
42	Provision to install shear wall sill plate anchor bolts to existing wall framing, 48" on center	LF	129	10.00	1,290
43	Provision to install shear wall top plate connection brackets to existing wall framing, 27" on center	LF	132	5.00	660
44	Fiber cement panel and batten siding, including weather barrier, rigid insulation, 2" thick, furring	SF	7,033	38.00	267,254
45	Fiber cement trim, 4" wide, including weather barrier, rigid insulation, 2" thick, furring	LF	466	15.00	6,990
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	1,396	48.00	67,008
48	Phenolic siding, including, weather barrier, rigid insulation, 2" thick, furring	SF	223	30.00	6,690
49	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	1,917	8.10	15,528
Exterior Walls				44.78/SF	475,601
B2020	Exterior Windows				
50	Selectively demolish window, 3' x 4', from wood framed walls to remain	EA	16	50.00	800
51	Demolish storefronts, from wood framed walls to be demolished	SF	180	3.00	540
52	Demolish storefronts, from wood framed walls to remain	SF	343	3.50	1,201
53	Aluminum framed windows, 3-lite insulated glazing	SF	225	150.00	33,750
54	Aluminum framed storefronts, 3-lite insulated glazing	SF	40	120.00	4,800
55	Aluminum framed window walls, 3-lite insulated glazing	SF	393	160.00	62,880
Exterior Windows				9.79/SF	103,971
B2030	Exterior Doors				
56	Demolish single entrance door, 3' x 7', including frame, from walls or storefronts to be demolished	EA	3	40.00	120
57	Demolish single entrance door, 3' x 7', including frame, from walls to remain	EA	2	140.00	280
58	Remove from walls to be demolished, set aside, and later reinstall in same position, overhead sectional door, 14' x 14'	EA	3	2,000.00	6,000
59	Entrance single door, hollow metal, 3' x 7', including frame, hardware, finish	EA	1	3,500.00	3,500

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
60	Entrance single door, wood framed half glass, 3' x 7', including hardware, finish	EA	2	3,700.00	7,400
61	Entrance single door, wood, including narrow view panel, 3' x 7' high, metal frame with top lite, 3' x 3' high, hardware and finish	EA	4	4,600.00	18,400
62	Overhead sectional door, aluminum glazed fixed panels, including frame, hardware and finish, 12' x 12'	EA	3	22,000.00	66,000
63	Overhead sectional door, aluminum glazed fixed panels, including frame, hardware and finish, 14' x 14'	EA	2	27,000.00	54,000
64	Provision for ADA push button door opener	EA	1	4,000.00	4,000
Exterior Doors				15.03/SF	159,700
B3010	Roof Coverings				
65	Standing seam metal roofing, including weather barrier, insulated plywood sheathing, R-38, blocking, flashing and finish	SF	12,874	25.00	321,850
66	Aluminum gutters, enameled, 5" box	LF	304	15.00	4,560
67	Aluminum downspouts, enameled, 2" x 3"	LF	179	12.00	2,148
Roof Coverings				30.93/SF	328,558
B3020	Roof Openings				
68	Skylight, solar tube, 30" diameter, double glazed acrylic	EA	5	2,500.00	12,500
69	Skylight, add strapping to existing skylight (per perimeter)	LF	55	5.00	275
Roof Openings				1.20/SF	12,775
C1010	Interior Partitions				
70	Selectively demolish plywood and gypsum board from wood stud framed exterior walls (to become partitions)	SF	1,298	1.10	1,428
71	Selectively demolish wood framed gypsum board covered partitions, including temporary support of roof construction above	SF	4,450	5.00	22,250
72	Reinforced shotcrete walls against existing plywood sheathing, 10" (shear walls)	SF	1,476	15.00	22,140
73	Partition framing, wood studs, 2" x 8", 16" on center, sill and top plate connections (non-shear walls)	SF	5,011	12.00	60,132
74	Partition framing, wood studs, 2" x 8", 16" on center, including plywood sheathing, 15/32", one side, sill and top plate anchors (shear walls)	SF	3,437	15.00	51,555
75	Install shear wall sill plate anchor bolts to existing wall framing, 48" on center	LF	70	10.00	700
76	Install shear wall top plate connection brackets to existing wall framing, 27" on center	LF	74	5.00	370
77	Install plywood sheathing, 15/32", to existing wood stud partition framing (shear walls)	SF	1,298	3.60	4,673

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
78	Gypsum board on wood stud framed partitions, including level 5 finish	SF	27,149	2.40	65,158
79	Interior storefronts, aluminum, fully glazed	SF	41	80.00	3,280
Interior Partitions				21.81/SF	231,686
C1020	Interior Doors				
80	Remove single door from frame in partitions to remain	EA	8	40.00	320
81	Demolish single door and frame from partitions to be demolished	EA	11	40.00	440
82	Demolish double door and frame from partitions to be demolished	EA	1	80.00	80
83	Single door, hollow metal, 3' x 7', installed on existing frame, including hardware, finish	EA	2	1,200.00	2,400
84	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	4	1,600.00	6,400
85	Single door, wood solid core, plastic laminate, 3' x 7' installed on existing frame, including, hardware, finish	EA	5	1,500.00	7,500
86	Single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	9	1,900.00	17,100
87	Single door, wood framed half glass, 3' x 7', including hardware, finish	EA	1	2,100.00	2,100
88	Rated single door, wood solid core, plastic laminate, 3' x 7', including metal frame, hardware, finish	EA	7	3,000.00	21,000
Interior Doors				5.40/SF	57,340
C1030	Interior Specialties				
89	Provision for signage, including room numbers, code required signs (per GFA)	SF	10,622	0.50	5,311
90	Plywood wainscot (apparatus bay)	SF	748	3.30	2,468
91	Bunker gear metal storage rack, wall mounted, 20" x 20" x 72" high	EA	31	500.00	15,500
92	Remove, set aside, and later reinstall in new location, tech locker, including locker base (L2)	EA	13	100.00	1,300
93	Remove, set aside, and later reinstall in new location flammable materials locker (L4)	EA	1	200.00	200
94	Shower doors, sliding, tempered glass, 48" opening	EA	3	900.00	2,700
95	Toilet towel dispenser and waste receptacle, 18 gallon capacity	EA	4	530.00	2,120
96	Toilet / ADA shower grab bar, 2-wall, 36" x 24"	EA	3	170.00	510
97	Bathroom mirrors, unframed, laminated, polished edges, 24" x 36" x 1/4" thick	EA	4	180.00	720
98	Toilet napkin/tampon dispenser, semi-recessed	EA	2	520.00	1,040
99	Toilet soap dispenser, surface mounted, liquid	EA	4	120.00	480
100	Toilet seat cover dispenser, surface mounted	EA	4	87.00	348

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
101	Toilet tissue dispenser, surface mounted, double roll	EA	4	57.00	228
102	Shower seat, wall mounted	EA	1	440.00	440
Interior Specialties				3.14/SF	33,365
C3010	Interior Wall Finishes				
103	Ceramic tiles on walls, including base	SF	762	15.00	11,430
104	Paint on gypsum board / concrete walls	SF	28,472	1.80	51,250
105	Paint on previously painted gypsum board walls	SF	8,201	2.00	16,402
Interior Wall Finishes				7.45/SF	79,082
C3020	Interior Floor Finishes				
106	Polished finish to concrete floors including sealer	SF	448	8.00	3,584
107	Sealer on concrete floors	SF	3,108	1.30	4,040
108	Sealer on previously polished and sealed concrete floors	SF	6,057	1.50	9,086
109	Ceramic tiles on floors, thin set	SF	280	23.00	6,440
110	Resilient sheet flooring flooring	SF	93	10.00	930
111	Rubber tiles on floors, including sealer on previously sealed concrete floor finish underneath	SF	639	12.00	7,668
112	Rubber base, 4"	LF	831	3.90	3,241
113	Rubber base, 4", including removing existing base	LF	424	4.50	1,908
Interior Floor Finishes				3.47/SF	36,897
C3030	Interior Ceiling Finishes				
114	Selectively demolish existing ceiling finishes	SF	4,009	1.50	6,014
115	Paint on previously painted gypsum board ceilings	SF	3,412	2.00	6,824
116	Gypsum board ceilings, including framing, paint	SF	2,236	5.00	11,180
117	Gypsum board ceilings in patches, including framing, paint	SF	40	20.00	800
118	ACT ceiling finishes	SF	5,466	7.00	38,262
Interior Ceiling Finishes				5.94/SF	63,080
D2090	All Plumbing Work				
119	Plumbing (per Sider+Byers escalated from November 2020) (per GFA)	SF	10,622	26.00	276,172
All Plumbing Work				26.00/SF	276,172
D3090	All HVAC Work				
120	HVAC (per Sider+Byers escalated from November 2020) (per GFA)	SF	10,622	32.20	342,070
All HVAC Work				32.20/SF	342,070

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D4010	Fire Protection Sprinkler Systems				
121	Fire sprinkler (per Sider+Byers escalated from November 2020) (per GFA)	SF	10,622	5.00	53,110
	Fire Protection Sprinkler Systems			5.00/SF	53,110
D5090	All Electrical Work				
122	Electrical (per BCE Engineers from January 2021) (per GFA)	SF	10,622	28.62	303,952
	All Electrical Work			28.62/SF	303,952
E1040	Other Equipment				
123	Remove miscellaneous equipment (per GFA)	SF	7,067	2.00	14,134
124	Washer extractor (E1)	EA	1	8,000.00	8,000
125	Gear dryer (E2)	EA	1	9,000.00	9,000
126	Remove, set aside, and later reinstall in new location tool chest (E3)	EA	1	200.00	200
127	Double stack washer and dryer (E5)	EA	1	2,500.00	2,500
128	Under counter individual food locker (E6) (OFCI)	EA	5	40.00	200
129	SCBA bottle storage, 30" x 30" (E7)	EA	1	3,500.00	3,500
130	Wall mounted hand sanitizer (E8)	EA	2	150.00	300
131	Remove, set aside, and later reinstall in same but higher location, controls panel (E9)	EA	1	300.00	300
132	EMS dispenser machine, 41" x 36" (E10)	EA	1	700.00	700
133	Radio cabinet with countertop (E11)	LF	12	450.00	5,400
134	Range, including hood	EA	1	5,000.00	5,000
135	Microwave oven	EA	2	1,000.00	2,000
136	Dishwasher	EA	2	3,000.00	6,000
137	Refrigerator	EA	3	4,500.00	13,500
138	Freezer	EA	1	4,500.00	4,500
	Other Equipment			7.08/SF	75,234
E2010	Fixed Furnishings				
139	Selectively demolish casework	LF	90	15.00	1,350
140	Window roller shades, double shade, manual (exterior windows)	SF	225	30.00	6,750
141	Kitchen wall cabinets	LF	35	310.00	10,850
142	Kitchen base cabinets, including granite countertops	LF	33	450.00	14,850
143	Kitchen island countertops, 4' 6" wide, including supporting walls and cabinets	LF	10	850.00	8,500
144	Kitchen pantry cabinets	LF	6	700.00	4,200
145	Kitchen open shelving cabinets	LF	3	200.00	600

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

A Living Quarters / Bunker Room / Apparatus Bay / Support Area (continued)

GFA: 10,622 SF Cost/SF: 281.14
Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
146	Food locker, 12" x 18" (F2)	EA	10	310.00	3,100
147	Day room/corridor full height cabinets	LF	7	500.00	3,500
148	Vanity base cabinets, including granite countertops	LF	16	450.00	7,200
149	Laundry base cabinets, including plastic laminate countertops	LF	6	350.00	2,100
150	Laundry wall cabinets	LF	6	310.00	1,860
151	Janitor closet wall open shelving cabinets	LF	5	200.00	1,000
152	Sleep room full height cabinet, 24" x 24"	EA	28	700.00	19,600
153	Display cases	LF	9	1,000.00	9,000
154	Check-in, check-out cabinets	LF	4	300.00	1,200
155	Remove, set aside, and later reinstall in new location, bench, 41" x 36" (F1)	EA	2	50.00	100
Fixed Furnishings				9.02/SF	95,760
LIVING QUARTERS / BUNKER ROOM / APPARATUS BAY / SUPPORT AREA				281.14/SF	2,986,263

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

B Alternate Siding

Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2010	Exterior Walls				
46	Brick veneer, including sealer, weather barrier, rigid insulation, 2" thick, furring	SF	-1,396	48.00	-67,008
47	Fiber cement lap siding, including weather barrier, rigid insulation, 2" thick, furring	SF	1,396	40.00	55,840
	Exterior Walls				-11,168
	ALTERNATE SIDING				-11,168

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN STATIONS 58 59



LOCATION UNIFORMAT LEVEL 3 ITEM

C Sitework

Rates Current At August 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G2040	Site Development				
156	Sitework resulting from building and pavement reconfigurations and additions	LS	1	300,000.00	300,000
	Site Development				300,000
G3020	Site Sanitary Sewer Systems				
157	Provision for sewer piping, and expanding septic tank and leach field	LS	1	50,000.00	50,000
	Site Sanitary Sewer Systems				50,000
	SITWORK				350,000

CAPITAL FACILITIES PLAN

CHAPTER 7 FIRE STATIONS SWEDE HILL TRAINING CAMPUS



*RICE*fergusMILLER

Chapter 7: Swede Hill Training Campus

Narrative

In 2004, the district commissioned Rice Fergus Miller Architects to prepare a long-range plan and schematic design-level drawings for improving the Swede Hill Training Campus. This was a necessary step per Pierce County Zoning Code prior to submitting for the eventual required building and construction permits for the proposed development.

All drawings and documents produced by Rice Fergus Miller Architects and its consultants were submitted to Pierce County under a Conditional Use Permit/Administrative Design Review application. A list of documents submitted to Pierce County are listed in this CFP under the Executive Summary, page ES 4.

In the development of this Capital Improvement Plan, the fire district elected to adopt the previously prepared design documents since they still fulfilled the district's training objectives as previously conceived. These documents, as submitted and approved by the Pierce County Hearing Examiner on August 24, 2009, have been granted several extensions by Pierce County, but are set to expire permanently in August 2024. The cost estimate for these training campus improvements, as designed and permitted, have been updated and included in this Capital Facility Plan.

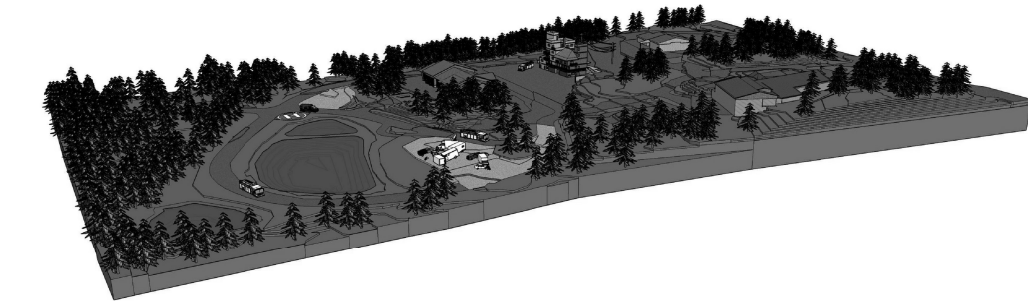
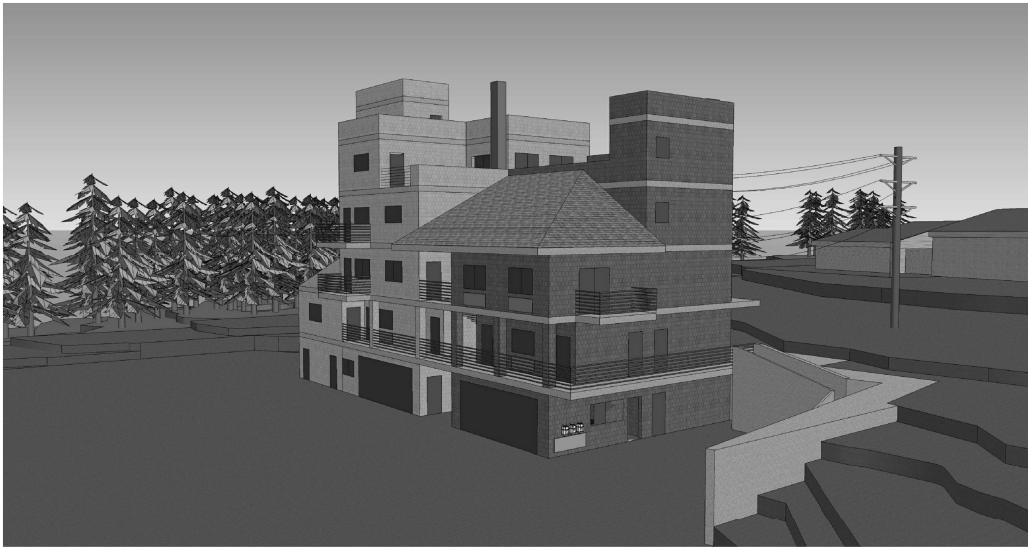
TRAINING CAMPUS IMPROVEMENTS

GIG HARBOR FIRE AND MEDIC ONE

GIG HARBOR, WASHINGTON

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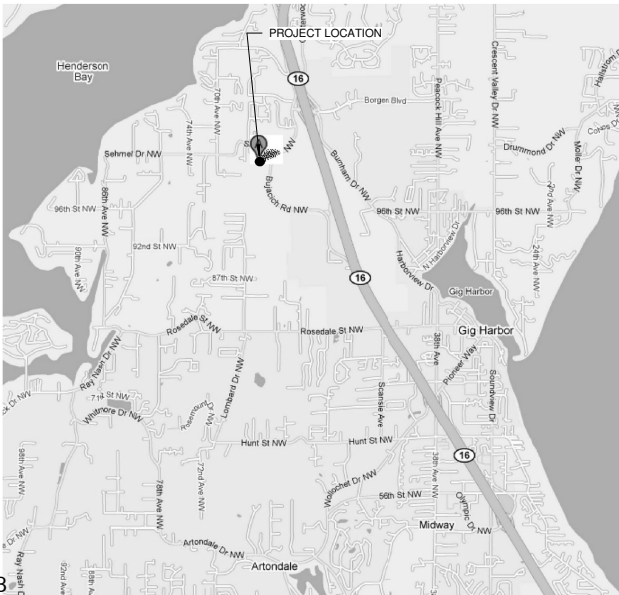
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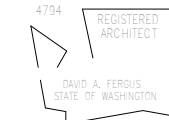
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C2.0	EROSION AND SEDIMENT CONTROL
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L1.02	TREE CONSERVATION PLAN
L1.03	TREE CONSERVATION PLAN
L1.04	TREE CONSERVATION PLAN
L1.05	TREE CONSERVATION PLAN
L1.06	TREE CONSERVATION PLAN
L1.11	PLANTING PLAN
L1.12	PLANTING PLAN
L1.21	IRRIGATION PLAN
L1.22	DETAILS
TP1.01	TREE PROTECTION PLAN
ARCHITECTURAL	
A00.01	PROJECT INFORMATION
A00.03	ASSEMBLY TYPES & ABBREVIATIONS
A01.01	SITE PLAN
A10.02	TRAINING TOWER CODE INFORMATION
A12.01	BASEMENT FLOOR PLAN
A12.02	FIRST FLOOR PLAN
A12.03	SECOND FLOOR PLAN
A12.04	THIRD FLOOR PLAN
A12.05	FOURTH FLOOR
A12.06	FIFTH FLOOR PLAN
A12.07	ROOF PLAN
A13.01	BUILDING ELEVATIONS
A16.01	DOOR AND OPENING SCHEDULES
A20.00	SUPPORT BUILDING CODE INFORMATION
A22.01	SUPPORT BUILDING FIRST FLOOR PLAN
A22.02	SUPPORT BUILDING FIRST FLOOR DIMENSION PLAN
A22.03	SUPPORT BUILDING SECOND FLOOR PLAN
A22.05	SUPPORT BUILDING ROOF PLAN
A22.07	SUPPORT BUILDING ENLARGED PLANS AND FINISH SCHEDULE
A22.11	SUPPORT BUILDING REFLECTED CEILING PLAN - FIRST FLOOR
A22.12	SUPPORT BUILDING REFLECTED CEILING PLAN - SECOND FLOOR
A23.01	SUPPORT BUILDING ELEVATIONS
A24.10	SUPPORT BUILDING BUILDING SECTIONS
A24.11	SUPPORT BUILDING BUILDING SECTIONS
A25.01	SUPPORT BUILDING WALL SECTIONS
A26.01	SUPPORT BUILDING DOOR AND WINDOW SCHEDULES
A28.02	SUPPORT BUILDING INTERIOR ELEVATIONS

DRAWING INDEX (CONTINUED)	
SHEET NUMBER	SHEET NAME
STRUCTURAL	
S10.01	STRUCTURAL ABBREVIATIONS AND SYMBOLS
S10.02	GENERAL STRUCTURAL NOTES
S10.03	GENERAL STRUCTURAL NOTES
S10.04	GENERAL STRUCTURAL NOTES
S12.20	BASEMENT LEVEL/FOUNDATION PLAN
S12.21	FIRST FLOOR PLAN
S12.22	SECOND FLOOR PLAN
S12.23	THIRD FLOOR PLAN
S12.24	FOURTH FLOOR PLAN
S12.25	FIFTH FLOOR PLAN
S12.26	ROOF PLAN
S14.01	SECTIONS AND DETAILS
S14.02	SECTIONS AND DETAILS
S14.03	SECTIONS AND DETAILS
S15.01	TYPICAL DETAILS
S15.02	TYPICAL DETAILS
S15.03	TYPICAL DETAILS
S15.04	TYPICAL DETAILS
S15.05	TYPICAL DETAILS
S15.06	TYPICAL DETAILS
S15.07	TYPICAL DETAILS
S15.08	TYPICAL DETAILS
S20.01	STRUCTURAL ABBREVIATIONS AND SYMBOLS
S20.03	GENERAL STRUCTURAL NOTES
S20.04	GENERAL STRUCTURAL NOTES
S22.00	FIRST FLOOR FOUNDATION PLAN
S22.01	SECOND FLOOR FRAMING PLAN
S22.02	ROOF FRAMING PLAN
S24.02	SECTIONS AND DETAILS
S25.01	TYPICAL DETAILS
S25.02	TYPICAL DETAILS
S25.03	TYPICAL DETAILS
S25.04	TYPICAL DETAILS
S25.05	TYPICAL DETAILS
MECHANICAL	
M00.01	COVER SHEET
M00.02	SCHEDULES
M00.03	SCHEDULES
M12.20	BASEMENT FLOOR PLAN
M12.21	FIRST FLOOR PLAN
M12.22	SECOND FLOOR PLAN
M12.23	THIRD FLOOR PLAN
M12.24	FOURTH FLOOR PLAN
M12.25	FIFTH FLOOR PLAN
M12.26	ROOF PLAN
M22.10	MAIN FLOOR PLAN
M22.30	UPPER FLOOR PLAN
M22.40	ROOF PLAN
PLUMBING	
P00.01	PLUMBING COVER SHEET
P12.2F	FOUNDATION PLAN
P12.20	BASEMENT FLOOR PLAN
P12.21	FIRST FLOOR PLAN
P12.22	SECOND FLOOR PLAN
P12.23	THIRD FLOOR PLAN
P12.24	FOURTH FLOOR PLAN
P12.25	FIFTH FLOOR PLAN
P12.26	ROOF FLOOR PLAN
P22.00	FOUNDATION PLAN
P22.10	FIRST FLOOR PLANS
P22.30	UPPER FLOOR PLAN
P22.40	ROOF PLAN
ELECTRICAL	
E01.00	SYMBOLS AND ABBREVIATIONS
E01.01	SITE PLAN
E12.01	TRAINING FLOOR PLANS - POWER & COMM
E12.02	TRAINING FLOOR PLANS - POWER & COMM
E13.01	TRAINING FLOOR PLANS - LIGHTING
E13.02	TRAINING FLOOR PLANS - LIGHTING
E22.01	SUPPORT BUILDING FLOORPLANS - POWER
E23.01	SUPPORT BUILDING FLOOR PLANS LIGHTING
E24.01	SUPPORT BUILDING FLOOR PLANS COMM
E25.01	ONE-LINE DIAGRAMS & LOAD CALCS
E25.02	PANEL SCHEDULE
E26.01	DETAILS
E26.02	TRAINING PROPS ELECTRICAL DIAGRAM



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1 VICINITY MAP
NO SCALE



Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

NOT FOR CONSTRUCTION

Project Number 2004109.00

DESIGN DEVELOPMENT	
ISSUED: 1/08/2010	
REVISION SCHEDULE	

PROJECT INFORMATION

SHEET:

A00.01



THOMAS RENGSTORFF
AND ASSOCIATES

LANDSCAPE ARCHITECTURE
SITE PLANNING
URBAN DESIGN
SUITE 202, 911 WESTERN AVE., SEATTLE, WA 98104
PHONE: (206) 682-7562 FAX: (206) 682-4721

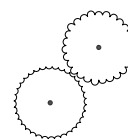
Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

PROJECT #2004109.00
SCHEMATIC DESIGN
ISSUED: 03/16/09

SHEET:
L1.11

PLANT SCHEDULE

TREES



BOTANICAL

COMMON

CONT

CAL



OEMLERIA CERASIFORMIS

INDIAN PLUM

5 GAL



RIBES SANGUINEUM

RED FLOWERING CURRANT

5 GAL



VACCINIUM OVATUM
NATIVE

EVERGREEN HUCKLEBERRY

3 GAL



VIBURNUM OPULUS

EUROPEAN CRANBERRYBUSH

5 GAL

SHRUBS

BOTANICAL

COMMON

CONT

MIN HT/SPREAD

GROUND COVERS



BOTANICAL

CORNUS CANADENSIS

BUNCHBERRY DOGWOOD

1 GAL@ 12" OC 12"



POLYSTICHUM MUNITUM

WESTERN SWORD FERN

1 GAL@ 2" OC 24"



TURF HYDROSEED

DROUGHT TOLERANT FESCUE BLEND SEED

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PLANT QUANTITIES FOR FULL COVERAGE OF ALL PROPOSED LANDSCAPE AREAS AS SHOWN ON PLAN.
2. CONTRACTOR SHALL HYDROSEED ALL DISTURBED AREAS.

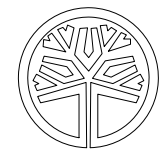
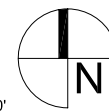


SEE L1.12

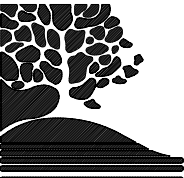
1 PLANTING PLAN
1" = 20' - 0"

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0 10' 20' 40'



STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
Thomas V. Rengstorff
CERTIFICATE NO. 298
THOMAS V. RENGSTORFF



**THOMAS RENGSTORF
AND ASSOCIATES**

LANDSCAPE ARCHITECTURE
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Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

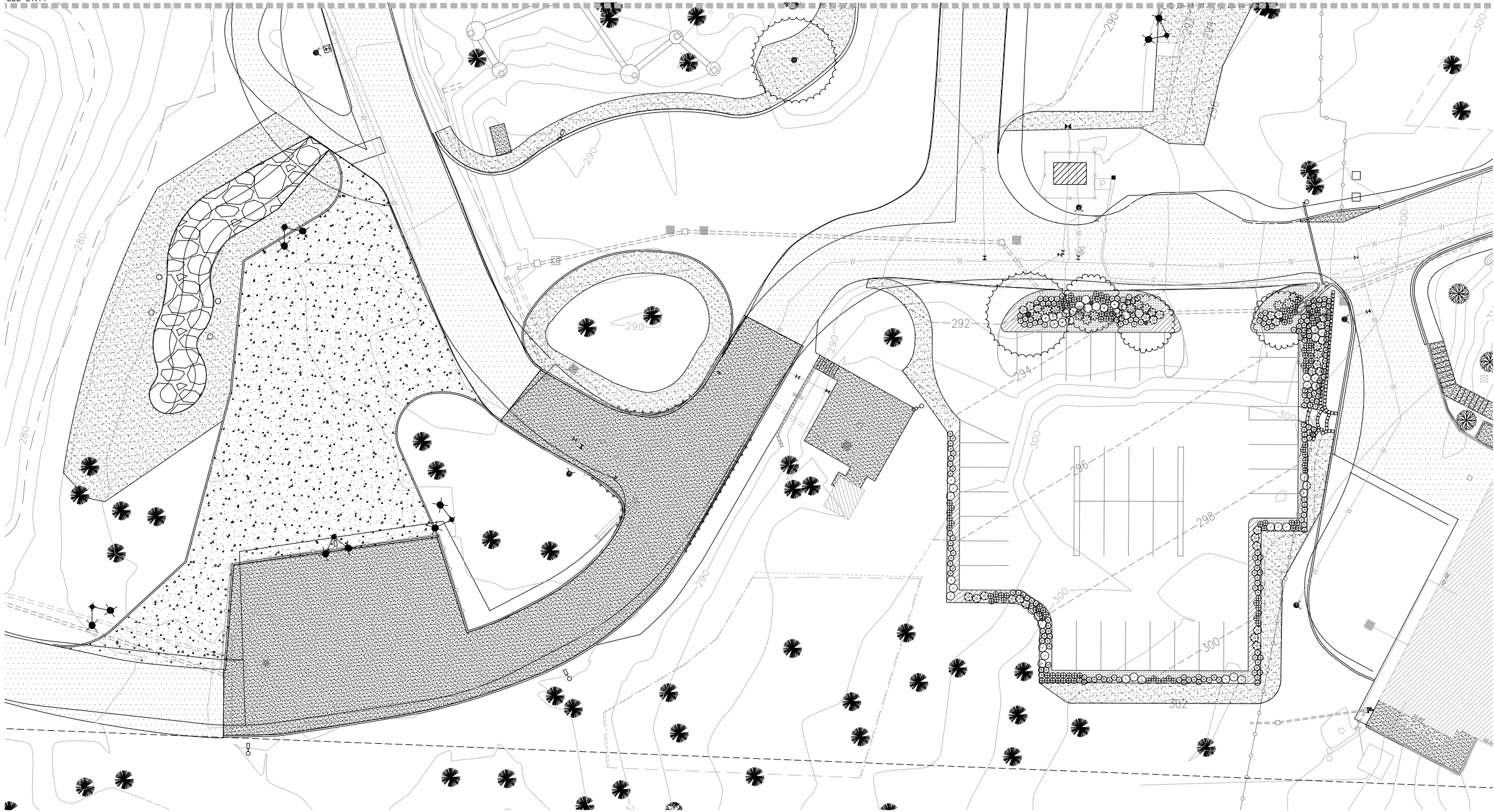
PROJECT #2004109.00
SCHEMATIC DESIGN
ISSUED: 03/16/09



STATE OF
WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
CERTIFICATE NO. 298
THOMAS V. RENGSTORF

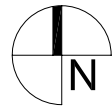
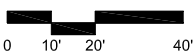
SHEET:
L1.12

SEE L1.11



1 PLANTING PLAN
1" = 20' - 0"

7-04 of 58



-A-		-H-		-O-	
AV	AUDIO VISUAL	H	HIGH	QT	QUARRY TILE
AB	ANCHOR BOLT	HB	HEIGHT	QTY	QUANTITY
ACST	ACOUSTIC(AL)	HC	HOSE BIB		
ACT	ACOUSTIC CEILING TILE		HOLLOW CORE,	-R-	
ADJ	ADJACENT		HANDICAPPED	R	RISER,
	ADJUST(ABLE)	HDR	HEADER		RANGE
AF	ABOVE FLOOR FINISH	HDW	HARDWARE		RADIUS
ALT	ALTERNATE	HDWD	HARDWOOD	R/S	ROD & SHELF
ALUM	ALUMINUM	HGR	HANGER	RA	RETURN AIR
APPROX	APPROXIMATELY	HM	HOLLOW METAL	RB	RESILIENT BASE
ARCH	ARCHITECT(URAL)	HCTBRL	HORIZONTAL	RCP	RECEIVED CEILING PLAN
AU	ACCESSORY USE	HR	HOURS (FIRE		ROOF DRAIN
AUTO	AUTOMATIC		RESISTANT RATING)	REBAR	REINFORCING BAR
		HT	HEIGHT	REC	RECESSED
-B-		HTVAC	HEATING, VENTILATION,	RECPRT	RECEPTACLE
BD	BOARD		& AIR CONDITIONING	REF	REFERENCE
BITUM	BITUMINOUS				REFRIGERATOR
BLDG	BUILDING			REINF	REINFORCE(D)(ING)
BLKG	BLOCKING	-J-		REQD	REQUIRED
BM	BEAM	D	INSIDE DIAMETER	RESTROOM	RESTROOM
BO	BOTTOM OF	IFC	INTERNATIONAL	RET	RETAINING
BTWN	BETWEEN		FIRE CODE	REV	REVISED(ION),
BUR	BUILT UP ROOF(ING)	IIC	IMPACT INSULATION CLASS	RM	ROBE HOOK
		IMC	INTERNATIONAL	RH	ROOM
			MECHANICAL CODE	RO	ROUGH OPENING
-C-			(INCHES)	RP	RADIUS POINT
CAB	CABINET	IN	INCREASE	RS	ROUGH SAWN
CALC	CALCULATION	INC	INCLUDE(D)(ING)	RTL	RIGHT
CB	CATCH BASIN,	INCL	INFORMATION	RVL	REVEAL
	CORNER BEAD	INFO	INSTALLATION		
CEM	CEMENT	INSTL	INSULATION		
CG	CORNER GUARD	INSUL	INTERIOR	-S-	
CH	CAST IN PLACE	INT		S	SOUTH,
CIP	CAST IN PLACE				SINK
CJ	CONTROL JOINT	-J-		SAFF	SELF-ADHESIVE
	CONSTRUCTION JOINT	JAN	JANITOR (CLOSET)		FLEXIBLE FLASHING
CL	CENTERLINE	JBOX	JUNCTION BOX		SANITARY
CLD	CLOTHES DRYER	JT	JOINT	SC	SOLID CORE
CLG	CEILING			SCD	SEAT COVER DISPENSER
CLKJ	CAULKED JOINT	-K-		SCHED	SCHEDULE
CLO	CLOSET	KD	KILN DRIED	SD	SOAP DISH,
CLR	CLEAR	KIT	KITCHEN		SOAP DISPENSER
CMU	CONCRETE MASONRY UNIT				STORM DRAIN
CO	CLEAN OUT	-L-		SEAL	SEALER(ANT)
COL	COLUMN	L	LEFT,	SECT	SECTION
CONC	CONCRETE		LONG,	SEP	SEPARATION
CONF	CONFERENCE		ANGLE	SF	SQUARE FEET
CONN	CONNECT(ION)	LAM	LAMINATE(D)	SG	SAFETY GLASS(ZING)
CONT	CONTINUE(OUS)	LAU	LAUNDRY	SHR	SHOWER
CORR	CORRIDOR	LAV	LAVATORY	SHT	SHEET
CP	CERMENT PLASTER	LB(S)	POUND(S)	SHTG	SHEATHING, SHEETING
CPT	CARPET	LDG	LOADING	SHV	SHELVING
CRK	CORK	LEUM	LEADUM	SM	SIMILAR
CRL	CHAIR RAIL	LL	LIVE LOAD	SM	SHEET METAL
CS	CONCRETE SEALER	LOC	LOCATION	SND	SANITARY NAPKIN DISPENSER
CSMT	CASEMENT	LPT	LOW POINT	SOG	SLAB ON GRADE
CT	CERAMIC TILE	LMCS	LEAKS	SPC	SPECIFICATION(S)
CTR	CENTER	LT	LIGHT	SPKLR	SPRINKLER
		LTG	LIGHTING	SPKR	SPEAKER
-D-		LVR	LOUVER	SQ	SQUARE
D	DEEP			SQIN	SQUARE INCH
	DRYER	-M-		SS	SERVICE SINK
DBL	DOUBLE	M&S	MIRROR & SELF	SS	SANITARY SEWER
DEMO	DEMOLISH(TION)	MACH	MACHINE	SST	STAINLESS STEEL
DEPT	DEPARTMENT	MAINT	MAINTENANCE	ST	STREET
DET	DETAIL	MATL	MATERIAL	STN	STATION
DF	DRINKING FOUNTAIN	MAX	MAXIMUM	STR	SOUND TRANSMISSION CLASS
DIA	DIAMETER	MB	MACHINE BOLT	STD	STANDARD
DIM	DIMENSION	MC	MEDICINE CABINET	STL	STEEL
DISP	DISPOSAL - IN SINK	MDO	MEDIUM DENSITY OVERLAY	STOR	STORAGE
DL	DOWN LOAD	MECH	MEDIUM (AL)	STRCT	STRUCTURAL
DN	DOWN	MED	MEDIUM	SUBFL	SUBFLOOR
DOOR	DOOR,	MEMB	MEMBRANE	SUSP	SUSPENDED
	DINING ROOM,	MEZZ	MEZZANINE	SW	SWITCH
DRAIN	DRAIN	MFR	MANUFACTURER	SYM	SYMMETRICAL
	DOWNSPOUT	MGR	MANAGER		
DS	DISHWASHER	MH	MANHOLE	-T-	
DW	DRAWING	MIN	MINIMUM	T	TREAD
DWG	DRAWING	MIR	MIRROR	T&B	TOP AND BOTTOM
DWR	DRAWER	MISC	MISCELLANEOUS	T&G	TONGUE AND GROOVE
		MO	MASONRY OPENING	TB	TOWEL BAR
-E-		MTD	MOUNTED	TEL	TELEPHONE
E	EAST	MTL	METAL	TEMP	TEMPORARY
(E)	EXISTING	MUL	MULCH		TEMPERATURE
E&A	EACH	MULT	MULTIPLE	TER	TERRAZO
EE	EACH END	MW	MICROWAVE OVEN	THK	THICK(NESS)
EF	EACH FACE			TI	TENANT IMPROVEMENT
EJ	EXPANSION JOINT			TL	TOTAL LOAD
EL	ELEVATION	-N-		TPMD	TEMPERED
ELEC	ELECTRICAL	N	NORTH	TO	

	EXTERIOR ELEVATION TAG
	INTERIOR ELEVATION TAG
	EXTERIOR SECTION TAG
	WALL / STAIR SECTION TAG
	PLAN DETAIL CALLOUT
	WALL/PARTITION TYPE TAG
	WINDOW TAG
	LOUVER TAG
	DOOR TAG
	ROOM TAG
	CEILING TAG
	KEYNOTE TAG
	FINISH TAG
	DATUM TAG
	GRID LINE
	SPOT ELEVATION
	ROOF SLOPE
	SLOPE ARROW

	RIGID INSULATION		GYPSPUM		BATT INSULATION		2x2 ACT
	STEEL		EARTH		WOOD		BRICK
	CONCRETE		PLYWOOD		RIGID INSULATION		MASONRY

RICE
ARCHITECTURE
& PLANNING
fergus
MILLER

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4/94
REGISTERED
ARCHITECT
DAVID A. FERGUS
STATE OF WASHINGTON

Training Campus Improvements

Project Number 2004109.00

DESIGN DEVELOPMENT

ISSUED: 1/08/2010

REVISION SCHEDULE

ASSEMBLY TYPES & ABBREVIATIONS

SHEET:

A00.03

NOT FOR CONSTRUCTION

Gig Harbor, Washington

ISSUED: 12/16/09

SHEET:

A01.01

NOT FOR CONSTRUCTION



ADJACENT ZONING AND USES		
NORTH:	RSVS	RESIDENTIAL
EAST:	P1	VACANT INDUSTRIAL LAND
SOUTH:	RSVS	VACANT LAND UNDEVELOPED
WEST:	RSVS	RESIDENTIAL

GENERAL INFORMATION

A NEW 5 STORY TRAINING TOWER WITH BASEMENT AND ROOF ACCESS. THE TOWER WILL SUPPORT

10222 BUJACICH ROAD NW
GIG HARBOR, WA 98332

0122363020

RESERVE 5

PARKING REQUIRED AND PROVIDED

<u>SETBACKS</u>	<u>REQUIRED</u>	<u>PROVIDED</u>
FRONT	25	
SIDE	25	
REAR	25	

LOCAL JURISDICTION
PIERCE COUNTY, WASHINGTON

CODES IN USE
2006 INTERNATIONAL BUILDING CODE (IBC) W/ WA STATE AMENDMENTS. WAC 51-50
2006 INTERNATIONAL FIRE CODE (IFC) W/ WA STATE AMENDMENTS. WAC 51-54
2006 INTERNATIONAL MECHANICAL CODE (IMC) W/ WA STATE AMENDMENTS. WAC 51-52
2006 UNIFORM PLUMBING CODE W/ WA STATE AMENDMENTS. WAC 51-56 & WAC 51-57
2006 WASHINGTON STATE ENERGY CODE. WAC 51-11
2006 WASHINGTON STATE VENTILATION. WAC 51-13
NFPA 1402 GUIDE TO BUILDING FIRE SERVICE TRAINING CENTERS 2007
NFPA 1403 STANDARD ON LIVE FIRE TRAINING EVOLUTIONS 2007
ACCESSIBILITY
2006 IBC - CHAPTER 11
ICC/ANSI A117.1-2003 (REFERENCED BY IBC)

ZONING CODES
PIERCE COUNTY ZONING CODE

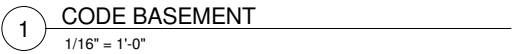
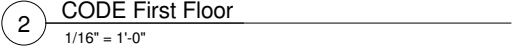
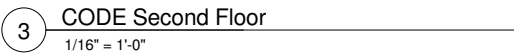
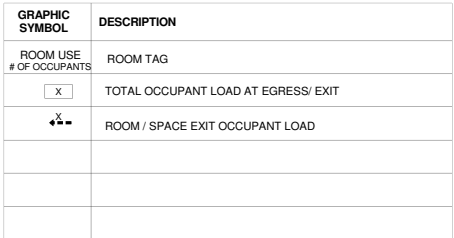
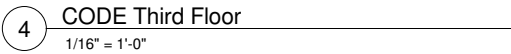
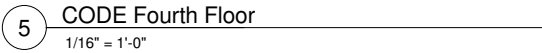
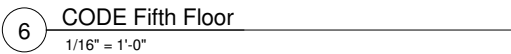
CONSTRUCTION TYPE
V-A

BUILDING AREAS

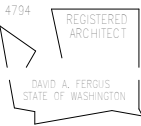
USE AND OCCUPANCY
BUSINESS GROUP - B

BUILDING HEIGHT

OCCUPANCY LOAD CHART					
ROOM NUMBER	ROOM NAME	ROOM OCCUPANCY	ROOM AREA	SQUARE FOOT PER PERSON	# OF OCC
BASEMENT					
10	STAIR 1	ACCESSORY USE	188 SF	0	0
11	SMOKE ROOM/ UTILITIES/ ELECTRICAL	ACCESSORY STORAGE AREAS / MECHANICAL	263 SF	300	1
12	STAIR 2	ACCESSORY USE	194 SF	0	0
13	SHORING PROPS	ACCESSORY STORAGE AREAS / MECHANICAL	1737 SF	300	6
14	GARAGE	BUSINESS AREAS	378 SF	100	4
15	HALLWAY	ACCESSORY USE	130 SF	0	0
16	FHM	ACCESSORY STORAGE AREAS / MECHANICAL	61 SF	300	1
17	STAIR 3	ACCESSORY USE	148 SF	0	0
				FLOOR TOTAL	12
FIRST FLOOR					
101	STAIR 1	ACCESSORY USE	257 SF	0	0
102	COLLAPSE FLOOR PROP	BUSINESS AREAS	250 SF	100	3
103	STORE FRONT	BUSINESS AREAS	188 SF	100	2
104	KITCHEN	BUSINESS AREAS	310 SF	100	4
105	STORE FRONT	BUSINESS AREAS	557 SF	100	6
106	FHM	ACCESSORY STORAGE AREAS / MECHANICAL	63 SF	300	1
107	STAIR 3	ACCESSORY USE	163 SF	0	0
108	LOBBY	BUSINESS AREAS	194 SF	100	2
109	APT #2	BUSINESS AREAS	607 SF	100	7
111	STAIR 2	ACCESSORY USE	137 SF	0	0
				FLOOR TOTAL	25
SECOND FLOOR					
201	STAIR 1	ACCESSORY USE	Not Enclosed	0	0
202	ATTIC 2	BUSINESS AREAS	Not Enclosed	100	0
203	ATTIC 1	BUSINESS AREAS	Not Enclosed	100	0
204	APT #3	BUSINESS AREAS	537 SF	100	6
205	HALLWAY	ACCESSORY USE	257 SF	0	0
206	APT #1	BUSINESS AREAS	413 SF	100	5
207	STAIR 3	ACCESSORY USE	163 SF	0	0
208	APT #2	BUSINESS AREAS	216 SF	100	3
209	APT #4	BUSINESS AREAS	368 SF	100	4
210	FHM	ACCESSORY STORAGE AREAS / MECHANICAL	66 SF	FLOOR TOTAL	1
211	STAIR 2	BUSINESS AREAS	190 SF	100	2
					21
THIRD FLOOR					
301	STAIR 1	ACCESSORY USE	188 SF	0	0
302	UPPER LEVEL APT #3	BUSINESS AREAS	536 SF	100	6
303	CONFIDENCE COURSE	BUSINESS AREAS	1062 SF	FLOOR TOTAL	11
304	ATTIC 3	BUSINESS AREAS	656 SF	100	7
307	STAIR 3	ACCESSORY USE	163 SF	0	0
					24
FOURTH FLOOR					
401	STAIR 1	ACCESSORY USE	188 SF	0	0
402	AERIAL RESCUE/ SPRINKLER TRAINING	BUSINESS AREAS	853 SF	FLOOR TOTAL	9
407	STAIR 3	ACCESSORY USE	163 SF	0	0
				FLOOR TOTAL	9
FIFTH FLOOR					
501	STAIR 1	ACCESSORY USE	188 SF	0	0
					0
					91



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Training Campus Improvements

Gig Harbor Fire & Medic One

Project Number 2004109.00

DESIGN DEVELOPMENT

ISSUED: Issue Date

TRAINING
TOWER CODE
INFORMATION

SHEET:

A10.02

NOT FOR CONSTRUCTION

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

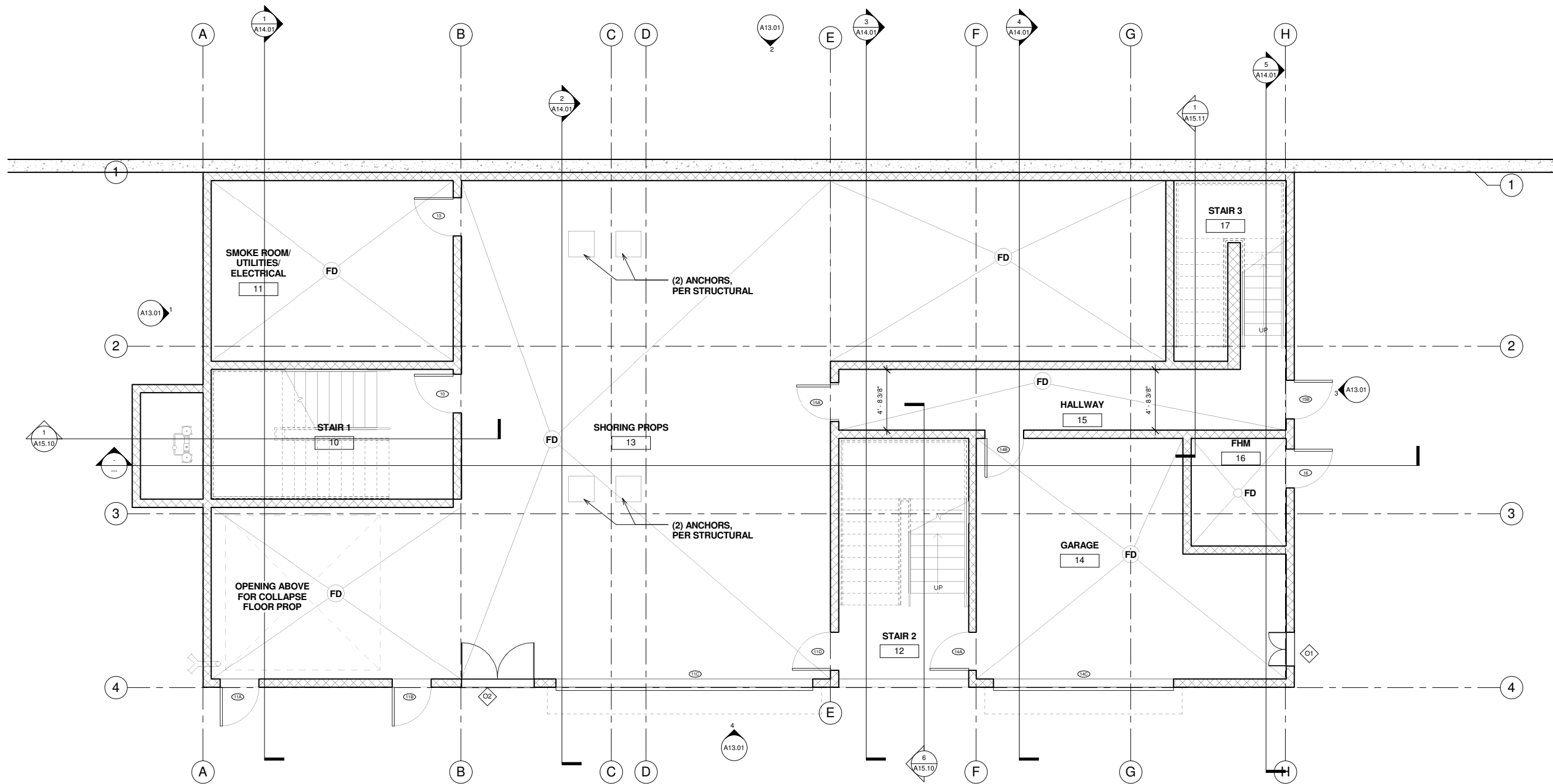
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

BASEMENT
FLOOR PLAN

SHEET:

A11.01

NOT FOR CONSTRUCTION



1 BASEMENT
1/4" = 1'-0"



FLOOR PLAN NOTES

- ALL DIMENSIONS ARE TO FINISH FACE UNO.
- ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO.
- ALL EXTERIOR WALLS ARE TYPE WT UNO.
- ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
- ALL FINISHED DOOR OPGS ARE LOCATED 4" FROM WALL UNO.
- *— DENOTES DIMENSION TO GRIDLINE.
- MENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
- REFERENCE A13 SERIES FOR RETURN ELEVATIONS AND MATERIALS.
- SEE A16.01 FOR WINDOW TYPE DESIGNATIONS.
- SEE A16.01 FOR DOOR TYPES AND SCHEDULE.
- DIMENSIONS OF EXTERIOR OPENINGS ARE OF ROUGH OPENING, UNO.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

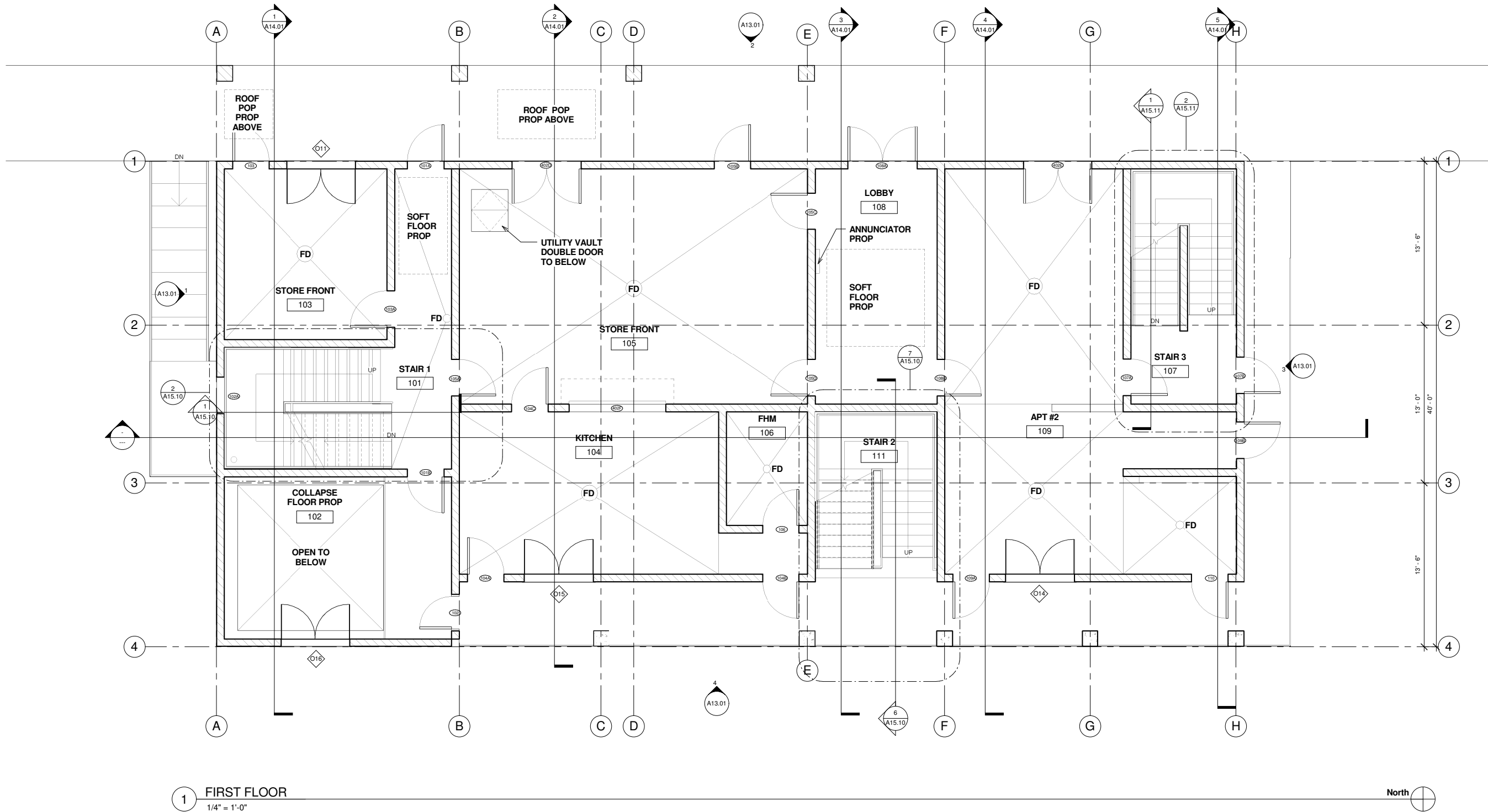
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

FIRST FLOOR
PLAN

SHEET:

A11.02

NOT FOR CONSTRUCTION



FLOOR PLAN NOTES

- ALL DIMENSIONS ARE TO FINISH FACE UNO.
- ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO.
- ALL EXTERIOR WALLS ARE TYPE WT UNO.
- ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
- ALL FINISHED DOOR OPGS ARE LOCATED 4" FROM WALL UNO.
- DENOTES DIMENSION TO GRIDLINE.
- MENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
- REFERENCE A13 SERIES FOR RETURN ELEVATIONS AND MATERIALS.
- SEE A16.01 FOR WINDOW TYPE DESIGNATIONS.
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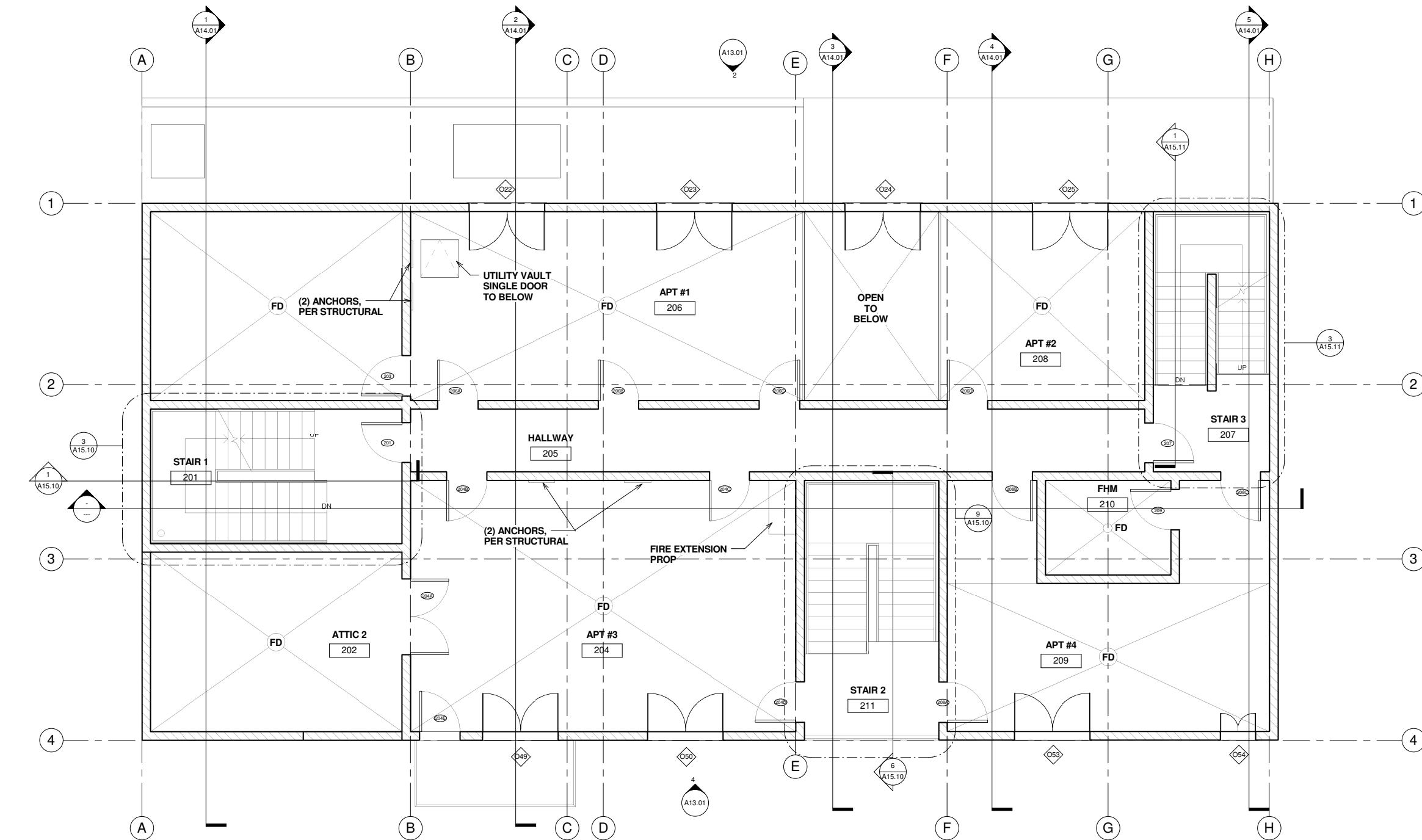
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

SECOND FLOOR
PLAN

SHEET:

A11.03

NOT FOR CONSTRUCTION



FLOOR PLAN NOTES

- ALL DIMENSIONS ARE TO FINISH FACE UNO.
- ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO
- ALL EXTERIOR WALLS ARE TYPE WT UNO.
- ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
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- SEE A16.01 FOR DOOR TYPES AND SCHEDULE.
- DIMENSIONS OF EXTERIOR OPENINGS ARE OF ROUGH OPENING, UNO.

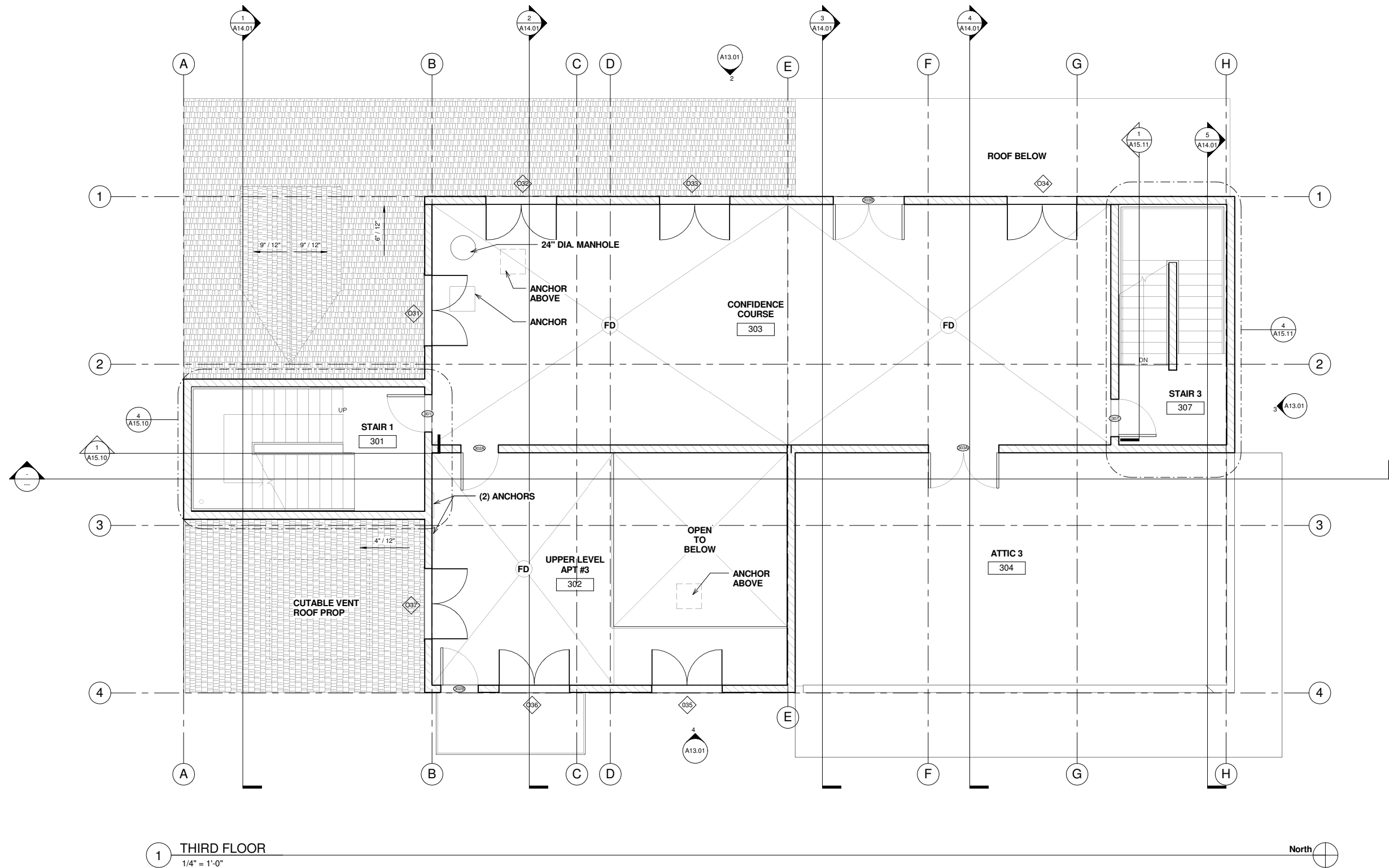
Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

THIRD FLOOR
PLAN

SHEET:

A11.04



FLOOR PLAN NOTES

- ALL DIMENSIONS ARE TO FINISH FACE UNO.
- ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO
- ALL EXTERIOR WALLS ARE TYPE WT UNO.
- ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
- ALL FINISHED DOOR OPGS ARE LOCATED 4" FROM WALL UNO.
-  DENOTES DIMENSION TO GRIDLINE.
- MENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
- REFERENCE A13 SERIES FOR RETURN ELEVATIONS AND MATERIALS.
- SEE A16.01 FOR WINDOW TYPE DESIGNATIONS.
- SEE A16.01 FOR DOOR TYPES AND SCHEDULE.
- DIMENSIONS OF EXTERIOR OPENINGS ARE OF ROUGH OPENING, UNO.

Training Campus Improvements
Gig Harbor Fire & Medic One
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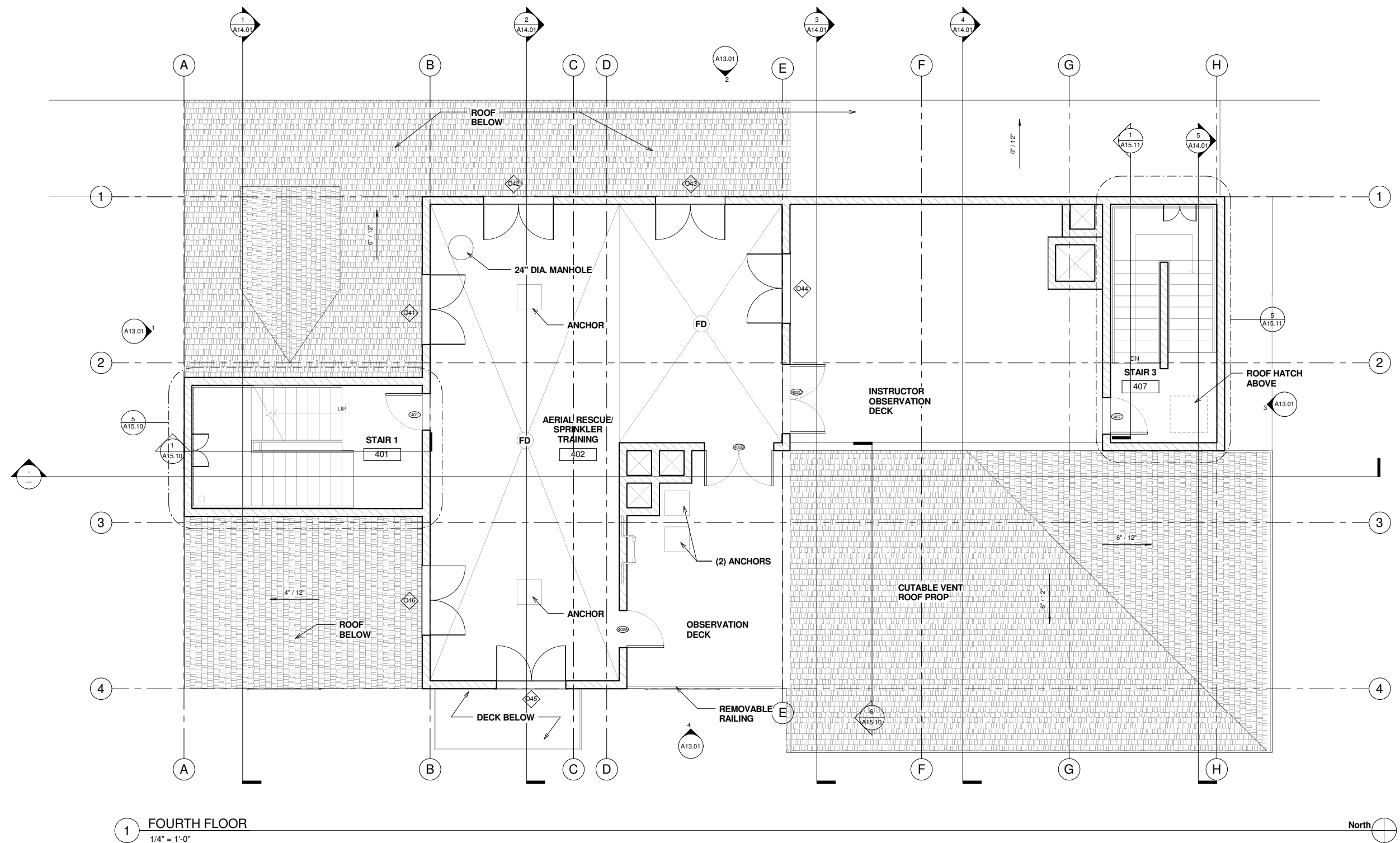
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

FOURTH FLOOR

SHEET:

A11.05

NOT FOR CONSTRUCTION



1 FOURTH FLOOR
1/4" = 1'-0"

- FLOOR PLAN NOTES**
1. ALL DIMENSIONS ARE TO FINISH FACE UNO.
 2. ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO.
 3. ALL EXTERIOR WALLS ARE TYPE WT UNO.
 4. ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
 5. ALL FINISHED DOOR OPGS ARE LOCATED 4" FROM WALL UNO.
 6. —+— DENOTES DIMENSION TO GRIDLINE.
 7. MENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
 8. REFERENCE A13 SERIES FOR RETURN ELEVATIONS AND MATERIALS.
 9. SEE A16.01 FOR WINDOW TYPE DESIGNATIONS.
 10. SEE A16.01 FOR DOOR TYPES AND SCHEDULE.
 11. DIMENSIONS OF EXTERIOR OPENINGS ARE OF ROUGH OPENING, UNO.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

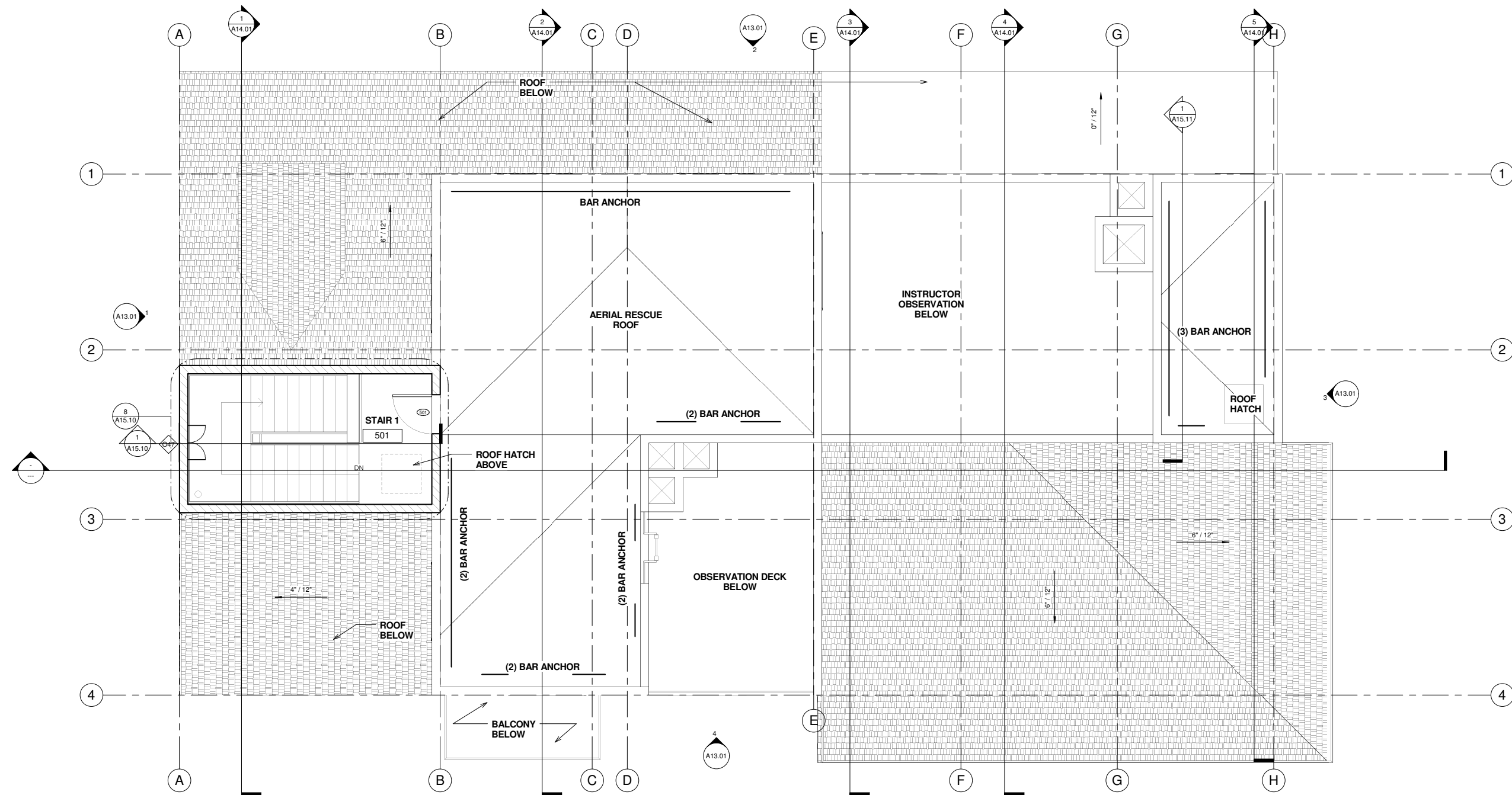
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

FIFTH FLOOR
PLAN

SHEET:

A11.06

NOT FOR CONSTRUCTION



1 FIFTH FLOOR
1/4" = 1'-0"

- FLOOR PLAN NOTES
- ALL DIMENSIONS ARE TO FINISH FACE UNO.
 - ALL BELOW-GRADE EXTERIOR WALL TYPES ARE XX & BELOW GRADE INTERIOR WALLS ARE XX UNO
 - ALL EXTERIOR WALLS ARE TYPE WT UNO.
 - ALL INTERIOR WALL TYPES ARE TYPE WT UNO.
 - ALL FINISHED DOOR OPGS ARE LOCATED 4" FROM WALL UNO.
 - DENOTES DIMENSION TO GRIDLINE.
 - MENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
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 - SEE A16.01 FOR DOOR TYPES AND SCHEDULE.
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Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

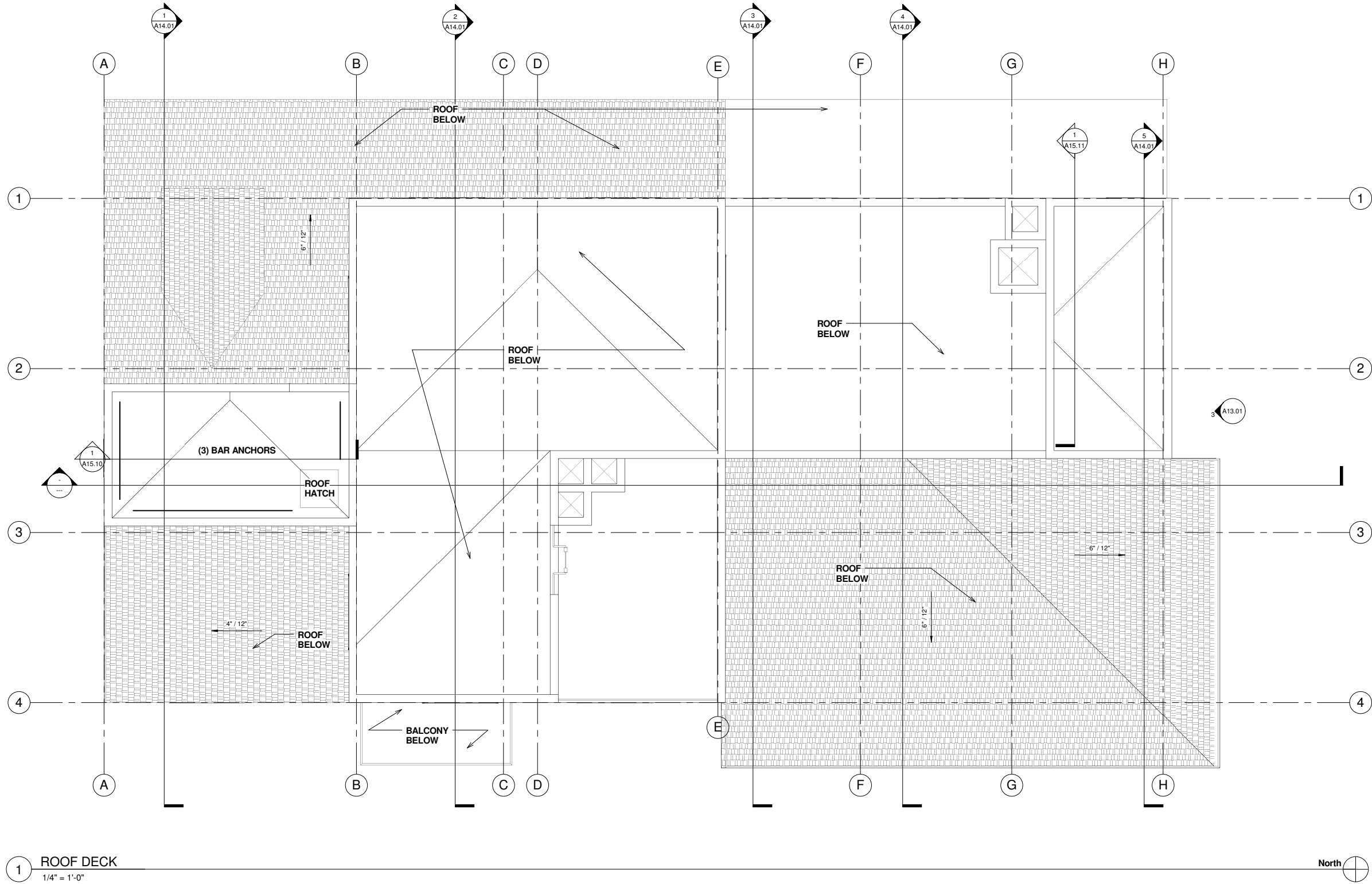
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DESIGN
DEVELOPMENT
ISSUED: Issue Date

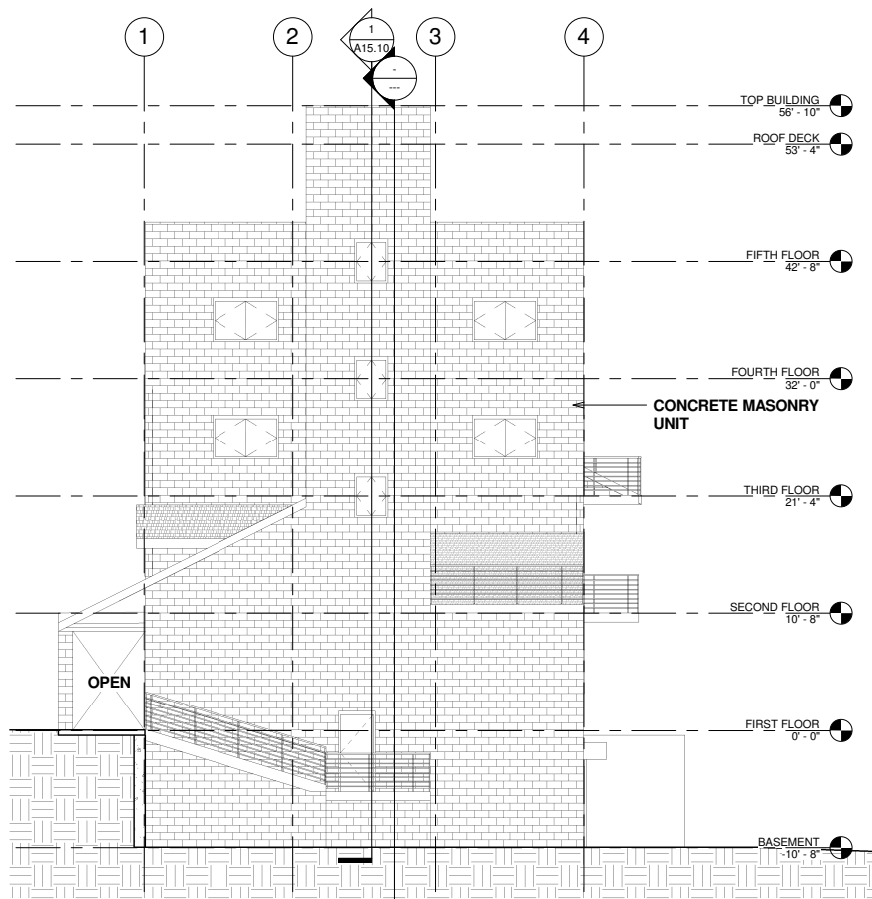
ROOF PLAN

SHEET:

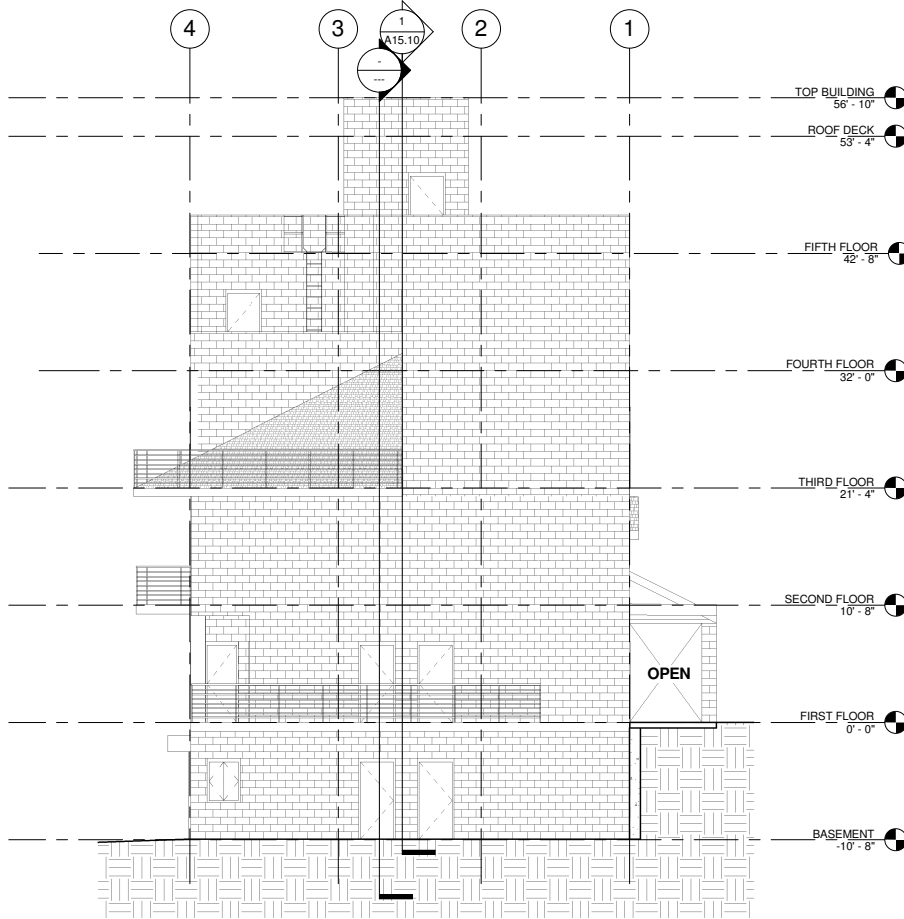
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NOT FOR CONSTRUCTION

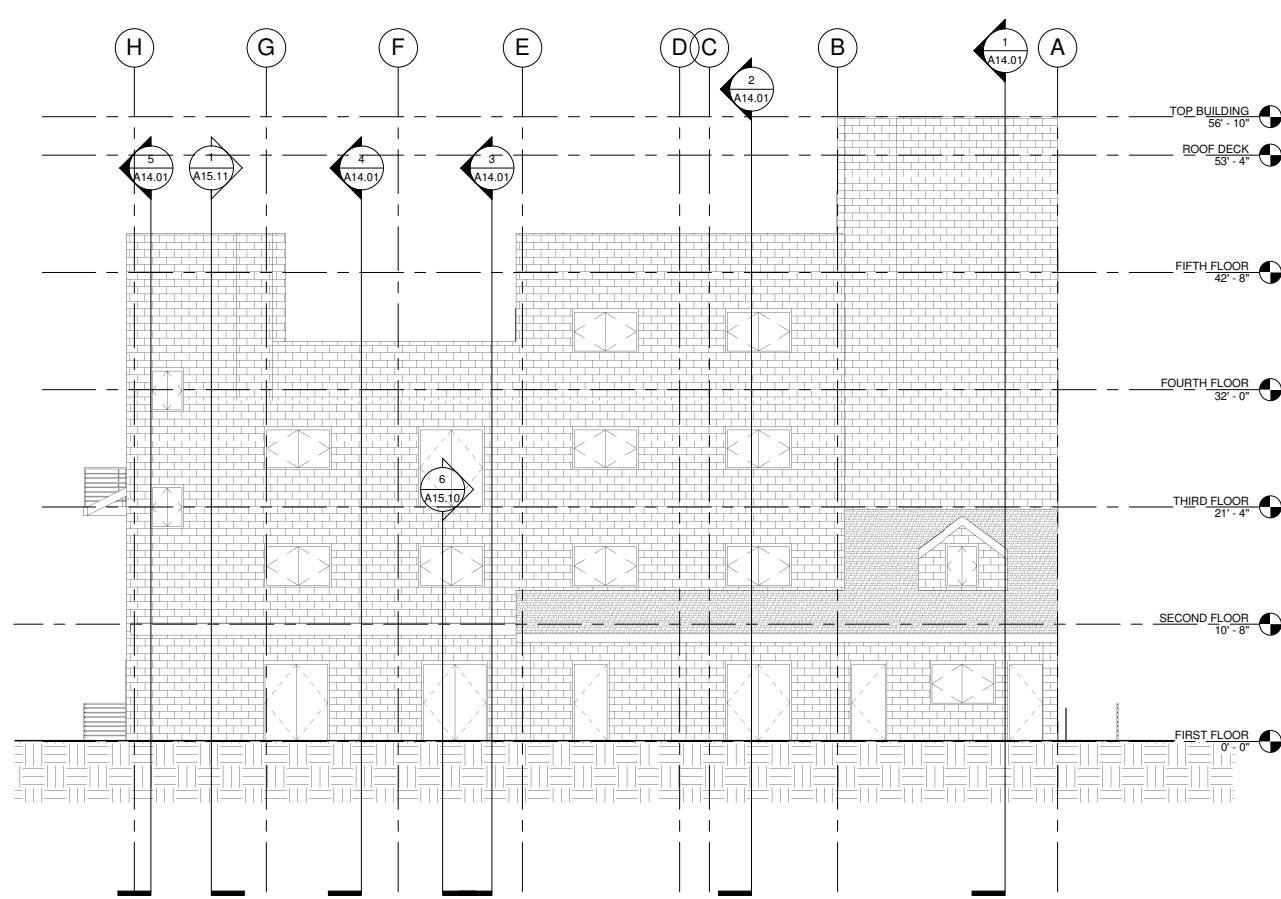




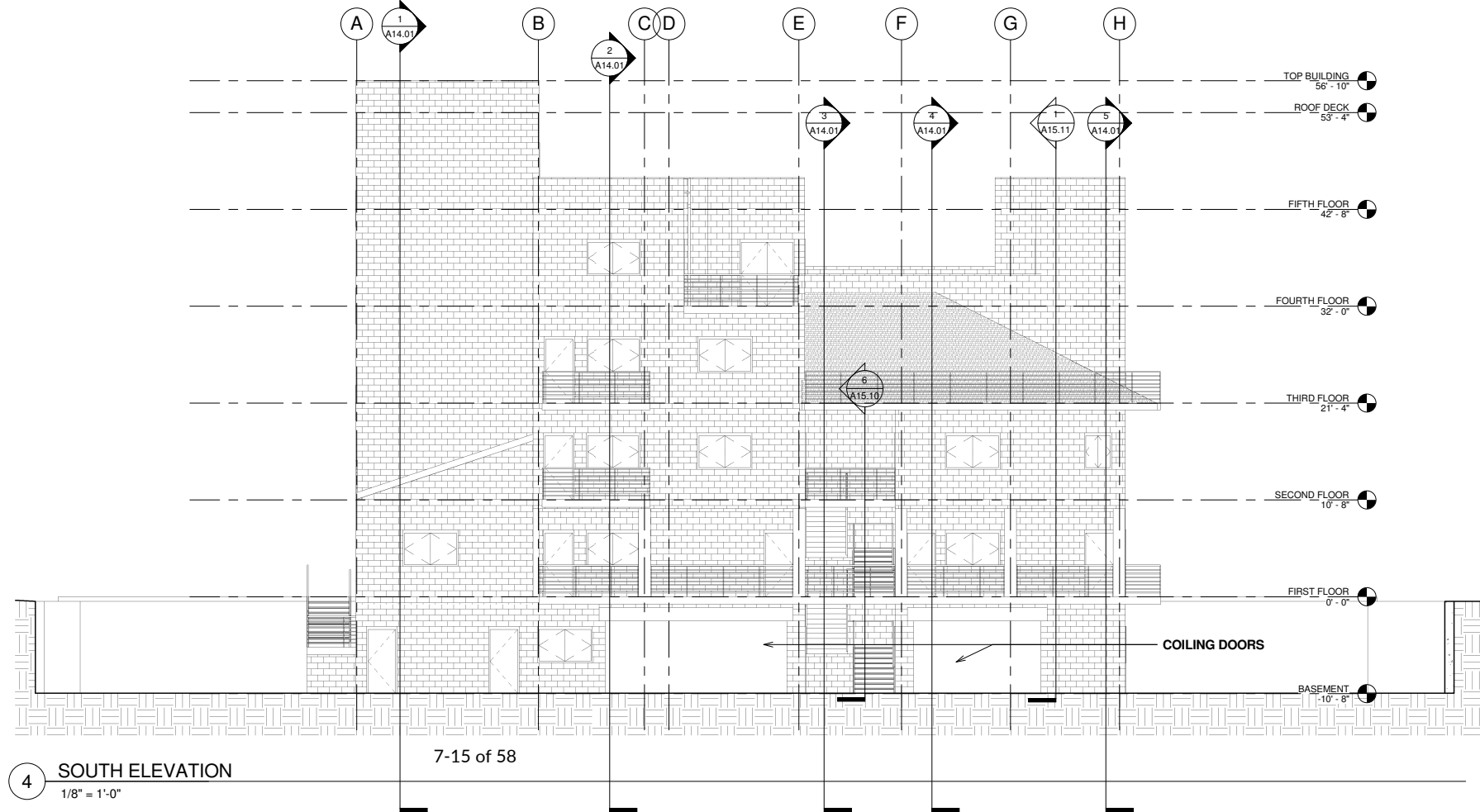
1 WEST ELEVATION
1/8" = 1'-0"



3 EAST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"



4 SOUTH ELEVATION
1/8" = 1'-0"

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Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

BUILDING
ELEVATIONS

SHEET:

A13.01

NOT FOR CONSTRUCTION

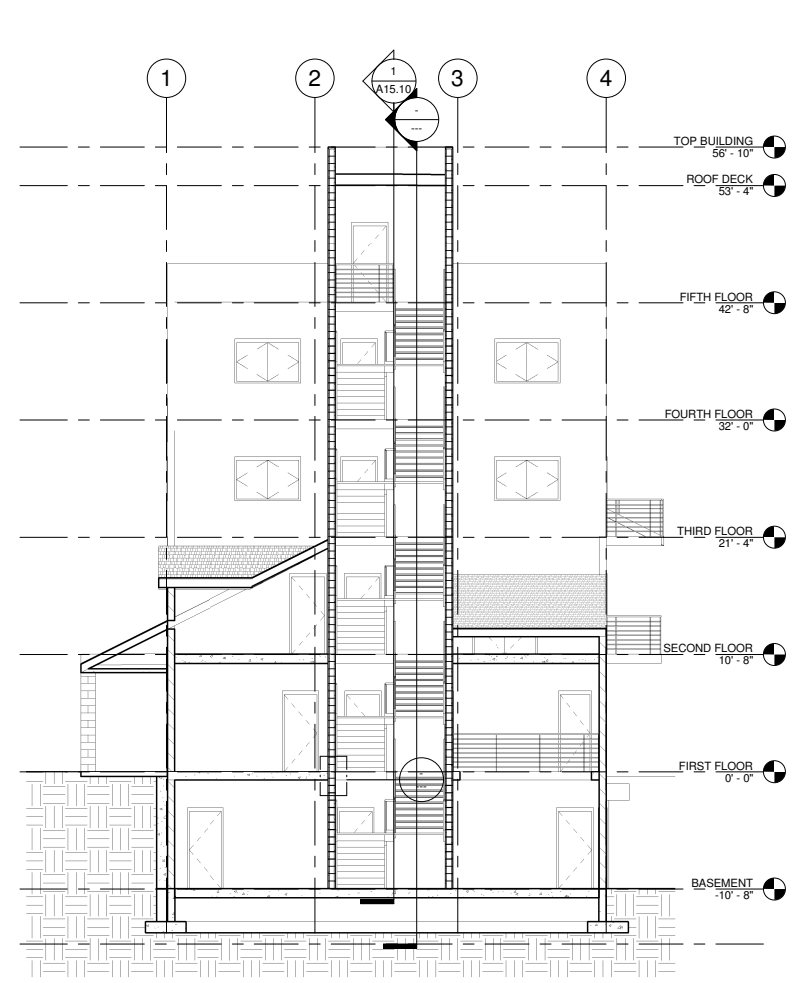
Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

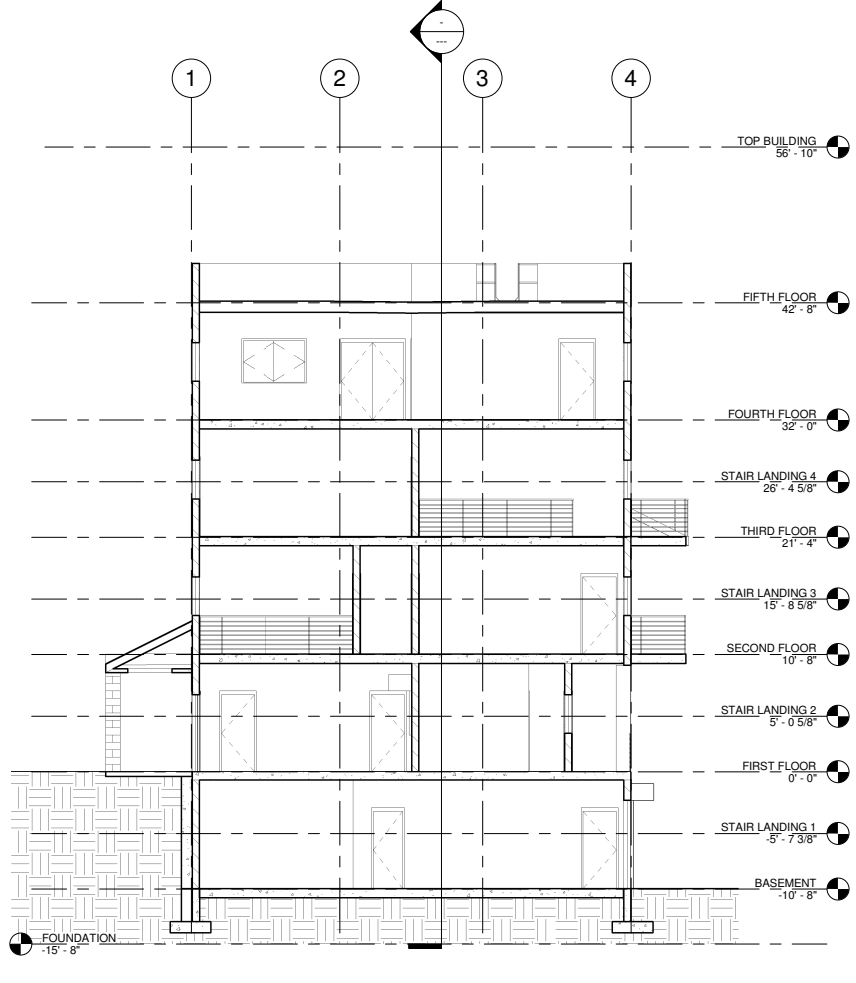
BUILDING
SECTIONS

SHEET:

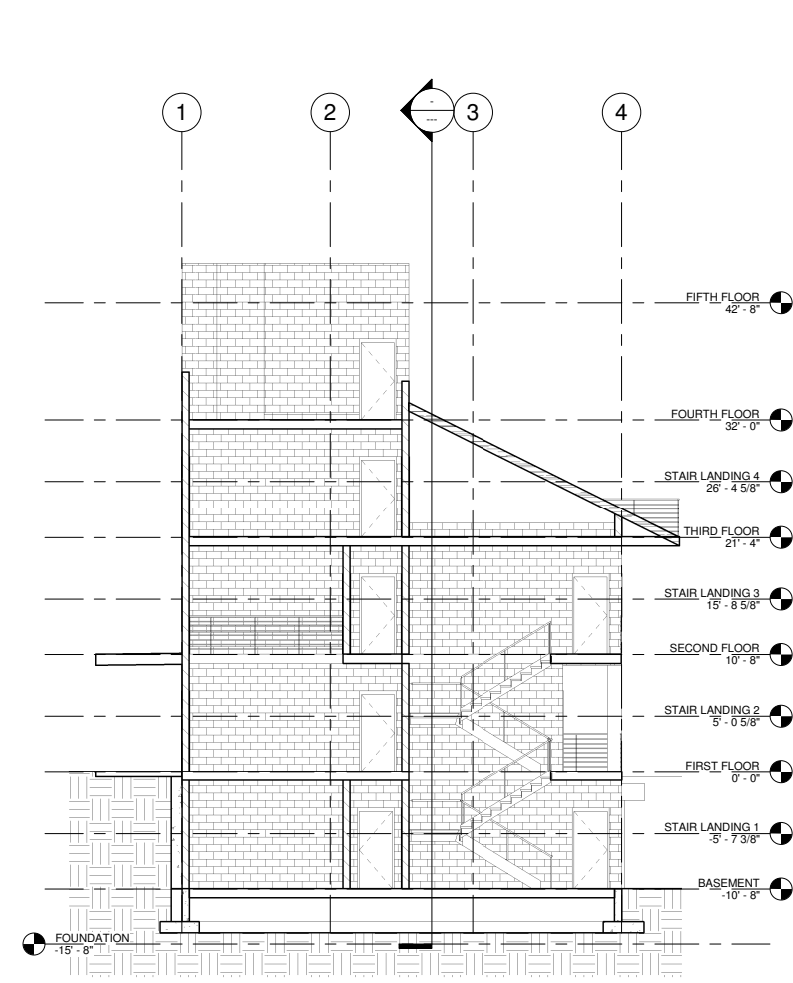
A14.01



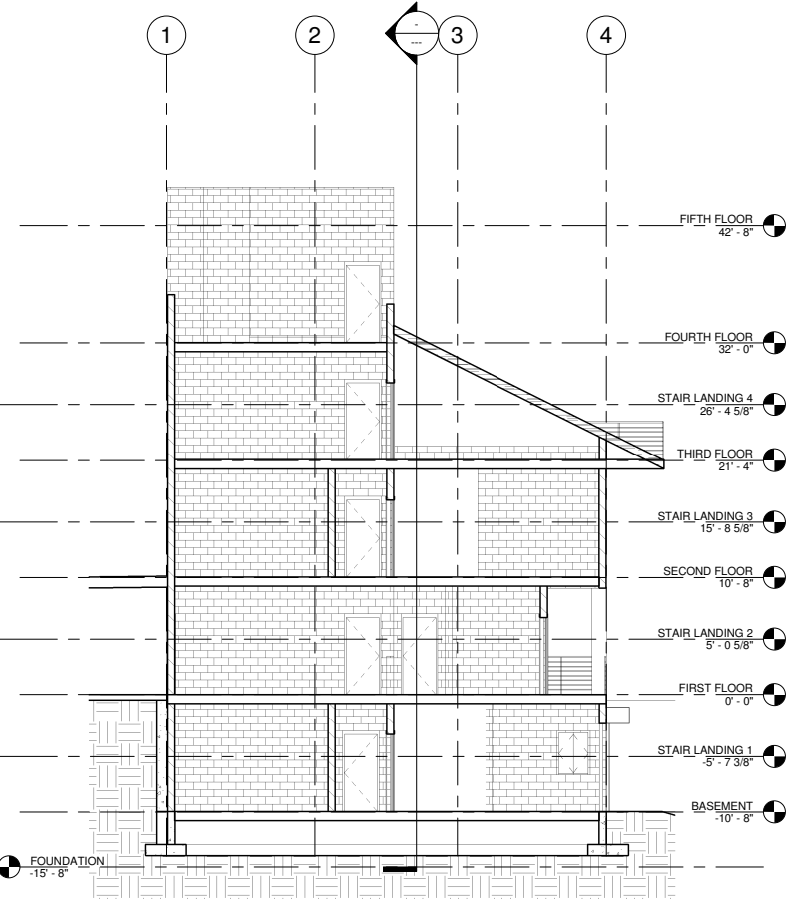
1 BUILDING SECTION
1/8" = 1'-0"



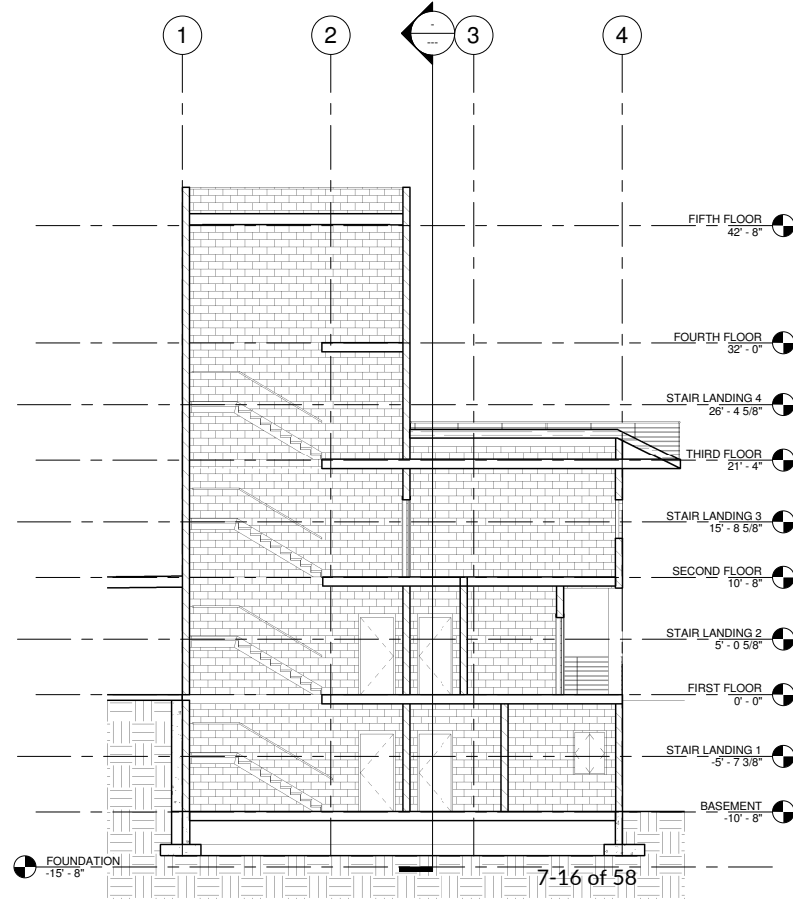
2 BUILDING SECTION
1/8" = 1'-0"



3 BUILDING SECTION
1/8" = 1'-0"



4 BUILDING SECTION
1/8" = 1'-0"



5 BUILDING SECTION
1/8" = 1'-0"

NOT FOR CONSTRUCTION

Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

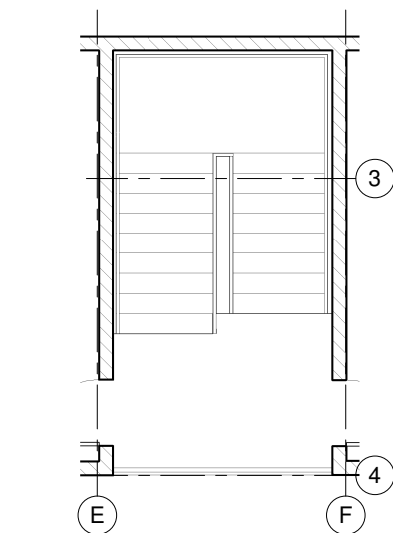
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

VERTICAL
CIRCULATION

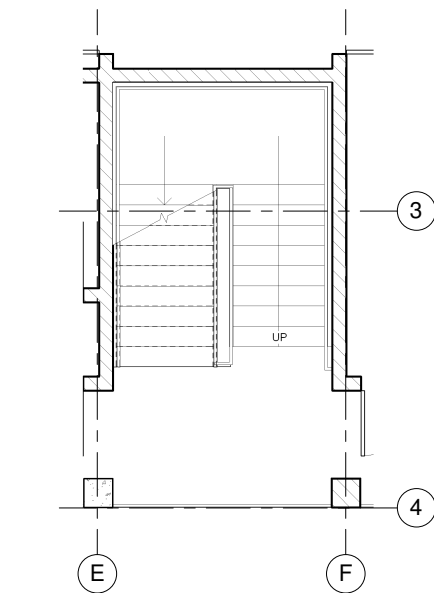
SHEET:

A15.10

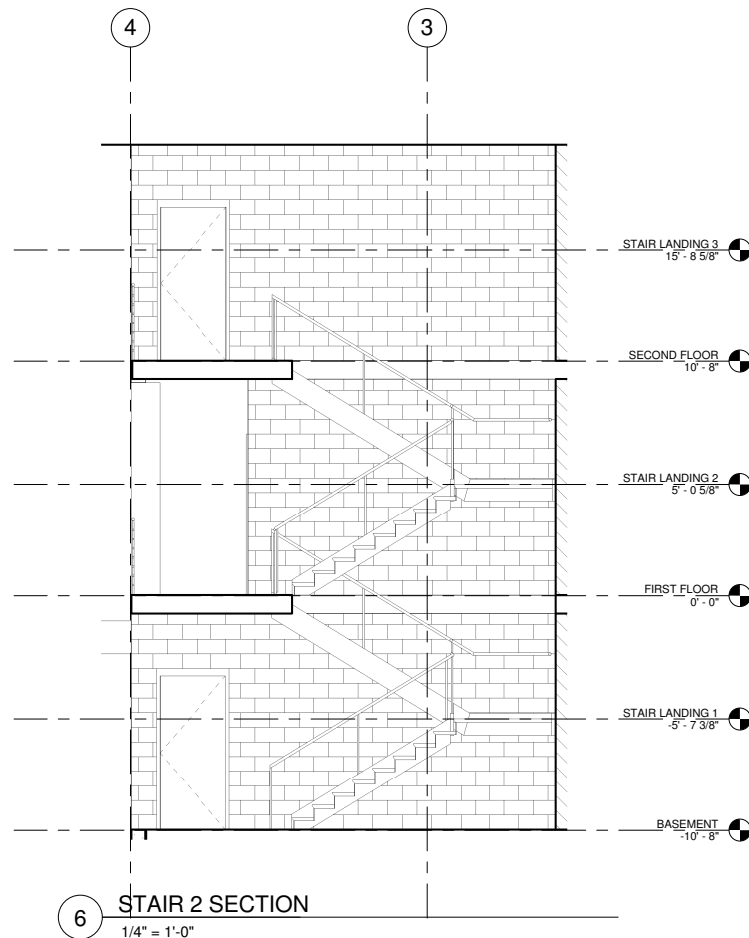
NOT FOR CONSTRUCTION



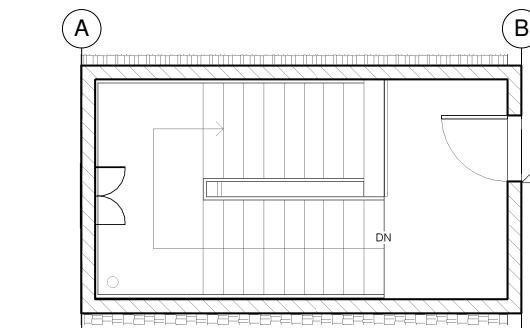
9 -- STAIR 2 SECOND FLOOR PLAN
1/4" = 1'-0"



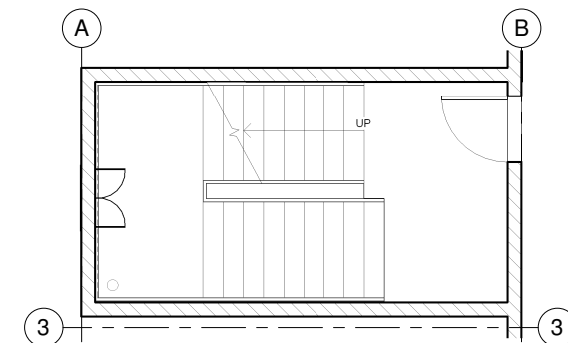
7 -- STAIR 2 FIRST FLOOR PLAN
1/4" = 1'-0"



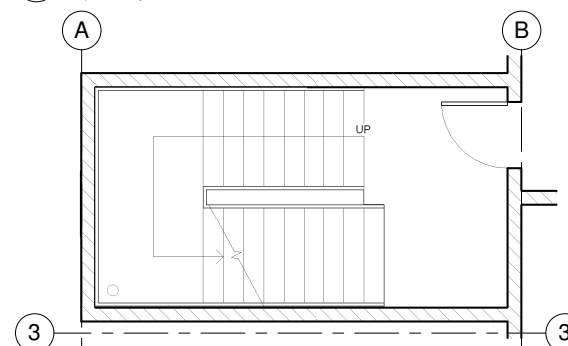
6 STAIR 2 SECTION
1/4" = 1'-0"



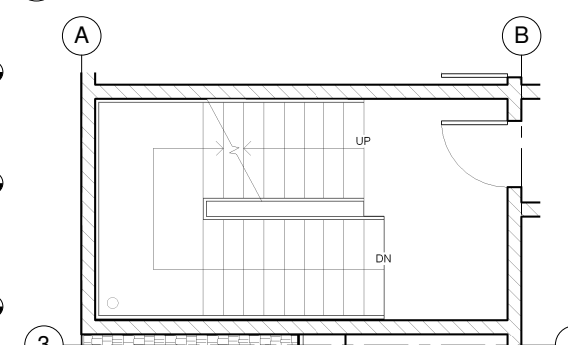
8 -- STAIR 1 FIFTH FLOOR PLAN
1/4" = 1'-0"



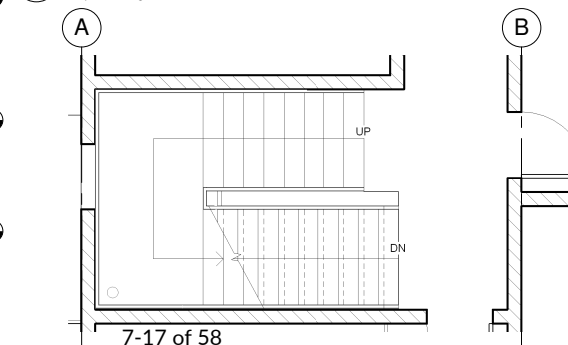
5 -- STAIR 1 FOURTH FLOOR PLAN
1/4" = 1'-0"



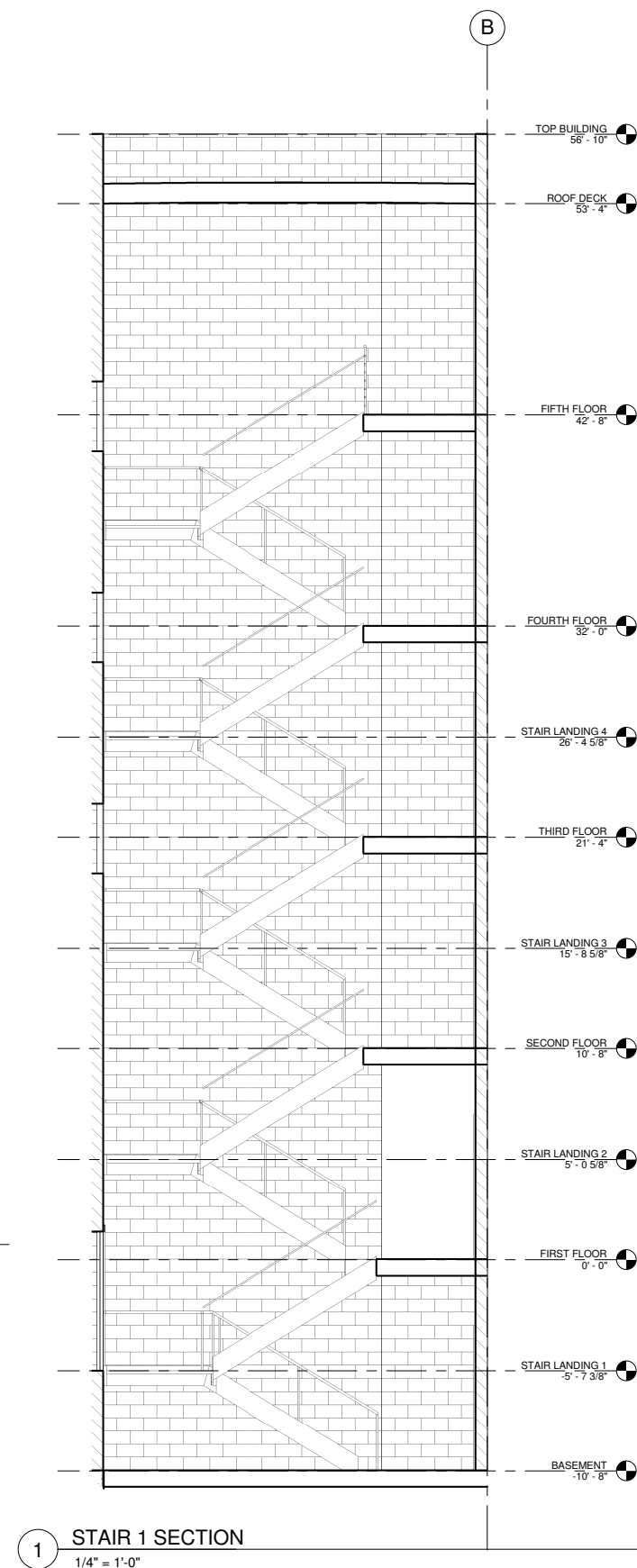
4 -- STAIR 1 THIRD FLOOR PLAN
1/4" = 1'-0"



3 -- STAIR 1 SECOND FLOOR PLAN
1/4" = 1'-0"



2 -- STAIR 1 FIRST FLOOR PLAN
1/4" = 1'-0"



1 STAIR 1 SECTION
1/4" = 1'-0"

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

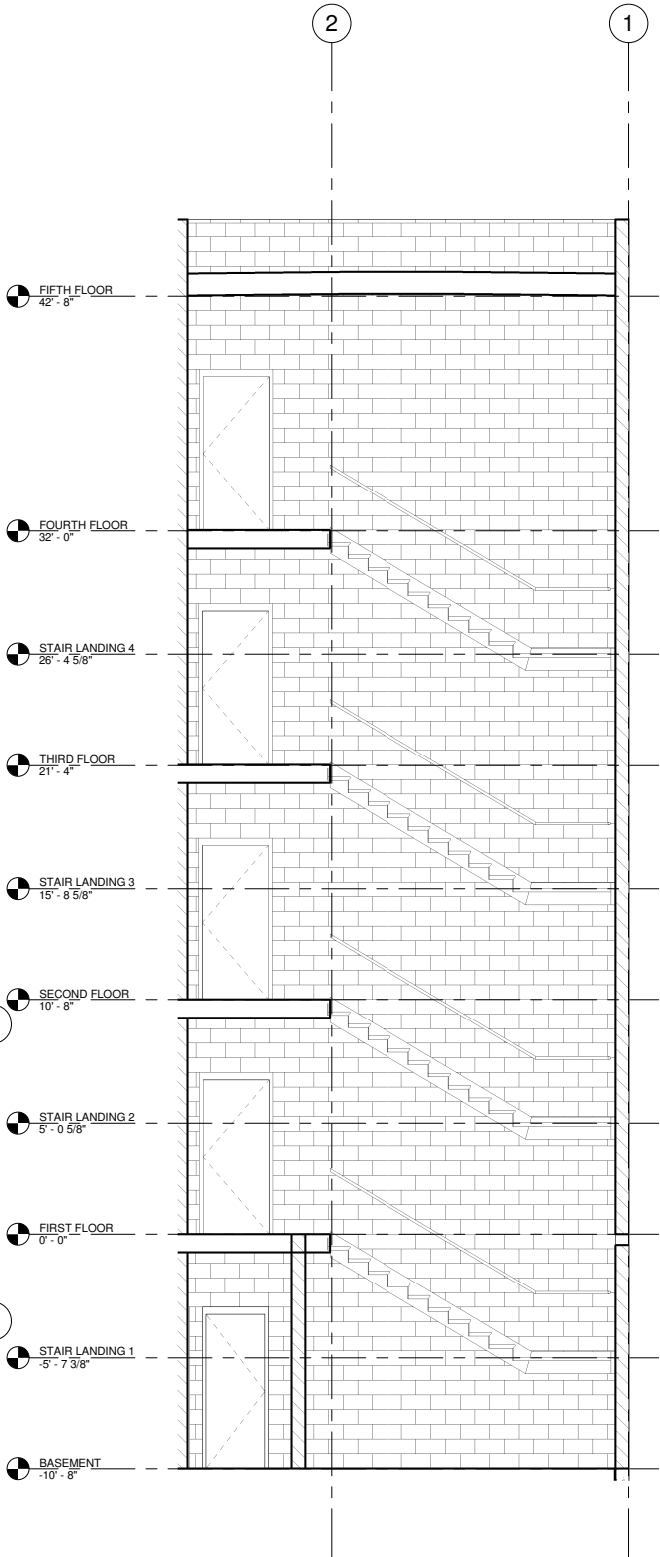
Project Number 2004109.00
DESIGN
DEVELOPMENT
ISSUED: Issue Date

VERTICAL
CIRCULATION

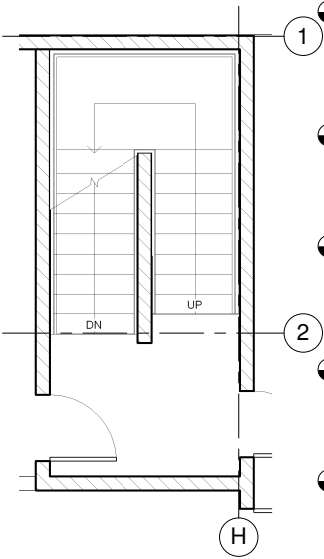
SHEET:

A15.11

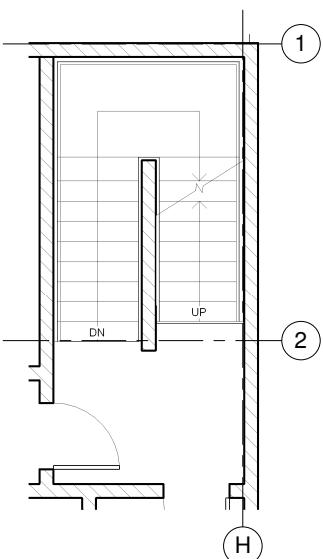
NOT FOR CONSTRUCTION



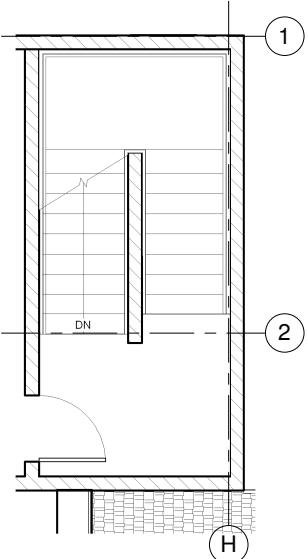
1 STAIR 3 SECTION
1/4" = 1'-0"



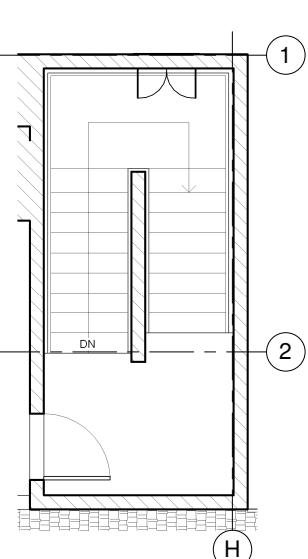
2 -- STAIR 3 FIRST FLOOR PLAN
1/4" = 1'-0"



3 -- STAIR 3 SECOND FLOOR PLAN
1/4" = 1'-0"



4 -- STAIR 3 THIRD FLOOR PLAN
1/4" = 1'-0"



5 -- STAIR 3 FOURTH FLOOR PLAN
1/4" = 1'-0"

CODE REVIEW

GENERAL INFORMATION

PROJECT DESCRIPTION
A NEW 11,401 SQ FT 2 STORY VEHICLE STORAGE BUILDING FOR TRAINING APPARATUS, EQUIPMENT, AND TEACHING AREA WITH RESTROOMS.

PARCEL ADDRESS
10302 BUJACICH ROAD NW
GIG HARBOR, WA 98332

PARCEL #'s:
0122363018

ZONING
RESERVE S

SITE AND ZONING DATA

PARKING REQUIRED AND PROVIDED

SETBACKS	REQUIRED	PROVIDED
FRONT	25	
SIDE	25	
REAR	25	

BUILDING CODE ANALYSIS

LOCAL JURISTICTION
PIERCE COUNTY, WASHINGTON

CODES IN USE
2006 INTERNATIONAL BUILDING CODE (IBC) W/ WA STATE AMENDMENTS. WAC 51-50
2006 INTERNATIONAL FIRE CODE (IFC) W/ WA STATE AMENDMENTS. WAC 51-54
2006 INTERNATIONAL MECHANICAL CODE (IMC) W/ WA STATE AMENDMENTS. WAC 51-52
2006 UNIFORM PLUMBING CODE W/ WA STATE AMENDMENTS. WAC 51-56 & WAC 51-57
2006 WASHINGTON STATE ENERGY CODE. WAC 51-11
2006 WASHINGTON STATE VENTILATION, WAC 51-13

ACCESSIBILITY
2006 IBC - CHAPTER 11
ICC/ANSI A117.1-2003 (REFERENCED BY IBC)

ZONING CODES
PIERCE COUNTY ZONING CODE

CONSTRUCTION TYPE
VA - FULLY SPRINKLERED

USE AND OCCUPANCY
BUSINESS GROUP - B FOR TEACHING AREA (SECTION 304.1 OF 2006 IBC)
BUSINESS GROUP B OCCUPANCY INCLUDES, AMOUNG OTHERS, THE USE OF A BUILDING OR STRUCTURE, OR A PROTION THEREOF, FOR OFFICE, PROFESSIONAL OR SERVICE-TYPE TRANSACTIONS, INCLUDGING STORAGE FO RECORDS AND ACCOUTNNS. BUSINESS OCCUPANCIES SHALL INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:
EDUCATIONAL OCCUPANCIES FOR STUDENTS ABOVE THE 12TH GRADE.

STORAGE GROUP - S2 FOR VEHICLE STORAGE AREA

BUILDING AREA, HEIGHT, SETBACKS

BUILDING AREA (TABLE 503 2006 IBC; TYPE VA CONSTRUCTION)

B OCCUPANCY (IN SQ FT)				
ALLOWABLE		ACTUAL		TOTAL
18,0000	1ST FLR	2ND FLR		
	3,845	1,240		5085
S-2 OCCUPANCY				
ALLOWABLE		ACTUAL		TOTAL
21,000	1ST FLR	2ND FLR		
	6,045	685		6,730
BUILDING TOTAL				11,815

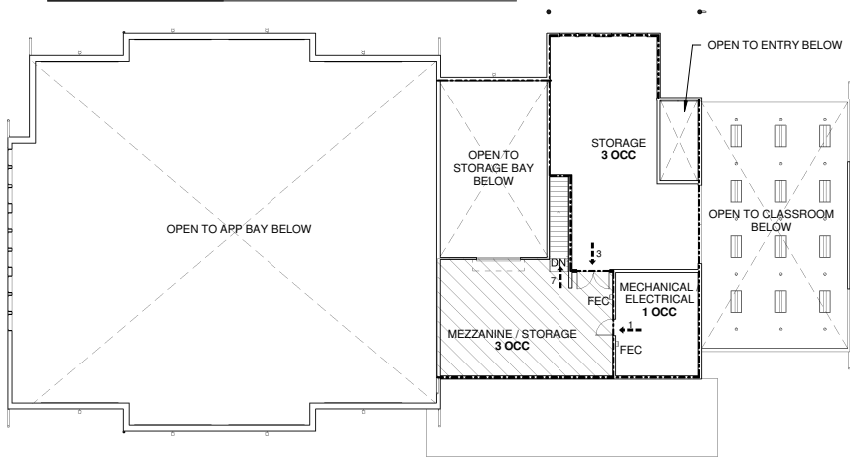
BUILDING HEIGHT (TABLE 503 2006 IBC; TYPE VA CONSTRUCTION)

B OCCUPANCY		ACTUAL
ALLOWABLE		28' - 4" (2 STORIES)
50'-0" (3 STORIES)		
S-2 OCCUPANCY		ACTUAL
ALLOWABLE		32' - 9" (2 STORIES)
50'-0" (4 STORIES)		

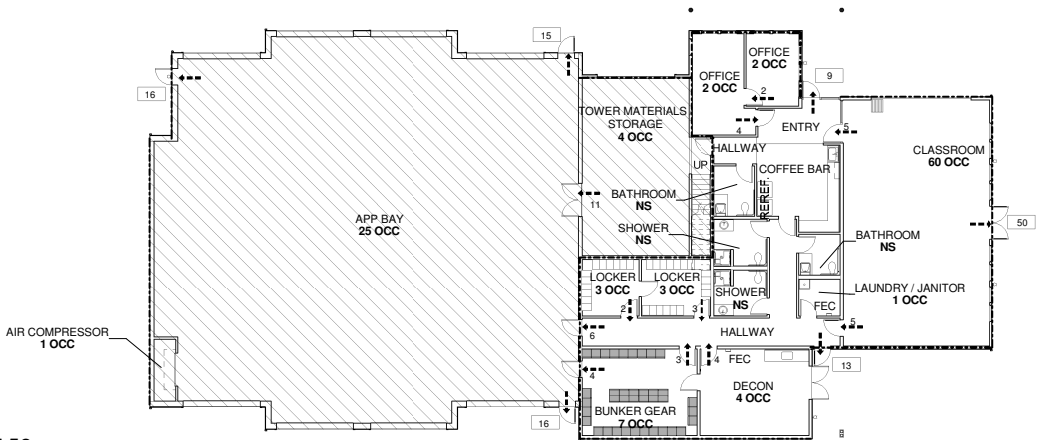
OCCUPANCY LOAD CHART					
ROOM NUMBER	ROOM NAME	ROOM OCCUPANCY	ROOM AREA	SQUARE FOOT PER PERSON	# OF OCC
FIRST FLOOR					
100	ENTRY	ACCESSORY USE	110 SF	0	
101	OFFICE	BUSINESS AREAS	125 SF	100	2
102	OFFICE	BUSINESS AREAS	185 SF	100	2
103	HALLWAY	ACCESSORY USE	37 SF	0	
105	BATHROOM	ACCESSORY USE	67 SF	0	
106	SHOWER	ACCESSORY USE	80 SF	0	
107	BATHROOM	ACCESSORY USE	66 SF	0	
108	SHOWER	ACCESSORY USE	81 SF	0	
109	LAUNDRY / JANITOR	ACCESSORY STORAGE AREAS / MECHANICAL	51 SF	300	1
110	CLASSROOM	EDUCATIONAL - CLASSROOM AREA	1185 SF	20	60
111	DECON	BUSINESS AREAS	312 SF	100	4
112	LOCKER	LOCKER ROOMS	133 SF	50	3
113	BUNKER GEAR	LOCKER ROOMS	327 SF	50	7
114	LOCKER	LOCKER ROOMS	108 SF	50	3
115	HALLWAY	ACCESSORY USE	324 SF	0	
116	TOWER MATERIALS / STORAGE	PARKING GARAGES	707 SF	200	4
117	APP BAY	PARKING GARAGES	4962 SF	200	25
118	AIR COMPRESSOR	ACCESSORY STORAGE AREAS / MECHANICAL	44 SF	300	1
120	COFFEE BAR	ACCESSORY USE	218 SF	0	
FLOOR TOTAL					112
SECOND FLOOR					
201	MEZZANINE / STORAGE	ACCESSORY STORAGE AREAS / MECHANICAL	701 SF	300	3
202	MECHANICAL / ELECTRICAL	ACCESSORY STORAGE AREAS / MECHANICAL	278 SF	300	1
203	STORAGE	ACCESSORY STORAGE AREAS / MECHANICAL	670 SF	300	3
FLOOR TOTAL					7
BUILDING TOTAL					119

GRAPHIC SYMBOL	DESCRIPTION
	HATCHED AREA INDICATES STORAGE (S-2) OCCUPANCY
	NON-HATCHED AREA INDICATES BUSINESS (B) OCCUPANCY
	1 HR RATED WALL
ROOM USE # OF OCCUPANTS	ROOM TAG
	TOTAL OCCUPANT LOAD AT EGRESS/ EXIT
	ROOM / SPACE EXIT OCCUPANT LOAD

CODE PLANS LEGEND



2 CODE - SECOND FLOOR
1/16" = 1'-0"



1 CODE - FIRST FLOOR
1/16" = 1'-0"

RICE

ARCHITECTURE

& PLANNING

MILLER

fergus

262 4th Street

Bremerton, WA 98337

(360) 377-8773

FAX 792-1385

info@frMarch.com

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

NOT FOR CONSTRUCTION

Project Number	2004109.00
DESIGN DEVELOPMENT	
ISSUED:	1/08/2010
REVISION SCHEDULE	

SUPPORT
BUILDING CODE
INFORMATION

SHEET:

A20.00

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Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

NOT FOR CONSTRUCTION

Project Number 2004109.00

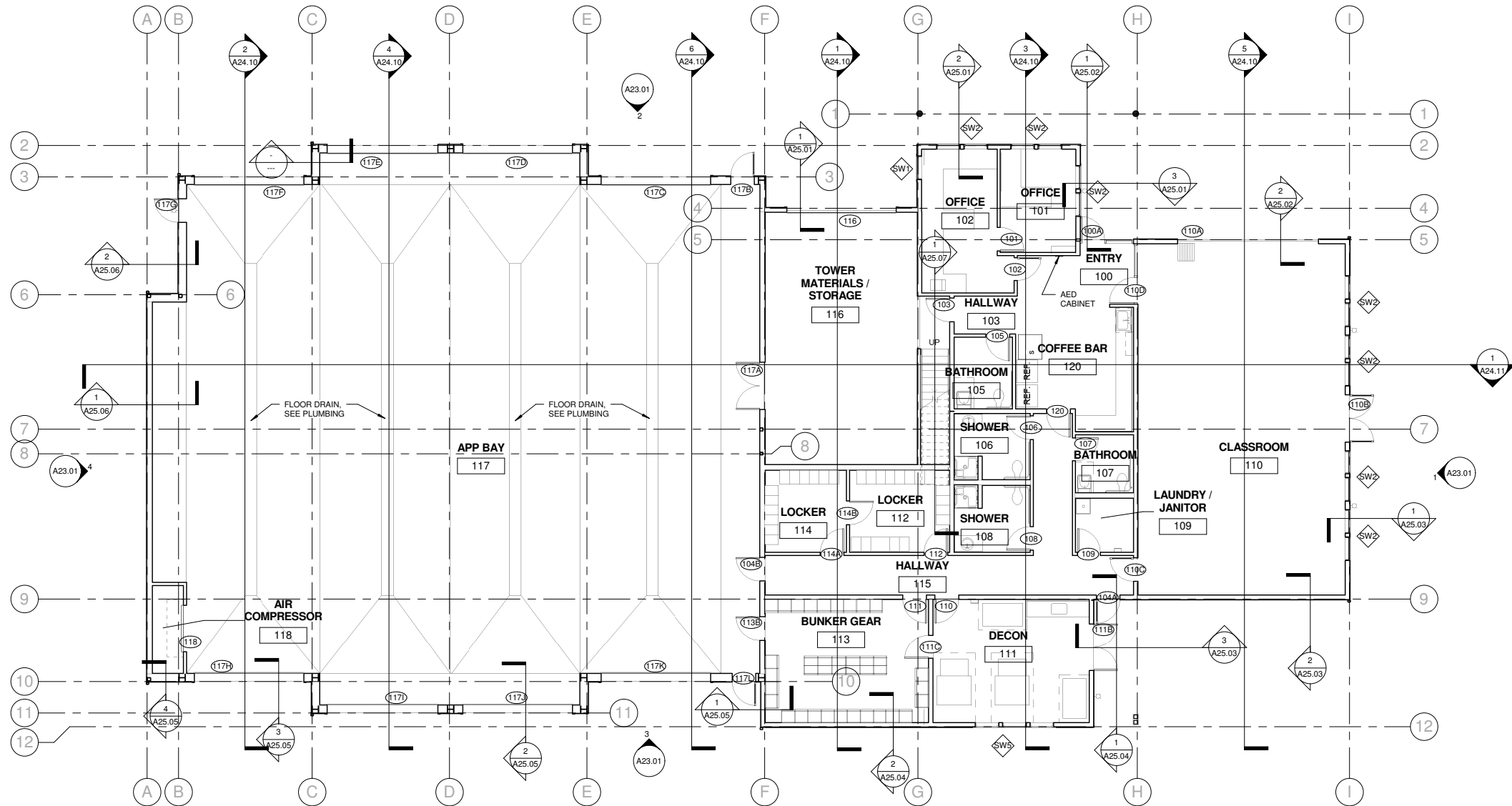
DESIGN
DEVELOPMENT

ISSUED: 1/08/2010
REVISION SCHEDULE

SUPPORT
BUILDING FIRST
FLOOR PLAN

SHEET:

A22.01



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

FLOOR PLAN NOTES

1. ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
2. EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
3. FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
4. ALL INTERIOR WALL TYPES ARE TYPE W1 UNO.
5. ALL FINISHED DOOR OPGS ARE LOCATED 3" FROM WALL UNO.
6. NOT USED.
7. DIMENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
8. REFERENCE A23 SERIES FOR ELEVATIONS AND MATERIALS.
9. SEE A26.01 FOR WINDOW & LOUVER TYPE DESIGNATIONS.
10. SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
11. SEE A00.03 FOR ABBREVIATIONS.

Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

ISSUED: 1/08/2010

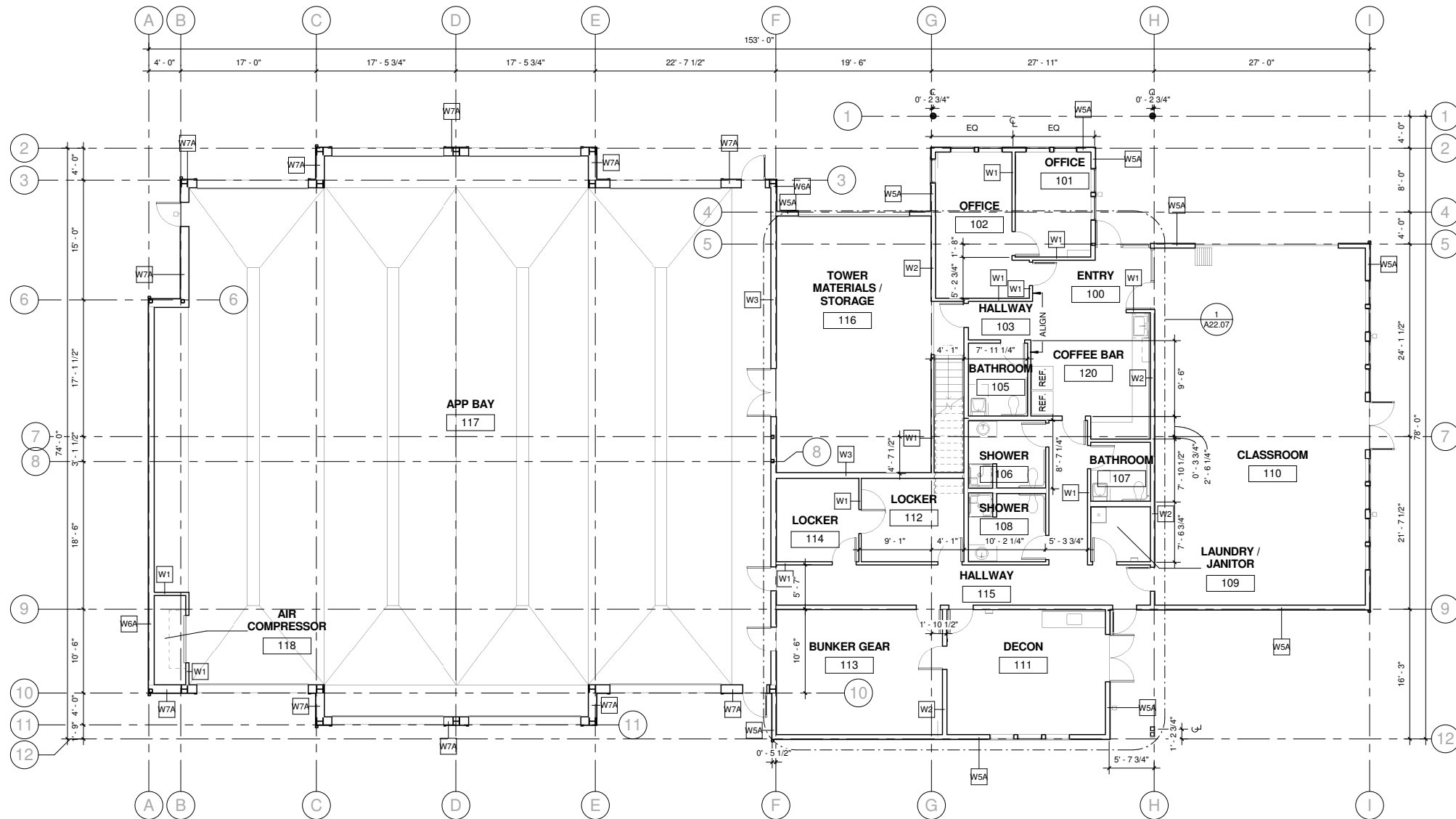
REVISION SCHEDULE

SUPPORT
BUILDING FIRST
FLOOR
DIMENSION PLAN

SHEET:

A22.02

NOT FOR CONSTRUCTION



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

FLOOR PLAN NOTES

- ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
- EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
- FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
- ALL INTERIOR WALL TYPES ARE TYPE W1 UNO.
- ALL FINISHED DOOR OPGS ARE LOCATED 3" FROM WALL UNO.
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- SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
- SEE A00.03 FOR ABBREVIATIONS.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

NOT FOR CONSTRUCTION

Project Number 2004109.00

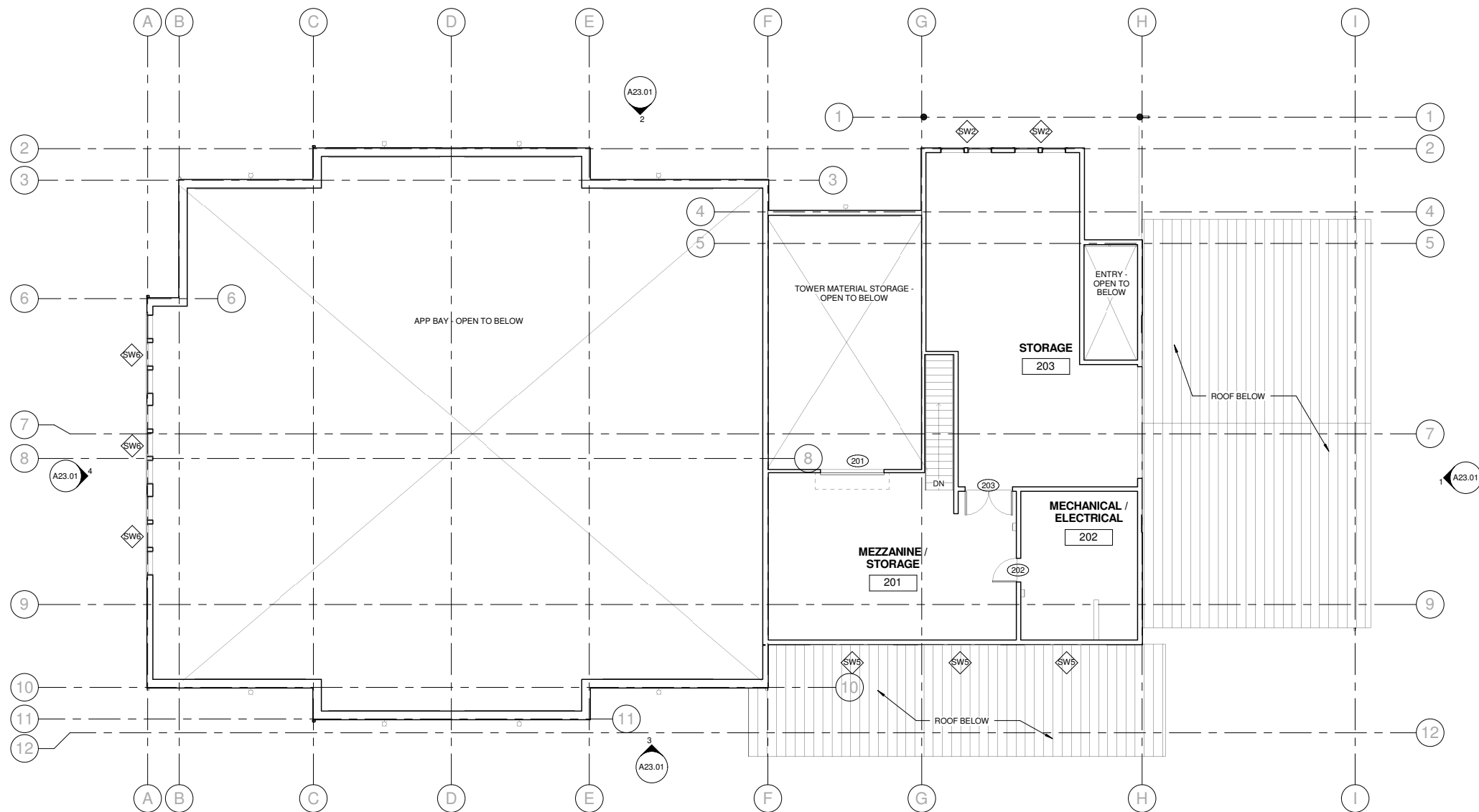
DESIGN
DEVELOPMENT

ISSUED: 1/08/2010
REVISION SCHEDULE

SUPPORT
BUILDING
SECOND FLOOR
PLAN

SHEET:

A22.03

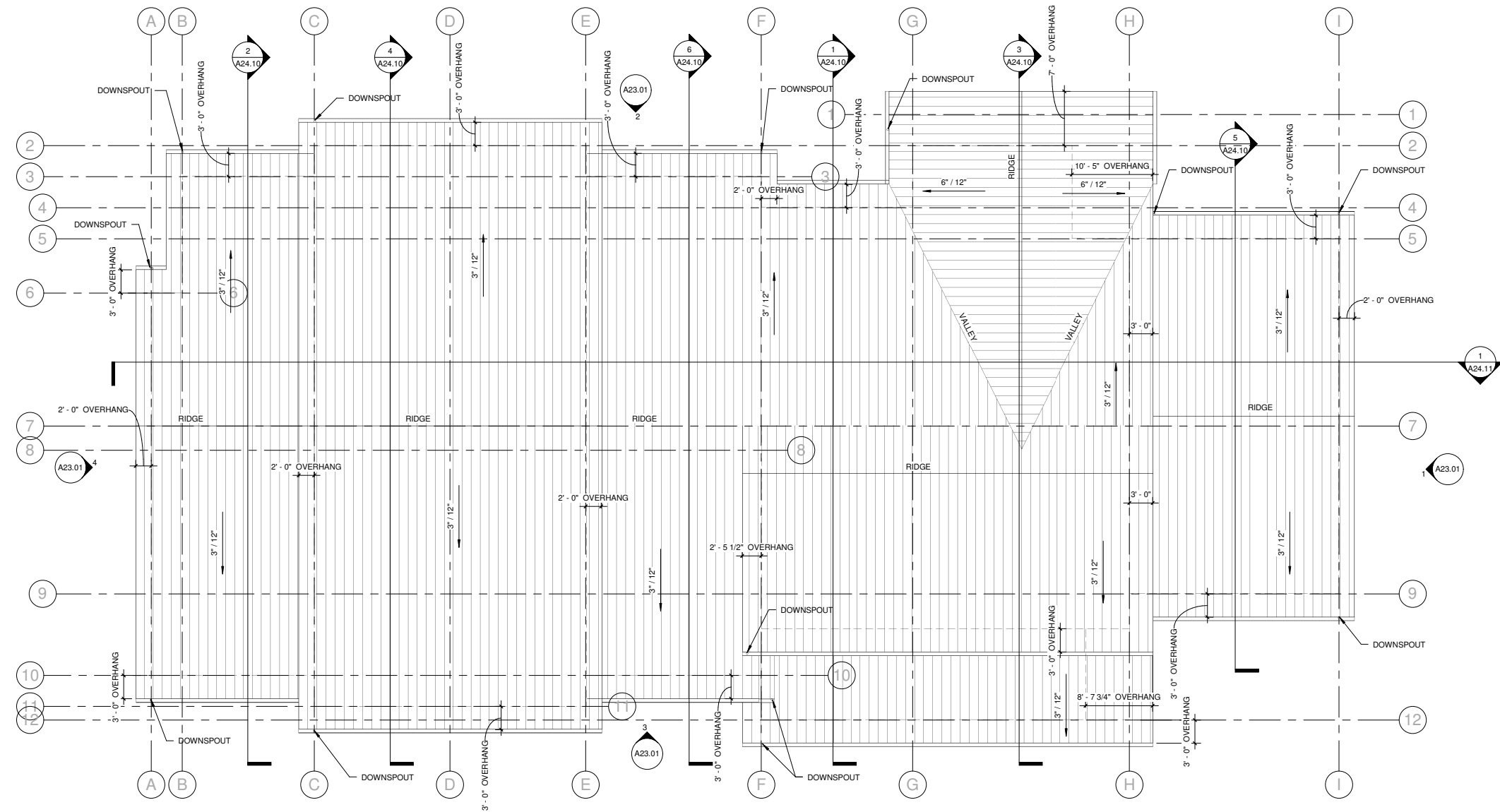


1 SECOND FLOOR PLAN
1/8" = 1'-0"

FLOOR PLAN NOTES

1. ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
2. EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
3. FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
4. ALL INTERIOR WALL TYPES ARE TYPE W1 UNO.
5. ALL FINISHED DOOR OPGS ARE LOCATED 3" FROM WALL UNO.
6. NOT USED.
7. DIMENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
9. REFERENCE A23 SERIES FOR ELEVATIONS AND MATERIALS.
10. SEE A26.01 FOR WINDOW & LOUVER TYPE DESIGNATIONS.
11. SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
12. SEE A00.03 FOR ABBREVIATIONS.

NOT FOR CONSTRUCTION



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Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

ISSUED: 1/08/2010

REVISION SCHEDULE	

SUPPORT
BUILDING
ENLARGED
PLANS AND
FINISH
SCHEDULE

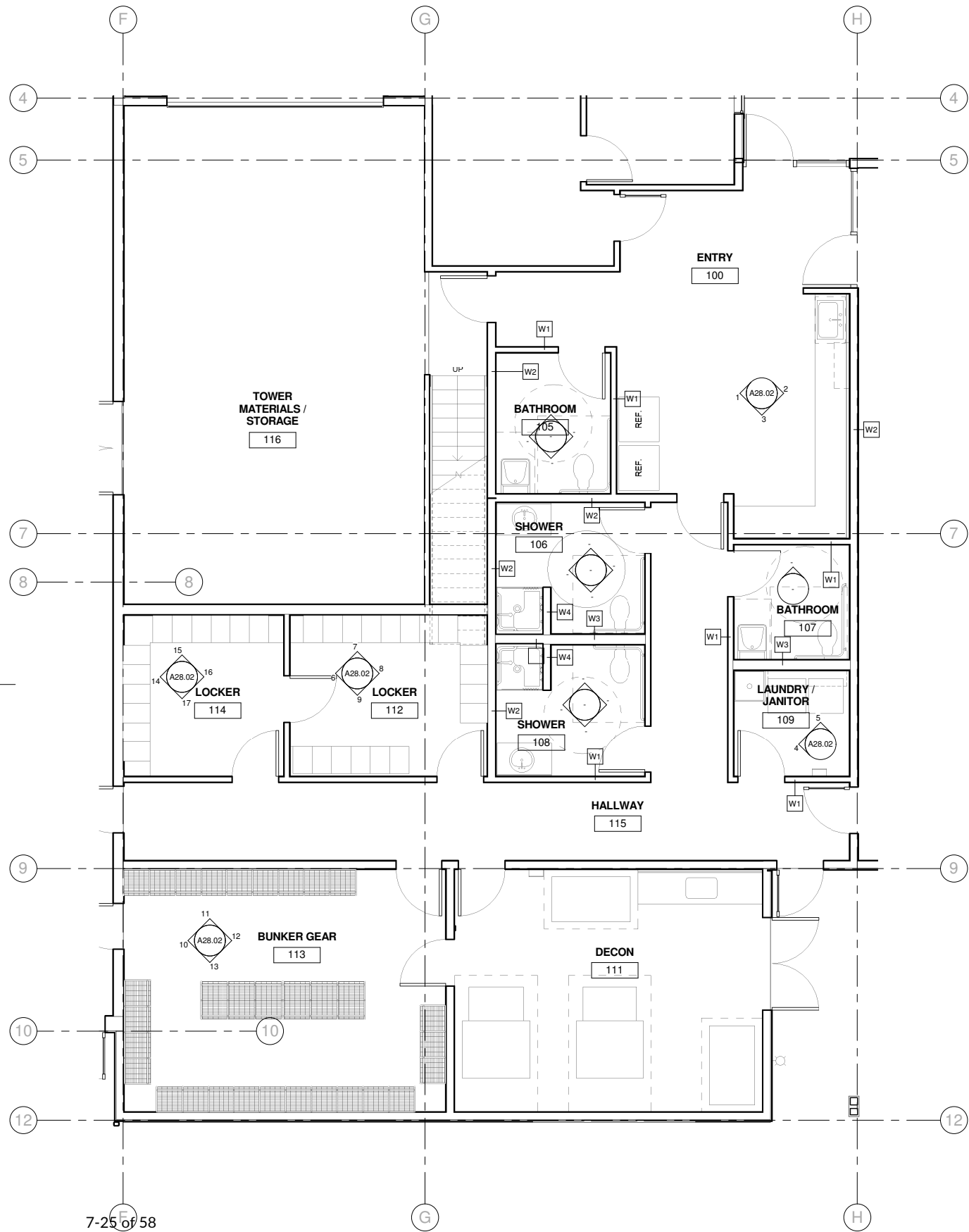
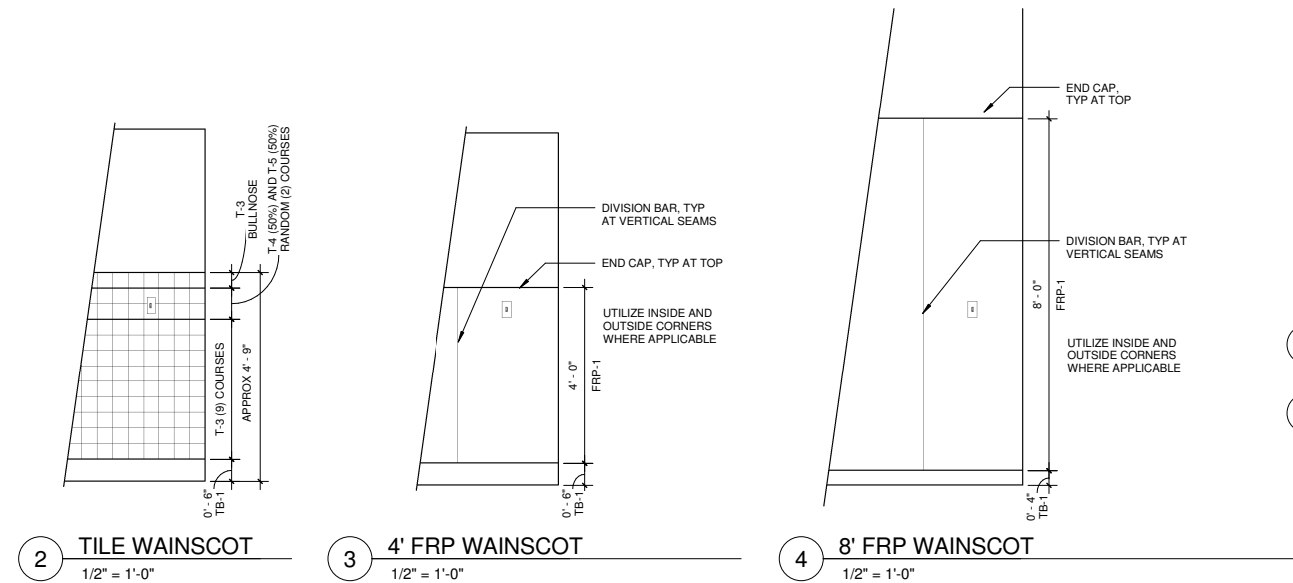
SHEET:

A22.07

FINISH SCHEDULE							
RM NO	ROOM NAME	FLOOR	BASE	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL
100	ENTRY	T-1	TB-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-2	FRP-1/PT-1
101	OFFICE	RBR-1	RB-1	PT-1	PT-1	PT-1	PT-2
102	OFFICE	RBR-1	RB-1	PT-2	PT-1	PT-1	PT-1
103	HALLWAY	T-1	TB-1	FRP-1/PT-1	FRP-1/PT-1	--	FRP-1/PT-1
105	BATHROOM	T-2	TB-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-2
106	SHOWER	T-2	TB-1	T-3,4,5/PT-1	T-3,4,5/PT-2	T-3,4,5/PT-1	T-3,4,5/PT-1
107	BATHROOM	T-2	TB-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-2
108	SHOWER	T-2	TB-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-1	T-3,4,5/PT-2
109	LAUNDRY / JANITOR	T-2	TB-1	T-3/PT-1	T-3/PT-1	PT-1	PT-1
110	CLASSROOM	RBR-1	RB-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1
111	DECON	T-2	TB-1	FRP-1	FRP-1	FRP-1	FRP-1
112	LOCKER	T-1	TB-1	PT-1	PT-1	PT-1	PT-1
113	BUNKER GEAR	T-2	TB-1	FRP-1	FRP-1	FRP-1	FRP-1
114	LOCKER	T-1	TB-1	PT-1	PT-1	PT-1	PT-1
115	HALLWAY	T-1	TB-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1
116	TOWER MATERIALS / STORAGE	CONC/RBR-2	RB-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1
117	APP BAY	CONC	RB-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1	FRP-1/PT-1
118	AIR COMPRESSOR	CONC	RB-1	PT-1	PT-1	PT-1	PT-1
120	COFFEE BAR	T-1	TB-1	FRP-1/PT-1	--	PT-1	FRP-1/PT-1
201	MEZZANINE / STORAGE	CONC	RB-1	FRP-1	FRP-1	FRP-1	FRP-1
202	MECHANICAL / ELECTRICAL	CONC	RB-1	FRP-1	FRP-1	FRP-1	FRP-1
203	STORAGE	CONC	RB-1	FRP-1	FRP-1	FRP-1	FRP-1

FINISH SCHEDULE REMARKS:

- FRP WAINSCOT PER DETAIL 3/A22.07.
- TILE WAINSCOT PER DETAIL 2/A22.07.
- FRP WAINSCOT, SIMILAR TO DETAIL 3/A22.07 BUT FRP FULL HEIGHT TO CEILING.
- FRP WAINSCOT PER DETAIL 4/A22.07.
- PT-2 AT SOUTH WALL TO INCLUDE WING WALL BETWEEN CABINET AND DOOR TO CLASSROOM.



7-25 of 58
ENLARGED FLOOR PLAN
1/4" = 1'-0"

NOT FOR CONSTRUCTION

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

**DESIGN
DEVELOPMENT**

ISSUED: 1/08/2010

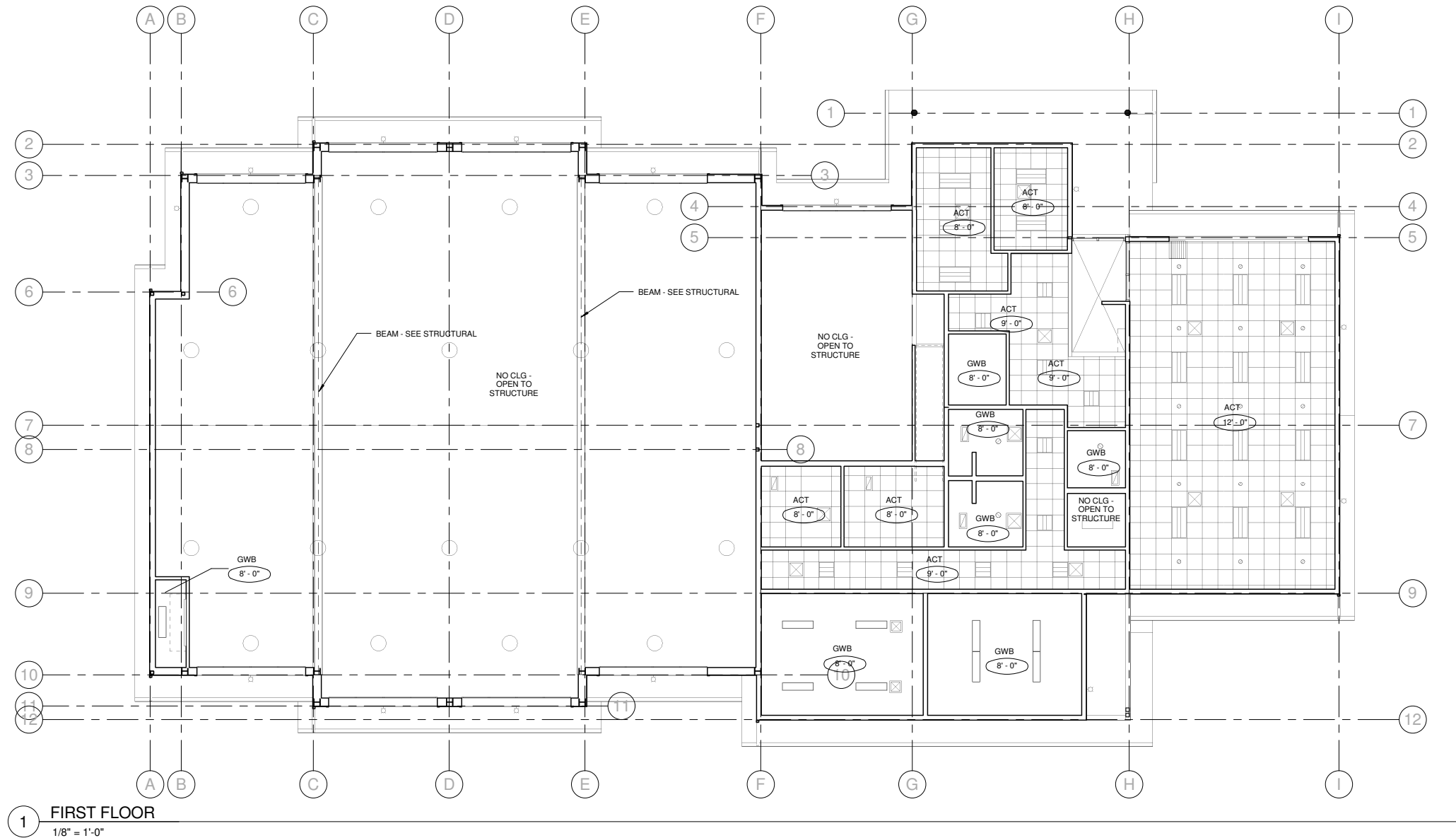
REVISION SCHEDULE	

**SUPPORT
BUILDING
REFLECTED
CEILING PLAN -
FIRST FLOOR**

SHEET:

A22.11

NOT FOR CONSTRUCTION



REFLECTED CEILING PLAN LEGEND

	4x2' LIGHT FIXTURE - SEE ELECTRICAL		WALL SCONCE - SEE ELECTRICAL		GYPSUM BOARD (GWB) CEILING
	2x2' LIGHT FIXTURE - SEE ELECTRICAL		PENDANT LIGHTING		ACOUSTICAL CEILING TILE (ACT) CEILING
	FLUORESCENT FIXTURE - SEE ELECTRICAL		SMOKE DETECTOR - SEE ELECTRICAL		SUPPLY DIFFUSER - SEE MECHANICAL
	CAN LIGHT - SEE ELECTRICAL FOR TYPE		WORK POINT - START ACT GRID HERE		RETURN OR EXHAUST - SEE MECHANICAL
	LIGHTING - SEE ELECTRICAL FOR TYPE				

REFLECTED CEILING PLAN NOTES

- SEE ELECTRICAL FOR LIGHT FIXTURE TYPE DESIGNATIONS.
- WHERE NO DIMENSION PROVIDED, CENTER CLG MOUNTED LIGHT IN ROOM OR EQUALLY SPACE IN ROOM. AVOID INTERFERENCE OR BLOCKAGE BY EQUIPMENT AND OTHER FURNISHINGS SUCH AS STORAGE LOCKERS.
- DIMENSIONS ARE TO CENTERLINE OF LIGHT FIXTURE UNO.
- AT ACT CEILINGS:
*CORRIDOR/HALLWAY CEILING AND FIXTURES CENTERED ABOUT LONG DIMENSION.
*COMMON AREA ROOMS, CEILINGS AND FIXTURES CENTERED ABOUT ROOM CENTERLINE BOTH DIRECTIONS.
*STAFF OFFICES, WORK AREAS, ETC., USE A FULL OR HALF TILE AS STARTER TILE.
- EXTERIOR WALL MOUNTED LIGHT FIXTURES ARE LOCATED ON A23 SERIES. AT INTERIOR WALL MTD, CENTER ON WALL OR SPACE EQUALLY UON.
- FOR ALL SPECIFIC FINISH INFORMATION SEE INTERIOR FINISH PLANS.
- FIXTURES SHOWN FOR LOCATION, SEE ELECTRICAL FOR TYPE.
- SEE ELECTRICAL DRAWINGS FOR DESIGNATION OF LIGHTS ON EMERGENCY POWER.
- SEE A00.03 FOR ABBREVIATIONS.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

**DESIGN
DEVELOPMENT**

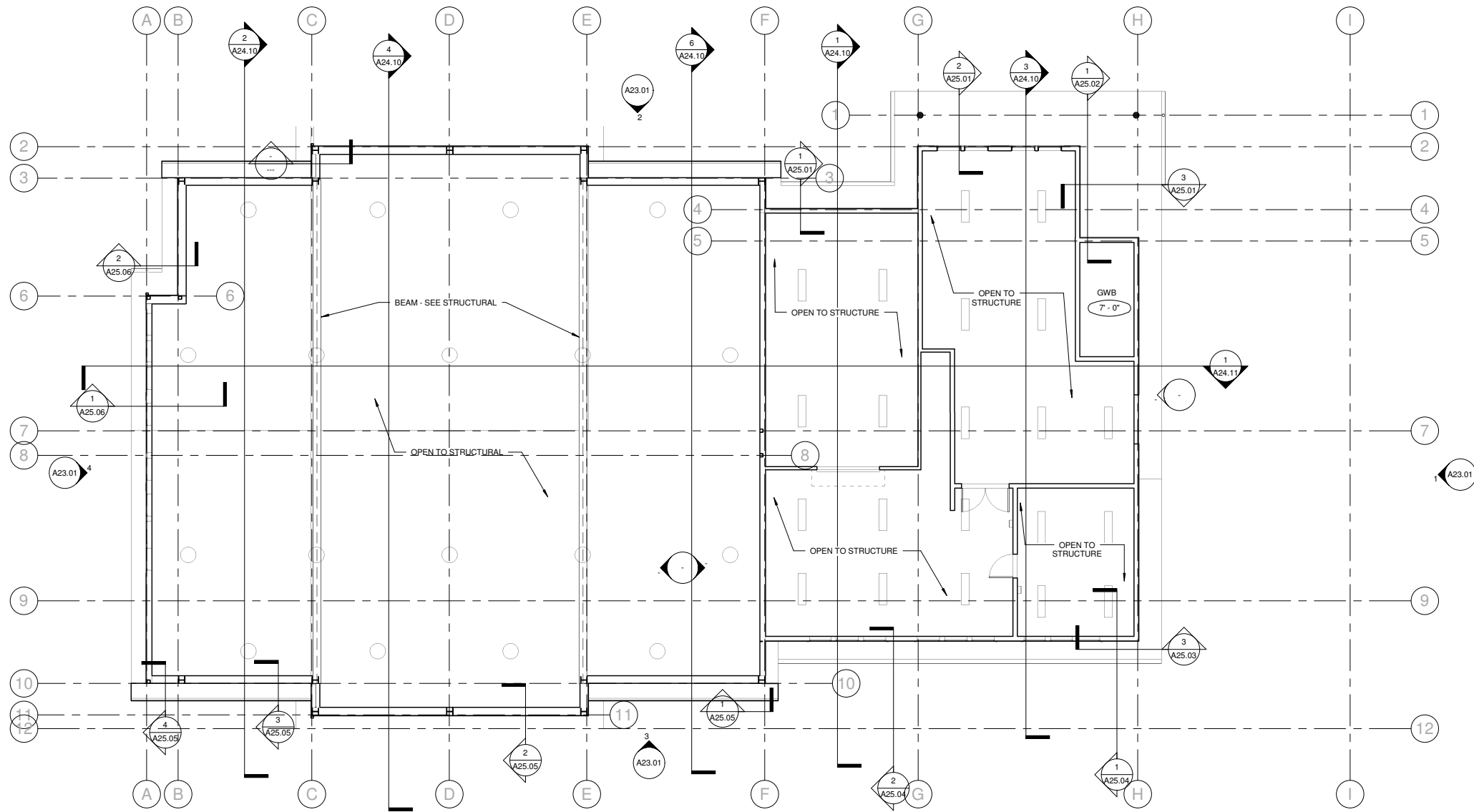
ISSUED: 1/08/2010
REVISION SCHEDULE

**SUPPORT
BUILDING
REFLECTED
CEILING PLAN -
SECOND FLOOR**

SHEET:

A22.12

NOT FOR CONSTRUCTION



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

REFLECTED CEILING PLAN LEGEND

	4x2' LIGHT FIXTURE - SEE ELECTRICAL		WALL SCONCE - SEE ELECTRICAL		GYPSUM BOARD (GWB) CEILING
	2x2' LIGHT FIXTURE - SEE ELECTRICAL		PENDANT LIGHTING		ACOUSTICAL CEILING TILE (ACT) CEILING
	FLUORESCENT FIXTURE - SEE ELECTRICAL		SMOKE DETECTOR - SEE ELECTRICAL		SUPPLY DIFFUSER - SEE MECHANICAL
	CAN LIGHT - SEE ELECTRICAL FOR TYPE		WORK POINT, START ACT GRID HERE		RETURN OR EXHAUST - SEE MECHANICAL
	LIGHTING - SEE ELECTRICAL FOR TYPE				

REFLECTED CEILING PLAN NOTES

- SEE ELECTRICAL FOR LIGHT FIXTURE TYPE DESIGNATIONS.
- WHERE NO DIMENSION PROVIDED, CENTER CLG MOUNTED LIGHT IN ROOM OR EQUALLY SPACE IN ROOM. AVOID INTERFERENCE OR BLOCKAGE BY EQUIPMENT AND OTHER FURNISHINGS SUCH AS STORAGE LOCKERS.
- DIMENSIONS ARE TO CENTERLINE OF LIGHT FIXTURE UNO.
- AT ACT CEILINGS:
*CORRIDOR/HALLWAY CEILING AND FIXTURES CENTERED ABOUT LONG DIMENSION.
*COMMON AREA ROOMS, CEILINGS AND FIXTURES CENTERED ABOUT ROOM CENTERLINE BOTH DIRECTIONS.
*STAFF OFFICES, WORK AREAS, ETC., USE A FULL OR HALF TILE AS STARTER TILE.
- EXTERIOR WALL MOUNTED LIGHT FIXTURES ARE LOCATED ON A23 SERIES. AT INTERIOR WALL MTD, CENTER ON WALL OR SPACE EQUALLY UNO.
- FOR ALL SPECIFIC FINISH INFORMATION SEE INTERIOR FINISH PLANS.
- FIXTURES SHOWN FOR LOCATION. SEE ELECTRICAL FOR TYPE.
- SEE ELECTRICAL DRAWINGS FOR DESIGNATION OF LIGHTS ON EMERGENCY POWER.
- SEE A00.03 FOR ABBREVIATIONS.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

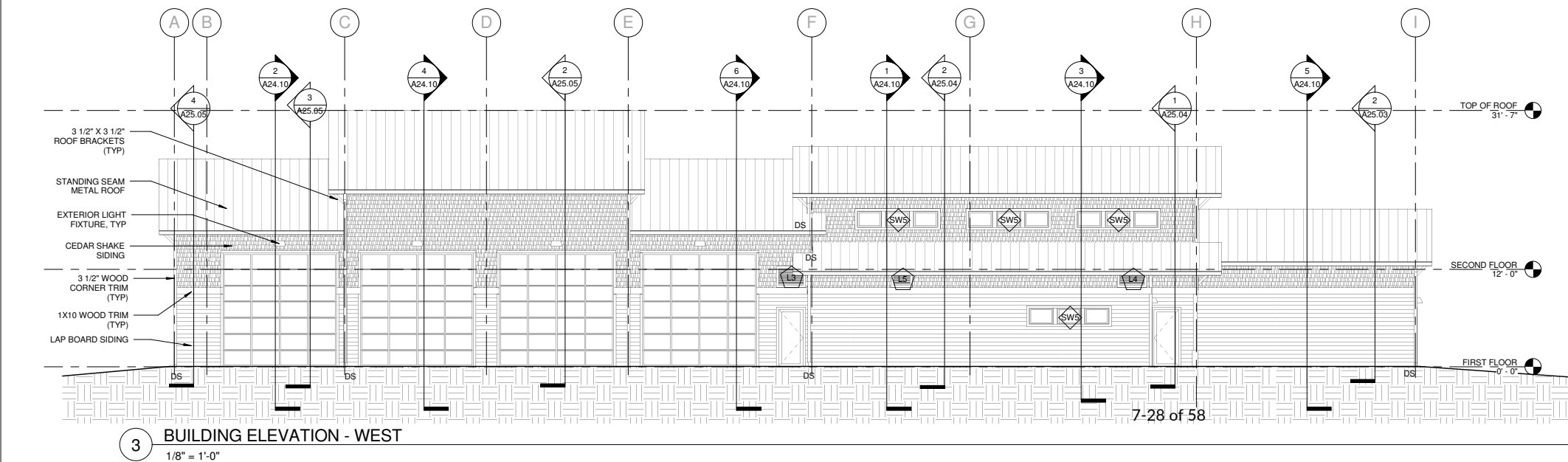
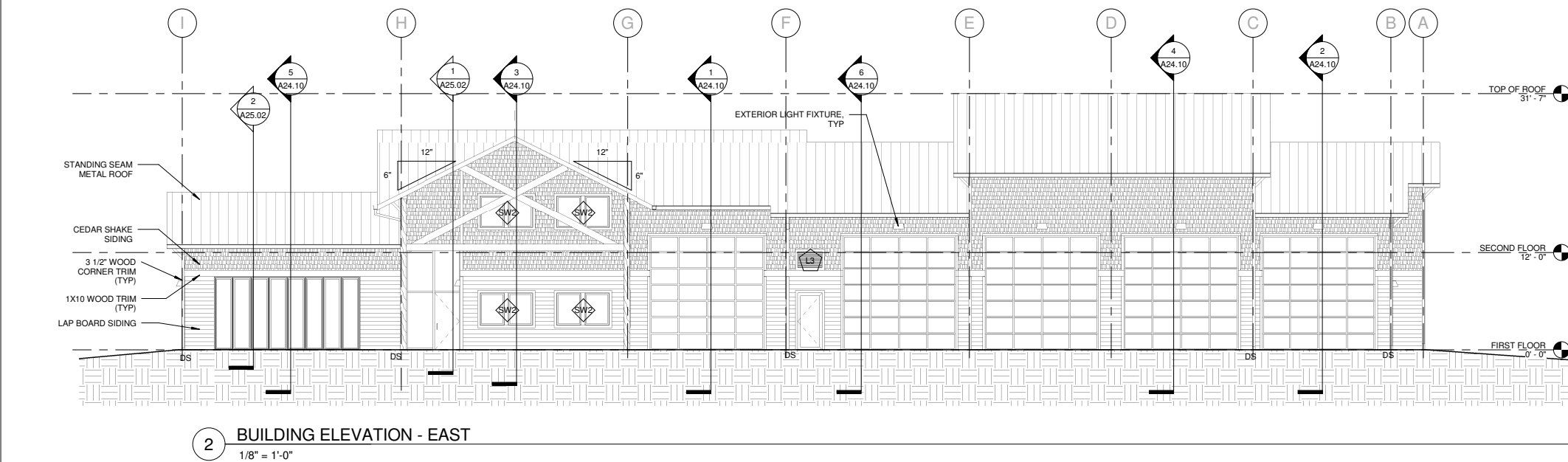
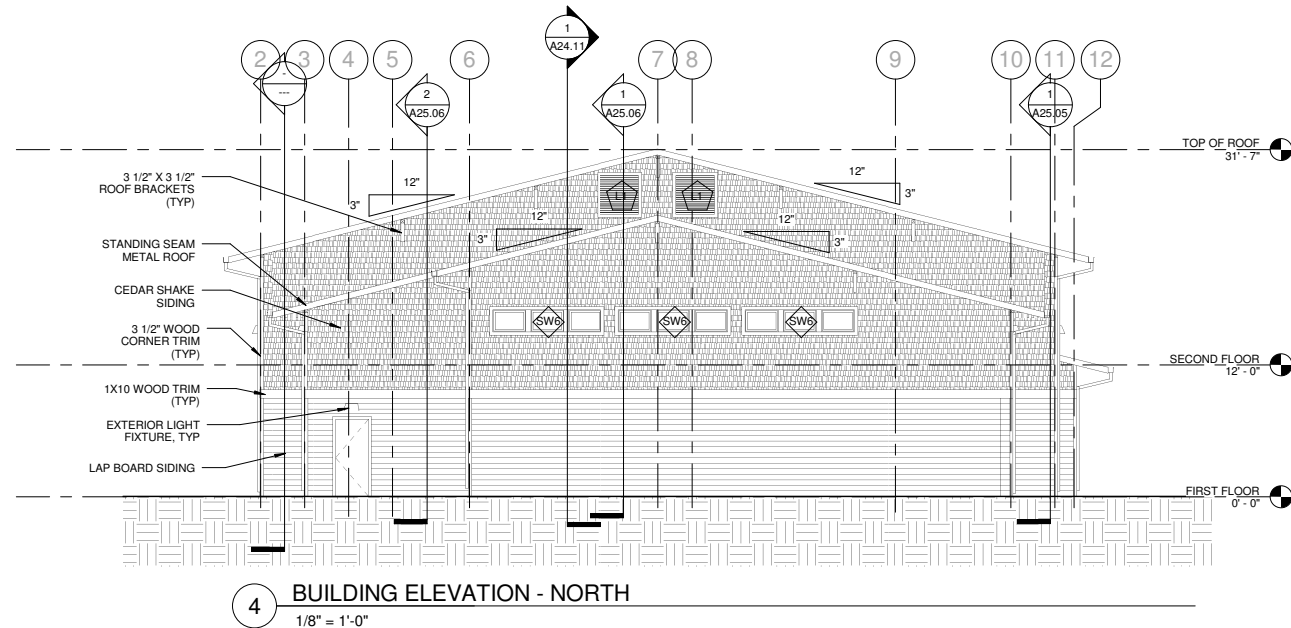
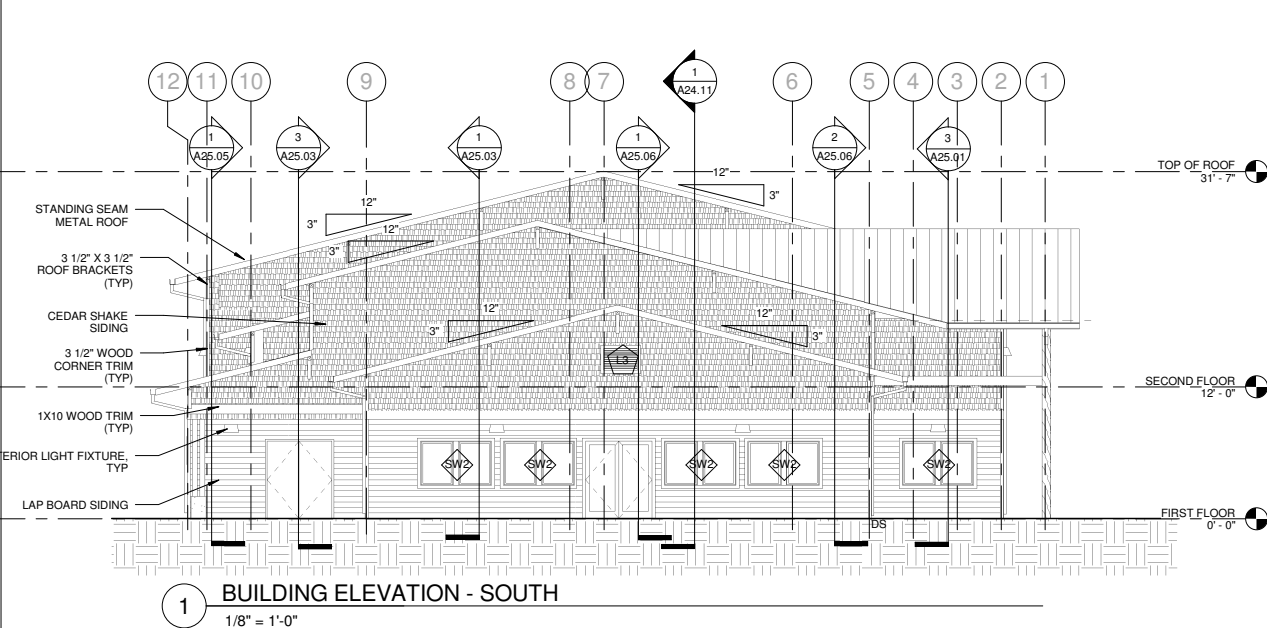
ISSUED: 1/08/2010
REVISION SCHEDULE

SUPPORT
BUILDING
ELEVATIONS

SHEET:

A23.01

NOT FOR CONSTRUCTION



ELEVATION NOTES

1. ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
2. EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
3. FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
5. ALL FINISHED DOOR OPGS ARE LOCATED 3" FROM WALL UNO.
6. DIMENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
7. SEE A26.01 FOR WINDOW & LOUVER TYPE DESIGNATIONS.
8. SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
9. SEE A00.03 FOR ABBREVIATIONS.

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

ISSUED: 1/08/2010

REVISION SCHEDULE

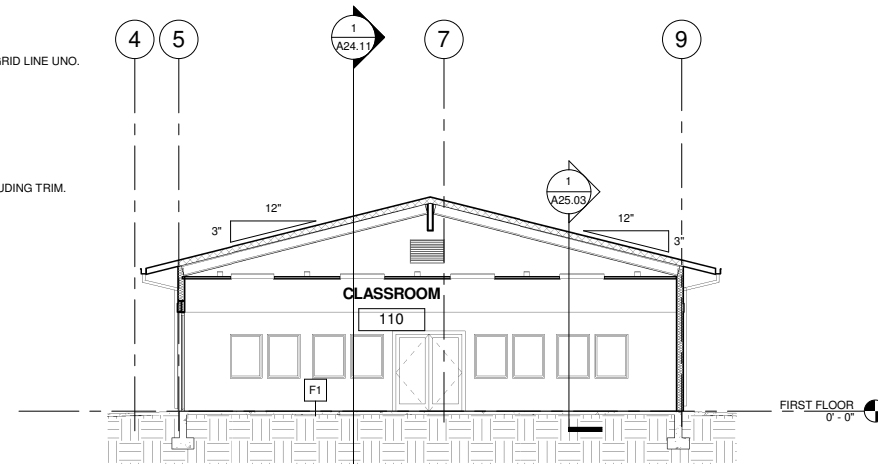
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SUPPORT
BUILDING
BUILDING
SECTIONS

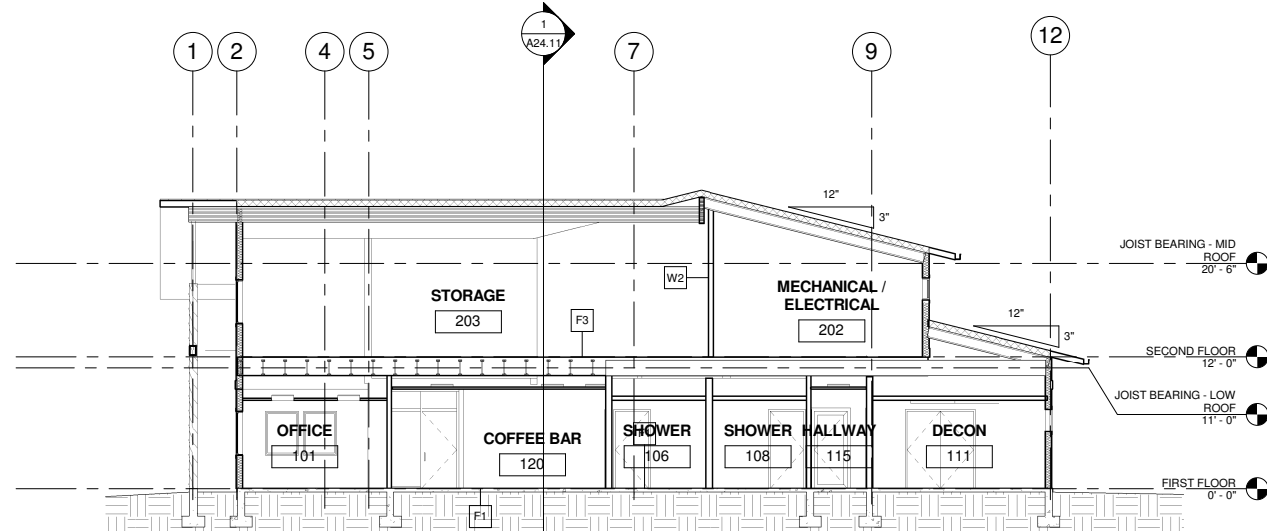
SHEET:

A24.10

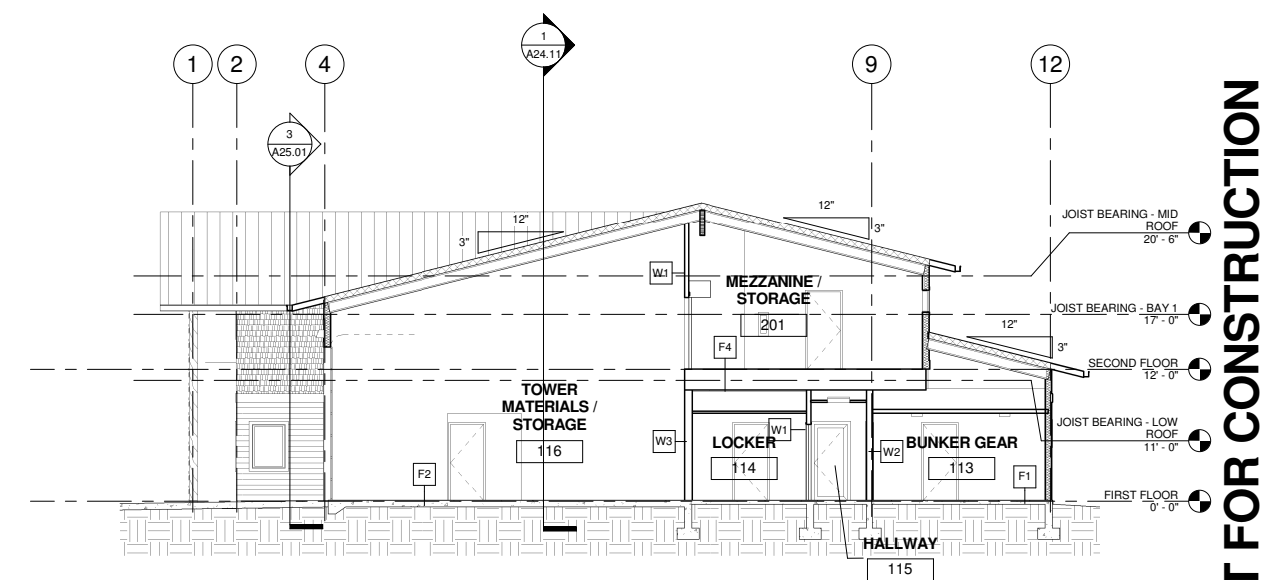
NOT FOR CONSTRUCTION



5 BUILDING SECTION AT CLASSROOM
1/8" = 1'-0"



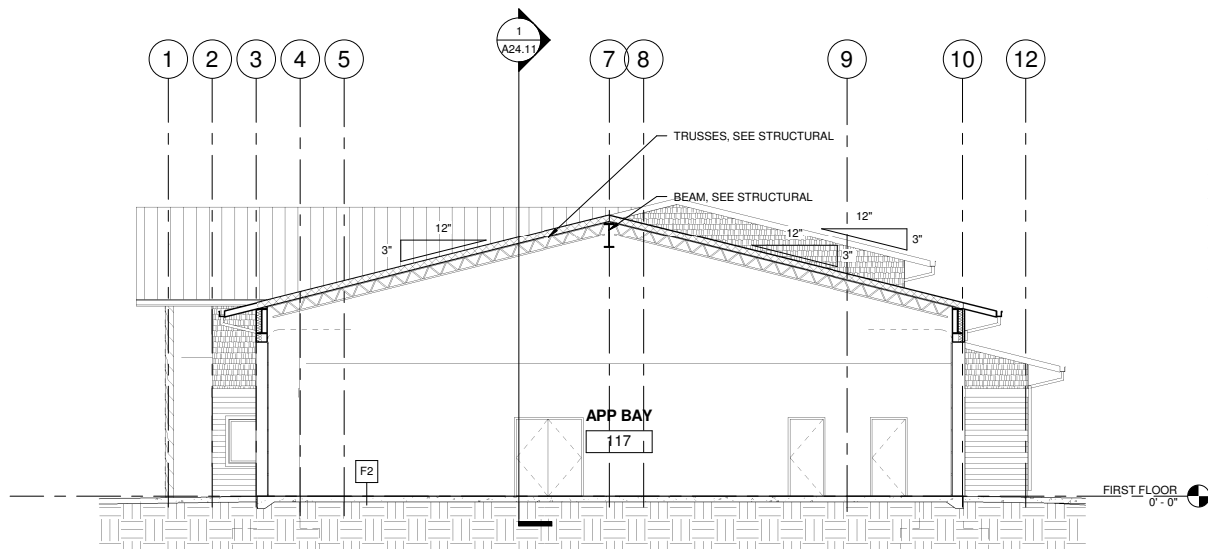
3 BUILDING SECTION 1
1/8" = 1'-0"



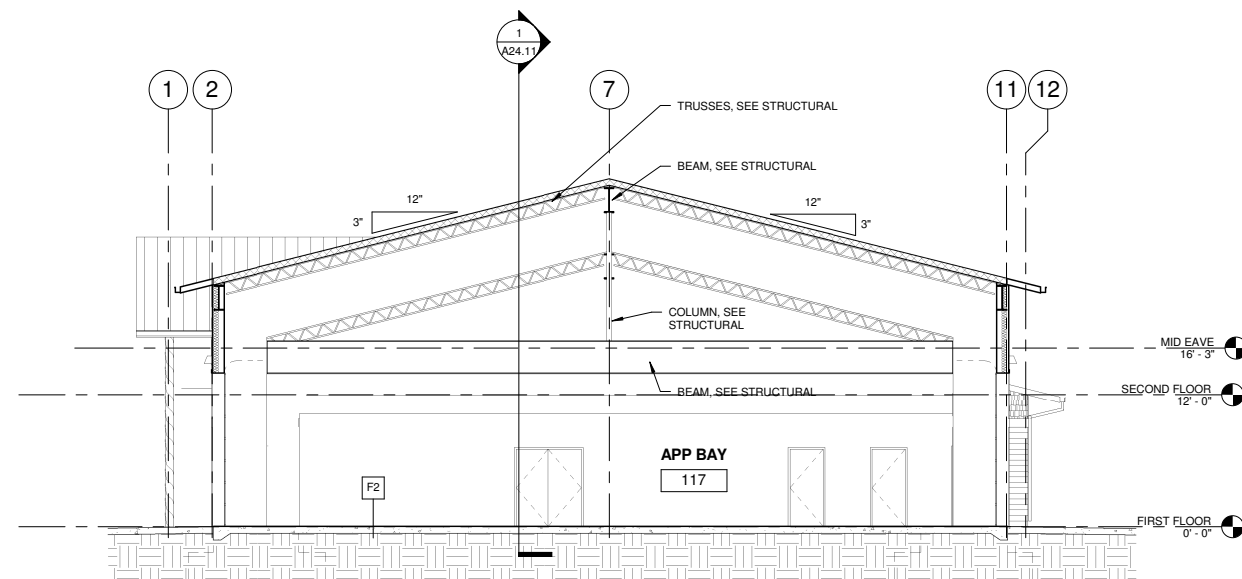
1 BUILDING SECTION TROUGH STORAGE BAY
1/8" = 1'-0"

SECTION NOTES

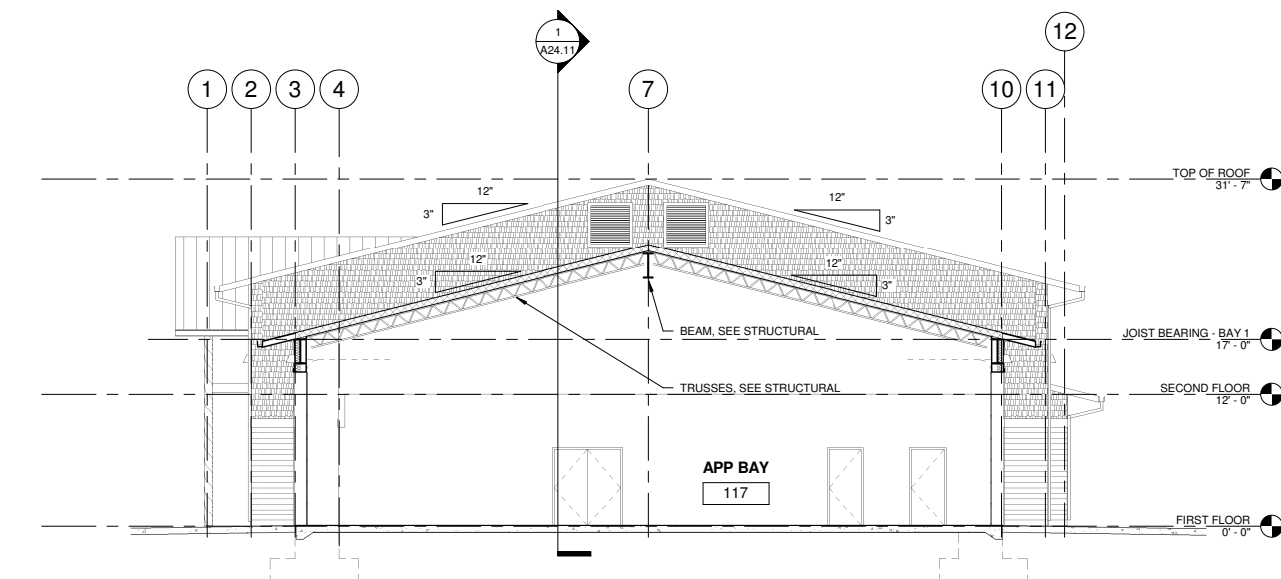
1. ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
2. EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
3. FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
4. ALL INTERIOR WALL TYPES ARE TYPE W1 UNO.
5. ALL FINISHED DOOR OPS ARE LOCATED 3" FROM WALL UNO.
6. NOT USED
7. DIMENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
8. REFERENCE A23 SERIES FOR ELEVATIONS AND MATERIALS.
9. SEE A26.01 FOR WINDOW & LOUVER TYPE DESIGNATIONS.
10. SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
11. SEE A00.03 FOR ABBREVIATIONS.
12. SEE A00.03 FOR ABBREVIATIONS.



6 BUILDING SECTION THROUGH AT APP BAY 3
1/8" = 1'-0"



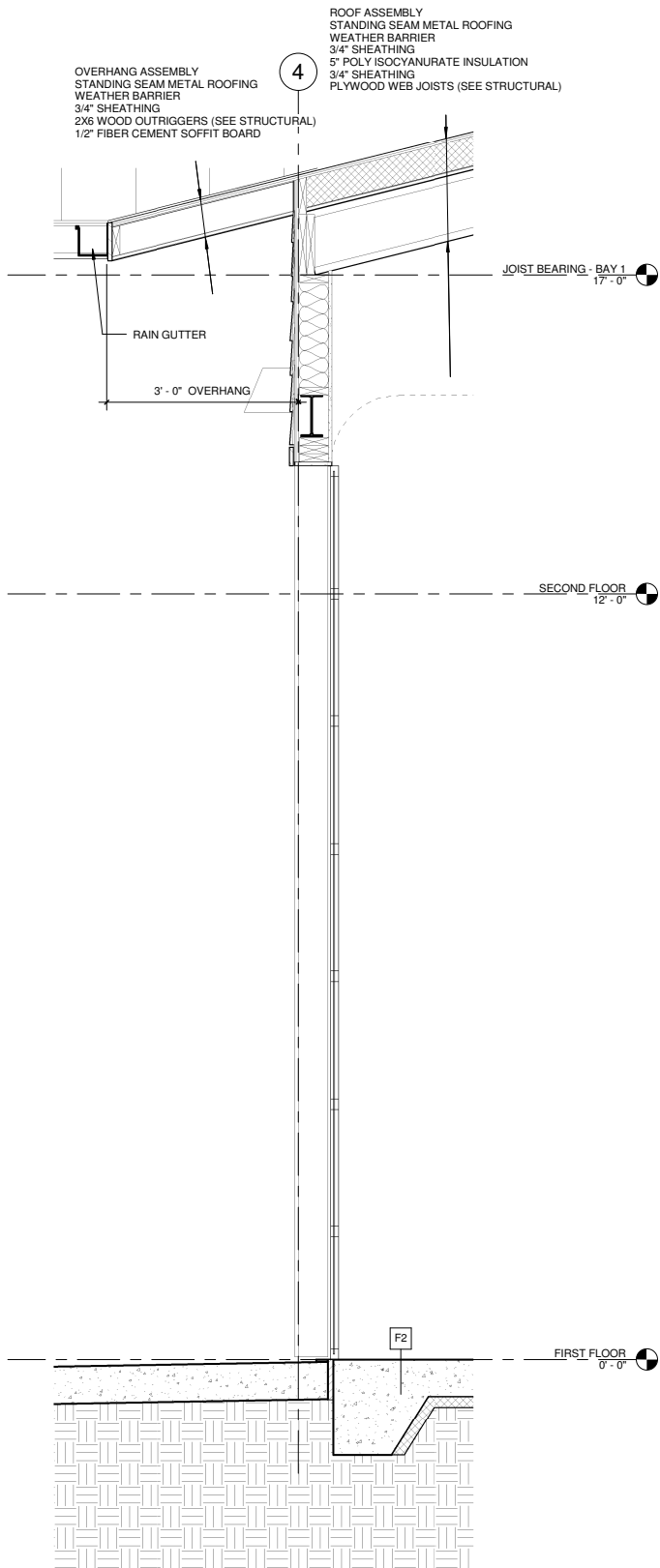
4 BUILDING SECTION AT APP BAY 2
1/8" = 1'-0"



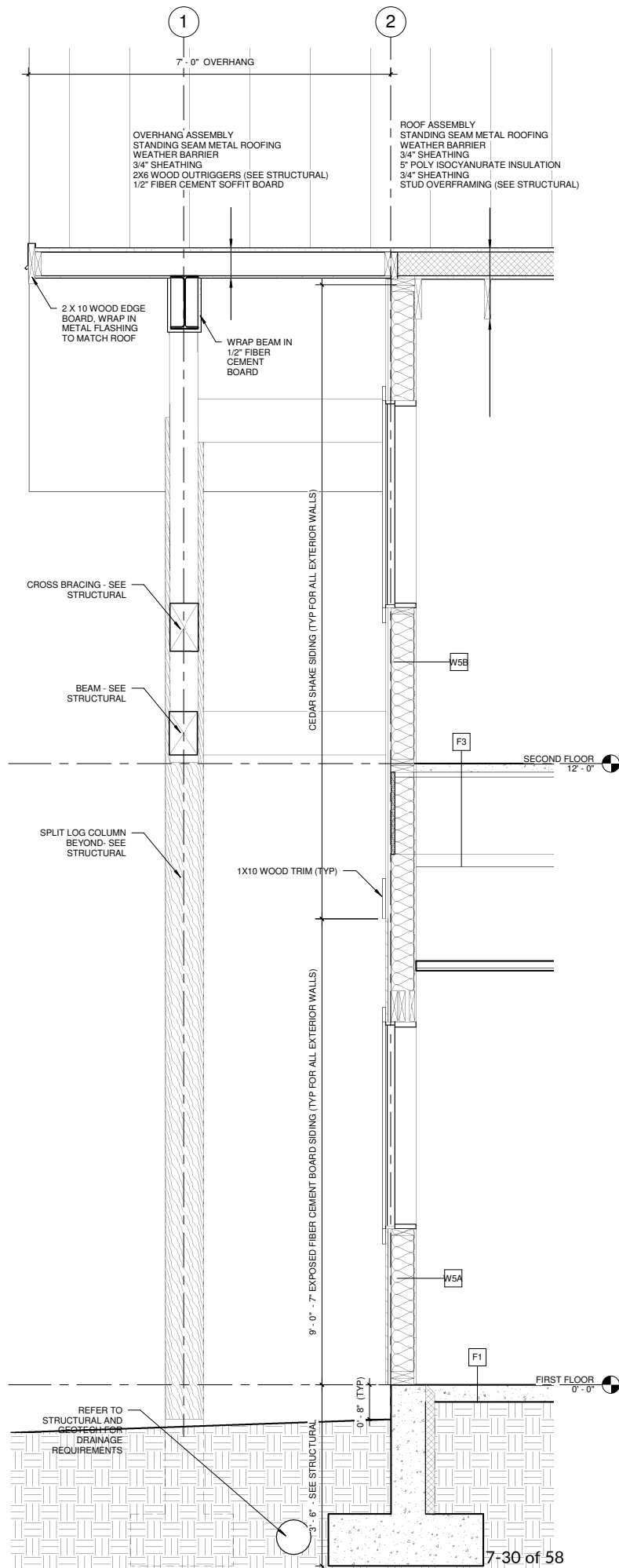
2 BUILDING SECTION AT APP BAY 1
1/8" = 1'-0"

SECTION NOTES

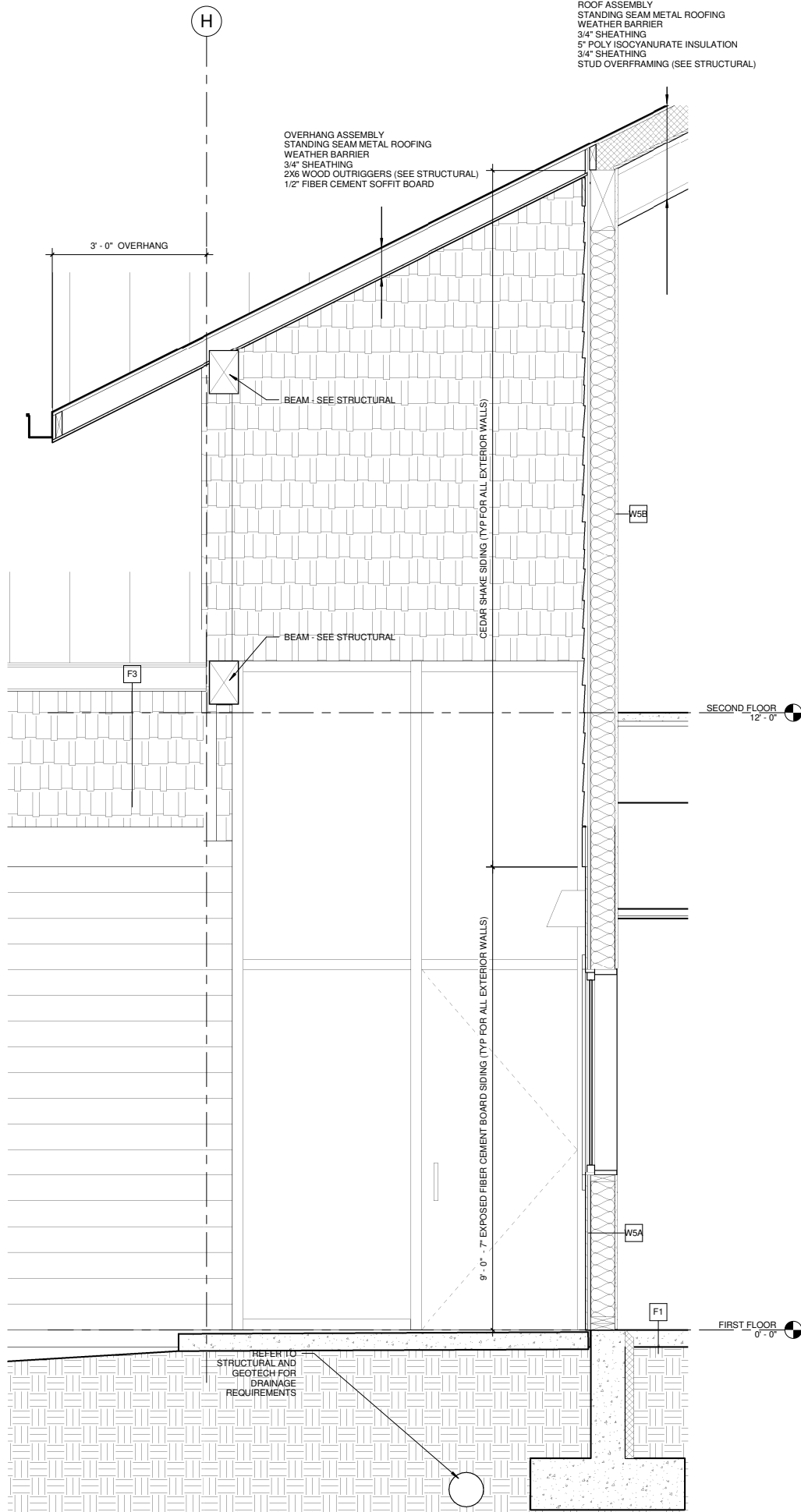
1. ALL DIMENSIONS ARE TO FACE OF FRAMING UNO.
2. EXTERIOR SIDE OF STUD (FOR EXTERIOR WALLS) ALIGNS WITH BOTH FOUNDATION AND GRID LINE UNO.
3. FOR WALL AND FLOOR TYPES, SEE SHEET A00.03.
4. ALL INTERIOR WALL TYPES ARE TYPE W1 UNO.
5. ALL FINISHED DOOR OPGS ARE LOCATED 3" FROM WALL UNO.
6. NOT USED
7. DIMENSIONS INDICATED AS "MIN" OR "CLEAR" ARE FROM NEAREST FINISH SURFACE INCLUDING TRIM.
8. REFERENCE A23 SERIES FOR ELEVATIONS AND MATERIALS.
9. SEE A26.01 FOR WINDOW & LOUVER TYPE DESIGNATIONS.
10. SEE A26.01 FOR DOOR TYPES AND SCHEDULE.
11. SEE A00.03 FOR ABBREVIATIONS.
12. SEE A00.03 FOR ABBREVIATIONS.



1 WALL SECTION @ STORAGE BAY
3/4" = 1'-0"



2 WALL SECTION @ FRONT CANOPY
3/4" = 1'-0"



3 WALL SECTION @ FRONT CANOPY
3/4" = 1'-0"

Training Campus Improvements
Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

ISSUED: 1/08/2010

REVISION SCHEDULE

NO.	DESCRIPTION

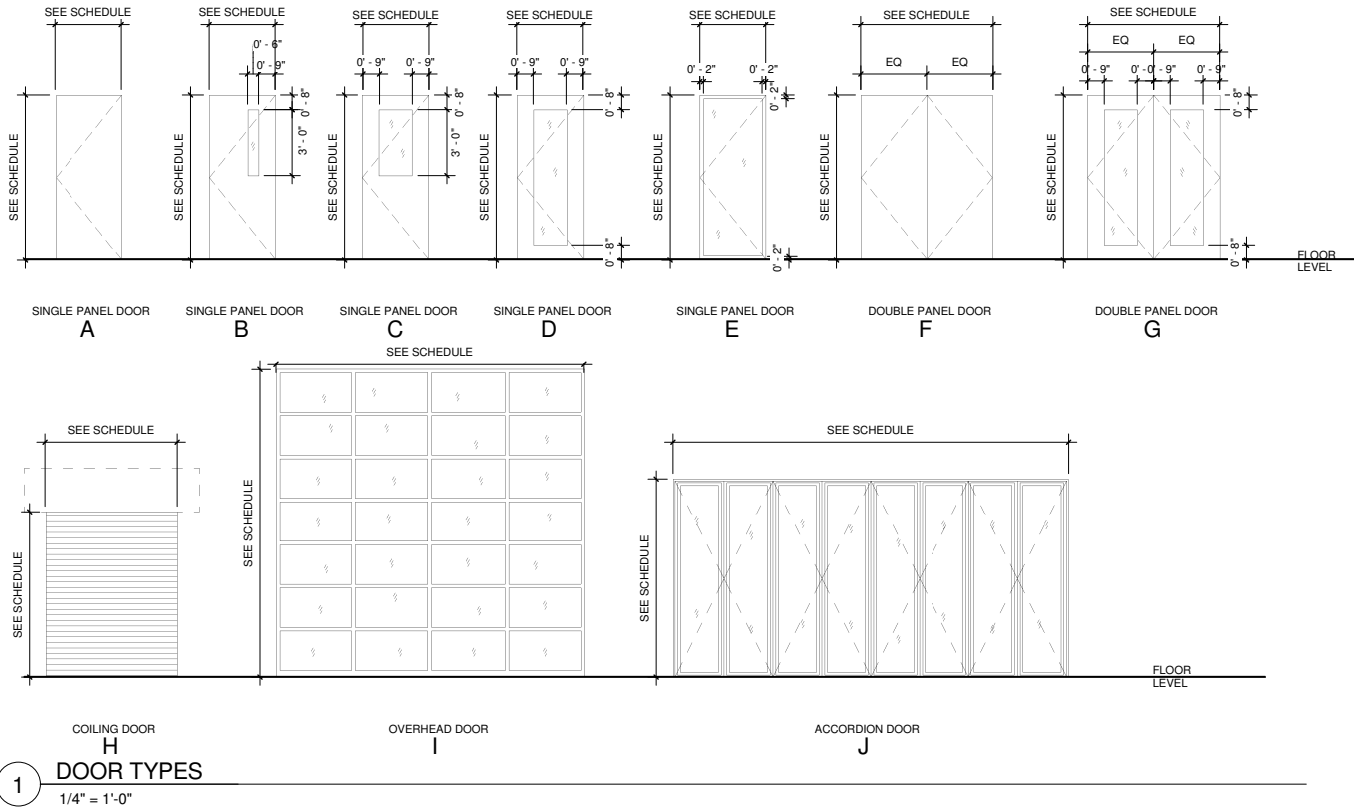
SUPPORT
BUILDING WALL
SECTIONS

SHEET:

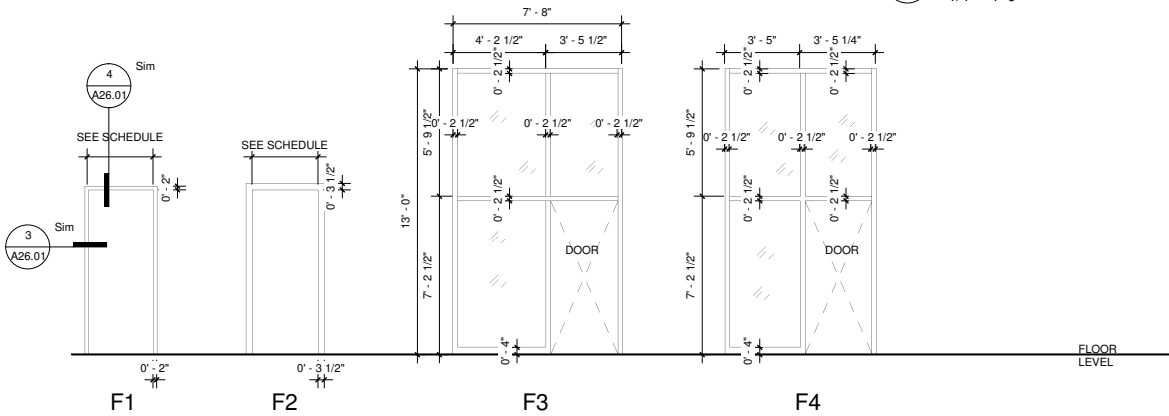
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NOT FOR CONSTRUCTION

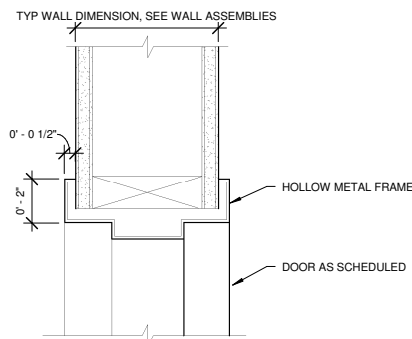
DOOR SCHEDULE									
DOOR NUMBER	DOOR TYPE	HEIGHT	WIDTH	THICKNESS	DOOR MATERIAL	FRAME TYPE	FRAME MATERIAL	FIRE RATING	COMMENTS
FIRST FLOOR									
100A	E	7'-0"	3'-0 1/4"	0'-1 1/2"	ALUM	F4	ALUM		
101	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
102	D	7'-0"	3'-0"	0'-2"	HM	F1	HM		
103	B	7'-0"	3'-0"	0'-2"	HM	F1	HM	1 HR	
104A	D	7'-0"	3'-0"	0'-2"	HM	F2	WOOD		
104B	B	7'-0"	3'-0"	0'-2"	HM	F1	HM	1 HR	
105	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
106	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
107	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
108	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
109	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
110	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
110A	H	9'-0"	18'-0"		ALUM	F2	WOOD		
110B	G	7'-0"	6'-0"	0'-2"	ALUM	F2	WOOD		
110C	D	7'-0"	3'-0"	0'-2"	HM	F1	HM		
110D	E	7'-0"	3'-2 1/4"	0'-1 1/2"	ALUM	F3	ALUM		
111	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
111B	F	7'-0"	3'-0"	0'-2"	HM	F2	WOOD	0	
111C	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
112	A	7'-0"	3'-0"	0'-2"	HM	F1	HM		
113B	A	7'-0"	3'-0"	0'-2"	HM		HM	1 HR	
114A	A	7'-0"	3'-0"	0'-2"	HM		HM		
114B	A	7'-0"	3'-0"	0'-2"	HM		HM		
116	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117A	F	7'-0"	6'-0"	0'-2"	HM				
117B	D	7'-0"	3'-0"	0'-2"	HM	F2	WOOD	1 HR	
117C	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117D	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117E	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117F	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117G	A	7'-0"	3'-0"	0'-2"	HM	F2	WOOD		
117H	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117I	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117J	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117K	I	14'-0"	14'-0"	0'-1 1/2"	ALUM				
117L	D	7'-0"	3'-0"	0'-2"	HM	F2	WOOD		
118	H	6'-6"	6'-0"	0'-2"	STL				
120	B	7'-0"	3'-0"	0'-2"	HM		ALUM		
SECOND FLOOR									
201	H	6'-6"	8'-0"	0'-2"	STL				
202	A	7'-0"	3'-0"	0'-2"	HM	F2	HM	1 HR	
203	F	7'-0"	3'-0"	0'-2"	HM	F2	HM	1 HR	



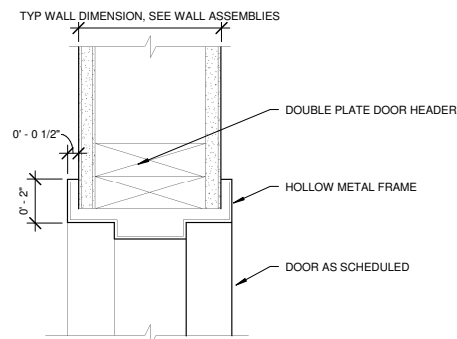
1 DOOR TYPES
1/4" = 1'-0"



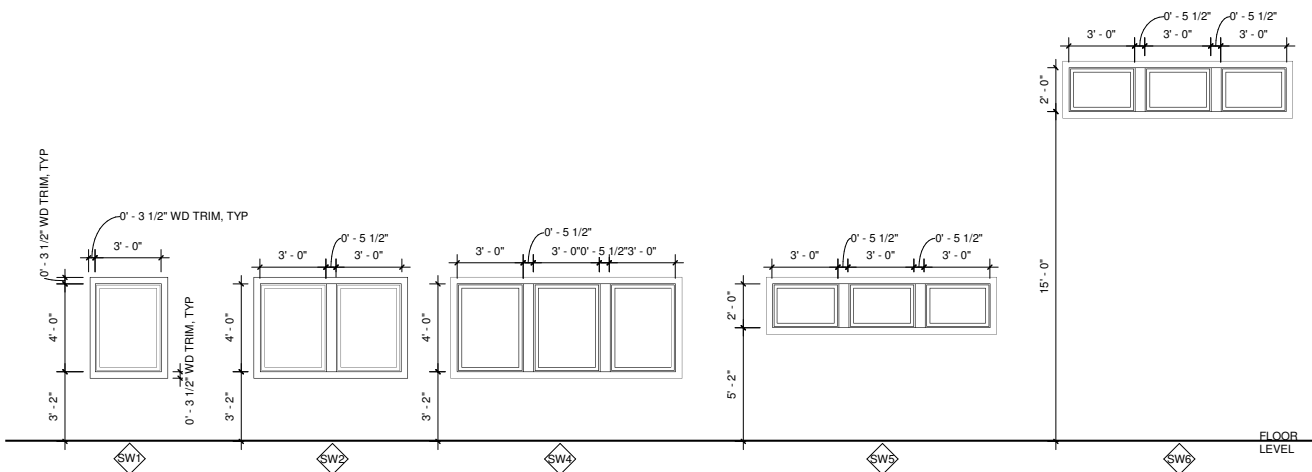
2 FRAME TYPES
1/4" = 1'-0"



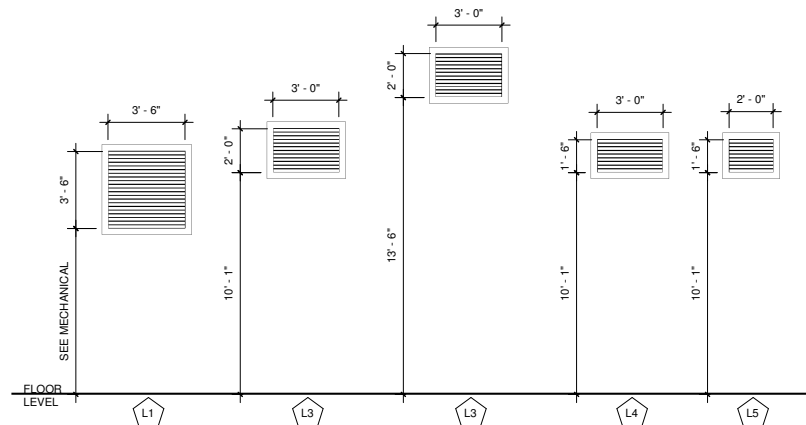
3 TYPICAL HOLLOW METAL JAMB DETAIL
3" = 1'-0"



4 TYPICAL HOLLOW METAL HEAD DETAIL
3" = 1'-0"

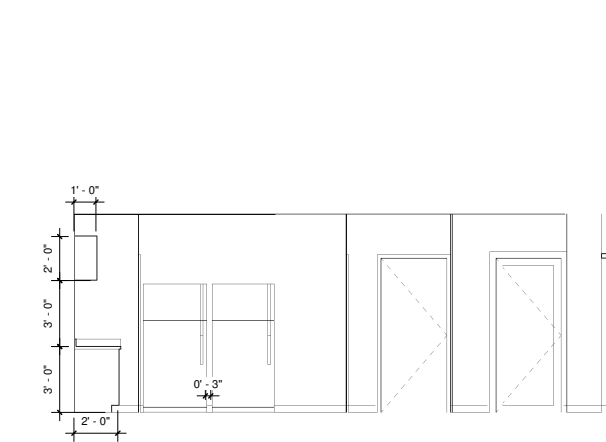


5 WINDOW TYPES
1/4" = 1'-0"

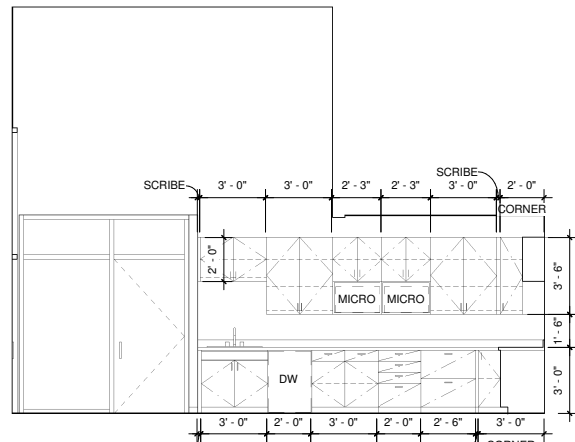


6 LOUVER TYPES
1/4" = 1'-0"

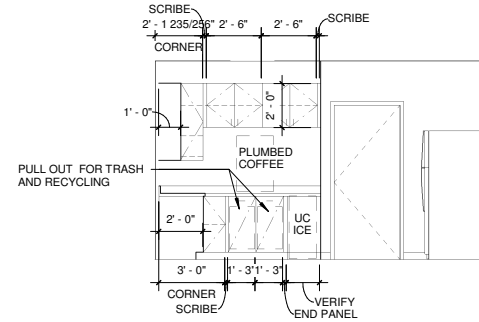
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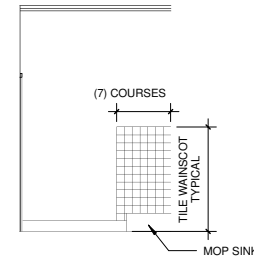
1 120 - Coffee Bar North
1/4" = 1'-0"



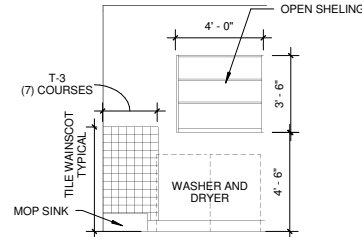
2 120 - Coffee Bar South
1/4" = 1'-0"



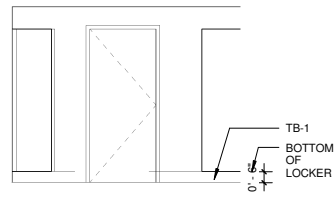
3 120 - Coffee Bar West
1/4" = 1'-0"



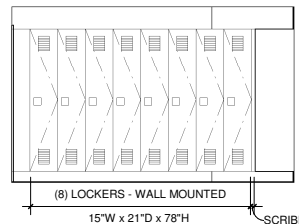
4 109 - Laundry/Jan North
1/4" = 1'-0"



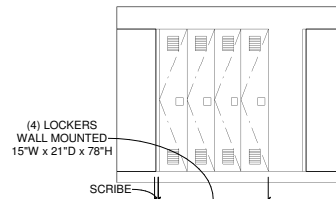
5 109 - Laundry/Jan East
1/4" = 1'-0"



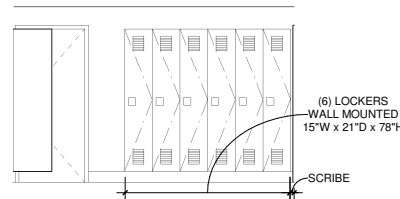
6 112 - Locker North
1/4" = 1'-0"



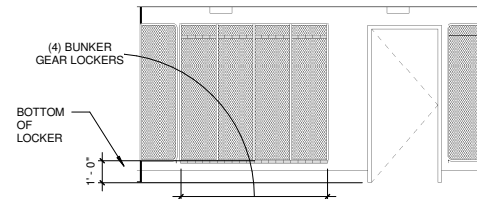
7 112 - Locker East
1/4" = 1'-0"



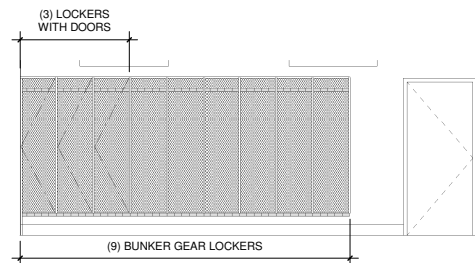
8 112 - Locker South
1/4" = 1'-0"



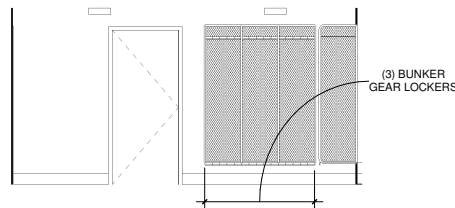
9 112 - Locker West
1/4" = 1'-0"



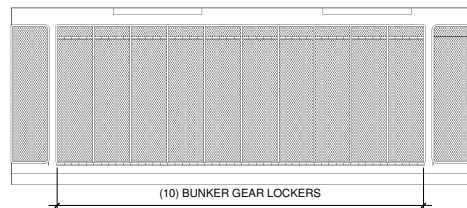
10 113 - Bunker Gear North
1/4" = 1'-0"



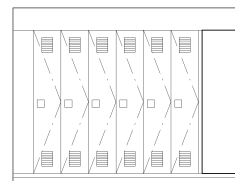
11 113 - Bunker Gear East
1/4" = 1'-0"



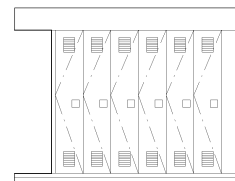
12 113 - Bunker Gear South
1/4" = 1'-0"



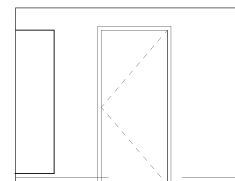
13 113 - Bunker Gear West
1/4" = 1'-0"



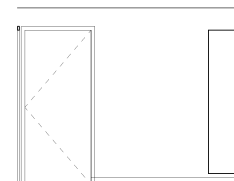
14 114 - Locker North
1/4" = 1'-0"



15 114 - Locker East
1/4" = 1'-0"



16 114 - Locker South
1/4" = 1'-0"



17 114 - Locker West
1/4" = 1'-0"

NOT FOR CONSTRUCTION

Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

Project Number 2004109.00

DESIGN
DEVELOPMENT

ISSUED: 1/08/2010

REVISION SCHEDULE

SUPPORT
BUILDING
INTERIOR
ELEVATIONS

SHEET:

A28.02



Training Campus Improvements

Gig Harbor Fire & Medic One
Gig Harbor, Washington

PROJECT #: 2004109.00

DESIGN DEVELOPMENT

ISSUED: December 16, 2009

REVISIONS:

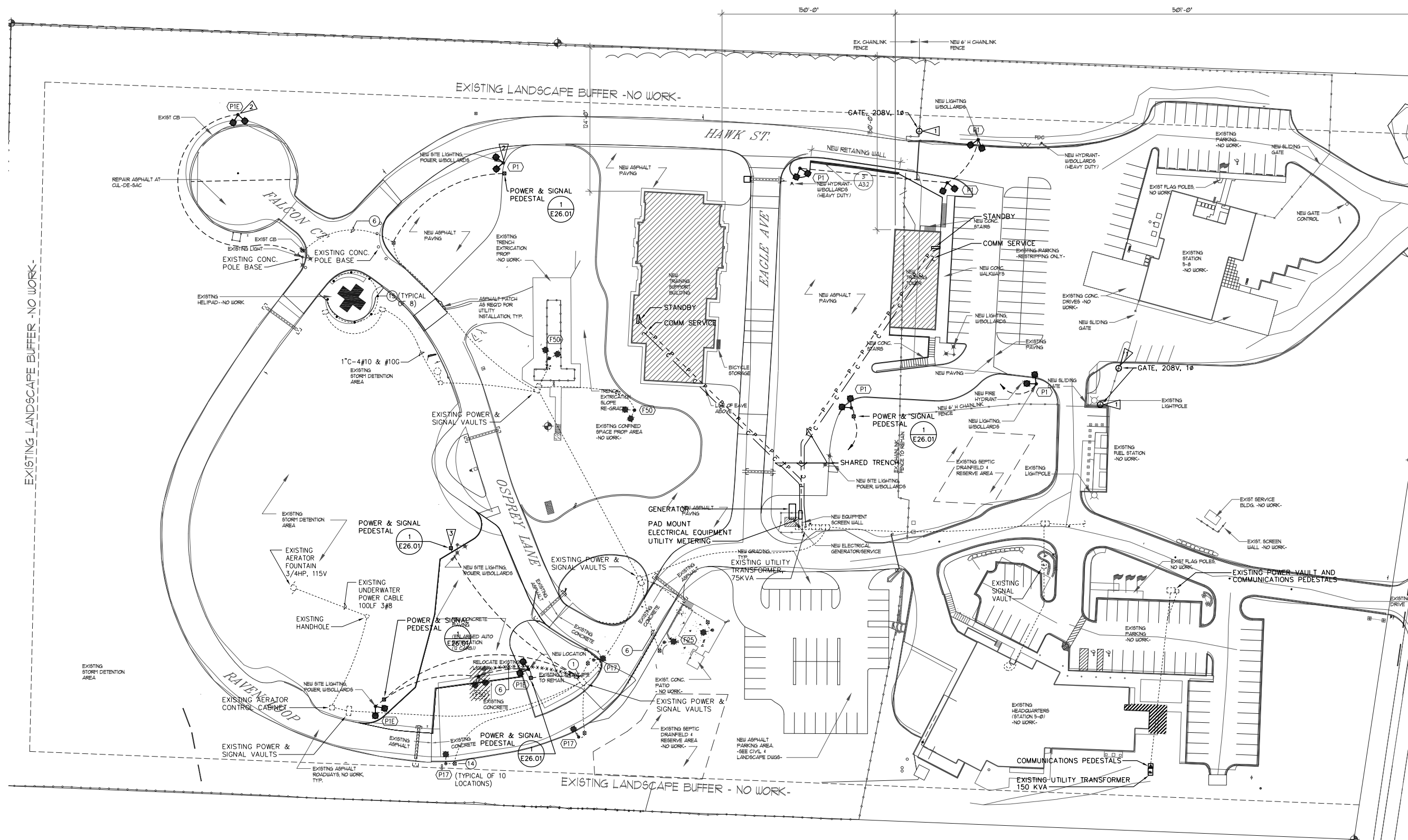
ELECTRICAL
SITE PLAN

SHEET:

E01.01

FLAG NOTES:

- 1 POWERED GATE WITH OPTICOM AND KNOX KEYED SWITCH CONTROLS.
- 2 POLE AND LIGHTS FURNISHED BY OWNER (EXISTING STORED ON SITE).
- 3 EXISTING POLE AND LIGHT RELOCATED.



GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SITEWORK DESIGN DEVELOPMENT



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At May 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Training Campus			
A3	Sitework			1,414,186
	Training Campus			1,414,186
	ESTIMATED NET COST			1,414,186

MARGINS & ADJUSTMENTS			
GC General Conditions/Requirements	10.0 %		141,419
Insurances & Bonds	1.7 %		26,445
GC Overhead & Profit	5.0 %		79,103
Design Contingency	10.0 %		166,115
State Sales Tax			Excl.
Subtotal			1,827,268
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %		109,636
ESTIMATED TOTAL COST			1,936,904

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SITEWORK DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A3 Sitework

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
G1020 Site Clearing					
226	Clear and grub, light, trees to 6"diameter (per Warner Engineering cost estimate escalated to 2021)	Acre	2.80	4,177.86	11,698
227	Remove stripped material from site (per Warner Engineering cost estimate escalated to 2021)	CY	2,300.0	19.96	45,916
Site Clearing					57,614
G1040 Site Earthwork					
137	Soldier piles, pre-augering, in average soil, up to 30' deep, 24" diameter	LF	660.0	26.00	17,160
139	Soldier piles, steel, W14x73	LF	660.0	60.00	39,600
141	Soldier piles, concrete encasement	CY	37.0	210.00	7,770
143	Timber lagging, 4" thick, including vertical strip drain, drainage composite fabric, sand-water slurry fill	SF	1,658.0	29.00	48,082
145	Cast in place reinforced concrete retaining wall continuous footings, cast against lagging, 18" x 12" thick	LF	124.0	30.00	3,720
147	Cast in place reinforced concrete retaining walls, cast against lagging, 7" thick	SF	1,685.0	45.00	75,825
228	Bedding for utility trenches, flexible pipe (per Warner Engineering cost estimate escalated to 2021)	CY	125.0	27.22	3,402
229	Bedding for utility trenches, rigid pipe (per Warner Engineering cost estimate escalated to 2021)	CY	35.0	27.23	953
230	Cut and fill native material, dozer to 150' (per Warner Engineering cost estimate escalated to 2021)	CY	13,800.0	18.78	259,170
Site Earthwork					455,682
G2020 Parking Lots					
231	Asphalt, HMA, 2" thick (per Warner Engineering cost estimate escalated to 2021)	SY	729.0	13.01	9,487
232	Asphalt, HMA, 4" thick (per Warner Engineering cost estimate escalated to 2021)	SY	9,725.0	26.03	253,107
233	Concrete pavement, 4000 psi (per Warner Engineering cost estimate escalated to 2021)	SY	1,669.0	66.55	111,064
234	Concrete pavement base / gravel, 6"thick (per Warner Engineering cost estimate escalated to 2021)	SY	1,669.0	10.20	17,030
237	Curb and gutter, concrete (per Warner Engineering cost estimate escalated to 2021)	LF	135.0	31.80	4,293
238	Curb, concrete traffic curb (per Warner Engineering cost estimate escalated to 2021)	LF	1,988.0	11.24	22,343

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SITEWORK DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A3 Sitework (continued)

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
239	Heavy paving 12" CSBC (per Warner Engineering cost estimate escalated to 2021)	CY	1,621.0	24.44	39,624
240	Heavy paving 6" CSTC (per Warner Engineering cost estimate escalated to 2021)	CY	3,241.0	24.44	79,224
241	Prepare and roll subbase, large area (per Warner Engineering cost estimate escalated to 2021)	SY	11,394.0	1.18	13,480
242	Bollard, 6" diameter (per Warner Engineering cost estimate escalated to 2021)	EA	271.0	61.14	16,570
Parking Lots					566,222
G2030	Pedestrian Paving				
235	Concrete sidewalk and 4" base (per Warner Engineering cost estimate escalated to 2021)	SF	1,691.0	4.29	7,252
236	Concrete stairs, 5' wide, reinforced (per Warner Engineering cost estimate escalated to 2021)	EA	60.0	60.63	3,638
Pedestrian Paving					10,890
G3010	Site Water Supply and Distribution Systems				
243	Bends & reducers, 4" HDPE (per Warner Engineering cost estimate escalated to 2021)	EA	1.0	83.00	83
244	Bends & reducers, 6" DI (per Warner Engineering cost estimate escalated to 2021)	EA	3.0	680.33	2,041
245	Check valve, 6" diameter (per Warner Engineering cost estimate escalated to 2021)	EA	2.0	1,769.50	3,539
246	Ductile iron, 6" diameter, including trench (per Warner Engineering cost estimate escalated to 2021)	LF	483.0	59.45	28,713
247	FDC, 6" including vault (per Warner Engineering cost estimate escalated to 2021)	EA	2.0	10,233.50	20,467
248	Fire hydrant assembly, not including gate valve (per Warner Engineering cost estimate escalated to 2021)	EA	3.0	2,668.00	8,004
249	Gate valve, 4" diameter (per Warner Engineering cost estimate escalated to 2021)	EA	1.0	794.00	794
250	Gate valve, 6" diameter (per Warner Engineering cost estimate escalated to 2021)	EA	8.0	889.50	7,116
251	HDPE SDR 21, 3" diameter, including trench (per Warner Engineering cost estimate escalated to 2021)	LF	443.0	41.41	18,343
252	Indicator post, not including valve (per Warner Engineering cost estimate escalated to 2021)	EA	2.0	1,166.50	2,333
253	Tap to 8" main, not including gate valve (per Warner Engineering cost estimate escalated to 2021)	EA	1.0	1,455.00	1,455

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SITEWORK DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A3 Sitework (continued)

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
254	Water meter and vault, 2" diameter (per Warner Engineering cost estimate escalated to 2021)	EA	1.0	1,524.00	1,524
Site Water Supply and Distribution Systems					94,412
G3020	Site Sanitary Sewer Systems				
255	Drainfield aggregate (per Warner Engineering cost estimate escalated to 2021)	CY	80.0	27.21	2,177
256	Drainfield trench & backfill, 4' wide x 4' deep (per Warner Engineering cost estimate escalated to 2021)	LF	350.0	11.68	4,089
257	Filter fabric lining (per Warner Engineering cost estimate escalated to 2021)	SF	720.0	0.47	341
258	Holding tank, 1500 gallon (per Warner Engineering cost estimate escalated to 2021)	EA	1.0	6,736.00	6,736
259	Pump chamber, 1250 gallon and pump (per Warner Engineering cost estimate escalated to 2021)	EA	2.0	6,802.50	13,605
260	PVC schedule 40, 1" diameter, not including trench (per Warner Engineering cost estimate escalated to 2021)	LF	350.0	17.30	6,056
261	PVC schedule 40, 1" diameter bend (per Warner Engineering cost estimate escalated to 2021)	EA	10.0	9.00	90
262	PVC schedule 40, 2" diameter, including trench (per Warner Engineering cost estimate escalated to 2021)	LF	515.0	35.57	18,316
263	PVC schedule 40, 2" diameter bend (per Warner Engineering cost estimate escalated to 2021)	EA	5.0	16.00	80
264	PVC SDR 25, 6" diameter, including trench (per Warner Engineering cost estimate escalated to 2021)	LF	37.0	40.46	1,497
265	Sanitary cleanout, 6"	EA	3.0	1,338.33	4,015
266	Septic tank, 1250 gallon	EA	2.0	5,989.50	11,979
Site Sanitary Sewer Systems					68,981
G3030	Site Storm Sewer Systems				
267	ADS N-12, 12" diameter, including trench	LF	1,004.0	39.63	39,790
268	ADS N-12, 6" diameter, downspout collector	LF	575.0	31.35	18,027
269	ADS N-12, 6" diameter perforated, foundation drain, no trench	LF	770.0	19.67	15,145
270	Catch basin frame and grate	EA	19.0	332.74	6,322
271	Catch basin, type 1	EA	14.0	1,060.14	14,842
272	Catch basin, type 2, 48" diameter, 5' to 9' deep	EA	5.0	3,253.40	16,267
273	Connect to existing catch basin	EA	1.0	370.00	370
274	Connect to existing storm pipe	EA	4.0	148.00	592

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SITEWORK DESIGN

DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A3 Sitework (continued)

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
275	Control structure, restrictor standpipe 18	EA	1.0	888.00	888
276	Oil/water separator, 50 gpm coalescing plate	EA	1.0	8,977.00	8,977
277	Oil/water separator, pipe, including 466-stainless steel	EA	3.0	5,028.00	15,084
278	Storm cleanout	EA	3.0	296.00	888
Site Storm Sewer Systems					137,192
Z1020	Procedural General Requirements				
222	Construction layout, building corner (per Warner Engineering cost estimate escalated to 2021)	EA	28.0	310.57	8,696
223	Construction layout, CB, MH & vaults (per Warner Engineering cost estimate escalated to 2021)	EA	25.0	354.92	8,873
224	Construction layout, parking area (per Warner Engineering cost estimate escalated to 2021)	EA	3.0	525.00	1,575
225	Construction layout, water (per Warner Engineering cost estimate escalated to 2021)	LF	928.0	4.36	4,049
Procedural General Requirements					23,193
SITEWORK					1,414,186

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At May 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Training Campus			
A2	Support Building	11,642	265.68	3,093,041
	Training Campus	11,642	265.68	3,093,041
	ESTIMATED NET COST	11,642	265.68	3,093,041

MARGINS & ADJUSTMENTS				
GC General Conditions/Requirements	10.0 %			309,304
Insurances & Bonds	1.7 %			57,840
GC Overhead & Profit	5.0 %			173,009
Design Contingency	10.0 %			363,319
State Sales Tax				Excl.
Subtotal		11,642	343.28	3,996,513
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %			239,791
ESTIMATED TOTAL COST		11,642	363.88	4,236,304

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus
A2 Support Building

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 36" x 12" thick, including earthwork	LF	487.0	66.00	32,142
2	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	518.0	36.00	18,648
3	Cast in place reinforced concrete stem walls, 12" thick, 18" high	LF	54.0	46.00	2,484
4	Cast in place reinforced concrete spread footings, 5' x 5' x 18", including earthwork	EA	5.0	660.00	3,300
5	Cast in place reinforced concrete spread footings, 8' x 8' x 30", including earthwork	EA	6.0	2,500.00	15,000
6	Cast in place reinforced concrete spread footings, 10' x 7' x 30", including earthwork	EA	1.0	2,900.00	2,900
7	Cast in place reinforced concrete spread footings, 12' x 10' x 30", including earthwork	EA	4.0	5,000.00	20,000
8	Cast in place reinforced concrete stub columns, 8" x 16" x 42" high (roof overhang at entrance)	EA	1.0	260.00	260
9	Rigid insulation to foundations, 2" thick	LF	572.0	8.00	4,576
10	Foundation dampproofing, bituminous asphalt, including protection board	LF	572.0	14.00	8,008
11	Foundation subsoil drain lines, 6", including gravel encasement	LF	608.0	20.00	12,160
Standard Foundations				10.26/SF	119,478
A1030 Slabs on Grade					
12	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	3,784.0	6.90	26,110
13	Cast in place reinforced concrete slab on grade, 7" thick, including base, vapor barrier (apparatus bay)	SF	5,932.0	10.70	63,472
14	Premium on concrete slab on grade for thickenings to slab edges, 20" average" x 8" thick, including earthwork	LF	175.0	26.00	4,550
15	Rigid insulation under concrete slab on grade, 2" thick	SF	9,715.0	3.00	29,145
Slabs on Grade				10.59/SF	123,277
B1010 Floor Construction					
16	Structural steel HSS-section columns to floor framing, including loose and attached connections	T	0.370	6,000.00	2,220
17	Structural steel W-section beams in floor framing, including loose and attached connections	T	0.190	6,000.00	1,140
18	Wood posts to floor framing, 6" x 6"	BF	37.0	5.30	196
19	Wood I-joists floor framing, 18" TJI/65, 16" on center	SF	1,928.0	7.80	15,038
20	Floor sheathing, plywood, 1-1/8"	SF	1,928.0	5.20	10,026

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
21	Cast in place reinforced concrete topping slabs, 2" thick	SF	1,928.0	4.00	7,712
22	Provision for wood floor framing metal connections, hold downs, blocking, etc (per GFA)	SF	1,928.0	2.00	3,856
Floor Construction				3.45/SF	40,188
B1020	Roof Construction				
23	Structural steel W-section columns to roof framing, including loose and attached connections	T	11.160	6,000.00	66,960
24	Structural steel HSS-section posts to roof framing, including loose and attached connections	T	6.210	6,000.00	37,260
25	Structural steel W-section beams and girders to roof framing, including loose and attached connections	T	19.420	6,000.00	116,520
26	Wood posts to roof framing, 6" x 6" (including roof overhangs at entrances)	BF	443.0	7.90	3,500
27	Wood decorative posts to roof framing, 16" diameter (roof overhangs at entrances)	LF	36.0	250.00	9,000
28	Laminated roof framing, straight beams, 3-3/4" x 16-1/2"	LF	55.0	44.00	2,420
29	Laminated roof framing, straight beams, 6-3/4" x 12" (roof overhangs at entrances)	LF	116.0	62.00	7,192
30	Laminated roof framing, cross bracing, 6-3/4" x 12" (roof overhangs at entrances)	LF	44.0	62.00	2,728
31	Laminated roof framing, straight beams, 6-3/4" x 16-1/2"	LF	28.0	86.00	2,408
32	Laminated roof framing, straight beams, 6-3/4" x 28"	LF	48.0	136.00	6,528
33	Laminated roof framing, hip and valley rafters, 5-1/2" x 30"	LF	123.0	116.00	14,268
34	Wood I-joists roof framing, 11-7/8" TJL, 16" on center	SF	4,806.0	11.70	56,230
35	Wood I-joists roof framing, 14" TJL, 24" on center	SF	5,450.0	13.70	74,665
36	Wood outriggers to roof overhangs, 2" x 6"	BF	1,480.0	4.30	6,364
37	Wood fascia boards to roof overhangs, 2" x 6"	BF	209.0	4.30	899
38	Wood edge boards to roof overhangs, 2" x 10", flashing lined	BF	695.0	22.90	15,916
39	Wood roof brackets to roof overhangs, 3-1/2" x 3-1/2"	BF	41.0	7.66	314
40	Roof sheathing, plywood, 15/32"	SF	10,255.0	3.30	33,842
41	Polyisocyanurate insulation, on roof decks, 5" thick	SF	10,255.0	3.50	35,893
42	Provision for wood roof framing metal connections, hold downs, blocking, etc (per GFA)	SF	9,715.0	2.00	19,430
Roof Construction				44.01/SF	512,337
B2010	Exterior Walls				
43	Cedar shake siding, including air and vapor barriers	SF	4,731.0	9.20	43,525

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
44	Lap board siding, wood, 6" exposure, including air and vapor barriers	SF	4,307.0	15.00	64,605
45	Wood trim, 1" x 5", including air and vapor barriers (around openings)	LF	907.0	12.00	10,884
46	Wood trim, 1" x 10", including air and vapor barriers	LF	479.0	24.00	11,496
47	Wall framing, studs, 2" x 6", minimum 12' high walls (non-shear walls interior skin)	SF	3,692.0	5.70	21,044
48	Wall framing, studs, 2" x 6", minimum 12' high walls, including plywood sheathing, 15/32", outside (non-shear walls outside skin)	SF	5,954.0	8.10	48,227
49	Wall framing, studs, 2" x 6", minimum 12' high walls, including plywood sheathing, 15/32", outside (shear walls)	SF	1,674.0	9.40	15,736
50	Wall framing, studs, 2" x 6", minimum 12' high walls, including plywood sheathing, 15/32", both sides (shear walls)	SF	1,808.0	13.00	23,504
51	Gypsum board on wood wall framing, 5/8", including level 5 finish	SF	9,435.0	2.50	23,588
52	Thermal insulation to walls, foil faced fiberglass blankets, R21	SF	9,435.0	1.40	13,209
53	Fiber cement board to soffits of roof overhangs, 1/2", including vents and finish	SF	2,007.0	8.10	16,257
54	Louvers (see mechanical)	SF	76.0		Incl.
Exterior Walls				25.09/SF	292,075
B2020	Exterior Windows				
55	Fixed casement windows, aluminum, 2 lites insulating glass, including mullions	SF	379.0	110.00	41,690
56	Window walls, aluminum, 2 lite insulating glass	SF	60.0	140.00	8,400
Exterior Windows				4.30/SF	50,090
B2030	Exterior Doors				
57	Entrance single door, glass, including hardware, 3' x 7' high (type E)	EA	1.0	5,000.00	5,000
58	Entrance double door, aluminum, including view panels, frame, hardware and finish, 6' x 7' high (type G)	EA	1.0	4,500.00	4,500
59	Sliding panel door, aluminum, 2 lites insulating glass, fixed panels, 18' x 9' high (type J)	EA	1.0	9,600.00	9,600
60	Entrance single door, hollow metal, including frame, hardware and finish, 3' x 7' (type A)	EA	1.0	3,500.00	3,500
61	Entrance single door, hollow metal, half glass, frame, hardware and finish, 3' x 7' (type D)	EA	3.0	3,600.00	10,800
62	Entrance double door, hollow metal, including, frame, hardware and finish, 6' x 7' (type F)	EA	1.0	6,200.00	6,200

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
63	Overhead sectional door, aluminum glazed fixed panels, including frame, hardware and finish, 14' x 14' (type I)	EA	9.0	27,000.00	243,000
64	Provision for electric door opener	EA	1.0	4,000.00	4,000
Exterior Doors				24.62/SF	286,600
B3010	Roof Coverings				
65	Standing seam metal roofing, including weather barrier, plywood sheathing, 3/4", flashing and finish	SF	12,366.0	17.00	210,222
66	Aluminum gutters, enameled, 5" box	LF	377.0	15.00	5,655
67	Aluminum downspouts, enameled, 2" x 3"	LF	208.0	12.00	2,496
Roof Coverings				18.76/SF	218,373
C1010	Interior Partitions				
68	Wall framing, partitions, wood studs, 2" x 4", 16" on center (non-shear walls)	SF	2,717.0	5.10	13,857
69	Wall framing, partitions, wood studs, 2" x 6", 16" on center (non-shear walls)	SF	3,001.0	5.70	17,106
70	Wall framing, partitions, wood studs, 2" x 6", 16" on center, including plywood sheathing, 15/32", one side (shear walls)	SF	1,044.0	9.40	9,814
71	Wall framing, partitions, wood studs, 2" x 6", 16" on center, including plywood sheathing, 15/32", both sides (shear walls) (partitions)	SF	1,126.0	13.00	14,638
72	Gypsum board on wood wall framing, 5/8", including finish	SF	21,752.0	2.50	54,380
73	Interior window walls, aluminum, fully glazed	SF	71.0	110.00	7,810
Interior Partitions				10.10/SF	117,605
C1020	Interior Doors				
74	Single door, hollow metal, including frame, hardware and finish, 3' x 7' (type A)	EA	10.0	1,600.00	16,000
75	Single door, hollow metal, including view panel, hardware and finish, 3' x 7' (frame elsewhere) (type D)	EA	1.0	1,600.00	1,600
76	Single door, hollow metal, including view panel, frame, hardware and finish, 3' x 7' (type B)	EA	2.0	1,800.00	3,600
77	Single door, hollow metal, including view panel, frame, hardware and finish, 3' x 7' (type D)	EA	2.0	1,900.00	3,800
78	Rated single door, hollow metal, including frame, hardware and finish, 3' x 7' (type A)	EA	2.0	2,000.00	4,000
79	Rated single door, hollow metal, including view panel, frame, hardware and finish, 3' x 7' (type B)	EA	2.0	2,500.00	5,000

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
80	Rated double door, hollow metal, including frame, hardware and finish, 6' x 7' (type F)	EA	2.0	3,200.00	6,400
81	Doors, specialty, coiling, manual, galvanized steel, 6' 5" high, 6' long, including frame and hardware	EA	1.0	3,900.00	3,900
82	Doors, specialty, coiling, manual, galvanized steel, 6' 5" high, 8' long, including frame and hardware	EA	1.0	5,200.00	5,200
Interior Doors				4.25/SF	49,500
C1030	Interior Specialties				
83	Provision for marker and tackboards (per GFA)	SF	11,642.0	0.20	2,328
84	Provision for signage, including room numbers, code required signs (per GFA)	SF	11,642.0	0.30	3,493
85	Provision for corner guards (per GFA)	SF	11,642.0	0.50	5,821
86	Locker, steel, baked enamel, wall mounted, 15" x 21" x 78", including locker base	EA	30.0	530.00	15,900
87	Bunker gear locker, steel, baked enamel, mesh door, wall mounted, 20" x 21" x 76", including locker base	EA	38.0	680.00	25,840
88	Shower doors, sliding, tempered glass, 48" opening	EA	2.0	900.00	1,800
89	Toilet towel dispenser and waste receptacle, 18 gallon capacity	EA	4.0	530.00	2,120
90	Toilet grab bar, 2-wall, 36" x 24"	EA	4.0	170.00	680
91	Bathroom mirrors, unframed, laminated, polished edges, 24" x 36" x 1/4" thick	EA	4.0	180.00	720
92	Toilet napkin/tampon dispenser, semi-recessed	EA	2.0	520.00	1,040
93	Toilet soap dispenser, surface mounted, liquid	EA	4.0	120.00	480
94	Toilet seat cover dispenser, surface mounted	EA	4.0	87.00	348
95	Toilet tissue dispenser, surface mounted, double roll	EA	4.0	57.00	228
96	Shower seat, wall mounted	EA	2.0	440.00	880
97	Provision for other miscellaneous specialties (per GFA)	SF	11,642.0	1.00	11,642
Interior Specialties				6.30/SF	73,320
C2010	Stair Construction				
98	Stairs, wood, prefabricated box type, oak treads, metal pipe rails, 3'-6" wide, 20 risers	Flight	1.0	8,000.00	8,000
Stair Construction				0.69/SF	8,000
C2020	Stair Finishes				
99	Provision for rubber tiles on treads and risers of stairs, marbleized colors, including nosing (measured on plan)	SF	65.0	42.00	2,730
Stair Finishes				0.23/SF	2,730

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
C3010	Interior Wall Finishes				
100	Ceramic tiles on walls, thin set	SF	595.0	15.00	8,925
101	Fiberglass reinforced plastic panels on walls	SF	7,859.0	9.00	70,731
102	Paint of walls, primer and two coats	SF	20,444.0	1.80	36,799
	Interior Wall Finishes			10.00/SF	116,455
C3020	Interior Floor Finishes				
103	Polished finish to concrete floors, including sealer	SF	8,199.0	9.30	76,251
104	Ceramic tiles on floors, thin set	SF	1,916.0	23.00	44,068
105	Ceramic tiles base, thin set, 4" high	LF	199.0	16.00	3,184
106	Ceramic tiles base, thin set, 6" high	LF	338.0	16.00	5,408
107	Rubber tiles on floors, marbleized colors, 12" x 12"	SF	1,529.0	12.00	18,348
108	Rubber base, 4" high	LF	731.0	3.90	2,851
	Interior Floor Finishes			12.89/SF	150,110
C3030	Interior Ceiling Finishes				
109	Acoustic ceiling tiles, 2' x 2', including suspension system	SF	2,307.0	7.00	16,149
110	Gypsum board ceilings, including framing and finish	SF	965.0	14.00	13,510
111	Provision for finishes to exposed floor and roof construction	SF	8,721.0	2.00	17,442
	Interior Ceiling Finishes			4.05/SF	47,101
D2090	All Plumbing Work				
112	Plumbing systems (based on 2009 cost estimate escalated to 2021)	SF	11,642.0	18.00	209,556
	All Plumbing Work			18.00/SF	209,556
D3090	All HVAC Work				
113	HVAC systems (based on 2009 cost estimate escalated to 2021)	SF	11,642.0	23.00	267,766
	All HVAC Work			23.00/SF	267,766
D4010	Fire Protection Sprinkler Systems				
114	Fire protection systems (based on 2009 cost estimate escalated to 2021)	SF	11,642.0	6.00	69,852
	Fire Protection Sprinkler Systems			6.00/SF	69,852
E1020	Institutional Equipment				
115	Electrical systems (based on 2009 cost estimate escalated to 2021)	SF	11,642.0	25.00	291,050
	Institutional Equipment			25.00/SF	291,050

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING DESIGN DEVELOPMENT



LOCATION UNIFORMAT LEVEL 3 ITEM

A Training Campus

A2 Support Building (continued)

GFA: 11,642 SF Cost/SF: 265.68
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
E1040	Other Equipment				
116	Refrigerator	EA	2.0	4,500.00	9,000
117	Microwave oven	EA	2.0	1,000.00	2,000
118	Dishwasher	EA	1.0	3,000.00	3,000
119	Washer	EA	1.0	1,250.00	1,250
120	Dryer	EA	1.0	1,250.00	1,250
121	Audio visual equipment (per classroom)	EA	1.0	10,000.00	10,000
	Other Equipment			2.28/SF	26,500
E2010	Fixed Furnishings				
122	Window shades, double layer, heat reflective, manual (exterior and interior windows)	SF	509.0	10.00	5,090
123	Manufactured wood kitchen base cabinets, including plastic laminated countertops	LF	21.0	330.00	6,930
124	Manufactured wood kitchen wall cabinets	LF	23.0	310.00	7,130
125	Laundry wall cabinets	LF	4.0	310.00	1,240
126	Restroom vanity countertops	LF	8.0	86.00	688
	Fixed Furnishings			1.81/SF	21,078
	SUPPORT BUILDING			265.68/SF	3,093,041

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At May 2021

Ref	Location	GFA SF	GFA \$/SF	Total Cost \$
A	Training Campus			
A1	Training Tower	11,063	284.65	3,149,098
	Training Campus	11,063	284.65	3,149,098
	ESTIMATED NET COST	11,063	284.65	3,149,098

MARGINS & ADJUSTMENTS				
GC General Conditions/Requirements	10.0 %			314,910
Insurances & Bonds	1.7 %			58,888
GC Overhead & Profit	5.0 %			176,145
Design Contingency	10.0 %			369,904
State Sales Tax				Excl.
Subtotal		11,063	367.80	4,068,945
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6.0 %			244,137
ESTIMATED TOTAL COST		11,063	389.87	4,313,082

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower

GFA: 11,063 SF Cost/SF: 284.65

Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A	SUBSTRUCTURE				
A10	Foundations				
A1010	Standard Foundations				
--	Undefined				
127	Cast in place reinforced concrete continuous footings, cast against lagging, 36" x 12" thick, including earthwork	LF	93.0	54.00	5,022
128	Cast in place reinforced concrete continuous footings, 36" x 12", including earthwork	LF	52.0	66.00	3,432
129	Cast in place reinforced concrete continuous footings, 96" x 24", including earthwork	LF	8.0	220.00	1,760
130	Cast in place reinforced concrete stem walls, 8" thick, 36" high	LF	451.0	72.00	32,472
131	Cast in place reinforced concrete spread footings, 4' x 4' x 12", including earthwork	EA	4.0	450.00	1,800
132	Cast in place reinforced concrete spread footings, 7' x 7' x 16", including earthwork	EA	2.0	1,200.00	2,400
133	Cast in place reinforced concrete mat footings, 36" thick, including earthwork	CY	225.0	380.00	85,500
134	Cast in place reinforced concrete stub columns, 16" x 16" x 36" high	EA	14.0	410.00	5,740
135	Foundation dampproofing, bituminous asphalt, including protection board	LF	451.0	14.00	6,314
136	Foundation subsoil drain lines, 6", including gravel encasement	LF	285.0	20.00	5,700
	Undefined			13.57/SF	150,140
	Standard Foundations			13.57/SF	150,140
A1030	Slabs on Grade				
--	Undefined				
151	Cast in place reinforced concrete slab on grade, 4" thick, including base, vapor barrier	SF	3,435.0	6.90	23,702
	Undefined			2.14/SF	23,702
	Slabs on Grade			2.14/SF	23,702
	Foundations			15.71/SF	173,842

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
A20	Basement Construction				
A2020	Basement Walls				
--	Undefined				
138	Soldier piles, pre-augering, in average soil, up to 30' deep, 24" diameter	LF	450.0	26.00	11,700
140	Soldier piles, steel, W14x73	LF	450.0	60.00	27,000
142	Soldier piles, concrete encasement	CY	23.0	210.00	4,830
144	Timber lagging, 4" thick, including vertical strip drain, drainage composite fabric, sand-water slurry fill	SF	1,237.0	29.00	35,873
146	Cast in place reinforced concrete retaining wall continuous footings, cast against lagging, 18" x 12" thick	LF	93.0	30.00	2,790
148	Cast in place reinforced concrete retaining walls, cast against lagging, 7" thick	SF	1,267.0	45.00	57,015
149	Retaining wall dampproofing, bituminous asphalt, including protection board	SF	1,267.0	7.00	8,869
150	Concrete block, high strength, hollow, 8" x 8" x 16", fully grouted and reinforced	SF	903.0	25.00	22,575
	Undefined			15.43/SF	170,652
	Basement Walls			15.43/SF	170,652
	Basement Construction			15.43/SF	170,652
	SUBSTRUCTURE			31.14/SF	344,494
B	SHELL				
B10	Superstructure				
B1010	Floor Construction				
--	Undefined				
152	Cast in place reinforced concrete columns, 16" x 16"	LF	267.0	140.00	37,380
153	Cast in place reinforced concrete elevated slabs, 10" thick	SF	9,286.0	23.00	213,578
154	Premium on concrete elevated slabs for cast in place reinforced concrete integral beams, 16" x 34"	CY	22.0	1,300.00	28,600
155	Premium on concrete elevated slabs for soft floor prop floor depressions	LF	56.0	11.00	616
156	Manhole liner cast into concrete slabs, steel, 24" diameter x 10" deep	EA	1.0	90.00	90

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
157	Cast in place reinforced concrete cantilever balcony slabs, 10" thick	SF	518.0	30.00	15,540
	Undefined			26.74/SF	295,804
	Floor Construction			26.74/SF	295,804
B1020	Roof Construction				
--	Undefined				
158	Cast in place reinforced concrete columns, 16" x 16"	LF	22.0	140.00	3,080
159	Cast in place reinforced concrete elevated slabs, 10" thick	SF	1,372.0	23.00	31,556
160	Premium on concrete slabs for cast in place reinforced concrete integral beams, 16" x 34"	CY	4.0	1,300.00	5,200
161	Structural steel W-section framing to pitched roofs, including loose and attached connections	T	6.540	6,000.00	39,240
162	Wood framing to pitched roofs, fascia boards, 2" x 8"	BF	185.0	6.95	1,286
163	Wood framing to pitched roofs, rafters, 2" x 8"	BF	1,686.0	3.90	6,575
164	Wood framing to pitched roofs, hip and valley rafters, 2" x 8"	BF	100.0	4.65	465
165	Metal roof decking to pitched roofs, galvanized, 18 GA, 1-1/2" deep	SF	1,700.0	6.40	10,880
166	Plywood underlayment on decking to pitched roofs, 1/2" thick, including blocking	SF	1,700.0	6.00	10,200
167	Structural steel W-section framing to pitched canopies, including loose and attached connections	T	1.590	6,000.00	9,540
168	Wood framing to pitched canopies, fascia boards, 2" x 8"	BF	68.0	6.96	473
169	Metal roof decking to pitched canopies, galvanized, 18 GA, 1-1/2" deep	SF	434.0	6.40	2,778
170	Plywood underlayment on decking to pitched canopies, 1/2" thick, including blocking	SF	434.0	6.00	2,604
	Undefined			11.20/SF	123,877
	Roof Construction			11.20/SF	123,877
	Superstructure			37.94/SF	419,681

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B20	Exterior Enclosure				
B2010	Exterior Walls				
--	Undefined				
171	Exterior walls, concrete block, decorative, hollow, 8" x 8" x 16", fully grouted, reinforced and flush pointed both sides	SF	13,494.0	37.00	499,278
172	Parapet walls, concrete block, decorative, hollow, 8" x 8" x 16", fully grouted, reinforced and flush pointed both sides, 3' 6" high, including precast concrete coping	LF	290.0	171.00	49,590
173	Parapet walls, concrete block, decorative, hollow, 8" x 8" x 16", fully grouted, reinforced and flush pointed both sides, 4' 4" high, including precast concrete coping	LF	23.0	199.00	4,577
174	Pitched roof edge railing, 7 rail with handrail on top, 3' 6" high, including finish	LF	87.0	300.00	26,100
175	Balcony railing, 7 rail with handrail on top, 3' 6" high, including finish	LF	166.0	300.00	49,800
176	Removable railing, 7 rail with handrail on top, 3' 6" high, including finish	LF	13.0	300.00	3,900
177	Premium on concrete elevated balcony slabs for smooth finished soffits	SF	518.0	4.10	2,124
178	Fiber cement roof overhang soffit covering, including framing, vent, finish	SF	280.0	8.10	2,268
179	Fiber cement canopy soffit covering, including framing, vent, finish	SF	434.0	8.10	3,515
	Undefined			57.95/SF	641,152
	Exterior Walls			57.95/SF	641,152
B2020	Exterior Windows				
--	Undefined				
180	Wall opening closure, double panel, hollow metal, including frame, hardware and finish, 2' 8" x 3' 6"	EA	8.0	1,200.00	9,600
181	Wall opening closure, double panel, hollow metal, including frame, hardware and finish, 5' 8" x 3' 6"	EA	23.0	2,500.00	57,500
	Undefined			6.07/SF	67,100
	Exterior Windows			6.07/SF	67,100

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
B2030	Exterior Doors				
--	Undefined				
182	Hollow metal single door, including frame, hardware and finish, 3' x 7'	EA	23.0	3,500.00	80,500
183	Hollow metal double door, including frame, hardware and finish, 5' 8" x 7'	EA	6.0	5,700.00	34,200
184	Metal overhead coiling door, manual, including hood, frame, hardware and finish, 14' x 8'	EA	1.0	6,900.00	6,900
185	Metal overhead coiling door, manual, including hood, frame, hardware and finish, 20' x 8'	EA	1.0	8,300.00	8,300
	Undefined			11.74/SF	129,900
	Exterior Doors			11.74/SF	129,900
	Exterior Enclosure			75.76/SF	838,152
B30	Roofing				
B3010	Roof Coverings				
--	Undefined				
186	Asphalt shingles on pitched roofs, pneumatic nailed, including rubberized asphalt underlayment	SF	1,700.0	8.00	13,600
187	Asphalt shingles on pitched canopies, pneumatic nailed, including rubberized asphalt underlayment	SF	434.0	8.00	3,472
188	Elastomeric roofing, acrylic rubber, fluid applied, reinforced on concrete roof slabs, 50 mils thick, including walking surface	SF	470.0	9.00	4,230
189	Elastomeric roofing, acrylic rubber, fluid applied, reinforced on concrete balcony slabs, 50 mils thick, including walking surface	SF	2,666.0	9.00	23,994
190	Sheet metal flashing and counter flashing, masonry headwalls	LF	128.0	23.00	2,944
191	Sheet metal flashing and counter flashing, masonry sidewalls	LF	82.0	34.00	2,788
192	Aluminum gutters, stock units, enameled, 5" box	LF	128.0	15.00	1,920
193	Aluminum downspouts, round, corrugated, 4" diameter	LF	139.0	16.00	2,224
194	Ladders, shop fabricated, steel, 20" wide, bolted to masonry	LF	15.0	89.00	1,335

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
195	Fall protection, welded U-bolt floor, wall or soffit anchor, including base plate, 24" square, bolted to masonry or concrete	EA	17.0	390.00	6,630
196	Fall protection, welded HSS bar roof anchor, including base plate, 12" square, 24" on center, embedded in concrete slab	LF	116.0	170.00	19,720
	Undefined			7.49/SF	82,857
	Roof Coverings			7.49/SF	82,857
B3020	Roof Openings				
--	Undefined				
197	Roof hatch with curb and cover, 4' x 4'	EA	2.0	2,600.00	5,200
198	Premium on roof construction and covering for cutable vent roof prop (prop elsewhere)	SF	65.0	18.00	1,170
	Undefined			0.58/SF	6,370
	Roof Openings			0.58/SF	6,370
	Roofing			8.07/SF	89,227
	SHELL			121.76/SF	1,347,060
C	INTERIORS				
C10	Interior Construction				
C1010	Interior Partitions				
--	Undefined				
199	Partitions, concrete block, high strength, hollow, 8" x 8" x 16", fully grouted, reinforced and flush pointed both sides	SF	7,324.0	36.00	263,664
200	Partitions, concrete block, high strength, hollow, 12" x 8" x 16", fully grouted, reinforced and flush pointed both sides	SF	105.0	41.00	4,305
201	Wall opening closure, double panel, hollow metal, including frame, hardware and finish, 5' 8" x 3' 6"	EA	2.0	2,500.00	5,000
202	Railing, 7 rail with handrail on top, 3' 6" high, including finish	LF	29.0	300.00	8,700
	Undefined			25.46/SF	281,669
	Interior Partitions			25.46/SF	281,669

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
C1020	Interior Doors				
--	Undefined				
203	Hollow metal single door, including frame, hardware and finish, 2' 8" x 7'	EA	2.0	3,500.00	7,000
204	Hollow metal single door, including frame, hardware and finish, 3' x 7'	EA	28.0	3,500.00	98,000
205	Hollow metal single door, including frame, hardware and finish, 5' 8" x 7'	EA	2.0	5,700.00	11,400
206	Metal counter coiling door, manual, including frame, hardware and finish, 8' x 4'	EA	1.0	3,400.00	3,400
207	Utility vault, single door, steel, 3' x 3', including frame, hardware and finish	EA	1.0	2,100.00	2,100
208	Utility vault, double door, steel, 3' x 3' 6", including frame, hardware and finish	EA	1.0	2,500.00	2,500
	Undefined			11.24/SF	124,400
	Interior Doors			11.24/SF	124,400
C1030	Interior Specialties				
--	Undefined				
209	Chalkboards, liquid chalk, white porcelain enamel, wall hung, 4' x 6'	EA	1.0	570.00	570
210	Miscellaneous specialties, including signage, corner protection, etc	SF	11,063.0	3.00	33,189
	Undefined			3.05/SF	33,759
	Interior Specialties			3.05/SF	33,759
	Interior Construction			39.76/SF	439,828
C20	Stairs				
C2010	Stair Construction				
--	Undefined				
211	Stairs, cast in place reinforced concrete, 10 risers, including landing, nosing, railing (exterior)	Flight	1.0	8,000.00	8,000
212	Stairs, cast in place reinforced concrete, 18 risers, including landing, nosing, railing	Flight	11.0	11,900.00	130,900

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
213	Premium on concrete stair landings for cast in place reinforced concrete integral beams, 16" x 34"	CY	2.0	1,300.00	2,600
	Undefined			12.79/SF	141,500
	Stair Construction			12.79/SF	141,500
C2020	Stair Finishes				
--	Undefined				
214	Premium on concrete stair treads and landings for polished finish, including sealer	SF	1,981.0	10.00	19,810
	Undefined			1.79/SF	19,810
	Stair Finishes			1.79/SF	19,810
	Stairs			14.58/SF	161,310
C30	Interior Finishes				
C3020	Interior Floor Finishes				
--	Undefined				
215	Polished finish to concrete floors, including sealer	SF	11,063.0	9.30	102,886
	Undefined			9.30/SF	102,886
	Interior Floor Finishes			9.30/SF	102,886
C3030	Interior Ceiling Finishes				
--	Undefined				
216	Premium on elevated concrete slabs for smooth finished soffits	SF	11,063.0	4.10	45,358
	Undefined			4.10/SF	45,358
	Interior Ceiling Finishes			4.10/SF	45,358
	Interior Finishes			13.40/SF	148,244
	INTERIORS			67.74/SF	749,382

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D	SERVICES				
D20	Plumbing				
D2090	All Plumbing Work				
--	Undefined				
217	Plumbing systems (based on 2009 cost estimate escalated to 2021)	SF	11,063.0	13.60	150,457
	Undefined			13.60/SF	150,457
	All Plumbing Work			13.60/SF	150,457
	Plumbing			13.60/SF	150,457
D30	HVAC				
D3090	All HVAC Work				
--	Undefined				
218	HVAC systems (based on 2009 cost estimate escalated to 2021)	SF	11,063.0	28.00	309,764
	Undefined			28.00/SF	309,764
	All HVAC Work			28.00/SF	309,764
	HVAC			28.00/SF	309,764
D40	Fire Protection				
D4010	Fire Protection Sprinkler Systems				
--	Undefined				
219	Fire protection systems (based on 2009 cost estimate escalated to 2021)	SF	11,063.0	2.70	29,870
	Undefined			2.70/SF	29,870
	Fire Protection Sprinkler Systems			2.70/SF	29,870
	Fire Protection			2.70/SF	29,870

GIG HARBOR FIRE & MEDIC ONE

TRAINING CAMPUS SUPPORT BUILDING BAY SPLIT OUT



LOCATION UNIFORMAT LEVEL 1/UNIFORMAT LEVEL 2/UNIFORMAT LEVEL 3/UNIFORMAT LEVEL 4/CSI DIVISION/STATUS ITEM

A Training Campus

A1 Training Tower (continued)

GFA: 11,063 SF Cost/SF: 284.65
Rates Current At May 2021

Ref	Description	Unit	Qty	Rate \$	Total Cost \$
D50	Electrical				
E1020	Institutional Equipment				
--	Undefined				
220	Electrical systems (based on 2009 cost estimate escalated to 2021)	SF	11,063.0	17.00	188,071
	Undefined			17.00/SF	188,071
	Institutional Equipment			17.00/SF	188,071
	Electrical			17.00/SF	188,071
	SERVICES			61.30/SF	678,162
E	EQUIPMENT & FURNISHINGS				
E10	Equipment				
E1040	Other Equipment				
--	Undefined				
221	Training props, destructable, provision for first supply only	LS	1.0	30,000.00	30,000
	Undefined			2.71/SF	30,000
	Other Equipment			2.71/SF	30,000
	Equipment			2.71/SF	30,000
	EQUIPMENT & FURNISHINGS			2.71/SF	30,000
	TRAINING TOWER			284.65/SF	3,149,098

CAPITAL FACILITIES PLAN

CHAPTER 8 DISTRICT MAINTENANCE SHOP

CHAPTER 8 DISTRICT
MAINTENANCE SHOP

RICEfergusMILLER

Chapter 8: (District) Maintenance Shop

Architectural Assessment

Scope of Review

This facility was reviewed by architectural and engineering consultants on September 4, 2020. Please see the included structural, mechanical, and electrical reports for their detailed engineering assessment of the facility.

General Station Information

- Age and Improvement History: Originally built in 2002, with subsequent minor remodeling in the office areas.
- Size: Approximately 13,250 sq. ft.
- Current and Future Deployment: This facility serves the district's vehicle and facility maintenance operations. The shop is home to 3 vehicle mechanics, and 2 full-time and 1 part-time facility maintenance staff. Space is provided for repair shops, offices, and general storage, together with dedicated storage for automotive parts and facility materials.

Noted Operational and Physical Limitations

- Bays: The three, double-deep maintenance bays work well for the vehicle maintenance aspects of the shop. It is noted that reserve apparatus is often stored at the shop due to lack of open apparatus bay space elsewhere in the district.
- Offices: The office area was remodeled to accommodate three mechanics. More space would likely be needed should additional staff be assigned to the facility.
- Roof Assembly and Membrane: The shop is a pre-engineered metal building, and its steel structure includes an integral metal roof. No active leaking was noted.
- Wall assembly: The metal building siding and tilt-up concrete is in good condition.
- Lighting: Predominately fluorescent tube style, these fixtures will likely need to be replaced as part of any substantial remodel to meet the current energy codes.
- Finishes: Flooring is in generally good condition relative to the age of the building.
- Life Safety: Fire sprinklers are provided in this facility.
- Windows and Doors: Windows are double-pane and in good condition. Doors are hollow metal and in good condition.

- Hazardous Materials: Not reviewed as part of this assessment, though no known hazardous materials were utilized as part of the original construction.
- Locker Room: Given the growing staffing at the facility, a locker room would be desirable. Currently staff lockers are in the restroom adjacent the breakroom, which can tie up the facilities.
- Parking: Because shop usage has increased since it opened, additional employee parking is necessary. In addition, the fire district requested covered parking (carport style) over the existing southeast parking area, behind the existing shop, for shop trucks, with an electrical outlet at each parking stall.
- Overhead Crane: The existing crane is limited to traversing a single bay. While this works fine for lifting items up to the second floor, it would be helpful to have the crane extend across all bays.
- Storage: In addition to vehicle maintenance parts supplies, the building serves as a logistical hub for station supplies. Additional storage is needed as some supplies have had to be moved to other locations (such as Station 54) due to space constraints.

Exterior and Site Issues

- Exterior: The Maintenance Facility is in good condition on the exterior, with no apparent issues or concerns beyond routine maintenance.
- Site: Paving and site appear in good condition, with no apparent issues noted.

Code and WAC Considerations

- Life Safety: No deficiencies are noted. The building has both a fire alarm and sprinkler system.
- Restrooms: ADA-compliant at the time of construction.
- Kitchen: The breakroom does not include a range, which would be helpful in the event 24-hour operations are needed. Importantly, adding a range would classify the break room as a kitchen for ADA compliance purposes which would require an accessible kitchen sink and workspace adjacent to the range.

Deferred Maintenance Issues

- Interior: The epoxy floor in the shop bays needs refinishing.

Engineering Reviews

- Summary of Structural Issues: The existing structure system is a pre-engineered metal building. No formal structural assessment was performed for this facility. The

maintenance facility was code-compliant at the time of its construction and no obvious structural impairments are known or visible.

- **Summary of Electrical Issues:** The current electrical and communications systems are in good condition and have at least 10 more years of service life left. There is plenty of spare capacity in the panels and a diesel generator sufficient to power the building is provided. Other than modernizing light fixtures to LED type, no improvements are needed at this time unless the building is substantially remodeled or expanded.
- **Summary of Mechanical Issues:** The existing HVAC systems are in good repair, though it is noted that the existing furnaces are original to the building and are nearing their end of life. Other changes are somewhat optional and can be done as desired or in the context of a renovation or remodel, such as replacing the unit heaters in the bay with more efficient infrared types. Consideration should be given to providing a vehicle source capture system in the smaller vehicle bay.

Conclusions and Long-Term Viability

- **Summary of Architectural and Operational Issues:** The maintenance facility was carefully planned when built. Nearly 20 years later, it continues to serve the district well. Over those two decades, the district has continued to grow and the number of people, vehicles, and materials vying for space within the shop and the site has grown as well. There is area to the south that is available to expand the existing building. The site is reasonably sized, though there is limited space available for additional structures due to circulation, parking, the fueling station, and site stormwater infrastructure.

GIG HARBOR FIRE MAINTENANCE FACILITY

Mechanical Systems Report

October 30, 2020

We visited the Maintenance Facility on September 4, 2020 to evaluate existing mechanical systems and issues relevant to bringing these systems in line with current Building Codes and fire facility design practices. The following is our report on these systems and the necessary improvements.

Existing Systems

1. **Fire Protection:** The facility has a full coverage wet sprinkler system and dry system for outdoor covered areas.



2. **Plumbing:**
 - a. Domestic hot water: The facility is currently served by a single gas water heater with 75 MBH input and 98-gallon storage capacity. The water heater appears to be from 2015 and should still have 10 years of life.
 - b. Piping: Copper piping is used throughout and is mostly insulated.
 - c. Water closets: China, flush valve, in good condition.
 - d. Urinals: China, flush valve, in good condition.
 - e. Lavatories: China, wall mounted with single handle faucet, in good condition.

- f. Sinks: Stainless steel, double bowl sink with single handle faucet, in good condition. Stainless steel utility sinks with double handle sink faucet, in fair/poor condition.
- g. Showers: Fiberglass enclosure, single knob mixing valve, handheld shower head in fair condition. Emergency shower head pull station and emergency eye wash in good condition.
- h. Drinking fountain: Stainless steel, refrigerated, hi-lo station in good condition.
- i. Drains: The maintenance bay has trench drains positioned in front of each bay door. The trench drains and other floor drains from parking areas all connect to one waste line that drains to an oil/sand separator.
- j. Compressed Air: The facility has an air compressor located in the mech/fire room with piping to various outlets throughout.



- 3. **Natural Gas:** The facility does have a natural gas service and is piped to gas furnaces, unit heaters, water heater, dryer and equipment washers. Steel piping is used throughout and in fair condition.
- 4. **HVAC – Facility North and South Wings**
 - a. **Ventilation:** There are two exhaust fans that serve the restrooms. The mech/fire room has an individual exhaust fan. Fresh air for each north and south wing is brought in by two ducted furnaces.
 - b. **Systems:** The facility has one ducted gas furnace on the north wing and a ducted split system gas furnace with ground mounted condensing unit for the south wing. Both sets of equipment were installed in 2002 and are near the end of their expected lifetime.

- c. **Zoning:** The facility is comprised of two zones each with a programmable thermostat. The north zone includes most of the first and second floor spaces of the north wing. The south zone includes the break room, entry and work spaces on the south wing. The south wing furnace also provides supply air into the restrooms.
- d. **Refrigerant:** The single furnace split system is rated for both R22 or R410A refrigerant, so the exact refrigerant used was not confirmed.



5. **HVAC – Maintenance Bays**

- a. **Ventilation:** In the large maintenance bay there is a general exhaust fan present that runs on a switch, condition was not verified since the fan is located on the roof. Make-up air is provided via louvers above the entry doors includes a CO gas sensor. The smaller single bay has a general exhaust fan with a louver for make-up air and CO gas sensor.
- b. **Source Capture Vehicle Exhaust:** The large maintenance bay has a vehicle exhaust reel system with several exhaust hoses positioned close to the bay doors. The exhaust fan is mounted on the roof and the condition was not verified. No source capture exhaust present in the smaller single maintenance bay.

- c. **Heat:** The large maintenance bay has two gas unit heaters. The large maintenance bay layout has a tall ceiling and could accommodate infrared tube heaters. The small single bay has one gas unit heater and a lower ceiling.



Mechanical Improvement Discussion

1. **Operational Related:**
 - a. Consider adding two gas unit heaters at the northwest and southeast corners of the large maintenance bay to improve heat distribution. Note that this requires gas line modification due to the additional gas load from the heaters.
 - b. Plan on providing mixing valve for the hot water system so that water can be stored at 140 deg. F and set to an outlet temperature of 120 deg. F.\
 - c. Consider adding source capture exhaust system for the smaller single maintenance bay to safely perform maintenance work.
2. **Code Related:**
 - a. Ventilation: The Energy Code requires that outside air ventilation for fire related facilities be provided independently of the heating and cooling system(s) and contain energy recovery. An ERV (Energy Recovery Ventilation) system is used to supply each space directly with outside air and recovery heat out of exhaust air from restrooms, laundry, etc. Any type of heating and cooling system(s) may be used with the ERV.
 - b. For new construction, the Code would require both CO and NO2 sensors to control the general exhaust fan in the bays. Consider adding NO2 sensors to pair with the existing CO sensors that tie into each general exhaust fan for the large and small maintenance bays.

3. **Maintenance Related:**

- a. Split systems that use R-22 refrigerant cannot be directly replaced due to the phase out of that refrigerant. When considering replacement or upgrade of split system equipment, it will need to utilize newer refrigerant such as R-410a. This will necessitate replacing not only the exterior condensing unit but also the indoor coil and the refrigerant piping as well.
- b. We recommend replacing the domestic water heater in-kind within 10 years.

BY: Carlos Herrera, Engineer



Maintenance Shop

This building was built around 2002. The facility has a Kohler emergency generator that provides back up power to the entire facility.

The building is fed with a 800-amp; 120/208-volt, 3 phase, 4 wire service to a 800-amp main switchboard. The switchboard is Square D and replacement circuit breakers are still available. The facility has spare capacity on the electrical service (current demand reading was 25 kW; 70 amps. There are plenty of spare breaker space in most of the panelboards. The rest of the electrical system is sufficient for the next 10-years.

The building is fully sprinkled and has a Fire-Lite fire alarm system. The building appears to meet current life safety code requirements. There is horn/strobes located throughout the facility.

The lights are 2x4 lensed with 4' long T5 & T8 fluorescent lamps, electronic ballasts throughout the majority of the facility. Consideration should be taken to have light fixtures changed out to LED type. The exterior wall mounted building lights appear to be metal halide. There may be energy rebates available from the local utility for a LED lighting upgrade.

This building is served by fiber optic cabling from Station 5-6 for communications.

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130930 SF
3.01 ACRES

MOTOR OPERATED CHAINLINK
CANTILEVER GATE, SEE 12/A2.1 W/
OPTICON SYSTEM & AUTOMATIC OPERATOR,
SEE ELEC. DWGS. PROVIDE CONC.
PAD FOR GATE MOTOR AND KEYPAD -
WIDTH & DEPTH OF PAD PER MANUF. REQ'D

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388.19'
NEW 6" CHAIN LINK —

GATE KEYPAD

MOTOR OPERATED CHAINLINK
CANTILEVER GATE, SEE 12/A2.1 W/
OPTICON SYSTEM & AUTOMATIC OPERATOR,
SEE ELEC. DWGS. PROVIDE CONC.
PAD FOR GATE MOTOR AND KEYPAD -
WIDTH & DEPTH OF PAD PER MANUF. REQ'D

FIRE HYDRANT,
SEE CIVIL DWGS.

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STAFF PARKING
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A diagram showing a horizontal beam with several vertical lines representing supports. A blue arrow points to a specific point on the beam.

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SITE PLAN

$$1'' = 20' - 0''$$

8-10 of 16



**RICE
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ARCHITECTS

SHEET
A10

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION SUMMARY

GFA: Gross Floor Area
Rates Current At July 2021

Ref	Location	GFA SF	GFA USD/SF	Total Cost USD
A	Storage Building Addition	1,386	301.15	417,394
B	Sitework			153,746
ESTIMATED NET COST		1,386	412.08	571,140

MARGINS & ADJUSTMENTS

GC General Conditions/Requirements (8 Months)	15 %			85,671
Bonds and Insurances	1.7 %			11,166
GC Overhead and Profit	6 %			40,079
Design Contingency	15 %			106,209
State Sales Tax				Excl.
Subtotal		1,386	587.49	814,265
Average Escalation (From Date of Estimate to Bond Measure Date - April 2022)	6 %			48,856
ESTIMATED TOTAL COST		1,386	622.74	863,121

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION ELEMENTS ITEM

A Storage Building Addition

GFA: 1,386 SF Cost/SF: 301.15
Rates Current At July 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
A1010 Standard Foundations					
1	Cast in place reinforced concrete continuous footings, 24" x 12" thick, including earthwork	LF	107.0	52.00	5,564
2	Cast in place reinforced concrete continuous footings, next to and joined to existing footings, 18" x 12" thick, including dowels, 12" on center, earthwork	LF	47.0	58.00	2,726
3	Cast in place reinforced concrete stem walls, 8" thick, 18" high	LF	107.0	36.00	3,852
4	Cast in place reinforced concrete stem walls, 8" thick, 18" high, cast against existing stems, including chipping, dowels	LF	47.0	38.00	1,786
5	Foundation dampproofing, bituminous asphalt, including protection board	LF	107.0	14.00	1,498
6	Rigid insulation to foundations, 2" thick	LF	107.0	8.00	856
7	Foundation subsoil drainage, including perforated pipe, 6", gravel encasement, geotextile fabric (to existing swale)	LF	120.0	20.00	2,400
Standard Foundations				13.48/SF	18,682
A1030 Slabs on Grade					
8	Reinforced concrete slab on grade, 8", including edge thickenings, base course, vapor barrier, rigid insulation, R-10	SF	1,386.0	15.00	20,790
9	Premium on concrete slab on grade for smooth troweled finish	SF	1,386.0	1.50	2,079
Slabs on Grade				16.50/SF	22,869
B1020 Roof Construction					
10	Roof construction including structural steel columns, beams, joists, decking (per GFA)	SF	1,386.0	25.00	34,650
11	Provision to connect new roof construction to existing building	LF	46.0	25.00	1,150
Roof Construction				25.83/SF	35,800
B2010 Exterior Walls					
12	Provision to demolish/modify exterior wall finishes/roof overhang of existing building to become partition wall	SF	1,152.0	5.00	5,760
13	Wall framing, studs, 2" x 8", including plywood sheathing, 15/32" outside, sill and top plate anchors, batt insulation	SF	2,659.0	17.00	45,203
14	Standing seam metal panel siding, including weather barrier, rigid insulation, 2" thick, furring, finish	SF	2,659.0	25.00	66,475
Exterior Walls				84.73/SF	117,438
B2020 Exterior Windows					
15	Aluminum framed windows, 2-lite insulated glazing	SF	24.0	150.00	3,600
Exterior Windows				2.60/SF	3,600

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION ELEMENTS ITEM

A Storage Building Addition (continued)

GFA: 1,386 SF Cost/SF: 301.15
Rates Current At July 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
B2030	Exterior Doors				
16	Single door, hollow metal, 3' x 7', including metal frame, hardware, finish	EA	2.0	3,500.00	7,000
17	Prefinished metal sectional overhead door, including frame, hardware, finish, 10'x10'	EA	1.0	10,000.00	10,000
	Exterior Doors			12.27/SF	17,000
B3010	Roof Coverings				
18	Standing seam metal roofing, including weather barrier, insulating sheathing, R-49, blocking, flashing and finish	SF	1,386.0	28.00	38,808
19	Aluminum gutters, enameled, 5" box	LF	47.0	15.00	705
20	Aluminum downspouts, enameled, 2" x 3"	LF	44.0	12.00	528
	Roof Coverings			28.89/SF	40,041
B3020	Roof Openings				
21	Skylight, solar tube, 30" diameter, double glazed acrylic	EA	1.0	2,500.00	2,500
	Roof Openings			1.80/SF	2,500
C1010	Interior Partitions				
22	Furred out gypsum board partition to existing exterior walls, including level 5 finish	SF	784.0	6.00	4,704
23	Gypsum board on stud framing, including level 5 finish	SF	1,809.0	2.40	4,342
	Interior Partitions			6.53/SF	9,046
C1030	Interior Specialties				
24	Miscellaneous interior specialties (per GFA)	SF	1,386.0	0.50	693
25	Plywood wall protection, including clear finish (8' high)	SF	1,219.0	5.00	6,095
26	Metal industrial cross-braced shelving system, 36" wide, 5 shelves	LF	185.0	170.00	31,450
	Interior Specialties			27.59/SF	38,238
C3010	Interior Wall Finishes				
27	Paint on gypsum board/plywood walls	SF	3,808.0	1.80	6,854
	Interior Wall Finishes			4.95/SF	6,854
C3020	Interior Floor Finishes				
28	Sealer on concrete floors	SF	1,386.0	1.30	1,802
	Interior Floor Finishes			1.30/SF	1,802
C3030	Interior Ceiling Finishes				
29	Open to structure, paint	SF	1,386.0	2.00	2,772
	Interior Ceiling Finishes			2.00/SF	2,772

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION ELEMENTS ITEM

A Storage Building Addition (continued)

GFA: 1,386 SF Cost/SF: 301.15
Rates Current At July 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
D2090	All Plumbing Work				
30	Plumbing systems (per GFA)	SF	1,386.0	20.00	27,720
	All Plumbing Work			20.00/SF	27,720
D3090	All HVAC Work				
31	HVAC system (per GFA)	SF	1,386.0	30.00	41,580
	All HVAC Work			30.00/SF	41,580
D4010	Fire Protection Sprinkler Systems				
32	Fire sprinkler system (per GFA)	SF	1,386.0	5.00	6,930
	Fire Protection Sprinkler Systems			5.00/SF	6,930
D5090	All Electrical Work				
33	Electrical systems (per GFA)	SF	1,386.0	17.00	23,562
	All Electrical Work			17.00/SF	23,562
G2020	Parking Lots				
50	Concrete ramps, 6" thick, including base and sub-base courses	SF	80.0	12.00	960
	Parking Lots			0.69/SF	960
	STORAGE BUILDING ADDITION			301.15/SF	417,394

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION ELEMENTS ITEM

B Sitework

Rates Current At July 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
G1020	Site Clearing				
34	Clearing typical building perimeter landscaping, including small trees (storage building addition)	Acre	0.10	10,000.00	1,000
35	Clearing typical parking lot landscaping, including medium to large trees (parking stall expansion)	Acre	0.10	30,000.00	3,000
	Site Clearing				4,000
G1030	Site Demolition and Relocations				
36	Demolish AC paving for new utility vehicle parking stalls	SF	1,344.0	2.00	2,688
37	Demolish concrete curs for new parking stalls	LF	175.0	6.00	1,050
38	Demolish pole mounted light, handhole and cap feeder	EA	1.0	500.00	500
	Site Demolition and Relocations				4,238
G1040	Site Earthwork				
39	Cut and fill to create final grade for buildings	CY	146.0	30.00	4,380
40	Cut and fill to create final grade for parking stalls	CY	60.0	20.00	1,200
41	Cut to create final grade for utility vehicle parking stalls	CY	45.0	10.00	450
	Site Earthwork				6,030
G2020	Parking Lots				
42	AC paving, medium duty, for new parking stall expansion, including base and sub-base courses	SY	186.0	130.00	24,180
43	Concrete paving, heavy duty, for utility vehicle parking stalls, including base and sub-base courses	SF	1,344.0	15.00	20,160
44	Concrete curbs	LF	222.0	35.00	7,770
45	Parking stall striping	LF	253.0	2.00	506
46	Parking stall numbering	EA	8.0	10.00	80
47	ADA parking stall symbol	EA	1.0	70.00	70
48	ADA parking stall gore lines	SF	72.0	6.00	432
49	Parking stall carport, including foundations	SF	1,426.0	50.00	71,300
	Parking Lots				124,498
G2030	Pedestrian Paving				
51	Concrete sidewalks, including base and sub-base courses	SF	18.0	10.00	180
	Pedestrian Paving				180
G3030	Site Storm Sewer Systems				
52	Provision for stormwater mitigation	LS	1.0	10,000.00	10,000
	Site Storm Sewer Systems				10,000

GIG HARBOR FIRE & MEDIC ONE

PRE-DESIGN PCFD 5 MAINTENANCE FACILITY



LOCATION ELEMENTS ITEM

B Sitework (continued)

Rates Current At July 2021

Ref	Description	Unit	Qty	Rate USD	Total Cost USD
G5010	Site Electrical Distribution				
53	Electrical outlet, waterproof, GFI, including wiring, connection to existing service	EA	8.0	600.00	4,800
	Site Electrical Distribution				4,800
	SITWORK				153,746