msgs architects

Washington State Military Department

CONDITIONS ASSESSMENT

Building 500 Kent Readiness Center - Kent, WA
Building 501 Kent Readiness Center - Kent, WA
Longview Readiness Center - Longview WA
Montesano Readiness Center - Montesano WA
Ephrata Readiness Center - Ephrata, WA

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Washington State Military Department
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Washington State Military Department
CONDITIONS ASSESSMENT
Executive Summary

1. Introduction

The Washington State Military Department seeks to provide facilities that support its mission to "minimize the impact of emergencies and disasters on people, property, environment, and the economy of Washington State and the region; provide trained and ready forces for state and federal missions; and provide structured, alternative education opportunities for at-risk youth."

A number of Department facilities are at risk of failing to provide this support when called upon, due to age and lack of upgrades to meet current Life Safety, Energy, Accessibility Codes and standard building practices and, in some cases, lack of maintenance. Because of age, inadequate structural design, lack of life safety systems, and inadequate provisions for the disabled, these facilities may not perform as intended in both emergency and non-emergency situations. In addition, due to aged construction and systems, these facilities use an excessive amount of energy and other resources. The Department recognizes the need to identify specific deficiencies and address them in an effort to ensure these facilities will function appropriately for their intended purpose.

2. Scope of Report

In October 2010 MSGS Architects was asked by the Washington State Military Department to provide an overall conditions assessment and recommendations to correct deficiencies at five Department facilities. The task was to identify specific deficiencies, provide recommendations and costs to correct deficiencies, and prioritize the implementation of each recommendation. The five facilities included in this assessment are as follows:

- Washington State National Guard Kent Readiness Center Campus, 500 Building, Kent, WA
- Washington State National Guard Kent Readiness Center Campus, 501 Building, Kent, WA
- Washington State National Guard Longview Readiness Center, Longview, WA (Regional Anchor Facility)
- Washington State National Guard Montesano Readiness Center, Montesano, WA (Regional Anchor Facility)
- Washington State National Guard Ephrata Readiness Center, Ephrata, WA (Regional Anchor Facility)

A comprehensive assessment was performed for each building, looking for deficiencies within the following categories: Life Safety Issues, Non-Life Safety and Maintenance Issues, Accessibility and other Code Related Issues, and Energy Performance Issues. Each specific area was evaluated against current applicable Codes and standard practices. Specific areas evaluated within each facility include:

- Site condition and amenities: adequate parking, ability for fire department response, collection and treatment of stormwater, adequacy of utilities, and accessible routes, including building evacuation in the event of an emergency.

- Structural condition: condition of the existing structural system and an evaluation of the system's performance in a seismic event per current requirements of the International Building Code.

- Building Envelope condition: overall condition of walls, windows, doors, roofs, and other exterior features, including weather tightness, insulation and energy performance, damage, and maintenance issues.

- Interior Building condition: a general evaluation of the facility.

- Life Safety evaluation: building egress, fire protection, fire alarm notification, per requirements of the International Building and Fire Codes and Health Department requirements.

- Accessibility evaluation: vehicle parking, building entrances, interior surfaces and clearances, restroom fixtures and equipment, door hardware, and signage.

- Mechanical Systems condition: age, adequacy, efficiency, and condition of existing equipment.

- Electrical Systems condition: age, adequacy, and condition of existing service, equipment, lighting, fire alarm and exit light systems.

The scope of this study does not specifically address hazardous materials which may be present in each building. With the exception of ceiling tile in the Longview Readiness Center facility, no materials were observed in the course of this study which raised concern. However due to their age, the likelihood of hazardous materials being present in these facilities is high, and testing by a qualified agency is recommended.

3. Methodology

MSGS Architects assembled the following team of engineers to assist in performing evaluations and recommendations for each facility:

- AHBL Civil Engineering (Site and Civil Engineering)
- PCS Structural Solutions (Structural Engineering)
- Veach Mechanical Consulting Engineers (Mechanical Engineering)
- BCE Engineers (Electrical Engineering)

Each facility was assessed based on the following information:

Existing Drawings:
Original construction drawings were provided to the team for each facility by the Military Department, though not necessarily complete sets. In some cases, drawings from some renovation projects were provided. These drawings were used to understand and evaluate the construction of each building, however it is noted that actual field conditions varied due to renovations undertaken through the years since construction.

Site Visits:
The team conducted a site visit to each facility to perform visual inspections. Access was provided to all spaces except high security rooms, which generally included vaults, ammunition supply rooms, and the offices of the Commanding Officer. Building Managers were present at each site to assist with access, questions, and general information about each facility. Observations were recorded via notes and photographs.

Identifying Deficiencies and Recommendations:
The above information was analyzed against current codes and standard practices appropriate for each facility. Deficiencies were identified, and recommendations for addressing each deficiency were developed. Each recommendation was assigned a priority based on urgency; whether work should be performed immediately, within 5 years, or within 10 years. Many of the recommendations would be required by code to be addressed if the facility were to undergo a major renovation, and they have been identified as such. A cost was assigned to each recommendation, which includes both construction and project costs.

Documentation:
Included in this document is a Narrative for each facility including a general description of its present condition, and a Matrix identifying deficiencies, recommendations, priorities and costs as per above. The Matrix is organized around the following categories: 1) Life Safety Issues, 2) Non-Life Safety and Maintenance Issues, 3) Accessibility and other Code Related Issues, and 4) Energy Performance Issues. Costs are provided for each individual item, as well as totaled by urgency/priority. Where drawings or photographs exist to help illustrate a deficiency, a Figure is included in Appendix A of each Facility section.

MSGS Architects is pleased to present the following report.

Washington State Military Department
CONDITIONS ASSESSMENT
Narrative

Montesano Readiness Center
Regional Anchor Facility
Montesano, WA

1. General Description

The Montesano Readiness Center is located at 298 Clemons Road, Montesano WA, near the City of Montesano. The building is a single story masonry wall structure constructed in 1979, with low-slope roofs and wood roof framing. It is 24,000 Square Feet in size, including a 6,390 Square Foot Drill Hall. The building also contains office space, munitions and equipment storage, locker storage, a commercial kitchen, classrooms, an exercise room, restroom and shower facilities. The site is moderately sloped, and contains approximately 35 paved parking stalls, none of which are designated as Accessible stalls. There are substantial additional paved staging areas around the building.

2. Summary of Site/Civil Observations:

A. Parking, Paved Surfaces, and Fencing:

An existing approximate 36,000 square feet paved asphalt parking lot is located south of the building. A barbed wire security fence separates military vehicle parking areas from personnel vehicle parking areas. The parking lot includes a drive lane accessing Clemons Road to the east of the site. In addition, the parking lot drive lane accesses the FMS Building located south of the Readiness Center Building. The main building entrance is located along the center of the southeast side of the building. Concrete sidewalks connect the parking lot to the building entrance. Ongoing construction was observed northwest of the building. Design drawings dated 09/17/2010 by Trans Olympic Engineers for construction of a 27,000 square foot asphalt pad northwest of the building were obtained. Prior to construction, the area northwest of the building was surfaced by gravel. The wellhead serving the site is located along the north property line. Mark Leingang of Trans Olympic Engineers indicated that the asphalt pad and a new storm drainage conveyance system were constructed to eliminate stormwater discharges to groundwater within the 100-feet wellhead protection zone. Areas of gravel surfacing and concrete fueling pads are located between the Readiness Center Building and the FMS Building. Areas southwest to northeast of the Readiness Center Building including the FMS Building, new paved asphalt pad, fueling islands and landscaped areas are enclosed by a barbed wire security fence. The security fence's gate is located along the drive lane within the parking lot.

The paved parking lot, walkways, and drive lanes appear to be in satisfactory condition. Numerous areas of cracking asphalt pavement were observed within the parking lot. Cracking was particularly observed along pavement joints. While at the

site the parking lot was observed to have minimal usage. Based upon usage of the parking lot, cracking of the pavement is a minimal concern. No other large areas of cracking or deteriorated paving were observed. Ponding stormwater was observed within the parking lot. Designated ADA parking stalls within the parking lot do not meet slope, signage, and striping requirements. In addition, the accessible route between ADA parking stalls and the building does not meet slope requirements and there is not a sufficient number of ADA parking stall provided within the existing parking lot. The fencing appears to be in satisfactory condition. No areas of damaged fencing were observed.

B. Storm Drainage:

The existing storm drainage system includes a roof drainage conveyance system for the Readiness Center Building and a storm drainage system for the new 27,000 square feet asphalt pad. At the northeast and south exterior walls downspouts were observed connecting to a below grade roof drainage system. As-built drawings indicate that the roof drainage system at the northeast portion of the building travels beneath the building to the eastern exterior wall of the building where it connects with the roof drainage system from the south exterior wall. From the eastside of the building, the roof drainage system travels east and outfalls to a ditch conveyance system along Clemons Road. A new conveyance system consisting of catch basins, 8-inch and 12-inch pipes for the new 27,000 square feet asphalt pad was observed. The conveyance system routes drainage south from the new asphalt pad located northwest of the Readiness Center Building through a military vehicle parking area. Two catch basins are located in the military vehicle parking area. The conveyance system outfalls to a biofiltration swale located south of the existing parking lot Downstream of the biofiltration swale, drainage is discharged to a forested area south of the parking lot for dispersion and infiltration. Mark Leingang of Trans Olympic Engineers indicated that the new conveyance system collects drainage from the new 27,000 square feet asphalt pad and portions of the military vehicle parking area. The area draining into the new conveyance system could not be determined from the design drawings. The personnel and military vehicle parking lots slope to the southeast at grades varying between 1.5 and 6.5-percent. Drainage sheet flows southeast across the parking lots and outfalls to the forested areas south and southeast of the site.

At the northeast building walls, existing gutters and downspouts are cracked and leaking. Moss growth along the building wall and downspouts is observed. The roof drainage system has no stormwater quantity system. Other than the cracked downspouts and gutters, the existing roof drainage conveyance systems appear to function adequately. Construction of the 27,000 square feet asphalt pad northwest of the building was ongoing during the site visit and pavement was not in-place.

Therefore, proper fall for drainage into the conveyance system could not be confirmed. Mark Leingang indicated that a storm drainage report was not completed for the new conveyance system and stormwater calculations were not performed to size the biofiltration swale or confirm that adequate dispersion of drainage will occur in the forest area. The biofiltration swale and stormwater dispersion system to the forest area provide stormwater quality and stormwater quantity function. However, the biofiltration swale and dispersion systems may not meet current code sizing requirements. The personnel and military vehicle parking lot south of the building do not have stormwater quality or quantity systems.

C. Water, Sanitary Sewer, and Gas Utilities:

Domestic water is supplied to the building by a well located northwest of the building. It is our understanding, that the parking lot northwest of the building was constructed to prevent pollutants from military vehicles from entering subsurface soils adjacent to the well. The well's pumprate could not be confirmed. The water service line between the well and the building is 3-inches in size, and enters the building at the mechanical room at the north central portion of the building. Within the Readiness Center Building mechanical room a 2-inch water line tee's off of the 3-inch water service to serve the FMS Building. A 650 gallon (7LF x 4-feet diameter) A.O. Smith Corp. pressure tank with maximum operating pressure of 125 psi supplies the water system. The pressure tank was observed with operating pressure of approximately 52 psi. The pressure tank has a 1 HP, 1725 RPM, 60 Hz Dayton compressor. The site is served by a septic system located northeast of the building. Waste piping exits the bathroom and kitchen located at the northeast portion of the building. Kitchen waste piping discharges to a 55 gallon grease interceptor. Downstream of the grease interceptor bathroom and kitchen waste piping combine prior to connection to 1150 gallon and 750 gallon septic tanks. Downstream of the septic tanks, waste piping enters a 1650 square feet septic drain field. Gas service is not provided to the site.

To our knowledge, there are no deficiencies with the existing domestic water system. If renovation work occurs to the building and additional fixtures are required or the building population increased, water service demand will increase. The well pump rate will need to be determined. The well pump may be required to operate too frequently and a larger water storage/pressure tank system may be necessary. The pressure tank shall meet requirements of the Washington State Department of Health Criteria for Class A Systems. We recommend that the owner install a flow meter and take daily readings to determine current usage. The building has no backup water supply for use if the pump fails. To our knowledge there not no known complaints regarding operation of the septic system. Current Code requires minimum pipe size of 6-inches for sanitary sewer services. Portions

of the existing sanitary sewer services exterior to the building are 4-inches in size. The grease interceptor does not meet current sizing requirements. Kitchen grease waste may be entering the septic drain field. There is not a designated reserve septic drain field area on the site. The septic system was constructed in the late 1970's. If the building is renovated or population increase, the Gray's Harbor County will require improvements to the septic system to meet current code requirements.

D. Fire Water System:

The building currently does not have a fire sprinkler system, which is required by the International Building Code for wood framed buildings of this size. A fire hydrant was recently added at the northeast corner of the site, which is fed by two large nearby reservoirs. This report recommends the addition of fire sprinklers to the building. The water supply appears to be adequate in volume to support the installation of fire sprinklers in the building, however a fire booster pump will be required to supply adequate pressure for the sprinkler system. The reservoirs do not appear to provide adequate volume to meet the International Building Code requirements for water flow at the hydrant. (Revised 8/5/2011)

3. Summary of Structural Observations:

A. Structural System Description

The Montesano Readiness Center is a single story masonry structure with a wood framed roof originally designed in 1975 and constructed in 1979. Existing drawings were available for our review. The building is identified as a Regional Anchor Facility and evaluated as an Essential Facility per the International Building Code.

Vertical Load Resisting System: Concrete spread footing foundations, concrete slab on grade floor construction (6 inch slab at assembly area), masonry exterior walls with brick veneer, masonry interior bearing walls and partition walls, glu-lam roof beams, wood purlins, roof trusses and plywood roof sheathing.

Lateral Force Resisting System: Reinforced masonry shear walls and plywood roof diaphragm. The masonry corridor walls and partition walls do not extend to the roof diaphragm and are not part of the lateral force resisting system.

B. Observations and Comments

At the east wall of the Assembly Hall there are a couple of masonry panels where there is vertical cracking and deterioration of the masonry units. It is not clear how

the moisture is getting to this area nor is there a simple explanation to the cause of the cracks.

Some of the exterior walls showed signs of excessive moisture at the walls with moss and discoloration of the exterior brick veneer.

The wood roof trusses on the project are plywood gusset trusses where the transfer of stresses between web members and plywood gussets rely on a glue connection without mechanical fasteners. These trusses are known as "Frame Joist" and have had structural concerns/failures in other buildings constructed in the same time period.

The seismic design criteria was not specifically indicated on the existing drawings. In 1976 Uniform Building Code was the first year an importance factor was introduced into the seismic design criteria. We therefore estimate that the current International Building Code (IBC) Criteria is anywhere from 2 to 3 times more than that required at the time of the original construction.

C. Conclusion

There are numerous structural concerns both gravity and seismic for the building to meet life/safety or essential facility structural requirements. The wood trusses used on the project are unique, have historically not performed well under full snow loads and are of immediate concern. The seismic concerns are common for masonry buildings constructed before more current seismic requirements starting with the 1973 UBC. It should also be noted that the code required seismic criteria for the building has changed significantly since the building was originally constructed. This is mainly due to the more recent concern of a large subduction earthquake off the Washington Coast.

4. Summary of Architectural Observations:

A. Exterior

The exterior walls of the building are constructed of Concrete Masonry Units (CMU) with a brick veneer exterior finish, and include an assumed 1 ½ to 2 inches of rigid insulation (actual thickness is not called out on the existing drawings). Some cracking in northeast wall developed following the 2001 Nisqually Earthquake. All cracks should be patched. Water infiltration through the masonry walls was observed, likely caused by wind-blown water penetrating the brick veneer and migrating through the CMU interior wall, compounded by improper installation or lack of a weather barrier in the wall cavity.

The roof is constructed of a single-ply membrane over an assumed 2 inches of rigid insulation (actual thickness is not called out on the existing drawings) on a plywood deck, supported by glu-lam beams and purlins or wood trusses. The membrane itself appears to be in adequate condition, however a lack of cap flashing at the parapets may contribute to current leaks or cause leak issues in the future. Metal cap flashing should be installed at the parapets to protect the membrane.

Gutters along the south and west sides of the building were observed to be severely deteriorated, corrosion has caused large holes to develop in several locations, and should be replaced. Several downspouts have broken or are missing connections to the drains at grade and should be replaced with the gutters.

Windows are aluminum single-pane and window caulking has deteriorated. At a minimum, windows should be re-caulked, however per Energy Performance recommendations below, windows should be replaced.

B. Interior

VCT and carpet interior flooring appear in adequate condition. Painted CMU wall finishes appear in adequate condition, though cracking was observed in some of the CMU walls. The ceilings are suspended acoustical tile and appear in adequate condition. Restrooms are finished with tile floors and wainscot to 5 feet above the floor, with painted CMU above, in reasonable shape.

The Kitchen is finished with tile floors and a tile wainscot to 7 feet, with painted CMU above and a painted sheetrock ceiling, and appear to be in reasonable condition. The exhaust hood appears to have a fire suppression system.

C. Life Safety

The building appears to generally conform to the International Building Code (IBC) for number of exits. Exit signage does not comply with code, and should be addressed. Panic/exit devices were present at most required exit doors, but should be placed on all exit doors. Exit widths and distances appear to conform with current requirements.

The building is over the square footage allowed by the IBC for a structure without a fire sprinkler system, a fire sprinkler system and fire alarm system should be installed in the building.

D. Accessibility

Accessible parking stalls are not currently provided, and should be added in compliance with the IBC and ANSI 117. Though not required by current code, Federal ADAAG guidelines recommend the installation of an automatic door operator at the main entry door.

The majority of interior door operating hardware is of the knob type, and should be replaced with lever hardware per IBC and ANSI 117 requirements.

Rest Rooms do not include Accessible toilet stalls, compliant grab bars and other accessories, compliant faucets on the lavatories, or required knee protection for piping under the lavatories, and should be renovated to comply with the IBC and ANSI 117.

The building does not contain a compliant drinking fountain, one should be added.

E. Energy Performance

The exterior walls of the building are constructed of Concrete Masonry Units with a brick veneer exterior finish, and include assumed 1 ½ to 2 inches of rigid insulation, with an R value of approximately 7.5 to 10, allowing significant heat loss through the walls of the building. There is no vapor barrier present, which allows conditioned air to leak out the walls of the building. To comply with the Washington State Energy Code, walls should be furred on the inside, a vapor barrier added, and insulation with a minimum R value of 24 installed.

The roof is constructed of a single-ply membrane over 2 inches of rigid insulation on a plywood deck, supported by glu-lam beams and purlins. It is assumed no vapor barrier is installed, and combined with minimal insulation allows significant heat loss and air leakage through the roof. At the time of the next roof replacement, Insulation with a minimum R value per code should be installed with a vapor barrier.

5. Summary of Mechanical Observations:

A. HVAC Systems

The building is heated and air conditioned by rooftop and split system heat pumps. The restrooms areas have electric unit heaters, and the Fan coils with electric heat. The heat pumps are Late 1990's Trane or Carrier units. The duct work is fiberglass ductboard. The rooftop exhaust fans are generally original to the building (1978). Controls are recent 2009 vintage Delta digital controls.

The current HVAC systems are in reasonable shape, and serviceable. The rooftop exhaust fans need to be replaced. The rifle range is no longer used, and the system for the rifle range is no longer appropriate. The fiberglass ducts should be checked for soft spots and erosion.

B. Plumbing Systems

The building is served by a well, and has a large pressure tank. Water heaters are electric. The plumbing fixtures are over 10 years old and showing wear. The water piping is copper with no known problems.

The current systems are in reasonable shape, and serviceable. Some improvements can be made to improve performance.

6. Summary of Electrical Observations:

A. Electrical Infrastructure

The overall condition of the electrical gear and panel boards is good. All of the breakers appear to be in working order with clearances that meet code. There are two services to the building from two separate transformers- both at 208V, 3-phase. A standby generator exists for the building with a transfer switch at one of the services. Surface conduit is routed through many of the spaces to serve receptacles, switches and lighting that were added after the initial construction. The existing receptacles and switches appear to be in good condition.

B. Lighting

Lighting primarily consists of recessed static troffers, surface mounted wraparound fixtures, and strip lights. These are typically lit with linear 4' T8 and T12 lamps. The linear industrial fixtures in the drill hall are lit with T5HO lamps. Incandescent fixtures are still used in a few locations. Lamps are out and/or lenses are broken in several fixtures. Manual switching is typical throughout the spaces. Most areas are provided with occupancy sensors in addition to the manual switching. Emergency egress bug-eye fixtures are provided throughout the building. Exit signage is provided at most exits. Building exterior lighting generally consists of wall-mounted HID fixtures.

C. Systems

A fire alarm system is not present in the building. The telecommunications system appears to be adequate for the building. The head-end is in good condition. Cables are typically routed above the accessible ceiling system. Surface-mounted conduit and open cabling are used to route cable to each individual jack.

D. Site

Existing site lighting is HID based and extremely limited. Existing site power and telecommunications infrastructure appear to be adequate.

E. Observations

Most of the light switching schemes do not meet the requirements of the current Washington State Energy Code. The code requires several things that are not present in the current scheme: daylighting zones to be switched separately from non daylighting zones, automatic daylight harvesting in daylighting zones, and additional occupancy sensors in some areas.

The exit sign and emergency egress lighting system is not adequate for the building. Some additional egress fixtures need to be added to get the required 1-footcandle average on the paths of egress. Additional exit signage is also required to meet egress codes.

Many of the light fixtures can be replaced with newer fixtures to reduce energy usage.

The building does not have a fire alarm system.

Many telecommunications and low-voltage cables are dropping directly out of the ceiling. These cables should be routed in conduit or raceway to ensure they are not damaged.

Washington State Military Department
CONDITIONS ASSESSMENT
Montesano, WA

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AHBL

1. Life Safety Issues

Item		Deficiency	Figure	Recommendation	Urgency	Cost*
Structural	S1.1	Wood trusses with plywood gusset plates: These trusses referred to as "Frame Joist" have not performed well in past under full snow load.		Perform a detailed analysis of the trusses to verify their live load capacity. In the past the addition of gusset plates and strengthen top chord by the addition of web members to reduce stresses has been required. An alternate solution is to provide an over built roof spanning from the exterior walls to the interior bearing walls.	Immediate**	$720,000
	S1.2	Anchorage of masonry walls to wood roof structure: A majority of the wall anchorage consists of cross grain bending in wood ledgers which historically have performed poorly in past seismic events. Without adequate anchorage the walls may separate from the building in the event of a major earthquake.		Provide positive anchorage by epoxy bolts into the bond beams at the top of the masonry walls and metal straps to the wood roof structure. At the end walls where the walls are parallel to the roof trusses provide blocking and strapping at the plywood panel edges to develop a sub diaphragm	Immediate**	
	S1.3	Essential Facility seismic design criteria: Based on the quick checks there appears to be adequate shear wall capacity. However, the roof diaphragm and possibly out of plane design of the taller masonry walls do not appear to comply with the current code for an essential facility nor the ASCE 31-03 provisions for immediate occupancy buildings.		Items 2, 4-10 are all seismic improvements that are anticipated in upgrading the facility to an essential facility. These items would also be required as part of a seismic upgrade of the building to meet current life/safety standards. The primary difference would be the a 1.5 importance factor applied to the level of seismic forces that each element is designed for.		
	S1.4	Cracking in the masonry walls of the Drill Space.		Repair the cracking by either removing face shells in the areas of the wall cracks or rout out the cracks and fill with mortar. Where the cracks run through reinforced grouted cells provide pressure injected epoxy grout		
	S1.5	Under Reinforced 12 inch Masonry Walls: Walls do not meet minimum reinforcing requirements and may not meet out of plane requirements. They therefore are more susceptible to damage in the event of a major earthquake then a wall meeting current standards.		Adding reinforcing to the wall would be difficult. The in-plane stresses in the wall appear low so the primary issues would be to brace the walls out of plane by strong backing the walls with steel columns.		
	S1.6	CMU Corridor Walls: The walls are cantilevered out of the ground and not continuous to the roof structure above.		Brace the top of the walls to the roof structure or strong back the wall with steel columns extending from the foundation to the roof structure above.		
	S1.7	Building Cross Ties: Roof diaphragms lack cross ties from exterior wall to exterior wall.		Add tension straps to tie roof trusses together primarily at the corridor walls to provide a tension tie across the building. At the end walls provide plywood sheathing at the cripple walls within the sub diaphragm per item 2 above to transfer forces to the masonry walls below. At the assemble room provide tension straps between the wood purlins.		
	S1.8	Re-Entrant Corners: Diaphragm collectors are lacking at the re-entrant corners of the roof diaphragm.		At the re-entrant corner of the north and east wing provide steel member extending from the exterior masonry walls across the roof diaphragm.		
	S1.9	Interior CMU Partition Walls: The top of the walls are not braced to the roof structure for out of plane loading.		Brace the partition walls to the wood roof structure.		$505,000
	S1.10	Non structural elements including suspended ceilings, light supports, and piping do not appear to meet current seismic standards		Non structural elements are generally upgrade during a remodel of the building. Seismic bracing of the ceilings, lights, piping, mechanical equipment, etc would be required to upgrade the building to meet current seismic standards.	Within 10 Years**	$25,000
Architectural	A1.1	The building is over the allowed square footage for structures without an automatic fire sprinkler system. The site does not have a fire supply system including interior fire sprinkler system.		Install an automatic fire sprinkler system. A fire supply system meeting NFPA requirements will require construction of a fire pump to boost pressure from the existing supply line.(Rev. 8/5/2011)	Within 5 Years**	$155,000
Electrical	E1.1	The exit sign and emergency egress lighting system is not adequate for the building. Some additional egress fixtures need to be added to get the required 1-footcandle average on the paths of egress. Additional exit signage is also required to meet egress codes.		Install additional emergency egress fixtures and illuminated exit signs.	Immediate**	$7,500
	E1.2	The building does not have a fire alarm system.		Install a new fire alarm system.	Immediate**	$61,800
Total						$1,474,300

2. Non-Life Safety & Maintenance Issues

Item		Deficiency	Figure	Recommendation	Urgency	Cost*
Civil/Site	C2.1	The personnel and military vehicle parkings lots have no stormwater quantity system.		If other renovation work occurs at the building, provide a stormwater quantity system consisting of measures such as underground detention, LID measures or open ponds. Dependant on the extent of work only partial improvement may be necessary.	Within 10 Years**	$165,000
	C2.2	The personnel and military vehicle parking lots have no stormwater quality system.		If other renovation work occurs at the building, provide a stormwater quality system consisting of measures such as underground mechanical filtration, biofiltration swales, raingardens, or LID measures.	Within 10 Years**	$30,000
	C2.3	The roof drainage conveyance system has no stormwater quantity system		If other renovation work occurs at the building, provide a stormwater quantity system consisting of measures such as underground detention, LID measurs or open ponds.	Within 10 Years**	$25,000
	C2.4	At the northeast building wall, existing gutters and downspouts are cracked and leaking. Moss growth is observed along the wall and downspouts.	Fig C2.4	Replace cracked and leaking gutters and downspouts with new gutters and dowspouts.	Immediate**	$4,000
	C2.5	Minor crack of paved surfaces is observed in the parking lots	Fig C2.5	Hot tar seal all cracked pavement within the parking lots to extend pavement life	Immediate**	$6,000
	C2.6	The well pump rate is unknown. The well pump may operate too frequently and a larger water storage/pressure tank system meeting WSDOH Criteria for Class A water systems may be necessary if additional fixtures are added during renovation.	Fig C2.6	Install a flow meter to take daily usage reading. Provide a larger pressure tank if determined necessary.	Within 10 Years**	$25,000
	C2.7	The building has no backup water supply if the well pump fails.		The owner shall determine if backup water supply is critical to the site operations. If a backup water supply is critical, we recommend constructing a water tank on the building exterior to provide 24-hour water storage.	Within 10 Years**	$75,000
	C2.8	Portions of the existing sanitary sewer laterals are 4-inches in size.		Install 6-inch services with cleanouts between the building and the existing 6-inch service lateral.	Within 10 Years**	$12,500
	C2.9	The grease interceptor does not meet current sizing criteria. Grease waste may be entering the septic drainfield and limiting the operation of the drain field.	Fig C2.9	Install a grease interceptor meeting Code requirements for the site usage.	Immediate**	$10,000
	C2.10	Current Codes require designation of an on-site area for a reserve septic field equal in area to the existing drainfield		Coordinate designate a 1,650 SF area on site as a reserve drainfield with a septic designer. The designated area shall be in close proximity to the existing drain field and have no further development planned within its limits.	Immediate**	$2,000
	C2.11	The existing septic tanks and drain fields were constructed in the late 1970's and likely do not meet current code requirements.		If the building is renovated or populations increase improve the septic system to meet current code including installation of new septic tanks and drain field	Within 10 Years**	$60,000
	C2.12	The biofiltration swale and dispersion system may not meet code requirements for stormwater quality and stormwater quantity.		Complete storm drainage calculations to determine capacity of the biofiltration swale and dispersion system. If the systems do not have adequate capacity, the systems shall be enlargened. $3,000 if system has adequate capacity, $10,000 to enlarge existing system.	Complete with building renovation	$10,000
Architectural	A2.1	Aluminum window frame caulking is failing in several locations.		Re-caulk window frames at the jambs and both ends of each sill.	Immediate	$2,000
	A2.2	Water infiltration occurs along the northeast wall of the drill space. Evidence of leaks were observed at both the interior drill hall side wall in several places, and on the opposite side of the wall near the ceiling. Water appears to be coming in through cracks in the concrete block, about mid-way up the wall. Existing drawings do not show a weather barrier in the cavity between the brick veneer and the CMU wall behind, and it is likely cracks in the brick veneer are allowing wind-driven water to reach the air/insulation space between the CMU and brick veneer with no flashing or weep holes to direct the water out of the wall.	Fig. A2.2	Patch all cracks in brick veneer wall and seal brick veneer with a clear, elastomeric sealer. Sealer should be re-applied every two years. As an alternative, cover brick veneer with new metal siding, and new flashing at the parapet and low roof walls (not cost estimated).	Immediate	$3,400
	A2.3	Parapet flashing around the building relies on the roof membrane, and does not include a metal cap flashing to protect it from damage and possible leaks.	A2.3	Install a metal cap flashing over the parapet walls, extending a minumum of 6" below top of wall. This may be included as part of the next re-roofing project for the building.	Within 10 years	$47,000

	A2.4	Condition of the mechanical hoods on the roof is poor, metal is severely corroded with rust in many locations, which can cause leaks into the ductwork if corrosion continues to the point of developing holes in the sheet metal.	Fig. A2.4	Replace corroded mechanical hoods with new pre-finished metal or stainless steel hoods.	Within 5 years	$8,000
	A2.5	Water is collected off the roof via metal gutters. The gutters on the south and west sides of the building are badly corroded and deriorated with holes to the point they are virtually ineffective. Downspout connections at grade in several locations have become broken or loose.	Fig. A2.5	Replace all metal gutters and downspouts with new pre-finished metal gutters and downspouts. Repair downspout connections at grade.	Immediate**	$28,000
Mechanical	M2.1	The rooftop exhaust fans are aging, corroding, and in need of replacement	Fig. A2.4, M2.1	Replace rooftop exhaust fans.	Within 5 Years	$11,000
	M2.2	The HVAC system in the former rifle range area is inappropriate for use as a storage space.		Install a rooftop heat pump with new supply and return ducting for space. Remove exhasut fan and exhaust duct.	Within 5 Years**	$18,000
	M2.3	The Heat pumps are aging and need to be replaced.		Replace heat pumps with new high efficiency units.	Within 5 Years	$65,000
	M2.4	The plumbing fixtures are old an looking worn. They do not meet curent water usage code.		Install new Low water usage fixtures.	Within 5 years**	$18,000
	M2.5	The Galvanized Steel water pressure tank is near the end of its life.		Replace pressure tank.	Within 5 Years	$17,500
Total						$642,400

3. Accessibility and other Code Related Issues

Item		Deficiency	Figure	Recommendation	Urgency	Cost*
Civil/Site	C3.1	There are not a sufficient number of ANSI 117 compliant designated parking stalls for the building within the parking lot.		Provide an additional 4 ANSI 117 compliant parking stalls adjancet to existing ADA parking aisles within the north and south parking lots. Dependant on the extent of work only partial improvement may be necessary.	Immediate**	$12,000
	C3.2	Existing ADA stall signage and striping is not compliant with current Code requirements		Replace the existing ADA parking stall signage and striping with Washington State Code & ANSI 117 compliant parking stall signage and striping.	Immediate**	$2,000
	C3.3	There is no compliant accessible route between the parking lot and the building. Existing sidewalks between the parking lot and the building exceed 1:20 slope requirements.		Provide an IBC & ANSI 117 compliant accessible walkway between the parking lot and building. Handrails and landings shall be installed where necessary to meet slope requirements.	Immediate**	$10,000
	C3.4	Fire hydrants are not located within 150-feet of all points of the building.		Install a fire water loop around the north and eastside of the building with construction of a fire supply and building interior fire sprinkler system.	Within 10 Years**	$60,000
Architectural	A3.1	Mens and womens restrooms are not ANSI 117 compliant. Lavatories currently have non-compliant faucet handles and lack knee protection around piping underneath. ADA toilet stalls do not comply for width, clearance, and grab bars.	Fig. A3.1	Renovate mens and womens rest room to provide ANSI 117 compliant facilities.	Within 5 Years**	$293,000
	A3.2	One required drinking fountain is provided, however it is not ANSI 117 compliant.		Add one compliant drinking fountain.	Within 5 Years**	$2,000
	A3.3	Approximately half of the interior doors currently have knob-style hardware, and do not comply with ANSI 117 lever style door handles.		Replace all non-compliant door knobs with compliant lever style handles.	Within 5 Years**	$9,000
	A3.4	Though not required by the IBC or ANSI 117, the main entry does not include an accessible automatic door operator as recommended by Federal ADAAG guidelines.		Install an accessible automatic door operator at the main entry.	Within 5 Years**	$3,800
Mechanical	M3.1	Shower valves are not temperature compensated as required by current code.		Replace shower valves.	Within 5 Years**	$6,000
Electrical	E3.1	Most of the light switching schemes do not meet the requirements of the current Washington State Energy Code. The code requires several things that are not present in the current scheme: daylighting zones to be switched separately from non daylighting zones, automatic daylight harvesting in daylighting zones, and additional		Update switching schemes to meet current state energy code.	Within 5 Years**	$9,500
Total						$407,300

4. Energy and Performance Issues

Item		Deficiency	Figure	Recommendation	Urgency	Cost*
Architectural	A4.1	CMU and brick veneer exterior walls contain 1" - 1 1/2"rigid inslulation, with an R vaule between 5 and 7.5, which does not meet the requirements of the Washington State Energy Code, and contribuites to excessive energy building energy use.		Furr existing walls with 4" metal studs and sheetrock, and provide 4" of rigid insulation with a vapor barrier. This will provide R-20 and meet the requirements of the Washington State Energy Code.	Within 5 Years**	$230,000
	A4.2	It is presumed the roof system includes rigid insulation, the original building was constructed with 2" thickness, providing an R value of approximately 10. It is unknown if the insulation thickness was increased as part of past re-roofing projects.		If necessary include new tapered insulation with a minumum R vaule of 30 to meet the requirements of the Washington State Energy Code as part of the next re-roofing project	Within 10 Years**	$126,000
Mechanical	M4.1	Water heaters are standard efficiency electric tank type.		Install a solar domestic water heating system with electric backup. Interconnect the two existing hot water heaters to use water from the new solar system.	Within 5 Years	$12,000
	M4.2	Heat pumps are standard efficiency and aging. They rely on electric heat at low temperatures.	Fig. M4.2	Provide new high efficiency heat pumps that operate to low temperatures. Mistubishi Hyper-Heating or similar that operate to 0F. Ducts would need to be re-configured for this system.	Within 5 Years	$95,000
	M4.3	Locker rooms and core of the building are served by electric resistance heat.		Replace air handler with electric heat with a split system heat pump for increased efficiency.	Within 5 Years	$10,000
Electrical	E4.1	Many of the light fixtures can be replaced with newer fixtures to reduce energy usage.		Replace existing T8 fixtures with newer lamp and electronic ballast technology.	Within 5 Years**	$6,800
	E4.2	Many telecommunications and low-voltage cables are dropping directly out of the ceiling. These cables should be routed in conduit or raceway to ensure they are not damaged.		Install conduit for these cables.	Within 5 Years**	$2,700
Total						$482,500

Immediate Cost	$1,373,700
Cost Within 5 Years	$972,300
Cost within 10 Years	$650,500
Grand Total	$3,006,500

Notes

*Estimated Project Costs are in 2011 dollars and include design fees and permitting as required.
**Must be completed as part of any major renovation to the building.

Montesano Readiness Center
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Figure C2.4 At NE wall, gutters and downspouts are cracked and leaking leading to moss growth on the brick

Figure C2.5 Minor cracking of paved surface was observed

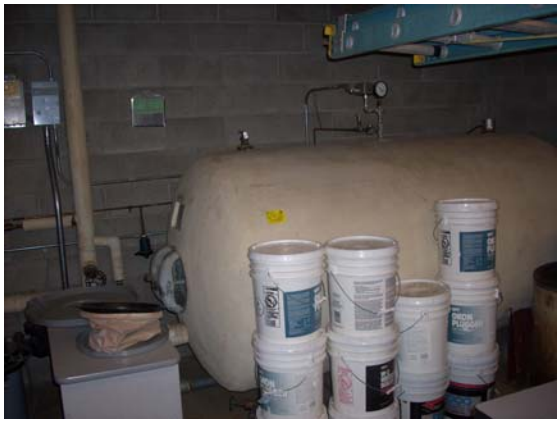

Figure C2.6 Well pump rate is unknown and may operate too frequently creating a need for a larger storage/pressure tank system if fixtures are added

Figure C2.9 Existing grease interceptor does not meet current sizing criteria potentially allowing grease to enter the septic drainfield and limiting the drain fields operation

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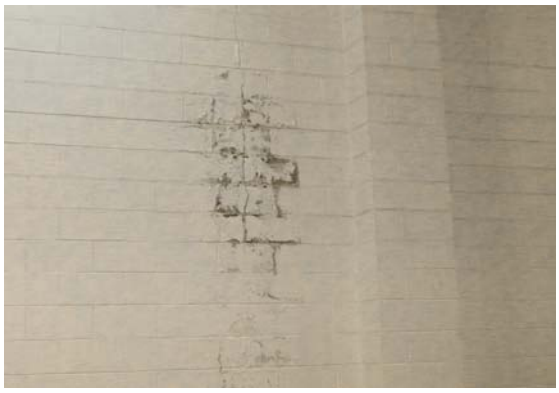

Figure A2.2 Water infiltration is occurring at the NE wall of the drill space most likely due to wind driven rain through cracks in the CMU/brick veneer and lack of flashing and a weather barrier

Figure A2.3 Parapet flashing relies on roof membrane and does not include metal cap flashing to protect it from damage and leaks

Figure A2.4 The condition of metal mechanical roof hoods is poor which may cause leaks in to ductwork

Figure A2.5 Gutters at the South and West sides of the building are badly corroded/deteriorated and connections at grade at several locations have broken or are loose

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Montesano, WA

Figure M2.1 See Figure A2.4

Figure A3.1 Existing restrooms do not meet ANSI 117 requirements

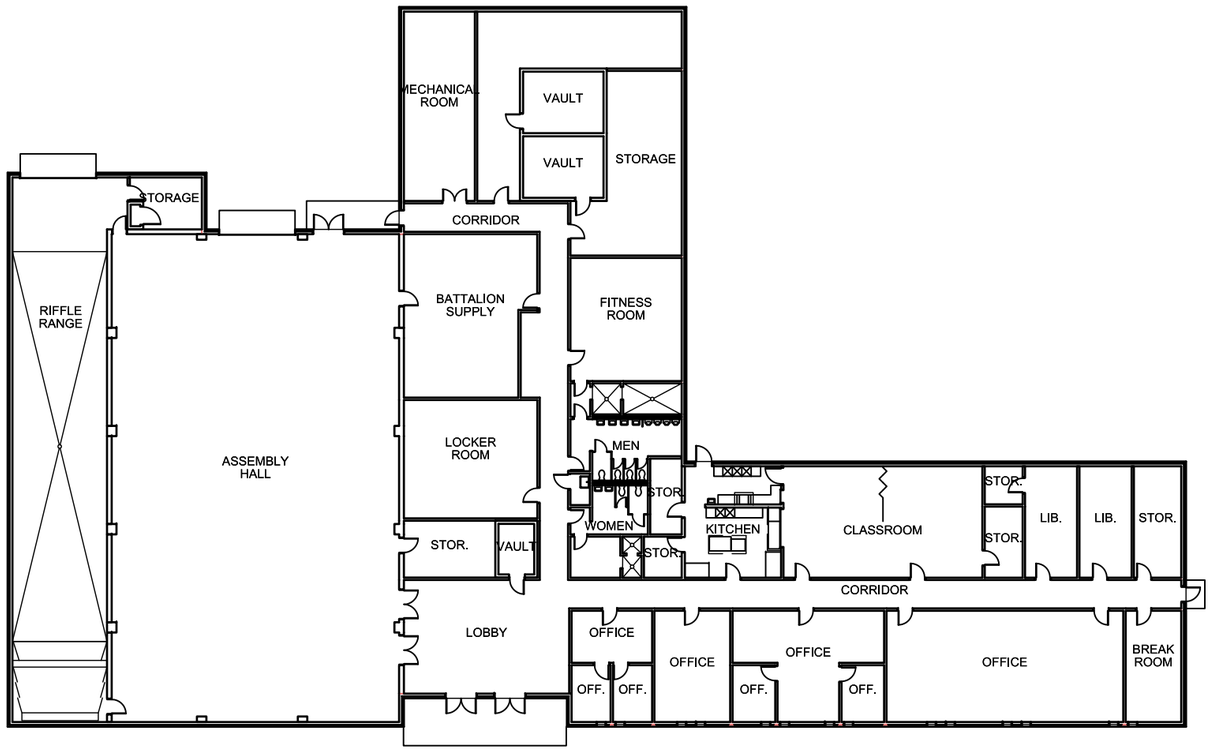
Figure M4.2 Heat pumps are standard efficiency and aging and rely on electric heat at low temperatures

Washington State Military Department
CONDITIONS ASSESSMENT
Code Study

Montesano Readiness Center
Regional Anchor Facility
Montesano, WA

Code Compliance
International Building
Code- 2009 Edition

Occupancy Group(s)	Business & Classrooms: B at 34% of total building Assembly: A-3 at 32.5% of total building Storage: S at 33.4% of total building
Construction Type	Concrete, brick, concrete block & wood roof structure: VB
Allowable/Actual Area	Actual area =24,000 SF. Basic allowable code area = (0.340 x 9000) + (0.325 x 6000) + (0.334 x 9000) = 3060 + 1950 + 3006 = 8016 Allowable area = A_A = 8016 + (8016 x .75) + (8016 x 0) = 14,028 SF. Allowable area = A_A = 8016 + (8016 x .75) + (8016 x 3) = 38,076 SF if the building were to be sprinkled.
Fire Sprinkler Req.	None provided, but currently required by IBC for area. Grays Harbor County has no sprinkler requirements beyond the IBC.
Occupant Loads	625 including 426 for the Assembly/Drill Hall. Drill Hall occupant load assumes unconcentrated use at 15 SF/person.
Number of Exits	Building has 6 exits totalling 324" of exit width. Drill hall has 2 exits totalling of 216" of exit width.
Exit Signage	Lighted exit signage with attached emergency lighting was noted at most required locations
Egress Widths	All exterior entry doors are 3' wide. Hallways are 6' wide, all sufficient for ADA. Most other doors are also 3' wide. Total exit width for the building is 324". Minimum required is 625 x 0.2" = 125".
Travel Distance	All spaces in the building are less than 200' to an exit, which is the maximum allowable.
Areas of Refuge	None required in single story building.
Rated Walls/Openings	None required when yards exceed 30'.



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MONTESANO READINESS CENTER - BUILDING 1 FLOOR PLAN

1/32" = 1'-0"

MONTESANO READINESS CENTER - BUILDING 1 FLOOR PLAN

BUILDING ASSESSMENTS for WASHINGTON STATE MILITARY DEPARTMENT

Montesano, Washington

Project Number	10-132
Date	Dec. 2010
Drawn By	clm

A2.01

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