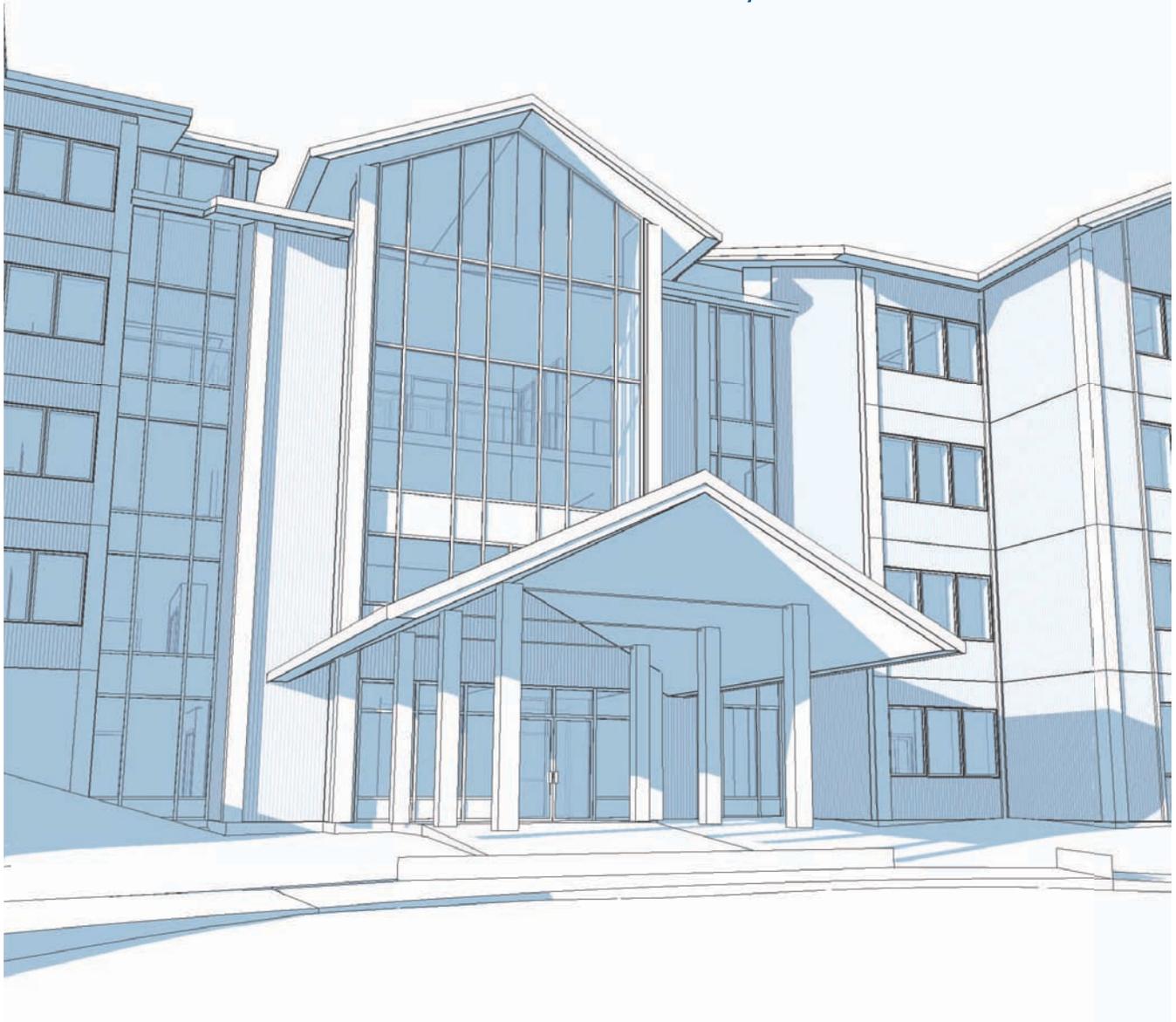


UAS Student Residence Hall

Schematic Design Materials

for the
University of Alaska Southeast



learn • engage • change

MRV ARCHITECTS

1420 GLACIER AVENUE #101
JUNEAU, ALASKA 99801

907-586-1371
mrv@mrvarchitects.com

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PROJECT BACKGROUND

The University of Alaska Southeast has initiated design of the long-anticipated new residence hall for incoming Freshmen students. The initial site selection and scoping phase has been completed, and a prime central campus site selected for the new residence hall. This location will combine several positive attributes, with its central campus location, easy proximity to existing food service at Mourant Building, and the potential for increased student academic and social connections. The new facility should function as a central campus anchor to support critical incoming student needs.

The following recaps major planning and design decisions for the new residence hall:

Size and Capacity: The new residence hall will contain 60 beds in the current first phase, with future growth to 120 beds in a second phase. The residence units are organized in a suite arrangement similar to that utilized for Banfield hall, but increased in size and features. The basic module pairs two double occupancy rooms with a shared bathroom and kitchenette area. Per attached Program Summary in the appendices, the total project size is approximately 31,000 sq.ft.

Support Spaces: The residence hall will feature a general-purpose meeting and assembly room, sized to hold all residents for a meeting or social event. This space is located on the third floor, with a panoramic view across the campus, Auke Lake, and to the mountains beyond. A small general-purpose kitchen space adjoins the assembly room, providing flexibility to support a variety of events. Other spaces in the building include flexible study rooms which are easily accessible on the first floor, with other general study spaces on level four. The facility includes full laundry facilities, and student storage. The building will contain appropriate mechanical and electrical spaces.

Location: The new residence hall will be located on a prime site on the westerly edge of the developed parking area, situated between Noyes Pavilion and the drop-off circle to Egan Library. Food service will be provided by improved cafeteria operations at the Mourant Building, slated for expanded 7-day offerings. Generalized site planning has considered the potential for a future housing facility and other adjoining UAS facilities and connective infrastructure, including roadways and pedestrian routes.

Site issues: Site development will integrate covered space, and amenities to support socialization and interaction between students on the building exterior. Site features include ADA access for pedestrians and adjacent accessible parking. A convenient drop-off zone is provided, including a covered approach to the building. Dumpster location and maintenance service will be considered.

Sustainability and LEED: The facility will embody best practices for environmental stewardship, including high levels of thermal insulation, low system operating costs, low maintenance, and healthy indoor materials. A preliminary decision has been made to design and construct the project as a LEED-Silver project, a 3rd party national benchmark for

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excellent sustainable design and construction. The modest additional design and construction costs to achieve this enhanced level of quality and performance are usually recouped in operating expenses within a few years. This commitment to obtain a LEED rating is also of value to student recruitment, and promulgating UAS strategic commitments to sustainable practices.

Timeline: The following initial time line for design and construction is anticipated:

Schematic Design Complete:	August 8.
Design Development:	October 5.
95% Construction Documents:	January 5, 2013.
100% bid documents:	February 5.
Bidding and Award of contract:	February 10 - March 21
Ground breaking:	May 1, 2013
Substantial Completion:	July 15, 2014
Final Completion:	August 15, 2014
Student Move-in:	August 22, 2014

Mourant Kitchen: Key to the decision on the location of freshman housing near the central campus is the assumption of improved student dining at the Mourant Building. Parallel efforts are beginning to improve food service offerings, with analysis of new financial structure for food service, and physical improvements to the Mourant facility.

ARCHITECTURAL NARRATIVE

A. SITE AND LANDSCAPE

The building site development will include an ample covered entry area, with exterior benches. The island at drop-off and adjoining site areas will include landscaping with bushes and small decorative trees. The majority of the disturbed site area will be smooth graded, and hydroseeded.

The covered entry area will include trash receptacles and back rack. A dumpster area will be provided near the existing parking lot boundary.

An additive alternate is identified for a covered walkway following the approach sidewalk approximately 100' to the primary pedestrian crossing.

B. BASIC DESIGN LAYOUT

The building includes a central public space, four stories in height, with student residence wings on each side, also four stories in height. Each wing will house 60 beds, with one side

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completed in Phase I, and the other in Phase II. The central portions will be completed with Phase I. A deductive alternate will be developed to illustrate a smaller central area at all four levels.

The upper, or southerly, Phase I housing wing starts one story above the main entry level, due to rising site slope. It is accessed by either stairway or elevator from the main entry. This housing wing rises one story higher than the central public spaces and the Phase II wing.

C. CONSTRUCTION MATERIALS

The basic framing of the housing wings will utilize load-bearing steel studs on concrete slab-on-grade foundations. Floor framing uses light-gauge steel framing, with metal deck and concrete cover. The cold roof uses pre-manufactured light-gauge steel trusses with metal deck. See Structural narrative for additional details.

Wall construction: The wall construction will use a "blue skin" approach as recommended by the University of Alaska Cold Climate Institute. For this system, the majority of insulation is exterior to the stud wall framing. After studs are framed and sheathed, a comprehensive exterior skin of adhered waterproof membrane is applied over the sheathing. This is then covered with 4" of rigid board insulation, which is then covered with a weather barrier, relief air space, and exterior metal siding. The interior of the metal stud walls includes R-11 batt insulation, increasing See Appendices for sketch of exterior wall system details.

Glazing and Windows: The standard windows for the residence units will be triple-glaze operable vinyl windows. They will have a high energy efficiency, and very durable performance. Glazing in the central public areas and at the corridor/stairwell ends will utilize aluminum curtainwall systems with triple-glaze lites. Several interior spaces, such as study rooms and break spaces, will utilize structural plate glass walls to promote visibility and daylight penetration.

Exterior Treatment: The primary exterior siding will be painted galvanized steel panels, 22 ga., with exterior stainless steel screw attachment. The painted finish will be Kynar 30-year finish system. Corners and window trims will utilize clear-finished Alaska yellow cedar. Trim members will be rough-sawn 2" members, attached to preservative-treated plywood substrates.

Roofing: The roofing will consist of high-quality asphalt composition shingles, Malarkey "Legacy" or equal. This is a 50-year shingle, with flexible rubberized layers, and integral zinc granules to control moss growth. The perimeter and fascia flashing will utilize steel prefinished 22 ga steel materials.

D. INTERIOR FINISHES

Flooring: Floors will be concrete substrate. Finishes include the following:

- walk-off absorptive matt in the entry vestibules.
- carpet tile in corridors and general public spaces.

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- carpet tile in residential bedrooms.
- sheet vinyl in residential bathrooms, self-covered.
- VCT tile in janitorial, electrical, storage spaces.
- painted concrete in mechanical rooms.

Walls: painted gypsum wall board used for typical walls, with fabric wainscot treatment in primary corridors and public areas for durability. Base in public areas is wood, with rubber in support areas.

Ceilings: Ceilings in residential rooms are painted gypsum wall board, including bedrooms and bathrooms. Ceilings in hallways and central public areas include 12x12 glue-on acoustic tile.

Casework: Casework in residential rooms includes 5' of kitchen casework, with base cabinets and open 14" shelves above. Bathrooms include vanity top and base cabinet with storage. Public spaces include casework in uni-sex bathrooms, laundry room, kitchenette, and security office. Open shelving will be provided in the student storage room.

Signage: Signage will include ADA plastic panel signs at all door entries.

CIVIL NARRATIVE

A. BACKGROUND

R & M Engineering, Inc. (R&M) has prepared a schematic civil design site narrative for the proposed University of Alaska Southeast (UAS) Student Residence building. The property is owned by UAS. MRV provided R&M an AutoCAD site drawing on July 26, 2012 to assist in preparing the schematic site development narrative.

The Student Residence Hall site is located along Auke Lake Way adjacent to the UAS Noyes Pavilion near Auke Lake in Auke Bay, Alaska. The project site is located on a portion of Lot H and Lot L, U.S. Survey No. 2391.

The planned site facilities for the Student Residence indicated in the schematic site plan include two 60 bed dormitory units connected by a common building. The buildings are proposed to be four stories with a new student drop-off zone and new concrete sidewalks connecting to existing.

B. SITE GEOLOGY AND SOILS

R&M conducted a preliminary soils exploration on July 28, 2012 as part of the schematic design for this project. Four test pits were machine dug within the building footprint. The test pit depths varied from 5.5' to 7.0' below the ground surface.

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The surface layer consisted of organic material in all test pits varying between 2' and 3' in depth. Beneath the organic layer was a fine to coarse sand with gravel/cobbles. All test pits were terminated on dense Glacial Till soil where the excavator bucket encountered "refusal". This soil is a gravelly, fine to coarse sand containing silt, cobbles and boulders and could not be excavated beyond a depth of 7' below the natural ground surface at any location tested. It is assumed that drilling and blasting would be necessary to excavate below 7'.

The southern part of the site is covered with second growth forest that covers most of the steeper slopes up toward Noyes Pavilion and is dominated by an overstory of Western Hemlock and scattered Sitka Spruce and a shrub layer dominated by False Azalea, Red Huckleberry and early Blueberry with a few patches of devils club in the shallow draws on the north side of the hill. The herb layer is dominated by Dwarf Dogwood. The flatter west and north side of the site is dominated by Western Hemlock, early Blueberry and skunk cabbage. This part of the site has been delineated as a U.S. Army Corps of Engineers wetland by Bosworth Botanical Consulting. East of the project site lies the UAS Campus upper asphalt parking tier. To the south lies the Noyes Pavilion facility. The west and north are undeveloped forested property as described above.

C. SITE PREPARATION METHODS

Based on R & M's preliminary test pit investigation on July 28, 2012 and our knowledge of the project area, we offer the following recommendations for the Student Residence building site preparation and student drop-off lanes:

Building Foundations

It is recommended that all frost susceptible soils be removed to reduce frost penetration and possible foundation settlement from freeze/thaw cycles. The following site preparation methods are recommended for this site:

1. Install erosion and sediment control devices prior to beginning construction.
2. Clear and grub trees and vegetation designated for removal within the project site.
3. Install dewatering devices as necessary to maintain a dry work zone.
4. Remove and dispose of all organic soils and loose wet silty/sandy soils.
5. In the dense Glacial Till soils area (non wetlands) excavate the area beneath the building foundation (10' outside each side of building foundation) to a depth of 1' minimum below bottom of proposed footing. Excavation into the dense Glacial Till soils may require drilling and blasting as reported on the adjacent Noyes Pavilion project. Place and compact base course grading D-1 to bottom of footing.
6. In the weaker wetter regions of the site (wetlands area) the organics and loose Glacial till soils shall be removed until the medium dense Glacial Till soils are encountered.
7. Proof roll the excavation using a 10-ton self propelled compactor or track with excavator. Should areas be observed to "pump" or "settle" further, excavate and replace with shot rock borrow.

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8. Place 12-inch minus well graded shot rock borrow, 3' minimum depth and compact with a vibratory grid roller (minimum centrifugal force shall be 50,000 lb) with minimum of 8 passes prior to placement of subsequent lifts. One pass is considered down and back. Initial lift thickness shall be a maximum of 24" in depth; all other lifts 12". Shot rock gradation should include enough fines such that the surface will seal and not be subject to voids from loss of fine material. A recommended option is geotextile separation fabric placed above the shot rock to prevent loss of fines and potential formation of voids.
9. Select borrow material above the shot rock borrow shall be placed in maximum 12" lifts compacted to 95% of the maximum dry density unit weight as determined by modified proctor (ASTM D1557). This material shall be placed up to the bottom of the base course below the building footing.
10. Dewater the footing excavation as necessary to manage the storm water and to keep the in-situ Glacial Till soils from becoming saturated and weak.

Student Drop-Off and Parking Lot

We recommend the following typical section of improvements for the asphalt paved Student Drop-off and reconstruction of the parking lot:

1. Remove and dispose of the existing surficial vegetation, organics and native silty sand soil to an elevation that is at least 44 " below the planned pavement, curbs, gutters and sidewalks finish elevation. Place subgrade geotextile material.
2. Static proof roll the bottom of the sub-cut using a 10-ton self propelled compactor. Should areas be observed to "pump" or "settle" further, excavate and replace with N.F.S. selected borrow and compact to 95%.
3. Place 30" minimum depth of 12-inch minus well graded shot rock borrow and compact with vibratory grid roller similar to pool foundation site prep methods.
4. Place 6" depth of select borrow over the top of the shot rock borrow, compact to 95% of maximum dry density unit weight per ASTM D 1557.
5. The selected borrow should be topped with a minimum 6" depth of base course, grading D-1 compacted to 95% of maximum dry density unit weight.
6. Place a 2½" depth of hot asphalt concrete pavement per CBJ, Class B, Type II asphalt mix over the structural base course section.
7. The perimeter of all driving and parking areas will include concrete curb and gutter to contain and route stormwater runoff. Accessible curb cuts with detectable warning tiles will be installed at the accessible stall and the drop-off area. Accessible signs and striping will be completed. Accessible routes will be maintained from the building entrance to the accessible parking stall.

D. SITE UTILITIES

Water and sanitary sewer services for UAS Student Residence will connect to existing CBJ utilities located within Glacier Highway to the west of the site (sanitary sewer) and to the south of the site (water). Water for the facility will be provided by an existing 16-inch ductile

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iron water line that feeds UAS campus and Back Loop Road. New sanitary sewer lines from the Student Residence will connect to an existing sanitary sewer line in Glacier Highway sidewalk area.

Electrical power service will come from AEL&P site transformer/vault located in the south campus parking lot. ACS and GCI are currently provided underground on the south side of the site in a utilidor near where the existing water line exists. Details of utilities follow:

Water Service

An existing CBJ 16-inch ductile iron water line is located on the south side of the UAS campus parking lot near the existing asphalt path. A 16"x8"x16" tee will be installed with a new 8-inch gate valve assembly at the connection point. New 8-inch ductile iron water line will be connected to this existing 16" line and routed to the new mechanical room for the Student Residence. A new 6-inch fire hydrant leg and fire hydrant assembly will be installed near the adjacent parking lot. A 8-inch gate valve and future stub out is planned for to the undeveloped UAS property. Existing asphalt pavement, concrete curb and gutter and concrete sidewalk will need to be removed and replaced with the new water line installation.

Sanitary Sewer Service

Wastewater generated by the Student Residence buildings will exit through two separate 6-inch PVC sanitary sewer lines via gravity flow methods. Sanitary sewer cleanouts will be installed within 5' of the building prior to the 6-inch lines connecting to a new sanitary sewer manhole. From this new manhole the wastewater will gravity flow through 8-inch PVC sewer lines downhill through Lot H to Glacier Highway in a series of manholes to where the existing 8-inch PVC sanitary sewer main is located in the Glacier Highway asphalt sidewalk. A new sanitary sewer manhole will be installed which intercepts the existing sewer line and connects the new line. Wastewater will then flow by gravity through the CBJ system to the Auke Bay Treatment Facility where it will be treated. Existing asphalt sidewalk and curb and gutter will need to be removed and replaced for the new manhole installation.

Stormwater System

Existing stormwater collection is limited in this area of campus. An existing catch basin is located behind the existing sidewalk which has a 12" CPP drain line exiting to the existing underground storm drain system. This project will install a series of catch basin structures with new 12" CPP underground piping connecting to the existing system. Foundation and roof drains will also connect to the new catch basins. Stormwater runoff from the sidewalks and a portion of the student drop-off area will flow through short biofiltration swales prior to being collected in drop inlet catch basins.

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E. REQUIRED DEVELOPMENT PERMITS

The following is a list of development permits that most likely will be required from local, state and federal agencies to construct the UAS Student Residence project:

- CBJ Grading and Drainage Permit
- CBJ Building Permit
- US Army Corps of Engineers Permit
- State of Alaska Right-of-Way Permit
- State of Alaska Utility Permit

STRUCTURAL NARRATIVE

A. DESIGN PARAMETERS

The residence hall will be designed for design loads in accordance with the IBC 2009 which references ASCE 7-05, Minimum Design Loads for Buildings and Other Structures. Dead loads assigned to structural members will be based on actual weights of building materials. Collateral loads shall be assigned where it is anticipated to have additional loads from mechanical, electrical, or architectural building components. Other building load parameters for this facility are listed below:

- Live Loads
 - Private Rooms and Corridors serving them 40psf
 - Public Roofs and Corridors serving them 100psf
 - Mechanical Rooms 125psf
 - Storage 125psf
 - Stairs 100psf
 - Roof 20psf
- Snow Loads
 - Ground Snow Load 60psf
 - Roof Snow Load 46psf
 - Exposure Factor 1.0
 - Temperature Factor 1.1
 - Importance Factor 1.0
 - Drift Considerations Yes
 - Sliding Considerations Yes
- Wind Loads
 - Basic Wind Speed 100mph
 - Importance Factor 1.0

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– Exposure Category	B
• Seismic Loads	
– Importance Factor	1.0
– Occupancy Category	II
– S _s	0.40g
– S ₁	0.25g

B. CENTRAL GATHERING SPACE

The roof framing for the central gathering space shall have exposed Glued Laminated Beams (GLB) at both the gable ridge lines. The joist framing shall be Cold-Formed Steel (CFS) joists supported by steel beams and columns. The metal joists will not be exposed to view. The roofing above the structural members will be metal roofing over plywood sheathing.

The 2nd through 4th floor structure will consist of lightweight concrete over metal deck which will be supported by exposed GLBs. The GLBs will be supported by wide flange steel beams and tube steel columns.

The 1ST floor/foundation will be a concrete slab on grade (SOG) with a shallow foundation system. The interior columns will be supported by concrete footings located below the concrete SOG. A stem wall with continuous footings will extend around the exterior portions of the building. At the interaction with residence units, the SOG will have a thickened slab edge.

The lateral force resisting system for the central gathering space will be a plywood diaphragm at the roof and concrete pan decking diaphragms at the intermediate floors. The lateral forces from the diaphragms will be carried to the foundation members by steel ordinary concentrically braced frames. A seismic joint will be located between the central gathering space and the residence buildings to accommodate building drift during a seismic event.

C. RESIDENCE BUILDINGS

The roof framing for the residence buildings shall be pre-engineered Cold-Formed Steel Trusses with CFS ridge and joist members at secondary gables. The roofing above the trusses will consist of composition shingles over plywood sheathing.

The 2nd through 4th floor structure will consist of lightweight concrete over metal deck which will be supported by CFS joists. The CFS joists will be supported by CFS bearing walls. Openings in the bearing walls will have load bearing headers and king studs designed for the width of the opening.

The 1ST floor/foundation will be a concrete SOG with a shallow foundation system. The CFS bearing walls will be supported by continuous stem walls with continuous footings at the exterior of the building. Interior bearing walls will be supported by continuous thickened

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slabs. At the interaction with the central gathering space building, the SOG will have a thickened edge. The east residence building will have a retaining wall along the north and west walls due to a difference in elevation from the other buildings in the residence complex.

The lateral force resisting system for the residence buildings will be a plywood diaphragm at the roof and concrete pan decking diaphragms at the intermediate floors. The lateral forces from the diaphragms will be carried to the foundation members by a CFS bearing wall system using flat strap bracing. A seismic joint will be located between the central gathering space and the residence buildings to accommodate building drift during a seismic event.

D. CANOPY

The front entrance canopy will have a roof constructed with asphalt composition shingles over plywood sheathing which will be supported by Glu-Lam structural elements using Alaskan yellow cedar. The glu-lam roof purlins will be supported by beams between columns. The columns will be supported by concrete footings. The columns will be designed as a cantilevered columns system to support lateral wind and seismic loads. The canopy will not be structurally attached to the main building structure.

E. MECHANICAL, ELECTRICAL, AND ARCHITECTURAL COMPONENTS

All components shall be anchored to the building structure. Anchorage shall be designed or all design cases, including wind and seismic. For components to be designed and installed as a deferred submittal, the contractor will be required to hire a professional engineer registered in the state of Alaska. The contractor shall be required to submit drawings and calculations for review.

MECHANICAL NARRATIVE

The following outlines the scope of mechanical work for the Freshman Residence Hall for the University of Southeast (UAS)-Juneau Campus.

A. DESIGN CRITERIA

The mechanical systems will be designed and constructed in accordance with the following codes or later approved codes:

- 2009 International Building Code
- 2009 International Mechanical Code
- 2009 Uniform Plumbing Code
- 2009 International Fire Code

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- 2012 National Fire Protection Association (NFPA)
- ASHRAE - American Society of Heating, Refrigeration, and Air-conditioning Engineers
- ASHRAE - American Society of Heating, Refrigeration, and Air-conditioning Engineers. Standard 62.1-2007: Ventilation for Acceptable Indoor Air Quality.
- LEED Certification Design Criteria

B. GENERAL SCOPE OF WORK

The scope of mechanical work includes installation of a dual fuel oil-fired and electric heating plant, perimeter hydronic finned pipe heating units, heat recovery ventilation systems for resident dorm room areas. A main air handling unit will serve the core commons areas. Domestic hot water will be provided by a dual system; during high occupancy times two indirect hot water makers, 120 gallons each. For lower occupancy times, such as summers, there will be one 250 gallon electric hot water tank. Additional systems will include an underground fuel oil storage system with leak detection monitoring, wet and dry automatic sprinkler systems, and direct digital controls connected to the Siemens UAS host system.

C. LEED REQUIREMENTS AND COMMISSIONING

Provide LEED Commissioning and Enhanced Commissioning of Mechanical Systems. The Mechanical system design and installation will be an integral part of the building LEED requirements. The LEED goals for project are provided separately in the Architectural Narrative.

At the end of construction all mechanical systems will be commissioned for proper operation. All mechanical systems will be checked for correct operating sequence. Building maintenance personnel will be trained in all operating and maintenance procedures of the mechanical systems.

The LEED goals for Mechanical Systems include the following:

- Water Efficiency: A 20% water reduction will be sought by using lower water use plumbing fixtures with dual flush feature on water closets.
- Energy and Atmosphere: Refrigerant will not be used for mechanical cooling in new AHU ventilation units. Natural (free) cooling strategies will be utilized and controlled through the building controls system.
- Indoor Environmental Quality: Use of CO₂ monitoring and scheduled ventilation will allow for increased energy conservation while improving indoor air quality.
- Indoor Environmental Quality: Heat Recovery will be utilized for pre-heating in-coming outdoor air ventilation.
- Indoor Environmental Quality: Individual room thermostat control shall be provided in each Occupied space to control respective environment.

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- Project Closeout: Contractor to provide as-built drawings, training, and operating and maintenance manuals to Owner.

D. PLUMBING SYSTEM DETAILS

Plumbing Fixtures: ADA fixtures will be used where required. All plumbing fixtures located in toilet rooms, unless otherwise noted, shall be vitreous china. Water closets will be low water consumption, dual flush tank type with pressure assist and be manually operated trip levers. Lavatories will be generally be counter mounted with combination manual lever supply faucet. The plumbing fixtures will be institutional type as manufactured by Kohler, American Standard, or Eljer unless otherwise noted. All fixtures will be the water saving type. Floor drains with trap primers will be installed in all public toilet and toilet/shower rooms with ADA showers.

Various sinks, floor drains, floor sinks, and other plumbing fixtures will be provided as needed according to the building layout. ADA fixtures will be provided where required. The building exterior will have non-freeze, lockable, recessed type wall hydrants spaced as needed to provide cold water to the building exterior and landscaping, estimated at four total exterior wall hydrants. There shall be a floor sink at each HRV. Mechanical room shall have one service sink, two floor sinks, and two floor drains.

Showers will be one piece fiberglass units with tempering anti-scald type shower valve. All ADA shower units will have a floor drain in front of the shower pan. Kitchen sinks shall be of stainless, double compartment, stainless steel construction with swivel gooseneck faucets and wrist-blade handles. ADA approved shallow depth basins will be installed where required. All sinks shall have cleanouts on the waste piping. Drinking fountains will typically be a double unit, non-cooler type, ADA approved, of stainless steel construction. Service sinks shall be floor mounted cast-iron service sinks with wall-mounted faucets, hose attachments, and pail hooks. One service sink will be located in the Mechanical Room at the Basement level and one in Janitor Room on the fourth floor.

Kitchen Facilities: Kitchen will have a double basin sink, dishwasher, and garbage disposal. Water connection to the refrigerator will be included.

Laundry Facilities: Laundry shall have a recessed washer box for connection of hot, cold and washer drainage. Facility shall also have a laundry type tub for tenant use. Floor drains will be located in the laundry room. Assume four washer and four dryers. Dryer exhaust shall penetrate exterior wall and have a wall cap with backdraft damper.

Domestic Hot Water Generation: Domestic hot water will be generated by two indirect hot water makers 120 gallons each located in the Mechanical Room and heated by circulated boiler heating water through a double wall immersion heater. Summer use and back up hot water will be provided by one 250 gallon electric hot water heater located in the Mechanical Room. These two systems will be piped in such a way that either hot water generation system can be used at the Owner discretion. Domestic hot water will be maintained at an adjustable 140F via an immersion thermostat in each hot water heating tank. A tempering

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valve installed at the hot water tank will temper the water for a maximum of 115F water temperature to be supplied to all fixtures. Two hot water recirculating pumps (HWRPs) located in the Mechanical Room will circulate water throughout each residence dorm wings of the building hot water mains to reduce hot water wait time at remote fixtures.

Main Sanitary Waste: 4 inch diameter waste risers for each set of plumbing chases in between toilet/shower room of the residence dorm wings and on 4 inch main riser for the core commons area. Mains will be routed through each chase for two suites to the crawlspace below the residence dorm wings routing to main 6 inch diameter sanitary waste main with yard clean out to connect to City main. See Civil Design Narrative for work.

Main vent risers to each wing of the residence dorms shall be located in the main chase between toilet/shower rooms. Vent riser shall terminate at roof level with 4 inch vent through roof. A vent riser for the core commons building area shall terminate with 4 inch vent through roof at roof level above the core commons area. Anticipate three 4 inch vents through roof assemblies.

Main Utility Connections will be a 6 inch diameter sanitary sewer connection with yard clean out, and 6 inch diameter cold water main. See Civil Design Narrative for site utility information. Cold Water Supply in building is to be a 3-inch cold water serving all domestic plumbing fixtures water needs. 4 inch diameter cold water will be supplied to main wet and dry sprinkler system header.

Elevator sump will be served by a sump pump that will discharge to a floor sink in mechanical room.

E. HEATING SYSTEM DETAILS

Heating Plant: A dual fuel boiler plant will be comprised of two cast-iron sectional forced draft, oil fired boilers, sized at 60% capacity, will provide heating water for the building heating system. Preliminary oil fired boiler sizes are 758,000 Btu/hr. Secondary boiler system will be an electric boiler sized for 100% of capacity to provide heating water to building. Preliminary electric boiler size is 1,126,000 Btu/HR. Boilers will be required to be 50 psi rated due to height of the building. Dual system will provide Owner with operating cost options between the cost of fuel oil and electric power. Double wall positive pressure rated chimney will convey combustion products to discharge above roof surface.

Pump Systems: Pumping system will be a primary/secondary piping loop with reverse return. In-Line pipe mounted circulating pumps P-1, P-2 and P-3 will inject heating water from each boiler in to the main heating loop. Pumps, P-4A and P-4B Lead/Lag Base mounted circulating pumps, with variable frequency drives, will circulate heating water through the building to all heating units, heating coils in AHU and HRVs, and hot water makers. In the main heating loop will be a bypass automatic valve to regulate the return water temperature to protect cast iron boilers from a heating return temperature lower than 135 degrees F, this will help prevent boiler shock. The lag pump will operate if the lead pump fails. All pumps will be located in the

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Mechanical Room. Heating water supply to the hot water makers will utilize automatic valves to modulate the flow of heating water supply to maintain domestic water set point as indicated by immersion thermostats in each hot water maker.

Fuel Oil System: Fuel oil will be supplied to the burners from a 25-gallon day tank with integral supply and return/overflow pumps. Day Tank pump will retrieve its fuel from a 2,000-gallon double wall underground fuel oil tank. A man-way sump manhole, containment fill manhole, and a monitoring manhole with tank monitoring sensors for leak detection and monitoring panel with user interface will be provided with the tank. Monitoring panel with user interface shall be installed in Mechanical Room. All manholes are to be mounted flush in exterior concrete pad. Underground fuel oil piping will consist of double wall flexible tubing installed in a 4-inch flexible containment conduit with oil supply and oil return piping inside the conduit.

Heating elements: All areas of the building will be heated with perimeter finned pipe heating units, wall mounted convectors in stair wells, and ceiling mounted cabinet unit heaters in the main entrance. Heating units will be controlled by individual wall mounted DDC room thermostats. It is anticipated that each two bedrooms suite would have control of one room thermostat for a total of 32 zones for the Residence areas. For the Common Core Areas thermostats will be sensor type only with DDC control of set points, total of 4 zones. For individual study rooms on Common Core Areas will have individual controls via room thermostat, total of 6 zones. Convectors total of 6 zones. Cabinet Unit Heater total of 1 zone.

F. VENTILATION SYSTEMS

Residential rooms: Ventilation to the basic residence units will be provided by two commercial central heat recovery ventilators (HRV), each consisting of a manufacturer's supply fan, exhaust fan and cross flow core heat exchanger. HRVs will exhaust air from all toilet/shower rooms, residence dorm rooms, main corridors areas and supply ventilation air to all occupied areas of the residence dorm wings. The two HRVs are anticipated to be located in the Mechanical Room or below each Residence Dorm Wings in a basement fan room. Preliminary size is 4,000 cfm each. A hot water heating coil will temper the air for delivery to the rooms. Sheet metal ductwork will transport supply air to the rooms and exhaust air to the HRVs.

Central spaces: Ventilation to the central public spaces will be provided by a commercial central air handling unit system consisting of a manufacturer's supply fan, mixing box with filter section, face and bypass damper, and heating coil will supply ventilation air to all occupied areas of the core common areas. The AHU is anticipated to be located in the Mechanical Room. Preliminary size is 4,600 cfm. Sheet metal ductwork will transport supply air to the rooms and return air to the AHU.

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General Exhaust from Core Commons Area: Utility type exhaust fan will exhaust air from the Toilet Rooms and Janitor rooms in the Core Commons area. Approximate capacity of EF-1 is 450 cfm.

Laundry Room Ventilation System: Laundry room, on the second floor, shall have a wall mounted exhaust fan. EF-2 approximate capacity 200 cfm and controlled by a speed switch mounted on the wall. Make up supply air shall be from ceiling mounted supply grilles supplied by AHU system, transfer grilles, and door transfer grille. Make up air volume required is approximately 1,000 cfm to be supplied from a combination of transfer air and AHU supply.

Elevator Machine Room Ventilation System: Elevator machine room shall have an exhaust fan controlled by room thermostat to relieve heat and air from elevator machine above and adjustable 70 degrees F. EF-3 anticipated air volume is 250 cfm.

Elevator Shaft: Elevator shaft shall have a relief cap with normally closed automatic damper that covers approximately 2/3 of the relief cap throat. Damper shall actuate when pressure sensor in the shaft sense a positive pressure of 0.05"WC or upon actuation of fire alarm system.

G. SPRINKLER SYSTEM

The entire building will be sprinklered in accordance with NFPA 13 sprinkler system for protection of all areas. Sprinkler protection for building shall be provided by a wet sprinkler system for the interior of building. Dry sprinkler system shall serve crawlspaces, exterior canopies, and combustible attic spaces.

A 4-inch water header with wet alarm valve, flow switch, and dry alarm valve. Piping throughout the building shall be black steel, schedule 40, threaded. A 4-inch sprinkler header with double check back flow preventer assembly and alarm valves will be located in the Mechanical Room. A compressor for dry sprinkler system will be pipe mounted.

Sprinkler system in interior areas shall provide coverage above and below ceiling for protection of all combustible areas. Sprinkler heads throughout the building shall be recessed ceiling sprinkler heads in ceiling area, and upright heads above ceiling. Dry sprinkler system sprinklers shall be upright to cover exterior canopies, crawlspaces, and attic spaces.

A fire department pumper connection shall be located in an approved accessible location on the entry level.

H. CONTROLS

The control system shall be an extension of the campus wide SIEMENS Direct Digital Control system. Connection to the campus host system will be done hereunder. A computer workstation in mechanical room with graphics package will be included in DDC Work. Room

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thermostats, HRVs, AHU, Pumps, all mechanical systems and appurtenances will be connected into the DDC system.

ELECTRICAL NARRATIVE

A. POWER SYSTEMS

Utility Service: Utility power will be served from the present campus underground system; originating from a junction near the pathway between the Whitehead Building and Anderson Building. A three phase, 15 KV cable will be installed in conduit underground along side the water and/or waste water utilities, thus utilizing a common trench. The 15 KV cable will terminate at a padmount transformer located at the front of the new residence hall on the north side of the entrance.

The new residence hall will be served with three phase power at 208Y/120 volts. The conductors and service equipment will be rated with a capacity adequate to support all of the building systems, including any heating loads.

The service conductors will be routed directly to service equipment including metering transformers and main disconnect. The utility revenue meter will be strategically located on the exterior of the building permitting access for monthly reading while also minimally affecting the appearance of the building. The main disconnect will be configured with a shunt trip mechanism and "emergency power off" switch located adjacent to the revenue meter. The service equipment will be located in the mechanical room on the first floor.

The service grounded conductor (neutral) will be bonded to the grounding system in the service equipment. The grounding system will focus to a ground bus in the electrical room with connections to grounding electrodes outside the building, rebar in the foundation, the water service, and any building structural steel. The system will also include grounding for the communications/network system.

All circuits involved with the utility service will be single conductors installed in conduit. The conduit will be concealed in all spaces except possibly the utility spaces.

Distribution and Branch Circuit Systems: The service feeder will be routed from the main disconnect in the mechanical room to a main distribution panel in the electrical room. This panel will enclose circuit breakers designated to protect and support feeders to large equipment and appliance & lighting panelboards.

The panelboards will enclose smaller circuit breakers designated to protect and support branch circuits to receptacle devices, electrified equipment, and lighting. A panelboard will be located in the corridor of each wing on each floor (a total of seven). Each of these panels will support the circuits required for the dormitory rooms and their connecting corridors.

Additionally, panelboards will be provided in the mechanical room, the electrical room, and one will be designated for the elevator. The panelboard in the mechanical room will support

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the circuits for the mechanical systems, while the one in the electrical room will support circuits for the core areas on all four floors.

All of the feeder circuits will consist of single conductors in conduit. The branch circuits will consist of single conductors in conduit for "home runs" with some judicious application of metal clad (MC) cable to small circuits of devices and luminaires.

Devices & Equipment: In the dorm rooms, receptacles will be provided and positioned in compliance with the National Electrical Code, at a minimum. Typically this requirement stipulates that portable equipment located next to the wall needs no more than a six foot long cord to reach a receptacle.

Devices will be strategically located in the common rooms in accordance to typical demands. Additionally, convenience receptacles will be located as needed for building maintenance and cleaning.

The heating and ventilation equipment will be provided with control devices and disconnects in accordance to the needs of the control systems and codes.

B. LIGHTING SYSTEM

Exterior: The existing area lighting along the driveway in front of the residence hall will be repositioned in coordination with the new pullout at the front entrance. The circuit for this lighting will be rerouted as needed to coordinate with the work in the driveway. This lighting will remain on its present circuit and control system.

The entrance canopy will be illuminated with sconces mounted to its support columns providing tightly focused up and down illumination much like that provided for the entrance at Banfield Hall. Additional sconces will be mounted to the building exterior in the stairwells at each end of the building. This lighting will be supported with emergency power packs, maintaining illumination for a minimum of 90 minutes during a power outage. This lighting will be controlled with a day/night (photoelectric) sensor.

Dormitory Rooms: The individual rooms will be provided with a surface mounted fixture affixed to the ceiling. Its light source will be LEDs. It may include dimming control. The vestibules common to each set of two rooms will be illuminated with recessed cylinders with LED light sources. A wall mounted linear fixture with fluorescent lamps will be mounted above the mirror over the sink of each bathroom. All of the lighting will be manually controlled.

Corridors: The corridors will be illuminated with recessed cylinders with LED light sources. Select luminaires will include emergency battery packs. This lighting will be controlled with a scheduling scheme allowing full brightness during active times and dimmed during quiet time.

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Study Rooms: The luminaires in the study rooms will include 2x2 troffers in the ceiling and wall sconces. The troffers will utilize LED light sources with dimming drivers, and the sconces will be non-dimming with LED light sources. Wall stations at the entrances will be utilized to activate the lights and provide dimming control. Occupancy sensors will secure the lights when the room is unoccupied, as will the wall station.

Offices: The offices will be illuminated with 2x2 troffers in the ceiling with dimming LED light sources. Wall stations at the entrance will provide dimming and manual control, as well as occupancy sensor control.

Utility/Mechanical/Electrical Rooms: The lighting for the utility rooms, ex. janitor and storage rooms, will utilize surface mounted linear fixtures with fluorescent lamps (T5) and wraparound acrylic lenses. The luminaires in the mechanical, elevator, and electrical rooms may be industrial linear fixtures with open fluorescent lamps (T5) and reflectors. These will be used primarily where it is necessary to suspend the fixtures. The illumination in these rooms will be constant with the lighting controlled by a wall station at the entrances to activate/secure it in coordination with an occupancy sensor that will secure it when the room is no longer occupied.

Laundry: The lighting in this room will be similar to that for the utility rooms with surface mounted linear fixtures with fluorescent lamps and wraparound acrylic lenses. The controls will also be similar with wall stations at the entrance and occupancy sensors.

Large Lounge (Open Seating): This room will incorporate three types of luminaires to allow flexibility in use. The body of the room will be illuminated with 2x2 troffers using dimming LEDs. The perimeter of the room will utilize recessed cylinders with dimming LEDs. And sconces with non-dimming LEDs will be located on the walls. The sconces will provide up and down illumination. Some will be positioned to lightly illuminate the walls of the fourth level.

The kitchen area will be illuminated with recessed LED cylinders and under-cabinet fixtures using LEDs. A wall station will be located near the kitchen allowing control of segments of the room for various applications. The controls will include "scene" selection features.

Some of the luminaires selected to illuminate access/egress routes will include emergency battery packs, and will be illuminated at a dimmed level adequate for illumination in accordance to the codes when the room is unoccupied. Occupancy sensors may be used to secure some luminaires and dim the remainder to a preset level when the room is unoccupied for a long duration.

Seminar: The seminar room will incorporate two luminaire types. Recessed cylinders with dimming LEDs will line the hard wall on the end of the room. These fixtures may be wall wash type. The body of the room will be illuminated with 2x2 troffers using dimming LEDs.

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A wall station will be located inside the room near to the room entrance with manual and dimming control. Occupancy sensors will be used to secure the lighting when the room is unoccupied for long durations.

Interior Stair: An architecturally pleasant linear fixture with fluorescent lamps (T5) will be wall mounted above the landings. It will provide both direct and indirect illumination. The fixtures will remain on at a constant level of illumination all of the time.

C. NETWORK/COMMUNICATIONS

Vertical/Backbone Structure: The new residence hall will be integrated with the campus network system. A fiber-optic cable will be routed from the main distribution frame in the Whitehead Building computer machine room underground to a frame in the electrical room of the residence hall. The fiber will incorporate a bundle of 12 multimode pairs, or more in a cable suitable for underground application.

Horizontal Structure: The frame, a rack with patch panels and space for switches will be located in the electrical room. It will support Category 5e copper cables to the user terminals scattered about the building. The rack will be configured to allow UAS insertion of switches and a UPS.

Infrastructure: The infrastructure will incorporate cable runways in the electrical room, conduits in the core structure, and hooks in the dormitory wings, all supporting the cables. Cable (basket style) tray may be used where the ceiling spaces are accessible.

Two terminal stations will be located in each dormitory room with jacks just for network connection. Additional network terminals will be located in the study, lounge, and seminar room, strategically located to best serve the users. The terminals in the offices will incorporate jacks for telephones and network. Terminals will be positioned throughout the building to allow installation of wireless routers, providing uniform wireless coverage throughout the building. Terminals will also be provided to incorporate the building systems "Direct Digital Control" (DDC), elevator telephone, fire alarm, access control, and surveillance cameras.

The seminar room will be configured with additional terminals and raceways as needed to incorporate projectors and televideo conferencing.

All terminals will be cabled in accordance to UAS standards.

The system will incorporate a grounding system with a conductor in the cable runway and cable trays if provided; and with bonding to the rack and the conduits.

D. TELEVISION

Service: Television service will be routed from the nearest utility source. It will follow the same trench used for the power and network/communications service. It will entail coaxial cable installed in conduit with a junction near to the transformer in front of the building. The

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cable will enter the building underground and through the mechanical room to the electrical room where it enters the amplification/distribution system.

Distribution: The service to the building will be amplified as required for the number of connection points within the building. A distribution panel will be installed on a mounting board in the electrical room with individual cables directed to each terminal.

Each dormitory room will be provided with a terminal. Additionally two terminals will be located in the large lounge; and one in the seminar room. The terminals will be integrated with the network terminals where possible.

E. FIRE DETECTION & ALARM

The building will include a fully implemented automatic fire detection and alarm system. The system will be addressable with initiation and notification devices provided in compliance with the codes. It will incorporate features for the elevator and sprinkler system.

The control panel will be located in the electrical room. A remote annunciator with control capability will be located at the front entrance. A building map will be located with the remote annunciator.

F. ACCESS CONTROL & SECURITY

Access Control: Access control using proximity card readers will be located at the main entrance for student and faculty. Additional card readers will be located at the security office, the mechanical room, the electrical room, and possibly the elevator machine room for maintenance staff access.

The exit doors to the exterior stairways in the dormitory wings will incorporate sensors indicating door open conditions, and alarming.

The system will be networked together with connection to the security office and campus for monitoring.

Surveillance Cameras: Network based cameras will be positioned in the building as required to observe the main entrance and the exterior stairs. The cameras will be integrated to allow monitoring from the security office, and any other computer station implemented with the appropriate software and access codes.

The cameras will be programmable to allow image collection on a periodic basis with video streaming when motion is sensed at certain locations. The images and video streams will be stored for a minimum period of time, allowing historic review as needed from the monitoring stations.

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COST ESTIMATE

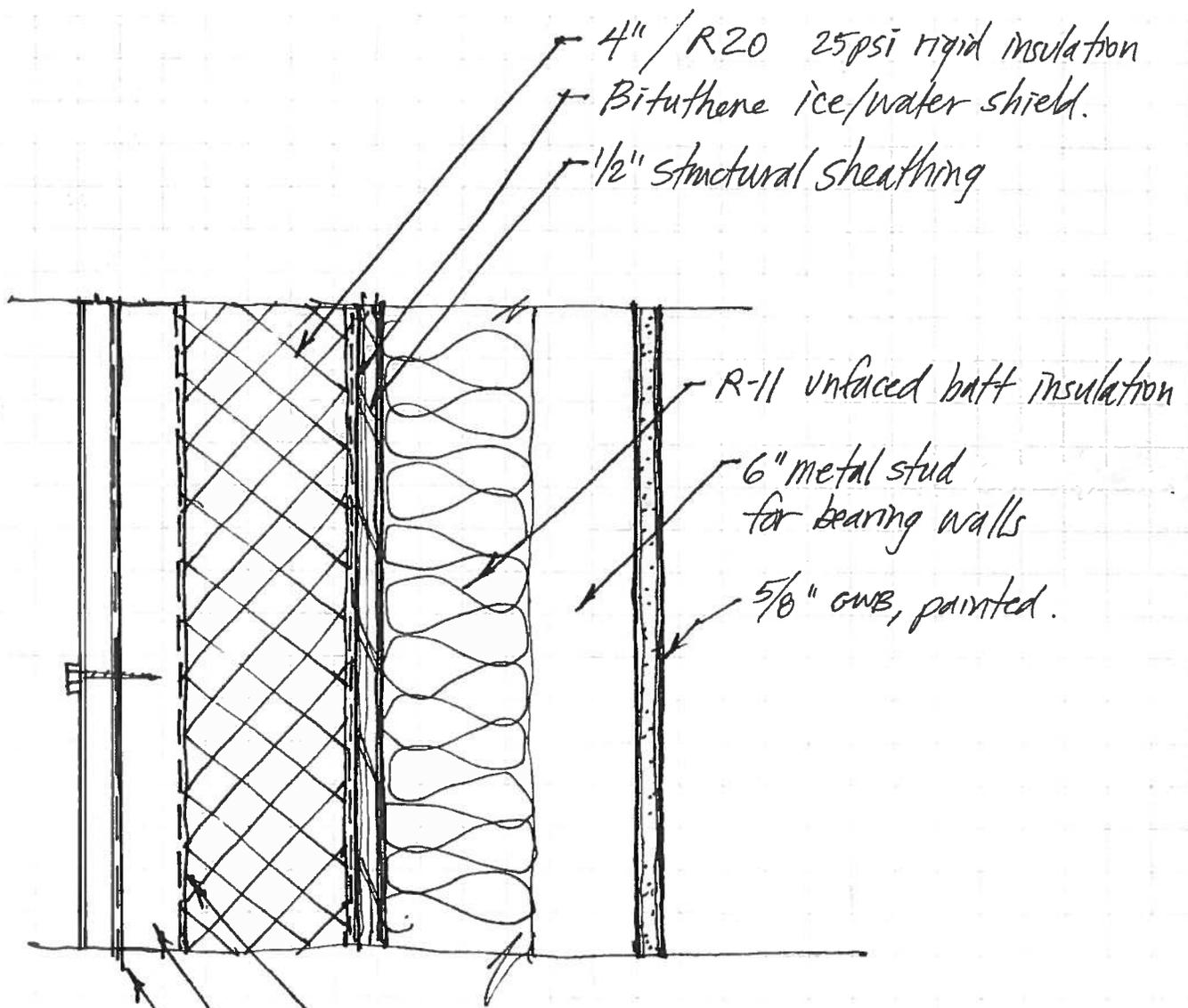
(SUMMARY FROM HMS INSERTED WHEN COMPLETE)

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APPENDICES

120-Bed Freshman Residence Hall

New Residence Hall - Program Areas	Phase I Spaces	Phase II Spaces	Comments
Bedroom Suites			
Typ quad suite, 29 total (14 Phase I)	8,400	9,000	typ quad unit w/ 2 double bedrooms @ 600 sf each. RA use as single
Accessible suite, 2 total (1 Phase 1)	600	600	modified suite, two single beds @ 600 sf each.
Subtotal	9,000	9,600	
Shared Areas			
Lounge/meeting space	1,500		assume 120 @ 12 sq.ft. per occupant. Add 440 sq.ft., Phase II
Balcony	350		open to lounge/meeting below
Kitchenette	120		Locate adjoining lounge/meeting space
Manager's Suite	600		Utilize typ. Quad
Security Office	120		Locate at main entry point
Chair/table storage	150		
Study Rooms	500		4 total, 2 rooms near entry, 2 rooms on 4th floor
Laundry	240		
Subtotal	3,580	-	
Building Support Spaces			
Vestibule, Entry	100		
Public Restrooms	150		2 uni-sex, one at 2nd level, one at 4th level
General building storage	250		
Janitor	150		
Subtotal	650	-	
Mechanical, Electrical rooms at 4%	913		
Circulation at 18%	2,546	1,728	
Walls/Shafts at 4%	668	453	
Total <u>Gross</u> Building Area Square Feet	17,357	11,781	Total size of 29,140 sq.ft. , or 243 sf per bed, 120 beds.



4" / R20 25psi rigid insulation
 Bituthene ice/water shield.
 1/2" structural sheathing

R-11 unfaced batt insulation
 6" metal stud for bearing walls
 5/8" GWB, painted.

weather barrier - "Vaproshield" or equal
 1 1/2" X 3 1/2" P.T. FURRING AT 16" O.C.
 ATTACH TO STUDS.

FINISHED SIDING. 3/4" X 22 GA KYNAR;
 GALV. STEEL CORRUGATED SIDING. SS FASTNERS.

PROPOSED WALL, STUDENT RESIDENCE
 3" = 1'-0"

Title <i>EXTERIOR WALL, TYP.</i>	MRV ARCHITECTS 1420 Glacier Avenue, #101 (907) 586-1371 Juneau, Alaska 99801 mrvarchitects.com	MRV No. <i>1213</i>	Sheet
Project <i>UAS STUDENT RESIDENCE</i>		Date: <i>7-26-12</i>	/
		Drawn: <i>PV</i>	of 1