

35% DESIGN NARRATIVE

KGB GATEWAY RECREATION CENTER ADDITON

KETCHIKAN AK

ARCHITECT

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STRUCTURAL

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MECHANICAL, PLUMBING, ELECTRICAL

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ARCHITECTURAL NARRATIVE

Construction Type:

IIB (non-fire rated), Assembly 3 Occupancy, there will not be a fire separation needed between existing and addition. The addition will have a full fire sprinkler system.

Exterior Architectural Character:

The existing Recreation Center should set the tone for the character of the new addition. The addition should be designed in a way that provides a unified building, making it appear as a single facility, rather than an existing building with an addition added later. This does not necessary mean that the design must “copy” the existing architectural materials and detailing, only that it should be designed in a way that incorporates those elements in the new design to produce a unified whole.

General Spaces:

The addition is roughly 12,500 total square feet consisting of two levels. The main level holds the workout gym (all exercise equipment excluded from estimate), garage, and a storage room, plus mech. / elect. room. The second level will have four multipurpose spaces, kitchen, restrooms, and another storage room. There will be a mech. mezzanine above the kitchen and ladder accessed from the ceiling in the storage room.

Exterior Walls:

The exterior walls will be metal framed with exterior matching the existing building, which is mostly a vertical metal corrugation and a phenolic panel system that matches the existing

building. At the garage the walls will be concrete to a height necessary to capture the grade sloping and metal framed above with a thin CMU veneer finish to match the existing building. Since the addition will be partly underground there will be concrete walls at the West and North sides up to the second level and metal framing above to the roof structure.

Interior Walls:

The interior walls will be metal framed studs with gypsum finish. Equipment Gym will have high impact wall treatments on most walls full height along with full height mirror walls. The restrooms and Kitchen will have wall treatments wainscot.

Roof System:

The addition sloped roof system will use a standing-seam metal roof with metal fascia to match the existing facility.

The garage roof will be a flat roof with parapet walls. There will be a roof drain that connects to the storm drainage system and possibly two scuppers for extra runoff.

Doors & Windows:

Exterior Windows are a thermally-broken aluminum frame system with triple-glazed insulating glass units.

Doors will primarily be hollow metal systems. The main exterior door at the second level will be a storefront system.

Ceilings:

The main level will have exposed structure that is paint finished. The upper level will have ACT in the multipurpose rooms, vaulting to exposed painted structure in the hallway, and hard lids in the restrooms, storage, and kitchen.

Code Information:

- a. Applicable Architectural Codes and Standards
 - i. 2021 International Building Code
 - ii. 2021 International Fire Code
 - iii. 2018 Uniform Plumbing Code (plumbing fixture counts)
 - iv. 2018 International Energy Conservation Code

Existing Building Photos:



STRUCTURAL NARRATIVE (Prepared by BBFM Engineers)

Codes and Standards

Building design will conform to the requirements of the 2021 International Building Code (IBC). Steel design and detailing will be done in conformance with the American Institute of Steel Construction, Fifteenth Edition. Seismic design and detailing of steel will conform with American Institute of Steel Construction, Seismic Provisions for Structural Steel Buildings, ANSI/AISC 341-16. Concrete design will conform to the American Concrete Institute, Building Code Requirements for Reinforced Concrete (ACI 318-19). Design of the steel deck will conform with Steel Deck Institute, SDI Publication 26, Design Manual for Composite Decks, Form Decks, and Roof Decks and Steel Deck Institute, Diaphragm Design Manual.

Design Loads

The following are minimum uniformly distributed loads for various occupancies and structural elements:

Building Risk Category III

Live Loads:

» Exercise Rooms	100 PSF
» Multipurpose Spaces	100 PSF
» Office & Administrative	50 PSF + Partitions (15 psf Allowance)
» Roof snow load	42 PSF Uniform, Snow Drift per ASCE 7-16
» Stairs	100 PSF

Snow Loads:

Uniform Ground Snow Load	$P_g = 55$ PSF
Minimum Flat Roof Snow Load	$P_f = 42$ PSF
Drifting Load	ASCE 7-16
	$I = 1.1$

Lateral Loads

Wind Load: $V = 152$ MPH (3 sec gust), Exposure B

Seismic Load: $S_s = 0.300g$, $S_1 = 0.250g$, $I = 1.25$
Site Class D, Seismic Design Category D.
 $S_{ds} = 0.31$, $S_{d1} = 0.32$

Structural Materials

Materials to be used in the proposed structure are as follows:

» Concrete, slab on grade, footings & walls	4,000 psi
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» Reinforcing steel	ASTM A615, grade 60
» Structural steel beams and columns	ASTM A992 Grade 50
» Structural tube sections	ASTM A1085 Grade 50
» Structural steel anchor bolts	ASTM F1554
» Structural steel high-strength bolts	ASTM A325
» Metal deck	Steel Deck Institute

Framing Systems

Foundations

The building will be supported on concrete spread footings, piers, and pilasters. Where required, footings will be buried below grade for overturning resistance. The first floor will be a 4" concrete slab on grade, supported by the 8" concrete stem wall and strip footing. For the south and a portion of the west wall, the concrete wall will extend to the 2nd floor and serve as a retaining wall for exterior soils.

2nd Floor Framing Systems

The Second-floor will be framed with composite steel wide-flange (I-shaped) framing members. These will support 1 1/2" x 20 gauge steel decking and a composite concrete topping of 2 1/2" (total depth of 4"). The concrete topping will be cast around welded shear studs on the steel wide-flange beams, creating a composite floor system. Steel beams will connect to hollow-structural-section (tube) steel columns as well as wide flange steel columns. Columns will bear directly on supporting concrete foundation elements.

This same framing system will be used at the mechanical mezzanine, which will be supported by some standard building columns as well as some "hanging" steel columns, that are hung from the roof structure overhead.

Roof Framing Systems

Due to the complexity of the roof profile, the roof will be framed with wide-flange steel beams in lieu of open-web steel joists. The steel beams will be proportioned to achieve the sloping roof profile plate, with no overframing required at the gable roof area. The roof deck will be 1 1/2" x 20 gauge steel roof decking.

Lateral Force Resisting System

Lateral loads will be resisted with a combination of Steel Special Concentric Braced Frames, Steel Special Moment Frames, and Special Reinforced Concrete Shear Walls.

Moment frames will be used at the north, south, and west walls, other than at the north garage wall. These moment frames are intended to have all-bolted field connections to simplify field work and reduce cost. Moment frame bases will be pin-style connections except where they land on/near the concrete walls on the south and west sides, where an embedded fixed-style connection will provide added capacity and reduce lateral "drift".

Braced frames will be utilized at the east wall adjacent to the existing structure as well as at the north wall of the garage area.

Concrete shear walls at the south wall and a portion of the west wall will act as shear walls in addition to retaining walls.

Seismic Separation

The new addition will be structurally separate from the existing building. A complete seismic joint will be required at the second floor, roof, and all walls above the first level. The seismic joint will be sized as required to prevent pounding / interaction between the two portions of the building during the design lateral loading event.

MECHANICAL AND PLUMBING NARRATIVE (Prepared by AMC Engineers)

GENERAL

The mechanical scope of this project includes heating, ventilation, plumbing, fire protection and HVAC control systems.

This addition will be designed with the end user in mind, keeping health, safety, and comfort as top priorities. Mechanical systems will be designed with a primary goal to provide simple operation and functionality, based on input from Ketchikan Gateway Borough personnel and the design team.

Product selections will be based around standard quality commercial-grade components and packaged systems with consideration given to the marine environment in Ketchikan, with preference given to specific brands and/or models of equipment as may be determined by Ketchikan Gateway Borough maintenance staff. Systems will be designed to be safe, comfortable, and efficient using proven techniques and modern technology. Consideration will be given to incorporating energy efficient devices requiring uncomplicated maintenance where readily feasible.

HEATING AND COOLING SYSTEMS

Building Heating System:

The central hydronic heating plant for this building addition will consist of five modular air source heat pumps (ASHP) for an N+1 configuration (four needed for full load, with an extra for redundancy and use when multiple units are in defrost mode). The heat pumps together will be sized for approximately 100% of the building's heating load and 100% of the building's cooling load. Based on the estimated building heating load is approximately 300 MBH which includes building conduction and infiltration losses as well outside air ventilation heating load, the heat pumps will be sized for a nominal 10 tons each. Buffer tank size is estimated at 250 gallons.

The five air source heat pumps will be either for heating only or for cooling only. It will be possible for one or more units to be in cooling mode and the other unit(s) in heating mode. All heat pumps will pump the heating loop through a buffer tank for building heat (including the AHU heating coil), and all units will be able to separately pump the cooling loop through a buffer tank to the AHU cooling coil.

Generally, the occupied spaces will be heated using VAV boxes with reheat coils. Entry vestibules and hallways will be equipped with semi-recessed wall mounted cabinet unit heaters to handle the high pick-up loads from the doors. The garage, storage room, mechanical/electrical room, and mezzanine fan room will be heated with unit heaters.

No snowmelt or radiant floor heating will be provided for this project.

Building Cooling System:

Economizer cooling will be provided for the air handling system to save energy by utilizing outdoor air for 'free cooling' when outdoor conditions are suitable. During warm summer months, mechanical cooling will be provided at the air handling unit via the heat pumps while minimizing outdoor air. The air handler will have an integral cooling coil to provide mechanical cooling, served from the heat pumps. Estimated building cooling load is approximately 310 MBH which includes heat gains from people, equipment, lights, and solar. Buffer tank size is estimated at 250 gallons.

Hydronic Piping, Pumps and Fluids:

Hydronic piping 3/4 inch through 3 inches in diameter will be type L copper with 95-5 tin-antimony or 430 silver solder. Where accessibility is limited, piping will be brazed. Press fittings or Victaulic couplings may

be provided as a contractor option in accessible areas, if approved by the owner. Hydronic piping will be sized for a maximum pressure loss of 3.5 feet of head per 100 lineal feet of piping.

Primary / standby heating system pumps arranged in a parallel redundant pair will circulate heating fluid in heating piping loops throughout the building addition. Primary / standby cooling system pumps arranged in a parallel redundant pair will circulate cooling fluid in cooling piping loops to the air handling unit. All pumps will be sized for design flow and each will be equipped with a Variable Speed Drive (VSD) controller. During periods of reduced heating demand, the VSD will slow the pump speed to conserve electrical energy. If the primary pump fails to operate, the standby pump will take over. Pumps will be Grundfos as basis of design. Pumps will be either in-line or vertical in-line type, as required. Pump motors will be specified with inverter duty motors.

A mixture of 30% propylene glycol and 70% water will be used as the hydronic heating/cooling fluid to serve both the heating and the cooling loop, as needed.

Ventilation

The addition will be ventilated using an air handling unit (AHU), sized to handle the ventilation loads, including the minimum outside air requirements of ANSI/ASHRAE Standard 62.1 "Ventilation for Acceptable Indoor Air Quality". System equipment will be located in a new, separate mechanical (fan) room on the mezzanine level above the upper floor level.

The controls for the ventilation equipment will be microprocessor based and integral with the DDC building automation system.

AHU-5

This air handling unit (AHU) provides ventilation to the building addition and is numbered to follow the original building which has four existing AHUs. AHU-5 will have a mixing box, pre- and final filter sections, heating coil, and plenum supply fan in a draw-through arrangement, along with a silencer section (if needed) on the discharge of the fan.

This mechanical ventilation system will supply 55 degrees F (adjustable) air to each zone. For zones requiring heat, reheat coil control valves will be modulated to control air discharge temperature from a duct coil to the zone between 55 and 92 degrees F. The 55 degrees F air supply will allow different zones to either heat or cool independently. At this time, it is anticipated there will be 12 VAV boxes.

The exhaust fan (EF) for the addition will exhaust air from the toilet rooms to the outdoors. Also, there will be a separate exhaust fan in the garage to handle the exhaust air for that space.

If the kitchen is categorized as residential, it will have a range hood over the stove; or if it is categorized as a commercial kitchen there will be a Type I (grease) hood over the cooking appliances.

Building Pressurization

The addition will be maintained at a neutral pressure relative to the rest of the building and a slightly positive pressure relative to the outdoors. This will reduce the amount of infiltration into the building.

The toilet rooms will be maintained at a slightly negative pressure relative to the building to control odors.

Plumbing

The existing 6" domestic cold water line feeding the original building will be moved to the storage room to accommodate this building addition. No issues related to inadequate city water supply or pressure are anticipated.

Plumbing fixtures will be vitreous china or stainless steel as applicable. ADA handicapped accessible fixtures will be provided as needed.

Toilets and lavatories will be specified based on the American Standard product line. Toilet fixtures will be of the low water usage type appropriate for a public facility and generally will be wall hung. Toilet flush valves will be manual type, Sloan Royal flush or Zurn Aquaflush, no substitutions, as directed by the owner.

Manual, self-closing faucets will be used for all lavatory sinks.

The drinking fountain will have push-bar type faucet operators and a sensor operated bottle filler.

Floor drains will be provided for the garage, kitchen, and the mechanical/electrical room. As needed, one will also be provided near the water service entry / fire riser. Trap primers will be provided as required.

The domestic water system for the building will be fed from the water service main. Domestic water piping within the building will be type L copper. Solder will be either 95-5 tin-antimony, 430 silver or Bridgit lead-free solder.

Vent piping aboveground will be cast iron or DWV copper.

Sanitary waste piping will be routed throughout the building as needed and discharged to the city sewer. Sanitary sewer piping will be cast iron. No-hub fittings are acceptable.

Isolation valves will be quarter turn ball valves.

Domestic Hot Water

Domestic hot water will be provided by extending the existing supply and recirculation system.

FIRE PROTECTION

The addition will be protected by a wet pipe fire sprinkler system in accordance with the latest requirements of NFPA 13. This will be accomplished providing a new riser and separate zone at the water service entry. This sprinkler riser location will be shown on the drawings. Based on available data, the existing city water supply will be sufficient in both quantity and pressure so that a fire pump or water storage tank is not needed.

Dry pendant or sidewall heads will be provided in areas subject to freezing such as entry vestibules and the garage.

This fire protection work will be performance specified.

BUILDING CONTROLS

Building controls will be specified to be a DDC (Direct Digital Controls) building automation system.

CODES AND STANDARDS

Applicable Codes include, but are not limited to, the following:

- International Building Code, IBC (2021 Edition)
- International Fire Code, IFC (2021 Edition)
- International Mechanical Code, IMC (2021 Edition)
- International Existing Building Code, IEBC (2021 Edition)
- Uniform Plumbing Code, UPC (2018 Edition)
- National Electric Code, NEC (2020 Edition)

Applicable Standards include, but are not limited to, the following:

- American National Standards Institute, ANSI

American Society of Heating, Refrigerating and Air Conditioning Engineers, ASHRAE

American Society for Testing and Materials, ASTM

National Fire Codes and Standards, NFPA

Duct Construction Standards, SMACNA

Underwriters Laboratory, UL

ENGINEERING DESIGN PARAMETERS

Outside Temperatures:

Winter (99.6% Extreme) 14.7 degrees F

Summer (0.4% Extreme) 72.6 degrees F

Inside Design Temperatures:

70 degrees F \pm 2 degrees F

MAJOR MECHANICAL EQUIPMENT

Air Source Heat Pumps, HP-1 through HP-5.

Buffer Tanks, BT-H1 and BT-C1.

Hydronic Pumps, PMP-xx (tags to follow current numbering scheme).

Air Handling Unit, AHU-5 (tag to follow current numbering scheme).

Exhaust Fans, EF-8 and EF-9 (tags to follow current numbering scheme).

Relief Fans, RF-1 and RF-2.

Plumbing Fixtures (toilets, lavatories, sinks, drinking fountain, etc.).

ELECTRICAL NARRATIVE (Prepared by AMC Engineers)

General

This narrative summarizes the 35% electrical engineering Basis of Design (BOD) for the Ketchikan Gateway Recreation Center Addition at the Gateway Recreation & Aquatic Center located in Ketchikan, Alaska. The existing recreation center is located on the west side of the building while the aquatic center is located on the east side. The recreation center addition includes a building expansion on the west side of building. The existing recreation center is the original construction with an age of approximately 29 years. The aquatic center expansion was completed in 2012. This narrative is based upon available Owner furnished record drawings and limited field verification.

The overall project goal is to expand the recreation center by 13,000 square feet including the addition of a fitness equipment room, garage, kitchen and four multi-purpose rooms. The multi-purpose spaces will be used for community gatherings, youth camps, private parties, and conferences. The existing west electrical service entrance will be impacted by the new addition and will be demolished. The existing east service will be utilized the back feed the existing west service and support the building addition. The existing east electrical service is adequately sized to support the aquatic center, existing recreation center and the new recreation center addition.

The contractor will be required to coordinate with Owner for construction phasing of electrical systems. Building shut-off hours will need to be strategically planned during construction. Areas requiring ongoing service will need to be discussed and coordinated ahead of time. Some disruptions to services are expected, though the goal will be to minimize disruptions through careful planning and coordination with project phasing.

Codes and Standards

This BOD incorporates the current codes adopted by the Ketchikan Gateway Borough (AHJ) which include:

- International Building Code, IBC (2021 Edition)
- International Fire Code, IFC (2021 Edition)
- National Electrical Code, NEC (2020 Edition)
- Life Safety Code, NFPA 101 (2012 Edition)

Basic Materials and Methods

Conduit for use on this project will be of the following types:

- Galvanized rigid steel conduit – GRC
- Intermediate metal conduit - IMC
- Electrical metallic tubing – EMT
- Schedule 40, polyvinyl chloride conduit – PVC (underslab and corrosive areas only)
- Flexible metallic conduit - FMC
- Liquid-tight flexible metallic conduit – LFMC

Conductors for use on this project will be of the following types:

- Conductors will be copper.
- Indoor conductors will be provided with type THHN/THWN insulation.
- Outdoor conductors will be provided with type XHHW insulation.

Outdoor conductors and conductors installed in unheated spaces such as underslab will be provided with Type XHHW or XHHW-2 insulation. Conductors between VSDs and motors will be provided with Type XHHW-2 insulation.

Panelboard assemblies will be enclosed in steel cabinets. "Door-in-door" construction shall be furnished on all panelboards unless otherwise noted. Spare conduits will be stubbed into accessible ceiling space from all flush mounted panels.

Molded case circuit breakers will be suitable for individual as well as panelboard mounting. Bolt-in type only. No breakers designated "plug-on" type.

Hand-Off-Auto (H.O.A.) switches or (Relay-In a-Box) RIB relays (by others) with pilot lights will be provided for starters for interface to the building automation system.

Enclosures for equipment in corrosive environments including outdoors will be NEMA 4X type.

Device faceplates will be stainless steel with engraved circuit numbers.

Power wiring will be in raceways.

Homeruns will be a minimum of 3/4-inch conduit.

Feeder and branch circuit conductors throughout the project electrical system will be color coded per NEC standards.

Interior branch circuit wiring will be in concealed conduit, EMT (or other suitable types as noted above) or as noted on drawings. Exposed raceway use will be limited to above ceilings, mechanical, and utility spaces.

The raceway system will be bonded in conformity with NEC requirements to provide a continuous ground path. An additional grounding conductor will be provided in conformity with Table 250.122 of NEC.

Boxes:

- Junction and outlet boxes will be concealed flush in walls in finished spaces. Exposed junction and outlet boxes raceway use will be limited to above ceilings, mechanical, and utility spaces.
- Junction boxes will be commercial-grade, metallic.

Devices:

- Lighting control switches will be low voltage, 0-10V dimming, pushbutton style. Line voltage, toggle switches will be UL listed 20 Amp rated and limited to mechanical and utility spaces.
- General purpose receptacles will be 125 Volt, 20 Amp rated.
- GFCI receptacles with trip point to not exceed 5 milliamps for personnel protection will be provided in locations where required by Code.

Power

The existing building is comprised of two departments: The Recreation Center and the Aquatic Center, each served by its own main service by Ketchikan Public Utilities (KPU). The Recreation Center is served by 500 kVA pad mounted transformer via overhead power lines and utility pole located on the exterior west side approximately 40 feet from the building. From the transformer, the service is routed underground to the CT enclosure, meter, 600 Amp main service equipment, and shunt trip push button located on the exterior wall west side of the building. The aquatic center is served by 1500 kVA pad mounted transformer located on the exterior north side of building. The main service equipment including a CT enclosure, meter, 2500 Amp service equipment, and shunt trip push button are located on the

exterior of the north side of building enclosed within a fenced area. There is no existing building generator. The addition of a generator is not anticipated.

The Recreation Center Main Distribution Panel (MDP) is rated 600 Amps, 277Y/480 Volt, 3-phase, 4-wire and is located in the main electrical room 138. The Aquatic Center Main Distribution Panel (MDP-2) is rated 2000 Amps, 277Y/480 Volt, 3-phase, 4-wire and is located in the main electrical room 004.

Based on record drawings, utility meter records, and preliminary load calculations, the Aquatic Center Main Service has the capacity to support the Recreation Center MDP. To accomplish this transition, it is proposed to demolish the associated overhead utility line and associated poles, utility pole riser, service transformer, CT enclosure, meter, and 600 Amp service disconnect. Power will need to be intercepted and rerouted with (2) 3-inch conduits of 4-350 KCMIL and 1-#1 Ground conductors underground from the existing west service MDP, exterior along the north perimeter, and across the main entrance into the fenced area to the existing 2500 Amp aquatic center service. This route will require trenching across softscape, hardscape including existing sidewalks and asphalt and along the face of the building. Surfaces crossed will need to be restored to original condition. Exact routing and requirements will be determined during the next design phase.

Power serving the recreation center addition will be provided by the existing recreation center MDP. A feeder from the MDP will supply a 200 Amp, 277Y/480 Volt, 3-phase, 4-wire distribution panel, H1B, which will in turn feed a dry type transformer and additional branch circuit panelboards to serve mechanical and electrical equipment required under this project.

Two garage doors will be provided under this project. Electrical requirements will require a 120 Volt receptacle in ceiling.

Since there is no existing generator, no back up power will be provided except via Owner provided point of use UPSs.

Lighting

Lighting will be furnished in accordance with the Illuminating Engineering Society of North America (IESNA) Lighting Library, and the current State of Alaska regulations administered by DEC. Lighting concepts will be fully developed in coordination with the architect during the Design Development phase. Some preliminary concepts are described below based on area types. These are ideas for consideration in lieu of specific layouts at this stage in design.

The exterior lighting is comprised of 30-foot poles with LED single or double light fixture configurations. Exterior lighting will be designed to accommodate the site re-configuration due to the building addition and complement or match the existing fixtures. Exterior fixtures, supports and pole assemblies will be specified to be capable of withstanding 110 mph winds with 143 mph gusts with no damage. Exterior fixtures will be vandal resistant with integral solid state light sources (LEDs). Existing metal-halide building mounted fixtures where the addition will be constructed will be demolished. LED building mounted lighting fixtures will be provided on the exterior of the building addition. Second level of building addition will consist of building canopy walkway with egress stairs. Lighting fixtures will be provided to illuminate the pathway properly. Exterior fixtures added under this project will be tied into the existing exterior lighting photocell and building lighting contactors via the building automation system.

The interior lighting will be comprised of a variety of fixture types and will be used to distribute lighting in a controlled way that will be efficient, flexible and will complement the architecture in their respective spaces. Fixtures will contain integral LEDs and drivers and will have a 5000K color temperature.

Exit signs and emergency egress fixtures will use integral battery drivers or emergency lighting units (ELU) to provide Code required egress lighting illumination per the IBC. Central lighting inverters may be used to provide required emergency egress illumination in areas where light fixtures are not easily accessible.

Fitness Equipment Room: 40fc horizontal. Indirect lighting will be provided. The mounting type will be determined depending on the ceiling type in the space.

Garage: 75fc horizontal. Pendant lighting fixtures will be provided in space and equipped with manual controls.

Mechanical/Utility Spaces: 25-40 fc horizontal. Pendant, surface mounted, or recessed utilitarian lighting will be provided depending on the ceiling type in the space.

Electrical and mechanical rooms will be equipped with manual controls.

Kitchen: 50 fc horizontal on work surface. The kitchen will be illuminated with recessed troffer light fixtures and undercabinet lighting where desired.

Multi-purpose Rooms: 100fc horizontal at floor. The multi-purpose room use is undetermined. Lighting will be selected to accommodate the use of the space.

Lighting fixtures will be manually controlled with on/off and dimming controls.

Toilets: 20 fc horizontal. Recessed downlights will provide general area lighting and add a visual light source to the space. Care will be taken to assure increased light levels are available at the mirror locations with vanity light (minimum of 50 fc).

Light fixtures will be automatically controlled with occupancy sensing controls.

Fire Alarm

The existing fire alarm and detection system installed at the Recreation Center is manufactured by Silent Knight. The notification and initiation circuits are wired in two-wire Class "B" configuration.

Devices will be added and installed to accommodate the building addition and connected back to the existing fire alarm system.

Other Electrical Systems

Telecom:

An existing exterior in-grade telecom pull box in asphalt is located on the west side of building where the addition will be located. From the pull box, telecom cabling is routed underground up the building wall via (2) 4-inch PVC and (1) 2-inch PVC. The conduit penetrates the building wall and routes to Office/Copy Room 120 and MTR located in electrical room 138.

The recreation building addition will include demolishing the existing in-grade telecom pull box and providing new in-grade pull box at an area outside of the building addition boundary. Telecom cabling and conduits will be extended and rerouted as required. Existing telecom conduits on exterior will be enclosed in 18-inch deep chase in the new fitness equipment room under the new work.

The current building is designed with Category 5e network. The addition will be designed to EIA/TIA Enhanced Category 6A network. The system will be in accordance with the latest EIA/TIA standards for telecommunication. Patch panels will be provided in existing telecom racks in recreation center to accommodate the building addition.

The system will include outlets, conduit, cable trays, cables, terminations, specifying test documentation and other "passive" components. A partial system description includes:

- Telecommunication outlets in multi-purpose rooms, fitness equipment room, and other miscellaneous areas requiring data.
- Horizontal cabling from outlets to modular patch panels in existing telecom room.
- Patch cables mounted in telecom rack in existing telecom room.
- Data network switches
- Data network equipment

Telecommunication cabling will be run in conduit or cable tray. It will be determined on future design phases if backbone cabling will be required to support the building addition. Currently no additional backbone will be required. Telecommunication cabling to the building addition will be routed back to MTR of existing building.

CCTV System

The existing multi-megapixel IP CCTV system contains exterior cameras covering the parking areas and interior cameras covering the entrances and main public spaces. Cameras are connected to the Recreation Center DVR System. Cameras can be remotely accessed (password protected) and live viewed by the local police department.

The exterior cameras at the building addition will be removed, cleaned, and reinstalled. Additional interior and exterior cameras will be provided to accommodate the building addition including west level 2 walkway areas. Cameras will be connected to existing IP CCTV system.

Public Address (Paging System/Music):

Public address/sound system will be provided at the building addition. The systems will include input sources, amplifiers, speakers, wireless microphones, rack enclosures, equalizers, cables, and accessories. The sound system in the fitness equipment room will amplify and distribute AM/FM Tuner, CD player, smart phones, wireless microphones, and auxiliary inputs. Multi-purpose rooms will have connection capability from laptop to TV. Additional AV equipment such as racks, speakers, amplifiers, switches, etc. will be discussed in future design phases.

TV Distribution:

It is anticipated that TV displays will be provided in the fitness equipment room and multi-purpose rooms. Connectivity and power requirements will be coordinated during future design phases.

Access Control and Security:

The security system at the existing building consists of door contacts on exterior doors and passive infrared motion detectors in corridors this system will be extended into the building addition. Exterior doors are currently by key access only.

No access control will be provided at this time.

Mechanical Coordination

Electrical will be provided to support the following mechanical items:

- (2) Air Source Heat Pumps (HP-1 and HP-2)
- Hydronic Pumps (PMP-xx)
- Air Handling Unit (AHU-4)
- Exhaust Fans (EF-xx)
- Toilet Flush Valves (if requiring hard wired connection)
- Sensor Operated Faucets
- Trap Primers
- Drinking Fountains