Agency: Commerce, Community and Economic Development

Grants to Municipalities (AS 37.05.315)

Grant Recipient: Barrow

Project Title: **Project Type:** New Construction and Land Acquisition

Barrow - Recreation Center Renovation and Expansion

State Funding Requested: $7,500,000 **House District:** 40 / T

Future Funding May Be Requested

Brief Project Description:

The funding will be used to renovate and expand the recreational facilities in Barrow.

Funding Plan:

Total Project Cost:	$15,000,000
Funding Already Secured:	($4,341,000)
FY2013 State Funding Request:	($7,500,000)
Project Deficit:	$3,159,000

Funding Details:

Federal and local support of $4,341,000 has been received. Additional funding is being sought from local companies.

Detailed Project Description and Justification:

The Piuraagvik Recreation Building was originally constructed in 1984 when Barrow's population was approximately 2,973. Today Barrow's population is over 4,400 people, and there is not enough room to fit everyone who wishes to take part in recreational or cultural activities at the recreation center such as Eskimo dancing, whaling celebrations, Christmas games and other sports activities. In the past four years, Piuraagvik has had over 120,000 recorded visits. The current size of the facility limits the use and does not meet the current population needs. (Bezek, Durst, & Seiser Schematic Design August 2010) Additionally, the Piuraagvik Recreation Center Facility has received heavy use and resulting wear and tear from the harsh Arctic conditions since construction. As a result, the demand for renovated and expanded recreational facilities is high.

Recreation activities offered at the Piuraagvik Recreation facility include flag football, bocce, soccer, basketball, racquetball, rock wall climbing, volleyball, weight lifting, strength training, and aerobics, to name a few. New activities implemented in 2010 include a Polynesian dance class, 2 women's conditioning classes, and a turbo kick boxing class. Additionally, in 2011 new activities will include laser tag, archery, and air rifle training. Current programs are expanding as well. For instance, to accommodate the increased need, basketball leagues are now offered for 3 seasons (fall, winter, and spring) out of the year. Volleyball leagues are now offered in the fall and spring of each year.

According to the North Slope Economic Profile and Census Report (2003), nearly forty percent of Barrow's population is comprised of children 18 and under. This is well above both national and Alaskan averages. As a result, the City of Barrow Recreation Program provides many youth activities and recreation services. In addition to sports, safety education programs, such as the Bike Rodeo, and youth employment opportunities, such as the Summer Youth Program, and Workforce Development Program take place in part or entirely at the Piuraagvik facility.

Contact Name: Christine Hess
Contact Number: 465-4833

For use by Co-chair Staff Only:

$4,500,000 Approved

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To meet the growing need of youth activities, a new gymnastics and tumbling program was introduced to Barrow in 2009 and continued in 2010. The program has been a success. In 2011, it is anticipated that new youth activities such as laser tag, archery, strength training, and Challenge Life Foundation basketball camps will occur in the Piuraagvik Recreation Center. In addition to these recreation activities, the City of Barrow runs an annual children's basketball league titled, Little Dribblers, at the Piuraagvik Facility. During the Challenge Life and Little Dribblers Programs, youth from across the NPR-A region utilize the Piuraagvik Facility. All of these positive youth activities help to keep children involved and steers them away from alcohol, drugs, and suicide. Additionally, it puts at risk children in frequent contact with adults that can serve as positive role models who are leading sober and drug free lives.

The existing Piuraagvik Recreation Center Building is comprised of 6,417 square feet of open gymnasium space, along with an additional 10,248 s.f. of supporting space and was constructed in 1984. In 1989, the building underwent a minor renovation expanding the second floor and converting excess storage space into 851 s.f. of aerobics space on the second level. The majority of systems and finishes for this facility are at or beyond their life cycle requiring upgrades and alterations. Today, due to an increase in recreation activities as a result of population increases, a larger Piuraagvik Recreation Center Facility is needed.

Expansions includes a new gym with spectator seating to accommodate 732 people, four new program spaces for aerobics, ballet, weights and other recreational activities, renovated locker rooms, new public restrooms, a new snack bar and new mechanical and electrical systems. The entire facility will have a sprinkler system for greater life safety.

The project is proposed in two phases that basically renovate and restore the existing facility and then add additional program spaces and a new spectator gym. Detailed phasing descriptions follow:

Phase I existing building upgrades
1) Locker room upgrades and expansion to restore existing locker rooms that have reached their
useful life expectancy. These upgrades increase plumbing fixture counts (based on a total
occupancy of 1500 subject to State Fire Marshall approval) to provide nearly all those required for the entire project.
2) Replacement and expansion of existing HVAC including capacity for the Phase II additions
heating requirements.
3) Sprinkler system installation sized for Phase II additions -- note this will answer the requirement of the State Fire Marshall for sprinkler systems in assembly occupancies when they are renovated.
4) Replacement and upgrading of electrical panels inclusive of a MDP sized for Phases I and II.
5) Replacement of communications equipment along with a new control area at the existing
entrance side of the new locker rooms.
6) Water service upgrades to support the sprinkler system.

Phase II new additions
1) New additions
2) New ventilation systems to support the additions
3) Site work upgrades to accommodate the new additions
4) Completion of existing facility renovations

The Construction of the Piuraagvik Recreation Center Facility Addition project will benefit every citizen, visitor, or transient worker in Barrow. This project is vital for the City's sound functioning as a Municipality and provider of varied public and recreational services of the people of Barrow. With the recreation centers wide array of activities a wide cross section of

Contact Name: Christine Hess
Contact Number: 465-4833

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individuals utilize the gym. Most importantly, it provides youth with positive recreation activities and steers them away from drugs, alcohol, and suicide. It also provides a safe haven for children and youth since the recreation center is open on a regular basis and operates later in the evening.

Project Timeline:

July 2012-August 2012
Grant Awarded
Competitive Bid Process Begins for expansion

September 2012
Bids reviewed by Selection Committee
Contractor Selected

December 2012 to May 2013-Phase 1 Upgrades

June 2012 to March 2013-- Construction process for new additions begins.

March 2013 -Completion of existing facility renovations

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Barrow

Grant Recipient Contact Information:

Name:	Ann Murphy
Title:	Grants Administrator
Address:	P.O. Box 629
	Barrow, Alaska 99723
Phone Number:	852-5211
Email:	Ann.Murphy@cityofbarrow.org

Has this project been through a public review process at the local level and is it a community priority? [X] Yes [ ] No

For use by Co-chair Staff Only:

4:17 PM 5/2/2012

Contact Name: Christine Hess
Contact Number: 465-4833

City of Barrow

Piuraagvik Recreation Center Alterations & Expansion

Barrow, Alaska

Revised 35% Narratives

August 26, 2010

BEZEK DURST SEISER INC
3330 C Street, Suite 200
Anchorage, Alaska 99503
PH: (907) 562-6076 F: (907) 562-6635
www.bdsak.com

Letter of Transmittal

To: City of Barrow
P.O. Box 629
Barrow, Alaska 99723

Attention: Mayor Robert Harcharek

We are pleased to submit this Revised as of August 26, 2010 Schematic Design Phase document for review and comment.

Sincerely,

Robert F Bezek,
Principal in Charge

Table of Contents

Introduction

A National Petroleum Reserve Alaska (NPRA) Grant dated 8-21-08 (Grant Agreement Number 09-NPRA-07) was received by the City of Barrow for the design of Alterations and Expansions to the existing Piuraagvik Rec Center. This report documents project development thru the Schematic Design Phase for this project.

The majority of systems and finishes for this facility are at or beyond their life cycle requiring upgrades and alterations. The current size of the facility limits use and is being expanded to meet current population needs.

The existing Building is comprised of a 6,417 s.f. of open gymnasium space, along with an additional 10,248 s.f. of supporting space and was constructed in 1984. In 1989, the Building underwent a minor renovation expanding the second floor and converting excess storage space into 851 s.f. of aerobics space on the second level.
Expansions includes a new gym with spectator seating to accommodate732, four new program spaces for aerobics, ballet, weights and other recreational activities, renovated locker rooms, new public restrooms, a new snack bar and new mechanical and electrical systems. The entire facility will have a sprinkler system for greater life safety.

The project is proposed in two Phases that basically renovate and restore the existing facility and then add additional program spaces and a new spectator gym. Renovation of the existing structure in Phase I includes system infrastructure to support Phase II additions. Detailed phasing descriptions follow:

Phase I existing building upgrades to include:

1) Locker room upgrades and expansion to restore existing locker rooms that have reached there useful life expectancy. These upgrades increase plumbing fixture counts (based on a total occupancy of 1500 subject to State Fire Marshall approval) to provide nearly all those required for the proposed for the entire project.
2) Replacement and expansion of existing HVAC including capacity for the Phase II additions heating requirements
3) Sprinkler system installation sized for Phase II additions – note this will answer the requirement of the State Fire Marshall for sprinkler systems in assembly occupancies when they are renovated
4) Replacement and upgrading of electrical panels inclusive of a MDP sized for Phases I and II
5) Replacement of communications equipment along with a new control area at the existing entrance side of the new locker rooms
6) Water service upgrades to support the sprinkler system

Phase II

1) New additions
2) New ventilation systems to support the additions
3) Site work upgrades to accommodate the new additions
4) Completion of existing facility renovations

Gross Space Summary Follows:

PHASE 1 - Renovation	
Main Level	11,946
Upper Level	3,347
	15,293
PHASE 2 - New Construction	
Main Level	15,911
Upper Level	2,309
	18,220

I. ARCHITECTURAL

A. General Requirements

Applicable Codes and Standards

- IBC 2009
  As the project does not yet have construction funds the project will be designed to the 2009 code. Currently the 2006 code is in place and the States amendments are to that code. The design will need to be updated when the new amendments are published. This should give a three to four year window for funding without changes in the design.
  A code analysis is on the drawings.
- ADA Accessibility Guidelines for Buildings and Facilities 2002
- 2006 UPC

B. Types of Construction

The existing facility is non rated wood construction. The new construction will be non combustible steel construction with curtain wall.
Both existing assemblies and proposed new assemblies of construction are shown on the drawings.

C. Issues

Existing Gym Floor Levels

The existing gym floor levels were initially surveyed. The worst case variation was 7.44" from South to North along the east side of the existing gym." Detailed elevations taken at the time of the survey are shown on the survey drawing. A more detailed Pile Cap Survey has now been completed with only a 2" variation. The mystery of the top of the floor variations remains. To address this we will set the new gym floor at a mid elevation with the ability to deal with elevation variations at the North and South ends.

Water Pressure / Fire Pump

A sprinkler system is required for this facility. It appears that a wet pipe sprinkler system with partial dry pipe heads complying with NFPA 13 is the appropriate system configuration. This requires a new water entrance to the building.

To accomplish NFPA code compliance, a minimum flow rate to the most remote sprinkler head is required. Calculations are required to be based on the existing flow and pressure conditions at the service main. Communications with Barrow Utilities provided approximate pressure conditions on the supply and return main, but additional information is required to determine if sufficient pressure and flow is available. A hydrant flow and pressure test is required to ascertain this information. The following information is required: Static and residual pressure (psi), and flow rate (gpm).

Should either the pressure or flow rate be below workable minimums, a fire pump or/storage tank will be required. In order to adequately include allowances in our design and construction cost estimate, this information is required during design. An additional test may be required by the Contractor to confirm conditions prior to construction.

We are not sure if Barrow Utilities has the capabilities to provide this testing or a contractor will be required.

At this time we are planning space for a fire pump assuming that the required pressure will not be available. Should it be available the space for the fire pump will be reassigned.

Occupant load

A meeting with the State Fire Marshall concerning the 1,500 total occupant load was held on June 17, 2010. The Fire Marshall's Office has not made a determination as of September 2010. The Cities position is documented in the letter content that follows:

> The City of Barrow has commissioned Bezek Durst Seiser, Inc., an Architectural Firm in Anchorage to design additions and renovations for our existing City owned and operated recreation center (Piuraagvik) in Barrow, Alaska.
> The "primary addition" is a new double gym with a limited preparation kitchen to support community events for warming of pre-prepared foods and for the sale of snacks. These primary functions drive the addition of adjoining circulation, locker room and restroom support spaces and limited additional office program spaces.
> Because of the nature of the double gym over and above the existing gym, code determined full occupancy is 3,703 occupants. Community demographics show projected growth at a medium level of 4,465 residents by the year residents by the year 2020.
> If the facility ever entertained 3,703 occupants, which is almost unthinkable, that would equate to 83% of the entire community – men, women, children and elders. Our experience after 26 years of operation is that the largest past gathering has been 900 occupants once a year, every

few years, at most. Realistically, the maximum future occupancy for the life of the facility would never exceed 1,200 people, no matter what type of event were taking place.

The maximum average daily gathering for the past twenty years has been 100 occupants. To prepare to accommodate 3,703 occupants or even 1,500 occupants in the foreseeable future over the life of the facility is totally unrealistic and, from our perspective, unjustifiable.

Therefore, we are respectfully requesting that the occupancy load be reduced and posted at 1,500 which are 600 more occupants than the community has ever experienced in peak events occurring annually at best. The primary aim of expanding the current facility is to provide an opportunity for more of our youth and young adults to play or engage in athletic activities simultaneously.

The proposed three basketball courts which will be in the new facility are being built to accommodate our youth and young adults desire to play basketball and volleyball in community leagues predominantly throughout the fall and winter months. Having three courts will allow thirty individuals to play at once and not just ten, as is the case now. No community basketball or volleyball in community leagues predominantly throughout the fall and winter months. Having three courts will allow thirty individuals to play at once and not just ten, as is the case now. No community basketball or volleyball game in Barrow has ever had more than sixty or so fans in the Piuraagvik facility watching a game.

Any occupant load higher than this generates operational issues on a daily basis to monitor participants or occupants, manage excessive exits and resultant plumbing fixtures.

D. Functions descriptions

Kitchen

The kitchen has been reduced from the July SD submittal to a snack operation.

A food service narrative for a snack bar, prepackaged foods kitchen follows:

Narrative

Snack Bar, Prepackaged Foods

Only food prepared, packaged and labeled at a certified full production food facility, or is

commercially packaged and sold for individual sale, may be sold in this option. No food may be prepared on site. An example of food and beverage products include bottled/canned water, pop and juices, fresh coffee, packaged snack bars, packaged cookies and candy snacks, wrapped & labeled fresh sandwiches, prepackaged ice cream novelties, fresh, uncut & unpeeled fruit, popcorn, cotton candy, etc.
The Alaska Dept of Environmental Conservation, Environmental Health (ADEC) specifically exempts operations of this type from requiring a food service operator's permit (see 18 ACC 31.012 Alaska Food Code). However, employees would still need to follow safety and sanitation guidelines published by the ADEC for safe food handling and cleanliness. As the users have requested a four burner residential stove and as this is a commercial building a Type 2 vent hood will be required.

Snack Bar Seating

There will be no snack bar seating.

Control Room

The control room is to be renovated in place. A second control point is the snack bar.

Anticipate main control room functions follow:

- PA and Intercom system. This equipment generally fits in a standard 19" wide communications rack and is 24" deep.
- Music distribution system would be part of the PA and intercom. This would require radio and CD or MP3 player. In PA rack.
- Security operator station which includes PC interface, digital recording device, and display monitor. Table top location for PC and monitor. Security recorder can be rack mounted in PA rack.
- Security system control panel. Wall mounted 24" wide by 36" tall.
- Fire alarm control panel. May be located near entry vestibule due to Fire Dept requirements. Wall mounted 24" wide by 36" tall.
- Lighting control panel for remote control of lighting in different spaces. This would be cabinet on wall, similar size to panel board.
- No Gym curtain control, I would recommend this be located in the gym adjacent to each curtain. This would require the person to be in the vicinity of the curtain during raising/lowering operations for added safety.
- No scoreboard control, this should be in each gym.
- DDC control panel, for operator interface. Table top location with PC monitor and workstation.
- Possibly central clock equipment. Small control panel that may fit in the rack.
- Cash register and PC for membership and user tracking.

- Lockable storage cabinet for specialized equipment that may need to be rented or checked out.

Worst case we would use several wall mounted panels, table top PC's, panel board and 2 19" wide vertical racks.
The ideal solution is for the racks to be in the utility space upstairs, with local control and display interface in the control room to reduce the amount of equipment in the space. Ideal solution would be 1 19" rack with tabletop PC's for user interface and 2 remote enunciators for the fire and security panels.

Running Track

The running track has been deleted from the July SD.

New Gym and spectator seating

With seating retracted there will now only be one new gym. However, there will still be three volleyball courts. With seating extended it will be one gym seating +/- 732 people.

Handball Courts 1 and 2

Handball courts are existing and will remain. Floors will be refinished, walls need some updating and ceilings are in good condition but will have to be removed and reinstalled to accommodate the new sprinkler system. Ventilation ductwork will remain. Doors will be replaced.

Ballet/Aerobics, Exercise and Free Weights

These spaces (program spaces 1,2,3 and 4) are now new construction and will have floor surfacing to allow flexible use except one space which will be finished for free weights.

Existing Gym

The existing gym will be retained. The existing Maple floor will be refinished. A folding stage will be added with a community movie screen. The existing climbing wall will remain.

Locker and Restrooms

Locker and restroom fixtures are computed using the current UPC to accommodate total facility occupancy of 1,500. Past experience puts average daily use at 100 with peak event use at 900. Minimum new restrooms are being added in the new construction at the users request.

Operational Phasing

In this revised design Phase I there will be a three to six month construction period with curtailed use of the existing facility. We will provide for temporary heat and portable toilets while existing systems are replaced which may allow use of the existing gym except while it is being resurfaced.

Demolition

The existing structure prow front will be demolished to allow new structure piling installation. As some components of this prow are structural, the structural engineer will require temporary reinforcement until the new structure is in place. This prow also contains building insulation and a 4" expanded poly styrene insulation layer with an air infiltration barrier will have to be put in place until the new construction envelope is completed

Funding Phasing

Construction funding is not yet in place. Construction funding may come from multiple sources. The facility is design at this time to be constructed in two Phases to accommodate partial funding at different times. The phases are:
Phase I existing building upgrades to include:

1) Locker room upgrades and expansion to restore existing locker rooms that have reached there useful life expectancy. These upgrades increase plumbing fixture counts (based on a total occupancy of 1500 subject to State Fire Marshall approval) to provide nearly all those required for the proposed entire project.
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Finishes

Finishes are show on the drawings and included in the specifications.

Doors

Doors and configuration of doors are based on a total occupant load of 1500 for the new gym's and calculated occupancy for all other spaces.

Windows

Window material is still being defined.

II. CIVIL NARRATIVE

Site Conditions

Location

The existing Piuraagvic Recreation Center is situated on Lot 2G, Block 11A, Townsite of Barrow, Alaska. Barrow is within the North Slope Borough. Other facilities occupying this lot include City Hall, a skating rink, and a fenced ballfield. The proposed addition to the recreation center and associated site improvements will be on this same lot. Access to the site is from Okpic and Ahkovak Streets, to the south.

Existing Site Conditions

The Piuraagvic Recreation Center is sited near the intersection of Okpic and Ahkovak Streets. Two main driveways serve the site, one from each street. A drive connects the driveways and passes through the site. Parking spaces for all three facilities are along this drive. Overflow parking is available at the back of the rec center. All drives and parking areas are gravel-surfaced.

The site is relatively flat. In the area of the rec center, the ground surface is about elevation 21, and gravel areas are about elevation 23 to 24. The rec center is elevated above the ground, with a floor level about elevation 27. Elevated areas slope away from the building, to low areas along the roads, and to low-lyin ground northwest of the building.

Soil Conditions

A subsurface investigation is currently being finalized by Golder and Associates to provide information for the building and site improvements. A native surface organic layer is present in undeveloped areas. In areas of previous earthwork, 2 to 3 feet of sand/gravel fill is present overlying the native surface organic layer. Continuous permafrost is below the shallow active layer, extending to a shallow depth (reference the geotechnical narrative in this report).

Existing Utilities

The existing rec center is served by a buried “utiliduct” that includes water and sewer services. These utilities are under the jurisdiction of Barrow Utilities & Electrical Coop, Inc. (BUECI). The utiliduct extends from a utilidor in Okpik Drive to near the southwest building corner, and is located within a 10-foot utility easement.

Proposed Site Improvements

The site improvements will consist of the rec center additions, removal of sand/gravel fill at the building expansion locations, new and relocated fill in parking driveway and parking expansion areas, and retaining structures at interfaces between traffic-way fill and building access points.

Driveways and Parking

Access to the site will continue to be provided by the two driveways. the driveway nearest the rec center will be modified to be a standard with to better define vehicle movements. The driveway to the school to the east will be widened for two-way traffic, and as a parking access aisle.

Parking spaces will be modified at the new front entrance to delineate two van-accessible parking spaces. Bollards will be provided to identify the access point, as well as protect the entrance from errant vehicles. New parking spaces will be provided east of the building, along the drive connecting to the school.

Traffic Structural Section

All areas supporting vehicle access and parking will be provided with a structural section of sand and gravel fill, capped with a layer of crushed aggregate base course. The thickness of these material layers will be as recommended in the geotechnical report.

Site Grading & Drainage

Development of the site will provide positive drainage away from the new building additions. Design grades will be generally no less than 2 percent. Cut and fill slopes will be limited to a 2 to 1 maximum steepness. Drainage will be accomplished by directing surface run-off to existing drainage ways.

New Water and Sewer Services

It is anticipated that the existing rec center water services will need to be upgraded to serve the expanded facility and addition of a sprinkler system.

Permitting Issues

Since the construction will disturb more than one acre, the construction activity will need to apply for coverage under the Alaska Pollutant Discharge Elimination System (APDES) general permit, under the jurisdiction of the Alaska Department of Environmental Conservation (ADEC). The construction contractor will need to prepare a stormwater pollution prevention plan (SWPPP), and as) file a Notice of Intent (NOI) (as well as the owner, City of Barrow) prior to construction.

ADEC also regulates stormwater runoff from constructed commercial facilities, which are to be designed to control sediment and erosion. They recommend that projects request Engineering Plan Review, which involves a submittal and fee, and if successful results in a letter of non-objection.

Duane Miller Associates
Arctic & Geotechnical Engineering

TECHNICAL MEMORANDUM

Date: August 19, 2010

Project No.: 103-95383

To: Robert Bezek

Company: Bezek Durst Seiser

From: Duane Miller, PE

RE: BARROW RECREATION CENTER - GEOTECHNICAL RECOMMENDATIONS

The proposed addition to the Piuraagvik Recreation Center in Barrow has been downsized from the alternative considered in our memorandum dated July 20. The facility will still be elevated above a clear blow-through space, but to match the condition under the existing building, the existing fill will have to be removed down to a finish grade of about elevation 21 feet; about 3 feet of fill will be removed. The addition will have shorter clear roof spans than assumed in July and the resulting sustained loads on the support points are estimated by PDC Engineers to be up to 50 kips.

As discussed in our memorandum of July 20, the soil's salinity is below 10 parts per thousand (ppt) to depths of 12 to 13 feet in the borings. But with the removal of 3 feet of existing fill, the higher salinities will be encountered at 9 to 10 feet below finish grade. This further reduces the pile capacities we had estimated in July.

We still recommend that the building be supported on slurried, untreated wood piles installed to a depth of 15 feet below finish grade. The 12-inch square timber piles should be installed in an oversized drilled hole and backfilled with a sand-water slurry. The ground should be insulated with a buried layer of rigid board insulation. The insulation layer should be 4-inches thick and constructed of two layers of 2-inch thick expanded polystyrene board insulation with a compressive strength of at least 40 psi at 5% strain (Styrofoam® or equivalent). The insulation layer should be installed tightly around the piles and the joints should be overlapped. The insulation layer should extend 6 feet beyond the perimeter of the pile footprint and should be covered with a 6-inch thick layer of fill to finish grade.

Although we currently have cold ground temperatures, climate warming could reduce the capacity of the piles through the design life of the building. Therefore, we recommend that a thermoprobe be installed with each pile that has a sustained load of 35 kips or greater. The thermoprobe will consist of a 3-inch diameter pipe 15 feet long with a 30-square foot radiator (condenser) inclined to fit in the crawl space. The 3-inch pipe will fit in the annulus of the 24-inch diameter hole drilled for the pile. The thermoprobe is manufactured by Arctic Foundations Inc. in Anchorage, and is a passive, two-phase cooling system that relies on cold winter air on the external condensers to chill the ground.

Golder Associates Inc.
2121 Abbott Road
Anchorage, AK 99507
Tel: (907) 344-6001 www.golder.com

The thermoprobes would be placed in the annulus of all piles that have a sustained load of 35 kips to 50 kips. For heavier loads, a pair of piles should be installed. Piles with a sustained load of less than 35 kips do not need a thermoprobe, but to allow for future thermal modification, a closed 3-inch iron pipe could be installed next to each of the piles. The piles will have a total load capacity including wind loads that is twice the sustained load capacity. A closed 1-inch diameter HDPE pipe should be installed adjacent to each pile to allow for future temperature measurements.

If a pile group is needed, the two piles should be spaced 4 feet center to center. Lateral loads will be resisted by the cantilever action of the piles with a point of fixity at 1 foot below finish grade.

The construction sequence would start with the excavation of the existing fill down to about elevation 20 feet. The sand and gravel would be used to fill any existing low areas and be stockpiled for later refilling. Timber piles would be installed to a depth of 15 feet below finish grade with the thermoprobes and temperature monitoring pipes and backfilled with a slurry of sand and potable water. The insulation layer would be placed and then covered with gravel fill.

cc: PDC Inc. Engineers, Anchorage

IV. STRUCTURAL NARRATIVE

A. Applicable Codes and Standards

- 2009 International Building Code
- ASCE 07-05 Minimum Design Loads for Buildings and Other Structures
- AISC 360-05 Steel Construction Manual
- AISC 303-05 Standard Practice for Steel Buildings and Bridges

B. Design Criteria and Requirements

Location	71°-30' N Lat, 156°-77' W Long.
Live Loads:	
Gymnasium/Bleachers	100 psf
Lobbies and Corridors	100 psf
Offices/Program Space	50 psf
Stairs and Exit Ways	100 psf
Mechanical	125 psf
Snow Design Criteria:	
Peak Ground Snow Load	25 psf
Maximum Drift Load	61 psf
Wind Design Criteria:	
Design Wind Speed	120 mph
Drift Criteria	H/400
Occupancy Category	III

C. Structural System Design

Gravity Resisting System

The primary structural system will be composed of a hybrid of conventional and steel joist construction with a two inch metal deck spanning between framing of the roof and floor structure. Forty-eight inch deep steel joists have been selected for the 90 foot main span of the gymnasium roof. The long-span joists will need to be shipped in sections and spliced together in the field with bolted connections. All other framing at the high and low roofs have been selected as eighteen inch steel joists. Any joists or purlins not supported directly by building columns will be supported by conventional steel girders spanning to tube steel columns.

The gymnasium floor will consist of a conventionally framed, sixteen and twelve inch steel structure. In consideration of a schematic bid line item, both the main and mezzanine floor systems have been designed assuming two inches of concrete over a two inch metal deck.

Though concrete would not be a requirement of the structural floor system, PDC recommends this minimum design profile to mitigate the potential for service level vibration and discomfort to the building occupants.

Lateral Force Resisting System

The lateral wind loads imposed on the Piuraagvik Rec Center Expansion will be resisted by an ordinary steel braced frame system. The locations of the braces have been preliminarily placed and coordinated with architectural input and geotechnical consideration. The new steel framing will be physically separated from the existing structure but architecturally connected with a flexible joint to allow movement between the two structures.

With regards to the required modifications to the existing facility, any changes made to the existing lateral system will require evaluation and replacement of shearwalls to match the existing lateral capacity. It is anticipated that such shearwall framing will be required at the gridline three construction interface and the shearwalls surrounding the existing restrooms which provide support for the mechanical mezzanine above.

Foundation

The foundation and pile layout has been based on the preliminary geotechnical memorandum released by Golder & Associates on August 19, 2010. From the report, it is understood that the new structure will be founded on a regular grid of twelve inch square timber piles. Double pile configurations will ultimately be warranted where the design capacity has been exceeded for both short and long term loading conditions. Each pile will be drilled in-place with a minimum twelve inch oversized bore diameter and embedded a minimum of fifteen feet from existing grade. The design assumes any pile in exceedance of 35 kips of sustained load will require a two-phase thermal siphoning system to mitigate permafrost degradation and excessive differential settlement.

At the time of this writing, initial geotechnical findings indicated an un-bonded soil with a high salinity concentration. Preliminary sustained pile loads have been provided to the geotechnical engineer for analysis.

V. MECHANICAL NARRATIVE

A. General Requirements

Applicable Codes and Standards

- ASHRAE Handbooks and Standards
- Applicable NFPA Standards
- Americans With Disabilities Act Guidelines
- ANSI Z-358.1-1998
- SMACNA Standards
- 2009 UPC
- 2009 IMC
- 2009 IBC

B. Design Criteria and Requirements

Location:	71°-30' N Lat, 156°-77' W Long.
Elevation:	13 ft.
99% Winter Design Temp:	-41°F. DB
1% Summer Design Temp:	53°F DB, 49°F WB
Indoor Design Temp:	72°F ± 2°F Winter, 72°F ± 2°F Summer
Heating Degree Days:	20,370 HDD Fahrenheit

Design ventilation rates:

Admin, Control Room	6-8	Air Changes per Hour (AC/Hr)
Workout Rms	12	AC/Hr max, variable to match load
Toilet Rooms	10	AC/Hr
Mechanical Rooms	6	AC/Hr
Electrical Rooms	10	AC/Hr

These ventilation rates are engineering guidelines subject to the specific requirements of a space, such as cooling load, exhaust load and number of occupants.

Design Ventilation Noise Criteria (NC):

Snack Bar	NC-40
Gymnasiums, Workout Rooms	NC-40
Admin, Control Room	NC-35
Locker Rooms, Toilet Rooms	NC-40
Other Spaces & Corridors	NC-40
Mechanical Spaces	OSHA

C. Mechanical System Design

Construction

The design intent includes demolition and replacement of all mechanical equipment. Mechanical duct and pipe systems will remain intact only where building spaces are not being changed and existing materials are in good condition. Existing duct and pipe systems will be connected to new central equipment. Use of the building during construction will require the provision of temporary heat and ventilation.

Construction will be divided into two phases. The first will include renovations to the existing structure, with new equipment being sized to cover the final addition, Phase 2, which will include associated air handlers and terminal heating units.

Plumbing Systems

Plumbing Fixtures

The plumbing fixtures shall be minimum flow type fixtures to comply with water conservation guidelines and all fixture controls will be accessible. All fixtures shall be of institutional quality. Accessible fixtures shall be provided and installed in accordance with the Americans with Disabilities Act Guidelines. Water closets, urinals, and lavatories shall be vitreous china. Counter sinks shall generally be stainless steel. The water closets and urinals will be provided with infrared sensor actuated, battery powered flush valves; the lavatories will be provided with infrared actuated, battery powered faucets. The water closet flush valve capacity will be 1.6 gallons/flush, urinal flush valve capacity will be 0.5 gallons per flush, lavatory faucets will be 0.5 GPM, counter mounted sink faucets will be 2.2 GPM or less, and shower heads will be restricted to 2.0 GPM or less. Showers will use pressure balanced anti-scald valves. Drinking fountains will be provided with integral chillers and will be wall mounted for ADA accessibility or will be dual-level with one of the pair mounted for ADA accessibility.

Domestic Water

Domestic water system will be designed in accordance with the 2009 Uniform Plumbing Code and local amendments. All domestic water piping will distribute on the warm side of the building envelope using partition walls or the piping chases. All cold water piping will be insulated and provided with vapor barrier to prevent condensation. Water hammer arresters will be provided at groups of fixtures, at the end of long supply runs, and at fast-closing valves.

Hot Water

Domestic hot water will be provided by multiple on demand gas fired hot water heaters. The domestic hot water will be circulated to provide nearly instantaneous hot water to the most remote fixtures from the hot water heaters. The hot water circulation system will be provided with flow control valves to ensure proper flow in all hot water branch piping. All hot water and hot water circulation water piping will be insulated to prevent heat loss.

Sanitary Waste

All sanitary waste, vent, and storm drain piping systems will be designed in accordance with the 2009 Uniform Plumbing Code and local amendments. Sanitary waste will be drained by gravity to the gravity sewage main. Floor drains will be provided in toilet rooms and mechanical rooms as required to accommodate equipment discharges. Floor sinks will be provided where required. Floor drains will be provided with trap primer valves to protect trap seals.

Materials

Domestic water piping will be type L copper tubing with 95/5 tin/antimony or any IAPMO approved lead-free solder. Sanitary waste piping will be no-hub service weight cast iron above ground and service weight no-hub or hub and spigot cast iron below ground.

Natural Gas

Natural gas will be provided to the building complete with meter by others. Natural gas piping downstream of the meter and within the building, routed through the facility to the mechanical room and kitchen, will be provided by the mechanical contractor.

Hydronic Heating System

Boilers

Gas fired cast iron boilers will be used to provide heat for the facility. Three boilers, each sized for 50% of the total heating load at design winter conditions will be provided. A 50/50 percent propylene glycol/water solution will be used as the heat transfer fluid.

Materials

Distribution piping material will be ASTM A53, schedule 40 steel piping with welded fittings, or type L copper pipe. Boiler flue stacks shall be insulated, double-walled, AL 29-4C stainless steel, factory manufactured, stack assemblies.

Distribution

The heating system will have duplex variable frequency pumps, arranged in a main/stand-by configuration. The perimeter hydronic system will be served by one set of pumps and the air handling units will be served by a second set of pumps.

Heating Zones

The existing basket ball and racquet ball courts will be heated by ventilation with duct-mounted coils controlling each zone. Air handling unit will require heating coil and outside air duct preheat coil.

Ventilation Systems

The ventilation system will consist of a single air handling unit for the existing structure. Turn down performance matching load conditions will enhance electrical efficiency. CO^2 sensors shall be employed in the gymnasiums for additional outside air matching and air handling unit turndown. The overall building pressurization will be positive with respect to outdoor ambient conditions. The ventilation system will supply cooling air at 55°F and heating air at minimum 72 °F to each space.

The exhaust air system will be fully ducted and routed to the fan room exhaust fans. The exhaust air fans will utilize variable frequency drives to match the supply fan system airflow. Miscellaneous building exhausts (toilet rooms, locker rooms, janitor's closet, etc) will be connected to the central exhaust system.

The main air handling unit and the exhaust air fan will have sound attenuators to meet the sound level design criteria.

Materials

All air handling units and large fan casings will be premium high quality units with heavy gauge steel cabinets and double walled insulated steel casing for sound control. All ducts will be galvanized steel installed per SMACNA Standards, unless otherwise noted. All sound attenuators will be hospital grade, cleanable units without exposed fiberglass. All air filters will be per ASHRAE Standard 52.1-92.

Boiler Room

The boiler room ventilation system will be a constant volume, variable temperature system with return air. Outside air at a minimum damper setting will be mixed with return air and provide boiler and water heater combustion air. A supply air economizer (100% OSA) will be used to provide cooling in the boiler room as required

Humidification

Humidification will not be provided.

Direct Digital Controls

The mechanical HVAC control system shall be a Direct Digital Control (DDC) microprocessor based system employing distributed processing. Local control shall be accomplished by networked DDC control panels. Each controller shall be capable of stand-alone operation, and shall be complete with battery backup and manual override capability. Centralized monitoring and control shall be provided through the central processing unit, graphics operator interface and associated peripherals. Sensors shall be electronic. Operators shall be electric. Local control shall include custom sequences of operation for each terminal unit, piece of equipment, and HVAC system. Proportional/Integral/Derivative (PID) control modes shall be employed. The central processor shall be located in the Penthouse with full access operator terminals located throughout the building.

Temperature Control

Typical spaces will utilize a reheat coil and terminal heating unit (finned tube, unit heater, radiant ceiling panel, etc.) for temperature control. When a space calls for heating, the general exhaust airflow control valve modulates to a minimum flow position, and the reheat coil valve opens. As the space temperature increases, the reheat coil valve closes and the supply airflow control valve modulates open causing the general exhaust airflow valve to exhaust more air from the space in order to maintain pressurization.

Fire Suppression

Fire Protection Design Criteria

- IFC-2009
- NFPA 13-2007

A commercial type wet pipe fire protection system in accordance with NFPA 13, for light hazard (some spaces may have increased hazard classification depending on the space use) occupancy will be provided. A fire sprinkler riser, complete with backflow prevention, inspectors test to

exterior of building, and main drain shall be provided. A zoned sprinkler system shall be provided by floor, with supervised control valve, flow switch, and inspectors test/drain for each zone. Supervisory and alarm connections to the fire alarm system shall be provided. The sprinkler system will consist of ASTM A53, schedule 40, black steel pipe. Sprinkler piping shall be oversized as needed to reduce the pressure drop through the system. Sprinkler piping will distribute above the suspended ceiling with commercial pendant type heads. The sprinkler system serving vestibules, stairwells, canopies and other areas subject to low ambient temperatures shall be dry pendent type. The sprinkler piping within the mechanical and electrical rooms will be exposed with commercial upright type sprinklers. Concealed type sprinkler heads will be provided where heads may be hit by basket balls.

Depending on the pressure and flow characteristics from the utility, a fire pump may be required. The most convenient location for the sprinkler riser and fire pump, if required, would be on the ground floor adjacent to a new water entrance. This allows full access for operations and testing, and is closer to the water service entrance shortening the length of the water main within the building decreasing capital cost. Alternatively, a new six inch diameter water service upgrade may eliminate the need for a fire pump, further study is required to make this determination.

Information Request

1. Hydrant test data is required to determine if a fire pump is required.
2.

VI. ELECTRICAL NARRATIVE

A. Design Requirements

Referenced Codes and Standards

AAC	Alaska Administrative Code
NFPA 70 (NEC)	2008 National Electrical
NFPA 72	National Fire Alarm Code
NFPA	Other related standards.
IFC	2006 International Fire Code
IBC	2006 International Building Code
IMC	2006 International Mechanical Code
IESNA	Illuminating Engineering Society of North America (Applicable principles and applications)
IEEE	Institute of Electrical and Electronics Engineers (Applicable Standards)
NEMA	National Electrical Manufacturers Association (Applicable Standards)
UL	Underwriters' Laboratories (Applicable Standards)
ANSI	American National Standards Institute
TIA/EIA-568A	Commercial Building Telecommunications Cabling
TIA/EIA TSB 67	Transmission Performance Specifications for Field Testing of Unshielded Twisted Cabling Systems
TIA/EIA TSB 72	Centralized Optical Fiber Cabling Guidelines
TIA/EIA TSB 75	Additional Horizontal Cabling Practices for Open Offices
TIA/EIA-569A	Commercial Building Standard for Telecommunications Pathways and Spaces
TIA/EIA-606	The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
TIA/EIA-607	Commercial Building Grounding and Bonding Requirements for Telecommunications
NECA	National Electrical Contractor Association (Applicable Standards)
NEIS	National Electrical Installation Standards

B. Basic Materials And Methods

Raceways

All wiring, except for telephone/data communications systems and as noted below, will be installed in raceways. Raceways will be specified to be of the type suited for the application and as further described below.

No raceway smaller than 1/2 inch in diameter will be permitted except for flexible fixture whip connections. Circuit homeruns for lighting and power shall be no smaller than 3/4 inch in diameter.

To the maximum extent possible, conduit will be concealed in all areas except "utility" spaces.

Where raceways must be exposed outside the protection of structures galvanized rigid steel or intermediate conduits will be used.

Galvanized rigid steel conduit or intermediate metal conduit will be specified for all exposed conduits inside the building where mechanical protection must be considered. The exception to these requirements would be where ground wires must be mechanically protected, schedule 40 or schedule 80 PVC will be specified.

Electrical metallic tubing (EMT) will be permitted for concealed work above grade and inside the building where it will not be subjected to moisture or damage. EMT is also allowed for necessary exposed work where the raceway does not require mechanical protection (mechanical rooms, electrical rooms, etc.).

Flexible metallic conduit will be used for the extension of the building's fixed raceways to any vibrating or similar equipment. The flexible connections in wet, high humidity and devices mounted on or near water piping will only use liquid-tight metallic conduit with overall PVC jacket where allowed by NEC.

All raceways crossing expansion joints shall have flexibility for expansion and contraction for 3-way movement.

In order to provide the maximum flexibility for changes to communications systems, extension from data outlet boxes will be made in raceway run concealed in building wall, then run exposed above the ceiling in D-rings to the telecomm rack.

Wires

All "building" wiring (line voltage) shall be copper with type THHN (indoor) or XHHW (indoor, outdoor, service entrance and feeder conductors) insulation and rated 600 volts unless some other type is specifically required for a particular application. No wire for line voltage (120 volts to 600 volts) applications or ground wire for line voltage systems will be less than #12 AWG in size. All neutral conductors will be full size. An insulated green ground wire for all circuits will be provided unless noted otherwise. Color coding of insulated wiring shall be:

120/208V, 3-phase, 4-wire systems:	Shall be labeled black, red, blue with a white neutral and green ground.

All conductors, including neutrals, passing through pull, junction and outlet boxes will be labeled with cloth markers or tubing type tags having clearly legible data identifying the panel and circuit number, or other appropriate identification.

Communication systems' wiring will be specified to be listed by UL for installation in return air plenums (not in conduit) and will have Teflon (plenum rated) overall jacket. These characteristics will permit spaces to be used for air return in this project's construction or at anytime in the future.

Boxes

Boxes mounted outside, exposed to weather, located in interior wet areas, or in other environments other than "dry" will be cast steel with neoprene gasketed covers, threaded hubs. Flush interior boxes, including pull boxes and junction boxes will be pressed sheet steel with galvanized finish. Boxes of minimum size 4" square will be specified for outlets, switches and other wall mounted applications. Boxes for ceiling mounted luminaires will be minimum size, 4" square. Exposed interior boxes will be galvanized steel in unfinished areas and primed/painted steel in finished areas. All junction box covers shall include identification of circuit numbers. Single gang flush outlets will be mounted using single gang plaster rings mounted on the 4" square boxes. All boxes will be the 2-1/8" deep type. See "Device Plates" below for information about device plates.

Receptacles

Ivory, 20 ampere, 125 volt, 3-pole duplex receptacles will be specified for this Project unless some specific items of equipment require different characteristics or

configurations of outlets. Special outlets of proper arrangement and rating will be selected to match such equipment. The devices will be specification grade. All receptacles will be labeled to identify the panel and circuit number.

Ground fault circuit-interrupting (GFCI) receptacles will be provided in all bathrooms, break rooms, wet areas, exterior, etc. GFCI devices will be end-of-line type.

Hazardous Storage/Areas

No hazardous classified locations are expected for this project. Any hazardous locations will be identified on the construction drawings.

Light Switches

Only 20 ampere, 120/277 volt switches will be specified for switching lighting circuits. Light switches shall be colored ivory the same as receptacles.

Device Plates

Stainless steel non-magnetic (Type 302) device plates will be specified for devices in finished areas. Galvanized steel plates will be used for boxes and devices in unfinished areas. Device plates for special purpose outlets and receptacles having characteristics differing from the typical duplex receptacle will have clear adhesive labels identifying their characteristics. Weatherproof device plates will have weatherproof while in-use covers, per the NEC. All device plates will be identified with clear adhesive labels with the circuit number and panel name.

Motor Starters

Unless special considerations require selection of other types of starters, starters will be horsepower-rated and will consist of toggle-type manual starters for fractional horsepower motors and full NEMA size units sized for those motors greater than 1/2 horsepower in size or of 3-phase configuration.

Automatic starters will be equipped with LED pilot lights, transformers, start-stop push-buttons or H-O-A switches as required and connected so control will be shut down (but protective devices will not be bypassed) when the disconnect switch is opened for any reason. All starter enclosures will be steel and of NEMA 1 construction unless another enclosure type will better suit the application.

Soft-start motor controllers or variable frequency drives (VFD) motor controllers will be used for motors greater than 10 HP in size and having widely variable loads. VFD controllers will be stand-alone units. Heating and circulation pumps smaller than 10HP will also likely utilize VFD controllers, see Mechanical for discussion of VFD controller applications. The units will be required to include electromagnetic interference (EMI) protection. All VFD controllers shall have manual electric bypass capability, except for redundant motors.

Main Distribution Assembly

The electric Utility BUECI will provide primary power overhead from the existing overhead primary utility lines to a new pad mounted utility transformer near the facility. The Utility will provide the primary equipment and installation labor, while the contractor will be responsible for the equipment and labor costs. A current transformer cabinet and meter base will be provided in a building mounted NEMA 4X cabinet outside the building near the transformer for the utility. The secondary conductors will be brought from the meter base to the main breaker located in the adjacent NEMA 4X cabinet. The secondary conductors will then terminate in a new main distribution panel (MDP) inside the building that will contain the equipment necessary to distribute power to all distribution panelboards throughout the facility. The new MDP will be installed in the same location as the existing MDP which will be demolished.

The existing electrical room will be re-used to house the new electrical distribution equipment including the MDP, branch circuit panelboards, lighting contactors, and telecommunications equipment.

The estimated load size at the MDP is 800 amperes, which includes capacity for a future gym addition as well as 20% future growth. The distribution system will be 208/120 V, 3-phase, 4-wire, “wye”. The main breaker will be a 1000 ampere, 3-pole frame with a 800 ampere trip mounted in the exterior NEMA 4X cabinet. The MDP will house the feeder breakers protecting feeders supplying all other power requirements for the facility. The main breaker and all feeder breakers will be of the solid-state selectable trip type. As will be the case with all electrical distribution components, a minimum 10% spare capacity will be included when selecting sizes.

From the MDP, feeders will be routed through electrical metal tubing to other branch circuit panels and re-feed some of the existing panels currently installed in the electrical room in the facility. Any new panels required in future expansions will be fed from this MDP.

The MDP will include feeder breakers. All components will be in a single lineup of electrical equipment and interconnected with copper bus with the entire assembly rated for the appropriate short-circuit interrupting requirements.

Branch Circuit Panelboards

Branch circuit panelboards will be located near the centers of load in the various parts of the facility in spaces with limited public access and in the second floor electrical room. These panelboards provide power for local loads and to avoid problems such as voltage dips and voltage drops due to large loads starting and stopping at the ends of long runs of wire. Panels will not be loaded past 80% of main rating after all future capacity has been provided for, meaning panel load not to exceed 68% of initial design loads to allow for future spare capacity for both ampacity and space. These panelboards will be dead-front front construction with bolt-on breakers and will serve individual branch circuits supplying lighting, equipment and general power throughout the building. The branch circuit panelboards will be 208/120Y volts, 3-phase, 4-wire. A plastic covered circuit directory shall be provided in each panelboard. The circuit breaker protecting the branch wiring to the fire alarm panel shall be provided with a protective device preventing accidental opening of the breaker with a warning label mounted adjacent to it stating, “Fire Alarm. Do Not Turn Off”.

Motor and Circuit Disconnects

These heavy duty units will be sized for the specific circuit and application in which they are used. Each motor will be provided with a local disconnect. Each motor disconnect switch will be horsepower rated. Circuit disconnects will have ampere ratings equal to or greater than the ampere rating of the circuit supplying the equipment. All disconnects will be of the heavy-duty non-fusible type and will be required to be enclosed in steel NEMA 1 enclosures unless the application requires a different type of enclosure.

C. Lighting

General Design Considerations

Essential elements of lighting design which provide the appropriate quantity and quality of light are as follows:

This Project has many different lighting tasks. A number of different luminaires may be required to develop the optimum lighting approach for each area and task.

Lighting controls should be coordinated with furniture placement, space use, and activity zones. Lighting controls should promote and encourage energy conservation wherever possible.

Task lighting will be coordinated with space activities to supplement general lighting levels wherever possible.

Maintained design illumination levels for different activities shall correspond to those listed in the following chart. These levels are based on the Illuminance Standards in the Illuminating Engineering Society (IES) Lighting Handbook.

Type of Area	Footcandles @ +30" Above Floor Unless Otherwise Noted
Corridors, Lobbies and Stairs	20
Janitor Closets and Storerooms	40
Locker Rooms and Restrooms	30-40
Gymnasiums (future)	75
Mechanical and Electrical Rooms	50
Communication Rooms	70

Specialized tasks, such as in racquet ball courts, saunas may require different light levels on the work surface while maintaining overall averages indicated. These levels shall be oriented to the task area.

Phase 1 work will leave the lighting fixtures in the gymnasium and racquetball courts as is, and only provide new power circuit homeruns to the lighting fixtures from the new branch circuit panelboards. Future phases will upgrade the lighting in the gymnasium and racquetball courts. A possible alternate design option could be to upgrade the lighting in Phase 1 if funding is available.

Lamps

Interior areas will benefit from the efficiencies of fluorescent lamps. In general, linear fluorescent lamps will be 48" in length, energy saving, low-mercury and long-life (in available sizes) T8 and T5 and will have high color-rendering indexes (CRI's). Compact fluorescent lamps will be energy saving, low-mercury (in available sizes) and will provide high color-rendering indexes. All fluorescent lighting will have a color temperature of 3500°K, except where a different temperature may be required. Energy consumption and efficiency must also be considered in selecting the most appropriate illumination source for each application. Use of compact fluorescent lamps will be limited.

The building exterior will be illuminated using high-pressure sodium or LED sources. The parking lot lighting will not be included in phase 1 work.

Interior Building Lighting

The luminaires used in control room and conference rooms will be direct/indirect pendant mounted (large spaces) or semi-recessed (single or small) indirect fluorescents providing ceiling illumination. The luminaires used in weight rooms, and aerobics areas will be generally direct surface mounted fixtures with 3 and 4 T8 lamps and metal wireguards shields for protection (See "Interior Lighting Controls" below) and high-efficiency. Indirect fixtures provide light for the ceiling plane of a room creating a spacious atmosphere and reduce cave effect. The luminaires used in hallways and stairways will be fluorescent ceiling mounted fixtures with parabolic reflectors. Placement will be such that uniform light distribution will be provided. Mechanical spaces, storage areas and similar areas will generally be illuminated with fluorescent lamps used in industrial luminaires with reflectors. Where downlights, task lights or other type lighting are used when the light is to be directed, a fluorescent type lamp is to be considered, if it can produce the desired effect.

Emergency lighting will be accomplished using fixtures with emergency ballasts or wall mounted dedicated emergency fixtures with self contained batteries. Backup batteries will power exit signs and lighting units where required, arranged and installed to comply with the life safety code requirements.

Ballasts and Accessories

Fluorescent fixtures will be specified with electronic programmed rapid start ballasts for high efficiency and long life in areas where temperatures do not preclude the use of low-wattage lamps in conjunction with electronic ballasts. Electronic ballasts shall have <10% total harmonic distortion (THD) for high efficiency and long life. High intensity discharge ballasts will be high power factor type with temperature characteristics specified to insure their reliable starting and operation in expected ambient temperatures.

Interior Lighting Controls

Individual switches and controls for large area lighting will be provided to permit selective energy use when required. Where illumination level requirements are not constant, use of multilevel switching for fluorescent lamps will be provided. Other measures will include block or group switching of fixtures. Fluorescent fixtures will have lamps switched

in combinations to permit varied control of light levels (33, 66 and 100% for 3-lamps and 50 and 100% for 4-lamps). Ceiling mounted occupancy sensors will be used in corridors, storage rooms, and janitor closets. Remote switching capability will be provided in the Control room so the Gym operator can turn on/off lights as demanded by the usage functions.

Site Lighting

Site lighting requirements at entries to the structure are 5 maintained foot-candles (MFC) at all entries. Building entry points require an average of 5 MFC. Performance must have a uniformity ratio of 4:1 (average/minimum) for parking and pedestrian areas and uniformity ratios of between 3:1 and 6:1 (average/minimum) for area lighting based on maintained levels throughout the area. Building mounted luminaires using 250 watt high pressure sodium lamps or LED fixtures with cutoff IES type distribution (Types II or V) will be suitable for this application. Luminaires will operate on 208 volt ballasts, be weatherproof, incorporate rotatable optics assemblies and will have unitized ballast trays for ease of maintenance.

Exterior lighting luminaires will be mounted on the building exterior or existing poles for area lighting of building vehicular approaches. No new lighting poles will be provided. Exterior luminaires will be specified with aluminum housings with natural anodized finish.

All exterior lighting systems will be controlled by a single photocell that will provide input for the lighting contactor. The photocell shall be located to facilitate easy maintenance and replacement. A hand-off-auto (H-O-A) switch shall be included with the controls so that exterior lighting can be controlled manually if needed at certain times. All lighting contactors shall be of the mechanically held and electrically operated type and be mounted in NEMA enclosures suitable for the environment in which installed.

Energy Conservation

The building utilizes many of today's standard energy conservation measures including:

Linear fluorescent lamps will be 48" in length, energy saving, low-mercury (in available sizes), long-life T8 (in available sizes) and will have high color-rendering indexes (CRI's). Electronic ballasts for fluorescent fixtures saving energy through higher ballast factors and higher light output reducing the number of fixtures/lamps required.
Lighting controls promote and encourage energy conservation wherever possible (such as occupancy sensors, multiple switching in individual areas, group switching with local overrides, etc.).

Light finishes will be promoted for optimal use of light within spaces.
High efficiency motors will be provided where available in mechanical and other systems.

D. Telecommunications And Information Systems

Fire Alarm

The fire alarm system will be separate from the DDC system but will provide control signals to the DDC system. Sprinkler flow and valve position switches, manual pull-stations, combination horn with strobe units, supervision and other functions shall be controlled, monitored and annunciated from the Fire Alarm Panel (FAP). Power for the FAP will be supplied from an internal battery backup. A label shall be provided in the FAP identifying the panelboard and circuit number supplying power to the FAP. The circuit breaker protecting the branch wiring to the FAP shall be provided with a protective device preventing accidental opening of the breaker with a warning label mounted adjacent to it stating, “Fire Alarm. Do Not Turn Off”.

Automatic fire detection will be limited to the areas specifically required to have detectors by the applicable codes. These areas include: fire doors with door holders; duct detectors (on air handling systems over 2000 cfm); automatic-closing fire assembly smoke compartment dampers.

The module’s components and interfaces that make up this system shall be UL/FM listed as suitable for such systems. The system shall be fully supervised and zoned.

In lieu of a graphic annunciator, the fire alarm panel with alpha-numeric display will be located at the main entry of the building (the entry closest to the fire department connection).

A digital alarm communicator will be included in the FAP to provide 24 hour monitoring of the fire alarm and sprinkler system. The remote monitoring of the fire alarm and sprinkler system will be a local central monitoring and dispatch service in Barrow.

Television

A cable television system will not be provided.

Networked Clock System

A networked clock system will not be provided.

Security System

The security system shall consist of controlling access at exterior entry doors and selected interior room doors via card readers. The system shall allow for multiple users and unlimited configurations of programmable access. The administration workstation and control panel will be located in the Main Office. The workstation will allow for the building manager to issue and program access key card to the gym users. The security system will report alarms outside of the facility to the local security monitoring service. The security system will also provide control, monitoring, and recording of the security cameras. Security cameras will be provided at the building entrances and in corridors to monitor and record the activities in the gym for security purposes. A monitor will be provided in the main office for viewing of all camera inputs simultaneously.

Future Growth

Provisions for adding services to future areas and revising existing services will be included in the many communication systems distributed throughout the building. The key to these future additions and revisions is plenum cables mentioned above. All sub-panels, control panels, hardware and software have been selected and specified to permit the addition of devices and equipment required to incorporate future expansions of these facilities.

Telecommunications Distribution Systems

Horizontal Distribution

Extensions from data outlet boxes to communication racks will be made in raceway run concealed in building wall, then run exposed above the ceiling in D-rings.

Main Distribution Frame, MDF

Only equipment in direct support of the distribution frames (telephone equipment, network hubs, computers and related equipment) shall be included within these areas.

MDF contains racked terminations of horizontal distribution cables and these cables are located to maintain a maximum physical cable length from any outlet to the MDF to less

than 295 feet for copper cables but preference is no more than 200 feet of cable be required. IDFs also shall contain electronic hubs and switches which connect the horizontal cables to the backbone of the building. The smallest horizontal dimension of any frame room should be 5' to accommodate installation of 19"x22" deep racks. The preferred minimum horizontal dimension would be 7.5 feet to allow 30” clearance around each rack(s).

Special Materials/Finishes Criteria

MDF 3/4” thick, 4’ by 8’ plywood, starting up 18” above floor on one wall. Grounding in accordance with TIA/EIA 607.

Telephone/Data Cabling and Installation Requirements

A prewired data/telephone network shall be provided for the facility. Design and implementation shall meet the applicable requirements of the TIA/EIA Standard 569. The basic horizontal cable consists of a copper Category 6 cable.

Telephone only locations shall include only copper cables meeting the same standards as the cable used above. Each communications outlet faceplate shall be capable of supporting 2 network devices and 1 telephone device.

The entire cabling system shall be electronically documented (database) during construction in accordance with TIA/EIA Standard 606. The database shall be a deliverable to the Owner at completion of the project.

Similarly, telephone and data patch cables will be provided in each IDF or MDF frame room location.

Terminations

Copper	In frame rooms: Rack mounted 110 Block Patch Panels with T569A jacks. At workspace faceplates: T569A jacks.

Outlets/Jacks - in common 2-gang device plate

Telecomm	3 Each 568B, Category 6 minimum to match cable

Direct Digital Control System (DDC)

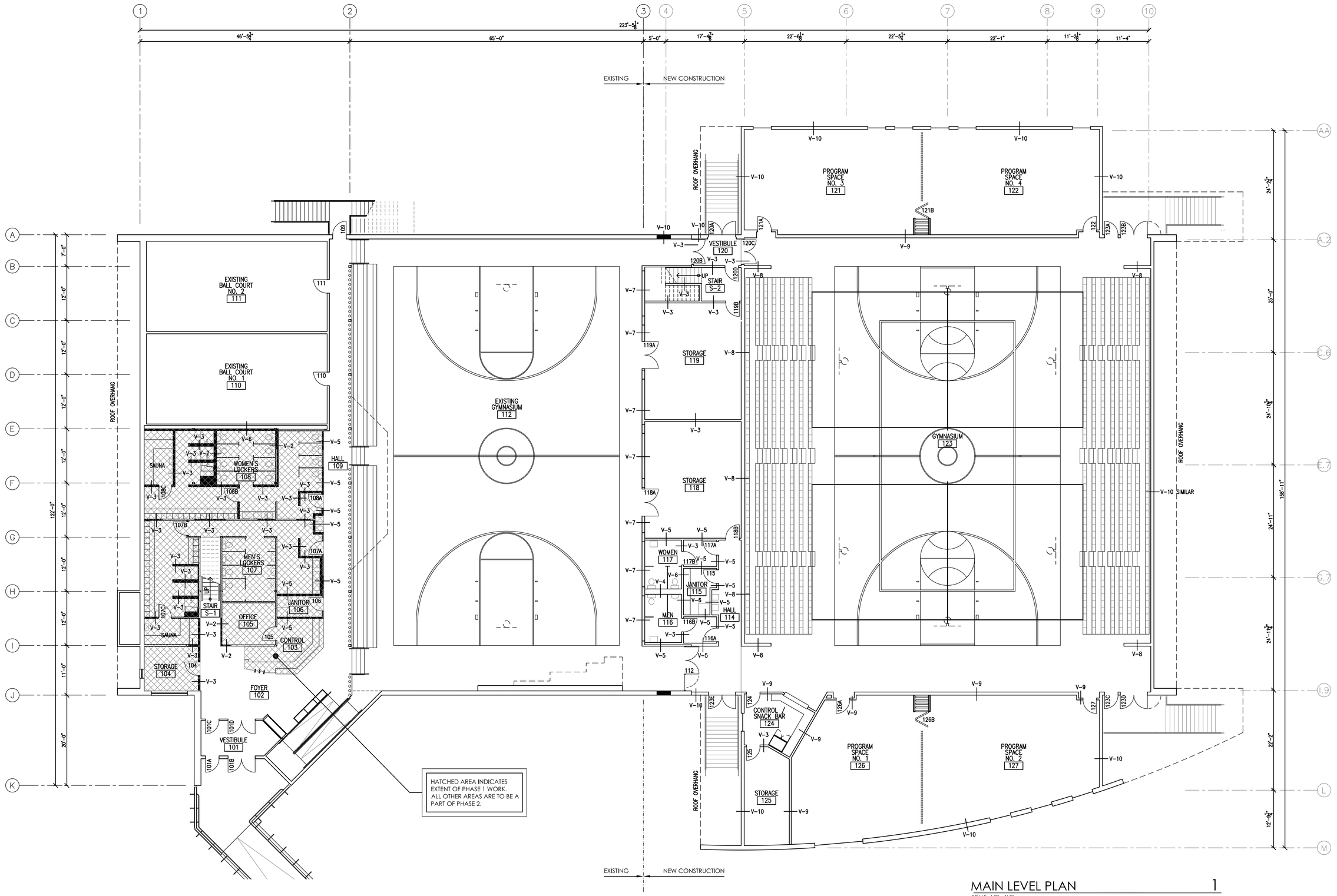
A computer based monitoring and control system will be provided in this facility in accordance with the requirements and standards of the program and the appropriate application of this technology. A central control system will be located at the building's maintenance office or other designated 24-hour manned location. This system will be carefully coordinated with the mechanical controls. The central control equipment will receive reports from "smart" local and area control panels. The local and area control panels will be specified to function independently should the central computer go down. In this way local design conditions are not affected by the loss of the central control system.

The system will integrate mechanical controls and monitoring and other control, sensing and monitoring functions into a single system. The system will include the operating systems, graphics and accessories to allow the adjustment and revisions of other systems reporting to the central system hardware/console from a common control point as well as from portable and/or remote terminal locations.

Piuraagvik Recreation Center — **Construction Cost Estimate**
Alterations and Expansion — **Schematic Design Submittal**
Prepared for Bezek Durst Seiser, Inc. by Estimations — **August 26, 2010**

Description				Estimated Cost
PHASE 1				
General Construction - Locker Room Area (no plumbing)	2,400	SF	$260.00	$624,000
Minor Repartitioning Upstairs	50	LF	$80.00	$4,000
Door Revisions	2	EA	$1,600.00	$3,200
New Flooring Upstairs, Remove Conc pads, Replace Conc	1,000	SF	$8.00	$8,000
Demolition Mechanical	1	LS	$10,000.00	$10,000
Plumbing fixtures & Roughin	59	EA	$7,000.00	$413,000
Water Service	180	LF	$300.00	$54,000
Water Heaters	3	EA	$2,500.00	$7,500
Sprinker/FA to existing building	13,000	SF	$5.50	$71,500
Hydronic Piping	1	EA	$50,000.00	$50,000
Gas Piping	160	LF	$30.00	$4,800
Boilers & Appurtences	3	EA	$193,000	$579,000
Boiler Room Ventilation, Plenum, Dampers	1	EA	$2,200.00	$2,200
Ductwork at new AHU	1	EA	$10,000.00	$10,000
Locker Room Exhaust	1	EA	$2,500.00	$2,500
F-1: Gymnasium Fans, 8' Diameter	3	EA	$5,500.00	$16,500
New AHU	19,000	CFM	$5.53	$105,000
Electrical - MDP 800, w/800A Feeder	1	EA	$85,000.00	$85,000
Main Disconnect, CT	1	EA	$17,000.00	$17,000
Lighting and Power at Locker Room Included in General Renovation				
Subtotal				**$2,067,200**
General Requirements and Contractor Markups			40.0%	$826,880
Estimating Contingency:			20.0%	$578,816
Project Cost Factor			25.0%	$868,224
Total project cost, Phase 1				**$4,341,120**

Notes:
General Scope is to Renovate approx. 2400 SF including locker room area, and replace major mechanical equipment.
Sprinkler Building
Replace main electrical distribution equipment
No upgrades to the remaining building areas
No Entrance Upgrades



MAIN LEVEL PLAN 1

SCALE: 1/8" = 1'-0"

NOT FOR CONSTRUCTION

Bezek Durst Seiser, Inc.
3330 C Street, Suite 200
Anchorage, Alaska 99503
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F.907.562.6635
www.bdsak.com
BDS

BARROW, ALASKA

PIURAAGVIK
REC CENTER
ALTERATIONS AND
EXPANSION

BDS PROJECT NO.
609014

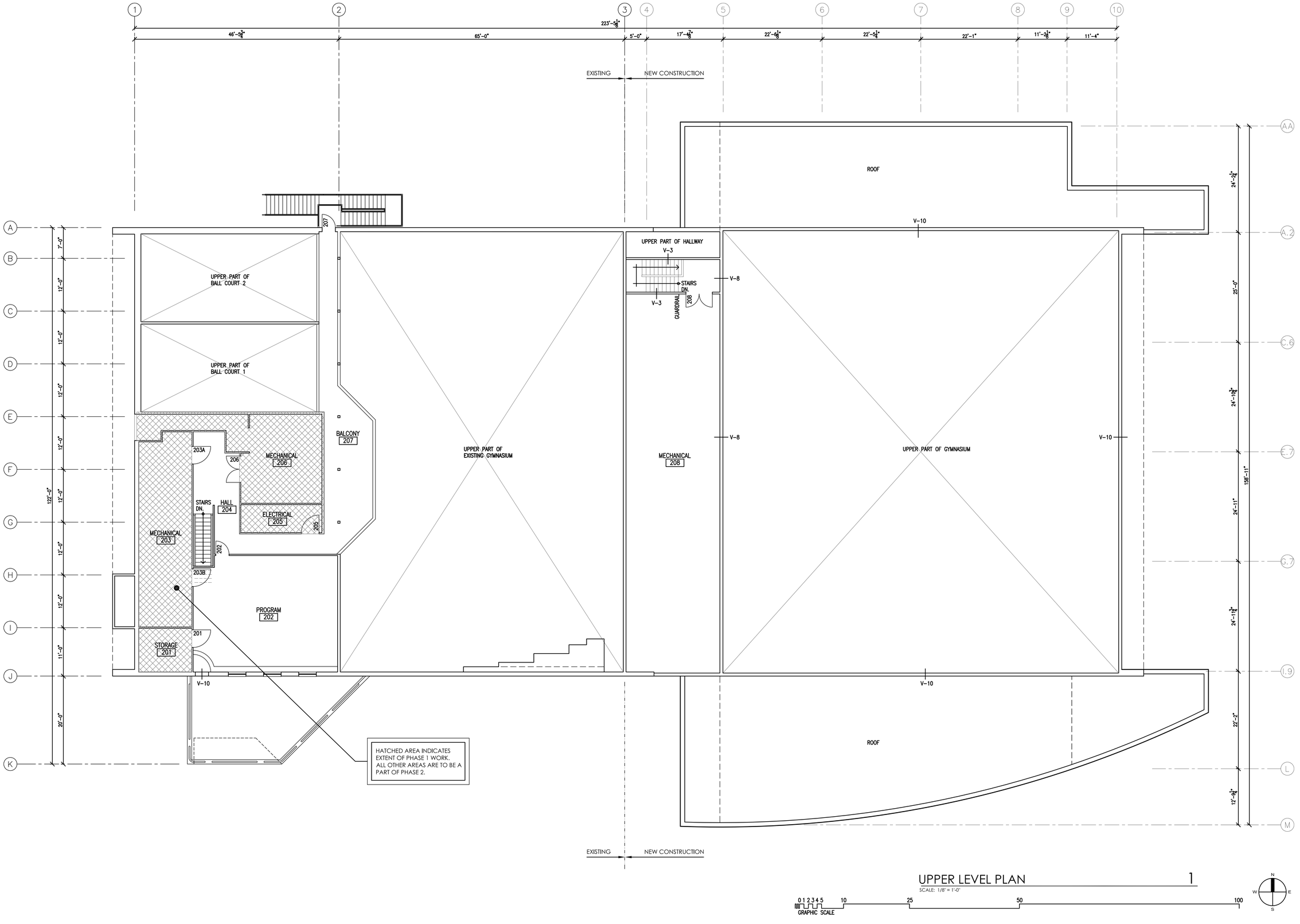
PHASE
SCHEMATIC DESIGN

DATE
AUGUST 25, 2010

DRAWING TITLE
MAIN LEVEL PLAN

A2.1

GRAPHIC SCALE
0 1 2 3 4 5 10 25 50 100



UPPER LEVEL PLAN 1

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE 0 1 2 3 4 5 10 25 50 100

N W E S

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EXPANSION

BDS PROJECT NO.
609014

PHASE
SCHEMATIC DESIGN
DATE
AUGUST 25, 2010
DRAWING TITLE

UPPER LEVEL PLAN

A2.2

State of Alaska Legislative Grant Program

Issued By:

State of Alaska
Department of Commerce, Community and Economic Development

December 13, 2010

City of Barrow

Construction of Piuraagvik Recreation Center Facility Addition

$15,000,000.00

TABLE OF CONTENTS

APPLICANT INFORMATION AND ADMINISTRATIVE CAPABILITY

1. Name of municipality applying for grant: **City of Barrow**

2. Mailing address:

   City of Barrow

   PO Box 629

   Barrow, Alaska 99723

3. Physical address:

   2022 Ahkovak Street

   Barrow, Alaska 99723

4. Contact Person:

   Name: Ann Murphy

   Title: Grant Administrator

   Phone number: 907-852-5211

   E-mail address: Ann.Murphy@cityofbarrow.org

Key Personnel

Name and position title: Ann Murphy, Grants Administrator

Responsibilities in relationship to this project: Ms. Murphy will work with the City of Barrow project personnel to ensure grant project completion and compliance. She is also responsible for submitting quarterly progress and financial reports and ensuring the project meets audit requirements.

Previous experience with similar projects and/or any projects funded by grants from other state or federal agencies. Grant Administrator on state, federal and non-profit organization grants, private grants, contracts and cooperative agreements and is responsible for project/program compliance and all reporting requirements. Ms. Murphy has over 11 years experience administering grant funds. Please refer to Attachment A for résumé.

Name and position title: Bob Thomas, Recreation Director

Responsibilities in relationship to this project: The Recreation Director will serve as Project Investigator for the Construction of the Piuraagvik Recreation Center Facility. Bob Thomas is the Chair of the Recreation Committee. He will work with the Mayor and construction firm ensure that the project objectives are completed in a timely manner.

Previous experience with similar projects and/or any projects funded by grants from other state or federal agencies. Bob Thomas has grant project administration experience with City of Barrow FY 05, FY 06, FY 07, and FY 08 State, Federal, and local grants. Please refer to Attachment A for résumé.

Contractor information

To comply with procurement standards, this project will be competitively bid.

Current and Potential Impacts

Population Impacts

A remote and geographically isolated community, Barrow's increase in population from 363 Inupiat in 1939 to over 4,400 residents today is almost entirely a result of direct and indirect impacts from gas and oil development on the North Slope of Alaska. Government records show that the Navy's PET-4 project demonstrated the feasibility of oil exploration and extraction in the National Petroleum Reserve-Alaska. From 1947 through 1977, the Naval Arctic Research Laboratory (NARL) scientists in Barrow worked with British Petroleum (BP) to develop the technology used in the creation of the Trans-Alaska Pipeline System (TAPS) and the Navy's support of entities in Barrow such as the U.S. Weather Bureau, the Public Health Service, and the State of Alaska made Barrow the natural choice for the logistical and economic hub of the North Slope Borough. (Fifty More Years Below Zero, 2001)

Current and Future Exploration and Development: Gas and oil development and exploration activities on the North Slope are increasing every year. Currently ConocoPhillips operates three producing oil fields within the NPR-A: Alpine, and Nanuq, and Qannik. According to the U.S. Bureau of Land Management (BLM) NPR-A Oil and Gas Activity Report (October 2009), there were three new exploratory wells drilled in 2009. North Slope Borough property taxes on oil and gas infrastructure within the North Slope of Alaska contribute to the revenue stream which the Borough translates into public services and jobs, most of which are concentrated within Barrow.

Recently, interest in offshore oil drilling in the Arctic Ocean has intensified in recent years. According the Department of Natural Resources Oil and Gas Activity Report (December 2009), the following oil and gas activities will take place in 2010 and 2011:

- British Petroleum drilling at Liberty point in 2010, and oil production in 2011.
- Ultra Star drilling second dew line well in 2011.
- AVG/Brooks Range Plan to drill 2 wells within Beechy Point Unit in 2010.
- ENI expects first production from Schrader Bluff in Nikaitchuq Unit in end of 2010. Sea Lift in 2010.

- Pioneer Natural Resources development and drilling continues near Oooguk.
- Shell plans to drill 2 wells on Sivulliq prospect by the end of 2010.
- Exxon Mobil drill PT-15 and PT-16 to surface casing point. Both wells estimated to reach TD by December 2010.

Additionally, in the 2008 annual energy outlook, the Department of Energy's Information Agency projected the price of oil to be $74 per barrel in 2010. In August 2010, the cost per barrel was $76 per barrel. (www.energy.gov)

Based on those assumptions, the following is likely to occur in the future:

• Multiple lease sales will be held;

• Industry will aggressively lease and explore the tracts offered, which could require large numbers of exploration wells and seismic surveys;

• Several industry groups will independently explore and develop new fields in the on the North Slope;

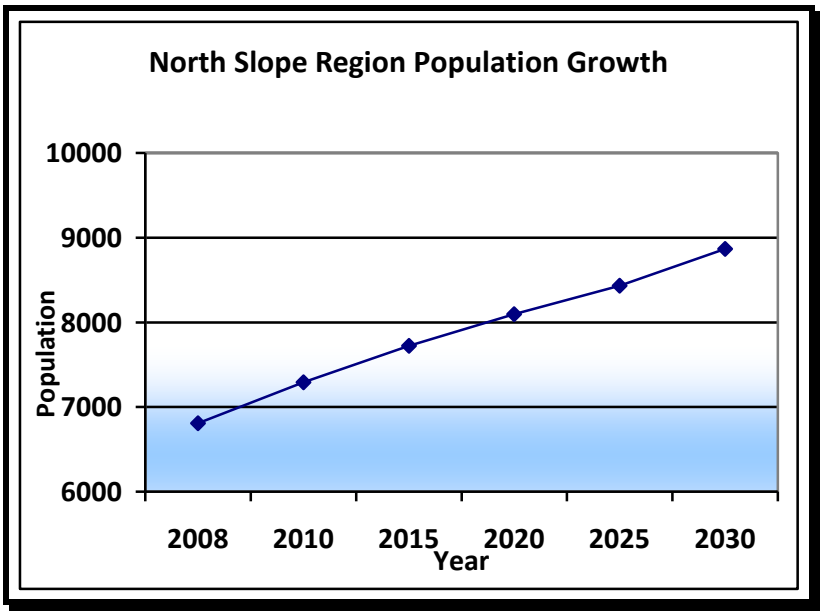
• Economic conditions (particularly oil price) would remain favorable to development in Northern Alaska.

(Northeast NPR-A Final Supplemental IAP/EIS, 2008)

With increased oil and gas activity in the North Slope region, private companies, the US Coast Guard, and commercial ships will be utilizing the waters surrounding the Northern Alaska region. Because Barrow is the hub of the North Slope, an increase in revenue from oil and gas exploration means an increase in the number of residents.

It is estimated that the population of the North Slope region will increase by approximately 484 by the end of 2010 and by 2,060 by the year 2030. (Alaska Population Projection 2010-2030, 2007) Chart 1 below illustrates the projected population growth in the years ahead due to oil and gas activity on Alaska's North Slope.

Chart 1



In the 1960's, at the start of the PET-4 Project, the majority of population in Barrow was Inupiat. Today, nearly forty percent of the population is non-native, (North Slope Economic Profile, 2003) making it the most ethnically diverse village on the North Slope. The ethnic diversity is as follows:

- Inupiaq (64.0%)
- White Non-Hispanic (21.2%)
- Two or more races (8.5%)
- Filipino (7.0%)
- Hispanic (3.3%)
- Native Hawaiian and Other Pacific Islander (1.4%)
- Other Asian (1.2%)
- Black (1.0%)
- Korean (0.8%)
- Other race (0.7%)

While the increase in services has positively impacted the community of Barrow, it has negatively impacted City Operations. For instance, due to the diverse population, the City of Barrow must provide a much wider range of activities to meet the needs of the residents.
In 2009, visitors for City recreational services are as follows:

- Piuraagvik Recreation Center had 152 visitors on average per day.
- Roller Rink had 72 visitors on average per day.
- Youth Center had 34 visitors on average per day.

The demand for recreation services and facilities provided by the City of Barrow is population driven. As the population of Barrow has increased so has the need for recreation facilities. Now, recent assessments of the potential oil and gas development and the BLM's expeditious leasing program may have Barrow poised upon the brink of another petroleum-related boom. To continue to provide services at the same level as today to an increased population, the City of Barrow must continue to function efficiently, while increasing recreation space and activities.

The Piuraagvik Recreation Building was originally constructed in 1984 when Barrow's Population was approximately 2,973. Today Barrow's population is over 4,400 people, and there is not enough room to fit everyone who wishes to take part in recreational or cultural activities such as Eskimo dancing, whaling celebrations, Christmas games and other sports activities. In the past four years, Piuraagvik has had over 120,000 recorded visits. Lapses in record keeping, special events where no sign-in is required, and people who don't sign in to avoid the $1.00 entrance fee, mean that the actual number is probably significantly higher. The current size of the facility limits the use and does not meet current population needs. (Bezek, Durst, & Seiser Schematic Design August 2010) As a result, the demand for renovated and expanded recreational facilities is high.

The City of Barrow Recreational Program provides the majority of recreation options for the residents of Barrow. Facilities include:

- Piuraagvik Gym: Activities such as basketball, volleyball, racquetball, weight lifting, cardiovascular training, aerobics, and rock wall climbing.

- Community Playgrounds: City of Barrow outfits and maintains four community playgrounds, Block A Playground, Utiqtuq Playground, Sadie Neakok Playground, Manuluk Playground.
- Barrow Community Center: Activities include bingo, pool tables, ping pong, and foosball.
- Tupikpak Ice Rink: Activities include curling, hockey, shuffleboard, and gatherings.
- Piuraagvik Park: Softball Park
- Boardwalk Trails: flat, non-tundra surfaced for walking, biking, and running.
- Roller Rink – Bocce, roller skating, concerts, performances and gatherings.

Several City of Barrow Recreational Facilities – Roller Rink, Piuraagvik, and Tupikpak – are also available to rent and use for community meetings, gatherings, parties, and cultural events.

The City of Barrow's recreation and special event services provide common ground for the citizenry of Barrow. Recreation options also provide places and activities where people of all cultures and races can play, workout, and steam together, lessening ethnic groups' natural segregation. This helps to mitigate some of the conflict by helping different ethnicities to become more familiar with each others' systems, cultures, and goals. Various City of Barrow teams and activities build feelings of teamwork between children and adults of different ethnicities.

Recreation activities offered at the Piuraagvik Recreation facility include flag football, bocce, soccer, basketball, racquetball, rock wall climbing, volleyball, weight lifting, strength training, and aerobics, to name a few. New activities implemented in 2010 include a Polynesian dance class, 2 women's conditioning classes, and a turbo kick boxing class. Additionally, in 2011 new activities will include laser tag, archery, and air rifle training. Current programs are expanding as well. For instance, to accommodate the increased need, basketball leagues are now offered 3 seasons (fall, winter, and spring) out of the year. Volleyball leagues are now offered in the fall and spring of each year.

According to the North Slope Economic Profile and Census Report (2003), nearly forty percent of Barrow's population is comprised of children 18 and under. This is well above both national and Alaskan averages. As a result, the City of Barrow Recreation Program provides several youth activities, and is actively involved in several youth recreation services. In addition to sports, safety education programs, such as City of Barrow's Bike Rodeo, and youth employment opportunities, such as Summer Youth Program, and Workforce Development Program take place in part or entirely at the Piuraagvik facility.

To meet the growing need of youth activities, a new gymnastics and tumbling program was introduced to Barrow in 2009 and continued in 2010. The program has been a success. In 2011, it is anticipated that new youth activities such as laser tag, archery, strength training, and Challenge Life Foundation basketball camps will occur in the Piuraagvik Recreation Center. In addition to these recreation activities, the City of Barrow runs an annual children's basketball league titled, Little Dribblers, at the Piuraagvik Facility. During the Challenge Life and Little Dribblers Programs, youth from across the NPR-A region utilize the Piuraagvik Facility.

Construction of the Piuraagvik Recreation Center Facility Addition will mitigate the need for population-driven recreation services by creating additional recreational facility space to allow for an increased number of activities and social gatherings. Phase I of the construction process will consist of renovating the current mechanical systems to bring them up to code and prepare the current facility for the construction of the new addition the during Phase II.

Finance Impacts

The City of Barrow has the unique challenge of providing recreational services to an ever-increasing population *without* the benefit of the North Slope Borough's large gas and oil infrastructure tax base. User fees, gaming, gravel royalties, and property rentals provide the City of Barrow with a revenue stream, but it is not large enough to comply with local demand for recreational services, or to build additional facilities to accommodate the increased demand for recreational activities. To provide an increase in recreational activities, a larger recreational facility is critically needed. The City does not have the operating budget to provide funds to

build the Piuraagvik Recreation Center Facility Addition needed to meet the increased demands in recreational services.

In order to meet the increased demand for services, it is critical to increase the space provided for recreational activities. Due to funding limitations, the construction process has been proposed in two phases. Phase I will renovate the current mechanical systems in the current facility, and Phase II will construct the new addition.

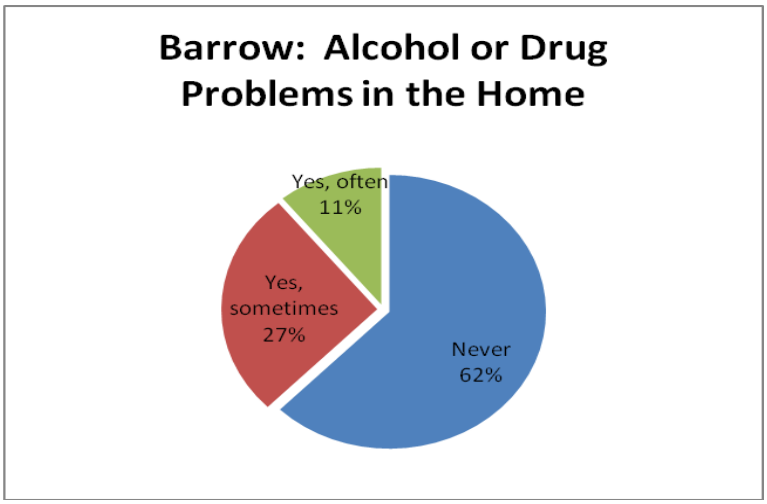
Social Impacts

The Inupiat have developed socio-cultural systems, including settlement patterns, kinship, leadership institutions, and cultural values concerning relationships with the land, as tools for successfully adapting to their Arctic environment. The cycle of oil exploration, development, and production activities has contributed to harvest shortfalls, a loss of cultural privacy, and challenge to traditional Inupiat values. (NE NPR-A Final Supplemental IAP/EIS May 2008)

A loss of traditional ways produces apathy and frustration as well as more available time. As a result, traditional activities are often times replaced by recreational activities, including drug and alcohol abuse, and domestic violence. This is compounded by the threat of future oil and gas development in the North Slope Region. One study by the Center for Research on the Acts of Man 'begins by documenting the prodigious amount of alcohol consumed by the Inupiat of Barrow, the failure to attend to family and work responsibilities, violent attacks on one another, death, and suicide. (Study on Social Change and the Alcohol Problem on the Alaskan North Slope, 1980)

According to the 2010 North Slope Borough Health Impact Assessment baseline results, Inupiat adult (16 and over) survey respondents living in Barrow were more likely to report frequent alcohol or drug problems in the home, compared with those living in other North Slope villages. Chart 2 illustrates alcohol and drug abuse in the home.

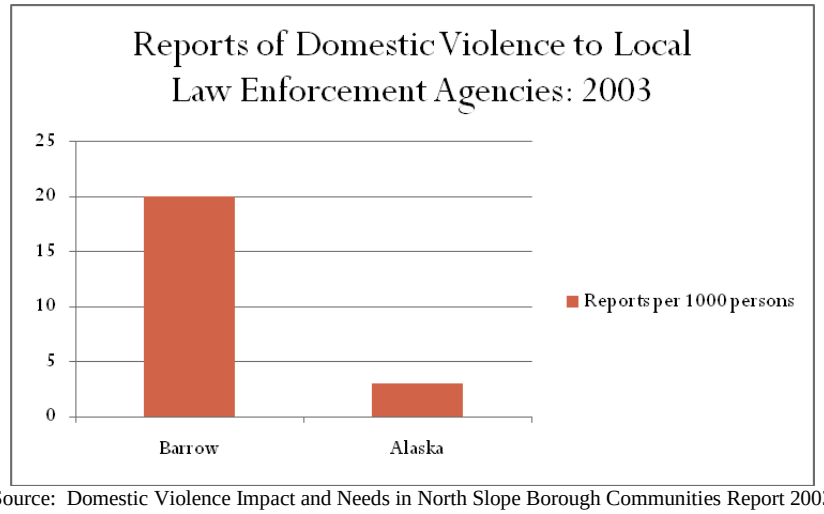
Chart 2



Increasing emphasis on material from a Western culture which requires employment, including cash income, decreasing time spent on the land and hunting game due to restrictive subsistence regulations and animal decline, and modernizing equipment and facilities which reduce the time required to obtain such necessities as food and water, all produce frustrations and more available time.

Social frustrations may also manifest themselves through actual physical abuse between family members caught in the midst of change. Particularly, relations between husband and wife and parents and children may be subject to expression of frustrations through abuse. According to the the North Slope Borough Health Impact Assessment Project baseline data (May 2010), in 2003, rates of reports of domestic violence to Barrow police were over six times the rate of reports made to Alaska state troopers statewide. Chart 3 below depicts domestic violence incidents in Barrow.

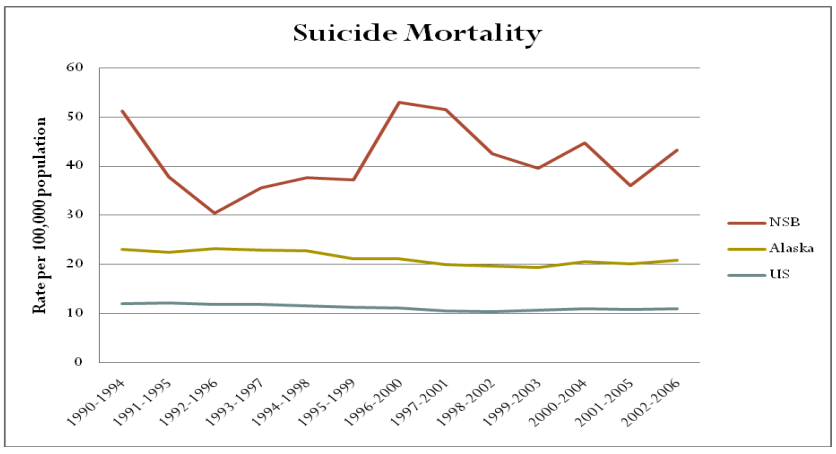
Chart 3



Source: Domestic Violence Impact and Needs in North Slope Borough Communities Report 2003

Suicide was the fourth leading cause of death in the NSB in 2006-2008. After a period of increasing rates, suicide rates appear to have roughly plateaued in the NSB, but have not declined. Since 1990, age-adjusted suicide mortality rates in the NSB have averaged twice the statewide average and four times the national average. Twenty-two of the 31 suicides occurring in the NSB since 2000 have been by use of firearms. (2010 NSB Health Impact Assessment baseline data) Chart 4 shows a comparison of suicide rates for NSB residents, Alaska residents, and US residents.

Chart 4



Source: Alaska BVS US Source: Health, United States 2007, with Chartbook on Trends in the Health of Americans
Age-adjusted to 2000 US Standard population

In summary, traditional family oriented activities are being replaced by outside recreation activities, including social drinking. These activities lead to violent crimes, and even death. During periods when subsistence or work activity is slack, frustrations over lack of constructive recreation opportunity, lack of employment, and discomfort over the increasing non-Inupiat population many spill over and become disruptive to other family activity. It is imperative to continue to provide healthy recreational activities such as sports, community potlucks, and social/cultural events to alleviate social ills brought about by oil and gas development.

Health Issues: In recent years many residents of Barrow have reported an increase in health related issues (such as asthma, cancer, and even death) believed to be caused by persistent and short-term pollution from oil industry activities. Health issues are also occurring from increased injuries as a result of the need to travel further over rough terrain to support families with subsistence foods. In May 2010 baseline data became available to assist residents in determining the effects of oil and gas development on their health. Table 1 and Chart 5 illustrate trends in leading causes of death in the North Slope Borough.

Cancer is the highest with 29 deaths. Heart disease is second highest with 26 deaths, accidental deaths the third highest at 17, and Chronic Lower Respiratory Disease and Suicidal deaths the fourth highest at 10 deaths since 2006.

Table 1

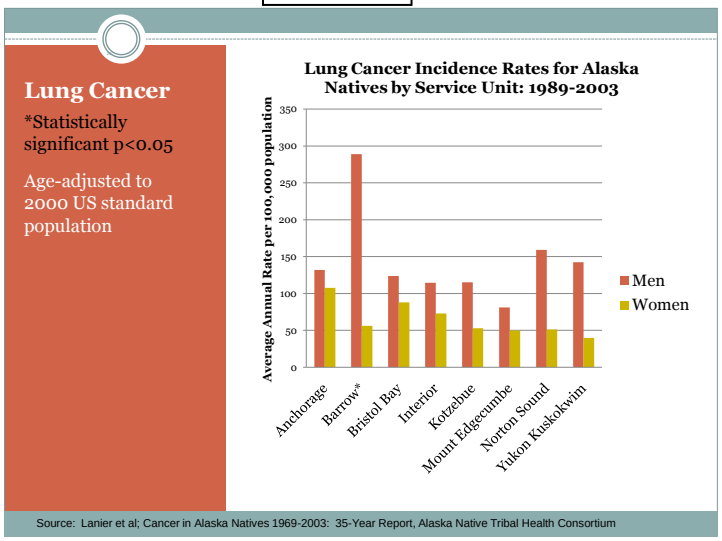
Leading Causes of Death in the NSB: 2006-2008

Source: Alaska Bureau of Vital Statistics
Rates are per 100,000 persons, age-adjusted to U.S. year 2000 standard population.
*Rates based on fewer than 20 occurrences are statistically unreliable and should be interpreted with caution.

Cause of Death	NSB Rank	Deaths	NSB Rate (age-adjusted)	Alaska Rank	Alaska Rate (age-adjusted)
Cancer	1	29	272.9	1	181.3
Heart Disease	2	26	274.8	2	154.8
Accidents	3	17	125.2*	3	54.8
Chronic Lower Respiratory Diseases	4	10	144.3*	5	42.5
Suicide	4	10	53.3*	6	22.7
Total Deaths		136	1267.0		772.5

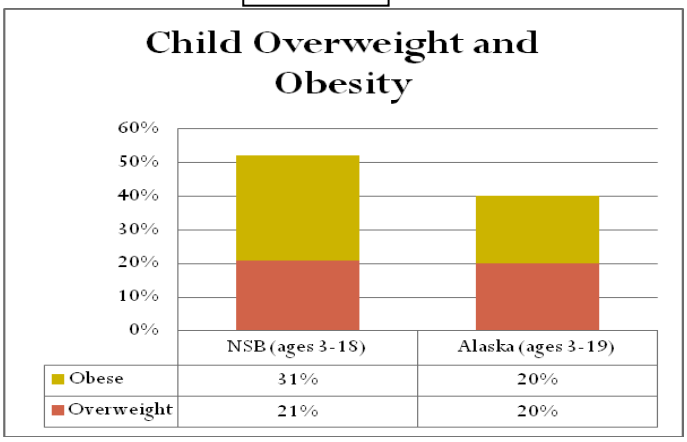
Furthermore, the 2010 NSB Health Impact Assessment baseline results demonstrate that lung cancer incidents and mortality are significantly higher among Alaska Natives than non-Natives. Lung cancer incidence rates among Alaska Native men in the Barrow area services were more than twice that of men from other areas combined.

Chart 5



Health Impacts Among Youth: According the 2010 NSB Health Impact Assessment results, data on childhood obesity have been compiled in a recent report by the Alaska Department of Health and Social Services (Childhood obesity in Alaska). BMI's were also calculated for a sample of over 1000 children in the NSB aged 3-18 in the public health nursing database (NSB PHN RPMS). Overall, half of the NSB children in this sample were either overweight or obese, based on CDC definitions, and obesity among children in the NSB appears to be more common than among Alaskan children statewide. As shown by Chart 6, by kindergarten, roughly half of children in the NSB are already overweight or obese.

Chart 6



NSB data source: NSB Public Health Nursing RPMS database, single year estimate based on heights and weights taken from 08/08 to 08/09.

Based on the NSB Health Impact Assessment baseline statistics discussed above, mitigation measures such as providing recreational activities must continue to be addressed to alleviate health issues for Barrow residents.

The City of Barrow recognizes that the disruption to the traditional way of life has contributed to social problems in Barrow, including many health issues. The City recreation options are extensive and continue to grow with demand. The City of Barrow provides numerous recreational activities such as basketball, volleyball, soccer, hockey, softball, playgrounds, seasonal festivities, and community gatherings to help mitigate the social ills of today as a result of oil and gas impacts to the community. Many of these activities take place in the Piuraagvik Recreation Center Facility.

The renovation of the current facility and construction of a new addition to the Piuraagvik Recreation Center Facility Addition will allow for more recreational activities and cultural events/meetings to help address the social ills of today brought on by oil and gas activity in the region.

Cultural Impacts

Over the last 30 years, the City of Barrow residents have participated in public hearings for various industrial activities such as lease sales and project scoping. During these hearings, they have consistently stated that they are concerned about the cumulative effects of industrial

activities in their traditional subsistence use areas. They have noted the decline of fish populations caused by seismic activities, the diversion of caribou from traditional migration routes and calving areas caused by an increased number of low flying aircraft, the disruption of caribou movements by low pipelines, the ending of use of traditional harvest areas due to the avoidance of industrial areas by hunters, and the fear of the consequences of oil spills on subsistence resources. (NE NPR-A Final Supplemental IAP/EIS May 2008)

The spectrum of direct and indirect social ramifications stimulated by petroleum development and exploration activities, an increasing non-Inupiat population in traditional communities (especially in Barrow), and a diminishing land and resource base have cumulatively served to promote cultural disruption. (NE NPR-A Final Supplemental IAP/EIS May 2008) The effects are manifested in increasing levels of generalized hostilities, violent behavior, and disharmony among members of the Inupiat group and between Inupiat and non-Inupiat. While positive change has occurred at institutional levels, individual adjustments to rapid change have not been without social and psychological costs. The increasing social problems associated with alcohol and drug abuse also indicate social and cultural tensions linked to development and dissatisfaction with restrictions on the subsistence life-style.

Survival of the Inupiat socio-cultural system depends on maintenance of a traditional family organization with reciprocal responsibility between members and generations. This system is strengthened and maintained by patterns of sharing and cooperation.

Activities such as the sharing of subsistence foods are profoundly important to the maintenance of Inupiat family ties, kinship networks, and a sense of community well-being. (BLM NE Planning EIS Statement, 2008) The Piuraagvik Facility is frequently used for Inupiat subsistence and cultural activities such as sharing of subsistence food. Some of the activities are completely organized and carried out by the City of Barrow, while some are partially funded by the City of Barrow in cooperative efforts with other entities. Thanksgiving Feast (when whaling captains distribute shares of their whales to the community), Pooktalook (Inupiat Halloween), Fourth of July Games (which include traditional Inupiat games of skill), Christmas Eskimo Games, Piuraagiaqta (spring whaling games), and other special events involve many people in

cooperative efforts to benefit the entire community. These activities help to maintain community-wide integration and cooperation.

The Piuraagvik Recreation Center has also been utilized to hold meetings and forums regarding current and future oil and gas activities impacts to subsistence use areas. The renovation and construction of an addition to the current facility will allow the City to effectively address cultural issues that will help to strengthen the Inupiat culture as oil and gas activities continue in the years ahead.

PROJECT DESCRIPTION

Type of Project

1. Planning
2. **Construction**, maintenance or operation of essential public facilities
3. Other necessary public services

The existing Piuraagvik Recreation Center Building is comprised of a 6,417 s.f. of open gymnasium space, along with an additional 10,248 s.f. of supporting space and was constructed in 1984. In 1989, the Building underwent a minor renovation expanding the second floor and converting excess storage space into 851 s.f. of aerobics space on the second level. The majority of systems and finishes for this facility are at or beyond their life cycle requiring upgrades and alterations. The current size of the facility limits use and is being expanded to meet current population needs. Today, due to an increase in recreation activities as a result of population increases, a larger Piuraagvik Recreation Center Facility is needed.

Expansions includes a new gym with spectator seating to accommodate732, four new program spaces for aerobics, ballet, weights and other recreational activities, renovated locker rooms, new public restrooms, a new snack bar and new mechanical and electrical systems. The entire facility will have a sprinkler system for greater life safety.

The project is proposed in two phases that basically renovate and restore the existing facility and then add additional program spaces and a new spectator gym. Detailed phasing descriptions follow:

Phase I existing building upgrades

1) Locker room upgrades and expansion to restore existing locker rooms that have reached there useful life expectancy. These upgrades increase plumbing fixture counts (based on a total occupancy of 1500 subject to State Fire Marshall approval) to provide nearly all those required for the proposed for the entire project.

2) Replacement and expansion of existing HVAC including capacity for the Phase II additions heating requirements.

3) Sprinkler system installation sized for Phase II additions – note this will answer the requirement of the State Fire Marshall for sprinkler systems in assembly occupancies when they are renovated.

4) Replacement and upgrading of electrical panels inclusive of a MDP sized for Phases I and II.

5) Replacement of communications equipment along with a new control area at the existing entrance side of the new locker rooms.

6) Water service upgrades to support the sprinkler system.

Phase II new additions

1) New additions

2) New ventilation systems to support the additions

3) Site work upgrades to accommodate the new additions

4) Completion of existing facility renovations

Projected timeline for completion is as follows:

July 2011
Grant Awarded
Competitive Bid Process Begins

August 2011
Competitive Bid Process Continues

September 2011
Bids reviewed by Selection Committee
Contractor Selected

December 2011 - Locker room upgrades and expansion to restore existing locker rooms that have reached the useful life expectancy.

December 2011 - Replacement and expansion of existing HVAC including capacity for the Phase II additions heating requirements.

June 2012 - Sprinkler system installation sized for Phase II additions.

June 2012 - Replacement and upgrading of electrical panels inclusive of a MDP sized for Phases I and II.

March 2012 - Replacement of communications equipment along with a new control area at the existing entrance side of the new locker rooms.

May 2012 - Water service upgrades to support the sprinkler system.

June 2012 – Construction process for new additions begins.

October 2012- New ventilation systems to support the additions

December 2012- Site work upgrades to accommodate the new additions

March 2013 -Completion of existing facility renovations

The End Result –The construction of the Piuraagvik Recreation Center Addition Phases I and II, will mitigate current and potential population impacts of oil development in the future by upgrading the current mechanical systems and building the new addition design floor plans prepared by Bezek, Durst, & Seiser Architectural and Engineering Firm. Please refer to Attachment B for detailed information regarding the floor plan design, location, and technical specifications.

Importance of Project

The City of Barrow has recognized the need to provide many of the public services such as recreational and cultural activities to mitigate social impacts brought on by oil and gas activitiy.
The Piuraagvik Recreation Center Facility has received wear and tear from heavy use and from the harsh arctic conditions at Barrow since construction in 1984. Today, current size of the facility does not meet the growing population needs. According to Bezek, Durst and Seiser Architectural and Engineering Firm (2010), the majority of systems and finishes for this facility

are at or beyond their life cycle requiring upgrades and alterations. Consequently, the demand for renovated and expanded recreational facilities is high.

The Construction of the Piuraagvik Recreation Center Facility Addition project will benefit every citizen, visitor, or transient worker in Barrow. This project is vital for the City's sound functioning as a Municipality and provider or varied public and recreational services of the people of Barrow.

The Piuraagvik Recreation Center Addition is one of Mayor Harcharek's top priorities, and that is why the construction process has been designed 2 phases. – Otherwise, it would be very difficult to receive funding for the entire cost of the project. Without grant funds, the proposed project will not be addressed.

PROJECT BUDGET

Cost Category	Grant Funds Requested	Total Project Cost
Contractual	**$14,938,211.00**	**$14,938,211.00**
Administration	**$ 61,789.00**	**$61,789.00**
TOTAL	**$15,000,000.00**	**$15,000,000.00**

Budget Narrative:

Contractual

Contractual costs include construction costs for mechanical system renovations of the current Piuraagvik Recreation Center Facility and the new additions outlined in Phase II. Please refer to Attachment B, Construction Cost Estimate for a detailed breakdown of costs. **Total Contractual Costs: $14,938,211.00**

Administrative

Administrative costs to oversee and manage the project are as follows:

Title	Hours	Rate	Gross	Benefits 31%	WORK COMP	LIFE INS	BLUE CROSS	MET LIFE	TOTAL
Mayor	300	48.91	14,673.00	4,548.63	172.11	4.62	1611.54	34.92	21,044.82
Special Assistant	150	33	4,950.00	1,534.50	58.06	2.31	805.769	17.46	7,368.10
Grant Administrator	150	36.05	5,407.50	1,676.33	63.43	2.31	805.769	17.46	7,972.79
Director of Finance	150	43.54	6,531.00	2,024.61	76.61	2.31	805.769	17.46	9,457.76
Recreation Director	300	36.05	10,815.00	3,352.65	126.86	4.62	1611.54	34.92	15,945.59
Total Administrative Costs									**61,789**

PROJECT SUSTAINABILITY

The Piuraagvik Recreation Center Facility Addition will provide the City with a mechanism to mitigate the increased demand of recreational activities for years to come. The continuing costs of the project for operations and maintenance, equipment upgrades or other improvements will be sustained through a mixture of future operational funds, as well as borough, state, and federal grants.

Attachment A

Résumé Key Personnel

Attachment B

Bezek, Durst, & Seiser
Piuraagvik Recreation Center Facility Addition Design Floor Plans and Cost Estimate