FINAL REPORT

SHAKTOOLIK COMMUNITY EMERGENCY SHELTER

Shaktoolik, Alaska

USKH
SHARED VISION. UNIFIED APPROACH.

December 2012

Prepared for:
Native Village of Shaktoolik
Post Office Box 100
Shaktoolik, AK 99771

Prepared by:
USKH Inc.
544 4th Avenue, Suite 102
Fairbanks, AK 99701-4714
Phone (907) 452-2128
Fax (907) 452-4225

USKH WO# 1251600

This page intentionally left blank.

SUMMARY

The Native Village of Shaktoolik IRA Council contracted with USKH Inc. (USKH) to provide planning services for a new Shaktoolik Community Emergency Shelter, funded by an Alaska Climate Change Impact Mitigation Program grant from the Alaska Department of Commerce, Community and Economic Development (DCCED); Division of Community and Regional Affairs.

The Shaktoolik Community Emergency Shelter as presented within this document is conceived as a community resource with functions related to both emergency and non-emergency use, with the following key premises:

- Provide shelter for the community during emergencies, principally during storm surges, but also in other extreme weather events.
- Provide non-emergency functions as a Tribal and community asset.
- Capacity to accommodate up to 280 persons for 2 to 7 days in an emergency situation.
- Potential revenue generation from transient/visitor lodging, meals and other opportunities.

With direct input from the community obtained through a series of work sessions, key project parameters have been determined:

> Site Selection: The IRA/City Office/Teen Center site for the facility has been selected in the heart of the community, at the parcels where the IRA Council offices, VPSO, Post Office and Teen Center are currently located. This site offers immediate access in emergencies, and has utilities available.
>
> Facility Program: Development of a combined emergency/non-emergency program for a new structure of just over 9,000 net SF has been adopted, and is included in Appendix A.

Using the selected site, criteria from various agencies, and the adopted facility program, USKH developed a concept level design for an elevated structure that is presented in Appendix B. This concept is responsive to both non-emergency and emergency modes of operation, as indicated in Appendix C.

Estimated cost for the facility is in the range of $10 million, based on 2013 construction. Funding strategies for the project should include escalation of this cost to the year of construction, which will be dependent on how soon funding can be acquired for both design and construction. An escalation table is included in the cost estimate in Appendix D.

A preliminary Implementation Plan has been developed which outlines specific tasks for funding and advancing the project through design, construction, occupancy and post-occupancy operations and maintenance. Development of a specific project timeline will be dependent on funding and further investigation and analysis of various factors, including geotechnical recommendations for the proposed pile foundation system. Generally, it should be anticipated that construction would require a minimum of one year.

It was also the consensus of the Council and the community to express a preference to use and source local materials and labor for this project.

This report is funded by the Alaska Climate Change Impact Mitigation Program which was established by Alaska's Twenty Fifth Legislature. The preparation of this (map/report) is funded by a grant from the Alaska Department of Commerce, Community and Economic Development (DCCED), Division of Community and Regional Affairs. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Alaska or any of its sub-agencies.

This page intentionally left blank.

TABLE OF CONTENTS

TABLES AND FIGURES

Tables

Figures

APPENDICES

ACRONYMS

ADA.....Americans with Disabilities Act
ADEC.....Alaska Department of Environmental Conservation
AHFC.....Alaska Housing Finance Corporation
AHJ.....authority having jurisdiction
AIA.....American Institute of Architects
ANCSA.....Alaska Native Claims Settlement Act
ANTHC.....Alaska Native Tribal Health Consortium
APDES.....Alaska Pollutant Discharge Elimination System
ARRA.....American Recovery and Reinvestment Act
AS.....Alaska Statutes
ASLA.....American Society of Landscape Architects
BIA.....Bureau of Indian Affairs
CCHRC.....Cold Climate Housing Research Center
CF.....Community Facilities
CHL.....Coastal and Hydraulics Laboratory
DCCED.....Alaska Department of Commerce, Community and Economic Development
DHS.....Department of Homeland Security
DOT.....Department of Transportation
DRMOs.....Defense Reutilization and Marketing Offices
EOC.....Emergency Operations Center
EPA.....Environmental Protection Agency
FASLA.....Fellow American Society of Landscape Architects
FEMA.....Federal Emergency Management Agency
FY.....Fiscal Year
IAWG.....Immediate Action Work Group
ICDBG.....U.S. Department of Housing and Urban Development: Community Development Block Grant Program for Indian Tribes and Alaska Native Villages
IHS.....Indian Health Services
IRHA.....Interior Regional Housing Authority
IRR.....BIA Indian Reservation Roads
IRRTIP.....Indian Reservation Roads Transportation Improvement Program
MHW.....Mean High Water
NOFA.....Notice of Funding Availability
NSEDC.....Norton Sound Economic Development Corporation
O&M.....Operations and Maintenance
OEF.....Outside Entity Funding
ONAP.....Office of Native American Programs
PDM.....Pre-Disaster Mitigation
PMP.....Project Management Plan
RFP.....request for proposals
RFQ.....request for qualifications
RUS.....USDA Rural Utilities Service
SHSP.....State Homeland Security Program
SPCC.....Spill Prevention, Control and Countermeasure Plan
SWPPP.....Storm Water Pollution Prevention Plan

TCC.....Tanana Chiefs Conference
THSGP .....Tribal Homeland Security Grant Program
TIP .....Transportation Improvement Program
USACE .....United States Army Corps of Engineers
USDA.....U.S. Department of Agriculture
USDA.....United States Department of Agriculture
USFWS .....United States Fish and Wildlife Service
USKH .....USKH Inc.

Consultant Team

Gary H. Pohl, AIA*; Dwayne Adams, FASLA; Michael Spackman, ASLA; Matthew Prouty..... USKH Inc.

Shelly Wade*; Thea Agnew Bemben.....Agnew::Beck

Jack Hebert; Aaron Cooke; Judith Grunau..... Cold Climate Housing Research Center (CCHRC)

Jay Lavoie.....Estimations

*Principal Authors

1 INTRODUCTION

1.1 Purpose of this Document

The City, Native Corporation, and Native Village of Shaktoolik IRA Council are proposing the development of a community emergency shelter for Shaktoolik. The Native Village of Shaktoolik received a Community Planning Grant from the State of Alaska Climate Change Impact Mitigation Program in 2008 to draft this community planning document as the first step toward this effort. This document presents an implementation strategy that is intended to help guide the community through the necessary next steps in project development that includes fundraising, design and construction and ultimately ownership through sustainable operations and maintenance of the facility.

1.2 Description of Project, Community and Region

The community of Shaktoolik with a current population of 251 participates in fishing and hunting subsistence lifestyle. The community is currently growing and is not losing population as other villages in Alaska have experienced. It is located on the east shore of Norton Sound, on a spit of land between the Sound and Shaktoolik Bay, at the mouth of the Togoomenik River. The area encompasses 1.1 square miles of land. Shaktoolik's current location leaves the community vulnerable to erosion and coastal damages from storm surge. Additional information related to the community can be found at its website using the following link: (http://www.kawerak.org/tribalHomePages/shaktoolik/index.html.) (Shaktoolik Area Info)

Figure 1 - Shaktoolik

Shaktoolik is a culturally diverse coastal village noted as the first and southernmost Malemiut Eskimo village located on the Norton Sound. Today Shaktoolik is home to many diverse people from native cultures all over Alaska. The original village site was located approximately six miles up the Shaktoolik River; the community was moved in 1933 to what is now referred to as the “Old Village Site” where many of the current residents grew up. As this village site was prone to erosion, severe storms, and winds, the village relocated to its current more protected location in 1967.

Shaktoolik is located on a narrow spit of land consisting of approx. 1.1 square miles of area between the Norton Sound and the Tegoomenik River. Shaktoolik is located 125 miles to the east of the regional hub of Nome and 33 miles north of Unalakleet. The majority of residents are both culturally and economically connected to a subsistence way of life.

Shaktoolik has a subarctic climate with maritime influences when Norton Sound is ice-free, usually from May to October. Storm seasons have been regulated and tempered depending on the formation of sea ice. The earlier the storm event, timed with a reduced sea ice, has led to more unpredictable and dangerous storm events

1.2.1 Lead Entity – Shaktoolik IRA

The Shaktoolik Tribe will serve as a lead entity for the community emergency shelter project; the Tribe will own and operate the emergency shelter. The Native Village of Shaktoolik is governed by a seven member Indian Reorganizational Act (IRA) Council. Full and Part time tribal staff provide programs and services to tribal members and the community.

Organizations with Local Offices

Tribe - federally recognized - Native Village of Shaktoolik
P.O. Box 100
Shaktoolik, AK 99771-0100
Phone 907-955-3701
Fax 907-955-2352
E-mail ksagoonik@kawerak.org
Web http://www.kawerak.org/tribalHomePages/shaktoolik/index.html

City - City of Shaktoolik
P.O. Box 10
Shaktoolik, AK 99771
Phone 907-955-3441
Fax 907-955-3221
E-mail rita_auliye@hotmail.com

Village Corporation - Shaktoolik Native Corporation
P.O. Box 46
Shaktoolik, AK 99771
Phone 907-955-3241/42
Fax 907-955-3243

1.3 Community Need and Impact

According to the Shaktoolik Local Economic Development Plan (Kawerak Incorporated, 2007), storm surges from 2003, 2004, and 2005 have greatly eroded the natural barriers protecting the community. A profound sense of urgency and concern was expressed by a number of community members at the March 8, and September 16, 2011 work sessions held at the Shaktoolik School gymnasium.

Reports of critical importance to the Shaktoolik Community Emergency Shelter planning process are the results of the coastal erosion analysis and inundation models which were presented by the US Army Corps of Engineers to the community on September 16, 2011. Also of note is the “Draft” Shaktoolik Erosion Assessment based on a one day field study of August 12, 2010 prepared by the State of Alaska Coastal Engineer, which also contains information related short and long term analysis. (Smith, P.E. & Carter, P.E., 2010)

The community of Shaktoolik in agreement with the Denali Commission and Kawerak Inc., asked the U.S. Army Corps of Engineers (USACE) Alaska District and the Coastal and Hydraulics Laboratory (CHL) to perform an analysis to identify the frequency and severity of coastal flooding in Shaktoolik. The coastal flooding investigated for the study was related to inundation caused by a combination of storm surge, waves, and wave

run-up. Recommendations from the USACE report include revetment for wave protection or relocation of structures, flood proofing measures may include elevating buildings and mechanical and electrical units. (U.S. Army Corps of Engineers, Alaska District, 2009)

Figure 2 - November 9, 2011 Shaktoolik Coastline (Photo Credit: Elmer Bekoalok)

Storm surges are most common in the fall. The recent storm event of November 8-10, 2011 serves as a reminder to just how exposed and vulnerable the community is to major, or even a minor, storm event. Storm events can come quickly, often with little warning and after dark. Hazards include ten foot waves with flotsam and elevated water levels on the Shaktoolik Bay side of the spit. Duration of such events is relatively short with conditions subsiding with several days; however, the intensity and potential for destruction of these events is severe. Of the threats posed to the community, storm surge, wave run up, wind and debris have historically and recently been the threat for which a shelter is most needed.

At four work sessions over 2011 and 2012, the community came together as a unified body to share their concerns and fears while developing their shared visions, goals, and desired uses for their community emergency shelter. The primary use of the shelter will be to provide safe, strong, and comfortable shelter for the community during extreme weather events. The shelter will also provide ancillary emergency and non-emergency functions as tribal and city offices, community and regional meeting spaces, and lodging for elders and transient visitors.

1.3.1 Primary Need: Community Emergency Shelter

Shaktoolik has experienced frequent severe weather events, resulting in high waves and storm surges that lead to high water levels on the lagoon side of the village (see Figure 4). Storm events along the western coast of Alaska and the Norton Sound region have resulted in State and Federal declared disasters. Shaktoolik is one of several villages whose relocation efforts were studied by the U.S. Government Accountability Office and reported in GAO-09-551 'Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages

Threatened by Flooding and Erosion' from June 3rd, 2009. (U.S. Government Accountability Office, 2009) Shaktoolik was "Declared a state flood disaster area in 2004 and 2005. The 2005 storm cut off the village evacuation route to the south, inundating the road with floodwater and turning the village into an island. Storm surge has propelled large driftwood close to village buildings, creating huge debris piles on the shoreline, and erosion is now approaching village infrastructure. Village leaders are considering relocation site options." Per this report Shaktoolik is listed as one of the 31 imminently threated villages located throughout Alaska's river and coastal areas and relocation and is further identified as one of the top 6 priority village identified by the Immediate Action Work Group in 2008.

Shaktoolik is primarily accessible by air and sea and, as identified in the Immediate Action Work Group's final report, is classified as an isolated village where emergency services have coastal and air access only. A State-owned 4,000 feet long by 75 feet wide gravel airstrip is available. The Alex Sookiayak Memorial Airstrip allows for regular service from Nome. In the summer, village residents travel by 4-wheel ATV, motorbike, truck, and boat; in the winter, by snow machine and dog team. Cargo is barged from Nome and then lightered to shore. The community has no docking facilities (Shaktoolik Area Info). The river and sound is heavily traveled when ice-free, from mid-May to mid-October historically; but the ice has been observed by community members to be forming later and later into the year. In the past, the sea ice would protect the community from severe storm events. Without the early formation of sea ice, the community is increasingly exposed. However evacuation of all individuals from the village either by air or boat may not be feasible or safe during a storm event. Sufficient aircraft or boat resources or access to those resources may not be available to move or evacuate all individuals with very short notice, and severe weather conditions may not allow safe aircraft or boat operations for days.

The community has considered a number of short and long term strategies for addressing environmental or weather related safety threats. One discussed strategy was the eventual relocation of the village to higher ground located in the foothills. However, understanding the high cost and complicated logistics and availability of funding for village relocations, the community is entertaining shorter term and less costly solutions – building a community emergency shelter that is accessible and located in the center of the city. Currently there are no facilities in the community that can offer safe shelter or high ground that can accommodate the population of the entire village that would likely remain in the community or await evacuation should an emergency occur. The proposed shelter will fill this need.

This report serves as a break with previous planning efforts that either recommended or identified the community's desire to relocate. After the release of the USACE Coastal Flooding report (U.S. Government Accountability Office, 2009) and following work sessions it would be an option to remain at the current "New Village" location with the addition of an emergency shelter.

1.3.2 Additional Community Needs

In addition to the primary need for a safe place to house community residents during a natural disaster or emergency event, the shelter has the potential to provide space for other community needs, fulfilling these needs will help generate revenue for continued sustainable operation and maintenance of the facility. The community has identified the following additional needs and potential sources of operations and maintenance revenue.

- Office Space: The Tribe and the City both have need for quality office space. The Tribe's space is crowded and does not meet the Tribe's current and future needs. Additionally, the Tribe provides services under the Indian Child Welfare Act that necessitates office space where staff can hold private and confidential

conversations. The current office space does not meet these requirements or needs. Tribal program funding would go toward annual facility operations and maintenance fees.

- Elders Lunch Program: the current program is run out of community volunteer homes. The proposed kitchen and community meeting space would serve as both preparation and serving locations for the Elders Lunch Program.
- Community and Regional Meeting Space: Shaktoolik, aside from the school's gym, lacks a large communal meeting/gathering space. Shaktoolik would like to be able to host larger regional meetings and gatherings. Providing enough space to hold these larger regional meeting would add additional revenue for the facility and the community. This would also serve as a center to help invigorate the community and provide an inviting and culturally appropriate meeting space for the residents of Shaktoolik and their friends and family from the Norton Sound/ Bering Sea region, a place to gather.
- Visitor Lodging: Shaktoolik residents have expressed an interest in adding to the number of comfortable and safe rentable rooms to guests, vesting family, temporary housing for out-of-town workers, and state troopers when an officer visits the community. Currently there is one option for out-of-town visitors or laborers to stay; once this is full there is no other short- or long-term lodging space in Shaktoolik. Instead community members accommodate visitors in their personal houses or visitors can pay to stay at the school or the Early Head Start building. It is not always convenient to stay at the school when in session as visitors must accommodate the daily schedule. With the addition of both short- and long-term lodging options, the opportunity to grow awareness about the community and provide catalyst to grow additional industries within the community such as eco-tourism or guiding and hunting enterprises is available. Additional lodging facilities would also provide housing for temporary workers such as visiting nurses or teachers.

1.3.3 Impact of the Community Emergency Shelter

The community has a well-documented and pressing need for immediate, short and near term solutions to the unpredictable treats arising from global climate change. The Shelter will provide the immediate safety to the very real threat of evacuation due to total wave inundation and whole village flooding. It will also provide a real center for the community with co-location of the emergency management center, tribal offices, city offices, native corporation office space, Elders meals program, Village Police Safety Officer (VPSO), Post Office, a central entry lobby to allow for local arts/crafts to be displayed and sold, a true community gathering space and the additional elders/visitor lodging. The co-location of these program spaces add value and provide cost savings with shared services and redundant systems.

Other direct impacts of the community emergency center include the potential for increased training and employment opportunities available to residents of Shaktoolik. The project management and construction of the project will require a specific skill set, as will successful ownership and management of the facility once it is constructed. Once acquired, local residents could utilize new skills or certifications developed on this project to work on other community projects and for other job opportunities in the region. The community emergency center is a real opportunity to both assess and build on the community's project management, construction, financial management, and business ownership skills.

This page intentionally left blank.

2 FINAL FACILITY PLAN SUMMARY

The main objectives of the planning effort included the following tasks related to the new shelter:

- Identification of the most appropriate site
- Determination of programmatic requirements
- Development of conceptual and schematic design
- Estimation of capital costs for construction
- Estimation of operating costs and income (pro forma)
- Identification of potential funding sources
- Development of an implementation and funding plan

2.1 Public involvement

The consultant team collaborated with the Shaktoolik community and leadership to conduct three community workshops. On March 8, September 16 and 17, and October 22 of 2011 members of the consultant team met with the community and community leaders in various forums. During the first two work sessions, five sites were identified for consideration and preliminary facility program requirements were identified. Preliminary sustainability goals and the community's needs and vision for the new shelter were communicated. A preferred site was selected at the current IRA building location at the September 17th meeting with community leaders in the Annex building. The date and outcomes of each workshop are outlined below:

2.1.1 Work Session Number One – March 8, 2011

Figure 3 - Public Work Session at Shaktoolik School Gymnasium

Gary Pohl and Michael Spackman USKH, Shelly Wade of Agnew::Beck, Aaron Cooke and Judith Grunau of CCHRC traveled to Shaktoolik and met with community leaders in a small group work session, and conducted a public work session at the Shaktoolik School Gymnasium open to the entire community.

Following are preliminary thoughts regarding the shelter, identified by public input at the March 8, 2011 public meeting. These are only general requirements with specific requirements discussed in the facilities description section of this document. A strong message was presented regarding the need for sustainability in regards to the shelter and the overall community.

The public indicated that the shelter needs to be able to provide temporary housing for most of the population of 251, or approximately 250 individuals during an emergency "on-site" evacuation. Almost all will be in family units and will include elders, adults, and children. With the storm surge events being of limited duration, the shelter would only be activated for a few days if damage to the community was limited. If extensive damage

occurred to the community, a lengthier period of shelter would be required; however, such a scenario would almost certainly dictate the need to evacuate many, if not all, residents until assessment and recovery from the event could be completed.

The shelter will require a place to prepare and cook meals, however, not at a "commercial kitchen" level. This area will need dry and canned good storage, utensils, sink(s), refrigerator(s), oven(s) and stove top(s), and dishwasher(s). Space will be needed for preparing multiple meals at one setting.

The structure will need restrooms and showers to accommodate evacuees and emergency workers. A shower area should accommodate changing area(s) for individuals and families. In addition, clothes washers/dryers will be needed either in the restroom area or in an adjacent space.

An office will be needed from which emergency operations; search and rescue, and evacuation operations can be managed. The office will need radio and internet communications and strong storage of important community documents that will need to be secured and stored in the event of an evacuation.

Utilities should include water, sewer, and power, as well as communications. Since the village fuel depot and power plant could be vulnerable to large 50- to 100-year storm surge, a separate generator for this structure should be provided for backup purposes. Water and sewer would be difficult to maintain for an extended period given the vulnerability of existing infrastructure. The principal community water supply is a large storage tank on the seaward side of the main road north of the school, which is fed by pump from the freshwater lagoon at the terminus of the Tegoomenik River. Sanitary wastewater is typically disposed of through septic drain fields, many of which are located seaward and susceptible to storm surge damage. The community identified a number of other ancillary facilities to be considered uses that could be accommodated within the facility, both to facilitate better use of community resources and to possibly provide revenue sources for operation of the facility. Following are some of the facilities that were identified.

- Offices: City, Corporation, IRA Council
- Multi-purpose/meeting room(s)
- Health Care
- Lodging
- Sewing Shop
- Day Care/Preschool
- VPSO

2.1.2 Work Session Number Two – September 16 and 17, 2011

Matthew Prouty of USKH; Shelly Wade of Agnew::Beck; and Aaron Cooke of CCHRC traveled to Shaktoolik for a second public work session, which was jointly held with a presentation of the Denali Commission COE Report by David Williams and Wendy Shaw of the Army Corps of Engineers (USACE) and Mike McKinnon of the Denali Commission.

An additional work session with community leadership representatives from IRA, Native Village of Shaktoolik Corporation and the City of Shaktoolik was held.

The consultant team presented more detailed information on each of the potential facility sites as identified during work session #1. Feedback from the community was sought regarding a preferred site selection.

Additionally, the community continued to provide comments, additional questions, and concerns about the facility. Feedback was given on the building program and provided more direction. The community was also presented with draft operation and maintenance figures including more information on potential revenue and funding sources for the shelter, as well as initial thoughts on how to reduce construction and long-term operational cost by placing an emphasis on utilizing local resources including sustainable strategies.

Community Voices (Comments, Questions, and Concerns)

- In the past the community has followed the proper Federal regulation/ rules and protocol for development. This has led to previously funded projects to be placed on hold or even cancelled. Project delays and cancellations are directly tied to the question as to whether the community would need to be relocated.
- The question of village relocation is an issue that could create delays or even cancel planned projects that could be funded. These potential delays should be avoided; with each delay residents of Shaktoolik are subjected to an ever increasing danger to loss of life and property from a future storm event.
- How real is the Tsunami threat in Norton Sound? Response from USACE: The likelihood of a catastrophic Tsunami event at Shaktoolik is drastically reduced due to the relative shallow depth of water of Norton Sound.
- How much has the ocean risen due to polar ice melt and does this affect the USACE report findings? Past, current or future rise in ocean levels were not included in the studies or models in the report.
- The community needs a safe place to go now during a storm event. Action is needed “Lives are at Stake”

Community Leadership Meeting: Sat. September 17th at Annex

Objectives were to listen, discuss site selection and seek consensus for the selection of a site for the community emergency shelter. Discussion of general conceptual program requirements and begin coordination and planning of the project. Identification of the type of storm event we’re planning for.

Consensus was to plan for the 100-year storm event as the community does not believe relocation will happen in the near future, and the construction of a new shelter is a far less expensive and likely proposition to provide safety to the community.

Site Selection

- Community leaders voted 11-1 to select the IRA/City Office/Teen Center option as the site of the Shaktoolik Storm Shelter.
- The community leaders from The IRA, Native Village of Shaktoolik, the Corporation and City of Shaktoolik in response to this vote will draft a Joint Resolution identifying the site as selected.
- Once the old clinic site was ruled out as a possible location, the community leaders discussed various ideas about cost savings by co-locating the proposed health clinic next to the emergency shelter and sharing utilities and pad as a possibility. It may be possible to discuss with Norton Sound Health the potential relocation of the clinic site to be in close proximity to the emergency shelter.

The building should be: Strong, elevated and easy to get to (access). It was agreed that the next work session to be held at the offices of Agnew::Beck in Anchorage during the 2011 Alaska Federation of Natives (AFN) convention.

2.1.3 Work Session Number Three – October 22, 2011

This work session took place at the Anchorage office of Agnew::Beck Office during the week of the Alaska Federation of Natives Convention, and was attended by:

Edna Savetilik, Shaktoolik IRA, City
Carole Sookiayak, Shaktoolik Native Corporation
Agnes R. Takak, Shaktoolik IRA, City, School
Harvey Sookiayak, Shaktoolik IRA
George Sookiayak, Shaktoolik Native Corporation
Isabelle Jackson, Community Member
Teresa Perry, Shaktoolik Native Corporation
Eugene Asicksik, City of Shaktoolik.
Gary Pohl, USKH
Shelly Wade, Agnew::Beck
Aaron Cooke, CCHRC

The consultant team presented to the community leadership an initial concept and described how the shelter would operate during different scenarios. Three different storm scenarios were presented that match the scenarios identified by the USACE report. A general narrative was developed explaining how the storm shelter would activate and be used during these different storm events.

Topics of Discussion (based on the group's selected site – a combination of the School, IRA Council, City and Teen Center Sites):

Site plan and drawings – What will the site look like? What development needs to happen to prepare the site?

Revised program/uses (emergency and non-emergency) – What does the new program look like with the addition of City functions?

Estimated costs for construction – What are the costs for renovating the school and for building the new facility?

Estimated annual operation and maintenance costs – How much will it cost to operate and maintain the new facility? Who will help pay those costs?

Funding options and timelines – What are the funding options and what are the upcoming deadlines? Are there any non-grant resources we should consider? For example, can Norton Sound Economic Development Corporation contribute?

Example operational scenarios – How would the school be utilized and how would the shelter operate during non-emergency, emergency and catastrophic situations? The following summarizes three scenarios discussed:

Daily Operations (Non-Emergency Use)

Municipal and tribal entities will ensure that the shelter's operational cost and daily maintenance are maintained, as well as keeping the building prepared and storm ready.

Tenants of the storm shelter during daily operations:

- VPSO/Jail
- Post Office
- Tribal Offices
- City Offices
- Short- or long-term lodging for visiting elders and transient guests
- Storage Facilities for Fire and Emergency Preparedness Equipment

24-48 Hour Storm Event (1-49 year storm scenario)

School and New Emergency Shelter both can provide temporary shelter and sleeping space during a storm event. The school can supplement (to reduce crowding) the additional need for bathroom space, water needs and food service during this event. Water and waste systems are independent in case the schools water systems and septic are compromised by the storm. Emergency operations is headquartered and run from the shelter. Lodging quarters in the new shelter would be occupied by Elders during an emergency event. After the storm event the lodging quarters would be available to families or individuals that may need temporary shelter while repairs are made to damaged homes. Dry food storage and family storage will provide for families whose homes were damaged during the storm.

Catastrophic Storm (50-100 year storm scenario)

In the event of a catastrophic storm, the Emergency Shelter would act as a "lifeboat "and house all residents above high water. It is assumed that during this large of an event that the school basement and the emergency generator located within would be unusable, and in addition, the community's water supply and electrical generation capacity will be compromised during and after a catastrophic storm event. All emergency services would be handled in the new shelter including clean water, sanitary sewer (storage) and electrical power generation. The shelter would provide basic services for the community until an evacuation plan could be developed and executed by first responders. In the need of helicopter rescue, access to the roof is accommodated. The main shelter is to be elevated to be above the 100 year storm event mean high water line. The ocean facing side of the facility is to be a barrier, structurally designed and hardened to protect the building from ballistic debris.

2.1.4 Work Session Number Four Final Draft Report Presentation- February 9, 2012

A presentation to the general community was made at the Inupiat Church of God by Matthew Prouty of USKH Inc., Shelly Wade of Agnew::Beck, and Aaron Cooke of CCHRC.

The consultant team presented the community leadership the conceptual design of the facility. The conceptual design included initial code review, drawings, and cost estimate for capital construction. The team developed the concept utilizing both community and consultant feedback received during prior work sessions and from various reports. Draft implementation and funding plan documents were also presented to the community and leadership in an interactive forum.

This page intentionally left blank.

3 IMMEDIATE ACTION PLAN

3.1 Site Design Strategy

In the period between the work sessions of September 16, 2010 and February 9, 2012, the entire Norton Sound and parts or western Alaska experienced another significant early season storm event.

The consultant team was asked by the community: What can we do right now before the next storm season arrives?

3.1.1 Coastal Debris and Wave Run-up Protection Measures

Strategies as recommended by Harvey N. Smith, P.E. and Ruth Carter, P.E. in their "Draft" Shaktoolik Erosion Assessment dated December 3, 2010 from the Department of Transportation and Public Facilities Coastal Engineering Section State of Alaska (Smith, P.E. & Carter, P.E., 2010) include straightforward measures to harden the community against storm events:

1) Placement of a row or multiple rows of heavy timber post driven at roughly 8 foot centers and extending 4 feet above grade in front of homes would trap debris and form a natural barrier.

2) Creation of a natural berm which extends 4 feet above existing grade with fill material could be hauled from end of the spit. Constructing a berm closer to the road than the water and planting some wild beach rye would probably improve its performance. Leaving some wood debris on the outside of the berm may also help dissipate wave energy and reduce erosion. A berm is present at the old tank farm and has proven an effective approach in dealing with coastal protection of Shaktoolik.

These two steps combined provide a low cost, low impact site strategy that can expeditiously be employed using Yukon logs from the beach and local labor. It must be recognized, however, the soil materials are valuable and the source and the final design must both be carefully contemplated prior to the use of fill.

3.2 Adaptation to High Water

Elevated structures with robust foundations designed to mitigate damage from high water and wave run up should be considered for new construction. "The design of all new structures should be designed using the concept of "accommodation" so that the impacts of high water and wave run up are minimized. This philosophy needs to be encouraged for all new construction in Shaktoolik." (Smith, P.E. & Carter, P.E., 2010)

Figure 4 - November 9, 2011, Shaktoolik, Tegoomenik River side (Photo Credit: Elmer Bekoalok)

Figure 5 - New structure with elevated, pre-cast concrete foundation

4 SITE DEVELOPMENT/CRITERIA

The consensus IRA/City Office/Teen Center site is relatively small, and a stand-alone structure designed to the program requirements will simply not fit unless more than one story in height, and site size limitations would require demolition of existing structures. An elevated structure, that is somewhat protected by the shadow of Shaktoolik School, could meet the requirements on this site.

The community's road elevation at the IRA Council site is at 21.3 feet above mean high water (MHW). Entry into the building is provided at 22.0 feet above MHW built up gravel pad. Loading dock height is at 24.6 feet above MHW, Level #2 is at 27 feet above MHW and Level #3 elevation is at 37 feet above MHW this is to provide 2 feet of additional clear building height per FEMA guide lines above identified high water level for a 100-year storm event.

4.1 United States Army Corps of Engineers (USACE) Report: Shaktoolik Coastal Flooding Analysis

The Shaktoolik Coastal Flooding Analysis of October 2011 was prepared to assist the community of Shaktoolik in future planning, studies and projects based on recently updated bathymetric and topographic datum to model and predict coastal erosion and model wave action. It must be noted that the USACE modeling did not account for beach debris.

"Flood proofing measures may include elevating buildings and mechanical and electrical units." (U.S. Army Corps of Engineers, Alaska District, 2011)

Report Overview:

- The USACE report identifies a 100 year storm event as:
  - A 1 percent storm; every year there is a 1 percent chance of a storm to be this strong.
  - In a one year storm event the community can expect the road to be under 5 feet of water during slack/low tide.
  - Winds from the Southeast during a storm event would add 1-foot to the overtopping.
  - Wave action during a storm event would add up to 3 feet of water on top of high water mark.
  - Water height over the road during a 1 percent storm event would be 6 feet above the road plus an additional 3 feet related to wave action plus 1-foot due to wind direction totaling 10 feet of water above the road.
  - The road elevation is 21.3 feet, placing the high water at 31.3 feet including wave action and 30.3 feet without wave action.
  - The community would also face storm surge from the river side also.
- The USACE presented 15 year, 20 year, and 25 year storm models:
  - **25–yr. Storm has a 4% Chance of happening any year**: Village is Dry. Water would not top road, Debris deposited in town, No flooding as the wave would break on the beach. No Standing Water in town.
  - **50-yr Storm has a 2% change any year:** Water topping over the road (elev 21.3') at 24' the storm water and waves could reach 3.5 to 4' above the road with waves carrying debris.
  - **100-yr Storm 1% Chance any year:** 27' to 31.3' (approx. 6' of topping water) factor +3' for waves and +1' for wind direction there is a potential for upwards of 10' of water over the community.

- During a 100 year storm event the Tegoomenik and Shaktoolik Rivers would rise to meet the ocean level.

- Coastal Erosion

- Erosion along the beach at Shaktoolik has seen variation through the years.
- Erosion is not seen as large of threat as storm surge and high water with wind and ballistic debris.
- Erosion is thought to average out the throughout the years between the beach eroding and the beach growing.

- Past Significant storm events recorded in Shaktoolik:
- September 2005
- October 1960, 1964, 1965, 2004
- November 1966, 1970, 1974, 1975, 1978, 2009, 2011

- Worst Storm events recorded based upon a 56 year storm history.
- In 1964 and 2009 both storm events occurred during mean high tide.
- Worst case storm scenarios would place a storm event in the future to occurring at mean high tide.

- Examples of past recorded storm events
- 1974 storm was a 15% (year) storm event
- The new village location site of Shaktoolik has not experienced a 20, 25 year or greater storm event.
- 5-year storm events have deposited debris in a line along the lowest line on the beach.
- 10-year storm events have deposited debris in a line along the upper line on the beach.
- The last storm event recorded before the issue of this report was in 2009 this event was classified as a 9 year storm event where ballistic debris was deposited in the town by storm surge but with little to no flooding.

4.2 FEMA Requirements

FEMA Flood Design Criteria for Community Safe Rooms

FEMA design criteria established for “safe rooms” or community emergency shelters are to be located outside of high-risk flood hazard areas. Where not possible, structures should be located in the least hazardous area when no other feasible option is available and elevated to design flood elevation (DFE) at or above the highest wave crest elevations having a 0.2 percent change of being equal or exceeded in any given year.

5 SELECTED SITE

IRA/City Office/Teen Center Site

The consensus for site selection was determined to be the site of the current IRA Council Building located across from the road from Shaktoolik School and just to the west. This location best met stated criteria.

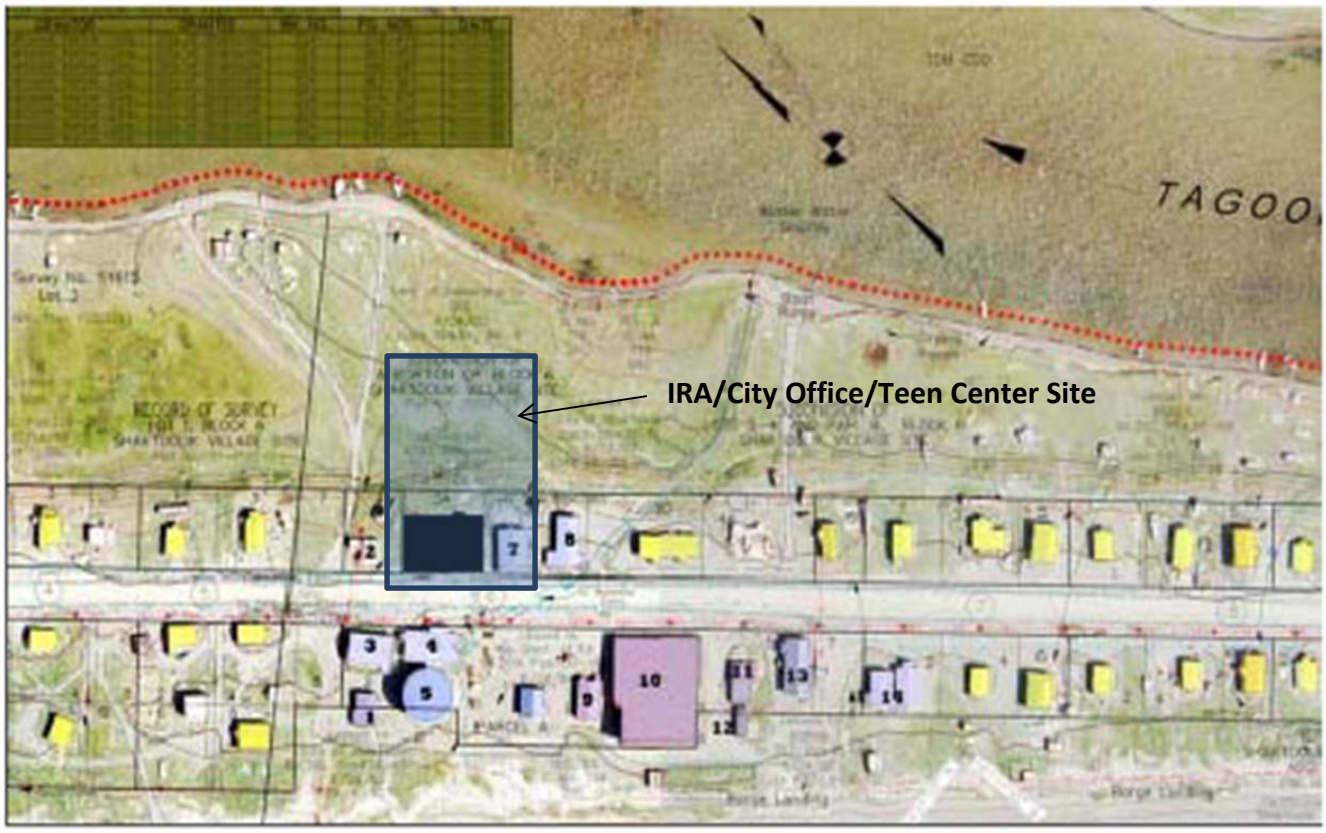


Figure 6 - Aerial View of Selected Site

Figure 7 - IRA/City Office/Teen Center Site

This is across the street from Shaktoolik School, as from the Tegoomenik River, was selected for the location of the Shaktoolik Community Emergency Shelter.

Exposure to storm surge/ballistic debris is slightly reduced as the site is located on the river side of the spit, opposite the school, the site is more protected than the school site as it is locates in the storm shadow of the school. Proximity of this site to the school would allow for use of facilites at the school site as a shelter.

Elevation: The site is not located above the highest level of anticipated storm surge. The solution would be to build all/ or protions of the shelter on piles to elevate above mean high water.

Proximity to Population: The site is ideally located in the center of the community. Community leaders selected this site based upon it central location and acceibility to all community members.

Route Accessibility: The route is highly accessible and well maintained during both summer and winter.

Non-Emergency Use Potential: The overall site area may be insufficient to contain the full amount of square footage area required for the community shelter. It is the communites desire to maintain one of three building co-located on this site as it has become a workshop and a place where caskets are constrcuted. Multiple floors will be required that will reduce building footprint. It was aggreed upon that the IRA building and Teen Center and Storage buildings located at the choosen site would have to be relocted or selectively demolished. Development at this site could include office space, storage, and gathering space to replace the buidling uses that will be removed. This type of inclusive development has the potential for rental space or user fee space that will help ennsure sustanoable building maintenace and operations.

Ownership: The site is owned by the IRA Council.

Regulatory Requirements: Steps would have to be undertaken to survey and allocate additional land if needed for use of the community emergency shelter.

Relative Development Costs: Given that available infrastructure: Water and communications utilities, as well as road access, are available this site is a postive. Design and constrcution for the foundation for the shelter on piles will be a large captital expense. Utilities will also require a sinificant capital expendure, to ensure indepentent emergency operation if power and utilites are lost in the village during a storm.

Development Timeframe: Development at this in town site could begin upon receipt of funding, with utilities available at the site. Demolition or relocation of the IRA Council structure would be required.

6 BUILDING PROGRAM CRITERIA

6.1 Foreword

The Shaktoolik Community Emergency Shelter is conceived as a community resource with functions related to both emergency use and non-emergency use, with the following key premises:

- Provide shelter for the community during emergencies, principally during storm surges, but also in other extreme weather events.
- Provide non-emergency functions as a Tribal and community asset.
- Capacity to accommodate 280 persons for two to seven days in an emergency situation. The targeted capacity is to accommodate future growth of the community.
- Potential revenue generation from transient/visitor lodging/meals, and other opportunities.

6.2 Program Considerations

In developing the design of the new facility, the following programmatic considerations will be important:

- Zoning of the facility in terms of public, semi-public, and private spaces: The assembly room will be the public center of the facility. Lodging/sleeping rooms should be separated for quiet and privacy; Elders will appreciate a quiet location for their shelter quarters.
- The building organization separates civic or public uses from the main assembly rooms.
- Because of the need for an elevated structure in emergency event, the program also considers a vertical hierarchy of space.

6.3 Building Program Requirements

Based on input from the stakeholders and Community Work Sessions in Shaktoolik and Anchorage, a final building program has been developed and is included in Appendix A – Building Program. The program identifies the various rooms and space components which are to be included in the facility, and identifies dual functions for each space in terms of emergency use and non-emergency use. The organization of spaces responds to the need for vertical hierarchy through grouping of spaces by level. Following are descriptions of principal spaces.

6.4 Shelter / Assembly Room

Forming the heart of the facility, the assembly room will provide space for community activities during non-emergency use, and will function as gathering, sleeping, and shelter space (sleeping) during emergency events. The assembly room will provide sleeping space for the bulk of those taking shelter. Adjunct storage space should be provided to allow for flexibility of use, including storage of tables and chairs. This space also includes a mezzanine above the main assembly space that will also serve as sleeping, gathering and dining space during a storm event and additional storage during non-emergency use.

6.5 Kitchen, Serving, Food Storage

Food storage, preparation, and serving functions must at a minimum accommodate up to the 280 person occupant load for limited duration emergency events, and provide capacity for large community gatherings in non-emergency situations. Food storage areas will be primarily dry storage and must be sized to hold sufficient reserves for the two to seven day event duration. Cooking facilities should be simple in nature, with easy to use and maintain, high quality, residential appliances that do not require Type I (grease) commercial hoods with fire suppression; which precludes the use of deep fat fryers and griddles. Cooking facilities should include a three compartment sink and separate hand-wash sink to provide the flexibility to include food service (i.e. restaurant, café, snack bar). Non-emergency uses will include community events, special events, and potential food service. During an emergency event, the food preparation areas should be designed to accommodate both large group meal and family meal preparation. As a side note, provisions for community food storage could also be considered.

6.6 Restrooms/Showers/Laundry

Restroom facilities will include public restrooms sized to accommodate sixty persons under an emergency event, and to accommodate a similar number during community potlatches and other events. Private restrooms would be desirable to serve the lodging/sleeping rooms. Shower facilities will be required and could be associated with the restrooms, or in separate shower rooms. Minimal laundry facilities are provided, principally for emergency use, as the washeteria would be assumed to be unusable. Restrooms, showers and laundry facilities could be sized for non-emergency operations with the acknowledgment of wait times and inconvenience during critical emergency events. Given the high cost to construct and maintain these facilities, the number of fixtures, square footage and piping should be reasonably determined.

6.7 Lobby/Gathering

An area should be provided at the main entry into the civic level of the shelter to serve as a lobby and facilitate ingress and egress. Casework should be provided in this area for local craft to be displayed and sold. A small seating area and space to allow for queuing for mail/parcel pick up would be an amenity during non-emergency use.

6.7.1 Tribal Offices/City Office

Non-emergency space for the Shaktoolik Tribal Council would include offices, workroom, communications room, and storage for records and supplies. During an emergency event, these areas would become part of the shelter space, and serve as an emergency operations command and communications center. For the city offices, two work stations minimum would be required.

6.7.2 Post Office

With the existing village post office demolished to make room on the site, a new post office would be located within the new Shelter facility. Design of the post office would be in accordance with US Postal Service requirements and would need provisions for secure storage, public access and mail distribution.

6.7.3 VPSO Office

The office for the Village Public Safety Officer (VPSO) will serve as the point of access and control to the front entry and civic level of the shelter. The VPSO office will include two workstations; one for the VPSO and one for visiting law enforcement. A secured strong space for evidence, weapons and ammunition storage will be provided along with two strong secure holding cells. Communication and command center capable.

6.7.4 Lodging/Sleeping Rooms/Laundry

Currently, there are no additional transient quarters available in Shaktoolik for visitors, except for a bed and breakfast, the school, which provides accommodations in an apartment, and in the Head Start day care center. Four sleeping rooms with private bathrooms would be provided that could be rented out to both short and long term visitors.

During an emergency event, these rooms would be made available to Elders to provide them a quieter shelter location than the main assembly room. Each unit has private toilet/bathing facilities akin to modern transient lodging standards.

6.7.5 Utility and Support Spaces

Utility spaces will be required for mechanical, electrical and communications equipment, water storage and treatment, and sewage treatment. Ongoing investigation is recommended to include the potential for an operational well at the facility, and feasibility of a packaged wastewater treatment unit, such as those manufactured for Alaska by *Lifewater Engineering Company* in Fairbanks, which would require minimal heated building area. Other support spaces would include custodial and storage areas. An emergency generator is an essential component, given the relative vulnerability of the AVEC village power plant and losing the fuel supply to a storm surge.

6.7.6 Horizontal and Vertical Circulation

The primary building access and point of entry would be at the south corner of the site located off the village road. The facility must be designed to accommodate the disabled under the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Given the vertical hierarchy of spaces, access must be provided to all levels by either ramp or elevator to meet ADAAG. Circulation must be convenient and provided code required egress.

6.7.7 Exterior Spaces

An exterior loading dock provides large scale access to the utility core and additional storage for large or bulk items, Exterior egress balcony serve as an addition to the main shelter space that will function as a place where people can get outside and protected from storm surge. This exterior egress balcony and stair serves all levels of the shelter. During peace time operation this will be a community asset as a gathering place, partially covered to provide protection from elements this are will provide exceptional views of the cape.

The inclusion of two look out points have been provided to assist in the safe and secure sheltering 280 persons during a storm surge, exterior building spaces have been provided for direct views from both the ocean and riverside with views over the whole community and a direct sight line to the airport. Access to the roof is provided at both lookouts.

This page intentionally left blank.

7 PRELIMINARY BUILDING CODE ANALYSIS

The authority having jurisdiction in Shaktoolik is the State of Alaska Department of Public Safety, Division of Fire and Life Safety, i.e. State Fire Marshal. The adopted codes are the International Building Code (IBC) series, with the exceptions of the Uniform Plumbing Code and National Electrical Code. A brief summary of programmatic code considerations is as follows:

7.1 Use and Occupancy Classification

While the program contains mixed uses, the overall classification would be that of A-3, Assembly, under IBC Section 508.3.2 for non-separated occupancies.

7.2 Type of Construction

Type V-B, non-rated, combustible is assumed to keep the construction simple and cost effective.

7.3 Allowable Height and Building Area

With an overall A-3 occupancy classification, and Type V-B construction, IBC Table 503 provides a base allowable area of 6,000 square feet and one story. Assuming that a minimum separation of 30 feet can be maintained all around the building, a 75 percent frontage increase is allowed per IBC Section 506.2, allowing a total one story building area of 10,500 square feet. This area easily accommodates the programmed building area. A two story building is not permitted unless the type of construction is upgraded to Type V-B fire rated construction, or the building is equipped with an automatic sprinkler system per IBC Section 504.2. A mezzanine is allowed under provisions of IBC Section 505, and is limited to one third the floor area of the room or space in which they are located, which in this case is the assembly room.

7.4 Fire Protection Systems

For Group A-3 occupancies, IBC Section 903.2.1.3 requires the building to be protected by an automatic sprinkler system in that the assembly occupancy is not located on a floor with direct exit discharge. IBC Section 506.2 allows an A-3 occupancy classification to be two stories when equipped with automatic fire sprinkler.

This page intentionally left blank.

8 CONCEPT SITE PLAN

Hardening against the elements: The primary purpose of the emergency facility will be to shelter people from extreme and unpredictable weather events for a short duration; the facility must be robust enough to withstand wave action, wind and wave driven debris, wind, and high water.

The selected IRA/City Office/Teen Center Site offers several advantages, including close proximity to the community's population for rapid access in emergencies, shelter from direct wave access on the leeward side of the road, and close proximity to the school. However, this location will require an elevated structure to get above the design storm surge high water line.

Site planning considerations are strongly based on orientation to the force of storm events and resultant building design. The seaward facing end of the building is placed along the road, with sheltered access to the structure located close to the street but along the two sides of the building. The site is virtually consumed by the approximately 115 foot long by 50 foot wide building footprint, which sits elevated on pilings, with its long dimension oriented perpendicular to the shoreline to minimize direct wind and wave exposure from the sea.

The concept site plan is shown on Sheet A1.0 in Appendix B – Concept Drawings.

This page intentionally left blank.

9 SCHEMATIC BUILDING CONCEPT AND STORM SCENARIOS

9.1 Schematic Building Concept

Appendix B – Concept Drawings, contains plans, elevations, and building sections that convey the architectural response to the building program and design criteria. The building is envisioned as a three story elevated structure on steel piling, oriented to present its smallest face against the forces of wind and water. The seaward facing side of the structure is hardened to absorb impact and sloped to deflect wind, water and debris. The physical organization of the structure is both vertical and horizontal.

9.1.1 Vertical Hierarchy

Conceptually, much like a ship, the elevated shelter facility is organized vertically in the following levels:

- Level 0 – Site Grade and Tank Storage (Elevation 0'-0"): The principal building entry is at grade, allowing barrier free access into the building from the site. As the base principal level, holds water storage for domestic and fire protection purposes, waste water treatment and storage, and access to upper levels via ramp and elevator low point.
- Level 1 – Access and Utility Deck (Elevation 2'-6"): Access to water and waste water systems is provided from this level, as well as ramped access to the base level of the elevator to the upper floors.
- Level 2 – Transient Housing/VPSO/Post Office Deck (Elevation 5'-0"): This level is high enough to survive 1-50 year storm events.
- Level 3 – Main Shelter Deck (Elevation 15'-0"): This is the largest level, elevated high enough to survive a catastrophic 100 year storm event, and sized to hold the entire community in such a worst case scenario. The emergency generator is also located on this level.
- Level 4 – Mezzanine Deck (Elevation 23'-0"): This small floor area that takes advantage of the vertical space created by the roof slope to provide additional shelter space above the main assembly room.

Building sections are contained on Sheets A3.4 and A3.5 of Appendix B, and present graphic depictions of the vertical relationship of these levels.

9.1.2 Horizontal Hierarchy

Each of the main vertical levels is organized to be functional under both non-emergency and emergency scenarios.

- Level 1 – Access and Utility Deck: Public access is located at one side, and service access (loading) is located opposite. The two purposes of this level are to provide shelter access up into the building, and to house heavy utility components (tanks and wastewater treatment) that would be designed to remain anchored during a worst case storm scenario.
- Level 2 – Transient Housing/VPSO/Post Office Deck: A front lobby provides public access to the Village Public Safety Officer and Post Office. Behind a closed door is a corridor leading to a more private transient housing and laundry area. Four guest rooms with separate restrooms would be available for short or longer term rental.

- Level 3 – Main Shelter Deck: At this level, City and Council Offices would be located, as well as restrooms, food storage and preparation, dining and assembly areas.

Building floor plans are contained on Sheets A1.1 and A1.2 of Appendix B showing the general relationship of spaces on each level.

9.2 Storm Scenarios

Functionally, the concept is designed to accommodate three modes of operation: non-emergency, 24-48 storm scenario, and catastrophic storm scenario. Graphic depictions of the three operational modes as presented at Work Session No. 3 are included in Appendix C – Storm Scenario Drawings.

9.2.1 "Peace Time" Daily Operations Scenario

Tenants of the storm shelter during "peace time" (non-emergency) daily operations on Level 2 include the VPSO Office, Post Office, four transient sleeping rooms with individual bathrooms and exterior decks, and a small laundry area. On Level 3, the principal peace time occupants are the City and IRA offices. Assembly areas at this level can be used for a variety of community events and can accommodate food service. When not in use, these areas can be closed off and minimally heated to save energy. Restrooms are ganged and subdivided for flexibility of use, such that in normal mode, the main banks of restrooms (Rooms 30 and 31) are locked off and out of service. During an assembly event, these main restrooms are made available.

9.2.2 24-48 hour Storm Scenario 1-50 year event

The Shaktoolik School and the Community Shelter both will provide temporary shelter and sleeping space during a storm event of this range of magnitude. As indicated in Appendix A – Building Program, the non-emergency use functions will convert to the indicated emergency use functions for each area. Level 2 transient housing rooms can provide shelter for those requiring special care or privacy, including village elders. Level 3 transforms into full shelter mode, with the assembly areas and main restrooms opened up to accommodate those requiring shelter in the facility. Water and waste water systems are set up to be independent from City utility services and are separate from the Shaktoolik School. Dry Food Storage and family storage will provide for families whom experience loss or damage to property. Office space can be converted to a command post for the event, and additional shelter space as needed.

After the storm event passes, the transient housing rooms can serve families that have suffered loss or property damage to their homes while assessment and repairs can be arranged and completed. After the event the emergency shelter space returns to its peacetime operation or purpose. Families whom need extra time to move back into their homes can stay in the shelter which has provisions for sleeping, bathing, and meals.

9.2.3 50 – 100 year event a Catastrophic Storm Scenario

A catastrophic storm scenario assumes that the Shaktoolik School would have its foundation, water and septic compromised by extreme wave action and storm surge to become unusable. All emergency shelter service for the community would shift solely to the new the storm shelter. Furthermore, Level 2 spaces will likely have been under the high water level, so all shelter function will of necessity be provided for on Level 3, at Elevation 15'-0". This is above the high water design elevation and Level 3 would become the safe house for the community that would keep the entire population safe and out of the elements with basic services provided for a limited duration. Upon subsidence of the event, it is anticipated that large scale evacuation would be required. During

this class of storm event local water, power and sewer will have been compromised. This scenario is essentially one of survival, the community population would survive, housed in a hardened core within the shelter with communication to the outside world, stored food and water, emergency power generation and waste water handling capacity.

This page intentionally left blank.

10 DRAFT OPERATIONAL PLAN CONSIDERATIONS

10.1 IRA Council Annual Operating Budget

Table 1 is a summary of the current understanding of the Shaktoolik IRA Council's annual operating budget. This is a rough estimate based on the IRA's past and most current profit and loss statements. Additionally, consultant staff interviewed IRA staff to gain a deeper understanding of the IRA's most consistent forms. Currently, the IRA does not have a detailed annual operating budget by which to compare "estimated" to "actual" income and expenses. Moving forward, financial information should be updated to provide an accurate picture of the IRA's annual operating budget. This will be a critical next step in gaining a comprehensive understanding of what the IRA can contribute to annual operations and maintenance of the community emergency shelter. Please see the *ImplementationStrategy/ Plan* section of this report for our recommendations regarding next steps for building IRA staff financial recordkeeping capacity.

Table 1 - Shaktoolik IRA Estimated Annual Budget

Shaktoolik IRA Council Estimated Annual Budget	Amount
Built from Profit & Loss Statement, January 1 – November 2, 2011 and Staff interview conducted on March 16, 2012	
Revenue	
Grants and Annual Regional Entity Funds	$310,000
Other Revenue	$ 5,000
TOTAL REVENUE	**$315,000**
Expenses	
Salaries, Wages, & Fringe Benefits	$104,000
Office Space Rent (includes Utilities)	$ 10,000
Telephone	$ 4,400
Clinic Operation & Maintenance	$ 19,000
Travel	$100,000
Program Expenses	$ 14,000
Stipends	$ 12,000
Annual Meeting Supplies	$ 1,500
TOTAL EXPENSES	**$264,900**
Net Income	**$ 50,100**

10.1.1 Revenue

As the table above shows, the IRA takes in approximately $315,000 annually. This figure includes monies received through different grant programs (e.g. Indian General Assistance Program through the Environmental Protection Agency, Indian Reservation Roads Program through the Bureau of Indian Affairs) and contributions from regional for profit and non-profit entities (e.g. Cultural Camp and Small + Needy Tribes Funds through Kawerak).

10.1.2 Expenses

The IRA's annual expenses are estimated to be approximately $265,000. Most funds go toward staff salaries and benefits ($104,000) and travel, including per diem and lodging, for various program staff to attend training in Anchorage and outside of Alaska ($100,000).

10.2 Project Operations Plan and Budget

10.2.1 Five Year Projection

The "5-Year Projection" worksheet below summarizes total revenue and expenses over five years and calculates the surplus or deficit for the Shaktoolik Community Emergency Shelter. Detailed explanations for anticipated revenue and expenses are outlined below.

Table 2 – Operation and Maintenance Costs

Five Year Projection: Annual Operation + Maintenance Costs					
Revenues	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Uses + Fees	$69,680	$72,118	$74,648	$77,274	**$79,999**
Total Revenues	**$69,680**	**$72,118**	**$74,648**	**$77,274**	**$79,999**
Expenses					
Facility Operation + Maintenance**	$77,968	$81,087	$84,330	$87,703	**$91,211**
Total Expenses	**$77,968**	**$81,087**	**$84,330**	**$87,703**	**$91,211**
Surplus (Deficit)	**-$8,288**	**-$8,968**	**-$9,682**	**-$10,430**	**-$11,212**

*Based on conversation with IRA Tribal Administrator. This is an estimate of what the IRA can contribute based on current program revenue.
**Based on energy efficient cost scenario

10.2.2 User Fees

The "Uses + Fees" worksheet Table 3 provides an overview of potential revenue that can be collected from different users and potential tenants for the facility. A detailed explanation of each category is detailed below.

Tenants

Lease paying tenants that include the Shaktoolik IRA Council, the City of Shaktoolik, United States Postal Service, Bering Strait School District and Kawerak may generate potential revenue. Currently, the Shaktoolik IRA leases space from the City of Shaktoolik. The City also owns and occupies a separate facility; this facility has space for a Village Public Safety Officer (VPSO) office, a holding cell and the post office operations. Both facilities are in poor condition and are not considered salvageable structures.

The Shaktoolik IRA Council as anchor tenant would use a minimum of 400 square feet of the shelter space for tribal offices. This is an average that includes actual offices for tribal staff, as well as some shared space with Kawerak to provide behavioral health services. The calculation for anticipated revenue in the 5-year projection assumes the IRA is paying market rate, or $2.80/square foot/month, as are other tenants, to occupy space in the facility. As of March 2012, based on current program revenue, the IRA anticipates a contribution of approximately $16,500 the first year, with the potential to increase that amount by three percent annually, over

the next four years. This contribution would amply cover the anticipated cost for leasing 400 square feet at $2.80/square foot/month, or $13,440, or an average $14,000 over five years.

Other tenants include the following*:

- City of Shaktoolik – 150 square feet of shared space with USPS and an additional 400 square feet for the Village Public Safety Officer office and cells, average contribution of $19,600.
- USPS (shared space) – 150 square feet, average contribution of $5,300 per year.
- Bering Strait School District – 400 square feet, or two units at 200 square feet per unit, for itinerant teachers, average contribution of $14,000 per year. NOTE: During emergency events, these rooms would be available to elders and/or families requiring additional privacy.
- Kawerak – 300 square feet for Village Based Counselor, average contribution of $11,000 per year.

*Lease rates are projected to increase at a rate of three percent per year.

Specific User Fees

User fees for the Shaktoolik Community Shelter are estimated from two sources. “Lodging” is for itinerant workers or tourists who rent a room on a short or long-term basis. The estimate projects 50 nights per year for year one increasing to 56 visits per year for year five (three percent increase annually). Nightly rate for lodging is set at $175 per night for year one with a three percent increase annually over the next four years. Two rooms of the new facility would be dedicated to itinerant workers and visitors. Anticipated revenue would be approximately $11,000 per year. One additional option, should the IRA Council and Bering Strait School District partner, would be to open up the two teacher housing units for itinerant workers and visitors. This would be a total of four lodging units during the summer months of June through August. And, as noted above, these rooms would be available to elders and/or families requiring additional privacy.

The Assembly Space + Kitchen may be used for community events, some of which may pay a fee for use. This is very conservatively estimated at six uses per year in year one with an additional use added per year for the subsequent four years. The use fee is set at $75 per event, with an annual three percent increase. Examples of community events include potlatches, Elders + Youth Conference, Whaling Camp and Marine Mammal Commission (Shaktoolik, Elim and Koyuk) gatherings. Anticipated annual revenue from events is approximately $650.

Table 3 – Uses and Fees

	Unit	Estimate Fees	Estimated Annual Revenue	Unit*	Estimate Fees	Estimated Annual Revenue	Unit	Estimate Fees	Estimated Annual Revenue	Unit	Estimate Fees	Estimated Annual Revenue	Unit	Estimate Fees	Estimated Annual Revenue
			$ 5,040			$5,191			5,347			$5,507			$5,673
Total Lease Revenue			$ 60,480			$ 62,294			$ 64,163			$ 66,088			$ 68,071
Lodging															
Examples: Itinerant workers, visitors	Number of Visitors	Per Night Fee	Total	Number of Visitors	Per Night Fee	Total	Number of Visitors	Per Night Fee	Total	Number of Visitors	Per Night Fee	Total	Number of Visitors	Per Night Fee	Total
	50	$175	$ 8,750	52	$ 180	$ 9,283	53	$ 186	$ 9,848	55	$ 191	$ 10,448	56	$ 197	$ 11,084
Total Lodging Revenue			$ 8,750			$ 9,283			$ 9,848			$ 10,448			$ 11,084
Assembly Space + Kitchen															
	Number of Events	Per Use Fee	Total	Number of Events	Per Use Fee	Total	Number of Events	Per Use Fee	Total	Number of Events	Per Use Fee	Total	Number of Events	Per Use Fee	Total
Examples: Potlatches, Elders + Youth Conference, Whaling Camp, Marine Mammal Commission	6	$75	$ 450	7	$ 77	$ 541	8	$ 80	$ 637	9	$ 82	$ 738	10	$ 84	$ 844
Total Event Revenue			$ 450			$ 541			$ 637			$ 738			$ 844
TOTAL REVENUE			**$69,680**			**$72,118**			**$74,648**			**$77,274**			**$79,999**

*With the exception of "Units" for "Lease Space" + "Assembly Space/Kitchen"; all other "Units" and "Estimate Fees" for Years 2, 3 and 4 are based on an estimated average 3% annual increase.

`**Based on conversation with Jim Abbott of Nanuaq, Inc., a subsidiary of Sitnasuak Native Corporation in Nome, Alaska. Nanuaq owns commercial property in Nome and they currently lease their space for approximately $2.80/sq foot. Bering Straits Native Corporation also leases property in Nome for approximately the same amount.

10.2.3 Comparable Operations & Maintenance

The following Comparable Operations and Maintenance (O&M) worksheet provides a baseline for facility costs by using estimates for a facility with a very energy efficient design. It includes fuel and electricity costs based on projected usage from the energy model of the 35 percent design of the Mertarvik Evacuation Center, designed by the Cold Climate Housing Research Center with the village of Newtok, Alaska. The operating costs for the more energy efficient design were used in the 5-year projection. Average operation and maintenance cost per square foot employing the energy efficient design is $9.04.

Table 4 – Comparable Operation and Maintenance Costs

Estimated Operation + Maintenance Costs		
	*Energy Efficient**	*Current Costs***
Utilities		
Electricity	$6,500	$109,929
Fuel Oil	$16,500	$87,702
Water + Sewer	$0	$32,226
Telephone	$1,200	$10,661
Maintenance Personnel	$7,102	$7,102
Maintenance Supplies + Equipment	$800	$800
Custodial Materials	$1,500	$1,500
Building Insurance	$7,500	$7,500
Contribution to Renewal + Replacement Fund	$21,344	$21,344
TOTAL	$62,446	$278,764
Square Feet for Comparison Facilities	7,000	18,201
$/SF O&M	$8.92	$15.32
O&M for Shaktoolik Community Emergency Shelter	$77,968	$133,860

*Mertarvik Evacuation Center was designed as an energy efficient structure
**Based on an informal survey of current facility owners/users in Shaktoolik including: Karlene Sagoonick (Tribal Administrator); Mayor Eugene Asicksik (City of Shaktoolik); Fred Sagoonick (Shaktoolik Native Corporation); and Larry Cobb (Principal), Shaktoolik School.

As comparison, this worksheet also provides estimated costs for operating and maintaining a new facility at current utility costs. These costs were developed through an informal survey of staff at existing facilities in Shaktoolik, including the Shaktoolik IRA Council office, the City of Shaktoolik building, the Shaktoolik Native

Corporation Store and the Shaktoolik School. Average operation and maintenance costs per square foot for the facility, using current costs for utilities in the community, are $15.42, a difference of $6.22.

Both estimates described above also incorporate estimated costs for maintenance personnel; maintenance supplies and equipment; custodial material; building insurance; and an estimate of the annual contribution to a repair and replacement fund that will be required, based on the estimated capital cost of the facility. The facility owner deposits the annual amount each year into a dedicated fund to be used for major repair or for a down payment on financing for an eventual replacement of the facility.

Lastly, the estimate for annual operation and maintenance incorporates the concept of keeping parts of the community emergency shelter "cool" or "cold" when not in use. This "going cold" scenario would include areas that are not priority spaces for the community during peacetime operations. They are also areas that would not require a tremendous effort to commission and re-commission buildings. Specifically, areas where fluids are involved, whether domestic water supply, waste piping, fire protection water or hydronic heating, would be kept in "warm" status year-round. The table below shows those areas that would remain in warm status and a summary of the potential savings of this scenario. Specifically, approximately 2,752 square feet of the facility's total 4,400 square feet would remain warm; approximately 4,653 square feet would remain in "cool" status, requiring about half the operation and maintenance costs; and, the final 1,335 square feet, would remain "cold". The "going cold" scenario approximates an annual savings of $12,068. This scenario has the biggest impact on the assembly spaces as they will remain in a cold status year-round. When needed, the assembly space and related spaces, could be heated by wood stove or Toyo.

Table 5 - Estimated Operation Costs by Space

Space	**Square Footage**	**Cost to Operate + Maintain** (square footage x average cost/sq ft - $9.04)
Level Three – Warm		
IRA Offices	295	$2,667
Restrooms (240 of the total 790 square footage for restrooms)	240	$2,170
Corridor	385	$3,480
Conference Room	186	$1,681
Behavioral Health Office	287	$2,594
SUBTOTAL	*1393*	*$12,593*
Level Three – Cool		
Dining/Gathering	688	$6,220
Kitchen	350	$3,164
Storage	185	$1,672
Restrooms (550 of the total 790 square footage for restrooms)	550	$4,972
Emergency Operations	105	$949
Genset/Mech/Elec	175	$1,582
Mech/Elec Mezz	217	$1,962
Stairs	200	$1,808
SUBTOTAL	*2470*	*$22,329*

Space	Square Footage	**Cost to Operate + Maintain** (square footage x average cost/sq ft - $9.04)
Level 3 - Cold		
Mezzanine	455	$4,113
Assembly/Shelter	880	$7,955
SUBTOTAL	*1335*	*$12,068*
Level Two + Ground Floor – Warm		
City/USPS Space	306	$2,766
Elder/Guest Lodging	700	$6,328
Restroom	43	$389
VPSO (incorporating cells)	310	$2,802
SUBTOTAL - 2 Warm	*1359*	*$12,285*
Level Two - Cool		
Fresh Water Storage, STP	733	$6,626
Post Office Storage/Loading Dock/Landing	220	$1,989
Fire Water Tanks	490	$4,430
Waste Water Tanks	740	$6,690
SUBTOTAL - 2 Cool	2183	$19,734
TOTALS for Full Facility at "Warm"	8,740	$79,010
TOTAL for "Going Cold" = "Warm" + "Cool" Spaces Only	7,405	$66,941
Approximate Annual Cost Savings (TOTAL Full Facility - TOTAL Going Cold Status)		**$12,068**

*Assumes this space will be operated and maintained at approximately 50 percent of the costs needed to operate and maintain “warm” spaces.

10.2.4 Capital Replacement

Table 6 – Capital Replacement

Capital Replacement Expense		
Facility Cost:	**$ 9,072,120**	
Inflation Rate:	1.5%	
Expected Life in Years:	30	
Future Value of Facility (Cost with inflation):	**$14,180,451**	(formula for future value of an asset)
Percent Local Cash Required for Replacement:	10%	
10% Capital Replacement Amount:	**$1,418,045**	(future value multiplied by % local cash required)
Expected Interest Rate:	5.0%	
Annual Capital Replacement Expense	**$21,344**	(formula for determining annual capital replacement amount)

This page intentionally left blank.

11 IMPLEMENTATION STRATEGY/PLAN

This section of the report provides an overview of funding research and potential opportunities for the Shaktoolik Community Emergency Shelter. Included is a summary of research findings, followed recommendations and detailed information for specific funding sources including: program title and lead entity/agency; program guidelines and eligibility requirements; award amounts; timelines and deadlines for application/proposal processes; relevant links and contacts.

The consultant team used a combination of online research and follow-up phone calls and emails to specific funders for clarification and additional information on each funding opportunity. The starting point and guide for all research activities was several conversations and ongoing communications with Shaktoolik IRA Council Grant writer, Michael Sookiayak, Sr.

11.1 Overview of Research

- General Comment Regarding "Community Emergency Shelter vs. "Multi-Purpose Facility" – In discussions with potential funders, it's our recommendation that the community consider changing the name of the project to "Shaktoolik Multi-Purpose Facility". As indicated below, current funding conditions are more conducive to this type of project.
- Alaska Housing Finance Corporation (AHFC) – AHFC's Teacher, Health and Public Safety Professionals program is another viable option –with some restrictions. In order to qualify as an eligible project, it must be constructed as residential housing with permanent occupancy and be attached to the emergency shelter. By itself as an emergency shelter it would probably not qualify for the program. Additionally, the program would only fund that portion of the project that met the definition of teacher, health professional, or public safety housing.
- Norton Sound Economic Development Corporation (NSEDC) – NSEDC Energy Fund is not an option. In fact, NSEDC does not have any funding sources for the 2012 construction season. However, the Emergency Shelter Facility project would fall under NSEDC's 2013 Outside Entity Funding (OEF) Program. The application must come from the Tribe, Municipality or Native Corporation located in Shaktoolik. The OEF Program is considered a competitive grant program, but applications only come from that community and are awarded by a community based review committee. The 2013 OEF applications are expected to be due in Sept-Oct 2012.
- United States Department of Agriculture Rural Development Community Facilities Grant – Currently, the USDA Community Facilities grants are limited to a maximum award of approximately $50,000. However, the Community Facilities loan program may be a better option. According to the USDA Alaska State Director, the Community Facilities loan program recently had a large increase in available loan funds. This will depend on the applicant's capacity to borrow money.
- United States Department of Homeland Security – Neither the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Pre Disaster Mitigation (PDM) nor the Emergency Operations Center (EOC) programs are viable sources of funding for the Shaktoolik Project. State Homeland Security program officers have indicated the PDM program is being eliminated in 2013 and that 2012 PDM funds are only being used to clean-up existing projects. As such, neither program is an option for the project. The Tribal Homeland Security Grant Program in not an option either. It requires applicants to be located in the "continental" United States. Moreover, none of the Homeland Security Grant or Hazard Mitigation Assistance Programs allow for funding of the construction of an emergency shelter/evacuation facility.

- Unites States Department of Housing and Urban Development Indian Community Development Block Grant (ICDBG) – As far as ICDBG versus ICDBG Imminent Threat (IT) funds, the project would be a better fit under the regular ICDBG program. The IT program is to alleviate an immediate threat to public health and safety, and is usually applied for after a disaster happens. Because this is planning for a potential flood, regular ICDBG would be more appropriate. That said, the project would be considered a public facility, open to the general public. As far as the uses of the facility, you can apply for ICDBG and be able to use the funds only for the portion of the building that is not used for the general conduct of government on a prorated basis. The application would have to identify what space would be used for eligible ICDBG uses, and then the funds would be used proportionately. You would also need to provide a description of what all the space in the building would be used for when not being used as a shelter.
- Foundation Funding – Several foundations were also examined. The Kresge Foundation has only given out two awards in Alaska over the past two years, and neither award was remotely similar to the Shaktoolik project – both awards were made to organizations in urban cities (Anchorage and Juneau). The Ludwick Family Foundation does not appear to have any history with Alaska. The MJ Murdock Charitable Trust does have a history of funding projects in Alaska and in rural Alaska communities. The Shaktoolik Project may be of interest to the Trust. Although it doesn't cleanly match previously funded Alaska projects it does parallel a few. Finally, the Rasmuson Foundation might be another viable foundation to target –assuming Shaktoolik has an established and positive relationship with them.

In sum, the following options appear to be the strongest candidates for being one component of a comprehensive funding strategy for the Shaktoolik project:

1. AHFC TEACHER, HEALTH AND PUBLIC SAFETY PROFESSIONALS
2. FORAKER PRE-DEVELOPMENT PROGRAM
3. HUD ICDBG PROGRAM
4. NSEDC - OUTSIDE ENTITY FUNDING (OEF) PROGRAM
5. RASMUSON FOUNDATION
6. MJ MURDOCK FAMILY TRUST
7. STATE OF ALASKA LEGISLATIVE APPROPRIATION
8. USDA COMMUNITY FACILITIES LOAN PROGRAM
9. USDA COMMUNITY FACILITIES GRANT PROGRAM

Detailed information for each of those opportunities is outlined below:

11.2 Potential Opportunities

11.2.1 AHFC Teacher, Health and Public Safety Professionals

The purpose of this program is to: Provide gap funding to increase homeownership and/or rental units throughout the state. This program is designed to help retain desirable professionals in high-cost areas. To date, 319 units have been funded and 297 are under development under this program.

Eligibility: Applicants who have successfully completed AHFC's SFY 2012 THHP Pre-application Process are eligible. This means the applicant has:

1. Registered for the THHP online application system.
2. Submitted a THHP Pre-application.

3. Received an email invitation to submit an Application.

The following attachments are required: (1) Evidence of legal organizational status; (2) Resolution of the applicant's governing body; (3) A copy of your completed SFY2012 THHP Workbook; (4) *Third Party Evidence* for funding sources in your workbook; (5) Acceptable zoning letter; and (6) *Third-Party Evidence* to support that your rents are affordable.

"The Teacher, Health Professional, and Public Safety Housing Grant Program provides grant funding for residential housing. To meet this definition, it would require eligible tenants to reside there on a regular basis. An emergency shelter, in all likelihood, would not meet our definition of residential housing. However, if you constructed residential housing with permanent occupancy that was attached to an emergency shelter, it may be an eligible project. The program would only fund that portion of the project that met the definition of teacher, health professional, or public safety housing. Also, we record interest in the property through a DCCR. So, **the property would have to be unencumbered** for us to record a DCCR. The actual match is determined through a feasibility analysis. The maximum grant that could be contributed, however, would be no more than 85% of the project's development cost. On average, the grant funds represent approximately 60% of the Total Development. We use an **on-line application system**. At the end of March, we will request registration information (email, address, phone number) from applicants who are interested in applying for the program this year. The registration deadline will be the first week in May. Then, applicants will receive an email invitation to apply on-line with a "pre-application." The pre-application is for applicants to provide us with basic information about your proposal. The pre-application will need to be submitted by July 15th. Then, applicants will be invited to submit a full application by the end of August. Award announcements will be made in October." – *email from AHFC March 12, 2012*

Contact: James Wiedle, Planner I
AHFC Planning and Program Development
4300 Boniface Parkway, Anchorage, Alaska 99504
Email: jwiedle@ahfc.us
Phone: 907-330-8235

FY 2011 PowerPoint: http://www.ahfc.us/iceimages/grants/thhp_workshop_12.pdf

11.3 Foraker Group: Pre-Development Program

Deadline: Ongoing.

Contact: Chris Kowalczewski at (907) 743-1203 or ckowalczewski@forakergroup.org

Eligibility: Pre-Development Program services are not available through an open application process. Organizations are invited to participate through a selection process initiated by one of the program funders. Organizations should contact the Alaska Mental Health Trust, the Denali Commission, or the Rasmuson Foundation to request consideration for inclusion in the program. Each funding agency has its own criteria for eligibility, but in general only nonprofit organizations with 501(c)(3) status, municipal, or tribal organizations qualify.

Description: Many Alaska nonprofits undertake capital projects, whether it's purchasing, constructing, or renovating a facility. Effective planning in the first phase will dictate the long-term success of the project. "Pre-

development" is the phase of a construction project between the idea that a facility is needed through to the initiation of design. Inadequate planning during this phase can result in projects that are not sustainable in the long term. The Pre-Development Program assists nonprofit organizations in planning for successful capital projects. It is offered through a partnership with the Rasmuson Foundation, the Alaska Mental Health Trust Authority, the Denali Commission, and The Foraker Group. The Pre-Development Program ensures that selected projects meet a community need; that they are adequately prepared to pursue capital funding; and that operations will be sustainable. The Program follows five steps: (1) organize the project work plan, (2) determine need for capital project, (3) explore alternatives, (4) define the projects scope/design, and (5) decide whether to proceed. Organizations have access to program specialists, architects, engineers, and other specialists as necessary to successfully complete the pre-development phase of their project. For more information on the Pre-Development Program, visit The Foraker Group website.

1. HUD'S INDIAN COMMUNITY DEVELOPMENT BLOCK GRANT (ICDBG)

The ICDBG Program provides eligible grantees with direct grants for use in developing viable Indian and Alaska Native Communities, including decent housing, a suitable living environment, and economic opportunities, primarily for low and moderate income persons.

Who is eligible? Eligible applicants for assistance include any Indian tribe, band, group, or nation (including Alaska Indians, Aleut, and Eskimos) or Alaska Native village which has established a relationship to the Federal government as defined in the program regulations. In certain instances, tribal organizations may be eligible to apply.

Categories: The ICDBG program can provide funding for recipients in the following categories:

1. Housing: Housing rehabilitation, land acquisition to support new housing construction, and under limited circumstances, new housing construction.
2. Community Facilities: Infrastructure construction, e.g., roads, water and sewer facilities; and, single or multipurpose community buildings.
3. Economic Development: Wide variety of commercial, industrial, agricultural projects which may be recipient owned and operated or which may be owned and/or operated by a third party.

Award Ceiling: $600,000

Cost sharing or matching is not required under this grant; however, applicants who leverage this grant with other funds receive points under Rating Factor.

Application Deadline: January 04, 2012

Contact Info - Alaska Office of Native American Programs
Zachares, Bill, Administrator, (907) 677-9860, **bill.zachares@hud.gov**
Alston, Deb, Native American Program Specialist, (907) 677-9863, **deb.alston@hud.gov**

11.4 Norton Sound Economic Development Corp –Outside Entity Funding (OEF) Program

In 2003, the NSEDC Board of Directors started supporting regional efforts to fund programs, projects and activities benefiting the member communities and has annually set aside money to contribute to these regional

efforts. To be ***eligible*** to receive grant funding from NSEDC, an entity must be a municipal government, federally recognized tribal government, non-profit organization, or a local, state, or federal agency located in an NSEDC member community.

A total of 90% of the funds allocated annually to the Outside Entity Funding (OEF) program will be divided equally between each NSEDC member community for projects conducted within that community. The remaining 10% of the funding pool will be reserved for project proposals from regional non-profit entities. Fisheries related projects considered through NSEDC's internal budget process will not utilize funds from the Outside Entity allocation, however there is nothing that would prohibit fisheries related projects from being considered for funding through the Community OEF process.

The projected deadline to submit 2013 Outside Entity Funding applications for fisheries & non-fisheries related project proposals is Sept-Oct 2012.

Contact: Paul Ivanoff III, NSEDC, Community Benefits Director
(907) 624-3190, (907) 624-3183 fax, pivanoff@nsedc.com

11.5 Rasmuson Foundation

11.5.1 Tier 1 Requests Less than $25,000

Deadline: The Rasmuson Foundation accepts applications for Tier 1 grants of up to $25,000 year-round.

Contact: Rasmuson Foundation at (907) 297-2700 or rasmusonfdn@rasmuson.org

Eligibility: Alaskan organizations that have received 501(c)(3) status from the Internal Revenue Service and are classified as "not a private foundation" under section 509(a) of the Code, units of government and federally-recognized tribes.

Award Information: Tier 1 applications are for requests of up to $25,000.
Description: Tier 1 applications are limited to capital projects such as furnishings, buildings, audio and video equipment, books, medical equipment, technology, art supplies, sports equipment, musical instruments, vehicles.

Web link: http://www.rasmuson.org/index.php?switch=viewpage&pageid=32

11.5.2 Tier 2 Requests Greater than $25,000

Deadline: Generally Tier 2 requests greater than $25,000 are considered year-round.

Contact: Rasmuson Foundation at (907) 297-2700 or rasmusonfdn@rasmuson.org

Eligibility: Alaskan organizations that have received 501(c)(3) status from the Internal Revenue Service and are classified as "not a private foundation" under section 509(a) of the Code, units of government and federally-recognized tribes.

Award Information: Rasmuson Foundation makes awards greater than $25,000 for this category.

Description: Tier 2 applications greater than $25,000 are for strategic projects and the expansion or start-up of innovative programs by established organizations. These include: Capital Projects for assets such as furnishings, buildings, audio and video equipment, books, medical equipment, technology, art supplies, sports equipment, musical instruments, vehicles.

Tier 2 request greater than $25,000: a two-step process.

1. Letter of Inquiry: The Letter of Inquiry includes a range of required materials be submitted. Before submitting a letter of inquiry, it is strongly recommended that your organization contact the Foundation to discuss its project with a Program Officer.
2. Full proposal: If the project described in the Letter of Inquiry is of interest to the Foundation, a formal invitation will be extended to the applicant to undertake the second step of the process, submission of a full Tier 2 proposal. An invitation is typically extended within two to three months of submitting the Letter of Inquiry.

Web link: http://www.rasmuson.org/index.php?switch=viewpage&pageid=33

11.6 M.J. Murdock Charitable Trust

Deadline: Ongoing. Process begins with Letter of Inquiry.

Contact: (310) 451-1567

Eligibility: Eligible applicants include 501(c)(3) tax exempt organizations. Priority is given to applications for the support of projects within the five states of the Pacific Northwest: Alaska, Idaho, Montana, Oregon, and Washington.

Award Information: The Trust makes grant awards between $100,000 - $300,000.

Description: The M.J. Murdock Charitable Trust "emphasize(s) preventive efforts which address physical, spiritual, social, and psychological needs." Programs with a focus on youth are especially valued. About half of the grants awarded are for capital projects, and the remaining half is reserved for program initiation, expansion, or for increased organizational capacity." The Trust offers grants in three areas: 1. General Grants, 2. Scientific Research Grants, and 3. Focused Program Grants in Science. A Letter of Inquiry must be submitted to the Trust to obtain instructions and a password for the General Grant Application Form. Tips on writing the Letter of Inquiry are on the Trust website. The Scientific Research Grants and Focused Program Grants in Science do not require a Letter of Inquiry.

Web link: http://www.murdock-trust.org/grants/general-grants.php

11.7 State of Alaska Legislative Appropriation

Deadline: On or around February 12, annually

Description: Requests for legislative appropriations are due electronically via the CAPSIS information system: http://www.legfin.state.ak.us/ProjectBackup/enterCapitalProjects.php. Need to contact Representative Neal Foster's office prior to receive login name and password.

Contact Information: Representative Neal Foster, 1-800-478-3789; Representative_Neal_Foster@legis.state.ak.us

11.8 USDA Community Facilities Program

Objectives: Community Programs provides grants and loans to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population. **Grants** are authorized on a graduated scale. Applicants located in small communities with low populations and low incomes will receive a higher percentage of grants. Grants are available to public entities such as municipalities, counties, and special-purpose districts, as well as non-profit corporations and tribal governments. In addition, applicants must have the legal authority necessary for construction, operation, and maintenance of the proposed facility and also be unable to obtain needed funds from commercial sources at reasonable rates and terms.

Loans and guarantees are available to public entities such as municipalities, counties, and special-purpose districts, as well as to non-profit corporations and tribal governments. Applicants ***must have the legal authority to borrow and repay loans, to pledge security for loans, and to construct, operate, and maintain the facilities.*** They must also be financially sound and able to organize and manage the facility effectively. Repayment of the loan must be based on tax assessments, revenues, fees, or other sources of money sufficient for operation and maintenance, reserves, and debt retirement. Feasibility studies are normally required when loans are for start-up facilities or existing facilities when the project will significantly change the borrower's financial operations. The feasibility study should be prepared by an independent consultant with recognized expertise in the type of facility being financed.

Fund Uses: Grant funds may be used to assist in the development of essential community facilities. Grant funds can be used to construct, enlarge, or improve community facilities for health care, public safety, and community and public services. This can include the purchase of equipment required for a facility's operation. A grant may be made in combination with other CF financial assistance such as a direct or guaranteed loan, applicant contributions, or loans and grants from other sources.

Maximum Grant: The amount of grant assistance for project costs depends upon the median household income and the population in the community where the project is located and the availability of grant funds. In most instances, projects, which receive grant assistance have a high priority and are highly leveraged with other loan and grant awards. Grant assistance may be available for up to 75% of project costs. Grant funding limitations are based on population and income, economic feasibility, and availability of funds. Current max grant awards are approximately $50K –according to the USDA Alaska State Director.

Projects will be selected based on a priority point system. Projects that will receive priority are those that: Serve small communities - with the highest priority going to projects located in a community with a population of 5,000 or less.

Contacts: West Area Manager Tiffany Zulkosky in Bethel, (Tiffany.Zulkosky@ak.usda.gov) and/or Community Facilities Program Director Merlaine Kruse in Palmer (merlaine.kruse@ak.usda.gov).

Link to other Rural Development grant programs: http://www.rurdev.usda.gov/RD_Grants.html

Link to Community Facilities Loans: http://www.rurdev.usda.gov/HAD-CF_Loans.html

This page intentionally left blank.

12 LONG TERM ACTION/PROJECT DEVELOPMENT

Figure 6: Rendering of proposed Community Emergency Shelter Shaktoolik, Alaska

Based on the consensus that the facility will need to be constructed through a funded construction delivery method, step by step efforts will be required to advance the project now that the site has been selected and facility program /concept design developed.

12.1 Funding

Based upon the approved concept design and preliminary cost estimate, a target budget of funding has been established. In addition, on-going revenue will be required for maintained and operations. Funding procurement and operational cost models are described in previous Sections 10 and 11 of this report.

12.2 Management Team

Given the scale of the project, with a number of diverse tasks required, a skilled core management team will be essential to initiate, track and manage the process identified in this *Implementation Plan*. A project manager having a solid background and understanding of capital projects development will be a key necessary asset. The project manager will be the management team leader, and will have primary authority and responsibility for directing the project forward. Depending upon the availability of qualified individuals, the project manager should be assisted by a grants specialist and an accountant/bookkeeper. Additional staff may be required as the project moves forward.

12.3 Training

Development of a local work force can be facilitated through training, which should begin as soon as possible in advance of the work to be accomplished. Training will fall into two general categories:

- Labor Force Training: This category would include development of construction skills and associated certifications and licenses, such as CDL, carpenters, weatherization, and other skills applicable to the

construction of the proposed community emergency shelter. Development of a skilled local work force will facilitate local hire once the project moves into construction, and provide the potential to reduce construction costs through reduced travel and subsistence.

- Administration Training: Administrative skills for grant accounting and reporting, as well as grant writing skills will be needed. Once the project is funded and moves forward, additional reporting and record keeping duties will be required, as well as construction administration.

12.4 Planning

Planning for the community emergency shelter project began with the current efforts of site selection, programming, concept design and development of the implementation plan under the Climate Change grant from DCCED. However, planning efforts will need to continue and should examine opportunities for additional resources, partnerships, and development of know resources. Subsequent planning efforts remain and should at the minimum include:

- Site Survey: With the selection of the current site, a full topographic survey will be required as a prerequisite to design of the site improvements (pad, utilities, drainage), and site boundaries and property corners should be staked and flagged in the field to establish the project limits. The potential to have Kawerak surveyors accomplish this work should be investigated.

- Bio-Mass Inventory: The use of bio-mass as a heating source for the shelter, as well as other community uses, is dependent upon the presence of a renewable, consistent fuel source. Such a source could consist of wood chips from drift wood harvested from the surrounding coast line, or cord wood harvested from the surrounding foothills and mountains.

- Alternative Power Generation: As evidenced by the existing wind turbines in Shaktoolik, wind power is a viable resource, and should be considered at the shelter. Additionally, photo-voltaic panels may provide seasonal opportunities for power. Any opportunity to reduce consumption of non-renewable resources should be considered.

- Coordination with Proposed Shaktoolik Clinic: Although the proposed new clinic site is located near the old airport and away from the proposed shelter site, opportunities for collaboration could include a joint timeframe for construction to share contractor mobilization costs. Potentially, the clinic could be located in the shelter, although not in the program or concept design presented in this report.

- Water Supply: While the facility as envisioned would rely on limited stored water within domestic holding tanks, provisions for on-going water supply beyond the amount stored should be considered.

- Wastewater: With the use of the facility ranging from limited daily non-emergency use to heavy emergency use, the demands on the wastewater system will be highly variable. The concept presented in this report envisions an on-site wastewater treatment system sized to accommodate non-emergency daily use with a septic holding tank for periods of heavy use. However, further investigation, planning and cost estimating for a system that can accommodate this diverse range of use will be a critical aspect of on-going efforts. Sizing a wastewater system to treat the maximum use scenario would likely be cost prohibitive.

- Electrical: As envisioned in the concept design, the shelter would be connected to the local electrical utility, and have a standby generator located on Level 3 to provide power should the local utility be impacted by a storm event. Connection to the existing wind generators may provide additional capacity for power after a storm has subsided, assuming that they remain operational.

- Telecommunications: During a storm scenario, maintaining communications with the outside world will be critical. A reliable system of communication should be planned and would include satellite uplink communication based from the shelter, as well as radio.

12.5 Permitting

Planning in advance for required permitting can eliminate or minimize potential road blocks and delays in project implementation. Advance communication with the authority having jurisdiction (AHJ) for each area of permitting is also advised.

The list below outlines permits and other considerations that should be incorporated into the project "road map".

Spill Prevention, Control and Countermeasure Plan (SPCC) (EPA and State Fire Marshal)

- SPCC Plan must be developed and kept at the facility

- Personal training in spill prevention, containment removal and disposal of spilt oil

- Inspection and maintenance program

- Include relevant spill prevention systems (dikes, liners, pumps, etc.)

Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit Compliance (ADEC)

- Develop and implement SWPPP

- Submit Notice of Intent and payment of General Permit Authorization fee ($490) to ADEC at least 7 days before construction begins

- Submit notice of Termination to ADEC

On-Site Disposal System Review (ADEC, 30 day review period)

- Obtain "Approval to Construct." Submit sewage treatment systems to ADEC for compliance review.

- Process details and a checklist for the engineering plans submission package are in this document:

  HTTP://www.dec.state.ak.us/water/wwdp/onsite/pdf/introduction and instructions to cklist.pdf

- Construction may not begin before approval. Review period is estimated at 30 days from complete engineering plan package submittal.

- Obtain "Approval to Operate." Submit "Certificate if Construction" to ADEC upon completion of construction.

  (2) Note: If the project is constructed with the Village Safe Water or Facility Construction & Operation funding or if the project is supervised by ADEC under Village Safe Water of Facility Construction & Operation, the ADEC review fee can be waived (AS 46.07.040).

Approval of Public Water System (ADEC)

- Water for the facility will be through the city water system and also storage tanks for emergency use. Depending on facility classification of the facility, construction could involve ADEC review of Engineering plans consisting of two major stages, Approval to Construct and Approval to Operate.

- Facility classification depends in part on the number of individuals who will use the facility. An estimate of how many individuals will use the facility on a daily (or regular) basis and how many might use it through the year will help determine the facility classification and what considerations are necessary. Once an estimate is decided upon, we can contact the ADEC Drinking Water Program to determine what is necessary for this facility.

Plan Review Application (State Fire Marshal)

- Prior to the construction of the emergency shelter, including the foundation, a plan review application must be submitted to the State Fire Marshal for plan review and approval obtained prior to beginning construction.

- Plan review applications will require a full code analysis, drawings, and specifications prepared by a registered design professional.

- A plan review fee will be charged based upon the estimated cost of the facility

- Plan review may sometimes be submitted incrementally, for example, a foundation design may be submitted in advance of the full design package for review and approval.

12.6 Design

While efforts to date have included conceptual level design of the site and shelter building, the full development of the community emergency shelter will require contracting with one or more professional land surveyor, architect and engineer firms for subsequent design of the following elements.

- Site: This design stage would include limited civil site design to accommodate the structure. However, geotechnical engineering for the pile foundation system will be required, including structural analysis for accommodation of wave run up and high water upon both the foundation and utilities tanks located within the structure at the on grade level.

- Building: Design of the shelter structures will require a design team that would include architects and structural, mechanical, and electrical engineers.

- Utilities: Principal utilities to be design will include potable water and water storage systems and a package wastewater treatment system and additional waste water holding tanks, electrical system grid tied, standby generator power, and communications (radio/telephone/data) services. Some of the utilities design may be designed and specified and installed by the vendor, e.g., water module, wind generator, solar panels with thermal storage tanks, and photovoltaic array.

Design of these elements will be based on the work accomplished to date, and will proceed on a prescribed path of development, with the following recommended phases of design.

- **Schematic Design**: While the concept design presented in the report provides a basis for planning, funding acquisition, on-going development of design to a schematic level will be the next phase. Schematic design will inherently include a more detailed look at the building systems to be employed and further engineering of these systems, in particular the pile foundation system, structural systems, exterior building envelope, utilities systems, power and telecommunications.

- **Sustainable Systems Integration**: Opportunities for operational cost efficiencies should be considered, including but not limited to:
    - Super Insulation
    - Wind Power
    - Waste heat collection from existing wind generators
    - Solar Thermal
    - Solar PV
    - Rain Water Reclamation

- **Design Development**: Working from the Schematic Design as a basis of beginning, this phase begins full layout and development of the dimensioned building plans, building envelope, interiors, finishes and specialties, as well as detailed development of structural, plumbing, ventilation, heating, power, lighting and communications systems. Final selection of building materials, finishes, specialties, and equipment should be made, as well as development of preliminary specifications. An updated cost estimate would be prepared based upon the design development documents. Review and consensus of the design development package by the management team, IRA and other stakeholders is warranted. At completion of the design development phase, consensus should be obtained for all key design decisions, systems, and material selections before proceeding into the construction document phase.

- **Construction Documents**: This phase will provide the final construction documents for submittal to the authorities having jurisdiction, and should bear the seal of a professional designer(s) in the State of Alaska. Typically a “Final Review” set of documents is prepared at the approximately 95 percent level for the purpose of review by the users and owners, as well as a full quality control check by the design team. Upon receipt of comments on the final document set, “Final for Construction” documents are completed and professionally sealed.

12.7 Procurement

12.7.1 Procurement Categories

During the course of the project development, procurement will be required for a number of goods and services. Whereas much of the project development will be envisioned as grant funded, it will be essential to strictly comply with the provision of each grant as far as procurement methods. Generally, grants will require competitive, open procurement methods and full documentation for expenditures in excess of $10,000. Key procurement issues/items will include the following.

- **Professional Services**: This will include, but is not limited to, design services by professional architecture/engineering firms, land surveying, permitting assistance, legal counsel, and accounting services.

- **Labor**: It is anticipated that hiring of a qualified administrative staff and construction management will be required during the course of project implementation.

- **Equipment Purchases**: The community may decide that the purchase and training on key equipment may be purchased directly for incorporation into the emergency shelter project or for use for specific phases of construction. Examples of equipment may include tools, vehicles and construction related items, as wells as equipment to be incorporated in to the on-going use of the facility, such as a pre-packaged on-site sanitary on-site sewage system, and appliances for heating and cooking.

- **Equipment Lease/Rental**: For some aspects of construction and administration, it may be advantageous for the village to lease or rent equipment. Particular if the use is limited or temporary. These items may include construction machinery, and office equipment.

- **Contractor Services**: Selection of a General and Sub-Contractors to be involved in construction of all or various aspects of the project will be required. Given the size and complexity of the project, it would be advisable to contract a prime entity to have overall responsibility for construction. It may, however, be a consideration to contract the pile foundation as a separate project if advantageous to the overall schedule.

12.7.2 Procurement Methods

Depending on the category of procurement, a variety of methods may be used for hiring, contracting, purchasing, and rental/leasing.

- **Quality Based Selection**: This method of selection is appropriate for the hiring of key staff and professional services, as the intent is to procure the best services and level of expertise. Typically, this method will be initiated by a request for qualifications (RFQ) or request for proposal (RFP), or can also be made by direct selection where permitted by the funding agreement.

- **Competitive Bids**: For procurement of goods and services, such as supplies, equipment or construction bids, selection can be made on basis of price, or a combination of price and quality (e.g. best value).

12.7.3 Contracting Methods

A variety of contracting delivery methods are available:

- Conventional Design/Bid/Build: Award of the project to a general contractor on the basis of lowest responsive bid for complete construction documents prepared by the architect/engineer.

- Design/Build: Award of the project to a design builder, typically a general contractor, which in turn employs an architect/engineer to provide final design.

- Construction Management: Selection of a construction manager, typically a general contractor, to work with the architect/engineer to complete the design and construct the project based on a guaranteed maximum price.

Each of these methods has respective advantages and disadvantages, and determination of the preferred delivery method should be carefully considered.

12.7.4 Construction

Upon completion of the many steps that must occur prior to construction (funding, design, permitting and contracting team established), development of the site and construction of the facility will begin with the execution of a construction contract using one of the methods shown in 12.7.3 above. Construction projects are inherently based upon a “critical path “sequence of events, and development and execution of a detailed construction schedule is dependent on the skills and experience of the construction management team. Given the logistics and special expertise needed to construct a complex project in Shaktoolik, a contractor with demonstrated experience in Western Alaska construction will be needed.

The construction timeline of this facility will be critically related to seasonal aspects, as all materials will need to be barged in as early as possible, and ideally, the facility would be “closed in” before the onset of cold weather. In addition, depending on geotechnical recommendations for the pile foundation system, and whether permafrost is prevalent, it may be advisable to install the piles at a prescribed time of year, and allow for stabilization prior to construction of the facility.

Given the size and complexity of the proposed shelter facility, it is likely that construction would commence with the arrival of the first barge, and be substantially complete the following spring. Acceleration of this schedule may be possible.

This page intentionally left blank.

13 REFERENCES

Glenn Gray and Associates, in association with Kawerak, Inc. (2010). *Draft Situation Assessment, Shaktoolik Planning Project.*

Kawerak Incorporated. (2007). *Shaktoolik: Local Economic Development Plan.*

Shaktoolik Area Info. (n.d.). Retrieved from The Native Village of Shaktoolik: http://www.kawerak.org/tribalHomePages/shaktoolik/areainfo.html

Smith, P.E., H. N., & Carter, P.E., R. A. (2010). Shaktoolik Erosion Assessment (DRAFT). State of Alaska, Department of Transportation and Public Facilities, Coastal Engineering.

U.S. Army Corps of Engineers, Alaska District. (2009). *Community Eroision Assessment, Shaktoolik, Alaska.*

U.S. Army Corps of Engineers, Alaska District. (2011). *Shaktoolik Coastal Flooding Analysis.*

U.S. Government Accountability Office. (2009). *Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by flooding and Erosion.* http://www.gao.gov/new.items/d09551.pdf

This page intentionally left blank.

Appendix A –
Building Program

This page intentionally left blank.

Shaktoolik Community Emergency Shelter

Appendix A

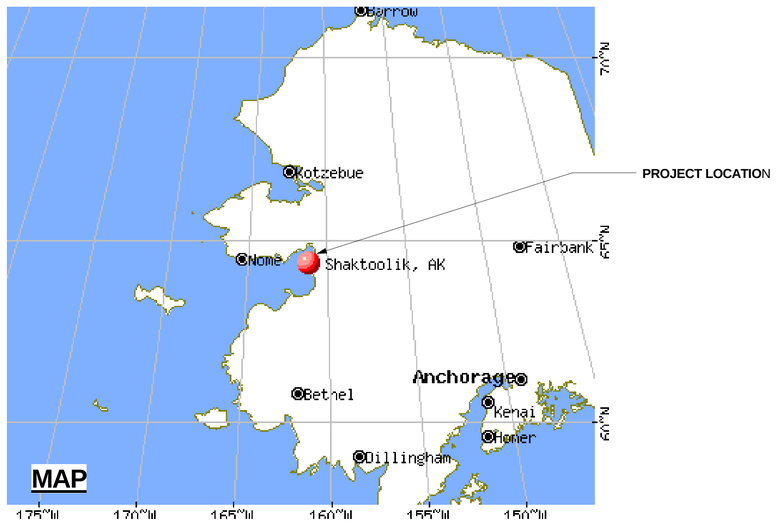
Building Program

Room or Space	Emergency Use Functions	Non-Emergency Use Functions	Program Required Area (SF) Min	Program Required Area (SF) Max	Notes	New Shelter Concept Areas (SF) "Lifeboat"
Level 3 Program Space	15 feet above road					
Assembly Space	Shelter / Housing /	Multi-Function Space / Closed		4,200	Sleeping for 280 @ 15 sf per occupant = 4,200 SF	880
Assembly Space Mezzanine	Shelter / Housing / Dining/ Gathering	Storage / Multi-Function / Closed				455
Assembly Space Dining / Gathering	Shelter / Serving / Dining / Gathering	Multi-Function Space / Closed				688
Assembly Corridor Space	Circulation/ Shelter	Circulation / Open				385
Kitchen (inc. Prep/Cold Storage)	Group / Family Meals	Elders / Group Meals		600		350
Dry Storage (Food)	Storage	Storage		60		111
Secure Storage	Storage	Storage		300	off corridor storage inc. bio mass	74
Offices	Command Center	Offices		500	2 Work Stations Sm. Work Tbl	295
Conference Room	Shelter	Office			inc. Storage	186
Tribal Offices inc Behavioral Health	Shelter	Offices		500	3 Work Stations	287
Bathrooms w/ Shower(s)				560		
Men's Restroom(s)	Open	Closed			2 stalls 2 urinals 3 lavs	260
Women's Restroom(s)	Open	Closed			4 stalls 3 lavs	290
Family Restroom(s)	Open	Open			2 ADA / Unisex Restrooms and Tub rooms @120sf each	240
Communications	Communications Racks	Secure Storage / JC		400	Communications Center	105
Generator / Mechanical/ Elec				200	New Genset located above MHW	175
Stair / Landing	Vertical Circulation	Circulation		100		200
Mechanical Mezzanine	Systems	Systems				217
Exterior Egress Balcony/ Stair	Outlook / Vertical Circulation	Circultion / Gathering			Exterior stair to mezzanine	128
					Total SF Level 3	5,326
Level 2 Program Space	5 Feet above road					
Lobby / Entry / Corridor / Stair	Shelter	Circulation				330
City Offices / Post Office	Shelter	Offices		400	2 work station City Offices inc loading dock @150 SF	306
VPSO	VPSO	VPSO			2 cells and Secure Storage included	310
Lodging Rooms (4) inc Laundry	Elders Units	Transient and Visitor Lodging		750	1 ADA Unit @ 275 SF Standard units @ 200 SF each	700
Laundry	Emergency Use	Use for Lodging/ Kitchen		60		64
Restroom	Community Use	Community / Office use		30		43
					Total SF Level 2	1753
Level 1 (Core) Program Space	Above and Below Grade					
Entry				100	Access to Stair / Lift / Ramp	220
Water / Waste Water Systems above gı	Water Storage Tanks	STP sized for daily Non Emergency use		800	(2)8,000 gal storage tanks and self contained Sewage treatment plant	733
Waste Water and Fire Water	Holding Tanks	Pumped and treated after emergency use		800	Holding Tanks for Emergency Operations (5) 8,000 Gal Tanks	1230
					Tota SF Core Level 1	2183
			Total Max SF	10360	Tota SF all Levels Net SF	9262
					Total Gross SF	10,072

This page intentionally left blank.

Appendix B –
Concept Drawings

This page intentionally left blank.



PROJECT LOCATION

Drawing Index	
T1.1	Cover Page / Concept Rendering
A1.1	Site Plan and Concept Images
A1.2	Level 1 (Ground Floor) and Level 2 Floor Plans
A1.3	Level 3 and Mezzanine Floor Plan
A3.1	Exterior Elevations
A3.2	Exterior Elevations
A3.4	Building Sections
A3.5	Building Sections

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Inlet Housing Authority
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP AC
Checked	GHP
Date	10/10/2012

Sheet Contents:

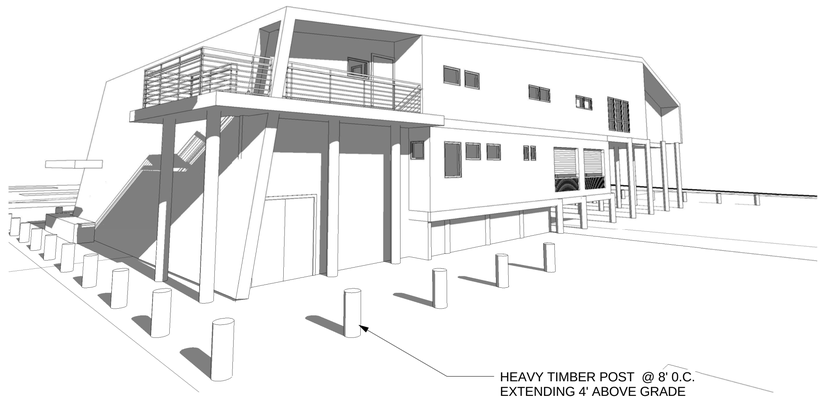
Cover Page / Concept Rendering

Sheet No.:

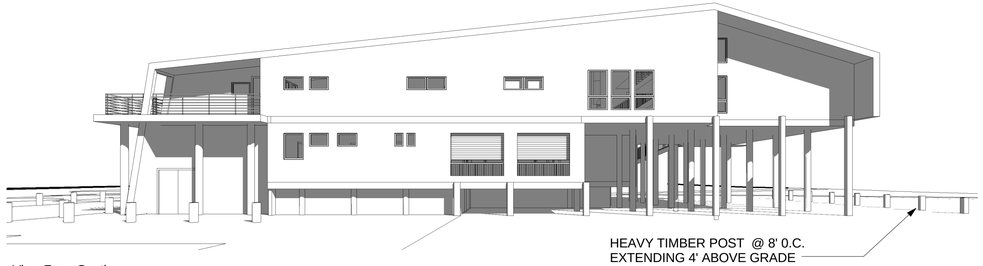
T1.1

USKH W.O. 1251600

APPENDIX B CONCEPT DRAWINGS

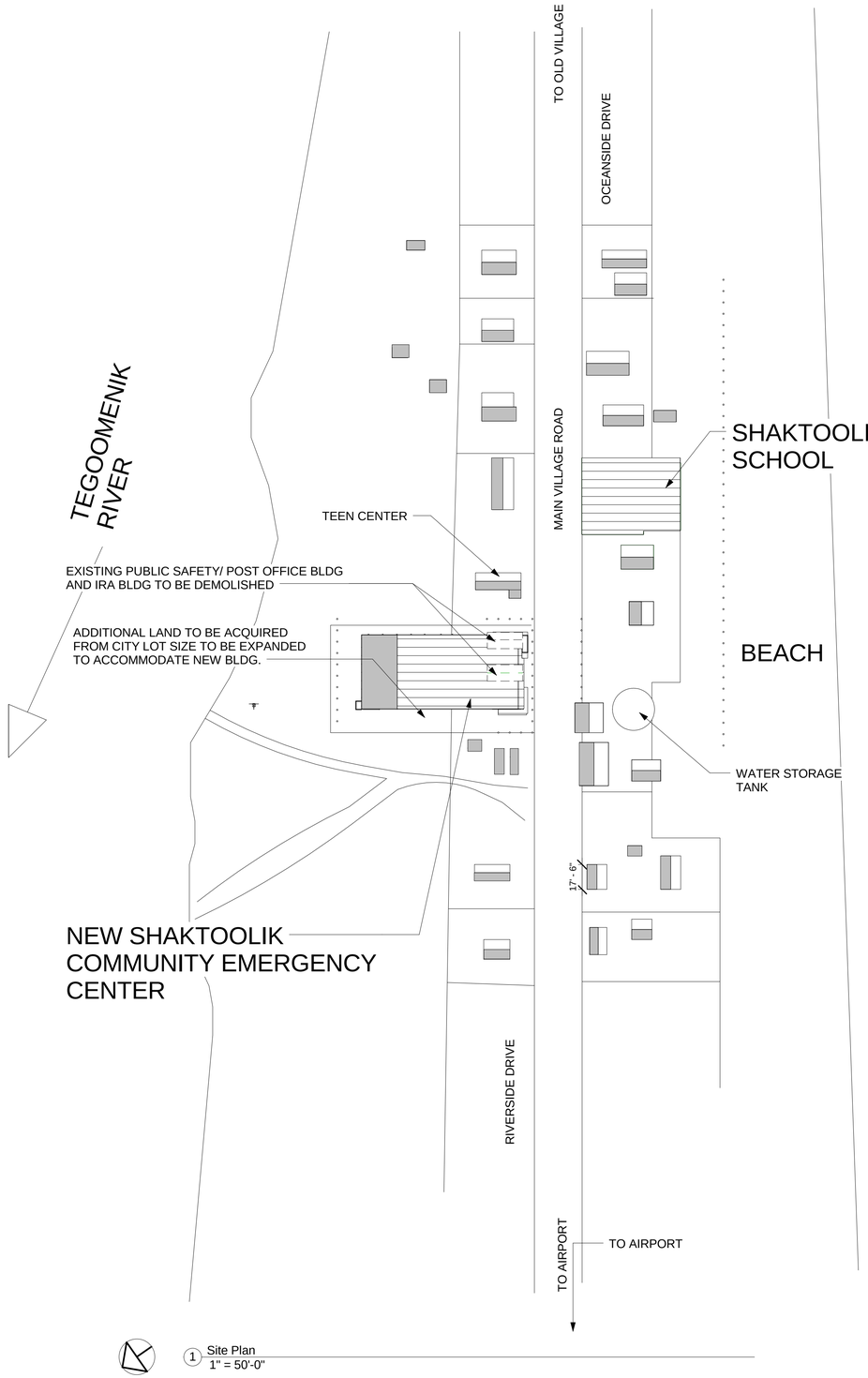


3 Front Entry View From Road



4 View From South

2 View From North



1 Site Plan
1" = 50'-0"

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Healthcare Research Center
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP
Checked	GHP
Date	10/10/2012

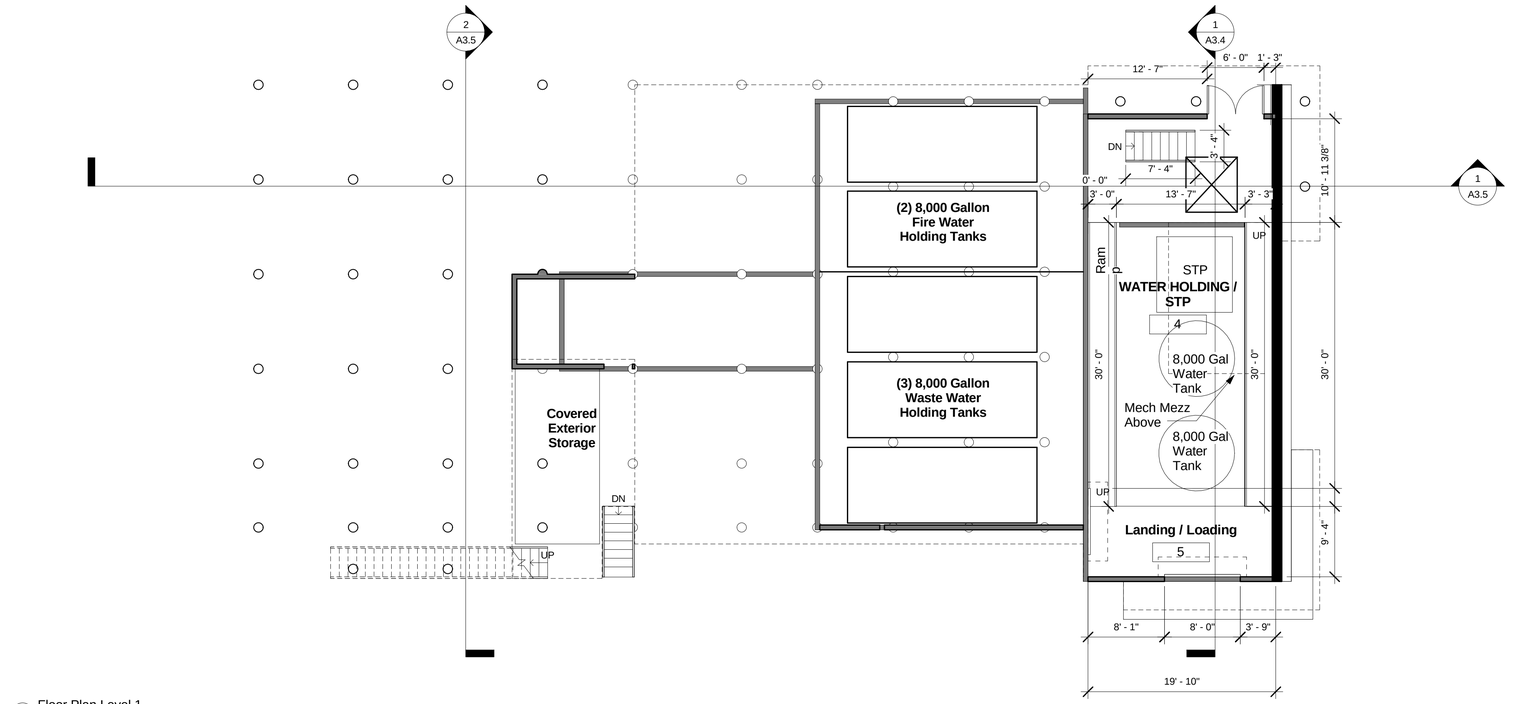
Sheet Contents:

Site Plan and Concept Images

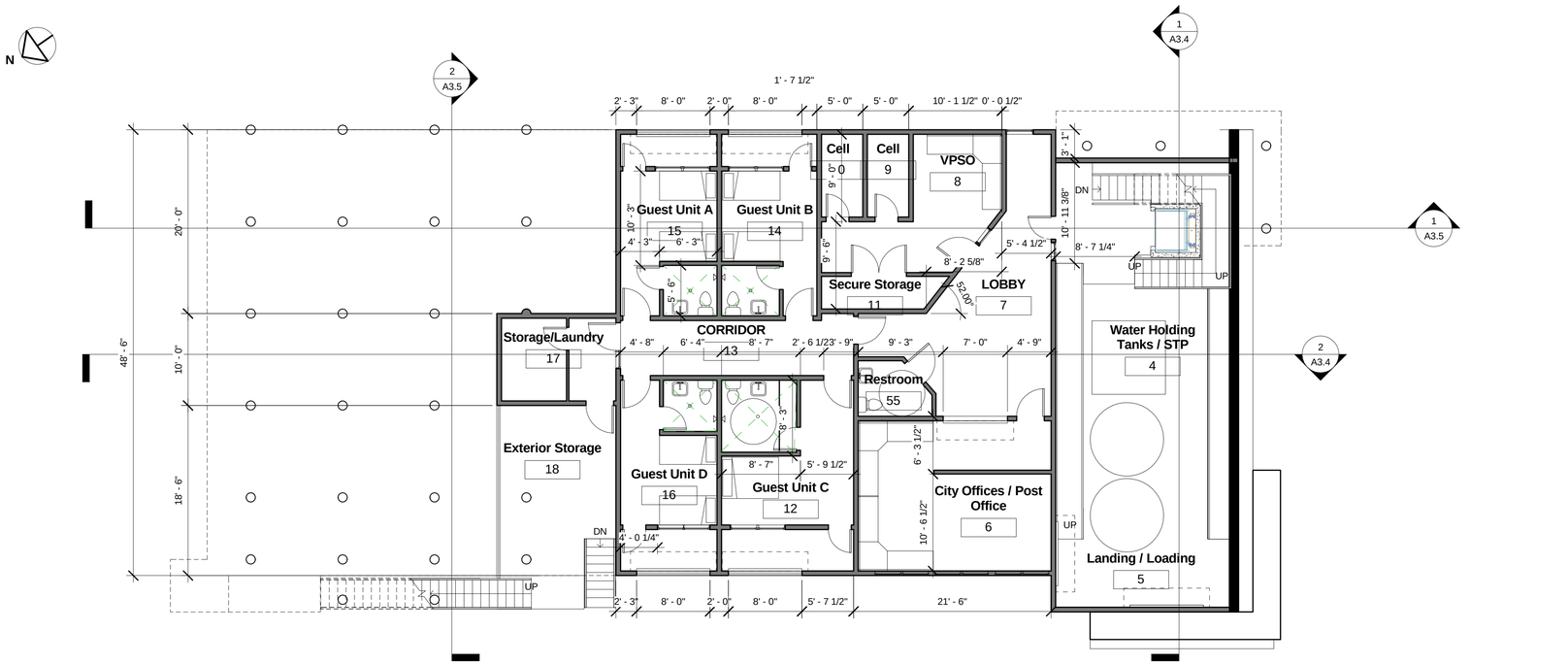
Sheet No.:

A1.1

USKH W.O. 1251600



2 Floor Plan Level 1
1/8" = 1'-0"



1 Floor Plan Level 2
1/8" = 1'-0"

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Healthcare Research Center
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP AC
Checked	GHP
Date	10/10/2012

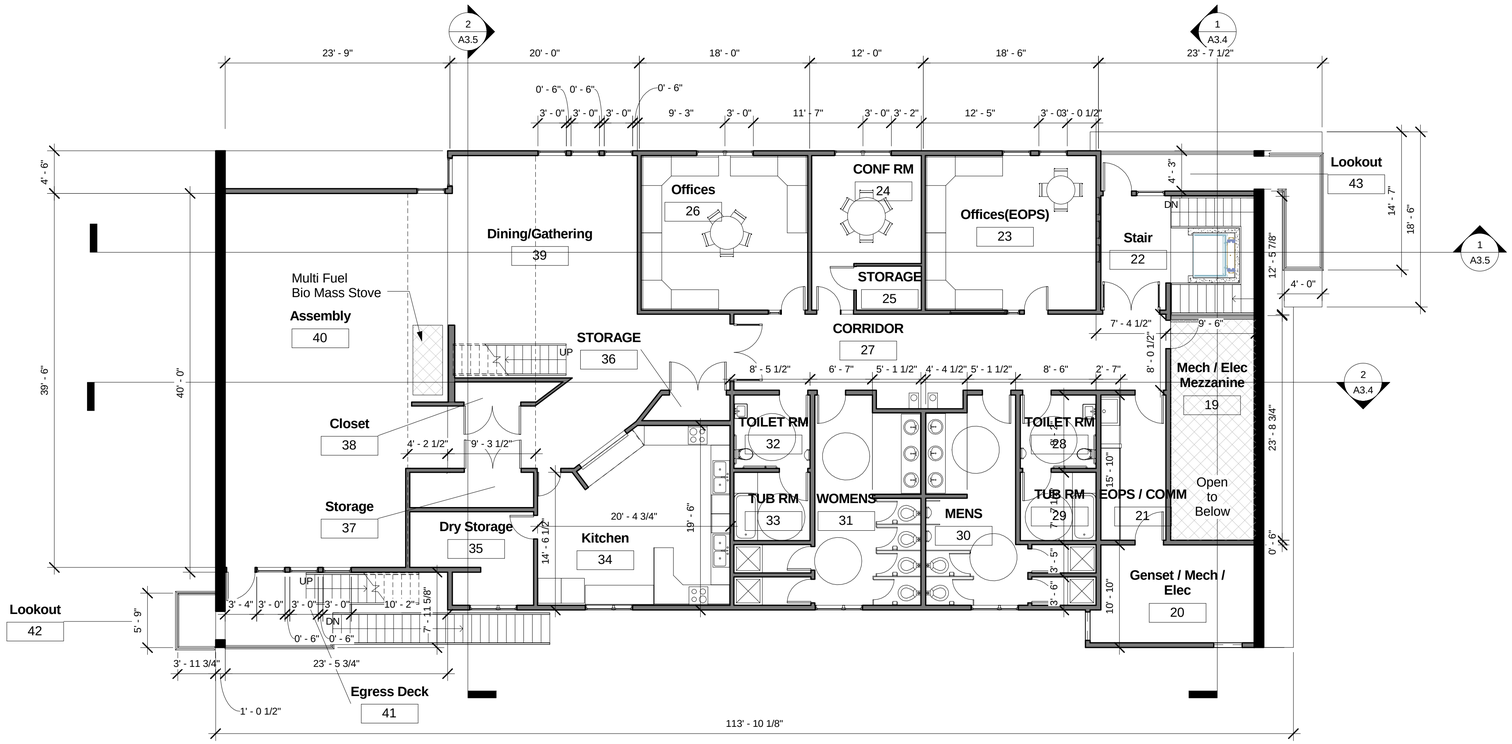
Sheet Contents:

Level 1 (Ground Floor) and Level 2 Floor Plans

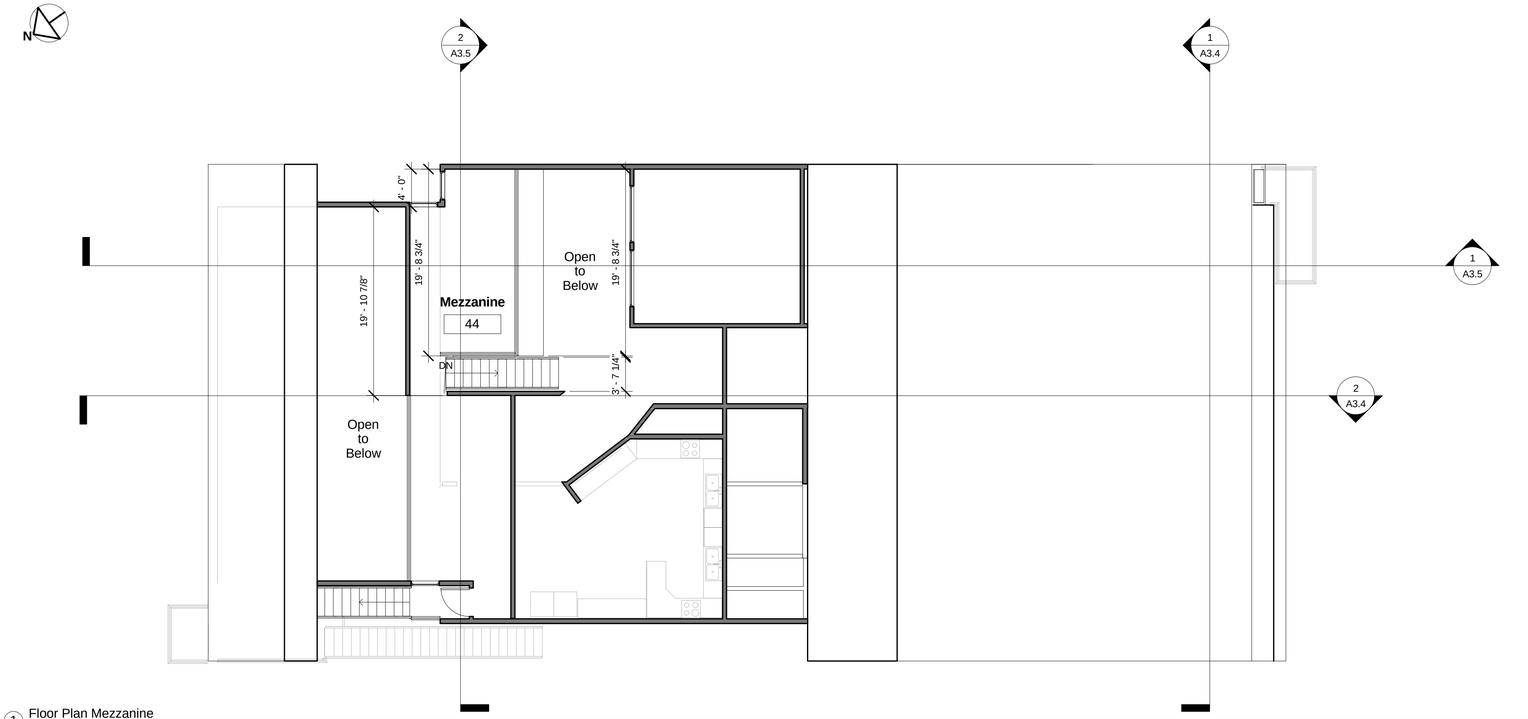
Sheet No.:

A1.2

USKH W.O. 1251600



2 Floor Plan Level 3
1/8" = 1'-0"



1 Floor Plan Mezzanine
1/8" = 1'-0"

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP AC
Checked	GHP
Date	10/10/2012

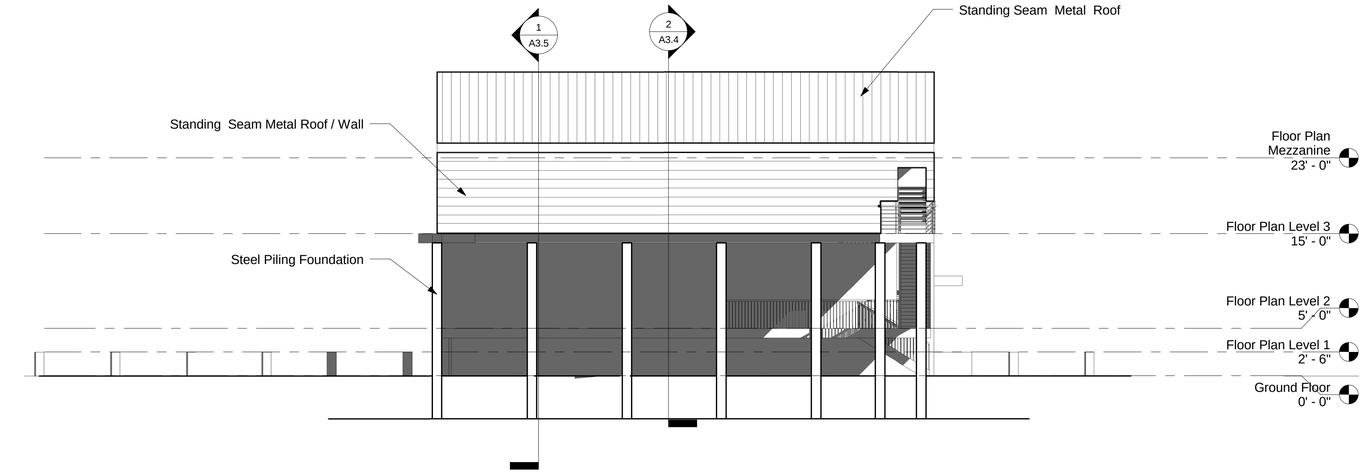
Sheet Contents:

Level 3 and Mezzanine Floor Plan

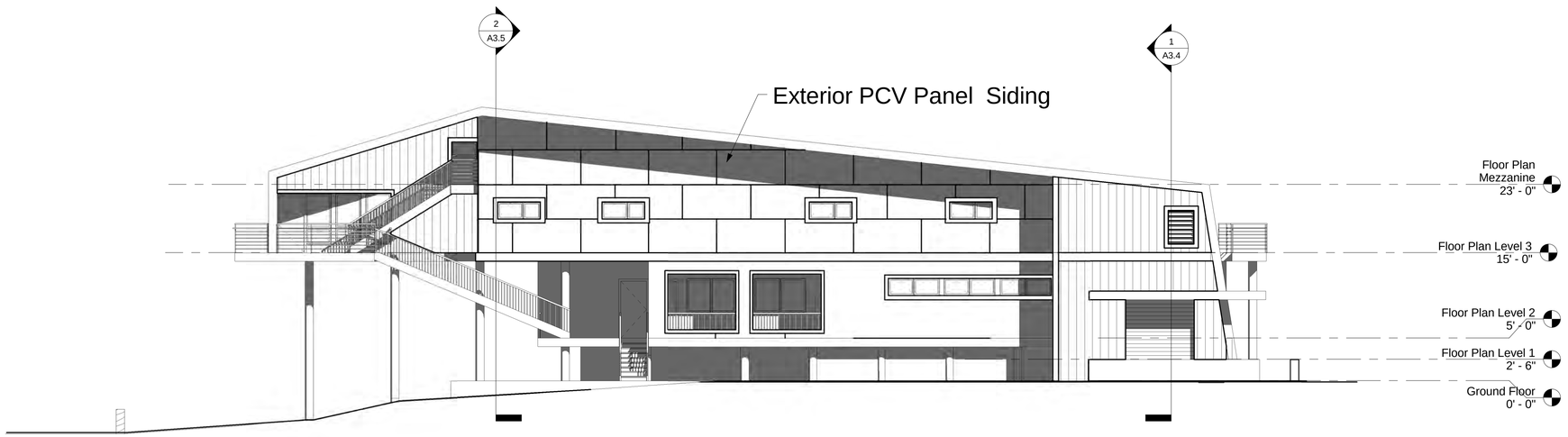
Sheet No.:

A1.3

USKH W.O. 1251600



2 West Elevation
1/8" = 1'-0"



1 South Elevation
1/8" = 1'-0"

10/11/2012 5:01:16 PM I:\1251600\Dwgs\ARevit\1251600 A-Central_msp.rvt

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Hospital Research Center
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP
Checked	GHP
Date	10/10/2012

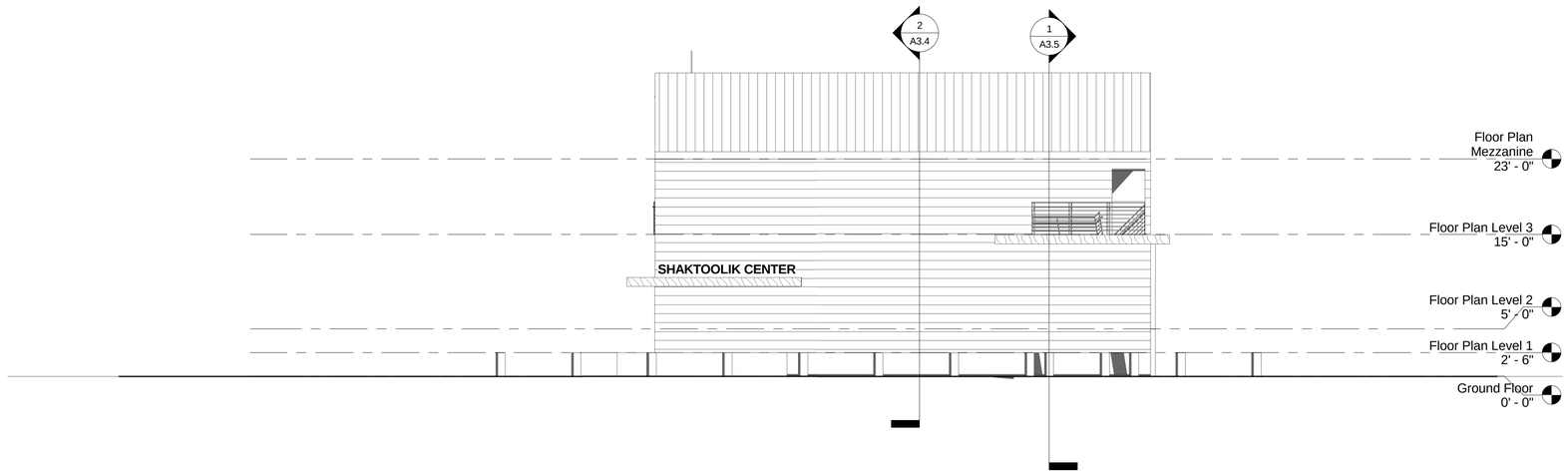
Sheet Contents:

Exterior Elevations

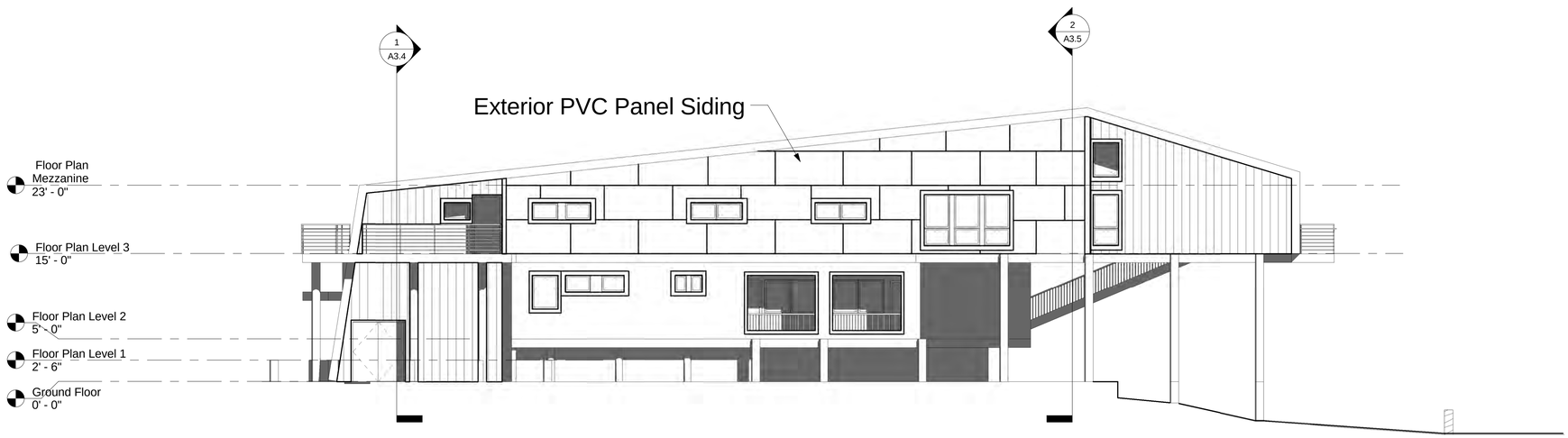
Sheet No.:

A3.1

USKH W.O. 1251600



1 East Elevation
1/8" = 1'-0"



2 North Elevation
1/8" = 1'-0"

10/11/2012 5:01:24 PM I:\1251600\Dwgs\ARevit\1251600 A-Central_msp.rvt

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Healthcare System
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP
Checked	GHP
Date	10/10/2012

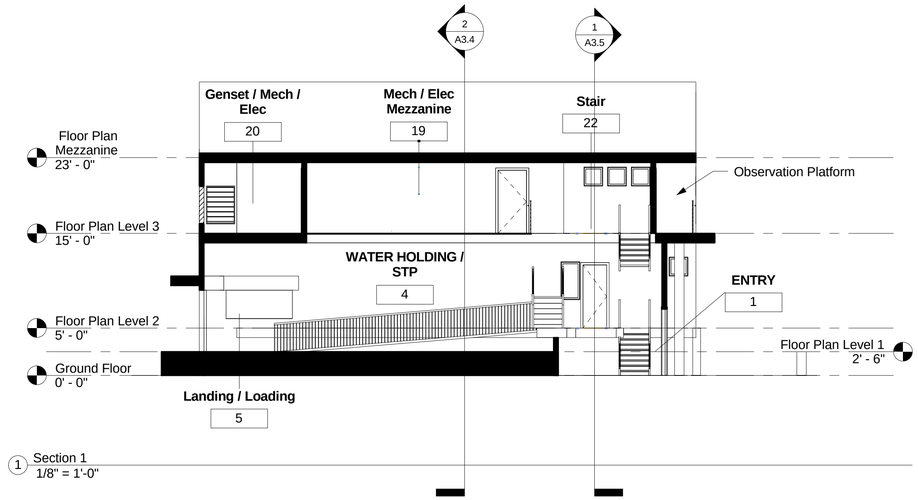
Sheet Contents:

Exterior Elevations

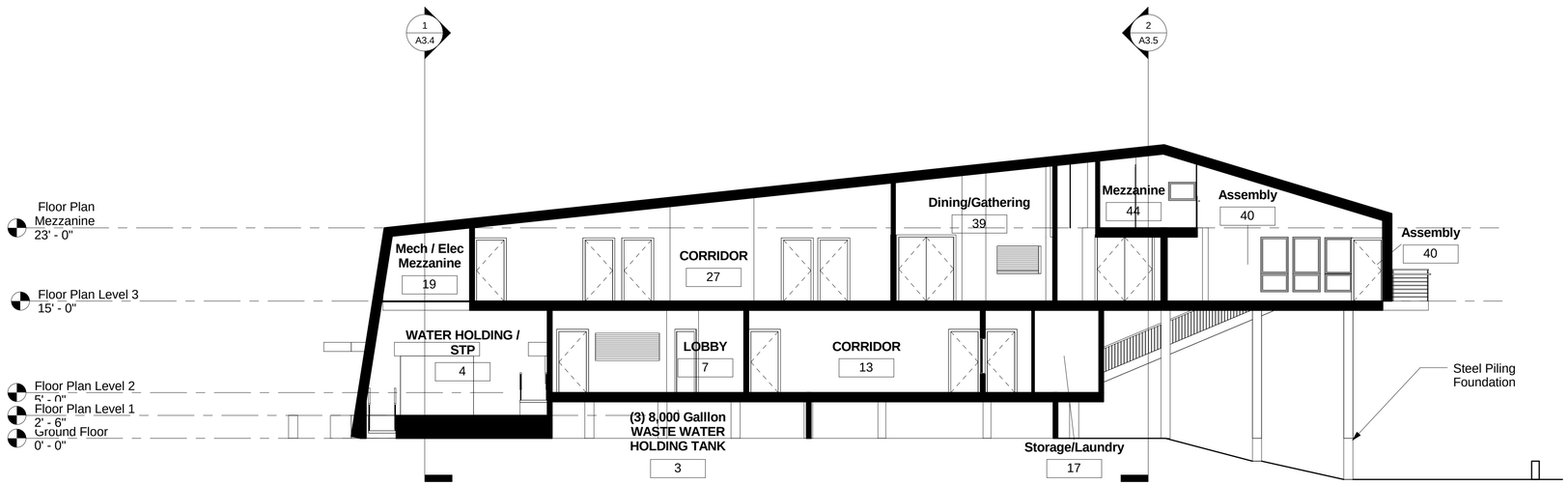
Sheet No.:

A3.2

USKH W.O. 1251600



1 Section 1
1/8" = 1'-0"



2 Section 2
1/8" = 1'-0"

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Hospital Research Center
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP
Checked	GHP
Date	10/10/2012

Sheet Contents:

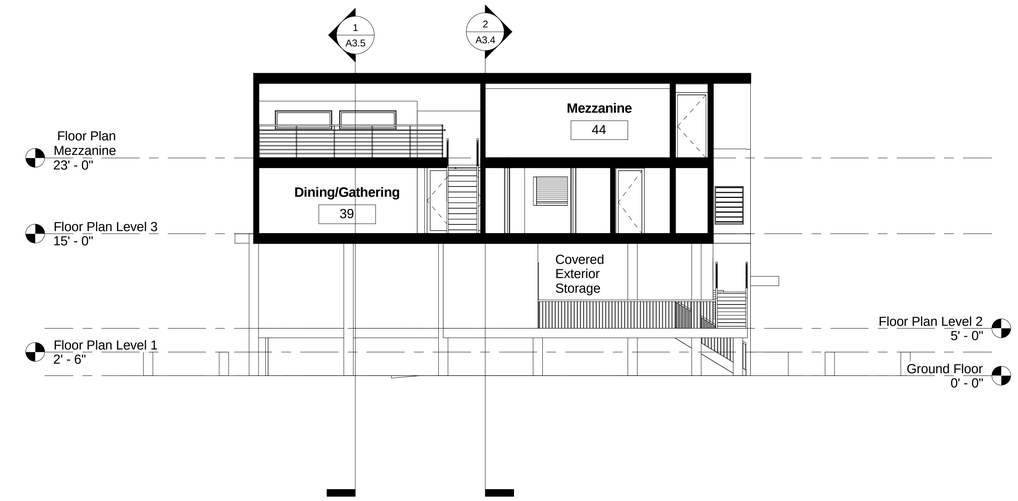
Building Sections

Sheet No.:

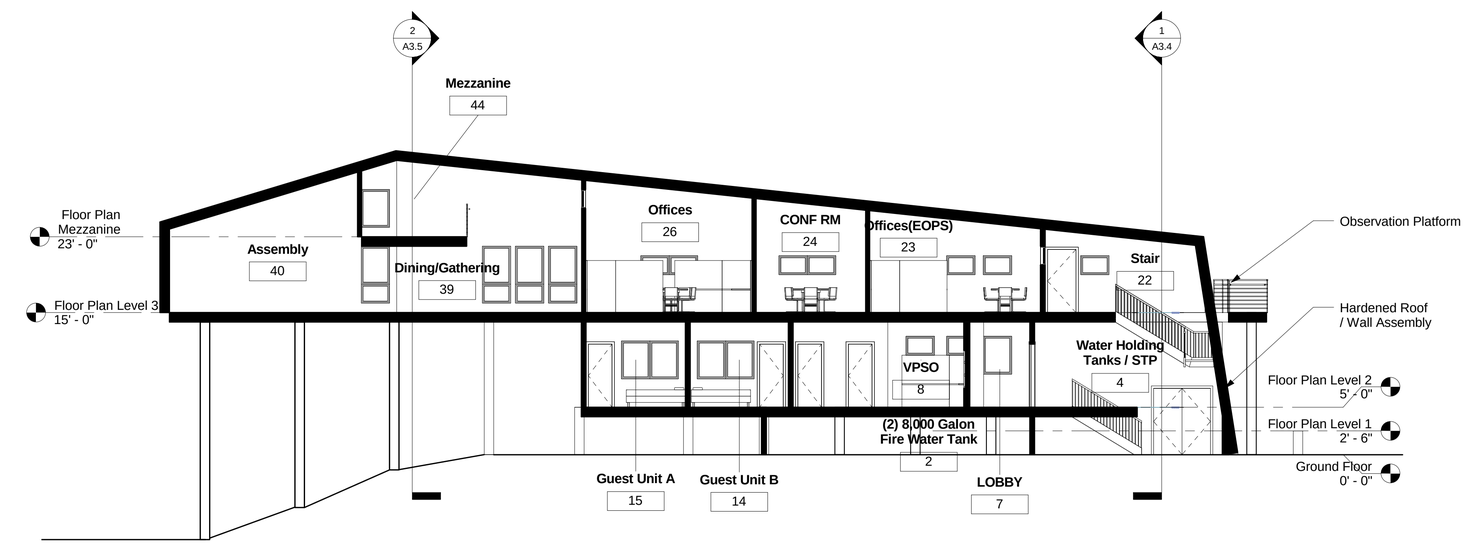
A3.4

USKH W.O. 1251600

10/11/2012 5:01:26 PM I:\1251600\Dwgs\AIRevit\1251600 A-Central_msp.rvt



2 Section 3
1/8" = 1'-0"



1 Section 4
1/8" = 1'-0"

10/11/2012 5:01:27 PM I:\1251600\Dwgs\AIRevit\1251600 A-Central_msp.rvt

CONCEPT DESIGN

Date Stamped:

No.	Description	Date	By

USKH
SHARED VISION. UNIFIED APPROACH.
Architecture ○ Engineering
Land Surveying ○ Planning
Environmental Services

2515 'A' Street
Anchorage, Alaska 99503
(907) 276-4245

544 4th Avenue,
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

3031 Clinton Drive,
Suite 200
Juneau, Alaska 99801
(907) 790-2901

351 W. Parks Highway,
Suite 200
Wasilla, Alaska 99654
(907) 376-7815

www.USKH.com

Cook Children's Healthcare System
CCHRC

Project:

Shaktoolik Community Emergency Center

Shaltoolik IRA

Project Mgr.	GHP
Drawn	MSP
Checked	GHP
Date	10/10/2012

Sheet Contents:

Building Sections

Sheet No.:

A3.5

USKH W.O. 1251600

Appendix C –
Storm Scenario Drawings

This page intentionally left blank.

DAILY OPERATION SCENARIO

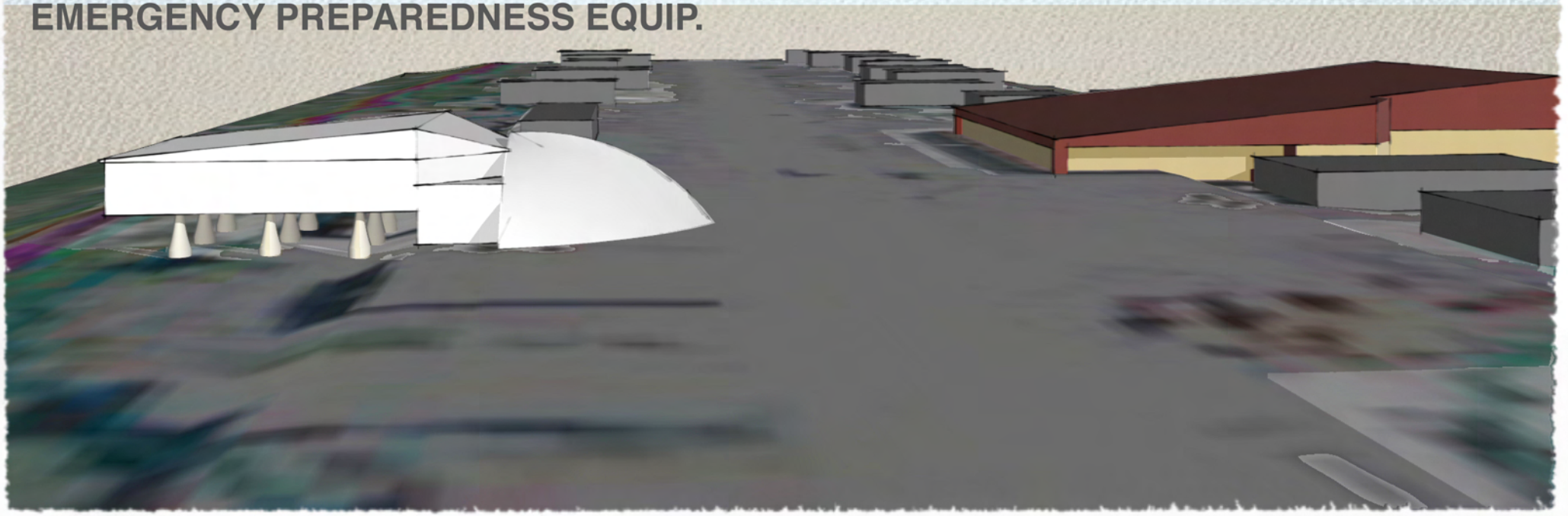
Tenants of the Storm Shelter during daily operation:

VPSO/JAIL
TRIBAL OFFICES
CITY OFFICES
TWO APARTMENTS FOR VISITORS

Storage facilities in the Shelter:

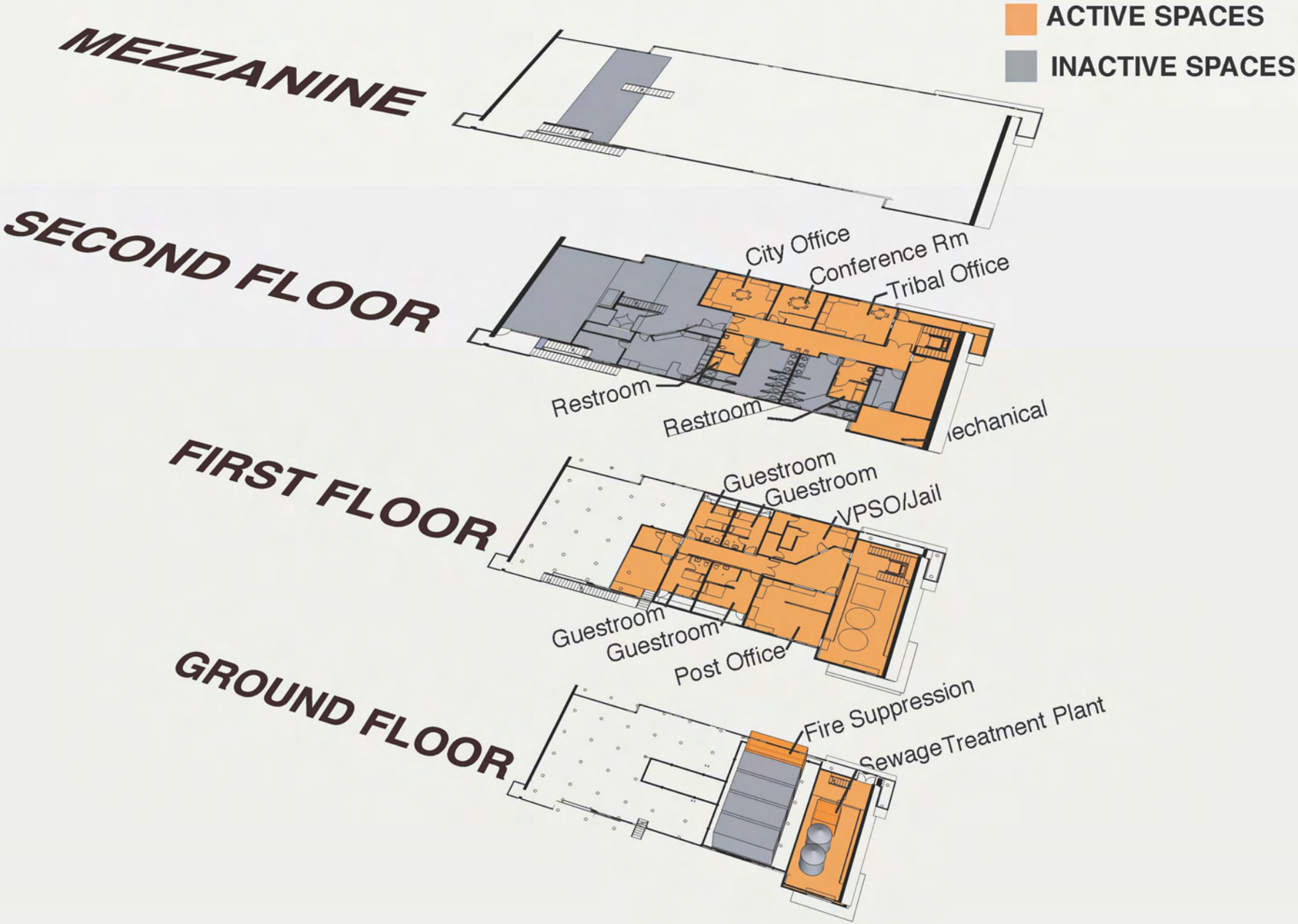
FIRE EQUIPMENT
EMERGENCY PREPAREDNESS EQUIP.

Municipal and tribal entities will ensure that the Shelter's operational costs are maintained, as well as keeping the building prepared and storm ready.



SHAKTOOLIK CENTER

PEACETIME OPERATIONS



24-48 HOUR STORM SCENARIO

Apartments occupied by Elders during the storm

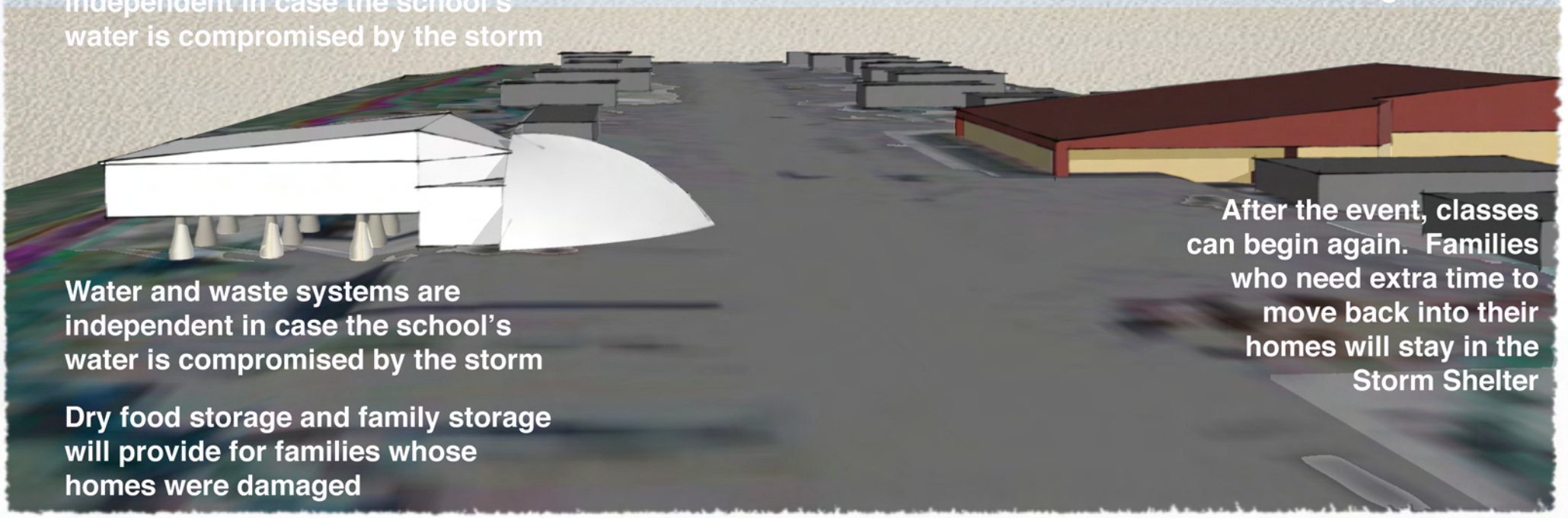
After a storm event, apartments occupied by families needing to repair damaged homes

Emergency Ops run out of Shelter

Water and waste systems are independent in case the school's water is compromised by the storm

School and Storm shelter both will provide temporary shelter and sleeping space during a storm event.

School can supplement the bathroom space, water needs, and food service to during the event.



Water and waste systems are independent in case the school's water is compromised by the storm

Dry food storage and family storage will provide for families whose homes were damaged

After the event, classes can begin again. Families who need extra time to move back into their homes will stay in the Storm Shelter

SHAKTOOLIK CENTER

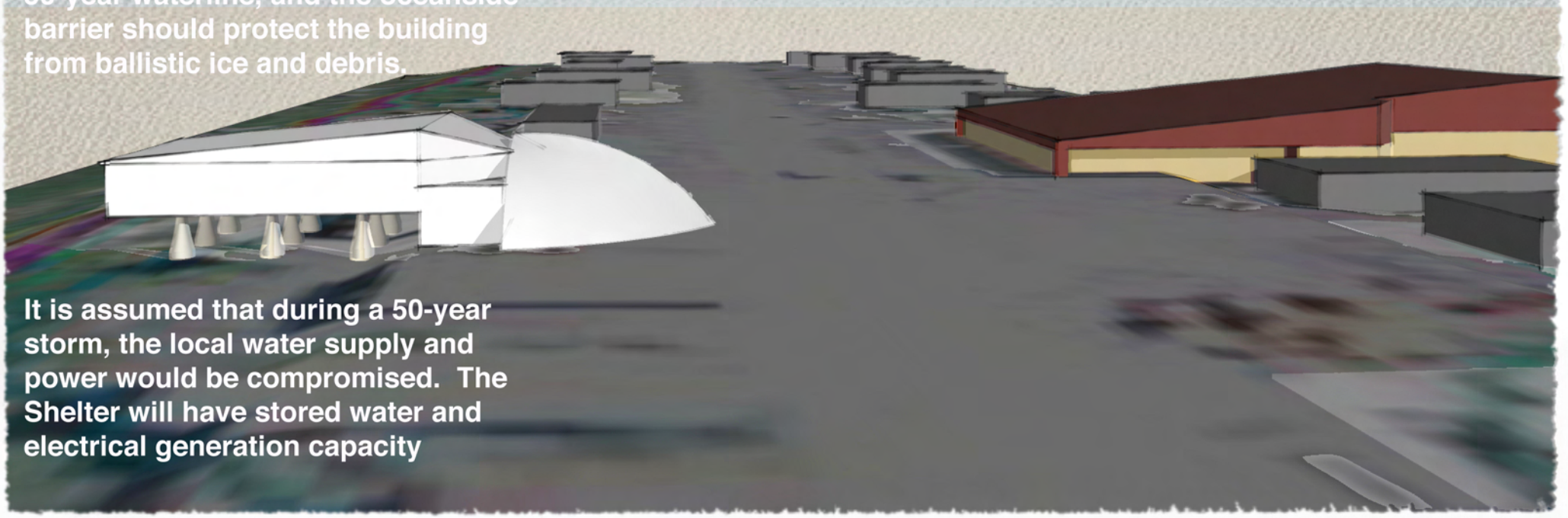
EMERGENCY OPERATIONS

CATASTROPHIC STORM SCENARIO

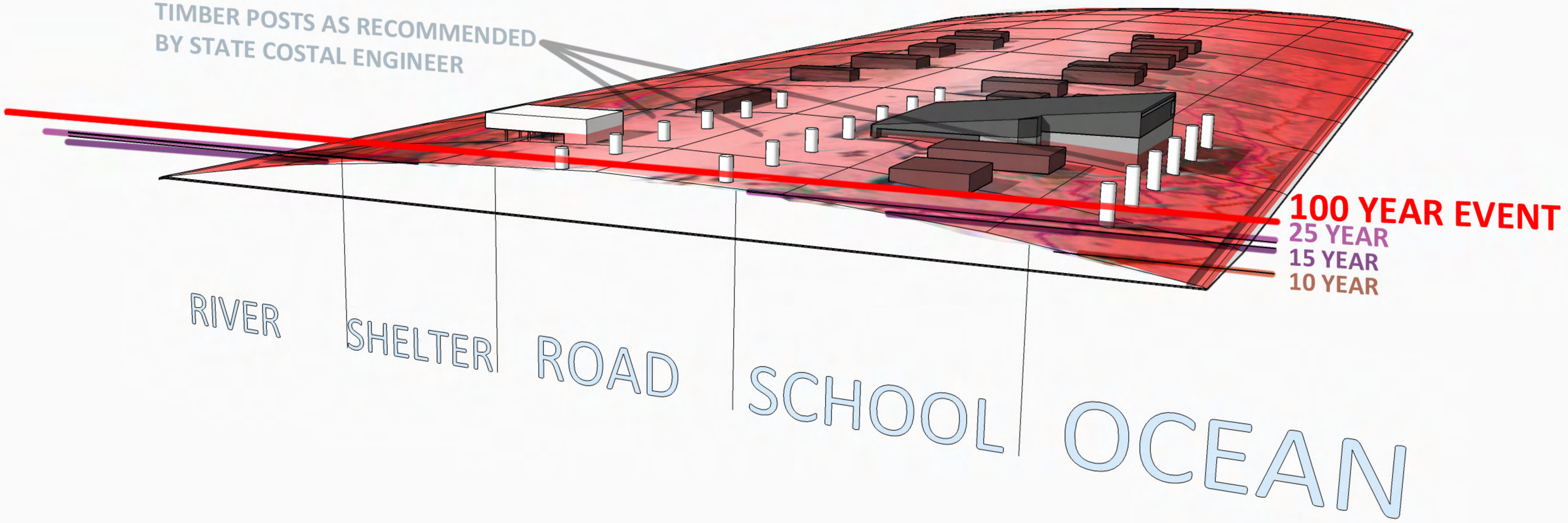
In the case of a catastrophic storm, the Storm Shelter would house basic services until members of the village could be rescued.

If the village is flooded, a helicopter landing could be possible on the roof of the building. The elevated portion would be above even the 50-year waterline, and the oceanside barrier should protect the building from ballistic ice and debris.

The school basement and gen-set could be unusable after a catastrophic storm. All emergency services would rest in the Shelter



It is assumed that during a 50-year storm, the local water supply and power would be compromised. The Shelter will have stored water and electrical generation capacity


TIMBER POSTS AS RECOMMENDED
BY STATE COSTAL ENGINEER
100 YEAR EVENT
25 YEAR
15 YEAR
10 YEAR
RIVER
SHELTER
ROAD
SCHOOL
OCEAN

Appendix D –
Cost Estimate

This page intentionally left blank.

Community Emergency Shelter
Shaktoolik, Alaska

Construction Cost Estimate
Concept Submittal
October 4, 2012

ESTIMATIONS
1225 E. International Airport Road, Suite 205
Anchorage, Alaska 99518
907.561.0790

Prepared for:
USKH, Inc.
544 4th Avenue, Suite 102
Fairbanks, Alaska 99701
907.452.2128

Community Emergency Shelter
Shaktoolik, Alaska
Prepared for USKH, Inc. by Estimations

Construction Cost Estimate
Concept Submittal
October 4, 2012

Description	Estimated Cost	Estimated Cost Plus Contingency	Div.
Basic Bid			
01 - GENERAL REQUIREMENTS	$3,565,881	$4,100,764	1
02 - SITEWORK	$483,044	$555,501	2
05 - METALS	$197,290	$226,884	5
06 - WOOD AND PLASTIC	$378,235	$434,970	6
07 - THERMAL & MOISTURE PROTECTION	$398,365	$458,120	7
08 - DOORS AND WINDOWS	$160,731	$184,841	8
09 - FINISHES	$312,428	$359,292	9
10 - SPECIALTIES	$30,765	$35,380	10
11 - EQUIPMENT	$23,643	$27,189	11
12 - FURNISHINGS	$1,906	$2,192	12
13 - SPECIAL CONSTRUCTION	$610,900	$702,535	13
14 - CONVEYING	$45,000	$51,750	14
15 - MECHANICAL	$1,510,369	$1,736,924	15
16 - ELECTRICAL	$630,205	$724,736	16
Total Estimated Cost - Basic Bid:	**$8,348,762**	**$9,601,077**	**<<<<<**
Alternates			
A1 - AZEK SHEET SIDING	($6,318)	($7,266)	

Estimating Contingency: 15.0%

Escalation Table	2013	2014	2015	2016
Escalation Rate	1.04	1.08	1.12	1.15
Base Bid	$9,994,253	$10,344,052	$10,706,094	$11,080,807
Alternate	($7,564)	($7,828)	($8,102)	($8,386)

Community Emergency Shelter
Shaktoolik, Alaska
Prepared for USKH, Inc. by Estimations

Construction Cost Estimate
Concept Submittal
October 4, 2012

Documents

Concept Submittal

Plans Dated: 1/19/12
Numerous Emails and Narrative Outline

Notes and Assumptions

1 Based on 2012 procurement/construction, with Escalation provided for various bidding schedules.
2 Labor rates based on Davis Bacon, 60 hours/week.
3 Weather, logistics and construction time window has been considered.
4 Assumes open competitive bid procurement.
5 Materials storage area will be designated near the building.

Community Emergency Shelter
Shaktoolik, Alaska
Prepared for USKH, Inc. by Estimations

Construction Cost Estimate
Concept Submittal
October 4, 2012

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
1	**01 - GENERAL REQUIREMENTS**										
2											
3	**Project Management**										
4	Project Manager, 16 Hour/Week	24	WEEKS			16.000	384.0	$29,568		$29,568	$29,568
5	Supervisor, 60 Hour/Week	22	WEEKS			60.000	1,320.0	$101,640		$101,640	$101,640
6	Project Expeditor, 16 Hour/Week	22	WEEKS			16.000	352.0	$26,330		$26,330	$26,330
7	Time Keeper/Cost Control, 20 Hour/Week	22	WEEKS			20.000	440.0	$9,680		$9,680	$9,680
8											
9	**Subsistence**										
10	Room & Board	2,937	MANDAY	$125.00	$367,133					$367,133	$367,133
11											
12	**Small Tools & Consumables**										
13	Consumables	1	LS	$7,600.00	$7,600					$7,600	$7,600
14	Small Tools	1	LS	$16,700.00	$16,700					$16,700	$16,700
15											
16	**Mobilization**										
17	Mobilization/Demob, Equipment	353	TONS	$2,170.00	$766,859	3.429	1,211.8	$90,643		$857,502	$857,502
18	Air Fare - Anchorage - Site	49	EA	$900.00	$44,100					$44,100	$44,100
19	Surface Freight	353	TONS	$1,240.00	$438,205	1.714	605.7	$45,306		$483,511	$483,511
20	Air Freight	61,500	LBS	$0.65	$39,975	0.003	184.5	$13,801		$53,776	$53,776
21											
22	**Equipment**										
23	Four-wheelers	2	EA						$19,000	$19,000	$19,000
24	Forklift (1 Ea)	22	WEEKS						$14,667	$14,667	$14,667
25	Flatbed (1 Ea)	22	WEEKS						$11,000	$11,000	$11,000
26	Manlift (2 Ea)	22	WEEKS						$9,900	$9,900	$9,900
27	Boom Truck (1 Ea)	22	WEEKS						$33,000	$33,000	$33,000
28	Maintenance, Fuel, Oil Grease	1	LS	$65,680.00	$65,680					$65,680	$65,680
29											
30	**Other Requirements**										
31	Project Meetings	20	EA			4.000	80.0	$3,080		$3,080	$3,080
32	Project Schedule	10,725	SF	$0.30	$3,218					$3,218	$3,218
33	Project Layout	10,725	SF	$0.05	$536	0.007	75.1	$5,617		$6,153	$6,153
34	Shop Drawings	30	HRS			1.000	30.0	$1,155		$1,155	$1,155
35											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
36	Temporary Facilities										
37	Project Office Trailer	5	MTHS						$7,500	$7,500	$7,500
38	Office Equipment/Supplies	5	MTHS	$1,000.00	$5,000					$5,000	$5,000
39	Project Tool Sheds	5	MTHS						$2,000	$2,000	$2,000
40	Project Safety Equipment	1	LS	$8,350.00	$8,350					$8,350	$8,350
41											
42	Temporary Services										
43	Chemical Toilets	5	MTHS	$400.00	$2,000					$2,000	$2,000
44	Power	5	MTHS	$750.00	$3,750					$3,750	$3,750
45	Lighting	10,725	SF	$0.02	$215	0.002	21.5	$1,608		$1,823	$1,823
46	Lights, Site, Lite-tower (1 Ea)	5	MTHS	$2,500.00	$12,500					$12,500	$12,500
47	Heat Temporary	3	MTHS	$6,435.00	$19,305					$19,305	$19,305
48											
49	Cleaning										
50	Progressive	11	MSF	$2.00	$21	1.143	12.3	$920	$21	$962	$962
51	Final	11	MSF	$2.00	$21	2.229	23.9	$1,788	$32	$1,841	$1,841
52	Windows	368	SF	$0.25	$92					$92	$92
53											
54	Allow For Winter Costs	1	LS	$55,000.00	$55,000					$55,000	$55,000
55											
56	Survey	1	LS	$10,000.00	$10,000					$10,000	$10,000
57											
58	SWPP	1	LS	$8,000.00	$8,000					$8,000	$8,000
59	Erosion & Sediment Control	1	LS	$15,000.00	$15,000					$15,000	$15,000
60	Record Documents	1	LS	$5,000.00	$5,000					$5,000	$5,000
61	Operations and Maintenance Manuals	1	LS	$2,000.00	$2,000					$2,000	$2,000
62	Contract Closeout and Training	1	LS	$2,500.00	$2,500					$2,500	$2,500
63	Certified Payroll Fee	1	LS	$5,000.00	$5,000					$5,000	$5,000
64	**General Contractor Overhead**	6%									$426,894
65	**General Contractor Profit (Fee)**	8%									$603,343
66	**General Contractor Bond & Insurance**	2.5%									$203,628
67											
68	**Subtotal: 01 - GENERAL REQUIREMENTS**				$1,903,760		4,740.8	$331,136	$97,120	$2,332,016	**$3,565,881**
69	Average Unit Price for this division is: $332.48 per SF based on 10,725 SF										
70											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
71											
72	**02 - SITEWORK**										
73											
74	**02300 Earthwork**										
75	**Gravel Pad**	**20,000**	**SF**								
76	Rough Grading	20,000	SF			0.003	60.0	$4,402	$3,000	$7,402	$8,142
77	Grave Backfill, 2 Ft	1,780	CY	$25.00	$44,500	0.070	124.6	$9,142	$8,099	$61,741	$67,915
78											
79	**02450 Piling**										
80	**Driven Steel Piling**	**97**	**EA**								
81	Driving	291	HRS			5.000	1,455.0	$135,325	$48,015	$183,340	$183,340
82	Piles 10" Pipe Piling 40'L	97	EA	$1,214.40	$117,797	2.000	194.0	$18,043	$6,305	$142,145	$142,145
83	Driving Shoes, Installed at Mill	97	EA	$150.00	$14,550					$14,550	$14,550
84	Pile Cutoffs & Disposal	97	EA			2.000	194.0	$18,043	$1,576	$19,619	$19,619
85	Piling Cap, Steel, 16"x16"x1"	97	EA	$75.78	$7,351	1.500	145.5	$13,533		$20,884	$20,884
86	Mob/Demob Pile Driver	1	EA	$5,000.00	$5,000	96.000	96.0	$8,929	$3,600	$17,529	$17,529
87	Layout and Templates	1	LS	$560.00	$560	32.000	32.0	$2,976	$520	$4,056	$4,056
88	Surveying Of Pile Locations	1	LS	$250.00	$250	48.000	48.0	$4,464	$150	$4,864	$4,864
89											
90											
91											
92											
93											
94											
95											
96											
97											
98											
99											
100											
101											
102	**Subtotal: 02 - SITEWORK**				$190,008		2,349.1	$214,857	$71,265	$476,130	**$483,044**
103	Average Unit Price for this division is: $45.04 per SF based on 10,725 SF										
104											
105											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
106	**05 - METALS**										
107											
108	**05120 Structural Steel**										
109	Allow For Plate, Anchorage, Etc.	12,870	LBS	$1.40	$18,018	0.014	180.2	$14,924		$32,942	$36,236
110	Columns	16,090	LBS	$1.40	$22,526	0.007	112.6	$9,326	$4,023	$35,875	$39,462
111											
112	**05500 Metal Fabrications**										
113	Misc Metals	1	LS	$2,700.00	$2,700	50.000	50.0	$4,141		$6,841	$7,525
114	Framing Hardware	2,700	LBS	$2.00	$5,400					$5,400	$5,940
115											
116	**05511 Metal Stairs**										
117	Ladders, Steel W/ Cage	12	VLF	$65.00	$780	0.640	7.7	$638		$1,418	$1,560
118											
119	**05521 Pipe and Tube Railings**										
120	Stair Guardrail/Handrail	150	LF	$180.00	$27,000	0.400	60.0	$4,969		$31,969	$35,166
121											
122	**05530 Gratings**										
123	Grating at Mezzanine	461	SF	$25.00	$11,525	0.200	92.2	$7,636		$19,161	$21,077
124	Grating at Grade	800	SF	$25.00	$20,000	0.200	160.0	$13,251		$33,251	$36,576
125	Grating at Landing/Loading	140	SF	$25.00	$3,500	0.200	28.0	$2,319		$5,819	$6,401
126	Stair Treads	147	SF	$31.25	$4,594	0.250	36.8	$2,753		$7,347	$7,347
127											
128											
129											
130											
131											
132											
133											
134											
135											
136											
137	**Subtotal: 05 - METALS**				$116,043		727.5	$59,957	$4,023	$180,023	**$197,290**
138	Average Unit Price for this division is: $18.40 per SF based on 10,725 SF										
139											
140											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
141	**06 - WOOD AND PLASTIC**										
142											
143	**06100 Rough Carpentry**										
144	FT Plywood Under Rhino Lining	7,217	SF	$1.50	$10,825	0.017	122.7	$9,199		$20,024	$20,024
145											
146	**Exterior Wall**	**8,063**	**SF**								
147	2x4 Framing	7,203	BF	$0.60	$4,322	0.021	151.3	$11,343		$15,665	$15,665
148	Plywood Sheathing 5/8"	8,063	SF	$0.75	$6,047	0.017	137.1	$10,278		$16,325	$16,325
149	Holddowns	40	EA	$35.00	$1,400	1.500	60.0	$4,498		$5,898	$5,898
150											
151	**Partitions**										
152	2x6 Framing	1,044	BF	$0.60	$626	0.021	21.9	$1,642		$2,268	$2,268
153	2x4 Framing	9,396	BF	$0.60	$5,638	0.016	150.3	$11,268		$16,906	$16,906
154											
155	**Roof Framing**	**8,781**	**SF**								
156	Roof Sheathing 5/8" CDX	8,781	SF	$0.75	$6,586	0.017	149.3	$11,193		$17,779	$17,779
157	Joists 14" BCI6000 at 12" O.C.	9,220	LF	$3.10	$28,583	0.036	331.9	$24,882		$53,465	$53,465
158	Rim Joists	325	LF	$5.35	$1,739	0.047	15.3	$1,147		$2,886	$2,886
159	GL Beam Framing	10,260	BF	$2.60	$26,676	0.031	318.1	$23,848		$50,524	$50,524
160											
161	**Floor Framing**	**10,264**	**SF**								
162	GL Beam Framing	12,184	BF	$2.60	$31,680	0.031	377.7	$28,316		$59,996	$59,996
163	Floor Joists 11-7/8" BCI6000 at 16" O.C.	8,103	LF	$2.00	$16,206	0.029	235.0	$17,618		$33,824	$33,824
164	3/4" T&G Subflooring	10,264	SF	$0.95	$9,751	0.019	195.0	$14,619		$24,370	$24,370
165	2x4 Furring For Mechanical Chases	3,438	BF	$0.70	$2,407	0.021	72.2	$5,413		$7,820	$7,820
166	Plywood Ceilings	2,673	SF								
167											
168	**Subframing at Exterior Gratings**	1,410	BF	$2.50	$3,525	0.021	29.6	$2,219		$5,744	$5,744
169											
170	**Interior Stair Framing**	**2**	**Flights**	$400.00	$800	24.000	48.0	$3,599		$4,399	$4,399
171											
172	**Exterior Stair Framing**	157	SF	$7.50	$1,178	0.064	10.0	$750		$1,928	$1,928
173											
174											
175											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
176	**06200 Finish Carpentry**										
177	Wood Base	932	LF	$4.00	$3,729	0.030	28.0	$2,099		$5,828	$5,828
178	Misc Trim, Interior	990	LF	$3.00	$2,970	0.040	39.6	$2,969		$5,939	$5,939
179											
180	**06402 Interior Architectural Woodwork**										
181	Base Cabinets	52	LF	$190.00	$9,880	0.314	16.3	$1,085		$10,965	$12,062
182	Countertops, Plastic Laminate	52	LF	$30.00	$1,560	0.100	5.2	$346		$1,906	$2,097
183	Wall Cabinets	30	LF	$140.00	$4,200	0.314	9.4	$626		$4,826	$5,309
184	EPOS Counter, Self Supported	15	LF	$75.00	$1,125	0.100	1.5	$100		$1,225	$1,348
185	Vanities	17	LF	$75.00	$1,275	0.100	1.7	$113		$1,388	$1,527
186	Shelving, 7' High, 12" Wide Shelves	20	LF	$70.00	$1,400	0.229	4.6	$306		$1,706	$1,877
187	Shelving, 7' High, 18" Wide Shelves	20	LF	$95.00	$1,900	0.229	4.6	$306		$2,206	$2,427
188											
189											
190											
191											
192											
193											
194											
195											
196											
197											
198											
199											
200											
201											
202											
203											
204											
205											
206											
207	**Subtotal: 06 - WOOD AND PLASTIC**				$186,028		2,536.3	$189,782		$375,810	**$378,235**
208	Average Unit Price for this division is: $35.27 per SF based on 10,725 SF										
209											
210											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
211	**07 - THERMAL & MOISTURE PROTECTION**										
212											
213	**07210 Building Insulation**										
214	Soy Spray-On Foam Insulation										
215	Roof, Soy Foam R60 10"	8,781	SF	$10.00	$87,812					$87,812	$96,593
216	Floor, Soy Foam R40 6.5"	1,951	SF	$7.00	$13,657					$13,657	$15,023
217	Ext Wall 6" EPS	8,063	SF	$3.00	$24,189	0.020	161.3	$10,740		$34,929	$38,422
218	Ext Wall R11 Batts	8,063	SF	$0.30	$2,419	0.006	48.4	$3,223		$5,642	$6,206
219	Underslab Insulation 6"	2,183	SF	$4.50	$9,824	0.020	43.7	$2,910		$12,734	$14,007
220	Frog Skin Underlayment at Roof	8,781	SF	$0.35	$3,073	0.011	96.6	$6,432		$9,505	$10,456
221	Ceiling Vapor Retarder, 6 Mil	8,781	SF	$0.08	$702	0.006	52.7	$3,509		$4,211	$4,632
222	Vapor Retarder, 10 Mil (Ground Floor)	2,183	SF	$0.12	$262	0.003	6.5	$433		$695	$765
223	Air Barrier - Tyvek	8,063	SF	$0.16	$1,290	0.004	32.3	$2,151		$3,441	$3,785
224											
225	**07412 Metal Wall Panels**										
226	Metal Wall Panel, Corrugated	8,063	SF	$6.00	$48,378	0.043	346.7	$27,669		$76,047	$83,652
227											
228	**07610 Sheet Metal Roofing**	**8,781**	**SF**								
229	Standing Seam Metal Roofing, 22Ga	8,781	SF	$6.50	$57,078	0.057	500.5	$33,028		$90,106	$99,117
230	SAM	8,781	SF	$0.66	$5,796	0.007	61.5	$4,058		$9,854	$10,839
231											
232	**07620 Sheet Metal Flashing and Trim**										
233	Base Flashing	325	LF	$6.00	$1,950	0.040	13.0	$858		$2,808	$3,089
234	Misc Flashings	813	LF	$2.00	$1,625	0.040	32.5	$2,145		$3,770	$4,147
235											
236	**07720 Roof Accessories**										
237	Roof Hatch 24"x36"	2	EA	$1,600.00	$3,200	8.000	16.0	$1,056		$4,256	$4,682
238											
239	**07920 Joint Sealants**	10,725	SF	$0.05	$536	0.003	32.2	$2,414		$2,950	$2,950
240											
241											
242	**Subtotal: 07 - THERMAL & MOISTURE PROTECTION**				$261,791		1,443.9	$100,626		$362,417	**$398,365**
243	Average Unit Price for this division is: $37.14 per SF based on 10,725 SF										
244											
245											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
246	**08 - DOORS AND WINDOWS**										
247											
248	**08110 Steel Doors and Frames**										
249	HM Insulated 3'0"x7'0"	9	EA	$400.00	$3,600	4.000	36.0	$2,699		$6,299	$6,299
250	HM Insulated 3'0"x7'0" Dbl	1	PAIR	$800.00	$800	8.000	8.0	$600		$1,400	$1,400
251	HM Door, 3'0"x7'0"	2	EA	$400.00	$800	4.000	8.0	$600		$1,400	$1,400
252	HM Cell Doors 3"0"x7'0"	3	EA	$800.00	$2,400	5.000	15.0	$1,125		$3,525	$3,525
253	Insul. HM Frame	10	EA	$220.00	$2,200	4.000	40.0	$2,999		$5,199	$5,199
254	HM Frames	35	EA	$220.00	$7,700	4.000	140.0	$10,496		$18,196	$18,196
255	Add For Vision Lites	8	EA	$150.00	$1,200					$1,200	$1,200
256											
257	**08211 Flush Wood Doors**										
258	Solid Core Wood Flush Door 3x7	24	EA	$380.00	$9,120	4.000	96.0	$7,197		$16,317	$16,317
259	Solid Core Wood Flush Door 3x7, Pair	6	PAIR	$760.00	$4,560	8.000	48.0	$3,599		$8,159	$8,159
260											
261	**08331 Overhead Coiling Doors**										
262	Insulated Steel, Coiling Door 8'0"x6'6"	1	EA	$2,080.00	$2,080	16.000	16.0	$1,200		$3,280	$3,280
263	Loading Door at Post Office 3'0"x7'0"	1	EA	$800.00	$800	6.000	6.0	$450		$1,250	$1,250
264	Counter Doors 6'0"x3'0"	2	EA	$630.00	$1,260	6.000	12.0	$900		$2,160	$2,160
265											
266	**08500 Fiberglass Windows**	368	SF	$45.00	$16,560	0.143	52.6	$3,943		$20,503	$20,503
267											
268	**08710 Door Hardware**										
269	Int Hardware Sets	26	EA	$800.00	$20,800	4.000	104.0	$7,797		$28,597	$28,597
270	Cell Door Hardware, Manual, No Electronics	3	EA	$2,000.00	$6,000	8.000	24.0	$1,799		$7,799	$7,799
271	Int Hardware Sets, Double Doors	6	EA	$1,400.00	$8,400	6.000	36.0	$2,699		$11,099	$11,099
272	Ext Hardware Set	9	EA	$1,900.00	$17,100	6.000	54.0	$4,048		$21,148	$21,148
273	Ext Hardware Set, Double Doors	1	EA	$2,600.00	$2,600	8.000	8.0	$600		$3,200	$3,200
274											
275											
276											
277	**Subtotal: 08 - DOORS AND WINDOWS**				$107,980		703.6	$52,751		$160,731	**$160,731**
278	Average Unit Price for this division is: $14.99 per SF based on 10,725 SF										
279											
280											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
281	**09 - FINISHES**										
282											
283	**09250 Gypsum Board**										
284	GWB 5/8" Walls	24,582	SF	$0.40	$9,833	0.019	467.1	$35,018		$44,851	$49,336
285	GWB 5/8" Ceilings	10,725	SF	$0.40	$4,290	0.020	214.5	$16,081		$20,371	$22,408
286	Tape & Finish	24,582	SF	$0.12	$2,950	0.021	516.2	$38,699		$41,649	$45,814
287	Suspended GWB Ceilings	179	SF	$2.60	$465	0.057	10.2	$765		$1,230	$1,353
288	Soffiting	250	SF	$3.00	$750	0.086	21.5	$1,612		$2,362	$2,598
289											
290	**09500 Spray on Flooring & Wall Finish**										
291	Rhino Liner Flooring & Base	1,504	SF	$3.50	$5,263	0.100	150.4	$10,014		$15,277	$16,805
292	Rhino Liner Wall Finish	7,616	SF	$3.50	$26,657	0.100	761.6	$50,710		$77,367	$85,104
293	Rhino Liner Ceiling Finish	179	SF	$3.50	$627	0.100	17.9	$1,192		$1,819	$2,001
294											
295	**09650 Resilient Flooring**										
296	VCT	2,073	SF	$3.00	$6,219	0.029	60.1	$4,120		$10,339	$11,373
297	Resilient Base	323	LF	$0.70	$226	0.019	6.1	$418		$644	$708
298											
299	**09680 Carpet**										
300	Carpet Tiles	2,308	SF	$4.00	$9,232	0.026	60.0	$4,113		$13,345	$14,680
301	WOM, First Step Carpet Tile	953	SF	$9.00	$8,577	0.026	24.8	$1,700		$10,277	$11,305
302											
303	**09720 Wall Coverings**										
304	FRP	2,587	SF	$4.00	$10,347	0.025	64.7	$4,308		$14,655	$16,121
305											
306	**09910 Painting**										
307	Paint	11,720	SF	$0.15	$1,758	0.019	222.7	$15,534		$17,292	$19,021
308	Paint Exterior	1	LS	$1,500.00	$1,500	40.000	40.0	$2,790		$4,290	$4,719
309	Concrete Sealers	2,308	SF	$0.20	$462	0.013	30.0	$2,093		$2,555	$2,811
310	Paint Doors & Frames	52	EA	$5.00	$260	1.500	78.0	$5,441		$5,701	$6,271
311											
312	**Subtotal: 09 - FINISHES**				$89,416		2,745.8	$194,608		$284,024	**$312,428**
313	Average Unit Price for this division is: $29.13 per SF based on 10,725 SF										
314											
315											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
316	**10 - SPECIALTIES**										
317											
318	**10155 Toilet Compartments**										
319	Solid Plastics										
320	Standard Compartments	6	EA	$1,000.00	$6,000	3.000	18.0	$1,198		$7,198	$7,918
321	Urinal Screens	1	EA	$250.00	$250	1.500	1.5	$100		$350	$385
322											
323	**10410 Directories**										
324	Directories	1	EA	$2,500.00	$2,500	6.000	6.0	$399		$2,899	$3,189
325											
326	**10431 Signs**										
327	**Exterior Signs (Letters)**	1	LS	$5,000.00	$5,000					$5,000	$5,500
328											
329	**Interior Architectural Signage**										
330	Room Signage	44	EA	$20.00	$880	0.250	11.0	$732		$1,612	$1,773
331	ADA Signage	9	EA	$85.00	$765	1.000	9.0	$599		$1,364	$1,500
332											
333	**10520 Fire-Protection Specialties**										
334	FEC	6	EA	$175.00	$1,050	1.000	6.0	$399		$1,449	$1,594
335	FE Bracket Mounted	2	EA	$85.00	$170	0.500	1.0	$67		$237	$261
336											
337											
338											
339											
340											
341											
342											
343											
344											
345											
346											
347											
348											
349											
350											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
351	**10801 Toilet and Bath Accessories**										
352	Toilet Paper Dispenser - 2 Roll	8	EA	$67.00	$536	0.500	4.0	$266		$802	$882
353	Soap Dispensers	6	EA	$29.50	$177	0.500	3.0	$200		$377	$415
354	Seat Cover Dispenser	8	EA	$140.00	$1,120	0.500	4.0	$299		$1,419	$1,419
355	Robe Hooks	8	EA	$13.00	$104	0.250	2.0	$133		$237	$261
356	Shower Curtain Rod	2	EA	$52.00	$104	0.650	1.3	$87		$191	$210
357	Shower Curtain W/ Hooks	2	EA	$28.00	$56	0.250	0.5	$33		$89	$98
358	Paper Towel/Waste - Recessed	4	EA	$330.00	$1,320	1.500	6.0	$399		$1,719	$1,891
359	Grab Bar, Handicap, 36" X 54"	2	EA	$95.00	$190	1.500	3.0	$200		$390	$429
360	Grab Bar, Single Bar, 24"	2	EA	$38.00	$76	0.743	1.5	$100		$176	$194
361	Grab Bar, Single Bar, 36"	2	EA	$42.00	$84	0.743	1.5	$100		$184	$202
362	Grab Bar, Single Bar, 48"	2	EA	$50.00	$100	0.743	1.5	$100		$200	$220
363	Sanitary Napkin Disposal, Partition Mounted	4	EA	$100.00	$400	0.500	2.0	$150		$550	$550
364	Mirror 24" X 36"	2	EA	$63.00	$126	0.743	1.5	$100		$226	$249
365	Mirror 24" X 72"	2	EA	$361.00	$722	1.000	2.0	$133		$855	$941
366	Under Lavatory Guard	8	EA	$27.00	$216	0.250	2.0	$133		$349	$384
367	Janitor Shelf W/ Mop/Broom Holder, 34"	1	EA	$226.00	$226	0.743	0.7	$47		$273	$300
368											
369											
370											
371											
372											
373											
374											
375											
376											
377											
378											
379											
380											
381											
382	**Subtotal: 10 - SPECIALTIES**				$22,172		89.0	$5,974		$28,146	**$30,765**
383	Average Unit Price for this division is: $2.87 per SF based on 10,725 SF										
384											
385											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
386	**11 - EQUIPMENT**										
387											
388	**11451 Residential Appliances**										
389	Exhaust Fan, Residential Range Hood	2	EA	$250.00	$500	2.000	4.0	$266		$766	$843
390	Microwave	2	EA	$275.00	$550	1.000	2.0	$133		$683	$751
391	Undercounter Dishwasher	2	EA	$750.00	$1,500	1.500	3.0	$200		$1,700	$1,870
392	Refrigerator/Freezer	2	EA	$1,549.00	$3,098	1.500	3.0	$200		$3,298	$3,628
393	Range, 30" 4 Burner	2	EA	$999.00	$1,998	2.000	4.0	$266		$2,264	$2,490
394	Stackable Washer Dryer	2	EA	$1,900.00	$3,800	4.000	8.0	$533		$4,333	$4,766
395	Pellet Stove, Commercial	1	EA	$7,500.00	$7,500	24.000	24.0	$1,795		$9,295	$9,295
396											
397											
398											
399											
400											
401											
402											
403	**Subtotal: 11 - EQUIPMENT**				$18,946		48.0	$3,393		$22,339	**$23,643**
404	Average Unit Price for this division is: $2.20 per SF based on 10,725 SF										
405											
406											
407	**12 - FURNISHINGS**										
408											
409	**12491 Horizontal Louver Blinds**										
410	Horz. Louver Blinds	368	SF	$3.00	$1,104	0.029	10.7	$802		$1,906	$1,906
411											
412											
413											
414											
415											
416											
417	**Subtotal: 12 - FURNISHINGS**				$1,104		10.7	$802		$1,906	**$1,906**
418	Average Unit Price for this division is: $0.18 per SF based on 10,725 SF										
419											
420											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
421	**13 - SPECIAL CONSTRUCTION**										
422											
423	**13851 Fire Alarm (Addressable)**										
424	FACP, Testing, Engineering	1	EA	$12,000.00	$12,000	68.571	68.6	$5,484		$17,484	$24,478
425	Horn/Strobe	22	EA	$95.00	$2,090	1.000	22.0	$1,759		$3,849	$5,389
426	FA Signal Bell	1	EA	$75.00	$75	1.000	1.0	$80		$155	$217
427	Manual Pull Station	10	EA	$90.00	$900	1.000	10.0	$799		$1,699	$2,379
428	Heat Detector	5	EA	$100.00	$500	1.000	5.0	$400		$900	$1,260
429	Multi-Technology Smoke Detector	4	EA	$100.00	$400	2.500	10.0	$799		$1,199	$1,679
430	DD: Duct Smoke Sensor/Detector	1	EA	$350.00	$350	2.500	2.5	$200		$550	$770
431	CM: Control Module For Fan Shutdown	1	EA	$450.00	$450	4.000	4.0	$320		$770	$1,078
432	Tamper Switches	2	EA	$75.00	$150	1.000	2.0	$160		$310	$434
433	Flow Switches	2	EA	$125.00	$250	1.000	2.0	$160		$410	$574
434	FA Wiring 2 Conductors	1,440	LF	$0.22	$317	0.036	51.8	$4,141		$4,458	$6,241
435	Conduit 1/2"	1,440	LF	$0.40	$576	0.047	67.7	$5,413		$5,989	$8,385
436											
437	**13915 Fire-Suppression Piping**										
438	Wet Pipe Sprinkler Riser	1	EA	$2,500.00	$2,500	48.000	48.0	$3,784		$6,284	$7,855
439	Dry Pipe Sprinkler Riser	1	EA	$4,000.00	$4,000	48.000	48.0	$3,784		$7,784	$9,730
440	Ord. Hazard Wet Pipe Sprinkler System	5,363	SF	$0.96	$5,148	0.046	246.7	$19,448		$24,596	$30,745
441	Ord. Hazard Dry Pipe Sprinkler System	5,363	SF	$0.96	$5,148	0.046	246.7	$19,448		$24,596	$30,745
442	Dry Heads, Canopies, Cold Areas	1	LS	$1,000.00	$1,000					$1,000	$1,250
443											
444	**13920 Fire Pumps**										
445	Diesel Fire Pump	1	EA	$19,000.00	$19,000	40.000	40.0	$3,153		$22,153	$27,691
446											
447	**13999 OTHER**										
448	Wind Generator 50 KW	1	EA	$450,000.00	$450,000					$450,000	$450,000
449											
450											
451											
452	**Subtotal: 13 - SPECIAL CONSTRUCTION**				$504,854		876.0	$69,332		$574,186	**$610,900**
453	Average Unit Price for this division is: $56.96 per SF based on 10,725 SF										
454											
455											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
456	**14 - CONVEYING**										
457											
458	**14420 Personal Platform Lift**										
459	Graventa Genesis , 10' Rise	1	EA	$45,000.00	$45,000					$45,000	$45,000
460											
461											
462											
463											
464											
465											
466											
467	**Subtotal: 14 - CONVEYING**				$45,000					$45,000	**$45,000**
468	Average Unit Price for this division is: $4.20 per SF based on 10,725 SF										
469											
470											
471	**15 - MECHANICAL**										
472											
473	**15010 General Conditions**										
474	Field Engineering: Submittals, Shop & Record Dwgs, Operating Instructions, O&M Manuals	120	HRS	$5.00	$600	1.000	120.0	$4,620		$5,220	$5,220
475											
476	**Mob & Demob**	1	LS	$5,000.00	$5,000	160.000	160.0	$11,968		$16,968	$16,968
477											
478	Tests, Inspections	1	LS	$100.00	$100	28.571	28.6	$2,139		$2,239	$2,239
479	Supervision	28	WEEKS			40.000	1,120.0	$86,240	$1,750	$87,990	$87,990
480	Materials Control	28	WEEKS			20.000	560.0	$12,320	$1,925	$14,245	$14,245
481	Temporary Connections	1	LS	$1,000.00	$1,000	40.000	40.0	$2,992		$3,992	$3,992
482	Bond and Insurance (1%)	1	LS	$15,100.00	$15,100					$15,100	$15,100
483	Tools and Equipment (1% of Labor)	1	LS						$6,000	$6,000	$6,000
484	Seismic & Vibration Control	1	LS	$30,200.00	$30,200					$30,200	$30,200
485											
486											
487											
488											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
489	**15080 Mechanical Insulation**										
490	**Piping Insulation**										
491	Fiberglass Pipe Insulation, 1" Thick W/ ASJ										
492	Domestic Hot/Cold Water										
493	3/4" Pipe, Fittings	340	LF	$1.80	$612	0.070	23.8	$1,853		$2,465	$3,451
494	1" Pipe, Fittings	100	LF	$2.16	$216	0.073	7.3	$568		$784	$1,098
495	1-1/4" - 1-1/2" Pipe, Fittings	200	LF	$2.23	$446	0.076	15.2	$1,183		$1,629	$2,281
496	2" Pipe, Fittings	50	LF	$2.44	$122	0.080	4.0	$311		$433	$606
497	Hydronic										
498	3/4" Pipe, Fittings	960	LF	$1.80	$1,728	0.070	67.2	$5,232		$6,960	$9,744
499	1" Pipe, Fittings	160	LF	$1.84	$294	0.073	11.7	$911		$1,205	$1,687
500	1-1/4" - 1-1/2" Pipe, Fittings	160	LF	$2.23	$357	0.076	12.2	$950		$1,307	$1,830
501	2" Pipe, Fittings	160	LF	$2.44	$390	0.080	12.8	$997		$1,387	$1,942
502	2-1/2" - 3" Pipe, Fittings	160	LF	$3.04	$486	0.089	14.2	$1,106		$1,592	$2,229
503											
504	Insulated Protectors, ADA, Lav P-traps	4	EA	$16.80	$67	0.250	1.0	$78		$145	$203
505	VTR	3	EA	$20.00	$60	1.400	4.2	$327		$387	$542
506											
507	**Ductwork Insulation**										
508	Glass Fiber, Flexible Ductwrap, .75 Lb, FSK										
509	1" Thick (Typ For E/A Ducts, Round)	1,000	SF	$0.32	$320	0.046	46.0	$3,582		$3,902	$5,463
510	2" Thick (Typ For O/A Ducts, Round)	1,000	SF	$0.34	$340	0.053	53.0	$4,127		$4,467	$6,254
511											
512	**15140 Domestic Water Piping**										
513	Domestic HW/CW Supply, Type L Copper										
514	1/2" Pipe	480	LF	$3.49	$1,675	0.114	54.7	$4,312		$5,987	$7,484
515	3/4" Pipe	340	LF	$5.58	$1,897	0.121	41.1	$3,240		$5,137	$6,421
516	1" Pipe	100	LF	$8.30	$830	0.136	13.6	$1,072		$1,902	$2,378
517	1-1/4" Pipe	100	LF	$8.85	$885	0.159	15.9	$1,253		$2,138	$2,673
518	1-1/2" Pipe	100	LF	$11.40	$1,140	0.177	17.7	$1,395		$2,535	$3,169
519	2" Pipe	50	LF	$17.84	$892	0.219	11.0	$867		$1,759	$2,199
520	Fittings	1	LS	$1,682.78	$1,683	82.620	82.6	$6,178		$7,861	$7,861
521	Sterilization	1	LS	$25.00	$25	23.420	23.4	$1,845		$1,870	$2,338
522											
523											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
524	**15145 Domestic Water Piping Specialties**										
525	Mixing Valves	1	EA	$1,200.00	$1,200	2.000	2.0	$158		$1,358	$1,698
526	Water Hammer Arresters										
527	PDI Type A	2	EA	$56.00	$112	0.800	1.6	$126		$238	$298
528	PDI Type B	2	EA	$75.00	$150	0.800	1.6	$126		$276	$345
529											
530	**15150 Sanitary Waste and Vent Piping**										
531	Above Grade Copper DWV										
532	1-1/2" Pipe	290	LF	$7.32	$2,123	0.218	63.2	$4,982		$7,105	$8,881
533	2" Pipe	430	LF	$9.00	$3,870	0.229	98.5	$7,765		$11,635	$14,544
534	3" Pipe	110	LF	$13.08	$1,439	0.331	36.4	$2,869		$4,308	$5,385
535	4" Pipe	80	LF	$22.98	$1,838	0.480	38.4	$3,027		$4,865	$6,081
536	Fittings	1	LS	$2,781.00	$2,781	141.900	141.9	$11,186		$13,967	$17,459
537											
538	**15155 Drainage Piping Specialties**										
539	Floor Drains										
540	2", Cast Iron Body, Ni-Bronze Grate	4	EA	$257.00	$1,028	2.000	8.0	$631		$1,659	$2,074
541	3", Cast Iron Body, Ni-Bronze Grate	2	EA	$257.00	$514	2.000	4.0	$315		$829	$1,036
542	Floor Cleanouts	6	EA	$116.00	$696	1.000	6.0	$473		$1,169	$1,461
543	Vent Thru Roof, 4"	3	EA	$65.00	$195	1.000	3.0	$236		$431	$539
544	Trap Primer	3	EA	$60.00	$180	1.500	4.5	$355		$535	$669
545											
546	**15160 Storm Drainage Piping**										
547	Rain Leader, Svc Wt Cast Iron										
548	3" Pipe	100	LF	$9.60	$960	0.384	38.4	$3,027		$3,987	$4,984
549	4" Pipe	100	LF	$12.25	$1,225	0.419	41.9	$3,303		$4,528	$5,660
550	Fittings	1	LS	$235.88	$236	17.805	17.8	$1,403		$1,639	$2,049
551											
552											
553											
554											
555											
556											
557											
558											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
559	**15181 Hydronic Piping**										
560	**Pipe & Fittings, Copper Type L**										
561	3/4" Pipe	960	LF	$5.58	$5,357	0.121	116.2	$9,160		$14,517	$18,146
562	1" Pipe	160	LF	$8.30	$1,328	0.136	21.8	$1,719		$3,047	$3,809
563	1-1/4" Pipe	160	LF	$8.85	$1,416	0.159	25.4	$2,002		$3,418	$4,273
564	1-1/2" Pipe	160	LF	$11.40	$1,824	0.177	28.3	$2,231		$4,055	$5,069
565	2" Pipe	160	LF	$17.84	$2,854	0.219	35.0	$2,759		$5,613	$7,016
566	2-1/2" Pipe	160	LF	$30.98	$4,957	0.297	47.5	$3,745		$8,702	$10,878
567	3" Pipe	160	LF	$36.74	$5,878	0.329	52.6	$3,934		$9,812	$9,812
568	Fittings	1	LS	$3,720.75	$3,721	130.065	130.1	$9,731		$13,452	$13,452
569											
570	**Hydronic Specialties**										
571	Auto Air Vent, High Capacity	1	EA	$575.00	$575	1.330	1.3	$102		$677	$846
572	Air Separator	1	EA	$2,400.00	$2,400	8.000	8.0	$631		$3,031	$3,789
573	Expansion Tanks										
574	Diaphragm Type Expansion Tank, 44 Gal	1	EA	$874.50	$875	2.400	2.4	$189		$1,064	$1,330
575	DHW Expansion Tank	1	EA	$65.00	$65	1.000	1.0	$79		$144	$180
576	Relief Valve, ASME	2	EA	$135.00	$270	2.000	4.0	$315		$585	$731
577	Pressure Gauges	4	EA	$65.00	$260	0.500	2.0	$158		$418	$523
578	Thermometers	6	EA	$45.00	$270	0.500	3.0	$236		$506	$633
579	Pump, Equipment Flex Connector	4	EA	$150.00	$600	1.000	4.0	$315		$915	$1,144
580	Glycol System										
581	Mixing Tank	1	EA	$850.00	$850	6.000	6.0	$473		$1,323	$1,654
582	Propylene Glycol	198	GAL	$14.00	$2,773	0.242	47.9	$3,776		$6,549	$8,186
583	Valves, Piping, Feed Reg, Controls	1	LS	$400.00	$400	4.000	4.0	$315		$715	$894
584											
585											
586											
587											
588											
589											
590											
591											
592											
593											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
594	**15191 Fuel Oil Piping**										
595	Fuel Tank, 2,500 Gal Diked, Incl Level Gauge,										
596	Valves, Fittings, Vent	1	EA	$37,500.00	$37,500	40.000	40.0	$3,153		$40,653	$50,816
597	FOS, FOR Piping, 1/2" - 3/4" Type K	100	LF	$2.08	$208	0.049	4.9	$386		$594	$743
598	FOS, FOR Piping, 1" Type K	50	LF	$3.20	$160	0.129	6.5	$512		$672	$840
599	Day Tank/Pump Pkg, 100 Gal	1	EA	$2,200.00	$2,200	8.000	8.0	$631		$2,831	$3,539
600	Fuel Filter	1	EA	$22.00	$22	0.500	0.5	$39		$61	$76
601	Fuel Filter/Water Separator	1	EA	$50.00	$50	0.500	0.5	$39		$89	$111
602	Oil Safety Valve, 1/2"	2	EA	$26.00	$52	0.500	1.0	$79		$131	$164
603	Fusible Gate Valve, 1/2"	2	EA	$22.90	$46	0.500	1.0	$79		$125	$156
604	Drip Pan Under Burner	2	EA	$27.95	$56	0.750	1.5	$118		$174	$218
605											
606	**15194 Fuel Gas Piping**										
607	Connect To Service, Valves, Pipe, Fittings	1	LS	$1,000.00	$1,000	8.000	8.0	$631		$1,631	$2,039
608	Propane Tank, 10,000 Gal Costs $9,000	10,000	GAL	$0.90	$9,000					$9,000	$11,250
609	Conc Pad, Piers, Fence, Valves, Piping	1	LS	$9,000.00	$9,000					$9,000	$11,250
610	Sched 40 Blk Steel										
611	3/4" Pipe	100	LF	$3.25	$325	0.068	6.8	$536		$861	$1,076
612	1" Pipe	100	LF	$4.54	$454	0.068	6.8	$536		$990	$1,238
613	Fittings	1	LS	$233.70	$234	8.160	8.2	$646		$880	$1,100
614											
615	**15410 Plumbing Fixtures**										
616	Water Closet, Tank Type, Residence	3	EA	$332.00	$996	5.000	15.0	$1,182		$2,178	$2,723
617	Water Closet, Tank Type, Residence, ADA	1	EA	$332.00	$332	5.000	5.0	$394		$726	$908
618	Service Sink	1	EA	$550.00	$550	5.000	5.0	$394		$944	$1,180
619	Water Closet, Flush Valve	6	EA	$613.00	$3,678	8.000	48.0	$3,784		$7,462	$9,328
620	Wall Hung Water Closet, Infrared FV	2	EA	$782.00	$1,564	8.000	16.0	$1,261		$2,825	$3,531
621	Wall Hung Lavatory, Residential	3	EA	$474.00	$1,422	8.000	24.0	$1,892		$3,314	$4,143
622	Wall Hung Lavatory, Residential ADA	1	EA	$524.00	$524	8.000	8.0	$631		$1,155	$1,444
623	Countertop Lavatory, ADA	6	EA	$454.00	$2,724	5.000	30.0	$2,365		$5,089	$6,361
624	Countertop Lavatory, ADA	2	EA	$454.00	$908	5.000	10.0	$788		$1,696	$2,120
625	Wall Hung Urinal	2	EA	$355.00	$710	8.000	16.0	$1,261		$1,971	$2,464
626	Shower, Residence	3	EA	$465.00	$1,395	12.000	36.0	$2,838		$4,233	$5,291
627	Shower, Residence, ADA	1	EA	$800.00	$800	12.000	12.0	$946		$1,746	$2,183
628	Shower, Public Toilets	4	EA	$1,200.00	$4,800	12.000	48.0	$3,784		$8,584	$10,730

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
629	Tub/Shower, ADA	2	EA	$1,200.00	$2,400	12.000	24.0	$1,892		$4,292	$5,365
630	Hose Bibb, T-Handle	4	EA	$25.00	$100	4.000	16.0	$1,261		$1,361	$1,701
631	Wall Hydrant Freeze-Proof	3	EA	$195.00	$585	6.000	18.0	$1,419		$2,004	$2,505
632	St. Stl. Sink, Double Bowl	2	EA	$548.00	$1,096	8.000	16.0	$1,261		$2,357	$2,946
633	Washer Wall Box, Flush Mtd	1	EA	$45.00	$45	4.000	4.0	$315		$360	$450
634											
635	**15415 Drinking Fountains and Water Coolers**										
636	Drink Ftn, High-Low Dish Type	1	EA	$770.00	$770	6.000	6.0	$473		$1,243	$1,554
637											
638	**15441 Domestic Water Pumps, Equipment**										
639	Domestic Water Pump, Bronze, Frac HP	1	EA	$420.00	$420	4.000	4.0	$315		$735	$919
640	DHW Expansion Tank	1	EA	$100.00	$100	1.000	1.0	$79		$179	$224
641	Pressure Pump, Switch, Controls	1	EA	$2,500.00	$2,500	8.000	8.0	$598		$3,098	$3,098
642	Hydropneumatic Tank	1	EA	$1,500.00	$1,500	4.000	4.0	$299		$1,799	$1,799
643											
644	**15445 Sewage Pumps , WTP**										
645	Lift Station, Basin, Duplex Pump, Ctrls	1	LS	$2,500.00	$2,500	12.000	12.0	$946		$3,446	$4,308
646											
647	**Sanitary Sewerage**										
648	Sewer Treatment Plant, Lifewater System	1	EA	$300,000.00	$300,000	200.000	200.0	$15,766	$7,500	$323,266	$404,083
649											
650	**15450 Water Storage Tanks**										
651	Potable Water: 8000 Gallon	2	EA	$20,000.00	$40,000	40.000	80.0	$6,307		$46,307	$57,884
652	Waste Water: 8000 Gallon	3	EA	$20,000.00	$60,000	40.000	120.0	$9,460		$69,460	$86,825
653	Fire Supply Water: 8000 Gallon	2	EA	$20,000.00	$40,000	40.000	80.0	$6,307		$46,307	$57,884
654	Helical Anchors	28	EA	$1,500.00	$42,000					$42,000	$42,000
655											
656	**15471 Water Trtmt/Filtration Equipment**	1	LS	$5,000.00	$5,000	16.000	16.0	$1,261		$6,261	$7,826
657											
658	**15486 Domestic Water Heaters**										
659	Hot Water Heater, Indirect	1	EA	$2,800.00	$2,800	4.000	4.0	$315		$3,115	$3,894
660	Circ Pump, Valves, Specialties, Fittings	1	EA	$500.00	$500	8.000	8.0	$631		$1,131	$1,414
661	**15510 Heating Boilers and Accessories**										
662	Boilers - Cast Iron Oil Fired, 589 MBH	1	EA	$7,200.00	$7,200	36.923	36.9	$2,909		$10,109	$12,636
663	Boiler Trim, Foundation, Specialties	1	LS	$5,400.00	$5,400	27.714	27.7	$2,184		$7,584	$9,480

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
664											
665	**15550 Breechings, Chimneys, and Stacks**										
666	**Stack and Flue Vents**										
667	Pressure Stack, 8"	12	LF	$77.00	$924	0.308	3.7	$292		$1,216	$1,520
668	Fittings, 8"	4	EA	$400.00	$1,600	0.615	2.5	$197		$1,797	$2,246
669	Pressure Stack, 12"	20	LF	$98.00	$1,960	0.364	7.3	$575		$2,535	$3,169
670	Fittings, 12"	3	EA	$500.00	$1,500	0.727	2.2	$173		$1,673	$2,091
671	Roof Support Assy, Penetration, Curb	1	EA	$600.00	$600	0.909	0.9	$71		$671	$839
672	Stack Cap, Supports	1	EA	$400.00	$400	0.485	0.5	$39		$439	$549
673											
674	**15725 Modular Indoor Air-Handling Units**										
675	Component Air Handlers, Incl Mix Box, Coils, Filter Section, Int. Isolation										
676	HRV-1: Heat Recovery Ventilator 6,100 CFM	1	EA	$21,315.00	$21,315	80.000	80.0	$6,288		$27,603	$34,504
677											
678	**15764 Convection Heating Units**										
679	(Typ Assy Includes Fittings, AAV, Ctrl										
680	Isolation Valves, Bal Valve)										
681	Baseboard Radiation										
682	No. Of Units (Zones)	22	EA	$150.00	$3,300	2.000	44.0	$3,469		$6,769	$8,461
683	Enclosure, 24"	260	LF	$26.00	$6,760	0.200	52.0	$4,099		$10,859	$13,574
684	Fintube, 3/4", 1 Row	156	LF	$14.00	$2,184	0.200	31.2	$2,460		$4,644	$5,805
685											
686	**15766 Cabinet Unit Heaters**										
687	Cabinet Unit Heaters	3	EA	$1,200.00	$3,600	4.000	12.0	$946		$4,546	$5,683
688											
689	**15767 Propeller Unit Heaters**										
690	Unit Heaters	6	EA	$700.00	$4,200	4.000	24.0	$1,892		$6,092	$7,615
691											
692	**15815 Metal Ducts**										
693	Low Velocity Duct, Incl Allowance For Waste, Supports and Joints										
694	Round Spiral, Galvanized	3,200	LBS	$2.20	$7,040	0.094	300.8	$23,642		$30,682	$38,353
695	Rectangular, Galvanized	1,600	LBS	$2.47	$3,952	0.105	168.0	$13,204		$17,156	$21,445
696											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
697	**15820 Duct Accessories**										
698	Fire/Smoke Dampers	2	EA	$350.00	$700	2.000	4.0	$314		$1,014	$1,268
699	Duct Access Doors	2	EA	$28.00	$56	0.750	1.5	$118		$174	$218
700	Volume Dampers	20	EA	$18.00	$360	0.500	10.0	$786		$1,146	$1,433
701	Flex Duct Connectors	20	EA	$24.00	$480	0.750	15.0	$1,179		$1,659	$2,074
702											
703	**15830 Fans**										
704	Exhaust Fans										
705	Large Public Toilets, Utility Set, Hood	2	EA	$1,200.00	$2,400	4.000	8.0	$629		$3,029	$3,786
706	Public Kitchen Range Hoods	2	EA	$240.00	$480	4.000	8.0	$629		$1,109	$1,386
707	Small Toilet Rooms, Apartments	4	EA	$240.00	$960	4.000	16.0	$1,258		$2,218	$2,773
708	Vent Fans, Utility Sets										
709	Boiler Room Ventilation, Plenum, Dampers	1	LS	$1,200.00	$1,200	6.000	6.0	$472		$1,672	$2,090
710											
711	**15855 Diffusers, Registers, and Grilles**										
712	S/A Diffusers	40	EA	$75.00	$3,000	1.000	40.0	$3,144		$6,144	$7,680
713	R/A, E/A, Transfer Grilles	35	EA	$28.00	$980	0.660	23.1	$1,816		$2,796	$3,495
714											
715	**15856 Intake and Relief Ventilators**										
716	Louvers, Fixed Alum Incl. Birdscreen	20	SF	$50.00	$1,000	0.400	8.0	$629		$1,629	$2,036
717											
718	**15900 HVAC Instrumentation and Controls**										
719	Control Points	58	PTS	$700.00	$40,600					$40,600	$56,840
720											
721	**15950 Testing, Adjusting, and Balancing**										
722	Balance Hydronic System	1	LS	$200.00	$200	9.500	9.5	$754		$954	$1,336
723	Balance Air Systems	1	LS	$200.00	$200	18.000	18.0	$1,429		$1,629	$2,281
724	Commissioning, Startup	96	HRS			1.000	96.0	$7,619		$7,619	$10,667
725											
726											
727											
728	**Subtotal: 15 - MECHANICAL**				$829,262		5,653.4	$404,544	$17,175	$1,250,981	**$1,510,369**
729	Average Unit Price for this division is: $140.83 per SF based on 10,725 SF										
730											
731											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
732	**16 - ELECTRICAL**										
733											
734	**16010 Basic Electrical Requirements**										
735	Field Engineering: Submittals, Shop & Record										
736	Dwgs, Operating Instructions, O&M Manuals	80	HRS	$5.00	$400	1.000	80.0	$3,080		$3,480	$3,480
737	Permits, Tests, Inspections	1	LS	$100.00	$100	40.000	40.0	$2,992		$3,092	$3,092
738	Supervision	16	WEEKS			40.000	640.0	$49,280	$1,000	$50,280	$50,280
739	Materials Control	16	WEEKS			20.000	320.0	$7,040	$1,100	$8,140	$8,140
740	Bond and Insurance	1	LS	$6,300.00	$6,300					$6,300	$6,300
741	Small Tools	1	LS						$4,700	$4,700	$4,700
742	Equipment	1	LS						$7,100	$7,100	$7,100
743											
744	**16060 Grounding and Bonding**										
745	Ground Bus 12x2x1/4	1	EA	$35.00	$35	0.250	0.3	$24		$59	$74
746	1" PVC 1#2 Ground	30	LF	$1.57	$47	0.082	2.5	$200		$247	$309
747	1" PVC 1#1/0 Ground	30	LF	$1.97	$59	0.088	2.6	$208		$267	$334
748	Ground Rod 3/4" x 10'	1	EA	$65.00	$65	1.000	1.0	$80		$145	$181
749	Exothermic Connection	1	EA	$8.00	$8	0.250	0.3	$24		$32	$40
750											
751	**16072 Electrical Supports and Seismic Restraints**										
752	Seismic Engineering and Supports	10,725	SF	$0.30	$3,218					$3,218	$3,218
753											
754	**16075 Electrical Identification**	10,725	SF	$0.05	$536					$536	$670
755											
756											
757											
758											
759											
760											
761											
762											
763											
764											
765											
766											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
767	**16140 Wiring Devices**										
768	**Receptacles: Complete Assemblies**	**134**	**EA**								
769	Duplex 20A 125V	104	EA	$5.38	$557	0.200	20.7	$1,655		$2,212	$2,765
770	Quadruplex 20A 125V	8	EA	$10.76	$86	0.400	3.2	$256		$342	$428
771	GFCI Receptacles	6	EA	$19.56	$117	0.250	1.5	$120		$237	$296
772	WP GFCI Receptacles	7	EA	$27.01	$189	0.300	2.1	$168		$357	$446
773	Special Purpose Receptacles	1	EA	$59.50	$60	0.500	0.5	$40		$100	$125
774	Cord Drop Receptacle	7	EA	$120.00	$840	1.500	10.5	$839		$1,679	$2,099
775	Floor Outlet	9	EA	$160.00	$1,440	2.500	22.5	$1,799		$3,239	$4,049
776	Add For:										
777	3/4in. EMT	4,007	LF	$0.55	$2,204	0.035	140.2	$11,209		$13,413	$16,766
778	3/4in. EMT CONN	267	EA	$1.84	$491	0.030	8.0	$640		$1,131	$1,414
779	3/4in. EMT CPLG	267	EA	$1.81	$483					$483	$604
780	3/4in. EMT STRAP 1-H	401	EA	$0.16	$64	0.025	10.0	$799		$863	$1,079
781	#10 THHN	6,410	LF	$0.46	$2,949	0.006	38.5	$3,078		$6,027	$7,534
782	#12 THHN	6,410	LF	$0.30	$1,923	0.005	32.1	$2,566		$4,489	$5,611
783	UTILITY BOX 2-1/2 D 1/2 KO	134	EA	$2.90	$387	0.200	26.7	$2,135		$2,522	$3,153
784	1G SS RECEPTACLE PLATE	134	EA	$3.45	$461	0.025	3.3	$264		$725	$906
785	1in. x10 S-TAP SCREW	668	EA	$0.03	$20	0.020	13.4	$1,071		$1,091	$1,364
786	**Multi-Outlet Assemblies**	**50**	**LF**								
787	MOA 4000	50	LF	$9.75	$488	0.200	10.0	$799		$1,287	$1,609
788	Add For Power Outlets	25	EA	$16.85	$421	0.200	5.0	$400		$821	$1,026
789	Add For Data Outlets	25	EA	$18.75	$469	0.150	3.8	$304		$773	$966
790											
791	**Heat Trace**	200	LF	$14.00	$2,800	0.057	11.4	$911		$3,711	$4,639
792											
793	**16211 Electricity Metering**										
794	CT Cabinet, Main Disconnect, 600A	1	EA	$3,900.00	$3,900	8.000	8.0	$640		$4,540	$5,675
795											
796	**16231 Packaged Engine Generators**										
797	Generator, In Arctic Pack 150 KW	1	EA	$125,000.00	$125,000	80.000	80.0	$6,396		$131,396	$164,245
798											
799	**16269 Variable Frequency Controllers**										
800	VFD 5 HP Motor	1	EA			10.800	10.8	$863		$863	$1,079
801	VFD 15 HP Motor	1	EA			19.440	19.4	$1,551		$1,551	$1,939

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
802											
803	**16415 Transfer Switches**										
804	ATS	400	AMP	$12.00	$4,800	0.025	10.0	$799		$5,599	$6,999
805											
806	**16420 Enclosed Controllers**										
807	Fractional To 1/4 HP	15	EA	$65.00	$975	1.000	15.0	$1,199		$2,174	$2,718
808	Wiring: Nom. 3/4" EMT 3#10, 1N	750	LF	$2.77	$2,078	0.094	70.5	$5,636		$7,714	$9,643
809	Starter/Disconnects 0.5 HP	5	EA	$250.00	$1,250	3.000	15.0	$1,199		$2,449	$3,061
810	3/4" EMT, 3#10, 1#10	400	LF	$2.77	$1,108	0.094	37.6	$3,006		$4,114	$5,143
811	Starter/Disconnects 1 HP	2	EA	$250.00	$500	3.000	6.0	$480		$980	$1,225
812	3/4" EMT, 3#10, 1#10	160	LF	$2.77	$443	0.094	15.0	$1,199		$1,642	$2,053
813	Starter/Disconnects 5 HP	1	EA	$740.00	$740	5.000	5.0	$400		$1,140	$1,425
814	3/4" EMT, 3#10, 1#10	80	LF	$2.77	$222	0.094	7.5	$600		$822	$1,028
815	Starter/Disconnects 10 HP	1	EA	$1,075.00	$1,075	8.000	8.0	$640		$1,715	$2,144
816	3/4" EMT, 3#10, 1#10	80	LF	$2.77	$222	0.094	7.5	$600		$822	$1,028
817	Starter/Disconnect, AHU 15 HP	1	EA	$1,075.00	$1,075	8.000	8.0	$640		$1,715	$2,144
818	3/4" EMT, 3#10, 1#10	80	LF	$2.77	$222	0.094	7.5	$600		$822	$1,028
819											
820	**16441 Switchboards**										
821	600A MDP	1	LS	$8,800.00	$8,800	40.000	40.0	$3,198		$11,998	$14,998
822											
823	**16442 Panelboards**										
824	Panelboards, 120/208V, 3 Phase, 4 Wire, 225A, MLO, 42 Circuit, W/ Breakers	3	EA	$1,650.00	$4,950	10.000	30.0	$2,398		$7,348	$9,185
825	Panelboards, 120/208V, 3 Phase, 4 Wire, 100A, MLO, 42 Circuit, W/ Breakers	3	EA	$700.00	$2,100	10.000	30.0	$2,398		$4,498	$5,623
826											
827	**Feeders & Subfeeds**										
828	2 Sets 3" RGS, 3#350 KCMIL, 1#1	100	LF	$103.58	$10,358	0.946	94.6	$7,563		$17,921	$22,401
829	225 Amp: 2" RGS, 4#4/0, 1#4	240	LF	$35.45	$8,508	0.339	81.4	$6,508		$15,016	$18,770
830	100 Amp: 1-1/4" RGS, 4#2, 1#8	300	LF	$10.09	$3,027	0.214	64.2	$4,802		$7,829	$7,829
831											
832											
833											
834											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
835	**16511 Interior Lighting**										
836	Fluorescent Lighting	154	EA	$120.00	$18,480	1.250	192.5	$15,390		$33,870	$42,338
837	Compact Fluorescents	10	EA	$125.00	$1,250	1.000	10.0	$799		$2,049	$2,561
838	Hi Bay Fluorescents	8	EA	$840.00	$6,720	3.000	24.0	$1,919		$8,639	$10,799
839	Occupancy Sensors	15	EA	$156.00	$2,265	1.250	18.2	$1,455		$3,720	$4,650
840	Exit Sign, LED	19	EA	$156.00	$2,933	1.000	18.8	$1,503		$4,436	$5,545
841	Emerg. Batt Wall Pack	9	EA	$100.00	$880	1.000	8.8	$704		$1,584	$1,980
842	Switches	48	EA	$17.81	$862	0.529	25.6	$2,047		$2,909	$3,636
843	Wiring: 3/4" Cond, 3-#12, Gnd	5,600	LF	$1.52	$8,512	0.091	509.6	$40,742		$49,254	$61,568
844											
845	**16521 Exterior Lighting**										
846	Wall Mtd LED at Personal Doors	5	EA	$600.00	$3,000	2.000	10.0	$799		$3,799	$4,749
847	Wall Mtd LED Area Lights	8	EA	$850.00	$6,800	2.500	20.0	$1,599		$8,399	$10,499
848	Wiring: 3/4" Cond, 3-#12, Gnd	650	LF	$1.52	$988	0.091	59.2	$4,733		$5,721	$7,151
849	Lighting Controls	1	LS	$1,500.00	$1,500	16.000	16.0	$1,279		$2,779	$3,474
850											
851	**16715 Voice and Data Communication Cabling**										
852	**Voice and Data Communication Cabling**										
853	Telecomm Racks	1	EA	$2,500.00	$2,500	8.000	8.0	$640		$3,140	$3,925
854	Rack Grounding Bus Bar	1	EA	$50.00	$50	2.000	2.0	$160		$210	$263
855	Telecomm Outlets	12	EA								
856	Box, Cover Plate, Fittings	12	EA	$16.00	$192	1.000	12.0	$959		$1,151	$1,439
857	Quad Outlet, 2 Data, 2 Telephone	12	EA	$32.00	$384	1.000	12.0	$959		$1,343	$1,679
858	Conduit, Fittings 1"	1,680	LF	$1.20	$2,016	0.086	144.5	$11,553		$13,569	$16,961
859	Cat 5e Cable	3.8	MLF	$150.00	$576	10.000	38.4	$3,070		$3,646	$4,558
860	Service To Building	1	LS	$5,000.00	$5,000					$5,000	$6,250
861											
862											
863											
864											
865											
866	**Subtotal: 16 - ELECTRICAL**				$273,478		3,250.7	$235,606	$13,900	$522,984	**$630,205**
867	Average Unit Price for this division is: $58.76 per SF based on 10,725 SF										
868											
869											

Line No.	Description	Qty	UNITS	Material Costs Unit	Material Costs Total	Labor Hours Units	Labor Hours Totals	Labor Cost	Equip Cost	Total Cost	Total Cost w/ OH & P
870	**A1 - AZEK SHEET SIDING**										
871											
872	Metal Wall Panel, Corrugated	(8,063)	SF	$6.00	($48,378)	0.043	(346.7)	($27,669)		($76,047)	($83,652)
873	Azek Sheet Siding	8,063	SF	$5.00	$40,315	0.024	193.5	$14,474		$54,789	$54,789
874	Trim	3,024	LF	$5.00	$15,118	0.040	120.9	$9,043		$24,161	$24,161
875											
876											
877											
878											
879											
880											
881											
882											
883											
884											
885											
886											
887											
888											
889											
890											
891											
892											
893											
894											
895											
896											
897											
898	**General Requirements**	15%									($705)
899	**General Contractor Overhead & Profit**	14%									($757)
900	**General Contractor Bond & Insurance**	2.5%									($154)
901											
902	**Subtotal: A1 - AZEK SHEET SIDING**				$7,055		(32.3)	($4,152)		$2,903	**($6,318)**
903	Average Unit Price for this division is: $-0.59 per SF based on 10,725 SF										
904											