Agency: Commerce, Community and Economic Development

Grants to Named Recipients (AS 37.05.316)

Grant Recipient: Mt. Sanford Tribal Consortium

Project Title:

Federal Tax ID: 92-0143492

House District: 6 / C

Project Type: New Construction and Land Acquisition

Mount Sanford Tribal Consortium - Chistochina Clinic and Multi-Use Facility

State Funding Requested: \$500,000

One-Time Need

Brief Project Description:

Construct a medium sized health clinic that will also provide space for health programs and health administration.

Funding Plan:

Total Cost of Project: \$4,563,502							
	Funding Secured		Other Pending R	Other Pending Requests		Anticipated Future Need	
	Amount	FY	Amount	FY	Amount	FY	
Federal Funds	\$79,150	2009	\$750,000	2010	\$882,470	2010	
Denali Commission	\$419,720	2009	\$1,932,162	2010			
Total	\$498,870	_	\$2,682,162	-	\$882,470	_	
Explanation of Other Funds:							
MSTC has prepared and submitted a loan guarantee request to the USDA in addition to the grant request. Should MSTC be unable to							

procure all of the requested funding from various agencies, we will execute a loan to cover funding shortfalls.

Detailed Project Description and Justification:

Mt Sanford Tribal Consortium (MSTC) is a sub-regional Tribal health organization, based in Chistochina AK that serves the Athabascan Indian villages of Cheesh'na and Mentasta Lake. The organization manages the IHS Compact for the two villages and provides a broad array of health services for the villages, as well as, clinic health services to the general public.

MSTC is submitting this funding request to construct a clinic and multi-use health facility in Chistochina, Alaska. The facility will house Tribal health programs and a medium sized health clinic that will provide expanded health and dental services for residents of MSTC's service area. This space will house a 3,012 sq. ft. clinic and an additional 2,982 sq. ft. of the facility will provide space for health programs, a conference room, and office space for health administration. MSTC is requesting \$500,000 of State funds to contribute to the total cost of the health facility project of \$4,563,500. This request will match additional funding sources from other grants and loans. The facility design is 65% complete and has been funded by a Denali Commission grant of \$419,720. The design is expected to reach 95% completion by March, 2010, under the continuing Denali Commission grant, and pending funding procurement, will begin construction this spring. MSTC has partnered with Alaska Native Tribal Health Consortium for administration of the design process. This has included coordinating the planning and design of the facility to ensure the best interests of its Tribal members.

MSTC currently expends large sums of Contract Health Care funds for it IHS beneficiaries on many services that could be

For use by Co-chair Staff Only:
\$500,000 Approved

Total Project Snapshot Report

FY 2011 Capital Budget

TPS Report 53927v3

provided locally in the service area. The primary obstacle in providing these services is the lack of an adequate health facility. Existing clinics in the service area are undersized, ill equipped and in disrepair. The proposed project will construct a multiuse facility in Chistochina that will provide adequate space to house health programs and administration and a well equipped, medium sized health clinic to provide expanded mid level services, dental, behavioral health services and itinerant advanced care services for residents in the Upper Copper River area. The new clinic will dramatically improve services to medically underserved populations while capturing a substantially larger market share of those residents currently purchasing services from outside of the service area to increase revenues.

MSTC's health clinic in Chistochina is housed in a small log cabin that shares space with the Cheesh'na Tribe's administration. It contains only one exam room and a small waiting room. The problems at the existing facility are numerous; it lacks privacy, has no laundry facilities, nor medical staff offices. The medical facility space is also shared with other non-medical governmental services making private medical consultation problematic. Renovation and expansion of the existing space was considered but is not practical because of the many deficiencies. A more economical alternative is to replace the facility.

In spite of its ability to provide innovative and effective services, MSTC's administration offices are currently housed in inadequate facilities that are inefficient and do not provide adequate space, comfort, privacy, storage, etc. necessary for the proper delivery of services. There are no other facilities available in the community to house programs and services, and the existing facilities are expensive to operate due to energy inefficiency and disrepair. This project addresses these deficiencies by constructing a multiuse facility that will provide adequate space for health program administration and clinical operations that will improve health services for the area's residents.

The new facility will be located near other Tribal/community facilities, allowing interconnection to a new water/sewer system being built by a Village Safe Water grant to Cheesh'na Tribal Council. In addition, interconnection will be possible to a biomass heating system (wood fired boiler) that the Tribe is constructing in partnership with the Alaska Energy Authority. These utilities will provide heat, water, and septic services for the facilities, resulting in substantial cost savings in constructing and operating the facility.

The Copper River region, in which MSTC operates, is approximately the size of Ohio and has a total population of approximately 3,500 residents living in small villages and communities, spread over 24,000 square miles. Classified as an "unorganized borough", it has no local or municipal government and very few state services. The proposed facility will serve community members of Chistochina and neighboring communities, as well as tourists and other visitors needing medical attention.

As a founding member and administrator of the Copper River Regional Health Network (CRRHN), MSTC has participated with other health care providers in a series of Regional Health Care Planning meetings that have been sponsored by the Denali Commission. These meetings are based in an agreement among providers regarding what facilities were needed, services to be provided by the various agencies and how the agencies would cooperate to ensure that adequate services were provided throughout the region. CRRHN members have unanimously supported and agreed that this project is necessary, urgent, and will provide vital services to residents of our region.

Pending funding procurement, the facility construction is scheduled to begin in July 2010, with a completion date of April, 2012.

Page 2

For use by Co-chair Staff Only:

Project Timeline:

The following timeline describes project activities that will require funding expenditures:	
1st Quarter:	
Environmental Review	
Materials procurement	
 Facility foundation and utilities installation 	
2nd – 5th Quarters:	
Facility construction	
6th Quarter:	
Contractor cleanup and demobilization	
7th Quarter:	
Facilities inspection and acceptance	
Project closeout activities	

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

Mt. Sanford Tribal Consortium

Grant Recipient Contact Information:

Name:	Evelyn Beeter
Address:	P.O. Box 357
	Gakona, AK 99586
Phone Number:	(907)822-5399
Email:	ebeeter@mstc.org

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

For use by Co-chair Staff Only:



P.O. Box 357 • Gakona, Alaska 99586 • Phone (907) 822-5399 • Fax (907) 822-5810

MEMO

DATE: February 8, 2010

RE: Legislative Finance Capital Project Funding Request

Mt Sanford Tribal Consortium (MSTC) respectfully submits this *Capital Project Funding Request* for a *Chistochina Clinic and Multi-use Facility*.

The following documents have been attached with this request:

- Resolutions and Letters of Support, including:
 - Denali Commission commitment letter
 - o Denali Commission Design Award
 - Other regional health providers support letters
 - Resolutions of support
- 35% Design Narrative and GeoTech Report
- 65% Design Narrative
- Budget Spreadsheets
- Audit Documents

Please let me know if you have additional questions regarding this request. Thank you for your consideration.

Respectfully,

Berti lef)

Evelyn Beeter, President Mt. Sanford Tribal Consortium

Denali Commission 510 L Street, Suite 410 Anchorage, AK 99501

907.271.1414 tel 907.271.1415 fax 888.480.4321 toll free www.denali.gov



January 29, 2010

Ms. Evelyn Beeter President / CEO Mt. Sanford Tribal Consortium P.O. Box 357 Gakona, AK 99586

Dear Ms. Beeter,

The Denali Commission is pleased to provide this letter to document the Denali Commission's involvement in the development of the Mt. Sanford Tribal Consortium (MSTC) proposed health services facility to be constructed in Chistochina, Alaska.

As you know, the Denali Commission health facilities primary care clinic application process is gated, and requires several steps in the due diligence process. These include:

- Community planning
- Business plan
- 100% Design and cost estimate
- Site control
- · Secured required cost share match

The Denali Commission primary care clinic business plan is rigorous, and requires a significant investment of time and energy by community leadership. MSTC produced a sound plan, which received approval by the Commission in the spring of 2009.

Following the approval of the business plan, MSTC was invited into the design phase, sponsored by the Denali Commission. The Commission has been a major funder in the planning and design phase of the facility, which includes approximately 3,600 square feet of primary care clinic space, embedded in a health services facility. The building will also include approximately 1,450 square feet of administrative space for MSTC. To date, the Commission has invested \$419,720 in this design phase, which has produced 65% design drawings, as of January 13, 2010. The design timeline will result in 100% design drawings by the end of March 2010.

As the design reaches 100% and a 100% cost estimate is produced, the MSTC project will be considered for construction funding. The Commission has placed the Chistochina facility on the FY 2010 primary care clinics prioritized list for construction funding. Although this is not a guarantee of FY 2010 construction money being awarded to this project, as there remain due diligence milestones for MSTC to attain, it does demonstrate

MSTC, Chistochina

that the Denali Commission Health Program is closely monitoring the progress of this project. And it has received a prioritized rank in our funding plan.

One of those milestones still to attain is the required cost share match. The Commission encourages all potential construction grant recipients to actively seek creative solutions to the realization of match, so we are pleased to share this information about our involvement thus far in the MSTC/Chistochina health facility project, as you continue your work to make this project a reality.

Please feel free to call (907/271-1779) or email (<u>nmerriman@denali.gov</u>) me at your convenience if additional information is needed.

Sincerely,

henjoghe

Nancy Merriman Health Facilities Sr. Program Manager

cc: Chronological George Drinkwater, MSTC Joan Herrmann, MSTC Chistochina Project File

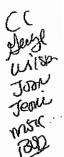
2



Denali Commission 510 L Street, Suite 410 Anchorage, AK 99501

907.271.1414 tel 907.271.1415 fax 888.480.4321 toll free www.denali.gov

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April 10, 2009

Ms. Evelyn Beeter President Mount Sanford Tribal Consortium PO Box 357 Gakona, AK 99586

RE: Chistochina Health Clinic Status - Notice of Award

Dear Ms. Beeter,

The Denali Commission is pleased to inform you that we have approved a financial assistance award (FAA) for the design of the Mount Sanford Tribal Consortium's (MSTC) Clinic to be located in Chistochina. Pursuant to the letter correspondence between the Denali Commission and MSTC dated March 5, 2008, the facility size approved for design is 5,994 square feet, of which 3,012 square feet is to be considered for primary care services. As the space allowed for the project consists of more than 50 percent of the total facility, the Denali Commission will furnish funds to cover the costs of designing the entire facility.

The design project will be managed by the Alaska Native Tribal Health Consortium (ANTHC), and as such, the Commission funds will be managed through a grant instrument between the Commission and ANTHC. MSTC will work directly with ANTHC and their contractor to achieve the design deliverables.

Please feel free to contact me if you have any questions or need additional information. I can be reached at <u>nmerriman@denali.gov</u> or 271-1779.

Sincerely,

Mro

Nancy Merriman, MPH, MBA Health Facilities Sr. Program Manager

cc: Paul Morrison, Michael Chard / ANTHC PJ Bell, Christine Celentano / Alaska Summit Enterprise

E. Applicant Resolution

AUTHORITY TO PARTICIPATE IN THE MULTI-USE FACILITY PROGRAM AND APPLY FOR CONCEPTUAL PLANNING FUNDS

RESOLUTION NUMBER 06-014

A RESOLUTION of the Mt Sanford Tribal Consortium (1) authorizing participation in the Multi-Use Facility Program.

WHEREAS, the Council/Board of Directors of Mt Sanford Tribal Consortium (1) wishes to provide a conceptual plan for the upper Copper River region including the communities of Chistochina, Mentasta Lake and Slana hereinafter the "Community";

WHEREAS, the Mt Sanford Tribal Consortium wishes to respond to the Division of Community Advocacy Multi-Use Facility Request for Proposals;

NOW, THEREFORE, BE IT RESOLVED THAT the Mt Sanford Tribal Consortium endorses the Multi-Use Facility proposal and commits to fulfilling the responsibilities and duties assigned to the Council in the proposal.

BE IT FURTHER RESOLVED THAT the Board of Directors of the Council is hereby authorized to negotiate and execute any and all documents required for granting and managing funds on behalf of this organization.

BE IT FURTHER RESOLVED THAT the Mt Sanford Tribal Consortium Board of Directors is also authorized to execute subsequent amendments to said grant agreement to provide for adjustments to the project within the scope of services or tasks, based upon the needs of the project.

PASSED AND APPROVED BY THE Mt Sanford Tribal Consortium Board of Directors on August 17_____, 2006.

IN WITNESS THERETO:

By: Larry Sinyon , MSTC Board Chairman____ Attest: George Drinkwater, Operation Manager Typed Name and Title

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Surjon

Typed Name and Title

Signature

(1) Insert name of organization that is submitting the proposal

(2) Insert title of person responsible for project oversight, usually the Council President or entity CEO



Cheesh-na Tribal Council

P.O. Box 241 Chistochina, AK 99586 (907) 822-3503/822-5179 FX

Resolution 09-13

ENTITLED: A resolution supporting Mt Sanford Tribal Consortium's application to Housing and Urban Development for an Indian Community Development Block Grant to support the construction of a multiuse facility with a new health clinic.

- WHEREAS, Cheesh-na Tribal Council is the federally recognized government of Cheesh-na village and authorized to sign documents and negotiate on behalf of the Tribe; and
- WHEREAS, the Code and Conditions survey conducted by the Alaska Native Tribal Health Consortium determined that the existing health clinic in Chistochina and the space for health programs provided by Mt Sanford Tribal Consortium are inadequate to meet community needs; and
- WHEREAS, Cheesh-na Tribal members have identified the need for a new facilities in the community plans; and
- WHEREAS, Mt Sanford Tribal Consortium provides health services for Cheesh-na and Mentasta Lake and has been approved by the Denali Commission to construct a multiuse facility with a new health clinic in Chistochina that will benefit the community.

NOW THEREFORE BE IT RESOLVED that Cheesh-na Tribal Council supports Mt. Sanford Tribal Consortium's application to HUD for an Indian Community Development Block Grant to provide matching funds for a new multiuse facility with a new health clinic.

Certification

We, the undersigned, do hereby certify that this resolution was passed and approved by roll call vote on July 28, 2009 with $\underline{4}$ voting for and $\underline{6}$ voting against.

Charles



P.O. Box 357 * Gakona, Alaska 99586 * Phone (907) 822-5399 * Fax (907) 822-5810

Resolution 07-02

A Resolution to Authorize Funding Agreement Resolutions

Whereas: The Mt. Sanford Tribal Consortium (Kelt'aeni), a Tribal Health Organization composed of two Federally Recognized Tribes, the Mentasta Tribe and Cheesh'Na Tribe, seeks funding to build clinics including multiuse space to enhance the health services of the communities in which it serves and

Whereas: Mt. Sanford Tribal Consortium will seek agreements with funding agencies which do require Waivers of Sovereign Immunity and Resolutions of Participation to enter into funding agreements with the Consortium and

Whereas: Every funding agency the Consortium will be working with, State and Federal, has specific time tables and requirements to enter into such agreements and

Whereas: Mt. Sanford Tribal Consortium, realizes the need to be expeditious in providing funding agencies with the required documentation, and subsequent waivers and resolutions.

Now Therefore Be It Resolved: As Mt. Sanford requests funding for purposes of creating and supporting the construction of new facilities, Resolutions for Participation or similar resolutions and Waivers of Sovereign Immunity shall be authorized for submission to funding agencies by the signature of one Active Board Member, and those resolutions submitted to funding agencies are to be ratified by the full Board at the next convened meeting.

Certification

This resolution was adopted at a duly convened meeting of the Mt Sanford Tribal Consortium Board of Directors on 11/27/2006

1 27 0 Date

Chairperson

Mount Sanford Tribal Consortium shall provide quality health care services and leadership with honor, dignity, and respect; empowering our people by enhancing our traditional values to ensure a healthier and more positive future for our children.



Copper River Native Association [AHTNA' T'AENE NENE']

Mile 104 Old Richardson P.O. Box H Copper Center, Alaska 99573 Phone (907) 822-5241 Fax (907) 822-8801 E-mail: info@cmative.org Website: www.cmative.org

AD-07-51

November 30, 2006

Mt. Sanford Tribal Consortium Justin Wilson, Director P.O. Box 241 Gakona, Alaska 99586

Dear Mr. Wilson:

Copper River Native Association (CRNA) supports the Mt Sanford Tribal Consortium in its efforts of filing and completing the Health Clinics conceptual Business Plan application to the Denali Commission. CRNA supports construction of this new clinic.

The present clinics in Chistochina and Mentasta are old and have outlived their capacity to provide adequate services to its clientele due to lack of space and equipment. The present facilities do not provide privacy and confidentiality in accordance to HIPPA regulations.

Copper River Native Association supports the construction of the Mt Sanford Tribal Consortium health without reservation.

Sincerely,

> A. DILTS-JACKSON Arlene Dilts-Jackson

Chief Executive Officer

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NATIVE VILLAGE OF CHITINA CHITINA TRIBAL AND COMMUNITY HEALTH CENTER

November 18, 2006

Mt. Sanford Tribal Consortium Justin Wilson, Director P.O. Box 241 Gakona, Alaska 99586

Dear Mr. Wilson:

Chitina Tribal and Community Health Center (CTCHC) supports the Mt Sanford Tribal Consortium (MSTC) in its effort to construct a new health clinic and multi-use facility in Chistochina. We recognize and were recently in the same situation that the present clinic in Chistochina is. Such as not having adequate space, equipment, privacy and confidentiality, in accordance with HIPPA regulations, and inability to provide quality health services to its clientele.

CTCHC and MSTC have held numerous discussions regarding ways in which our two organizations can collaborate to improve health services in the region. We were happy to share our knowledge and experience in developing our clinic services and believe that the new health facility in Chistochina will enable MSTC to expand and improve health services for the residents of its service area. We look forward to working collaboratively with MSTC to share professional services, information, training and other resources wherever practical to improve medical and dental services for all residents of the Copper River Basin.

Sincerely,

ride Int

Kr/s Winter Clinic Administrator Chitina Tribal and Community Health Center

Located at: Mile 28.5 Edgerton Highway Five Mile = Chitina Airport PO Box 31 Chitina, AK 99566

Telephone: 907-823-2213 Fax: 907-823-2257 Chitinahealthcenter@yahoo.com



Cross Road Medical Center

June 5, 2007

Mt. Sanford Tribal Consortium Wilson Justin, Director P.O. Box 241 Gakona, Alaska 99586

Dear Mr. Justin:

Cross Road Medical Center (CRMC) supports the Mt Sanford Tribal Consortium in its efforts of filing and completing the Health Clinics conceptual Business Plan application to the Denali Commission and construction of the new clinic facility.

The present clinic in Chistochina does not provide adequate space, equipment, privacy and confidentiality, in accordance with HIPPA regulations, to provide quality health services to its clientele.

Cross Road Medical Center supports the construction of the Mt Sanford Tribal Consortium's health clinic without reservation.

Sincerely,

Andre Hines Chief Executive Officer Evelyn Beeter, President Mt Sanford Tribal Consortium PO Box 357 Chistochina, Alaska 99586

January 11, 2008

Dear Ms. Beeter,

The Slana Community Corporation is pleased to provide this letter of support for Mt. Sanford Tribal Consortium's proposals for a new multiuse facility and health clinic in Chistochina. The health services that are available to our residents in Slana are currently provided in inadequate, undersized facilities that do not meet the codes or standards of health facilities. Our understanding is that the new clinic will provide expanded medical and new dental services that will be available to all residents in the area. We also understand that our current provider will able to provide services at the new facility.

Sincerely,

Jim Sharpe

Jim Sharpe Slana Community Corporation Box 861 Slana, AK. 99586



Cheesh-na Tribal Council

P.O. Box 241 Chistochina, AK 99586 (907) 822-3503/822-5179 FX

July 28, 2009

09-CTC-139

Mt. Sanford Tribal Consortium Attn: Evelyn Beeter, President P.O. Box 357 Gakona, AK 99586

RE: Letter of Support - Acknowledgement of Matching Funds

Dear Evelyn-

Cheesh-na Tribal Council (CTC) is entirely supportive of Mt. Sanford Tribal Consortium's (MSTC) request to HUD for an ICDBG to construct a multiuse facility, which includes a clinic in Chistochina. CTC is completely aware of MSTC's desperate need to improve the office and clinic infrastructure. As both of our organizations have been working together for years as partners on this project, we are excited that the design is underway and that the Denali Commission has approved the business plan.

The co-sponsored project of the biomass boiler system that has been approved by the Alaska Energy Authority ((Project #15 Renewable Energy) January '09 see enclosure) is to be considered State of Alaska matching funds to MSTC's multiuse project at 50% of the cost of the AEA project. The biomass project, which will heat the multiuse facility, community hall, and washeteria is projected to cost \$500,000, and the half of the heating capacity generated by the AEA biomass project is to be utilized by the multiuse facility. MSTC should consider \$250,000 of the AEA project as matching funds for the multiuse facility.

The other project that impacts MSTC favorably is CTC's washeteria project. This project will furnish the water and septic needs of MSTC's multiuse facility by a community loop potable water system and septic drain field. This project is also a State of Alaska funded project through the Department of Environmental Conservation - Village Safe Water (Project # 06E681). The project is projected at \$3,000,000, which MSTC can consider matching funds of 15% (\$450,000) to the multiuse facility.

Both the washeteria and biomass boiler projects have been designed to accommodate heating, water and septic needs of the new multiuse facility. Because MSTC and CTC have agreed to mutually support these projects, with the multiuse facility as a consumer

of the utilities generated by the washeteria and biomass boiler in mind, it is CTC's intention that a portion of costs of these projects be considered "match" funds for the multiuse facility. Without the loads generated by the multiuse facility, these two projects would be reduced in scope, and designed and built at a lower cost. By combining the utilities provided by the washeteria and biomass boiler into the multiuse facility, the cost to build and operate the multiuse building is reduced. This provides both MSTC and CTC economies of scale in operating water, septic and heating utilities saving both organizations money in the short and long term.

Cheesh-na Tribal Council is committed to assisting Mt. Sanford Tribal Consortium in any way possible to facilitate the creation of the multi-use facility. CTC appreciates HUD's consideration of MSTC's ICDBG request and this letter of support.

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Thank You,

Elaine Sinyon Tribal Administrator

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

THIS IS TO CERTIFY that on this 30^{10} day of 3404, 2007, before me, the undersigned Notary Public in and for the State of Alaska, duly commissioned and swom as such, personally appeared KATHRYN MARTIN, to me known to be the V.P. Land and Resources of Ahtna, Incorporated, a corporation, and known to me to be the person who executed the within instrument on behalf of the corporation herein named, and acknowledged to me that such corporation executed the same pursuant to its by-laws or a resolution of its Board of Directors.

WITNESS my hand and official seal the day and year last above written.

3 55



) ss.

NOTARY PUBLIC for Alaska My commission expires: /)/2/2009

ORIGINAL

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

THIS IS TO CERTIFY that on this 6th day of <u>August</u>, 2007, before me, the undersigned Notary Public in and for the State of Alaska, duly commissioned and sworn as such, personally appeared <u>Shine</u>, to me known to be the Representative of Cheesh-Na Tribal Council and known to me to be the person who executed the within instrument on behalf of the Chistochina Village Council herein named, and acknowledged to me that such entity executed the same pursuant to its by-laws or a resolution of its Village Council.

WITNESS my hand and official seal the day and year last above written.

NOTARY PUBLIC for Alaska My commission expires: 1-23.00

AGREEMENT AMENDING CHISTOCHINA VILLAGE COUNCIL PROPERTY LEASE PAGE 2

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AGREEMENT AMENDING CHISTOCHINA VILLAGE COUNCIL PROPERTY LEASE AGREEMENT

THIS AGREEMENT, made and entered into this 30th day July, 2007, by and between

Ahtna, Incorporated, an Alaska Native Corporation, of P.O. Box 649 Glennallen, Alaska 99588, as "Lessor", and

> Cheesh-Na Tribal Council of P.O. Box 241 Chistochina, Alaska 99586, as "Lessee".

Lessor and Lessee have entered into an Ahtna, Incorporated Chistochina Village Council Real Property Lease Agreement (the lease) dated as of February 7, 1995 respecting the following lands situated in the Chitina Recording District, State of Alaska and more particularly referred to as "TRACT F" and described as follows:

Commencing at a BLM Monument marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS No. 5524; thence, South 44 degrees, 06 minutes, 00 seconds East, along the Northeast line of USS 5524 a distance of 174.33 feet to a corner, the TRUE POINT-OF-BEGINNING; thence, North 15 degrees, 16 minutes, 00 seconds East, a distance of 376.34 feet; thence South 74 degrees, 44 minutes, 00 seconds West, a distance of 619.13 feet; thence North 44 degrees, 06 minutes, 00 seconds West, a distance of 476.50 feet to the TRUE POINT-OF-BEGINNING, containing 4.685 acres, more or less.

The parties have agreed to amend the provisions for use of "Tract F" in the lease on the terms and conditions stated below.

WHEREFORE, in consideration of Lessee's intended use for the aforementioned property, together with the covenants contained in the lease, the parties agree as follows.

FIRST, the Lessor may use the aforementioned property as a site for a multipurpose building.

SECOND, the Lessor may sub-lease any or all portions of the aforementioned property with prior approval of Ahtna, Incorporated.

All other terms and conditions of the Lease, not expressly amended herein, shall remain in full force and effect.

RIGINAL

LESSOR AHTNA, INC.,

4

By: Kathryn Martin

Its: V.P. Land and Resources

LESSEE CHEESH-NA TRIBAL COUNCIL

AHTNA, INCORPORATED

ORIGINAL

CHISTOCHINA VILLAGE COUNCIL REAL PROPERTY LEASE AGREEMENT

THIS LEASE AGREEMENT is entered into on <u>February 7</u>. 1995, between Ahtna, Incorporated, (the "Landlord"), and the Chistochina Village Council, (the "Tenant"). This Lease supercedes and invalidates the Lease(s) of 1) June 22, 1985, titled the Chistochina Community Development Lease. By signature to this Lease Agreement, all prior commitments, acts, pledges, and consignments are hereby erased, excepting and reserving to Ahtna, Inc. the right to take action as necessary to insure compliance with this Lease Agreement.

1. Property. In consideration of the mutual convenants contained in this Agreement, Landlord leases to Tenant the following real property, described as follows:

(Legal Description, Refer to Appendix A) containing 22.429 acres, more or less, together with all improvements located thereon.

Tenant has inspected and accepts the Property in it's current condition.

This lease is subject to all valid existing rights or encumbrances, including any rights under Section 14(c) of the Alaska Native Claims Settlement Act of 1971, (43 USC ss. 1613(c), as amended), hereafter referred to as ANCSA.

2. Term. The term of this agreement shall be for a period of <u>twenty five (25)</u>, year(s). The term shall start on <u>February 7</u>, 1995, and shall expire on <u>February 7</u>, 2020.

3. Extension of Term. (a) <u>Tenant's option to Extend</u>. Provided the Tenant is not in default of its obligations under this Lease, the Tenant shall have the option to extend the initial term on all the terms and conditions contained herein, for <u>two</u> additional period(s) of <u>twenty five years</u> (25), commencing at midnight on the day the initial term begins.

(b) <u>Procedure to Extend</u>. In order to exercise its option, the Tenant shall give the Landlord written notice of its intention to extend at least thirty (30) days prior to the expiration of the initial term.

4. Rental. <u>Annual Base Rent.</u> Tenant shall pay to Landlord annual base rent ("annual base rent") on or before the first day of each calendar year in an amount equal to \$1.00 per calendar year. All annual base rent shall be paid to Landlord at the address to which notices to the Landlord are given. Rent for any partial calendar year shall be pro-rated at a daily rate of one three hundred sixty fifths (1/365) of the monthly base rent.

5. Taxes and Assessments. The Tenant, at it's cost, shall pay to the public authorities charged with collection thereof, promptly as the same become due and payable, all taxes, assessments, general and special, permits, inspection and license fees, and other public charges, whether of a like or different nature, levied upon or assessed against the property and any building, structures, fixtures, or improvements now or hereafter located thereon, or arising in respect of the occupancy, use or possession of the Property, or which become a lien during the term of this Lease.

6. Maintenance and Repair. The Tenant, at its cost, shall make all repairs of whatever kind and nature, foreseen and unforeseen, as may be necessary or appropriate to keep the Property in good condition.

7. Hazardous Substances. Tenant agrees that it will not cause or permit the Property to be used as a site for the generation, manufacture, refining, transportation, treatment, storage, handling, disposing, transfer, production or processing of hazardous substances, or other dangerous or toxic substances, or solid waste, except in compliance with all applicable federal, state and local Environmental Laws.

8. Release and Indemnity. The Landlord shall not be liable to the Tenant for any damage to the Tenant or the Tenant's property from any cause, and the Tenant further waives all claims against the Landlord for damage to any person or property arising for any reason. The Tenant shall defend, indemnify, and hold the Landlord harmless from all claims, demands, causes of action, damages, and any expenses incident thereto, arising out of any damage to any person or property occuring in, on, or about the Property, or arising out of the Tenant's use of the Property or the Tenant's breach or any term of this Lease. Notwithstanding the provisions of this Section 8, the Landlord shall remain responsible and liable for its own acts.

9. Default. The occurrence of any of the following shall constitute a default by the Tenant:

(a) <u>Nonpayment.</u> The failure to make payment of any installation of the annual base rent, or of any other sum required under this Lease to be paid by the Tenant if not paid by the due date.

(b) <u>Violation of Agreement</u>. The failure to observe or perform any of the Tenant's other covenants, agreements, or obligations hereunder, if any such default shall not be cured within thirty (30) days after notice of default has been given to the Tenant. Notices of default given under this Section 9 shall demand that the Tenant perform according to the Lease provisions. No such notice of default shall be deemed a forfeiture or termination of this Lease unless the Landlord so elects in the notice of default.

(c) <u>Abandonment</u>. Failure to occupy and operate the Property for thirty (30) consecutive days shall be deemed an abandonment.

(d) <u>Receiver</u>. The appointment of a receiver or an debtor-in-possession to take possession of the Property or improvements or of the Tenant's interest in the leasehold estate of or the Tenant's operations in the Property by reason to the Tenant's insolvency.

(e) <u>Bankruptcy</u>. An assignment by the Tenant for the benefit of creditors or the filing of a voluntary or involuntary petition by or against the Tenant under any law for the purpose of adjudicating the Tenant a bankrupt; or for extending time for payment, adjustment, or satisfaction of the Tenant's liabilities; or for reorganization, dissolution, or arrangement on account of or to prevent bankruptcy or insolvency; unless the assignment or proceeding, and all consequent orders, adjudication, custodies, and supervisions are dismissed, vacated, or otherwise permanently stayed or terminated within thirty (30) days after the assignment, filing or other initial event.

10. Landlord's Remedies. In the event of default the Landlord shall have the following remedies in additions to all other rights and remedies allowable at law or equity, to which the Landlord may resort cumulatively or in the alternative:

(a) <u>The Landlord's Right to Terminate</u>. The Landlord shall have the right, at its election, during the period that Tenant is in default, to give the Tenant notice of the Landlord's intention to terminate this Lease and all of the Tenant's rights hereunder, and on the date specified in such notice, the term of this Lease and all rights granted the Tenant hereunder shall come to an end as fully as if the Lease then expired by its own terms.

(b) <u>The Landlord's Right to Retake</u>. In the event of termination of this Lease, the Landlord shall have the right to repossess the Property either with process of law or through any form of suit or proceeding, as well as the right to sue for and recover all rents and other sums accrued up to the time of such termination, and damages arising out of any breach on the part of the Tenant, including damages for rent not then accrued. The Landlord shall also have the right, without resuming possession of the Property or terminating this Lease, to sue for and recover all rents and other sums, including damages, at any time and from time to time accruing.

11. Assignment. The Tenant shall not voluntarily assign or encumber its interest in this Lease or in the Property, or sublease all or any part of the Property, or allow any other person or entity (except the Tenant's authorized representatives) to occupy or use all or any part of the Property, without first obtaining the Landlord's written consent. Any assignment, encumbrance, or sublease without the Landlord's written consent shall be voidable and, at the Landlord's election, shall constitute a default. No consent to any assignment, encumbrance, or sublease shall constitute a further waiver of the provisions of this Section 11.

12. Notices. Any notice, demand, request, consent, approval, or communication that either party desires or is required to give shall be in writing and either served personally or sent by prepaid, first-class mail, return receipt requested; and shall be addressed to the other party at the address set out below, unless a new address is specified in writing by the party whose address is changed. Notice shall be considered given on receipt by:

Landlord:

Tenant:

Ahtna, Incorporate	d
P.O. Box 649	
Glennallen, Alaska	99588

Chistochina Village Council P.O. Box 241 Gakona, Alaska 99586

13. Waiver. No delay or omission in the exercise of any right or remedy by the Landlord shall impair such right or remedy, or any act by the Tenant requiring the Landlord's consent or approval shall not be deemed to waive or render unnecessary the Landlord's consent to or approval of any subsequent act by the Tenant. Any waiver by the Landlord of any default must be in writing and shall not be a waiver of any other default concerning the same or any other provision of the Lease.

14. Surrender of Property. On the expiration or termination of this Lease, the Tenant shall surrender to the Landlord the Property and all of Tenant's improvements and alterations in good condition, ordinary wear and tear excepted, and the Tenant shall remove all of its personal property and equipment and shall perform all restoration made necessary by the removal of any of its personal property or equipment. In the event the Tenant does not remove its personal property or equipment on the expiration or termination of this Lease, the title to such personal property shall vest in the Landlord, and the Tenant hereby agrees to waive all claims against the Landlord for any damage to the Tenant and to indemnify and hold harmless the Landlord from all loss resulting from the Landlord's retention or disposition of any such personal property or equipment. The Tenant shall be liable to the Landlord for the Landlord's costs of storing, removing, and disposing of any such personal property and equipment.

15. Miscellaneous. (a) Entire Agreement. This Lease contains the entire agreement between the Parties, and no rights are to be conferred upon the Landlord until this Lease has been executed by the Tenant.

(b) <u>Gender and Plural</u>. All the terms and words used in this Lease, regardless of the number and gender in which they are used, shall be deemed and construed to include any other number, singular or plural, and any other gender, masculine, feminine or neuter, as the context may require.

(c) <u>Execution of Counterparts.</u> This Lease may be so executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original, but such counterparts together shall constitute but one and the same instrument.

(d) <u>Party Status</u>. The Landlord and the Tenant are not and shall not be considered joint venturers nor partners and neither shall have power to bind or obligate the other except as set forth herein.

(e) <u>Successors and Assigns.</u> The terms "Landlord" and "Tenant" shall include their successors and assigns.

(f) <u>Hold Over</u>. In the event the Tenant continues to occupy the Property after the last day of the term hereby created, or after the last day of any extension thereof, and the Landlord elects to accept rent thereafter, a tenancy from month to month only shall be created.

(g) <u>Venue</u>. Any legal proceedings concerning this Lease shall be held within the Third Judicial District, State of Alaska, and the laws of the State of Alaska shall apply.

(h) <u>Severability</u>. If any provision of this Lease or the application thereof to any person or circumstances shall, to any extent be invalid or unenforceable, the remainder of this Lease, or the application of such term or provision to persons whose circumstances are other than those as to which it is held invalid or unenforceable, shall not be affected thereby.

(i) <u>Modification</u>. No modification, alteration, or amendment of this Lease shall be binding unless in writing and executed by the Parties.

(j) <u>Titles.</u> The titles to the sections of this Lease are inserted only as a matter of convenience and for reference, and in no way confine, limit or proscribe the scope or intent of any section of this Lease, nor in any way affect this Lease.

(k) <u>Time of the Essence</u>. Time is of the essence for the performance of each provision of this Lease.

(I) <u>Recordation</u>. The Parties agree that the Tenant will not record this Lease. At the request of the Landlord or the Tenant the parties shall execute a memorandum of the Lease for recording purposes in lieu of recording this Lease in such form as may be satisfactory to their respective attorneys.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the date first above written.

AHTNA, INCORPORATED

CHISTOCHINA VILLAGE COUNCIL

By ident/CEO Tts:

P.O. Box 649 Glennallen, Alaska 99588

Its: President

P.O. Box 241 Chistochina, Alaska 99586

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

THE FOREGOING INSTRUMENT was acknowledged before me this <u>7th</u> day of <u>MANCH Pebruary</u>, 1995, by Roy S. Ewan, President/CEO of Ahtna, Incorporated, an Alaskan corporation, on behalf of the corporation.

)) ss.

)

)) ss.

)

NOTARY PUBLIC for Alaska

My commission expires: Ja Aug 95

STATE OF ALASKA

THIRD JUDICIAL DISTRICT

THE FOREGOING INSTRUMENT was acknowledged before me this <u>7th</u> day of <u>MMey</u> <u>Bebruary</u>, 1995, by Elaine Sinyon, President of Chistochina Village Council, a federally recognized Indian Tribe, on behalf of the tribe.

NOTARY PUBLIC for Alaska

My commission expires: 02 App 95

<u>APPENDIX A</u>

DEMISE

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The Landlord leases to the Tenant the premises in the Third Judicial District, State of Alaska, described as follows: A parcel of land consisting of six tracts within partially surveyed T. 9 N., R. 4 E., Sec. 9 and 10, CRM, more particularly described as follows (refer to attached maps):

TRACT "A", CHISTOCHINA SAFE WATER PROJECT

Commencing at BLM Brass cap marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS No. 5524, the TRUE POINT OF BEGINNING; thence North 15 degrees, 16 minutes, 00 seconds East (all bearings based on True North), along the highway R/W a distance of 287.51 feet; thence, South 74 degrees, 44 minutes, 00 seconds East, a distance of 150.00 feet; thence South 15 degrees, 16 minutes, 00 seconds West, a distance of 376.34 feet to a point on the Northeast line of USS 5524; thence, North 44 degrees, 06 minutes, 00 seconds West, a distance of 174.33 feet to the TRUE POINT OF BEGINNING, and containing 1.143 acres, more or less, and

TRACT "B", CHISTOCHINA NEW COMMUNITY HALL SITE

Commencing at BLM Brass cap marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS 5524; thence, North 15 degrees, 16 minutes, 00 seconds East along the highway R/W line towards Corner #4 of USS 5362, also on the R/W, a distance of 341.51 feet; thence South 74 degrees, 44 minutes, 00 seconds East, a distance of 60.00 feet to a corner, the TRUE POINT OF BEGINNING; thence North 15 degrees, 16 minutes, 00 seconds East, a distance of 200.00 feet; thence, South 74 degrees, 44 minutes, 00 seconds East, a distance of 300.00 feet; thence, South 15 degrees, 16 minutes, 00 seconds West, a distance of 200.00 feet; thence, North 74 degrees, 44 minutes, 00 seconds West, a distance of 300.00 feet to the TRUE POINT OF BEGINNING, and containing 1.377 acres, more or less; and

TRACT "C", CHISTOCHINA RECREATIONAL BUILDING SITE

Commencing at BLM Brass cap marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS 5524; thence, North 15 degrees, 16 minutes, 00 seconds East along the highway R/W line, towards Corner #4 of USS 5362, also on the R/W line, a distance of 547.51 feet; thence, South 74 degrees, 44 minutes, 00 seconds East, a distance of 60.00 feet to a corner, the TRUE POINT OF BEGINNING; thence, North 15 degrees, 16 minutes, 00 seconds East, a distance of 200.00 feet; thence, South 74 degrees, 44 minutes, 00 seconds East, a distance of 300.00 feet; thence South 15 degrees, 16 minutes, 00 seconds West, a distance of 200.00 feet; thence, North 74 degrees, 44 minutes, 00 seconds West, a distance of 300.00 feet; thence, North 74 degrees, 44 minutes, 00 seconds West, a distance of 300.00 feet; thence, North 74 degrees, 44 minutes, 00 seconds West, a distance of 300.00 feet to the TRUE POINT OF BEGINNING, and containing 1.377 acres, more or less; and

TRACT "D", CHISTOCHINA PLAYGROUND SITE

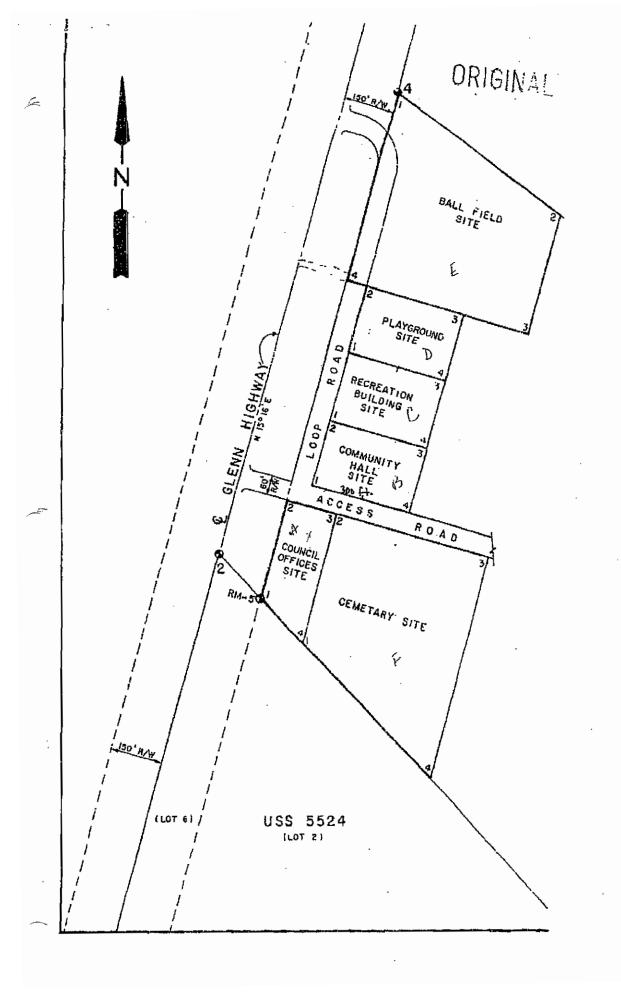
Commencing at a BLM Monument marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS No. 5524; thence, North 15 degrees, 16 minutes, 00 seconds East, along the highway R/W line a distance of 747.51 feet; thence South 74 degrees, 44 minutes, 00 seconds East, a distance of 60.00 feet to a corner, the TRUE POINT OF BEGINNING; thence North 15 degrees, 16 minutes, 00 seconds East, a distance of 200.00 feet; thence, South 74 degrees, 44 minutes, 00 seconds East, a distance of 300 feet; thence, South 15 degrees, 16 minutes, 00 seconds East, a distance of 200.00 feet; thence, North 74 degrees, 44 minutes, 00 seconds West, a distance of 300.00 feet to the TRUE POINT OF BEGINNING, containing 1.377 acres, more or less; and

TRACT "E", CHISTOCHINA BALL FIELD SITE

Commencing at a BLM Monument marked C-4, USS 5362, a point which is the intersection of the East R/W line of the Glenn Highway and the Southwest line of USS 5362, the TRUE POINT OF BEGINNING; thence, South 54 degrees, 07 minutes, 00 seconds East, along the Southwest line of USS 5362, a distance of 598.32 feet; thence, South 15 degrees, 16 minutes, 00 seconds West, a distance of 376.34 feet; thence North 74 degrees, 44 minutes, 00 seconds West, a distance of 560.00 feet, thence North 15 degrees, 16 minutes, 00 seconds East, a distance of 590.33 feet to the TRUE POINT OF BEGINNING, containing 12.470 acres, more or less; and

TRACT "F", CHISTOCHINA RESERVED LANDS

Commencing at a BLM Monument marked RM-5, USS 5524, a point which is the intersection of the East R/W line of the Glenn Highway and the Northeast line of USS No. 5524; thence, South 44 degrees, 06 minutes, 00 seconds East, along the Northeast line of USS 5524 a distance of 174.33 feet to a corner, the TRUE POINT OF BEGINNING; thence, North 15 degrees, 16 minutes, 00 seconds East, a distance of 376.34 feet; thence South 74 degrees, 44 minutes, 00 seconds East, a distance of 410.00 feet; thence, South 15 degrees, 16 minutes, 00 seconds West, a distance of 619.13 feet; thence, North 44 degrees, 06 minutes, 00 seconds West, a distance of 476.50 feet to the TRUE POINT OF BEGINNING; containing 4.685 acres, more or less.



Glennallen Appraisal Box 265 Glennallen, Alaska 99588 907-822-3766

July 26, 2009

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Mt. Sanford Tribal Consortium P.O. Box 357 Gakona, Alaska 99586 Attn: George Drinkwater

Subject: Appraisal of lands described in this report, located east of the Tok Cutoff Highway near mile 33.7, Alaska. The Subject land is best described as an unsurveyed portion of Tract A, and Tract F, in sections 9 & 10, T9N, R4E, Copper River Meridian, amounting to approximately 5.0 acres.

On July 24, 2009, I personally inspected the Subject lands and have arrived at an opinion of the market value as of this date. I have reviewed about 20 sales of land in the Copper River Valley and have used these sales to arrive at the estimated market value. I have not found any one sale that is exactly comparable to the Subject land, so therefore, have looked at a range of values.

The highest and best use for this land is probably for some Native community service for the benefit of the whole village. In fact this is what is tentatively planned by Mt. Sanford Tribal Consortium.

The land is level and well drained with no apparent swampy areas. The soil is said to be stable, mostly underlain with sandy gravel, which is common to areas close to the Copper River, which is about 1 ½ miles east. Most trees are white spruce, cottonwood, and aspen, and the view is trees on most of the lot. The Wrangell Mountains are to the east, and can be seen from open areas.

Good water is available from private wells, and telephone & electricity are private utilities. Most homes are heated by fuel oil, or wood stoves. There is an elementary school in Chistochina, and older children are bused to Glennallen. There is a small volunteer fire department, but the Gakona fire department is the major source of protection. Most shopping can be accomplished in Glennallen, which is 48 miles to the south, or Tok which is 87 miles north. For full shopping, most villagers drive to Anchorage which is about 237 miles south-west.

Between Slana and Copper Center it is possible to find land for sale from about \$1,000 to \$40,000 / acre. After careful consideration and adjusting, it is my opinion that the Subject land has a probable market value of about \$12,000/ acre.

Therefore, it is my opinion that the market value of the Subject property is approximately: \$12,000 x 5.0 acres = Estimated market value \$60,000

Conclusion: Estimated market value

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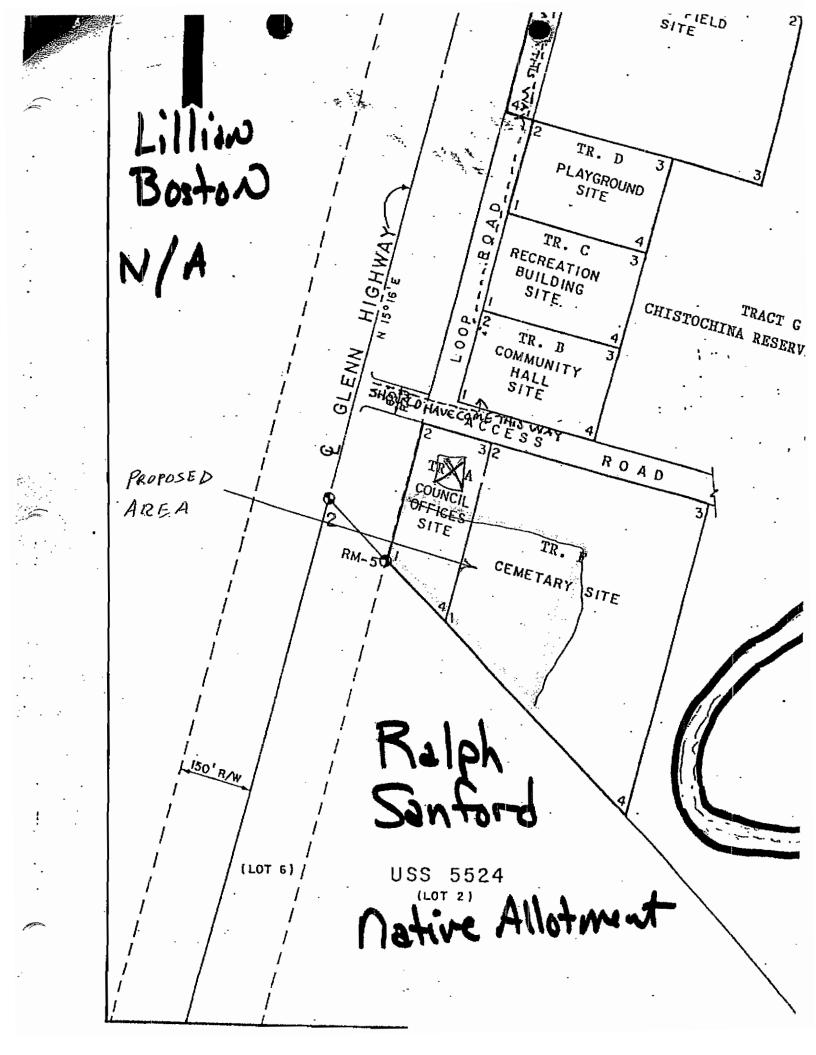
6

\$60,000

Sincerely,

Lee Radler

Lee R. Adler, Appraiser



AMENDMENT NUMBER 04 to the FY 2009 Funding Agreement between the Mount Sanford Tribal Consortium and the United States of America Department of Health and Human Services

The Multi-Year Funding Agreement, 58G000062, effective October 1, 2007 through September 30, 2010, between the Mount Sanford Tribal Consortium and the United States of America, Department of Health and Human Services, is hereby amended as follows:

SUB-SUB ACTIVITY	Previous FA Total	Increase (Decrease)	Amended FA Total
Others	\$0	\$79,150	\$79,150
EFFECT ON FA AMOUNT/PAYMENTS			
Total, FA Amount	\$960,361	\$79,150	\$1,039,511
Total, FA Retained Services	(\$3,994)	\$0	(\$3,994)
Total, Amount to be Rec'd	\$956,367	\$79,150	\$1,035,517

Remarks: This amendment adds specific and distinct, non-recurring American Recovery and Reinvestment Act of 2009 funds for the sole purpose and under the specific conditions described in the attached Addendum to transfer Medical Equipment Funds pursuant to the American Recovery and Reinvestment Act of 2009 herein Incorporated Into Amendment 04 by reference: \$79,150 to purchase and install new, complete and fully operational dental operatory suite equipment with associated system components as identified in April 3, 2009 correspondence for the Chistochina clinic.

Effective Date: July 14, 2009

Mount Sanford Tribal Consortium

By: Presider Tribal Administrator, Mentasta Traditional Council Tribal Administrator, Cheesh-Na Tribe

-7-1-67

United States of America Department of Health and Human Services

By:

Director, Indian Health Service

Date



DEPARTMENT OF HEALTH & HUMAN SERVICES

BY: .

Public Health Service

July 14, 2009

Alaska Area Native Health Services 4141 Ambassador Drive Anchorage, Alaska 99508-5928

MAN14911-22.09

Ms. Evelyn Bceter, President Mt. Sanford Tribal Consortium P.O. Box 357 Gakona, AK 99586-0357

RE: ARRA Medical Equipment Funding Agreement Amendment Transmittal

Dear Ms. Beeter:

Enclosed for your signature is two copies of Amendment 04 to the Funding Agreement (58G000062) for the American Recovery and Reinvestment Act (ARRA) Medical Equipment funds for the purpose of the purchasing and installation of new dental operatory suite equipment with associated system components.

Please return both copies of Amendment 04 to me. We will sign and return an original for your files and retain the other original in our files. We would appreciate receiving this amendment within 14 days of receipt of this letter.

We look forward to transferring these funds to you as soon as possible so they may be put to prompt beneficial use. The target date for completing ARRA Equipment purchases and installation is September 1, 2010.

Should you have any questions, please call me at (907) 729-3677.

Sincergly

/ James M. Armbrust Agency Lead Negotiator

Enclosure

cc: Dale Mossfin, A-OEH&E





Office of Environmental Health & Engineering Alaska Area Native Health Service, IHS 4141 Ambassador Drive, Suite 300 Anchorage, Alaska 99508

July 29, 2009

Mt. Sanford Tribal Consortium Evelyn Beeter, President P.O. Box 357 Gakona, AK 99586

Re: New Chistochina Clinic Construction and IHS Equipment Funding

Dear Ms. Beeter:

Thank you for your recent communication regarding plans to seek funding for a new health care clinic in Chistochina. For some years Indian Health Service (IHS) has been aware of the Mt. Sanford Consortium's desire to construct this new facility.

Indian Health Service (IHS) understands that Mt. Sanford is seeking funding from various government and private sources to construct a new the health care clinic.

We understand that Mt. Sanford Tribal Consortium may apply for an Indian Community Development Block Grant (ICDBG), the Denali Commission, and others to secure the necessary funds. I've recently discussed with Mt. Sanford representatives how the IHS Tribal Equipment Fund program been used successfully by many Tribes to fully or partially offset matching grant program requirements.

Mount Sanford Consortium is eligible to apply for the 2010 IHS Tribal Equipment funding program.

Applying for and securing IHS Tribal Equipment funds to offset other program requirements involves a well coordinated effort. For example, past ICDBG regulations stated:

"HUD recognizes that in some cases, firm commitments of non-tribal resources may not be obtainable by your tribe by the applications submission deadline. For such projected resources, your application must include a statement from the contributing entity that describes why the firm commitment cannot be made at the current time and affirms that your tribe and the proposed project meets eligibility criteria for receiving the resources. In addition a date by which the funding decisions will be made must be included."

The Mt. Sanford proposed project to construct a new clinic at Chistochina does meet IHS equipment funding eligibility requirements. However, IHS cannot commit that equipment funding would be available pending congressional appropriations, receipt, review, and approval of your Equipment Fund application. An application from Mt. Sanford Tribal Consortium would be competitive and the application, when received, will be reviewed following our regulations.

In general, IHS Tribal general equipment funding is provided to tribes that construct clinics without IHS funds to replace existing facilities based upon their relative need for equipment funding as it relates to the value of the construction being conducted. Tribes constructing new space by replacement, addition, or expansion may apply for these funds. "Eligible applicants will be funded on a fair share basis up to 20% of construction costs for outpatient facilities (17% for inpatient facilities), up to \$300,000." Should funds remain after all eligible awards are made, the remaining funds are distributed on a prorated basis according to the unmet need exceeding \$300,000. The final award may not exceed the final maximum eligible amount for each project."

IHS previously provided Mt Sanford guidance on the application process. That document is located at http://www.oehe.ihs.gov/hb/pdf/05102.pdf. We look forward to receiving your future Equipment Fund application. Please contact me at (907) 729-3623 with any questions you may have.

Sincerely;

Dale Mossefin, P.E. Director, Health Facility Engineering Alaska Area Native Health Service

cc: Tom Coolidge, P.E. Director, OEH&E, AANHS

Evelyn Beeter, President Mt Sanford Tribal Consortium PO Box 357 Chistochina, Alaska 99586

January 11, 2008

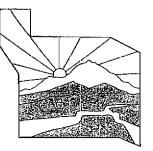
Dear Ms. Beeter,

The Slana Community Corporation is pleased to provide this letter of support for Mt. Sanford Tribal Consortium's proposals for a new multiuse facility and health clinic in Chistochina. The health services that are available to our residents in Slana are currently provided in inadequate, undersized facilities that do not meet the codes or standards of health facilities. Our understanding is that the new clinic will provide expanded medical and new dental services that will be available to all residents in the area. We also understand that our current provider will able to provide services at the new facility.

Sincerely,

Jam Sharpe

Jim Sharpe Slana Community Corporation Box 861 Slana, AK. 99586



Copper River Native Association

(AHTNA 'T'AENE NENE') Mile 104 Old Richardson Highway P.O. Box H • Copper Center, Alaska 99573 Phone (907) 822-5241 Fax: (907) 822-8801 E-mail: info@cmative.org Website: www.cmative.org

May 19, 2008

Ms. Denali Daniels, MPA Health Facilities Program Manager 510 L Street, Suite 410 Anchorage, AK.

RE: Letter of Commitment for Mt Sanford Tribal Consortium

Dear Ms. Daniels,

This Letter of Commitment is to demonstrate Copper River Native Association's (CRNA) commitment to provide professional dental and mental health services at MSTC's new health clinic in Chistochina. As you are aware, MSTC and CRNA are both founding members of the Copper River Regional Health Services Network and are working collaboratively with other network members to improve health services and facilities throughout the Copper River region. Both CRNA and MSTC are in support of each other's application to the Denali Commission for new health facilities and we are also signatories of a special MOU that was developed to demonstrate collaboration between CRNA, MSTC and Cross Road Medical Center (CRMC) as each organization develops new services and health facilities.

As the recognized regional provider of professional dental and mental health services, CRNA is committed to providing these services at MSTC's new clinic in Chistochina as part of a region strategy for improving health services throughout the region. CRNA and MSTC are in agreement as to the type of services that will be provided at MSTC's clinic. We are currently negotiating an MOA that will document the specifics of our agreement. We had hoped to be able to provide the signed MOA for MSTC to include in its revised proposal to the Denali Commission but we ran short of time at our last Board of Director's meetings and were not able to formalize the MOA at that time. MSTC is including a draft of the MOA that we are reviewing. Please accept this Letter of Commitment as documentation of CRNA's commitment to providing these services.

Sincerely Schuerch **CRNA** President/CEO

Diane "Dede" Duntze, FNP HC01 Box 335 Gakona, AK 99586

May 9, 2008

Evelvn Beeter Mt Sanford Tribal Consortium PO Box 357 Gakona, AK 99586

Dear Evelyn,

As a health care provider of Cross road Medical Center and a contract service provider for Mt Sanford Tribal Consortium, I have provided mid-level practitioner services for the communities of Mentasta Lake, Slana, and Chistochina for the past several years. Having provided services for many of the residents in this service area and working with your Community Health Aides in your clinics. I have a pretty good understanding of the health care needs of our area. Having a modern, fully equipped health aide facility in Chistochina will be a substantial upgrade from the current facilities.

I am aware that CRMC, MSTC, and CRNA have signed a Memorandum of Understanding that demonstrates their mutual support and collaboration for the development of new services and facilities in the Copper River region. This letter is to demonstrate my commitment to providing services at the new health clinic in Chistochina. The community of Slana will still have access to North Country Clinic at Grizzly Lake where I see approximately fifteen to twenty patients a month, many of whom receive sliding fee scale services.

Being able to offer dental and behavioral health services in the new facility will be beneficial for this area. I am especially excited about the dental program. I am supportive of your proposed project and look forward to its completion.

Best wishes

Side Suntze Dede Duntze, FNP



35% Design Documents: Civil Design Narrative

NARRATIVE PURPOSE

The intent of the design narrative is to complement the 35% Design Documents drawings with detailed information that provides the basis of the design approach. A written description of the information provides more insight and understanding of the decisions made during this design phase. The design narrative will also identify challenges or missing information that is needed to advance the succeeding design phases.

CIVIL DESIGN

I.0 CONNECTING TO PUBLIC UTILTIES

Public utilities in Chistochina are limited due to the remote location and amount of limited service providers established in this region. The primary public utilities consist of power and telephone that may be connected to residential dwellings or commercial facilities.

Chistochina does not have an established public water system; however, the community center serves as a potable water filling location for the surrounding residents who haul water to their dwelling.

1.1 Water and Wastewater Utilities

The proposed method to serve the health clinic facility with water and wastewater service is the community system that is planned for construction in the near future. CRW Engineering Group was provided with design plans, which were identified as the Cheesh'Na Washeteria and which include the proposed water and wastewater system intended to serve several buildings near the Health Clinic site. These design plans provide a basis for specifying the water and sanitary sewer piping and components.

The location of the community water and wastewater system is solely in the design phase at this point and may change during construction. Any change from the design location to the actual installation location is assumed to be minimal and have little effect on the final connection of the health clinic and administrate building utilities.

It is assumed that others will provide the necessary support documentation for the Alaska Department of Environmental Conservation to confirm that the proposed water and sewer system is adequately sized to meet the needs of the clinic.

The development of onsite water well or wastewater systems is not included in the project scope.

1.2 Water Connection

The water service connection point to the water main is proposed just west of the Tribal Office. The connection location should be in between the Tribal Office driveway and the adjacent driveway with the trailer structure. This location will place the connection point outside the Access Roadway or either driveway. It is assumed that the planned water and sewer project will install the water service connect to the main, including the service shutoff valve.



Chistochina, Alaska | Chistochina Health Clinic & Administrative Building | Schematic Civil Design Narrative

The water service pipe will extend south from the connection point and parallel with the driveway to a point where it will turn and intersect the northeast corner of the health clinic building. The connection to the clinic facility will be in the mechanical room. The design approach assumes the mechanical room may be the distribution location for the interior water piping system. Further coordination with the mechanical engineer will verify this design approach.

The water service piping design will match the proposed design relative to pipe size (1 1/2" diameter), burial depth (9 feet of cover), insulation width (12-inch shell) and freeze protection (electric heat trace to the main).

The water service extension will not include a fire hydrant. The Cheesh'Na Washeteria plans identify a flushing hydrant that is located near the Tribal Offices. This hydrant may supplement water needs of the fire department.

1.3 Wastewater Service

Wastewater service for the health clinic facility will connect to the sewer main near the Tribal Office—similar to the water service location. The connection locations for both the water sewer will observe the necessary separation distance (10-feet) required by Alaska Department of Environmental Conservation. It is assumed that the planned water and sewer project will install the sewer service connect to the main including the lateral, the 45-degree bend and the termination of the glycol system.

The wastewater piping will extend south from the connection point and parallel the driveway to a point where it will turn and intersect the east face of the building. The turning point identified on the 35% Design Development plans show the placement of the lift station. The wastewater piping between the lift station and connection point on the community main is specified as a pressure pipe.

The sewer service piping design will match the proposed design relative to pipe size (1-1/2" diameter pressure pipe and 4-inch diameter gravity pipe), burial depth (9 feet of cover), insulation width (12-inch shell) and freeze protection (electric heat trace to the main). The lift station will be an E/One dual pump unit similar to that proposed for the Community Hall Building (pending design review).

1.4 Missing Information and Clarification Request:

Item I:

Sizing of the wastewater lift station manhole and associated internal pumps is directly related to the expected water usage from the clinic users. It is understood that current clinic users consist of full- and part-time employees and seasonal or rotating medical personnel. There will also be occasional social or community gatherings held at this facility. The quantity and type of expected users for this facility is requested from the owner/users in order to complete final development of the wastewater system components. This request includes the duration (in days or weeks per year) part-time and seasonal or rotating personnel use the facility.

Item 2:

The design of the interior plumbing components has not been generated as of this submittal. This missing information affects the exact location of the water and wastewater piping intersecting the health clinic facility. Coordination with the mechanical engineer (HZA Engineering) will further define the exact location based on interior plumbing requirements and any structural considerations.



2.0 SITE PREPERATION

The existing site conditions consist primarily of undisturbed land that is heavily wooded with spruce trees. A portion of the site consists of a semi-open space, known to locals as the 'Potato Patch' and does not appear to be utilized at this time. A well house and an espresso shop are located in the northwest corner of the site and are proposed for decommissioning with the installation of the Cheesh'Na Washeteria water and sewer improvements. The existing well house should not impact the development of the health clinic facility.

There is also a small trail dividing the lot in an east-west direction. The trail was recently expanded to provide access for subsurface soil borings. In August 2009, the geotechnical engineer, in cooperation with a local contractor, excavated several test holes with a backhoe for the purpose of determining onsite subsurface soil conditions. All test holes were filled in with excavated material after the soil was observed and logged.

The geotechnical report prepared for this project identified the local subsurface soils to be very consistent with a silty sandy layer for the top 2.5 to 3.5 feet and a sandy gravel layer below. In general, the sandy gravel layer consists of non-frost to potentially susceptible material below the silty sand material that is highly frost susceptible.

2.1 Foundation Preparation

Preparation for the building footprint should include removing all vegetation and organic material to the sandy gravel stratum, located approximately 3.5 feet below the existing grade surface. The clinic facility is programmed to include a floor slab to accommodate the hydronic heating system. If this foundation type is selected, NFS material containing less than 10% fines must be placed directly below and adjacent to the concrete slab and compacted to 95% dry density. Fill material needed to achieve final grade of the concrete floor slab may be mined onsite or imported fill material. The Geotechnical report speaks to the specific recommendations for the foundation types. The civil design will incorporate the geotechnical recommendations into the construction drawings.

2.2 Parking Lot and Driveway Preparation

Preparation for the footprint of the parking area and driveway should remove the surface vegetation and strip all organic material. Excavation below the organic elevation should also remove all the highly frost-susceptible material and replace this with sandy gravel that contains less than 10 percent fines. This depth is assumed to be 2.5 feet to 3.5 feet. Onsite material or imported material consisting of sandy gravel is recommended to replace the removed material to achieve the roadway subbase elevation. The backfill material should be compacted to 95% dry density. This approach assumes asphalt paving for roadway surfaces is likely to be part of this project or programmed for the future. Proper design practice requires all highly frost-susceptible material to be removed or insulated, from classified subbase material used for roadway construction. Adverse settling of the roadway structure would most likely occur within a short time span, causing cracking or other surface failures of the asphalt paving if these poor and yielding materials were not removed or insulated.

2.3 Miscellaneous Areas

Site preparation for areas not listed above will be cleared of vegetation and stripped of organic soil. This will provide a working area free of organics and will limit tracking of topsoil throughout the site. Areas where utilities will be installed typically replace the mineral and organic soil displaced during excavation. Finished grade over the new utilities should be replaced with the onsite topsoil, unless the utilities cross under a parking lot, driveway, or other structural feature. The mineral and organic soil remaining from excavation may be spread onsite or hauled off and disposed of at a location willing to accept this material.



Clearing of vegetation should be minimized around the site, with special emphasis on preserving the north side of the health clinic site. The remaining vegetation on the north side of the health clinic will provide a significant buffer from the existing buildings and Access Road.

2.4 Cut and Fill Quantities

Earthwork required for the construction of the foundation and roadways includes moderate quantities of cut and fill. The majority of the site excavation is related to the removal of the highly frost-susceptible, sandy silt material, which is 2.5 to 3.5 feet deep, in preparation for the building structure driveway and parking areas. Proper fill material must then replace the removed soil for a competent subbase for further construction. Other material generated from earthwork activities includes the removal of non-structural soils, such as organics and topsoil.

The estimated earthwork quantities for this site are 3,500 cubic yards of excavation and 5,000 cubic yards of fill. These amounts include removal and replacement of topsoil. In an effort to lower the construction cost, the construction documents will allow onsite material to be mined and utilized as classified material to construct the building pad, parking lot, and driveway. However, this material must meet the non-frost susceptible requirement and gradations.

The finished floor elevation of the Health Clinic facility is driven by the existing ground elevation. The design intent elevates the building from the adjacent ground elevation and promotes proper drainage.

3.0 MATERIAL SOURCES

There is a local material source that may provide the necessary classified material needed for this construction project. Contact was made with Barb Charley of Northwind Enterprises, who owns two gravel pits in Chistochina. The available material source includes:

- Pit Run Utilized for base and subbase material under the building foundation, parking areas, and driveway.
- Select Material (D1) Material used for roadway driveway leveling course. May also be used as a top surface finish if asphalt pavement is not included in this project.
- 3/8-inch Minus A material containing slightly larger diameter rock than D1. This may be used for subbase construction in the building foundation, driveways, and parking areas.

Discussions with Barb Charley indicated an adequate supply of pit run and DI that will be the primary material utilized for the roadway and building foundation.

4.0 SITE DRAINAGE

Development of the new Health Clinic facility will generate additional runoff beyond historic patterns. The increase of runoff generated from the site has not be quantified; however, it is expected to be minimal to moderate considering the limited amount of disturbed area and the amount of impervious surfaces.

4.1 Existing Site Drainage and Relief

The general relief of the site consists of mild slopes, with a high area in the center of the project site. There is very little elevation change over the distance of the project site, creating a relatively flat area. A distinct or obvious drainage path is not noticeable.



4.2 Proposed Site Drainage

Construction of the Health Clinic facility will slightly alter the relief of the existing topography by adding fill material to raise the elevation of the building and parking area above the existing grade. Runoff will flow away from the building and parking areas to the outside limits of these improvements. Storm water generated from this development should not adversely impact adjacent properties or structures due to the considerable separation distance that is vegetated with forest or brush growth. Storm water will most likely infiltrate or evaporate before reaching the (lease) property boundary. Slopes created from the health clinic construction range from 2 percent to a maximum slope of 3:1.

Future submittals will specify the location(s) of onsite snow storage areas. These areas are best situated at the low point or the downhill region of the site. The selected location will have sufficient separation distance from the building and pedestrian walkways.

5.0 LANDSCAPING

A landscaping plan for the Health Clinic site has not been developed at the 35% Design Development milestone. Requirements for a landscaping plan are not specified within the Scope of Work design services. Although landscaping plans are not expected for the Health Clinic site, the civil and/or architectural plans will identify typical surfacing for areas outside the footprint of the building and parking areas.

The civil approach to specific grading and surfacing for landscape areas will include the following areas:

- Areas adjacent the Health Clinic building
- Cut and fill slopes for the parking areas and driveway access
- Areas where utilities are installed.

Soil used for top surfacing of landscaped and seeded areas will consist largely of reusing on-site material moved during initial dirt work activities. Civil plans will direct the contractor to stockpile onsite topsoil removed during preliminary construction activities, then subsequently placed around the building and other locations as a top surfacing material. Spreading hydro seed or a seed/mulch blend is expected throughout the top-soiled areas in addition to planting bushes, trees, or similar vegetation. The architectural plans or narrative will address the landscaping and planting requirements in more detail.

All other areas not surfaced with topsoil are planned to receive native mineral soil and not be seeded.

6.0 VEHICULAR ACCESS AND PARKING

A single driveway approach will provide access to the health clinic facility from the existing paved Access Road. The Access Road appears to be well maintained and has been paved with asphalt surfacing to a point just east of the proposed health clinic driveway access.

This report references a driveway as the means to gain access to the health clinic site, rather than prescribing to the typical driveway design requirements. The driveway access for this project will be designed to accommodate two-way traffic, similar to the Access Road.



The design approach for the driveway and parking lot does not reference a specific standard, since there does not appear to be a governing entity for development in Chistochina. Industry standards and typical roadway requirements observed in Alaska are the basis of design for the driveway, parking lot, and other roadway elements. The current roadway and parking lot design use applicable standards from Alaska Department of Transportation & Public Facilities and Municipality of Anchorage.

6.1 Parking Lot

The siting of the parking lot is located at the south side of the health clinic facility for two reasons. First, the parking lot clears the necessary trees to allow adequate sunlight to the health clinic facility. The second reason is to acquire the adequate separation distance between the emergency access parking and maneuver lane. Sufficient separation distance and clear sight distance are provided with the current site layout.

Grading of the parking lot will include slopes consistent with accessible design standards. The parking lot longitudinal slope will not exceed 5 percent while the cross slope will not exceed 2 percent. The sidewalk connecting the parking lot to the main (south) entry will maintain these accessible slopes.

6.2 Emergency Access

The emergency vehicle drop-off zone includes a dedicated parking stall restricted to use by ambulance and other emergency vehicles needing to unload patients. There is a dedicated turnout/maneuver lane the emergency vehicles may use to pull in and then back into the parking stall. This will reduce overshooting the emergency entry location and limit multiple backup attempts by the emergency vehicle driver. This turnout/maneuver lane also provides enough distance to better align the vehicle as it backs into the emergency entry.

6.3 Missing Information and Clarification Request:

Item I:

Legal ownership of the Access Roadway needs to be determined in order to evaluate the requirements of a driveway permit. The design of this driveway needs to adhere to any standards or design criteria, if such requirements exist. The civil design team requests information of roadway ownership. Once ownership is determined, the civil design team will prepare the necessary permit applications for approval to construct the driveway approach.

7.0 COORDINATION WITH WASHETERIA UTILITIES

CRW Engineering Group received design plans prepared by KAE, Inc of the Cheesh'Na Washeteria Project, dated February 2009. These design plans represent the development of a new washeteria facility, two community wells, community wastewater system, and the necessary subsurface piping needed to connect four buildings.

The Cheesh'Na Washeteria development will provide water and sewer service to the health clinic, as briefly described under the above section 1.0 Connection to Public Facilities. Sizing of the community wastewater system includes the contributing sanitary sewage flow and volume from the health clinic. Similarly, the community water system includes the expected usage demands from the health clinic.

The intent of the health clinic design is to match, as close as possible, the same components identified within the Cheesh'Na Washeteria plans relating to the water and wastewater services. This will create uniformity of materials and components between the two systems and a consistency throughout the community system by the users.



The ease of maintenance for the owner must also be considered within the health clinic design. Matching of system components to the Cheesh'Na Washeteria will reduce maintenance costs or special training needed to operate the complete system.

CRW will perform the calculations and research into the sizing of the water and service systems as the project advances to completion. Questions or issues may arise that will require coordination with KAE, Inc. to discuss their design approach, clarification, or elements within their design that are not included on their plan sheet. We will coordinate directly with the KAE, Inc project engineer, who is familiar with the washeteria plans, to assist with questions relating to health clinic design.

8.0 EVALUATION OF SITE CONTROL

The property on which the health clinic and administrative facility will be constructed is not a fee-simple property to the owner, but rather leased for a specific time. CRW Engineering Group received the lease and sublease agreement with the original scope of work documents, which provided insight into the legal use of this site.

Ahtna, Incorporated is the sole owner of the property and has leased it to Chistochina Village Council (CVC). A lease amendment between Ahtna and CVC identified the option of placing a health clinic on the property with the ability to sublease. CVC entered into a sublease with the Mount Sanford Tribal Consortium (MSTC) to use the property as the location of a health clinic and administrative building.

Early review of these documents by the CRW Engineering Group survey department identified four areas of concern that may adversely impact the use and ownership of the health clinic facility and administrative building. These issues were presented to ANTHC and MSTC in August 2009 for review and input. These items are presented in the following paragraphs.

Issue I:

There is no State or other local jurisdictional requirement for leases to be platted; however, there is documentation in the lease records between the Cheesh'Na Tribal Council and Mount Sanford Tribal Consortium, requiring a survey and recordation of a plat by the Tenant as agreed to per Exhibit A. Although there was not an Exhibit A, there was an Appendix A that shows the surrounding area, but no details on what was to be platted.

Issue 2:

A concern was identified on the original lease between Ahtna and CVC. The lease is for 25 years starting February 7, 1995, with option to extend for two additional periods of 25 years. The lease agreement between the Cheesh'Na Tribal Council and MSTC is for 30 years and could be null and void on February 7, 2020 if the Ahtna and CVC lease agreement is not extended.

Issue 3:

The original lease provided shows a lease between Ahtna and CVC. The sublease shows an agreement between Cheesh'Na Tribal Council and MSTC. The question is whether the Cheesh'Na Tribal Council and the CVC are the same or separate entities. Documentation stating that they are the same entity was not found within the documents provided.



Issue 4:

The amended lease between Ahtna and Cheesh'Na Tribal Council dated July 30, 2007, appears to be for the purpose of constructing a multipurpose building and for the ability to sublease a portion or the entire parcel. The concern is that the lease refers only to Tract F and does not mention Tract A. The proposed health clinic facility is planned to straddle both of these tracts. Discussions between CRW's surveyors and ANTHC identified that the description for Tract F in the amended lease is not a good description and seems to have been re-typed from the original lease and missing critical information.

Subsequent verbal discussions with George Drinkwater of MSTC provided clarity of these issues and presented a desired direction of corrective action. The following items address the potential ways to resolve these issues.

Issue I Resolution:

Mr. Drinkwater desires CRW to prepare an updated legal description for the proposed lease lot. This will update the existing description in the lease and sublease and satisfy the Tenant requirement for a legal description. CRW prepared and sent initial documents to MSTC for review and comment to show the potential lease lot boundaries.

Issue 2 Resolution:

George Drinkwater has been coordinating with a staff member who has in-depth knowledge on the lease agreement between Ahtna and the Cheesh'Na Tribal Council. Mr. Drinkwater reported thatthere is a draft document that will extend the original lease beyond the first 25 years of the lease. This document has not been executed; therefore, there is still a potential liability. Mr. Drinkwater indicated that he will continue dialog with this person to determine the best approach to satisfy MSTC interests.

Issue 3 Resolution:

Mr. Drinkwater indicated that he is confident that the Cheesh'Na Tribal Council and CVC are the same entity—or could be proven legally to mean the same entity. In essence, CVC is the same entity as Cheesh'Na Tribal Council.

Issue 4 Resolution:

This issue will be addressed under the effort listed under the Issue I Resolution, specifically, by preparing an updated legal description to replace the original language within the lease and sublease documents. George Drinkwater told CRW that he assumes this language modification will not be an issue with Ahtna.

8.1 Missing Information and Clarification Request:

Item I:

CRW must receive feedback from MSTC and interested stakeholders regarding the options previously sent showing two different options for the lease area. These are the areas identified in Issue I Resolution. Once an option is approved or an alternate option is selected, a formal legal description can be prepared.

Item 2:

Verification of extending the lease agreement between Ahtna and the CVC (Cheesh'Na Tribal Council) must be executed to ensure MSTC's interests are maintained for control of the health clinic and administrative building.

Chistochina Health Center Electrical Narrative Schematic Design Phase

General

Electrical systems shall be designed and installed in accordance with the latest adopted editions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), the Americans with Disabilities Act (ADA), applicable chapters of the NFPA Codes, EIA/TIA standards, the International Fire Code (IFC), the International Building Code (IBC), and all applicable Federal, State and local codes. Electrical equipment shall have adequate identification, seismic protection, clearances, etc as required to comply with general industry standards, as indicated in these documents, and as required by the above mentioned codes. Design services shall be performed by a Professional Electrical Engineer currently licensed for practice in the State of Alaska.

Electrical Utility Services

Utility power for this facility will be provided from service transformers installed by Alaska Power and Telephone, (AP&T) and will supply a 120/240 volt single phase 3 wire service to the facility. The service entrance equipment at the exterior of the building is to be provided and installed by the contractor and shall be sized as required for the building loads as determined in the design process. In addition to the requirements set forth by AP&T, the service shall conform to all applicable provisions of the National Electrical Code and the National Electrical Safety Code. All contractor performed work shall comply with serving utility installation standards.

Power Distribution System

Building power distribution shall be provided from a 120/240 volt, single phase, three wire, circuit breaker main distribution panel, sized as required for the building loads, and in addition will be rated for the available fault current from the serving utility company. Branch panelboards shall be provided as required to satisfy the branch circuit demands of the facility. Panelboards and feeder capacities shall be sized as required to accommodate the connected demand loads.

A 100 amp rated manual transfer switch and weatherproof 100 amp, 240 volt male receptacle shall be located ahead of one of the branch panelboards for connection to an owner provided portable generator. To keep the size of the generator reasonable, only critical electrical loads will be circuited to this panelboard. These loads are limited to building heating systems, water and sewer heat trace, telecommunication room receptacles, trauma room receptacles, lighting from select areas of the building, and a lab refrigerator.

The grounding system will be in accordance with the National Electrical Code. Components of the facility distribution system shall be grounded through a common grounding electrode system consisting of driven ground rods, connections to building steel components, to metallic cold water supply piping, and connections to rebar and/or a concrete encased electrode. All wiring devices shall have a separate insulated grounding conductor connected to this system. Grounding of conduit systems and panelboards will consist of a pathway through the conduit system with a redundant insulated green grounding conductor installed in each conduit and bonded at each panelboard, junction box, or terminal device. Insulated green ground wires will be installed to all receptacles. In all Voice/Data closets and Low Voltage rooms, a separate ground bus shall be provided. Each of these busses shall be tied together via a ground conductor and extended to building ground.

Major equipment described under this section will be as manufactured by Square D, NQOD series, or approved equals. All equipment shall be fully rated for the available fault current. Series rated panelboards will not be utilized.

General Purpose Power Distribution

All branch circuit wiring will be copper conductors in metallic conduit. Electric Metallic Tubing (EMT) conduit or MC cable listed for health care facilities (with redundant ground) will be used for interior branch circuits. Rigid steel conduit will be used for feeder circuits, secondary service laterals, and for circuits that are subject to possible damage. The final connection to mechanical equipment shall consist of 3' of flexible metallic Flexible metallic conduit shall also be required for final conduit. connections to lighting fixtures in ceiling grids. Connections to pumps or other mechanical equipment in areas that may be subjected to water spray will be provided with liquid tight flexible metallic conduit. An equipment grounding conductor will be installed in each conduit. Insulation will be type XHHW outdoors, and THHN or XHHW insulation will be used indoors. Minimum requirements for branch circuits will be #12 AWG wire in 1/2" conduit. #10 AWG wire will be provided for 20 amp circuits, with lengths in excess of 75'. All wiring and raceways are to be concealed. Wiring on exterior walls shall utilize shallow boxes within furred out areas to avoid penetration of the vapor barrier.

Convenience outlets shall be distributed throughout the building in accordance with the prototypical clinic design, as appropriate for the identified use of each space, in compliance with all requirements of the National Electrical Code as well as the specific requirements as identified by the owner. Receptacles and connections shall also be provided as required to supply all special equipment as identified. Specific equipment, which requires dedicated circuitry, will be provided with such, including but not limited to dental equipment, office equipment, medical equipment, and mechanical equipment. All receptacles throughout the building will be 20 amp rated, commercial hospital grade, NEMA 5-20R. Receptacle faceplates shall be grey colored, nylon heavy-duty type except in unfinished utility spaces where industrial style boxes and device covers may be employed. Receptacles for other than 20 amp, 120 volt circuits shall be provided from dedicated circuits, with ampere ratings, voltage ratings and grounding configurations to meet the specific requirements of the equipment to be connected.

GFCI protected duplex receptacles will be provided at convenient locations on the exterior of the building and within 6' of sinks. Receptacles located in wet or damp locations will be a listed weather resistant type. All receptacles and electrical devices located outside and where susceptible to water spray will be provided with weatherproof covers.

Unless otherwise noted, wall mounted convenience receptacles will be mounted at a height of 18" in accordance with ADA requirements. Heights above counter tops will be coordinated with architectural provisions.

Heat trace shall be Raychem XL –Trace and GM-XT or equal, with all required appurtenances for a complete and operational system as required to trace all pipes, drains, wells, sewers, scuppers, etc. as indicated by Civil and Mechanical drawings. Circuit breakers supplying heat trace shall have 30mA ground fault trip level for equipment protection. Heat trace shall be controlled from pilot light switches located in the mechanical room.

Mechanical equipment and motor loads as indicated by the mechanical and civil drawings shall be connected to the nearest available panelboard that has adequate capacity. Connections and appropriate disconnect and controlling means shall be provided for all mechanical system equipment as required for complete and proper operation. Branch circuit conductors and breakers shall be sized per the NEC.

Wiring devices described under this section will be as manufactured by Leviton Wiring Devices or approved equal.

Interior Lighting Systems

Interior illumination levels will conform to IES (Illuminating Engineers Society) standards. General illumination in exam rooms, offices, waiting areas, hallways, and similar areas will be provided by 2'x4' recessed fluorescent type fixtures with acrylic prismatic diffusers. Conference rooms with have additional lighting consisting of fluorescent recessed can lights. The bathrooms, pharmacy, telecomm room, mechanical room, and similar areas will be provided with modular surface mounted fluorescent fixtures with acrylic prismatic diffusers.

Recessed, 2'x4' fixtures for use in exam rooms described under this section will be as manufactured by Lithonia Lighting (Series #2SRT) or approved equal. Recessed, 2'x4' fixtures for use in other than exam rooms described under this section will be as manufactured by Lithonia Lighting (Series #2SP) or approved equal. Recessed can lights described under this section will be as manufactured by Gotham Lighting (Series #AF) or approved equal. Surface modular style lights described under this section will be as manufactured by Lithonia Lighting (Series #AF) or approved equal.

Fluorescent fixtures shall be triphosphor type, 32 watt, T-8, 3500 degrees K., CRI 80 or greater, RE835, with 2950 initial lumen output. All fluorescent fixtures will be furnished with energy efficient electronic ballasts with less than 10% total harmonic distortion.

Lamps and ballasts described under this section will be as manufactured by General Electric or approved equal.

Interior lighting will mainly be controlled by 20 amp, heavy duty, silent type toggle switches located near entrances, at a height of 48", in accordance with ADA requirements. Occupancy type switches are to be utilitized in mechanical rooms, bathrooms, pharmacy rooms, and telecomm. rooms. Switch faceplates shall be grey colored, nylon heavy duty type, except in unfinished utility spaces where industrial style boxes and device covers may be employed.

Emergency exit signs will be LED type with battery backup and will be located to provide clear direction to all exits and as required to comply with all applicable codes. Exit signs described under this section will be as manufactured by Lithonia Lighting (Series #LQM) or approved equal.

Emergency egress lighting will consist mainly of standard fixtures with integral battery ballasts with supplemental use of self-contained emergency units with integral battery, charger, and remote lamps. Emergency egress lighting will automatically illuminate upon loss of normal power and be sized to provide emergency illumination for a minimum of 90 minutes. Units will be located as required by code to provide the necessary illumination at all paths of egress. Emergency lighting units described under this section will be as manufactured by Lithonia Lighting (Series #ELM2, ELM654, & ELA-NX) or approved equal.

Exterior Lighting Systems

General area security and parking lighting shall be provided by wall mounted HID fixtures on the exterior of the facility at walkways, personnel doors, and on the front of the building.

Exterior lighting shall be controlled by a photocell and a manual override switch.

Exterior lighting described under this section will be as manufactured by Lithonia Lighting (Series #TWL and TWP) or approved equal.

Communication Systems

Telephone and Data Service: Voice and data cabling and auxiliary support systems will be designed in accordance with the prototypical clinic design as well as the specific requirements as identified by the owner in areas modified from the prototypical design. It is anticipated the horizontal network cabling will be provided by category 5e UTP (unshielded twisted pair) structured cable and termination system. The network equipment will be rack mounted in a dedicated space. Empty conduits will extend out from the building to the point of utility service. Installation will be specified to be in compliance with the requirements outlines in TIA/EIA-568-A 'Commercial Building and Telecommunication Cabling Standards" including all subsequent addendum to this standard. Modifications to this approach may be applied as specifically indicated by the owner.

Cabling described under this section will be as manufactured by Berk-Tek or approved equal. Patch panels, jacks, outlets, racks and additional accessories described under this section will be as manufactured by Ortronics or approved equal.

Fire Alarm and Security

A complete fire alarm and intrusion detection system will be installed in the building. It will include the installation and testing of an addressable fire alarm & intrusion detection system control panel with auto dialer, manual pull stations, audible and visual alarms, intrusion detectors, and intrusion keypads. Automatic detection will be as located on the prototypical clinic plans, modified areas will have similar type coverage. In addition to the audio-visual devices required by the design codes, an exterior, weather protected horn/strobes will be provided on the exterior of the building. Intrusion keypads will be located at each entry and the control panel will be located in the arctic entry.

Fire alarm and security control system equipment described under this section will be as manufactured by Honeywell Security, Ademco Vista series or approved equal.

Chistochina Health Clinic and Administrative Office Building Mechanical Narrative Schematic Design Phase

General

Mechanical systems will be designed in accordance with the latest adopted editions of the International Mechanical Code (IMC), 2006 Edition, the Uniform Plumbing Code (UPC), 2006 Edition, the International Building Code (IBC) 2006 Edition, and all applicable Federal, State and local amendments. Design services will be performed by a professional mechanical engineer currently licensed for practice in the state of Alaska.

Design Conditions

Design conditions for determining building loads and equipment sizing will be in accordance with climatic conditions as outlined in the Alaska Climate Summaries and ASHRAE weather data from the 2009 Fundamentals Handbook, the Engineering Weather Data AFM 88-29, 1978 and the Uniform Plumbing Code, Appendix D.

General Mechanical System Information

The new Chistochina Health Clinic and Administrative Office building will include, but not be limited to, the following mechanical systems:

- Domestic cold water distribution.
- Domestic hot water generation and distribution.
- Sanitary sewer and vent systems.
- Fuel oil storage and distribution.
- Dental gas piping systems.
- Heating generation and distribution.
- Heat recovery air distribution systems (limited).
- General and specialty exhaust systems.
- Boiler room ventilation.
- Building/Equipment controls systems.

Plumbing

Fixtures: Plumbing fixtures and trim will be of commercial quality including vitreous china lavatories, urinals and water closets; stainless steel exam and kitchen sinks and drinking fountains. Mop sinks will be molded stone or similar material. Where required, fixture mounting will be in accordance with ADAAG requirements.

Water: Plumbing systems will be designed in accordance with the Uniform Plumbing Code. Primary water service will be from a heat traced buried utility main. Cold water will be distributed throughout the building by a copper pipe distribution system to applicable plumbing fixtures. Hot water will be generated by a boiler water indirect fed domestic hot water generator using boiler heat sized in accordance ASHRAE recommendations and distributed throughout the building by a copper pipe distribution system to applicable plumbing fixtures. Water piping systems will be provided with appropriate drains, unions and isolation valves to facilitate maintenance and system draining.

Sanitary: The sanitary piping system will be of a cast iron or PVC system sized and vented in accordance with the UPC requirements. Sanitary piping systems will be gravity type through the buildings and to the buried exterior sanitary sewer system.

Fuel Oil: The fuel oil system will consists of a double wall, above ground, storage tank serving the boiler system. The tank shall be UL 142, welded steel with support saddles or skids. The tank will be sized to operate the building for one month based on the coldest month.

Heating

Boilers: Primary heat generation will be provided by two 86% - 88% efficiency oil fired hydronic boilers. Based on Energy Kinetics model EK boilers. Each boiler will be sized for approximately 60% of peak load to provide some back-up capability in the case that one boiler fails or is down due to maintenance. Space will be allocated in the boiler room for a third future boiler to hand the anticipated future addition.

Off Site Heat Tie-In: It is our understanding that the community plans on having a central heating plant installed to serve buildings throughout the village. The buildings heating system will provide for future tie in of this system. It is anticipated that sufficient information regarding the central system will be available to deign team during the design process so that we can fully incorporate the benefits of the off site heat source.

Hydronic Piping: The copper hydronic piping system will be served the terminal heating units. If radiant slab heating system is desired then a Pex piping with an oxygen barrier will be used in the slab. Drains, unions, and isolation valves will be provide to facilitate system maintenance and draining. We recommend the use of the glycol solution to provide the heating system with freeze protection. The hydronic fluid will be an inhibited propylene glycol solution mixed at a ratio as appropriate for a freeze point of -40° F.

Terminal Heating Units: The hydronic piping distribution system will serve terminal heating devices including baseboard or radiant slab, cabinet unit heaters and unit heaters. The mechanical rooms will be provided with unit heaters, entrances with cabinet unit heaters with baseboard or radiant slab in the office area and activity center.

Zoning: In general, each room shall be a separate heating zone.

Ventilation

The building will depend on operable openings to meet the ventilation requirements of the IBC. No mechanical supply ventilation will be provided with the exception of a heat recovery ventilator (HRV) to provide a minimal ventilation to normally occupied interior spaces on the clinic side of the building.

The toilet rooms and janitor's closets will be provided with exhaust fan systems.

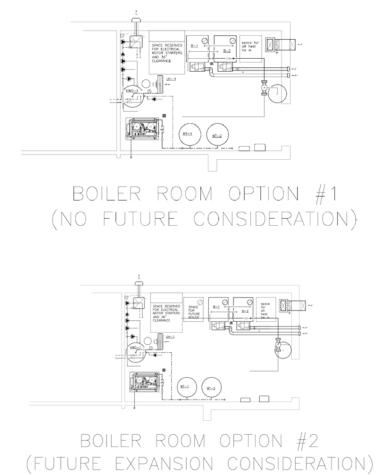
The mechanical room will be provided with combustion and ventilation air openings as required by the IMC.

Air inlets and outlets at the exterior of the building will be provided with louvered hoods to prevent infiltration of rain and snow. Air inlets will be sized for low entrance velocities to prevent entrainment of rain and snow into the air intake assembly.

Controls

The control system will consist of local thermostat control for the heat system. Boiler system and pumps will be controlled through a unitary digital controller specifically design to operate small hydronic boiler systems. Boilers will operate via their integral controls. Exhaust fans will be turned on-off through local wall switches.

Preliminary Boiler Room Layout for Boiler Room Sizing Purposes



Chistochina Health Clinic & Administrative Office Building Chistochina, Alaska



ALTERNATIVE ENERGY AND ENERGY CONSERVATION NARRATIVE

[DRAFT]

Prepared for: Mount Sanford Tribal Consortium Chistochina, AK

Through: Alaska Native Tribal Health Consortium 1901 South Bragan Street

Anchorage, AK 99508

October 2009

Prepared by: The Design Consultant Team for the Chistochina Health Clinic and Administrate Office CRW Engineering Group Kluge and Associates HZA Engineering



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1	Wall and	Roof Lloating	Payback Analysis
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- B Life Cycle Cost Utility Power vs. PV Power
- C Life Cycle Cost Fuel Fired Hotwater vs. Solar Hotwater

I. BACKGROUND

Chistochina Health Clinic and Administrative Office Building

The professional services scope of work document requested a proposal for energy conservation and alternative energy sources that could be utilized by this facility. This effort includes an evaluation of alternative energy sources to incorporate into the facility, with a payback of 10 years or fewer or cost neutral as a life cycle cost comparison.

The approach to this task assumes that any selected alternative energy sources will supplement the clinic's main heating/lighting source, unless it can be shown by existing examples or documentation that a total energy supply for this type of facility is feasible.

This narrative provides a basic evaluation of several different alternative energy and energy conservation methods to minimize energy use. Each alternative identified below discusses the limitation or advantage associated with each option. The owners and stakeholders will use this information as a basis to make an evaluative decision on the implementation of any alternative energy or energy conservation methods.

2. POWER GRID SUPPLY

The primary power supply for residential dwellings and business facilities in Chistochina is supplied by the Alaska Power Company through transmission power lines. Chistochina is located on the power 'grid' system. This power source is very reliable and accessible for the residences in the regional area.

The Alaska Power Company utilizes fuel oil as the energy source to operate the power generators. The rate per kilowatt hour is \$0.3228, which is approximately double what customers pay in Tok. The overall cost of fuel oil is gradually increasing, even with the recent drop in prices in early 2009. Future expectations for fossil fuel costs will maintain a slow to moderate increase for the years to come.

Power supplied by the grid is anticipated to continue satisfying the needs of the local residents and users given the facility infrastructure already in place and the high reliability of service from the provider.

3. WIND TURBINE POWER GENERATION

According to the Wind Energy Resource Atlas published by the U.S. Department of Energy, the Chistochina area is designated as a Class 2 wind zone on a scale of 1 to 7. This designation indicates a low probability that wind energy is a good energy resource for this community. There are no known studies or reports from Alaska Energy Authority or Alaska Village Electric Cooperative specifically addressing the use of wind power as a viable energy source in this community. Further research and studies would need to be conducted in the Chistochina area for wind energy potential and supporting data provided for the use of this energy source. Future efforts to study this energy resource are unknown and likely not anticipated considering the likelihood of a poor energy return on the capital investment.



4. HYDROELECTRIC POWER GENERATION

Two local rivers near Chistochina convey a considerable flow rate at least part of the year. The Chistochina River, located to the north, and Copper River, located to the east, are potential sources of hydroelectric power generation. Either of these two rivers is at least one mile from the health clinic, creating a need to transmit power via power lines.

According to the USGS Peak Streamflow data for the Copper River near Chistochina, there appears to be varied flow rates during the summer months. Measured peak flows ranged from 20 cubic feet per second (cfs) to just more than 200 cfs over a 29-year period. Use of rivers, such as the Copper River, will be a challenge to permanently set and operate typical hydroelectric components used to harness energy from the flowing water with such a varied flow rate. Freeze-up during the winter months also presents another complication that may limit power generation with this resource. Although adequate stream flow may be present several times throughout the year, it varies greatly on a month-to-month basis. The Chistochina River does not have any recorded stream flow data from the USGS or the State of Alaska that would provide information on the normal or peak flow rates. This analysis assumes the Chistochina River has similar characteristics to the Copper River, and the flow rates will vary considerably.

Small-scale hydroelectric plants require adequate velocity to drive the power generation components that create enough power to be economically feasible. Velocity is directly driven by elevation drop of the stream bed from one location to the next. The elevation drop, or commonly referred to as the head, may be determined from topographical maps of the area with a reasonable elevation contour interval (10 feet or less contour interval). Given the relatively flat topography of this area, velocity of the streams is fairly slow, with the exception of occasional fast flows during storm events or peak runoff during spring melting.

Due to the project area's flat topography, freeze-up during winter months, highly varied flow rate, and the importance of the local rivers and streams for subsistence fisheries, the potential for implementing a successful and economically feasible hydroelectric power project in Chistochina is very low.

5. GEOTHERMAL

No known studies have been conducted to evaluate the feasibility of harnessing geothermal energy in the project area, and the community has no plans to conduct such a study at this time. Given the lack of existing data and the relatively high exploration and development costs associated with this resource, no geothermal energy recovery systems are anticipated in the foreseeable future.



6. SOLAR ENERGY

6.1 Photovoltaic Power

The typical solar energy system consists of multiple arrays of photovoltaic panels situated on top of buildings, towers, or other relatively high structures. The fact that sunlight intensity varies from minute to minute due to changes in cloud cover, smoke from fires, blowing dust, etc. requires that most solar-based systems have substantial battery storage. Due to the dramatic solar radiation fluctuations in northern latitudes and the practical limitations of storing and disposing of battery banks, solar systems are rarely capable of providing more than a minor amount of the total power necessary for a large facility or a community. Small-scale solar installations for a typical residential dwelling may be capable of meeting some household electrical demands during the summer months. However, the dependency of electricity from the local power grid system is necessary during winter and portions of the fall and spring seasons due to the limited sunlight availability.

An applicable example of solar energy use in Rural Alaska is the community of Lime Village. This community incorporated solar energy to help offset the dependence on diesel fuel. Although the Lime Village example is on a larger scale than the Chistochina Health Clinic, there are similar principals that can provide insight into the use of solar power. In 1999, Lime Village installed a solar array with a battery bank that powered a DC motor to supplement electricity consumption in this community. This system worked well during the first one to two years at supplementing the power and reducing fossil fuel consumption; however, increased maintenance started to take a toll on the mechanical components and negatively affect the overall use of the system. Maintenance requirements consisted of rebalancing the DC motor components, replacing the battery banks, and installing an inverter, all of which were not initially anticipated during the selection process. The system was taken off line in 2005 due to these challenges and significant monetary cost required for adequate performance. One significant detriment to maintaining this system is the lack of a local work force experienced or skilled with this kind of this system.

The Lime Village example presents issues that may be encountered with future solar energy systems, especially in rural communities such as Chistochina. Unless skilled labor is available and willing to maintain the delicate balancing requirements of this type of system, solar power will be problematic to use. Otherwise, new technology will need to simplify the solar power process to lower level of maintenance.

6.2 Solar Thermal

Capturing thermal energy from the sun to heat interior areas of residential or commercial buildings is a proven method to supplement the standard heater using fossil fuel or electric energy. Implementing this practice may come in many forms but typically involves a large, dark-colored object that absorbs the solar energy during sunny hours and releases the energy at all other times. This passive system prolongs the warm temperature within the building and delays the need for the primary heat source to switch on.



Thermal energy may also be employed to supplement domestic hot water use for residential or commercial facilities. Thermal hot water generation units are generally installed to preheat the incoming cold water to the standard electric, gas, or fuel fired boiler. This process effectively reduces the amount of energy needed by the primary heating system to heat water to domestic use temperatures. These units are usually small and can be easily fitted on new or existing hot water systems. Smaller units, typically used in residential settings, are fairly simple in construction components and easy to maintain. Some manufactures tout little to no maintenance is required for their units; however, a conservative approach would be to expect some effort needed to maintain the units. Costs for residential-type units range considerably based on the complexity of the interface with the existing water system. Such units may range in cost from \$6,000 to \$12,000 that includes the necessary components for a complete and working system. Studies reviewed outside this document suggest a payback for residential units in fewer than 10 years. This is reasonable considering the example discussed in the following paragraph.

Solar water heating using evacuated tube panels manufactured by Apricus was selected for investigation since this system is proven and applicable example for the health clinic facility. Calculations indicate that 123 evacuated tubes would be required to heat 80 gallons of water per day based on an insulation factor of 2.41 kWh/m2/day. This factor is for Helsinki, Finland which was the only city found with similar latitude to Chistochina. One-hundred-twenty-three evacuated tubes would require approximately four of the Apricus 30 tube manifolds. Each manifold is 86 inches wide by 80 inches high or 48 square feet, so four panels is approximately 192 square feet. The cost of the each Apricus 30 panel is approximately \$1,435 for a total cost of \$5,740. The energy savings per year would be approximately \$1,020, per the energy saving calculations provided thru the Apricus website. Therefore, the simple payback would be 5.6 years. Note that the above cost does not include piping, pump, controller, installation, or cost of shipping. We feel that solar water heating systems are more applicable to more southern locations and to residential buildings rather than a commercial building.

Inclusion of a solar thermal unit to supplemental domestic hot water will require additional room beyond the standard heating system units. Solar thermal systems may be installed within the mechanical room or approved space. Programming and planning of floor plans should anticipate the sizing requirements needed to accommodate a specified solar thermal unit - both inside and outside a building.

6.3 Energy Conservation

There are provisions that can be incorporated into the design of the proposed clinic that will reduce energy consumption. First, the long axis of the clinic can be oriented in an east to west manner facing the longest building profile to a southerly exposure. Trees should be removed from the south side allowing for as much direct sunlight as possible. One way to accomplish this is to plan for parking on the south side of the building. This passive solar design is the most economical approach to benefiting from solar heat gain during the cooler months.

Incorporating an efficient thermal envelope for the facility has good potential for reducing energy consumption. In looking into this approach, the design team has considered two levels of upgrading the exterior walls and roof assembles. The prototypical clinic design reflects R24 wall insulation and R38 attic insulation. Heat loss calculations were also performed on two additional wall and roof options. The options for the walls are: a 2"x8" stud wall assembly with R30 insulation and a 2"x10" stud wall assembly with R36 insulation. The roof options consisted of:



R44 attic insulation and R60 attic insulation.



Included in Appendix A is the energy consumption summary analysis for prototype and the two alternate options. This analysis reflects the difference in initial construction cost versus the cost for heating energy required for the facility. This analysis indentifies the payback, in years, for the savings in reduced fuel consumption for each of the alternate options.

7. BIOMASS PROGRAM

George Drinkwater of MSTC has informed the design team that a heating plant facility using biomass fuels is currently in the design stage and is planned for construction in Chistochina in the near future. The purpose of this heating plant will supplement the heating needs of health clinic, administrative facility, and several other buildings in the immediate area. Delivery of the heat energy generated by this plant is transferred via a heating loop buried subsurface. The intent of this project is to reduce the need for each individual facility to generate its own heat energy and to create a more efficient and cost-saving single heat source. The heating plant raw energy source is a pellet-size wood particle.

8. ALTERNATE COMBUSTIBLE FUELS

There are no known local sources of coal, natural gas, or other alternative combustible fuels. The cost of importing such fuels would be prohibitive.

Local wood supply may supply fuel for the biomass heating plant dependant on the final design and fuel type specification. Final design of the biomass heat plant will reveal which fuel sources are appropriate for heat generation.





APPENDIX A | Wall and Roof Heating Payback Analysis



Indoor Temp. = Outdoor Temp. = Wall Height =	70 ºF -60 ºF 10 ft.	ProtoType Wall, R-40, U-value = 2x8 Wall, R-30, U-value = 2x10 Wall, R-36, U-value =	0.043 Btu/hr-ft^2-°F	Perimeter Factor = Window U-value = Door U-value =	0.55	Btu/hr-ft^2-°F
Prototype, R-24 2" x 8", R-30		Prototype Roof, R-38, U-value = Roof Ins, R-44, U-value =	0.023 Btu/hr-ft^2-°F			
2" x 10", R-36		Roof Ins, R-60, U-value =	0.017 Btu/hr-ft^2-ºF			

Run			Roof			Floor			Wa	alls				Glass		Infil	tration	Total w/s.f.	Btuh
No.	Run Description	U	Area	Q	PF	Area	Q	U	Height	Length	Area	Q	U	Area	Q	ac/hr	Q	Q	/sq.ft.
1	Prototype R-24 wall; R-38 rf	0.026	5,145	17,390	0.55	5,145	26,098	0.050	10	365	2,825	18,363	0.550	825	58,988	0.50	60,197	217,241	42.2
2	2x8 Wall, R-30	0.026	5,145	17,390	0.55	5,145	26,098	0.043	10	365	2,825	15,792	0.550	825	58,988	0.50	60,197	214,156	41.6
	Prototype, R-38																		
3	R-44 Bat	0.026	5,145	17,390	0.55	5,145	26,098	0.035	10	365	2,825	12,854	0.550	825	58,988	0.50	60,197	210,630	40.9
	R-60 Bat																		
4	Roof - R-44	0.023	5,145	15,384	0.55	5,145	26,098	0.050	10	365	2,825	18,363	0.550	825	58,988	0.50	60,197	214,833	41.8
5	Roof - R-60	0.017	5,145	11,370	0.55	5,145	26,098	0.050	10	365	2,825	18,363	0.550	825	58,988	0.50	60,197	210,017	40.8
	D 20 vo D 24																		
	R-30 vs. R-24																		
	R-36 vs. R-24																		
	R-36 vs. R-30																		

Project Title: Chistochina Health Clinic

Page: Heat Loss Analysis

Project No. : 2009.099.0

Date: 10/06/09

File Name: WallStudyCalc.XLS

Tab Name: HeatLoss

By: Alec C. Thomson, P.E.



ANNUAL FUEL USAGE ESTIMATE - Prototype R-24 Wall Constuction

Prototyp 2" x 8", F			Chistochina, Ala	aska
2" x 10" , Based on 6	, R-36 55 deg F Degree Day (DD)		14,000	
INDOOR (Ti)	DESIGN TEMPERATURE		70°F	
AMBIEN (To) Prototype	T DESIGN TEMPERATURE		-60°F	
R-44 Bat			18,363	
R-60 Bat				
	ATION HEAT LOAD		0	
	ATION HOURS		0	
			Boiler, Standard	1
R-30 vs. R-36 vs. R-36 vs. R-	R-24 —		80.00%	
	Btu per year (Et), (Et = (DD*Qt*24 ANNUAL VENTILATION H Btu per year (Ev), (Ev = (DD*Qv*2 v: TOTAL ANNUAL HEATING V: Btu per year (E), (E = Et + Ev)	EATING ENERGY 4*(Hrs/24))/(To-Ti)*Eff		0 59,325,000
FUEL TY	vs. R-44 Bat /PE		Oil	
Gas, oil, ele FUEL UI Therm, CC			Gallon	
FUEL HE Btu/unit (Ff	EATING VALUE		140,000	
FUEL CC \$/unit (F\$)	DST		\$3.50	
	ANNUAL HEATING FUEL Gallon (F), (F = E/Fhv) ANNUAL FUEL COST — \$, (\$ = F * F\$)	CONSUMPTION		424 \$1,483
roject Title:	McGrath Health Clinic		Page Title:	Fuel Usage Estimate - Proto R-24
Project No. :	2008.167.0	Date: 10/06/09	By:	Alec C. Thomson, P.E.



ANNUAL FUEL USAGE ESTIMATE - 2x8 Wall, R-30

Prototy 2" x 8", F	pe, R-24		Chistochina, Ala	aska
2" x 10"			14,000	
INDOOF (Ti)	R DESIGN TEMPERATURE	·	70°F	
AMBIEN (To)	IT DESIGN TEMPERATUR	Е ———	-60°F	
Prototyp				
R-44 Ba	t		15,792	
R-60 Bat				
	ATION HEAT LOAD load in Btuh (Qv)		0	
	ATION HOURS		0	
	G SYSTEM ТҮРЕ ——		Boiler, Standard	ł
R-30 vs R-36 vs R-36 vs. R	. R-24		80.00%	
	ANNUAL BUILDING TR Btu per year (Et), (Et = (DD*Qt ANNUAL VENTILATION Btu per year (Ev), (Ev = (DD*G	t*24)/(To-Ti)*Eff)	Y	51,019,500
	t v: TOTAL ANNUAL HEAT t v:Btu per year (E), (E = Et + Ev)			51,019,500
R-60 Ba	t vs. R-44 Bat			
FUEL T Gas, oil, e	YPE		Oil	
	NIT CF, Gal, Etc.		Gallon	
FUEL H Btu/unit (F	EATING VALUE		140,000	
FUEL C \$/unit (F\$)			\$3.50	
	ANNUAL HEATING FUI Gallon (F), (F = E/Ft ANNUAL FUEL COST \$, (\$ = F * F\$)			364 \$1,275
oject Title:	Chistochina Health Clinic	0	Page Title:	Fuel Usage Estimate - 2x8 Wa
roject No. :	2009.099.0	Date: 10/06/09	Bv:	Alec C. Thomson, P.E.
•				- /



ANNUAL FUEL USAGE ESTIMATE - 2x10 Wall, R-36

Prototyp 2" x 8", R			Chistochina, Ala	iska
2" x 10",			14,000	
INDOOR (Ti)	DESIGN TEMPERATURE		70°F	
AMBIEN (To) Prototype	R-38		-60°F	
R-44 Bat			12,854	
R-60 Bat			·	
	TION HEAT LOAD		0	
	TION HOURS ours per day (Hrs)		0	
	SYSTEM TYPE		Boiler, Standard	l i i i i i i i i i i i i i i i i i i i
R-30 vs. R-36 vs. R-36 vs. R-3	R-24 —		80.00%	
R-60 Bat	ANNUAL VENTILATION HI Btu per year (Ev), (Ev = (DD*Qv*24 v: TOTAL ANNUAL HEATING V: Btu per year (E), (E = Et + Ev)	1*(Hrs/24))/(To-Ti)*Efi		0 41,527,500
R-60 Bat FUEL TY Gas, oil, ele	vs. R-44 Bat PE c., etc.		Oil	
FUEL UN Therm, CCF			Gallon	
FUEL HE Btu/unit (Fh			140,000	
FUEL CO \$/unit (F\$)	ost		\$3.50	
	ANNUAL HEATING FUEL (Gallon (F), (F = E/Fhv) ANNUAL FUEL COST \$, (\$ = F * F\$)	CONSUMPTION		297 \$1,038
Project Title:	Chistochina Health Clinic		Page Title:	Fuel Usage Estimate - 2x10 Wall
Project No. :	2009.099.0	Date: 10/06/09	By:	Alec C. Thomson, P.E.



ANNUAL FUEL USAGE ESTIMATE - Prototype Roof, R-38

Prototy 2" x 8", F			
2" x 10" Based on (, R-36 65 deg F Degree Day (DD)	14,425	
INDOOF (Ti)	DESIGN TEMPERATURE	70°F	
(To)	IT DESIGN TEMPERATURE	60°F	
Prototyp		47.000	
R-44 Ba R-60 Bat	t –	17,390	
VENTIL	ATION HEAT LOAD	0	
	ATION HOURS hours per day (Hrs)	0	
HEATIN	G SYSTEM ТҮРЕ	Boiler, Standard	
R-30 vs		00.000/	
R-36 vs. R-36 vs. R		80.00%	
	Btu per year (Et), (Et = (DD*Qt*24)/(To-Ti)*E ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24)	ENERGY 0 /(To-Ti)*Eff)	
R-60 Ba	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENER t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat	ENERGY 0 /(To-Ti)*Eff) 0 SY 57,888,968	
R-60 Ba	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENER t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat (PE	ENERGY 0 /(To-Ti)*Eff) 0 SY 57,888,968	
R-60 Ba R-60 Ba FUEL T Gas, oil, el	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENER t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat (PE	ENERGY 0 /(To-Ti)*Eff) 0 SY 57,888,968 Oil 0	
R-60 Bar R-60 Bar FUEL T Gas, oil, el FUEL UI Therm, CC	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENERG t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat YPE ec., etc. NIT :F, Gal, Etc. EATING VALUE	ENERGY 0 /(To-Ti)*Eff) 0 SY 57,888,968 Oil 0	
R-60 Ba R-60 Ba FUEL T Gas, oil, el FUEL UI Therm, CC	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENERG t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat YPE ec., etc. NIT :F, Gal, Etc. EATING VALUE	ENERGY 0 /(To-Ti)*Eff) 57,888,968 Oil Gallon 140,000 140,000	
R-60 Bar R-60 Bar FUEL T Gas, oil, el FUEL U Therm, CC FUEL H Btu/unit (F	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENERG t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat YPE ec., etc. NIT :F, Gal, Etc. EATING VALUE	ENERGY 0 /(To-Ti)*Eff) 57,888,968 Oil Gallon 140,000 \$3.50	
R-60 Bar R-60 Bar FUEL T Gas, oil, el FUEL U Therm, CC FUEL H Btu/unit (F	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24) t v: TOTAL ANNUAL HEATING ENERGY t v: Btu per year (E), (E = Et + Ev) t vs. R-44 Bat YPE ec., etc. NIT cF, Gal, Etc. EATING VALUE hv) OST ANNUAL HEATING FUEL CONSU Gallon (F), (F = E/Fhv) ANNUAL FUEL COST	ENERGY 0 /(To-Ti)*Eff) 57,888,968 Oil 0 Gallon 140,000 \$3.50 413	roto
R-60 Bar R-60 Bar FUEL T Gas, oil, el FUEL U Therm, CC FUEL H Btu/unit (F FUEL C \$/unit (F\$)	ANNUAL VENTILATION HEATING Btu per year (Ev), (Ev = (DD*Qv*24*(Hrs/24)) t v: TOTAL ANNUAL HEATING ENERGY t V:Btu per year (E), (E = Et + Ev) t vs. R-44 Bat YPE ec., etc. NIT :F, Gal, Etc. EATING VALUE hv) OST ANNUAL HEATING FUEL CONSU Gallon (F), (F = E/Fhv) ANNUAL FUEL COST \$, (\$ = F * F\$)	ENERGY 0 /(To-Ti)*Eff) 57,888,968 Oil Gallon Image: Gallon 140,000 \$3.50 \$3.50 MPTION 413 \$1,447	roto



ANNUAL FUEL USAGE ESTIMATE - Roof, R-44

Prototype 2" x 8", R-				Chistochina, Ala	iska
2" x 10", l				14,000	
INDOOR I (Ti)	DESIGN TEMPERATURE	<u> </u>		70°F	
AMBIENT (To)	DESIGN TEMPERATUR	E ——		-60°F	
Prototype,	, R-38				
R-44 Bat		-		15,384	
R-60 Bat					
	TION HEAT LOAD bad in Btuh (Qv)			0	
	TION HOURS			0	
				Boiler, Standard	l i i i i i i i i i i i i i i i i i i i
R-30 vs. l R-36 vs. F R-36 vs. R-3	R-24			80.00%	
R-60 Bat v R-60 Bat v FUEL TYF Gas, oil, elec FUEL UN Therm, CCF	IT, Gal, Etc. ATING VALUE	ING ENER	GY —	Oil	49,700,700
FUEL CO \$/unit (F\$)	ST			\$3.50	
	ANNUAL HEATING FU Gallon (F), (F = E/F ANNUAL FUEL COST \$, (\$ = F * F\$)		MPTION		355 \$1,243
Project Title:	Chistochina Health Clini	с		Page Title:	Fuel Usage Est 13.5" Roof Ins
Project No. :	2009.099.0	Date:	10/06/09	By:	Alec C. Thomson, P.E.



ANNUAL FUEL USAGE ESTIMATE - Roof R-60

Prototy 2" x 8", F			Chistochina, Ala	iska
2" x 10"	, R-36 55 deg F Degree Day (DD)		14,000	
INDOOR (Ti)	DESIGN TEMPERATURE	·	70°F	
AMBIEN (To) Prototyp		E	-60°F	
R-44 Ba			11 370	
R-60 Bat	-		,0.0	
	ATION HEAT LOAD load in Btuh (Qv)		0	
	ATION HOURS		0	
	G SYSTEM ТҮРЕ ——		Boiler, Standard	l
R-30 vs R-36 vs. R-36 vs. R	R-24		80.00%	
	Btu per year (Et), (Et = (DD*Q ANNUAL VENTILATION Btu per year (Ev), (Ev = (DD*C t v: TOTAL ANNUAL HEAT t v: Btu per year (E), (E = Et + Ev)	N HEATING ENERG Qv*24*(Hrs/24))/(To-Ti)*Ef TING ENERGY		0 36,735,300
R-60 Bat FUEL T Gas, oil, el	t vs. R-44 Bat /PE ec., etc.		Oil	
FUEL U	NIT F, Gal, Etc.		Gallon	
FUEL HI Btu/unit (F	EATING VALUE		140,000	
FUEL C \$/unit (F\$)	OST		\$3.50	
	ANNUAL HEATING FU Gallon (F), (F = E/FI ANNUAL FUEL COST \$, (\$ = F * F\$)			262 \$918
oject Title:	Chistochina Health Clinic	C	Page Title:	Fuel Usage Est 18.75" Roof Ins
oject No. :	2009.099.0	Date: 10/06/09	By:	Alec C. Thomson, P.E.



WALL SUMMARY

Wall Type	Annual Fuel Cost	Assembly Construction Cost
Prototype, R-24	\$1,483	\$57,910.00
2" x 8", R-30	\$1,275	\$77,571.00
2" x 10", R-36	\$1,038	\$104,167.00

ROOF SUMMARY

Roof Type	Annual Fuel Cost	Assembly Construction Cost
Prototype, R-38	\$1,447	\$20,073.00
R-44 Bat	\$1,243	\$36,661.00
R-60 Bat	\$918	\$44,105.00

WALL COST ANALYSIS

Wall Type vs. Wall Type	Annual Fuel Savings	Assembly Construction Up Cost	Pay Back Period (years)
R-30 vs. R-24	\$208	\$19,661.00	94.7
R-36 vs. R-24	\$445	\$46,257.00	104.0
R-36 vs. R-30	\$237	\$26,596.00	112.1

ROOF COST ANALYSIS

Roof Type vs. Roof Type	Annual Fuel Savings	Assembly Construction Up Cost	Pay Back Period (years)
R-44 Bat vs. R-38 Bat	\$205	\$16,588.00	81.0
R-60 Bat vs. R-38 Bat	\$529	\$24,032.00	45.4
R-60 Bat vs. R-44 Bat	\$324	\$7,444.00	23.0

Project Title:	Chistochina Health Clinic		Page Title:	Pay Back Analysis	
Project No. :	2009.099.0	Date: 10/06/09	By:	Alec C. Thomson, P.E.	
File Name: WallStudy	Calc.XLS	Tab Name: Summa	У		Version 1.0



APPENDIX B | Life Cycle Cost - Utility Power vs. PV Power

Life Cycle Cost Analysis - Summary



Project:

Chistochina Multi-Use Facility

Study Period: Discount Rate:

30	C
2.25%	6

Life Cycle Costs of Project Alternatives				
	Alternate #1 Utility Power	Alternate #2 PV/Utility Power		
Initial Construction Cost Operations Cost	\$0 \$312,000	\$129,000 \$299,000		
Maintenance & Repair Cost Replacement or Midlife Cost	\$0 \$0 \$0	\$0 \$16,000		
Residual Value	\$0 \$0	\$0 \$0		
Total Life Cycle Cost	\$312,000	\$444,000		

Life Cycle Cost Analysis - Alternate #1



Estimations, Inc. Cost Planning and Management

Item Purchase Electric Power from Utility Project: Chistochina Multi-Use Facility

	Quantity	Unit	Unit Cost	Total Cost	Years	Present Value	Notes
Initial Expenses							
Initial Investment Cost (one time start-up costs) Electrical Service - Similar for Both (not evaluated)				\$0	0	\$0	
Future Expenses							
Operations Cost (annual costs) Electrical Purchase	32,000	KWH	\$0.45	\$14,419	30	\$312,000 Costs	are similar between both Alternatives
Maintenance & Repair Cost (upkeep costsestimate on a Costs Similar between Alternatives	annual basis	:) Not Used	\$0	\$0	30	\$0 Costs	are similar between both Alternatives
Replacement Cost None	1	LPSM		\$0	10	\$0	
Residual Value (value of facility at end of study period) None	1	LPSM		\$0	20	\$0 \$0	
Total Life Cycle of Alternate #1						\$312,000 (All co	ost Rounded x1000)



Estimations, Inc. Cost Planning and Management

ItemSupplemental PV PowerProject:Chistochina Multi-Use Facility

	Quantity	Unit	Unit Cost	Total Cost	Years	Present Value	Notes
tial Expenses							
Initial Investment Cost (one time start-up costs)							
Electrical Service - Similar for Both (not evaluated)				\$0	0	\$0	
PV Power	10	KW	\$12,880.00	\$128,800	0	\$129,000	
(Based on \$8/Watt (national) x area factor (1.61)							
in panel rating wattage.) panel area is 10kw*1000/300 w/sf / 10.76 SF/m2 = 3	1 m2						
Power Required for the clinic is estimated at 2700 KW							
87 KWH/Day							
ture Expenses							
Operations Cost (annual costs)							
A 22 KW installation in Lime Village saved 35% of						Costs	are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel						Costs	are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R	Renewable Ener		07)			Costs	are similar between both Alternativ
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW	Renewable Ener		07)			Costs	are similar between both Alternativ
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day	Renewable Ener		07)			Costs	s are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW	Renewable Ener		07) \$0.45	\$13,795	30	Costs \$299,000	are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh Electrical Purchase (32,000 kwh - 1386 kwh)	Renewable Éner h/M2/day 30,614	gy Atlas (7/20 KWH	·	\$13,795	30		s are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh	Renewable Éner h/M2/day 30,614 n annual basis	gy Atlas (7/20 KWH	·	\$13,795 \$0	30 30	\$299,000	
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA F Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh Electrical Purchase (32,000 kwh - 1386 kwh) Maintenance & Repair Cost (upkeep costsestimate of Costs Similar Between Alternatives	Renewable Éner h/M2/day 30,614 n annual basis	gy Atlas (7/20 KWH	\$0.45			\$299,000	s are similar between both Alternative
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA R Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh Electrical Purchase (32,000 kwh - 1386 kwh) Maintenance & Repair Cost (upkeep costsestimate of	Renewable Éner h/M2/day 30,614 n annual basis	gy Atlas (7/20 KWH	\$0.45			\$299,000	
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA F Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh Electrical Purchase (32,000 kwh - 1386 kwh) Maintenance & Repair Cost (upkeep costsestimate of Costs Similar Between Alternatives Replacement Cost	Renewable Éner h/M2/day 30,614 n annual basis	gy Atlas (7/20 KWH ;) Not Used	\$0.45 \$0	\$0	30	\$299,000 \$0 Costs	
A 22 KW installation in Lime Village saved 35% of fuel typically consumed or was 35% Efficient at Panel Conditions at Chistochina are similar based on AEA F Solar Insulation at Chistochina is estimated at 3.5 kW at 35% efficiency = 1.22 kWh/m2/day * 365 days * *3.1 m2 = 1386 kwh Electrical Purchase (32,000 kwh - 1386 kwh) Maintenance & Repair Cost (upkeep costsestimate of Costs Similar Between Alternatives Replacement Cost Inverter/Batteries	Renewable Ener h/M2/day 30,614 on annual basis 1 1	gy Atlas (7/20 KWH ;) Not Used LPSM	\$0.45 \$0 \$10,948	\$0 \$10,948	30 10	\$299,000 \$0 Costs \$9,000	

Total Life Cycle of Alternate #2

\$444,000 (All cost Rounded x1000)



APPENDIX C | Life Cycle Cost - Fuel Fired Hotmater vs. Solar Hotmater

Life Cycle Cost Analysis - Summary



Project:

Chistochina Multi-Use Facility

Study Period: Discount Rate:

	30
1	2.25%

Life Cyc	le Costs of Project Alternati	ves
	Alternate #1 Fuel Fired Hotwater	Alternate #2 Solar Hotwater
Initial Construction Cost Operations Cost Maintenance & Repair Cost Replacement or Midlife Cost Residual Value	\$4,000 \$9,700 \$4,300 \$5,000 \$0	-
Total Life Cycle Cost	\$23,300	\$22,700

Life Cycle Cost Analysis - Alternate #1



Estimations, Inc. Cost Planning and Management

Item Fuel Fired Hotwater Project: Chistochina Multi-Use Facility

	Quantity	Unit	Unit Cost	Total Cost	Years	Present Value
tial Expenses						
Initial Investment Cost (one time start-up costs) HWG-1: Hot Water Generator, WHS-60ZC-DW Gal 60 Gal 268 GPH	1	LS		\$3,977	0	\$4,000
(Based on 45 Gallons Hot Water Use Per Day)						
ture Expenses						
Operations Cost (annual costs) Fuel Oil Purchase	128	GAL	\$3.50	\$447	30	\$9,700
Maintenance & Repair Cost (upkeep costsestimate on	annual basis)					
Annual Maint Annualized 5 Yr Major Maint Cycle	1 1	EA EA	\$150 \$50	\$150 \$50	30 30	\$3,200 \$1,100
Replacement Cost						
System Replacement in 12 Years System Replacement in 24 Years	1 1	LPSM LPSM	\$3,977 \$3,977	\$3,977 \$3,977	12 24	\$3,000 \$2,300
Residual Value (value of facility at end of study period)						
None	1	LPSM		\$0	20	\$0

Life Cycle Cost Analysis - Alternate #2



Estimations, Inc. Cost Planning and Management

Item Supplimental Solar Hotwater Project: Chistochina Multi-Use Facility

	Quantity	Unit	Unit Cost	Total Cost	Years	Present Value
Initial Expenses						
Initial Investment Cost (one time start-up costs) Flat Panel Solar Hotwater System. Includes Two 8' Collectors, 60 Gallon Storage Tank, Toyotomi Tankless Water Heater, and Roof Mounts (No Government Tax Credits Assumed) (Based on 45 Gallons Hot Water Use Per Day)	1	LS		\$9,500	0	\$9,500
uture Expenses						
Operations Cost (annual costs) Fuel Oil Purchase Assume 49% of Hotwater Provided by Solar	65	GAL	\$3.50	\$228	30	\$4,900
Maintenance & Repair Cost (upkeep costsestimate on Annual Maint	annual basis 1	5) EA	\$150	\$150	30	\$3,200
Replacement Cost System Replacement in 15 Years	1	LPSM	\$7,125	\$7,125	15	\$5,100
Residual Value (value of facility at end of study period) None	1	LPSM		\$0	20	\$0
Total Life Cycle of Alternate #2						\$22,700

CHISTOCHINA, ALASKA **CHISTOCHINA HEALTH CLINIC & OFFICE** BUILDING

35% DESIGN DEVELOPMENT PLAN SET NUMBER: CZO-09-00X

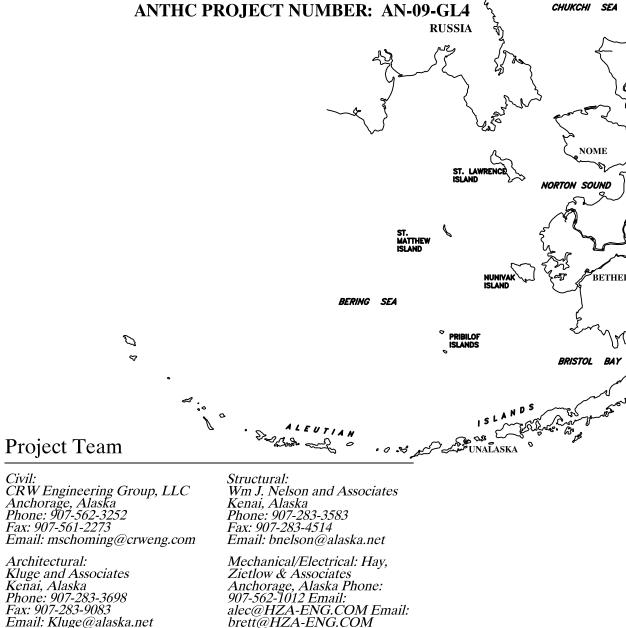
TABLE OF CONTENTS						
SHEET NUMBER	SHEET TITLE					
GENERAL						
G-001	COVER SHEET					
G-002	VICINITY MAP, LEGEND AND ABBREVIATIONS					
SURVEY						
V-001	SURVEY CONTROL SHEET					
CIVIL						
C-001	SITE PLAN					
ARCHITECTURAL						
A-001	ABBREVIATIONS, GENERAL NOTES & DRAWINGS SYMBOLS					
A-101	FLOOR PLAN					
A-102	ENLARGED FLOOR PLAN					
A-103	ENLARGED FLOOR PLAN					
A-104	REFLECTED CEILING PLAN					
A–105	ROOF PLAN					
A-201	EXTERIOR ELEVATIONS					
A-301	BUILDING SECTIONS					
A-601	FINISH SCHEDULE, WALL ASSEMBLIES & DETAILS					
A-602	DOOR-FRAME SCHEDULE & DETAILS					
STRUCTURAL						
S-001	LEGEND					
S-002	NOTES AND SPECIFICATIONS					
S–101	FOUNDATION PLAN					
S–102	SHEARWALL PLAN					
S–103	ROOF FRAMING PLAN					
S–104	TRUSS PROFILES					
S–105	TRUSS PROFILES					
S-301	BUILDING SECTIONS					
S-501	FOUNDATION DETAILS					
S-503	ROOF DETAILS					
MECHANICAL						
M—101	MECHANICAL ROOM PLAN					

Code Information:

IBC 2006 V-B (Non-Sprinkled) Building Type: Occupancy Group: B-Clinic

Б

Allowable SF.: 9,000 Actual Building SF.: 5,142



Dental Supplier: Burkhart Dental Supply Company Tacoma, WA Phone: 253-474-7761 Fax: 253-212-4983 Contact: Carter Barnes

Civil:

Anchorage, Alaska Phone: 907-562-1012 Email: alec@HZA-ENG.COM Email: brett@HZA-ENG.COM

Furniture Supplier: Capital Office Systems Anchorage, AK Phone:907-777-1522 Fax: 907-777-1516 Contact: Mary Whalen



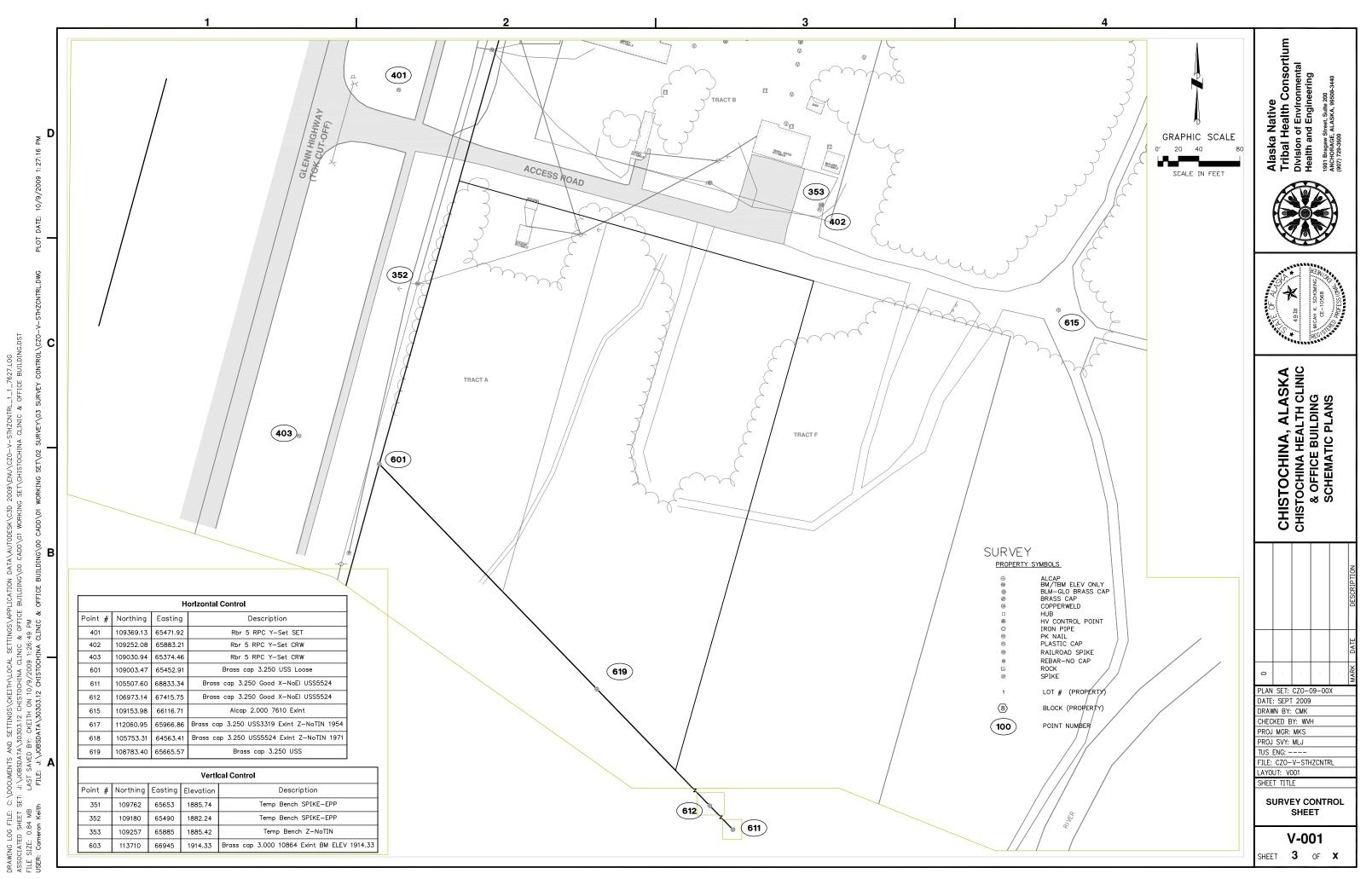


Division of Environmental Health and Engineering

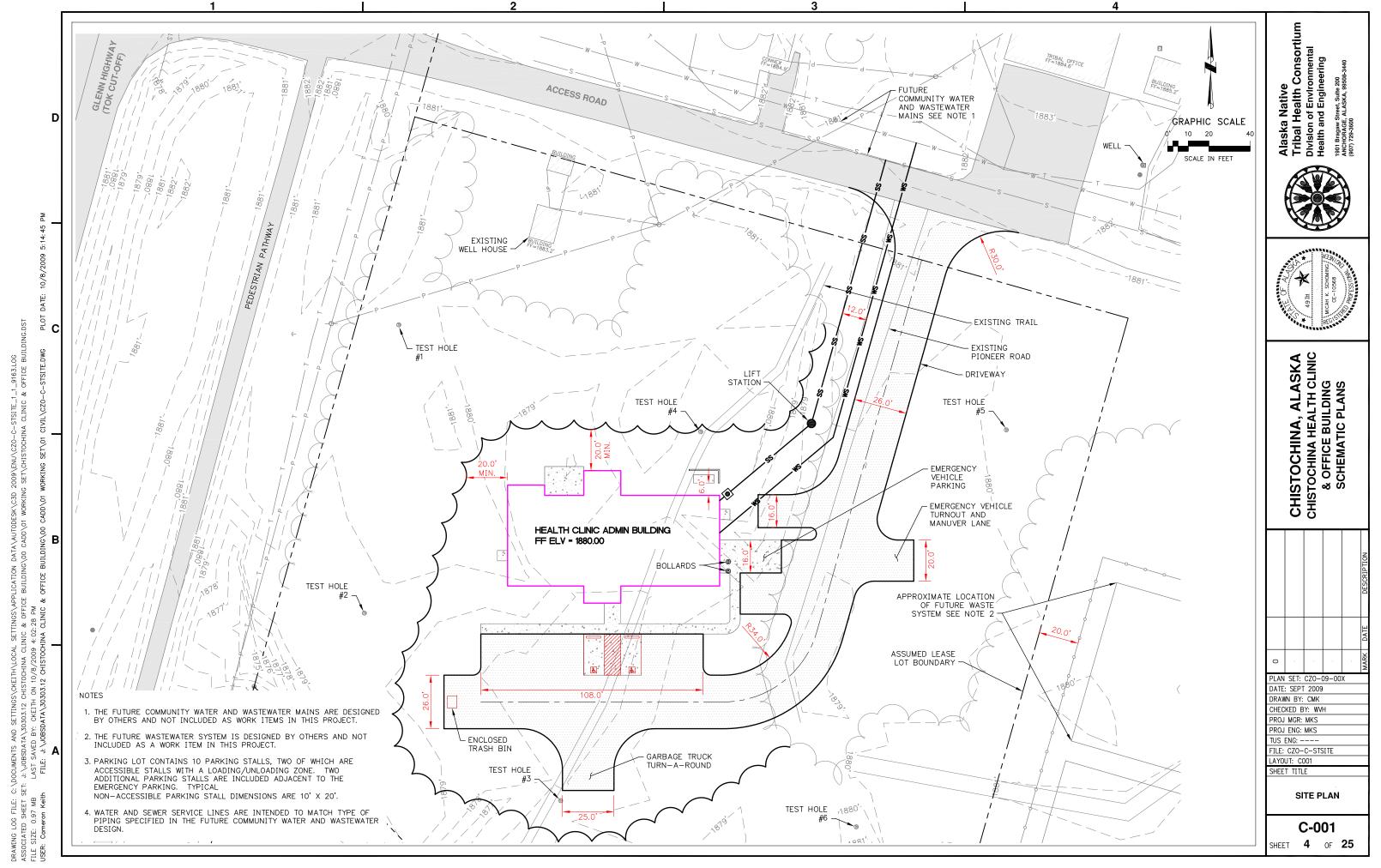
1901 Bragaw Street, Suite 200 Anchorage, Alaska 99508 Phone: (907) 729-3600 Fax: (907) 729-4090 http://www.dehe.org

	MISCELLANEOU	IS	SANITARY SEWER	ELECTRIC + TELEPHONE		§
	EXISTING	<u>PROPOSED</u> EXISTIN				Alaska Native Tribal Health Consortium ^{Division of Environmental}
				-O- UTILITY POLE		Sons
	(TP) TEST PIT (B) BOLLARD	© ® 0	SEWER MANHOLE			th C
		0 ⁰⁰	SEPTIC CLEANOUT	G GUY ANCHOR		Nati leal: of En
			-			ska al H
						Alas Trib
		SITE PLAN				
	EXISTING		PROPOSED			
	24	CONTOUR				
COMMON ABBREVIATIONS	\rightarrow	CULVERT				
ALUM ALUMINUM APPROX APPROXIMATE		DRIVEWAY,				
ASTM ASSOCIATION STANDARD TESTING MATERIAL		GRAVEL ROADS				
AWW ALL WEATHER WOOD AWWA AMERICAN WATER WORKS ASSOCIATION		STREAM OR EDGE OF	WATER			
BOT BOTTOM BOD5 5-DAY BIOCHEMICAL OXYGEN DEMAND						E E
CAP CORRUGATED ALUMINUM PIPE CF CUBIC FEET CMP CORRUGATED METAL PIPE		EDGE OF FILL LIMITS	>			**************************************
CL CENTERLINE CO CLEANOUT		EDGE OF CUT LIMITS		<u>GENERAL LE</u>	<u>GEND</u>	
CONC CONCRETE CRNR CORNER	xxx	FENCE				
CY CUBIC YARD DIA DIAMETER E EAST					NORTH ARROW	NA, ALASKA
EA EACH EF ELECTROFUSION		GRADE SYMBOL				
ELEC ELECTRIC EL ELEVATION	FM	FORCE MAIN			DRAWING TITLE OR	
EST ESTIMATE F&I FURNISH AND INSTALL				XX	SECTION TITLE	
FLG FLANGE FM FORCE MAIN FPT FEMALE PIPE THREAD	P	POWER LINE		SHEET NUMBER		
FRP FIBERGLASS REINFORCED PLASTIC FT FEET		PROPERTY LINE			DRAWING TITLE OR SECTION	
GA GAUGE GAL GALLON				HORZ SCALE XX"-XX'	— TITLE WITH VERTICAL AND HORIZONTAL SCALE	
GALV GALVANIZED GPCD GALLONS PER CAPITA DAY GPM GALLON PER MINUTE		TELEPHONE & POWER	K	VERT. SCALE XX'-XX' SHEET NUMBER		
GRC GALVANIZED RIGID CONDUIT HDPE HIGH DENSITY POLYETHYLENE	S	SEWER LINE	S	VIEW TITLE		
HORZ HORIZONTAL ID INSIDE DIAMETER				X X-XXX	CALL OUT BUBBLE	
IMC INTERMEDIATE METAL CONDUIT INV INVERT		SEWER SERVICE LINE	\$\$	SHEET NUMBER		
LF LINEAR FEET LTMFC LIQUID TIGHT METAL FLEXIBLE CONDUIT IN INCH				VIEW TITLE		
LB POUND LVL LEVEL		STRUCTURES		X	SECTION INDICATOR	
MAX MAXIMUM MC MISC. CHANNEL		TRAIL			SECTION INDICATOR	
MH MANHOLE mg/L MILLIGRAMS PER LITER MIN MINIMUM				SHEET NUMBER		
MIN MINIMUM NTS NOT TO SCALE NSF NATIONAL SCIENCE FOUNDATION	$\frown \frown \frown \frown$	TREE LINE	\sim	GRAPHIC SCALE 0′ 10 20 40		
OC ON CENTER OD OUTSIDE DIAMETER	T	TELEPHONE (BURIED)			ENGINEERING GRAPHIC SCALE	PLAN SET: CZ
OSHA OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION				SCALE IN FEET		DATE: SEPT 2 DRAWN BY: C
PE POLYETHYLENE PSI POUND PER SQUARE INCH PVC POLYVINYL CHLORIDE	W	WATER LINE			BREAK LINE	CHECKED BY: PROJ MGR: MK
R RADUS REQ'D REQUIRED	————WS———	WATER SERVICE LINE	ws			PROJ ENG: MK
ROW RIGHT OF WAY SS STAINLESS STEEL		FINISH GRADE	EL. 17.0'		REVISION INDICATOR	TUS ENG: FILE: CZO-G-
SCH SCHEDULE SIM SIMILAR			•			LAYOUT: G002 SHEET TITLE
STA STATION STD STANDARD STL STEEL		RADIUS POINT	A			
(TYP) TYPICAL		LAYOUT POINT	1			ABBRE
WS WATER SURFACE						

D



DRAWING LOG FILE: C:' ASSOCIATED SHEET SET FILE SIZE: 0.84 MB USER: Cameron Keith



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. : .\.\u0BSDATa\30303.12 CHISTOCHINA CLINIC & OFFI
LAST SAVED BY: CKEITH ON 10/8/2009 4:02:28 PM
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ING.DST

LOG

ABBREVIATIONS

1

Ø

A.E

A.C.1

A.F.

ACOUS

ADD. ADDN.

ALT. ALUM.

ANDD

ARCH

ASB.

ASPH

AVG.

ΒM

B.0

B S

BK

BIL

BUR

BLDG.

BLKG.

BLK.

BM

C.B

C.I

C.J

C.I.P

C.M.P.

CMU

C.R. C.R.C.

CAB. CEM.

CER. CH.B

CIRC

CL. CLG. CLKG.

CLOS CLR

COL. COMM.

COMF

F

CONC. CONN.

CONST

CONT

CORR. CPT.

BOTT.

C TO C

C

AUTO, DR.

APPROX

Г

3

SANITARY SEWER

SANITARY SCHEDULED

SIDING

SHEET

SHOWER

SPECIFICATIONS

SQUARE SQUARE FEET

STAINLESS STEEL STORM SEWER

SIMILAR

SPECIAL

STATION STANDARD

STEEL STORAGE

STRUCTURE

SUSPENDED

SHEET VINYI

SYMMETRICAL

TOWER BAR TACK BOARD

TOP OF CURB TOP OF STEEL

TELEPHONE

TEMPORARY

TERRAZZO

THROUGH

TRANSVERSE TUBE STEEL

TELEVISION

UNFINISHED

VINYL TILE

VESTIBULE

WATER CLOSET

WELDED WIRE MESH

WATER PROOF WELDED WIRE FABRIC

VACUUM VERTICAL

VERIFY

WEST

WITH

WITHOUT

WEIGHT

WOOD

WIDTH

VAPOR BARRIER

VERIFY IN FIELD

TYPICAL

THICK

TOP OF

TONGUE AND GROOVE

TENANT IMPROVEMENT

UNDERWRITERS LABORATORIES

UNLESS OTHERWISE NOTED

VINYL COMPOSITION TILE

SURFACE

SECTION

SHEATHING

GENERAL NOTES 2

SUMMARY OF WORK:

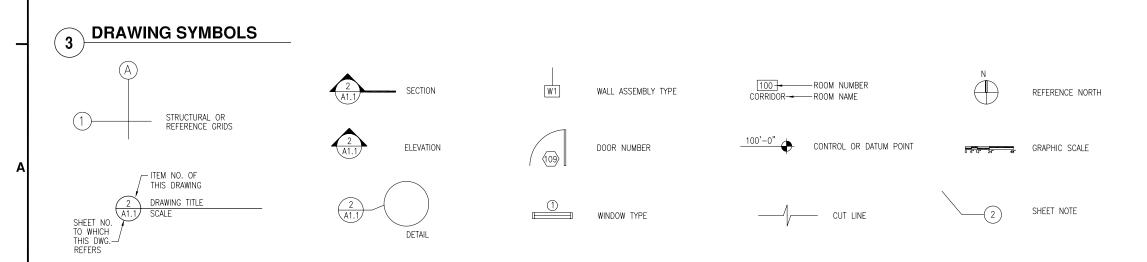
- THE SCOPE OF WORK SHOWN IN THE CONTRACT DOCUMENTS ADDRESSES THE WORK REQUIRED TO COMPLETE THE NEW CONSTRUCTION OF A HEALTH CLINIC FOR THE VILLAGE OF CHISTOCHINA, ALASKA.
- 1.
- 2. RE-USED OR REPRODUCED WITHOUT PERMISSION FROM ANTHC
- 3. CONTRACTOR.
- 5. DAMAGES INCURRED DURING CONSTRUCTION.
- 6.
- 7. REGARDLESS OF SIZE.
- 8.
- CONSTRUCTION.
- SUBMIT TO THE CONTRACTING OFFICER FOR APPROVAL.
- UNLESS INDICATED OTHERWISE.

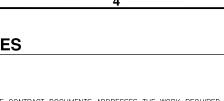
INCH NUMBER AND AT ANGLE DIAMETER	CSK. CSMT. CTD. CTR. CU. CVR'G	COUNTERSUN CASEMENT COATED CENTER CUBIC COVERING
ANCHOR BOLT ACOUSTICAL CEILING TILE ABOVE FINISH FLOOR ACOUSTICAL ACTUAL ACTUAL ADDITION OR ADDENDUM ADDITIONAL ALTERNATE ALUMINUM ANODIZED APPROXIMATE ARCHITECTURAL ASEESTOS ASPHALT AUTOMATIC DOOR AVERAGE	D.B. D.F. D.L. DBL. DEMO. DEPT. DIA. DIAG. DIFF. DIM. DISP. DK. DN. DR. DR. DR. DTL. DWG.	DRAWER BAN DRINKING FO DEAD LOAD DOUBLE DEMOLITION DIAMETER DIAGONAL DIFFUSER OF DIMENSION DISPENSER DECK DOOR DOWN DOOR DOWN SPOUT DETAIL DRAWING
BASE CABINET BENCH MARK BOTTOM OF BOTH SIDES BRITISH THERMAL UNIT BUILT-UP ROOFING BACK BULDING BLOCK BLOCK BLOCKING BEAM BOTTOM CENTER TO CENTER CATCH BASIN CAST IRON CAST IRON CAST IRON CAST IRON CAST IRON CAST IRON CAST IRON CAST IRON CAST	EXIST. FXP	EAST EXT INSULATI EACH SIDE EACH WAY EACH ELECATICAL ELEVATION ENCLOSURE EQUAL EQUIPMENT EXISTING EXPANSION EXPOSED AG EXPANSION EXTERIOR EXTERIOR EXTERIOR
CONTROL JOINT CORRUGATED METAL PIPE CONCRETE MASONRY UNITS COLD ROLLED CHANNEL CERAMIC TILE CABINET CERAMIC CHALK BOARD CHALK BOARD CONTRUCTION CARPET	F.O.F. F.O.S. F.O.W. F.P. F.S. F.T. FAB. FDN. FIG. FIN.	FACE TO FAC FLAT BAR FLOOR DRAIN FIRE EXTING FIRE EXTING FIRE EXTING FIRE HOSE OF FINISHED FLO FIRE HOSE OF FACE OF FACE OF BLC FACE OF BLC FACE OF FIN FACE OF FIN FACE OF ST FACE OF WA FIRE TREATEL FABRICATED FOUNDATION FIGURE FINISH FLOOR

COUNTERSUNK CASEMENT COATED CENTER CUBIC COVERING
DRAWER BANK DRINKING FOUNTAIN DEAD LOAD DOUBLE DEMOLITION DEPARTMENT DIAGONAL DIFFUSER OR DIFFERENCE DIMENSION DISPENSER DECK DOWN DOOR DOWN SPOUT DETAIL DRAWING
EAST EXT INSULATION & FINISH SYS EACH SIDE EACH WAY EACH ELECTRICAL ELEVATION EQUIPMENT EXISTING EXPANSION EXPOSED AGGREGATE EXPANSION JOINT EXPERION EXTRUDED
FACE TO FACE FLAT BAR FLOOR DRAIN FIRE EXTINGUISHER CABINET FACTORY FINISH FINSHED FLOOR ELEVATION FINSHED FLOOR ELEVATION FINCH OF LOOR ELEVATION FACE OF BUILDING FACE OF BUILDING FACE OF BUILDING FACE OF FUILDING FACE OF FINISH FACE OF STUDS FACE OF STUDS FACE OF STUDS FACE OF WALL FIRE PROOF FABRICATED FABRICATED FABRICATED FABRICATED FABRICATED FOUNDATION FIGURE FINISH FLOOR

FLR.	FLOOR
FLSH.	FLASHING
FLUOR.	FLUORESCENT
FRPF.	FIREPROOFING
FRT.	FIRE RETARDANT TREATED
FT.	FOOT
FTG.	FOOTING
FURR.	FURRING
FUT.	FUTURE
G A. G.B. G.I. G W.B. GAL. GALV. GLB. GOV'T. GCB. GSP. GYM. GYM. H.C. H.C. H.C. H.C. H.C. H.M. F. H.M. H.M. H.M. H.D. HDWR. HD. HDWR. HT. HWY.	GYPSUM ASSOCIATION GRAB BAR GALVANIZED IRON GAUCANIZED IRON GAUCANIZED IRON GALUANIZED GLAS GLUE LAMINATED BEAM GOVERNMENT GRADE GALVANIZED STEEL PIPE GYMNASIUM GYPSUM WALL BOARD HOSE BIB HANDICAPPED HOLLOW CORE HOLLOW METAL HOLLOW METAL HOLLOW HARDWOOD HARDWOOD HARDWARE HORIZONTAL HOUR HEIGHT HIGHWAY
I.D.	INSIDE DIAMETER
IN.	INCH
INCL.	INCLUDE
INSUL.	INSULATE
INT.	INTERIOR
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
L.L.	LIVE LOAD
L.P.	LOW POINT
LAB.	LABORATORY
LAM.	LAMINATE
LAV.	LAVATORY
LBR.	POUND
LG.	LUMBER
LG.	LONG OR LENGTH
LH.	LEFT HAND
LKRS.	LOCKERS
LT.	LEFT
M.	MINUTE
M.C.	MEDICINE CABINET
M.O.	MASONRY OPENING
MAT'L.	MATERIAL
MAX.	MAXIMUM

MECH. MEMB. MFG. MH. MIN. MIR. MISC. MTL. MULL. MWP.	MECHANICAL MEMBRANE MANUFACTURE MANHOLE MINIMUM OR MINUTE MIRROR MISCELLANEOUS METAL MULLION MEMBRANE WATER PROOFING	S.S. SAN. SCHED. SD. SDG. SECT. SHET. SHWR. SIM. SPEC.
N N.A. N.I.C. N.T.S. NO. NOM.	NORTH NOT APPLICABLE NOT IN CONTRACT NUT TO SCALE NUMBER NOMINAL	SPL. SQ. SQ. FT. SST. ST.S. STA. STD.
O.C. O.H. OFF. OHD. OPNG. OPP. ORIG.	ON CENTER OVER HEAD OFFICE OVER HEAD DOOR OPENING OPPOSITE ORIGINAL	STL. STOR. STRUCT. SUR. SUSP. SV. SYM.
P.LAM. P.T.D. PART. PL. PLAST. PLYWD. PR. PRE. ENG. PREFAB. PROJ. PSF. PT.	PLASTIC LAMINATE PAPER TOWER DISPENSER PARTITION PLATE PLASTER PLYWOOD PAIR PREVIOUSLY ENGINEERED PREFABRICATED PROJECT POUNDS PER SQUARE FOOT POINT	T.&G. T.B. T.BD. T.I. T.O. T.O.C. T.O.S. TEL. TEMP. TERR. THRV. THRU. TRANSV.
Q.T. R.	QUARRY TILE RISER	TS. TV. TYP.
R. RCP R.D. R.H. R.L. R.O. R.O.W.	RISER REFLECTED CEILING PLAN ROOF DRAIN RIGHT HAND RAIL LEADER ROUGH OPENING RIGHT OF WAY	U.L. U.O.N. UNFIN. V.B.
RAD. RBR. REF. REFR. REINF. REQ. RESIL. REV.	RADIUS RUBBER REFERENCE REFRICERATOR REINFORCED REQUIRED RESILIENT REVERSED	V.C.T. V.I.F. V.T. VAC. VERT. VEST. VFY.
RGH. RM. RT.	ROUGH ROOM RIGHT	W. W.C. W.P. W.W.F.
S. S.A.T. S.B. S.C. S.C.W. S.D.	SOUTH SUSPENDED ACOUSTICAL TILE SINK BASE SOLID CORE SOLID CORE WOOD SMOKE DETECTOR	W.W.F. W.W.M. W/ W/O WD. WT. WTH.





ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST RECENT ADOPTED EDITION OF THE INTERNATIONAL BUILDING CODE, NFPA, JCAHO, INTERNATIONAL MECHANICAL CODE, NATIONAL ELECTRICAL CODE, UNIFORM PLUMBING CODE AND ALL LOCAL AND ALASKA STATE CODE REGULATIONS AND AMENDMENTS.

THESE DRAWINGS ARE SUPPLIED TO THE GENERAL CONTRACTOR AND OTHERS FOR THEIR USE ON THIS SPECIFIC PROJECT. ALL COPIES OF THESE DRAWINGS SHALL REMAIN THE PROPERTY OF ANTHC AND SHALL NOT BE

THE ORGANIZATION OF THESE DRAWINGS IS NOT INTENTED TO CONTROL THE DIVISION OF WORK AMONG SUB-CONTRACTORS. THE DIVISION OF THE WORK SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL

4. CONTRACTORS ARE RESPONSIBLE FOR CONFORMING TO ALL APPLICABLE LOCAL CODES AND TRADE STANDARDS.

CONTRACTORS SHALL TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION. CONTRACTOR ASSUMES ALL LIABILITY FOR

CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO COMPLETE ALL WORK AS SHOWN OR AS IMPLIED ON THESE DRAWINGS.

CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL FACILITIES FOR LIGHT, HEAT AND POWER WITHIN THE PREMISES AND IN THE CONSTRUCTION AREA DURING THE ENTIRE CONSTRUCTION PERIOD. PROVIDE NECESSARY MATERIALS AND LABOR FOR POWER CONNECTIONS FOR MACHINES, PORTABLE, ETC. AS USED BY OTHER TRADES,

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION. IF A CONDITION NOT COVERED IN THE DRAWINGS IS ENCOUNTERED, OR IF A DIMENSIONAL ERROR IS FOUND, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE COMMENCING WITH THAT PORTION OF THE WORK.

9. ALL COMPONENTS, EQUIPMENT, ETC., SHALL BE INSTALLED PER MANUFACTURERS PRINTED RECOMMENDATIONS

10. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL RUBBISH AND DEBRIS RESULTING FROM

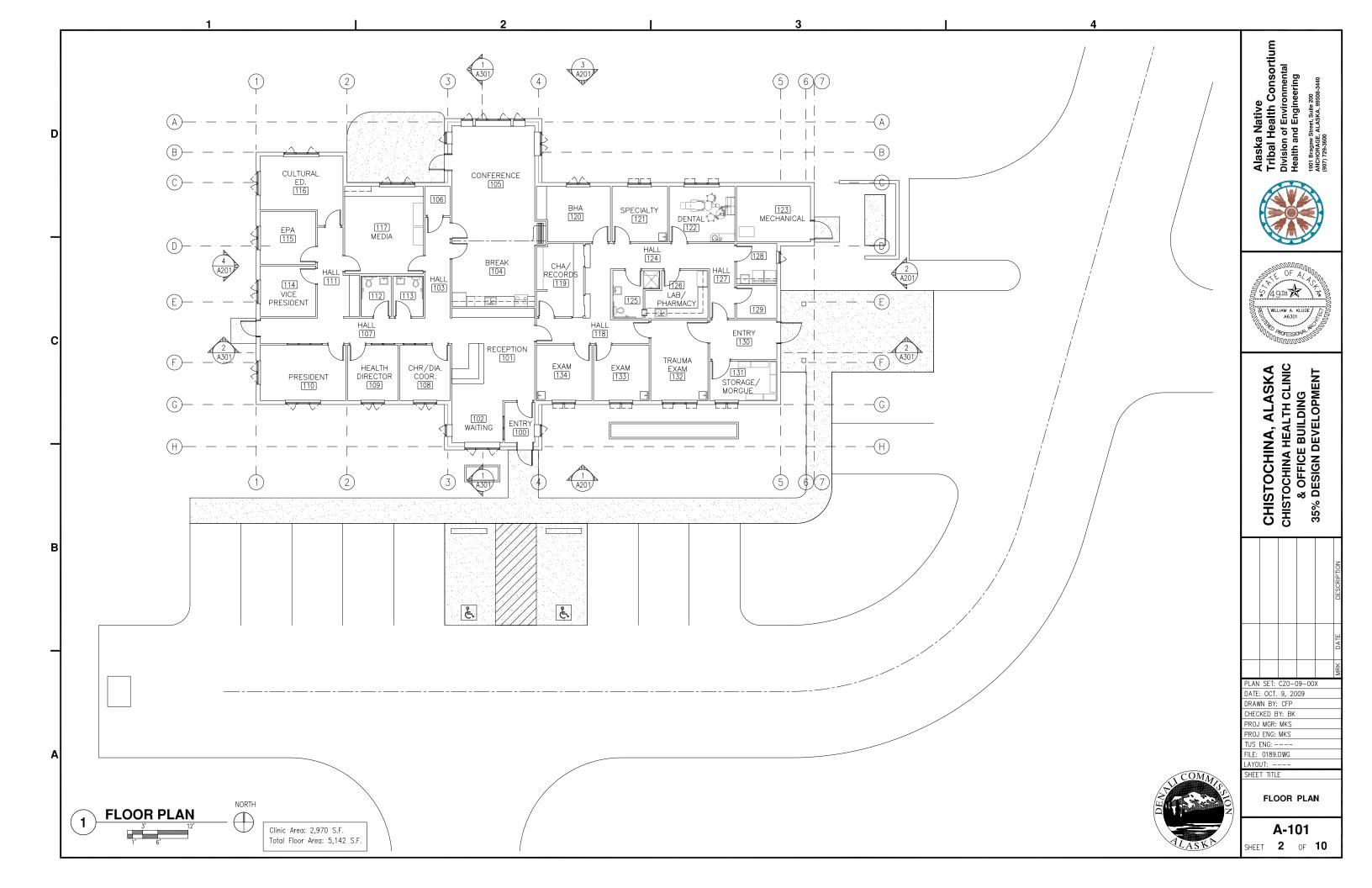
11. ALL COLOR SELECTION SHALL BE PER THE COLOR SCHEDULE OR IF NOT ON THE COLOR SCHEDULE THEN

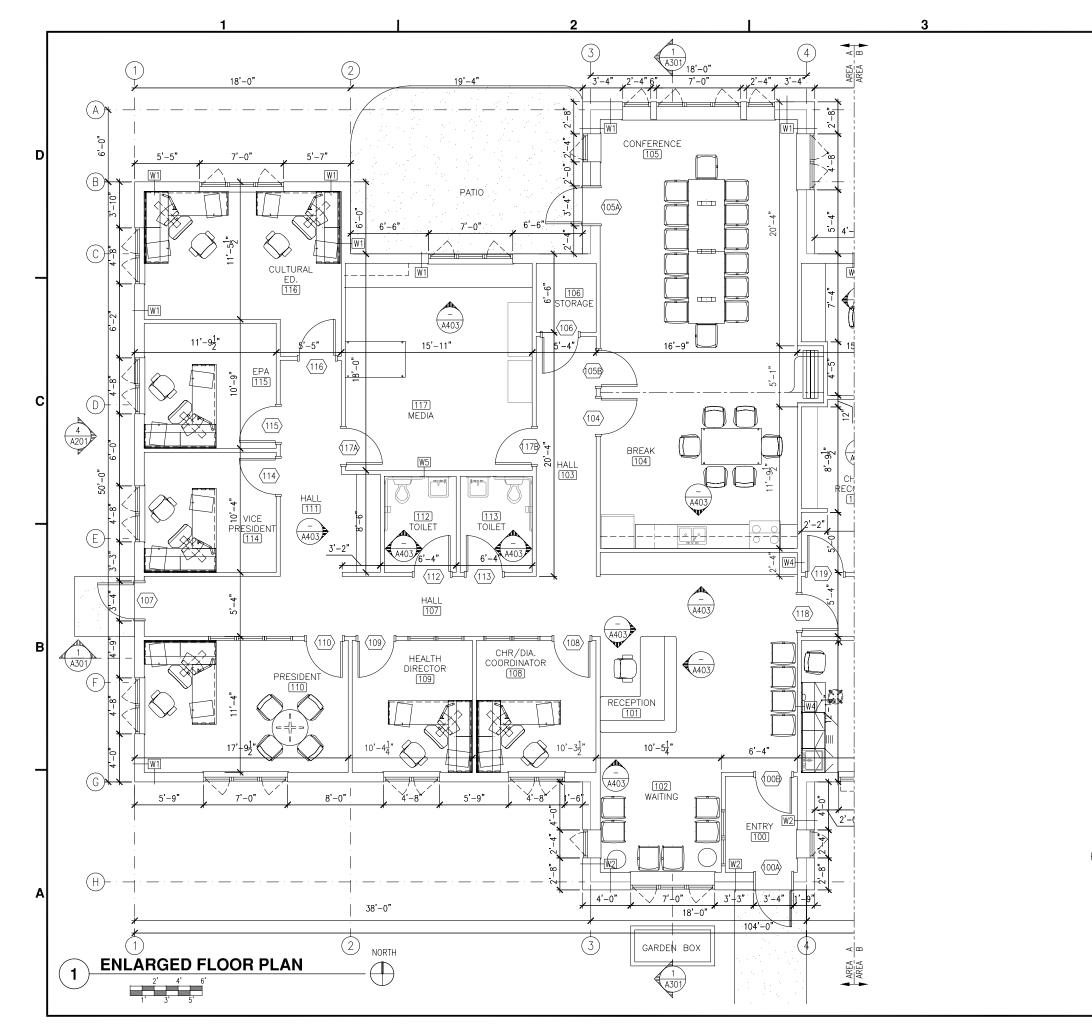
12. ALL DIMENSIONS ARE TO FACE OF STUDS, FACE OF PANEL SHEATHING, GRID LINES, FACE OF ROUGH OPENING,

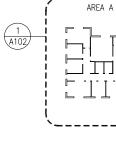
CAULK ALL JOINTS, PROVIDE BACKER ROD AS NEEDED, AND PROVIDE FLASHING AND COUNTER FLASHING AS NEEDED TO PROVIDE COMPLETE WEATHER PROOF INSTALLATION.



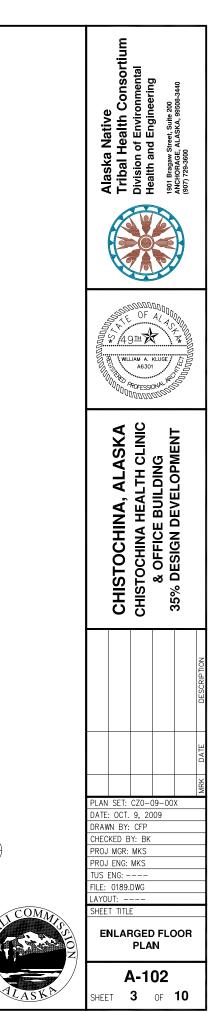
Alaska Native Tribal Health Consortiu Division of Environmental Health and Engineering 1901 Fragew Street, Suite 200 ARCHORAGE, ALASKA, 99509-3440 (907) 723-3600					
WILLIAM A KLUBE					
CHISTOCHINA, ALASKA CHISTOCHINA HEALTH CLINIC & OFFICE BUILDING 35% DESIGN DEVELOPMENT					
	DESCRIP TION				
	NTE				
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PLAN SET: CZO-09-00X DATE: OCT. 9, 2009 DRAWN BY: CFP	MRK D/				
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DATE: OCT. 9, 2009 DRAWN BY: CFP CHECKED BY: BK PROJ MGR: MKS PROJ ENG: MKS TUS ENG: FILE: 0189.DWG LAYOUT: SHEET TITLE ABBREVIATIONS,	MRK D/				



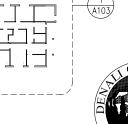




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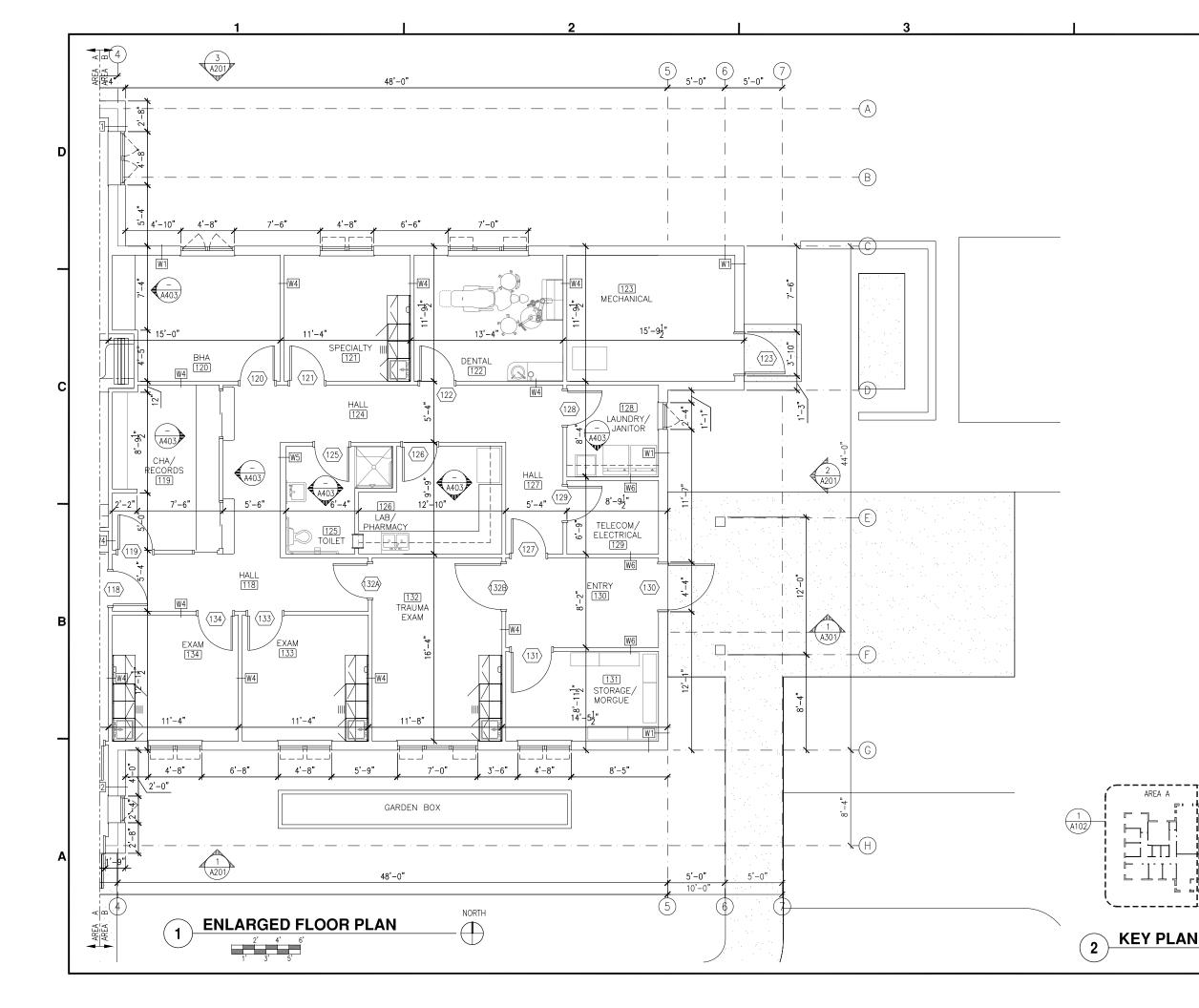


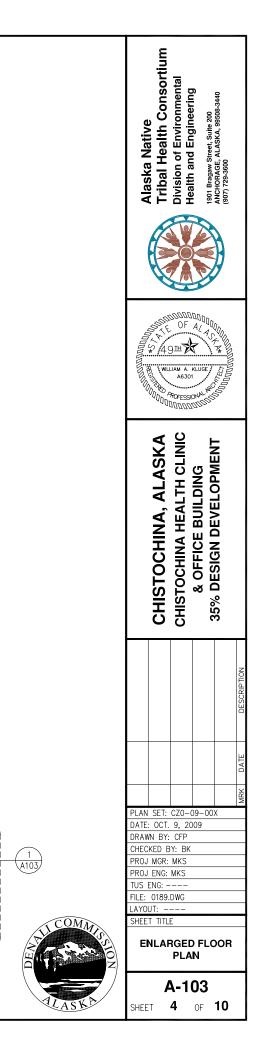


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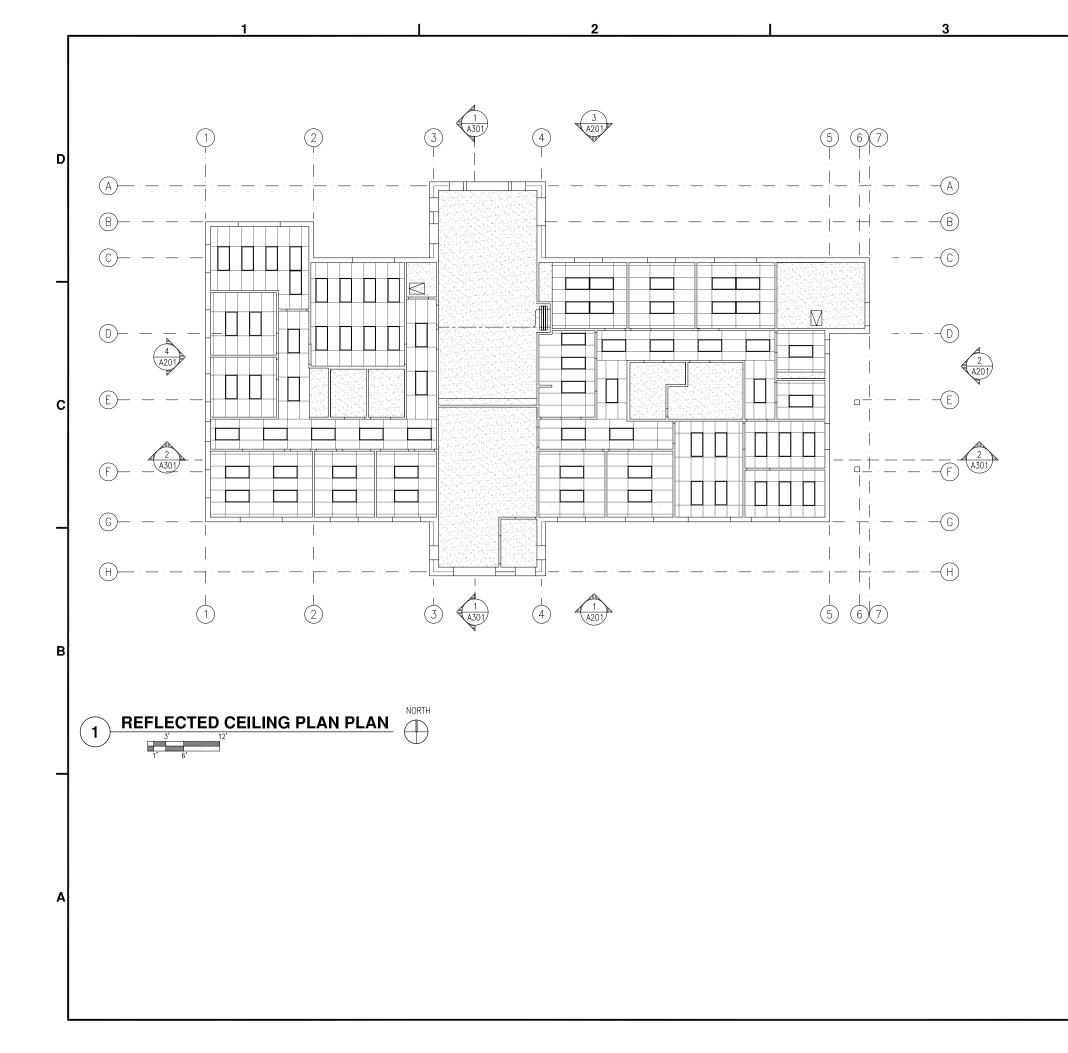
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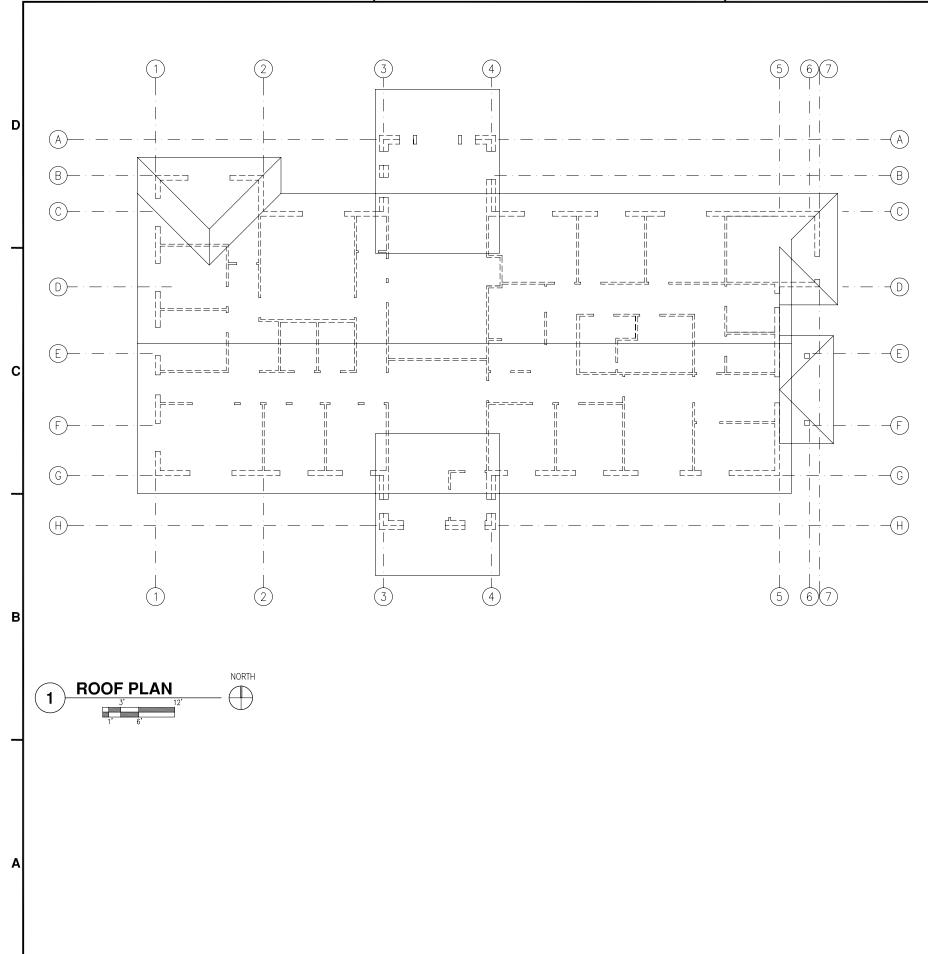
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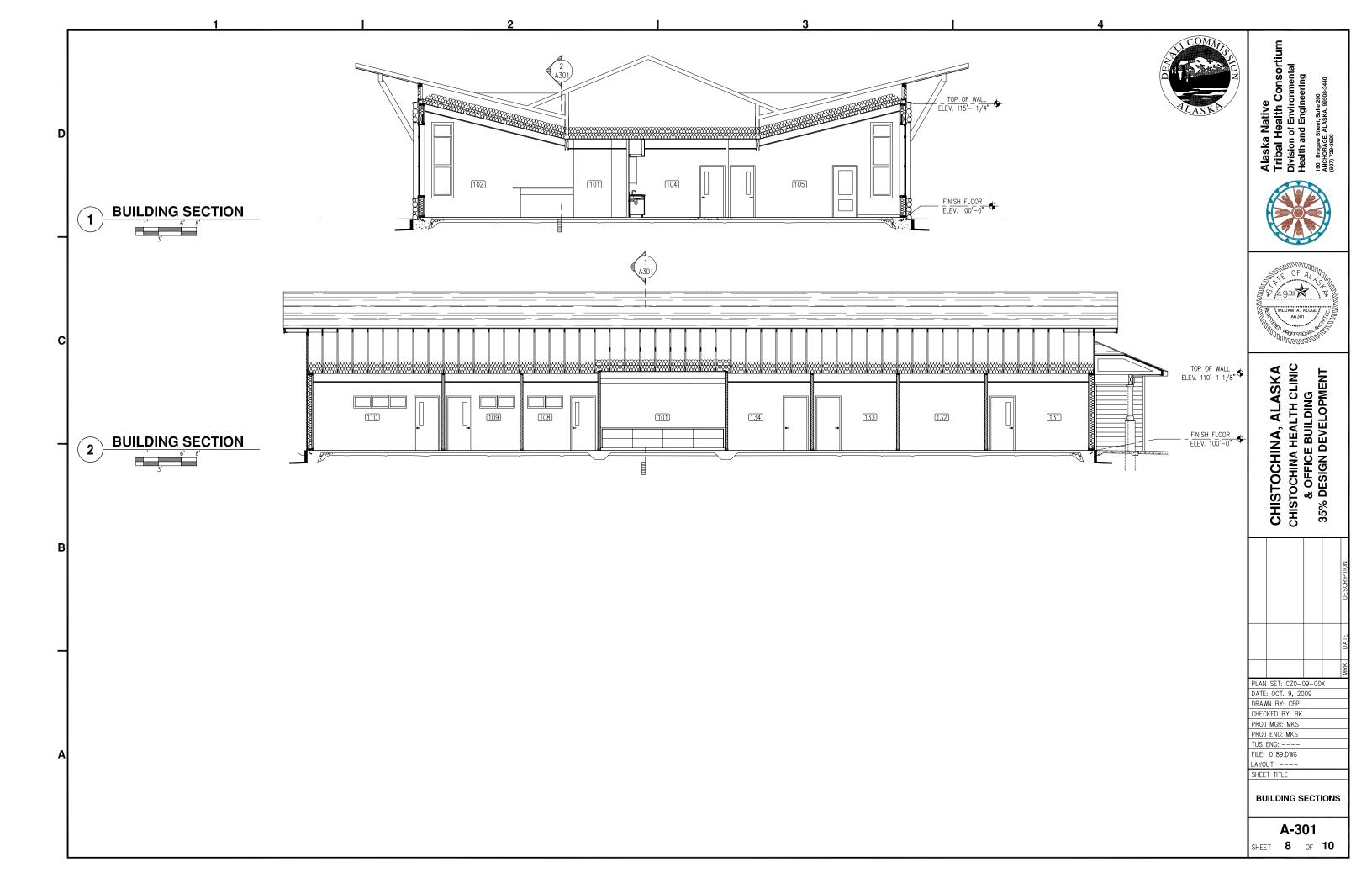










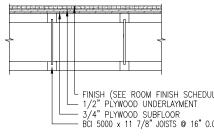


/ARK	ROOM NAME	FLOORING	BASE		WA	ALLS		CEILING	CEILING HEIGHT	NOTE	FLOORING
				NORTH	EAST	SOUTH	WEST		neidin		F1.1 RESILIENT FLOORING
100	ENTRY	F4	B1	W1.2	W1.2	W1.2	W1.2	C1	8'-0"		F1.2 RESILIENT FLOORING
101	RECEPTION	F2	B1	W1.3	W1.1	W1.1	W1.1	C1	SLOPE		F2 CARPET F3 SEALED CONCRETE
102	WAITING	F2	B1	W1.1	W1.1	W1.1	W1.1	C1	9'-0"		F4 TILE
103	HALL	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		
104	BREAK	F4/F1.2	B1	W1.3	W1.3	W1.3	W1.3	C1	10'-0"		BASE
105	CONFERENCE	F2	B1	W1.3	W1.3	W1.3	W1.3	C1	SLOPE		B1 4" RESILIENT BASE
106	STORAGE	F2	B1	W1.1	W1.1	W1.1	W1.1	C1	8'-0"		B2 6" BEVELED P-LAM
107	HALL	F4/F2	B1	W1.3	W1.3	W1.3	W1.3	C2	9'-0"		
108	CHR/DIA. COORDINATOR	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		
109	HEALTH DIRECTOR	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		WALLS
110	PRESIDENT	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		W1.1 PAINT/ IPS 10
111	HALL	F2	B1	W1.1/W2	W1.1/W2	W1.1/W2	W1.1/W2	C1/C2	9'-0"	1	W1.2PAINT/ IPS 20
112	TOILET	F1.2	B2	W1.2/W3	W1.2/W3	W1.2/W3	W1.2/W3	C1	8'-0"		W1.3PAINT/ IPS 30 W2 RIGID VINYL SHEET TO
113	TOILET	F1.2	B2	W1.2/W3	W1.2/W3	W1.2/W3	W1.2/W3	C1.1	8'-0"		HEIGHT OF WALL GUARD
114	VICE PRESIDENT	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		W/ PAINT ABOVE
115	EPA	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		W3 P-LAM WAINSCOT 48"
116	CULTURAL ED.	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		A.F.F. WITH METAL CAP & CORNER TRIM
117	MEDIA	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		
118	HALL	F1.1	B1	W1.1/W2	W1.1/W2	W1.1/W2	W1.1/W2	C2	9'-0"		CEILING
119	CHA/RECORDS	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		
120	вна	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		C1 GWB/ IPS 10 C2 2X4 SUSPENDED ACOUSTIC
121	SPECIALTY	F1.2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		TILE
122	DENTAL	F1.2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		
123	MECHANICAL	F3	B1	W1.1	W1.1	W1.1	W1.1	C1	10'-0"		NOTES
124	HALL	F1.1	B1	W1.1/W2	W1.1/W2	W1.1/W2	W1.1/W2	C2	9'-0"		1. REFER TO RCP *** FOR LOCATION OF C1.
125	TOILET	F1.2	B2	W1.2/W3	W1.2/W3	W1.2/W3	W1.2/W3	C2	9'-0"		
126	LAB/PHARMACY	F1.2	B1	W1.1	W1.1	W1.1	W1.1	C1	8'-0"		1
127	HALL	F1.1	B1	W1.1/W2	W1.1/W2	W1.1/W2	W1.1/W2	C1	9'-0"		1
128	LAUNDRY/JANITOR	F1.1	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		1
129	TELECOM/ELECTRICAL	F2	B1	W1.1	W1.1	W1.1	W1.1	C2	9'-0"		1
130	ENTRY	F4	B1	W 1.2	W1.2	W1.2	W 1.2	C2	9'-0"		1

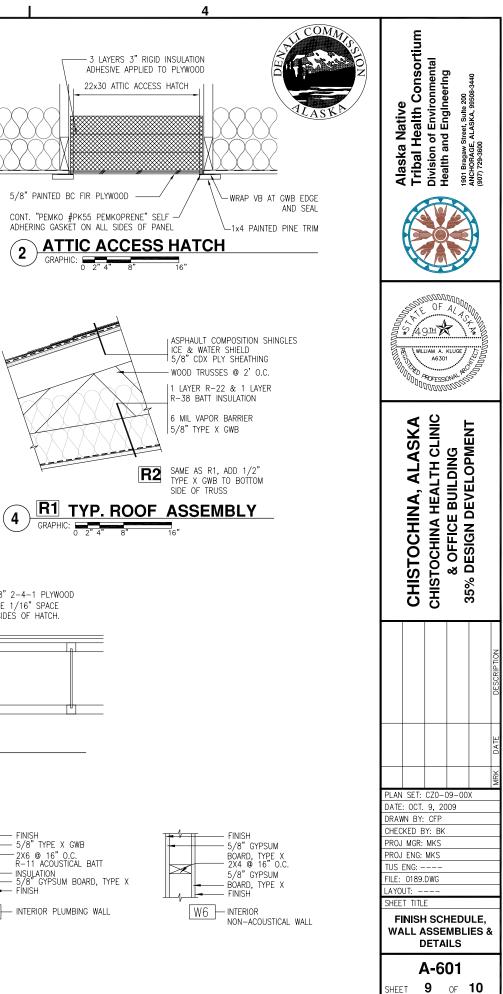
1 THE CONTRACTOR SHALL PROPERLY PREPARE THE SURFACES PER This Handractor shall prove the fine of the sources for the sources the sources the sources of t GLUE, PLASTER AND PAINT EXCESS.

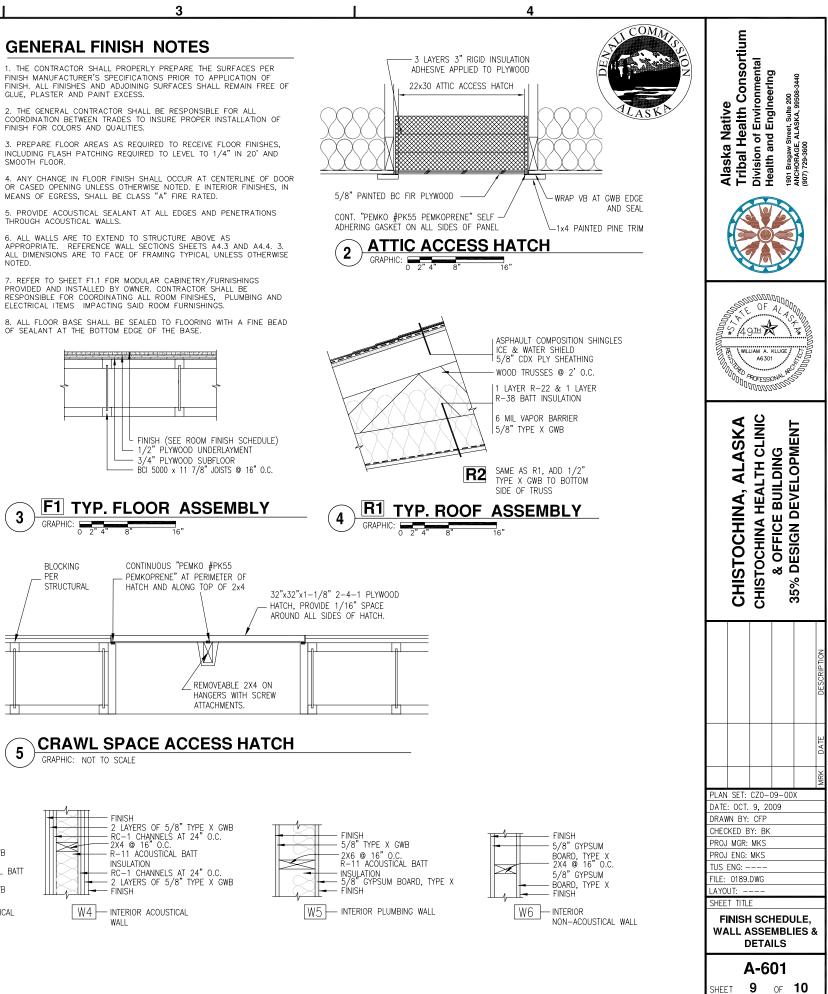
FINISH FOR COLORS AND QUALITIES.

MEANS OF EGRESS, SHALL BE CLASS "A" FIRE RATED.

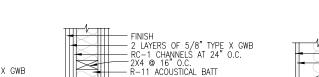


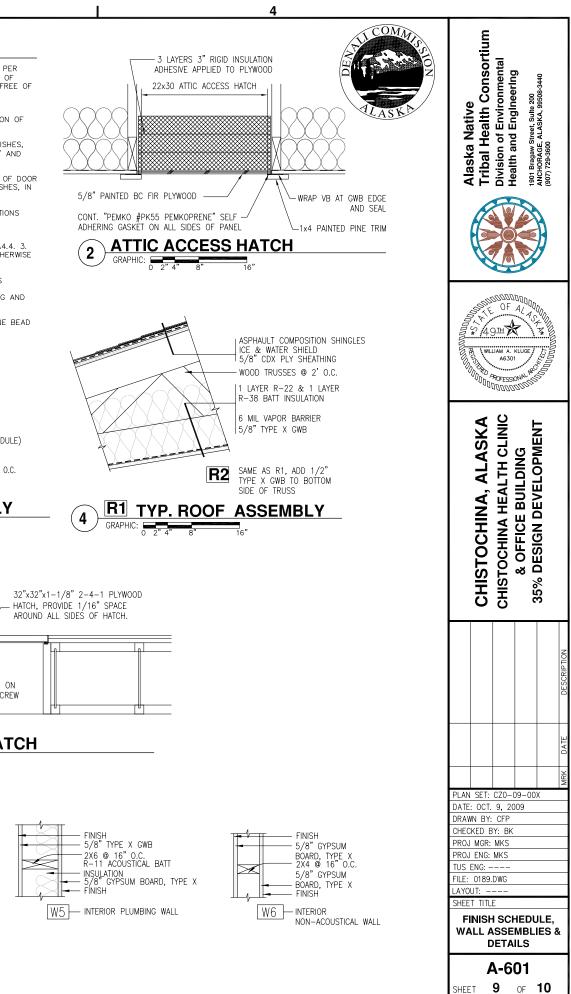
F1 TYP. FLOOR ASSEMBLY GRAPHIC:











LOCAL RIVER ROCK MASONRY MINERAL BOARD SIDING WEEP SPACE INFILTRATION BARRIER INFILTRATION BARRIER - 1/2 " PLYWOOD SHEATHING - 1/2 " PLYWOOD SHEATHING 2X8 @ 16" O.C 2X8 @ 16" O.C. - 2 LAYERS OF R15 FIT BATT INSULATION - 2 LAYERS OF R15 FIT BATT INSULATION FINISH 5/8" TYPE X GWB WIRING CHASE WITH 2"x2" STUDS AND WIRING CHASE WITH 2"x2" STUDS AND 2X4 @ 16" O.C. 2"x4" TOP AND BOTTOM PLATES 6 MIL VAPOR BARRIER 5/8" TYPE X GWB 2"x4" TOP AND BOTTOM PLATES R-11 ACOUSTICAL BATT 6 MIL VAPOR BARRIER 5/8" TYPE X GWB FINISH INSULATION 5/8" TYPE X GWB - FÍNISH W2 EXTERIOR WALL W1 EXTERIOR WALL W3-- INTERIOR ACOUSTICAL WALL

WALL ASSEMBLIES 6 GRAPHIC: 0 2" 4" 8"

16" NOTE: ALL WALLS SHALL BE W3 TYPICAL UNLESS OTHERWISE NOTED PER A-102.

F1.2

F1.2

F1.2

F1.2

B1

B1

B1

B1

W1.1

W11

W1.1

W1.1

W11

W1.1

W1.1 W1.1

W1.1

W11

W1.1

W1.1

W1.1

W11

W1.1

W1.1

C1

C2

C2

C2

10'-0"

9'-0"

9'-0"

9'-0"

D

131

132

133

134

STORAGE/MORGUE

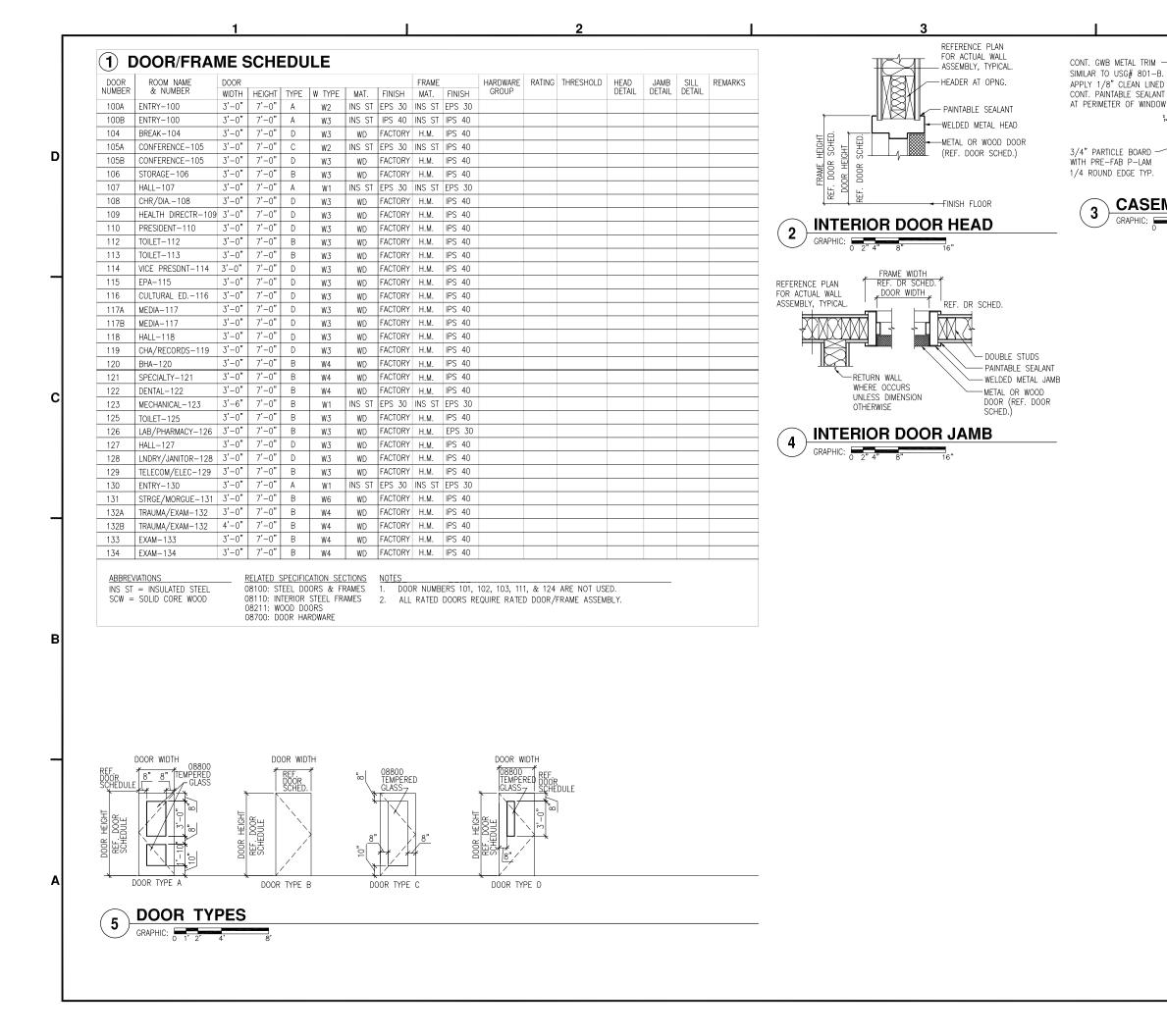
TRAUMA/EXAM

FXAM

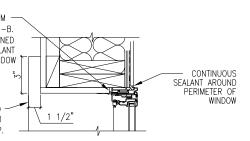
EXAM

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GRAPHIC



SHEET 10 OF 10



GENERAL NOTES

1. INTERPRETATION OF DRAWINGS & SPECIFICATIONS

A) FOR CONVENIENCE, SPECIFICATIONS HAVE BEEN PREPARED FOR THIS PROJECT AND ARE ARRANGED IN SEVERAL SECTIONS, BUT SEPARATION SHALL NOT BE CONSIDERED AS THE LIMITS OF THE WORK REQUIRED BY ANY SEPARATE TRADE. THE TERMS AND CONDITIONS OF SUCH LIMITATIONS ARE WHOLLY BETWEEN THE CONTRACTOR AND HIS SUBCONTRACTORS.

B) IN GENERAL, THE WORKING DETAILS WILL INDICATE DIMENSIONS, POSITIONS AND KIND OF CONSTRUCTION, AND THE SPECIFICATIONS, QUALITIES AND METHODS. ANY WORK INDICATED ON THE WORKING DETAILS MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, SHALL BE FURNISHED AS THOUGH FULLY SET FORTH IN BOTH. WORK NOT PARTICULAR DETAILED, MARKED OR SPECIFIED, SHALL BE THE SAME AS SIMILAR PARTS THAT ARE DETAILED, MARKED OR SPECIFIED. IF CONFLICTS OCCUR BETWEEN DRAWINGS AND SPECIFICATIONS, THE MOST EXPENSIVE MATERIALS OR METHODS WILL PREVAIL.

C) SHOULD AN ERROR APPEAR IN THE WORKING DETAILS OR SPECIFICATIONS OR IN WORK DONE BY OTHERS AFFECTING THIS WORK, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AT ONCE AND IN WRITING. IF THE CONTRACTOR PROCEEDS WITH THE WORK SO AFFECTED WITHOUT HAVING GIVEN SUCH WRITTEN NOTICE AND WITHOUT RECEIVING THE NECESSARY APPROVAL, DECISIONS OR INSTRUCTION IN WRITING FROM THE OWNER, THEN HE SHALL HAVE NO VALID CLAIM AGAINST THE OWNER, FOR THE COST OF SO PROCEEDING AND SHALL MAKE GOOD ANY RESULTING DAMAGE OR DEFECT. NO VERBAL APPROVAL, DECISION, OR INSTRUCTION SHALL BE VALID OR BE THE BASIS FOR ANY CLAIM AGAINST THE OWNER, ITS OFFICERS EMPLOY'S OR AGENTS. THE FOREGOING INCLUDES TYPICAL ERRORS IN THE SPECIFICATIONS OR NOTATIONAL ERRORS IN THE WORKING DETAILS WHERE THE INTERPRETATIONS IS DOUBTFUL OR WHERE THE FREOR IS SUFFICIENTLY APPARENT AS TO PLACE A REASONABLY PRUDENT CONTRACTOR ON NOTICE THAT SHOULD HE ELECT TO PROCEED, HE IS DOING SO AT HIS OWN RISK.

2. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS.

3. SHOP DRAWING NOTES:

A) SHOP DRAWINGS SHALL BE SUBMITTED IN THE FORM OF ONE SEPIA TRANSPARENCY AND TWO BLUE LINE PRINTS OF EACH SHEET.

B) THE PURPOSE OF SHOP DRAWINGS SUBMITTALS BY THE CONTRACTOR IS TO DÉMONSTRATE TO THE STRUCTURAL ENGINEER THAT HE UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIALS HE INTENDS TO FURNISH AND INSTALL, AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS HE INTENDS TO USE.

PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW TO THE STRUCTURAL ENGINEER. SHOP DRAWINGS SUBMITTALS SHALL INCLUDE. BUT ARE NOT NECESSARILY LIMITED TO STRUCTURAL STEEL AND REINFORCED STEFL

PRIOR TO SUBMISSION THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL STAMP SUBMITTALS AS BEING "REVIEWED FOR CONFORMANCE".

E) SHOP DRAWINGS SUBMITTALS PROCESSED BY THE STRUCTURAL ENGINEER ARE NOT CHANGE ORDERS.

F) ANY DETAIL ON THE SHOP DRAWING THAT DEVIATES FROM THE CONTRACT DOCUMENTS SHALL CLEARLY BE MARKED WITH THE NOTE "THIS IS A CHANGE".

SHOP DRAWINGS OR CALCULATIONS SUBMITTED FOR REVIEW THAT REQUIRE RÉSUBMITAL FOR RE-REVIEW SHALL BE BILLED HOURLY FOR SUCH TIME TO THE GENERAL CONTRACTOR. RE-REVIEW WILL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE GENERAL CONTRACTOR FOR ADDITIONAL ENGINEERING REVIEW SERVICES

4. SAFETY NOTES:

A) IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS, AS THEY APPLY TO THIS PROJECT, OF THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF ALASKA LATEST EDITION, AND ALL OSHA REQUIREMENTS

B) THE OWNER AND THE STRUCTURAL ENGINEER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS

C) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED.

THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER WHERE A CONFLICT OR A DISCREPANCY OCCURS BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS. SUCH NOTIFICATION SHALL BE GIVEN IN DUE TIME SO AS NOT TO AFFECT THE CONSTRUCTION SCHEDULE. IN CASE OF A CONFLICT BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS, THE MORE RESTRICTIVE CONDITION SHALL TAKE PRECEDENCE UNLESS WRITTEN APPROVAL HAS BEEN GIVEN FOR THE LEAST RESTRICTIVE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO COMMENCING ANY WORK.

6. WHERE NO SPECIFIC DETAILS IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THIS PROJECT. SHOULD THERE BE ANY QUESTIONS, CONTACT THE ARCHITECT AND THE ENGINEER PRIOR TO PROCEEDING

WHEN CONSTRUCTION ATTACHES TO AN EXISTING BUILDING, A COMPLETE SET OF DRAWINGS OF THE EXISTING BUILDING SHALL BE KEPT ON THE JOB SITE. CONTRACTOR TO OBTAIN THESE DRAWINGS FROM THE OWNER.

CONTRACTOR SHALL PROVIDE AN ALLOWANCE EQUAL TO 2% OF THE BID FOR STRUCTURAL STEEL, MISC. IRON AND REINFORCING STEEL TO BE USED AT THE DISCRETION OF THE STRUCTURAL ENGINEER. UNUSED AMOUNT TO REVERT TO THE OWNER UPON COMPLETION OF THE JOB.

9. ANY SUBSTITUTIONS FOR STRUCTURAL MEMBERS, HARDWARE, OR DETAILS SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER. SUCH REVIEW WILL BE BILLED ON A TIME AND MATERIALS BASIS TO THE GENERAL CONTRACTOR WITH NO GUARANTEE THAT THE SUBSTITUTION WILL BE ALLOWED.

10. DO NOT SCALE DRAWINGS. CONTACT THE ARCHITECT OR STRUCTURAL ENGINEER FOR ANY DIMENSIONS NOT SHOWN.

11. THESE DRAWINGS ARE NOT COMPLETE UNTIL REVIEWED AND SIGNED BY THE STRUCTURAL ENGINEER AND ARCHITECT

12. THESE DRAWINGS ARE SUPPLIED TO THE GENERAL CONTRACTOR AND OTHERS FOR THEIR USE ON THIS SPECIFIC PROJECT. ALL COPIES OF THESE DRAWINGS SHALL REMAIN THE PROPERTY OF ANTHC, AND SHALL NOT BE REUSED OR REPRINTED WITHOUT PERMISSION FROM ANTHC.

13. THE STRUCTURE SHOWN ON THESE DRAWINGS IS STRUCTURALLY SOUND ONLY IN ITS COMPLETED FORM. THE STABILITY OF THIS STRUCTURE DEPENDS ON THE DIAPHRAGM AND BRACING MEMBERS SHOWN. THE CONTRACTOR IS TO PROVIDE FOR THE DESIGN AND CONSTRUCTION OF SHORING FOR ALL EARTH, FORMS, CONCRETE, STEEL, TO RESIST GRAVITY, EARTH, WIND, AND CONSTRUCTION LOADS. SHORING SHALL REMAIN IN PLACE UNTIL ALL DIAPHRAGM AND LATERAL RESISTING ELEMENTS ARE IN PLACE IN THEIR ENTIRETY

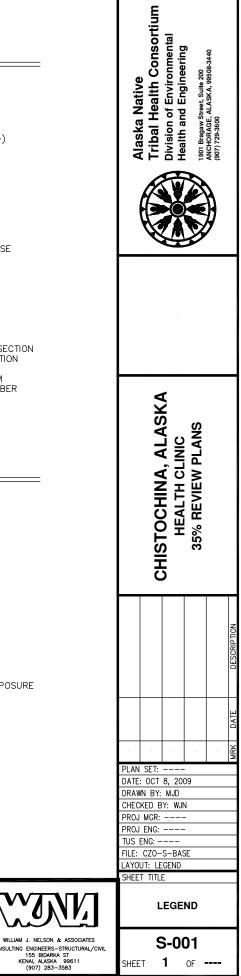
R	ANCHOR BOLT
	CENTER TO CENTER
). `.l	
יו פ	CONSTRUCTION JOINT CLEAR
	CONTINUOUS
	COMPLETE PENETRATION
	COUNTERSINK
	DOUGLAS FIR
/i	DEAD LOAD
lo	
e)	
	EXPANSION JOINT
	EDGE NAIL
	FACE OF BLOCK
D	FACE OF BLOCK
د د	FACE OF CONCRETE
s	FACE OF STUD
	HIGH STRENGTH BOLT
IT	
	JOIST HANGER (SIMPSON)
	LIVE LOAD
<u>S</u>	LAG SCREW
. wi	LIGHT WEIGHT
1B	MACHINE BOLT MALLEABLE IRON
11、	MALLEABLE IRON
n)	
стј	CONTROL JOINT
	SELF DRILLING SELF
	TAPPING SCREW
	CONCRETE
'LR	
IDR	
1FR	MANUFACTURER
TOF	

	Α.	GRAVITY	LOADS
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1. ROOF AND FLOOR DEAD	=	15.0	PSF	
2. FLOOR LIVE	=	50.0	PSF	OFF
	_	100.0	DCE	EVI

ABBREVIATIONS	
AB ANCHOR BOLT NTS NOT TO SCALE BTWN BETWEEN OH OPPOSITE HAND CC CENTER TO CENTER pc PIECES CJ CONSTRUCTION JOINT PP PARTIAL PENETRATION CLR CLEAR PT PRESSURE TREATED CONTIN. CONTINUOUS WS WOOD SCREW CP COMPLETE PENETRATION SC SHEAR CONNECTOR (["~)) CSK COUNTERSINK SP STRUCTURAL PLYWOOD DF DOUGLAS FIR SPEN STRUCTURAL PLYWOOD DL DEAD LOAD EDGE NAILING EDGE NAILING do DITTO STFNR STIFFNER (e) EXISTING STGGRD STAGGERED EJ EXISTING STGGRD STAGGERED EJ EXISTING STGGRD STAGGERED EJ EXPANSION JOINT T & B TOP & BOTTOM EN EDGE NAIL T & GOVE FB FACE OF BLOCK TN TOE NAIL TOF NORUE & GROOVE FB FACE OF STUD TOS	Alacka Matina
HSB HIGH STRENGTH BOLT W/WITH HT HEIGHT W/WITHOUT JH JOIST HANGER (SIMPSON) WP WORK POINT LL LIVE LOAD WWF WELDED WIRE FABRIC LS LAG SCREW CENTERLINE LT WT LIGHT WEIGHT > PLATE MB MACHINE BOLT # NUMBER OR POUNDS MI MALLEABLE IRON SQUARE (n) NEW ~ ROUND OR DIAMETER CJJ CONTROL JOINT CONTINUOUS PLATE IN SECTION SDSTS SELF DRILLING SELF WOOD BLOCKING IN SECTION TAPPING SCREW FTG FOOTING CONC CONCRETE GLB GLUED-LAMINATED BEAM FLR FLOOR LVL LAMINATED VENEER LUMBER HDR HEADER RDWD REDWOD MFR MANUFACTURER FF FINISH FLOOR PTDF PRESSURE TREATED DOUGLAS FIR FINISH FLOOR	
A. GRAVITY LOADS 1. ROOF AND FLOOR DEAD = 15.0 PSF 2. FLOOR LIVE = 50.0 PSF OFFICE AREA. = 100.0 PSF EXIT HALLWAY	
 3. SNOW LOAD = 70.0 PSF GROUND, DESIGN BASED ON PUBLICATION ASCE 7-05. B. LATERAL LOADING 1. WIND DESIGN BASED ON IBC 2006, 100 MPH, 3-SECOND GUST FACTOR, EXPOSURE B. 2. SEISMIC DESIGN BASED ON IBC 2006, Ss = 0.571 AND S1= 0.289. 	
SEISMIC DESIGN CATAGORY D	

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WILLIAM J. NELSON & ASSOCIATES

GENERAL STRUCTURAL NOTES

AND SPECIFICATIONS

GENERAL

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO REQUIREMENTS OF THE INTERNATIONAL CODE COUNCIL INTERNATIONAL BUILDING CODE (IBC) 2006 EDITION. WHERE EXPLICIT DETAILS ARE NOT SHOWN OR DESCRIBED, THE MINIMUM REQUIREMENTS OF THE ABOVE CODE SHALL APPLY. UNLESS OTHERWISE NOTED. ALL CODES. STANDARDS AND OTHER PUBLICATIONS CITED SHALL REFER TO THE LATEST EDITION.

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THESE PLANS ARE FOR THE CONSTRUCTION OF THE CHISTOCHINA CLINIC IN CHISTOCHINA, ALASKA.

CONCRETE

MIXING, SELECTION OF MATERIALS, AND PLACING OF ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE IBC, CHAPTER 19. AN AIR ENTRAINING AGENT SHALL BE USED IN ALL CONCRETE MIXES FOR CONCRETE WORK WHICH IS TO BE EXPOSED TO EARTH OR WEATHER

AIR ENTRAINMENT SHALL BE 5% +/- 1% BY VOLUME. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (F'C) = 3000 P.S.I. CONCRETE FOR INTERIOR AND EXTERIOR SLABS SHALL CONTAIN 1.6 POUNDS OF 'FORTA FIBRE D15' COLLATED FIBRILLATED POLYPROPYLENE FIBER PER CUBIC YARD OF CONCRETE. THE FIBER SHALL BE THOROUGHLY MIXED INTO THE CONCRETE IN TRANSIT TO THE SITE, IN ACCORDANCE WITH THE FIBER MANUFACTURER'S RECOMMENDATIONS. TESTING OF CONCRETE SHALL BE REQURED PER SPECIAL INSPECTION NOTE.

SITE WORK

THESE STRUCTURES ARE INTENDED TO BE CONSTRUCTED ON A THICKENED SLAB ON GRADE FOUNDATION SYSTEM AS DESCRIBED IN THE 'GEOTECHNICAL REPORT FOR THE PROPOSED CHISTOCHINA HEALTH CLINIC IN CHISTOCHINA ALASKA' PROVIDED BY NORTHERN GEOTECHNICAL ENGINEERING, AND DATED SEPTEMBER, 2009 AND SUPPLEMENTED BY LETTER DATED SEPTEMBER 08, 2009, AND SIGNED BY KEITH MOBLEY P.E. FOOTINGS HAVE BEEN DESIGNED ASSUMING AN ALLOWABLE BEARING PRESSURE OF 2800 PSF AND AN ALLOWABLE SHORT TERM BEARING PRESSURE OF 3700 PSF AS RECOMMENDED IN THE REPORT.

FOUNDATIONS

FOUNDATIONS SHALL CONSIST OF A MONOLITHICALLY CAST SLAB AND THICKENED EDGE FOOTING. THE FOOTING AND SLAB DESIGN HAS BEEN PREFORMED IN ACCORDANCE WITH THE SEPTEMBER 08, 2009 GEOTECHNICAL INVESTIGATION PROVIDED BY NORTHERN GEOTECHNICAL ENGINEERING. THE REPORT REQUIRES THE REMOVAL OF THE SILTY MATERIAL FOUND ON THE BUILDING SITE WITHIN 8' OF AND INSIDE THE BUILDING PERIMETER BETWEEN 6" AND 3' BELOW GRADE. THE FOOTINGS SHALL BEAR DIRECTLY ON THE NATIVE GRAVEL BELOW OR COMPACTED NFS GRAVEL. ANY GRAVEL FILL SHALL BE COMPACTED TO 95% MAX DRY DENSITY.

REINFORCING STEEL

UNLESS NOTED OTHERWISE, ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO IBC CHAPTER 19. REINFORCING BARS SHALL BE GRADE 60. REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE WITH #16 DOUBLE ANNEALED IRON WIRE. REINFORCING IN FOOTINGS SHALL BE SUPPORTED ON WELL CURED CONCRETE BLOCKING OR APPROVED METAL CHAIRS. REINFORCING BARS SHALL BE SPLICED BY A LAP OF AT LEAST 36 BAR DIAMETERS. A MINIMUM LAP FOR ALL BARS SHALL BE 24". CONCRETE COVER OVER REINFORCING SHALL BE 3" FOR CONCRETE CAST AGAINST EARTH. CONCRETE COVER FOR FORMED CONCRETE THAT WILL BE EXPOSED TO WEATHER OR EARTH SHALL BE 2" MINIMUM FOR #6 THROUGH #18 BARS AND 1 1/2" MINIMUM FOR #5 BARS AND SMALLER. CONCRETE COVER FOR CONCRETE THAT IS NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND SHALL BE 3/4" MINIMUM. WELDED WIRE FABRIC SHALL BE MIN 60 KSI STEEL WITH SPACING AND SIZE OF BARS AS NOTED ON THE DRAWINGS

ANCHOR BOLTS AND CONCRETE EXPANSION ANCHORS

ANCHOR BOLTS, THREADED RODS AND CONCRETE EXPANSION ANCHORS SHALL CONFORM TO ASTM A 307. CONCRETE EXPANSION ANCHORS (KB) SHALL BE "HILTI KWIK BOLT II" CONCRETE EXPANSION ANCHORS OR STRUCTURAL EQUIVALENT, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ANCHOR BOLTS SHALL BE PROVIDES WITH HEX HEAD NUTS AND 2"x2"x1/4" STEEL PLATE WASHERS. WHERE BOLTS OR RODS ARE USED WITH CEDAR SILL PLATES, BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. ALL FASTENERS IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE HOT DIPPED GALVANIZED OR SHALL BE STAINLESS STEEL. PROVIDE 5/8" X 10" ANCHOR BOLTS AT 48" O/C SPACING UNLESS NOTED OTHERWISE AND WITHIN 6" OF WALL OPENINGS AND BUILDING CORNERS.

POWER FASTENERS

POWER FASTENERS FOR CONNECTION TO CONCRETE, GROUTED MASONRY, OR STEEL SHALL BE POWDER ACTUATED HILTI X-AL-H HEAVY DUTY DOME HEAD NAILS WITH 0.177 INCH SHANK DIAMETER. MINIMUM FASTENER EMBEDMENT SHALL BE 1 3/8". NAIL LENGTH SHALL BE AS REQUIRED TO ACHIEVE SPECIFIED MINIMUM PENETRATION INTO SUBSTRATE.

ADHESIVE ANCHORING SYSTEM

THREADED ROD ANCHORS AND REINFORCING BAR DOWELS SHALL BE SET IN SIMPSON ACRYLIC TIE ADHESIVE OR STRUCTURAL EQUIVALENT. ADHESIVE ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE ADHESIVE MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES, MINIMUM EMBEDMENT IN CONCRETE FOR ALL ANCHORS SHALL BE 31/2" UNLESS NOTED OTHERWISE.

PRESSURE TREATED WOOD

ALL WOOD INDICATED AS PRESSURE TREATED, (PT) SHALL BE PRESSURE TREATED (PT) IN ACCORDANCE WITH THE AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) STANDARD UC4A. THE PRESERVATIVE SHALL BE ALKALINE COPPER QUAT (ACQ). ALL WOOD SHALL BE TREATED TO A RETENTION OF 0.60 PCF AS REQUIRED FOR 'GROUND CONTACT' ALL PRESSURE TREATED WOOD SHALL BE APPROPRIATELY MARKED ATTESTING TO COMPLIANCE WITH THESE REQUIREMENTS. LUMBER SHALL BE DRIED AFTER TREATMENT TO A MOISTURE CONTENT OF 19% OR LESS. ALL BOLTS, NAILS AND SIMPSON CONNECTORS IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE TYPE 304 OR TYPE 316 STAINLESS STEEL.

GLUED LAMINATED STRUCTURAL UNITS

MATERIALS, MANUFACTURE, AND QUALITY CONTROL OF GLUED LAMINATED STRUCTURAL UNITS (GLULAM) SHALL CONFORM TO IBC CHAPTER 23 WITH ALLOWABLE STRESSES AS DEFINED IN AMERICAN FOREST & PAPER ASSOCIATION 'NATIONAL DESIGN SPECIFICATION 2001 SUPPLEMENT', TABLE 5A, AND SHALL BE DOUGLAS FIR, COMBINATION 24F-V8, DF/DF. GLUE LAMINATED STRUCTURAL UNITS SHALL BE GRADE MARKED BY THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION, AITC.

WOOD TRUSSES

WOOD TRUSSES SHALL BE DESIGNED FABRICATED AND INSTALLED IN ACCORDANCE WITH THE TRUSS PLATE INSTITUTE'S DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES (TPI-78). TRUSS PROFILES SHALL BE AS SHOWN ON THE DRAWINGS. INSTALL AND BRACE TRUSSES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. TRUSS SHOP DRAWINGS SHALL BE PROVIDED BY THE TRUSS SUPPLIER AND SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE CIVIL ENGINEERING IN THE STATE OF ALASKA

PLYWOOD

ALL PLYWOOD SHALL CONFORM TO UBC STANDARD 23-2 AND SHALL BE AMERICAN PLYWOOD ASSOCIATION GRADE TRADE MARKED. PLYWOOD SHALL BE GROUP I OR GROUP II DOUGLAS FIR. ALL PANELS SHALL BE NOMINAL 4' X 8' PANELS. UTILIZE FULL SHEETS WHEREVER POSSIBLE. LAY FACE GRAIN OF ROOF AND FLOOR SHEATHING PANELS PERPENDICULAR TO JOISTS AND WITH PANEL CONTINUOUS OVER THREE OR MORE SPANS. STAGGER END JOINTS OF SUCCESSIVE COURSES 4' - 0". WALL SHEATHING SHALL BE INSTALLED WITH THE FACE GRAIN PARALLEL TO STUDS, (LONG DIMENSION VERTICAL).

ROOF SHEATHING: SHALL BE 5/8" THICK GRADE APA 40/20 SPAN RATED PLYWOOD WITH EXTERIOR GLUE. ROOF SHEATHING SHALL BE FASTENED TO END SUPPORTS WITH 10D GALVANIZED NAILS AT 6" O/C. AT BLOCKED DIAPHRAGM LOCATIONS, FASTEN PLYWOOD TO FRAMING AT ALL PANEL EDGES WITH 10D GALVANIZED NAILS @ 4" O/C. AT ALL LOCATIONS, FASTEN PLYWOOD TO INTERMEDIATE SUPPORTS WITH 10D GALVANIZED NAILS AT 12 INCHES ON CENTER. PROVIDE 2X4 BLOCKING ALONG ALL PANEL EDGES WHERE SHOWN ON THE DRAWINGS. FASTEN ROOF SHEATHING TO BLOCKING OVER EXTERIOR WALLS WITH 10D GALVANIZED NAILS AT 4" O/C.

ORIENTED STRAND BOARD (OSB)

ALL ORIENTED STRAND BOARD SHALL CONFORM TO UBC STANDARD 23-3 AND SHALL BE AMERICAN PLYWOOD ASSOCIATION GRADE TRADE MARKED. ALL PANELS SHALL BE NOMINAL 4' X 8' PANELS. UTILIZE FULL SHEETS WHEREVER POSSIBLE. LAY STRENGTH AXIS OF ROOF AND FLOOR SHEATHING PANELS PERPENDICULAR TO SUPPORTS AND WITH PANEL CONTINUOUS OVER THREE OR MORE SPANS, STAGGER END JOINTS OF SUCCESSIVE COURSES 4'.

OSB WALL SHEATHING: SHALL BE $7/16^{"}$ PANELS WITH EXTERIOR GLUE. UNLESS NOTED OTHERWISE ON THE DRAWINGS, WALL SHEATHING SHALL BE FASTENED TO FRAMING WITH 8D GALVANIZED NAILS 3" O/C ALONG PANEL EDGES AND 12" O/C ALONG INTERMEDIATE SUPPORTS. WALL SHEATHING SHALL BE BLOCKED AT ALL EDGES WITH NOMINAL 2" SOLID BLOCKING.

SAWN LUMBER AND TIMBER

LUMBER SHALL CONFORM TO THE CLASSIFICATION, DEFINITION, AND GRADING REQUIREMENTS OF IBC CHAPTER 23 WITH ALLOWABLE UNIT STRESSES AS GIVEN IN THE AMERICAN FOREST & PAPER ASSOCIATION 'NATIONAL DESIGN SPECIFICATION 2001 SUPPLEMENT', TABLE 4A. LUMBER SHALL BE GRADE MARKED BY THE WEST COAST LUMBER INSPECTION BUREAU /WESTERN WOOD PRODUCTS ASSOCIATION

ITEM	SPECIES
4 X AND LARGER	DOUGLAS FIR #2
BEARING WALL PLATES	HEM FIR #2
BEARING WALL STUDS	HEM FIR #2
ALL OTHER LUMBER	HEM FIR #2

ALL LUMBER SHALL BE FASTENED IN CONFORMANCE WITH TABLE 2304.9.1 OF THE IBC. UNLESS NOTED OTHERWISE. FASTENERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. FASTEN ALL JOIST BLOCKING TO PLATES WITH (4) 16D MINIMUM AND FASTEN ALL WALL PLATES TO WOOD FLOORS WITH 16D AT 6" ON CENTER TYPICAL DOUBLE TOP PLATES SHALL OVERLAP 10' - 0" MINIMUM AND SHALL BE SPLICED TOGETHER WITH 16D NAILS AT 6" ON CENTER MINIMUM UNLESS NOTED OTHERWISE.

PROVIDE JOIST/BEAM HANGERS WITH LOAD CAPACITY EQUAL TO SUPPORTED MÉMBER SHEAR LOAD CAPACITY FOR ALL MEMBERS NOT OTHERWISE PROVIDED WITH DIRECT BEARING SUPPORT. PROVIDE A MINIMUM OF (2) KING STUDS AND (2) CRIPPLE STUDS FOR ALL BEARING WALL HEADERS. PROVIDE A MINIMUM OF (1)KING STUD AND (1) CRIPPLE STUD AT NON-BEARING WALL HEADERS. PROVIDE SOLID BLOCKING SUPPORT FOR BEAMS AND HEADERS CONTINUOUS DOWN TO FOUNDATIONS. MINIMUM HEADER OVER OPENINGS IN BEARING WALLS SHALL BE 4X12 DF#1 UNLESS NOTED OTHERWISE.

BOLT HEADS AND NUTS BEARING AGAINST WOOD TO BE PROVIDED WITH FLAT WASHERS. SOLID BLOCKING OF NOT LESS THAN 2" NOMINAL THICKNESS SHALL BE PROVIDED AT ENDS AND AT ALL SUPPORTS OF JOISTS AND RAFTERS, UNLESS SHOWN OTHERWISE. BEAM AND JOIST HANGERS SHALL HAVE A CAPACITY EQUAL TO THE SHEAR STRENGTH OF THE BEAM OR JOIST WHICH IT IS SUPPORTING, UNLESS NOTED OTHERWISE. ALL METAL FRAMING ANCHORS AND HANGERS SHOWN ON DRAWINGS SHALL BE "STRONG TIE CONNECTORS" AS MANUFACTURED BY SIMPSON COMPANY OR APPROVED FOLIAL ALL SIMPSON CONNECTORS IN CONTACT WITH PRESSURE TREATED WOOD SHALL BE TYPE 304 OR TPYE 316 STAINLESS STEEL

RIGID INSULATION INSULATION SHALL BE 'DOW HIGHLOAD 40' EXTRUDED POLYSTYRENE INSULATION, 'BLUEBOARD' OR 'INSULFOAM' HIGH DENSITY EXPANDED POLYSTYRENE WITH 40 PSL MIMIMUM COMPRESSIVE STRENGTH

SPECIAL INSPECTION INCLUDE: <u>STEEL</u>

1. PERIODIC INSPECTION OF FILLET WELDS SINGLE PASS FILLET WELDS NOT EXCEEDING $\%_6$ INCH IN SIZE. 2. PERIODIC INSPECTION OF FLOOR AND ROOF DECK WELDING. 3. VISUAL INSPECTION OF ALL WELDS PRIOR TO COMPLETION.

<u>CONCRETE</u> POURING CONCRETE TO SPECIFICATIONS. CONCRETE.

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STRUCTURAL STEEL AND CONNECTORS STRUCTURAL STEEL SHALL CONFORM TO UBC CHAPTER22, FOR ASTM SPECIFICATION A-36, FY = 36 K.S.I. EXCEPT WHERE NOTED OTHERWISE. STEEL TUBING (TS) SHALL CONFORM TO ASTM A500, GRADE B, FY = 46 K.S.I. DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE IBC CHAPTER 22, DIVISION IX, ALLOWABLE STRESS DESIGN. MACHINE BOLTS (MB) SHALL CONFORM TO ASTM 307 AND SHALL BE PROVIDED WITH STANDARD HEX HEAD NUTS CONFORMING TO ASTM A563, GRADE A AND HARDENED STEEL CIRCULAR WASHERS CONFORMING TO ASTM F436. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY D1.1. WELD ALL FAYING SUREFACES WITH CONTINUOUS 3/16" FILLET WELD (MINIMUM) UNLESS OTHERWISE NOTED. ELECTRODES SHALL BE A.W.S. È-70. ANCHOR ALL COLUMNS WITH MINIMUM (4) 3/4" X 10" ANCHOR BOLTS UNLESS SHOWN OTHERWISE. PROVIDE ADEQUATE LATERAL BRACING FOR STRUCTURE DURING CONSTRUCTION.

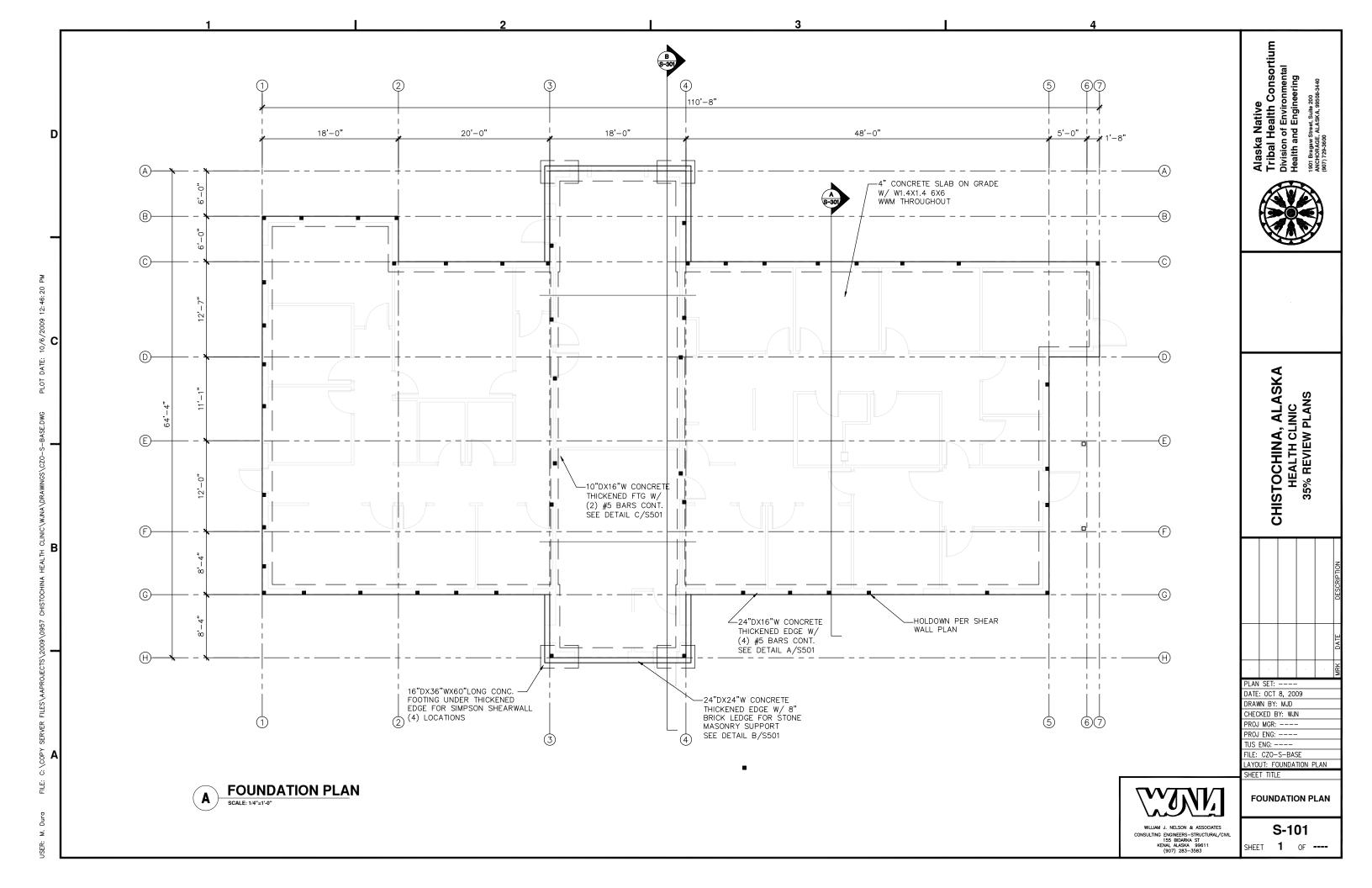
OWNER SHALL PROVIDE A SPECIAL INSPECTION PROGRAM IN ACCORDANCE WITH IBC CHAPTER 17. SPECIAL INSPECTIONS SHALL

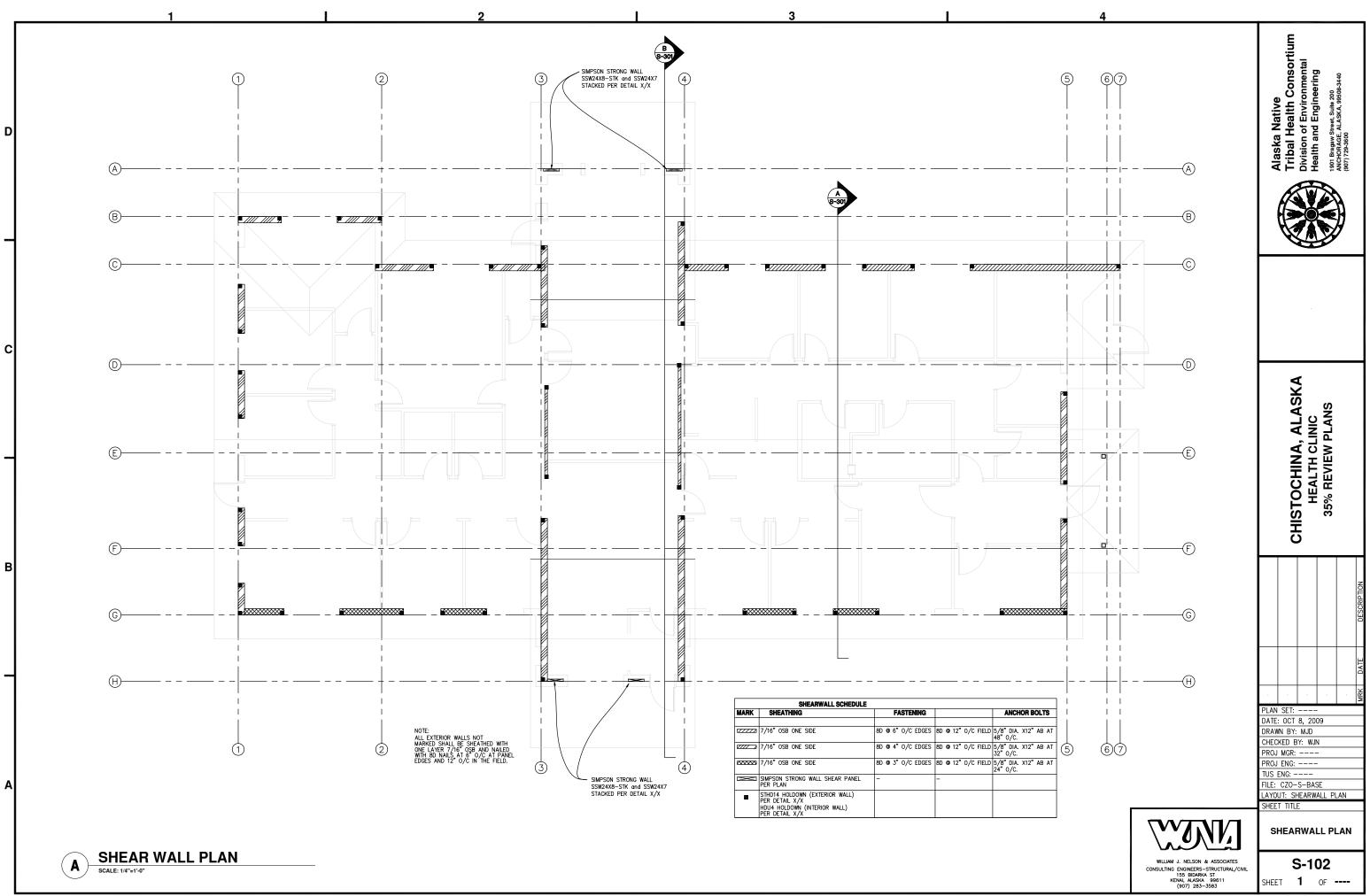
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT, PRIOR TO 2. SUBMITTAL OF CONCRETE MIX DESIGN TO VERIFY CONFORMANCE

TESTING OF CONCRETE MATERIALS FOR CONCRETE USED IN THE

PROJECT. PROVIDE CONCRETE TEMPERATURE, SLUMP, ENTRAINED AIR CONTENT AND COMPRESSIVE STRENGTH TESTS FOR EACH BATCH OF

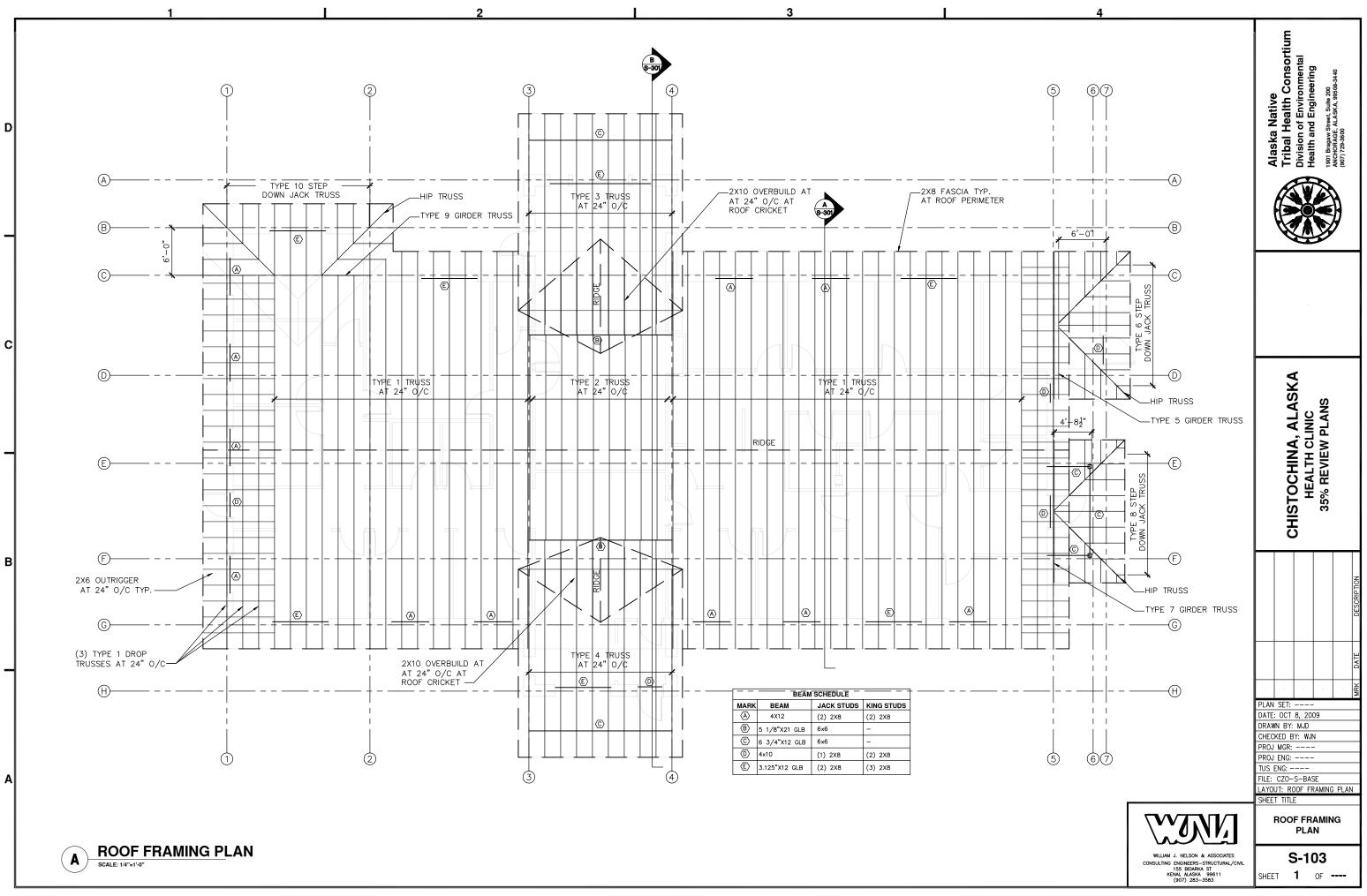
ORS HAPTER22, FOR EPT WHERE NOTED M TO ASTM A500, AND ERECTION TER 22, DIVISION IX, HB) SHALL CONFORM ITANDARD HEX HEAD ND HARDENED STEEL 6. ALL WELDING Y D1.1. WELD ALL LLET WELD (MINIMUM) BE A.W.S. E-70. X 10" ANCHOR EQUATE LATERAL N.	Alaska Native	Tribal Health Consortium	Division of Environmental	1901 Bragaw Street, Suite 200	ANCHORAGE, ALASKA, 99508-3440 (907) 729-3600	
RUDED POLYSTYRENE DENSITY EXPANDED SIVE STRENGTH. PROGRAM IN INSPECTIONS SHALL						
LE PASS FILLET DECK WELDING. COMPLETION. CEMENT, PRIOR TO RIFY CONFORMANCE CRETE USED IN THE LUMP, ENTRAINED AIR FOR EACH BATCH OF		CHISTOCHINA ALASKA		35% REVIEW PLANS		
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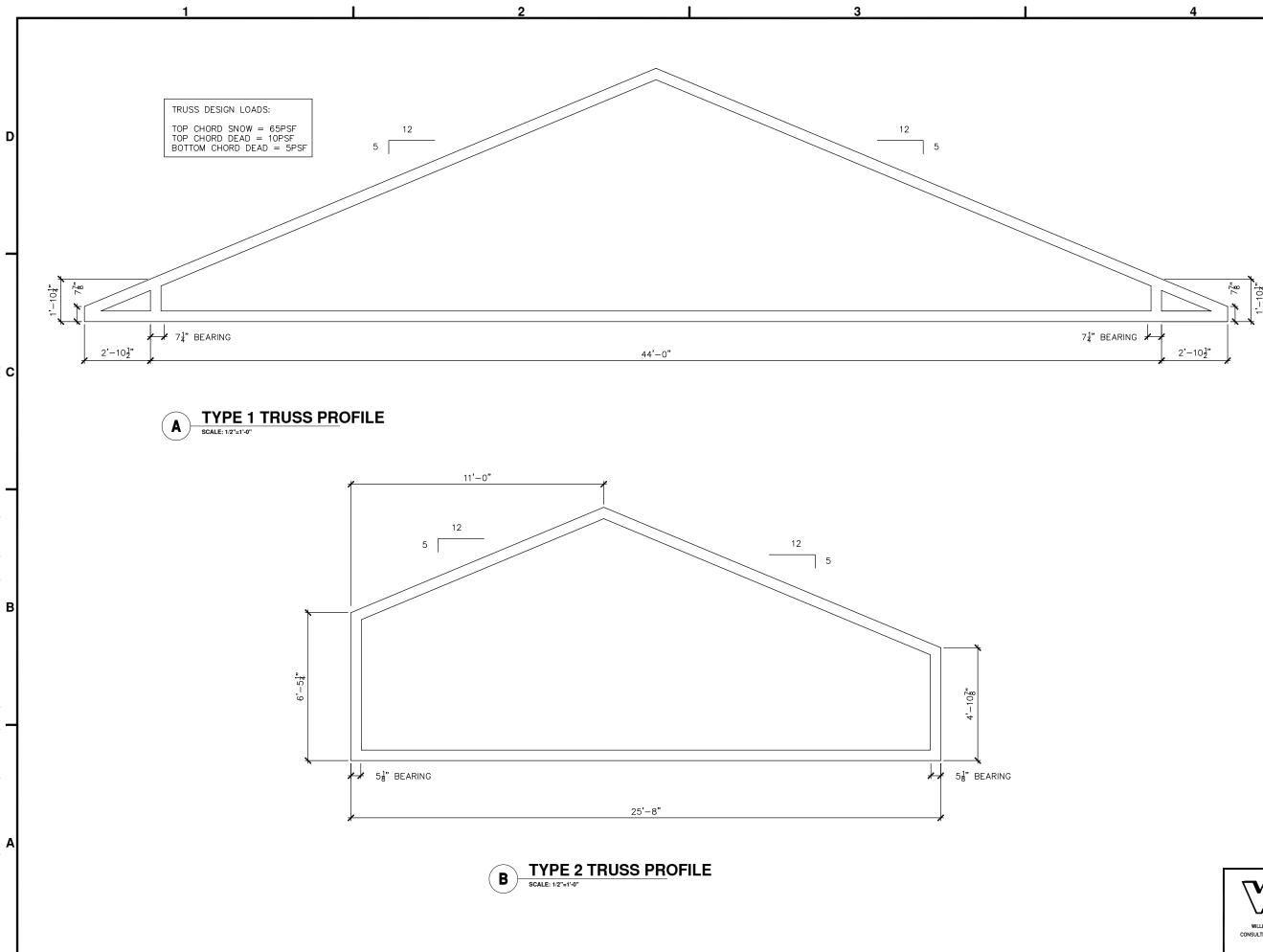


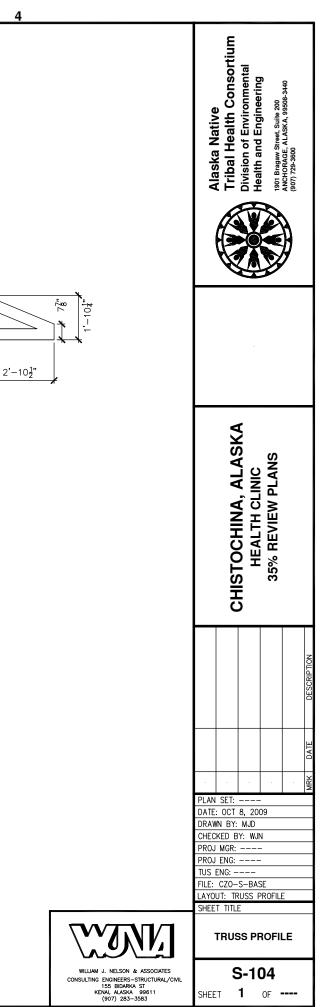


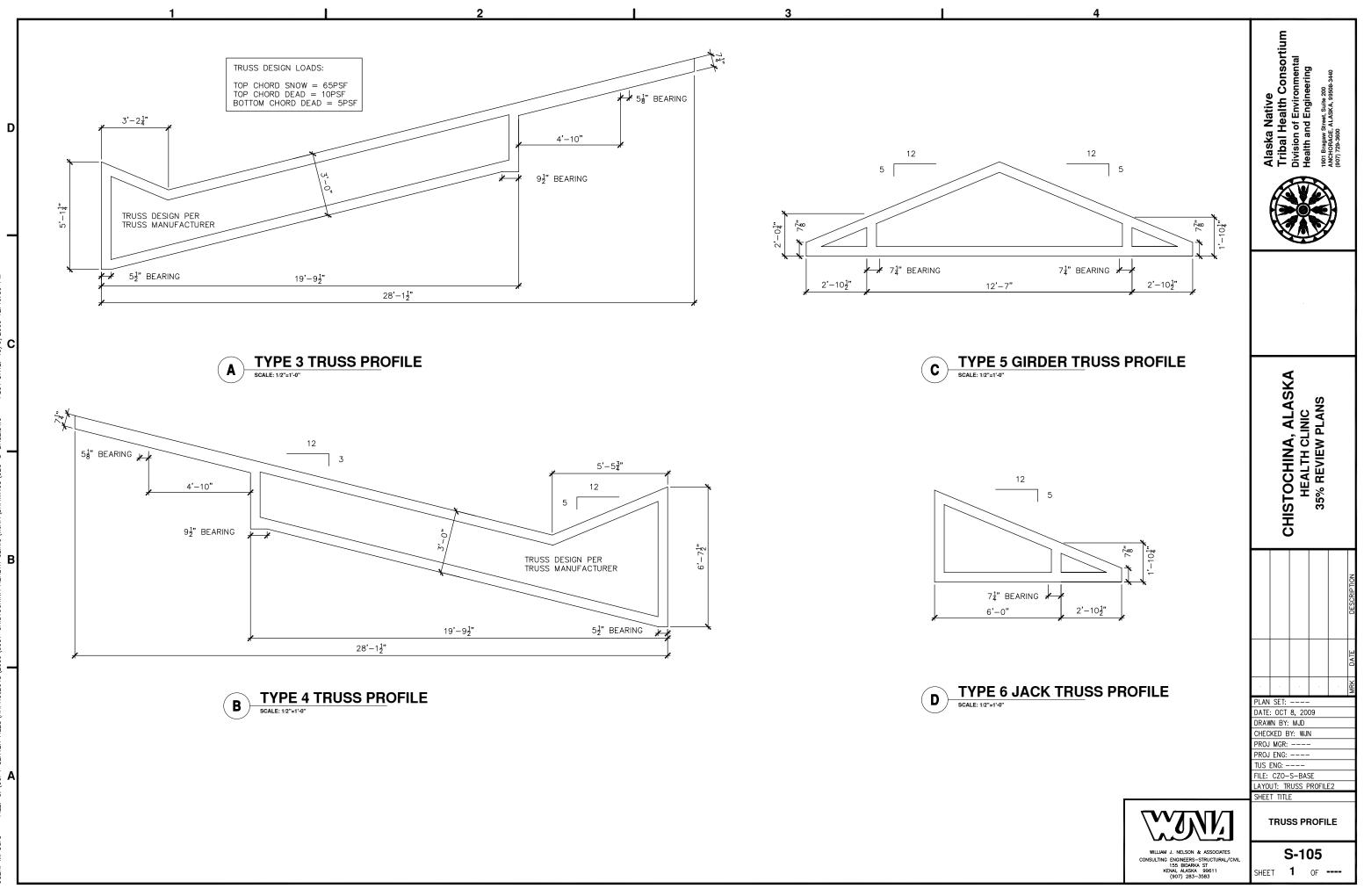
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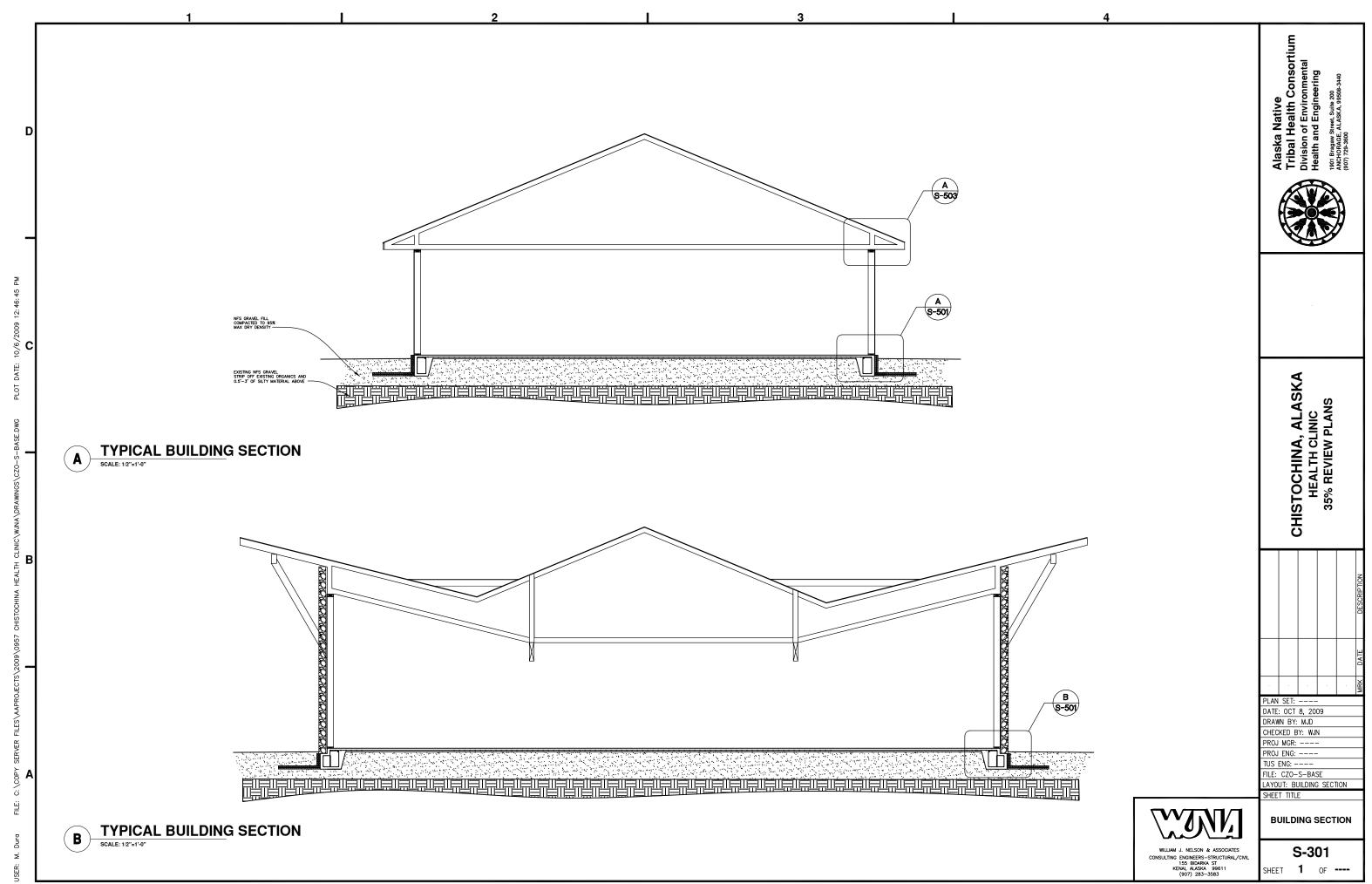








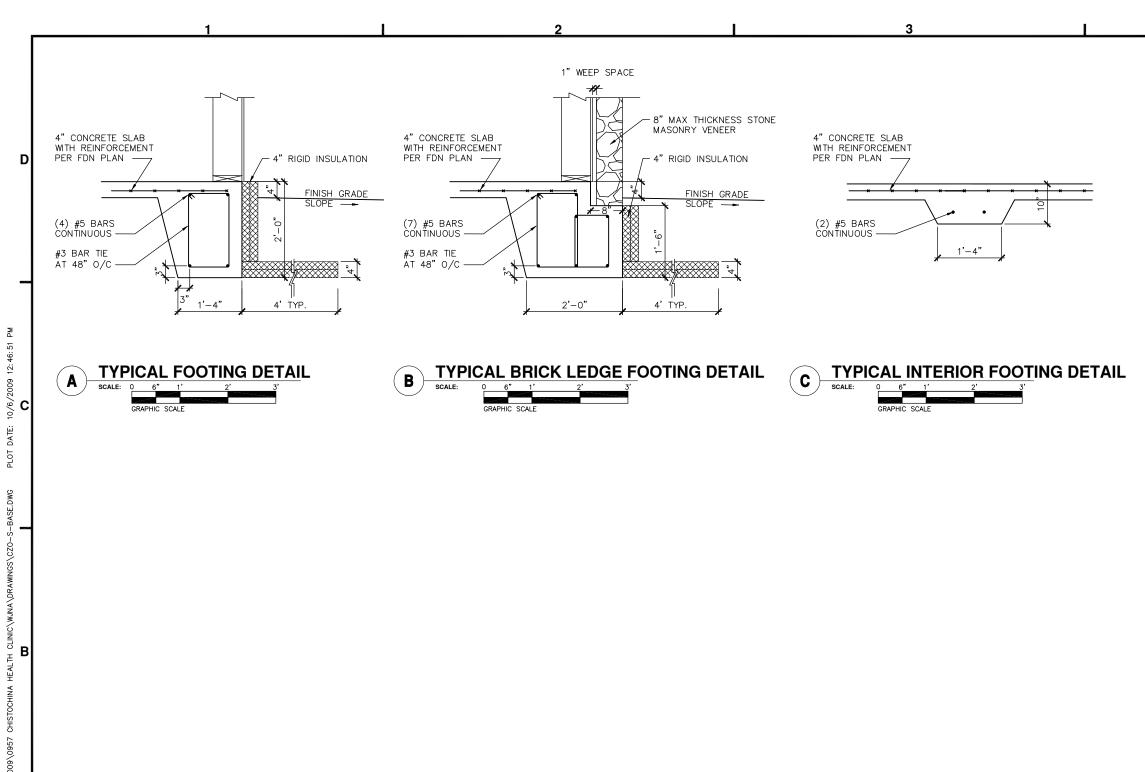
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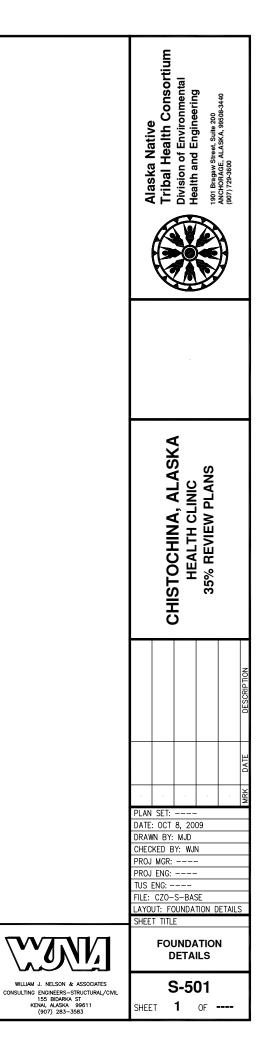


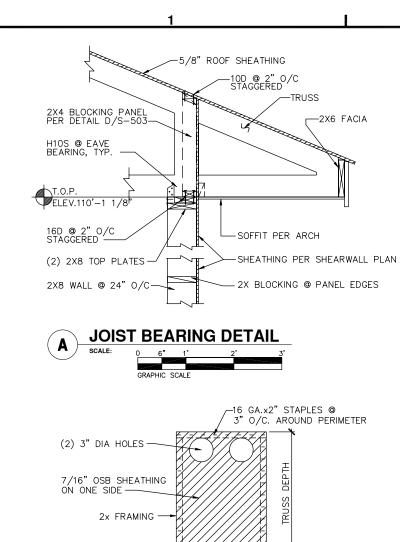
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SPACE BTWN TRUSSES

TRUSS BLOCKING PANEL

GRAPHIC SCALE

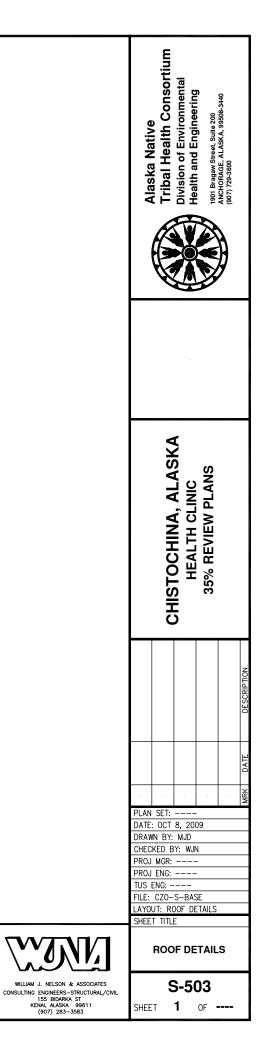
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GEOTECHNICAL REPORT for the proposed CHISTOCHINA HEALTH CLINIC CHISTOCHINA, ALASKA

Prepared for: CRW Engineering Group, LLC 3940 Arctic Blvd. Suite 300 Anchorage, AK 99503

Prepared by: Andy Smith – Project Geologist Northern Geotechnical Engineering, Inc.

SEPTEMBER 2009

2256-09



September 8, 2009

2256-09

CRW Engineering Group, LLC 3940 Arctic Blvd. Suite 300 Anchorage, AK 99503

Attn: Micah Schoming

RE: GEOTECHNICAL REPORT FOR THE PROPOSED CHISTOCHINA HEALTH CLINIC, CHISTOCHINA, ALASKA

Micah,

Northern Geotechnical Engineering has completed the geotechnical evaluation of the above referenced project as requested. Findings and recommendations are presented in the following report.

This opportunity to be of service has been appreciated. If you have any questions, please do not hesitate to contact me at your convenience.

Sincerely, Northern Geotechnical Engineering - Terra Firma Testing, Inc.

Andy Smith Project Geologist

Keith F. Mobley, P.E. President



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1	SITE DESCRIPTION

FIGURES

Figure 1	Site Location Map
Figure 2	Test Pit Location Map
Figure 3	Material Specifications

APPENDICIES

	Appendix A	Graphical Borehole Logs
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Appendix B Laboratory Data

1.0 INTRODUCTION

This report presents the results of field explorations, laboratory testing, and geotechnical engineering studies conducted at the site of the proposed Chistochina Health Clinic in Chistochina, Alaska. Northern Geotechnical Engineering, Inc. (NGE) evaluated the subsurface conditions across the site to help develop recommendations for utility, pavement section, and foundation construction.

Results of this study indicate that the materials present on the site are suitable for the proposed improvements provided the recommendations presented herein are applied. Recommendations concerning excavation and fill activities, as well as utility installation, pavement section parameters, and foundation construction are provided herein.

2.0 SITE DESCRIPTION

The site is located in Chistochina, Alaska, along the Glenn Highway (Tok Cut-off) at approximately mile marker 35. The site is approximately three acres in size, is relatively flat, and mostly wooded with spruce and birch trees with some clearings located along the northeast corner of the site.

Proposed improvements to the site include the construction of an approximately 6,000 ft² health clinic and administrative building and associated utilities, driveways, and parking areas.

3.0 SUBSURFACE EXPLORATIONS

NGE conducted field explorations at the site on August 25th, 2009 to determine the subsurface conditions as they currently exist. Six test pits, designated TP-1 through TP-6, were advanced using a wheeled backhoe and operator provided by Northwind Enterprises of Chistochina, AK. The approximate test pit locations are shown on Figure 2. The surface elevations of the test pits were determined by a CRW survey crew, and are recorded on the graphical test pit logs in Appendix A. A representative of NGE was present onsite during the excavation activities to determine the test pit locations, log the

geology of the test pits, and collect and prepare appropriate soil samples. Soil samples collected during the drilling activities were sealed in air-tight bags (to preserve the natural moisture content of the samples) and returned to the laboratory for further identification and analysis. The test pits were subsequently backfilled with excavated material.

4.0 LABORATORY TESTING

Sixteen samples were collected from the six test pits and were submitted to our laboratory for moisture content, grain size, and frost class analyses. These laboratory analyses, along with observations made during the excavation activities, aid in the evaluation of the subsurface conditions and the stability of the materials located on the property.

Soil moisture content analysis for all 16 samples was conducted in general accordance with ASTM Test Method D-2216. Results of the analyses are presented on the test pit logs in Appendix A and in the laboratory summary sheets in Appendix B.

Grain size analysis for five of the 16 samples was completed in general accordance with ASTM Test Method D-422. Results of the analyses are presented in the laboratory summary sheets in Appendix B.

Six tests were conducted to determine the fines content of the soil. This test, termed the P200, was generally conducted in accordance with ASTM Test Method D-1140. Results of the analyses are presented in the laboratory summary sheets in Appendix B.

Frost class analysis for two of the 16 samples was completed in accordance with ASTM Test Method D-422. Results of the analyses are presented on the borehole logs listed in Appendix A and on the laboratory summary sheets in Appendix B.

5.0 SUBSURFACE CONDITIONS

Observations made during the excavation activities were compiled with the results from the laboratory analyses to generate a graphical log for each test pit (Appendix A). These test pit logs display the subsurface conditions at each test pit and allow for the interpretation of subsurface conditions for areas adjacent to, and immediately surrounding, the test pit locations.

The site is overlain by approximately two to ten inches of organic matter consisting of a mix of mosses, leaf litter, woody debris, and organic topsoil.

The organic mat is underlain by 0.5 to 3.5 feet of silty sand and sandy silt material. The silt/sand material displays moisture contents ranging from nine to 33 percent of the total sample mass and is highly frost susceptible (F4).

The silt/sand is underlain by an unknown thickness of sandy gravel extended to depths of at least 13 feet bgs. The gravel material displays moisture contents ranging from two to four percent of the total sample mass (where located above the groundwater table) and is potentially to non-frost susceptible (PFS to NFS). The gravel contains some cobbles ranging n size up to approximately 10 inches in diameter.

Groundwater was encountered in four of the six test pits at depths ranging from 11 to 12 feet bgs and is expected to occur at similar elevations across the extent of the site.

All of the soils encountered during the explorations were in a thawed state, and no permafrost is believed to exist across the site.

6.0 ENGINEERING CONCLUSIONS

With proper improvements the site is suitable for the planned improvements. The inorganic mineral soils found in all six test pits are likely sufficiently dense to support the proposed structures. The organic material will need to be removed from the footprint of any structures prior to construction as is it unsuitable for building support. The silt/sand material identified in all six test pits is highly frost susceptible, and will need to be

removed from any proposed pavement sections or have adequate amounts of NFS material placed above it to insulate the pavement section. The underlying gravel material is sufficiently dense to support the proposed structures.

7.0 ENGINEERING DESIGN RECOMMENDATIONS

The recommendations below are presented in the general order that the property will most likely be developed. The recommendations can be used in parts (as needed) for the final design configuration.

7.1 Excavation and Fill Placement Activities

As mentioned in Sections 5.0, up to approximately one foot of organic-rich topsoil was identified across the site, which is unsuitable for supporting structures or gravity-fed utilities as differential settlements will occur. We therefore recommend that any organic-rich material which is found within the footprint of the proposed building be removed from the building foundation footprints and any gravity fed utility alignments prior to the commencement of any construction activities. The organic-rich material (located within the footprint of the proposed building and along any gravity-fed utility alignments) should be excavated to its vertical extent. Furthermore, the foundation excavation should extend laterally 10 feet past the perimeter of the proposed foundation in every direction. The excavation should then be backfilled with appropriate structural fill material using proper placement and compaction techniques.

Any and all fill material used at the site should be placed at a minimum of 95% of the Modified Proctor density as determined by ASTM D-1557, unless specifically stated in other sections of this report. The existing ground surface should be proof rolled prior to placement of existing or imported fill. The thickness of individual lifts will be determined based on the equipment used, the soil type, and existing soil moisture content. Typically, fill material will need to be placed in lifts of less than one foot in thickness. All earthworks should be completed with quality control inspection.

In general it has been found that structural fill should have less than about 10 to 15 percent passing the #200 sieve for ease of placement. Siltier soils can be used, however, the effort required to achieve proper compaction of siltier soils may be more costly than

purchasing and better grade materials. The time of year, existing moisture content, rainfall, and freezing conditions can all have an impact on the effort required to adequately compact silt-rich material. Silt-rich soils will also impact pavement sections and can result in uneven and cracked pavement surfaces (as a result of frost heaving).

7.2 Utilities

The finished grade elevation for the property and utility profiles will determine whether or not groundwater is encountered within deep utility trenches (water and sewer). In general, the material in which deep utility trenches (<10 feet bgs) are to be constructed are relatively dense sandy gravels. If utility trenches are extended below the groundwater surface, then trench wall stability in the gravel material may be poor. Rigorous pumping may need to be employed to ensure trench stability and worker safety. The contractor should be responsible for trench safety and regulation compliance. Piping should be installed prior to construction of the pavement section such that trenching is done through the subgrade soils only.

All pipes should be bedded per the manufacturers recommendation, with the bedding compacted to provide pipe support. Above the bedding materials, the backfill should be similar to the native soils and compacted to the density of the native soils. Well drained, coarse granular material (2" minus) will need to be utilized in areas where utility trenches extend below the groundwater surface.

7.3 **Pavement Section**

Construction of the pavement sections will be guided in part by the amount of fill needed to achieve the final site grade. Any paved parking areas constructed above the silt/sand material will need to have an adequate pavement section to minimize damage to the pavement surface frost action. Board insulation may be used in lieu of a portion of the fill required to achieve the appropriate section. Suitable pavement sections for construction on the silt/sand material are presented below:

Pavement on Existing Frost Susceptible Soils

Without Insulation:

Thickness	Material
2 in.	Asphalt
2 in. max	Leveling Course
10 in.	Type IIA (NFS Material)
20 in.	Type II (NFS to PFS Material)
	Existing Frost Susceptible Soils

With Insulation:

Thickness	Material
2 in.	Asphalt
2 in max.	Leveling Course
10 in.	Type IIA (NFS Material)
2 in.	Board Insulation
8 in.	Type II (NFS to PFS Material)
	Existing Frost Susceptible Soils

The existing sandy gravel material has very low to no frost susceptibility, however additional confirmation testing should be completed following clearing, grubbing and demolition. If the confirmation testing shows NFS soils, the following section may be used. A suitable pavement section for construction on the native gravel material is presented below:

Pavement on Non-frost Susceptible Soils

Thickness	Material
2 in.	Asphalt
2 in. max	Leveling Course
	Existing native sandy gravel material

The Type II-A, Type II and Leveling Course should conform to the specifications outlined in Figure 3. All of these materials should be placed in thin lifts and each lift should be compacted to at least 95% maximum Proctor density.

Any insulation used should consist of extruded polystyrene such as DOW HI-40, UC Industries Formular 400 or equal. Any insulation used should be closed cell, board stock with a minimum compressive strength of 35 psi. at 5% deflection. It should not absorb more than 2% water per ASTM Test Method C-272. The thermal conductivity (k) should not exceed 0.25 BTU/hr-ft²-°F when tested at 75°F. The satisfactory performance of the

insulation is in part controlled by the details of construction including: 1) the care taken to ensure that the board stock lies flat on a smooth, level surface; and 2) the adjoining ends of the insulation are closely butted together. Furthermore, any vertical joints should be staggered where more than one layer of insulation is used.

All of the earth work for the driveways and parking areas should be completed as early as possible in the construction schedule, and the pavement placed as late as possible. We recommend that driveway foundations be excavated and constructed at the same time that foundations are excavated. This will give the subgrade soils time to settle, compress, and stabilize prior to placement of the pavement. Prior to paving, any surface fill material should be re-leveled and re-compacted.

7.4 Foundations

All of the native soils encountered in the explorations (located below any existing fill and/or organics) are suitable for foundation support. It is recommended that the buildings be supported on continuous strip footings bearing directly on the existing sandy gravel material.

At the footing grade, bearing soils should be granular material with less than approximately 10% passing the #200 sieve (assuming a continuously heated building is constructed). This material should be compacted to a minimum of 95% of the Modified Proctor density. A separation geo-textile fabric may be useful for placement of any fill material, but is not necessary.

Bearing Capacity

Conventional footings placed on the native gravel material (as discussed above) may be designed for an allowable bearing capacity of 3500 psf. Thickened edge slabs placed on the native gravel material may be designed for an allowable bearing capacity of 2800 psf. These bearing values may be increased by 1/3 to accommodate short-term wind and seismic loads. The minimum horizontal dimension for continuous strip footings or thickened edge slabs is 16 inches, and two feet for spread footings. Avoid placing isolated spread footings in unheated areas so as to reduce the potential for differential movements. The minimum burial depth for footings contained within a continuously heated structure is 48 inches. The minimum burial depth for an insulated thickened edge slab is 20 inches, with a minimum of four inches of board insulation applied to the

exterior perimeter of the foundation. The insulation should extend a minimum of four feet out from the outside perimeter of any thickened edge slab.

Floor Slabs

All floor slabs enclosed in continuously heated spaces can be constructed on structural fill material placed above the native mineral soils. Cold floor slabs are not recommended, however if required, they should be placed on granular structural pads constructed of NFS material with a minimum thickness of five feet (NFS material should have less than 6% of the material passing a #200 sieve).

As mentioned in Section 7.1, the upper fill material (at or above the footing grade) used to construct the structural pad for a heated building should be relatively free draining (sands and gravels) with less than 10% of the fill material passing through a #200 sieve. Furthermore, the top four to six inches of the structural pad located beneath the slabs should be free draining, with less than 3% passing the #200 sieve. This "blanket" will serve as a capillary break to help maintain a dry slab. All of the fill material should be placed at a minimum of 95% of the Modified Proctor density. A separation geo-textile fabric may be useful for placement of the fill material, but is not necessary.

Slabs constructed on granular structural pads or the native sands and gravels, as described above, may be designed using a modulus of subgrade reaction equal to 190 pci.

Lateral Pressures

Retaining walls (such as perimeter foundation walls for buildings with basements or crawl spaces) must be designed to resist lateral earth pressures. The magnitude of the pressure exerted on a retaining wall is dependent upon: 1) whether the wall is allowed to deflect after placement of backfill; 2) the type of backfill used; 3) compaction rates; and 4) drainage provisions. The foundation stem walls should be backfilled on both sides simultaneously to prevent differential lateral loading of the foundation wall.

An active earth pressure condition will prevail (under static loading) if a retaining wall is allowed to deflect or rotate a minimum of 0.001 times the wall height (assuming that granular structural fill containing less than 10% fines is used as backfill and is compacted to 90% of the Modified Proctor density, and has drainage provisions preventing the buildup of groundwater on the wall face). If the aforementioned conditions exist, then the wall should be designed to resist the pressures exerted by a fluid with a density of 32 pcf.

If drainage away from the wall is not provided, then wall design pressure should be calculated based on a fluid with a density of 90 pcf (this assumes that water is not allowed to accumulate on both sides of the wall).

An at-rest pressure condition will prevail if a retaining wall is restrained at the top and cannot move at least 0.001 times the wall height. (assuming that granular structural fill containing less than 10% fines is used as backfill and is compacted to 90% of the Modified Proctor density, and has drainage provisions preventing the buildup of groundwater on the wall face). If these conditions exist, then the wall should be designed to resist the pressures exerted by a fluid with a density of 55 pcf. If drainage away from the wall is not provided, then wall design pressure should be calculated based on a fluid with a density of 105 pcf (this assumes that water is not allowed to accumulate on both sides of the wall).

Lateral forces exerted by wind or seismic activity may be resisted by passive earth pressures against the sides of the foundation footings, exterior walls (below grade), and grade beams. These resisting pressures can be estimated based on the pressure distribution of a fluid with a density of 270 pcf. Lateral resistance may also be developed in the form of friction, generated along the base of the foundations and preventing sliding. This resistance generated may be calculated using a coefficient of 0.4 between the concrete and soil.

Settlements

Building settlements are expected to be within normal limits granted that proper compaction is performed prior to foundation construction. The total settlement anticipated for foundations placed on the sandy gravel material is less than ³/₄-inch, with differential settlements comprising about ¹/₂ of the total settlement. Total and differential settlements amounts could increase substantially if structural fill material is used to bring the property up to grade is not properly compacted. Most of the settlements should occur as the building loads are applied, such that additional long-term settlements should be relatively small and within tolerable limits. The long-term settlement of the buildings is expected to be ¹/₄ of an inch or less.

Settlements under driveways and parking areas are expected to be somewhat more variable than under the buildings, especially where utility trenches are located. Proper earthwork is necessary to minimize the settlement potential. Additionally, completing the

earthwork as soon as possible and paving as late as possible can minimize these settlements.

Seismic Design Parameters

It is assumed that IBC 2003 or IBC 2006 will be used for design of the structures on site. For seismic design, the site classification is D. The design parameters are $F_a=1.1$ ($S_s=1.0$) and $F_v=1.5$ ($S_1=0.5$). The potential for soil liquefaction within this site is considered low.

7.5 Drainage

After the property is brought to grade it should be nearly flat, such that storm water will tend to collect and flow off site slowly. Water accumulation will have a detrimental effect on driveways, parking facilities, and foundations. Provisions should be included in the design to collect runoff and divert it away from pavement sections and foundations. The soils on the surface should be tightly compacted to minimize infiltration.

Roof, parking lot, and driveway drainage should be directed away from any foundations. If storm sewer is available, tight line connections from roof drain collectors should be made.

7.6 Winter Construction

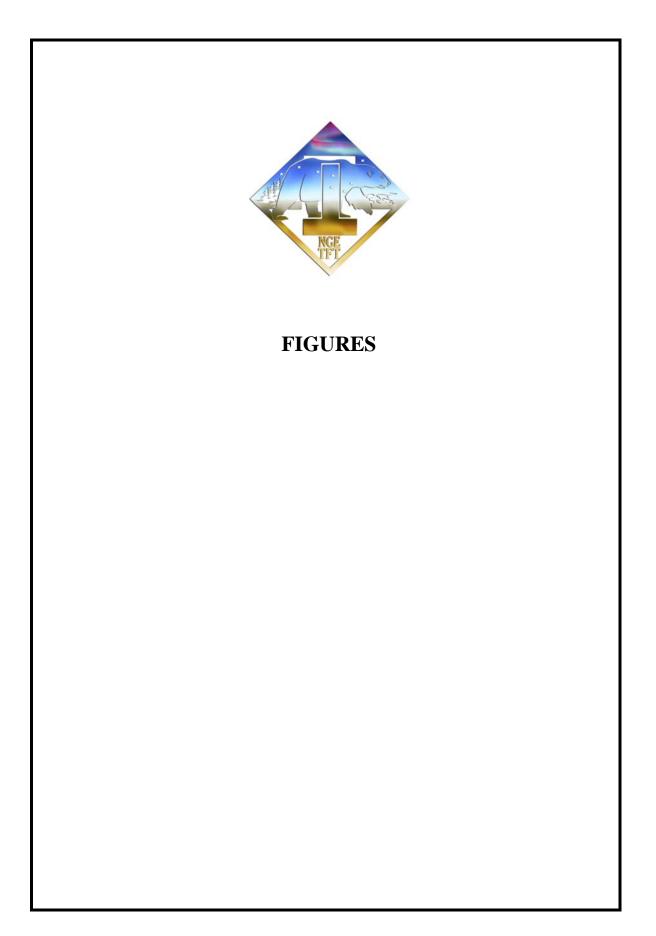
Winter construction is becoming more common in Alaska. It is imperative that building foundations remain in a thawed state for the entire construction period, even when dealing with low frost susceptible materials. Foundations that are allowed to freeze during the initial construction (before the building is enclosed and heated) may be compromised by the development of ice lenses. Upon thawing, which may take several weeks or months, potential differential settlements could distort the structure causing cracked sheetrock, skewed door frames and broken windows. Therefore, if construction extends into winter months, temporary enclosures and heat should be applied to prevent freezing of the soils located beneath the foundation and floor slab.

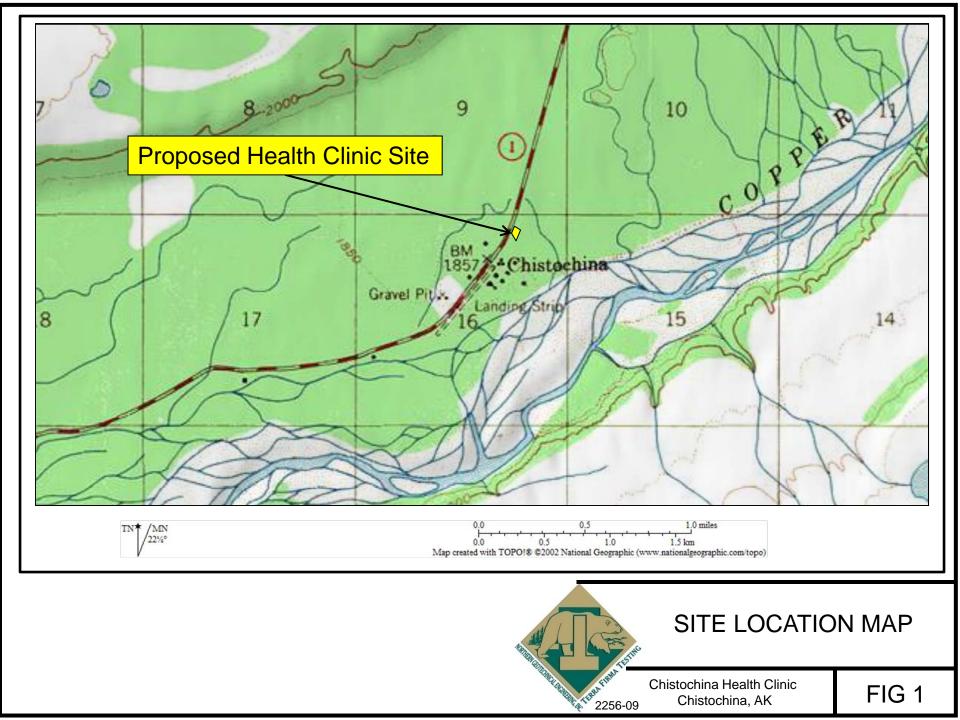
8.0 CLOSURE

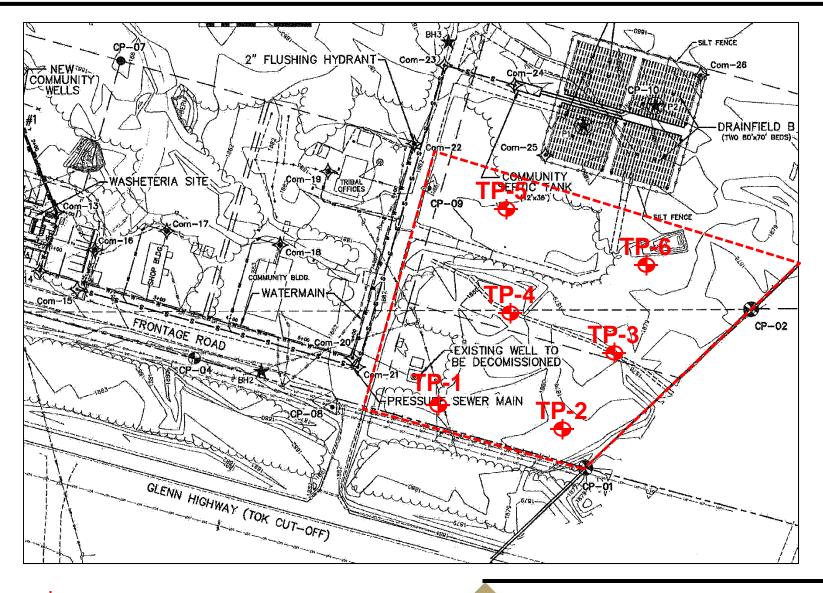
Northern Geotechnical Engineering Inc. prepared this report exclusively for the use of *CRW Engineering Group*, *LLC* and their consultants for use in design of the proposed clinic. Northern Geotechnical Engineering, Inc. should be notified if significant changes are to occur in the nature, design, or location of the proposed facilities in order that the conclusions and recommendations presented in this report may be reviewed and, if necessary, modified to satisfy the proposed changes.

Due to the natural variability of earth materials, variations in subsurface conditions across the property may exist other than those identified during the course of the investigation. Therefore, it is recommended that a qualified geotechnical engineer be on-site during construction activities to provide corrective recommendations for any unexpected conditions revealed during construction. Furthermore, the construction budget should allow for any unanticipated conditions that may be encountered during construction activities.

Northern Geotechnical Engineering Inc. conducted this investigation following the standard of care expected of professionals undertaking similar work in the State of Alaska under similar conditions. No warranty expressed or implied is made



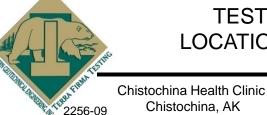




= Approximate Location of Test Pit

= Approximate Site Boundaries

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TEST PIT LOCATION MAP

FIG 2

COARSE AGGREGATE

Sieve Size	% Passing by Weight
1.0"	100
3/4"	90-100
#40	4-10
LEVELING COURSE	
Sieve Size	% Passing by Weight
1.0"	100
3/4"	70-100
3/8"	50-80
#4	35-65
#8	20-50
#50	10-30
#200	3-8
0.02	1-3
TYPE II BASE	
Sieve Size	% Passing by Weight
8.0"	100
3.0"	70-100
1.5"	5-90
0.75"	45-85
#4	20-60
#10	12-50
#40	4-30
0.02	0-3
TYPE II – A BASE	
Sieve Size	% Passing by Weight
3.0"	100
0.75"	50-100
#4	25-60
#10	15-50
#40	4-30
0.02	0-3
*Specifications are more restrictive than M.A.S.S. se text for more detail	MATERIAL SPECIFICATIONS

Chistochina Health Clinic 2256-09 Chistochina, AK



APPENDIX A

GRAPHICAL TEST PIT LOGS

KEY:

Standard SPT w/ 140# Hammer 30 in. Drop and 2.0" O.D. Sampler.

Modified SPT w/ 340# Hammer 30 in. Drop and 2.8" O.D. Sampler.

Grab Sample.

- Shelby Tube Sample.
- Core Sample.
- No Recovery.
- bgs Below ground surface
- bss Below stockpile surface

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.5mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	1 - 5%
Few	5 - 10%
Little	10 - 20%
Some	20 - 35%
And	35 - 50%

MOISTURE CONTENT

DRY	Absence of moisture, dusty,
DAMP	dry to the touch. Some perceptible
MOIST	moisture; below optimum No visible water; near optimum
WET	moisture content Visible free water, usually
	soil is below water table.

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N -VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	"N" value	Approximate Relative Density (%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose Loose Medium Dense Dense Very Dense	0 to 4 5 to 10 11 to 25 26 to 50 over 50	0 - 15 15 - 35 35 - 65 65 - 85 85 - 100	Very Soft Soft Medium Stiff Stiff Very Stiff Hard	0 to 1 2 to 4 5 to 8 9 to 15 16 to 30 over 30	< 250 250 - 500 500 - 1000 1000 - 2000 2000 - 4000 > 4000



TEST PIT LOG KEY

Chistochina Health Clinic Chistochina, AK

MAJOR DIVISION		GRAPHIC SYMBOL	USCS SYMBOL	TYPICAL DESCRIPTIONS	
	GRAVEL AND	CLEAN GRAVELS (LITTLE OR NO FINES)	Ŏ ° °Ŏ°° Ŏ°ŎŎ°Ŏ Ŏ°ŎŎ°Ŏ	GW	WELL-GRADED GRAVELS, GRAVEL. SAND MIXTURES, LITTLE OR NO FINES
COARSE GRAINED	GRAVELLY SOILS			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
SOILS	MORE THAN 50% OF COARSE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND- SILT MIXTURES
	FRACTION RETAINED ON NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL-SAND- CLAY MIXTURES
	SAND AND	CLEAN SAND		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL	SANDY SOILS	(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
	FRACTION PASSING NO. 4 SIEVE	(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE SILTS GRAINED AND SOILS CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
		LIQUID LIMIT <u>GREATER</u> THAN 50		МН	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
50% OF MATERIAL IS <u>SMALLER</u> AND THAN NO. CLAYS 200 SIEVE SIZE	AND			СН	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



TEST PIT LOG KEY

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FROST GROUP	SOIL TYPE	PERCENTAGE FINER THAN 0.02mm BY WEIGHT	TYPICAL SOIL TYPES UNDER UNIFIED SOIL CLASSIFICATION SYSTEM
NFS*	 (a) Gravels Crushed Stone Crushed Rock (b) Sanda 	0 – 1.5	GW, GP
	(b) Sands	0-3	SW, SP
PFS+	(a) Gravels Crushed Stone Crushed Rock	1.5 – 3	GW, GP
	(b) Sands	3 - 10	SW, SP
S1	Gravelly Soils	3 - 6	GW, GP, GW-GM, GP-GM
S2	Sandy Soils	3 - 6	SW, SP, SW-SM, SP-SM
F1	Gravelly Soils	6 - 10	GM, GW-GW,GP-GM
F2	(a) Gravelly Soils (b) Sands	10 – 20 6 - 15	GM, GW-GW,GP-GM SM, SW-SM, SP-SM
F3	 (a) Gravelly Soils (b) Sands, Except very fine Silty Sands (c) Clays, PI>12 	Over 20 Over 15	GM, GC SM, SC CL, CH
F4	 (a) All Silts (b) Very Fine Silty Sands (c) Clays, PI>12 (d) Varved Clays and Other Fine Grained Banded Sediments. 	Over 15	ML, MH SM CL, CL-ML CL, CL-ML, CL &ML CL, CL, & SM CL, CH, & ML CL, CH, ML, & SM

'Non-frost susceptible

+Possibly frost susceptible, but requires lab testing to determine frost design soils classification

From: "Seasonal Frost Conditions", June, 1992, U.S. Army Corps of Engineers TM-5-822-5



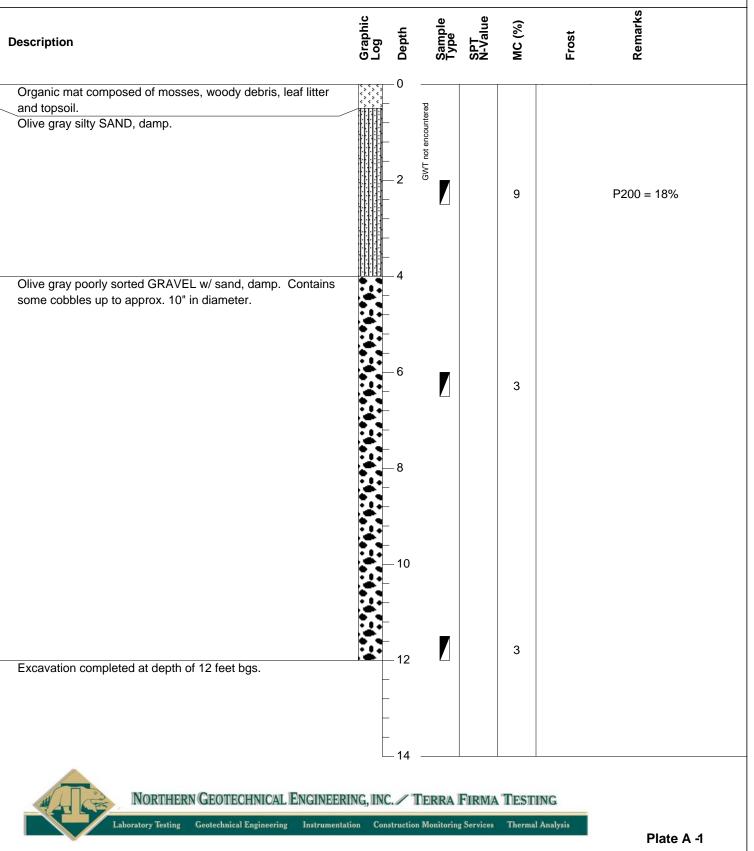
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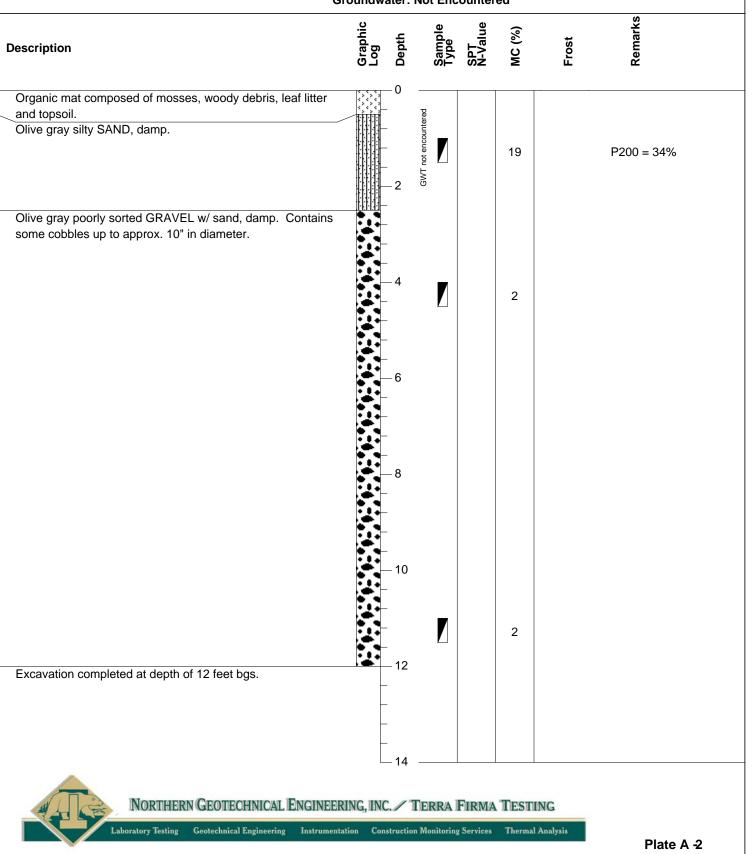
Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 12 ft bgs Groundwater: Not Encountered Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1880' above msl Project: 2256-09



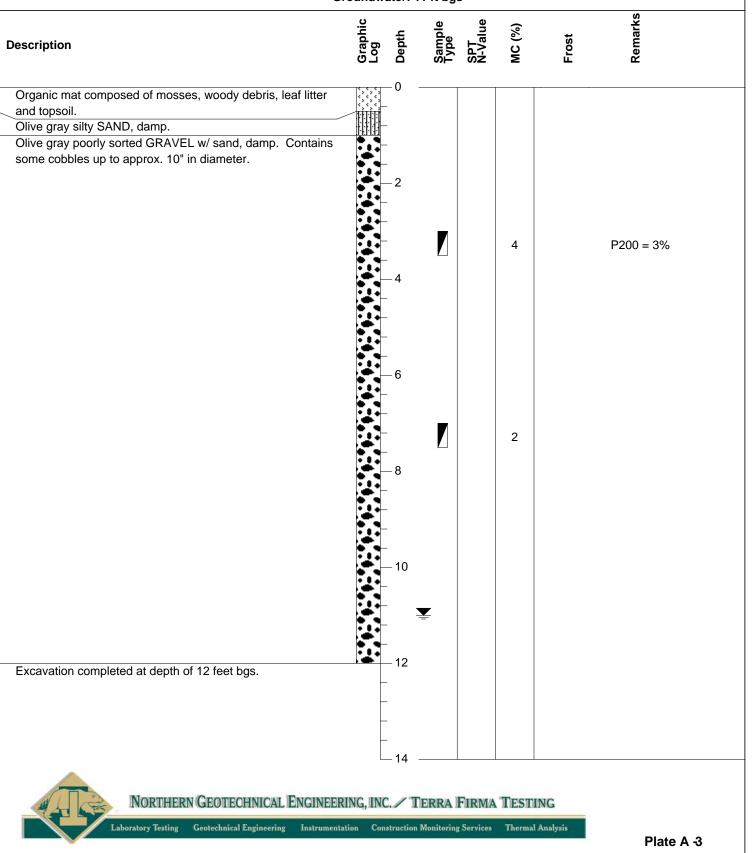
Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 12 ft bgs Groundwater: Not Encountered Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1880' above msl Project: 2256-09



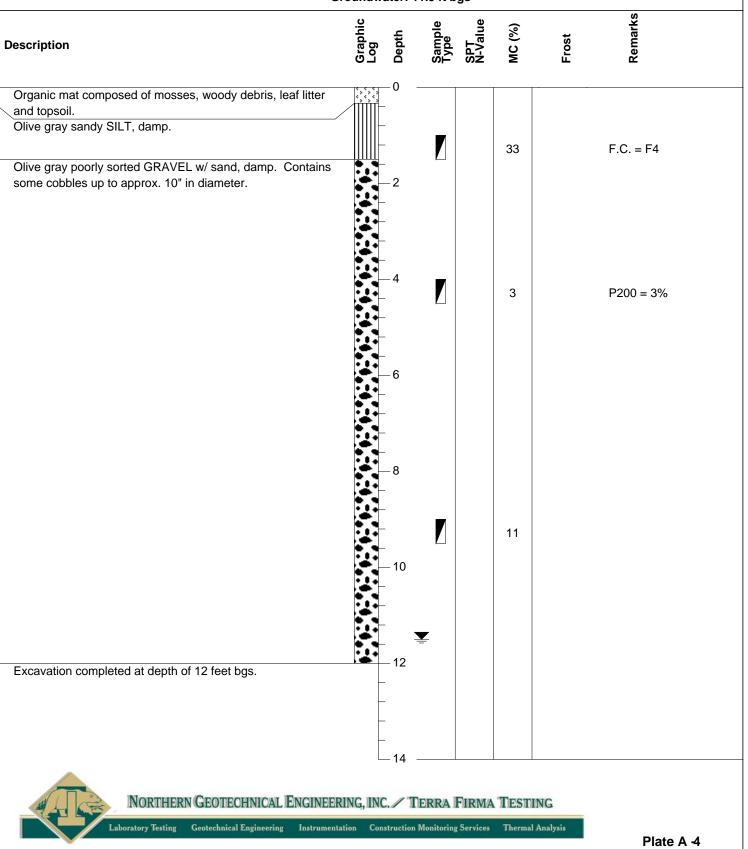
Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 12 ft bgs Groundwater: 11 ft bgs Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1878' above msl Project: 2256-09



Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 12 ft bgs Groundwater: 11.5 ft bgs Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1879' above msl Project: 2256-09



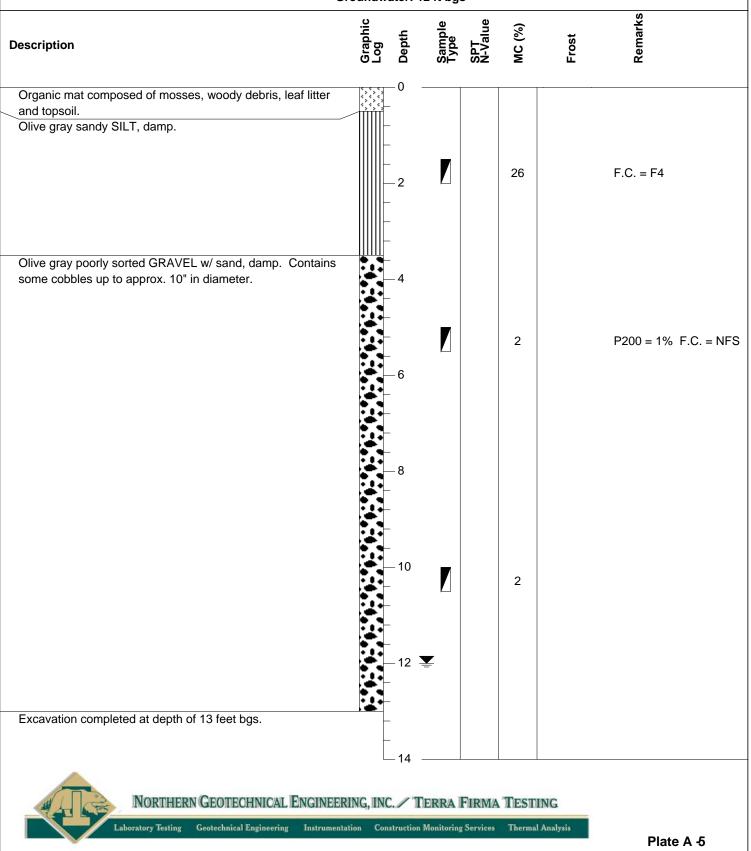
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File: N:WGE-TFT Job Files/2201-09 thru 2300-09/2251-09 thru 2260-09/2256-09 Chistochina Helath Clinic/Test Pit Logs/2256-09 Final logs.log

SuperLog CivilTech Software, USA www.civiltech.com

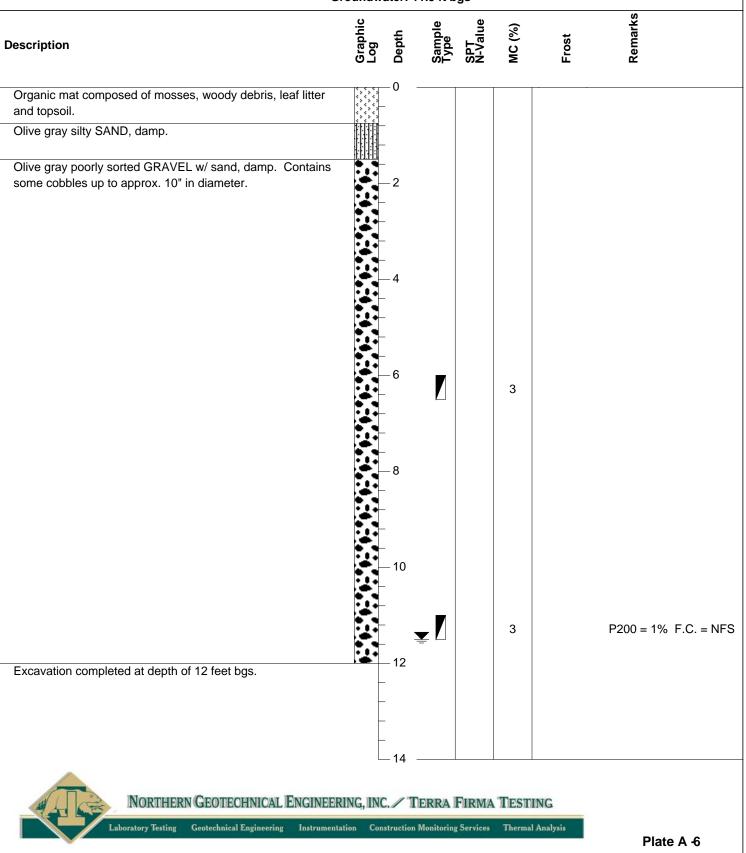
Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 13 ft bgs Groundwater: 12 ft bgs Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1880' above msl Project: 2256-09



Chistochina Health Clinic Chistochina, Alaska

Excavator: Wheeled Backhoe Sampling: Grab Logged By: ACS Total Depth: 12 ft bgs Groundwater: 11.5 ft bgs Date Started: 8/25/09 Date Completed: 8/25/09 Elevation: Apx. 1879' above msl Project: 2256-09





APPENDIX B

LABORATORY DATA

Laboratory Data Summary

Chistochina Health Clinic

Chistochina, AK

Project 2256-09

Borehole	Sample Depth (ft bgs)	Moisture Content (%)	Grain Size Analysis (%)			% Passing	% Passing	Frost Class	Unified Soil Classification
			Gravel	Sand	Silt	#200 Seive	.02 mm	(COE)	
TP-1	2.0	9				18			
TP-1	6.0	3	45.8	50.3	3.9				Poorly graded sand w/ gravel (SP)
TP-1	12.0	3							
TP-2	1.0	19				34			
TP-2	4.0	2	77.0	20.1	2.9				Poorly graded gravel w/ sand (GP)
TP-2	11.0	2							
TP-3	3.0	4				3			
TP-3	7.0	2							
TP-4	1.0	33	1.2	39.2	59.6		19	F4	Sandy silt (ML)
TP-4	4.0	3				3			
TP-4	9.0	11							
TP-5	1.5	26	0.3	40.7	59.0		17	F4	Sandy silt (ML)
TP-5	5.0	2				1		NFS	
TP-5	10.0	2							