

Copper River Basin Regional Housing Authority



Request for Proposal

Design-Build Services for Emergency Response Facility

October 20, 2025

Proposals are due by 4:00 p.m., November 20, 2025

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1. Project Overview

1.1 Project Background

The Copper River Basin Regional Housing Authority (CRBRHA) is a public housing agency whose mission is to provide and maintain affordable, energy efficient, safe and suitable housing to benefit Ahtna Tribal members, Alaskan Natives and American Indians with a primary focus on self-sufficiency. CRBRHA strives to become “an innovative leader, creating dynamic partnerships that build vibrant and sustainable communities.” CRBRHA is the Tribally Designated Housing Entity for eight tribes located within the Ahtna Region. CRBRHA manages federally funded tribal housing programs. Their office is located at Milepost 111, Richardson Highway in Glennallen, Alaska.

1.2 General Project Description

CRBRHA desires to have constructed an Emergency Response Facility in Chistochina, Alaska, (using design-build delivery. The lot is located at Mile 33 Tok Cutoff (see attached overall site plan). The Emergency Response Facility should include three large vehicle bays wide enough to fit an ambulance, and a pumper fire truck, a warm storage, and bathroom with shower stall, we estimate the square footage at 3,500 to 4,000.

Design priorities include Energy efficiency and low maintenance.

CRBRHA intends to use a one-phase design-build solicitation to select the design-build team.

1.3 Project Site

This project site is in the Village of Cheesh’na Please see the attached site location photo and plat in Exhibit ‘A’.

1.3.1 Site Visits

Potential Offerors may visit the project site. Please notify Teri Nutter if you would like to schedule a site visit, so she can coordinate with Cheesh’na Tribal Council.

1.4 Project Budget

Funding has been secured for this project. The owner’s total project budget is approximately \$2.1 million. Please note that this amount is all-inclusive of design, consultants, project administration, construction, contingency, etc. and not just the construction cost. Should the total cost exceed \$2.5 million the Build America, Buy American Act will be applied to this project.

1.5 Project Completion Schedule

Substantial Completion shall be no later than September 15, 2026, and Final Completion shall be no later than September 31, 2026. If Offeror is of the position that Work cannot be completed prior to these dates, or would like to propose earlier dates, include proposed completion dates in your narrative.

1.6 Project Approach

This project shall utilize a design-build delivery method, where a single contractor will be responsible for both the design and construction of the work described herein.

CRBRHA will serve as the project manager and will perform construction management.

1.7 Nomenclature Note

The terms “Design-Builder” and “Contractor” are used interchangeably throughout the Contract Documents.

2. Submission Guidelines

2.1 Eligibility

Offeror and its subcontractors and suppliers shall be eligible to complete the work included in this solicitation, including but not limited to having all necessary State of Alaska business, contractor and professional licenses, including residential endorsement.

Offeror shall submit with its proposal both a completed HUD Form 5369A (Exhibit F) and the Non-Collusion Affidavit (Exhibit H) certifying its eligibility.

2.2 Proposal Schedule and Submittal Deadline

The following is the anticipated schedule for the procurement phase. Unless later amended, the proposal due date is firm. All other dates in the below schedule are approximate.

Activity	Date
Issue RFP	October 20, 2025
Last day for clarifications or questions	4:00 p.m. AK time, November 13, 2020
Proposals due	4:00 p.m. AK time, November 20, 2020
Issue Notice of Intent to Award	Approximately December 1, 2025

Proposals to this RFP must be received by no later than 4:00 p.m. Alaska Time, November 20, 2025.

2.3 Submission of Proposals

- a. Proposals may be e-mailed in .pdf file format to tnutter@crbrha.org with the e-mail subject title “CRBRHA Emergency Response Facility.” Total attachment size shall not exceed 20MB. It is Offeror’s responsibility to verify receipt of its proposal.
- b. Alternatively, a hardcopy plus an electronic copy on a jump drive may be mailed to the following address, but it must be *received* by the due date (i.e. not the postmark date):

CRBRHA
“Proposal Emergency Response Facility”
PO Box 89
Glennallen, AK 99588

2.3.1. Proposer’s Checklist

- Technical Proposal with Design
- Bid Form (Exhibit I)

- HUD Form 5369A, Representations, Certifications and Other Statements (Exhibit F)
- Non-Collusion Affidavit (Exhibit H)
- Bid bond
- Any proposed contract modifications (if applicable)

2.4 Page Limit

Technical Proposal shall be limited to twenty (20) pages in length, *excluding* cover page, cover letter, table of contents, resumes, dividers (if used), drawing sheets, Bid Form, HUD Form 5369A, non-collusion affidavit and any proposed contract modifications. Drawing sheets may be either 8.5x11 or 11x17 and do not count against maximum page limit.

One page is defined as one side of a standard 8 ½" by 11" sheet of paper. Small font sizes should be avoided.

2.5 Technical Proposal Format

Offeror's proposal shall include a cover letter, table of contents, and use the headings in Section 3 of this RFP to respond to each criterion in that section.

Offers shall include appendices to its technical proposal for:

- a. Resumes (no longer than two pages each)
- b. Bid Form
- c. HUD Form 5369A
- d. Non-Collusion Affidavit
- e. Bid Bond
- f. Any proposed contract modifications

Brevity is desired. Marketing materials such as brochures are not desired.

Proposals not conforming to these requirements, or that are uncertain or incomplete, shall not be considered.

2.5.1 Cover Letter

Proposals shall include a cover letter no longer than two (2) pages in length and shall:

- a. Briefly state Offeror's understanding of the services to be performed and why your firm is uniquely qualified to provide them.
- b. Identify, at a minimum, the proposed designer, project manager, and project superintendent.
- c. Include a statement that the person signing the proposal has the authority to bind Offeror to the proposal.
- d. The cover letter shall include a statement that Offeror agrees to the terms and conditions of the contracts included in Exhibit D, or reference where proposed modifications are located (e.g., in an appendix). Refer to Section 4.1.3 of this RFP.

2.5.2 Table of Contents

Proposals shall include a table of contents that identifies the individual sections of Offeror's technical proposal with the corresponding page numbers.

2.6 Questions and Clarifications

Questions regarding the project or this RFP shall be submitted via e-mail to Teri Nutter at tnutter@crbrha.org.

2.7 RFP Addenda

It is Owner's intent to ensure that all Offerors have the same information. Therefore, answers to individual Offeror's questions shall be answered in one or more addenda to be provided to all Offerors. It is Offeror's responsibility to ensure its contact e-mail address is on the plan holders list to receive all addenda. Request to be added to plan holders list by e-mailing the contact in Section 2.6.

Addenda shall not be issued less than two (2) days prior to the proposal due date. Owner retains the right to not answer questions during the two (2) days prior to the proposal due date, so as not to delay the project schedule.

Acknowledge receipt of all addenda in the designated location on the Bid Form. Failure to acknowledge addenda may result in rejection of Offeror's proposal.

2.8 Correction, Modification or Withdrawal of Proposals

A proposal may be corrected, modified or withdrawn by providing a request via e-mail from an authorized agent of the Offeror to the contact in Section 2.6 before the time and date set for receipt of the proposals. After proposals are opened, modifications may be allowed prior to completion of the evaluation process if Owner determines in its sole discretion that it is in its best interest to solicit modifications or best and final offers. The apparent Successful Offeror may be requested to modify or correct its proposal during contract negotiations to the extent it is in the best interest of Owner.

2.9 Required Review

Offerors must carefully review the RFP for defects and questionable or objectionable material. Such defects must be reported to the contact in Section 2.6 in writing via e-mail and received prior to the deadline for receipt of proposals. This will allow sufficient time to issue an addendum if one is required. This will help prevent the evaluation of proposals based on a defective RFP. Protests based on an omission, error, or the content of the RFP, will be disallowed if notice of the defect is not made as set out above.

2.10 Pre-Proposal Meeting

A pre-proposal meeting is not anticipated.

2.11 Statement of Non-liability

Owner reserves the right to reject all proposals if it deems that doing so is in its best interest.

Minor informalities that do not affect responsiveness may be waived by the Owner.

Owner shall not be liable for any decision to reject a proposal, to not purchase services, to partially award services, or for altering deployment characteristics or requirements from those specified in this RFP.

Owner's liability, if any, shall be governed by the terms of the contract that is entered into after the Owner accepts a proposal.

Owner shall not be liable for any costs associated with preparation or submission of Offeror's submittals to this RFP.

2.12. Confidentiality

Proposals will not be publicly opened. After a Notice of Intent to Award has been issued, Offerors may request e-mailed copies of other proposals. Offerors shall not include confidential or proprietary information in their proposals.

3. Selection Criteria

Proposals received in response to this RFP shall be reviewed by a selection committee. The committee may elect to identify the top-ranked respondents for a short-list, and may, at its discretion, decide to interview the short-listed firms. If interviews are held, Offerors shall be responsible for all expenses associated with such interviews.

Proposals shall use the criteria below as section headings in their technical proposal with the exception of Price, which shall be submitted on the Bid Form in an appendix to the technical proposal. Proposals shall be evaluated as follows:

Category Description	Weight (%)
Key Personnel	10
Past Performance of Project Team	10
Design and Functionality	25
Features and Systems that Minimize Energy Cost	10
Features and Systems that Minimize Maintenance Costs	10
Price	30
Native Preference	5

3.1 Key Personnel (10%)

Introduce the proposed firms (contractor, architect and major subconsultants (if separate entities) and major subcontractors (if known) and provide a brief background of each.

Introduce the individual project team members who would be working on this project, summarize their experience and qualifications in the narrative, and provide resumes in an appendix to the proposal. Individual resumes shall be no more than two-pages in length. Include at a minimum: proposed project manager, on-site superintendent, lead architect and project architect (if separate). Resumes of principals that will participate on the project solely in a supervisory or general management capacity are not desired.

3.2 Past Performance of Project Team (10%)

a. Design-Build Experience

Identify past design-build projects that the proposed companies and key personnel have worked on together. Highlight projects of similar nature to the work proposed in this RFP. If proposed team members have worked on other design-build projects separately from the proposed team, identify those projects accordingly. Include construction cost, any unique

characteristics similar to this project, and a contact reference. Projects using design-build delivery are preferred, but projects similar in scope that were not design-build may also be included.

- b. Describe the team's experience and technical competence with designing energy efficient and low maintenance facilities. Highlight those projects and design elements most similar to this project.

3.3 Design (25%)

Provide a narrative that describes the key design elements. Reference the submitted drawings in the proposal.

Provide concept drawings and a narrative in accordance with the requirements of Section 4, Scope of Work.

Drawings shall include the following:

- a. Site Plan – Show proposed location of the structures. Indicate site circulation by showing road access, extent of gravel, parking layout, front entries and outdoor space. Indicate locations of overhangs, stairs, garage doors, man doors etc.
- b. Floor Plan – Provide scale floor plans with dimensions that show doors, windows, plumbing fixtures, heating equipment, and any special design features. Provide the overall gross square footage of facility. Plan size and fonts shall be suitable for 11x17 printing.
- c. Front Exterior Elevation or Perspective– Include materials indications, windows, doors, lighting, etc. Provide sufficient detail for reviewers to understand the massing forms, esthetics, style and materials being proposed.
- d. Preliminary Finish Schedule – Include a summary of flooring, wall finishes, and ceiling finishes.

Scoring for this section shall consider:

- The site design provides logical, efficient parking, easily identified and separated entries, and private outdoor space for each home.
- Snow shedding (e.g. will snow shed off the roof in front of doors).
- Building envelope design, including R-values and moisture controls.
- The facilities exterior, room layout and design features promote a sense of well-being and a sense of community.
- The layout is efficient, and spaces are sized appropriately.
- The design maximizes use of natural light.
- Exteriors and interiors are esthetically pleasing.

3.4 Features and Systems that Minimize Energy Costs (10%)

Identify and describe features in the proposed design that will minimize energy costs. Identify areas of long-term, added value. Discuss proposed R-values for proposed wall and roof assemblies.

The intent of this section is for Offerors to identify creative solutions that are above and beyond what is already included in the minimum requirements identified in Section 4 of this RFP.

3.5 Features and Systems that Minimize Maintenance Costs (10%)

Identify and describe features in the proposed design that will minimize maintenance costs, including, but not limited to, interior and exterior finishes, appliances and equipment.

The intent of this section is for Offerors to identify creative solutions that are above and beyond what is already included in the minimum requirements identified in Section 4 of this RFP.

3.6 Price (30%)

Offeror shall submit its bid on the Bid Form included in Exhibit I of this solicitation. Offeror may re-create the form electronically but shall not modify or combine fields.

For purposes of scoring price, the lowest price will receive the maximum points (30) and higher prices will be scored in a linearly proportional manner to the lowest bid. For example, if the sum total of the lowest Offeror is \$700,000 and the next lowest Offeror's bid is \$750,000; the second place Offeror's score would be $30 \times (700,000/750,000) = 28$.

For purposes of scoring, price shall be the sum of the base bid, plus all additive alternatives if applicable.

Offeror is reminded to review administrative, bonding and insurance requirements of the Project, and include all such costs in its price.

3.7 Native American and Alaska Native Preference (5%)

If firm is at least 51% owned by Alaska Native or Native American, submit information substantiating ownership.

4. Scope of Work

The scope of work includes, but is not limited to, all management, design, permits, labor, equipment, temporary controls, utilities and materials to construct the Emergency Response Facility in Chistochina, Alaska:

Construct a 3,500 to 4,000 sq feet facility with 3-bays to house an ambulance, a pump fire truck and a large vehicle, garage doors should be at least 14 ft. tall and one bay an emergency vehicle should be able to drive from front to back. It is anticipated that one of the bays will be used for vehicle maintenance with an automotive lift up to 14,000 lbs. In-floor drains with oil and water separators preferred, but evaporative channels in vehicles bays will be required at a minimum. Warm storage will be required for public safety equipment. A bathroom with shower will be required with in-floor drain for decontamination rinse.

We anticipate the facility will be heated with two Energy Kinetics (EK) Boiler systems with radiant floor heat.

Evaluation of current existing water and wastewater systems on site to determine if an extension of the existing infrastructure can be utilized or updated. There are three potential wells that can be accessed the campus to connect to the proposed facility. The well will need to be flow tested to ensure adequate flow and usage. There are two waste water systems that can potentially be connected to the proposed facility.

The Successful Offeror shall work with CRBRHA to develop 100% construction documents that are approved by CRBRHA, and all design and construction work shall be completed within the schedule and budget listed in this solicitation.

The Successful Offeror shall be responsible for, but not limited to, the following tasks:

1. Working with the project team to ensure Owner's goals are met.
2. Ensuring all project requirements are properly detailed in the design documents.
3. Ensuring the design work meets or exceeds the standard of care for its industry.
4. Keeping the project within budget and on schedule.
5. Managing the design team through project completion.
6. Obtaining all required permits (Successful Offeror pays for permits).
7. Coordinating and paying for utility connections.
8. Managing logistics to prevent schedule impacts.
9. Oversight of construction quality control.
10. Ensuring proper supervision of all work.
11. Compliance with all regulatory requirements.
12. Maintaining proper as-built and project documentation.
13. Participating in startup activities as outlined below.

4.0.1 Administrative

4.1 Administrative Items

Offerors shall review all administrative requirements in the solicitation, including, but not limited to, Sections 4, 5 and the contracts.

4.1.1 Permits

The Authority Having Jurisdiction (AHJ) for a building permit at this project's location is the State of Alaska. Since these are single-family homes, the State of Alaska does not require building permits, however, onsite septic permits are required from ADEC with compliant separation distances. The Successful Offeror shall be responsible for well and septic design, submitting septic permits to ADEC and obtaining approvals by ADEC prior to construction of the septic systems.

4.1.2 Prevailing Wage Requirements

This project is subject to the minimum wages included in Exhibit 'G', tribal wage requirements.

4.1.3 Contract Requirements

The contracts for this project are included in Exhibit 'D' of this solicitation. If Offeror has any objections to these contracts, they are required to specifically list these objections in their response to this RFP and offer alternate contract language. If Offeror does not identify any modifications, Offeror accepts the terms of the contracts as written. Due to the short timeframe for award of this contract, negotiation of the terms of the contracts not addressed in the Offeror's response to the RFP will not be allowed.

4.1.4 Licenses

Offerors are required to hold a valid Alaska business license, general contractor's license and residential endorsement at the time proposals are due. Proposed architects and engineers shall have current licenses from the State of Alaska. For more information on licensing, contact the Department of Commerce, Community and Economic Development, Division of Occupational Licensing, P.O. Box D--LIC, Juneau, Alaska 99811. Telephone (907) 465-2550, <https://www.commerce.alaska.gov/web/cbpl/>.

Proposals submitted by joint ventures are required to have a license in the name of the joint venture. The business licenses should be in the name of the Offeror, unless otherwise required by the Department of Commerce, Community and Economic Development.

4.1.5 Bonds

A bid bond in the amount of \$10,000.00 is required to be submitted with Offeror's proposal. If e-mailing the proposal, an electronic scan of the bid bond is acceptable. Cash, personal or business checks are unacceptable.

The Successful Offeror shall be required to furnish 100% performance and payment bonds that include the cost of the design work.

4.1.6 Insurance

Refer to Article 7 of the ConsensusDocs 400 contract and Article 10.2 of the ConsensusDocs 415 contract, which are included in Exhibit D. Proof of coverage shall be required prior to issuance of a Notice to Proceed.

CRBRHA will obtain a builder's risk policy per the terms of the contract.

4.1.7 Liquidated Damages

Liquidated damages will be applied in the amount of \$100/day. Refer to Article 6.4 of the ConsensusDocs 415 contract that is included in Exhibit D.

4.1.8 Site Security

Per Specifications Section 015000, Successful Offeror shall be solely responsible for site security until Substantial Completion, including but not limited to protection from theft, damage, vandalism, etc.

4.2 Sitework Items

4.2.1 Temporary Utilities

Per Specifications Section 015000, Successful Offeror shall be solely responsible for paying for all temporary utility costs through Substantial Completion, including but not limited to, generators, temporary power poles, pedestals, service drops and cost of telephone, fuel oil, Internet, electricity, etc.

4.2.2 Clearing & Grubbing

Successful Offeror shall be responsible for clearing and grubbing for the access road, lots, etc. to achieve an aesthetic landscape while still following Firewise practices. The Successful Offeror

shall remove all stumps as well. CRBRHA will not authorize stumps, shrubs or other waste material to be buried onsite.

4.2.3 Permanent Utilities

1. Telecom – Copper Valley Telecom (CVT). Contact: (907) 822.3551.
2. Electricity – Alaska Power and Telephone – (907) 883.5101.

4.2.4 Water and Wastewater

The Successful Offeror shall be responsible for the design, permitting and construction of the on-site well and septic systems and ensuring all proper distancing is achieved.

The Successful Offeror shall be responsible for completing drinking water analysis for the new wells.

4.2.5 Survey

Successful Offeror shall be responsible for construction survey control. Final as-built drawings of the sites shall be submitted as part of its record drawings, but they do not need to be stamped by a Professional Land Surveyor (PLS).

4.2.6 SWPPP

The Successful Offeror shall verify whether a Storm Water Pollution Prevention Plan (SWPPP) is required, and if so, shall be responsible for all requirements.

4.2.7 Firewise Practices

Design shall incorporate Alaska Firewise practices per the State of Alaska Division of Forestry. Refer to the latest handout at <http://forestry.alaska.gov/Assets/pdfs/home/firewise09.pdf>.

4.3 Architectural Items

4.3.1 Bathroom

Bathroom shall include a wash basin, commode and shower.

Towel bars, paper towel dispensers and toilet paper holders are required.

4.3.2 Windows

Exterior windows shall be certified window screens shall be included for all operable windows.

Windows shall be boxed and trimmed on the interior and trimmed on the exterior.

4.3.3 Building Envelope

Cold climate building practices shall be employed.

4.3.4 Exterior Finish

LP Smart Lap siding, equivalent or better. Other LP Smartside products may be proposed to add aesthetic appeal.

Windows and doors on the exterior shall be trimmed.

4.3.5 Roofing

Metal roof with rain gutters, downspouts and snow breaks, especially above doors.

OSB roof sheathing is not desired.

4.3.6 Doors

Thermally broken exterior doors.

All doors to be trimmed on the interior and exterior.

Exterior front door hardware shall include a keyed latch set and programmable touchpad deadbolt with integral key cylinder.

Secondary exterior exit doors shall include a keyed latch set and keyed deadbolt. All exterior doors shall be keyed to the same key.

4.3.9 Flooring

Finished concrete is desired.

4.3.10 Smoke Alarms & Fire Extinguishers

Successful Offeror shall be responsible for furnishing and installing hard-wired combination smoke/CO detectors with battery backup. Fire extinguishers shall also be furnished.

4.3.11 Interior Storage

Designs with adequate warm storage areas shall be scored higher than those with limited storage areas. Built-in shelving is also desired.

4.3.12 Interior Walls

Interior walls shall be painted/stained pressure treated CDX

Install backing in walls where appropriate, including areas likely to receive fasteners for wall hangings.

4.3.13 Ceilings

Ceilings can be open industrial concept.

4.3.14 Garage Bays Doors

The Vehicle Bay doors shall include motorized operation. One bay door shall be approximately 14'x16' a pumper truck, and three 10'x12' doors with one bay as a drive through.

4.4 Mechanical Items

4.4.1 HRV

An HRV shall be included and sized accordingly.

Regardless if there is an HRV exhaust (intake) in the bathroom, there shall also be a separate, dedicated bathroom exhaust fan that exhausts to outside. The bathroom exhaust fan shall be on a humidity controlled "smart-switch."

4.4.2 Heating Appliances

The Emergency Response Facility shall include two fuel-oil fired, Energy Kinetic boilers with sealed combustion and a minimum energy efficiency rating of 87%.

Radiant in-floor heat is required with heat loops that extend to the man door entrance and front of the bay entrances.

The Emergency Response Facility heating system should include an installation of water heater exchanger for waste heat that can connect to external wood/pellet (biomass) heating system.

4.4.3 Hot Water

Hot water shall be supplied from an indirect-fired hot water supplied from the boiler.

4.4.4 Fuel

- a. Fuel Oil. Successful Offeror shall provide a 500-gallon fuel oil tank with stand and all associated plumbing.

Boilers and indirect fired hot water heaters shall operate on fuel oil.

Successful Offeror shall be responsible for filling and topping off the fuel oil tanks at Substantial Completion.

4.4.5 Exterior Hose Bibs

Include four freeze-proof hose bibs: two on the front and two on the back of the facility at a minimum.

Branch lines for hose bibs shall be upstream of any water treatment systems.

4.4.6 Interior Hose Bibs

Include two interior hose bib connections.

4.5 Electrical Items

4.5.1 Lighting

All lighting fixtures shall be designed for LED bulbs.

Smart switches shall be used in the bathroom.

Emergency lights shall be installed and located near the door and throughout the facility.

Overhead electrical for emergency vehicles on standby.

Electrical runs for future air compressors and vehicle lift should be considered in the design.

Exterior lighting shall be located above exterior bay doors, and man door(s), etc. All of four sides of building shall have exterior security lights, which the fixture shall include interior switched power, as well as options for motion-on and photocell operation. Additionally, the front of the bays should have two flood lights above the bay doors that project out.

4.5.2 Exterior Receptacles

Include a minimum of eight separate exterior power receptacles with compliant covers for such items as engine block heaters. Coordinate location with Owner during design.

4.5.3 Interior Receptacles

Include a minimum of eight power receptacles and at least one 220V.

4.5.4 CVT Fiber to the Home, and Interior Network Location with Power

Once a site plan has been developed showing footprints of each structure, contact CVT (Bob Cyr at 907-259-1220) to determine available fiber or copper. If fiber is available, or available in the near future, coordinate locations on each buildings' exterior for CVT's fiber slack box. Obtain CVT's written concurrence on all proposed locations.

At each confirmed fiber slack box location, install backing and appropriate material for CVT to attach its boxes. From these exterior slack box locations, install an empty ¾" conduit to a predetermined, central location interior to each home (shown on the drawings) where CVT will install its Optical Network Terminal (ONT) and the owner would best locate a wireless router. This would be a central location for also home-running copper telephone, coax, etc. Follow appropriate conduit installation practices for bend radius and intermediate pull boxes.

At each ONT location, install a quad electrical receptacle.

4.5.5 Telephone

Install RJ-11 telephone jacks at appropriate locations. Home run CAT6 cabling to the central location identified in 4.5.3.

4.5.6 Manual Transfer Switches and Generator

For manual transfer switches on the exterior of the facility for the connection of a generator to power emergency circuits in the event of a power outage. Emergency circuits shall include heating, some lighting, and garage doors, circulating pumps. Include the cost of portable generators in your bid.

5. Administrative Requirements

Applicable Codes, Standards and Regulations

1. It is Successful Offeror's responsibility to ascertain and comply with all applicable codes, ordinances and regulations. Unless otherwise noted, all applicable code editions are the most current and adopted at the time of the Agreement.

2. Except where the design-build documents include other requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the design-build documents. Such standards are made as part of the design-build documents by reference.
3. Each entity engaged in design and construction of the Project is required to be familiar with industry standards applicable to its design or construction activity. Copies of applicable standards are not bound with the design-build documents.
4. Where compliance with two or more codes, ordinances, regulations and/or standards is required, and/or there are conflicting requirements, the stricter code, ordinance, regulation and/or standard shall prevail.
5. The code and regulatory agencies having jurisdiction over the Work includes, but is not limited to, the State of Alaska adopted building codes. It is Successful Offeror's responsibility to ascertain and comply with any and all applicable codes and regulations, including those not listed above.

004336 Subcontractor Approval

1. Successful Offeror shall submit its list of proposed subcontractors performing more than \$10,000 worth of Work. This list shall be submitted prior to the Notice to Proceed for construction services.
2. Successful Offeror shall ensure all provisions in the Contract Documents flow-through to Subcontractors, Sub-Subcontractors, Suppliers and Successful Offeror shall verify eligibility of these entities under these provisions.
3. Refer to Article 5 of ConsensusDocs 415 contract.

006100 Bonds

1. Refer to Article 10.5 of the ConsensusDocs 415 contract.
2. Per the RFP, a \$10,000 bid bond is required with the proposal.
3. Payment and performance bonds are required in the amount of the Contract Price, including design.
4. Bond forms shall be ConsensusDOCS 470 (performance bond) and ConsensusDOCS 472 (payment bond) documents. If Successful Offeror's bond broker or surety does not have a ConsensusDocs subscription to obtain the bond forms online, contact Owner for further direction.
5. If notice of any change affecting the general scope of Work or change in the contact price is required by the provisions of any bond to be given to the surety, it will be Successful Offeror's responsibility to so notify the surety, and the amount of each applicable bond shall be adjusted accordingly. Successful Offeror shall furnish proof of such adjustment to Owner.

012600 Contract Modification Procedures

1. Refer to HUD 5370 (Exhibits), Item 29, "Changes."
2. Note that in HUD 5370 29(f)(3), "Contractor shall not be allowed a profit on the profit received by any subcontractor."
3. Refer to Article 8 of the ConsensusDocs 415 contract regarding Change Directives and Change Orders. Observe the notice provision of Section 8.5.
4. In order to be considered, Change Order proposals must include a detailed breakdown of actual direct costs, indirect costs and profit per HUD 5370 29(f).
5. Successful Offeror should update the project schedule and submit a new schedule within five (5) business days whenever a Change Directive or Change Order affects the critical path of the project schedule.
6. Change Orders for deleted Work shall include credit for not only direct costs, but indirect/overhead costs and profit.

012613 Request for Information (RFI)

1. When design and/or construction conditions require additional information, clarification or verification by Successful Offeror, a written RFI is required to be submitted in accordance with the following:
 - a. Successful Offeror shall designate a single point of contact for sending and receiving RFIs.
 - b. RFI form shall be submitted to Owner for approval prior to the start of construction.
 - c. Subcontractor RFIs must be routed through Successful Offeror and transmitted to Owner on Successful Offeror's RFI form.
 - d. Allow seven (7) working days for Owner's response for each RFI.
 - e. Notify Owner within three (3) business days if Successful Offeror disagrees with response.
 - f. Successful Offeror shall maintain a log of RFIs and make available to Owner.

012973 Schedule of Values

1. No less than ten (10) calendar days prior to Successful Offeror's first pay application, Successful Offeror shall submit a Schedule of Values, including design costs, to Owner for review and approval.
2. There should be separate Schedule of Values for each structure.
3. Schedule of values shall be of adequate detail to easily provide a breakdown of the components of Work. Add additional lines as requested by Owner.
4. Coordinate line items with progress schedule.
5. Design shall be separate line items.

6. Successful Offeror's overhead and profit shall be incorporated in each line item in the schedule of values.
7. Change Orders shall be tracked separately from the base scope Schedule of Values, and added as separate line items at the bottom of the Schedule of Values.

012976 Progress Payment Procedures

1. Refer to Article 9 of the ConsensusDocs 415 contract.
2. Per HUD 5370, Section 27(e), included in Exhibit E, Successful Offeror shall include with each progress payment the following certification:

Along with each request for progress payments and the required estimates, Successful Offeror shall furnish the following certification, or payment shall not be made:

I hereby certify, to the best of my knowledge and belief, that:

- a. *The amounts requested are only for performance in accordance with the specifications, terms and conditions of the contract;*
- b. *Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,*
- c. *This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.*

Name: _____

Title: _____

Date: _____

3. Per Section 013216, an updated project schedule shall be updated and submitted with each monthly pay application. Failure to submit an updated schedule with the pay application will hold up Owner's processing of the pay application and Owner shall have no liability for non-payment due to Successful Offeror's failure to submit updated schedules.
4. In accordance with Article 9.1.7 of the ConsensusDocs 415 contract, stored materials may be included in Successful Offeror's pay application with adequate notice. Successful Offeror and Owner shall jointly and concurrently inspect the stored materials. The address of any off-site location of stored materials must be provided to Owner, must be fully insured by Successful Offeror for any loss, theft or vandalism and must not change without prior written notice to Owner. Three (3) business days shall be added to the payment terms if materials are stored offsite to allow for additional coordination by Owner.
5. Prior to first pay application, Successful Offeror shall have submitted: List of subcontractors, project schedule, proof of insurance, bonds and Schedule of Values.

013113 Project Coordination, Meetings and Daily Reports

1. Communication and Coordination

- a. Communication and correspondence shall be between the designated Successful Offeror's Representative and Owner.
- b. Designers or subcontractors of any tier, suppliers and vendors will endeavor to not contact Owner. Communications between subcontractors of any tier, suppliers and vendors with Owner shall be through Successful Offeror. Successful Offeror shall communicate questions or request clarification using a Request for Information (RFI) form.

2. Project Meetings

Successful Offeror will conduct the meetings listed below and produce meeting minutes which will be distributed to the attendees. Meetings will be scheduled at a mutually agreeable time and location and are to be attended by the following:

- Owner and staff, as needed
 - Successful Offeror's Superintendent and Project Manager
 - Successful Offeror's Design Team, as needed.
- a. A Pre-Award Review Conference (Referred to as "Pre-Construction Conference" per Exhibit E, HUD-5370, Section 5(a)) is to be scheduled within ten days of the Notice of Intent to Award at a mutually agreeable time and location. The purpose of this meeting is to facilitate communication between Successful Offeror and Owner, review any contract or administrative matters, assist Owner in fully understanding the proposed design and gather input and comments from Owner about the design.
 - b. A conference to review the 65% Construction Documents will be scheduled at a mutually agreeable time and location.
 - c. A conference to review the 95% Construction Documents will be scheduled at a mutually agreeable time and location. The 95% shall be reviewed and approved before an NTP for construction is issued. Owner may wait for 100% Construction Documents prior to issuance of NTP for construction.
 - d. Construction Progress Meetings will be scheduled at intervals that are mutually agreeable to Owner and Successful Offeror, and not less than once per month during the duration of construction. The purpose of these meetings will be to discuss the progress schedule, upcoming work activities, payment applications, changes in Work, RFI status, problem areas and any other issues. Scheduling and conducting the progress meetings and producing and distributing the meeting minutes will be the responsibility of Successful Offeror.
 - e. Project Safety Meetings: Successful Offeror is encouraged to conduct regularly scheduled safety meetings for the duration of construction.
 - f. Subcontractor Coordination Meetings: Regularly scheduled subcontractor meetings are encouraged and at the discretion of Successful Offeror.

3. Daily Reports

Successful Offeror shall submit copies of its daily reports to Owner on a weekly basis. At a

minimum, daily reports shall record hours worked for its staff and subcontractors' staff, major equipment, significant deliveries, weather, Work in progress/completed, accidents and other significant events.

4. Supervision
 - a. Successful Offeror shall identify a competent superintendent who shall be onsite on a daily basis to oversee Work underway and not just Work that Successful Offeror is self-performing, but all Work, including Subcontractors, Sub-Subcontractors and others under Successful Offeror's supervision.
 - b. Owner can request Successful Offeror replace its superintendent if Owner reports performance shortcomings and Successful Offeror shall propose alternate individuals for Owner's approval, which it shall not arbitrarily withhold approval.
 - c. Superintendent shall be on the project site whenever Work is taking place, including subcontractors.

013216 Schedule

1. In accordance with HUD-5370, Section 6, within ten (10) after receiving the Notice to Proceed for design work (and not within five days of work commencing per HUD-5370), Successful Offeror shall submit a Preliminary Schedule of the Work to Owner detailing the design completion, Owner review periods, submittal review and approval process, shipment of materials and equipment, sequencing of Work, the different sub-contractors start and finish of the dates, etc.
2. Successful Offeror shall use adequate software to develop and update the schedule. Example includes Microsoft Project. Tasks should be linked with sequential logic (relationships between tasks) to establish a critical path.
3. Schedule shall be updated and submitted with each monthly pay application. Failure to submit an updated schedule with the pay application will hold up Owner's processing of the pay application and Owner shall have no liability for non-payment due to Successful Offeror's failure to submit updated schedules.
4. Successful Offeror shall notify Owner if it falls behind its baseline schedule by two (2) weeks or more. Successful Offeror shall provide Owner a recovery plan showing how it intends to bring Work current with the baseline schedule, and Owner has all remedies per Section 6 of HUD-5370 or otherwise noted.
5. Successful Offeror shall update the project schedule and submit a new schedule within five business days whenever a Change Directive or Change Order affects the critical path of the project schedule.
6. Schedules may be submitted electronically in .pdf format via e-mail instead of the three hard copies per HUD-5370.

013300 Submittals and Reviews

1. Successful Offeror Design Documents:
 - a. Owner requires submittal of design documents at the following stages of design:
 - 35% schematic drawings including mechanical and electrical narratives and/or drawings.
 - 65% design development drawings including mechanical and electrical drawings, and draft technical specifications.
 - 95% Construction Documents including mechanical and electrical drawings, and .
 - 100% Construction Documents.
 - b. For each design (progress set) document review, Successful Offeror shall submit .pdf electronic copies of all documents to Owner. Final construction documents shall be both electronic and two (2) full-sized, hard copies.
 - c. Following Owner review of Successful Offeror's design documents, Owner shall provide Successful Offeror with review comments. Successful Offeror shall respond to comments in writing and return those comments to Owner within ten (10) business days of receipt of Owner comments.
 - d. In the event Successful Offeror deems design review comments by Owner require a change in the Contract price or time, Successful Offeror shall immediately notify Owner in writing and shall await Owner direction per the established change process procedure before proceeding with any additional Work.
 - e. Drawings shall be completed to a level sufficient to construct the facility, indicate compliance with this RFP's requirements and allow required code compliance reviews. The 95% submittal shall include specifications for materials, equipment and systems. Cut sheets indicating proposed major material/product selections are desired.
2. Shop Drawings, Product Data and Samples.
 - a. Where identified, Shop Drawings, Product Data and Samples shall be reviewed and approved by the designers of record. Approved copies shall be provided to Owner prior to the installation of the materials or system.
 - b. Product data may include catalog cuts, color/finish charts, rough-in diagrams and templates. Mark each copy to show application choices and selections.
 - c. Samples shall be identical to the material or product to be used. Samples include materials, color range sets, swatches/material cuts showing color and/or texture and pattern. Maintain one set of approved samples at the project site.
 - d. Color selections are to be approved by Owner.
 - e. Spare Parts and Extra Stock

- One unopened gallon of each color paint, both interior and exterior, as applicable.
- Extra set of air filters for all equipment with air filters.
- Extra LVT, at least 50 square feet per housing home.

f. Operation and Maintenance Manuals – See 017823

g. Record Drawings - See 017839

014500 Quality Control/Special Testing and Inspection Services

1. Project architect shall visit the project sites at key milestone dates such as foundation, prior to covering walls with sheetrock, etc. Successful Offeror shall give notice to Owner of the schedule of these milestones well in advance.
2. Successful Offeror shall provide access at all times to any and all portions of the work to be tested and/or inspected.
3. Successful Offeror shall be responsible for all Quality Control (QC) testing, including but not limited to soil compaction, rebar inspection, concrete slump and strength and epoxy dowels. Owner may perform a smaller sample of tests to verify Successful Offeror's QC testing, which shall be primary.
4. Successful Offeror's Engineer(s) of Record shall identify the type and frequency of any IBC Chapter 17 special inspections for which Successful Offeror shall be responsible for performing QC tests. Successful Offeror shall submit name of the third-party special inspector(s) to Owner no less than fourteen (14) prior to any special inspections and provide no less than three (3) days' notice to Owner of any special inspections.

015000 Temporary Facilities & Controls

1. Successful Offeror shall conduct its Work activities so as to ensure the least possible obstruction to vehicular traffic and inconvenience to the general public and the residents in the vicinity of the Work and to ensure the protection of persons, property and natural resources. The driveways to other facilities may only be closed with prior permission.
2. Security
Successful Offeror is solely responsible for site security until Substantial Completion, including protection from theft, damage, vandalism, etc. Owner will not reimburse Successful Offeror for any lost or stolen tools, materials or equipment or associated labor, or any acceleration to make up for lost production.
3. Protection of Existing Utilities
Successful Offeror is solely responsible for identifying the exact locations of existing utilities prior to starting construction operations.
4. Shutdowns of Existing Utility Services
Continuity of any existing utility services shall be maintained at all times. Any utility shutdowns

necessary to proceed with a portion of the Work shall be scheduled with Owner with as much advance notice as possible and not less than 48 hours. Successful Offeror shall be responsible for all costs associated with any utility shutdowns.

5. Field Office

Successful Offeror may furnish and install a field office for which it will be responsible for security of, and the removal of, prior to Substantial Completion.

6. Temporary Electrical Power

Electrical power facilities for field office(s), subcontractor office(s), other temporary structures, construction tools and equipment shall be furnished, installed and paid for by Successful Offeror. Successful Offeror shall be responsible for providing all temporary equipment required to provide power to the site including but not limited to transformers, cable, GFCI boxes, etc. All temporary equipment shall be installed and maintained in accordance with all applicable safety regulations. Successful Offeror will be responsible for removal and termination at the time temporary power is no longer required for the project. All electrical use during the term of the contract shall be paid for by Successful Offeror, and Successful Offeror shall change the account(s) to the Owner's name upon Substantial Completion.

7. Temporary Lighting

Successful Offeror shall provide adequate lighting to support its construction operations.

8. Temporary Heat

Successful Offeror shall provide and pay for temporary heat as required to protect existing structures, new Work, personnel, materials and equipment from damage, dampness and cold.

9. Water

Temporary water services shall be obtained, paid for and maintained by Successful Offeror.

10. Temporary Toilet Facilities

Successful Offeror shall provide and bear costs for adequate toilet facilities for all those performing and connected with the Work in accordance with all pertinent safety and other regulations.

11. Telephone, Internet, Computer

All costs for job site telephone, Internet and computer installation and use shall be borne by Successful Offeror.

12. Temporary Enclosures

Successful Offeror shall provide barriers, safety guards and warnings for protection of the public as required by law and/or local ordinances. Keep streets and walks clean and free from dirt and obstruction.

13. Noise Control/Hours of Work

Work hours shall comply with local ordinances and regulations. Consideration of neighbors and other stakeholders shall be required when scheduling Work that generates noise.

14. Parking

Construction parking outside of the designated parking area or outside of the project boundaries shall not be permitted without prior written approval from Owner.

15. Dust Control

Successful Offeror shall be responsible for keeping dust due to construction activities to a minimum. Water dust as it is generated. Successful Offeror shall be liable for any fines or subsequent damages caused by dust generated by its activities or lack of dust control at the project site and/or additional construction related areas outside of the project boundaries.

16. Water and Erosion Control

Successful Offeror shall monitor and control the use of water on site to prevent damage to the worksite and adjacent property. If a Storm Water Pollution Prevention Plan (SWPPP) is required by authorities having jurisdiction, Successful Offeror shall provide one as part of their bid price and maintain it with a certified CSECL. Successful Offeror shall furnish, install, and operate all necessary machinery, appliances and equipment to keep the site free from water during construction.

17. Pollution Control

Successful Offeror shall comply with all applicable pollution control laws, regulations and ordinances.

18. Protection of Existing Property

Successful Offeror shall employ means to protect existing elements and areas of the site not designated for removal or construction. Protect adjacent property and public from damage and injury. Temporary provisions shall be made by Successful Offeror to ensure the use of sidewalks, private and public driveways and ensure the proper functioning of gutters, sewer inlets, drainage ditches and culverts, irrigation ditches and natural water courses, as applicable.

19. Removal

Successful Offeror shall maintain all temporary facilities as long as needed for the safe and proper completion of Work and remove all such temporary facilities as quickly as construction activities will allow. Work shall not be considered as Substantially Complete until all temporary facilities have been removed from the project site unless otherwise agreed to in writing by Owner.

013523 Safety Procedures

1. Refer to Article 3.4 of ConsensusDocs 415 contract.
2. Successful Offeror shall prepare a site-specific safety plan that is consistent with its company's safety plan. Successful Offeror shall designate a safety representative.
3. Successful Offeror shall report all safety incidents to Owner and provide copies of any OSHA reports or citations.
4. Fire Extinguishers: Provide types, sizes, numbers and locations as would be reasonably effective

in extinguishing fires during early stages by personnel at project site. Provide Type ABC dry chemical extinguishers; comply with recommendations of NFPA 10. Post warning and instructions at each extinguisher location, and instruct all personnel at project site, at time of their first arrival, on proper use of extinguishers and other available facilities at project site. Post local fire department call number on each telephone at project site.

5. Successful Offeror shall conduct its operations in a manner that is fire safe for the Work area and adjacent area. Successful Offeror shall maintain the premise clear of rubbish, debris and/or other combustible materials. Successful Offeror shall adhere to all applicable provisions as determined by the local AHJ. Successful Offeror shall be responsible for any fines or penalties levied by the AHJ due to non-compliance with fire safety on the worksite.
6. Successful Offeror shall:
 - Report any fires and/or hazardous material spills immediately to the local authorities and Owner.
 - Provide protection for combustible and finished surfaces and protect personnel from injury. Outdoor storage and staging operations may not impede access or egress, restrict fire-fighting access, fire lanes or present a fire exposure risk to the Work and surrounding areas. Provide adequate separation between structures such as construction trailers and in lay-down areas.
 - Where applicable, fire hydrants on or adjacent to the Work shall be accessible at all times.

017516 Startup Procedures

1. Successful Offeror shall be responsible for startup and functional testing of all building systems. The Successful Offeror shall document all testing and shall notify Owner no less than five (5) business days prior to conducting functional tests.
2. O&M manuals shall be submitted prior to startup and Substantial Completion and shall be used during training of Owner staff.
3. Successful Offeror shall train Owner staff on all building systems. Schedule training with Owner at least fourteen (14) days prior to training.

017700 Closeout Procedures

1. Final Cleaning
Successful Offeror shall perform a final cleaning of the completed building(s) and surrounding project site(s). At a minimum, complete the final cleaning operation before requesting Substantial Completion inspection by Owner.
2. Substantial Completion
Substantial Completion is defined as the Work being completed enough to be used for the purpose in which it was intended. Before requesting inspection by Owner for Substantial Completion, Successful Offeror shall perform the following:
 - Submit written notice to Owner that the project is ready for Substantial Completion

- inspection.
- Submit Successful Offeror punch list noting defective/damaged items, and items not yet completed.
 - a. Upon receipt of the items listed above, Owner will either proceed with their inspection or advise Successful Offeror of unfulfilled requirements. Following initial inspection, Owner will recommend the date of Substantial Completion or advise Successful Offeror of Work that must be completed or corrected before the date of Substantial Completion can be established. Results of completed inspections will form Owner's punch list, which must be completed in order to satisfy the requirements for Final Completion. The following are to be provided or submitted prior to Substantial Completion:
 - i. Operation and Maintenance Manuals (ref. 017823)
 - ii. Operations and for HVAC systems
 - iii. Spare materials
 - iv. Owner staff training
 - v. Provide copies of manufacturers' warranties for all warranties over one year in length
 - b. When the project is deemed Substantially Complete, Owner will provide written notice to Successful Offeror.
 - c. All warranties and guarantees begin upon the date of Substantial Completion.
 - d. Owner will assume responsibility for utilities upon the date of Substantial Completion. And it is Successful Offeror's responsibility to coordinate the change of customer names with the utilities.
3. Final Completion
- Before requesting final inspection by Owner for Final Completion, Successful Offeror shall perform the following:
- Submit final Application for Payment including consent of Surety on mutually agreed upon form, which may be AIA G707 or similar.
 - Submit a copy of Owner's final punch list stating that each item is complete or otherwise resolved for acceptance, signed by Owner.
 - Submit final as-built record drawings and specifications (ref. 017839).
 - Remove from project site any remaining temporary facilities and services along with construction equipment, tools, waste and facilities.
 - Complete final cleaning requirements.
 - a. Owner will perform a final inspection upon receipt of Successful Offeror's notice that the Work, including punch-list items, is complete. Those items whose completion is delayed due to circumstances acceptable to Owner will be exceptions.
 - b. Upon completion of final inspection, Owner will either grant Final Completion or advise Successful Offeror of Work not complete or obligations not fulfilled, as required for Final Completion. If necessary, the Final Completion procedures will be repeated. When all

required items are complete, Owner will issue a letter of Final Completion and release final payment to Successful Offeror.

017823 Operations and Maintenance Manuals (O&M)

1. Operations and Maintenance (O&M) manuals shall be furnished to Owner by Successful Offeror and shall contain maintenance, operation, product, technical, warranty and certification information for materials and equipment used in the project. O&M Manuals shall be presented and arranged logically for efficient use by Owner's maintenance personnel.
2. At a minimum the O&M Manuals shall contain:
 - a. General maintenance, cleaning and repairing of material and finishes
 - b. Material manufacturer data
 - c. Dimensional and performance data
 - d. Servicing data
3. Copies shall be bound in 3-ring binders sized appropriately for the amount of data, and also provided in .pdf format.
4. Provide cover identification title: 'Operations and Maintenance Manual', project name, Successful Offeror name and year of completion. Provide spine identification with the same information as the cover identification. Each copy shall have an index and tabbed dividers between sections.
5. Submittal:
Deliver two (2) hard copy notebooks, and one electronic copy in .pdf format on a jump drive of the O&M Manuals to Owner prior to Startup and Substantial Completion. The O&M Manuals must be received and approved by Owner prior to release of final payment to Successful Offeror.

017839 Record Documents

1. During construction, Successful Offeror shall maintain a clean, undamaged set of final design drawings as as-built drawings (or "Record Documents"). Mark the set to show the actual installation where the installation varies from the Work as originally shown. Where shop drawings are used, record a cross reference at the corresponding location on the final design drawings.
 - a. Mark record set with red, erasable pencil.
 - b. Note related change orders and RFI numbers where applicable.
 - c. Record accurate measurements and locations of anything underground prior to burial.
 - d. Note changes of direction and location.
 - e. Cross out conditions not constructed with an "X" to convey the actual constructed conditions.
 - f. Show revisions to drawings with a "cloud" drawn around the revision and date of change, RFI, change order, addendum number or other indicator of change initiator.
 - g. Include signed-off permits.

- h. All red-line changes to the final design drawings shall be updated electronically and one (1) full size paper copy and one jump drive shall be provided to Owner at Final Completion. The electronic record shall include both a CAD version and a pdf version.
2. Record Technical Specifications:
Successful Offeror shall maintain one complete copy of the final design and construction specifications manual and one copy of other written construction documents such as change orders and RFIs. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the specification. Changes and/or notations to the final design construction specifications shall also be made on the electronic version for submittal as record documents.

330000 Permanent Utilities

1. Successful Offeror shall coordinate and pay for permanent utilities, including electrical and telephone services. For convenience, the following utilities should be contacted:
 - Electric Company, Alaska Power & Telephone (AP&T): 907.883.5101
 - Phone Service, Copper Valley Telecom: 907.822.3551

EXHIBIT 'A'

Site Location

Emergency Response Facility
Mile 33 Tok Cutoff



EXHIBIT 'B'

Site Photos





EXHIBIT 'C'

Geotechnical Report



REVISED 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.

JULY 2011



NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING

Laboratory Testing

Geotechnical Engineering

Instrumentation

Construction Monitoring Services

Thermal Analysis

July 20, 2011

2256-09

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

Attn: Micah Schoming

**RE: REVISED 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. The revision to the report consists of assessing the potential for on-site wastewater disposal. All other recommendations remain unchanged.

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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Figure 2	Test Pit Location Map
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APPENDICIES

Appendix A	Graphical Borehole Logs
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.

The revisions to the report address percolation of the site soils for a proposed on site wastewater disposal system. All other recommendations remain unchanged.

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 in 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:

<u>Thickness</u>	<u>Material</u>
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:

<u>Thickness</u>	<u>Material</u>
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

<u>Thickness</u>	<u>Material</u>
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 ¾-inch, with differential settlements comprising about ½ 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 ¼ 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 On Site Wastewater Disposal

The soil profile on the site consists of about 1 to 4 feet of silty sand and gravel with a thin surface layer of organics overlying clean sandy gravel. Groundwater was encountered at about 11 to 12 feet below the surface. The native soils at the leach field level will likely be more porous than desirable per the State and Federal guidelines for leach fields. As such a sand blanket will likely be needed below the distribution piping.

To minimize transportation of the sand blanket into the native gravel as a result of water flow through the sand blanket into the gravel, the gradation of the sand blanket should be designed to work as a sand filter. When the leach field trenches are excavated, several samples of the underlying native gravel should be obtained for gradation testing. Because of the large size of some of the gravel, the samples may be upwards of 100kg. With the

gradation results, a specification for the range of acceptable sand can be calculated. Alternatively a geofabric may be more suitable to prevent sand migration into the gravel.

The design of the wastewater system can use the following parameters:

1. The fastest percolation rate allowable by regulation
2. Groundwater depth of 11 feet
3. Native gravel backfill in the trench
4. Native silty sand cover over the leach zone
5. Board stock insulation may be needed to prevent freezing in the distribution piping
6. On-site inspection of the installation should be required

7.7 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.

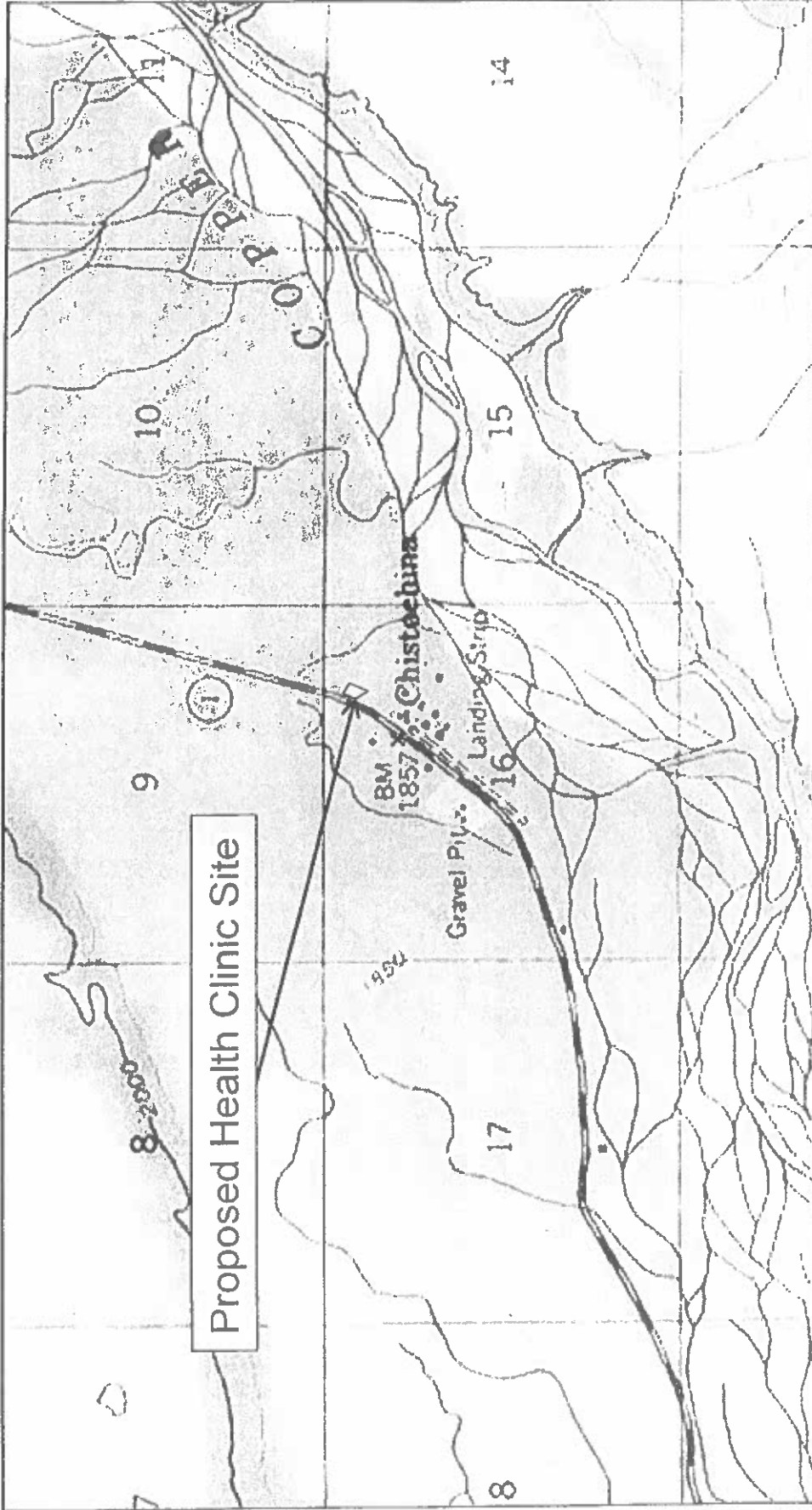
Due to the natural variability of earth materials, variations in subsurface conditions across the property may exist other than those identified during the course of the investigation. Therefore, it is recommended that a qualified geotechnical engineer be on-site during

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.

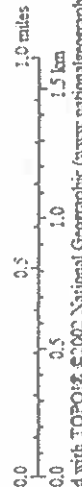
Northern Geotechnical Engineering Inc. conducted this investigation following the standard of care expected of professionals undertaking similar work in the State of Alaska under similar conditions. No warranty expressed or implied is made.



FIGURES



Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)



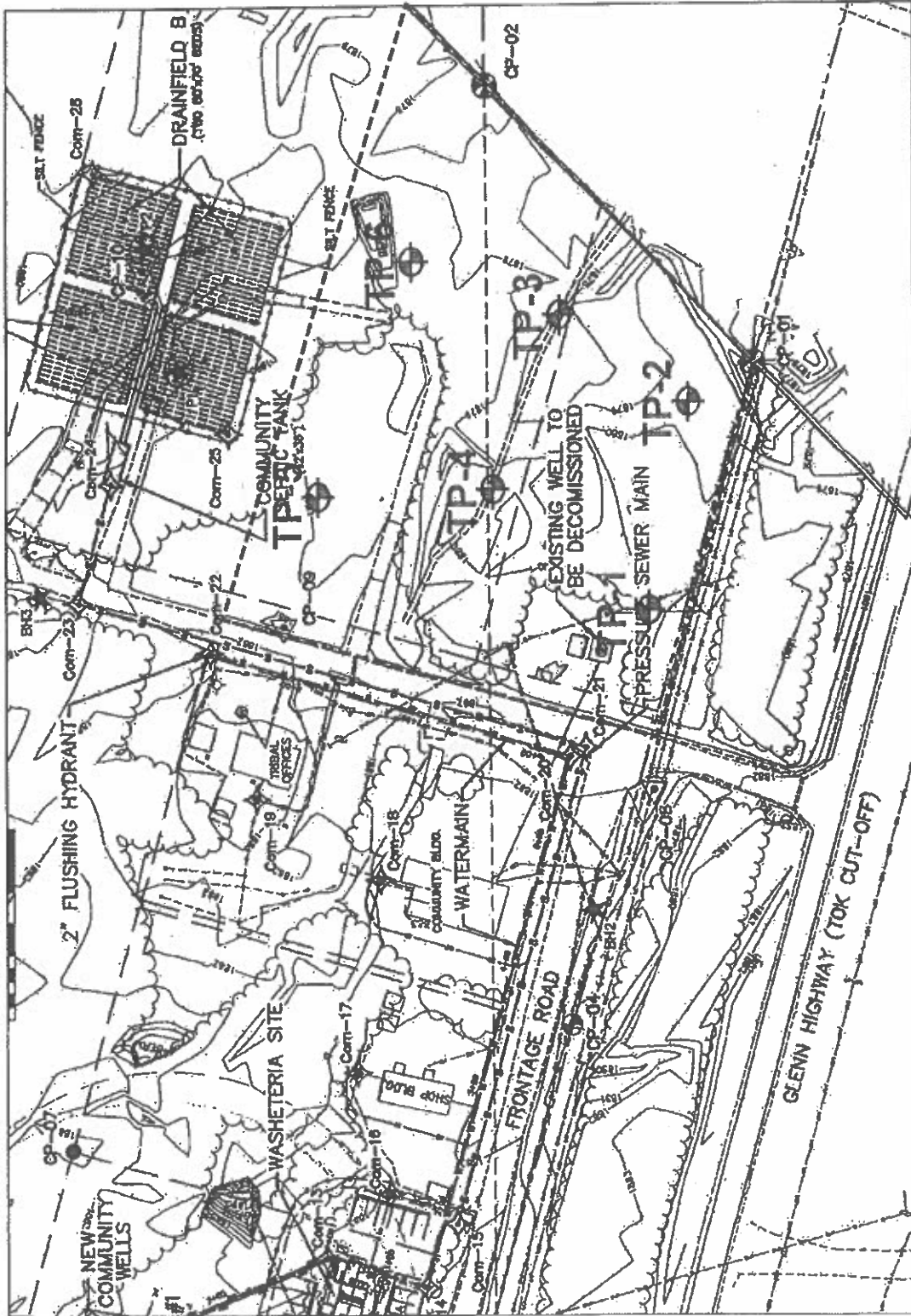
SITE LOCATION MAP



Chistochina Health Clinic
Chistochina, AK

FIG 1



2256-09



-  = Approximate Location of Test Pit
-  = Approximate Site Boundaries



TEST PIT LOCATION MAP

Chistochina Health Clinic
Chistochina, AK

22566-09

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
see text for more detail



MATERIAL SPECIFICATIONS

Chistochina Health Clinic
Chistochina, AK

FIG 3



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 (4.5 mm) 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, dry to the touch.
DAMP	Some perceptible moisture; below optimum
MOIST	No visible water; near optimum moisture content
WET	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	0 to 4	0 - 15	Very Soft	0 to 1	< 250
Loose	5 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	11 to 25	35 - 65	Medium Stiff	5 to 8	500 - 1000
Dense	26 to 50	65 - 85	Stiff	9 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	16 to 30	2000 - 4000
			Hard	over 30	> 4000



TEST PIT LOG KEY

Chistochina Health Clinic
Chistochina, AK

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MAJOR DIVISION			GRAPHIC SYMBOL	USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT <u>LESS</u> 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
	SILTS AND CLAYS	LIQUID LIMIT <u>GREATER</u> THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
HIGHLY ORGANIC SOILS					

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



TEST PIT LOG KEY

Chistochina Health Clinic
Chistochina, AK

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2256-09

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	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	10 - 20	GM, GW-GW, GP-GM
	(b) Sands	6 - 15	SM, SW-SM, SP-SM
F3	(a) Gravelly Soils	Over 20	GM, GC
	(b) Sands, Except very fine Silty Sands	Over 15	SM, SC
	(c) Clays, PI>12	-----	CL, CH
F4	(a) All Silts	-----	ML, MH
	(b) Very Fine Silty Sands	Over 15	SM
	(c) Clays, PI>12	-----	CL, CL-ML
	(d) Varved Clays and Other Fine Grained Banded Sediments.	-----	CL, CL-ML, CL & ML CL, ML, & 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



USACOE FROST DESIGN SOIL CLASSIFICATION

Chistochina Health Clinic
Chistochina, AK

Support Log CivilTech Software, USA www.civiltech.com File: N:\WGE-TFT Job Files\2201-09 thru 2300-09\12251-09 thru 2260-09\12256-09 Chistochina Health Clinic\Test Pit Logs\12256-09 Final logs.log Date: 9/1/2009

Test Pit: TP-1

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

Description	Graphic Log	Depth	Sample Type	SPT N-Value	MC (%)	Frost	Remarks
Organic mat composed of mosses, woody debris, leaf litter and topsoil. Olive gray silty SAND, damp.		0					
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		2		9	9		P200 = 18%
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		4		3	3		
Excavation completed at depth of 12 feet bgs.		6		3	3		
Excavation completed at depth of 12 feet bgs.		12		3	3		
Excavation completed at depth of 12 feet bgs.		14					



NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING

Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

Date: 9/1/2009
 File: N:\UNGE-TFT Job Files\2
 SuperLog CivilTech Software, USA www.civilttech.com
 File: N:\UNGE-TFT Job Files\2
 hru 2300-09\2251-09 thru 2260-09\2258-09 Chistochina Health Clinic\Test Pit Logs\2256-09 Final logs..

Test Pit: TP-2

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

Description	Graphic Log	Depth	Sample type	SPT N-Value	MC (%)	Frost	Remarks
Organic mat composed of mosses, woody debris, leaf litter and topsoil.		0					
Olive gray silty SAND, damp.		1			19		P200 = 34%
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		2			2		
		4			2		
		6					
		8					
		10					
		12			2		
Excavation completed at depth of 12 feet bgs.		12					
		14					



NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING

Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

Date: 9/1/2009

1 thru 2300-0912251-09 thru 2260-0912256-09 Chistochina Health Clinic Test Pit Logs 12256-09 Final log.

File: N:\NGE-TFT Job Files

SuperLog CivilTech Software, USA www.civiltech.com

Test Pit: TP-4

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

Description	Graphic Log	Depth	Sample Type	SPT N-Value	MC (%)	Frost	Remarks
Organic mat composed of mosses, woody debris, leaf litter and topsoil. Olive gray sandy SILT, damp.		0			33		F.C. = F4
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		2			3		P200 = 3%
		4					
		6					
		8					
		10			11		
		12					
Excavation completed at depth of 12 feet bgs.		14					



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Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

SuperLog CivilTech Software, USA www.civiltech.com File: N:\WGE-TFT Job Files\2201-09 thru 2300-09\2251-09 thru 2250-09\2256-09 Chistochina Health Clinic\Test Pit Logs\2256-09 Final logs.log Date: 9/12/09

Test Pit: TP-5

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

Description	Graphic Log	Depth	Sample Type	SPT N-Value	MC (%)	Frost	Remarks
Organic mat composed of mosses, woody debris, leaf litter and topsoil.		0					
Olive gray sandy SILT, damp.		0 to 2			26		F.C. = F4
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		2 to 12			2		P200 = 1% F.C. = NFS
Excavation completed at depth of 13 feet bgs.		12					



NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING

Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis

Date: 8/12/09

18 thru 2300-0912251-09 thru 2260-0912256-09 Chistochina Health Clinic Test Pit Logs 12256-09 Final

SuperLog CivilTech Software, USA www.civiltch.com File: N:\WGE-TFT Job File

Test Pit: TP-6

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

Description	Graphic Log	Depth	Sample Type	SPT N-Value	MC (%)	Frost	Remarks
Organic mat composed of mosses, woody debris, leaf litter and topsoil.		0					
Olive gray silty SAND, damp.		0 to 1.5					
Olive gray poorly sorted GRAVEL w/ sand, damp. Contains some cobbles up to approx. 10" in diameter.		1.5 to 12					
		6			3		
		11.5			3		P200 = 1% F.C. = NFS
Excavation completed at depth of 12 feet bgs.							



NORTHERN GEOTECHNICAL ENGINEERING, INC. / TERRA FIRMA TESTING

Laboratory Testing Geotechnical Engineering Instrumentation Construction Monitoring Services Thermal Analysis



APPENDIX B
LABORATORY DATA

Laboratory Data Summary

Chistochina Health Clinic

Chistochina, AK

Project 22556-09

Borehole	Sample Depth (ft bgs)	Moisture Content (%)	Grain Size Analysis (%)			% Passing #200 Sieve	% Passing .02 mm	Frost Class (COE)	Unified Soil Classification
			Gravel	Sand	Silt				
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							

Laboratory Data Summary

Chistochina Health Clinic

Chistochina, AK

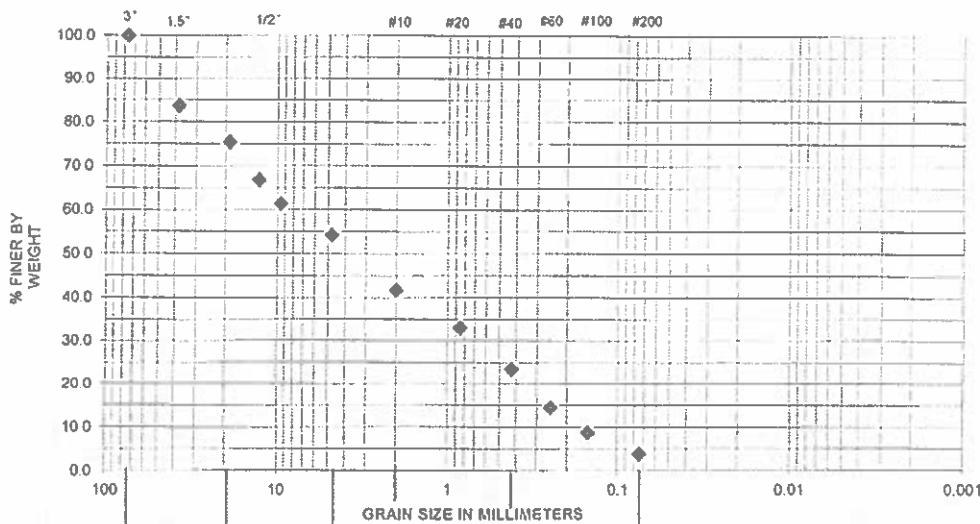
Project 2256-09

Borehole	Sample Depth (ft bgs)	Moisture Content (%)	Grain Size Analysis (%)		% Passing #200 Sieve	% Passing .02 mm	Frost Class (COE)	Unified Soil Classification
			Gravel	Sand				
TP-6	6.0	3	56.2	41.5				Well graded gravel w/ sand (GW)
TP-6	11.0	3			1		NFS	

PROJECT CLIENT:	CRW Engineering
PROJECT NAME:	Chlstochna Health Clinic
PROJECT NO.:	2256-09
SAMPLE LOCATION:	TP-1
SAMPLE NO/ DEPTH	6'
DESCRIPTION:	Poorly grd. sand w/ gravel.
DATE TESTED:	8/28/2009
TESTED BY:	DP
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	45.8	USC:	SP
% SAND:	50.3	FC:	
% SILT/CLAY:	3.9	.02 mm:	
ASTM D1557(uncorrected)		pcf	
ASTM D4718 (corrected)		pcf	
OPTIMUM M.C.%(corrected)			
NATURAL M.C. %		2.8	

PARTICLE SIZE ANALYSIS ASTM D422/ C136



SIEVE ANALYSIS RESULT

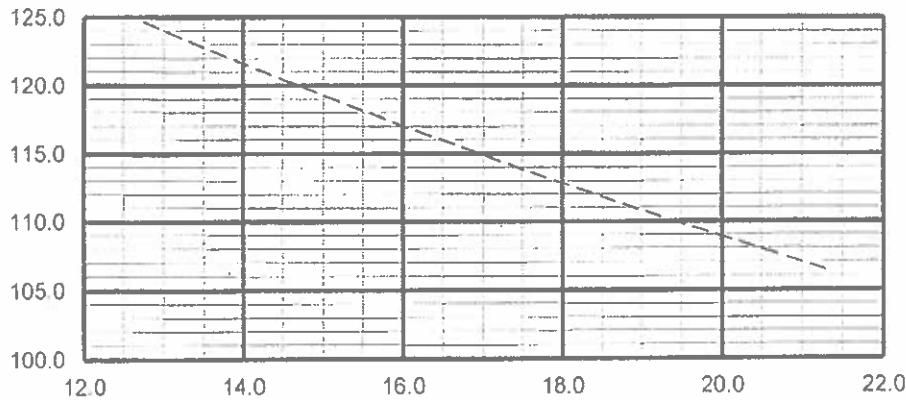
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"	100	
38.1	1.5"	84	
19.05	3/4"	75	
12.7	1/2"	67	
9.5	3/8"	61	
4.75	# 4	54	
2	#10	42	
0.85	#20	33	
0.425	#40	23	
0.25	#60	14	
0.15	#100	9	
0.075	#200	3.9	

COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP ASTM D1557



Perm. (ASTM D2438)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

The testing services reported herein have been performed to recognized industry standards, unless otherwise noted. No other warranty is made. Should engineering interpretation or opinion be required.

11301 Olive Lane
Anchorage, AK 99515

TERRA FIRMA TESTING

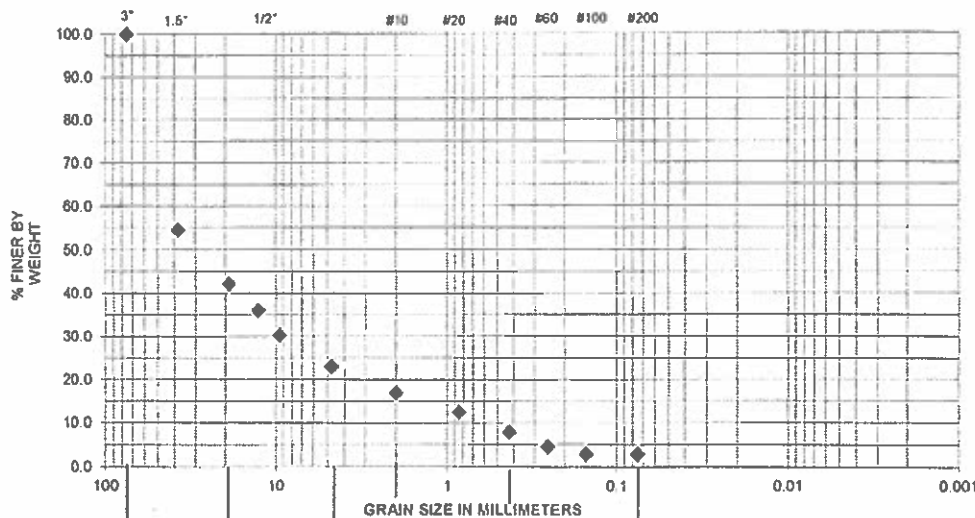
Laboratory Testing / Construction Monitoring

Telephone: (907) 344-5934
Fax: (907) 344-5993
www.nge-lft.com

PROJECT CLIENT:	CRW Engineering
PROJECT NAME:	Chistochina Health Clinic
PROJECT NO.:	2258-09
SAMPLE LOCATION:	TP-2
SAMPLE NO/ DEPTH:	4'
DESCRIPTION:	Poorly grd. gravel w/ sand.
DATE TESTED:	8/28/2009
TESTED BY:	DP
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	77.0	USC:	GP
% SAND:	20.1	FC:	
% SILT/CLAY:	2.9	.02 mm:	
ASTM D1557(uncorrected)		pcf	
ASTM D4718 (corrected)		pcf	
OPTIMUM M.C.%(corrected)			
NATURAL M.C. %		1.7	

PARTICLE SIZE ANALYSIS ASTM D422/ C136



SIEVE ANALYSIS RESULT

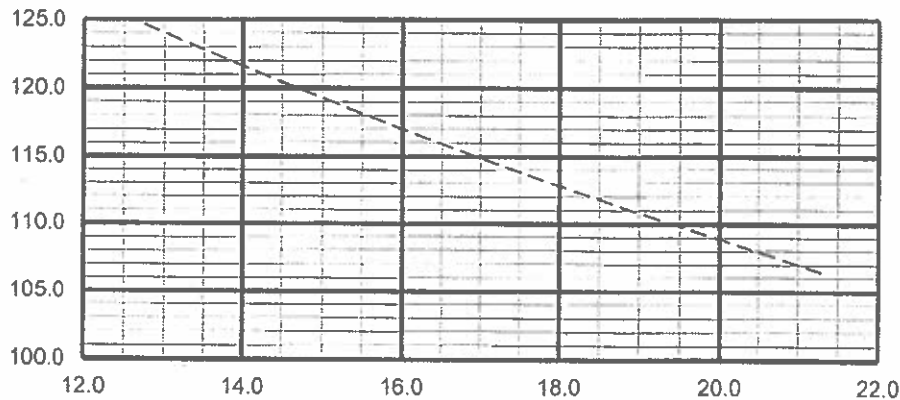
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"	100	
38.1	1.5"	65	
19.05	3/4"	42	
12.7	1/2"	36	
9.5	3/8"	30	
4.75	# 4	23	
2	#10	17	
0.85	#20	12	
0.425	#40	8	
0.25	#60	5	
0.15	#100	3	
0.075	#200	2.9	

COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP ASTM D1557



Perm. (ASTM D2438)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

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11301 Olive Lane
Anchorage, AK 99515

TERRA FIRMA TESTING

Laboratory Testing / Construction Monitoring

Telephone: (907) 344-5934

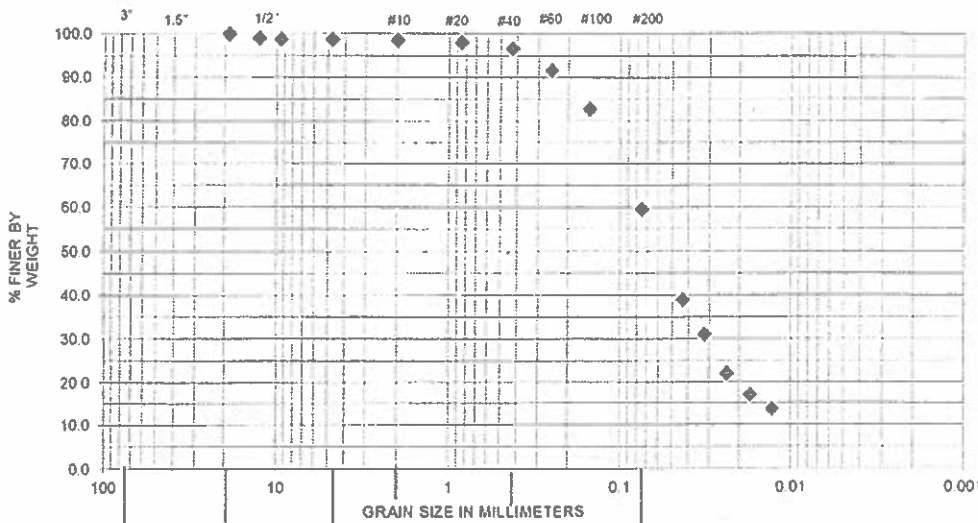
Fax: (907) 344-5993

www.nge-tft.com

PROJECT CLIENT:	CRW Engineering
PROJECT NAME:	Chistochina Health Clinic
PROJECT NO.:	2256-09
SAMPLE LOCATION:	TP-4
SAMPLE NO/ DEPTH	1'
DESCRIPTION:	Sandy silt
DATE TESTED:	8/28/2009
TESTED BY:	DP
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	1.2	USC:	ML
% SAND:	39.2	FC:	F4
% SILT/CLAY:	59.6	.02 mm:	19.4
ASTM D1557 (uncorrected)			pcf
ASTM D4718 (corrected)			pcf
OPTIMUM M.C. % (corrected)			
NATURAL M.C. %			33.4

PARTICLE SIZE ANALYSIS ASTM D422/ C136



SIEVE ANALYSIS RESULT

SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"		
38.1	1.5"		
19.05	3/4"	100	
12.7	1/2"	99	
9.5	3/8"	99	
4.75	#4	99	
2	#10	99	
0.85	#20	98	
0.425	#40	97	
0.25	#60	92	
0.15	#100	83	
0.075	#200	59.6	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1	0.0432	38.9
2	0.0320	31.0
4	0.0237	22.1
8	0.0173	17.2
15	0.0129	13.7
30		
60		
250		
1440		

Perm. (ASTM D2438)	
Degradation (ATM T-13)	
Atterberg Limit (ASTM 4318)	

COBBLES

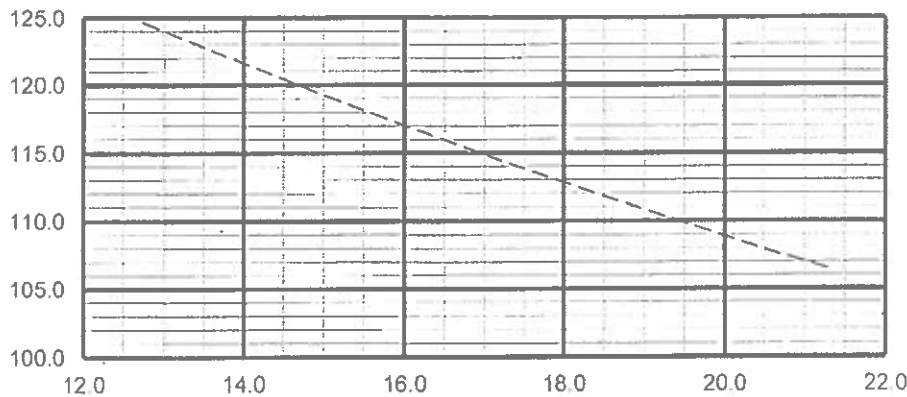
GRAVEL

SAND

SILT or CLAY

Coarse Fine Coarse Medium Fine

MOISTURE-DENSITY RELATIONSHIP ASTM D1557

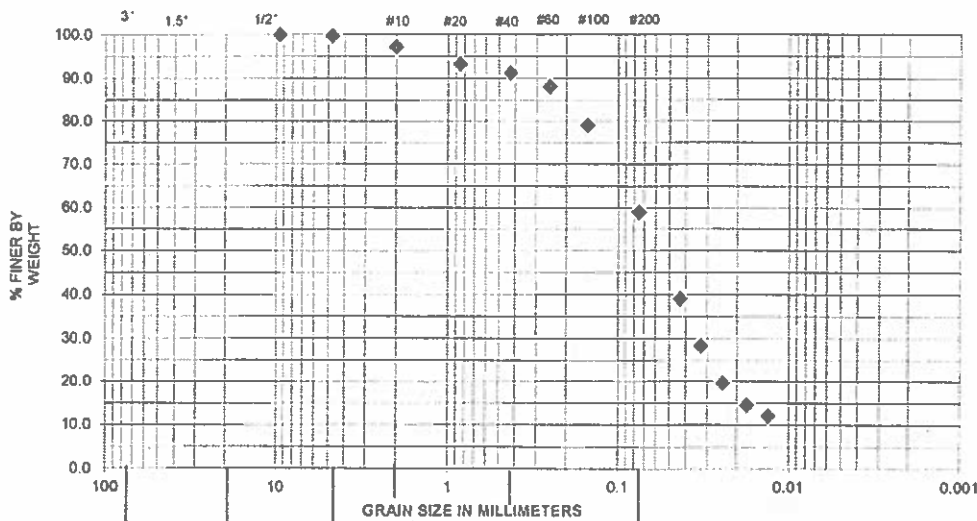


The testing services reported herein have been performed to recognized industry standards, unless otherwise noted. No other warranty is made. Should engineering interpretation or opinion be required.

PROJECT CLIENT:	CRW Engineering
PROJECT NAME:	Chistochina Health Clinic
PROJECT NO.:	2256-09
SAMPLE LOCATION:	TP-5
SAMPLE NO/ DEPTH	1.5'
DESCRIPTION:	Sandy silt
DATE TESTED:	8/28/2009
TESTED BY:	DP
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	0.3	USC:	ML
% SAND:	40.7	FC:	F4
% SILT/CLAY:	59.0	.02 mm:	16.7
ASTM D1557(uncorrected)		pcf	
ASTM D4718 (corrected)		pcf	
OPTIMUM M.C.%(corrected)			
NATURAL M.C. %		26.4	

PARTICLE SIZE ANALYSIS ASTM D422/ C136



SIEVE ANALYSIS RESULT

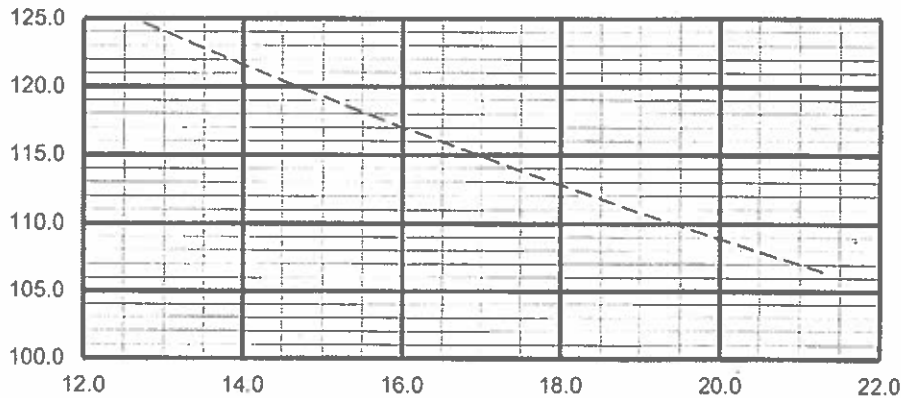
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"		
38.1	1.5"		
19.05	3/4"		
12.7	1/2"		
9.5	3/8"	100	
4.75	# 4	100	
2	#10	97	
0.85	#20	93	
0.425	#40	91	
0.25	# 60	88	
0.15	#100	79	
0.075	#200	59.0	

COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1	0.0432	39.1
2	0.0327	28.4
4	0.0242	19.7
8	0.0175	14.6
15	0.0130	12.0
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP ASTM D1557



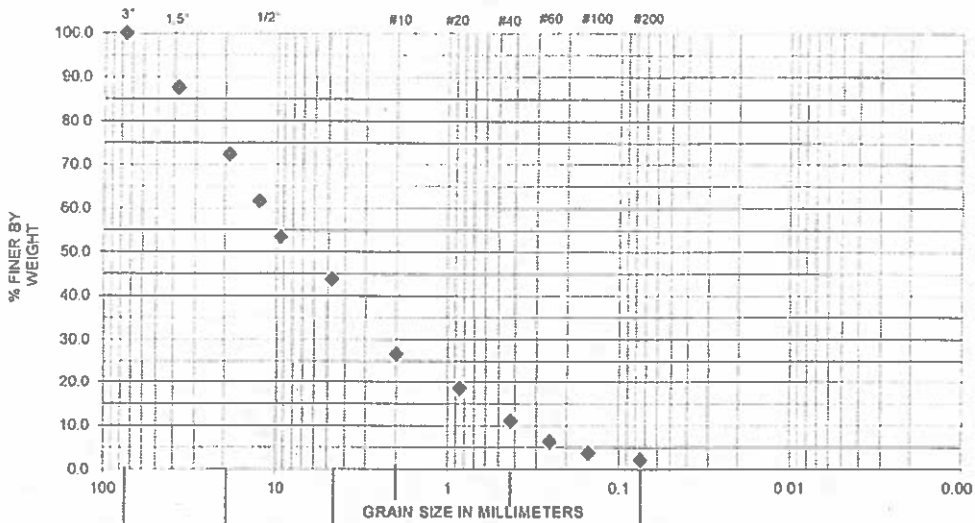
Perm. (ASTM D2438)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

The testing services reported herein have been performed to recognized industry standards, unless otherwise noted. No other warranty is made. Should engineering interpretation or opinion be required.

PROJECT CLIENT:	CRW Engineering
PROJECT NAME:	Chistochina Health Clinic
PROJECT NO.:	2256-09
SAMPLE LOCATION:	TP-6
SAMPLE NO/ DEPTH	6'
DESCRIPTION:	Well grd. gravel w/ sand
DATE TESTED:	8/28/2009
TESTED BY:	DP
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	56.2	USC:	GW
% SAND:	41.5	FC:	
% SILT/CLAY:	2.3	.02 mm:	
ASTM D1557(uncorrected)		pcf	
ASTM D4718 (corrected)		pcf	
OPTIMUM M.C. % (corrected)			
NATURAL M.C. %		2.8	

PARTICLE SIZE ANALYSIS ASTM D422/ C136



SIEVE ANALYSIS RESULT

SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"	100	
38.1	1.5"	88	
19.05	3/4"	72	
12.7	1/2"	62	
9.5	3/8"	53	
4.75	#4	44	
2	#10	27	
0.85	#20	19	
0.425	#40	11	
0.25	#60	6	
0.15	#100	4	
0.075	#200	2.3	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

Perm. (ASTM D2438)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

COBBLES

GRAVEL

SAND

SILT or CLAY

Coarse

Fine

Coarse

Medium

Fine

MOISTURE-DENSITY RELATIONSHIP ASTM D1557

