Denison
Environmental
Services
a division of Denison Mines Inc.

Faro Mine Closure

# Electrical Distribution Expansion

# Scope, Schedule and Budget

## Faro Mine Complex

Denison Environmental Services

Faro Mine Complex
Box 280
Faro, Yukon
Y0B 1K0

September 19, 2009

# Table of Contents



**Appendices:**

# 1 Background

The Faro Mine Complex, (formerly known as the Anvil Range mine) located approximately 22.5 km north west of the Town of Faro, Yukon is a former lead and zinc mine operation. It closed permanently in 1998. An environmental care and maintenance program continues to operate to maintain site environmental compliance.

The Yukon Government – Assessment and Abandoned Mines, is now in control of the Faro Mine Complex, and Denison Environmental Services (DES) has been awarded a contract to provide care and maintenance services.

The mining operation over the course of 30 years extracted ore from three open pits, Faro, Grum and Vangorda Pit. The Faro Pit was developed and mined first, followed by the Vangorda and Grum Pits, which are located about 13 km east of the Faro site.

A 138 kV power line was constructed to the Faro side of the property in the late 1960's and in the late 1980's a 69 kV power line was constructed to the east side of the property where the Vangorda and Grum Pits are located.

For the ongoing care and maintenance work, there continues to be a need for electrical power to the entire site.

Transition from an active mining operation to care and maintenance has resulted in the need for an electrical distribution system that varies from the previous mining requirements. Contaminated water is being found and pumped in locations that previously were not serviced electrically. The intention of this project is to improve the overall efficiency of the site by extending the power distribution system and delivering electricity to each of the identified locations.

The Request for Proposals was forwarded to four qualified contractors in August with the deadline for submission of September 2nd. Three bids were received ranging from $346,559.45 to $610,482.60. The low bidder was Arctic Power Systems, who was deemed to be capable of completing the project and the project was awarded to that organisation in consultation with Yukon Government.

# 2 Project Description

Denison Environmental Services (DES) requires construction services for the provision of 6 power lines at the Faro Mine Complex.

There are 7 locations that require work, 6 of which are new lines. The names of each, in order of priority for completion, are:

1. Intermediate Pond
2. S-Wells
3. Grum V-15 Site
4. New transformer bank at the Faro Pit.
5. Shops at Faro Mill Site
6. Emergency Tailings Area (ETA)
7. Extension from Intermediate pond to Cross-Valley Dam Site

Miscellaneous works to be completed on a time and materials basis include:

1. Replacement of a 5 kV teck cable drop near the existing main substation.
2. Move Poles for Vangorda Creek Diversion Channel construction.
3. Straighten leaning poles on the Grum/Vangorda line.
4. Repairing a problem with a stretched line at the Grum pit.

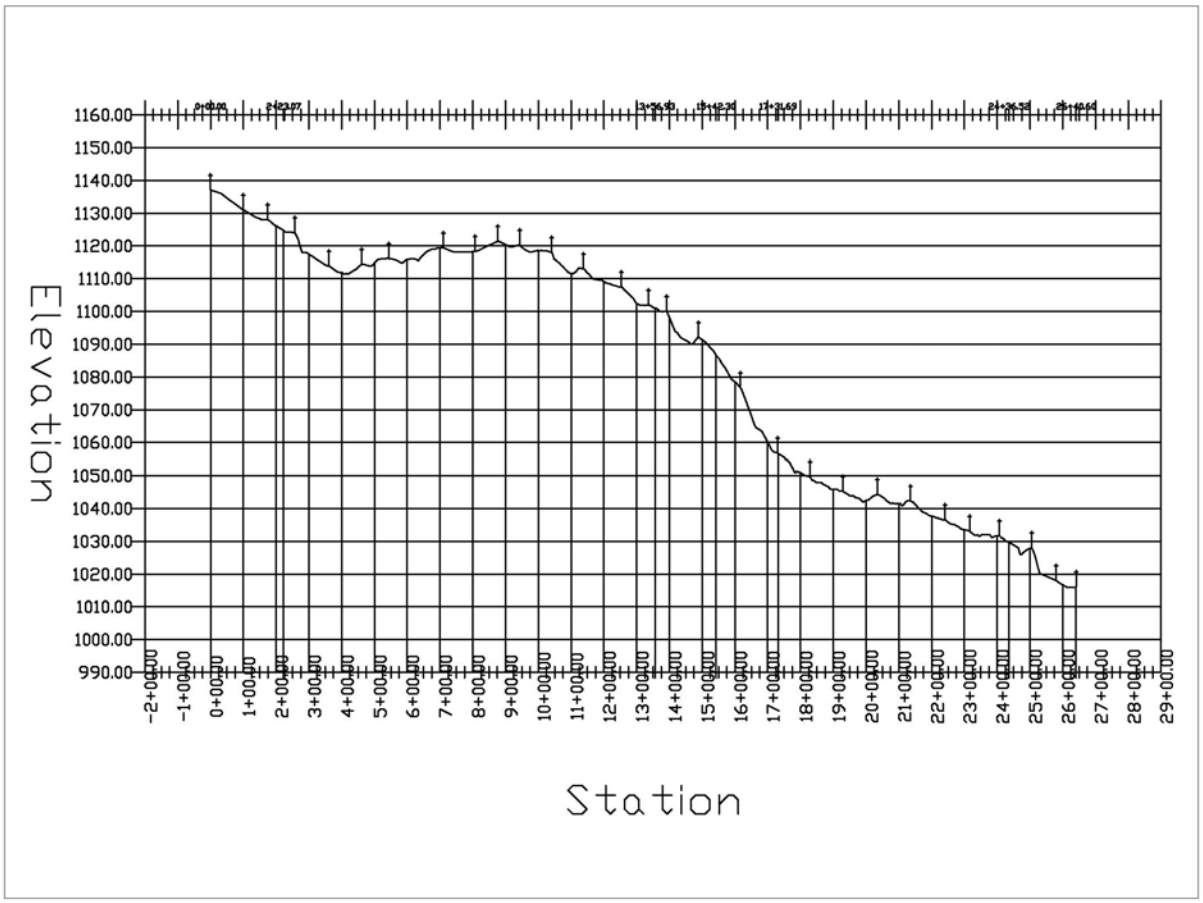
Minimum clearance for lines over traveled ways will be 12m.

Pictures of connection points to the existing system have been included in Appendix A.

## 2.1 Intermediate Pond

Currently the intermediate pond is the collection point for water from various contaminated sources. The water from this reservoir is currently pumped to the Faro Mill Treatment Plant (FMTP) by a diesel powered pump. An electric powered pump will be used in its place once the distribution system is in place.

The proposed power line will be connected to a 4160 V transmission line near the guard house and will be approximately 1900 m long. A minimum 500 kVA transformer bank will be installed near the pump structure adjacent the intermediate pond as part of this contract, along with all associated materials. Line capacity shall be suitable for line extension to the toe of the CV dam. Allow for 1000 HP capacity total on this line. A fused break shall be provided and installed at the tie in point in the Faro yard. A profile of the proposed route, including the Cross Valley Pond Extension, is below.




## 2.2 S-Wells

Flow of contaminated water is being collected at the toe of the waste rock pile, close to the north fork of Rose Creek. An array of wells and a sump have been installed along with a pumping system that transfers the water from the S-Wells up the edge of the waste rock pile and over to the Faro Pit. The system is currently powered by a 30 kVA diesel generator.

The proposed power line will transfer power from the 4160 V line close to the Faro Pit as shown below. It will tie in to the current power line at what is known as the Zone II well and will follow the existing S-Wells water discharge pipe to the current diesel powered generating plant, a distance of approximately 750 m. A 4160V to 600 V transformer will need to be installed at this location. Allow for 100 HP capacity in the transformer bank and 500 HP capacity in the line. A fused break shall be provided and

installed at the tie in point or close to the tie in point. The line follows the road around the waste rock pile so is relatively flat.

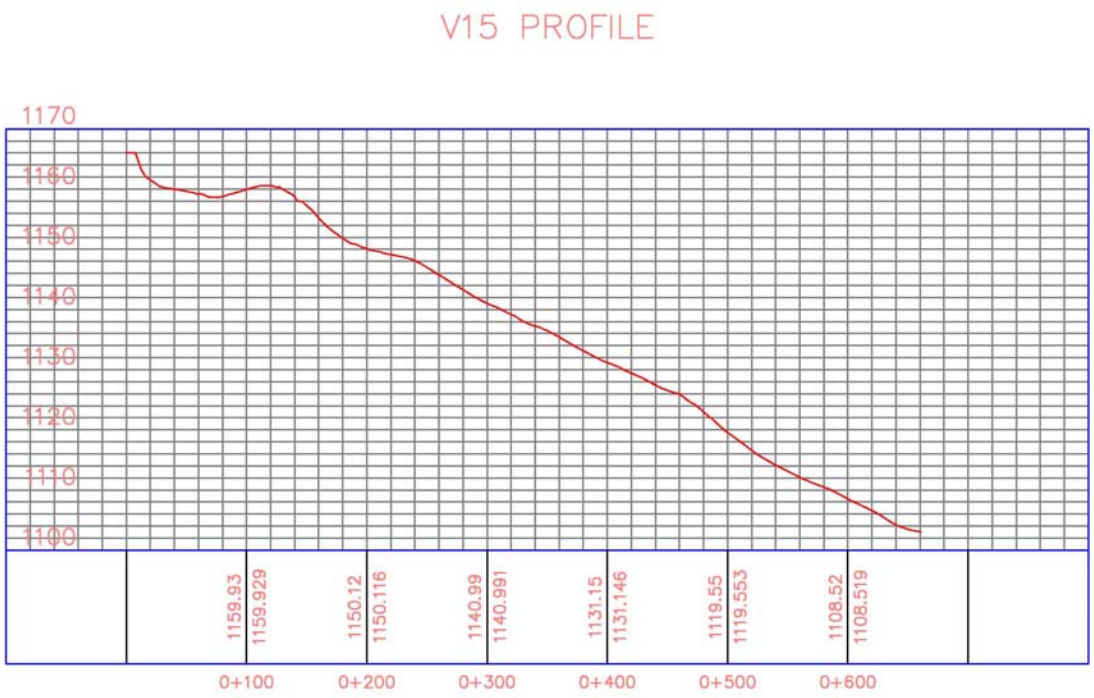

Google Image of S Wells Transmission Line Location.

## 2.3 Grum V-15 Wells

Seepage is draining from underneath the Grum waste rock pile on the Grum/Vangorda side of the FMC. Environmental conditions are currently acceptable, however increases in volume and levels of contamination may require a system to be installed to collect and discharge the water for treatment.

This line will run from the existing power line that services the Vangorda pumping system to the V-15 wells location. Allow for 500 HP capacity in this line. A fused break shall be provided and installed at the road crossing. The line will be approximately 850 m long. No transformer will be required at this site. An image of the location is below:


V 15 Wells proposed routing.




V 15 Wells profile

## 2.4 Faro Pit Transformer

The existing Faro Pit 4160/600 V skid mount transformer is temporary. The transformer is to be repaired so that it meets current electrical standards. This work wilol include construction of a fence at the appropriate clearance from the transformer, upgrading the grounding system and repairing the primary feed side of the transformer.

## 2.5 Faro Shops Electrification

During construction of the mine and associated expansion, electrical services from the main sub station were provided to various mine buildings through an underground conveyor tunnel. Upon shutdown and abandonment, the conveyor tunnels were allowed to fill with water, thus rendering the electrical lines unusable. Since that time the shop and warehouse buildings have not had electrical power. With activities at the FMC turning to improving efficiencies in water treatment for a long term it will become necessary that the shops and warehouse become usable again. In order to provide power to these areas a new line will be constructed. The line will connect an existing 4160 V line to the service line and will require some connection work near the shops. The line will be approximately 370 m long and connect through an existing service between the main shop and the primary crusher building. Allow for 500 HP in the line. Work includes removal of line to the conveyor building. Provide a fused break at the tie in point. Route line as far as possible along the road before crossing to avoid conflict with conveyor building which will be removed at a later date. A Google image of the location is below:

## 2.6 ETA Pumping Station

600 volt electrical service is provided to this area via a #6 AWG copper SOW cable run down the hill from the 4160 volt yard distribution. The line provides power for a 30 HP and a 5 HP pump. The existing cable installation is temporary; since SOW cable does not meet minimum code requirements for a permanent installation. It is also expected that up to 100 HP capacity may be required in the future and therefore an upgrade of the electrical supply is required.

The new line will tie in at the pole located east of the existing drop. This is to avoid the area of contaminated materials located at the bottom of the bank. A fused break is to be installed at the tie in point. The existing transformer is to be relocated to the ETA pumping site. Allow for 500 HP capacity in the line. A plan view of the area is below.

## 2.7 Intermediate Pond Line Extension to Cross Valley Dam

A new line is required to be brought from the intermediate pond site to the cross valley dam site. Allow for 500 HP capacity in this line. Terminate the line at the last pole without a transformer bank. A fused break is to be provided at the intermediate pond transformer bank or next pole. This line is approximately 700 m long.

## 2.8 Miscellaneous Works

This project includes various repairs and maintenance activities at the site. These minor works projects will include:

1. Vangorda Creek Diversion Channel construction during the 2010 summer season will conflict with an existing line. A part of this project will be to remove 4 poles in that area in order to retain the functionality of that line after construction.

2. Straighten leaning poles on the Grum/Vangorda line

3. Repairing a problem with a stretched line at the Grum Pit.

4. Straightening insulators on the 69kV Grum feeder line.

The tender form includes a unit price table for hourly rates for labour and equipment under which these and other minor works projects may be completed.

# 3 Ancillary Activities

## 3.1 Support Equipment

The tender package has been prepared with the intention of not having support equipment supplied by the power line contractor. There are 2 reasons for this; that the cost of mobilizing that equipment be avoided because that equipment is on site or nearby, and that the necessary equipment may be supplied by a local Affected Yukon First Nation (AYFN) Contractor. In this manner the activities at the mine site will be supporting local industry and employment.

## 3.2 Project Inspection and Quality Control

A part of the project will be the assurance of quality and compliance with the technical portions of the tender documents during construction activities. Assurance of this will be provided by contracting the owner's technical advisor, Dorward Engineering, to conduct inspection activities.

Dorward has provided a budget (attached in Appendix C) to provide these services. The inspection activities will proceed concurrently with other works Dorward had previously been contracted to perform.

Dorward activities will include project definition and tender document preparation, power line construction inspection, certification of construction completion, and ancillary projects definition and inspection.

## 3.3 Post Construction Connection

After the power distribution lines have been constructed it will be necessary to have the lines connected to the accepting facilities. This is not generally a part of power line construction and requires a different skill set. For this purpose a separate Request for Quotations has been developed and prices have been sent to 3 different industrial Electrical Contractors, although a response has been received from only one.

The Scope of Work included all of the secondary connections, the replacement of the main Teck feeder cable to the Grum/Vangorda Sub Station and also to do miscellaneous repairs in the shops complex including isolation of the abandoned warehouse and office facilities, ensuring that the electrical system is safe and meets electrical code requirements and repairing all of the lights in the building.

# 4 Project Schedule

This project will undergo an accelerated schedule due to time constraints. The intention of the tender is to complete construction in accordance with the table of priority below. Arctic Power Systems proposed the following

## 4.1 Schedule

| Date | Task | Comment |
|---|---|---|
| Aug 25 | Site Visit | Mandatory |
| Sep 2 | Proposals Due | Due at 4:00 PM Pacific Time |
| Sep 3 | Award of Contract | |
| Sept 28 | Intermediate Pond Line Complete | Priority # 1 |
| Oct 8 | S Wells Line Complete | Priority # 2 |
| Oct 18 | Grum V 15 Line Complete | Priority # 3 |
| Nov 30 | All Projects Complete | |

# 5 Budget

| Vendor | Cost | Comment |
|---|---|---|
| Arctic Power Systems | $ 346,559.45 | As per tender |
| Dorward – Tender Docs | $ 13,409.00 | Invoice 2718 |
| Dorward - Inspection | $ 15,000.00 | |
| Dorward – Sec Connections | $ 10,000.00 | |
| Machinery time – T Moon | $ 12,602.50 | Sep 17 - 22 |
| Machinery time – On site | $ 10,000.00 | 40 hours at $160 per |
| Secondary Connections and Miscellaneous | $ $70,823.72 | 3 contractors approached, one response |
| **Total** | **$ 478,394.67** | Without GST |

# Appendix A

Site Photos

Power pole with service to shops

Tailings pump house with 138kV to 4160V sub station in the background

Faro pit pump power supply.  Requires new transformer.

Tie in at the Zone 2 to the S Wells Line

Typical Leaning Pole on 69 kV line – May be Straightened

Tie in for the Intermediate Pond

# Appendix B

Supporting Documentation

# RE: Faro Pit Transformer

Ross Dorward [dorward@ieee.org]

**Sent:** September 9, 2009 4:47 PM

**To:** Erik Nyland; mjohnbrodie@shaw.ca

**Cc:** Roy Morrell; Kaori.Torigai@gov.yk.ca; Sandeep Sharma [sandeep@dorwardeng.com]

---

Hi Erik;

1. At the meeting I was asked to prepare a budget for the secondary 600 volt connection. I have a question regarding the Intermediate Pond Connections. I'm assuming that the pumps themselves are in a separate budget. If so does that budget all ready contain the numbers for the required distribution and starters?

2. I am working on a budget for engineering on the above works package. I'm imagining something similar to the powerline package which will be descriptive including pictures. I'm sure Arcrite and Dynamic will bid on it but I'd like to invite Bens Electric. They are doing the Dawson Waste Water Plant with Corix and have grown quite a bit in the last few years.

3. The single line budget is in my report. I had set the number at $20K. This included only one trip to site and assistance for staff. I'm not sure how taxed Doug is taxed and how much time he would have to commit to it, so the estimate is a bit arbitrary.

4. Sandeep has finished the Lab drawings and will distribute ASAP.

5. We have completed a time sheet/task summary for work to date on the Electrical Assessment Report and I would like to submit this together with invoicing to DES. Is it possible to reference a PO number for this? I understand that we are already working on the recommendations of the draft report but I would like to finish it to completion stage for completeness and proper documentation. Time is of the essence on some of the work and we all now how critical it is; I think we are doing things properly and cost effectively.

6. I'll be back in the office after lunch but you can reach me by cell in the morning. 332-1936.

If I don't hear from you I'll call you when I get in.

Ross Dorward, P.Eng.

Dorward Engineering Services Ltd.
3147 3rd Avenue, Whitehorse, Yukon
Canada, Y1A 1E9
Tel (867) 668-6888
Fax (867) 633-4561


---

**From:** Erik Nyland [mailto:enyland@denisonenvironmental.com]
**Sent:** Wednesday, September 09, 2009 2:58 PM
**To:** Ross Dorward; mjohnbrodie@shaw.ca
**Cc:** Roy Morrell; Kaori.Torigai@gov.yk.ca
**Subject:** RE: Faro Pit Transformer

Hi Ross,
You were going to get a budget together for the inspection and management of the Powerlines Const. We

discussed having your guy do the inspection at the same time as he was finishing up the single line diagram for which we had previously asked for a budget.
Also on the agenda is the design work for the Lab wiring. I have asked Arcrite to be here to finish their part of that project on Monday 21 September. They will need drawings by then.
I will call you tomorrow.
Thanks
Erik

**Erik Nyland, P. Eng.**
*Construction Manager*

t: 867-393-4800 x222 | f: 867-393-4803
c: 867-335-0211
4109 4th Avenue, Suite 207
Whitehorse, YT Y1A 1H6

t: 705-848-9191 | f: 705-848-5814
8 Kilborn Way, Elliot Lake, ON P5A 2T1


www.denisonenvironmental.com



**From:** Ross Dorward [dorward@ieee.org]
**Sent:** September 8, 2009 4:27 PM
**To:** mjohnbrodie@shaw.ca
**Cc:** Roy Morrell; Erik Nyland; Kaori.Torigai@gov.yk.ca
**Subject:** RE: Faro Pit Transformer

Hi John;

I made some enquiries and put together an estimate of what it would take to place the existing Faro Pit pad mount transformer on a proper pad, with enclosure and grounding. The costs work out to somewhere in the range of $20k to $25k. It turns out that the cost for secondary connections is really a difference in cable lengths; and the padmount install would require half the cable requirement; a further savings of about $1K. Looks like we could save about $5 to $7k reusing the existing transformer.

Given the age of the transformer and its value as an emergency spare, I tend to think that we should go for the $27.5k install.

I am happy to write a contemplated change notice so that we can get a firm price from Arctic power.

Please let me know which direction you want me to take on this.

I am working on a budget for secondary (600 volt) connections and will have it to you shortly.

Thank you

Ross Dorward, P.Eng.

Dorward Engineering Services Ltd.
3147 3rd Avenue, Whitehorse, Yukon
Canada, Y1A 1E9
Tel (867) 668-6888
Fax (867) 633-4561

if you have received this message in error.
Thank you.

Denison
Environmental
Services
a division of Denison Mines Inc.

**WHITEHORSE:**

4109 4th Avenue, Suite 207
Whitehorse, YT
Y1A 1H6

Tel: (867) 393-4800
Fax: (867) 393-4803

**FARO:**

PO Box 280
Faro, YT
Y0B 1K0

Tel: (867) 994-2600
Fax: (867) 994-2354

**HEAD OFFICE:**

8 Kilborn Way
Elliot Lake, ON
P5A 2T1

Tel: (705) 848-9191
Fax: (705) 848-5814
Email: info@denisonenvironmental.com

September 3, 2009

Mr. Jim Dooley
Arctic Power and Communications Ltd.
184 Industrial Rd.
Whitehorse, Yukon
Y1A 2V1

Dear Mr. Dooley:

**RE: Request for Proposals - Electrical Distribution Expansion - Faro Mine Complex**

Thank you for your proposal with respect to the above noted project. We are pleased to advise that Arctic Power and Communication Systems Ltd. will be awarded this contract based on the terms provided in the Request for Proposals and your proposal submitted on September 2, 2009.

Please provide a letter of good standing from Yukon WCHSB, a copy of the required liability Insurance Policy and proof of insurance for all vehicles operating on the Faro Mine Complex, for review and acknowledgement by the Denison Site Manager.

Respectfully,

Denison Environmental Services

Roy Morrell,
Site Manager

RM/en

cc: I. Ludgate/J. Bronson
E. Nyland
K. Torigai

Arctic Power & Communication Systems Ltd.
184 Industrial Road
Whitehorse, Yukon
Y1A 2V1
Tel: 1-877-551-8588
867-667-6063
Fax: 867-668-6028

September 1, 2009

Denison Environmental Services
4109-4th Avenue, Suite 207
Whitehorse, Yukon
Y1A 1H6

Attn: Mr. Erik Nyland

Dear Sir;

**Re: Request For Proposals.**
**Electrical Distribution Expansion Faro Mine Site**

We would like to submit the following proposal for the above noted project. Our proposal covers the full scope of this project and we firmly believe we have covered all items as per the tender documents.

Arctic Power has been a Yukon Contractor since 1980, and has completed extensive work at the Faro Mine since the days of Anvil Range Mining. We have permanent employees and facilities in Whitehorse on a year around basis, and will be available to respond to trouble calls on behalf of the mine, if required.

Arctic power has been a contractor for Yukon Electrical and Yukon Energy since starting up in 1980 and continues a permanent, on-going working relationship with Yukon Electrical. Yukon Energy has since hired their own line crew but we are available to perform routine maintenance and respond to trouble calls for them on an on-call basis.

Our company also maintains a working relationship with B.C. Hydro in Atlin , North Eastern B.C., the Lower Mainland, Squamish, Whistler, and Kamloops.

The following references are being supplied to assist you in determining our qualifications and credibility to perform the services required by your company.

| | |
|---|---|
| Luke Horrelt, Construction Coordinator Yukon Electrical | 867- 633-7056 |
| Brian Power, Planning Dept. Yukon Energy | 867-335-0866 |
| Bryan Smith, Project Manager Kiewit Const. | 250-726-2673 |
| Wayne Faulkner, Area Manager B.C. Hydro, Kamloops | 250-318-4769 |
| David Hill, Area Manager BC Hydro, Surrey | 604-351-8554 |

I am including a copy of our Certificate of Recognition that we received in 2005.
We thank you for the opportunity to submit this quote.

Yours Truly

for Jim Dooley

LUMP SUM PRICE TO COMPLETE TOTAL PROJECT $ 303,308.02

COST PER METER TO COMPLETE POWER LINE IS $48.46 PER METER.

Breakdown of Lump Sum Bid.

| | |
|---|---|
| Intermediate Pond: 1900 meters @ $48.46 per meter: | $ 92,079.82 |
| Transformer supply and install: | 27,500.00 |
| Total cost of installation is: | $119,579.82 |
| | |
| S-Wells: 750 meters @ $48.46 per meter: | $ 36,345.00 |
| Transformer supply and install: | 8,460.00 |
| Total cost of installation is: | $ 44,805.00 |
| | |
| Grum V-15 Site: 850 meters @ $48.46 per meter: | $ 41,191.00 |
| No transformer supplied for this site. | |
| | |
| New transformer bank at Faro Pit: | $ 27,500.00 |
| Transformer sized at 500 kva. | |
| | |
| Shops at Faro Mill Site 1600 meter @ $ 48.46 per meter: | $ 17,930.00 |
| No transformer supplied for this site. | |
| | |
| Emergency Treatment Area (ETA) 250 meters @ $ 48.46 per meter: | $ 12,115.00 |
| | |
| Extension to Cross Valley Dam. 700 meters @ $ 48.46 per meter: | $ 33,922.00 |
| | |
| Mobilization and demobilization cost: | $ 6,265.20 |

## SCHEDULE TO COMPLETE PROJECT IN PRIORITY SEQUENCE.

| | |
|---|---|
| **Intermediate Pond: Mobilize Sept 14** | **Complete Sept 28** |
| **S-Wells** | **Complete Oct 8** |
| **Grum V-15 Site** | **Complete Oct 18** |
| **Transformer @ Faro Pit** | **Complete Oct 28** |
| **Shops at Faro Mill Site** | **Complete Nov 10** |
| **Emergency Treatment Area.** | **Complete Nov 18** |
| **Extension to Cross Valley Dam** | **Complete Nov 30** |

## SCHEDULE BREAKDOWN

If awarded the contract Arctic will have a representative on site right after the Labor Day weekend to work with Denison staff to complete the right of way and stake out power lines, starting with most urgent and working down the line to the next priority.

The schedule is based on mobilizing the crews to site on Sept 14th, completing a safety orientation in the afternoon or possibly in the morning of Sept 15th.
Poles and material will be arriving on Sept 15th. They will be laid out, and structures framed and ready to set on the intermediate power line. The crew will start setting poles using Denison's Excavator to dig holes and back fill.
While the crew is setting these poles the framing crew will be framing the power line to S- Wells. We expect to have a little wait time for the Intermediate Transformer to arrive (possibly 2 weeks). Grum V-15 site will have the poles framed and ready to set after S-well poles are set. This sequence will follow through to the completion of the project.

Arctic will be bringing in extra manpower from Whitehorse on the weekends to speed-up the conductor stringing, and help complete the transformer installations.

We feel the above schedule can be completed in the allotted time. As stated previously Arctic has additional labor resources in Whitehorse

## CREW AND EQUIPMENT COMPLIMENT

1-4 man crew consisting of Foreman, Lineman, Apprentice, and Equipment Operator.
1997 International c/w Pitman digger derrick boom.
2003 GMC Topkick c/w Reach-All Manlift.
2006 Chev. 4X4 Crewcab pickup.
1998 GMC Topkick c/w Manitex crane model 1461
2006 Kubota model KX161-2LS
All our equipment is regularly maintained and is in good operating condition.

## HOURLY RATES FOR MEN AND EQUIPMENT USED ON SITE.

| Category | Straight Time | Overtime |
|---|---|---|
| Supervisor | $ 84.80 | $ 128.21 |
| Foreman | 81.79 | 120.69 |
| Lineman | 73.14 | 107.71 |
| Apprentice | 66.62 | 97.93 |
| Operator | 59.76 | 89.14 |

| | |
|---|---|
| 1 ton pickup | $ 33.45 |
| Digger Truck | 84.50 |
| Bucket Truck | 84.50 |
| Pole Trailer | 22.00 |
| Reel Trailer | 22.00 |
| Picker Truck | 95.00 |
| Kubota Excavator | 85.00 |

# Certificate of Recognition

This certificate recognizes that

## Arctic Power and Communication Systems Ltd.

has successfully developed and implemented a
Safety Management System to a standard established by the

## Northern Safety Network Yukon

| December 3, 2008 | #2005-001 |
|---|---|
| External audit performed *(valid for three years)* | NSNY COR Certification number |

The Yukon Workers' Compensation Health and Safety Board endorses the Northern Safety Network Yukon's Certificate of Recognition accreditation program for Yukon employers

*Richard Zral,* *Manager, NSNY*

*Kurt Dieckmann, CRSP,* *Director, OH&S*

northern safety network YUKON

YUKON WORKERS' COMPENSATION HEALTH AND SAFETY BOARD
COMMISSION DE LA SANTÉ ET DE LA SÉCURITÉ AU TRAVAIL DU YUKON

# Arctic Power and Communication Systems Ltd.

## CORPORATE PROFILE

Arctic Power and Communication Systems Ltd. is owned by Jim and Lynn Dooley, and was incorporated in 1980 in Whitehorse, Yukon Territory, Canada.

The Company's main areas of expertise are in the following areas:

- Construction and maintenance of overhead and underground power lines, substations and street lighting
- Live line maintenance on power lines up to and including 69Kv
- Construction and maintenance of overhead and underground telephone systems
- Installation of aerial fibre optic cables and direct bury of fibre optic cables by backhoe, plough and trencher
- Construction and maintenance of cable TV systems

Our company has travelled throughout Northern Canada, including the Northwest Territories, British Columbia, and Yukon Territory, and Washington, USA working extensively for the following companies:

- Yukon Electric Co. Ltd. (a utility company owned by Atco)
- Northwestel (a telephone company owned by Bell Canada)
- Yukon Energy Corporation
- BC Hydro in the Fraser Valley and Northern BC
- Esso Pipelines, Norman Wells, Northwest Territories
- Puget Sound Energy Corporation, Seattle, Washington, USA
- Anvil Range Mining, Faro, Yukon
- Yukon Territorial Government
- Government of Canada

We have a dedicated group of employees who have been with us for many years and are used to travelling away from home, many of these employees are Journeymen ticketed in their respective trades. The company has a large selection of new and nearly new equipment that is used in the power line and telephone industry as well as our own fibre optic splicing equipment.

Jim and Lynn Dooley will provide both personal and company references upon request.

**Arctic Power and Communication Systems Ltd.**

184 Industrial Road
Whitehorse, YT
Y1A 2V1
Tel: (867) 667-6063
Fax: (867) 668-6028
e-mail: aps-yukon@arcticpowersystems.com

The following is a description of overhead and underground power line projects that were recently completed by Arctic Power and Communication Systems Ltd. in the Yukon Territory and British Columbia. This work was done for Yukon Electric Co. Ltd., Yukon Energy Corporation, and BC Hydro.

Built substations in Mayo, Teslin, Haines Junction, Watson Lake, Stewart Crossing, Carmacks, and Whitehorse and upgraded several existing substations.

Rebuilt structures and restrung line over rivers in Pelly Crossing, Faro, Carmacks, and Whitehorse.

Underground power installation throughout new subdivisions in Whitehorse – Arkell, Copper Ridge, Range Road, Crow Street, and Logan.

2009 – On going construction projects including power line construction of up to 3kms. for Yukon Electrical Co. Ltd.

2008 – 2km. of 3-phase 25kv. power line for the Atlin Hydro, Pine Creek

2008 – 33km. of 25kv. 3-phase new construction from Minto Landing to Sherwood Copper's mine

2000 - 2006 – On going conversion of power lines from overhead to underground throughout the downtown area of Whitehorse.

2006 – Fox Lake single-phase line build.
- Copperbelt new subdivision 3-phase development.

2005 – Mayo to Dawson transmission line deficiency repairs.
– Dawson City street light installation.

2004 – Hamilton Boulevard, Whitehorse, installation of streetlights.
– Mayo Road 3-phase line rebuild.

2003 – Keno City, rebuild distribution system.

2001 – Takhini river bridge, install 11 streetlights.
– Haines Junction, installation of streetlights along the highway.

2000 – Dawson City, line move and rebuild, 10 km. of single phase to three phase.
– Haines Junction, rebuild double circuit line and restring to larger conductor.
– Norcan/Range Road, rebuild and relocate.

1999 – Fort St. John, convert 5km. single phase to 3 phase primary and build 2km. of 3 phase primary.
– Teslin South rebuild, single phase.
– Alaska Highway West line extension, 8 ½ km. of single phase.

1997 & 1999 – College Drive and Rabbits Foot canyon, Whitehorse, street light installation.

1998 – Nisutlin River bridge, move overhead line to pipes under bridge.
– Riverdale street lights installation.
– Atlin Airport, build single phase line to airport.

1997 – Robert Service Way, convert to underground.
– Mac tie line, Whitehorse, underground installation.

Completed all the power line work in the Faro Grum and Van Gorda sites

Completed all the power line work for the Ketza River Canamax mine, Ross River

Completed all the power line work in the Wheaton river Valley for Skookum Gold.

Valard
Powerline Contractor

September 1, 2009

Denison Environmental Services
Faro Mine Complex
Phone: 867.393.4800
Cell: 867.335.0211
Fax: 867.393.4803

Attention: Erik Nyland, P.Eng., Construction Manager
(enyland@denisonenvironmental.com)

RE: Request for Proposals Electrical Distribution Expansion, Faro Mine Complex

Please find attached our tender response for the above noted request for proposal.

If you have any questions, please contact the undersigned.

Yours truly

C. J. Mohn.

Chris Mohn, P.Eng.
Project Manager
Valard Construction LP

Valard
Powerline Contractor

## Our Mission…

**Valard Construction has always had one clear mission:**

**"To be Canada's leading Power Line Construction Contractor while continuing to deliver 100% customer satisfaction"**

## Our Safety…

**Safety is our number one priority within Valard Construction Ltd. Workers are made aware of the very strict commitment to safety by Valard and its employees and contractors alike. Valard adheres strictly to all safety Policies and Procedures as well as with all Occupational Health & Safety Rules and Regulations.**

**..... "Our main goal is to have no accidents or injuries" .....**

## Our Alliances…

**Our Strategy is to build long term relationships with leaders within selected industrial segments that mesh with ours, with the aim of attaining market leadership.**

**"Long-term strategic business partnerships with industry segment leaders remain at the center of our go-forward strategy"**

Valard
Powerline Contractor

**Valard Construction** is one of Western Canada's largest power line contractors. For twenty eight years we have continued to provide industry with safe and reliable products and services to our customers. Our head office is located in Grande Prairie, Alberta, Canada with regional offices throughout the area.
We provide construction, operations and maintenance services to utilities, mining, oil and gas industries and Rural Electric Associations throughout Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Yukon, Nunavut and the Northwest Territories.

We offer a wide spectrum of power line and fibre optic contracting services unsurpassed in our operating area.

Company History

- Valard commenced operations in 1978 with a staff of 15 and concentrated its services mainly in construction.
- Valard consistently grew over the years, developing and expanding its expertise in the fields of electrical distribution, substation, transmission line, and fibre optic engineering, construction and maintenance.
- In 1997 Valard added an engineering section to its organization.
- As part of its commitment to safety, in 2003 Valard Construction Ltd. appointed Andy Felczak as its Health & Safety Manager.
- Valard expanded its HS&E team to include six full time employees.
- In 2005 Valard moved its corporate office to Edmonton, AB.
- Valard now employs over 450 people during the peak construction season.

What We Do
We serve our clients in six major areas of operations:

- Transmission
- Substations
- Overhead and Underground Distribution
- Fibre Optics
- Electrical Distribution Operations
- Restoration

Within each specialty we can provide engineering, design, construction, maintenance, inspection and emergency restoration.

- Valard employs over 400 trade related employees and can offer expertise in several different specialties.

- Valard utilizes over 500 pieces of power line equipment. This includes: bucket trucks, digger/derricks, a wide range of track mounted equipment for off road service,

- excavators, cranes, trenching machines, ploughing equipment, directional boring equipment for underground installations, loaders crawler tractors, winch tractors and many different pieces of stringing tools and equipment. Valard Construction also has a 150 man camp that may be used for housing its employees in remote locations.

- Valard is now strategically equipped to tension string 4-bundle transmission lines. It now owns an extensive complement of 4-drum tensioners, sagging winches, pilot winders and travelers.

- Being experienced power line specialists we can provide technical and comprehensive practical experience in scheduling, procurement, inspection and financial management in large utility projects.

**Overhead distribution**

- Overhead distribution is the largest segment of our business.

- Valard Construction provides services from simple maintenance to the supply of complete turn key systems in energized or de-engerized situations from 2400 - 25kV.

**Underground**

- In addition to standard trenching, termination and URD connections, Valard offers the latest technology in trenchless directional boring.

**Transmission**

- Valard Construction is proud to have, in its organization, a large group of employees with current 500kV transmission line experience. Our employees have worked on the latest 500kV transmission lines to be constructed in British Columbia and Alberta.

- Specialized transmission crews build and maintain lines on almost any structure type.

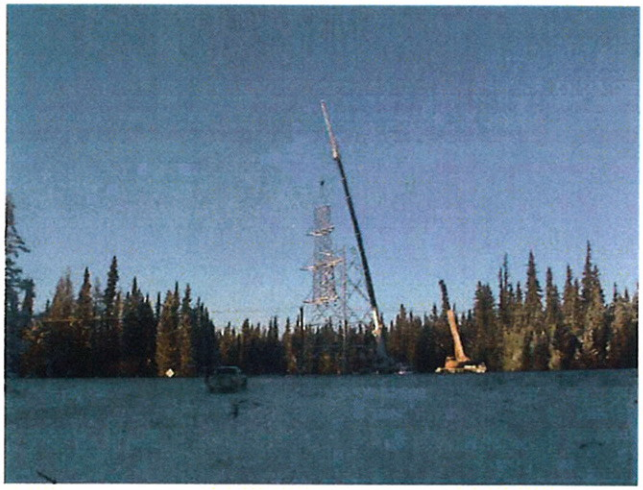
- Foundations constructed include screw anchors, concrete, piling, culvert and caissons.

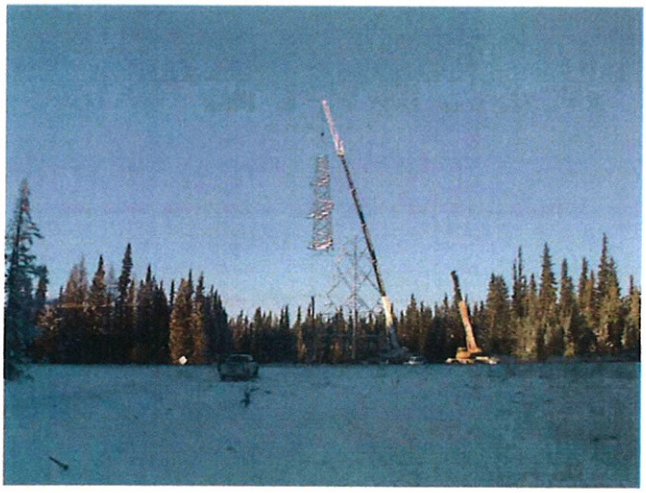
- Valard can provide the expertise to find and pinpoint problems on energized lines and we can provide projected maintenance plans.

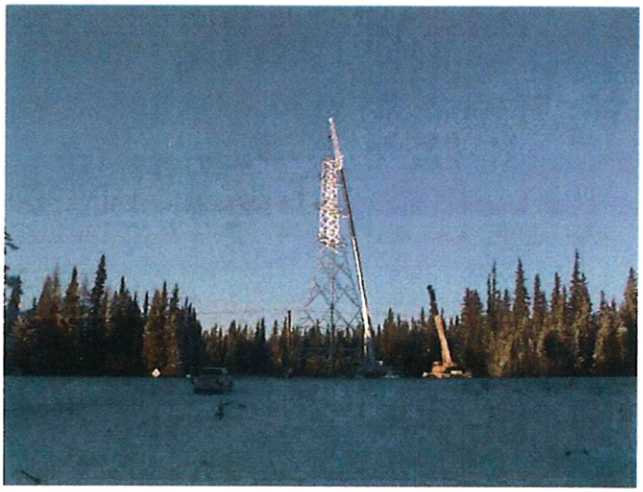
**Alliances**

As part of its commitment to building strategic alliances with leaders in the power line industry, Valard Construction LP is currently involved in the BCTC Alliance program for transmission line construction and maintenance. As part of the BCTC Alliance Program, Valard is member of a select group of contractors prequalified to respond to bid requests for fast track projects valued between $500,000.00 and $5,000,000.00. As part of this program, Valard also supplies expert consultant services in the form of construction cost estimates and design constructability reviews.

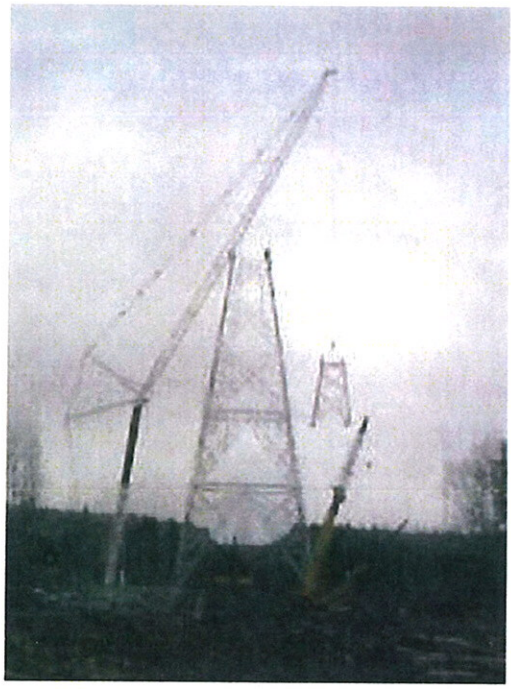
Valard
Powerline Contractor

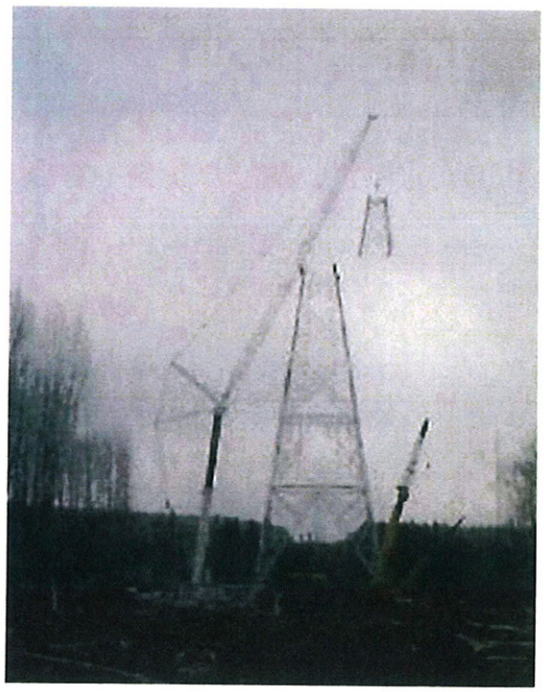






Valard
Powerline Contractor





Valard
Powerline Contractor

**Substations**

- Valard has completed many new substations and major expansions.
- Valard also designs complete packages with detailed drawings, calculations and maintenance manuals. Valard installs steel structures or wood poles as required, including ground grids, bus supports, conductors, insulators, circuit breakers and switches.
- Valard installs and assembles transformers up to 240kV.
- Complete site preparation.
- Valard provides inspection, maintenance and emergency restoration for substations.

Valard
Powerline Contractor

**Fibre Optics**

- Valard can install, splice and maintain fibre optic lines in utility and industrial settings.

**Distribution System Operation**

- Operated the electrical distribution system for eight Rural Electrification Areas in Alberta over the past 9 year.

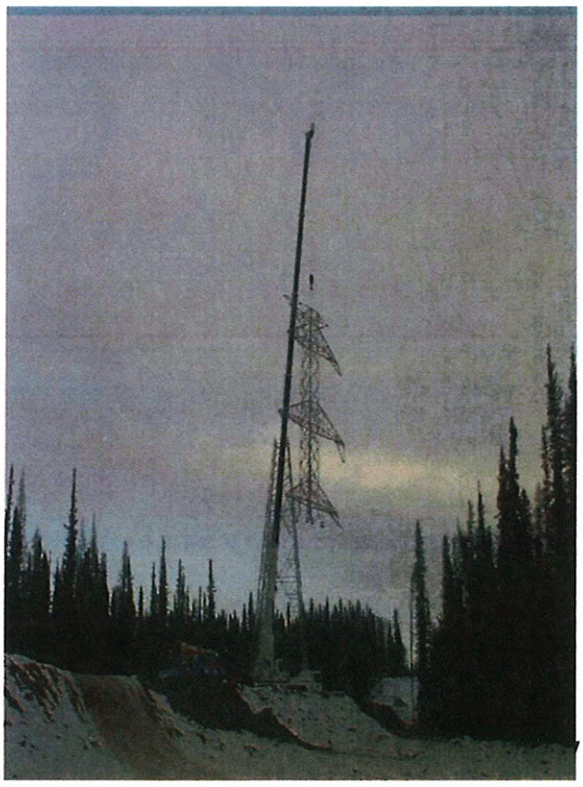
- Responsible for the following services:
  - ✓ Operations and emergency.
  - ✓ Design, engineering and construction.
  - ✓ Material inventory maintenance.

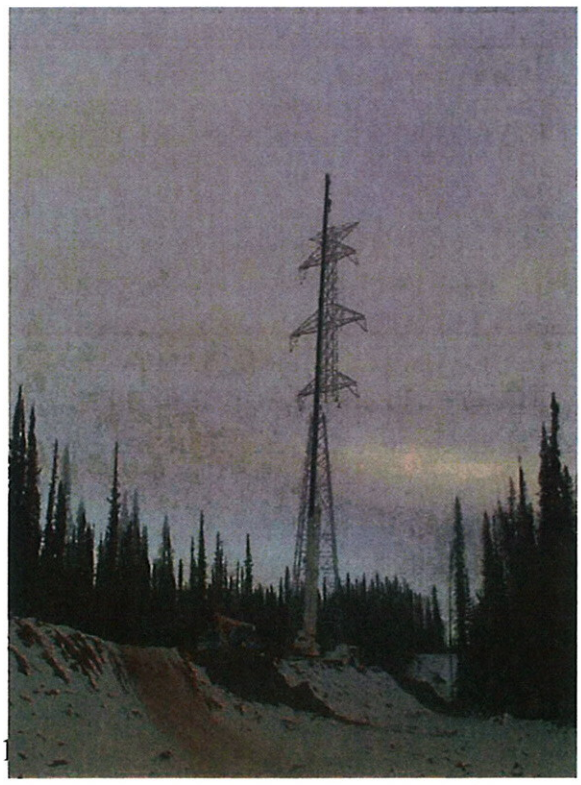
**Restoration**

- Can mobilize a large emergency work force promptly to deal with transmission or distribution systems anywhere in Western Canada.

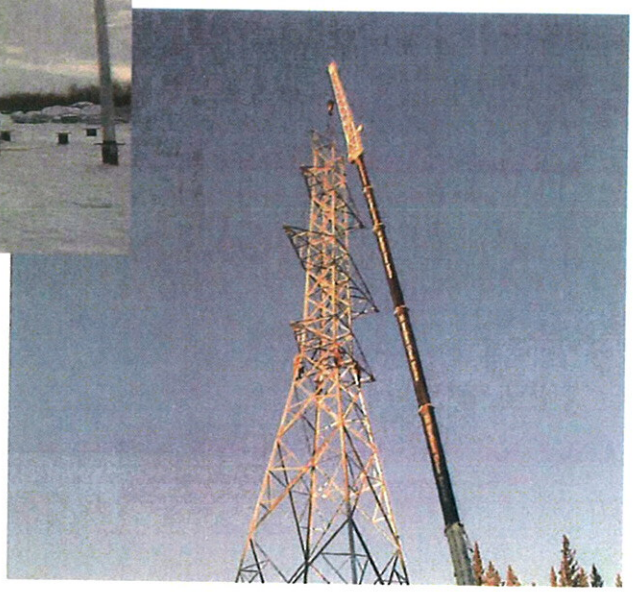
**Other**

- Provide other services to our industrial customers such as street light installation and maintenance.
- Valard owns and operates a Cessna 414 that it utilizes to transport personnel to and from worksites, and also for emergency situations.





Valard
Powerline Contractor



Denison Environmental Services

## Electrical Distribution Design Build
## Unit Price Rate Sheet (Item #9 on Lump Sum Price Sheet)

Contractor Valard Construction LP

Address 5005-77th Avenue SE, Caglary, AB T2C 2X4

| Work Item | Units | # | Rate ($) | Cost ($) |
|---|---|---|---|---|
| Pole Truck | Hr | 20 | $80.25 | $1,605.00 |
| Bucket Truck | Hr | 40 | $80.25 | $3,210.00 |
| Foreman | Hr | 60 | $105.00 | $6,300.00 |
| Lineman | Hr | 120 | $95.00 | $11,400.00 |
| Labourer | Hr | 120 | $60.00 | $7,200.00 |
| **Total** | | | | $29,715.00 |

**Minimum Equipment Specifications**

| | |
|---|---|
| Pole Truck | Suitable for expected conditions, c/w fuel and required tools |
| Bucket Truck | Suitable for expected conditions, c/w fuel and required tools |
| Crew | c/w tools, vehicle , room and board |

**Conditions:**

- All equipment must be in good operating condition
- Hourly rates to include operator, room and board, fuel, consumables and all other costs associated with owning and operating said equipment
- Equipment to be paid on hourly basis of actual hours worked and daily time slips are to be filled out and signed by the appointed representative of Denison Environmental Services.
- The contractor has an option of purchasing fuel from Denison for the price of $1.12 per Litre. Fuel to be delivered by Denison and metered from the Denison fuel delivery truck. Contractor to sign for volume of fuel at time of delivery.
- Contractor's personnel are required to participate in the Faro Mine Complex Contractor Safety Orientation.
- All contractor personnel and equipment must comply with the current Yukon Worker's Compensation Health and Safety Board requirements.
- Contractor to submit a Letter of Good Standing from Yukon WCHSB prior to starting work.
- Contractor must submit to Denison copies of insurance for all vehicles travelling on roadway prior to commencement of work.
- Contractor to submit one invoice on the last day of each month and upon project completion

Signature | September 1, 2009 (Date) | Vice President Transmission (Position)

Denison Environmental Services

# FARO MINE COMPLEX

## Electrical Distribution Design Build

## Schedule of Lump Sum Prices

Contractor: Valard Construction LP

Address: 5005-77th Avenue SE, Calgary, AB T2C 2X4

| Item No. | Description | Lump Sum Price |
|---|---|---|
| 1 | Mobilization, Demobilization | $ 45,000.00 |
| 2 | Intermediate Pond Line | $ 176,775.00 |
| 3 | S- Wells Line | $ 54,625.00 |
| 4 | V-15 Line | $ 65,081.25 |
| 5 | Grum Pit Transformer Bank | $ 19,375.00 |
| 6 | Shops Electrical | $ 26,375.00 |
| 7 | ETA Line | $ 33,562.50 |
| 8 | Cross Valley Dam Line | $ 38,531.25 |
| 9 | Total From Unit Rate Sheet | $ 29,715.00 |
| | **Total for All Items (For Bonding Purpose)** | $ 489,040.00 |
| | **GST @ 5%** | $ 24,452.00 |
| | **Total Tender Price (For Contract Award)** | $ 513,492.00 |

**Total Tender Price Written in Words**

Five hundred thousand four hundred ninety two **Dollars**

**and** zero **Cents**

Sept.1.09
**Date**

**Signature**

Vice President Transmission
**Position**

**Clarifications to RFP Electrical Distribution Expansion- Faro Mine.**

1. The proposal has not included any costs for Right-of Way preparation.

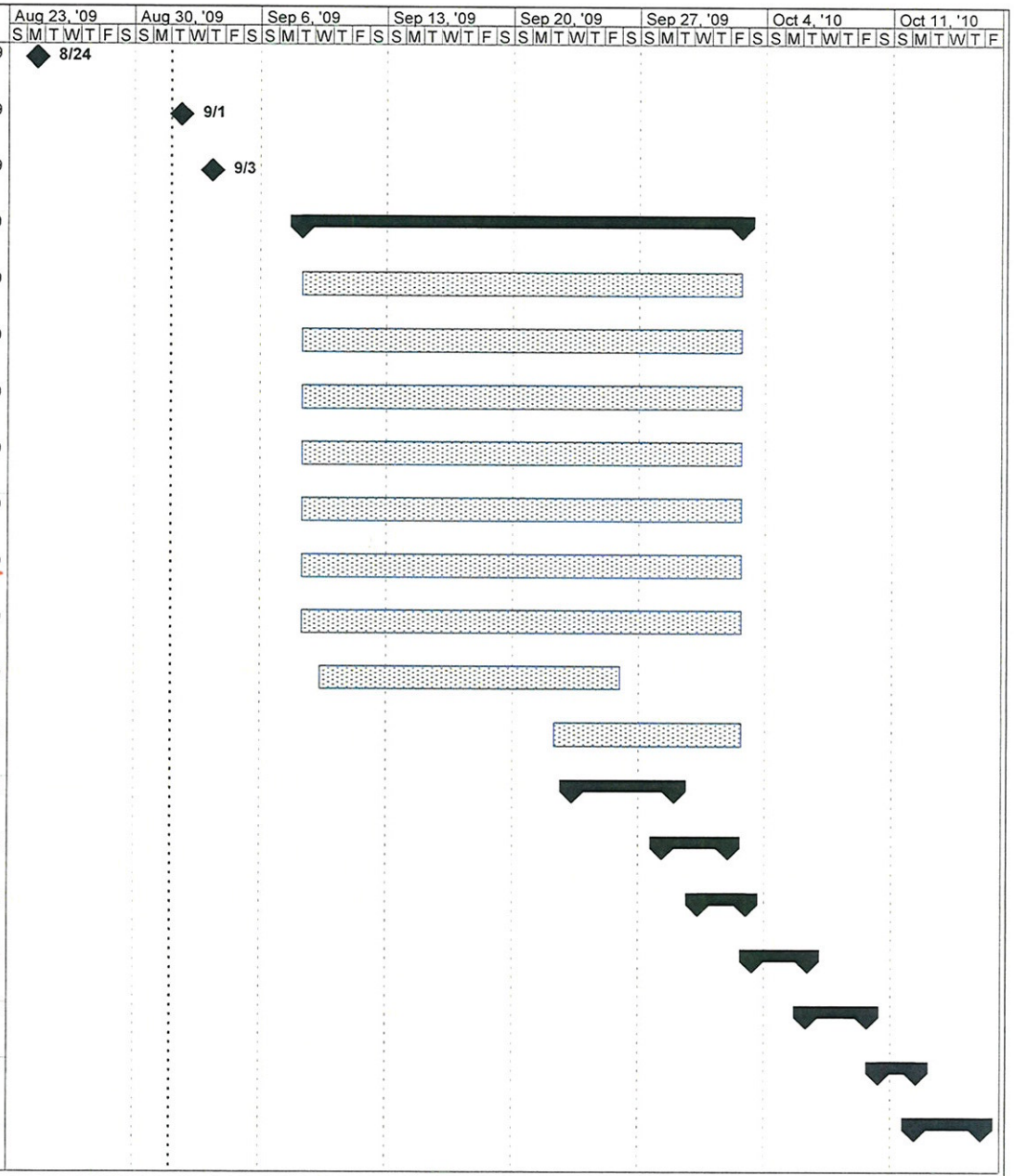
2. The material cost is based on using refurbished transformers to meet the time constraints.

3. Design will done as construction progresses and will be more of an "As-Built " design.

4. The schedule is extremely tight. It is being driven by the acquiring of the material in a 2 week period. We have not been able to get commitments from the suppliers for a 2 week delivery for transformer & switch delivery. We can substitute 25kv switches and insulators to meet the 2 week delivery.

5. The 500 kva transformer for the Intermediate Pond Line is a re-maufactured transformer with a 100% 3-year warrenty and a 6-8 week delivery.

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Site Visit | 0.13 wks | Mon 8/24/09 | Tue 8/25/09 |
| 2 | Proposal Submission | 0.13 wks | Tue 9/1/09 | Wed 9/2/09 |
| 3 | Award of Contract` | 0.13 wks | Thu 9/3/09 | Fri 9/4/09 |
| 4 | **Order Material** | **16 days** | **Tue 9/8/09** | **Fri 10/2/09** |
| 5 | Poles | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 6 | Arms | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 7 | Hardware | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 8 | Insulators | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 9 | Conductor | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 10 | *Transformers* | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 11 | Switches | 2 wks | Tue 9/8/09 | Fri 10/2/09 |
| 12 | **Right of Way Prep & Design** | 10.4 days | Wed 9/9/09 | Fri 9/25/09 |
| 13 | **Mobilize Crew** | 1 wk | Tue 9/22/09 | Fri 10/2/09 |
| 14 | **Intermediate Pond** | **4 days** | **Wed 9/23/09** | **Mon 9/28/09** |
| 20 | **S-Well** | **3.2 days** | **Mon 9/28/09** | **Thu 10/1/09** |
| 26 | **Grum V-1** | **2.4 days** | **Wed 9/30/09** | **Fri 10/2/09** |
| 32 | **Faro Pit Transformer** | **1.8 days** | **Sat 10/3/09** | **Tue 10/6/09** |
| 38 | **Service to Faro Shop** | **3.2 days** | **Tue 10/6/09** | **Fri 10/9/09** |
| 43 | **Emergency Tailings Area** | **1 day** | **Sat 10/10/09** | **Mon 10/12/09** |
| 49 | **CV Dam Power Line** | **3.2 days** | **Mon 10/12/09** | **Thu 10/15/09** |




Project: Faro Mines
Date: Tue 9/1/09

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

| Year(s) | Project Name | Location | Owner | Owner's Consultant | Line Length (km) | Structure Type | Comments | Scope | Value | Owner's Rep |
|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | Southern Alberta Irrigation 2009 | Southern Alberta (Lethbridge - Brooks - Medicine Hat and surrounding areas) | Fortis Alberta | Fortis Alberta | 400 | 25kv 3 phase Overhead Wood Pole | 400km of 3 phase 25kv OH wood pole construction to service approx 380 new irrigation customers within Fortis Alberta service territory. The typical average services ranged from 800-1500m in length, approx 50% of total length of line built required salvaging of exisiting 1 phase line and upgraded to new three phase construction | Construction Management, Constuction, Material Management, Quality & Safety Supervision | | Todd Dettling 403.514.4530 |
| Pre-Construction | Bruce x Milton Reinforcement | Greater Toronto Area, ON | Hydro One Networks Inc. | Stantec/Alberici | 180 | Ontario Hydro V1 Family 2x 500kV Lattice towers typ. Height 180 ft. | Double circuit transmission line between Greater Toronto and the Bruce nuclear generation plant at Kincardine, ON. Project challenges include dealing with over 300 landowners and a double-circuit crossing of Hwy. 401. Conductor is 4-bundle 973kcmil Erie Compact. Project to be completed in partnership with NAC Constructors of Morriston ON. | Construction | | Charlie Sauter 416.345.1221 |
| 2009 | Brintnell to Wesley Creek Transmission | Peace River Region, AB | Atco Electric | Atco Electric Balfour Beatty United Group Ltd. | 89 | 16 Lattice Towers 307 Wood Pole H-Frames | Project completed between January 25 - April 2, 2009 (viz: built to completion in 2 months) | Construction | | John Ilett 796.766 9235 |
| 2008 | Suncor 144kV Live Lift | Fort McMurray Region, AB | Suncor Energy | Jacobs | 2 | 144kV Wood Pole Bypass | Constructed bypass and live tap to raise existing line to 18m clearance. | EPC | | Ben Hassenstein 403.990.8663 |
| Currently in Engineering | Noel 138kV TX Line | Dawson Creek Region, BC | British Petroleum | LEX Engineering | 70 | 138kV Wishbone | --- | EPC | | |
| 35% Construction Complete (on hold) | Firebag Site Distribution | Fort McMurray Region, AB | Suncor Energy | Jacobs | 5 | 25kV Wood Pole | Construction of site distribution and underground power facilities | EPC | | Brian Austin 780.713.8304 |
| Final Construction | Lower Clowhom Transmission | Sunshine Coast Region, BC | HydroMax | Canadian Projects | 7 | 138kV Wood Pole Standoff | Supply and Construct 7 km of BC Hydro standard structures to connect an IPP to a BC Hydro Substation using a single circuit of 138 kV line | Procure / Construct | | |
| Final Construction | Upper Clowhom Transmission | Sunshine Coast Region, BC | HydroMax | Canadian Projects | 30 | 138kV Delta | Supply and Construct 23 km of Delta structures to interconnect portions of an IPP Project using a single circuit of 138 kV line | Procure / Construct | | |
| Currently Underway | Dokie Windfarm Collector and Transmission | Moberley Lake Region, BC | EarthFirst | LEX Engineering | 37 | 260kV Braced Post, 35kV 1-, 2-, 3-, and 4-circuit post insulators | 30km total length of 35kV Collector and 7km 230kV grid connection; most structures placed in rock excavations. | Procure / Construct | | |
| Currently Underway | Firebag 144kV TX Line & Station Civil | Fort McMurray Region, AB | Suncor Energy | Washington Group Northern | 18 | Steel Monopole | Also includes foundations & earthworks for 5 144/260kV substations | Construction | | Mike Buzan 780.742.1936 |
| 2009 | Cloudworks Transmission Line Construction | Upper Harrison Lake, BC | British Columbia Transmission Corporation | SNC Lavalin | 1.8 | Wood Pole H-Frames and Monopoles | To redirect an existing 360 kV line into a newly constructed substation, several existing lattice towers where dismantled and replaced by wood H-Frame structures and Monopoles. | Procure / Construct | | |
| 2008 | Carmacks-Pelly TX Line & Minto Spur | Klondike Hwy. Region, Yukon | Yukon Energy | Wardrop Engineering | 130 | 138kV H-Frame and 25kV Delta | 100km transmission circuit with 30km 25kV spur built under joint venture with local First Nations. Environmental concerns led to hand-digging of 25 structures in permafrost conditions. Also included 450m crossing of Yukon River and 650m Crossing of Tatchun Creek | Procure / Construct | | |
| 2006-2008 | Victor TX Line | James Bay Region, ON | DeBeers Canada | Amec Americas | 415 | 138kV Wishbone | Also includes 4 115kV substations & substantial logistical challenges; entire line built along the James Bay Coast with mobilization and support by rail, barge, and air. Project included dedicated CN-414 for expediting support and crew moves, as well as construction of public-use ice road linking isolated Northern communities to the Ontario highway system. | EPC | | |
| 2007-2008 | Firebag 260kV TX Line | Fort McMurray Region, AB | Suncor Energy | Jacobs | 50 | 230kV Lattice Double-Circuit, 150 ft. typ. | 50km cross-country line with 4 access points | EPC | | Brian Van Troyen / 403. |
| 2007-2008 | Dry Creek 144kV TX Line | Airdrie, AB | AltaLink LP | SNC-Lavalin ATP | 5 | 144kV Steel Monopole Double Circuit | Included crossing of HWY. 2 Corridor on major commuter route outside City of Calgary | Construction | | Paul Nikkel / 403.539.4669 |

| Year(s) | Project Name | Location | Owner | Owner's Consultant | Line Length (km) | Structure Type | Comments | Scope | Value | Owner's Rep |
|---|---|---|---|---|---|---|---|---|---|---|
| 2007 | New Ameria 230kV TX Line | Fort Saskatchewan, AB | AltaLink LP | SNC-Lavalin ATP | 2 | 230kV Double-Circuit Lattice and Monopoles | Includes installation of substantial monopole footings for double-circuit 1590mcm monopole terminations (80+ truckloads of concrete each) | Construction | | Paul Nikkel / 403.539.4669 |
| 2006-2007 | Horizon 260kV TX Line | Fort McMurray Region, AB | CNRL | Horizon | 12 | 260kV Lattice Double-Circuit, 180 ft. typ | Also includes greenfield construction of 2 major 260kV substations | Construction | | |
| 2006-2007 | Horizon Site Distribution | Fort McMurray Region, AB | CNRL | Fluor | 55 | 25kV wood pole standard built to 69kV spacing | Included all plantsite lighting and electrical | EPC | | Henk Jan Van Klinken 780.881.5572 |
| Summer 2006 | FSJ Reinforcement Project 138kV TX Line | Fort St. John, BC | BCTC | BC Hydro | 65 | 138kV Wood Pole Delta | Included extreme environmental considerations for 8km section crossing organic farms | Construction | | |
| Winter 2006 | 104L 144kV Rebuild | Edmonton, AB | AltaLink LP | SNC-Lavalin ATP | 12 | 144kV Wood Pole Standoffs c/w 14.4kV U/Build | All construction along busy HWY. 16 Corridor outside of Edmonton | Salvage & Rebuild | | |
| 2005 | Michichi 138kV TX Line & Underbuild | Three Hills, AB | Atco Electric | Atco Electric | 65 | 144kV Wood Pole c/w 25kV U/Build | Included Red Deer River Canyon Crossing | Salvage & Rebuild | | |
| 2005 | Whitehorse-Dawson Network Expansion | Central Klondike Region, Yukon | NorthWesTel | NorthWesTel | 210 | Ploughed Optical Fibre Cable | Contract included ploughing of optical fibre cable between the communities of Carmacks and Whitehorse, as well as the installation of fibre spurs between community POP's and extant microwave towers. Scope included all splicing and placement as required to allow the Owner to extend cellular service to all communities alon a 450km stretch of the Klondike Highway | Construction | | |
| 2005 | Three Sisters U/G 230kV | Canmore, AB | AltaLink LP | SNC-Lavalin ATP | 6 | 230kV Double-Circuit Buried Cable Encased in Concrete Conduit | Included Excavation and placement of reinforced concrete duct bank and vaults, all overhead connections, excavation of tower foundations, placement, splicing, and testing of cable | Construction | | |
| 2005 | Ribstone 138kV TX Line | Consort, AB | Atco Electric | Atco Electric | 60 | 144kV Wishbone | --- | Construction | | |
| 2004 | Alberta Supernet OSP | Alberta-Wide | Bell Alberta Supernet | Ledcor CMI | N/A | Underground ADSS Fibre in XLPE tubing | Consisted of all local-area installation of the Supernet from inter-city terminations to all government buildings in 90 Alberta communities | Construction | | |
| 2004 | Dover-Whitefish 230kV TX Line | Fort McMurray Region, AB | Atco Electric | Stantec Consulting | 170 | 230kV Lattice Double-Circuit and Steel H-Frame | Included greenfield construction of substantial 260kV substation and crossing of Athabasca River with 280 ft. towers. Project awarded Edison Award by Edison Institute. Peak MP loading of 120 all housed in Valard-owned camps. | Construction | | |
| 2003 | Firebag 144kV TX Line | Fort McMurray Region, AB | Atco Electric | Atco Electric | 52 | 144kV Wishbone | 50km cross-country line with access only from 1 point. | Construction | | |
| 2003 | Petro-Can-Aurora 230kV TX Line Phase I | Fort McMurray Region, AB | Atco Electric | Stantec Consulting | 105 | 230kV Lattice Double-Circuit and Steel H-Frame | Peak MP loading of 120. | Construction | | |
| 2002 | Marianna Lakes 144kV Transmission Line | Fort McMurray Region, AB | Atco Electric | Atco Electric | 50 | 144kV Wishbone | --- | Construction | | |
| 2001 | Cranberry Lake 144kV Connection and Distribution System | Red Earth Creek, AB | Atco Electric | Atco Electric | 200 | 144kV Wishbone & single-pole 25kV | Project consisted of construction of 100km 144kV connection, two 144kV greenfield substations, and 100km of rural 3-phase connections. Total of 1700 structures were placed. | Construction | | |
| 2001 | Rosser-Birdshill | Winnipeg, MB | MB Hydro | MB Hydro | 20 | 230kV Lattice Double-Circuit, 150 ft. typ. | --- | Construction | | |
| 2001 | Wabamun Line Relocate | Wabamun, AB | AltaLink LP | SNC-Lavalin ATP | 12 | Lattice 230kV Double Circuit | Relocation of 230kV transmission line at open-pit mine facility. | Salvage & Rebuild | | |
| 2000-2001 | Dorsey-Neepawa 230kV TX Line | Interlake Region, MB | MB Hydro | MB Hydro | 165 | 230kV Steel H-Frame | Construction completed over 7-month schedule with substantial contribution of local resources | Construction | | |
| 1999 | Fort MacMurray-Marianna Lakes | Fort MacMurray Region, AB | Atco Electric | Atco Electric | 78 | 144kV Wishbone | Included construction of 2 greenfield substations | Construction | | |
| 1997-1998 | Kemess Mine 138kV TX Line | MacKenzie Forest District, BC | Royal Oak Mines | Teshmont Consultant LP | 189 | 230kV Steel Guyed-Y | Pioneering privately owned 230kV connection to Kemess mine, constructed in extremely difficult remote mountain conditions. Scope included provision of camp facilities for 70 persons. | Construction | | |
| 1996 | North Central Project 230kV TX Line | North Central Region, MB | MB Hydro | MB Hydro | 79 | 230kV Lattice Single Circuit | Inclusive of foundation installation and micro-pile anchors. All work completed from Valard camps in extreme remote conditions in Northern Manitoba. | Construction | | |
| 1995 | Sechelt 138kV Rebuild | Sunshine Coast Region, BC | BC Hydro | BC Hydro | 20 | 138kV Wishbone | All work completed along the coast in rocky fjords; extensive use of helicopters based on mobile barge bases as well as barge-mounted cranes. All holes hand excavated with explosives as required. | Salvage & Rebuild | | |
| 1994 | Prince Rupert 138kV Rebuild | Skeena Estuary Region, BC | BC Hydro | BC Hydro | 35 | 138kV Wishbone | All work completed along the Skeena river estuary; project included extensive use of helicopters and hand-construction techniques. All crews commuted using project-purchased jet boats. | Salvage & Rebuild | | |

Manitoba Hydro

P.O. Box 815 | Winnipeg, Manitoba, Canada | R3C 2P4
Telephone: (204) 474-3724 | Fax: (204) 474-4329
Delivery Address: 1100 Waverley Street
E-Mail Address: jakreml@hydro.mb.ca

March 27, 2003

Valard Construction Ltd.
Mr. V. Budzinski
14310 - 97th Street
Grande Prairie, AB T8V 7B6

Dear Vic:

Re: Letter of Reference

In response to you request for a letter of reference, I am pleased to provide the following:

1. Valard Construction has done considerable transmission line work for Manitoba Hydro in the past. In all cases, the work has been done on schedule and on budget.
2. Valard Construction has always acted in a professional manner. Relationships have been, and continue to be, harmonious.
3. Valard Construction's attitude to safety is first class and certainly above that of other contractors.

I have no reservations about recommending Valard Construction for transmission construction work.

I trust that the above is satisfactory for your purpose.

Yours truly,

J.A. (John) Kreml, Manager
Transmission Line & Civil Construction Department
Transmission Construction & Line Maintenance Division
Transmission & Distribution

JAK/alb/030327-1.doc

ATCO Electric

March, 25, 2003

To whom it may concern:

Re: Valard Construction Recommendation Letter

Valard Construction Limited has worked under my supervision with ATCO Electric Limited for the past ten years. During this time they have successfully completed a number of projects in distribution overhead and underground installation and maintenance, fiber optics installations, transmission line and substation construction and maintenance.

Their management team has shown a strong commitment to safety, both in the office and out in the field. Valard Construction have regularly conducted there own site audits and offer a number of safety courses and training sessions to their employees. They received their certificate of recognition through the Construction association, and have built and designed their own safety policies and programs.

Quality assurance and safety codes are monitored and tracked very closely. Valard Construction Limited has shown time and again their commitment from management and staff to comply with these standards. When there has been a discrepancy or error, they have not hesitated to rectify any discrepancies to comply with these standards and policies.

I have had no concerns in the past with the level of productivity, performance or professionalism this company has displayed. I have found them willing to work together with myself on any issues to complete all projects on schedule, and within budget. I am confident Valard Construction Limited will provide you with the same level of service in the future that they have provided me in the past.

Yours truly,

**ATCO ELECTRIC LIMITED**

Bryan McIntosh
Work Desk Supervisor

BCHydro

ENGINEERING

Neil A. McNeill
Construction Contracts Manager
Phone: 604 528-3044
Fax: 604 528-1883
E-mail: neil.mcneill@bchydro.com

3 April 2003

TO WHOM IT MAY CONCERN:

This letter of reference is written on behalf of Valard Construction Limited in terms of constructing high voltage transmission lines. Valard has worked on many BC Hydro transmission lines in the 138, 230 and 500 kV voltage class. We have found Valard to be a very efficient and well organized company with the expertise and resources necessary to complete our work in a competent manner. I have no concern in recommending them for HV line construction based on their performance on our projects. For additional comment or clarification I may be contacted at 604 528-3044.

Yours truly,

Neil A. McNeill
Construction Contracts Manager

NAM/sgg

NU-LINE
POWERLINE CONTRACTORS LTD.

September 2, 2009

Denison Environmental Services
4109-4th Avenue, Suite 207
Whitehorse, Yukon T1A 1H6

Dear Sir:

Re: Faro Mine Complex – Electrical Distribution Expansion – Project 07-034

NU-Line Powerline Contractors Ltd. is pleased to submit our proposal for the work required to construct the above noted project. This proposal is based on emails from Erik Nyland August 21, 28 and 31, and a site visit August 25.

1.0 Scope of Work:

1. Intermediate Pond
   - 1.1.1 Supply and install approximately 1.9km 4160V line from existing source to pond. Overhead conductor will consist of #2 ACSR primary and #2 ACSR neutral.
   - 1.1.2 Supply and install 500kVA 3 phase transformer on platform or pole mounted cluster
   - 1.1.3 Supply and install 900Amp Airbrake for line isolation one span from source tap including grounded mat.
2. S-Wells
   - 1.2.1 Supply and install approximately 750m 4160V line from existing source (Zone II Well) to existing generator site. Overhead conductor will consist of #2 ACSR primary and neutral.
   - 1.2.2 Supply and install 100kVA transformer on platform or pole mount.
   - 1.2.3 Supply and install fused disconnects at suitable location.
3. Grum V-15 Wells
   - 1.3.1 Supply and install approximately 850m 4160v line from source at top of hill, over road and down to well location
   - 1.3.2 Supply and install fused disconnects at suitable location.
4. ETA Pumping Station
   - 1.4.1 Supply and install approximately 130m 4160v line from source at hill top, across road, to ETA pumping site. Line will consist of #2 ACSR primary and neutral.
   - 1.4.2 Supply and install fused disconnects at top of hill.
5. Faro Shops Electrification
   - 1.5.1 Supply and install approximately 370m 4160v line from source to area tying into line between main shop and crusher. Primary and secondary line will be #2 ACSR.
   - 1.5.2 Supply and install fused disconnects at source tie in.
6. Faro Pit Transformer
   - 1.6.1 Supply and install 500kVA transformer as cluster on pole or mounted on platform. *Disconnects already present.*

BOX 808 THORSBY, AB. T0C 2P0
PH: (780) 789-4142 FAX: (866) 311-0813

7. Intermediate Pond Line Extension to Cross Valley Dam
   - 1.7.1 Supply and install approximately 700m 4160v line from initial Intermediate dead-end to Cross Valley Dam. Conductor to be #2 ACSR primary and neutral.
   - 1.7.2 Supply and install fused disconnect one pole past tie in point.
8. Miscellaneous Works
   - 1.8.1 Various maintenance and repairs as requested, work done on hourly rates or negotiated price.

2.0 Pricing – Please note Appendix A ( 2 pages) for Hourly Rates and Schedule of Lump Sum Prices

- Please note Appendix B for our standard hourly rates noting additional job descriptions. Numbers do vary from Appendix A to Appendix B to comply with conditions required in Appendix A.

3.0 Schedule/Milestones/Key Dates

Week 1 (Sept. 2-4) Pre-construction
Sept. 2 – Proposal submission
Sept. 3 – Proposal Review, award, P.O. issue
Sept. 4 – Material order confirmed, travel & accommodation arranged

Week 2 (Sept. 7-12) Construction Preparation
Sept. 7-8 – Supervisor & Crew 1 arrive on site
- Hazard Assessment & Corrective Actions
- ROW I.D., ROW prepped, pole location I.D.

Week 3 (Sept. 13-19) Construction Preparation
- Crew 1 pre-digging holes (assistance of Mine excavator as required)
- MILESTONE – September 17 – ROW's prepped, all holes pre-dug
- KEY DATE – September 18 – Material & Poles arrive
- KEY DATE – September 18 – Mobilization of Crews 2 & 3

Week 4 (Sept. 20-26) Construction
- Crew 1 & 2 Begin construction Intermediate Pond
- Crew 3 Begin construction S-Wells

Week 5 (Sept. 27-Oct. 3)
- Crew 1 & 2 Complete Intermediate Pond, Begin Intermediate Pond Extention
- Crew 3 Complete S-Wells, Begin Grum V-15

Week 6 (Oct. 4-10)
- Crew 1 & 2 Complete Intermediate Extention
- Crew 1 & 3 Complete Grum V-15
- Crew 2 Complete ETA Pump
- Crew 2 & 3 Begin Faro Shops
- Crew 1 Complete Transformer site prep for Faro Pit

Week 7 (Oct. 11-17)
- Crew 2 & 3 Complete Faro Pit
- Crew 1 Begin working on repairs and maintenance
- Crew 2 & 3 Site clean up, repairs and maintenance
- KEY DATE – October 16 – Transformers arrive on site
- October 17 – Crew 1, 2, 3 begin installing transformers

Week 8 (Oct. 18-24)
- October 19 – transformers complete
- October 20 – crew's de-mobilize

4.0 Preliminary Crew Compliment

Journeymen – 3
4th Yr. Apprentice – 1
1st-3rd Yr. Apprentice – 5
Operator – 2
Labourer – 1

5.0 Intended Equipment on Site

2001 Western Star Digger Derrick (K14XL)
2001 Freightliner with Digger Derrick (MTI A6-60R)
1994 International with Digger Derrick (Altec 945)
2007 Dodge 4X4 Service Truck
2007 Dodge 4x4 Service Truck
2006 Dodge 4x4 Service Truck

6.0 Corporate & Project History

1. Corporate History

6.1.1 NU-Line Powerline Contractors Ltd. was incorporated in 1997 as an Alberta based powerline construction and maintenance company. The company's initial, primary focus was to service the Alberta coal mining sector. In 1999, Alberta utilities were added to the customer list as NU-Line began completing projects for ATCO Electric and FortisAlberta (TransAlta Utilities at the time). The company has since grown from 3 men and a digger derrick to 17 field staff, 4 office/shop staff, 5 digger derricks, 3 bucket trucks and an assortment of trailers and service trucks. In late 2008, NU-Line studied opening in other regions, and in January 2009 opened our Whitehorse shop to begin serving the Yukon mining sector.

2. Recent Related Projects

6.2.1
Project Title: Pit 08 Feeder
Customer: TransAlta
Date of Project(s): Spring 2009
Value: $500 000
Scope of Work: Construct 28 structure double circuit, bundled conductor line from new substation to pit distribution line.

6.2.2
Project Title: Pit 08 Expansion
Customer: TransAlta
Date of Project(s): Spring 2009
Value: $950 000
Scope of Work: Construct approximately 5km 477 MCM line and approximately 12km 3/0 Pigeon line. Design included six Air-brake structures.

6.2.3
Project Title: South Mine Boundary Powerline
Customer: Luscar Genesee Mine
Date of Project: Spring 2006
Value: $615 000
Scope of Work: Engineer, Procure, Construct 10 km of 477 MCM and 266 MCM line for South Pit

6.2.4
Project Title: Genesee West Field Powerline
Customer: Prairie Mines and Royalty Genesee Mine
Date of Project: December 2007
Value: $674 000
Scope of Work: Engineer, Procure, Construct 8 km of 477 MCM Line for west field.

7.0 Project References

1. Byron Billay – TransAlta – Phone: 780-731-6000 ext. 6891
   Available on September 3rd from 7:30AM – 10:00AM Mountain Time
2. Dean Jeffrey – Prairie Mines & Royalty Genesee Mine – Phone: 780-848-2165
   Available on September 3rd from 8:00AM – 9:00AM Mountain Time
3. Dave Dence – Coal Valley Resources, Coal Valley Mine – Phone: 780-794-8128
   Available on September 3rd "earlier the better"

8.0 Exceptions

1. NU-Line will build line based on industry standards and using standard industry methods. The line(s) shall not be considered "Engineered" and NU-Line will not take responsibility for issues with the line due to the lack of engineering. NU-Line will honour the 1 year warranty only for items relating to material failure or poor construction methods. Warranty for items that could have been prevented due to proper engineering will not be honoured.

   8.1.1 NU-Line has contacted Magna IV Engineering regarding their services for this project. They have advised that they could have engineered drawings within 2 weeks of order date (assuming all questions are answered promptly). The cost would include 2 site visits and continued communication throughout project, and engineered drawings at project end. The Cost for their services is $ 54 700 plus tax.

2. Regarding payment and completion, as transformers will not arrive until project end, each segment of the project will be incomplete until transformers arrive. Propose that each segment be considered 80% complete and invoiced as such (continue following the holdback of course). Once transformers arrive and are installed, remaining 20% of each segment will be invoiced.

3. It is NU-Line's intention to auger the holes for structures, however we anticipate problems and intend to make use of Faro's offer for access to excavators. Every attempt will be made to schedule the use of excavator.

Denison Environmental Services

# FARO MINE COMPLEX

## Electrical Distribution Design Build

## Schedule of Lump Sum Prices

Contractor NW-Line Powerline Contractors Ltd.

Address 12A Burns Road Whitehorse, Yukon Y1A 4Y9

| Item No. | Description | Lump Sum Price |
|---|---|---|
| 1 | Mobilization, Demobilization | $ 20000 |
| 2 | Intermediate Pond Line | $ 157595 |
| 3 | S- Wells Line | $ 77652 |
| 4 | V-15 Line | $ 112183 |
| 5 | Grum Pit Transformer Bank | $ 32000 |
| 6 | Shops Electrical | $ 54503 |
| 7 | ETA Line | $ 25745 |
| 8 | Cross Valley Dam Line | $ 68434 |
| 9 | Total From Unit Rate Sheet | $ 33300 |
| | Total for All Items (For Bonding Purpose) | $ 581412 |
| | GST @ 5% | $ 29070.60 |
| | Total Tender Price (For Contract Award) | $ 610482.60 |

Total Tender Price Written in Words

Six hundred ten thousand four hundred eighty-two Dollars

and sixty Cents

Sept 2/09 Date

Signature

President Position

# Denison Environmental Services

## Electrical Distribution Design Build
## Unit Price Rate Sheet (Item #9 on Lump Sum Price Sheet)

Contractor N/U-Line Powerline Contractors Ltd.

Address 124 Boras Road Whitehorse, Yukon Y1A 4P9

| Work Item | Units | # | Rate ($) | Cost ($) |
|---|---|---|---|---|
| Pole Truck | Hr | 20 | 140.00 | 2800.00 |
| Bucket Truck | Hr | 40 | 140.00 | 5600.00 |
| Foreman | Hr | 60 | 135.00 | 8100.00 |
| Lineman | Hr | 120 | 85.00 | 10200.00 |
| Labourer | Hr | 120 | 55.00 | 6600.00 |
| **Total** | | | | 33300 |

**Minimum Equipment Specifications**

| | |
|---|---|
| Pole Truck | Suitable for expected conditions, c/w fuel and required tools |
| Bucket Truck | Suitable for expected conditions, c/w fuel and required tools |
| Crew | c/w tools, vehicle , room and board |

**Conditions:**

- All equipment must be in good operating condition
- Hourly rates to include operator, room and board, fuel, consumables and all other costs associated with owning and operating said equipment
- Equipment to be paid on hourly basis of actual hours worked and daily time slips are to be filled out and signed by the appointed representative of Denison Environmental Services.
- The contractor has an option of purchasing fuel from Denison for the price of $1.12 per Litre. Fuel to be delivered by Denison and metered from the Denison fuel delivery truck. Contractor to sign for volume of fuel at time of delivery.
- Contractor's personnel are required to participate in the Faro Mine Complex Contractor Safety Orientation.
- All contractor personnel and equipment must comply with the current Yukon Worker's Compensation Health and Safety Board requirements.
- Contractor to submit a Letter of Good Standing from Yukon WCHSB prior to starting work.
- Contractor must submit to Denison copies of insurance for all vehicles travelling on roadway prior to commencement of work.
- Contractor to submit one invoice on the last day of each month and upon project completion

| Signature | Date | Position |
|---|---|---|
| Chris Ross | Sept 2/09 | President |

# Yukon Construction Rates

| | Regular Hrs. | OT Hours |
|---|---|---|
| Foreman | $100.00/Hr | $125.00/Hr |
| Journeyman Lineman | $ 80.00/Hr | $100.00/Hr |
| Fourth Year Apprentice | $ 70.00/Hr | $ 87.50/Hr |
| First-Third Year Apprentice | $ 60.00/Hr | $ 75.00/Hr |
| General Labourer | $ 50.00/Hr | $ 62.50/Hr |

## Equipment Usage Rates

| | |
|---|---|
| Digger Derrick | $ 75.00/Hr |
| Bucket Truck | $ 75.00/Hr |
| Foreman's Truck | $ 35.00/Hr |
| Pole Trailer (per day of use) | $ 75.00 |
| Wire Winder | $ 35.00/Hr |

## Vehicle Mileage Expense

Equipment mileage rate: $ .80/Km

Provisions will be negotiated for long term contracts. There will be no charges if the customer supplies fuel while on site, but pricing does not include mobilization and de-mobilization costs.

## Accommodation

If food and quarters are supplied accommodation will not be charged. If NU-Line is to supply, rates will be negotiated based on facilities available. Charges will be waived if crew is within 100 km of Whitehorse.

## Specialized Equipment/Trades

NU-Line has access to specialized equipment and several contractors with specialized training. After discussing needs with customer, a separate rate sheet will be provided addressing costs for such equipment or contractors. Of course, these charges shall be discussed with the customer and pre-approved in writing.

# Request for Proposals

## Electrical Distribution Expansion

Secondary Connections and Shops Electrical

Faro Mine Complex

Denison Environmental Services

Faro Mine Complex
Box 280
Faro, Yukon
Y0B 1K0

October 20, 2009

## Project Description

The Faro Mine Complex, (formerly known as the Anvil Range mine) located approximately 22.5 km north west of the Town of Faro, Yukon is a former lead and zinc mine operation. It closed permanently in 1998. An environmental care and maintenance program continues to operate in treating acidic and zinc contaminated water from the various rock dumps as well as the tailings management area.

The Yukon Government – Assessment and Abandoned Mines is now in control of the Faro Mine Complex, and Denison Environmental Services (DES) has been awarded a contract to provide care and maintenance services.

On August 21, 2009 DES provided a Request for Proposals to interested contractors and on September 3, 2009 awarded a contract for the construction of 6 new pole lines to Arctic Power Systems (APS). The new pole lines included all power line construction work including the transformers but not the secondary connections past the transformers.

A part of the work completed by APS included construction of a new line to the shops. The shops house a 4160 to 600 V transformer, which provides power to the entire shop, office and warehouse complex. A large part of the building is not in use and because of the condition of the office warehouse portion of the building is not likely to be used in the future. A portion of this project will be to isolate the shops from the office and warehouse portions of the complex and ensure that the shops portion is safe and meets current electrical code requirements. The shops contain approximately 75 overhead lights which are assumed to have a short remaining lifespan so part of this project will be to change the bulbs and check the ballasts. The roof in the shops is as high as 16 m so will require a man lift of that capacity.

Electrical supply is provided to the mine through a 138kV overhead power line. The power line terminates at the mine near the mill at the 138 kV to 4160 V transformer sub station. Electrical power is supplied to the Grum Vangorda side of the property through a 69 kV overhead line, the supply of which is transformed from 4160 V to 69 kV in a separate transformer sub station near the mill. The feed to the 69 kV substation consists of 2 - 500 MCM Teck cables to the overhead line. The Teck cables are no longer securely attached to the pot heads and must be re attached and the cables replaced.

Two transformers will be installed that will require immediate connection. These are the Emergency Tailings Area (ETA) and the S Wells. Drawings are provided which describe the work in detail.

The transformers are expected to be on site the week of October 27, and installed shortly afterward. Contractors are expected to begin work on this project November 2, 2009.

Heavy equipment is available on site at no cost to the contractor, however the contractor is required to provide a minimum of 2 days notice of requirement. It is possible that the heavy equipment will not be available Friday through Sunday, contractors are to plan work schedules accordingly.

The Studio Hotel provides accommodation in Faro, (867) 994-3133. Faro does not have a gas station however Denison does provide fuel to contractors at a cost of $1.12 per litre for either gas or diesel. Contractors are to sign for the fuel at the time of delivery.

## Inquiries

Inquiries regarding this project may be addressed to:

Erik Nyland, P.Eng.
Construction Manager
Denison Environmental Services
Faro Mine Complex
Telephone: (867) 393-4800
Cell: (867) 335-0211
Fax: (867) 393-4803
Email: enyland@denisonenvironmental.com

## Proposals

The proposals shall be received by DES no later than 4:00 PM Pacific Time on October 26, 2009.

Proposals shall be mailed, couriered or hand delivered to:

Denison Environmental Services
4109-4th Avenue
Suite 207
Whitehorse, Yukon
Y1A 1H6

Proposals in the form of a facsimile or an email will NOT be considered.

The bidder shall identify on the envelope containing the proposal, the name and address of the bidder, the name of the project and the date and time of bid closing.

Hourly rates are to include all costs associated with owning and operating said equipment and all costs associated with labour. No extra money will be paid for standby, room and board, training, safety, transportation costs, owning and operating costs, ownership costs, fuel costs, maintenance, or any other costs associated with providing the labour services or equipment services to the site. All employees must be qualified to provide the services required. All equipment must be in good operating condition and will be certified to the extent required under Yukon Law to operate on Yukon Highways.

## Worker's Compensation

Prior to commencing the work the Contractor shall provide to DES evidence of compliance with worker's compensation legislation in Yukon, including payments due under it.

## Insurance

Prior to commencement of the work the contractor shall provide, maintain and pay for automobile liability insurance with respect to all licensed vehicles owned or leased by the contractor, with limits not less than $2,000,000 per occurrence and with a property damage deductible of not more than $5,000. Proof of insurance must be provided to DES before any work is undertaken on site.

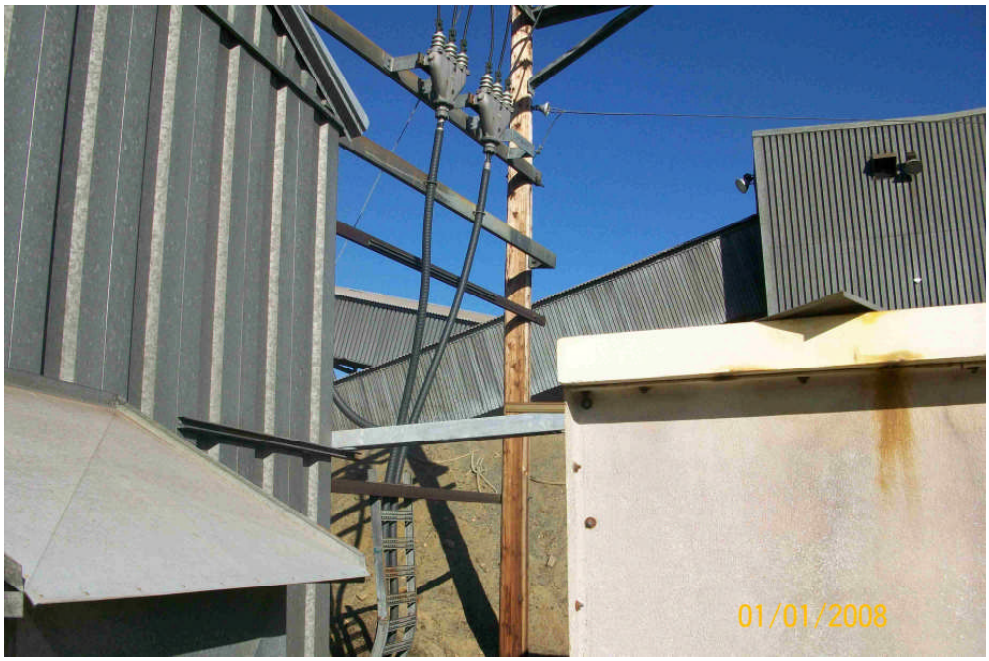
# Appendix A

Site Photos

ETA Distribution Centre to be resupplied from new pole location.


Existing ETA Fused Switch and Housing to be relocated to New Pole


ETA Pole Configuration – Transformer will be moved by Arctic Power
Drop and switch moved by Electrical Contractor




Grum line Isolation Transformer 5 kV cables to be replaced

Pot heads to be removed


Grum Line Isolation Transformer and Cable Tray


Grum Line Isolation Transformer Cable Tray


‘S’ Well Generator House and Pole

Arctic Power will install transformer bank on pole

Electrical Contractor will supply and install drop

# Appendix B

Technical Specification

**1. General**

.1 This section covers items common to all sections of the electrical trade and is intended only to supplement the requirements of the project description.

**2. Site Visit**

.1 The bidding contractors are encouraged to visit the site prior to tender closing to examine closely any local and existing conditions which may effect the performance of the work.

**3. Scope of Work Summary**

.1 Reconfigure 600 and 120/208 volt distribution in the S Well generator building as per drawing details and this specification.

.2 Supply and Install new 600 volt service drop at S well generator building service pole to supply revamped distribution as per specifications and drawing details.

.3 Relocate existing ETA pole drop and weatherproof disconnect switch to new pole at ETA site as per specifications and drawing details.

.4 Supply and Install new teck cable feeder from relocated weatherproof disconnect to the ETA distribution centre.

.5 Replace 5 kV teck feeders on secondary side of the Grum line 7.5 MVA isolation transformer.

.6 Supply 75 HID lamps as per specifications.

.7 Supply 12 HID Ballasts as per specifications.

.8 Supply 16 meter man lift for 5 day working period.

.9 Provide hourly rate for crew including labour, hand tools and truck for maintenance work in shop.

**4. Responsibility of Contractor**

.1 No consideration will be granted for failure to visit the site or for any resulting misunderstanding of work to be done. No additional charges will be considered for items which were apparent during a site visit.

.2 During the course of this construction, any existing conditions which are found which deviate from those indicated on the drawing are to be brought to the attention of the Engineer.

.3 Promptly advise the Consultant of any specified equipment, material or installation of same which appears inadequate or unsuitable, in violation of laws, ordinances, rules or regulations of authorities having jurisdiction, or of any necessary items of work omitted from

the Contract Documents.

**5. Work Schedule**

.1 Follow any specific requirements outlined in Division 1 regarding work schedule, job completion, and the timing of the work.

**6. Codes and Standards**

.1 Do complete installation in accordance with CSA C22.1 - 2009 (Canadian Electrical Code) except where specified otherwise.

.2 Comply with all CSA electrical bulletins as well as local rulings in force at the time of tender.

**7. Permits and Fees**

.1 Submit to the Electrical Inspection Department and Supply Authorities necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Pay all fees and co-ordinate all inspections required by Authorities having jurisdiction, as well as work of other trades involving electrical installation or connection.

.3 Furnish certificates of acceptance from inspection department upon completion of work.

.4 Notify engineer of changes required by the Electrical Inspection Department prior to making changes.

**8. Care, Operation and Start Up**

.1 Instruct operating personnel in the operation, care and maintenance of equipment.

**9. Materials and Equipment**

.1 Equipment and materials to be new and CSA certified.

**10. Record Drawings**

.1 Owner will provide one set of clean drawings to be used for the production of record drawings.

.2 Neatly record, as the job progresses, all work as installed. Make these drawings available to the engineer for inspection and review from time to time as the engineer sees fit.

.3 Record all cable runs and connections on the record drawings.

**11. Shop Drawings and Operating Instructions**

.1 Provide shop drawings including the following:

a. Lighting Equipment
b. Distribution Equipment
c. Teck Cables

**12. Labels**

.1 Label all equipment using lamicoid labels.

**13. Protection**

.1 Protect exposed live equipment during construction for personnel safety.

**14. Conduits**

.1 Rigid steel or EMT as determined by location or as indicated on drawings.

| | | | |
|---|---|---|---|
| **15.** | **Teck Cables** | .1 | Armoured TECK 90 Cable, Copper, 1000 Volts CSA FT4 HL. |
| | | .2 | Armoured TECK 90 Cable, Copper, 5000 Volts CSA FT4 HL, unshielded. |
| | | .3 | Conductor: Bare 7 stranded annealed copper Class B in accordance with ASTM B8 |
| | | .4 | Insulation: XLPE rated as 90°C dry and wet and -40°C in accordance with CSA Standard C22.2 No. 131 for Type RW90 -40 insulation |
| | | .5 | Inner Jacket: Black PVC as per CSA Standard C22.2 No. 0.3, 90°C to -40°C temperature rating, FT4 flame retardant, low acid gas emitting (LAG) |
| | | .6 | Outer Jacket: PVC as per CSA Standard C22.2 No. 131-M89, 90°C to -40°C temperature rating, low acid gas emitting (LAG) with corrosion and sunlight resistance |
| **16.** | **Grounding** | .1 | Install ground to code and inspection department approval and requirements. |
| **17.** | **Breakers** | .1 | Plug-in or bolt-on full width moulded case circuit breakers, quick make, quick break type, for manual and automatic operation with temperature compensation for 40 degrees Celsius. Use common trip breakers with single handle for multipole applications. |
| **18.** | **Disconnect Switches** | .1 | All fusible and non-fusible disconnect switches must be padlockable with interlocked door, quick make/quick break type. |
| **19.** | **Seismic Restraint** | .1 | Provide seismic restraint and anchorage for all electrical equipment and services in accordance with the current edition of the National Building Code of Canada, 1995 edition, Subsection 4.1.9. and table 4.1.9.E. |

----------end----------

**PART I - GENERAL**

| | | | |
|---|---|---|---|
| **1.1** | **Reference Standards** | .1 | Canadian Electrical Code CEC 22.1 - 2009. |
| **1.2** | **Payment** | .1 | Hourly labour rates will apply to work conducted in this section. |
| | | .2 | Payment will be for two man crew c/w hand tools vehicles, and man lifts. |
| **1.3** | **Scope of Work** | .1 | High bay lighting repairs. |
| | | .2 | 120/208 and 600 volt branch circuit isolation. |
| | | .3 | Circuit and switchgear megger testing. |
| | | .4 | Labelling and tagging. |
| | | .5 | Switch gear cleaning. |
| | | .6 | As built documentation. |
| | | .7 | All hourly work under the direction of the site electrician. |
| **1.4** | **Crew** | .1 | Two man crew c/w hand tools and vehicle. |
| | | .2 | Man lift |
| **1.5** | **Estimated Requirement** | .1 | Estimated requirement is 2 men for 100 hours |

**PART II - PRODUCTS**

| | | | |
|---|---|---|---|
| **2.1** | **Materials** | .1 | All new equipment as specified or as supplied by the owner on site. |
| **2.2** | **Test Equipment** | .1 | All test equipment supplied by owner. |
| **3.3** | **Vehicle** | .1 | Division 16 to supply one service truck c/w electricians' hand tools including portable power tools. |
| **3.4** | **Man Lift** | .1 | Minimum 16 meter man lift. WCB certified for overhead work on bay lighting |

**PART III - EXECUTION**

| | | | |
|---|---|---|---|
| **3.1** | **General** | .1 | All work performed under the supervision of the site electrician. |
| | | .2 | All work to WCB guidelines, regulations and according to company safety policies. |
| | | .3 | Provide protective covers on live equipment when not working on equipment. |

----------END----------

**PART I - GENERAL**

**1.1 Scope of Work**

.1 Install overhead service drops to approval of local inspection authority and the engineer.

**PART II - PRODUCTS**

**2.1 Cable**

.1 600V Rated FT-4 Teck copper armoured cables. Size as indicated.

.2 Grounding: to local authority and engineer approval.

**2.2 Service Entrance Boots**

.1 Four wire. Standard of acceptance: Thomas and Betts, “Shrink-Kon” HSB series heat shrinkable breakout boots.

.2 Size to match cables.

.3 Voltage rating to match cable voltage

**PART III - EXECUTION**

**3.1 Installation**

.1 Install new service entrance boots on all cable drops.

.2 Install cable drops to prevent moisture from entering equipment.

.3 Make grounding connections, including supplying all equipment bonding conductors.

----------END----------

**PART I - GENERAL**

**1.1 Reference Standards** .1 Complete grounding work to CSA C22.1 2009.

**1.2 Scope of Work** .1 Refer to drawings for extent of grounding in addition to code requirements.

**PART II - PRODUCTS**

**2.1 Materials** .1 Grounding equipment to CSA C22.2 No. 41 Latest Edition.

**2.2 Equipment** .1 Clamps for grounding of conductor, size as required.

.2 Ground plate or ground rod at least 10m long.

.3 System and circuit, equipment, grounding conductors, bare stranded copper, soft annealed, size as indicated.

.4 Insulated grounding conductors to Section 16122.

**2.3 Manufacturers** .1 Acceptable manufacturers: Burndy Corp., Erico Inc. Cadweld Div., Federal Pioneer Ltd., McGraw Edison Canada Ltd.

**PART III - EXECUTION**

**3.1 Installation**

**General**

.1 Install complete permanent, continuous, system and circuit, equipment, grounding systems, including electrodes, conductors, connectors, accessories, as indicated, to conform to requirements of Owner, and local authority having jurisdiction over installation.

.2 Install connectors to manufacturer's instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Make buried connections, and connections to conductive water main, electrodes, using copper welding by thermit process or by a compression process to meet 1EEE837 standards.

.5 Use mechanical connectors for grounding connections to equipment provided with lugs.

.6 Soldered joints not permitted.

.7 Install bonding wire for flexible conduit, soldlderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.

.8 Connect building metal siding to ground by welding and/or compression to steel.

| | | | |
|---|---|---|---|
| **3.2** | **Equipment Grounding** | .1 | Install grounding connection to typical equipment included in, but not necessarily limited to the following list. Service equipment, frames of motors, starters, control panels, distribution panels, outdoor lighting, water service entrance, and fuel lines. |

----------END----------

**PART I - GENERAL**

**1.1 Shop Drawings and Product Data**

.1 Submit shop drawings in accordance with Section 16010 "Shop Drawings and Operating Instructions".

**1.2 Scope of Work**

.1 Provide 75 HID lamps.

.2 Provide 12 HID Ballasts.

.3 Provide maintenance for high bay lighting system.

**PART II - PRODUCTS**

**2.1 Lamps**

.1 Standard of acceptance: 1000 W GE Multi-Vapour Quartz Metal Halide BT56.

**2.2 Ballasts**

.2 Standard of acceptance: Crouse Hinds HBL 0500051BAC 208 Volt 6.8 Amps 1000 W.

.3 All ballasts on fixtures to be rated -40EC.

**PART III - EXECUTION**

**3.1 Installation**

.1 Under the direction of the site electrician replace lamps and ballasts.

.2 Work to conducted at hourly rates. Reference Section 16100.

----------END----------

# Appendix C

Bid Sheet

Denison Environmental Services
Electrical Distribution Expansion
Secondary Connections and Shops Maintenance

Bid Sheet

| Item | Units | Rate | # | Cost |
|---|---|---|---|---|
| 2 Man Crew<br>With Vehicle | Hr | | 100 | |
| Man Lift<br>Inc Mob & Demob | Day | | 5 | |
| Isolation Transformer Repair | Lump Sum | | 1 | |
| ETA Distribution | Lump Sum | | 1 | |
| S Wells Connection | Lump Sum | | 1 | |
| **Total (No GST)** | | | | |

_____

Contractor

_____

Address

_____

Signature

_____

Date

**Arcrite Northern Ltd.**
105 Platinum Road
Whitehorse, Yukon, Canada, Y1A 5M3
Phone: 867- 668-3053 Fax: 867- 667-4301
Email: walter@klondiker.com Email: charwood@klondiker.com Email: larry@klondiker.com Email: mand n@klondiker.com

# FAX COVER SHEET

Date: Nov. 4 '09

Company Name: _____ Attn: Erik Nylund.

Fax No: 393-4803

From: ELECTRICAL – CONTRACTING Walter Trotter ~~Chad Harwood~~ Vina McManus
From: ELECTRICAL – CONTROLS Larry Burton Trevor Justason
From: COR SAFETY CO-ORDINATOR Lara Rae Trotter
From: JUNIOR ESTIMATOR Kristen Trotter
No. of pages including cover sheet: 2

price for FARO.

Thanks

Chad

Denison Environmental Services
Electrical Distribution Expansion
Secondary Connections and Shops Maintenance

Supply Bulbs | per | Bid Sheet 52 | 75 | 3,900

| Item | Units | Rate | # | Cost |
|---|---|---|---|---|
| 2 Man Crew With Vehicle | Hr | $220.00 | 100 | $22,000 |
| Man Lift Inc Mob & Demob | Day | $910 | 5 | $4,550 |
| Isolation Transformer Repair | Lump Sum | 28,747.00 | 1 | 28,747.00 |
| Supply Ballasts | per | 135.56 | 12 | 1,626.72 |
| ETA Distribution | Lump Sum | 5,000 | 1 | 5,000 |
| S Wells Connection | Lump Sum | $5,000 | 1 | $5,000 |
| **Total (No GST)** | | | | $70,823.72 |

Arcrite Northern.
Contractor

105 plantinum Rd.
Address

Signature

Nov. 2 '09
Date

Faro Mine Complex