



P.O. BOX 119  
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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYIT  
OFFICE DES EAUX DU NUNAVUT

November 20, 2012

File No.: 3BM-KUG0914

Mr. Seth Bohnet  
Advisor, Data Systems & External Relations  
Diavik Diamond Mines Inc.  
PO Box 2498, 5007-50<sup>th</sup> Avenue  
Yellowknife, NT X1A 2P8  
Email: [seth.bohnet@riotinto.com](mailto:seth.bohnet@riotinto.com)

Mr. Don LeBlanc  
Senior Administrator Officer  
Hamlet of Kugluktuk  
P.O. Box 271  
Kugluktuk, NU X0B 0E0  
[saokug@qiniq.com](mailto:saokug@qiniq.com)

**Subject: Submission of Application Documents for Kugluktuk Water Crossings**

Dear Mr. Bohnet and Mr. LeBlanc:

On September 14, 2011, the Nunavut Water Board ("NWB" or "Board") received the following application documents from Diavik Diamond Mines Inc. ("DDMI") for the construction of water crossings located in the 4 Mile Bay Area, northwest of the Hamlet of Kugluktuk (Project):

- Supplemental Technical Information Required for Water Crossings;
- Document entitled "Snowmachine & ATV Bridges, Kugluktuk Drawings, 24 ft span, 30 ft span, and Product Information", prepared by T. Livingston, Government of Nunavut Community Government Services, 2007;
- Figure – General Location of ATV crossings;
- Figure – ATV Crossings and Community;
- Photo – First ATV crossing; and
- Photo – Second ATV crossing.

On October 31, 2011 the NWB received notification that DDMI would not be acting on behalf of the Hamlet, instead the Hamlet will be submitting the application for amendment themselves.

By copy of this letter to the Hamlet of Kugluktuk, the NWB is advising that, to complete the application, the NWB requires the following additional information:

- Completed *Application Form for a New Water Licence or Application Form for Water Licence Amendment*;
- Confirmation in writing from the Nunavut Planning Commission (NPC) confirming that NPC's requirements regarding land use plan conformity have been addressed;
- Confirmation in writing from the Nunavut Impact Review Board (NIRB) confirming that NIRB's requirements regarding development impact assessment have been addressed;
- Executive summary in English;

- Executive summary in Inuktitut; and
- Application fee of \$30.

The Board will proceed with processing the application upon receipt and assessment of the items listed above.

In addition, the NWB notes that the Supplemental Technical Information indicates that in August, 2010 the applicant received approval from the Department of Fisheries and Oceans (DFO) to proceed with the proposed Project. The applicant is reminded that an approval from another regulatory authority does not absolve the applicant from obtaining an approval from the NWB.

Should you have any questions please do not hesitate to contact the NWB office.

Sincerely,



Phyllis Beaulieu  
Manager of Licensing

PB/kt



## Phyllis Beaulieu

---

**From:** Karlette Tunaley <ktunaley@tlaconsultants.ca>  
**Sent:** Wednesday, July 18, 2012 4:47 PM  
**To:** dts@nunavutwaterboard.org  
**Cc:** licensing@nunavutwaterboard.org  
**Subject:** Hamlet of Kugluktuk wate crossings - Application Deficient  
**Attachments:** 120718-Ltr-Application Deficient - kt.doc

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hello Dave

Please find attached for your review a draft letter addressing the application documents received last September for construction of a couple of ATV crossings located northwest of the Hamlet of Kugluktuk in the 4 Mile Bay Area. Unfortunately it is not clear to me from the documents on the ftp who submitted the documents, who the applicant is, or whether the application is for a new licence or an amendment to the Hamlet of Kugluktuk Licence. Please let me know if you have any questions.

Kind Regards,  
Karlette

## Phyllis Beaulieu

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**From:** Phyllis Beaulieu  
**Sent:** Monday, January 09, 2012 10:32 AM  
**To:** Hamlet of Kugluktuk  
**Cc:** Erik Skiby (eskiby@nunavutwaterboard.org)  
**Subject:** 3BM-KUG0914 Request for Amendment ATV Bridges

**Importance:** High

Good morning Don – please advise if the Hamlet of Kugluktuk intends to go forward with their application for fabrication and installation of two ATV bridges just outside of the Hamlet. Please see email sent on December 2, 2011 requesting documents.

Regards,

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0  
Phone: (867) 360-6338, Ext. 26  
Fax: (867) 360-6369  
Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

**From:** Phyllis Beaulieu  
**To:** Hamlet of Kugluktuk  
**Cc:** "Bohnet, Seth (DDMI)"  
**Subject:** 3BM-KUG0914 Amendment to Hamlets Water Licence for ATV Bridges  
**Date:** Friday, December 02, 2011 11:02:00 AM  
**Attachments:** 100401-Application for Water Licence Amendment-OEDE-edited110502.doc

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Good morning Don – I hope all is well with you. Our office received notification in September, from Seth Bohnet, regarding the fabrication and installation of two ATV bridges across a couple of streams just outside the hamlet, in the Four-Mile-Bay area. Is this project still going forward? If so, we require the submission of an amendment application form, copy attached for your use. Also required would be the \$30.00 administration fee, payable by cheque.

If the Hamlet has determined that this project will not be going forward, please provide a letter requesting withdrawal.

Regards,

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
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Gjoa Haven, NU X0B 1J0  
Phone: (867) 360-6338, Ext. 26  
Fax: (867) 360-6369  
Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

**Phyllis Beaulieu**

*Transmittal*  
*3BM-KUG0914*

**From:** Bohnet, Seth (DDMI) [Seth.Bohnet@riotinto.com]  
**Sent:** Monday, October 31, 2011 8:27 AM  
**To:** Phyllis Beaulieu; Hamlet of Kugluktuk  
**Subject:** RE: 3BM-KUG0914 Amendment for ATV Bridges

Thanks Phyllis,

Only one thing to note,

I will not be acting on behalf of the Hamlet, instead the hamlet will be submitting the application for amendment for themselves. I have forwarded the amendment application to the hamlet for their use and will follow-up to see where it is currently at.

Thanks for your help.

Seth

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**From:** Phyllis Beaulieu [<mailto:licensing@nunavutwaterboard.org>]  
**Sent:** Thursday, October 27, 2011 3:23 PM  
**To:** Hamlet of Kugluktuk; Bohnet, Seth (DDMI)  
**Subject:** 3BM-KUG0914 Amendment for ATV Bridges

Good day, the Nunavut Water Board has begun the process for an amendment to the Hamlet's current water licence. In order to complete the application the following is required:

1. Amendment application form (previously provided)
2. Authorization letter from the Hamlet for Seth Bohnet to act on their behalf.
3. Administration fee \$30.00 (cheque made payable to Receiver General)

Regards,

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0  
Phone: (867) 360-6338, Ext. 26  
Fax: (867) 360-6369  
Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

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**From:** Phyllis Beaulieu  
**To:** Hamlet of Kugluktuk; "Bohnet, Seth (DDMI)"  
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**Date:** Thursday, October 27, 2011 3:23:00 PM

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2. Authorization letter from the Hamlet for Seth Bohnet to act on their behalf.
3. Administration fee \$30.00 (cheque made payable to Receiver General)

Regards,

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0  
Phone: (867) 360-6338, Ext. 26  
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Email: [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

**Phyllis Beaulieu**

*3BM-KUG0914 Transmitted*

**From:** Karen Kharatyan [k.kharatyan@nunavutwaterboard.org]  
**Sent:** Tuesday, September 20, 2011 11:19 AM  
**To:** Phyllis Beaulieu  
**Subject:** ATV Bridges outside of Kugluktuk

Hi Phyllis,

With respect to the inquiry about ATV Bridges across a couple small streams outside Kugluktuk, my understanding is that Diavik Diamond Mine Inc. (DDMI) intends to install those bridges on behalf of Hamlet of Kugluktuk.

In the past we issued new licenses to Hamlets as well for different water-crossing or trails separately from municipal licenses. So the issuance of a new licence with the name of Hamlet or DDMI is always an option.

An amendment to the existing licence is possible as well. If they apply for an amendment a confirmation letter from Hamlet stating that DDMI is acting on behalf of the Hamlet will be necessary to be included with the application. The application should also be completed within the Hamlet's name.

However, if the project is DDMI's project, so DDMI will be responsible for the undertaking, a new licence will be required for the activity.

Regards,

**Karén Kharatyan, Ph.D**  
Technical Advisor  
Nunavut Water Board

(Ph.) 867-360-6338 ext. 30  
(Fx.) 867-360-6369  
[k.kharatyan@nunavutwaterboard.org](mailto:k.kharatyan@nunavutwaterboard.org)

*Log Sept 14/11  
Create Blue file  
Amendment  
3BM-KUG0914*



Phyllis Beaulieu

3BM-K460914 Transmittal

**From:** Phyllis Beaulieu  
**Sent:** Tuesday, October 25, 2011 11:38 AM  
**To:** 'Bohnet, Seth (DDMI)'  
**Subject:** RE: Water License Questions

Thanks Seth – will await the application before moving forward.  
Regards,

---

**From:** Bohnet, Seth (DDMI) [mailto:Seth.Bohnet@riotinto.com]  
**Sent:** Wednesday, October 12, 2011 3:52 PM  
**To:** Phyllis Beaulieu  
**Subject:** RE: Water License Questions

Hey Phyllis,

I have discussed with the hamlet and we have agreed to proceed with an amendment request, which the hamlet will be submitting. I will assist them in generating the application however they will drive the process. I will keep you posted as we prepare to submit the application.

Thanks for your assistance.

---

**From:** Phyllis Beaulieu [mailto:licensing@nunavutwaterboard.org]  
**Sent:** Tuesday, October 11, 2011 5:02 PM  
**To:** Bohnet, Seth (DDMI)  
**Subject:** RE: Water License Questions

Hi Seth, just checking to see whether or not you've decided to amend the existing municipal licence or go with a standalone. I'm still holding the application without beginning the process until you have decided what your best option is.

Regards,

---

**From:** Bohnet, Seth (DDMI) [mailto:Seth.Bohnet@riotinto.com]  
**Sent:** Wednesday, September 28, 2011 10:30 AM  
**To:** Phyllis Beaulieu  
**Subject:** RE: Water License Questions

Thanks Phyllis,

I will discuss with the Hamlet to determine what will work best moving forward.

Appreciate the assistance

---

**From:** Phyllis Beaulieu [mailto:licensing@nunavutwaterboard.org]  
**Sent:** Thursday, September 22, 2011 10:41 AM  
**To:** Bohnet, Seth (DDMI)  
**Subject:** RE: Water License Questions

Good morning Seth, the information you provided has been reviewed by our technical staff. It has been suggested that you may want to request an amendment to the Municipal Water Licence to include this activity. In order to do that you will be required to file an amendment application (attached) and will need an authorization letter from the Hamlet in

order to act on their behalf. The Licence will then be issued to the Hamlet. You can also apply for a new licence if it's to be issued in the name of Diavik Diamond Mine Inc. (copy of new application also attached)

Regards,

**From:** Bohnet, Seth (DDMI) [mailto:Seth.Bohnet@riotinto.com]

**Sent:** Wednesday, September 14, 2011 11:21 AM

**To:** Phyllis Beaulieu

**Subject:** RE: Water License Questions

Hi Phyllis,

Attached is the Technical Questionnaire and some supporting documentation, for your review. If you can provide guidance as to the how best to proceed with the application (new or amended), I would greatly appreciate it.

Let me know if you require additional info

Cheers

---

**From:** Phyllis Beaulieu [mailto:licensing@nunavutwaterboard.org]

**Sent:** Thursday, September 08, 2011 2:20 PM

**To:** Bohnet, Seth (DDMI)

**Subject:** RE: Water License Questions

Hi Seth, once we review your submissions we can make an internal decision on whether or not to amend the current licence or keep it as a separate activity. That can be determined within a very short time. Perhaps you can forward all the documents, minus the application, to save you the trouble of possibly filling out the application twice. Hope this helps.

Regards,

---

**From:** Bohnet, Seth (DDMI) [mailto:Seth.Bohnet@riotinto.com]

**Sent:** Tuesday, September 06, 2011 4:45 PM

**To:** Phyllis Beaulieu

**Subject:** RE: Water License Questions

Thanks Phyllis,

I am hoping to have the license issued to the Hamlet however not certain as of yet. I am mtg with Don again later this week to discuss. Would it simplify the process to request an amendment?

---

**From:** Phyllis Beaulieu [mailto:licensing@nunavutwaterboard.org]

**Sent:** Tuesday, September 06, 2011 4:25 PM

**To:** Bohnet, Seth (DDMI)

**Subject:** RE: Water License Questions

Good afternoon Seth – as per our discussion I have attached an application form and other info required for submission. There will also be a requirement to submit a Spill Contingency Plan. Who will the licence be issued to? Will it be included in the Hamlet's current licence? If that is the case then an amendment application would be required instead of a "new" one.

Regards,

**From:** Bohnet, Seth (DDMI) [mailto:Seth.Bohnet@riotinto.com]

**Sent:** Tuesday, September 06, 2011 9:42 AM

**To:** licensing@nunavutwaterboard.org  
**Subject:** Water License Questions

Good morning Phyllis,

I was directed your way by Don LeBlanc in Kugluktuk as we have a few questions regarding a project we are planning. We are looking to fabricate and install two ATV bridges across a couple small streams just outside of Kugluktuk in the Four-Mile-Bay area (in an effort to reduce in-stream damage associated with the current crossing points) and I am wondering what (if any) licenses would be required. I would appreciate the opportunity to discuss with you at your earliest convenience, is there any chance I could give you a call later this week, or if there is someone else I should be contacting can you point me in the right direction?

Please advise.

Thanks in advance

Seth Bohnet

Advisor, Data Systems & External Relations

Diavik Diamond Mines Inc.

PO Box 2498, 5007-50<sup>th</sup> Avenue, Yellowknife, NT X1A 2P8 Canada

T: 867 669 6553 F: 866-769-5940

seth.bohnet@riotinto.com <http://www.diavik.ca>

Diavik Diamond Mines Inc. PO Box 2498, 5007-50th Avenue, Yellowknife, NT X1A 2P8, Canada

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Ida Porter

---

**From:** Bohnet, Seth (DDMI) [Seth.Bohnet@riotinto.com]  
**Sent:** Wednesday, September 14, 2011 11:21 AM  
**To:** Phyllis Beaulieu  
**Subject:** RE: Water License Questions  
**Attachments:** 4-Mile Bay ATV Crossings.pdf; ATV First Crossing Photo (Medium).JPG; ATV Second Crossing Photo (Medium).JPG; ATV Crossings General.jpg; Kugluktuk Bridge technical Questionnaire.doc; Kugluktuk ATV & Snowmobile Bridges Specs & Drawings-R.pdf

Hi Phyllis,

Attached is the Technical Questionnaire and some supporting documentation, for your review. If you can provide guidance as to the how best to proceed with the application (new or amended), I would greatly appreciate it.

Let me know if you require additional info

Cheers

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**Sent:** Thursday, September 08, 2011 2:20 PM  
**To:** Bohnet, Seth (DDMI)  
**Subject:** RE: Water License Questions

Nunavut Water  
Board

SEP 14 2011

Public Registry

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**To:** [licensing@nunavutwaterboard.org](mailto:licensing@nunavutwaterboard.org)

**Subject:** Water License Questions

Good morning Phyllis,

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Please advise.

Thanks in advance

Seth Bohnet

Advisor, Data Systems & External Relations

Diavik Diamond Mines Inc.

PO Box 2498, 5007-50<sup>th</sup> Avenue, Yellowknife, NT X1A 2P8 Canada

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Diavik Diamond Mines Inc. PO Box 2498, 5007-50th Avenue, Yellowknife, NT X1A 2P8, Canada

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TEL: (867) 360-6338  
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## NUNAVUT WATER BOARD NUNAVUT IMALIRIYIN KATIMAYINGI

### Supplemental Technical Information Required for Water Crossings (linear/bridge/culverts)

1. Waterbody name (English and Inuktitut) and location (Lat & Long)
  - a. N/A
2. Site photo, site map or air photo detailing location
  - a. See Attached Satellite Photos (4-Mile Bay ATV Crossings & ATV Crossings General)
3. Other Agencies contacted to date
  - a. Hamlet of Kugluktuk, SAO/Mayor and Council (Ongoing)
  - b. DFO (Ongoing)
    - i. Site visit (July 25/26 2010)
    - ii. DFO Approval of Project for partial fulfillment of Diavik's fish habitat compensation obligations as required under Fisheries Authorization SC98001. (2010.08.11)
  - c. INAC (2011.06.22) –A/Land Specialist, Land Administration (Nunavut)
    - i. Crossing locations assessed, determined to be within the Block Land Transfer for the Community of Kugluktuk
    - ii. Clear Span Bridges (not anchored into stream bed) – No authorization required from INAC
  - d. Government of Nunavut, Community & Government Services, Regional Municipal Engineer (2011.06.13)
    - i. Clear Span Bridge Design,
  - e. Government of Nunavut, Community & Government Services, Regional Director (2011.06.14)
    - i. Bridge Design Approval
    - ii. Permission to proceed, release of design drawings
4. Need for the project and alternatives considered
  - a. In 2004, the Department of Fisheries and Oceans (DFO) (and Terriplan Consultants) organized meetings with communities across the Northwest Territories, and Kugluktuk, Nunavut, regarding opportunities for fish habitat enhancement projects. The intent of which was to assemble a database of potential projects for diamond mines to undertake towards meeting obligations of "No Net Loss" to fish habitat, as required under Environmental Agreements.
  - b. At that time, two all terrain vehicle (ATV) stream crossings in the 4 Mile Bay area Northwest of the community of Kugluktuk, were identified by the community of Kugluktuk as potential candidates for enhancement
  - c. In July 2010, DDMI and DFO visited the two stream crossings to determine their suitability as a fish habitat compensation project. Having visited the location and through additional communication with community representatives, we (DDMI) believe a project to fabricate and strategically place two (2) ATV bridges across the 4 Mile Bay streams would reduce the ATV activity within the streams, as well as minimize further disturbance to the fish populations.
  - d. In August 2010, DDMI received DFO approval to move forward with the project.
1. General condition of the site (s)
  - a. See attached Pictures Attached (ATV First Crossing, and ATV Second Crossing)
    - i. Slope of banks
    - ii. Description of substrate
      1. Sand
    - iii. Vegetation (on banks, in-stream, to be removed)
      1. N/A
    - iv. Expected flow rates during time of construction
      1. Minimal
    - v. Channel meander pattern
      1. Defined Channel @ Crossing Points
2. Existing Habitat
  - i. Fish Community (species/common names) at and near the site
    1. Locals have identified the area as potential migration route for Arctic Char
  - ii. Use of impacted area as spawning, nursery, rearing, food supply or migration route
    1. Potential Migration Route
  - iii. Presence of sensitive habitat
    1. N/A
  - iv. Assessment of impact to fish and fish habitat

1. As identified by DFO and the Local Community, Installation of bridges would reduce damage currently incurred through use of crossing locations by ATV traffic

### 3. Construction Details

- i. In water work timing restriction for fishery
  1. N/A
- ii. Proposed start date and completion date
  1. C
- iii. Type of crossing,
  1. Clear Span Bridges
- iv. Method of installation
  1. TBD – Upon Awarding of Contract
- v. Dimensions of pipe or structure
  1. See Attached Design Drawings
- vi. Machinery to be used
  1. TBD – Upon Awarding of Contract
- vii. Construction sequence (timing restriction may need to be taken into account)
  1. Bridges fabricated in Community of Kugluktuk
  2. Bridges transported to crossing locations (most likely in spring over ice)
  3. Bridges installed (following spring melt)
- viii. Sedimentation and erosion control measures
  1. N/A
- ix. Monitoring during construction
  1. Pre-installation Inspection
  2. Fabrication and Installation Documented by Contractor
  3. Post Installation Inspection
- x. Other mitigation measures
  1. N/A
- xi. Assessment of impact to fish and fish habitat
  1. N/A
- xii. Bank stabilization (size range of material)
  1. N/A
- xiii. Cumulative impacts to area
  1. Reduction in Disturbance
- xiv. Contingency plan
  1. TBD – Upon Awarding of Contract
- xv. Revegetation proposed
  1. None
- xvi. Proposed post-construction monitoring (photos taken of the site before construction, during construction and after construction; photographs should be taken from the same reference point for easy comparison)

### 4. Bridge

- a. See Attached Design Drawings (\*Locations have changed as per DFO directive)
  - i. Bridge dimensions and type
  - ii. Any structures (abutments, pilings, piers) that will be placed in the water, on a temporary or permanent basis
  - iii. Anticipated changes to the existing channel/shoreline morphology as a result of the proposed works
  - iv. Activities or structures that may cause a temporary or permanent barrier to movement of fish or flow of water
  - v. Cofferdams, dewatering, temporary watercourse diversions, excavation and temporary crossings
  - vi. Total area of impact (m<sup>2</sup>)
  - vii. Stabilization method and materials used at bridge abutments(include details of material size range)

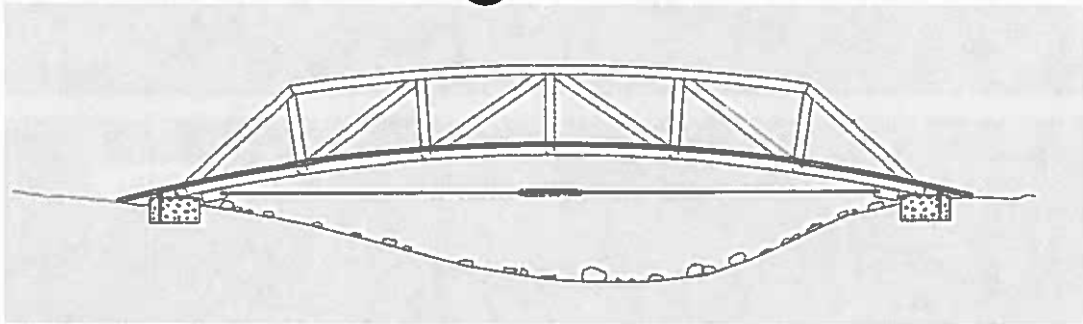
### 5. Culvert Installation

- a. N/A
  - i. Culvert dimensions (height and width or diameter, length)
  - ii. Culvert type/material
  - iii. Impact to fisheries ability to migrate through the culvert
  - iv. Need to realign the channel?
  - v. Open bottom or natural substrate inside?
  - vi. Slope of culvert
  - vii. Installation of baffles, rock weirs or other structures



# Snowmachine & ATV Bridges

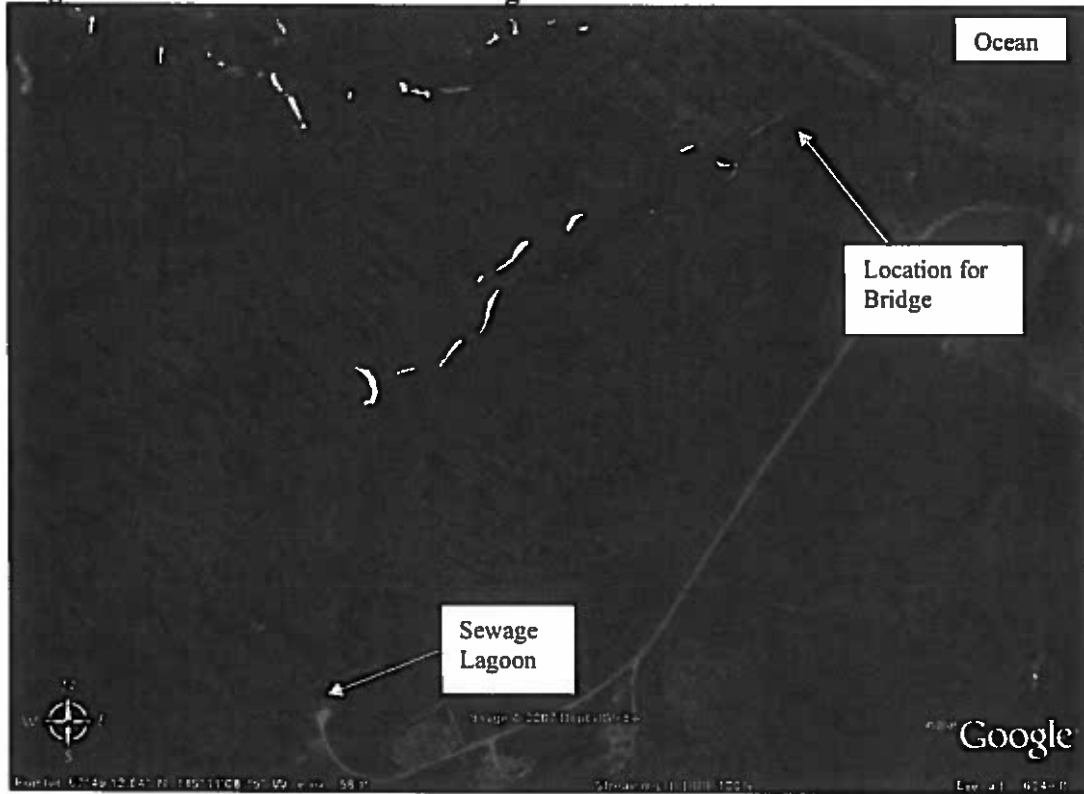
## Kugluktuk



## Drawings 24 ft span 30 ft span & Product Information

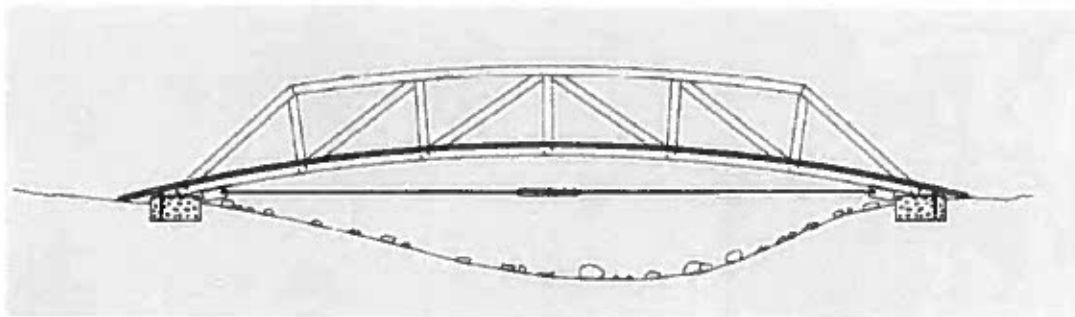
Thomas G. Livingston, P.Eng.    September 3, 2007  
Community and Government Services, Government of Nunavut

## Kugluktuk Snowmachine & ATV Bridge



# Kugluktuk

## Snowmachine & ATV Bridges

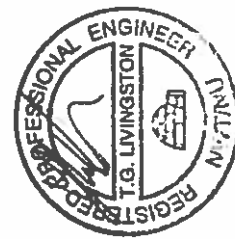


Drawings: 24 ft span



Thomas G. Livingston, P.Eng. September 3, 2007  
Community and Government Services, Government of Nunavut

Location: 67° 49.65' N, 115° 10.80' W



SEPT. 3, 2007

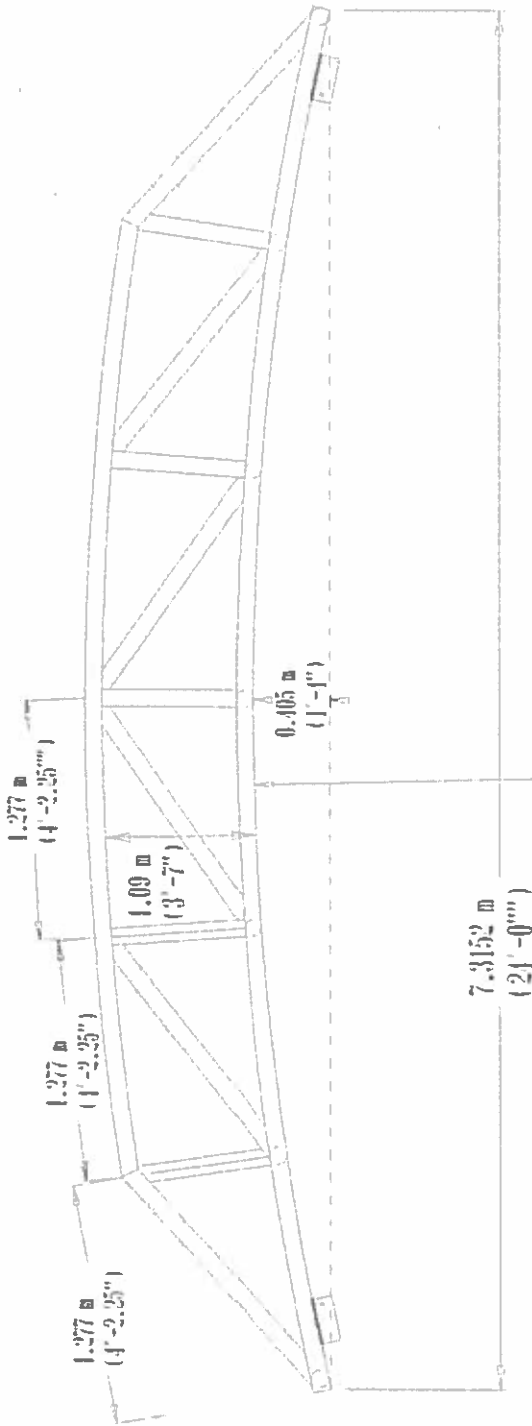
Do not scale drawing

ATV & Snowmobile Bridge, Kuglukuk, VI	Date: July 3, 2007
Material: 1.5" dia Schedule 40 Pipe	Revised: Aug. 30, 07
Maximum Allowable Load: 6,000 Lb	Span: 24 feet

Side Elevation

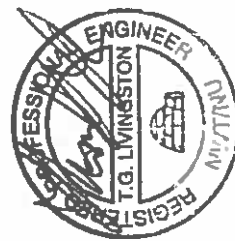
Thomas G. Livingston, P.Eng.

Drawg No. 1



Do not scale drawing

ATV & Stormobile Bridge, Kugluktuk, NU	Date: July 3, 2007
Material: 4.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 24 feet
Side Drawing Dimensions	
Thomas G. Livingston, P.Eng.	Drawg No. 2



SIDE VIEW



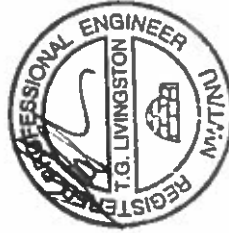
7.3152 m  
(24'-0")

TOP VIEW



1.676 m  
(5'-6")

Note: Place sign at either side of bridge:  
 "Maximum Allowable Load:  
 6,000 lbs = 2,700 kg  
 One vehicle at a time."



SEPT-3, 2007

Do not scale drawing

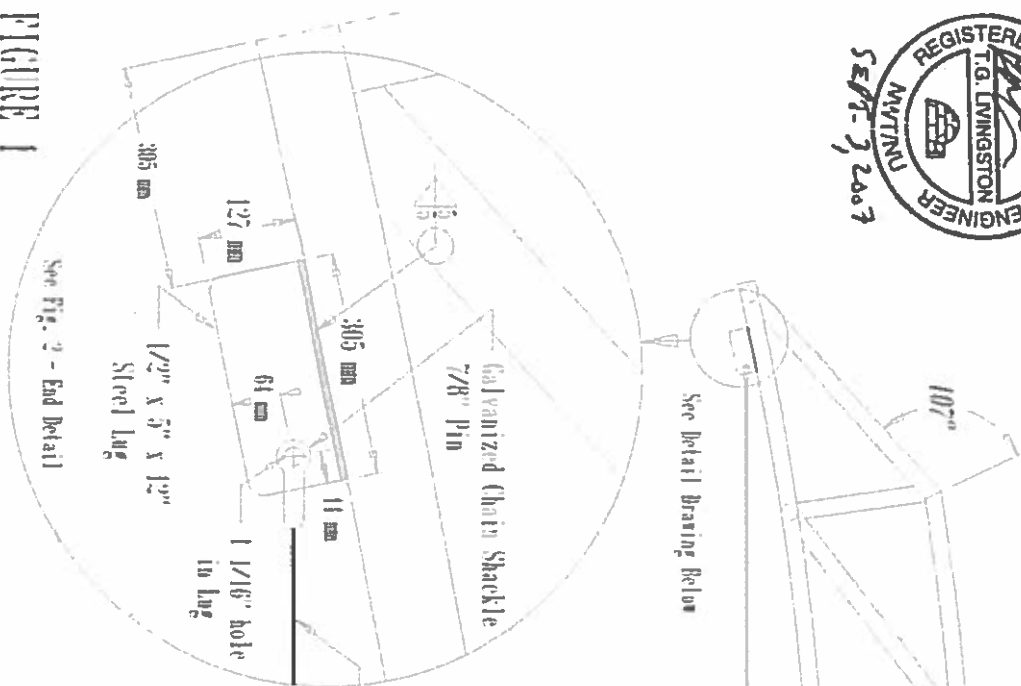
ATV & Snowmobile Bridge, Kuglukuk, NU Date: July 3, 2007  
 Material: 1.5" dia Schedule 40 Pipe Revises: Aug. 30, '07  
 Maximum Allowable Load: 6,000 lb Span: 21 feet

Side and Top Views

Thomas G. Livingston, P.Eng.

Draw No. 3

FIGURE 1



Drill 3/8\" holes in the underside of all pipes  
with closed ends for condensation drainage

5/8\" galvanized  
wire rope 6X19  
1WR, EIPS  
- 4 rope clips +  
limbale

Turbuckle (see  
Specifications)

5/8\" gals. steel cable  
6X19, 1WR, EIPS  
1 cable on each stringer

1.5\" O.D.  
Schedule 40 Pipe

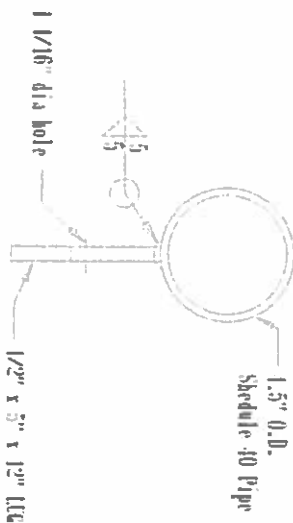


FIGURE 2

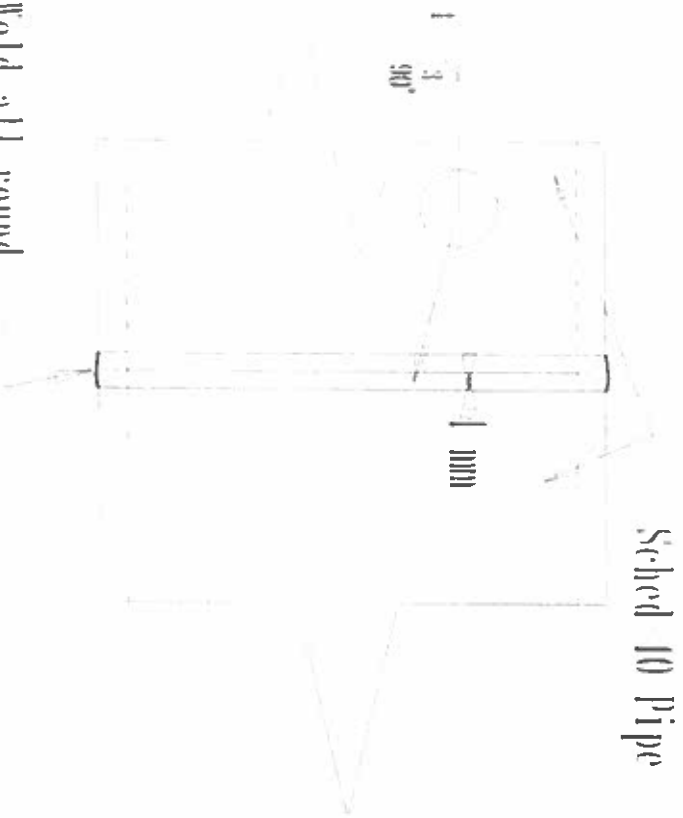
Do not scale drawing

ATV & Snowmobile Bridge, Kugluktuk, NU		Date: July 3, 2007
Material: 1.5\" dia Schedule 40 Pipe		Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb		Span: 24 feet
Side View Details		
Thomas G. Livingston, P.Eng.		Drawg No. 4

FIG. 3 Welding details: one pipe to another



FIG. 1 Butt Welds



**Welding:**

Fig. 3 - Welding pipes at an angle to each other:

Chamfer Pipe "X" 45 degrees

Chamfer depth: 1 mm

Root opening: 3 mm

Grind clean surface of Pipe "Y"

Fig. 1 - Welding pipes end-to-end:

Chamfer each pipe 45 degrees

Chamfer depth: 1 mm

Root opening: 3 mm



Weld all round  
1 mm groove weld  
E180NX (E70NX)

Be not scale drawing

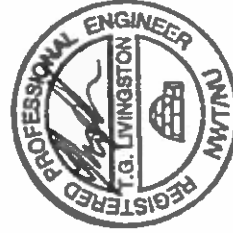
ATV & Smartphone Bridge, Kogalukod, W	Date: July 3, 2007
Material: 1.5" dia Schedule 10 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 24 feet
Welding details	
Thomas G. Livingston, P.Eng.	Page No. 3

6.872 m  
(22'-6.5")

0.75 m

Crushed Stone

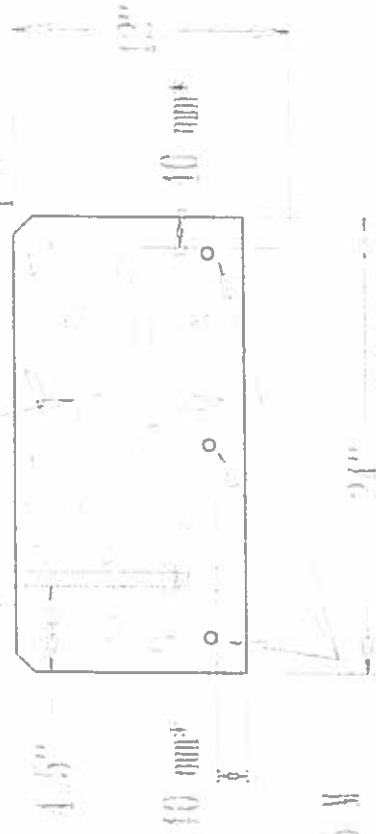
Do not scale drawing



ATV & Snowmobile Bridge, Kugluktuk, NT	Date: July 3, 2007
Material: 4.5" dia Schedule 10 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 Lb	Span: 21 feet
Concrete Pad Dimensions	
Thomas G. Livingston, P.Eng.	
Draw No. 6	

1.  $\frac{1}{2}$

三



# Journal

\* Note: 10 mm cover at ends also

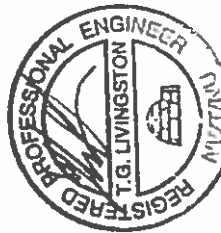
# RESULTS

- Wire Rope 60 ft  
Turnbuckles 2  
Wire Rope Clips 12  
Thimbles 8  
Chain Shackles 1  
Shoulder Nut Eye-bolts 4  
Castrols 12  
Re-bar 15 # 40 ft  
3/8" 6.5" galvanized carriage bolts  
3 1/2" various lengths  
1/4" exterior grade piano wire

100

See accompanying Product Data Sheet(s).

- 4 5" Schedule 40 pipe, shop-primed, field painted  
Wire Rope 6x36, 5/8" diameter Wire Rope Industries  
Turnbuckles Jaw & Jaw 1" x 12", #TBL1400-2 Cleveland City Forge  
Wire Rope Clips 5/8" = 2095-20, Four per end Wesco Industries  
Thimbles galv heavy duty, 5/8" = 76HD-G20 Wesco Industries  
Chain Shackles 7/8" = 51LSA-G28W Wesco Industries  
Shoulder Nut Eyebolts 1x9, # 28EHL-15 Wesco Industries  
Carriage bolts (3/8" x 6 5/8"), nuts, lock washers Portland Bolt & Mfg Co  
Concrete 2000 psi  
Reinforcing bar 15M (5/8")  
1/2" steel plate flags for wire rope

[illegible]

**Do not scale draining**

TT & Snowmobile Bridge, Koochikuk, VI Date: July 3, 2007

Material: 1.5" dia Schedule 10 Pipe

Maximum Allowable Load: 6,000 Lb  
Span: 21 feet

Concrete Pat Detail &amp; General Specifications

Thomas C. Livingston, Plt. Atty.

2x4 planking,  
3/4" ply deck

SIDE VIEW

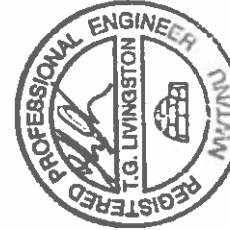
TOP VIEW

7 2x4s

9 2x4s

End planks continuous with butt joints  
2x4x bolted to cross-rails with  
3/8" x 6.5" galvanized carriage bolts.  
Lock washers and nuts.

Do not scale drawing

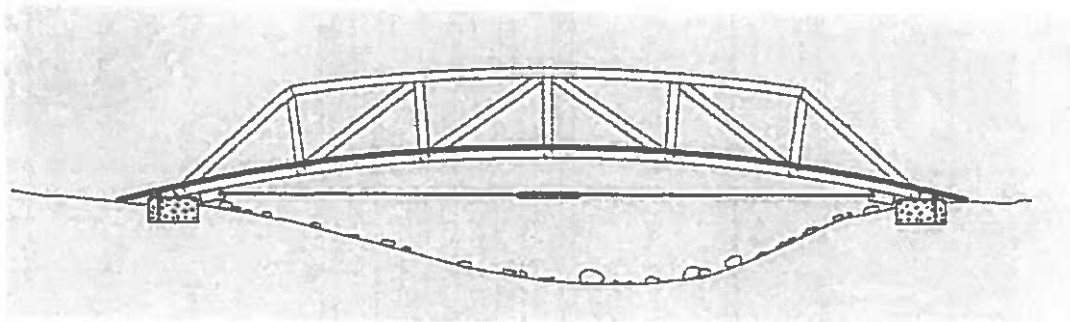


52873, 2007

ATV & Snowmobile Bridge, Anglutuk, VI	Date: July 3, 2007
Material: 4.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 21 feet
Planking: Side & Top Views	
Thomas G. Livingston, P.Eng.	
Drawg No. 8	

# Kugluktuk

## Snowmachine & ATV Bridges

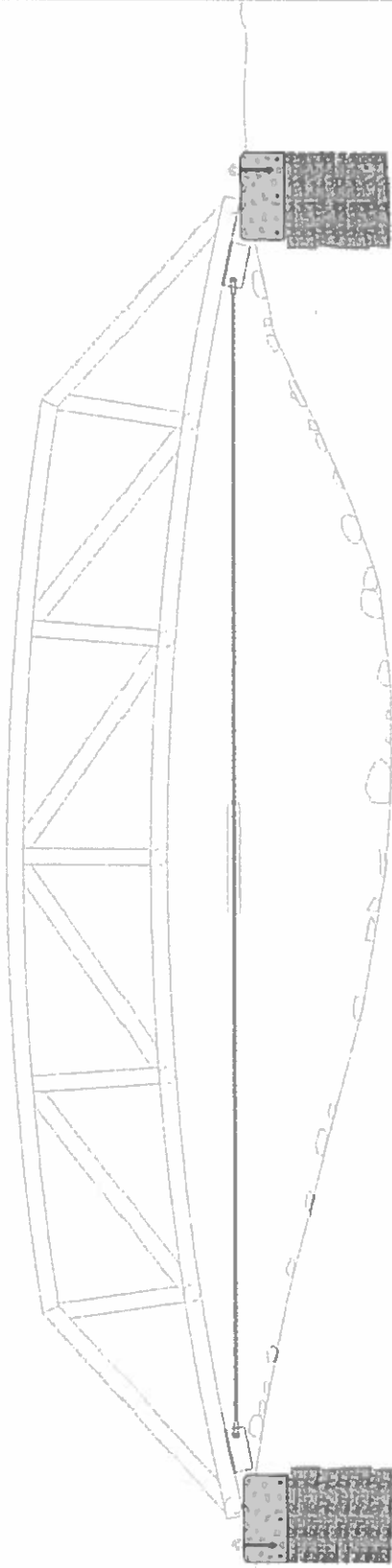


Drawings: 30 ft span



Thomas G. Livingston, P.Eng. September 3, 2007  
Community and Government Services, Government of Nunavut

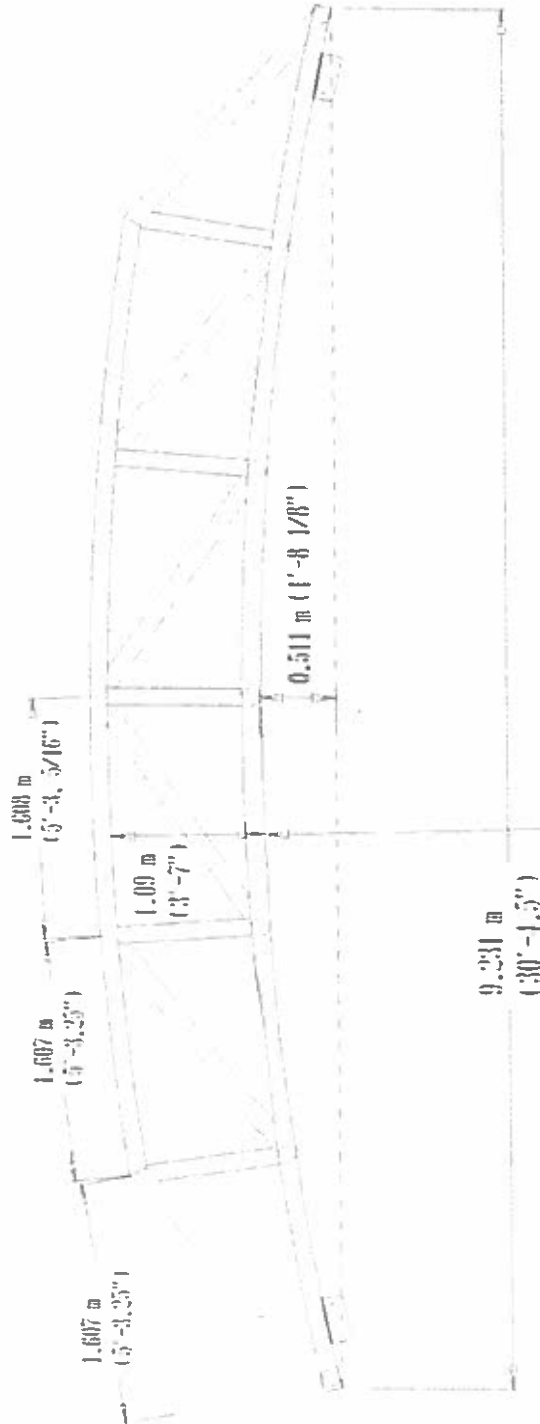
Location: 67° 19.51' N, 115° 10.12' W



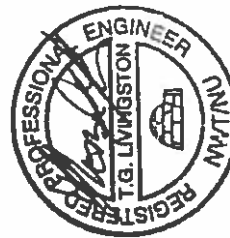
SEP 17 - 3, 2007

Do not scale drawing

ATV & Suemobile Bridge, Angaklut, AK	Date: July 3, 2007
Material: 4.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 Lb	Span: 30 feet
Side Elevation	
Thomas G. Livingston, P.Eng.	Drawg No. 1



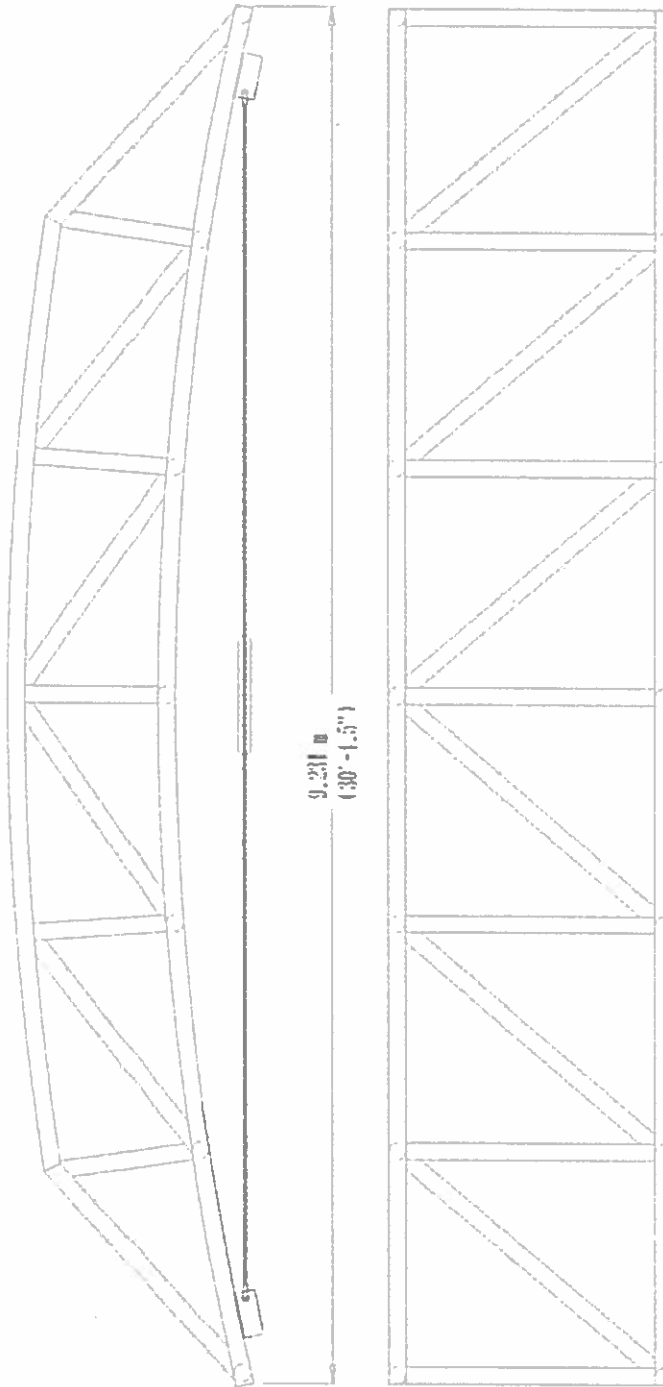
Radius = 21.096 m  
(69'-2.5")



Sept. 3, 2007

Do not scale drawing

ATV & Snowmobile Bridge, Anglukuk, AK	Date: July 3, 2007
Material: 1.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 30 feet
Side Drawing Dimensions	
Thomas G. Livingston, P.Eng.	
Draw No. 2	



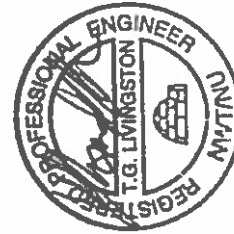
SIDE VIEW

TOP VIEW

1.676 m  
(5'-6")

9.231 m  
(30'-1.5")

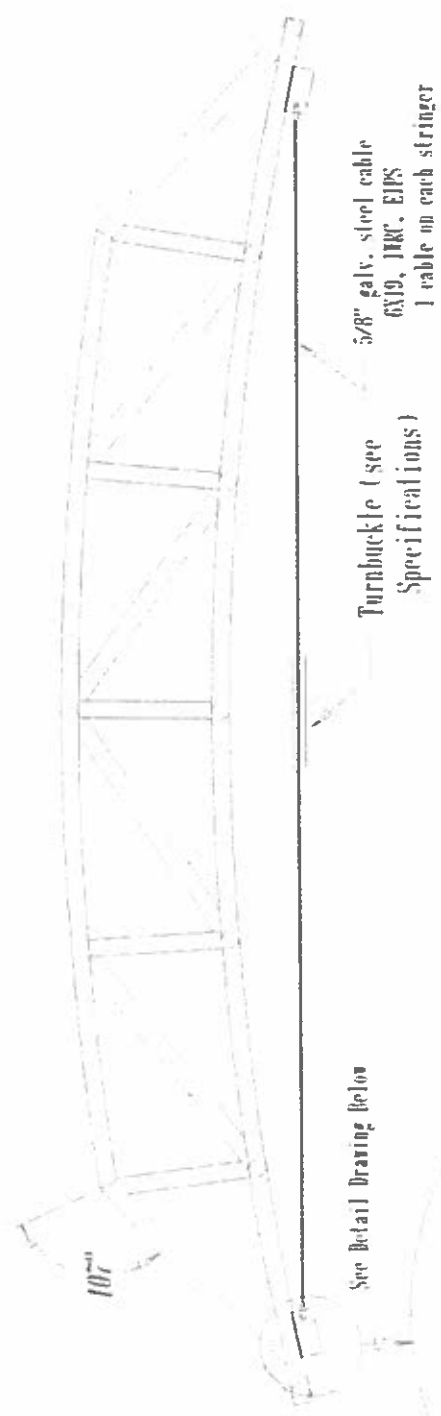
Note: Place sign at either side of bridge:  
 "Maximum Allowable Load:  
 6,000 lbs = 2,700 kg  
 One vehicle at a time."



Do not scale drawing

ATV & Snowmobile Bridge, Kuzluktuk, NT	Date: July 3, 2007
Material: 4.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 30 feet
Side and Top Views	
Thomas G. Livingston, P.Eng.	
Draw No. 3	

PROFESSIONAL ENGINEER  
 T.G. LIVINGSTON  
 REGISTERED  
 MECHANICAL ENGINEER  
 SEPT. 3, 2007



See Detail Drawing Below

Turnbuckle (see Specifications)

5/8" galv. steel cable  
6X19, IIRC, EIPS  
1 cable on each stringer

1.5" O.D.  
Schedule 40 Pipe

Galvanized Chain Shackle  
7/8" Pin

5/8" Galvanized  
wire rope 6X19  
IIRC, EIPS  
- 1 rope clips +  
thimble



See Fig. 2 - End Detail

Drill 3/8" holes in the underside of all pipes  
with closed ends for condensation drainage

FIGURE 1

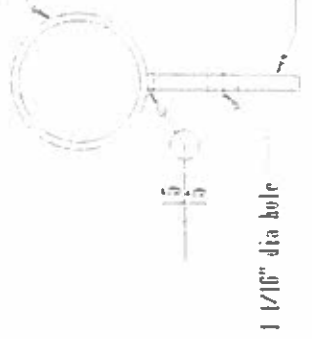
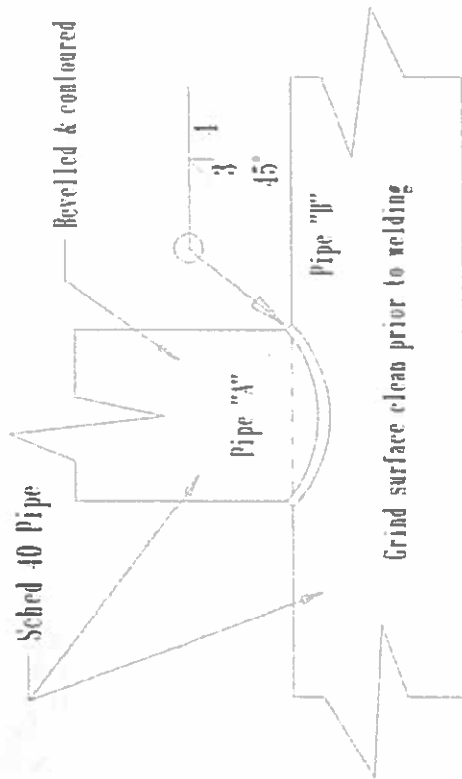


FIGURE 2

Do not scale drawing

ATV & Snowmobile Bridge, Kuglukuk, NU	Date: July 3, 2007
Material: 1.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 380 feet
Side View Details	
Thomas G. Livingston, P.Eng.	Drawg No. 4

FIG. 3 Welding details: one pipe  $\perp$  to another



Welding:

Fig. 3 - Welding pipes at an angle to each other:

Chamfer Pipe "A" 45 degrees

Chamfer depth: 4 mm

Root opening: 3 mm

Grind clean surface of Pipe "B"

Fig. 4 - Welding pipes end-to-end:

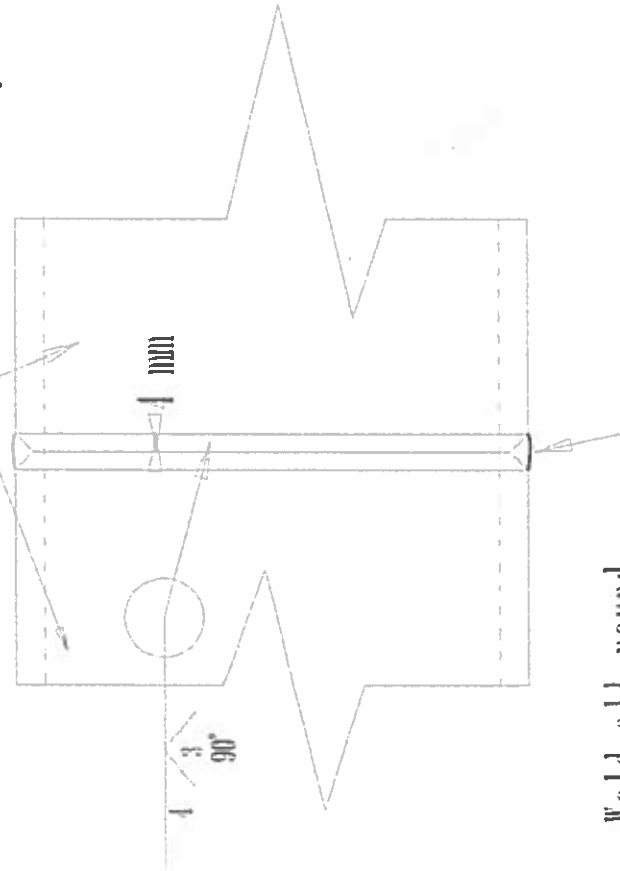
Chamfer each pipe 15 degrees

Chamfer depth: 4 mm

Root opening: 3 mm

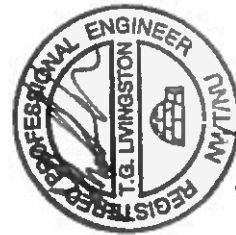
FIG. 4 Butt Welds

Sched 40 Pipe



Do not scale drawing

ATV & Soomobile Bridge, Augluktuk, NU	Date: July 3, 2007
Material: 4.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 30 feet
Pipe Welding Details	
Thomas G. Livingston, P.Eng.	
Draw No. 5	



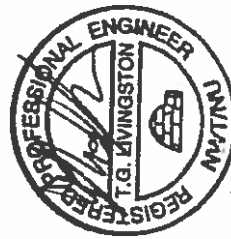
5/28/3, 2007

R. 672 m  
(28'-5.5")

0.75 m

Crushed Stone

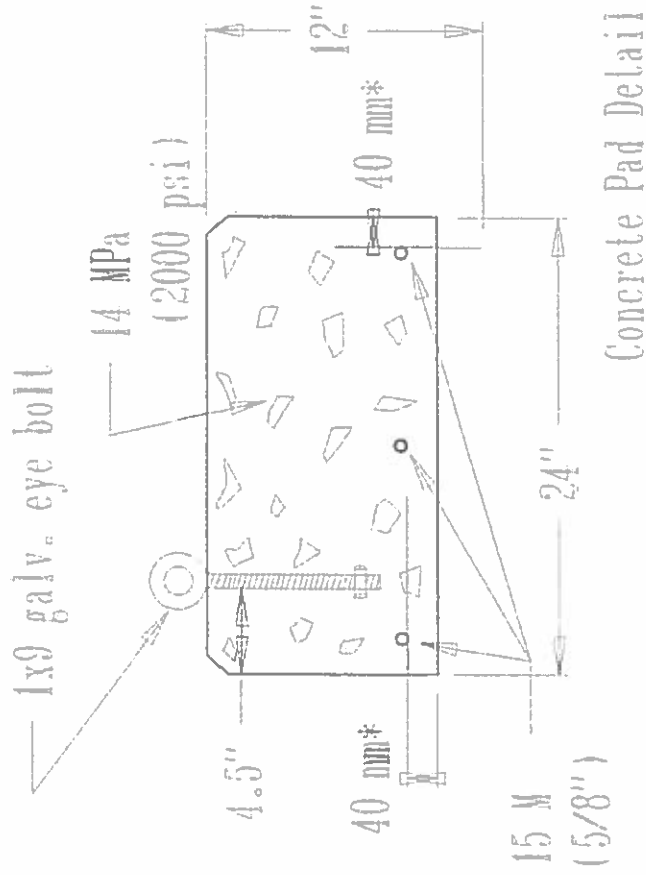
Do not scale drawing



SEPT. 3, 2007

ATV & Snomobile Bridge, Auglunk, NY	Date: July 3, 2007
Material: 4.5" dia Schedule 10 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 lb	Span: 30 feet
Concrete Pads & Gravel Fill	
Thomas G. Livingston, P.Eng.	Draw No. 6

FIGURE 5



\* Note: 40 mm cover at ends also

QUANTITIES:

- Wire Rope: 70 ft.
- Turnbuckles: 2
- Wire Rope Clips: 32
- Thimbles: 8
- Chain Shackles: 4
- Shoulder Nut Eyebolts: 4
- Concrete: 1.2 cu yd (1.5 cu yd)
- Re-bar: 15 m (30 ft)
- 3/8"x6.5" galvanized carriage bolts, nuts, lock washers: 100 ea
- 2x4 (various lengths)
- 3/4" exterior grade plywood, painted

SPECIFICATIONS for BRIDGE:

(See accompanying Product Data Sheets):

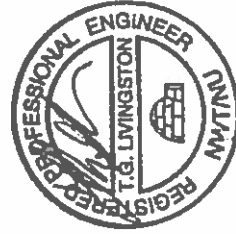
- 4.5" Schedule 40 pipe, shop-primed, field painted
- Wire Rope: 6x26, 5/8" diameter: Wire Rope Industries
- Turnbuckles: Jaw & Jaw: 1"x12", #TBJ100-2: Cleveland City Forge
- Wire Rope Clips: 5/8", # 22SS-20, Four per end: Wesco Industries
- Thimbles: galv, heavy duty, 5/8", # 76HD-G20: Wesco Industries
- Chain Shackles: 7/8" # 51LSA-G20CM: Wesco Industries
- Shoulder Nut Eyebolts: 1x9, # 28BSH-15: Wesco Industries
- Carriage bolts (3/8" x 6.5"), nuts, lock washers: Portland Bolt & Mfg Co.

Concrete: 2000 psi

Reinforcing bar: 15M (5/8")

1/2" steel plate (lugs for wire rope)

Follow all manufacturers' instructions



Sept. 3, 2007

Do not scale drawing

ATV & Snowmobile Bridge, Anglukluk, NI	Date: July 3, 2007
Material: 1.5" dia Schedule 40 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 Lb	Span: 30 feet
Concrete Pad Details & General Specifications	
Thomas G. Livingston, P.Eng.	
Draw No. 7	

2x4 planking,  
3/4" ply deck

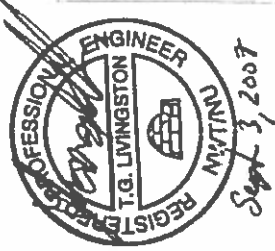
SIDE VIEW

TOP VIEW

7 2x4s

9 2x4s

End planks continuous with butt joints  
2x4x bolted to cross-rails with  
3/8" x 6.5" galvanized carriage bolts,  
Lock washers and nuts.

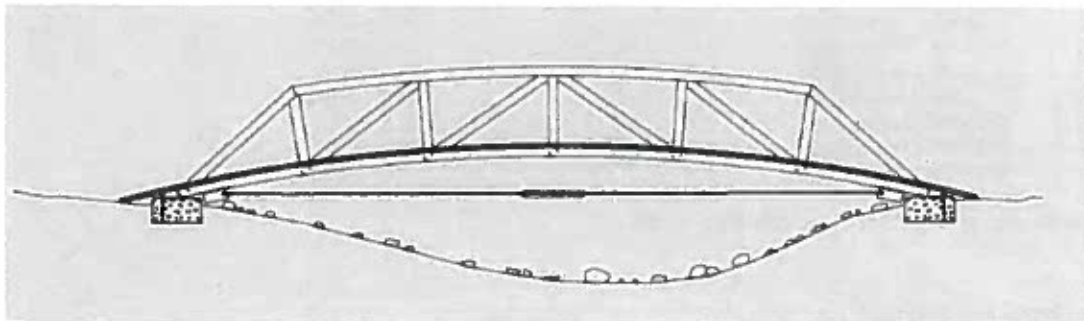


Do not scale drawing

ATV & Snowmobile Bridge, Anglukluk, NT	Date: July 3, 2007
Material: 1.5" dia Schedule 10 Pipe	Revised: Aug. 30, '07
Maximum Allowable Load: 6,000 Lb	Span: 30 feet
Planking: Side and Top Views	
Thomas G. Livingston, P.Eng.	Draw No. 8

# Kugluktuk

## Snowmachine & ATV Bridges



## Product Information



Nunavut Water  
Board

SEP 20 2011

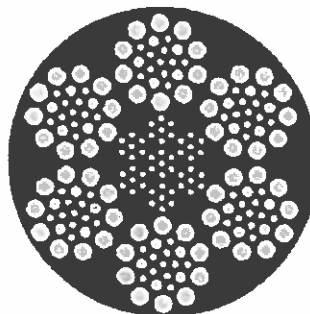
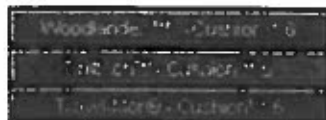
Public Registry

Thomas G. Livingston, P.Eng. September 3, 2007  
Community and Government Services, Government of Nunavut

## PRODUCT INDEX

*Back to Thumbnails*

### High Performance Ropes Cushion™ 6



#### Weights and Breaking Loads Table

Diameter Inches (mm)	Rope Construction	Approximate Weight lbs/ft (kg/m)	Nominal Breaking Load Tons (kN)
3/8 (10)	6x19 RRL Cushion Rope	0.26 (0.38)	6.6 (59)
7/16 (11)	6x19 RRL Cushion Rope	0.35 (0.52)	9.0 (81)
1/2 (13)	6x26 RRL Cushion Rope	0.45 (0.67)	11.7 (104)
9/16 (14)	6x26 RRL Cushion Rope	0.58 (0.86)	15.0 (133)
* 5/8 (16)	6x26 RRL Cushion Rope	0.72 (1.07)	18.8 (165)
3/4 (19)	6x26 RRL Cushion Rope	1.02 (1.51)	26.3 (234)
7/8 (22)	6x26 RRL Cushion Rope	1.41 (2.09)	36.4 (324)
1 (25)	6x26 RRL Cushion Rope	1.82 (2.71)	47.1 (419)
1-1/8 (29)	6x36 RRL Cushion Rope	2.18 (3.24)	57.2 (510)
1-1/4 (32)	6x36 RRL Cushion Rope	2.88 (4.29)	69.6 (663)
1-3/8 (35)	6x36 RRL Cushion Rope	3.52 (5.24)	85.7 (763)
1-1/2 (38)	6x36 RRL Cushion Rope	4.18 (6.21)	101.5 (904)

Breaking load values are subject to a minus tolerance of 2.5%.

#### Wire Rope Industries Ltd.

5501 Trans-Canada Highway, Pointe-Claire, Quebec, Canada

H9R 1B7

Ph: 514-697-9711

Fax: 514-697-3534

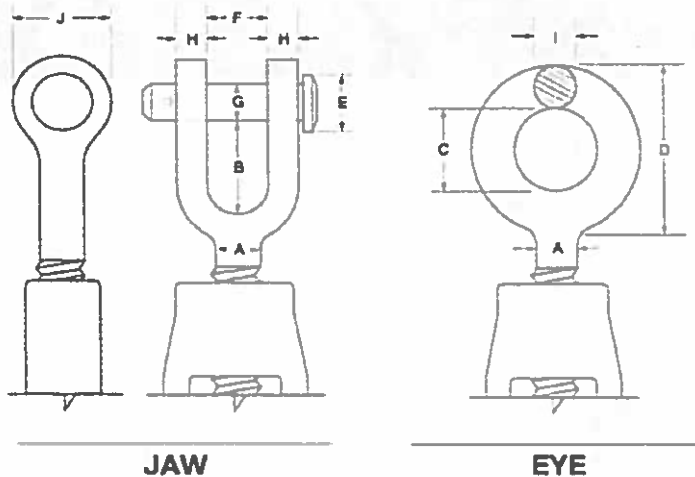
E-Mail: [mail@wirerope.com](mailto:mail@wirerope.com)

## TURNBUCKLE ASSEMBLIES

Material: C-1030

Threads: U.N.C. Class 2A, Right or Left Hand

Finish: Galvanized



### ASSEMBLY: JAW & JAW



Part No.	Turnbuckle		Jaw						Overall Closed Length	Rated Capacity (Lbs.)	Unit Weight (Lbs.)
	Thd. Dia.	Take Up	F	B	G	H	J				
TBJJ004	1/4	X 4	7/16	5/8	1/4	7/32	5/8	8	500	0.28	
TBJJ005	5/16	X 4 1/2	1/2	3/4	1/4	1/4	11/16	9	900	0.46	
TBJJ006	3/8	X 6	9/16	13/16	5/16	5/16	13/16	12	1200	0.86	
TBJJ008	1/2	X 6	5/8	1	7/16	3/8	1	13	2100	1.64	
TBJJ008-2	1/2	X 9	5/8	1	7/16	3/8	1	16	2100	1.95	
TBJJ008-3	1/2	X 12	5/8	1	7/16	3/8	1	19	2100	2.40	
TBJJ010	5/8	X 6	3/4	1 5/16	1/2	7/16	1 5/16	16	3200	2.75	
TBJJ010-2	5/8	X 9	3/4	1 5/16	1/2	7/16	1 5/16	19	3200	3.25	
TBJJ010-3	5/8	X 12	3/4	1 5/16	1/2	7/16	1 5/16	22	3200	4.00	
TBJJ012	3/4	X 6	15/16	1 1/2	5/8	7/16	1 5/8	17	5000	4.50	
TBJJ012-2	3/4	X 9	15/16	1 1/2	5/8	7/16	1 5/8	20	5000	4.96	
TBJJ012-3	3/4	X 12	15/16	1 1/2	5/8	7/16	1 5/8	23	5000	5.78	
TBJJ014	7/8	X 12	1 1/16	1 3/4	3/4	1/2	1 3/4	25	7000	8.75	
TBJJ100	1	X 5	1 3/16	2	1	5/8	2 1/8	18	10000	9.20	
TBJJ100-2	1	X 12	1 3/16	2	1	5/8	2 1/8	24	10000	12.10	

Safety Factor = 5 : 1

### ASSEMBLY: JAW & EYE



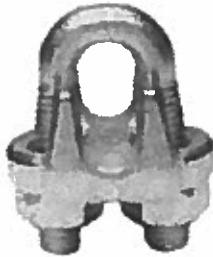
Part No.	Turnbuckle		Eye								Overall Closed Length	Rated Capacity (Lbs.)	Unit Weight (Lbs.)
	Thread Dia. A	Take Up T	C	D	I	F	B	G	H	J			
TBEJ004	1/4	X 4	1/2	1	1/4	7/16	5/8	1/4	7/32	5/8	8	500	0.26
TBEJ006	5/16	X 4 1/2	5/8	1 1/4	5/16	1/2	3/4	1/4	1/4	11/16	9	900	0.45
TBEJ008	3/8	X 6	3/4	1 1/2	3/8	9/16	13/16	5/16	5/16	13/16	12	1200	0.78
TBEJ008	1/2	X 6	1	1 15/16	7/16	5/8	1	7/16	3/8	1	13	2100	1.51
TBEJ008-2	1/2	X 9	1	1 15/16	7/16	5/8	1	7/16	3/8	1	16	2100	1.79
TBEJ008-3	1/2	X 12	1	1 15/16	7/16	5/8	1	7/16	3/8	1	19	2100	2.20
TBEJ010	5/8	X 6	1 3/8	2 1/2	9/16	3/4	1 15/16	1/2	7/16	1 5/16	16	3200	2.53
TBEJ010-2	5/8	X 9	1 3/8	2 1/2	9/16	3/4	1 15/16	1/2	7/16	1 5/16	19	3200	2.99
TBEJ010-3	5/8	X 12	1 3/8	2 1/2	9/16	3/4	1 15/16	1/2	7/16	1 5/16	22	3200	3.68
TBEJ012	3/4	X 6	1 1/2	2 13/16	21/32	15/16	1 1/2	5/8	7/16	1 5/8	17	5000	4.14
TBEJ012-2	3/4	X 9	1 1/2	2 13/16	21/32	15/16	1 1/2	5/8	7/16	1 5/8	20	5000	4.58
TBEJ012-3	3/4	X 12	1 1/2	2 13/16	21/32	15/16	1 1/2	5/8	7/16	1 5/8	23	5000	5.32
TBEJ014	7/8	X 12	1 11/16	3 1/4	3/4	1 1/16	1 3/4	3/4	1/2	1 3/4	25	7000	8.05
TBEJ100	1	X 5	1 13/16	3 9/16	7/8	1 3/16	2	1	5/8	2 1/8	18	10000	8.06
TBEJ100-2	1	X 12	1 3/16	3 9/16	7/8	1 3/16	2	1	5/8	2 1/8	24	10000	11.13

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## Stainless Steel Drop Forged Wire Rope Clips

Wesco's Stainless Steel Drop Forged Clips are manufactured from grade 304 Stainless material. They are generally used in corrosive or harsh environments. Please see installation instructions for standard drop forged wire rope clips on page 6.



Stock Code	Size Inches	Weight per 100 Pieces Pounds	Minimum Number of Clips per Eye	Amount of Rope to Turn Back Inches	Torque in Foot-Pounds
22SS-04	1/8	5	2	3 1/4	4.5
22SS-06	3/16	10	2	3 3/4	7.5
22SS-08	1/4	18	2	4 3/4	15
22SS-10	5/16	31	2	5 1/4	30
22SS-12	3/8	46	2	6 1/2	45
22SS-16	1/2	88	3	11 1/2	65
* 22SS-20	5/8	100	3	12	95
22SS-24	3/4	142	4	18	130



### WARNING

Strictly adhere to manufacturers instructions on installation. Failure to understand and install wire rope clips incorrectly could result in death, serious injury or property damage

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**THIMBLES** are designed and manufactured to protect wire rope from wear and damage when using shackles and hooks. Always ensure that you have the correct thimble for the size of rope being used, for any intermediate size the next size must be used. Always inspect thimbles for abuse, damage, cracks and deformation (stretch) before use. Heavy duty thimbles should be used for any lifting or load bearing applications. Thimbles can be used for wire rope or synthetic rope.

## Galvanized Heavy Duty Thimbles

Wesco's heavy duty thimbles should be used in any lifting or load bearing application, especially on wire rope slings which will be used in conjunction with hooks or shackles. They are not load rated and only serves to protect the rope.



Stock Code	Size Inches	Maximum Inside Diameter Inches	Weight per 100 Pieces Pounds
76HD-G08	1/4	11/16	8
76HD-G10	5/16	13/16	14
76HD-G12	3/8	15/16	26
76HD-G14	7/16	1	34
76HD-G16	1/2	1 1/8	44
* 76HD-G20	5/8	1 3/8	74
76HD-G24	3/4	1 5/8	115
76HD-G28	7/8	1 7/8	150
76HD-G32	1	2 1/2	225
76HD-G36/40	1-1/8 to 1-1/4	2 3/4	336
76HD-G40/44	1-1/4 to 1-3/8	3 1/2	817
76HD-G48C	1-3/8 to 1-1/2	3 1/2	1,167
76HD-G56	1 3/4	4 1/2	1,775
76HD-G64	2	6	2,775

## Stainless Steel Heavy Duty Thimbles

Wesco's stainless steel heavy duty thimbles should be used in any lifting or load bearing application, especially on wire rope slings which will be used in conjunction with hooks or shackles. They are not load rated and only serves to protect the rope. The Stainless Steel finish make them ideal for many marine applications.



Stock Code	Size Inches	Maximum Inside Diameter Inches	Weight per 100 Pieces Pounds
76SS-08CA	1/4	11/16	8
76SS-10CA	5/16	13/16	14
76SS-12CA	3/8	15/16	26
76SS-16CA	1/2	1 1/8	44
76SS-20H	5/8	1 3/8	74
76SS-24HD	3/4	1 5/8	115

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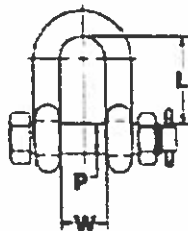
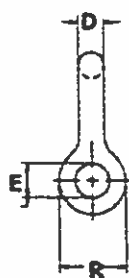
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This product is not load rated but is designed to protect rope from damage. Remove from service any thimbles that are damaged, cracked, worn or elongated.



## CM Big Orange High Strength Galvanized Load Rated Bolt Type Chain Shackles

Stock Code	Size Inches	CM Part Number	WLL Tons*	Dimensions (Inches)			Weight 100 Pieces
				Pin P	Width W	Length L	
51LSA-G16CM	1/2	M950	3	5/8	13/16	1-11/16	78
51LSA-G20CM	5/8	M951	4-1/2	3/4	1-1/16	2	150
51LSA-G24CM	3/4	M952	6-1/2	7/8	1-1/4	2-3/8	220
* 51LSA-G28CM	7/8	M953	8-1/2	1	1-7/16	2-13/16	320
51LSA-G32CM	1	M954	10	1-1/8	1-11/16	3-3/16	500
51LSA-G36CM	1-1/8	M955	12	1-1/4	1-13/16	3-9/16	700
51LSA-G40CM	1-1/4	M956	14	1-3/8	2-1/32	3-11/16	920
51LSA-G44CM	1-3/8	M966	17	1-1/2	2-1/4	4-7/16	1300
51LSA-G48CM	1-1/2	M957	20	1-5/8	2-3/8	4-7/8	1700
51LSA-G56CM	1-3/4	M977	30	2	2-7/8	5-3/4	2850
51LSA-G64CM	2	M958	35	2-1/4	3-1/4	6-3/4	3900

\*Ton = 2,000 lbs.

All shackles pins are forged from alloy steel, heat treated and tempered to give greater strength.

CM Big Orange high strength shackles meet performance requirements of Federal Spec. RRC-271 D.

All shackles are marked with size and working load limit in tons.

Ultimate strength equals 6 times working load limit.

Proof load equals 2.2 times working load limit.

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Industries Ltd.

WARNING: NEVER EXCEED WORKING LOAD LIMITS

PAGE 5

SHOULDER NUT EYEBOLTS are available in a long shank style, a machinery eyebolt and screw type eyebolt. Shoulder nut eyebolts can be used in angular lifting.

## Galvanized Shoulder Nut Eyebolts

Wesco shoulder nut eyebolts are galvanized which makes them ideal for marine and outdoor environments. They are available with long shank lengths suitable for inserting through thicker material. The shoulder gives support to the eyebolt and allows for limited angular loading.



Stock Code	Diameter x Thread Length	WLL @ 90° to Load	Eye Diameter	Weight per 100 Pieces Pounds
28BSH-01	1/4 X 2	650	0.50	6.0
28BSH-02	1/4 X 4	650	0.50	9.0
28BSH-03	5/16 X 2 1/4	1,200	0.62	10.0
28BSH-04	5/16 X 4 1/4	1,200	0.62	15.0
28BSH-05	3/8 X 2 1/2	1,550	0.75	20.0
28BSH-06	3/8 X 4 1/2	1,550	0.75	29.0
28BSH-06X	3/8 x 6	1,550	0.75	32.0
28BSH-07	1/2 X 3 1/4	2,600	1.00	40.0
28BSH-08	1/2 X 6	2,600	1.00	70.0
28BSH-08X	1/2 x 8	2,600	1.00	89.0
28BSH-09	5/8 X 4	5,200	1.25	104.0
28BSH-10	5/8 X 6	5,200	1.25	120.0
28BSH-10X	5/8 x 8	5,200	1.25	150.0
28BSH-11	3/4 X 4 1/2	7,200	1.50	125.0
28BSH-12	3/4 X 8	7,200	1.50	150.0
28BSH-12X	3/4 x 8	7,200	1.50	175.0
28BSH-14	1 x 6	13,300	2.00	390.0
28BSH-15	1 x 9	13,300	2.00	470
28BSH-15X	1 x 12	13,300	2.00	525.0

Note: Order must include: nuts and large washer

## Machinery Eyebolts

Wesco machinery eyebolts are suitable for equipment lifts. It has a short thread perfect for installing in electric motors, gearboxes, and other type types of equipment with pre sunk holes. this type of eyebolts is also available with a metric thread.



Stock Code	Diameter x Thread Length	Working Load Limit @ 90 Degrees	Weight per 100 Pieces Pounds
28BTH-08	1/4 X 1	500	5
28BTH-10	5/16 X 1 1/8	900	9
28BTH-12	3/8 X 1 1/4	1,300	16
28BTH-16	1/2 X 1 1/2	2,400	34
28BTH-20	5/8 X 1 3/4	4,000	65
28BTH-24	3/4 X 2	6,000	100
28BTH-28	7/8 X 2 1/4	7,000	150
28BTH-32	1 X 3	9,000	220

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To avoid injury or property damage ensure that instructions are followed carefully and eyebolts are always inspected before each use. If unsure on instructions or you are using swivel hoist rings please check with Wesco for further details.

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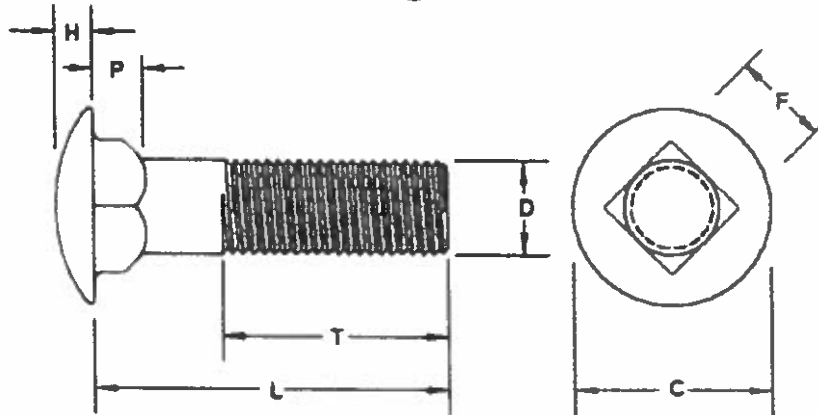
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Home > Products > Headed Bolts > Carriage Bolts

## Carriage Bolts



Bolt Diameter	D		C		H		F		P	
	Body Diameter		Head Diameter		Head Height		Square Width		Square Depth	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
3/8	0.388	0.360	0.844	0.782	0.208	0.188	0.388	0.368	0.219	0.188
1/2	0.515	0.483	1.094	1.032	0.270	0.250	0.515	0.492	0.281	0.250
5/8	0.642	0.605	1.344	1.219	0.344	0.313	0.642	0.616	0.344	0.313
3/4	0.768	0.729	1.594	1.469	0.406	0.375	0.768	0.741	0.406	0.375
7/8	0.895	0.852	1.844	1.719	0.469	0.438	0.895	0.865	0.469	0.438
1	1.022	0.976	2.094	1.969	0.531	0.500	1.022	0.990	0.531	0.500
1-1/4	1.277		2.850		0.531	0.500	1.250		0.625	

Dimensional specifications per ASME B18.5

### STANDARD THREAD LENGTH

Bolt lengths  $\leq 6"$ : Thread length = (2 X diameter) + 1/4"  
Bolt lengths  $> 6"$ : Thread length = (2 X diameter) + 1/2"

### STOCK

Diameters: 3/8" - 3/4"  
Lengths: 18" maximum  
Origin: Import  
Finish: Black and hot dip galvanized

Note: Most stock carriage bolts have extended thread lengths.

### MANUFACTURING

Portland Bolt manufactures carriage bolts from 3/8" diameter through 1-1/4" diameter in most **ASTM**, **AASHTO**, and **SAE** specifications. Special tooling can be created to produce nonstandard head dimensions, carriage bolts larger than 1" in diameter, or bolt heads with your company's name and/or logo.

**APPLICATION**

Carriage bolts (round head with square neck) are commonly used in wood connections. The square neck under the round head will seat into the hole in the wood to prevent the head from turning. Because they are used with wood, carriage bolts are rarely high strength and virtually always supplied in a standard **ASTM A307** specification.

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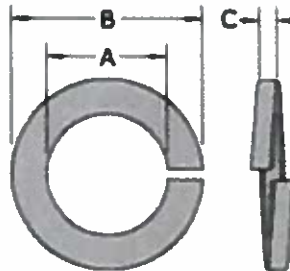
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Home > Products > Washers > Lock Washers

## Lock Washers



Bolt Size	B Outside Diameter	A Inside Diameter	C Thickness	Weight in Pounds Per 1000 Pieces
			Min	
1/4	1/2	9/32	.062	2.4
3/8	5/8	12/32	.094	6.0
1/2	7/8	17/32	0.125	13
5/8	1	21/32	0.156	24
3/4	1-1/4	25/32	0.188	43
7/8	1-15/32	29/32	0.219	60
1	1-21/32	1-1/32	0.250	88
1-1/8	2-5/32	1-27/32	0.281	120
1-1/4	2	1-3/8	0.312	160
1-3/8	2-1/4	1-1/2	0.344	219
1-1/2	2-7/16	1-9/16	0.375	282

ANSI B18.21.1 Regular Helical Spring Lock Washer

**STOCK**      Diameters:      1/4" - 2-1/2"  
Finish:      Black and hot dip galvanized

**APPLICATION**      Split lock washers provide greater bolt tensioning for tighter assemblies and provide protection against loosening resulting from vibration. Lock washers can be used with a standard washer to provide uniform bearing surface. These washers are unhardened and intended for general use.

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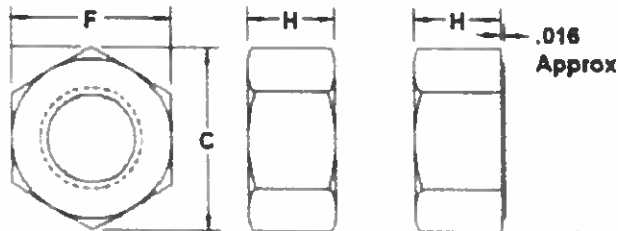


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Home > Products > Nuts > Finished Hex Nuts

### Finished Hex Nuts



Nominal Size	F			C		H		
	Width Across Flats			Width Across Corners		Thickness		
	Basic	Max	Min	Max	Min	Basic	Max	Min
3/8	9/16	0.562	0.551	0.650	0.628	21/64	0.337	0.320
1/2	3/4	0.750	0.736	0.866	0.840	7/16	0.448	0.427
5/8	15/16	0.938	0.922	1.083	1.051	35/64	0.559	0.535
3/4	1-1/8	1.125	1.088	1.299	1.240	41/64	0.665	0.617
7/8	1-5/16	1.312	1.269	1.516	1.447	3/4	0.776	0.724
1	1-1/2	1.500	1.450	1.732	1.653	55/64	0.887	0.831
1-1/8	1-11/16	1.688	1.631	1.949	1.859	31/32	0.999	0.939
1-1/4	1-7/8	1.875	1.812	2.165	2.066	1-1/16	1.094	1.030
1-3/8	2-1/16	2.062	1.994	2.382	2.273	1-11/64	1.206	1.138
1-1/2	2-1/4	2.250	2.175	2.598	2.480	1-9/32	1.317	1.245

Dimensional specifications per ASME B18.2.2

#### STOCK

Diameters: 3/8" - 1-1/2"  
Origin: Domestic and Import  
Finish: Black and hot dip galvanized

#### APPLICATION

Hex nuts (also referred to as *finished* hex nuts) are compatible with low carbon steel bolts such as **ASTM A307**, **ASTM F1554 grade 36**, SAE grade 2, and **AASHTO M183**. SAE grade 5 and grade 8 nuts are also available in a finished pattern. Since hot dip galvanizing typically adds 2.2 to 5 mils of thickness to the threaded portion of a fastener, galvanized hex nuts are tapped oversize to compensate for the corrosion resistant coating on the bolts.

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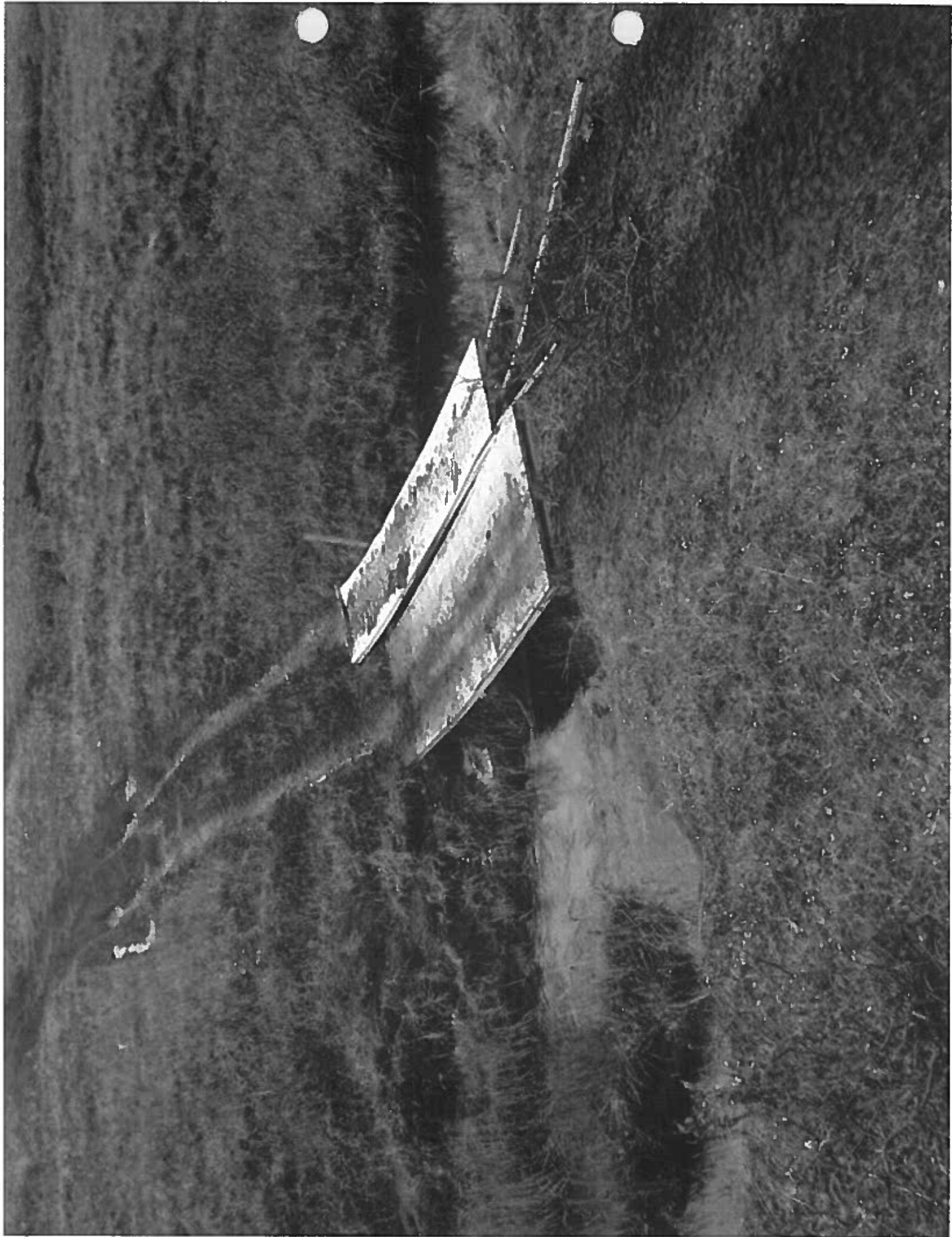
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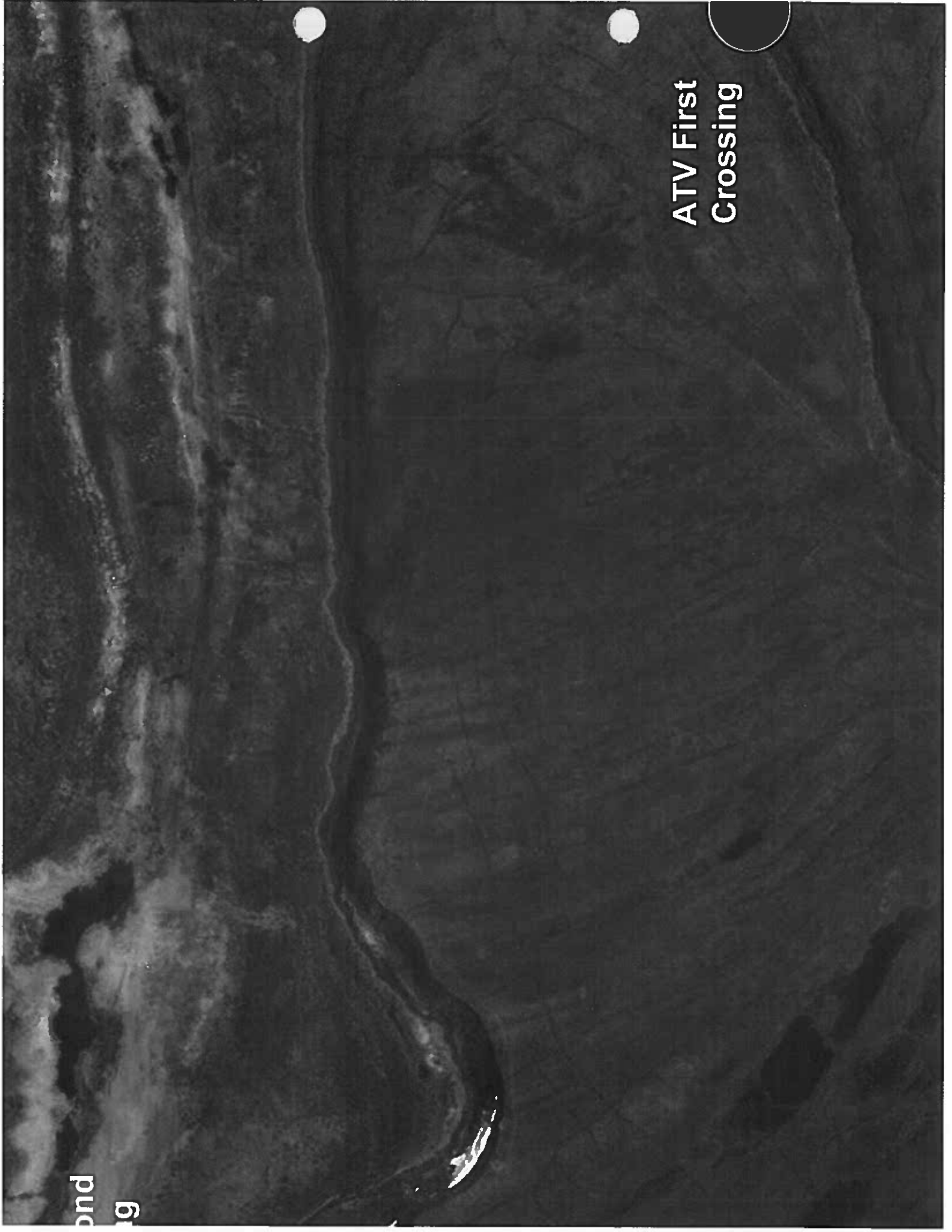
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