# TEMAGAMI FIRST NATION

# ICE ROAD POLICY


*Photo Credit: Published February 6, 2013 - Bear Island Ice road Jan.24- Temagami Lakes Association Website*

***Ratified at duly convened Temagami First Nation Council meeting: November 12, 2020***

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TEMAGAMI FIRST NATION

# ICE POLICY

**TFN POLICY STATEMENT:**

The Temagami First Nation Infrastructure Department (TFNID) is committed to operating and maintaining a winter ice road that is safe. The prevention of accidental loss of life and equipment, due to ice conditions, will be the main priority in the operation and maintenance of the road.
In fulfilling this commitment, the TFNID staff will conduct the operation and maintenance of the ice road in accordance with applicable and acceptable workplace Health and Safety standards and the Temagami First Nation Ice Policy.

The TFNID by accepting responsibility for operation and maintenance of the ice road, is responsible for ensuring that the ice is safe prior to employees or equipment starting work on ice road operations and opening the road for public use.

To ensure the ice is safe the TFNID staff will follow Ice Testing Procedures.

**# 1 Mandatory Health & Safety Requirements:**

a) The ice testing team will be made up of a two-people. When ice testing, the team will measure the ice and record location and coordinates using a GPS and enter results in the "ice test/GPS logbook".
b) In the event that the ice testing team working on the ice, may encounter conditions that are less than four inches (4"), the team is to go no further and return to the Band Office to meet with the Infrastructure Manager for discussion on this matter.
c) A two-way radio in each plow truck and/or snow machine at all times.
d) A throwline to be kept in each plow truck and/or snow machine, in the event that one of the team breaks through the ice.
e) The throwline must at least 50' in length.
f) A self-extraction tool must be carried at all times, by the two-person ice testing team while checking the ice.
g) The self-extraction tool must be kept in plow truck(s) at all times.
h) A fire extinguisher must be kept in all plow trucks at all times.
i) A first aid kit must be kept in all plow trucks at all times.
j) A flashlight and snow shovel must be kept in all plow trucks at all times.
k) In the event of an emergency, see Temagami First Nation Emergency TFN Response Plan Appendix "A" or it can be placed directly into the Ice Policy.

**# 2 Responsibilities of Infrastructure Manager**

a) Ensures all information and instruction as indicated in the policy is provided to the workers prior to any activity involving working on ice and that mandatory requirements have been implemented into the operating procedures.
b) Ensures the **posting of information** in sufficient workplace locations to ensure all employees required to travel on ice have access to the information.
c) Ensures that the Temagami First Nation Joint Health **&** Safety Committee is provided with a copy of thispolicy.
d) Ensures Temagami First Nation Emergency Response is implemented.

**# 3 Responsibilities of Infrastructure Staff (Heavy Equipment/Water Treatment)**

a) Must access any local hazards, and take all reasonable precautions to ensure their personal safety while on ice.
b) Must work in compliance with TFN Ice policy and all information and instruction asprovided by the Infrastructure Manager.
c) Must review current information on ice thickness prior to working on the ice.

**# 4 Responsibilities of Joint Health & Safety Committee**

a) Monitors the application of this policy as part of conducting regular committee duties.

**# 5 Ice Testing Procedures**

a) TFNID staff is responsible for testing the ice and documenting the results of the ice testing in the "ice test/GPS logbook".
b) The ice is not tested until the results of the ice test are recorded in the Ice Test/ GPS Logbook. Ice conditions will determine whether an axe, chainsaw, or core drill is used to test the ice. Using a chainsaw is sufficient if the ice is mostly made up of blue ice. When there is doubt a core drill will be used.
c) The number of tests required will be affected by the ice forming conditions.
d) As a standard practice, the TFNID staff test the ice every 200 meters and more often if weather conditions create doubt in ice conditions.
e) For each test location the TFNID staff person responsible will record if a chainsaw or core drill or axe was used, the thickness of the white ice over blue ice and the GPS coordinates.

**# 6 Ice Definitions:**

a) Blue Ice:
This is the strongest ice, formed by a quick drop in temperature and does not contain any other particulate, air bubbles, or snow. It is clear looking, translucent and has a reflective aspect. Its colour can be described as black, green or blue.

b) Opaque, (White) Ice:
This type of ice contains a mixture of ice, bubbles, snow or another particulate. It is milky in colour

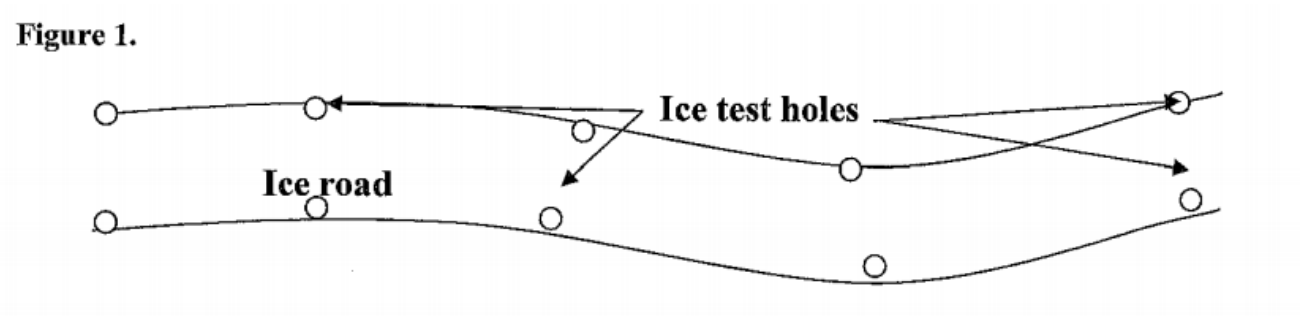
and generally has a textured surface. It is considered to be 50% weaker than Blue Ice.

c) Candled or Honeycomb Ice:
This ice is formed by repeated temperature changes. It is gray or silver in colour and has a unique texture. It is generally crumbly and easily fractures into long shards (e.g. candles). This ice is usually found in the spring or after repeated warm/cold spells. It has minimal structural integrity and is not considered capable of supporting a load.

## # 7. Opening New Road or New Section of Ice Road

a) New ice road(s) will be 100' wide and maintained at this width for the life of the ice road.
b) The TFNID staff will decide where to locate the various sections of ice road that will be maintained. The proposed locations will be marked and tested on both sides as per Figure
1. Note: Ice conditions will determine whether an axe, auger or chainsaw is used to test the ice.

**Figure 1.**




c) Once the proposed road is marked, tested and the results are recorded in the "Ice test/GPS Logbook" the Temagami First Nation Infrastructure Manager in consultation with the staff will review the results and determine based on the following criteria what work can begin.

- The following formula will be used to calculate the weight the ice can support:
  - Weight = $100 \times B^2$ or
  - Weight = $100 \times (B + ½, W)^2$
    - Weight= pounds
    - B = thickness of Blue Ice in Inches
    - W = thickness of White Ice

- The ice thickness must be capable of supporting a weight of 10,000 pounds before ¾ ton plow trucks begin plowing.
- The ice thickness must be capable of supporting a weight of 19,600 pounds before the big plow trucks begin plowing.
- Where there is less than ten inches (10") but more the five inches (5") of blue ice, flooding or snow compaction can be done to facilitate the natural ice thickening process.

d) Prior to beginning plowing operations on a new ice road, TFNID staff will put up barricades and signs at each end of the plowing operation indicating that the road is under construction and unsafe for vehicles.

e) When the TFNID staff have completed the plowing of a new section of Ice Road, or have opened a new section of ice road, they will test the ice again as per Figure 1. The ice testing results will be entered into the Ice Test/GPS Logbook and reviewed by the Infrastructure Manager in consultation with the TFNID staff.

f) Provided that the ice testing indicates that the ice is safe the barricades and signs will be taken down and the ice road opened for public use. The testing must indicate that the ice thickness is equivalent to ten inches (10") of blue ice.


**# 8. Opening New Road for Snow Mobile Travel (Temagami First Nation Staff & Clients)**

This section of the Ice Policy is implemented under the Ice policy guidelines in Section 8 (c). Provided that the ice testing indicates that the ice is safe and that the ice thickness is equivalent to five inches (5") of blue ice, only then will the Temagami First Nation Infrastructure Manager call the "official opening" of the ice road for Snow Machine (sled) and sleigh use.

**#9. Closing Sections of Ice Road**

Weather conditions affect ice conditions and therefore affect the ice road.

a) Whenever our area experiences weather conditions that may result in the deterioration of ice on the ice road, the TFNID staff will test the various sections of the ice road.

b) If the ice testing indicates that the ice on the road is not equivalent to ten inches (10") ice or is unsafe for any other reason, TFNID staff will erect barricades and signs indicating that the section of road is closed.

c) The barricades and signs will remain in place and the section of road will remain closed until ice testing by TFNID staff verifies that the ice is safe.

**# 10 Decommissioning of the Ice Road**

Warmer weather and sun penetrating clear blue ice can result in rapid deterioration in ice conditions on the ice road.

a) Once we begin to experience spring weather conditions the TFNID staff will begin to monitor changing ice conditions on the ice road.

b) Monitoring will be done by testing the ice on the road.

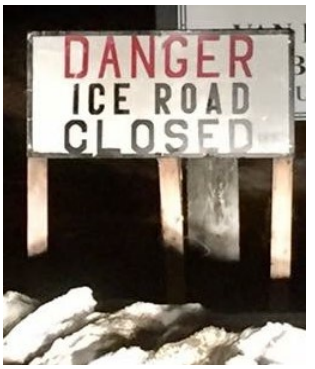
c) The ice road will be decommissioned and closed when testing indicates the ice thickness has deteriorated to less the ten inches (10") of blue ice.

d) Barricades and signs will be put up indicating the road is closed and unsafe.

**# 11 Barricades**

The TFN Infrastructure staff will construct barricades as per the following example to barricade and post signs indicating "road closed."






**# 13 Speed signs on Ice Road**

Max speed 40 km on the ice road

Max speed 20 km coming off the ice road


**Appendix "A"**

## Temagami First Nation ICE TEST / GPS Log Book

| | Date | Location/GPS Coordinates | Blue/ Black Ice (inches) | White Ice (inches) | Total Inches Blue & White Ice | Test Holes @ how many metres? | Equip. used for testing (axe, chainsaw, blade size, core | Name (Who tested the ice?) |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |

*Ice Checker:*_____ *Community Infrastructure Manager:*_____

*Date:*_____ *Date:*_____

**Appendix "B"**

# Bearing Capacity of Blue Ice Chart

**Resource: First Nations Guidelines for the construction & Maintenance of Existing Winter Roads- Printed- September 2010*

| Inches | Lbs. | Kgs. |
|---|---|---|
| 1 | 100 | 45.36 |
| 2 | 400 | 181.44 |
| 3 | 900 | 408.24 |
| 4 | 1,600 | 725.76 |
| 5 | 2,500 | 1,133.99 |
| 6 | 3,600 | 1,632.95 |
| 7 | 4,900 | 2,222.63 |
| 8 | 6,400 | 2,903.02 |
| 9 | 8,100 | 3,674.14 |
| 10 | 10,000 | 4,535.97 |
| 11 | 12,100 | 5,488.52 |
| 12 | 14,401 | 6,532.25 |
| 13 | 16,901 | 7,666.24 |
| 14 | 19,601 | 8,890.96 |
| 15 | 22,501 | 10,206.39 |
| 16 | 25,601 | 11,612.54 |
| 17 | 28,902 | 13,109.86 |
| 18 | 32,402 | 14,697.45 |
| 19 | 36,102 | 16,375.76 |
| 20 | 40,002 | 18,144.79 |

**Appendix "B"** ***(continued)***

# Bearing Capacity of Blue Ice Chart

**Resource: First Nations Guidelines for the construction & Maintenance of Existing Winter Roads- Printed- September 2010*

| Inches | Lbs. | Kgs. |
|---|---|---|
| 21 | 44,103 | 20,004.99 |
| 22 | 48,403 | 21,955.46 |
| 23 | 52,903 | 23,996.64 |
| 24 | 57,604 | 26,129.00 |
| 25 | 62,504 | 28,351.63 |
| 26 | 67,604 | 30,664.97 |
| 27 | 72,905 | 33,069.49 |
| 28 | 78,405 | 35,564.27 |
| 29 | 84,106 | 38,150.23 |
| 30 | 90,006 | 40,826.45 |
| 31 | 95,105 | 43,139.35 |
| 32 | 102,407 | 46,451.51 |
| 33 | 108,907 | 49,399.89 |
| 34 | 115,608 | 52,439.44 |
| 35 | 122,508 | 55,569.26 |
| 36 | 129,609 | 58,790.26 |
| 37 | 136,909 | 62,101.52 |
| 38 | 144,410 | 65,503.95 |
| 39 | 152,110 | 68,996.64 |
| 40 | 160,011 | 72,580.51 |

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