



Minto Communications Society
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Minto Communications Society

"Upper Bridge River Valley Broadband Internet Service"

Tower Construction Program 2010-2011

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1. PROJECT TITLE:

Upper Bridge River Valley Broadband Internet Service

2. PROJECT SUMMARY:

The objective of this project is to provide broadband connectivity to five communities in the Upper Bridge River Valley (BRV) utilizing wireless technology exclusively. The BRV communities are Gun Lake, Tyaughton Lake, Gun Creek, Gold Bridge, and Bralorne. This remote mountainous region is approximately 100 km west of the town of Lillooet, British Columbia. Full broadband service to the region will require technology improvements at the Point-of-Presence (POP) at Gun Lake, and the installation of telecommunications towers in all five communities.

In 2009 our non-profit society, Minto Communications Society (MCS), launched initial high speed wireless internet service to Gun Lake and Tyaughton Lake; prior to this deployment the only option for high speed internet was by satellite.

The present coverage area includes parts of Gun Lake, Tyaughton Lake, Lajoie Lake, and Hess Road. There are some dark areas within these locations which will require additional infrastructure. The town of Gold Bridge is nominally connected but is actually under a test program and is not currently fully serviced.

This project will allow MCS to expand service at Gun Lake, Tyaughton Lake, and Gold Bridge, and to further extend service to the unserved communities of Bralorne and Gun Creek Road.

Servicing the Upper Bridge River Valley is extremely difficult and costly due to the mountainous terrain, dense forest coverage, and highly dispersed populace.

The MintoComm network is based on WiFi wireless technology to bring "last mile" connectivity to end users. The network has a central node (POP) at Gun Lake and a series of repeaters and access points strategically located amongst the region for delivery to each household or business. Currently there is an 80' self-supporting tower at the Gun lake POP, a 50' self-supporting tower at the Minto repeater site and a 70' guyed tower at Reed Hill.

Three proposed remote towers are off-grid and will be solar powered.

3. STAKEHOLDERS

- i. Province of British Columbia: NetworkBC, Connecting Citizens Grant Program
- ii. Squamish Lillooet Regional District, Pemberton, BC
- iii. Industry Canada; Broadband Initiative

4. PROPOSED TOWER CONSTRUCTION PROJECTS

All physical construction in this project is for the installation of new telecommunication towers to extend service within the Bridge River Valley.

Gun Creek Rd. Community		
Mt. Zorba		
Guyed Tower (solar)	278 m ²	Trylon STG 80'

Tyughton Lake Community		
Tyughton Pearson Ridge		
Guyed Tower (solar)	278 m ²	Trylon STG 80'

Bralorne Community		
Bralorne North		
Guyed Tower (solar)	278 m ²	Trylon STG 80'

5. SYSTEM DESCRIPTION

Map of the Bridge River Valley, Gold Bridge

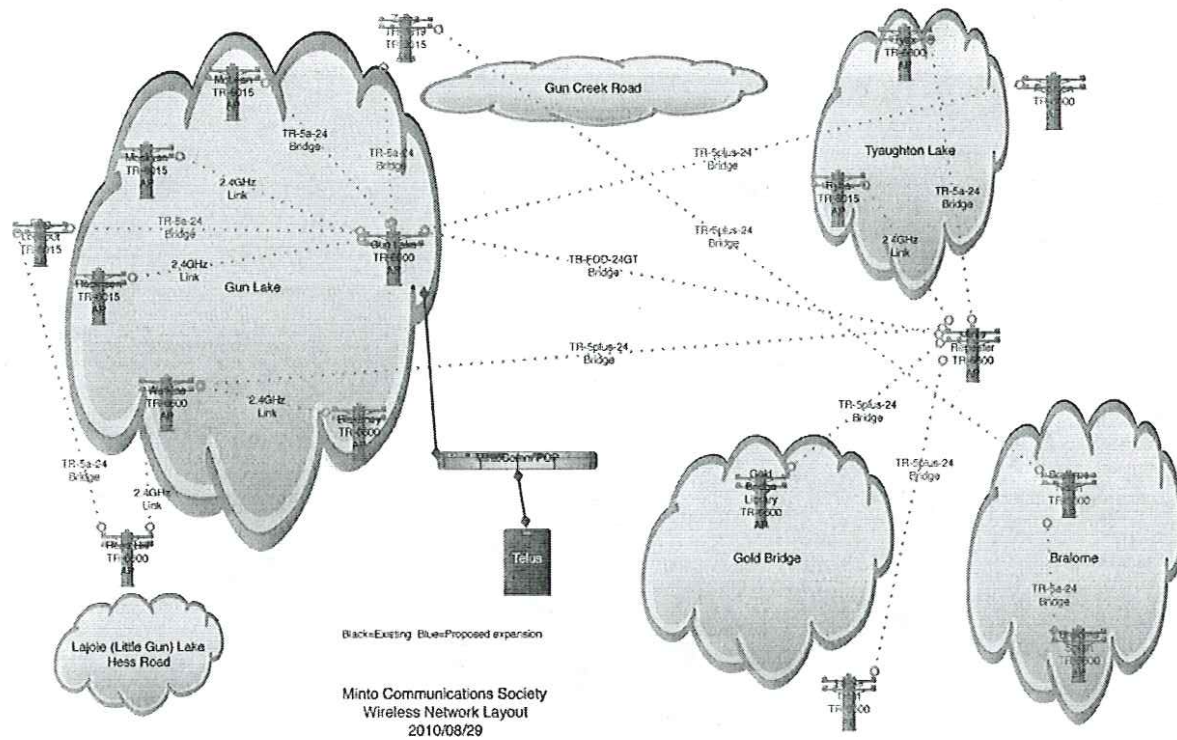


The Minto Communications Society's (MCS) high-speed digital communications network serves the communities of the Upper Bridge River Valley. Those communities are centred around, and include, the town of Gold Bridge, BC. They comprise the communities of Gun Lake, Lajoie (Little Gun) Lake, Tyaughton Lake, Gun Creek Road, and Bralorne.

MCS requires permits to locate three communications towers on remote Crown land in order to expand broadband internet service in the Bridge River Valley. This expansion is funded by NetworkBC and Industry Canada. Specifically, towers are required on the NE side of Tyaughton Lake (Pearson Ridge), Mt. Zorba on the NW side of Gun Lake, and north of Bralorne.

The broadband network is provisioned using Tranzeo radio technology in the unlicensed 2.4 GHz and 5.8 GHz bands. Internet service is provided on 7x24 basis. Power at the three sites is off-grid using solar/wind turbine technology.

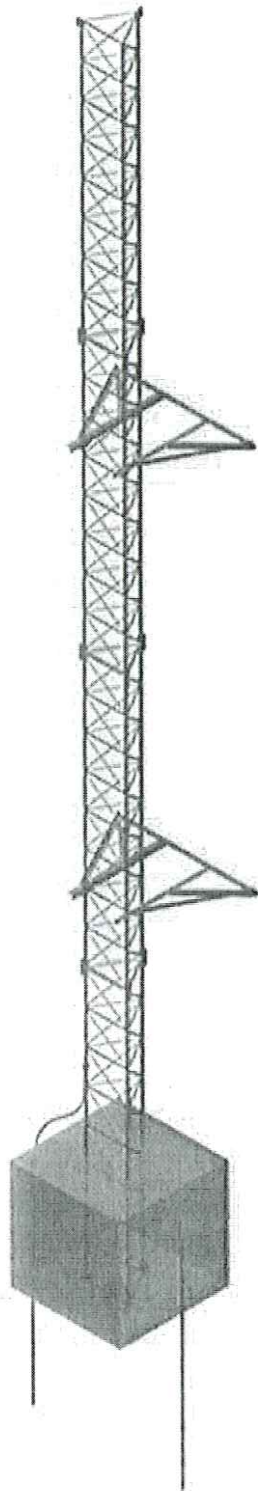
Generic Network Topography



Tower Location Details

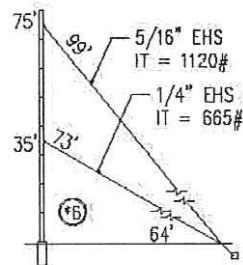
Project Site	Latitude	Longitude	Tower Height Above Ground (metres)	Ground Elevation	Radio Equipment	Manufacturer/ Model #	Approx. Center Frequency (MHz)	EIRP for access points (watts)	3 dB beam width for access radios	Azimuth (wrt true north)
Mt. Zorba	50°53'54.90"N	-122°52'21.50"W	28	1418m	Backhaul Radio	Tranzeo TR-5a-24	5800	200 Mw	15°-30°	167°
Mt. Zorba	50°53'54.90"N	-122°52'21.50"W	28	1418m	Backhaul Radio	Tranzeo TR-5plus-24	5800	200 Mw	15°-30°	165°
Mt. Zorba	50°53'54.90"N	-122°52'21.50"W	28	1418m	Access Point Radio	TR-6619	2400	200 Mw	60°	61°
Mt. Zorba	50°53'54.90"N	-122°52'21.50"W	28	1418m	Access Point Radio	TR-6600	2400	200 Mw	15°-30°	179°
Pearson Ridge	50°56'47.50"N	-122°45'48.60"W	28	1231m	Backhaul Radio	Tranzeo TR-5plus-24	5800	200 Mw	15°-30°	208.2°
Pearson Ridge	50°56'47.50"N	-122°45'48.60"W	28	1231m	Access Point Radio	TR-6600	2400	200 Mw	15°-30°	253°
Bralorne North	50°47'06.40"N	-122°49'26.43"W	28	1221m	Backhaul Radio	Tranzeo TR-5plus-24	5800	200 Mw	15°-30°	344.8°
Bralorne North	50°47'06.40"N	-122°49'26.43"W	28	1221m	Backhaul Radio	Tranzeo TR-5a-24	5800	200 Mw	15°-30°	147°
Bralorne North	50°47'06.40"N	-122°49'26.43"W	28	1221m	Access Point Radio	TR-6600	2400	200 Mw	360°	360°

6. Tylon STG 80' Profile



Tower Height:	80'
Part Number	4.618.G000.080
List Price	\$5861
Wind Load Area (ft ²) CSA class 1* 350/450/550 Pa** 10mm ice	Round: 97/75/63 Flat: 65/50/42
Wind Load Area (ft ²) CSA class 3* 390/490/590 Pa** 25mm ice	Round: 125/98/80 Flat: 83/65/53
Ship Weight	1534 lbs [690 kg]
Ship Dim. (L"xW"xH")	1@122x60x38 + 1@60x48x38

Ⓢ Design assumes
(number shown in
circle) of 5/8" Tx-line
equally distributed on
three faces of tower.



Tower triangular footprint = 278 sq.m

Each tower is guyed with 2 sets of three guy wires spaced at 120 degrees. The guy wire anchors are standard expanding anchors drilled into bedrock. There is minimal disruption to the terrain and no requirement for poured concrete foundations. There is a steel, locked battery enclosure and a solar panel beside each tower; there is no building, fences, or road construction.

7. GOLD BRIDGE CONSTRUCTION PROJECT



The Gold Bridge service area consists of the town of Gold Bridge and surrounding area.

Gold Bridge currently receives a temporary, experimental feed directly from the Minto Repeater site to a temporary mast located on the roof of the Gold Bridge Community Building (Library).

A proposed 40' guyed tower, located on the Library roof, will provide the necessary height to cover all the town residents. The footprint of the antenna is within the footprint of the building. A building permit has been issued by the SLRD.

There is no impact on sidewalks, sewer, electrical lines, water service, and there is no release of pollutants.

Geographical Locations

Gold Bridge Library Tower	50°51'09.73"N	122°50'14.19"W	667m
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8. PEARSON RIDGE CONSTRUCTION PROJECT



Pearson Ridge

The Tyaughton Lake service area consists of Tyaughton Lake and surrounding area.

Tyaughton Lake is currently served with three access points. These three access points do not currently provide full coverage of Tyaughton Lake. To complete the coverage of Tyaughton Lake, the Tyaughton East repeater is planned to serve the majority of the West shore and valley.

An 80' guyed tower will be required at this site to clear the surrounding forest. This site will be off-grid and solar powered. It will also utilize a wind turbine on the top of the tower.

The guyed tower is on a remote, unpopulated mountain top. It is on vacant crown land with no special status, i.e. it is not within any park, environmentally sensitive area, wetlands, or near any riparian zone. This forest in this location was destroyed by the Tyaughton Lake fire in 2009.

At the site will be a steel battery enclosure for housing 6-8 type D high capacity batteries, and a solar panel.

Access: By helicopter

Geographical Locations

Pearson Ridge Tower	50°56'47.50"N	122°45'48.60"W	1231m
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9. Mt. ZORBA CONSTRUCTION PROJECT



Mt.Zorba

The Gun Creek Road service area consists of a row of properties aligned in a linear string nestled within the Gun Creek valley.

Preliminary radio and visual surveys have confirmed the viability of bringing service to this locale from the Mount Zorba site.

Mount Zorba's primary function will be as an access point to the Gun Creek Road service area; Zorba's secondary role will be as an access point to service parts of the east side of Gun Lake.

An 80' guyed tower will be required at this site to clear the surrounding forest. This site will be off-grid and solar powered. It will also utilize a wind turbine on the top of the tower.

The guyed tower is on a remote, unpopulated mountain top surrounded by a sparse coniferous forest. It is on vacant crown land with no special status, i.e. it is not within any park, environmentally sensitive area, wetlands, or near any riparian zone.

At the site will be a steel battery enclosure for housing 6-8 type D high capacity batteries, and a solar panel.

Access: By helicopter

Geographical Locations

Mount Zorba Tower	50°53'54.90"N	122°52'21.50"W	1418m
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Bralorne Site

The Bralorne service area consists of Bralorne and surrounding area. It is separated into roughly two zones, North and South.

Two access points will be required to service the separate zones. One will share the Bralorne Firehall TV Society tower and the other, Bralorne North, will be located on an abandoned community TV repeater site on a hill at the northern end of Bralorne.

Bralorne North will require an 80' tower to clear surrounding trees and other obstructions.

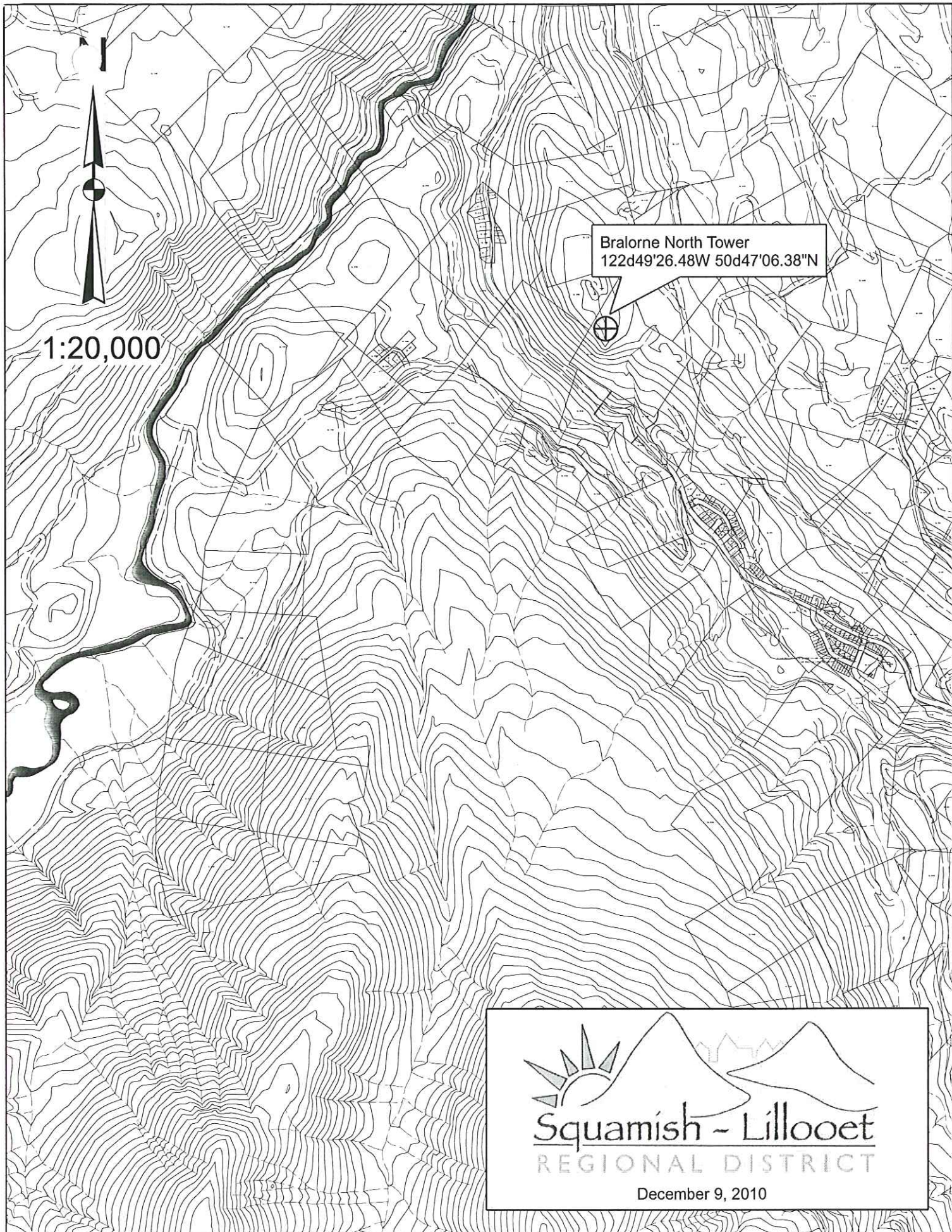
The Bralorne North guyed tower is on a remote, unpopulated granite hilltop surrounded by a coniferous forest. It is on vacant crown land with no special status, i.e. it is not within any park, environmentally sensitive area, wetlands, or near any riparian zone. This site will be off-grid and solar powered. It will also utilize a wind turbine on the top of the tower.

At the site will be a steel battery enclosure for housing 6-8 type D high capacity batteries, and a solar panel.

Access: By helicopter & rough trail

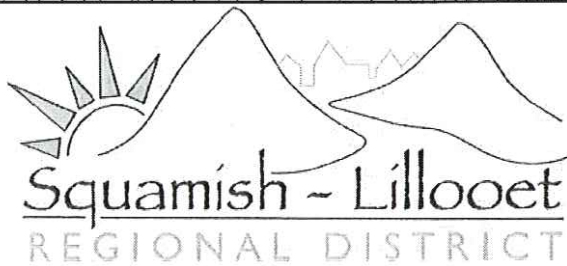
Geographical Locations

Bralorne North Tower	50°47'06.38"N	122°49'26.48"W	1221m
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Bralorne North Tower
122d49'26.48W 50d47'06.38"N

1:20,000



December 9, 2010

