On occasion, blasting activities are necessary to aid utility, roadway, or other types of construction. With the hard rock located in various areas of the upstate of South Carolina sometimes blasting is the only way to facilitate construction activities. It is critically important prior to any blasting, that a one-call notification to SC811 be made so that utilities can mark their lines.

https://ycnga.com/wp-content/uploads/2017/07/excavatoroctober-2016_interactive.pdf

Protection of pipeline from mining operations

- **338 (1)** A person must not **work** or prospect for **mines or minerals** lying under a pipeline or any of the works connected with the pipeline, or within 40 m of the pipeline, without a designated officer having, by order, authorized it to do so.

Canada Mining Regulations

mine means any work or undertaking in which minerals or ore containing minerals are removed from the earth or from talus by any method, and includes works, mills, concentrators, machinery, plant and buildings below or above ground belonging to or used in connection with the mine; (mine)

mineral means precious and base metals and other naturally occurring substances that can be mined, but does not include

(a) coal, petroleum and related hydrocarbons, native sulphur, construction stone, carving stone, limestone, soapstone, marble, gypsum, shale, clay, sand, gravel, volcanic ash, earth, ochre, marl or peat, or

(b) any other substances regulated under the Territorial Coal Regulations, the Territorial Dredging Regulations or the Territorial Quarrying Regulations; (minéraux)

video

https://youtu.be/s_r8_n9BI0A

Pipeline_Blasting_Services_|_Innisfail_Alberta_Canada_(glacierblasting.com)

Company Public Awareness Materials

PIPELINE SAFETY IS A SHARED REPONSIBILITY

Unauthorized construction and digging are the leading causes of damage to pipelines, and can have serious and deadly consequences. TNPI's pipeline is just one of many underground utilities you may encounter.

It's the law to secure approval before undertaking activities such as:

- Installing fences, poles, or posts;
- Building above- or in-ground swimming pools;
- Installing drainage or irrigations systems;
- Landscaping activities; and
- Paving, blasting, or digging – to name a few.

Permission is also required to drive vehicles or heavy machinery off a public road or to cross the right-of-way.

TNPI_Alberta-Brochure_Digital.pdf

Canadian Energy Regulator Pipeline Damage Prevention Regulations – Authorizations

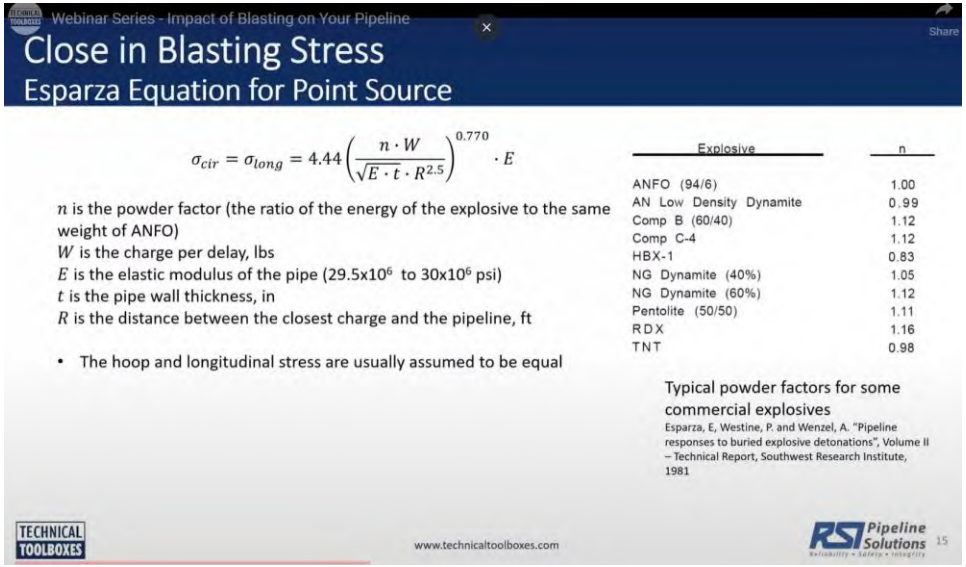
Activity that Causes a Ground Disturbance

Section 10(3) Measures

(3) Any person that is engaged in an activity that causes a ground disturbance within the prescribed area must comply with the following measures:

(a) ensure that the activity is **carried out in accordance with the technical details** that are set out in the person's request for consent and that have **been accepted by the pipeline company**, as well as with the **conditions set out in the pipeline company's consent**, including the conditions respecting directional drilling or **the use of explosives**;

Engineers are important!



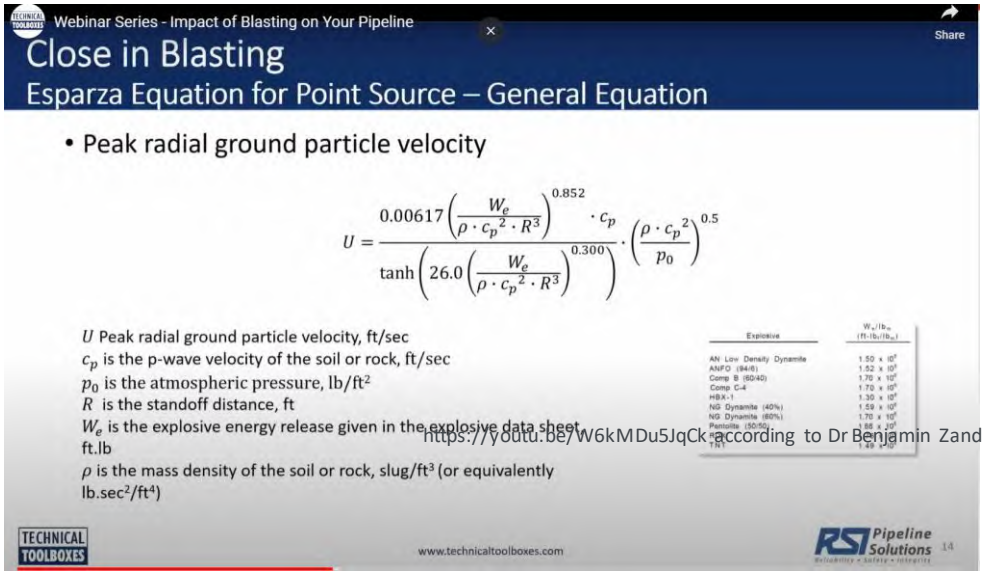


Figure 21: Blasting Under two high pressure gas pipelines, TransCanada Pipelines. Note 2x4 wood lagging around hotlines and blasting mats on top.

https://docs2.cer-rec.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/90552/548311/956726/2392873/2451003/2487998/B240-7_-_Trans_Mountain_Response_to_NEB_IR_No.2.134a-Attachment_1_Part_3of5_-_A3Z4Y4.pdf?nodeid=2487507&vernum=-2

https://www.fraserdrillblast.com/blasting-services

Pipeline Blasting

Pipeline Blasting Services | Innisfail Alberta Canada (glacierblasting.com)

Close Proximity Blasting Summary Matrix	Close Proximity Blasting **Level 0** 0m to 3m (0 to 10')	Close Proximity Blasting **Level 1** >3m to 10m (>10' to 33')	Close Proximity Blasting **Level 2** >10m to 30m (>33' to 100')	Close Proximity Blasting **Level 3** >30m to 100m (>100' to 330')	Close Proximity Blasting **Level 4** >100m to 500m (>330' to 1600')
Blast Design & Control Blasting Plan	• Close Proximity Blasting Manager with 10 or more years' experience. • Suggested oversight from an independent Blasting Consultant	• Close Proximity Blasting Manager with 7 or more years of experience. • Suggested oversight from an independent Blasting Consultant	• Close Proximity Blasting Manager with 5 or more years of experience suggested to design, develop and accept site Control Blasting Plan	• Certified Close Proximity Blaster suggested to design, develop site Control Blasting Plan	• Certified Close Proximity Blaster suggested to design, develop site Control Blasting if blasting activities are within 500m (1600') of school, hospital or clinic
Peak Particle Velocity & Frequency Response	• Blast designed to 50 mm/sec (2 inches/sec) at CP Level 1 distance. • Blast designed to maximize Frequency.	• Blast designed to 50 mm/sec (2 inches/sec) or in accordance with the USBM table in Appendix A	• Blast designed to 35 mm/sec (1.4 inches/sec) or in accordance with the USBM table in Appendix A	• Blast designed to 25 mm/sec (1 inch/sec) or in accordance with the USBM table in Appendix A	• Blast designed in accordance with the USBM table in Appendix A
Air Overpressure	• Maximum 134dBL	• Maximum 134dBL	• Maximum 134dBL	• Maximum 134dBL	• Maximum 134dBL
Blast Hole Diameter	• Suggested 45mm (1 ¾") blast hole diameter maximum • Max 70mm (2 ¾") blast hole diameter where explosive decking/decoupling is utilized.	• Suggested 45mm (1 ¾") blast hole diameter maximum • Max 70mm (2 ¾") blast hole diameter where explosive decking/decoupling is utilized.	• 70mm (2 ¾") blast hole diameter suggested maximum	• 75mm (3") blast hole diameter suggested maximum	• At the discretion of the Blaster
Blast Hole Length	• Governed by charge weight per delay to meet suggested PPV and frequency limit.	• Governed by charge weight per delay to meet suggested PPV limit	• Governed by charge weight per delay to meet suggested PPV limit	• Governed by charge weight per delay to meet suggested PPV limit	• Governed by charge weight per delay to meet suggested PPV limit
Explosives	• Directed by the Close Proximity Blasting Manager based on blast design and structure type. • ANFO/bulk products not recommended.	• Packaged explosive to a max 38mm ($1^{1/2}$") diameter • ANFO/bulk products not recommended below critical hole diameter for product.	• Packaged explosive to a max 50mm (2") diameter • ANFO/bulk products to be utilized in accordance with manufacturers specifications	• At the discretion of the Blaster • ANFO/bulk products to be utilized in accordance with manufacturers specifications	• At the discretion of the Baster • ANFO/bulk products to be utilized in accordance with manufacturers specifications
Detonators	• Electronic detonators suggested.	• Electronic detonators suggested	• Electronic detonators suggested Type of detonator utilized at the discretion of the Blaster	• Type of detonator utilized at the discretion of the Blaster	• Type of detonator utilized at the discretion of the Blaster
Fly Rock Control	• Adequate Blast Design • Use of a confinement device or clear crushed rock stemming. • Adequate blast matting or earth fill.	• Adequate Blast Design • Use of a confinement device and/or clear crushed rock stemming • Adequate blast matting or earth fill	• Adequate Blast Design • Use of a confinement device and/or clear crushed rock stemming • Adequate blast matting or earth fill	• Adequate Blast Design • Use of a confinement device and/or clear crushed rock stemming • Adequate blast matting or earth fill	• Adequate Blast Design • Use of a confinement device and/or clear crushed rock stemming • Blasting mats suggested within 300m (1000') • Adequate mating or earth fill
Pre-Blast Survey	• Suggested for all Close Proximity structures within 30m (100') of the blasting limits.	• Suggested for all Close Proximity structures within 30m (100') of the blasting limits	• Suggested for all inhabited structures within 75m (250') of the blasting limits	• Suggested for all inhabited structures within 75m (250') of the blasting limits	• At the discretion of the Blaster
Community Notification	• 48 hours notification for all inhabited structures within 30m (100') of the blasting limits. • Blasting schedule to be coordinated with schools, hospitals and clinics within 150m (500') of blasting limits.	• 48 hours notification for all inhabited structures within 30m (100') of the blasting limits • Blasting schedule to be coordinated with schools, hospitals and clinics within 150m (500') of blasting limits	• 48 hours notification for all inhabited structures within 75m (250') of the blasting limits • Blasting schedule to be coordinated with schools, hospitals, and clinics within 150m (500') of blasting limits	• 48 hours for all inhabited structures within 100m (330') and/or School/Hospitals within 300m (1000') of the blasting limits • Blasting schedule to be coordinated with schools, hospitals and clinics within 300m (1000') of blasting limits	• 48 hours for School/Hospitals within 500m (1600') of the blasting limits. • Blasting schedule to be coordinated with schools, hospitals and clinics within 500m (1600') of blasting limits
Monitoring	• Monitor as per CP1 distance. • Suggested use of a high frequency geophone.	• Follow ISEE Field Practice Guidelines for Seismographs. • Monitoring at the 2 nearest Close Proximity structures.	• Follow ISEE Field Practice Guidelines for Seismographs. • Monitoring at the 2 nearest Close Proximity structures.	• Follow ISEE Field Practice Guidelines for Seismographs. Monitoring at the 2 nearest Close Proximity structures.	• Follow ISEE Field Practice Guidelines for Seismographs. • Monitoring at the nearest Close Proximity structure. Additional monitoring as suggested

Community Notification of Blasting Operations

Commencement of Blasting Notifications

Notification of residents or owners should involve delivering a brochure or letter in person that contains the following information:

1. Project description, location and purpose.
2. Anticipated start and completion dates.
3. Anticipated blasting times and number of daily blasts.
4. How or if they will be notified for each blast.
5. Blasting Contractor's name and contact information.
6. Name of the person conducting the Pre-Blast survey (if suggested).

Inhabited Structures & Close Proximity Structures

It is best practice that residents or owners of all Close Proximity structures be notified in person at least 48 hours prior to the commencement of drilling and blasting activities in accordance with the following matrix:

Notification of Residents or Owners	
CP Level 0 **0 to 3m**	48-hour notice for all residents and owners of Close Proximity structures within ***30m*** (100') of the blasting limits.
CP Level 1 **>3m to 10m**	48-hour notice for all residents and owners of Close Proximity structures within ***30m*** (100') of the blasting limits.
CP Level 2 **>10m to 30m**	48-hour notice for all residents and owners of Close Proximity structures within ***75m*** (250') of the blasting limits.
CP Level 3 **>30m to 100m**	Suggested for all inhabited structures within ***100m*** (330') of the blasting limits.
CP Level 4 **>100m to 500m**	Notifications conducted at the discretion of the Blaster.

Notification of Schools and Medical Treatment Facilities

Schools, clinics & hospitals and other such medical treatment facilities may be especially sensitive to blasting activities. It is best practice to ensure that these facilities are notified in person at least 48 hours prior to the commencement of drilling and blasting activities in accordance with the following matrix:

Notification of Schools & Medical Treatment Facilities	
CP Level 0 **0 to 3m**	48-hour notice for all schools, clinics & hospitals within ***150m*** (500') of the blasting limits.
CP Level 1 **>3m to 10m**	48-hour notice for all schools, clinics & hospitals within ***150m*** (500') of the blasting limits.
CP Level 2 **>10m to 30m**	48-hour notice for all schools, clinics & hospitals within ***150m*** (500') of the blasting limits.
CP Level 3 **>30m to 100m**	48-hour notice for all schools, clinics & hospitals within ***300m*** (1000') of the blasting limits.
CP Level 4 **>100m to 500m**	48-hour notice for all schools, clinics & hospitals within ***500m*** (1600') of the blasting limits.

Blast Notification

Some schools, medical treatment facilities and other stakeholders may be sensitive to blasting operations and may require specified notification of all daily blasting activities.

It is best practice for the Close Proximity Blasting Manager to coordinate the blasting schedule accordingly to accommodate these types of facilities to ensure blasting does not interfere with sensitive procedures, processes and school children.

Company Oversight

Arkansas 2017 – Pipeline Blasting - Dykon Blasting

Canada Energy Regulator | Régie de l'énergie du Canada

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