

APPENDIX 'A'
Excerpts from Council Minutes
December 5, 2007

**THE TWENTY-FIRST MEETING OF THE PRIORITIES COMMITTEE
OF THE CITY OF GREATER SUDBURY**

**Council Chamber
Tom Davies Square**

**Wednesday, December 5, 2007
Commencement: 5:30 p.m.**

Chair

COUNCILLOR GASPARINI, IN THE CHAIR

Present

Councillors Cimino; Barbeau; Berthiaume; Dupuis; Rivest; Callaghan; Craig; Caldarelli; Landry-Altmann; Mayor Rodriguez

City Officials

M. Mieto, Chief Administrative Officer; R. Hotta, Acting General Manager of Community Development; D. Nadorozny, General Manager of Growth & Development; G. Clausen, General Manager of Infrastructure Services; T. Beadman, Chief of Emergency Services; C. Hallsworth, Executive Director of Administrative Services; L. Hayes, Chief Financial Officer/Treasurer; C. Dawe, Assistant City Solicitor; G. Mazza, Director of Building Services/Chief Building Official; C. Gore, Manager of Community Partnerships; B. Gutjahr, Manager of Compliance and Enforcement Services; Carmen Ouellette, Manager of Children Services; D. Brouse, By-law Enforcement Officer; J. McKechnie, Executive Assistant to the Mayor; A. Haché, City Clerk; K. Bowschar-Lische, Law Clerk; F. Bortolussi, Council Secretary

News Media

Sudbury Star; MCTV; CIGM; Channel 10 News; Le Voyageur; Northern Life

Declarations of
Pecuniary Interest

None declared.

PART I

POLICY DISCUSSION PAPERS - PRELIMINARY DISCUSSION

**Item 3
Blasting Activities of
the City of Greater
Sudbury**

Report dated 2007-11-09 was received from the General Manager of Growth & Development regarding Blasting Activities of the City of Greater Sudbury.

Guido Mazza, Director of Building Services/Chief Building Official, made an electronic presentation regarding Blasting Activities in the City of Greater Sudbury. He provided some historical information and referred to the letter from the Ministry of the Environment dated June 21, 2007 encouraging the City of Greater Sudbury consider the creation of a by-law to deal with blasting activities. He presented the three options.

Item 3
Blasting Activities of
the City of Greater
Sudbury

The first option (Status Quo) is that the Ministries of Labour and Environment currently have legislative power and should be lobbied to not change their policy.

The second option (Windsor Model) is that Council instruct staff to develop a draft by-law similar to Windsor. He indicated this is a stringent by-law which is not currently enforced. He further indicated such a by-law attracts major liability and responsibility and will have an impact on the industry and City of Greater Sudbury in terms of costs and time.

The third option (Victoria Model) is that Council instruct staff to develop a draft by-law similar to Victoria which is less stringent and controlled through current development approvals. He indicated this option models on the 'best practice' approach which is currently used by reputable contractors. He indicated that all options would involve public input sessions and development industry consultation and well as legal input.

Councillor Gasparini asked when the province decided that municipalities should be responsible for regulating blasting activities and questioned why the City should take any action based on only one letter from the local office.

Councillor Callaghan indicated that other municipalities should be canvassed to see how they are handling this matter.

With the consensus of the Committee, this matter was deferred for further information.

Item 4
Clearing of Debris
from Lands By-law

Report dated 2007-10-10 was received from the General Manager of Growth & Development regarding Clearing of Debris from Lands By-law.

Bryan Gutjahr, Manager of Compliance and Enforcement Services, made an electronic presentation regarding Clearing of Debris from Lands By-law. He outlined the procedure under the Maintenance and Occupancy Standards By-law 2001-200 (Property Standards) from the initial complaint to compliance including the appeal process stressing the timelines. He then outlined the procedure under the proposed Clearing of Debris from Lands By-law. He indicated staff's recommendation is that a by-law be drafted and that the Maintenance and Occupancy Standards By-law be amended to reflect the changes.

Mr. Gutjahr explained the Compliance & Enforcement initiatives and efficiencies. He indicated approximately 5,000 complaints are received annually with 60% of the calls being Property Standards issues. He indicated the proposed by-law would allow officers to deal with issues quickly and effectively. He indicated that officers

APPENDIX 'B'

**Mayor's Letter to Minister of the Environment
Dated February 25, 2008**

John Rodriguez

Mayor - Mayor

john.rodriguez@greatersudbury.ca



February 25, 2008

Ministry of Environment
135 St. Clair Avenue West
Toronto ON M4V 1P5

Attention: Honourable Mr. John Gerretsen
Minister of the Environment

Dear Minister Gerretsen,

**Re: Residential/Commercial Blasting Complaints
City of Greater Sudbury**

The Council for the City of Greater Sudbury has requested that I write to you on the above-referenced issue as it relates to the citizens of the City of Greater Sudbury.

As you may know, we in the City of Greater Sudbury are blessed with a thriving economy based on large part the success of the mining industry. This has resulted in an unprecedented amount of construction activity within the community and based on our unique topography in the heart of the Canadian Shield, a subsequent increase in blasting activity has occurred to accommodate this development.

The increase in blasting activity has led to a corresponding increase in citizen complaints related to the noise, vibration, dust and flying debris which results from blasting. By letter dated June 29, 2007 (copy attached), the Supervisor of the Ministry of the Environment district office in Sudbury advised City Council that the Ministry office would no longer be addressing complaints related to blasting activities unless the complaints were related to blasting at mine sites and quarries. Instead, the City was advised, all complainants would be referred to the City for resolution. The suggestion was made that the City should pass a by-law to govern blasting. The author suggested there were some municipalities in the country which had passed by-laws but offered no particulars.

Our investigation of the issue has indicated that municipalities do not have authority under the Municipal Act, 2001 to enact by-laws of the type suggested by the Supervisor of the Ministry of the Environment district office. At one point the City of Ottawa had special legislation to permit it to pass such a regulatory by-law, but it is our understanding that they may have since asked for that special legislation to be repealed. As a result, we would suggest that it may not be appropriate for the Ministry to advise citizens that the City has a duty to regulate in this area.

City of Greater Sudbury
Ville du Grand Sudbury

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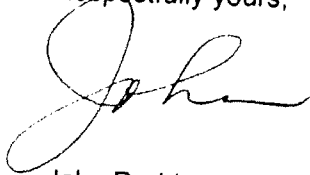
Honourable John Gerretsen
Minister of the Environment

Re: **Residential/Commercial Blasting Complaints**
City of Greater Sudbury

The City is concerned about the determination of the local office that it will discontinue its role in investigating blasting complaints which was previously undertaken, at a time when the need for that service is at a peak. I have been asked to explore with your office if the advice of the local office is reflective of the Ministry position. If this is the Ministry's position, then the Council of the City of Greater Sudbury would respectfully request that the Ministry reconsider its position, and continue to offer within the City, such services as the investigation of blasting complaints and enforcement of Ministry blasting guidelines. As the province chose to withhold this power from municipalities in the Municipal Act, 2001, the province can be seen to have some responsibility to address these issues directly.

We trust you will see your way to reinstating the prior service level of the local office of the Ministry of the Environment.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'John', with a large, stylized initial 'J'.

John Rodriguez
Mayor

Ministry of the Environment

199 Larch Street
Suite 1201
Sudbury ON P3E 5P9

Ministère de l'Environnement

199, rue Larch
Bureau 1201
Sudbury ON P3E 5P9



Direct Line: (705) 564-3278
Fax: (705) 564-4180

Sudbury/Sault Ste. Marie District

June 29, 2007

Mayor John Rodriguez
City of Greater Sudbury
Tom Davies Square
PO Box 5000, Station A
Sudbury, Ontario
P3A 5P3

Dear Mayor Rodriguez:

Re: Residential/Commercial Blasting Complaints
City of Greater Sudbury

Ministry staff at the Sudbury District Office, Ministry of the Environment, would like to bring to your attention the issue of blasting and complaints received as a result of blasting which is taking place for the purpose of residential/commercial development throughout the City of Greater Sudbury. We recently met with staff from the city's Bylaw Department and found out that they have no means to deal with these blasting concerns.

The Ministry of the Environment has very little legislation to address blasting, as it relates to incidents involving construction projects. Our blasting policy deals mainly with blasting activity at mine sites and quarries and was not developed to address residential/commercial development projects. Due to the unique geology of the Sudbury area and the vast amount of development taking place in our city over the past few years, the number of blasting complaints received by ministry staff has increased exponentially but with no real avenue for resolution.

Municipalities are responsible for issuing permits for construction and development activity within the city, and they also have the capability to create bylaws to address issues such as blasting. It is our understanding that the City of Greater Sudbury does not have a blasting bylaw in place, and we would like to take this opportunity to encourage municipal council to consider the creation of such a bylaw. We are aware of several communities within Canada that currently have and enforce this type of bylaw, and we feel the community of Greater Sudbury would also benefit from this type of bylaw.

With no real mechanism to deal with the concerns that are being raised, we will be explaining the situation to anyone who contacts us. Part of that explanation will be that the city has approved these developments, and their concerns should be addressed to the department responsible for the development approval and to the councillor for the area.

Should you have any questions or concerns, please contact me at (705) 564-3278 or alternatively you can contact Celeste Dugas, Provincial Officer for the City of Greater Sudbury at (705) 564-3014.

Yours truly,

Tom Brown
Supervisor
Sudbury District Office

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c: Brian Cameron, District Manager, Sudbury/Sault Ste. Marie District, Ministry of the Environment
Celeste Dugas, Provincial Officer, Ministry of the Environment
Joe Cimino, Councillor, Ward 1
Jacques Barbeau, Councillor, Ward 2
Claude Berthiaume, Councillor, Ward 3
Evelyn Dutrisac, Councillor, Ward 4
Ron Dupuis, Councillor, Ward 5
Andre Rivest, Councillor, Ward 6
Russ Thompson, Councillor, Ward 7
Ted Callaghan, Councillor, Ward 8
Doug Craig, Councillor, Ward 9
Frances Caldarelli, Councillor, Ward 10
Janet Gasparini, Councillor, Ward 11
Joscelyne Landry-Altmann, Councillor, Ward 12

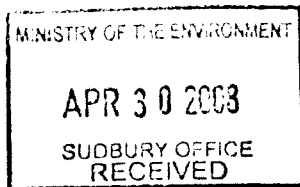
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APPENDIX 'C'

Minister of the Environment Letter

Dated April 15, 2008

To Mayor Rodriguez



bc: CCU
ADM/OD
DIR/Northern Region
Brian Cameron/Sudbury
AUTHOR: Celeste Dugas
Format by: Debbie Hofstetter
Log: ENV1283MC-2008-938

April 15, 2008

His Worship John Rodriguez
Mayor
City of Greater Sudbury
PO Box 5000, Station A
200 Brady Street
Sudbury ON P3A 5P3

Dear Mayor Rodriguez:

Thank you for your letter of February 25, 2008 requesting clarification on the Ministry of the Environment's (MOE) role with regard to noise/vibration complaints related to blasting activities within the City of Greater Sudbury.

It remains outside the MOE's mandate to regulate commercial/residential development activities that are permitted through the municipal planning process or by the issuing of a building permit. The current blasting policies and guidelines that the Province is authorized to approve deal primarily with activities such as mines, pits and quarries. The MOE has no approval requirements for most municipal activities related to residential and commercial development.

Under the authority of the *Municipal Act, 2001*, specifically sections 8, 9, and 10, the municipality is provided with broad authority to take such actions as deemed necessary or desirable to enhance the municipality's ability to respond to municipal issues. Examples of such municipal bylaws can be found in several municipalities throughout Ontario including Lake of Bays, Seguin Township, Burlington and Hamilton. The local district office for the Ministry of Municipal Affairs and Housing (MMAH) should be contacted for clarification and information pertaining to available options under the *Municipal Act, 2001*. The local management contact at MMAH is Ms. Laurie Brownlee who can be reached at 705-564-6864.

His Worship John Rodriguez
Page 2.

Staff from the MOE's Sudbury District Office would be pleased to participate in a meeting with you and staff from MMAH to address your questions. If you would like to discuss this matter in more detail, please contact Mr. Brian Cameron, Manager of the MOE's Sudbury District Office, at 705-564-3214.

MOE staff will continue to work closely with the City of Greater Sudbury to ensure that blasting complaints which fall under the ministry's mandate are addressed in a timely fashion.

I trust this information is helpful.

Sincerely,

Original signed by

John Gerretsen
Minister

c: Ms. Laurie Brownlee, Acting Manager, Community Planning and Development
Northeastern Municipal Services Office
Ministry of Municipal Affairs and Housing

APPENDIX 'D'

**Minutes of Staff Meeting with
Ministries of Environment & Labour
Dated May 12, 2008**

BLASTING ACTIVITIES IN THE CITY OF GREATER SUDBURY MINUTES OF MEETING WITH MINISTRY STAFF

Date: May 12, 2008

Time: 1:00 p.m. – 2:27 p.m.

Place: Committee Room C-40

Present:	Claude Nadon	Ministry of Labour
	Jill Bennett	Ministry of Labour
	Celeste Dugas	Ministry of Environment
	Carolyn Dawe	Legal Services, City of Greater Sudbury
	Guido Mazza	Building Services, City of Greater Sudbury
	Bryan Gutjahr	Compliance & Enforcement, CGS
	Doug Nadorozny	General Manager, Growth & Development, CGS
	Valerie Klotz	Building Services

Discussion:

Celeste Dugas, Ministry of the Environment, advised that she requested this meeting as a result of receiving correspondence from Mayor Rodriguez regarding blasting activities in the City of Greater Sudbury. She circulated a copy of a letter dated April 15, 2008, to Mayor Rodriguez from John Gerretsen, Minister of Environment, in response to the Mayor's letter dated February 25, 2008, requesting clarification on the Ministry of Environment's role with regard to noise and vibration complaints related to blasting activities in the City of Greater Sudbury. Ms. Dugas felt that a face-to-face meeting with City staff would be beneficial as opposed to sending correspondence back and forth.

The Minister's letter reiterates the local office's position that regulation of blasting activities for commercial/residential development remains outside the MOE's mandate. The only blasting policies and guidelines that the Province is authorized to approve "deal primarily with activities such as mines, pits and quarries. The MOE has no approval requirements for most municipal activities related to residential and commercial development". They are of the opinion that the City has the authority to regulate this type of blasting under authority of the Municipal Act by means of establishing a Blasting By-law. They cited some examples of such municipal by-laws from various municipalities. She provided a copy of the City of Burlington's blasting by-law.

Ms. Dugas noted that when they receive complaint calls regarding blasting for commercial or residential developments, they are currently referring the calls to the City (Mayor's office) for follow up. Ms. Dugas provided Mr. Nadorozny with a copy of their

policy dealing with mining and pits and quarries. City staff has been referring complaint calls to the Ministry of Labour or the Ministry of Environment, depending on circumstance (e.g. vibration, flying debris).

Ms. Dugas advised that in the past they may have dealt with complaint calls for residential development such as dust even though they didn't have any policies to cover them and that this was a long time ago. Their position is that the City should deal with them. Blasting activities could be covered under a noise and nuisance by-law however it is the City's decision to make as to whether they establish a blasting by-law.

Mr. Nadorozny and Mr. Mazza agreed that from a legal liability perspective, taking on the regulation of blasting for commercial/residential activity in the City may be more than the corporation is prepared to take on at this time. The City has neither the staff nor expertise (e.g. rock engineers) on hand to deal with this. It was felt that the Ministry of the Environment is in a better financial position to expand its role to include this activity. The MOE also currently has staff with the necessary blasting expertise.

There's a "Catch 22" situation as it appears that neither the City of Greater Sudbury, Ministry of Labour, Ministry of Natural Resources or Ministry of Environment are currently regulating this type of blasting activity. Contractors are conducting pre-blast surveys but are not provincially mandated to do so. They follow their good construction practices and are governed by their insurance, and or contractual obligations.

Mr. Mazza noted that local blasting companies are used to dealing with the Ministries of Labour, Natural Resources and the Environment, not municipalities. They've noticed that the Ministries are tightening their controls over blasting. They've indicated that the City would be "ill advised" to get involved in the permitting process based on inherent liabilities of such a regulatory process.

Mr. Nadon, Ministry of Labour, pointed out that the Ministry looks after blasting sirens, security for the public around blasting sites, blasting controls regarding explosives, and use of blasting mats. He noted that residential construction blasting is problematic due to the variety of competencies of the companies involved. The biggest complaint they get from the public is damage to property from vibration. If contractors do pre-blast surveys, it's much easier. Currently, no licensing requirement for blasting companies exists. The Ministry has the authority to investigate problems with blasting, but there is no pre-approval of companies. The Ministry has a reactive role, not a proactive one.

Ms. Dawe asked if there were any plans in the making to license blasting companies. Mr. Nadon responded that the Province was examining the possibility of having additional certification through the Ministry of Training, Colleges and Universities. They've discussed recommending a trade approval from some provincial ministry (e.g. Ministry of Labour or Education) that would ensure competency of blasters however it is not considered a priority. They expect contractors to hire competent staff.

Mr. Mazza noted that the City is hesitant to establish a blasting by-law as it's not in the City's mandate to take this on. We will require Council's direction on how to deal with residential blasting. He noted that the other few municipal blasting by-laws aren't good examples to follow and that the City of Ottawa got involved in establishing a blasting by-law through a private members bill however its by-law is no longer in effect. It only seems logical that the Ministry of the Environment take this on as they have the expertise to deal with it.

Mr. Nadon indicated that the public is most frustrated when they incur property damage as a result of residential blasting. They don't have a Ministry to help them. They basically have to deal with their insurance company who in turn would sue the contractor for damages. The Ministry of Labour can deal with complaints about noise and dust, but not property damage. They can however provide the public with the name of the contractor doing the blasting. If it is a subcontractor, the contractor will be able to identify them.

Ms. Dawe noted that under the old Municipal Act, the City was not permitted to become involved with regulating blasting activities. Although the new Act may allow us to regulate some aspects of blasting such as noise, it falls out of the normal range of municipal responsibility. She doesn't understand why the MOE would refer calls to the City. She agreed that since the Province has more staff and expertise, they should consider expanding their role. Ms. Dugas responded that the MOE has no intention of doing this. If the City decides it doesn't want to take complaint calls, then the MOE will advise the public that the liability lies with the contractor and they should contact their insurance company.

Mr. Nadorozny noted that although it was clear that there is no specific remedy, the City and the Ministries could agree amongst themselves that this is the best way to deal with complaint calls. Mr. Nadon indicated that The Ministry of Labour can help identify contractors by doing site visits. Mr. Mazza suggested that the City could prepare a public service announcement advising the public to participate in pre-blast surveys when approached.

Mr. Mazza will draft a report to the Mayor and Council on the City's options. He felt that Council will prefer to be proactive. He also felt that the Ministry of Environment was being somewhat misleading by claiming other municipalities have proactive blasting by-laws in place and he challenged them to provide an instance where this is truly taking place.

Everyone agreed that the bigger issue is having training and competency for the blasting companies with some sort of certification or licensing. Apparently, Ontario is the only province that doesn't regulate it.

/vk

APPENDIX 'E'

Ontario Provincial Standard Specification (OPSS) 120 (General Specification for the use of Explosives)



**ONTARIO
PROVINCIAL
STANDARD
SPECIFICATION**

**METRIC
OPSS 120
APRIL 2008**

**GENERAL SPECIFICATION FOR
USE OF EXPLOSIVES**

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120.08	QUALITY ASSURANCE - Not Used
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APPENDICES

120-A	Commentary
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120.01 SCOPE

This specification covers the requirements for the use of explosives on the Contract.

120.01.01 Specification Significance and Use

This specification has been developed for use in provincial- and municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities and the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

120.01.02

Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

120.02

REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Ministry of Transportation Publications

Ontario Traffic Manual (OTM):
Book 7 -Temporary Conditions

Canadian Standards Association

Z107.54-M85 (R1999) Procedure for Measurement of Sound and Vibration Due to Blasting Operations

Department of Fisheries and Oceans (DFO) Publication

Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, 1998

120.03

DEFINITIONS

For the purpose of this specification, the following definitions apply:

Blaster means a competent person knowledgeable, experienced, and trained in the handling, use, and storage of explosives and their effect on adjacent property and persons.

Blast Monitoring Consultant means an individual or firm with a minimum of 5 years experience related to blasting hired to provide blast monitoring services.

Designated Blast Area means the area where the Contractor has notified, in writing, and provided information to all Utilities, public and private property owners, and as the area where the Contractor has made arrangements to evacuate all persons whose safety might be threatened by the blasting operation.

Engineer means a Professional Engineer licensed by the Professional Engineers of Ontario to practice in the Province of Ontario.

Flyrock means rock that becomes airborne as a direct result of a blast.

Peak Particle Velocity (PPV) means the maximum speed in millimetres per second that ground particles move as a result of energy released from explosive detonations.

Pre-Blast Survey means a detailed record in written form, accompanied by film or video as necessary, of the condition of private or public property, prior to the commencement of blasting operations.

120.04

DESIGN AND SUBMISSION REQUIREMENTS

120.04.01

Design Requirements

A blast design shall be prepared by an individual or firm with a minimum 5 years experience and be certified by an Engineer. The blast design shall include, at a minimum, the following:

- a) Design PPV and design peak sound pressure level at 100 m radius or nearest Utility, residence, structure, or facility.
- b) Number, pattern, orientation, spacing, size, and depth of drill holes.
- c) Collar and toe load, number and time of delays, and mass and type of charge per delay.
- d) Setback distances to affected waterbodies.
- e) The explosive products to be used.
- f) The designated blast area.

120.04.02

Submission Requirements

The following shall be submitted to the Contract Administrator:

- a) A minimum of 2 weeks prior to the use of explosives:
 - i. The name and statement of experience of the firm carrying out the blasting.
 - ii. The name of the blaster including a record of experience and safety training.
 - iii. The name of the individual or firm responsible for the blast design, including a record of experience and statement of qualifications.

- iv. A letter from an Engineer certifying the design.
 - v. The name of the blast monitoring consultant, including a record of experience, a record of qualifications, and safety training.
 - vi. A certificate of insurance indemnifying the Owner from all claims and damages arising from the use of explosives.
- b) A minimum of 48 hours prior to the use of explosives:
- i. A letter signed by the Engineer certifying the blast design indicating the areas for which the blast design has been completed.
 - ii. A letter signed by the blaster indicating receipt of the blast design and agreement that the blasting shall be according to the design.
 - iii. A letter signed by the Contractor certifying that a pre-blast survey has been carried out in accordance with the Pre-Blast Survey subsection. A copy of the pre-blast survey shall be provided to the Contract Administrator upon request.
 - iv. A copy of the blast design.
 - v. The designated blast area.
 - vi. A blasting schedule.
 - vii. A list of all locations to be monitored.
- c) Upon request, any blasting permits, approvals, and agreements required for the use of explosives or to carry out blasting operations.

120.05 MATERIALS

120.05.01 Explosives

Only explosive products that are approved for use in Canada shall be used.

120.06 EQUIPMENT

120.06.01 Detonation Apparatus

Detonation apparatus shall be of the type approved by the detonation system manufacturer for the type of blasting operation to be undertaken. All apparatus shall be kept in working order and shall be thoroughly inspected before and after each blasting operation.

All wiring connected to electrical detonation apparatus shall be properly insulated.

120.06.02 Monitoring Equipment

All monitoring equipment shall be capable of measuring and recording ground vibration PPV up to 200 m/s in the vertical, transverse, and radial directions. The equipment shall have been calibrated within the six months prior to commencement of any blasting operations. Proof of calibration shall be submitted to the Contract Administrator prior to commencement of any monitoring operations.

120.07 CONSTRUCTION

120.07.01 General

Blasting shall be carried out only during daylight hours and at a time when atmospheric conditions provide clear observation of the blast from a minimum distance of 1,000 m. Blasting shall not be conducted on Sundays, statutory holidays, or during electrical storms.

No blasting shall be carried out closer than 30 m of concrete within 72 hours after completion of placement when the ambient temperature falls below 20 °C or for 36 hours when the ambient temperature is continuously greater than 20 °C, unless otherwise authorized by the Contract Administrator.

Protection of fish and fish habitat shall be according to the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.

120.07.02 Radio-Frequency Hazards

Prior to blasting, investigations shall be done to determine if radio-frequency hazards exist. Where such hazards exist, necessary precautions shall be taken.

120.07.03 Pre-Blast Survey

A pre-blast survey shall be prepared for all buildings, Utilities, structures, water wells, and facilities likely to be affected by the blast and those within 150 m of the location where explosives are to be used. The standard inspection procedure shall include the provision of an explanatory letter to the owner or occupant and owner with a formal request for permission to carry out an inspection.

The pre-blast survey shall include, as a minimum, the following information:

- a) Type of structure, including type of construction, and the date, if possible, when built.
- b) Identification and description of existing differential settlements, including visible cracks in walls, floors, and ceiling, including a diagram, if applicable, room-by-room. All other apparent structural and cosmetic damage or defect must also be noted. Defects shall be described, including dimensions, wherever possible.
- c) Photographs or video as necessary for recording areas of significant concern.

A copy of the pre-blast survey limited to a single residence or property, including copies of any photographs or videos that may form part of the report, shall be provided to the owner of that residence or property upon request.

120.07.04 Notification

120.07.04.01 General

A minimum of 15 Business Days prior to blasting, the Contractor shall provide written notice to Utilities and all owners and tenants of improved property within 500 m of the right-of-way. The notice shall include a blasting schedule, information about the audible blast warning system, and contact name for questions or other concerns.

The Contractor shall ensure that a competent person is available to receive, document, and deal with public inquiries before and after blasting operations.

Where potential Utility service disruptions exist, the Contractor shall request the Utility to re-route or temporarily shut down the Utility. When such requests are denied, the Contractor shall request, in writing, that a standby crew be present for the blast. When the Utility refuses to provide a standby crew, the Contractor shall notify the Utility and the Contract Administrator of the intent to proceed and the potential for service disruption. If the Utility objects, the Contractor shall adjust the blast design to prevent disruption.

Where a disruption of power or other services and Utilities may occur, the Contractor shall advise affected users of the Utility or service of the potential disruption and describe how such disruptions will be corrected as soon as is practically possible. When there are a large number of affected users, the Contractor may provide such notifications through the media.

Where power lines or other Utilities are relocated or damaged in the blasting operation the Contractor shall ensure they are restored to their original location or condition as soon as practically possible.

A minimum 48 hours prior to blasting, sufficient detail regarding the blasting operations shall be provided to NAV Canada.

120.07.04.02 Utilities

Authorities of all likely affected Utilities shall be notified a minimum of 72 hours prior to blasting.

120.07.04.03 Properties

Not more than 24 hours and not less than 4 hours prior to each blast, the Contractor shall provide notice of the blasting schedule to all owners and tenants of buildings or facilities within 150 m of the blast. All blasts scheduled for the following 24 hours may be included in one notice. The notice shall include information about the audible blast warning system.

When blasting operations may incur property damage or require temporary evacuation, notification shall include evacuation information and instructions. The Contractor shall take all reasonable steps to ensure that the property owner acknowledges, by their signature, that they have received the information and will comply with any evacuation requirements. Where such signature is withheld, the Contractor shall maintain records showing the date and time that the information was delivered.

120.07.05 Monitoring

120.07.05.01 General

The Contractor shall employ a blast monitoring consultant to carry out monitoring for ground vibration PPV, peak sound pressure levels and water overpressures as required. During each blast, ground vibration PPV and the peak sound pressure level shall be monitored 100 m from the blast or at the closest portion of any residence, Utility, structure, or facility within this radius. Water overpressure in affected fish habitats shall be monitored adjacent to the shore closest to the blast. The monitoring equipment shall be repositioned as required.

120.07.05.02 Ground Vibration

PPV shall be limited to the maximum levels shown in Table 1. Should readings from any two consecutive blasts exceed these values or any single reading exceed these values by more than 30 mm/s, all blast operations shall cease until a revised blast design, certified by the Engineer, has been submitted to the Contract Administrator.

120.07.05.03 Trial Blasts

The Contractor shall confirm the suitability of the blast design for the ground vibration PPV limits and sound pressure levels by carrying out a minimum of three limited test blasts at locations agreed upon by the Contract Administrator and the Contractor. The trial blasts shall be carried out with appropriate blast vibration and noise level monitoring equipment. Based on the results, the initial blast design shall be revised as necessary to ensure satisfactory levels of shatter depth and flyrock control, and that ground vibrations are within specified limits.

120.07.06**Protective Measures**

Immediately prior to the blast, the blast area designated by the blaster shall be cleared of all vehicular and pedestrian traffic.

All traffic shall be stopped and be prevented from entering the area until the blaster gives permission. Traffic control shall be according to the Ontario Traffic Manual, Book 7. Signs shall be posted to inform the public of blasting operations and to turn off radio transmitters. Audible blast warning devices, capable of alerting workers and the public up to a radius of 1,000 m, shall be used before and after blasting.

Blasting mats or other suitable means of controlling flyrock shall be used to limit potential hazardous effects of the blast.

120.07.07**Records**

A post-blast record shall be prepared and signed by the blaster for each blast completed. The post-blast record shall report the following conditions and be made available to the Contract Administrator for site review:

- a) The date, time, and location of the blast.
- b) The wind direction and approximate speed at the time of the blast.
- c) The general atmospheric conditions at the time of the blast.
- d) The actual blast details.
- e) PPV, peak sound pressure level, and water overpressure results of each blast according to CAN3-Z107.54.

A report summarizing the results of the vibration and air blast levels shall be submitted to the Contract Administrator at the end of each work day that blasting was carried out.

120.07.08**Damage**

Upon completion of blasting or immediately following the receipt of a complaint, a site condition survey shall be performed to determine if any damage has resulted. The Contractor shall record all incidents of any damage or injury, which shall be reported immediately in writing to the Contract Administrator. All other complaints shall be reported to the Contract Administrator in writing within 24 hours of receipt. Each complaint report shall include the name and address of the complainant, time received, and description of the circumstances that led to the complaint.

120.10**BASIS OF PAYMENT**

Payment at the Contract price for the appropriate tender items that requires the use of explosives shall be full compensation for all labour, Equipment, and Material to do the work.

When the Contract contains separate items for work required by this specification, payment shall be at the Contract prices and according to the specifications for such work.

The cost of standby crews and equipment required by Utility authorities shall be the responsibility of the Contractor.

120.10.01**Claims**

The Contractor shall be responsible for the management of all claims and payment arising from the hauling, handling, use of, and storing of explosives and all effects, directly or indirectly related to the blasting operation.

TABLE 1
Maximum Peak Particle Velocity Values

Element	Frequency Hz	PPV mm/s
Structures and Pipelines	≤ 40	20
	> 40	50
Concrete and Grout < 72 hours from placement	N/A	10

**Appendix 120-A, April 2008
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

This specification should be included on all projects that require the use of explosives.

The designer should determine if Utility authorities have any special measures or minimum offset distances and include them in the Contract Documents.

The designer should identify if there are site-specific conditions or environmental issues and alter monitoring requirements, pre-blast survey limits, or notification limits as necessary, and include them in the Contract Documents.

The designer should identify if there are site-specific conditions that may affect blasting design and pre-blast survey requirements and include them in the Contract Documents.

The designer should provide names of Utility authorities and contacts involved in the Contract.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

None

APPENDIX 'F'

“Windsor Model” Blasting By-law

BY-LAW NUMBER 6366

A BY-LAW RESPECTING THE TRANSPORTING,
STORING, HANDLING AND USE OF EXPLOSIVES IN
THE CITY OF WINDSOR

Passed the 22nd day of October, 1979

WHEREAS Section 3 of *The City of Windsor Act, 1978*, provides that The Corporation of the City of Windsor may pass by-laws for prohibiting the manufacturing, transporting, storing, keeping, having or using of any explosives in the Municipality and for examining, licensing, regulating and governing persons who transport, store, keep, have or use any explosives in the Municipality;

AND WHEREAS it is deemed expedient to enact this by-law;

THEREFORE the Council of The Corporation of the City of Windsor enacts as follows:

I. **DEFINITIONS**

(1) In this by-law,

- (a) **"Blaster"** means an individual knowledgeable and competent in the handling and use of explosives for the purpose of breaking up formations of rock, masonry, concrete or ice, or demolishing a structure.
- (b) **"Blasting"** means the breaking up of rock, masonry, concrete or ice formations, or the demolition of a structure.
- (c) **"Building Commissioner"** means the Building Commissioner appointed by the Council and shall include any person authorized by the Building Commissioner to carry out any of the powers or duties of the Building Commissioner pursuant to this by-law.
- (d) **"Chief of Police"** means the Chief of Police appointed by the Board of the Commissioners of Police for the City of Windsor.
- (e) **"Corporation"** means The Corporation of the City of Windsor.
- (f) **"Council"** means the Council of The Corporation of the City of Windsor.
- (g) **"Explosives"** means blasting explosives such as dynamite, blasting agents and related explosive accessories, including detonators, authorized under *The Explosives Act*, R.S.C. 1970, C. E-15 and Regulations passed thereunder and included in classes 1, 2, 3, and 4 and Division 3 of Class 6 therein.
- (h) **"Explosives Permit"** means a permit issued by the Building Commissioner which allows the carrying out of blasting as set out on the said permit and only by a licensed blaster who is named on the said permit.
- (i) **"Fire Chief"** means the Fire Chief appointed by the Council.
- (j) **"Licensed Magazine"** means a magazine in respect of which a licence has been issued under Section 6 of *The Explosives Act*, R.S.C. 1970, and is in force.

- (k) **"Magazine"** means any building, storehouse, structure or place in which any explosive is kept or stored.
- (l) **"Person"** includes a corporation, and the heirs, executors, administrators, or other legal representatives of a person to whom the context can apply according to law.
- (m) **"School Building"** means any building or group of buildings in which people receive instruction in the learning process under supervision.
- (n) **"Shipping Document"** means any document that accompanies dangerous goods being handled for transportation or transported and that describes or contains information relating to the goods and, in particular, but without restricting the generality of the foregoing, includes a bill of lading, cargo manifest, shipping order, way-bill and switching order.
- (o) **"Structure"** means any building used for habitation, commercial, manufacturing, storage or any other purpose, any concrete, masonry or metal installation above ground surface, sewer, water and other utility manholes.
- (p) **"Suitable Receptacle"** shall mean a receptacle conforming to the standards for a Type 6 magazine (receptacle) as defined in Section 6 of the Standards for Blasting Explosives Magazines of the Explosives Division of the Canada Department of Energy, Mines and Resources.
- (q) **"Vehicle"** means a motor driven conveyance having at least four wheels and for the purpose of transporting goods or materials.

2. **ADMINISTRATION**

- (1) In this by-law,
 - (a) It shall be the duty of the Building Commissioner to administer and enforce this by-law.
 - (b) The Building Commissioenr shall cause:
 - (i) the acceptance of applications for permits and the issuance of permits in accordance with Section 5 of this by-law;
 - (ii) proper records to be kept of permit applications, permits issued, notices and orders issued, fees collected, inspection records, and of any documents or material or information used in the operation of the Department of Buildings of the Corporation, and under the jurisdiction of the Building Commissioner, pertaining to this by-law;
 - (iii) an annual report to be made to the City Administrator of the Corporation.
 - (c) The Building Commissioner may exercise all powers necessary for the administration of this by-law and without limiting the generality of the foregoing, he may:
 - (i) enter upon any property at all reasonable times to ascertain whether the provisions of this by-law are being obeyed and to enforce and carry into effect any such provisions;

- (ii) require the assistance and co-operation of any person in charge of any explosive both prior to and during any blasting operation or inspection thereof;
- (iii) require the assistance and co-operation of the Chief of Police and/or the Fire Chief, if deemed necessary, with respect to any condition involving explosives;
- (iv) order any work involving explosives be stopped wherever there is reason to believe a condition exists which may be or could become unsafe and to take temporary possession of such explosives;
- (v) take into custody any explosives not in the possession of any properly authorized person;
- (vi) permit such deviation from the provisions of this by-law as may be deemed proper and reasonable within authority of the said Building Commissioner.

3. **EXEMPTIONS**

- (1) Nothing in this by-law shall be deemed to apply to:
 - (a) any explosive in the possession and control of the Department of National Defence;
 - (b) any explosive in the possession of any federal, provincial or municipal police officer acting in the performance of any lawful duty;
 - (c) any explosive in transit in the lawful possession of a carrier licensed under any Act of the Regulations made thereunder;
 - (d) gunpowder to a quantity of not more than 11.34 kilograms (25 pounds) kept in accordance with good practice and solely for lawful private use;
 - (e) such devices commonly used in a fireworks display and where the sale and use of such devices are regulated under By-law Number 2480 of the Corporation.

4. **PROHIBITIONS**

- (1) No person shall manufacture any explosives in the City of Windsor, provided that nothing shall apply to prohibit teachers in school buildings in carrying out their duties in a safe manner.
- (2) No person shall, within the limit of the City of Windsor,
 - (a) construct or cause to be constructed a licensed magazine;
 - (b) store or cause to be stored any explosives over night.
- (3) No person shall transport, store, keep, have or use, or cause to be transported, stored, possessed of, or used, nitroglycerine in the City of Windsor; provided, however, that nothing in this subsection shall be deemed to prohibit the normal and lawful transportation, possession or use of nitroglycerine for medical purposes, in quantities no greater than reasonably necessary, and other wise in accordance with law.

- (4) (a) No person shall use explosives in the demolition of a structure in the City of Windsor save and until a professional engineer has been retained to undertake a general review of the project during demolition where required by Ontario Regulation 925/75 as amended, made under the *Building Code Act, 1974*, Statutes of Ontario.
- (b) For the purpose of this subsection, a professional engineer shall mean a member or licensee of the Association of Professional Engineers of the Province of Ontario under the *Professional Engineers Act*, R.S.O. 1970, Chapter 366.

5. **PERMITS, LICENCES AND PAYMENT OF FEES**

- (1) No person shall perform or cause to be performed any work involving the use of explosives unless:
 - (a) an application for an explosives permit has been filed with the Building Commissioner, such application being on a prescribed form as set forth in Appendix "A" hereto, and such application shall be accompanied with evidence that the applicant has in effect public liability coverage in an amount not less than One Million (\$1,000,000.00) Dollars;
 - (b) an explosives permit has been obtained from the Building Commissioner and such permit shall:
 - (i) bear the personal signature of the Building Commissioner; or
 - (ii) in case of the absence of the Building Commissioner, bear the signature of an individual authorized personally by the Building Commissioner so to do; and
 - (iii) set out thereon the name and licence number of the blaster designated to handle and use the explosives during performance of the work authorized by the permit.
- (2) No person shall store, handle, or use explosives for blasting purposes unless:
 - (a) an application for a blaster licence has been filed with the Building Commissioner, such application being on the prescribed form as set forth in Appendix "B" hereto; and
 - (b) a blaster licence has been issued by the Building Commissioner.
- (3) Payment of applicable fees shall be made at the time an application is filed and any such fee paid shall not be refundable.
- (4) No permit or licence shall be issued to any person other than the person who signed the application and any such permit or licence shall be non-transferable.
- (5) An explosives permit not acted upon within a period of thirty (30) days following the date of issue shall be considered to have expired.

6. **REGULATIONS**

- (1) No blasting operation shall be carried out in the City of Windsor unless:
 - (a) it is authorized by an explosives permit, and
 - (b) such operation is performed by a person having a blaster licence, and

- (c) the Building Commissioner has been notified in writing at least two (2) full working days in advance of such operation and such notification shall specify the location, day, date and exact time it is proposed to carry out such operation, and
 - (d) the Building Commissioner or an inspector under his jurisdiction is at the site of such scheduled operation at least one (1) hour before and remains there during the actual operation for inspection purposes.
- (2) No explosives shall be transported in the City of Windsor unless in compliance with the following:
- (a) All vehicles used for transporting explosives shall bear the word **Explosives** clearly displayed in red letters not less than 152.4 mm - 6 inches in height on a white background on both sides and front and rear of the vehicle, to be plainly visible, but shall not be displayed when "no explosives" are carried.
 - (b) The transportation of explosives in transit through the City of Windsor shall be in accordance with Part VI of the Explosives Regulations enacted pursuant to *The Explosives Act*, R.S.C. 1970, C. E-15.
 - (c) Not more than two thousand (2000) lbs. of any explosive or eighty (80%) per cent of the carrying capacity of the vehicle as defined in accordance with Part VI of the Explosives Regulations enacted pursuant to *The Explosives Act*, R.S.C. 1970, C. E-15, whichever is the less, shall be transported on a street in one vehicle at one time and only when transported in a vehicle especially equipped and fitted for the sole purpose of transporting explosives and only carried from an outside location, for delivery to work sites within the City of Windsor.
 - (d) The explosives contained in the vehicle, loaded in accordance with the provisions of section 6(2)(c) hereof, may be delivered to a number of work sites, but the quantity delivered at each work site must not exceed that prescribed in section 6(3)(e) and (f) hereafter.
 - (e) The operation of loading, unloading or transportation of explosives are subject to the following conditions:
 - (i) all persons engaged in the loading, unloading or transportation of explosives shall observe all due precautions for the prevention of accidents of fire or explosion, and for preventing unauthorized persons having access to the explosive so being loaded, unloaded or transported, and shall abstain from any act whatever that tends to cause fire or explosion, and is not reasonably necessary for the purpose of loading, unloading or transportation of such explosive or of any other article carried therewith, and for preventing any other person from committing any such act and, any other person who, after being warned, commits any such act, shall be deemed to commit a breach of this regulation,
 - (ii) after the loading or unloading of explosives on or out of any vehicle is begun, it shall not be stopped until completed and it shall be completed as expeditiously as possible,
 - (iii) no bale hooks or other metal tools shall be used for loading, unloading or other handling of packages containing explosives nor shall any package or container of explosives be thrown or dropped during such loading or unloading,
 - (iv) the engine of a gasoline or oil-driven vehicle shall not be run during the loading or unloading of explosives,

- (v) the ignition of a gasoline or oil-drive vehicle shall be turned off and the brakes set when the vehicle containing explosives is parked,
- (vi) gasoline or oil-driven motor vehicles used for the transportation of explosives shall be inspected daily to ascertain that,
 - fire extinguishers are filled and in working order,
 - electric wiring is completely insulated and firmly secured,
 - gasoline tank and feed lines have no leaks,
 - chassis, engine, pan and bottom of body are clean and free from surplus oil and grease, and
 - brakes and steering apparatus are in good condition,
- (vii) a vehicle that is not in sound mechanical condition in all respects and suitable for and capable of safely transporting explosives shall not be used to transport explosives,
- (viii) explosives shall not be loaded onto a motor vehicle unless the vehicle has been fully serviced with respect to supplies to fuel, oil and air,
- (ix) the gasoline tank of a vehicle shall not be filled while explosives are upon the vehicle except in case of necessity, in which case the engine shall be stopped, the ignition shut-off, and the tank filled only at a place where filling would not be a danger to the public safety,
- (x) smoking on, in, or while attending any vehicle containing an explosive is prohibited,
- (xi) the driver or operator of any vehicle containing an explosive shall not drive or conduct same in a dangerous or reckless manner, and a person who is impaired shall not have charge of any such vehicle and shall not be permitted to be in, on, or attend same,
- (xii) the driver or operator of a vehicle transporting explosives shall not stop unnecessarily but when a stop is necessary it shall not be longer than may be reasonably required; stops at places where the public safety would be endangered shall be avoided,
- (xiii) routes passing through centres of habitation shall be as far as possible avoided,
- (xiv) due provision shall be made for preventing the introduction into a vehicle of fire, matches or any substance or article likely to cause explosion or fire, or any iron, steel or grit that may come into contact with an explosive; this paragraph does not prevent the introduction of an artificial light of such construction, position or character, or of safety matches of a character that will not cause any danger of fire or explosion,
- (xv) any vehicle transporting explosives shall be equipped with a fire extinguisher in working order, of adequate size and capable of dealing with a gasoline or oil fire,
- (xvi) each vehicle transporting explosives shall be in the exclusive charge of and constantly attended by some competent person, not under eighteen (18) years of age, and such person shall not have charge of more than one such vehicle,

- (xvii) when a halt is made overnight, the premises in which the vehicle is kept shall not be used for any other purpose that might give rise to the presence therein of naked lights, matches or any substance or article likely to cause explosion or fire, and the premises shall be at least three hundred and five metres (305m) - 1000 feet from any habitation or storehouse, and such vehicle shall, at all times, be in charge of, and attended by, some competent person not under eighteen (18) years of age,
 - (xviii) when two (2) or more vehicles transporting explosives are travelling together, a space of at least three hundred and five metres (305m) - 1000 feet - between each vehicle and every such vehicle shall be maintained unless circumstances render it impractical,
 - (xix) vehicles transporting explosives shall not be driven past fires of any kind burning on or near the highway or other thoroughfare until after due caution shall have been taken to ascertain that such passing can be made with safety,
 - (xx) no passengers other than persons licensed to assist in handling explosives shall be permitted on a vehicle transporting explosives,
 - (xxi) the driver or operator of a vehicle transporting explosives shall bring it to a full stop before crossing any railroad track,
 - (xxii) any explosive while being transported on a street shall be carefully packaged so as to prevent jolting and concussion, and
 - (xxiii) the speed of a vehicle transporting explosives shall conform to all local traffic laws, ordinances, and by-laws and be consistent with road and weather conditions.
- (3) No explosives shall be stored and held in storage for use in the City of Windsor unless in compliance with the following:
- (a) following transportation to the project site, explosives shall be placed in a suitable receptacle until use, and
 - (b) the suitable receptacle shall not be used to store an explosive overnight, during holidays or weekends, or any further period of time when work is not in progress, and
 - (c) every suitable receptacle shall have the word **Explosives** printed thereon in red letters at least 152.4 mm - 6 inches - high and painted on a heat reflecting surface, and
 - (d) a suitable receptacle shall be,
 - used exclusively for the keeping of explosives,
 - kept scrupulously clean, and
 - kept away from goods of a flammable nature, and
 - (e) storage of explosives on the project shall be in compliance with the requirements of the Building Commissioner, and
 - (f) the quantities of explosives stored pursuant to section 6(4)(c) hereof should not exceed those specified in the "Quantity-Distance Table for Blasting Explosives" of the Canada Department of Energy, Mines and Resources, and
 - (g) no explosive shall be kept or stored in any building which is used for any purpose other than the storage of explosives, and

- (h) detonators shall at all times be kept or stored separately from other explosives, and
 - (i) damp or deteriorating explosives shall be promptly disposed of in an approved safe manner, and
 - (j) when explosives are kept at or near the site of any work in progress a watchman shall be kept on duty at all times when the workmen are away from the site of the work, and
 - (k) all explosives not used on the work shall be returned to a licensed magazine located outside the City of Windsor.
- (4) No blasting operation shall be carried out in the City of Windsor unless in compliance with the following:
- (a) written permission is first obtained from the Windsor Utilities Commission to perform any blasting operation within a distance of one hundred and sixty-six metres (166m) - 545 feet - from any water storage reservoir, water pumping station, water works, water storage tank or transformer station, and
 - (b) written permission is first obtained from the relevant Commission, Municipal Department or utility company to perform any blasting operation within three point seven metres (3.7m) - 12 feet - of any water main, gas main, hydro conduit, telephone conduit, sanitary sewer, fire cable, petroleum lines or any other underground utility, and
 - (c) unless otherwise specified in this by-law, the use of explosives in the City of Windsor shall be in accordance with the following table and values for distances greater than fifteen point two four metres (15.24m) - 50 feet - may be obtained from the formula for,
 - (i) Imperial measurement $d = \frac{300\sqrt{E}}{8.2}$
 where d = distance from blasting shot to structure affected
 (in feet)
 E = weight of explosives used without delay caps
 (in lbs.)
 where delay caps are used, pounds per delay = $\delta\sqrt{E}$
 - (ii) Metric measurement $d = \frac{300\sqrt{E}}{18.12}$
 where d = distance from blasting shot to structure affected
 (in metres)
 where E = weight of explosives used without delay caps
 (in kilograms)
 where delay caps are used, kilograms per delay = $\delta\sqrt{E}$

Distance from Blasting Shot to any Structure (in feet) (in metres)		Maximum Weight of Explosive used without Delay Caps (in pounds) (in kilograms)		Maximum Weight of Explosive per Delay when Delay Caps used (in pounds) (in kilograms)	
20	6.096	0.5	0.227	0.5	0.227
30	9.144	1.0	0.454	1.0	0.454
40	12.192	1.5	0.680	1.0	0.454
50	15.240	2.0	0.907	1.5	0.680
60	18.288	3.0	1.361	2.0	0.907
70	21.336	4.0	1.814	2.7	1.225
80	24.384	5.0	2.268	3.3	1.497
90	27.432	6.0	2.722	4.0	1.814
100	30.481	8.0	3.629	5.3	2.404
200	60.961	30	13.608	20	9.072
400	121.921	120	54.432	80	36.288
600	182.882	270	122.472	180	81.648
800	243.843	476	215.914	317	143.791
1000	304.804	746	338.386	492	223.171

The weight of explosive contained in any one (1) blast shall not exceed nine hundred kilograms (900 kg) - 2000 pounds, and

- (d) granting of the written permission referred to in sections 6(4)(a) and (b) shall not absolve the holder of the permit from liability for damage caused by the blasting, and
- (e) the holder of an explosive permit shall,
 - (i) maintain a continuous record showing the total weight of explosives and the number of detonators delivered each day to the work and the disposal made of the explosives and detonators not used,
 - (ii) maintain a record of each blast, indicating the number of holes, time, location, weight of explosives and timing period,
 - (iii) make a return at the end of each month to the Building Commissioner clearly setting forth the above information,
 - (iv) such records shall be available at all times for checking by the Building Commissioner, and
- (f) no person shall carry on blasting in the City of Windsor at any time except during daylight hours or at any time on Sunday or at any time when atmospheric conditions prevent a clear observation at a distance of ninety-one metres (91m) - 300 feet - from the place where the blasting is to be carried on except by special permission in writing from the Building Commissioner, and
- (g) except as hereinafter provided, no person shall,
 - (i) fire any blast other than by means of an approved electrical apparatus,
 - (ii) use batteries installed in automobiles for blasting purposes,
 - (iii) operate an engine with spark ignition within three metres (3m) - 10 feet - of any blasting circuit,
 - (iv) connect any firing wire to the electrical firing device or testing apparatus until everything connected with the blasting operation is in readiness and all clear, and

- (h) except as hereinafter provided,
 - (i) after the blast has been exploded, the blasting circuit shall be immediately disconnected, and
 - (ii) in the event of a misfire, the firing device shall be disconnected immediately from the blasting circuit and shall remain disconnected, and
- (i) all electrical apparatus shall be kept in perfect order and shall be thoroughly inspected before and after each blasting operation and all wiring connected therewith shall be properly and adequately insulated, and all wiring shall be tested by approved apparatus before the connection of the electrical firing device to the blasting circuit, and
- (j)
 - (i) where, in the opinion of the Building Commissioner, a radio frequency may exist in the vicinity of radio-frequency generators such as, for example, radio, television and radar stations and radio-frequency furnaces, he may require that non-electrical methods of blasting be used, but in any event no person shall use non-electrical methods of blasting without the written authority of the building Commissioner,
 - (ii) the Building Commissioner may, at the expense of the person applying for a blasting permit, require that a radio-frequency field-strength measurement be made in order to determine the magnitude of the hazard, and
- (k) every mobile radio transmitter within thirty point five metres (30.5m) - 100 feet - of a blasting circuit shall be switched off at the main power switch, and
- (l) all blasting operations shall cease during electrical storms, and
- (m) all electrical apparatus of any nature used in blasting operations shall, when not in use, be kept under lock and key and under the direct charge of the powderman, and
- (n) no person shall carry on blasting within a radius of three hundred and five metres (305m) - 1000 feet - of any school building during school hours, or any hospital until the superintendent or the person in charge thereof shall have been notified six (6) hours previous to the blast being fired, and
- (o) no person to whom an explosives permit has been issued shall, or shall cause anyone to,
 - (i) drill within seven point six metres (7.6m) - 25 feet - of any loaded hole or any hole being loaded or until any misfire shall have been blasted,
 - (ii) make up primers in advance of loading holes,
 - (iii) load up hole while it is still hot from drilling,
 - (iv) load any hole except one to be fired in the next round of blasting, and

- (p) immediately after loading the explosive and before the blast, the material to be blasted shall be covered on all exposed sides either with a strong steel wire matting of at least thirty-eight millimetres (38mm) - 1 1/2 inches - thickness woven from steel wire rope in good condition or less than nineteen millimetres (19mm) - 3/4 inch - in diameter or a rubber-type mat not less than one hundred fifty-two millimetres (152mm) - 6 inches in thickness weighing not less than one kilogram per square metre - 24 pounds per square foot. After the material has been thus covered, the blast shall be fired within fifteen (15) minutes, and
- (q) no person while blasting shall permit any rock or other material to fly through the air in such a way as to fall upon any other person or upon property other than that owned by the person who is blasting, and
- (r) when blasting is being carried on,
 - (i) the person carrying on the blasting shall provide at least two (2) competent assistants and as many additional competent assistants as circumstances may require to warn all occupants of buildings in the vicinity and to take all reasonable precautions to adequately safeguard such occupants and guard all persons and vehicles from approaching within the danger zone of the blasting,
 - (ii) the holder of the permit shall also post warning signs within a radius of ninety-two metres (92m) - 300 feet - of the work advising that blasting operations are in progress,
 - (iii) at least three (3) minutes before firing a blast, the blaster shall give warning thereto by causing a competent man carrying a red flag to be situated at a reasonable distance from the blast at each avenue of approach or point of danger, and he shall give five (5) long blows on a whistle five (5) minutes before firing the blast and three (3) long blows one (1) minute before setting off the blast, and immediately following the explosion and, ascertaining that complete safety has been restored, shall sound one (1) long and shall then signal the traffic to proceed over such street or roadway,
 - (iv) no blasting is to be considered complete until the material broken at the firing of the last blast has been cleared away and the rock faces examined for misfires and cut off holes giving special attention to old bottoms, and the excavation has been pronounced safe by a certified blaster. This procedure is the responsibility of whichever blaster permit holder set off the blast,
 - (v) no charge of any explosive that has missed fire shall be withdrawn but the charge shall be blasted without undue delay,
 - (vi) no drilling or rock breaking shall be done within one hundred and fifty millimetres (150mm) - 6 inches - of any hole that has been charged and blasted or any remnant of such holes.

7. INCORPORATION OF APPENDICES

- (1) Appendix "A" is declared to form part of this by-law being a prescribed form "Application for Explosives Permit" and setting out the permit fee therein.
- (2) Appendix "B" is declared to form part of this by-law being a prescribed form "Application for Blaster Licence" and setting out the licence fee therein.
- (3) Appendix "C" is declared to form part of this by-law being a prescribed form "Examination Report on the Competency of Applicant for a Blaster Licence"

8. **VIOLATIONS AND PENALTIES**

- (1) Every person who contravenes any of the provisions of this by-law (Chapter) is guilty of an offence and shall, upon conviction thereof, forfeit and pay a penalty of not more than Five Thousand Dollars (\$5,000), exclusive of costs and every such fine is recoverable under the *Provincial Offences Act*. (amended B/L 10277, May 22/90)
9. This by-law shall come into force and effect on the day of the final passing thereof.

(signed) "A. H. Weeks"
MAYOR

(signed) "J. B. Adamac"
CLERK

First Reading - October 22, 1979
Second Reading - October 22, 1979
Third Reading - October 22, 1979