

U.S. Department of Transportation  
Research and Special Programs Administration  
400 seventh St., S.W.  
Washington, D.C. 20590

AUG 19 2002

Mr. Robert F. Smallcomb, Jr.  
Director, Pipeline Engineering and Safety Division  
Massachusetts Department of Telecommunications & Energy  
One South Station  
Boston, MA 02110

Dear Mr. Smallcomb:

We have considered your letter of August 15, 2001, notifying us that the Massachusetts Department of Telecommunications & Energy has granted the Keyspan Energy Delivery company a waiver from compliance with 49 CFR 192.321(a) for plastic pipe across bridge No. L-08-007, on Pleasant Street, over the Monoosnoc Brook in Leominster. The waiver will permit the installation of about 60 feet of 8-inch plastic pipe above-ground inside a 12-inch coated and welded steel casing across the bridge. The steel-encased plastic pipe will be protected against mechanical damage and ultraviolet radiation, and meet all stress limits applicable to plastic pipe.

We have no objection to the waiver. The circumstances are comparable to those of previous waivers we have approved permitting the installation of plastic pipe above ground on bridges.

Sincerely,  
Stacey G and  
Associate Administrator for Pipeline Safety

Commonwealth of Massachusetts  
Office of Consumer Affairs and Business Regulation  
DEPARTMENT of TELECOMMUNICATIONS & ENERGY  
ONE SOUTH STATION  
BOSTON, MA 02110  
(617) 305-3537

August 15, 2001

Ms. Stacey Gerard  
Associate Administrator for Pipeline Safety ( DPS-1)  
Research and Special Programs Administration  
Department of Transportation  
400 Seventh Street, SW.  
Washington, D.C. 20590

RE: Waiver of Pipeline Safety Regulations

Dear Ms. Gerard:

Being a certified agent under section 60105, Public Law 103-272, the Massachusetts Department of Telecommunications and Energy has approved a waiver to Keyspan Energy Delivery from the requirements of Title 49 C.F.R. Part 192, § 192.321(a). The waiver allows Keyspan to install a eight-inch nominal diameter, SDR 13.5, PE 2406 plastic carrier pipe into a new 12" nominal diameter, coated, welded steel casing. Approximately 60 feet of the plastic piping will not meet the burial requirements of § 192.321(a). The installation site is in Leominster, Massachusetts.

As required by section 60118(d). Public law 103-272, I am forwarding a copy of the waiver to your office with the understanding that the waiver will be effective within 60 days of notification unless the Secretary objects to the waiver in writing before the effective date. Thank you for your support in this matter.

Very truly yours,  
Robert F. Smallcomb, Jr.  
Director, Pipeline Engineering and Safety Division

Keyspan  
201 Rivermoor Street  
West Roxbury, Massachusetts 02132

Mr. Robert F. Smallcomb  
Director, Pipeline Engineering and Safety Division  
Commonwealth of Massachusetts  
Massachusetts Department of Telecommunications and Energy  
One South Station  
Boston, MA 02110

July 2, 2001

RE: Petition for a Waiver to Install Plastic Pipe Across Bridge No. L-08-907 Located on  
Pleasant St. over Monoosnoc Brook in Leominster, Massachusetts

Dear Mr. Smallcomb:

In accordance with 220 CMR 101.02: Application for Exceptions and Waivers from Provisions of the D. P. U. Regulation, KeySpan Energy Delivery hereby petitions the Massachusetts Department of Telecommunications and Energy for a waiver from the provision of 49 CFR 192.321, Installation of Plastic Pipe, paragraph (a). Paragraph (a) requires that plastic pipe must be installed below ground level.

KeySpan Energy Delivery proposes to install approximately 60 feet of 8-inch nominal diameter, SDR 13.5, PE 2406, medium density plastic pipe at ground level within the utility bay of the above-captioned bridge. The bridge spans Monoosnoc Brook. The pipeline will be a new main that will be inserted in a new casing across the bridge.

The pipeline will be joined by heat fusion and inserted in a 12-inch nominal diameter, coated, welded, steel casing. The pipeline will be tested in accordance with Massachusetts and federal regulations so that it may be operated at low pressure (inches water column).

The specifications for the plastic pipe appear as Table 1 and Table 2 in Exhibit A; and the specifications for the casing appear as Table 1 in Exhibit B. The design of the pipeline installation across the bridge, including, but not limited to, the carrier pipe and casing supports, the number of supports, the distance between supports, and the means for maintaining a separation between the plastic pipe and the metallic casing appears in Exhibit C. In accordance with 220 CMR. 101.06(10)(a) 6, an 8-inch, plastic valve will be located on each side of the bridge, at the approximate distances shown in Exhibit C.

The stress on the plastic pipe will not exceed the pipe's yield strength of 3,000 psig presented in Exhibit A, Table 1 because the anticipated temperature that the pipe will experience after installation is not less than  $-20^{\circ}\text{F}$ , nor greater than  $100^{\circ}\text{F}$ . The anticipated temperature of the plastic pipe at the time of its installation will be between  $45^{\circ}\text{F}$  and  $65^{\circ}\text{F}$ .

The plastic pipe will not be exposed to excessive thermal stresses, the deteriorating affects of ultraviolet light from the sun, or mechanical damage under normal operating conditions. Consequently, KeySpan Energy Delivery believes that there is no safety hazard associated with the installation of the plastic pipe at ground level across the bridge, as described herein.

If you have any questions or require additional information to be submitted regarding this petition, please contact Mark A. Scaparotti, Lead Engineer, at (617) 723-5512, Ext. 4420. A check for the amount of \$100 has been included with this submittal for the filing fee required by the DTE.

Sincerely,  
Steven A. Vitale  
Vice President and Chief Gas Engineer, Gas Engineering

KeySpan Energy Delivery  
201 Rivermoor Street  
West Roxbury, Massachusetts 02132

July 2, 2001

Mr. Robert F. Smallcomb, Director  
Pipeline Engineering and Safety Division Department of Telecommunications and Energy The Commonwealth of  
Massachusetts  
One South Station  
Boston, MA 02110

Re: Bridge Crossing over Monoosnoc Brook, Leominster

Dear Mr. Smallcomb:

The Massachusetts Highway Department (MHD) is planning the reconstruction of the above bridge in Leominster, Massachusetts. As part of the bridge reconstruction, KeySpan Energy Delivery is planning to replace the existing low pressure 4 inch steel gas main with a new single 8 inch low pressure plastic (PE 2406, SDR 133, medium density) gas main inside a 12 inch steel casing. KeySpan Energy Delivery is requesting approval for this new 8 inch plastic gas main.

In accordance with CMR 220, § 101.06 (10), I am providing the following information regarding the new main:

1. The nominal pipe diameter of the carrier pipe is 8 inches, with a wall thickness of 0.639 inches. The Specified Minimum Yield Strength (SMYS) is 3,000 psi. The 8 inch plastic carrier main shall be placed inside a 12 inch steel casing.
2. The maximum operating pressure of the new main is inches water column and the test pressure is 90 psig.
3. As stated in CMR 220, § 101.06 (10), the hoop stress is required for nominal pipe diameters of 12 inches or greater. This request for approval is for an 8-inch diameter pipe, which does not apply.
4. The pipe supports shall be in accordance with the KeySpan Energy Delivery standard detail for pipe support on bridges (enclosed). There will be a total number of 6 supports on the bridge spaced approximately 9 feet apart as shown on the enclosed KeySpan Energy Delivery Plan, Drawing No. P-149.
5. The approximate location of valves on each side of the bridge is shown on the enclosed plan.

The layout of the abutments and support beams as indicated on the attached plan were obtained from a set of construction plans supplied by the MID entitled "The Commonwealth of Massachusetts, Proposed Bridge, Leominster, Pleasant St over Monoosnoc Brook", not dated.

Please call me at (617) 723/5512 ext. 4420 if you have any questions. Thank you.

Sincerely,  
Mark A. Scaparotti  
Lead Engineer  
Engineering Department

EXHIBIT A

Plastic Pipe Specifications

TABLE 1  
Physical Property Data For UAC 2000 Polyethylene Pipe

PE 2406

<u>Property</u>	<u>Nominal Value</u>
Melt Index	0.2 g/10 min
Density	0.943 g/cc
Thermal Expansion	$9 \times 10^{-5}$ in/in/°F
Yield Strength	3,000 psi
Flexular Modulus	100,000 psi
Thermal Conductivity	1.8 Btu/hr/sq ft/°F/in
Hydrostatic Design Basis @73°F	1,250 psi
Deflection Temperature @ 68 psi	140°F
Vicat Softening Point	248°F
Brittleness Temperature	<-180°F
Hardness, shore D	64
Flammability	1 in/min
Ultimate Elongation	>800%

TABLE 2

## Plastic Pipe Data – PE 2406

Nominal Pipe Size (inches)	Standard Dimension Ratio (SDR) <sup>1</sup>	Average Outside Diameter (inches)	Average Inside Diameter (Inches)	Minimum Wall Thickness (Inches)	Design Pressure Rating @ 100°F(psi)
2	11.0	2.375	1.917	0.216	80
3	11.5	3.500	2.856	0.301	76
4	11.5	4.500	3.672	0.391	76
6	11.5	6.625	5.403	0.576	76
8	13.5	8.625	7.270	0.639	64
12	13.5	12.750	10.749	0.945	64

<sup>1</sup> SDR, Standard Dimension Ratio, is calculated by dividing the average outside diameter of the pipe by the minimum wall thickness as described in ASTM D2513.

EXHIBIT B

Casing Specifications



TABLE 1

Specifications for Casing Pipe  
TYPE OF PIPE: API 5L, Grade B

Property, Dimension, or Specification

Nominal Pipe Size:	12.0 in.
Outside Diameter:	12.75 in.
Inside Diameter	12.25 in.
Wall Thickness:	0.250 in.
Schedule Number	20
Weight per foot:	36.72 lb
Coating:	0.075 Pritec high molecular polyethylene outer coating with butyl rubber adhesive

EXHIBIT C

Installation Design  
Drawing No. P-149

GUIDELINES FOR INFORMATION TO BE INCLUDED IN  
APPENDIX C

- Plan and elevation views of the bridge showing the proposed location of the casing pipe.
- Details of the casing supports, the number of supports, and the distance between supports.
- Detail of the casing insulating spacers around the plastic pipe, indicating the location of the spacers closest to the end of the casing and the distance between spacers within the casing. The distance of the first and last spacer within the casing should be no more than two feet (2') from the end of the casing. It may be more beneficial to protect the plastic pipe from potential contact with, and abrasion from, the end of the casing by placing two spacers near each end of the casing. The distance between other spacers within the casing should be such that no abrasion of the pipe will occur during insertion in the casing and by lateral deflection of the pipe during operation caused by temperature changes. In addition, the more flexible the plastic pipe is, the closer the spacers should be placed. Flexibility will depend upon the pipe size and its SDR.
- Detail of the end seals attached to the casing and the plastic pipe. The end seals should be flexible enough to provide for the difference in expansion and contraction between the steel casing and the plastic carrier pipe. The attachment to the plastic pipe should prevent potential scratching or gouging of the pipe.
- Detail of the casing vent piping. Although regulations do not require casings to be vented, at least one vent located near the end of the casing with the highest elevation may be appropriate.

A drawing indicating the approximate location of each valve that is, or will be located, on each side of the bridge.

- A notation that a specified length of plastic pipe, with the spacers attached to it, will be drawn through the casing as a sample to demonstrate that the plastic pipe will not be damaged (e.g., gouged) when it is inserted in the casing.

The Commonwealth of Massachusetts  
Department of Telecommunications and Energy

August 13, 2001

D.T.E. 01-51-C

Application of Keyspan Energy Delivery for approval by the Department of Telecommunications and Energy for a waiver from the requirements in 49 C.F.R. Part 192, for underground installation of plastic pipe for a bridge crossing to be located in Leominster, Massachusetts.

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APPEARANCE:

Steven A. Vitale, Vice President  
201 Rivermoor Street  
West Roxbury, MA 02132  
FOR: KEYSpan ENERGY DELIVERY  
Petitioner

## I. BACKGROUND

On July 2, 2001, Boston Gas Company, an intrastate natural gas distribution company that operates in Massachusetts, doing business as Keyspan Energy Delivery ("Keyspan"), requested that the Department of Telecommunications and Energy ("Department") grant a waiver of the underground installation requirements for plastic pipe contained in 49 C.F.R. Part 192 ("Part 192"). Keyspan seeks to install 60 feet of plastic main inside a steel casing across a bridge located on Pleasant Street, Leominster. The bridge spans Monoosnoc Brook.

## II. REGULATORY REQUIREMENTS

The minimum federal safety standards for transportation of natural gas by pipeline are contained in Part 192. Specifically, § 192.321(a) states: "Plastic pipe must be installed below ground level."

Any waiver of any of the provisions of Part 192 granted by the Department is subject to the approval of the Secretary of Transportation's Office of Pipeline Safety ("OPS"). The Massachusetts Pipeline Safety Code, 220 C.M.R. § 101, and Public Law 103-272, formerly the Natural Gas Pipeline Safety Act, require the Department to give OPS notice of any waiver at least 60 days before it becomes effective. The Department regulations at 220 C.M.R.

§ 101.02(2) state:

The [Department] may issue a waiver to a gas corporation or municipal gas department from the provisions of Part 192 in Title 49 of the Federal regulations providing that the waiver pertains to an intrastate facility and the [Department] gives notice to the Department of Transportation at least 60 days before the waiver becomes effective.

In addition, Public Law 103-272 states in § 60118: Compliance and Waivers:

(d) Waivers by State Authorities. If a certification under section 60105 of this title... is in effect, the state authority may waive compliance with a safety standard to which the certification... applies in the same way and to the same extent the Secretary may waive compliance.... However, the authority must give the Secretary written notice of the waiver at least 60 days before its effective date. If the Secretary makes a written objection before the effective date of the waiver, the waiver is stayed....

## III. ANALYSIS AND FINDINGS

The proposed eight-inch nominal diameter plastic pipe is to be permanently installed in an 12-inch nominal diameter, coated, welded steel casing. The casing will be located in a utility bay underneath the bridge. The plastic pipe, sheathed within the casing; will not be exposed to ultraviolet radiation.

There are advantages to the use of encased plastic pipe at this bridge crossing. First, plastic pipe is not prone to corrosion, and therefore will require less maintenance than a steel pipeline. Second, a steel-encased plastic pipe is less susceptible to damage from vandalism, airborne objects and external loading.

In the expected ambient temperature range, the forces acting on the plastic pipe due to expansion and contraction are well within acceptable limits. The tensile stress due to temperature variation is 675 pounds per square inch gauge ("p.s.i.") which is well below the allowable limit of 2,250 p.s.i. (75 percent of the specified minimum yield strength which is 3,000 p.s.i.). The stresses due to pressure and bending, including the combined stresses, are also well below the allowable limits established in the American Society of Mechanical Engineers B31.8 Code, which is incorporated into Part 192 by reference.

Since 1979, many similar waivers have been granted by states and approved by OPS. OPS has approved dozens of similar waivers to operators in Massachusetts. All of these pipelines have operated satisfactorily. In addition, the following factors support Keyspan's application. Casing spacers will be placed on the plastic pipe at intervals no greater than five feet. These will support the carrier pipe and allow for movement during expansion and contraction.

The steel casing will continue approximately five feet past each of the abutments. The plastic pipe will be joined by butt fusion, requiring no fittings over the encased portion of the main. The pipe will be tested to 90 p.s.i. Its maximum operating pressure will be 0.5 p.s.i. (14 inches water column) Isolation valves will be installed on the approaches to each side of the bridge in accordance with 220 C.M.R. §101.06(10)(a)6.

IV. ORDER

Accordingly, after the consideration, it is:

ORDERED: Keyspan Energy Delivery is hereby exempted from the underground installation requirement in 49 C.F.R. Part 192 and authorized to install encased plastic pipe on the bridge on Pleasant Street over Monoosnoc Brook in Leominster. The foregoing waiver is granted with an effective date of October 31, 2001, provided that the Secretary of Transportation or his designee does not object to the waiver prior to the effective date.

By Order of the Department,  
James Connelly, chairman  
W. Robert Keating, Commissioner  
Paul b. Vasington, Commissioner  
Eugene J. Sullivan , Jr., Commissioner  
Deirdre k. Manning, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court, sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).