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SECTION 1: Introduction

A. Purpose

This handbook outlines the standards and procedures to be followed when working near or around Vermont Gas Systems, Inc. (Vermont Gas) facilities or when requesting the installation of natural gas facilities. The handbook is intended for use by city/state planners, engineers, land surveyors, land owners, customers, developers, builders, and other private contractors. When installing new natural gas facilities or working in the vicinity of facilities, project delays can be avoided and safe practices can be attained if Vermont Gas is included in the initial planning stages.

The handbook is designed to make you aware of the most common standards and procedures Vermont Gas typically requires to install and protect its facilities. This handbook is intended to be a guideline and is not a complete set of rules governing natural gas installations. Each proposed development, project, or activity, however, may require a case specific evaluation by a qualified Vermont Gas representative.

Vermont Gas feels that compliance with this manual will insure a quality installation in a timely manner. If you have further questions or need assistance, please contact the Vermont Gas office at 802-863-4511 or toll free at 1-800-639-2112.

Service Territory

Maps showing our service territory are available at: https://vermontgas.com/help-center/coverage-map/

B. Contact Information

Gas Leaks and/or Odor Complaints: 1-800-639-8081 (DO NOT USE E-MAIL)

General Questions, Phone: 1-800-639-2112

General Questions, E-mail: customerservice@vermontgas.com

Energy Efficiency, E-mail: efficiency@vermontgas.com

Company Web Address: www.vermontgas.com

Office Physical Address: 85 Swift Street
South Burlington, Vermont 05403

Office Mailing Address: P.O. Box 467
Burlington, Vermont 05402-0467
Dig-Safe (“CALL BEFORE YOU DIG”): 811

Dig-Safe Web Address: www.digsafe.com

For answers to your questions about installations call:

New Line Requests: 802-863-4511 ext. 336

Customer Service: 802-863-4511 ext. 250

Right-of-Way: 802-863-4511 ext. 368, for Right-of-Way and Easement questions.

Construction: 802-863-4511 ext. 335 for sleeve designs, meter location, and gas pipeline design and scheduling questions.

Customer Dig, Installations & Scheduling: 802-863-4511 ext. 335

C. Abbreviations

AGA American Gas Association
API American Petroleum Institute
ANSI American National Standards Institute
ASME American Society of Professional Engineers
ASTM American Society for Testing and Materials
BTU British Thermal Unit
BTUH British Thermal Unit per Hour
CCF Hundred Cubic Feet
CF Cubic Foot
CFH Cubic Foot per Hour
DOT Department of Transportation
EFV Excess Flow Valve
HDD Horizontal Directional Drill
MBTUH Thousand British Thermal Unit per Hour
MCF Thousand Cubic Foot
MCFH Thousand Cubic Foot per Hour
MMBTUH One Million British Thermal Unit per Hour
OQ Operator Qualification
PHMSA Pipeline & Hazardous Materials Safety Administration
PSIG Pressure in Pounds per Square Inch Gauge
ROW Right Of Way
WC Pressure in Inches of Water Column
D. Definitions

Appliance: Any device that utilizes natural gas as a fuel or raw material to produce light, heat, power, steam, refrigeration or air conditioning.

British Thermal Unit (BTU): The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.

Building: Shall mean a structure that stands alone or is cut off from adjoining structures by firewalls, as defined by the municipality or the authority having jurisdiction, with no openings or penetrations and doorways to be protected by approved fire doors.

Casing: Steel conduit used to protect steel transmission lines and steel or plastic distribution mains in certain situations. Casing requirements will be based on API recommended practice RP-1102 and the design must be approved by the Vermont Gas Engineering Department.

Combustible Material: Any material such as wood, paper, sheet rock, fibers or other materials that will smolder, ignite or burn when adjacent to or in contact with heat producing appliances, vent connectors, gas vents, chimneys, or hot water pipes.

Combustion Air: Air supplied to an appliance specifically for the combustion of fuel.

Cubic Foot of Gas: The amount of gas that occupies one cubic foot of space when at a temperature of 60 degrees Fahrenheit, and under pressure equivalent to that of 29.92 inches of mercury.

Curb Valve: A shut-off valve in a service line, usually located between the curb and a customer’s property.

Customer Dig: Upon approval the customer may be permitted, at their expense, to trench and backfill within the exact specifications provided by Vermont Gas.

Customer Owned Piping: The piping that is installed after the company’s meter set that connects the customer’s appliances and equipment to the gas supply. Customer Owned Fuel lines are the responsibility of the customer.

Department of Transportation (DOT): The federal regulatory agency that governs gas pipeline safety, transportation of hazardous materials, and administers regulations related to highway rights-of-way.

Developer: Person or company that invests in and develops real estate, especially by subdividing the land into home sites and building houses. In this document this also includes site contractors and builders.
**Dig-in:** Damage caused to Vermont Gas pipelines and/or facilities by digging into them during excavation activities, either by hand or mechanized equipment.

**Easement:** A document entitling its holder to the right to use a specified parcel of property. Easements give Vermont Gas the right to install underground natural gas facilities on private property.

**Excess Flow Valve:** An excess flow valve (sometimes called an EFV) is a device that is installed in a natural gas piping system that is used to limit the amount of natural gas that travels through the pipe in the event the pipe is severed downstream of the EFV.

**Gas Main or Distribution Main:** The piping system owned by the company that is used for the distribution of gas that is (a) located within the limits of any public highway or on a private right of way or (b) is used to supply gas to two or more gas services.

**Greenbelt:** That area of a public street located between the roadway edge and the sidewalk, or, if no sidewalk exists, between the roadway edge and the adjacent property line.

**Infill Service:** A service that is installed off of a preexisting distribution main.

**Input Rating:** The gas burning capacity of an appliance in BTU/Hr. as specified by the manufacturer.

**Loads-Connected:** The sum of the rated BTU/Hr. input of all connected gas equipment. May also be expressed in cubic feet per hour.

**Locator Wire:** A wire installed with all plastic pipe (including mains and services) to ensure being able to readily locate the buried piping in the future.

**Make Up Air:** The volume of air, either outside or inside, that is supplied to a space to replace air consumed by the gas burning appliances, exhausted or otherwise removed from the space.

**Mechanical Exhaust Appliance:** An appliance with a venting system designed to remove flue or vent gases by mechanical means utilizing induced draft under non positive pressure or forced draft under positive pressure.

**Meter:** An instrument installed by the company to measure the volume of Natural Gas delivered to a customer.

**Pipe:** Any pipe or tubing used in the transportation of gas.

**Primary Air:** The combustion air that mixes with the gas before it reaches the burner.
**Qualified Installer:** An individual who is qualified by the company or an authority acceptable to the company.

**Regulator:** A device placed in a pipe for reducing, controlling and maintaining the natural gas pressure required by the customer.

**Right of Way (ROW):** An agreement by which a property owner grants permission to another party to use a portion of his or her land for a specific purpose.

**Secondary Air:** The air externally supplied to the flame at the point of combustion.

**Service Line or Gas Line:** A pipe line that transports gas from a common source of supply to an individual customer, to two (2) adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the meter or at the connection to a customer owned fuel line, whichever is further downstream, or at the connection to customer piping if there is no meter.

**Service Riser:** A vertical pipe, adjacent to a customer’s facility that runs from the service line to the customer’s meter.

**Sleeve:** Non-metallic conduit that may be installed prior to installation of gas pipe at road or ROW crossings. Sleeves are non-pressurized and shall only be used to insert gas carrier pipe and locator wire.

**Valve Box:** A vertical tube that is capped at ground level and usually located near the street. Its purpose is to protect the access point to the underground shut-off valves.
Section 2: Pipeline Facilities Overview & Vermont Gas Programs

Overview

Vermont Gas has been serving Chittenden and Franklin counties since the mid-1960s and expands service to new customers every year. Vermont Gas owns and operates over 70 miles of transmission pipeline with over 60 million cubic feet per day at peak capacity. The transmission line currently extends from the Canadian Border in Highgate, VT to Winooski, VT with lateral lines extending off of it. The transmission operation includes high-pressure steel pipeline ranging in diameter from two (2") to sixteen (16") inches, meter and regulating stations or gate stations, odorization equipment, mainline valves, cathodic protection equipment, and other related facilities. Gate stations reduce the pressure in the transmission line and feed into the distribution main network.

Through these facilities, Vermont Gas provides service to over 48,000 customers through a distribution network of mains, services, and meters. Vermont Gas owns and operates over 730 miles of distribution main and has over 36,000 services. The distribution main network consists of both high density polyethylene plastic (PE) pipe and cathodically protected steel ranging in diameter from ¾” to 10”. Vermont Gas services are both high density polyethylene plastic (PE) pipe and cathodically protected steel and range in diameter from ½” to four (4”) inches. A service to a residential home typically is ½” or ¾” PE.

Programs

Service Department

Vermont Gas has a service department and an available 24/7 Service Plan. The service plan is operating insurance for your residential heating and hot water equipment. You’re covered for most parts and labor. Our service technicians are on call, any time, day or season. Just contact us and we’ll dispatch one of our professional, certified technicians to fix the problem. The 24/7 Service Plan makes good financial sense. Breakdowns can be expensive. The service plan covers you for just a few dollars a month.

Energy Efficiency Programs

Vermont Gas’ strong belief in energy efficiency is a key component of the company’s operating principles. As part of its commitment to the efficient use of energy, Vermont Gas has offered “Energy Efficiency” programs to both residential and commercial customers since 1992. Whether you're building a new home or business, or trying to save energy in an existing home or business, Vermont Gas has qualified experts that are excited to offer three distinct residential and commercial energy efficiency programs to help you make the best decisions for your specific
situation. Vermont Gas energy efficiency programs provides its customers with cash incentives and low interest financing for the installation of high efficiency equipment, insulation, and air sealing measures.

Our motto is, “If your home or business utilizes natural gas as a primary fuel, chances are there is equipment and other efficiency solutions available that will help the customer utilize their fuel more efficiently while receiving a cash rebate or financing for their efforts”.

SECTION 3: DigSafe & Cross Bores

A. DigSafe

Damage by outside force from a third party is the leading cause of pipeline failures. Accidents involving dig-ins to underground facilities occur every year. They can damage equipment, and more importantly, sometimes lead to serious injuries, even death. To help reduce the number of accidents, Vermont Gas is part of a One-Call-System, called DigSafe, designed to make it safer for you to dig and work near underground facilities. *It’s the Law! Call before you dig!* 

For your safety and protection, call 811 for details on the location of underground gas lines, electric wires, and communication cables. Most water and sewer departments/companies do not belong to DigSafe. You may need to contact these parties directly for facility locating. Call 811 before you start your project to prevent damage to underground equipment and avoid personal injury, or finding yourself with an unnecessary repair bill.

So remember to call DigSafe before you start your job. A single toll-free telephone call can save you plenty!

Dial: **811** or visit Digsafe.com

1. Vermont Gas will not be responsible for underground utilities which have not been or cannot be located and marked either by the respective utilities or the customer or developer desiring natural gas.

2. If Vermont Gas damages unmarked underground facilities, it will be the responsibility of the customer or developer to pay for the cost of repair.

3. Unmarked private utilities will be the responsibility of the customer or developer.

B. Cross Bores

Description

A Cross Bore occurs when a utility line intrudes into another utility line and is most commonly associated with utilities crossing sewer lines. Cross bores occur during the installation process of a utility such as electric, cable/internet, water, and natural gas. Cross Bores primarily occur when the utility is installed using boring techniques i.e. Horizontal Directional Drill (HDD) or pneumatic drilling.

Danger

Cross Bores present serious risks to contractors, homeowners, and the community. Clearing sewer blockages caused by Cross Bores can be especially dangerous. It is imperative to identify
the cause of a sewer blockage prior to clearing the blockage. There are documented instances of people clearing cross bored sewer lines without prior inspection, rupturing a utility line and causing injury, property damage, and even death.

Prevention

Contact Dig Safe prior to any installations or digging that is planned. Dig Safe, however, does not identify the sewer line locations. When sewer line location and depth are unknown, open trenching techniques will be utilized for gas installation. If all utilities cannot be located installation should be done using open trench methods of construction. **Note:** A sewer contractor can be contacted to attempt to locate sewer lines prior to construction.

It is necessary to investigate any sewer blockages that occur prior to attempting to clear the blockage. If unable to visually verify that the blockage has not been caused by a cross bored utility *Do Not* attempt to clear the blockage with mechanical equipment. Call Dig Safe and request an emergency locate for utility lines. If it is shown that the gas utility crosses the known path of the sewer line contact Vermont Gas. A Vermont Gas technician will provide assistance to correct the problem.
SECTION 4: Legislation & Governing Codes

Applicable codes are listed below. If there is a conflict of rules, the company will make a final decision applicable to the situation.

1. **ANSI Z-223.1/NFPA 54 National Fuel Gas Code (applies to customer owned piping)**

   AGA Distribution Center  
P.O. Box 79230  
Baltimore, MD 21279-0230  

   http://www.aga.org/Pubs/buy/Pages/default.aspx

2. **Department of Transportation Title 49 CFR Part 192**

   Superintendent of Documents  
   U.S. Government Printing Office  
   Washington, DC 20402  

   http://bookstore.gpo.gov/actions/GeneralSearch.do

3. **Vermont Department of Public Service Rules**

   Vermont Public Service Board  
   112 State Street  
   Montpelier, VT 05620-2701  

   http://psb.vermont.gov/statutesrulesandguidelines/currentrules

Local permit rules vary from town to town and city to city. Any questions about local excavation permitting processes may be directed to the Vermont Gas Construction Department at 863-4511.
SECTION 5: Right-of-Way Agreements, Land Use & Encroachments

A. Right-of-Way Agreements

A right-of-way agreement is an agreement by which a property owner grants permission to another party to use a portion of his or her land for a specific purpose. Vermont Gas’ right-of-ways are granted in return for a one-time consideration, which is paid at the time the right-of-way is acquired. The right-of-way gives Vermont Gas the right to construct, operate, and maintain its pipeline and related facilities which are necessary for the transmission, storage, and distribution of natural gas. Vermont Gas also has the free right of ingress and egress to access its right-of-way area.

The right-of-way agreement is a right in the land, and the agreement is recorded in the appropriate public records office. It is a legal document. If the land is sold, the rights and responsibilities under the terms of the agreement pass to the new owner.

Most of Vermont Gas existing pipeline easements and rights were acquired through right-of-way agreements granting Vermont Gas the right to construct, operate, maintain, repair, modify, alter, protect, clear obstructions, change the size of, remove, replace and access a pipeline or pipelines within the easement area.

In cases of new installations Vermont Gas may require an easement or right-of-way, which is required prior to installation of distribution mains or service lines. Our sales representative can supply you with the required forms to initiate the easement documentation. Please provide us with the name of the current property owner as soon as possible. If you have any questions or concerns, please contact our Right-of-Way Department at 802-863-4511.

B. Land Use Information

Under our right-of-way agreement, the landowner may use their land as they see fit provided it does not interfere with the rights granted to Vermont Gas to maintain and operate our pipeline. For safety purposes, we require all landowners notify Vermont Gas prior to any work on the right-of-way. Certain work on the premises unduly interferes with the safety of our pipeline. Vermont Gas cannot permit such work. We have summarized these situations below.

1. No trees shall be planted within the confines of the right-of-way. We consider trees as those plants that grow to an excess of five (5’) feet in height at maturity. Taller trees inhibit access to the pipeline and their roots can damage the pipeline. Shrubs or bushes less than five (5’) feet in height may be located on Vermont Gas’ right-of-way provided they are not planted within 10 feet of the pipeline, or between the pipelines in a multiple line situation. In either of these cases, Vermont Gas will be glad to locate its pipeline for you. No permanent planting of any type within 10 feet of the pipeline is allowed. Please note under the terms of the right-of-way agreement, Vermont Gas still reserves the right to remove any trees, shrubs or other obstructions, without compensation, that may interfere with the operation and maintenance of its facilities.
2. No earth shall be removed from the surface of the right-of-way, for such removal can expose the pipeline to damage. Small amounts of fill may be added with Vermont Gas’ approval, provided it is clean fill, free of rocks, stumps and debris. No water impoundment is allowed within Vermont Gas right-of-way.

3. No structures shall be located on the right-of-way. This includes houses, utility sheds, garages, swimming pools, house trailers, wells etc. It is not possible to maintain the pipeline or reach it promptly in times of service interruption with such structures present. Fences, though permanent structures, may be located across the right-of-way if provisions are made for Vermont Gas crews and equipment to gain access through them by proper placement of suitable gates.

4. Underground utilities crossing Vermont Gas’ pipeline shall be installed below the pipeline, with a minimum of 12 inches vertical clearance and 36 inches of horizontal clearance so as not to interfere with the pipeline. Utilities include sewers, drain lines, water pipes, gas pipes, underground electric or telephone cables, etc. These facilities are not to be placed parallel to our pipeline within Vermont Gas’ right-of-way. Septic systems shall not be built on Vermont Gas’ right-of-way.

5. No heavy equipment is to be moved across the right-of-way prior to notifying Vermont Gas.

Construction plans that affect Vermont Gas’ right-of-way, as outlined in paragraph four (4) and five (5) above, should be submitted for review and approval before any construction starts. This will save both parties from being involved in any possible misunderstanding and will save you time and money.

C. **Encroachments**

**Specifications and Requirements**

1. An encroachment agreement is required whenever a permanent installation (e.g., utility lines, pipelines, road crossings, above and below ground structures, sheds, swimming pools, trees, berm, shrubs, etc.) or intrusive temporary activity (e.g. construction, logging, mining, blasting, excavating) is approved to encroach into the right-of-way area.

2. The encroachment agreement must be executed by the landowner or party seeking to encroach and Vermont Gas prior to the proposed activity or installation.

3. All encroachment agreements covering permanent installations will be recorded in the appropriate public records office.
4. The encroachment agreements covering temporary encroachments will be recorded at the discretion of VGS.

5. All encroachments require prior approval by Vermont Gas and may be denied or approved based on a case by case basis. Project scope and proximity to the pipeline will be considered in accepting or rejecting any proposed encroachment.

6. All encroachment agreements will be tailored to the specific permanent or temporary encroachment.

7. It is our desire and right to keep a clear right-of-way that can be used by our maintenance personnel.

8. Vermont Gas must retain the right of free and ready access to the pipeline, cathodic protection, and other facilities along and within right-of-way across your property in order to properly maintain and operate our facilities in accordance with the United States Department of Transportation regulations.

   Vermont Gas understands its responsibilities and is attempting to exercise its right-of-way rights with a minimum of inconvenience to you. Your safety and the safety of the public are our first consideration, so we are asking for your cooperation.

*Remember to call DigSafe at 811 prior to any digging or excavation activity*
SECTION 6: General Requirements for Developers, Contractors & Builders:

A. General Application and Scheduling Requirements

1. Individual service applications should be submitted at least 60 days before the required installation date. In some instances, the exact requested installation date may not be known when submitting the original application. In these cases, the installation request must be made to the area sales representative at least three (3) weeks in advance.

2. Vermont Gas will provide excavation work during its normal construction year, which typically runs from May 1st to November 15th weather permitting. Excavation work outside of these dates is primarily limited to maintenance of our existing system. Any excavation work outside of these dates, including road crossings, will need to be performed by your excavating contractor (subject to local permitting). (See Section 13 for Customer Dig Guidelines.)

3. Certain permits may affect the schedule and are not in the control of Vermont Gas.

B. Site Plans and Site Preparation

Plans

1. Vermont Gas will need a reproducible site plan along with other pertinent drawings, and a copy of the CAD file (.DGN, .DWG or .DXF format) of the plot plan and utility plan.

2. Prior to submitting your site and/or utilities plan to Vermont Gas, please contact the Construction Department. They will inform you as to the proper location of gas mains and service lines to be shown on your drawings.

3. Section 8 contains sketches of typical single and multiple meter sets to help you properly locate your customer owned fuel lines. Proposed meter locations must be submitted with your site drawings.

Ledge

1. Vermont Gas does not generally excavate ledge unless it has been preapproved.

2. If ledge is encountered the developer shall remove the ledge that prohibits Vermont Gas from achieving proper depth.

3. In ledge area, a minimum of six inches (6") of sand padding will be applied around the pipe with twelve inches (12") on top of the pipe.
4. Shot rock maybe used as backfill material above the twelve inches (12") of sand padding. **SAND FOR PADDING MUST BE FURNISHED BY THE DEVELOPER OR SITE CONTRACTOR.**

**Sleeve**

1. Vermont Gas requires that a sleeve be installed in specified locations for all distribution main and service line road crossings; Vermont Gas will open cut and backfill with the same material an unpaved gravel road base if you prefer.

2. Vermont Gas will supply the sleeve material and mark the desired locations on a site plan.

3. Developer is to install the sleeves outside of the driveway cut, favoring the side of the lot where the service is to be installed. If the service location cannot be determined at the time of the sleeve installation, sleeves should be installed near the center of the lot frontage away from the driveway curb cut.

4. It is the responsibility of the developers/contractors to supply field identification of the location of the sleeves.

5. If the sleeves are unusable or cannot be located, it will be the developers' responsibility to install a new sleeve, dig a trench or have the service drilled (if scheduling allows) at the developer’s cost.

6. Sleeves shall be installed at a depth of three feet (3’) minimum below finish grade not to exceed a maximum of four feet (4’). Any deviation from these depths will need Vermont Gas’ Operations Department approval.

7. Sleeves shall not be installed within twenty (20’) feet of any building or structure.

8. A sketch of a typical sleeve installation is enclosed. **See Figure 6.1**

**Site Preparation**

1. If the location of the distribution main cannot be evident by existing roadways, it is the responsibility of the developer to stake out the proposed gas main locations in the field. If the developer chooses not to do so all relocations will be at developers cost.

2. Stakes showing the centerline and final elevation of roads or streets shall be installed and maintained until construction is complete.

3. Finished grade elevations shall also be provided to assure proper depth of burial.
4. Foundations should be backfilled to within six inches (6") of finish grade and the proposed service route should be free of obstructions and within six inches (6") of finish grade before a service line is constructed. If not at finish grade, a horizontal mark must be made on the foundation showing the finished grade to allow for proper height of the gas meter.

5. To prevent future corrosion to the meter, care must be taken during subsequent grading to ensure the gas meter is not buried or in contact with the earth and the gas riser is not buried above the bury line. If finish grade results in either of these situations, contact Vermont Gas.

6. The developer, contractor or builder is responsible for supplying the sand used for padding the pipelines in "customer dig" applications.

7. Developers, contractors and builders must notify Vermont Gas when the site will be ready. A three (3) week minimum lead-time is required for scheduling construction of distribution main or service lines. Please contact the Vermont Gas Construction Manager, at 802-863-4511 ext. 335 to schedule installation of gas mains and/or services. Please ensure you have submitted the application for service with the sales representative prior to calling to schedule the installation.
SECTION 7: Gas Mains & Service Lines

A. Gas Mains

General Information:

1. The gas main pipe will be installed by Vermont Gas or a qualified Vermont Gas contractor.

2. No one other than a Vermont Gas employee or qualified Vermont Gas contractor shall ever work on or alter any part of the natural gas distribution facilities.

3. Gas main typically will be installed on the front side of buildings/houses between the edge of the road and the R.O.W./property line. Preferably the main will be in the greenbelt. Gas main will be installed parallel to the road edge.

4. No gas mains are to be installed behind buildings/houses unless approved by the Vermont Gas Operations Department.

Conditions for Installing Gas Facilities:

1. For direct buried gas lines and all other methods of construction, Vermont Gas requires a minimum three feet (3’) of horizontal separation from all other utilities as depicted on figure 7.1. Note: Other utilities may require as much as 10 feet of separation.

2. A minimum of twelve inches (12”) of vertical separation between gas lines and other utilities must be maintained at all times.

3. Locator wire for plastic gas lines shall not be in contact with any utility or underground structure.

4. Vermont Gas prefers that water mains, water laterals, sewers and storm drains be installed prior to the installation of the gas mains and service lines.

5. The area in which the gas facilities are to be located should be made easily accessible and allow for safe working conditions.

B. Gas Service Lines

General Information:

1. Gas services will be installed by Vermont Gas or a qualified Vermont Gas contractor.

2. No one other than a Vermont Gas employee or a qualified Vermont Gas contractor should ever work on or alter any part of the natural gas distribution facilities.
3. Service lines should be installed perpendicular from the main to the meter location. Service risers and meters will be located on either side or in front of a building/house. With the exception of corner buildings, services will be installed off the gas main on the street for which the address of the building/house is on.

4. Corner buildings may have a service coming off either street with preference to the street which it is addressed on. The length of the service and whether or not a road crossing is required should also be considered.

5. Gas will be supplied to each building through a single service line or customer owned fuel line unless otherwise approved by the Vermont Gas Operations Department.

6. For buildings with two (2) or more services, a sign will be installed indicating such at each riser. A sign with the location of the service risers will also be required at each riser on new service installations.

7. Service risers should be attached to the foundation with a support bracket where building foundation conditions allow.
SECTION 8: Regulators, Meters, Piping & Barricades

A. Regulators:

Specifications and Requirements:

- Gas pressure regulators will be set to deliver seven inches (7") Water Column (W.C.) downstream of the meter. Gas pressure greater than seven inches (7") W.C. may be delivered downstream of the meter in the following situations:
  
  a. Total customer volume requirement on a single meter exceeds three (3) MBTUs/hour.
  
  b. Temporary heat for construction.
  
  c. Special manufacturing loads.
  
  d. Elevated pressure requires a rotary meter instead of a traditional meter. The active level of elevated pressure will determine the size of the rotary meter required. See figure 8.5 & 8.6 for the designs of a 5M and 2M/3M Rotary Meter.

Note: Gas piping of any size with elevated pressure entering a public building will be required to be welded. Gas pipe entering a public building will be required to be welded unless it enters the building at the point where the appliance is utilizing the elevated pressure. Elevated pressure in gas piping systems will be labeled to indicate the pipe contained elevated pressure according to ANSI/ASME A13.1 pipe marking guide. Exterior gas piping will be painted to protect the pipe from atmospheric corrosion or galvanized pipe will be used.

In cases where gas pressure greater than seven inches (7") W.C. is approved. Vermont Gas will provide five (5) psig downstream of the meter. **Pressure reduction from five (5) psig or less to the equipment utilization pressure is the responsibility of the customer.** Customer will provide and maintain that pressure reduction with overpressure protection equipment. All requests for gas delivery pressure in excess of seven inches (7") must be approved by the Operations Department.

- A **minimum** of three feet (3’) of horizontal separation is required between the gas pressure regulator and electric meter or other source of ignition.

- A **minimum** of three feet (3’) of radial separation is required between gas pressure regulators and building openings, air intakes, make-up air units, exhaust vents from heaters, exhaust vents from water heaters, exhaust vents from dryers, or from any source of excessive moisture.
• A minimum ten feet (10’) of radial separation is required for gas pressure regulators from forced air intakes unless equipped with full lockup over-pressure shut-off. See Figure 8.1 for a design depicting regulator location restrictions.

• Refer to figure 8.3 and 8.4 for designs of typical single and multiple meter sets on to help you properly locate your fuel lines. Proposed meter locations must be submitted with your site drawings.

B. Meters:

Specifications and Requirements:

• Proposed meter locations shall avoid areas of potential snow and ice buildup. Avoid locating meters under an eave of the building where snow or ice water might fall. Avoid locating meters in areas where snowplows and snow blowers will cover the meter with snow.

• The Vermont Gas Operations Department shall have final approval of meter locations.

• Proposed meter locations should avoid areas of vehicular traffic. If this cannot be avoided, Vermont Gas will require the customer or builder to install barriers approved by Vermont Gas to protect the service and meter set at the customer's cost. See Section 8D.

• If a customer or builder requests a location which requires meter set protection they shall bear the cost of the protection. **No meters will be turned on until above measures are satisfied.**

• Vermont Gas must have access to the meter, at all times, for the reasons of emergency response, safety, meter reading and maintenance concerns.

  a. Any installation which deviates from the above requirements must be approved by the Operations Department. In the event it is deemed that all possible service locations on the front or side of the structure have been exhausted, the contractor, builder, or developer may be given the option to pay to have the service installed in the rear of the structure. The current per foot charge will be assessed as measured from the nearest rear corner to the termination point, with a specified minimum charge.

  b. **The cost of relocating services after installation will be passed on to the contractor, developer or homeowner.**
C. Piping:

Specifications and Requirements

- All customer owned piping, piping on the outlet side of the meter, must meet the NFPA 54 Natural Fuel Gas Code, as adopted by the State of Vermont, referenced in Section 4.

- All Vermont Gas owned piping, piping on the inlet side of the meter, must meet the Department of Transportation Title 49 CFR Part 192, as adopted by the State of Vermont, referenced in Section 4.

- All piping exposed to the outside air must be protected from atmospheric corrosion. Two common methods of protection are to use galvanized piping or to paint all exposed piping.

- Piping installed above ground shall be securely supported and located where it will be protected from physical damage.

- Horizontal piping should be supported with an angle bracket. If an angle bracket cannot be used than a split ring bracket can be used.

- Call the Vermont Gas Operations Department at 802-863-4511 with any questions regarding the support of above ground piping.

**Support of Piping**

<table>
<thead>
<tr>
<th>Steel Pipe, Nominal Size of Pipe (in.)</th>
<th>Spacing of Supports (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½</td>
<td>6</td>
</tr>
<tr>
<td>¾ or 1</td>
<td>8</td>
</tr>
<tr>
<td>1¼ or larger (horizontal)</td>
<td>10</td>
</tr>
<tr>
<td>1¼ or larger (vertical)</td>
<td>Every floor level</td>
</tr>
</tbody>
</table>

For SI units: 1 ft. = 0.305 m.

**Manifolds**

<table>
<thead>
<tr>
<th>Manifolds</th>
<th>Inches to service from end of manifold</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 meter</td>
<td>14”</td>
</tr>
<tr>
<td>2 meter</td>
<td>34”</td>
</tr>
<tr>
<td>3 meter</td>
<td>50”</td>
</tr>
<tr>
<td>4 meter</td>
<td>66”</td>
</tr>
<tr>
<td>5 meter</td>
<td>82”</td>
</tr>
</tbody>
</table>
### Gas Meter Sizing

<table>
<thead>
<tr>
<th>Size</th>
<th>Min. Flow</th>
<th>Max. Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC250</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>320</td>
</tr>
<tr>
<td>AL425</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>AL630</td>
<td>550</td>
<td>900</td>
</tr>
<tr>
<td>AL800</td>
<td>800</td>
<td>1,100</td>
</tr>
<tr>
<td>AL1000</td>
<td>1,000</td>
<td>1,500</td>
</tr>
<tr>
<td>D1000</td>
<td>800</td>
<td>1,500</td>
</tr>
<tr>
<td>2M</td>
<td>1,400</td>
<td>1,900</td>
</tr>
<tr>
<td>3M</td>
<td>1,900</td>
<td>2,900</td>
</tr>
<tr>
<td>5M</td>
<td>2,900</td>
<td>4,900</td>
</tr>
<tr>
<td>7M</td>
<td>4,900</td>
<td>6,900</td>
</tr>
</tbody>
</table>

### Regulators

<table>
<thead>
<tr>
<th>Size</th>
<th>Body</th>
<th>Orifice</th>
<th>O.P.S.O.</th>
<th>Max. Flow scfh @ 25 psi</th>
<th>Max. Flow scfh @ 60 psi</th>
<th>Internal Relief &amp; or OPSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>American 1213 B</td>
<td>¾”</td>
<td>1/8”</td>
<td>No</td>
<td>475</td>
<td>700</td>
<td>Full</td>
</tr>
<tr>
<td>American SR 113</td>
<td>3/4”</td>
<td>1/8&quot;x3/16”</td>
<td>No</td>
<td>500</td>
<td>1100</td>
<td>Full</td>
</tr>
<tr>
<td>Itron B42R</td>
<td>3/4”</td>
<td>1/8&quot;x3/16”</td>
<td>No</td>
<td>550</td>
<td>1150</td>
<td>Full</td>
</tr>
<tr>
<td>Itron B42R</td>
<td>3/4&quot;x 1/4&quot;</td>
<td>1/8&quot;x3/16”</td>
<td>No</td>
<td>550</td>
<td>1150</td>
<td>Full</td>
</tr>
<tr>
<td>American 1813 C</td>
<td>1”</td>
<td>1/8&quot;x3/16”</td>
<td>No</td>
<td>575</td>
<td>1100</td>
<td>Full</td>
</tr>
<tr>
<td>American 1843 B2</td>
<td>1”</td>
<td>3/16”</td>
<td>Yes</td>
<td>1,250</td>
<td>2,400</td>
<td>partial w/ OPSO</td>
</tr>
<tr>
<td>American 1883 B2</td>
<td>1”</td>
<td>3/16”</td>
<td>Yes</td>
<td>1,250</td>
<td>2,400</td>
<td>OPSO</td>
</tr>
<tr>
<td>American 1813 B</td>
<td>2”</td>
<td>1/4”</td>
<td>No</td>
<td>2,500</td>
<td>4,500</td>
<td>Full</td>
</tr>
<tr>
<td>American 1843</td>
<td>2”</td>
<td>1/2”</td>
<td>Yes</td>
<td>9,050</td>
<td>17,400</td>
<td>partial w/ OPSO</td>
</tr>
<tr>
<td>American 1883</td>
<td>2”</td>
<td>1/2”</td>
<td>Yes</td>
<td>9,050</td>
<td>17,400</td>
<td>OPSO</td>
</tr>
</tbody>
</table>
**Radial Regulator Relief Clearance**

<table>
<thead>
<tr>
<th>Clearance From:</th>
<th>Radius from Regulator Vent:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows &amp; Doors</td>
<td>3 feet</td>
</tr>
<tr>
<td>Soft, Attic, Crawl Space Vents</td>
<td>3 feet</td>
</tr>
<tr>
<td>Gravity Direct Vent Termination</td>
<td>3 feet</td>
</tr>
<tr>
<td>Power &amp; Direct Vent Transition</td>
<td>3 feet</td>
</tr>
<tr>
<td>Air Conditioner or Mechanical</td>
<td>10 feet</td>
</tr>
<tr>
<td>Forced Air Intake (not DV Appliances)</td>
<td></td>
</tr>
</tbody>
</table>

**Meter Clearance:**
- Minimum 6” above grade or on cement pad.
- Minimum 3’ horizontal distance from electric meters.
- Shall not be placed under porch, deck, or stairs.
D. **Barricades/Barriers:**

1. Typical barriers are set a minimum of four feet (4’’) into the ground in concrete and standing above the top level of the meter set, within three feet (3’’) of a driveway, parking lot or sidewalk. All barriers are required to be painted bright yellow for visual safety. See Figure 8.9.

   - **Residential:** Two Inch (2”) Diameter SCH. 80 Steel Post. Minimum three feet (3’’) above grade. Concrete filled, painted yellow, minimum ten inch (10”) diameter Sonotube® or concrete base.

   - **Small Commercial and Apartment Complexes:** Four Inch (4”) Diameter SCH. 80 Steel Post. Minimum three feet (3’’) above grade. Concrete filled, painted yellow, minimum twelve inch (12”) diameter Sonotube® or concrete base.

   - **Large Commercial and Industrial:** Six Inch (6”) Diameter SCH. 80 Steel Post. Minimum four feet (4’’) above grade. Concrete filled, painted yellow, minimum twenty inch (20”) diameter Sonotube® or concrete base.

   - **Note:** Two (2) posts should be used when the maximum distance between posts are four feet (4’’) or less. A third post must be installed when greater than four feet (4’’).

2. In areas of potential vandalism, the customer may be required to provide a secure six foot (6’’) tall chain link fence with a gate that can be locked. Vermont Gas will need a key or combination for access.

3. For information on meter pads, installations not covered above and other support methods contact the Operations Department at 802-863-4511.

(Section left blank intentionally)
BARRICADE POST REQUIREMENTS

RESIDENTIAL:
2" DIAMETER SCH. 80 STEEL POST, MINIMUM 3' ABOVE GRADE, CONCRETE FILLED, PAINTED YELLOW, MINIMUM 10" DIA. SONOTUBE OR CONCRETE BASE.

SMALL COMMERCIAL AND APARTMENT COMPLEXES:
4" DIAMETER SCH. 80 STEEL POST, MINIMUM 3' ABOVE GRADE, CONCRETE FILLED, PAINTED YELLOW, MINIMUM 12" DIA. SONOTUBE OR CONCRETE BASE.

LARGE COMMERCIAL AND INDUSTRIAL:
6" DIAMETER SCH. 80 STEEL POST, MINIMUM 4' ABOVE GRADE, CONCRETE FILLED, PAINTED YELLOW, MINIMUM 20" DIA. SONOTUBE OR CONCRETE BASE.

NOTE: THE DISTANCE BETWEEN POSTS SHALL BE NO MORE THAN FOUR FEET. IF THE DISTANCE BETWEEN THE POSTS WOULD BE GREATER THAN FOUR FEET, ADDITIONAL POST(S) SHALL BE INSTALLED.

BARRICADE POST DIMENSIONS

BARRICADE POST PLACEMENT REQUIREMENTS

NOTE: TO MAINTAIN CLEARANCE FOR FUTURE MAINTENANCE, LOCATE POST "A" FIRST AND ALL OTHERS 4 FEET FROM SUBSEQUENT POSTS

VERMONT GAS SYSTEMS, INC.
P.O. Box 467, Burlington, VT 05402-0467
88 Swift Street, So. Burlington, VT 05403
Tel: 802-863-4511
www.vermontgas.com

REVISIONS / ADDITIONAL NOTES:
UPDATED TITLE BLOCK & MINOR DETAILS
INITIALS: MAL
DATE: 2/10/2016
DRAWING SCALE: NATURAL GAS INSTALLATION STANDARDS
N.T.S.
NOT TO SCALE
BARRICADE REQS.
FIG. 8.9
E. **Gas Meter Recess**

1. All entrances/penetrations into building shall be sealed properly.

2. Depth of recess must be 24”

3. A four inch (4”) diameter sleeve is required if paving during construction.

4. For a detailed design of the proper recess for a gas meter see figure 8.10.

(Section left blank intentionally)
STANDARD CLEARANCES

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>RISER TO BACK WALL</th>
<th>RISER TO HOUSE LINE</th>
<th>MINIMUM HEIGHT</th>
<th>MINIMUM WIDTH</th>
<th>DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-25D</td>
<td>8”</td>
<td>10.5”</td>
<td>48”</td>
<td>36”</td>
<td>24”</td>
</tr>
<tr>
<td>4/23/230</td>
<td>6”</td>
<td>20”</td>
<td>54”</td>
<td>48”</td>
<td>24”</td>
</tr>
<tr>
<td>L109B</td>
<td>6”</td>
<td>18”</td>
<td>54”</td>
<td>48”</td>
<td>24”</td>
</tr>
<tr>
<td>2X70SM</td>
<td>6”</td>
<td>60”</td>
<td>54”</td>
<td>54”</td>
<td>24”</td>
</tr>
<tr>
<td>5M</td>
<td>6”</td>
<td>60”</td>
<td>54”</td>
<td>72”</td>
<td>24”</td>
</tr>
</tbody>
</table>

THESE MEASUREMENTS ARE TO BE USED AS A GUIDELINE FOR SINGLE METER MANIFOLDS AT STANDARD PRESSURE ONLY. MULTIPLE METER MANIFOLDS AND OTHER NON-STANDARD INSTALLATIONS WILL REQUIRE APPROVAL FROM A VGS OPERATIONS MANAGER.

VERMONT GAS SYSTEMS, INC.
P.O. Box 487, Burlington, VT 05402-0487
85 Willard Street, S. Burlington, VT 05403
Tel: 802-863-4511
www.vermontgas.com

DRAWING SCALE: N.T.S.
NATURAL GAS INSTALLATION STANDARDS
GAS METER RECESS
FIG. 8.10
F. **Gas Meter Enclosures**

1. All enclosure side against building shall be gas tight as to prevent gas migration into building.

2. Provide a minimum of 120 sq. in. of free air space at the top and bottom of enclosure (if free air space of louver is unknown, use 75% of calculated surface area).

3. Enclosure shall be readily accessible for access and maintenance.

4. Either single or double door is allowed, but must be no smaller than 40” wide by 36” high.

5. For a detailed design of a proper enclosure see figure 8.11.
Regulators, Meters, Piping & Barricades

Vermont Gas Facilities Installations Standards Page 40

NOTES
1. ALL ENCLOSURE SIDE AGAINST BUILDING SHALL BE GAS TIGHT AS TO PREVENT GAS MIGRATION INTO BUILDING.
2. PROVIDE A MINIMUM OF 120 SQ.IN. OF FREE AIR SPACE AT THE TOP AND BOTTOM OF ENCLOSURE (IF FREE AIR SPACE OF LOUVER IS UNKNOWN USE 75% OF CALCULATED SURFACE AREA).
3. ENCLOSURE SHALL BE READILY ACCESSIBLE FOR ACCESS AND MAINTENANCE.
4. SINGLE OR DOUBLE DOOR MAY BE USED.

ENCLOSURE SIZE

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>MINIMUM WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-290</td>
<td>36&quot;</td>
</tr>
<tr>
<td>426-630</td>
<td>48&quot;</td>
</tr>
<tr>
<td>D1000</td>
<td>48&quot;</td>
</tr>
<tr>
<td>2&quot;x3/4&quot;</td>
<td>60&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>72&quot;</td>
</tr>
<tr>
<td>7&quot;</td>
<td>84&quot;</td>
</tr>
</tbody>
</table>

VERMONT GAS SYSTEMS, INC.
P.O. Box 467, Burlington, VT 05402-0467
85 Swift Street, So. Burlington, VT 05403
Tel: 802-863-4511
www.vermontgas.com

REVISIONS / ADDITIONAL NOTES: INITIALS: DATE:

DRAWING SCALE: N.T.S. NATURAL GAS INSTALLATION STANDARDS
NOT TO SCALE: GAS METER ENCLOSURE
FIG. 8.11
SECTION 9: Working in the Vicinity of Gas Lines

Damages to Vermont Gas piping system:

1. **IF ANY VERMONT GAS LINE IS DAMAGED AND LEAKING (OR POSSIBLY LEAKING) CALL 911. AFTER CALLING 911, NOTIFY VERMONT GAS AT 1-800-639-8081 OR 802-863-4511 AND CHOOSE OPTION 9 TO REPORT THE EMERGENCY. DO NOT ATTEMPT TO CONTACT INDIVIDUALS AT VERMONT GAS.**

2. All other damage should be reported to Vermont Gas at 1-800-639-8081 or 802-863-4511, option 9.

3. All damages to Vermont Gas owned facilities and gas lines shall be immediately reported to Vermont Gas. The damages shall be repaired by Vermont Gas maintenance personnel prior to backfilling.

4. All coating damage to steel gas lines shall be reported immediately to Vermont Gas. Coating breaks shall be repaired by either Vermont Gas maintenance personnel or by contractors with Vermont Gas inspection prior to backfilling.

5. All breaks and damages to tracer wire for plastic pipe shall be reported to Vermont Gas. The breaks and damages shall be repaired by either Vermont Gas personnel or by contractors with Vermont Gas inspection prior to backfilling.

6. All damages to Vermont Gas cathodic protection facilities and cathodic protection test facilities shall be reported to Vermont Gas. The damages shall be repaired and tested by Vermont Gas personnel or by contractors with Vermont Gas inspection prior to backfilling.

7. All damages to Vermont Gas test, locator, and valve boxes shall be reported to Vermont Gas. Either Vermont Gas personnel or contractors with Vermont Gas inspection shall repair the damages. All Vermont Gas test, locator, and valve boxes shall remain accessible after any grade changes. Contact Vermont Gas for any boxes that need to be raised due to a grade change. No boxes shall be under cover.

Specifications and Requirements for All Vermont Gas Pipe:

1. Contractors are to conform to Vermont Gas Requirements listed in section 7A.

2. No concrete shall be in contact with gas lines.

3. Extra coating required for steel gas lines shall be done by Vermont Gas personnel or contractors with Vermont Gas inspection prior to backfilling.
4. All exposed gas lines shall be padded with six inches (6") minimum of sand or a stone free material prior to backfilling unless otherwise stated by Vermont Gas specifications or drawings.

5. If blasting within 100-foot radius of Gas Facilities. Vermont Gas shall be notified prior to and after blasting. Vermont Gas will work with the blasting contractor prior to and after blasting to ensure the safety of the public and all parties involved. Proper arrangements shall be made between the blasting contractor and Vermont Gas to coordinate schedules.

If the blasting vibrations will be at or above two inches (2") per second (ips) Peak Particle Velocity and the two (2) ips peak particle velocity is going to be seen at the pipelines, a site meeting between the blasting contractor and a Vermont Gas Operations Manager or Supervisor will be held to discuss the safety of Vermont Gas facilities.

If the blasting in the area is below the two (2) ips peak particle velocity Vermont Gas will leak survey the area prior to and after the blasting.

**Specifications and Requirements for Vermont Gas Transmission Pipe:**

1. Vermont Gas’ Integrity management plan requires any excavations within 100 feet of a Vermont Gas Systems Transmission Pipeline to be monitored by a Vermont Gas Inspector.

2. Any areas of exposed transmission pipe should be reported to Vermont Gas.
Section 10: Infill Services & Natural Gas Service Line Installation

A. Infill Services

The following are prerequisites of service which the applicant subscriber(s), or its duly authorized officer/agent, agrees to meet:

1. The riser location chosen shall be no less than three feet (3’) from existing or planned electrical panels or meters, air intakes and windows. Meters will not be installed under any drip locations or areas exposed to vehicular traffic without proper protection. (See figures 8.2 & 8.5).

2. Grade shall be within six inches (6”) of finished grade from street to building and finished grade shall be marked on the foundation of the building with a horizontal line.

3. All materials shall be cleared from facilities location, including trees and bushes.

4. Meter protection and/or pad must be in place, if required.

5. No ledge removal is required. (Ledge removal will require a negotiated excess charge for construction.)

6. No frost in the ground. (Frost in ground will require a negotiated excess charge for construction.)

7. No other parallel utilities shall be within three feet (3’) horizontally or one foot (1’) vertically of facilities location selected.

B. Natural Gas Service Line Installation

1. Prior to Construction - Vermont Gas personnel will pre-mark the construction area with white flags and/or paint. The One Call Center, DigSafe #811, will be called to locate and map underground facilities within the pre-marked area. Privately owned sewer lines, water lines, irrigation lines, power, lighting and electric dog fences may not be clearly identified which sometimes makes them difficult to locate. To help identify sewer line locations, Vermont Gas personnel will attempt to document where the sewer line exits the structure and any other relevant information that may be provided by the resident in regards to underground utilities during a site visit. Locations having potential sewer line conflicts during the pre-marking process may require further investigation. The more potential conflicts the higher the probability of Open Trenching the service will be required.
2. Construction Methods:

A. **Open Trenching** – This technique is the preferred method of installation when the locations of underground utilities such as water or sewer are unknown. An excavator will open a trench roughly one foot (1’) wide and three feet (3’) deep from the street up to your home or business in which to install the gas line. Once the line is installed the trench will be backfilled and tamped (packed down).

B. **Plowing** – A technique that uses a machine that pulls along a sharp blade which slices through the ground ahead of a metal chute which places the pipe at any desired depth. An expander behind the plow blade is used to expand the ground and allow a pipe of a particular size to be pulled into the ground without opening a trench and creating the usual disturbance associated with an open excavation. This technology may be used if the location of all underground utilities is known.

C. **Directional Boring** - Commonly called horizontal directional drilling or HDD, is a mostly trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface launched drilling rig. Directional boring is used to limit surface disturbance. This technology is used if the location of all underground utilities is known.

D. **Pneumatic Boring** - A technique to bore a hole underground between two points without disturbing the surface ground. It uses compressed air and a “mole” to tunnel underground without disrupting or damaging underground infrastructure. This technology can only be used if the locations of all underground utilities are known. An excavation measuring approximately four feet by three feet (4’x3’) is made which is usually located near the roadway. The mole is placed in the excavation and bores a hole, compacting and displacing the soil underground rather than removing it. A second four feet by three feet (4’x3’) excavation is made to receive the mole. Excavation pits are required approximately every 40 feet.
3. **Post Construction** - Vermont Gas or its contractors will be back within seven (7) days to perform clean up, topsoil, seed and mulch any areas that have been disturbed during the installation of the natural gas line. In order to ensure proper growth of the grass, please water the seeded area twice per day. Vermont Gas will not be responsible for the non-growth of grass because of lack of watering. Vermont Gas on occasion will conduct post construction camera inspections of the sewer system in an effort to reduce the risk of Cross Bores that are defined in Section 3. To complete these inspections Vermont Gas and the third party contractor may require access to the residence to complete the inspection.
Section 11: Fuel Lines, Pool Heaters & Underground Piping

To run underground piping to a pool heater or secondary building, you must first understand the responsibilities of Vermont Gas and those of your contractor.

Vermont Gas does not monitor or maintain customer owned fuel lines as part of its distribution system. Buried piping that is not maintained is subject to the potential hazards of corrosion and leakage. Your piping should be periodically inspected for leaks regardless of the pipe material. If an unsafe condition exists, repairs should be made as soon as possible.

Following is a list of resources to assist you in this process.

Heath Consultants, Inc.
100 Tosca Drive
Stoughton, MA  02072-1591
617-344-1401

Pro-Tech
P.O. Box 58
Londonderry, NH  03053
603-437-9733

Vermont Gas Systems, Inc.
P.O. Box 467
Burlington, VT  05402
802-863-4511

The property owner shall hire a qualified contractor for installations of underground piping beyond the outlet of the gas meter. The material and testing shall meet all applicable Federal, State and Vermont Gas Regulations and Standards.

A. Getting Started

1. You and your contractor should determine the size and exact location of the additional gas appliances. Care shall be taken to install the appliances in accordance with the manufacturer’s installation instructions. This will allow your contractor to accurately estimate the gas load, length, size and cost of the underground piping.

2. Contact Vermont Gas to check gas load – Vermont Gas shall determine if the current service regulator and meter is properly sized to handle the added load. Vermont Gas may require your contractor to complete a GAS LOAD SHEET (List of all gas appliances and their input rates) which will be used to properly size the gas meter. If it is determined that a larger gas meter is needed, one will be installed by Vermont Gas.
B. **Next Steps - Customer and contractor will be responsible for the following:**

1. Call in a Dig Safe request at least 48 hours or two (2) business days, whichever is greater, prior to excavating at 811. This is a toll free call, which alerts utility owners that excavation will be taking place. If needed, the utility companies will visit the work site and mark out the locations of their facilities. This process assists in the safety of the excavator and prevents utility damage. If you have any question on the "Dig-Safe" process, please call the Vermont Gas Construction Department at 802-863-4511

2. Dig a ditch, at least 24” deep, from the appliance or secondary building wall to the primary building or outlet side of the meter (Right hand side as you face the meter). The bottom of ditch shall be flat and free of rocks and stones. Vermont Gas requires six inches (6”) of sand padding all around pipe in stony soil conditions.

3. The customer or contractor will be responsible for backfilling the remainder of the ditch. Your contractor is responsible for installing the high density polyethylene pipe, anodeless risers, tracer wire, and warning tape. The customer will also be responsible for installing the locator wire six inches (6”) above the pipe and the warning tape six inches (6”) below finish grade.

4. All high density polyethylene (HDPE) pipe and medium density polyethylene (MDPE) and all fittings must be below grade to ensure zero exposure to ultra-violet contact.

5. Pressure Test – Your contractor is required pressure test piping as specified in NFPA 54, to ensure there are no leaks.

6. Final connections to the meter and appliance (pool heater, etc.) will be the customers responsibility. If the customer desires, Vermont Gas can provide this service for a nominal charge. An appointment can be arranged by calling Vermont Gas at 802-863-4511.

C. **Final Steps**

1. Provide Vermont Gas with a copy of the pressure test.

2. If you would like Vermont Gas to perform the required monitoring of your underground gas piping, contact the Vermont Gas Operations Department at 802-863-4511.

3. For any questions regarding specific underground piping installations such as elevated pressure, using alternative materials, dielectric and insulated fitting requirements, or shut off location requirements, contact the Vermont Gas Operations Department at 802-863-4511.
Section 12: Natural Gas Service to Mobile Homes and Mobile Home Parks

Vermont Gas will provide natural gas service and conversion of customer appliances to mobile homes and mobile home parks under the following conditions:

Feasibility

- The project must meet the feasibility requirements of Vermont Gas’ line extension policy.

Natural Gas Distribution Main

1. Owners must provide an easement for the installation and operation of the pipelines. The easement width will be a minimum of five (5’) feet.

2. There must be a minimum of five (5’) feet of open space between the paved roadway and any structures in order to install the main line adjacent to the roadway.

3. There must be a minimum of three (3’) feet separation between the natural gas main pipeline and any other underground utilities such as electricity, water, sewer…etc.

4. All underground utilities must be located and marked by the Owner of the property.

Natural Gas Service Lines

1. Only mobile homes that are constructed to HUD standards. (Constructed after June 15, 1976) are eligible for natural gas service.

2. The mobile home must be blocked up, stable and have its wheels and hitch removed to receive service.

3. Foundations - Mobile homes installed on a slab or masonry foundation walls shall utilize standard residential meter set standards. If a pad or masonry foundation is not present, the meter assembly shall be supported by a meter support post and the connection from the meter outlet to the mobile home shall utilize a flexible connector approved for outdoor use.

4. Flexible connectors shall be no more than 6 feet in length, rated for outdoor use, sized to adequately for the connected load, be installed completely outside the skirting to allow visual inspection, and installed with a loop to allow for settling or movement of the home.

5. The riser and meter will be located in an area that is protected from vehicle traffic.

6. In cases where there is no foundational support for the riser and meter, an additional support for the meter and the riser shall be required and will be provided by the company.
7. There must be a minimum often (10) feet separation between adjacent mobile homes in order to install the service line.

8. All service lines will have a flow limiter installed.

**Conversion of Appliances**

1. All appliances must be in good condition, accessible and approved for use in a mobile home.

2. There must be a minimum of two (2’) feet of ground clearance underneath the mobile home.

3. On double wide mobile homes the crossover piping must be exposed. If it is not exposed it will need to be replaced.

4. Mobile home will have a tag affixed to the outside of the home conveying the appliances have been converted to natural gas.
Section 13: Customer Dig Guidelines

1. Permits

   a. **Excavation Permits** - It is the responsibility of the Customer/Developer to acquire the necessary state and local excavation permits. The permit must have Vermont Gas (VGS) listed as the co-applicant.

   b. **Wetlands Permits** – VGS will determine if a wetlands permit may be needed. It will be the responsibility of the Customer/Developer to obtain the field data required to determine if a permit is needed and obtain the Wetland permit if necessary.

   c. **Construction Storm water Permit** - VGS will determine if a Storm water permit may be needed. It will be the responsibility of the Customer/Developer to obtain the field data required to determine if a permit is needed and obtain the Storm Water permit if necessary.

2. Easements

   a. VGS will obtain the necessary ROW/easement documents when required. All easements must be signed and ready for filing in the public record prior to installing pipe.

3. Digging within a Public Right of Way

   a. If the Customer/Developer will be digging within the Public Right of Way, VGS will require the Customer/Developer place a deposit with VGS of $4.00 (four) dollars per foot of disturbance. This deposit will be held until the cleanup of the project has been approved by the Owner of the Public Right of Way. Upon approval the deposit will be returned to the Customer/Developer. If the Customer/Developer cleanup fails to get the approval of the Owner, VGS will utilize the deposit monies and provide the cleanup services to the satisfaction of the Owner.

   b. Below is a list of qualified excavation contractors. If the Customer/Developer utilizes one of these contractors the deposit requirement outlined above will be waived.

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Contact Person</th>
<th>Phone</th>
<th>HDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECI</td>
<td>Tom Loyer</td>
<td>(802)863-6389</td>
<td>HDD</td>
</tr>
<tr>
<td>Ryan J.</td>
<td>Ryan Jordan</td>
<td>(802)309-8091</td>
<td>HDD</td>
</tr>
<tr>
<td>NEU</td>
<td>Ernie Pyle</td>
<td>(207)353-1636</td>
<td>HDD</td>
</tr>
<tr>
<td>Menard &amp; Sons</td>
<td>Wade Menard</td>
<td>(802)864-4364</td>
<td>No</td>
</tr>
<tr>
<td>Dirt Tech</td>
<td>Tim Cole</td>
<td>(802)434-6640</td>
<td>No</td>
</tr>
<tr>
<td>Champlain Construction</td>
<td>Jim Danyo</td>
<td>(802)388-2652</td>
<td>No</td>
</tr>
<tr>
<td>Island Excavating</td>
<td>Desiree Blanchard</td>
<td>(802)372-4473</td>
<td>No</td>
</tr>
</tbody>
</table>
4. **Dig Safe**

a. The Customer/Developer will be required to obtain a valid DIGSAFE number with Vermont Gas named on it and be aware of utility marking in the proposed work area. The DigSafe will cover all areas Vermont Gas (VGS) and Developer may excavate. DigSafe can be contacted by dialing 811. Please have your DigSafe number prior to calling to schedule the installation.

5. **Scheduling of Construction**

a. To schedule your customer dig with VGS please contact your sales representative 802-863-4511. Please allow a minimum of two (2) week scheduling lead time. Any requests less than two weeks will be on a best efforts basis. Please note that scheduling will depend on amount of installations already scheduled.

b. Approximately 75% of ditch length or 400 feet, whichever is less, should be trenched and available for pipeline installation prior to Vermont Gas’ arrival on the scheduled date. On large jobs, alternative ditch lengths can be arranged with prior approval of VGS’ Operations Department. Down time incurred waiting for ditch to be excavated or equipment to arrive may be billed to the customer/developer or may require the job to be rescheduled.

6. **Construction**

a. The requirements for the trench are 36” deep for service mains and 24” deep for individual services. The trench shall not have sides caving in and the bottom of the ditch shall be flat and free of rocks and stones. See Figure 7.1 for a detail of a typical trench.

b. Customer/Developer will not expose Vermont Gas facilities. Vermont Gas personnel will be responsible for all excavation over live gas pipelines.

c. During regular construction season (May 15 – November 15), Vermont Gas will be responsible for road crossings unless circumstances dictate the developer be responsible. Vermont Gas will provide prior notification to developer should they be required to do a road crossing.

d. Customer/Developer will supply sand padding above and below the pipe in stony soil conditions for added protection of the pipe. After which backfill may be used as long as stones are no larger than six inches (6”) in diameter, is free of cinders, ash, organic material (mulch or sod), and paving material.

e. Customer/Developer is responsible for all restoration, including concrete and blacktop that the Customer/Developer has disturbed. Vermont Gas will be responsible for all restoration, including concrete and blacktop that Vermont Gas has disturbed.

f. Winter construction will be weather dependent and at the discretion of Vermont Gas to ensure the safety of all personnel. Vermont Gas will not excavate over live gas lines where frost conditions exist. Customer/Developer will make every effort to thaw the ground above gas lines. Frozen earth will not be used as backfill and suitable backfill
material is required if frost is present. During winter construction, customer/developer will be responsible for all sidewalk and road crossings.

I ______________________________________________ (Print Name) understand and will comply with Guidelines as set forth herein.

___________________________________________________                  Date:

________________________
Signature