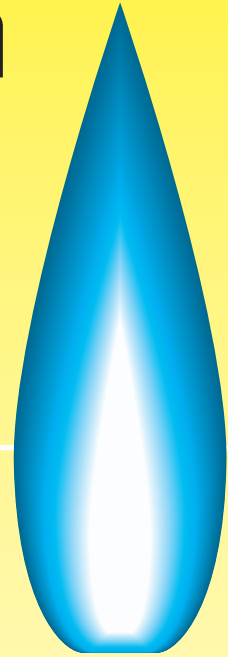



Natural Gas Installation Standards Handbook



 Orange & Rockland
Pike County Light & Power Co.

Revised April 2011

Natural Gas Installation Standards Handbook

Accidents involving dig-ins to underground facilities occur every year. They can damage equipment, and more importantly, sometimes lead to serious injuries, even death. We want to reduce the number of accidents so we joined a One-Call-System 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 for details on the location of underground electric wires, gas lines and communications cables. Call before you start your project to prevent damage to underground equipment and avoid personal injury, or find yourself with an unnecessary repair bill.

So, remember to call our One-Call-Center before you start the job. A single toll-free telephone call can save you plenty!

UNDERGROUND UTILITIES CALL CENTERS:

NEW YORK: 1-800-962-7962 or 811

NY Code 753 requires 2-10 working days notice.

NEW JERSEY: 1-800-272-1000 or 811

NJ Code requires 3-10 working days notice.

PENNSYLVANIA: 1-800-242-1776 or 811

PA Code requires 3-10 working days notice.

GAS EMERGENCIES CALL

1-800-533-LEAK

1-800-533-5325

HEARING IMPAIRED/TDD

845-425-3303

We think you should know

At Orange and Rockland Utilities, when we say: "We're here to help," we mean it! Our responsibility is to provide our gas customers with safe, reliable and cost effective service. Orange & Rockland's prices for natural gas service are among the lowest in the State of New York.

Before you start planning your project, please contact a representative at Orange & Rockland. We will be happy to provide you with information and assistance, as well as ways to save you energy and money. You can contact one of our New Construction Services Representatives at 845-577-3324. Our field offices are located at the following offices:

Blooming Grove

500 Route 208
Monroe, NY 10950-1699

Middletown

71 Dolson Avenue
Middletown, NY 10940

Spring Valley

390 West Route 59
Spring Valley, NY 10977

The O&R System: Maintaining a safe and reliable natural gas supply to more than 112,000 customers in 55 communities who depend on us is a top priority at Orange & Rockland. We have employees on duty 24 hours a day, 365 days a year to ensure the safety and reliability of our gas system. We work closely with multiple pipeline suppliers to ensure a consistent and reliable flow of gas into our distribution system.

This booklet is intended to protect the mutual interest of the customer and the company. Close attention and adherence to our specifications will ensure timely and efficient installation of service that meets your requirements. This booklet will be revised or amended as required in keeping with developments and progress in the gas industry. The latest revision of these specifications should always be used. Additional copies of this booklet, and any revisions may be obtained at any of the above company offices.

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SECTION 1 Introduction

A. Purpose

The information in this booklet provides a basic and uniform set of specifications and guidelines covering the installation of gas service for the company's customers. The codes we have referenced and the information provided in this booklet in no sense relieves the customer of the responsibility to install gas piping and appliances in accordance with the latest revisions of the applicable governing codes that are listed in Section 2.

The customer should always feel free to consult a company Representative regarding safe practices and practical applications of gas installation and equipment connection.

B. Scope

The information and specifications found in this booklet relate to the piping and equipment necessary for connecting the customer's appliances to the company's gas distribution system as well as other subjects of mutual interest to developers, customers, architects, engineers, and private contractors. This booklet is intended to be a guideline and is not a complete set of rules governing gas installations.

C. Abbreviations

AGA(IAS)	American Gas Association (International Approval Services)
ANSI	American National Standards Institute
BTU	British Thermal Unit
BTUH	British Thermal Unit per Hour
CCF	Hundred Cubic Feet
CF	Cubic Foot
CFH	Cubic Foot per Hour
MBTUH	Thousand British Thermal Units per Hour
MCF	Thousand Cubic Feet
MMBTUH	One Million British Thermal Units per Hour
PSIG	Pounds per Square Inch Gauge
UL	Underwriters Laboratories
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.

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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.

Company:

Orange and Rockland Utilities, Inc. its subsidiaries and our agents.

Cost or Expense:

Shall include all labor, material and other applicable charges including overheads involved with the work to be performed.

Cubic Foot of Gas (Standard):

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

Customer:

A present customer or an applicant for the company's natural gas service.

Customer's Agent:

Architects, Engineers, Contractors, Excavators, Builders, and Developers who are acting on behalf of a customer or applicant.

Direct Vent Appliance:

An appliance that is constructed and installed so that all air for combustion is obtained from the outside atmosphere and all flue gases are discharged to the outside atmosphere.

Fan Assisted Appliance

An appliance with a venting system designed to remove flue or vent gases by mechanical means, that may consist of an induced draft portion under non positive static pressure or forced draft portion under positive static pressure.

Fire Wall:

A wall or partition that is rated and intended to retard the spread of fire or products of combustion. Fire walls must be in accordance with NYS and local building codes.

Fuel Line:

The piping that is installed after the company's meter or regulator that connects the customer's appliances and equipment to the gas supply. Fuel lines are the responsibility of the customer.

Gas Main or Main Extension

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.

Gas Service:

The piping and accessory equipment owned by the company that is connected to the gas main and installed on a customer's property to supply gas to a residence or business.

Inches of Water Column:

A unit of measuring pressures. (1PSIG = 27.7"WC).

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Input Rating:

The gas burning capacity of an appliance in BTUH as specified by the manufacturer.

Loads-Connected:

The sum of the rated BTUH input of all connected gas equipment. May also be expressed in cubic feet per hour.

Make Up Air:

The volume of, either outside or inside, air 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.

Multiple Occupancy Building:

A structure, including row houses, enclosed within exterior walls of fire wall construction, erected and formed of component structural parts and designed to contain four or more individual dwelling units for permanent residential occupancy.

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.

Recommended:

means desired but not mandatory.

Regulator:

A device placed in a gas line for reducing, controlling and maintaining the natural gas pressure required by the customer.

Secondary Air:

The air externally supplied to the flame at the point of combustion.

Shall:

IS DEFINED AS MANDATORY IN NATURE.

Shared Meter:

exists when a tenant pays for gas service used in their dwelling unit as well as service used outside their dwelling unit by others. (For example: a shared meter exists if the tenant is paying for gas used in their apartment plus usage for a common hallway or common heating equipment.)

Should:

is defined as desirable in nature, as contrasted with mandatory.

Temporary Service:

Temporary gas services are not permitted as per O&R Gas Tariff leaf No. 18 paragraph 3.5.

SECTION 2 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

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

2. Codes, Rules and Regulations of the State of New York

Title 16 Parts 230, 255, 261 and Title 12 Part 753 (Code 753)
West Group
P.O. Box 64833
St. Paul, MN 55164-0833

3. Department of Transportation Title 49 CFR Part 192

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

4. ANSI B31.8 Code of Pressure Piping "Gas Transmission and Distribution Piping System"

American Society of Mechanical Engineers
United Engineering Center
345 East 47th St.
New York, NY 10017

5. Manual of Planning Standards for School Buildings — The New York State Education Department

University of the State of New York
State Education Department
Division of Educational Facilities Planning
Albany, NY 12234

6. The New York State Uniform Fire Prevention and Building Code

West Group
P.O. Box 64833
St. Paul, MN 55164-0833

SECTION 3 General Information

A. Application For Service:

Application for gas service can be made by mail or by a personal application at any of the following company offices:

Blooming Grove
500 Route 208
Monroe, NY 10950

Spring Valley
390 Route 59
Spring Valley, NY 10977

Middletown
71 Dolson Avenue
Middletown, NY 10940

A. Application for Service:

Orange & Rockland requires a company application form for the class and type of natural gas service that is required by the customer. To insure timely service connection your application should be submitted well in advance of the date service is required.

You must consult the company regarding service availability before you complete your plans, purchase any equipment, and before any construction commences on a facility that you plan to connect to the company's gas distribution system.

Please supply the following information to the company regarding the customer's natural gas requirements:

1. Three finalized plot plans, drawn by a licensed land surveyor, consulting engineer or architect, showing the requested location of the gas service and gas meter location. The drawing shall include property lines, access roads, water, sewer, drainage, electric telephone and cable television lines in addition to showing location of the building on the property. Please include any plans for future additions. Where the company determines that a meter(s) location(s) may be questionable with regard to safety or maintenance, a profile drawing will be requested showing the locations of windows, doors, vents and vehicular traffic areas.
2. A list of all natural gas equipment with the respective BTUH input and required pressure. This information should be provided either by separate letter, or you may include it on the company's application form.
3. O&R provides gas pressure at 7 inch W.C. Higher pressures will not be provided to compensate for inadequately sized customer fuel lines. Exceptions to the 7 inch W.C. may be warranted for commercial or industrial customers who can demonstrate special fuel pressure needs and no other reasonable alternative exists. Higher delivered pressure requires the prior approval of O&R. In such cases, the applicant shall provide written documentation on equipment specifications and fuel requirements.

B. Temporary Service:

According to Orange & Rockland's Gas Tariff Leaf No. 18, Paragraph 3.5: "During the term of the order dated October 26, 1971, as amended on December 14, 1971, of Public Service Commission Case No. 26766; Natural Gas is not available for temporary service."

C. Identification of Employees:

To protect customers from unauthorized persons representing themselves as company employees, each employee has an identification card that will be shown upon request.

D. Access to customer premises:

Orange & Rockland employees or its agents shall have access, at all reasonable times, to read, install, repair, change, or inspect O&R's gas meters, regulators, and the gas operated equipment installed on the customer's premises.

E. Meter and equipment ownership:

As a gas distribution company, Orange & Rockland owns and maintains all gas metering equipment regardless of the gas supplier.

F. Customer Excavated Service Trenches:

Orange & Rockland gas crews, or its authorized contractors, normally excavate

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Orange and Rockland Utilities, Inc.

and install gas service on private property. To save on the cost of excavation, a customer may elect to dig and back fill the gas service trench. Orange & Rockland will install the gas service line in the customer's trench. A gas service trench must be excavated to a depth minimum of 24 inches. The trench may contain electric, telecommunications and cable television cables provided the required separation from the gas line is maintained. Reference Section 4 and Appendix 1 for gas service trench specifications.

SECTION 4 Gas Mains and Services

A. Gas Mains

a. General Information:

1. The Gas Main will be installed by Orange & Rockland or its agent.
2. No person, unless in the employ of the company, shall repair, alter, open, or make connections to, or do any work on any part of the company's gas supply system.
3. It is the customer's responsibility to notify the one call system, 811 and initiate a request to locate underground facilities a minimum of two working days prior to excavation. Excavation, construction, and demolition at or near underground facilities requires strict adherence to the provisions of 12 NYCRR753 (Code 753). Requests for the location of underground facilities may not be made more than ten working days prior to the start of the proposed work.
4. Where a building is to be demolished; in addition to the Code 753 requirements, local municipalities often require written verification of the disconnection and removal of gas facilities before they will issue a "Demolition Permit." A contractor planning to demolish a building should contact Orange & Rockland using the telephone numbers provided in this booklet well in advance of the demolition. This procedure may take approximately ten working days.

b. Conditions for Installing Gas Facilities:

To provide prompt, safe and adequate gas supply to its customers, the company requires that the following conditions be met by the customer or the customer's agents:

1. The customer shall provide the company with three plot plans of the area to be served, along with gas supply requirements and the desired gas meter location.
2. Site shall be graded to with six inches of final grade and curbing and sidewalks, if required, shall be installed. Any relocation costs incurred after initial facility installation will be the responsibility of the customer.
3. The areas in which gas facilities are to be located shall be easily accessible and allow for good working conditions. Dirt piles, debris, construction material, etc. shall be removed from the gas route and trench. Trenches containing water must be pumped out by the customer before installation of the pipe.
4. Stakes showing the center line and final elevation of roads or streets shall be installed and maintained until construction is complete.
5. If required by the company, the customer shall execute and deliver to the company satisfactory written permanent easements or rights of way. Upon

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request, the company will provide the appropriate form for this purpose.

6. If the developer elects to provide the gas main trench, this trenching shall be in accordance with Standard 261.1 found in Appendix 1B shall comply with the agreement as set forth in Appendix 2.

B. Gas Service Lines

a. General Information:

1. The gas service will be installed by Orange & Rockland or its agent.
2. No person, unless in the employ of the company, shall repair, alter, open, or make connections to the service pipe or do any work on any parts of the company's gas supply system.
3. The company will install the gas service riser.
4. Metering equipment layout and service installations for commercial and industrial installations may vary. Gas Department standards will be used as a guide in layout and installation. (Refer to Appendix 3). Details of a particular installation will be provided by the company.
5. Gas service will be supplied to each building or premise through a single service pipe. Areas served by more than one service line must be separated by an approved firewall.
6. The company's service pipe shall terminate at the outlet piping of the company's meter or at the gas pressure regulator supplying the customer's piping. The company reserves the right to specify the location of the gas service connection. The customer shall consult with the company regarding the location of the service connection prior to starting construction.
7. Gas service lines shall be installed at a depth so as to have a minimum of eighteen inches of cover. Customer provided trench shall conform to Orange & Rockland's specifications, found in Appendix 1, A and C. Adequate sand or approved padding for the pipe shall be provided.

Service trenches shall generally run to the front of the building to be serviced, at the point closest to the main to which it will be connected. Service trenches shall not be run across the building. Prior to installing gas service in a customer provided trench, all other utilities, electric, CATV, telephone, etc. shall be installed to allow for proper separation from the gas pipe.

These utilities shall be in conduit or staked and padded to one side of the trench. Normal standards are that there shall be no less than a twelve inch clearance between the gas service and the other utilities. If the electric is not in conduit, the electrical inspection must be completed prior to gas installation to expedite backfilling operations.

b. Conditions For Installing Gas Service:

To provide prompt, safe and adequate gas service to its customers, the company requires that the following conditions be met by the customer or the customer's agents:

1. The areas in which gas services are located shall be easily accessible and allow for good working conditions. Dirt piles, debris, construction materials, etc. shall be removed from the gas route and service trench. Trenches containing water must be pumped out by the customer before installation of the service pipe.
2. Siding material should be installed at the meter location prior to installation of the service.

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3. Water mains and laterals, sewers and storm drains, shall be installed prior to the installation of the gas mains and services.
4. The route of the gas service and entrance to the building shall be at the closest point of supply. Any deviation from this requires company approval.
5. Final grade shall be indicated on the building at the gas service entrance.
6. The company is required to obtain a road opening permit from the municipality to connect the gas service to its main. The customer should allow three weeks or more for this process before digging his trench.
7. It is the customer's responsibility to notify the company at least seven days in advance of the requested installation date, when all of the above requirements have been accomplished.
8. Service trenches should not be run to an area of the building which would subject any above ground gas piping to vehicular damage. If such a location is unavoidable, the customer will be required to install adequate protection posts set in concrete as specified by the company.
9. Services will not be installed in trenches run only to foundations.
10. After installation of the gas service customer excavated trenches shall be backfilled as soon as possible.

SECTION 5 Pressure Control Equipment

A service line to a customer includes equipment to reduce the pressure from distribution pressure to the pressure required by the customer. Such equipment is specifically sized to meet the customer's needs. (Note: Services fed from low pressure distribution systems, which operate below 12 inches WC, do not require pressure control equipment.) The following provisions apply:

1. STANDARD DELIVERED PRESSURE AT THE OUTLET OF THE METER IS 7 INCHES WC (1/4 PSIG). The customer shall be responsible for sizing fuel lines so as to maintain an acceptable pressure at appliances. Higher pressure will not be provided to compensate for inadequately sized customer fuel lines.

Exceptions to the 7 inches WC may be warranted for commercial or industrial customers who can demonstrate special fuel pressure needs and no other reasonable alternative exists. Higher delivered pressure requires the prior approval of the company. In such cases, the customer shall provide written documentation on equipment specifications and fuel requirements.

2. The company's pressure control equipment and meter will be located outside of the building, unless it is unsafe to do so in the judgement of the company.
3. Where piping may be subject to vehicular damage, pipe posts shall be placed by the customer around pressure control and metering equipment. This protection shall consist of a minimum of two concrete filled, three inch or larger pipe posts or other suitable protection approved by the company. The concrete posts shall be buried at least two and one-half feet, and extend to a minimum height of two and one-half feet above ground. Post holes shall be filled with concrete. Certain installations may require more substantial protection at the discretion of the company (e.g. exposure to truck traffic).

CAUTION: Extreme care must be taken during the installation of protective posts to avoid damage to service line. Call the Underground Utilities Call

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Center for a markout of gas and other buried utility services (telephone number on inside of booklet cover).

4. Additional pressure control equipment installed by the customer to further reduce fuel line pressure must have appropriate overpressure protection, if applicable. All such equipment must be properly vented to outside atmosphere or have approved vent limiters installed. Common vent lines should be avoided, but if used, must be properly sized. The vent terminus must have an approved insect and water resistant cap and be installed a minimum of 18 inches from any building opening through which vented gas could enter the building, 10 feet from any forced air intake, and a minimum of 18 inches above grade.
5. In some instances, the company regulator and meter installation will be supported by bracketing to the building wall.
6. Where necessary for safety, company installed vent pipes may be routed above the roof line or to a safe location and will be supported by bracketing to the building wall.

SECTION 6 Gas Meters

The following requirements apply to gas meter installations:

1. The company will furnish and install all meters required for billing of gas delivered to the customer.
2. All meters shall be installed outside. The company reserves the right to designate or approve all meter locations. Gas meters shall not be installed:
 - within three feet of sources of ignition including burners, electric panel boxes or machinery;
NOTE: electric meters are not normally considered a source of ignition.
 - in a corrosive atmosphere;
 - where they may be subjected to vehicular damage;
 - in areas that are not readily accessible for reading, replacement or necessary maintenance;
 - in public passages, halls, bedrooms, over doors;
 - other areas deemed inconvenient or hazardous by the company.

Exceptions to the outside location of meters may be considered such as in downtown commercial areas or in other situations where physical conditions prohibit outside installation. Installation of a meter inside a building requires advance approval by the company prior to fuel line installation. If permission for an inside meter installation is granted, the meter must be located as near as possible to the point of entry of the gas service in a well ventilated area.

3. Meters are installed so that the meter inlet is on the left when reading the meter. Therefore the customer shall install the fuel line on the right side of the meter.
4. Pipe size of outlet of residential meters:

METER SIZE/OUTLET PIPE SIZE (INCHES)

AC/AL 250 — 1”

AL 425 — 1.25”

AL 800 — 1.5”

NOTE: For meter sizes up through AL 425 the company will install a meter bar which serves as the connection point for the fuel line.

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5. Sub-metering for the purpose of resale of natural gas is not permitted except under special approval by the company in accordance with state code.
6. Only one gas meter is installed for each residential customer. Separate appliance metering is not allowed.
7. For residential meter installations at apartments, condominiums, cooperatives and townhouses, as well as for certain commercial installations, gas meters are often "ganged" at a meter manifold at one location on the building. Plans for such installations require the prior approval of the company. Fuel lines should not penetrate the wall until the company has installed the manifold.
8. Installations for meter sizes AL 1400 and larger, and rotary meters 11 M and larger, require that the customer provide a concrete pad and chain link fence. The fence shall be provided with a four foot gate with locking hardware suitable for a padlock provided by the company. In lieu of the chain link fence, the customer may provide another form of suitable enclosure if approved by the company. The company reserves the right to require protective enclosures on smaller meter installations if warranted by the physical conditions of the site. The customer is responsible for keeping the area within the enclosure readily accessible, and free from debris, weeds, brush, etc. Applicants should consult Appendix 3 for specific meter standards which provides dimensional and physical details of the required facilities. For further information please contact the company offices listed in Section 3.
9. Meters and associated equipment are sealed and/or locked to prevent tampering. The breaking of seals by unauthorized persons or the tampering with meters or any associated piping is illegal. Violators will be subject to prosecution.

SECTION 7 Requirements for Gas Meter Installation

A. General Requirements:

1. The following requirements must be completed by the customer prior to requesting meter installation and/or gas turn on. This summary covers the most common but not all code compliance issues. The customer or persons performing natural gas installation work on behalf of the customer are responsible for satisfying all provisions of the appliance manufacturer's installation instructions and the applicable codes listed in Section 2 of this handbook. Please note that a service charge will be imposed for return trips to install meters that had no access, were not ready, or had code violations on the first visit.
2. Prior to requesting the gas meter, the customer or his contractor must complete the form entitled, "Gas Certification – Piping and Appliances Downstream of the Gas Meter" and then, contact the local code official from the municipality in which the work is being performed to schedule an inspection. This form is provided at the time of application for gas and is also available on the oru.com Web site. No gas meters will be installed until a properly completed form is received by O&R. Additional information on this process can be obtained by contacting the O&R New Construction Services Representative.
3. Electric meters are generally required to be set prior to installation of the gas meter.
4. When the inspection is satisfactorily completed and the meter is installed by O&R, the meter will normally be left off but not locked. The customer's plumber will then be responsible for lighting the appliances.
5. Upon completion of the requirements listed herein or if any assistance is needed, the customer should call the New Construction Services Department to request installation of the gas meter. Phone numbers are

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listed in Section 3 of this handbook.

6. Checklist – Gas Meter Installation — refer to Appendix 5.

B. Fuel Lines (Piping beyond the gas meter):

1. The customer's plumber must make the final connection to O&R's meter bar(s). For connected loads above 500 cfh, the meter will be installed and locked when the service is installed. In such cases, the customer's plumber makes the final connection to the outlet of the meter or associated meter piping.
2. For multiple meter installations.
 - a. It is recommended that fuel lines not be extended through the building wall until the meter manifold is in place. When piping to a tiered manifold, care should be taken not to obstruct the area where the meters will hang.
 - b. The customer's plumber must permanently mark each meter bar with the unit or apartment number it serves and must indicate the corresponding number in the electric breaker panel box within each unit or apartment. Gas meter bar markings must match electric meter pan markings.
 - c. In order to avoid mixed or shared metering conditions in multi-unit buildings, units must be identifiable by completed framing and electrical rough in and marked with the final unit number. To ensure the company's billing accurately reflects charges for the customer's own usage, it is critical that piping be installed and is traceable to the designated unit, and noted as such by company personnel after the meter installation.
 - d. By N.Y. State law, heating of common areas such as hallways may not be supplied through the appliances connected to an individual tenant's meter.
3. All steel or malleable iron fuel lines must be assembled using thread sealant suitable for natural gas. Sweated fittings are not permitted. Approved compression fittings may be used outdoors only and must be designed for pullout resistance or strapped.
4. Pipe passing through outer walls above ground must be sleeved with pvc or thoroughly wrapped with electrical tape. Pipe passing through masonry walls below ground must be installed in an approved gas and water tight sleeve. Refer to step #16 below for further details.
5. Fuel lines must be supported or strapped and must be plum and square. Refer to Appendix 4.
6. Fuel lines on rooftops must be supported and anchored to the roof.
7. Each appliance shall be provided with a shutoff valve separate from the appliance. The shutoff valve shall be located in the same room as the appliance, not further than 6 feet (1829 mm) from the appliance, and shall be installed upstream from the union, connector or quick disconnect device it serves. Such shutoff valves shall be provided with access. Shutoff valves for vented decorative appliances and decorative appliances for installations in vented fireplaces shall not be prohibited from being installed in an area remote from the appliance where such valves are provided with access. Such valves shall be permanently identified and shall serve no other equipment. Equipment shutoff valves located in the firebox of a fireplace shall be installed in accordance with the appliance manufacturer's instructions.
8. Water heaters, boilers and furnaces must have drip legs and unions installed on the appliance side of the shut off valve.
9. Concealed piping must be black steel (schedule 40) or corrugated stainless steel tubing. CSST may only be installed by individuals trained and certified

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by the manufacturer. Unions may not be concealed in ceilings, walls, floors or other partitions. CSST installations must contain the required strike plates and approved termination fittings, and be bonded in accordance with manufacturer instructions.

10. Fuel lines and service lines are not permitted to be buried under buildings, slabs or other structures. If the customer plans to construct such a structure over a gas line, the line must be relocated at the customer's expense.
11. Copper tubing within a building may only be used to connect a movable appliance such as a dryer, may only be located in the same room as the appliance, must be joined by flared fittings (not sweated or compression), and may not be concealed in or pass through walls, ceilings, floors, cabinets or other partitions. Care should be taken not to kink or damage copper tubing when moving appliances.
12. Flexible connectors must:
 - be AGA(IAS) approved.
 - only be used to connect a movable appliance such as a dryer or stove to the main fuel line (unless expressly approved in manufacturer's installation instructions).
 - be stainless steel or plastic coated brass with the proper adapter ends.
 - be located in the same room as the appliance.
 - not pass through walls, floors, cabinets or other partitions.
 - never be re-used once removed from appliance.

NOTE: Care should be taken not to damage flexible connectors when moving appliances
13. Aluminum tubing is not permitted.
14. Stubbed out fuel lines to which appliances have not yet been connected must have a valve installed and must be capped or plugged.
15. Steel fuel lines operating at or above 5 psig or with a nominal diameter larger than 4 inch must be welded.
16. All fuel lines must be pressure tested for leakage. The following guidelines apply to above ground piping only. For buried lines see step #16 below:
 - a. Test pressure shall be measured with a manometer or with a pressure measuring device designed and calibrated to read, record, or indicate a pressure loss due to leakage during the test period. The source of pressure shall be isolated before the pressure tests are made.
 - b. The test pressure shall be no less than 1 1/2 times the proposed maximum working pressure, but not less than 3 psig.
 - c. Test duration shall be no less than 1/2 hour for each 500 cubic feet of pipe volume or fraction thereof. When testing a system having a volume of less than 10 cubic feet or a system in a single family dwelling, the test duration may be reduced to 10 minutes.
 - d. Written certification of fuel line tests must be submitted to O&R for all large commercial and industrial installations (including schools, churches, office complexes, apartment buildings and shopping centers).
17. The following requirements apply to **underground fuel lines installed by the customer** such as those that supply a pool heater:
 - a. General: prior notification and a sketch of the proposed installation must be provided to O&R so that the service, regulator and meter sizing may be

Specifications for Gas Installations

Orange and Rockland Utilities, Inc.

checked for the additional load. Inspection by O&R prior to backfill is also required. All materials including but not limited to pipe, couplings, transition fittings, risers and methods of joining must be approved by O&R.

- trench bottom must be level, rock free and deep enough to provide a minimum of 18" cover above the pipe.
- sand padding with suitable rock free material is required 4 inches below and 6 inches on top of the pipe.
- pipe in the trench must not be in contact with or any closer than 12 inches to any other underground structure, cable, or pipe.
- customer owned lines may not be installed within the public road nor within any railroad right of way.
- backfill material must be free of rocks.
- after installation, an as-built sketch must be provided to O&R for mapping purposes.
- any future repairs required on customer underground piping will be the sole responsibility of the customer.

b. **Pressure test of underground lines:** Up to and including 2 inch diameter must be tested to 1 1/2 times maximum operating pressure or 20 psig, whichever is greater, for a minimum of 15 minutes. Above 2 inch diameter, duration shall be a minimum of 30 minutes. Maximum test pressure must not exceed three times design pressure of the pipe and fittings.

c. Plastic Pipe:

- plastic pipe must be medium density or higher
- materials, fittings and method of joining must be approved by O&R.
- may only be installed outside underground by persons qualified by O&R.
- must be installed with a #12 wire brought above ground and wrapped around the riser pipe for locating purposes.
- steel risers used with plastic pipe must be installed in accordance with the steel pipe specification below, except that a steel riser requires one, one pound anode, unless an anodeless riser is utilized.

d. Steel Pipe:

- all steel surfaces in contact with soil must be mill or field cleaned, primed and wrapped/coated with materials and methods approved by O&R.
- approved fittings that electrically insulate buried steel from building piping must be installed.
- magnesium anodes of the proper size and quantity must be attached to all underground steel lines (one 3 pound anode for each 50 feet of pipe).
- galvanized pipe is not permitted.

e. Copper Tubing:

- Approved fittings that electrically insulate copper tubing from the building piping must be installed.
- must be joined by flare or compression fittings. Sweated fittings are not permitted.
- is not required to be coated or wrapped.

Specifications for Gas Installations
Orange and Rockland Utilities, Inc.

f. CSST Pipe (flexible gas pipe):

- All CSST piping must be installed in accordance to New York State Fuel Gas Code.
 - only qualified installers may install CSST pipe.
 - all CSST piping must be bonded to the neutral side of the electrical box.
- g. A list of qualified installers will be provided by O&R upon request. However, O&R does not endorse or recommend any installer and assumes no responsibility for prices, materials or workmanship of any installer.
- h. Approved materials may be purchased from O&R through the New Construction Services Department.

C. Appliance Installation:

1. Appliance manufacturer's installation instructions must be readily available on the job site for reference by O&R personnel and the .customer.
2. All appliances must be installed according to manufacturer's specifications and applicable code.
3. At least one permanent piece of gas equipment must be in place and properly installed prior to installation of the gas meter.
4. Appliances, other than direct vent shall not be installed in a bedroom.
5. Requirements for decorative gas fireplaces/logs (other than direct vent/sealed combustion):
 - must be provided with combustion air from outside.
 - must have a permanently fixed open damper.
 - may not have a standing pilot light.
 - must have a safety to shut gas off automatically if flame goes out.
 - must have tight fitting glass doors (solid or bi-fold with gaskets between panels)
 - may not be thermostatically controlled.
6. The burner portion of any appliance installed in a garage must be at least 18 inches above the floor unless the appliance is designed with a flammable vapor barrier, and the appliance must be protected from physical damage (ie: lolly column).
7. Appliances must be readily accessible for lighting and servicing and must be installed with front, rear and side clearances specified by the manufacturer.
8. The cold air return to a furnace must not be from the same room in which the furnace is located. Cold air return duct joints and openings must be air tight within the furnace room.
9. **All appliances located on roofs or rooms that are 15 ft. or above must have a permanent inside access.**

D. Venting:

1. Flues and chimneys that have previously burned a fuel other than natural gas must be inspected for suitable physical condition and blockages and must be cleaned before gas is utilized.
2. All vent systems must be properly sized in accordance with the manufacturer's installation instructions. Be aware that vent systems which are too large are prohibited just as those which are too small.

Specifications for Gas Installations
Orange and Rockland Utilities, Inc.

3. Masonry Chimneys:
 - flues must be tight and cemented where they enter masonry chimneys.
 - masonry chimneys must have an approved and properly sized metal or clay tile liner.
 - exterior masonry chimneys are not recommended and are prohibited for fan assisted appliances.
4. Metal Vent Systems:
 - single wall pipe may only be used indoors in heated spaces to connect appliances to a chimney or common vent manifold within the same room as the appliance. Single wall may not pass through or be concealed in walls, floors or other partitions. Single wall requires a clearance of six inches from all combustibles including sheet rock. Single wall pipe must be secured with sheet metal screws.
 - metal vent systems passing through walls, floors, partitions or unheated spaces or installed outside must as a minimum be double wall (type b) vent. Such systems installed out-doors must be enclosed in a chase. It is recommended that manifolds for multiple common vented appliances be a minimum of double wall pipe.
 - double wall pipe requires a clearance of one inch from combustibles, including sheetrock.
5. Plastic Vent Systems:
 - materials, length, number of elbows and joining cement must be approved in and conform strictly to the manufacturer's installation instructions.
 - must be adequately supported.
6. Vent connectors must slope upward from the appliance to the chimney (one quarter inch per foot).
7. For a gas appliance common vented with an oil appliance, the gas appliance vent must enter the vertical chimney as close as possible and above the oil appliance vent.
8. Approved flange collars or thimbles must be installed where chimneys pass through ceilings, walls and roofs.
9. Long horizontal runs of vent connector should be avoided by locating the appliance as close as possible to the vertical vent (maximum 1 1/2 ft per inch of pipe diameter).
10. Spill switches are recommended on all vented gas appliances.
11. Chimneys must terminate the proper height above the roof line and have an approved cap installed (minimum 3 ft above the point it exits the roof and 2 ft above any structure within a 10 ft radius of the cap).
12. The proper draft diverter must be installed if required. Barometric dampers must be designed for natural gas (damper swings both ways).
13. Direct vent appliances must terminate the proper distances from building openings and above the ground as specified in the manufacturer's installation instructions and applicable code. Such vents should not terminate under decks.

E. Combustion Air:

1. Combustion air must be provided for all natural gas appliances other than direct vent (sealed combustion).
2. Combustion air may not be taken from a bedroom or bathroom.
3. Combustion air requirements must be calculated based upon the total btu/hr input of all appliances in the room and whether or not the room meets the definition of a confined space (room volume less than 50 cubic feet / 1,000 btu input. ex: 100,000 btu input requires a room volume of 5,000 cubic feet $l \times w \times h$ — before additional air must be introduced).
4. For combustion air from the outside, one permanent opening or straight duct (not a window) within 12 inches of the top of the room is required. Sizing must be one square inch per 3,000btu/hr free area (minimum) (ex: 250,000 btu/hr input: $250,000/3,000 = 83$ square inches free area). Allow for approximately 20% reduction of grills. Screens should not be less than 1/4 inch mesh.
5. Combustion air from adjoining rooms within the building requires two independent openings, one in or within 12 inches of the ceiling and one in or within 12 inches of the floor. Each opening requires a minimum free area of 100 square inches and must be sized for one square inch per 1,000 btu/hr input.— (ex: 150,000 btu/hr input: $150,000/1,000 = 150$ square inches each opening. NOTE: The volume of the room containing the appliances plus adjoining rooms supplying combustion air must be large enough so as not to fall within the definition of a confined space (see above) . NOTE: If the only appliance in the room is a clothes dryer, combustion air may be provided by a one inch overcut on the bottom of the door to the room.
6. Louver doors are not permitted by some municipalities. Please check with the local Building Department.
7. Mechanical louvers and other types of powered combustion air or ventilation systems must be interlocked with all appliances in the room such that when any appliance fires, the device(s) are activated. Conversely, if the devices do not activate, such as in a power failure, no appliances should be able to fire. All such devices must be in place, wired and operational at the time of meter installation.

F. Other Miscellaneous:

1. Industrial applications:
 - Customer installed vent lines from controls must be properly sized, piped to the outside, terminated no closer than 18 inches to building openings, terminated no less than 18 inches above the ground, terminated no closer than 10 feet to forced air intakes, and fitted with approved weather and insect resistant caps. For common venting of such lines, the equipment manufacturer must be consulted on the proper sizing such that a failure of one piece of equipment does not cause another piece of equipment to operate unsafely. Vent limiters are acceptable in lieu of vent lines where specifically approved by the equipment manufacturer. Vent lines may not be run into flues or chimneys.
 - It is recommended that customers receiving pressure in excess of 14 inches water column have a qualified person inspect their systems when first installed or if any changes are made. It is also recommended that such

Specifications for Gas Installations
Orange and Rockland Utilities, Inc.

 piping be stenciled with the words "Natural Gas" and the corresponding pressure.

2. Carbon Monoxide: Many customers have inquired about the dangers of carbon monoxide and how to protect themselves. Orange & Rockland recommends the installation of carbon monoxide detectors and offers the following suggestions:
- select a detector that carries the UL or IAS (AGA) seal of approval.
 - install detectors near sleeping quarters. Do not install the detector near appliances, near bathrooms, near kitchens, in garages, or on outside walls.
 - replace batteries regularly just as with smoke detectors.

Please Note: If the need arises to make repairs due to a carbon monoxide problem, make sure that the contractor hired has the equipment to read carbon monoxide levels.

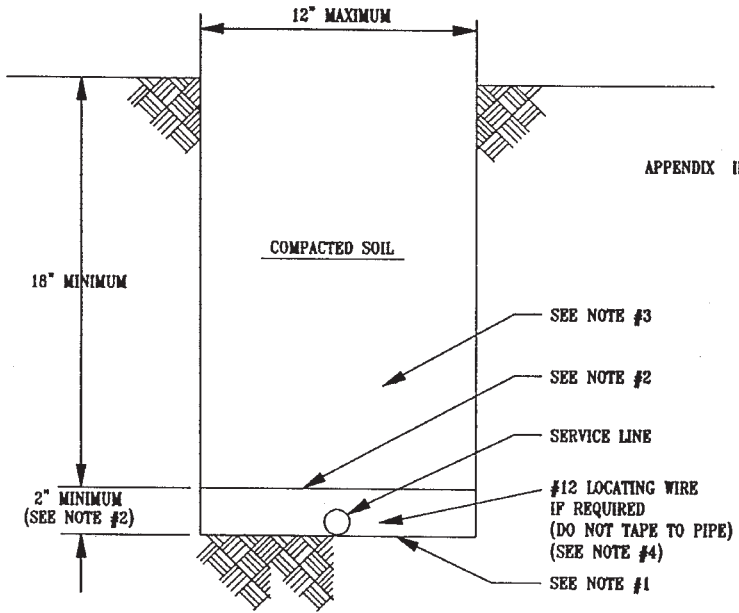
APPENDICES

Appendix 1 Gas Operations Standards

A. Gas Service Trench Standard 261.0

B. Gas Main Trench Standard 261.1

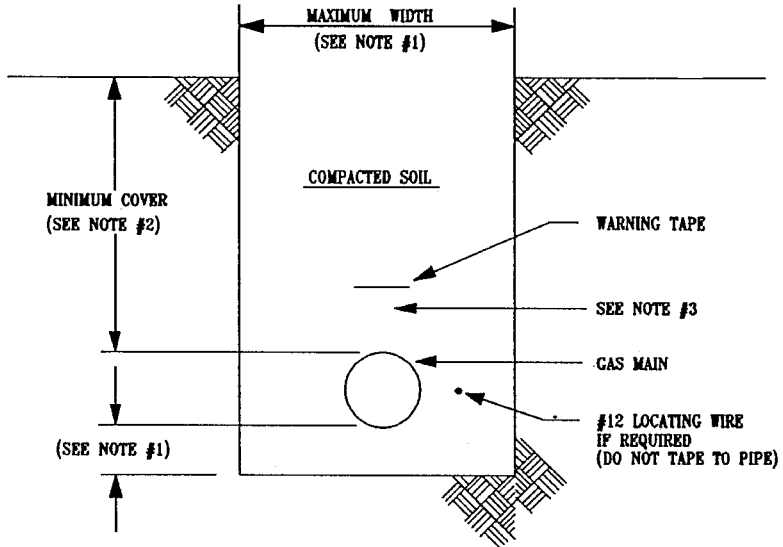
C. Multi-party Joint Trench Standard C-10-005



NOTES:

1. BOTTOM OF TRENCH SHALL BE FREE OF ROCKS AND OTHER DEBRIS.
2. HAND PAD AROUND SERVICE LINE WITH APPROVED ROCK FREE MATERIAL AS REQUIRED.
3. THE MATERIAL USED FOR BACKFILLING SHALL BE FREE OF LARGE ROCKS AND ANY OTHER MATERIALS THAT MIGHT CAUSE DAMAGE TO PIPE.
4. LOCATING WIRE SHALL BE TERMINATED AT TOP OF GAS SERVICE RISER AND AT MAIN LOCATING WIRE. CONNECTION AT MAIN LOCATING WIRE SHALL BE WITH AN APPROVED CONNECTOR AND TAPED WITH APPROVED MATERIAL.

OR ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW: <i>J. V. Ristich</i>			GAS SERVICE TRENCH
APPROVED: <i>J. S. Morasso</i>			DATE 01-09-97
REVISID:			STANDARD No. 261.0





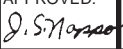
NOTES:

- | | | |
|----|----------------------|--|
| 1. | MAX. WIDTH OF TRENCH | MIN. DEPTH OF PADDING UNDER MAIN (IF REQ.) |
| | 4" AND UNDER | 4" |
| | 6" TO 8" | 4" |
| | 10" TO 16" | 4" |
| | OVER 16" | 4" |
2. MIN. COVER OF MAIN:
 DISTRIBUTION - 24" IN ALL TYPES OF SOIL
 TRANSMISSION - 36" IN NORMAL SOIL
 24" IN CONSOLIDATED ROCK
3. HAND PAD AROUND MAIN WITH APPROVED SAND.
4. THE MATERIAL USED FOR BACKFILLING SHALL BE FREE OF LARGE ROCKS OR ANY OTHER MATERIALS THAT MIGHT CAUSE DAMAGE TO PIPE OR COATING.

ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:			GAS MAIN TRENCH
APPROVED: <i>J. S. Morasso</i>			01-09-97
REVISID:			STANDARD No.
			261.1

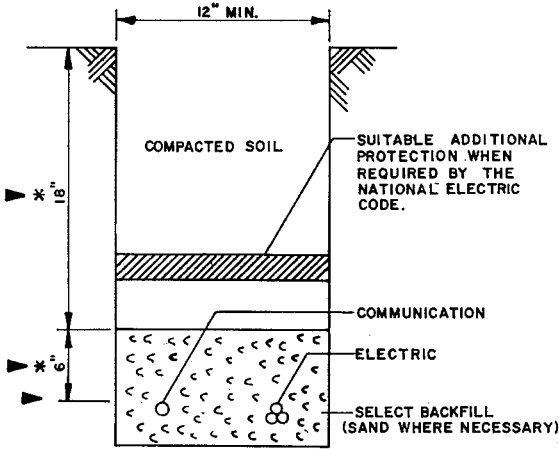
NOTES

1. FOR SERVICES THAT CROSS THE ROAD INSTALL ONE PLASTIC CONDUIT FROM MAIN TRENCH TO AREA BETWEEN SIDEWALK AND PROPERTY LINE. (PLUG ENDS TILL USED: M-18-2.326, M-18-2.330, M-18-2.334).
 2. IF SPECIAL LANDSCAPE OR OTHER PHYSICAL CHARACTERISTICS ARE PRESENT, SERVICES SHOULD BE INSTALLED IN CONDUIT FROM HOUSE TO TRANSFORMER OR SECONDARY SPLICE BOX.
 3. THE STANDARD MINIMUM CLEARANCE FOR UNDERGROUND SERVICE LATERALS SHALL BE 4" FROM ANY OTHER STRUCTURE, PIPE OR CABLE. IF IT IS NOT PRACTICAL TO ACHIEVE, IT MAY BE REDUCED TO AN ABSOLUTE MINIMUM OF 2" PROVIDED THAT PVC OR PE PLASTIC CONDUITS ARE PLACED AROUND THE GAS OR THE ELECTRIC AND THE COMMUNICATION FACILITIES FOR THE ENTIRE LENGTH OF THE REDUCED (2"-3.9") SEPARATION.
1. FOR NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) ROADS AND HIGHWAYS, THE MINIMUM DEPTH OF BURY FOR UNDERGROUND FACILITIES IS:
- A. WITHIN THE ROADWAY: 60" BELOW TOP OF PAVEMENT.
 - B. OUTSIDE THE ROADWAY AND WITHIN THE RIGHTS-OF-WAY: 36" BELOW FINISHED GRADE. INSTALLATIONS AT LESSER DEPTHS REQUIRE WRITTEN PRIOR APPROVAL AS ALLOWED IN PART 131.9 OF TITLE 17 NYCRR ACCOMMODATION OF UTILITIES WITHIN STATE HIGHWAY RIGHTS-OF-WAY.

 ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	ELECTRIC DISTRIBUTION STANDARDS
ENGINEERING REVIEW: 			APPROVED: 
LOCATION OF UGND JOINT FACILITIES IN SERVICE TRENCH			DATE
REVISIED:			11-03-95
			STANDARD No.
			C-10-005

2 PARTY JOINT TRENCH- ELECTRIC & COMMUNICATION

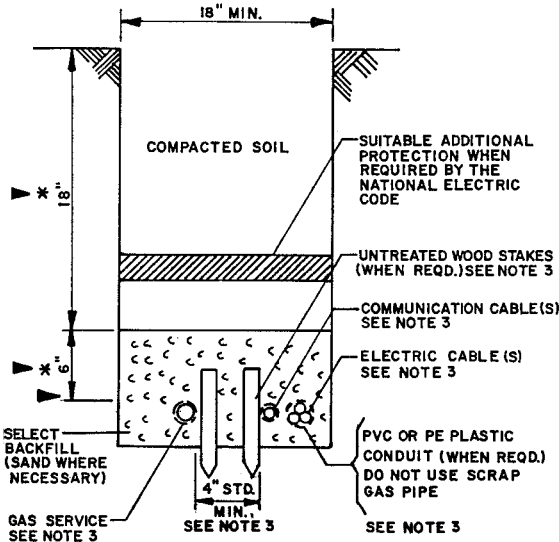
NOTES:
▶ SEE SHEET I



▶ * FOR NEW YORK STATE DEPT. OF TRANSPORTATION ROADS AND HIGHWAYS - SEE NOTE 4.

3 PARTY JOINT TRENCH- ELECTRIC, GAS & COMMUNICATION

NOTES:
▶ SEE SHEET I



◀ DENOTES REVISION

<h1 style="margin: 0;">ORANGE AND ROCKLAND UTILITIES, INC.</h1>			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	ELECTRIC DISTRIBUTION STANDARDS
<h3 style="margin: 0;">LOCATION OF UGND JOINT FACILITIES IN SERVICE TRENCH</h3>			DATE
			11-03-95
ENGINEERING REVIEW:			STANDARD No.
APPROVED:			C-10-005
REVISID:			

Appendix 2 Distribution Excavation Agreement

Date: _____

It is Agreed between Orange and Rockland Utilities, Inc. (hereinafter referred to as Orange and Rockland) and _____ for the purpose of supplying Distribution Trench for Electric, Gas, Telephone and Cable facilities. (NOT TO INCLUDE SERVICE TRENCH). Applicant agrees to supply _____ feet of acceptable trench, sand padding and backfill within the confines of _____ and adhere to all Utility Specifications (Attached) as well as all rules and regulations as required by State and Local building codes and laws.

Orange and Rockland shall pay Applicant at the rate of \$ _____ per foot of trench for normal Distribution trench excavation.

Orange and Rockland shall pay Applicant for rock excavation at the rate of \$ _____ per cubic yard in addition to normal distribution trench excavation. Rock excavation will only be compensated when investigated and approved by an Orange and Rockland Representative during the actual removal of the rock.

Applicant shall submit bills to Orange and Rockland on a formal invoice stating location of the dig, dates, trench footage and total invoice amount.

Deviations from the original plan and layout will only be allowed when authorized by an Orange and Rockland Representative.

Applicant

Title

Orange and Rockland Utilities, Inc.

Title

Specifications for Gas Installations
Orange and Rockland Utilities, Inc.

Standard	Number	Page
AL-250 Residential Metered Installation	701	27
Bill of Materials	701A	28
AL-425 L.P. Metered Installation	702	29
Bill of Materials	702A	30
AL-800 L.P. Metered Installation	703	31
Bill of Materials	703A	32
AL-1400 L.P. Metered Installation	704	33
Bill of Materials	704A	34
Plan AL-1400 L.P. Metered Installation	704B	35
AL-1400 H.P. Metered Installation	705	36
Bill of Materials	705A	37
Plan AL-1400 H.P. Metered Installation	705B	38
AL-2300 & AL-5000 L.P. Metered Installation	706	39
Bill of Materials	706A	40
Plan AL-2300 & AL-5000 L.P. Metered Installation	706B	41
AL-2300 & AL-5000 H.P. Metered Installation	707	42
Bill of Materials	707A	43
Plan AL-2300 & AL-5000 H.P. Metered Installation	707	44
11M/16M H.P. Metered Installation	708	45
Bill of Materials	708A	46
Notes: 11M/16M H.P. Metered Installation	708B	47
23M/38M H.P. Metered Installation	709	48
Bill of Materials	709A	49
Notes: 23M/38M H.P. Metered Installation	709B	50
56M H.P. Metered Installation	710	51
Bill of Materials	710A	52
Notes: 56M H.P. Metered Installation	710B	53
102M-125 H.P. (to 125PSI) Metered Installation	711	54
Bill of Materials	711A	55
Concrete Pedestal and Bolting Specifications	712	56
Rotary Meter Pedestal and Bolting Specifications	712A	57
Concrete Pedestal for AL-1400 Through AL-5000 Meter	713	58
Farm Tap Metered Installation	714	59
Bill of Materials	714A	60
8" Turbine H.P. (To 125PSI) Metered Installation	715	61
Bill of Materials	715A	62
Meter W/Magnetically Coupled Instrument Drive 7M, 11M, & 16M LM-MA	716	63
1.5M-3M L.P. Rotary Meter Installation	718	64
Bill of Materials	718A	65
Notes: 1.5M-3M L.P. Rotary Meter Installation	718B	66
1.5M-3M H.P. Rotary Meter Installation	719	67
Bill of Materials	719A	68
Notes: 1.5M-3M H.P. Rotary Meter Installation	719B	69
5M-7M L.P. Rotary Meter Installation	720	70
Bill of Materials	720A	71
Notes: 5M-7M L.P. Rotary Meter Installation	720B	72
5M-7M H.P. Rotary Meter Installation	721	73
Bill of Materials	721A	74
Notes: 5M-7M H.P. Rotary Meter Installation	721B	75

APPENDIX 3 GAS METER INSTALLATION STANDARDS

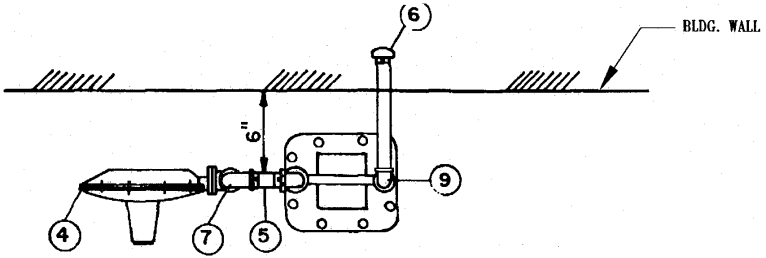
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Bill of Material	701A	2	06/23/97
AL-250 Residential Metered Installation	701	2	04/5/97
Bill of Material	702A	2	06/18/97
AL-425 L.P. Metered Installation	702	2	06/21/97
Bill of Material	703A	2	06/23/97
AL-800 L.P. Metered Installation	703	2	06/23/97
Bill of Material	704A		08/01/88
AL-1400 L.P. Metered Installation	704		01/16/88
AL-1400 L.P. Metered Installation	704B		01/07/88
Bill of Material	705A		08/01/88
AL-1400 H.P. Metered Installation	705		01/14/88
AL-1400 H.P. Metered Installation	705B		01/07/88
Bill of Material	706A		05/24/89
AL-2300 & AL-5000 L.P. Metered Installation	706		05/24/89
AL-2300 & AL-5000 L.P. Metered Installation	706B		01/07/88
Bill of Material	707A		05/29/89
AL-2300 & AL-5000 H.P. Metered Installation	707		05/25/89
AL-2300 & AL-5000 H.P. Metered Installation	707B		01/07/88
Bill of Material	708A	1	02/04/94
11M/16M H.P. Metered Installation	708	1	02/04/94
11M/16M H.P. Metered Installation	708B	1	02/04/94
Bill of Material	709A	1	02/04/94
23M/38M H.P. Metered Installation	709	1	02/04/94
23M/38M H.P. Metered Installation	709B	1	02/04/94

			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	GAS OPERATIONS
REVISD: 3 07/02/97			DATE 04-09-76
			STANDARD No. 700-1

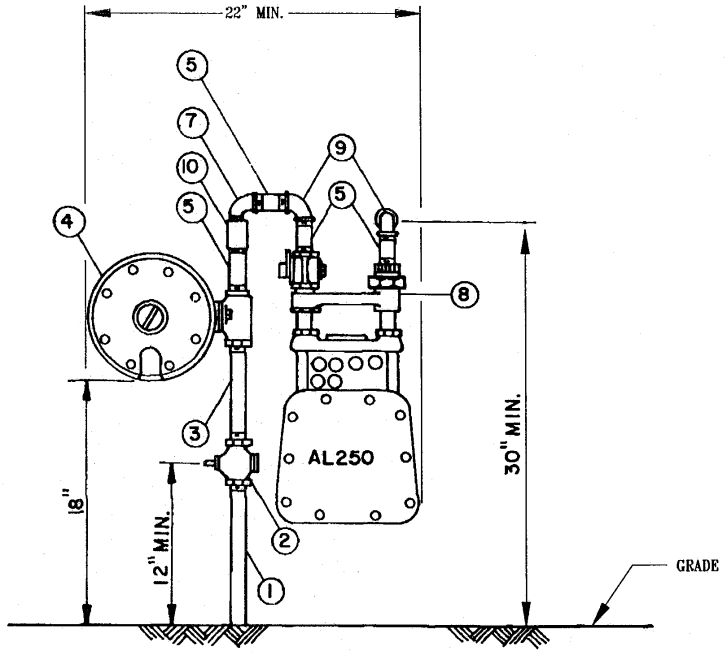
APPENDIX 3 (CONT'D)
GAS METER INSTALLATION STANDARDS

	STANDARD NUMBER	ISSUE NUMBER	DATE
Bill of Material	710A	1	02/04/94
56M H.P. Metered Installation	710	1	02/04/94
56M H.P. Metered Installation	710B	1	02/04/94
Bill of Material	711A		09/17/76
102M-125 H.P. (to 125PSI) Metered Installation	711		09/02/76
Rotary Meter Pedestal and Bolting Specifications	712A	1	06/01/83
Concrete Pedestal and Bolting Specifications	712	1	03/31/94
Concrete Pedestal for AL-1400 Through AL-5000 Meter	713		01/06/88
Bill of Material	714A	3	08/12/87
Farm Tap Metered Installation	714	3	08/11/87
Bill of Material	715A		04/11/79
8" Turbine H.P. (To 125PSI) Metered Installation	715		04/11/79
Meter W/Magnetically Coupled Instrument Drive 7M, 11M, & 16M LM-MA	716		06/01/83
Bill of Material	718A	2	08/10/95
1.5M-3M L.P. Rotary Meter	718	2	08/10/95
Notes	718B	1	02/28/95
Bill of Material	719A	2	08/10/95
1.5M-3M H.P. Rotary Meter	719	2	08/10/95
Notes	719B	1	02/28/95
Bill of Material	720A	2	08/10/95
5M-7M L.P. Rotary Meter	720	2	08/10/95
Notes	720B	1	02/28/95
Bill of Material	721A	2	08/10/95
5M-7M H.P. Rotary Meter	721	2	08/10/95
Notes	721B	1	02/28/95

OR ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	GAS OPERATIONS
REVISD: 3 07/02/97			DATE 04-09-76
			STANDARD No. 700-2



PLAN


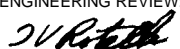
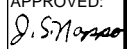


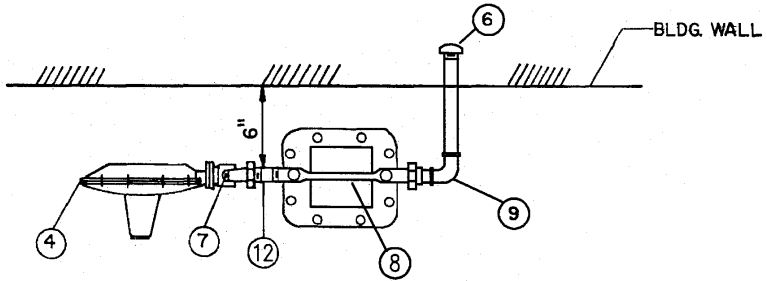
FRONT ELEVATION

ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			2
DRAWN: F.B.	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW: <i>JV Ristich</i>	APPROVED: <i>J. S. Morano</i>		AL-250 RESIDENTIAL METERED INSTALLATION
REVISID:			STANDARD No.
			701

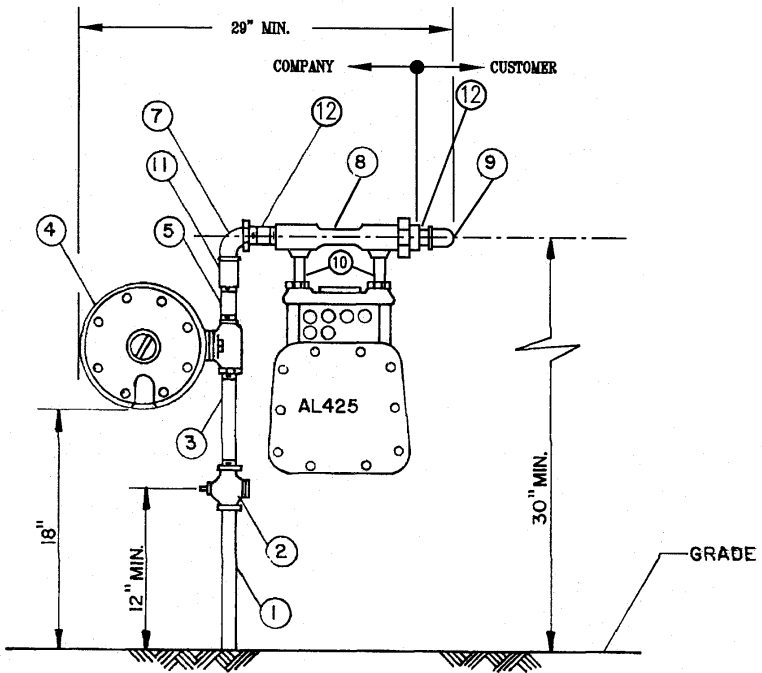
BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	3/4"	PREBENT RISER	603-125
2	1	3/4"	LOCKING WING COCK	152-100
3	1	3/4"	PIPE NIPPLE	
4	1	1" X 3/4"	STD. SERV. REGULATOR	
5	4	1"	PIPE NIPPLE (IF NEEDED)	
6	1	1"	CAP	
7	1	1"	90° STREET ELL-INSULATED	184-100
8	1		METER BAR WITH STOP	111-100
9	2	1"	90° ELL	
10	1	1"	PIPE COUPLING (IF NEEDED)	

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
S.M.N.	J.S.N.	H.W.K.	
ENGINEERING REVIEW:		APPROVED:	AL-250 RESIDENTIAL METERED INSTALLATION
			
REVISED:			DATE
			06-23-97
			STANDARD No.
			701A



PLAN


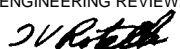
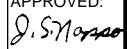


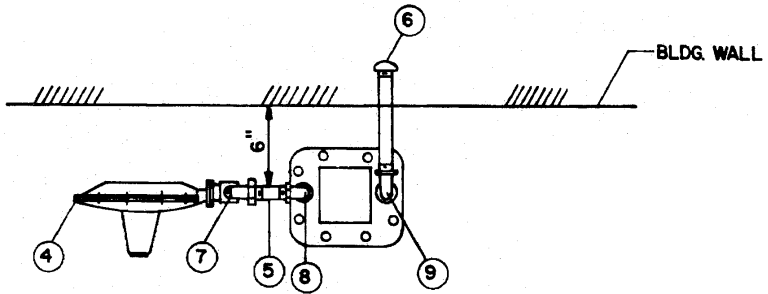
FRONT ELEVATION

			ISSUE No.
			2
DRAWN: F.B.	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW: <i>J.V. Ristich</i>	APPROVED: <i>J. S. Marso</i>		AL-425 LOW PRESSURE METERED INSTALLATION
REVISID:			STANDARD No.
			702

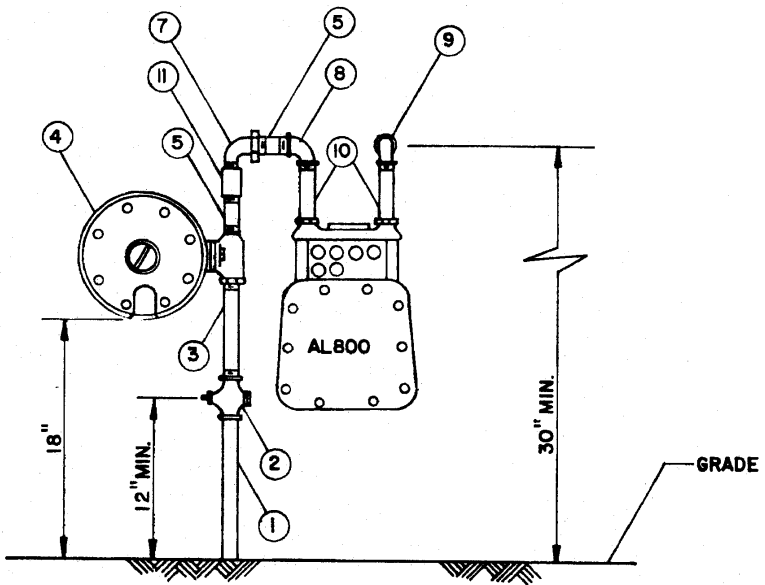
BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	3/4"	PREBENT RISER	603-125
2	1	3/4"	LOCKED WING COCK	152-100
3	1	3/4"	PIPE NIPPLE	
4	1	1" X 3/4"	SERVICE REGULATOR	
5	1	1"	PIPE NIPPLE	
6	1	1 1/4"	CAP	
7	1	1 1/4"	90° STREET ELL INSULATED	184-100
8	1	1 1/4"	METER BAR	111-102
9	1	1 1/4"	90° ELL	
10	2	1 1/4"	METER SWIVELS	
11	2	1 1/4" X 1"	REDUCER COUPLING	
12	2	1 1/4"	PIPE NIPPLE	

			ISSUE No.
			2
DRAWN: F.B.	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW: 			APPROVED: 
AL-425 LOW PRESSURE METERED INSTALLATION			DATE 06-18-97
REVISIED:			STANDARD No. 702A



PLAN


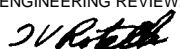
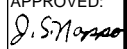


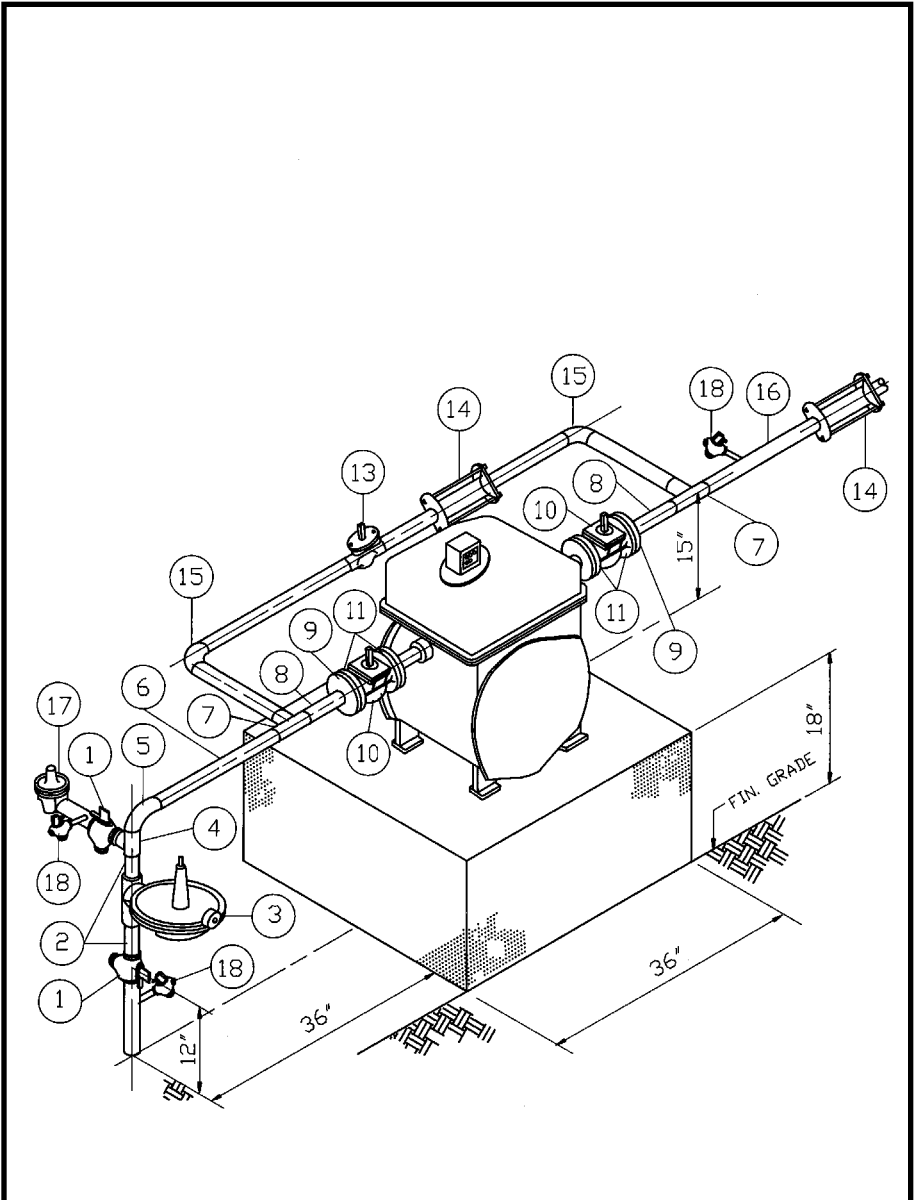
FRONT ELEVATION


OR ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			2
DRAWN: H.S.	DESIGNED: J.S.N.	CHECK: H.W.K.	DATE
GAS OPERATIONS STANDARD			06-23-97
ENGINEERING REVIEW: <i>J.V. Ristich</i>		APPROVED: <i>J. S. Marino</i>	STANDARD No.
REVISED:			703

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	3/4"	PREBENT RISER	603-125
2	1	3/4"	LOCKED WING COCK	152-100
3	1	3/4"	PIPE NIPPLE	
4	1	1" X 3/4"	SERVICE REGULATOR	
5	1	1"	PIPE NIPPLE (IF NEEDED)	
6	1	1 1/4"	CAP	
7	1	1"	90° STREET ELL INSULATED	184-100
8	1	1 1/2" X 1"	90° REDUCING ELL	
9	1	1 1/2" X 1 1/4"	90° REDUCING ELL	
10	2	1 1/2"	METER SWIVELS	
11	1	1"	PIPE COUPLING (IF NEEDED)	

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
H.S.	J.S.N.	H.W.K.	
ENGINEERING REVIEW:		APPROVED:	AL-800 LOW PRESSURE METERED INSTALLATION
			
REVISED:			DATE
			06-23-97
			STANDARD No.
			703A

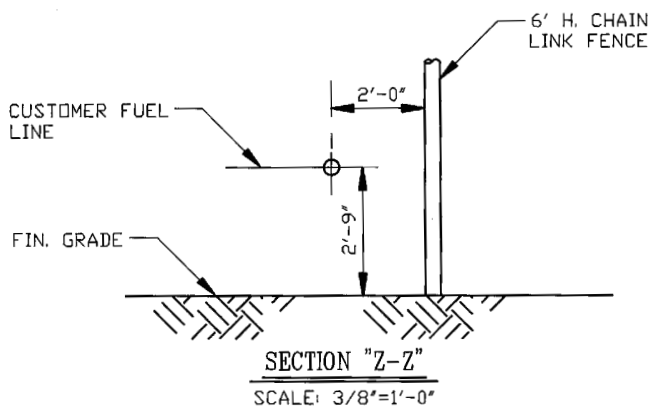
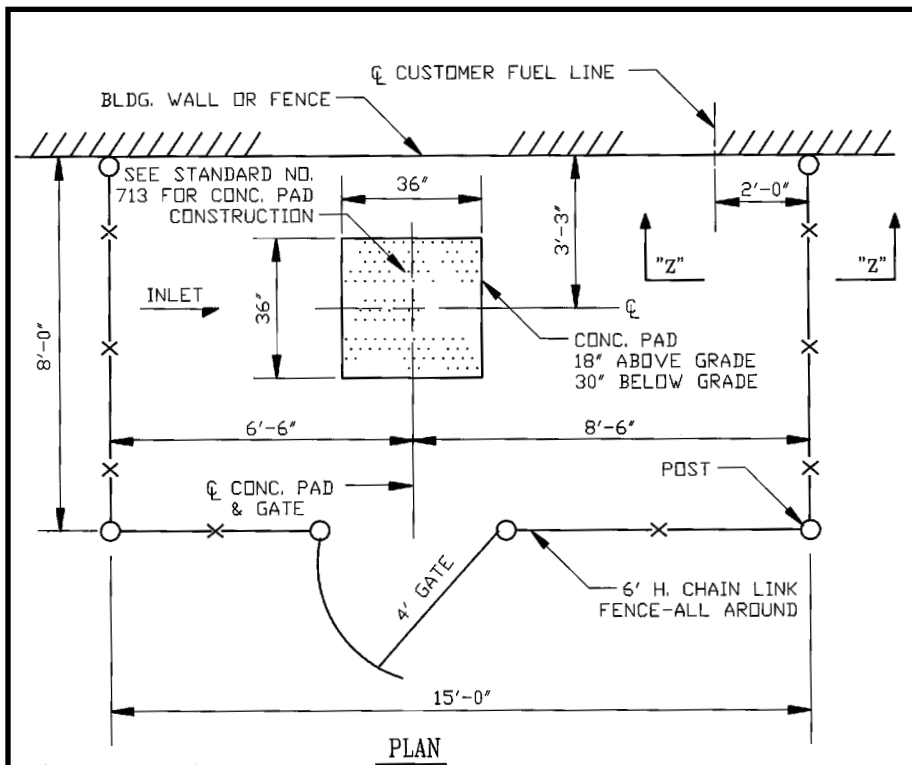


 ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
DRAWN: H.S.	DESIGNED:	CHECK: A.S.	DATE
ENGINEERING REVIEW:	APPROVED: <i>J. S. Morasso</i>	GAS OPERATIONS STANDARD AL-1400 LOW PRESSURE METERED INSTALLATION	
REVISD:			01-16-88 STANDARD No. 704

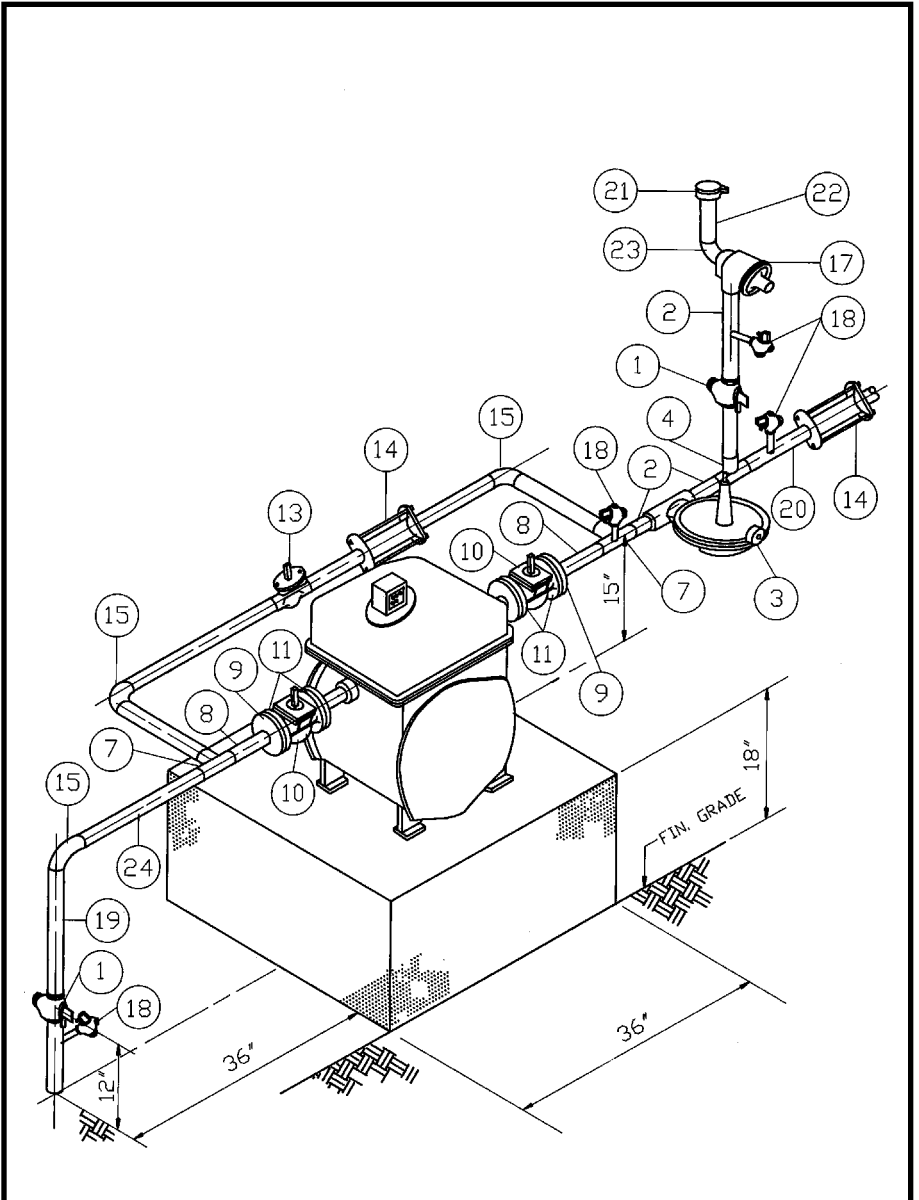
BILL OF MATERIALS


ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	2	2"	LOCKING WING COCK - THREADED	152-133
2	2	2"	PIPE NIPPLE - 4"	
3	1	2"	SERVICE REGULATOR - AMER. 1813B	341-410
4	1	2"	TEE	
5	1	2"	COMPRESSION STREET ELL	184-109
6	1	2"	PIPE NIPPLE - 17"	
7	2	2"	WELD TEE	
8	2	2"	STUB END	381-100
9	2	2"	LAP JOINT FLANGE	211-100
10	2	2"	FLANGE VALVE	549-133
11	4	2"	RING GASKETS - ANSI 150#	
12	8	4"	BOLTS - 5/8" DIA. - NUTS	895-121
13	1	2"	WELD VALVE	549-205
14	2	2"	DRESSER COUPLING - COMPRESSION	174-112
15	2	2"	WELD ELL'S - 90°	
16	1	2"	PIPE - 37" LONG	
17	1	2"	RELIEF - FISHER 289-H (IF NEEDED)	544-106
18	3	3/4"	LOCKING WING COCK - THREADED	152-100

			ISSUE No.
			DATE
DRAWN: H.S.	DESIGNED:	CHECK: AAS	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	AL-1400 LOW PRESSURE METERED INSTALLATION
REVISED:			STANDARD No. 704A



ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
DRAWN: H.S.	DESIGNED:	CHECK: A.S.	DATE
ENGINEERING REVIEW:	APPROVED: <i>J. S. Mayo</i>	GAS OPERATIONS STANDARD	
REVISED:	AL-1400 LOW PRESSURE METERED INSTALLATION		01-07-88
			STANDARD No.
			704B

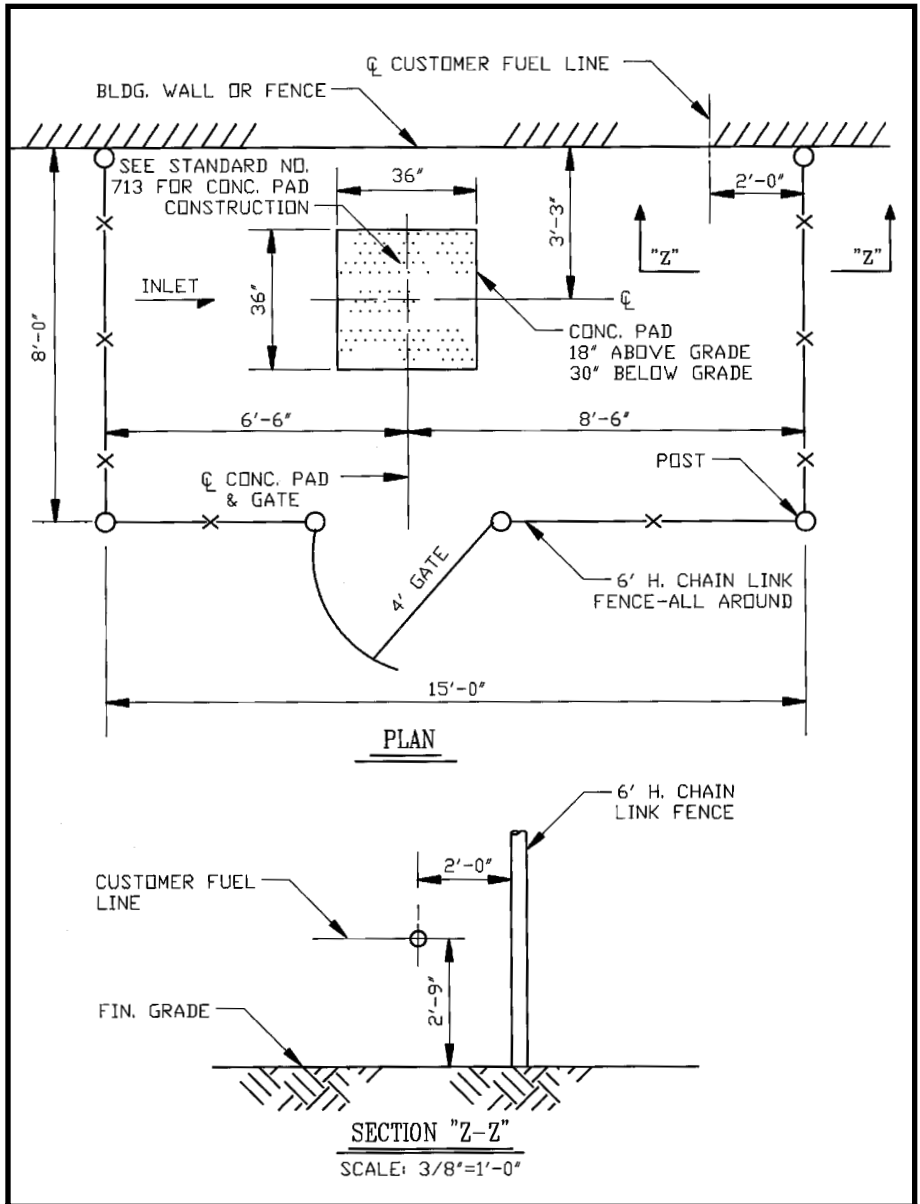


 ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
DRAWN: H.S.	DESIGNED:	CHECK: A.S.	DATE
ENGINEERING REVIEW:	APPROVED: <i>J. S. Morasso</i>	GAS OPERATIONS STANDARD AL-1400 HIGH PRESSURE METERED INSTALLATION	
REVISD:			01-14-88
			STANDARD No.
			705

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	2	2"	LOCKING WING COCK - THREADED	152-133
2	3	2"	PIPE NIPPLE - 4"	
3	1	2"	SERVICE REGULATOR - AMER. 1813B	341-410
4	1	2"	TEE	
5				
6				
7	2	2"	WELD TEE	
8	2	2"	STUB END	381-100
9	2	2"	LAP JOINT FLANGE	211-100
10	2	2"	FLANGE VALVE	549-133
11	4	2"	RING GASKETS - ANSI 150#	
12	8	4"	BOLTS - 5/8" DIA. - NUTS	895-121
13	1	2"	WELD VALVE	549-205
14	2	2"	DRESSER COUPLING - COMPRESSION	174-112
15	2	2"	WELD ELL'S - 90°	
16				
17	1	2"	RELIEF - FISHER 289-H (IF NEEDED)	544-106
18	4	3/4"	LOCKING WING COCK - THREADED	152-100
19	1	2"	PIPE - 17 1/2" LONG	
20	1	2"	PIPE - 20" LONG	
21	1	2"	WEATHER CAP	131-120
22	1	2"	PIPE - AS REQUIRED	
23	1	2"	STREET EL - 90°	
24	1	2"	PIPE NIPPLE 17" LONG	

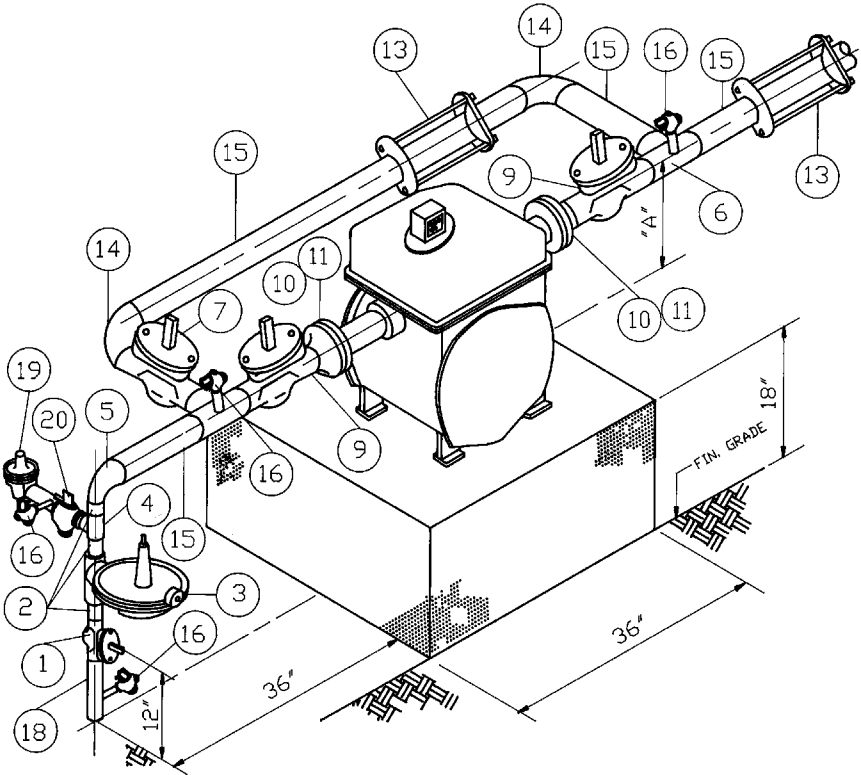
			ISSUE No.
			DATE
DRAWN: H.S.	DESIGNED:	CHECK: AAS	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	AL-1400 HIGH PRESSURE METERED INSTALLATION
REVISED:			808-01-88
			STANDARD No.
			705A



OR ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
DRAWN: H.S.	DESIGNED:	CHECK: A.S.	DATE
ENGINEERING REVIEW:	APPROVED: <i>D. S. Mayo</i>	GAS OPERATIONS STANDARD	
REVISED:	AL-1400 HIGH PRESSURE METERED INSTALLATION		01-07-88
			STANDARD No.
			705B

NOTES:

1. DRIFICE ON 1813B REGULATOR SHALL BE NO LARGER THAN 3/8" WITHOUT ENGINEERING DEPT. REVIEW.
2. MAXIMUM MAOP OF DISTRIBUTION SYSTEM = 80PSIG.
3. RELIEF VALVE SIZING ASSUMES NO VENT LINE ON RELIEF OUTLET.
4. SUPPORT THE PIPING CONNECTED TO THE METER TO PREVENT STRAINS IN THE PIPING FROM BEING TRANSFERRED TO METER CASE.
5. *A* = AL2300, 17 7/8" DR AL5000, 23 3/8"

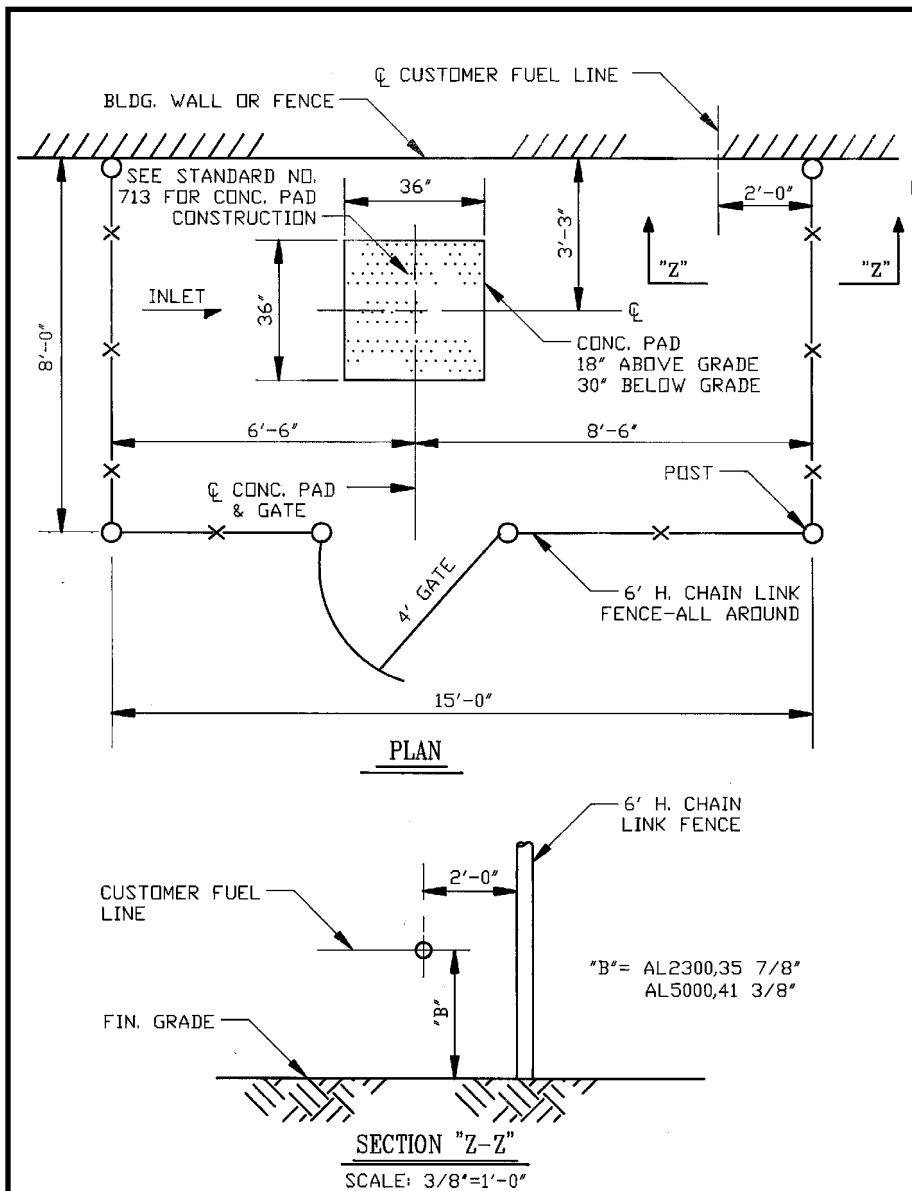


ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
DRAWN:	DESIGNED:	CHECK:	
H.S.		A.S.	DATE
ENGINEERING REVIEW:	APPROVED:	AL-2300 & AL-5000 LOW PRESSURE METERED INSTALLATION	
	<i>J. S. Mayo</i>	01-19-88	
REVISED:		STANDARD No.	
		706	

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2"	PLUG VALVE, 1943 1/2	549-201
2	3	2"	PIPE NIPPLE - 4"	
3	1	2"	SERVICE REGULATOR - AMERICAN 1813B, 3/8" ORIFICE MAS	341-410
4	1	2"	TEE	
5	1	2" X 4"	REDUCING ELL - 90° WELD, STD. WT.	187-103
6	2	4"	TEE - WELD, STD. WT.	401-106
7	1	4"	PLUG VALVE, W.E., 1943 1/2	549-207
8				
9	2	4"	W.E. X FLG. PLUG VALVE, 1943 1/4	549-209
10	2	4"	RING GASKETS - ANSI - 150#	
11	16	5/8" X 4"	ALLOY STUD BOLTS, EACH WITH 2 HEX NUTS	895-121
12				
13	2	4"	COUPLING, MAXIGRIP	176-204
14	2	4"	WELD ELL'S - 90°, STD. WT.	186-103
15	1	4"	PIPE, STD. WT.	311-103
16	3	3/4"	LOCKING WING COCK - THREADED	152-100
17				
18		2"	PIPE, STD. WT.	
19	1	2"	RELEIF, FISHER 289H	544-104
20	1	2"	APOLLO BALL VALVE W/LOCKING DEVICE	549-202

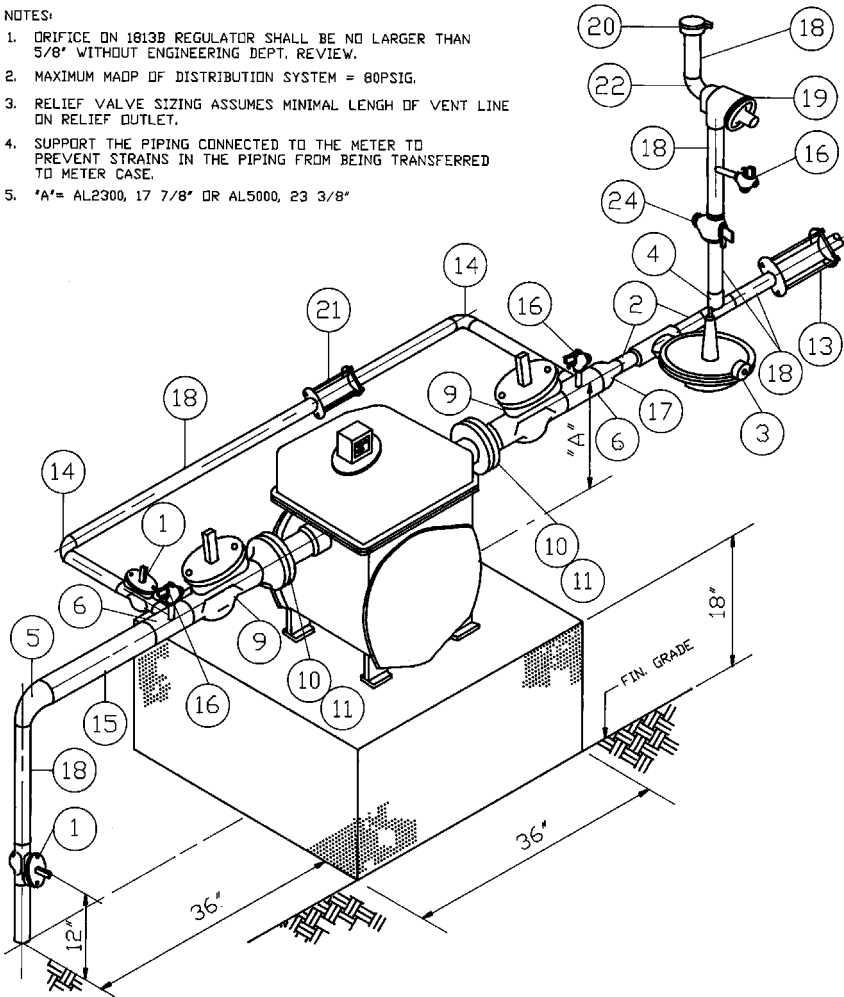
			ISSUE No.
			DATE
DRAWN: H.S.	DESIGNED:	CHECK: A.A.S.	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	AL-2300 & AL-5000 LOW PRESSURE METERED INSTALLATION
REVISED: 5-24-89			STANDARD No. 706A



ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			DATE
DRAWN: H.S.	DESIGNED:	CHECK: A.S.	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:	APPROVED: <i>J. S. Morasso</i>	AL-2300 & AL-5000 LOW PRESSURE METERED INSTALLATION	
REVISED:			01-07-88
			STANDARD No. 706B

NOTES:

1. ORIFICE ON 1813B REGULATOR SHALL BE NO LARGER THAN 5/8" WITHOUT ENGINEERING DEPT. REVIEW.
2. MAXIMUM MAOP OF DISTRIBUTION SYSTEM = 80PSIG.
3. RELIEF VALVE SIZING ASSUMES MINIMAL LENGTH OF VENT LINE ON RELIEF OUTLET.
4. SUPPORT THE PIPING CONNECTED TO THE METER TO PREVENT STRAINS IN THE PIPING FROM BEING TRANSFERRED TO METER CASE.
5. *A* = AL2300, 17 7/8" OR AL5000, 23 3/8"

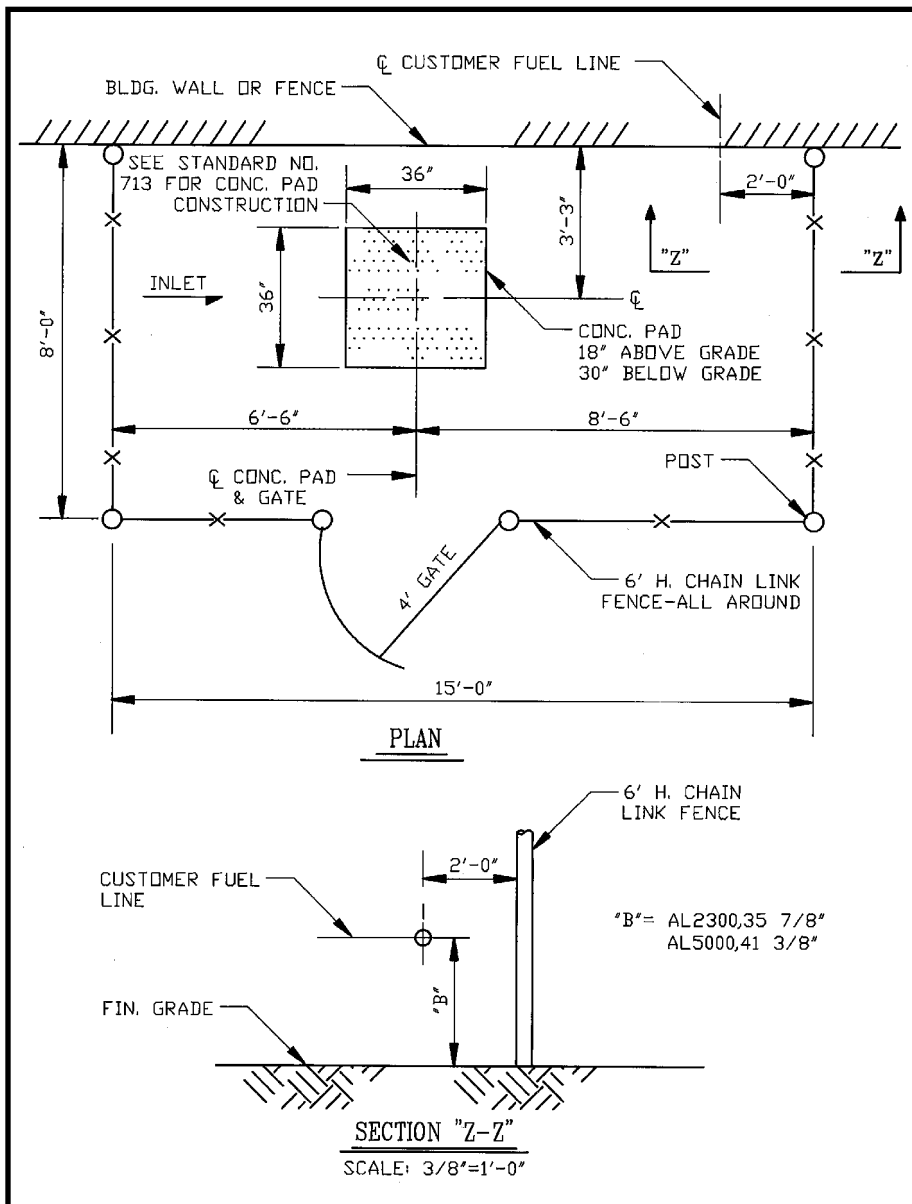


			GAS OPERATIONS STANDARD		ISSUE No.
			AL-2300 & AL-5000 HIGH PRESSURE METERED INSTALLATION		DATE
DRAWN: H.S.	DESIGNED:	CHECK: A.S.			01-18-88
ENGINEERING REVIEW:	APPROVED: <i>D. S. Morasso</i>				STANDARD No.
REVISED: 5-25-89 H.S.					707

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	2	2"	PLUG VALVE, 1943 1/2	549-201
2	2	2"	PIPE NIPPLE - 4"	
3	1	2"	SERVICE REGULATOR - AMERICAN 1813B, 3/8" ORIFICE MAS	341-410
4	1	2"	TEE, WELD	
5	1	2" X 4"	REDUCING ELL - 90° WELD, STD. WT.	187-103
6	2	4"	TEE - WELD, 4" RUN X 2" BRANCH	401-112
7				
8				
9	2	4"	W.E. X FLG. PLUG VALVE, 1943 1/4	549-209
10	2	4"	RING GASKETS - ANSI - 150#	
11	16	5/8" X 4"	ALLOY STUD BOLTS, EACH WITH 2 HEX NUTS	895-121
12				
13	1	2"	COUPLING, MAXIGRIP	176-202
14	2	4"	WELD ELL'S - 90°, STD. WT.	186-103
15		4"	PIPE, STD. WT.	311-103
16	3	3/4"	LOCKING WING COCK - THREADED	152-100
17	1	4" X 2"	4" X 2" WELD REDUCER	332-103
18		2"	PIPE, STD. WT.	
19		2"	RELEIF, FISHER 289P - 2355	544-108
20	1	2"	WEATHER HEAD	131-120
21	1	2"	COMP. COUPLING, STYLE 90	174-112
22	1	2"	STREET ELL	
23				
24	1		2" FULL OPENING SCREWED BALL VALVE W/LOCKING DEVICE	549-652

			ISSUE No.
			DATE
DRAWN: H.S.	DESIGNED:	CHECK: A.A.S.	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	AL-2300 & AL-5000 HIGH PRESSURE METERED INSTALLATION
REVISED: 5-29-89			STANDARD No. 707A



ORANGE AND ROCKLAND UTILITIES, INC.

ISSUE No.

DRAWN:

DESIGNED:

CHECK:

GAS OPERATIONS STANDARD

H.S.

A.S.

DATE

ENGINEERING REVIEW:

APPROVED:

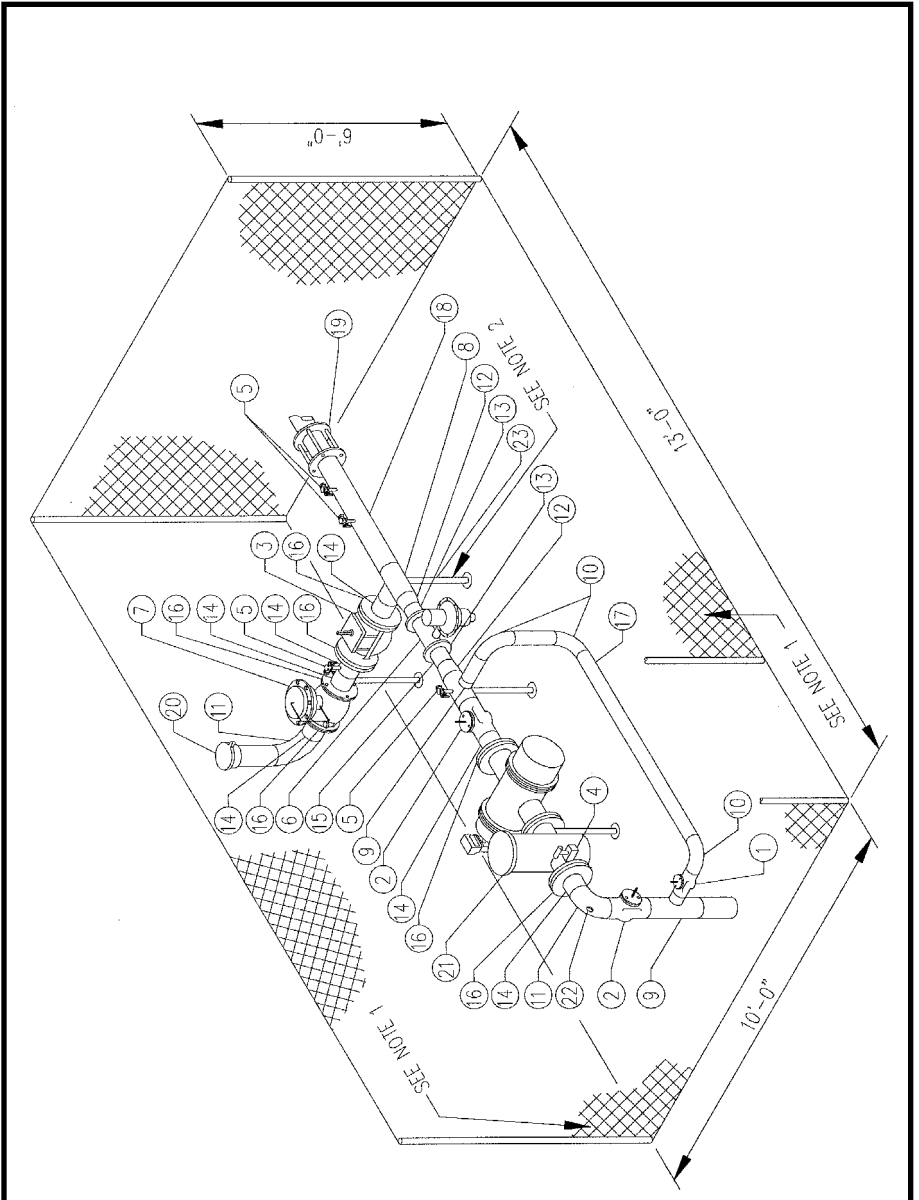
**AL-2300 & AL-5000
HIGH PRESSURE
METERED INSTALLATION**

01-07-88

STANDARD No.

REVISED:

707B



			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	DATE
ENGINEERING REVIEW:	APPROVED:		11M/16M HIGH PRESSURE METERED INSTALLATION
REVISD:			STANDARD No.
			708


BILL OF MATERIALS

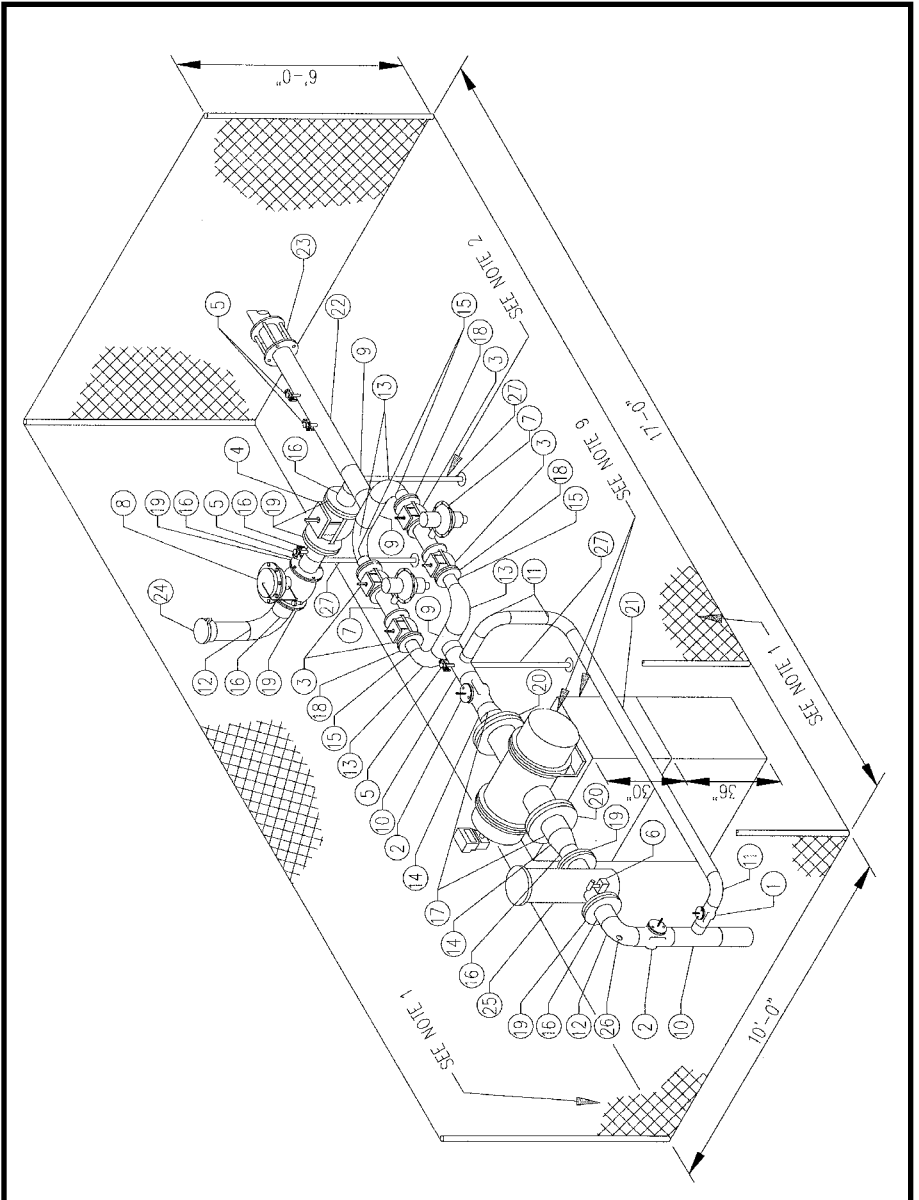
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2"	PLUG VALVE, WELD END	549-201
2	2	4"	PLUG VALVE, WELD END	549-207
3	1	4"	BALL VALVE, FLUID END, FULL PORT	549-650
4	1	1/4"	NEEDLE VALVE, THD	540-100
5	4	3/4"	LOCKING WING COCK, THD	152-100
6	1	2"	SERVICE REG (FISHER 99)	341-132
7	1	4"	RELIEF VALVE (BY ENGINEERING)	341-525
8	1	4"	TEE, WELD END	401-106
9	2	4" X 2"	TEE, REDUCING, WELD END	401-112
10	3	2"	ELL, WELD END	922-112
11	2	4"	ELL, WELD END	186-103
12	2	4" X 2"	CONCENTRIC REDUCER, WELD END	332-103
13	2	2"	STUB END	381-100
14	6	4"	STUB END	381-106
15	2	2"	LAP JOINT FLANGE, 150#	211-100
16	6	4"	LAP JOINT FLANGE, 150#	211-106
17		2"	STEEL PIPE, STD, WT.	931-124
18		4"	STEEL PIPE, STD, WT.	311-103
19	1	4"	COUPLING, MAXIGRIP	176-204
20	1	4"	RAIN CAP	131-125
21	1	4"	FILTER, 150# FLUID	190-224
22	1	1"	ELBOWLET	
23	4		PIPE SUPPORT, ADJUSTIBLE	

			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	
ENGINEERING REVIEW:	APPROVED:	11M/16M HIGH PRESSURE METERED INSTALLATION	
REVISID:			DATE
			02-04-94
			STANDARD No.
			708A

NOTES:

1. SEE GENERAL STANDARD No. 700 FOR FENCE SPECIFICATION.
2. PIPE SUPPORT SHALL REST ON 12" DIAMETER CONCRETE SUPPORT BASE. BASE SHALL BE 3 FEET BELOW AND 6" ABOVE GRADE. A CARDBOARD SONOTUBE SHOULD BE USED FOR THE FORM.
3. IF NECESSARY, THE REGULATOR AND RELIEF CONTROL LINE TAPS MAY BE INSTALLED IN THE CUSTOMER'S PIPING. IN THIS INSTANCE THE CONTROL LINES SHOULD BE INSULATED.
4. THE BYPASS VALVE, CONTROL LINE VALVES, AND THE ISOLATION VALVE UPSTREAM OF THE RELIEF SHALL ALL HAVE APPROVED LOCKING DEVICES INSTALLED.
5. INSTALL REGULATOR AND RELIEF TAGS IN ACCORDANCE WITH GAS OPERATIONS WORK PROCEDURE No. 7065.
6. REGULATOR OR PILOT VENTS SHOULD POINT DOWN WITH AN APPROVED SCREENED CAP INSTALLED.
7. IF INSTALLATION IS COMPLETE BEFORE CUSTOMER'S PIPING IS CONNECTED, INSTALL A RED COLORED LOCKING DEVICE ON THE COUPLING, AND CAP OR PLUG ALL OPEN CONNECTIONS.
8. INSTALL 17# ANODE ON STEEL SERVICE RISER.

			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	
ENGINEERING REVIEW:	APPROVED:	11M/16M HIGH PRESSURE METERED INSTALLATION	
REVISID:			DATE
			02-04-94
			STANDARD No.
			708B



			ISSUE No.
			1
DRAWN: ATOMETRICS INC.			CHECK:
ENGINEERING REVIEW:			APPROVED:
REVISID:			
GAS OPERATIONS STANDARD 23M/38M HIGH PRESSURE METERED INSTALLATION			DATE
			02-04-94
			STANDARD No.
			709

BILL OF MATERIALS

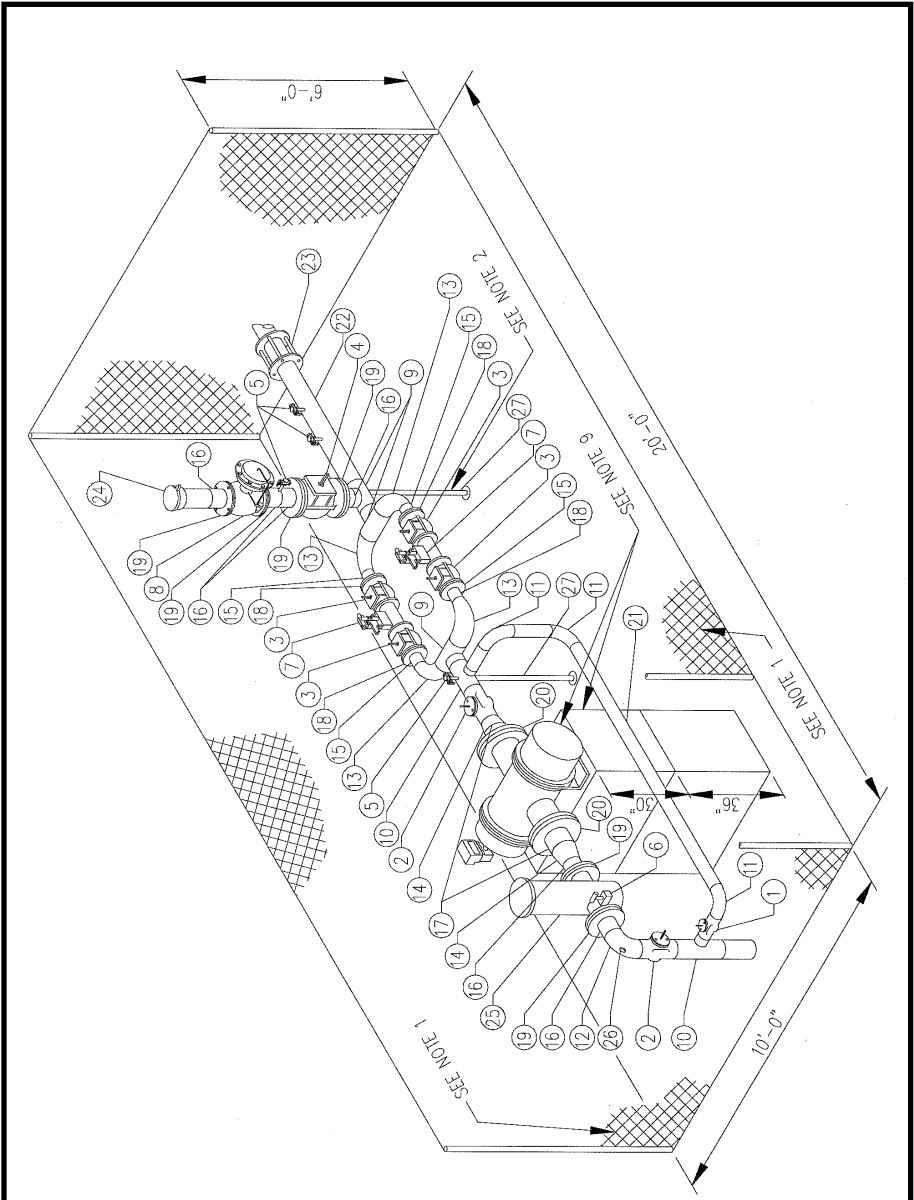
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2"	PLUG VALVE, WELD END	549-201
2	2	4"	PLUG VALVE, WELD END	549-207
3	4	2"	PLUG VALVE, FLUID END	549-133
4	1	4"	BALL VALVE, FLUID END, FULL PORT	549-650
5	4	3/4"	LOCKING WING COCK, THD	152-100
6	1	1/4"	NEEDLE VALVE, THD	540-100
7	2	2"	SERVICE REG (FISHER 99)	341-132
8	1	4"	RELIEF VALVE (BY ENGINEERING)	
9	3	4"	TEE, WELD END	401-106
10	2	4" x 2"	TEE REDUCING WELD END	401-112
11	3	2"	ELL, WELD END	922-112
12	2	4"	ELL, WELD END	186-103
13	4	4" x 2"	REDUCING ELL, WELD END	187-103
14	2	6" x 4"	CONCENTRIC REDUCER, WELD END	332-115
15	4	2"	STUB END	381-100
16	6	4"	STUB END	381-106
17	2	6"	STUB END	381-109
18	4	2"	LAP JOINT FLANGE, 150#	211-100
19	6	4"	LAP JOINT FLANGE, 150#	211-106
20	2	6"	LAP JOINT FLANGE 150#	211-109
21		2"	STEEL PIPE, STD WT.	932-124
22		4"	STEEL PIPE, STD, WT.	311-103
23	1	4"	COUPLING, MAXIGRIP	176-204
24	1	4"	RAIN CAP	131-125
25	1	4"	FILTER, 150# FLUID	190-224
26	1	1"	ELBOWLET	
27	3		PIPE SUPPORT, ADJUSTABLE	

			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	
ENGINEERING REVIEW:	APPROVED:	23M/38m HIGH PRESSURE METERED INSTALLATION	
REVISID:			DATE
			02-04-94
			STANDARD No.
			709A

NOTES:

1. SEE GENERAL STANDARD No. 700 FOR FENCE SPECIFICATION.
2. PIPE SUPPORT SHALL REST ON 12" DIAMETER CONCRETE SUPPORT BASE. BASE SHALL BE 3 FEET BELOW AND 6" ABOVE GRADE. A CARDBOARD SONO TUBE SHOULD BE USED FOR THE FORM.
3. IF NECESSARY, THE REGULATOR AND RELIEF CONTROL LINE TAPS MAY BE INSTALLED IN THE CUSTOMER S PIPING. IN THIS INSTANCE THE CONTROL LINES SHOULD BE INSULATED.
4. THE BYPASS VALVE, CONTROL LINE VALVES, AND THE ISOLATION VALVE UPSTREAM OF THE RELIEF SHALL ALL HAVE APPROVED LOCKING DEVICES INSTALLED.
5. INSTALL REGULATOR AND RELIEF TAGS IN ACCORDANCE WITH GAS OPERATIONS WORK PROCEDURE No. 7065.
6. REGULATOR OR PILOT VENTS SHOULD POINT DOWN WITH AN APPROVED SCREENED CAP INSTALLED.
7. IF INSTALLATION IS COMPLETE BEFORE CUSTOMER S PIPING IS CONNECTED, INSTALL A RED COLORED LOCKING DEVICE ON THE RISER VALVE, INSTALL A BULLHEAD IN THE MAXIGRIP COUPLING, AND CAP OR PLUG ALL OPEN CONNECTIONS.
8. INSTALL 17# ANODE ON STEEL SERVICE
9. FOR PEDESTAL DIMENSIONS AND ANCHOR BOLT SIZE AND LAYOUT SEE GAS OPERATIONS STANDARDS 712 AND 712A.

ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	
ENGINEERING REVIEW:	APPROVED:	23M/38M HIGH PRESSURE METERED INSTALLATION	
REVISED:			DATE
			02-04-94
			STANDARD No.
			709B



			ISSUE No.
			1
DRAWN: ATOMITRICS INC.			CHECK:
ENGINEERING REVIEW:			APPROVED:
REVISD:			
GAS OPERATIONS STANDARD 56M HIGH PRESSURE METERED INSTALLATION			DATE
			02-04-94
			STANDARD No.
			710


BILL OF MATERIALS

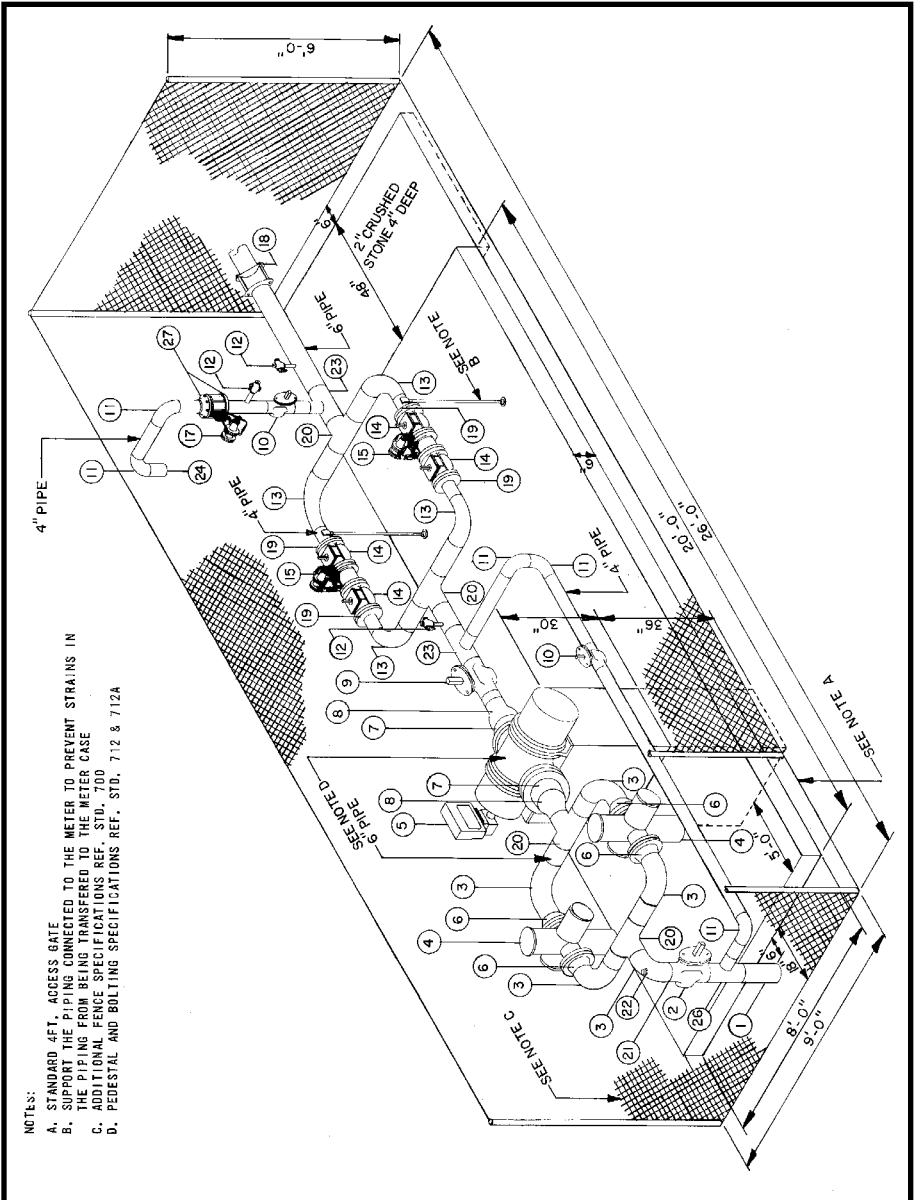
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	4"	PLUG VALVE, WELD END	549-207
2	2	6"	PLUG VALVE, WELD END	549-211
3	4	4"	PLUG VALVE, FLUID END	549-159
4	1	6"	BALL VALVE, FLUID END, FULL PORT	
5	4	3/4"	LOCKING WING COCK, THD	152-100
6	1	1/4"	NEEDLE VALVE, THD	540-100
7	2	4"	SERVICE REG (BY ENGINEERING)	
8	1	6"	RELIEF VALVE (BY ENGINEERING)	
9	3	6"	TEE, WELD END	401-115
10	2	6" X 4"	TEE, REDUCING, WELD END	401-118
11	3	4"	ELL, WELD END	186-103
12	1	6"	ELL, WELD END	186-106
13	4	6" X 4"	REDUCING ELL, WELD END	187-109
14	2	8" X 6"	CONCENTRIC REDUCER, WELD END	332-121
15	4	4"	STUB END	381-106
16	6	6"	STUB END	381-109
17	2	8"	STUB END	381-112
18	4	4"	LAP JOINT FLANGE 150#	211-106
19	6	6"	LAP JOINT FLANGE 150#	211-109
20	2	8"	LAP JOINT FLANGE 150#	211-112
21		4"	STEEL PIPE, STD, WT.	311-103
22		6"	STEEL PIPE, STD, WT.	311-106
23	1	6"	COUPLING, MAXIGRIP	176-206
24	1	6"	RAIN CAP	131-130
25	1	6"	FILTER, 150# FLUID	190-226
26	1	1"	ELBOWLET	
27	2		PIPE SUPPORT, ADJUSTABLE	

			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	
ENGINEERING REVIEW:	APPROVED:	56M HIGH PRESSURE METERED INSTALLATION	
REVISED:			DATE
			02-04-94
			STANDARD No.
			710A

NOTES:

1. SEE GENERAL STANDARD No.700 FOR FENCE SPECIFICATION.
2. PIPE SUPPORT SHALL REST ON 12" DIAMETER CONCRETE SUPPORT BASE. BASE SHALL BE 3 FEET BELOW AND 6 ABOVE GRADE. A CARD-BOARD SONO TUBE SHOULD BE USED FOR THE FORM.
3. IF NECESSARY, THE RECULATOR AND RELIEF CONTROL LINE TAPS MAY BE INSTALLED IN THE CUSTOMER'S PIPING. IN THIS INSTANCE THE CONTROL LINES SHOULD BE INSULATED.
4. THE BYPASS VALVE, CONTROL LINE VALVES, AND THE ISOLATION VALVE UPSTREAM OF THE RELIEF SHALL ALL HAVE APPROVED LOCKING DEVICES INSTALLED.
5. INSTALL REGULATOR AND RELIEF TAGS IN ACCORDANCE WITH GAS OPERATIONS WORK PROCEDURE No. 7065.
6. REGULATOR OR PILOT VENTS SHOULD POINT DOWN WITH AN APPROVED SCREENED CAP INSTALLED.
7. IF INSTALLATION IS COMPLETE BEFORE CUSTOMER S PIPING IS CONNECTED, INSTALL A RED COLORED LOCKING DEVICE ON THE RISER VALVE, INSTALL A BULLHEAD IN THE MAXIGRIP COUPLING, AND CAP OR PLUG ALL OPEN CONNECTIONS.
8. INSTALL 17# ANODE ON STEEL SERVICE RISER.
9. FOR PEDESTAL DIMENSIONS AND ANCHOR BOLT SIZE AND LAYOUT SEE GAS OPERATIONS STANDARDS 712 AND 712A.

			ISSUE No.
			1
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	DATE
ENGINEERING REVIEW:	APPROVED:		56M HIGH PRESSURE METERED INSTALLATION
REVISD:			STANDARD No. 710B



- NOTES:
- A. STANDARD 4FT. ACCESS GATE
 - B. SUPPORT THE PIPING CONNECTED TO THE METER TO PREVENT STRAINS IN THE PIPING FROM BEING TRANSFERRED TO THE METER CASE
 - C. ADDITIONAL FENCE SPECIFICATIONS REF. STD. 700
 - D. PEDESTAL AND BOLTING SPECIFICATIONS REF. STD. 712 & 712A

ORANGE AND ROCKLAND UTILITIES, INC.

ISSUE No.

DRAWN:

DESIGNED:

CHECK:

GAS OPERATIONS STANDARD

DATE

H.S.

J.S.N

H.W.K.

**102M-125 HIGH PRESSURE
TO (125 PSI)
METERED INSTALLATION**

09-02-76

ENGINEERING REVIEW:

APPROVED:

R. P. Stone

STANDARD No.

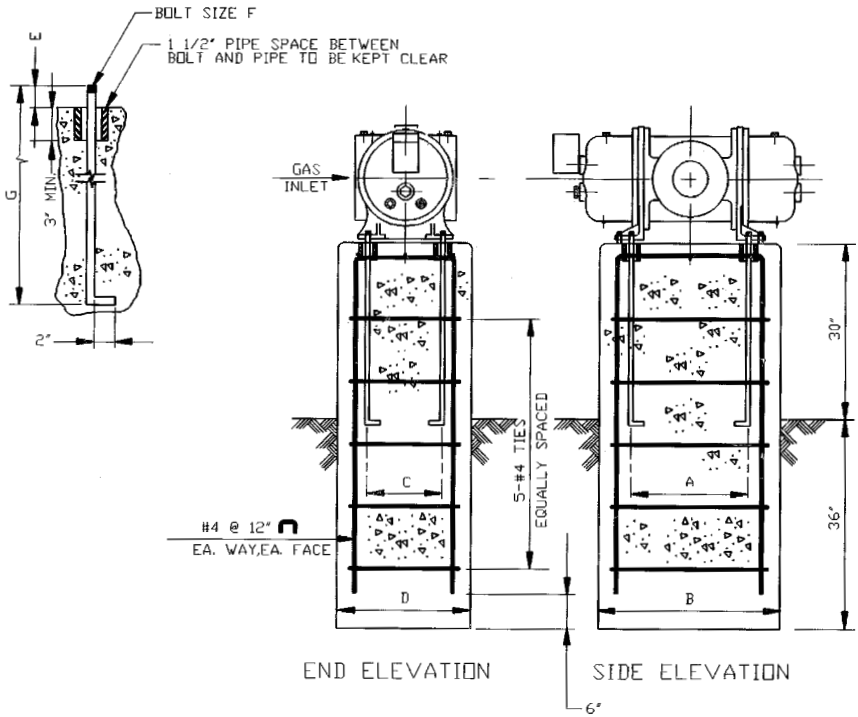
711

REVISED:

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1			GAS SERVICE	
2	1	8"	WELD VALVE	549-214
3	5	6"	WELD ELL	186-106
4	2	6"	FILTER	
5	1		BASE VOLUMN INDEX	
6	4	6"	FLANGE	212-109
7	2	10"	FLANGE	212-115
8	2	10 X 6	WELD REDUCER	
9	1	6"	WELD VALVE	549-211
10	2	4"	WELD VALVE	549-208
11	5	4"	WELD ELL	186-103
12	3	1"	LOCKWING COCK	152-106
13	4	4"	WELD ELL	187-109
14	4	4"	FLANGE VALVE	549-159
15	2	4"	REGULATORS - AXIAL FLOW	
16				
17	1	4"	RELIEF VALVE - AXIAL FLOW	544-113
18	1	6"	INSULATED COUPIING	176-118
19	4	4"	FLANGES	211-109
20	4	6"	WELD TEE	401-115
21	1	8 X 6	WELD REDUCER (IF REQUIRED)	332-121
22	1	1"	PIPE COUPLING	
23	2	6 X 4	WELD TEE	401-118
24	1	4"	SCREENED VENT	
25			PIPE NIPPLES WHERE REQUIRED	
26	1	8 X 4	WELD TEE	
27	2	4"	FLANGES	212-106

			ISSUE No.
			DATE
DRAWN: S.M.N.	DESIGNED: J.S.N.	CHECK: H.W.K.	GAS OPERATIONS STANDARD 102M-125 HIGH PRESSURE (TO 125 PSI) METERED INSTALLATION
ENGINEERING REVIEW:		APPROVED: <i>R. P. [Signature]</i>	09-17-76
REVISID:			STANDARD No. 711A

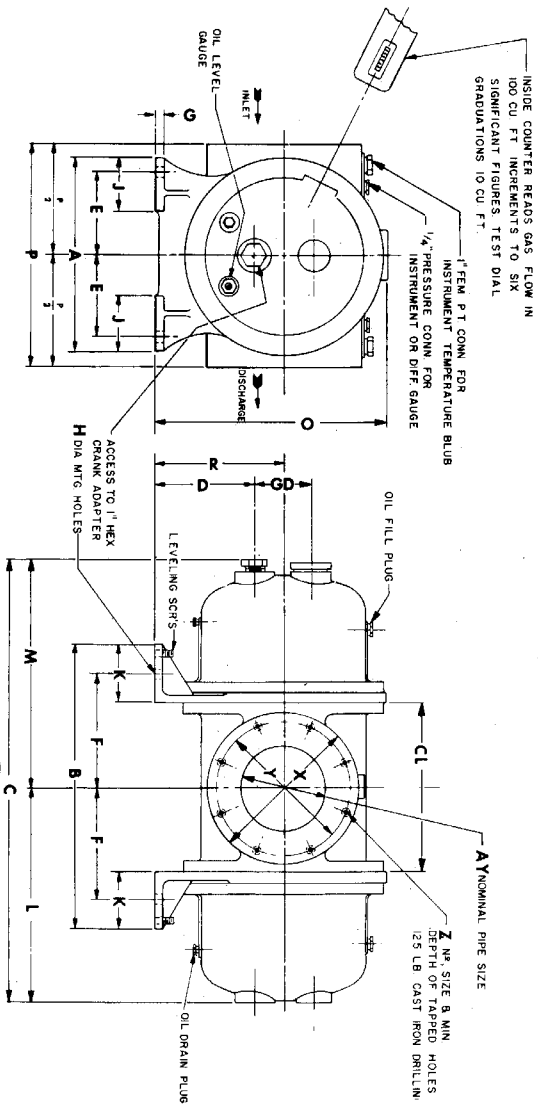


Model	A	B	C	D	E	F	G
23M125	16	24	11-3/4	18	2	5/8	22
38M125	19-1/4	28	15-1/4	22	2	3/4	26
56M125	22-5/8	32	17-3/4	24	2	7/8	30
102M125	32-1/4	41	24	31	2	1	34

Typical Concrete Foundation, with Required Dimensions

- NOTES:
1. THE CONCRETE SHALL BE AIR ENTRAINED (4-6%) THAT WILL TEST TO 3000 PSI AT TIME OF USE.
 2. IF UNIT IS PRECAST AN INSPECTION CERTIFICATE IS REQUIRED CERTIFYING THE STRENGTH OF CONCRETE AND THE PLACING OF THE PROPER REINFORCING. INSPECTION WILL BE MADE BY AN O&R APPROVED INSPECTION AND TESTING AGENCY.
 3. ALL CONCRETE AND REINFORCING SHALL CONFORM TO O&RU, INC. STANDARDS.
 4. WHEN BACKFILLING AROUND THE PEDESTAL, THE SOIL SHOULD BE TAMPED EVERY 6"

			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
H.S.			DATE
ENGINEERING REVIEW:	APPROVED:		03-31-94
			STANDARD No.
REVISED:			712



INSIDE COUNTER READS GAS FLOW IN
100 CU FT INCREMENTS TO SIX
SIGNIFICANT FIGURES, TEST DIAL
GRADUATIONS 10 CU FT.

1" FEM PT CONN. FOR
INSTRUMENT TEMPERATURE BUBB
1/4" PRESSURE CONN. FOR
INSTRUMENT OR DIFF. GAUGE

OIL FILL PLUG

A NOMINAL PIPE SIZE
Z NR. SIZE & MIN
DEPTH OF TAPPED HOLES
(25 LB CAST IRON DRILLING)

ROTARY DISPLACEMENT METER
WITH COUNTER
SERIES 125

NOTE: INLET AND DISCHARGE DRILLING
150 LB. STEEL ASA STANDARD
WITH TAPPED HOLES

MODEL	GD	CL	A	B	C	D	E	F	G	H	J	K	L	M	O	P	R	X	Y	Z	AY	ZP	2P		
23M125	4	12	14	20 1/4	3 3/4	7	5 7/8	8	11 1/8	3 1/4	4	4 1/8	15 1/2	16 1/4	16 1/2	16	9	11	9 1/2	8	3 4/10	1 1/8	6	3.0 T	475 LB
38M125	5	15 1/8	17 1/4	24 1/8	3 5/8	7	7 5/8	9 1/4	13 1/4	7/8	4 5/8	4 1/2	17 9/32	18 7/8	19 3/8	18	10 1/2	11	9 1/2	8	3 4/10	1 1/8	6	1.6AL	750 LB
56M125	6	18	19 3/4	28	4 0 1/8	9	8 7/8	11 5/8	13 1/8	1	5	5	19 5/8	20 1/2	22 1/2	21	12	13 1/2	11 3/4	8	3 4/10	1 1/8	9	1.6AL	1100 LB
102M125	8	24	27	37	48 1/8	11 3/4	12	16 1/8	17 1/8	1 1/8	6	6 1/2	27 1/8	24 1/2	29 1/8	28	15 3/4	16	14 1/4	12	1 1/2	1 1/8	10	2.6AL	2150 LB

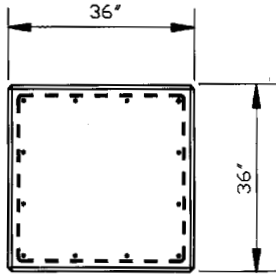
OR ORANGE AND ROCKLAND UTILITIES, INC.

DRAWN: H.S.
DESIGNED:
CHECK: J.S.N.
APPROVED: *R. P. Sherr*

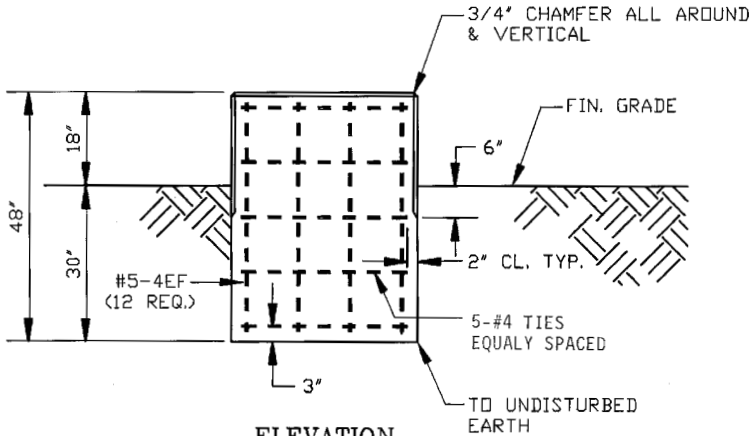
GAS OPERATIONS STANDARD
ROTARY METER PEDESTAL
AND BOLTING SPECIFICATIONS

REVISED:

ISSUE No.	1
DATE	11-01-76
STANDARD No.	712A



PLAN



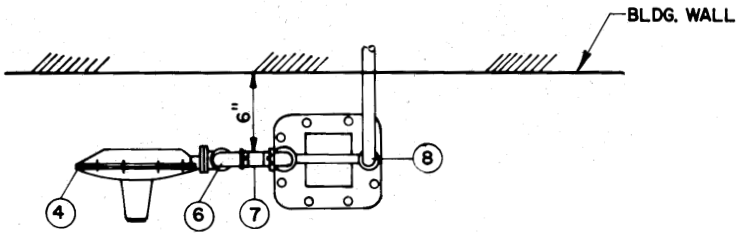
ELEVATION

SCALE: 1/2"=1'-0"

NOTES:

1. THE CONCRETE SHALL BE AIR ENTRAINED (4-6%) THAT WILL TEST TO 3000 PSI AT TIME OF USE.
2. IF UNIT IS PRECAST AN INSPECTION CERTIFICATE IS REQUIRED CERTIFYING THE STRENGTH OF CONCRETE AND THE PLACING OF THE PROPER REINFORCING. INSPECTION WILL BE MADE BY AN O&R APPROVED INSPECTION AND TESTING AGENCY.
3. ALL CONCRETE AND REINFORCING SHALL CONFORM TO O&RU, INC. STANDARDS.
4. WHEN BACKFILLING AROUND THE PEDESTAL, THE SOIL SHOULD BE TAMPED EVERY 6".

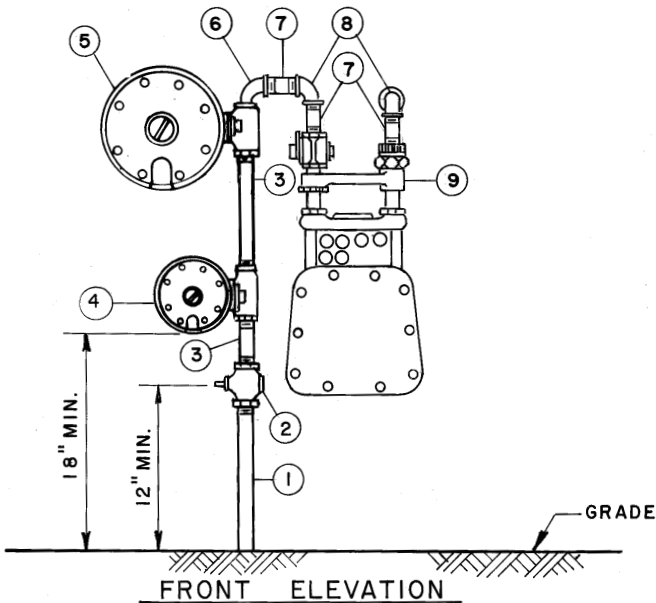
OR ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			DATE
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
H.S.		A.S.	
ENGINEERING REVIEW:	APPROVED:	CONCRETE PEDESTAL FOR AL 1400 THROUGH AL 5000 METER	
	<i>J. S. Morasso</i>		
REVISID:			STANDARD No.
			713



PLAN

NOTES:

- 1) INLET PRESSURE NOT TO EXCEED 250 PSIG.
- 2) ORIFICE SIZE IN ITEM "4" NOT TO EXCEED 3/16".



FRONT ELEVATION

			ISSUE No.
			3
DRAWN: V.A.G.	DESIGNED: C.E.P.	CHECK: A.A.R.	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Mayo</i>	FARM TAP METERED INSTALLATION
REVISED: 1-23-80 H.S. 8-11-87 H.S.			DATE 07-27-79
			STANDARD No. 714

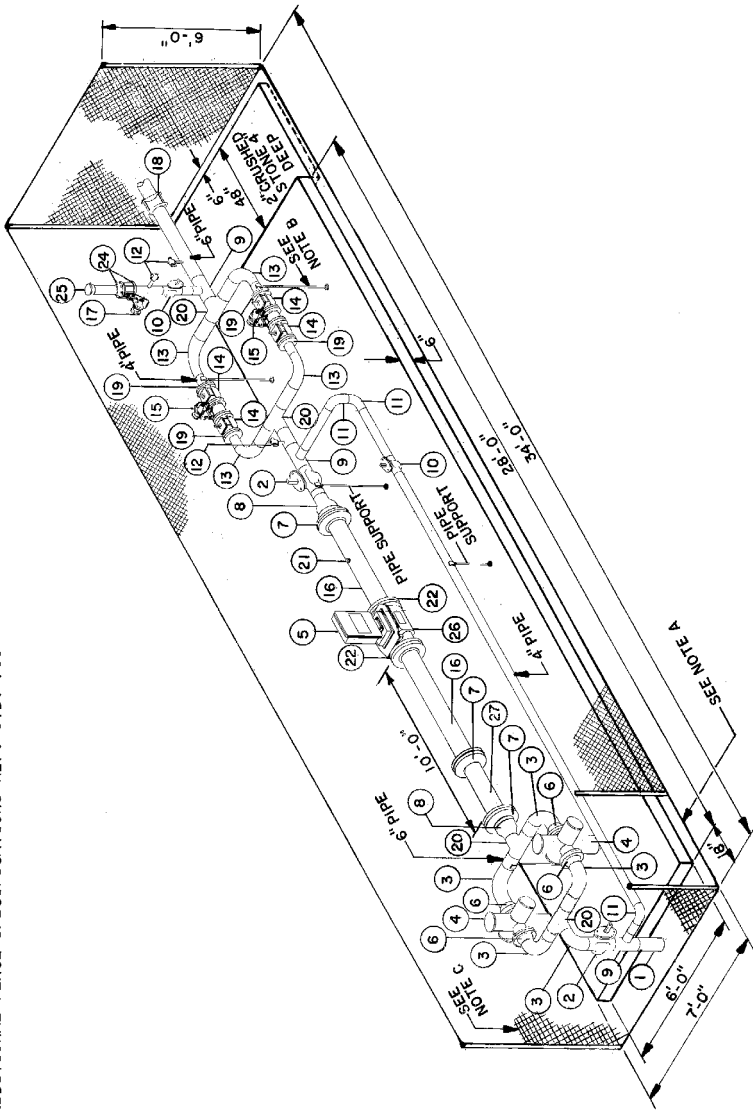
BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	3/4"	PREBENT RISER	603-125
2	1	3/4"	LOCKED WING METER STOP (SERVICE VALVE)	152-102
3	2	3/4"	PIPE NIPPLE	
4	1	3/4"	FARM TAP REGULATOR (627) WITH INTERNAL RELIEF	341-305
5	1	1" x 3/4"	STD. SERVICE REGULATOR	341-400
6	1	1"	90° STREET ELL-INSULATED	184-100
7	3	1"	PIPE NIPPLE	
8	2	1"	90° ELL	
9	1	1"	METER BAR WITH STOP	111-100

			ISSUE No.
			3
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD FARM TAP METERED INSTALLATION
V.A.G.	C.E.P.	A.A.F.	
ENGINEERING REVIEW:		APPROVED:	07-27-79
		<i>J. S. Morasso</i>	STANDARD No.
REVISED: 1-23-80		8-12-87	714A

NOTES:

- A. STANDARD 4FT. ACCESS GATE.
- B. SUPPORT THE PIPING CONNECTED TO THE METER TO PREVENT STRAINS IN THE PIPING FROM BEING TRANSFERRED TO THE METER CASE.
- C. ADDITIONAL FENCE SPECIFICATIONS REF. STD. 700



ORANGE AND ROCKLAND UTILITIES, INC.

DRAWN: H.S.	DESIGNED: J.S.N.	CHECK: A.A.S.
ENGINEERING REVIEW:	APPROVED: <i>J. S. Marino</i>	

GAS OPERATIONS STANDARD
8 INCH TURBINE
HIGH PRESSURE (TO 125 PSI)
METERED INSTALLATION

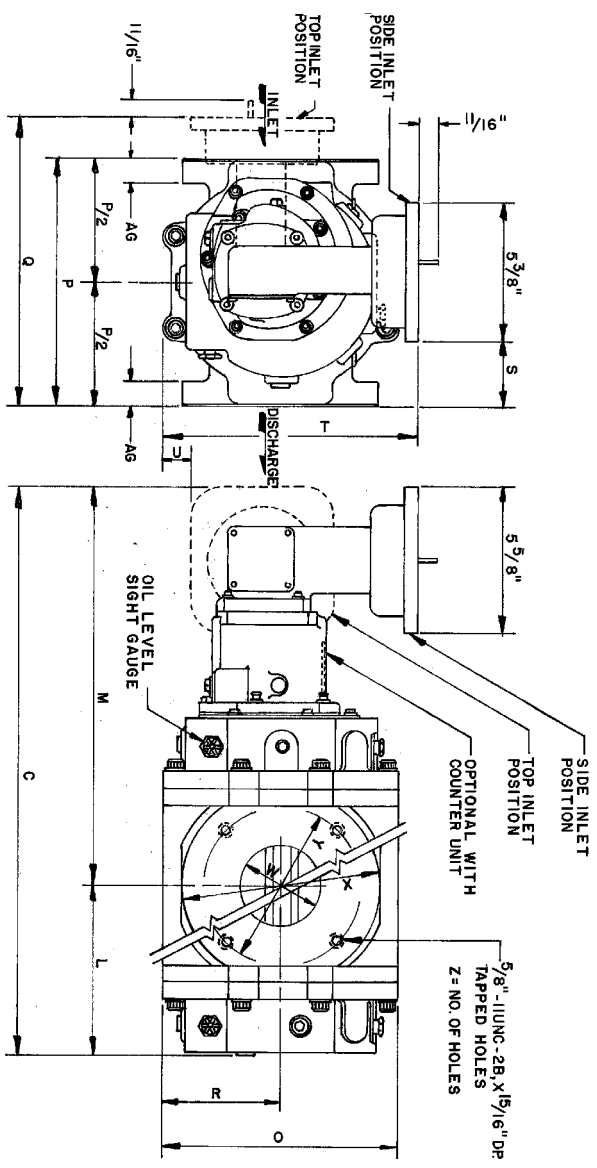
ISSUE No.
DATE
04-11-79
STANDARD No.
715

REVISED:

BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1			GAS SERVICE	
2	2	6"	WELD VALVE	549-211
3	5	6"	WELD ELL	186-106
4	2	6"	FILTER	
5	1		BASE VOLUME INDEX	
6	4	6"	FLANGE	212-109
7	3	8"	FLANGE	212-112
8	2	8X6	WELD REDUCER	382-121
9	3	6X4	WELD TEE	401-118
10	2	4"	WELD VALVE	549-208
11	3	4"	WELD ELL	186-103
12	3	1"	LOCKWING COCK	152-106
13	4	6X4	WELD ELL	187-109
14	4	4"	FLANGE VALVE	549-159
15	2	4"	REGULATORS - AXIAL FLOW	
16		8"	PIPE	
17	1	4"	RELIEF VALVE - AXIAL FLOW	544-113
18	1	6"	INSULATED COUPLING	176-118
19	4	4"	FLANGES	211-119
20	4	6"	WELD TEE	401-115
21	1	1"	PIPE COUPLING (BVI TEMP)	
22		8"	LAP JOINT FLANGE	211-112
23			PIPE NIPPLES WHERE REQUIRED	
24	2	4"	FLANGES	212-106
25	1	4"	WEATHER CAP	131-125
26	1	8"	TURBINE MEIER	
29	1	8"	STRAIGHTENING VANES (FLANGED)	

			ISSUE No.
			DATE
DRAWN: S.M.N.	DESIGNED: J.S.N.	CHECK: A.A.S.	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:		APPROVED: <i>J. S. Morasso</i>	8 INCH TURBINE HIGH PRESSURE (TO 125 PSI) METERED INSTALLATION
REVISED:			STANDARD No.
			715A



SHOWN IN SIDE INLET POSITION
 FOR TOP INLET ROTATE INSTRUMENT SUPPORT
 90° COUNTERCLOCKWISE.

MODEL	DIMENSIONS IN INCHES												N.P.T.	NO. HOLES	APPROX. OIL CAPACITY		APPROX. WEIGHT	MAX. WORK PRESSURE	
	A	G	C	L	M	O	P	Q	R	S	T	U			X	Y			W
7M	15/16	22 1/2	7	15/16	9	3/16	11 1/8	4 1/2	2 1/2	19 3/4	1 1/8	7 1/2	6	3	4	24.4 FL. OZ.	6.0 FL. OZ.	53.0 LBS.	75.0 P.S.I.G.
11M	1	24 1/8	8 5/8	17 9/16	9	3/16	11 1/8	4 1/2	2 1/2	19 3/4	1 1/8	7 1/2	6	4	24.4 FL. OZ.	6.0 FL. OZ.	66.0 LBS.	75.0 P.S.I.G.	
16M	1	30 3/4	11 1/8	19 7/8	9	3/16	11 1/8	4 1/2	2 1/2	19 3/4	1 1/8	7 1/2	6	4	24.4 FL. OZ.	6.0 FL. OZ.	83.0 LBS.	75.0 P.S.I.G.	

ORANGE AND ROCKLAND UTILITIES, INC.

DRAWN: H.S.
 DESIGNED:
 CHECK:
 APPROVED: *J. S. Marino*


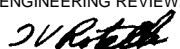
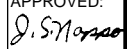
GAS OPERATIONS STANDARD
 METER W/MAGNETICALLY COUPLED INSTRUMENT DRIVE 7M, 11M & 16M LM-MA

ISSUE No.
DATE
06-01-83
STANDARD No.
716

REVISED:


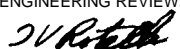
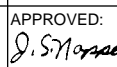
BILL OF MATERIALS

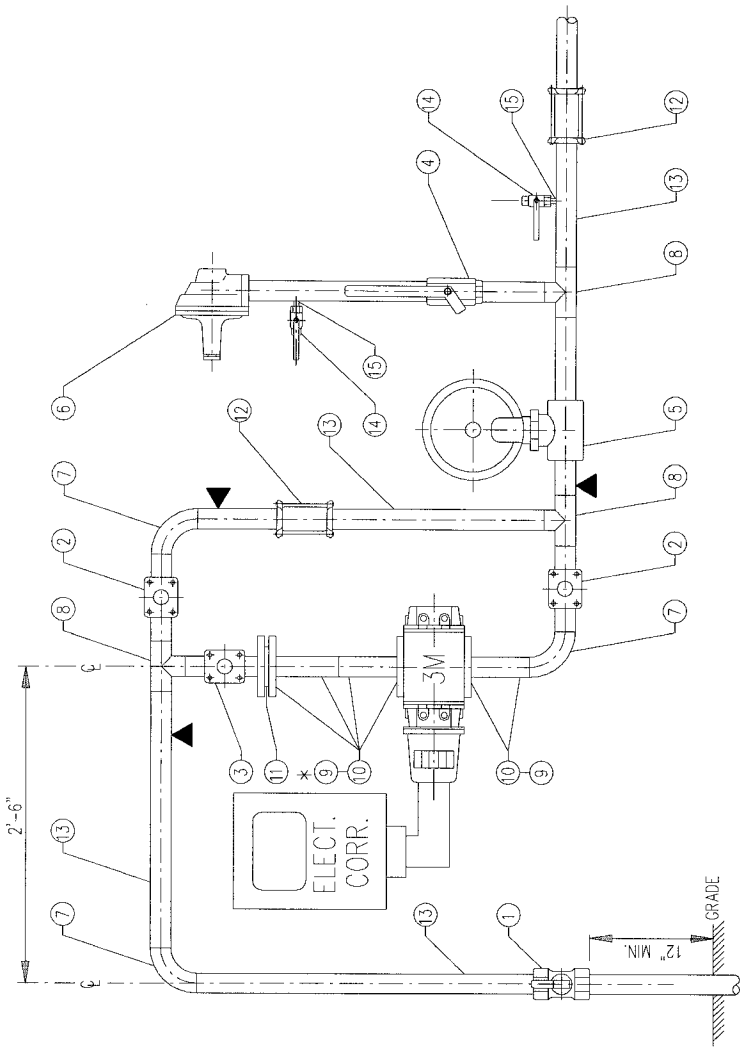
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2"	LOCKING WING COCK, THD	152-133
2	3	2"	VSI-111 BAL VALVE, WELD END	549-654
3	1	2"	REGULATOR - AMERICAN 1813B	341-410
4	2	2"	90° ELL, WELD END	922-112
5	1	2"	90° COMPRESSION STREET ELL, DRESSER	184-109
6	2	2"	TEE, WELD END	924-112
7	2	2"	STUB END	381-100
8	2	2"	LAP JOINT FLANGE, 150#	211-100
9	1	2"	Y-TYPE STRAINER, THD	380-012
10	2	2"	MAXI-GRIP COUPLING, INSULATED	176-202
11		2"	STEEL PIPE, STD. WT.	932-124
12	1	1/2"	BALL VALVE	549-101
13	1	1/2"	3000# STEEL THREDOLET	407-118
14	3	2"	PIPE SUPPORT, WALL-MOUNTED	382-012

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD 1.5M – 3M LOW PRESSURE ROTARY METER INSTALLATION
S.M.	S.F.	F.W.S.	
ENGINEERING REVIEW:		APPROVED:	08-10-95
			STANDARD No.
REVISED:			718A

NOTES

1. IF WARRANTED BY CONDITIONS AT THE CUSTOMER'S SITE, EITHER THE COMMERCIAL OPERATIONS REPRESENTATIVE OR THE OPERATIONS SUPERVISOR MAY REQUIRE THE INSTALLATION OF PROTECTIVE FENCING BY THE CUSTOMER. SEE GENERAL STANDARD' NO. 700 FOR FENCE SPECIFICATIONS.
2. INSTALL PIPE SUPPORTS ON ADJACENT WALL WHERE INDICATED.
3. USE 1-3/4" LONG HEX HEAD BOLTS FOR BOLTING FLANGES TO THE METER.
4. IF NECESSARY, THE REGULATOR AND RELIEF CONTROL LINE TAPS MAY BE INSTALLED IN THE CUSTOMER'S PIPING. IN THIS INSTANCE THE CONTROL LINES MUST BE INSULATED.
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7. REGULATOR AND PILOT VENTS SHOULD POINT DOWN WITH AN APPROVED SCREENED CAP INSTALLED.
8. IF INSTALLATION IS COMPLETE BEFORE CUSTOMER'S PIPING IS CONNECTED, INSTALL A RED COLORED LOCKING DEVICE ON THE RISER VALVE, INSTALL A BULLHEAD IN THE MAXIGRIP COUPLING, AND CAP OR PLUG ALL OPEN CONNECTIONS. BULLHEAD SHALL BE DRILLED WITH SMALL VENT HOLE ON THE BOTTOM SIDE TO PREVENT PRESSURE BUILDUP.
9. INSTALL 17# ANODE ON STEEL SERVICE RISER.
10. FLANGE GASKETS SHALL BE INSTALLED "DRY" WITHOUT ANY GREASE, LUBRICANTS OR SEALING COMPOUNDS.

			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD
S.M.	S.F.		DATE
ENGINEERING REVIEW:		APPROVED:	02-28-95
			STANDARD No.
REVISD:			718B



SCALE: 1"=1'-0"

- LEGEND:**
- ▲ - SUPPORT LOCATIONS
 - - - - - INSTALL STRAINER BETWEEN FLANGES
 - * - MOUNTED INSTALLATION, PROVIDE 6" OF CLEARANCE BETWEEN WALL AND RISER

ORANGE AND ROCKLAND UTILITIES, INC.

ISSUE No.

2

DRAWN:
ATOMETRICS INC.

CHECK:

GAS OPERATIONS STANDARD

DATE

ENGINEERING REVIEW:

APPROVED:

**1.5M - 3M HIGH PRESSURE
ROTARY METER INSTALLATION**

08-10-95

REVISED:

STANDARD No.

719


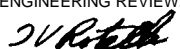
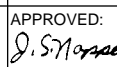
BILL OF MATERIALS

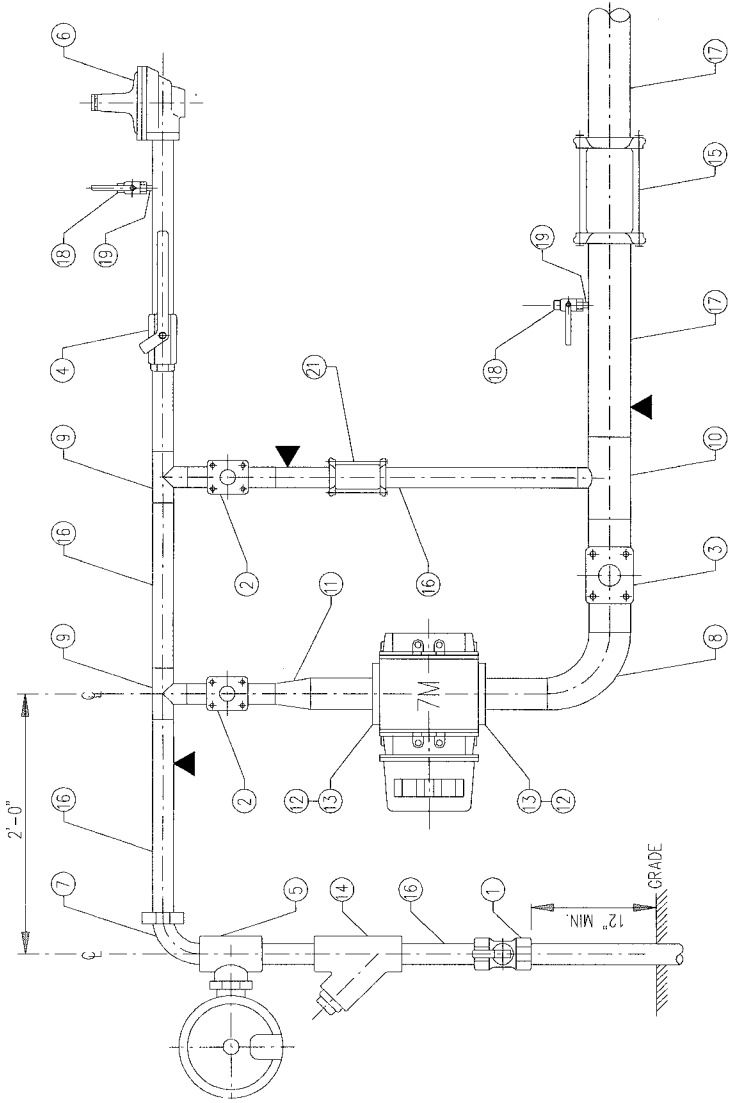
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2"	LOCKING WING COCK, THD	152-133
2	3	2"	VSI-111 BAL VALVE, WELD END	549-654
3	3	2"	VSI-111 BAL VALVE, WELD X FLANGE	549-656
4	1	2"	BALL VALVE, THD (BY ENGINEERING)	
7	3	2"	90° ELL, WELD END	922-112
5	1	2"	REGULATOR - AMERICAN 1813B	341-410
6	1	2"	RELIEF, THD (BY ENGINEERING)	
7	3	2"	90° ELL, WELD END	922-112
8	3	2"	TEE, WELD END	924-112
9	3	2"	STUB END..	381-100
10	3	2"	LAP JOINT FLANGE, 150#	211-100
11	1	2"	CONE TYPE STRAINER	380-014
12	2	2"	MAXI-GRIP COUPLING, INSULATED	176-202
13		2"	STEEL PIPE, STD. WT.	932-124
14	1	1/2"	BALL VALVE	549-101
15	1	1/2"	3000# STEEL THREDOLET	407-118
16	3	2"	PIPE SUPPORT, WALL-MOUNTED	382-012

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD 1.5M – 3M HIGH PRESSURE ROTARY METER INSTALLATION
S.M.	S.F.	F.W.S.	
ENGINEERING REVIEW:		APPROVED:	08-10-95
			STANDARD No.
REVISED:			719A

NOTES

1. IF WARRANTED BY CONDITIONS AT THE CUSTOMER'S SITE, EITHER THE COMMERCIAL OPERATIONS REPRESENTATIVE OR THE OPERATIONS SUPERVISOR MAY REQUIRE THE INSTALLATION OF PROTECTIVE FENCING BY THE CUSTOMER. SEE GENERAL STANDARD' NO. 700 FOR FENCE SPECIFICATIONS.
2. INSTALL PIPE SUPPORTS ON ADJACENT WALL WHERE INDICATED.
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9. INSTALL 17# ANODE ON STEEL SERVICE RISER.
10. FLANGE GASKETS SHALL BE INSTALLED "DRY" WITHOUT ANY GREASE, LUBRICANTS OR SEALING COMPOUNDS.

			ISSUE No.
			1
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD 1.5M – 3M HIGH PRESSURE ROTARY METER INSTALLATION
S.M.	S.F.		
ENGINEERING REVIEW:		APPROVED:	02-28-95 STANDARD No. 719B
			
REVISED:			



SCALE: 1"=1'-0"

LEGEND:

▲ - SUPPORT LOCATIONS

NOTE: FOR A WALL - MOUNTED INSTALLATION, PROVIDE 6" OF CLEARANCE BETWEEN WALL AND RISER

ORANGE AND ROCKLAND UTILITIES, INC.

DRAWN:
ATOMETRICS INC.

CHECK:

GAS OPERATIONS STANDARD

ENGINEERING REVIEW:

APPROVED:

**5M - 7M LOW PRESSURE
ROTARY METER INSTALLATION**

REVISED:

ISSUE No.

2

DATE

08-10-95

STANDARD No.

720


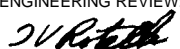
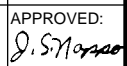
BILL OF MATERIALS

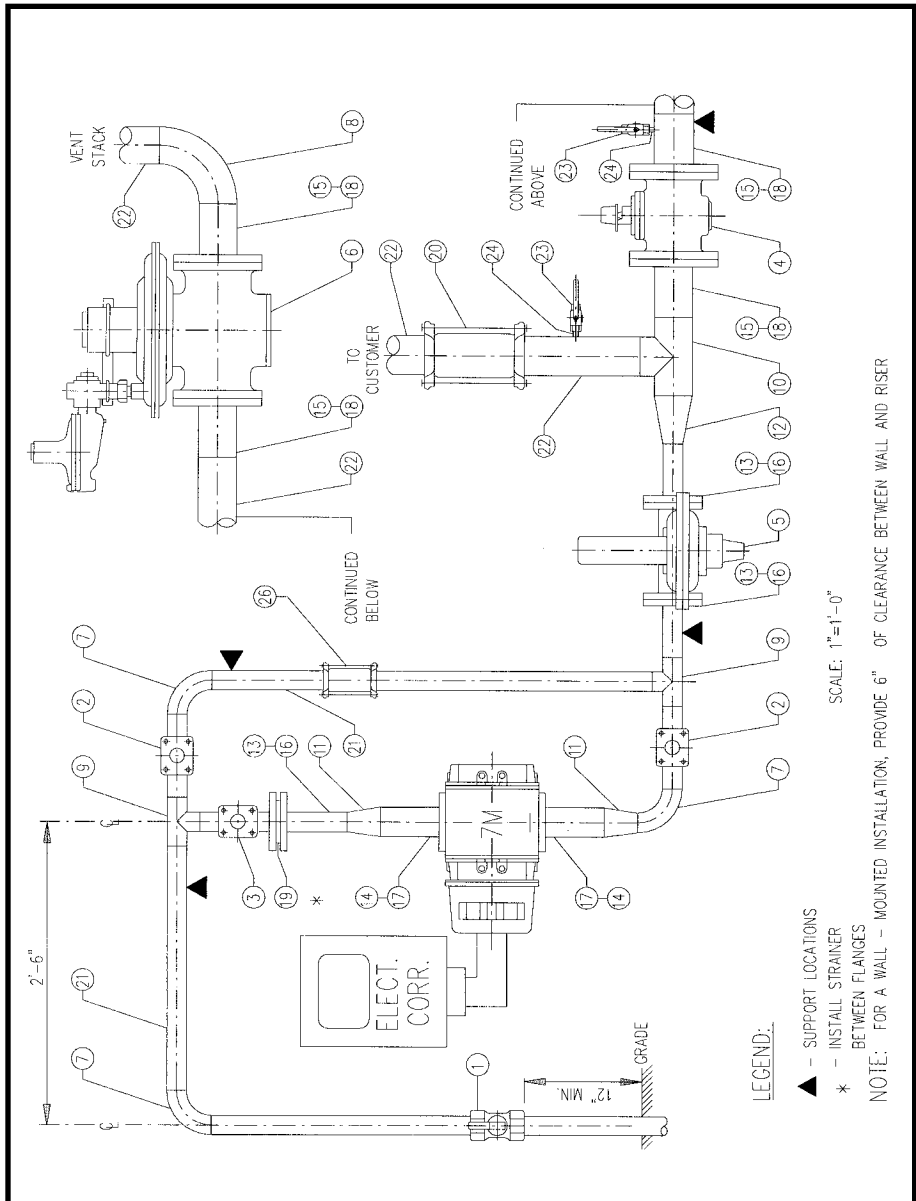
ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
1	1	2	"LOCKING WING COCK, THD	152-133
2	2	2"	VSI-III BALL VALVE, WELD END	549-654
3	1	4"	PLUG VALVE, WELD END	549-207
4	1	2"	BALL VALVE, THD (BY ENGINEERING)	
5	1	2"	REGULATOR - AMERICAN 1813B	341-410
6	1	2"	RELIEF, THD (BY ENGINEERING)	
7	1	2"	90° COMPRESSION STREET ELL, DRESSER	184-109
8	1	4" x 3"	90° ELL, WELD END	187-106
9	2	2"	TEE, WELD END	924-112
10	1	4" x 2"	REDUCING TEE, WELD END	401-112
11	1	3" x 2"	CONCENTRIC REDUCER, WELD END	332-100
12	2	3"	STUB END	381-103
13	2	3"	LAP JOINT FLANGE, 150#	211-103
14	1	2"	Y-TYPE STRAINER, THD	380-012
15	1	4"	MAXI-GRIP COUPLING, INSULATED	176-204
16		2"	STEEL PIPE, BARE, STD. WT.	932-124
17		4"	STEEL PIPE, BARE, STD. WT.	311-103
18	1	1/2"	BALL VALVE	549-101
19	1	1/2"	3000# STEEL THREDOLET	407-118
20	3	2"	PIPE SUPPORT, WALL-MOUNTED	382-012
21	1	2"	MAXI-GRIP COUPLING, INSULATED	176-202

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD 5M – 7M LOW PRESSURE ROTARY METER INSTALLATION
S.M.	S.F.	F.W.S.	
ENGINEERING REVIEW:		APPROVED:	08-10-95
			STANDARD No.
REVISED:			720A

NOTES

1. IF WARRANTED BY CONDITIONS AT THE CUSTOMER'S SITE, EITHER THE COMMERCIAL OPERATIONS REPRESENTATIVE OR THE OPERATIONS SUPERVISOR MAY REQUIRE THE INSTALLATION OF PROTECTIVE FENCING BY THE CUSTOMER. SEE GENERAL STANDARD' NO. 700 FOR FENCE SPECIFICATIONS.
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			ISSUE No.
			1
DRAWN: S.M.	DESIGNED: S.F.	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW: 			APPROVED: 
REVISID:			5M – 7M LOW PRESSURE ROTARY METER INSTALLATION
			DATE 02-28-95
			STANDARD No. 720B



SCALE: 1"=1'-0"

LEGEND:

- ▲ - SUPPORT LOCATIONS
- * - INSTALL STRAINER BETWEEN FLANGES

NOTE: FOR A WALL - MOUNTED INSTALLATION, PROVIDE 6" OF CLEARANCE BETWEEN WALL AND RISER

ORANGE AND ROCKLAND UTILITIES, INC.			ISSUE No.
			2
DRAWN: ATOMETRICS INC.	CHECK:	GAS OPERATIONS STANDARD	DATE
ENGINEERING REVIEW:	APPROVED:		5M - 7M HIGH PRESSURE ROTARY METER INSTALLATION
REVISED:			STANDARD No.
			721


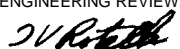
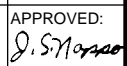
BILL OF MATERIALS

ITEM	QUANT.	SIZE	DESCRIPTION	M&S NO.
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2	2	2"	VSI-III BALL VALVE, WELD END	549-654
3	1	2"	VSI-III BALL VALVE, WELD X FLANGE	549-656
4	1	4"	VSI-III BALL VALVE, 150# FLUID	549-650
5	1	2"	REGULATOR, 150# FLUID. (BY ENGINEERING)	
6	1	4"	RELIEF, 150# FLUID. (BY ENGINEERING)	
7	3	2"	90° ELL, WELD END	922-112
8	1	4"	90° ELL, WELD END	186-103
9	2	2"	TEE, WELD END	924-112
10	1	4"	TEE, WELD END ~	401-106
11	2	3" X 2"	CONCENTRIC REDUCER, WELD END	332-100
12	1	4" X 2"	CONCENTRIC REDUCER, WELD END	332-103
13	3	2"	STUB END	381-100
14	2	3"	STUB END	381-103
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16	3	2"	LAP JOINT FLANGE, 150#	211-100
17	2	3"	LAP JOINT FLANGE, 150#	211-103
18	4	4"	LAP JOINT FLANGE, 150#	211-106
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23	1	1/2"	BALL VALVE	549-101
24	1	1/2"	3000# STEEL THREDOLET	407-118
25	1	2"	PIPE SUPPORT - WALL-MOUNTED	382-012
26	1	2"	MAXI-GRIP COUPLING INSULATED	176-202

			ISSUE No.
			2
DRAWN:	DESIGNED:	CHECK:	GAS OPERATIONS STANDARD 5M – 7M HIGH PRESSURE ROTARY METER INSTALLATION
S.M.	S.F.	F.W.S.	
ENGINEERING REVIEW:		APPROVED:	08-10-95
			STANDARD No.
REVISED:			721A

NOTES

1. IF WARRANTED BY CONDITIONS AT THE CUSTOMER'S SITE, EITHER THE COMMERCIAL OPERATIONS REPRESENTATIVE OR THE OPERATIONS SUPERVISOR MAY REQUIRE THE INSTALLATION OF PROTECTIVE FENCING BY THE CUSTOMER. SEE GENERAL STANDARD' NO. 700 FOR FENCE SPECIFICATIONS.
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			ISSUE No.
			2
DRAWN: S.M.	DESIGNED: S.F.	CHECK:	GAS OPERATIONS STANDARD
ENGINEERING REVIEW:  APPROVED: 			DATE
			2-28-95
REVISED:			STANDARD No.
			721B

Appendix 4 ANSI Z223.1 Table II, Support Piping

Steel Pipe, Nominal Size of Pipe (Inches)	Spacing of Supports (Feet)	Nominal Size of Tubing (Inch O.D.)	Spacing of Supports (Feet)
1/2	6	1/2	4
3/4 or 1	8	5/8 or 3/4	6
1-1/4 or larger (horizontal)	10	7/8 or 1	8
1/4 or larger (vertical)	every floor level		

Appendix 5 Checklist — Gas Meter Installation

The following is in accordance with Orange and Rockland Utilities, Inc. (O&R)

When Calling for the Meter Installation

- The gas service, regulator and meter bar must be installed, trench backfilled to structure, and your contractor must have connected the fuel line to the meter bar before you request installation of the gas meter.
- O&R's gas service personnel must have access to the inside of the building to perform inspections.
- Dwelling's total BTU load must be determined in order for O&R to provide a properly sized gas meter.
- Electric service must be energized prior to gas meter set (due to electric start on some appliances).
- A properly completed "Gas Certification – Piping and Appliances Downstream of the Gas Meter" form must be received by O&R.

Venting

- All flues must be rigid, tight and cemented at the point of entry to masonry chimneys.
- All single-wall vent pipes must have a clearance of six inches from any combustible material.
- Double wall piping (Type B) must be used when installed along the outside wall of a structure (mostly commercial establishments), and must have a clearance of one inch from any combustible material.
- In all common vented gas and oil appliances, the gas appliance vent must enter chimney above the oil appliance vent.
- No gas appliances can be commonly vented with wood burning appliances.

Specifications for Gas Installations
Orange and Rockland Utilities, Inc.

- Minimum of **one permanent piece of gas equipment** must be installed.

Fuel Lines

- All lines must have doped fittings and should be supported or strapped (inside, outside and rooftops) every six feet.
- Water heaters, boilers and furnaces must have drip legs, and flexible pipe connectors will not be used unless required by the manufacturer.
- **Every** appliance must have a separate shut-off valve in an accessible location.
- All unions on fuel lines must be on the appliance side of shut-off valves.
- Fuel lines **must** be connected to meter bar.
- On multiple-metered installations, the meter bars must be permanently marked with corresponding unit/apartment numbers. The units/apartments themselves must also be clearly marked.
- Fuel lines must be air tested for leaks.
- High pressure welded installations must submit pressure test results in writing.
- Fuel line must be sleeved or taped when penetrating a cement wall.

Appliance Installations

- All installed appliances shall be in accordance with the manufacturers' and NFGC specifications, and be accessible.
- A utility room or closet containing a gas dryer must have a fully louvered door, or one inch space above finished floor.
- No vented appliances may be installed in a bedroom/bathroom.
- The burner portion of any appliance installed in a garage must be located at least 18 inches above the floor unless the appliance is designed with a flammable vapor barrier and protected from physical damage.
- All utility rooms that have a boiler, furnace or water heater must have provisions for make-up air in accordance with local building codes.
- An initial inspection by Orange & Rockland personnel will be done at no charge. A fee will be charged for each subsequent re-inspection conducted, with payment to be made by check prior to the re-inspection.

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**If you damage or pull
a gas facility or**

SMELL GAS

Call us immediately

1-800-533-L-E-A-K

1-800-533-5325

And then:

- **Keep all persons away from the area**
- **Eliminate sources of ignition**



**Orange & Rockland
Pike County Light & Power Co.**