



**Civil/Mechanical Engineering**  
Steam Distribution Engineering  
Consolidated Edison Company of New York, Inc.  
4 Irving Place, New York, N.Y. 10003

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## **SPECIFICATION S-11965-0**

### **GENERAL REQUIREMENTS FOR STEAM SERVICE**

**FOR CUSTOMERS UTILIZING CON EDISON STEAM SERVICE  
AND INTERCONNECTING COMBINED HEAT AND POWER FACILITIES  
TO THE CON EDISON STEAM DISTRIBUTION SYSTEM**

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**SECTION I.**

**DEFINITIONS**

- 1.0 “Company” means Consolidated Edison Company of New York, Inc., or the Steam Business Unit (SBU), or any department(s) in the SBU, including Steam Distribution Engineering (SDE).
- 2.0 “Customer” includes both an existing consumer of and New Customer for the Company's steam service. It may also refer to a representative of the Owner; for example, a Consulting Engineer or a Registered Architect
- 3.0 “Meter” means the steam-metering device used by the Company to measure the service supplied to the Customer, including any equipment furnished by the Company as part of such metering device.
- 4.0 “New Customer” is an applicant for steam service at a new premises, or who was not the last previous Customer at the premises to be served, regardless of whether such Customer previously was or is still a Customer of the Company at a different location.
- 5.0 “Point of entry” (POE) is used interchangeably with the term “point of service termination”; more specifically, it refers to the point at which the steam service pipe intersects with the Customer’s property line.
- 6.0 “Point of service termination” means the point at which the Company terminates its service line and the Customer begins his piping.
- 7.0 “Rate Schedule”, also sometimes referred to as the "Tariff", means the Company's Schedule for Steam Service as filed with the New York Public Service Commission.
- 8.0 “Rules”, “regulations”, “rules and regulations of the Public Service Commission”, or any combination thereof, refer to the rules and regulations duly adopted by the Public Service Commission for publication in Title 16 of the State of New York Official Compilation of Codes, Rules and Regulations (NYCRR), and to any lawful orders of the Public Service Commission.
- 9.0 “Service line” means the pipes and equipment for delivering steam from the Company's distribution system to the piping system of the Customer's building or premises.
- 10.0 “Service” or “steam service” means the supply of steam provided by the Company.

**SECTION II.****GENERAL REQUIREMENTS FOR ALL SERVICE CLASSIFICATIONS****1.0 Applicability**

- 1.01. This procedure is for Customers requesting new steam service or a modification to an existing steam service. Customers must comply with the requirements written in this document if they are planning work that may include: steam load changes due to equipment upgrades/exchanges or building improvements; on-site distributed generation with heat recovery steam generators; on-site boiler to Company steam conversions; steam micro-turbine installation; steam service pipe relocation or duplication; significant changes or redesign to internal high-pressure steam headers, risers or piping network; steam meter station upgrade; and/or pressure reducing valve (PRV) station upgrade.

**2.0 Requests for New or Modified Steam Service**

- 2.01. All service requests and the furnishing of service are subject in all respects to the lawful orders of the Public Service Commission, and to the provisions of the Rate Schedule of the Company on file with the Commission and any subsequently effective revisions thereof. The Rate Schedule for steam service can be found on the Con Edison Website: <http://www.coned.com/rates/steam-sched.asp>
- 2.02. Upon the Customer's compliance with all applicable rules, regulations, terms and conditions as required for the availability and beginning of service under the Service Classification applied for, the Company will duly supply service as may be required for the building or premises for which service is requested.
- 2.03. Requests for new service must be made by having a professional engineer or a registered architect submit the following to the Company:
- A Steam Service Load Letter (Attachment #1). The steam service load letter can be downloaded from the Company's website: [http://www.coned.com/steam/steam\\_service.asp](http://www.coned.com/steam/steam_service.asp)
  - A site-specific drawing detailing the POE coordinates (Attachment #2) The site-specific POE form can be downloaded from the Company's website: [http://www.coned.com/steam/steam\\_service.asp](http://www.coned.com/steam/steam_service.asp)
  - A Signed Application for Steam Service. The Application for Steam Service can be downloaded from the Company's website: [http://www.coned.com/steam/steam\\_service.asp](http://www.coned.com/steam/steam_service.asp)
- 2.04. Requests for modification to existing service must be made by having a professional engineer or a registered architect submit a steam service load letter to the Company.
- 2.05. The Company shall issue to the Customer a formal written notice within 90 business days of receipt of a signed Application for Steam Service to inform the Customer whether the Application is complete or not complete. An Application for Steam Service shall not be modified or affected by any promise, agreement or representation,

orally or in writing, by any agent or employee of the Company, except as expressly provided in the Rate Schedule.

2.06. **Rider Payments.**

1. **Rider A Payment.** The Company shall review the Con Edison Steam Distribution system map and determine if an extension or reinforcement of the Company's main is required to serve the Customer's premises. The Company will notify the Customer if a Rider A payment is required. If the payment is required, it must be paid before the Company begins any work. (Attachment #3)
2. **Rider B Payment.** If the estimated cost to the Company for furnishing, installing and connecting of a service line and the furnishing of service equipment exceeds an amount equal to two-years' estimated revenue from the Customer, the Customer must pay the Rider B payment before the Company begins any work. (Attachment #3)
3. **For Rider Payment Information go to the following Company Website Address:** <http://www.coned.com/documents/steam/InfoVI-XI.pdf>

- 2.07. After the Load Letter and POE form have been received from the Customer, the Company will make a ruling on the meter sizes, service line size, and POE location, after which an Engineering Specification Package (ESP) shall be mailed to the Customer's consulting engineer. The ESP consists of a cover letter; a general specification letter detailing all applicable rules and regulations, meter sizes, service size and POE location; and attachments (any additional Company specifications determined to be necessary on a case-by-case basis; such as, meter specification, trap specification, insulation specification, etc.)

All of the following shall be included in the General Specification Letter:

**3.0 Certificate of Inspection**

- 3.01. The Company is required by the Department of Buildings (DOB) of the City of New York to secure a Certificate of Inspection prior to introducing high-pressure (greater than 15 psi) steam into new piping or equipment.
- 3.02. The Company shall not be required to supply steam service until the Customer's installation shall have been approved by the authorities having jurisdiction over the same; and the Company further reserves the right to withhold its service, or discontinue its service, whenever such installation or part thereof is deemed by the Company to be unsafe, inadequate or unsuitable for receiving the Company's service, or to interfere with or impair the continuity or quality of the Company's service to the Customer or to others.
- 3.03. All high-pressure steam piping systems installed in the Customer's building must be designed and constructed in accordance with The Department of Buildings of the City of New York code requirements. The DOB requires that a registered architect (RA) or a licensed professional engineer (PE) design the high-pressure steam piping systems. The responsible engineer or architect must obtain an application, file plans, and obtain Technical Report (TR-1) approval from the DOB prior to a service turn-on by Con

Edison. A copy of the DOB Rules and Regulations for high Pressure Steam Piping Systems is available upon request.

- 3.04. Governmental facilities; federal, city, and state-owned buildings; Amtrak; New York City Transit Authority (NYCTA); Port Authority of New York and New Jersey (PANYNJ); Metropolitan Transit Authority (MTA); Metro North Commuter Railroad; and Long Island Railroad (LIRR) are agencies that DO NOT come under the jurisdiction of the DOB and are not required to file with the DOB. The Company requires that such agencies certify that the design basis for the high-pressure steam piping systems installed in the facilities owned by the same agencies is in compliance with DOB code requirements. The Company also requires such agency to submit a written statement (on the agency's letterhead paper) that the installation was found satisfactory, and that the agency authorizes connection and turn-on of the required steam service. A letter (on the consulting engineering firm's letterhead paper) signed and sealed by a licensed PE from the consulting engineering firm of record verifying that all applicable codes have been met is also required.

Examples of authorizations follow:

- a. Foreign Embassies. A letter from the foreign consulate stating that the installation meets all applicable codes.
- b. Federal and State Buildings. A letter from the project engineer stating that the installation meets all applicable codes.
- c. State Colleges and Universities. A letter from the State Dormitory Authority stating that the installation meets all applicable codes.
- d. NYC Transit Authority, Other Transit Authorities and Federal and State Railroads. A letter from the authority or railroad stating that the installation meets all applicable codes.

NOTE: Subleased space within an exempt facility will come under the jurisdiction of the Department of Buildings of the City of New York.

#### 4.0 High Pressure Steam Piping System Design Requirements

- 4.01. The system, from the point of entry (POE) up to and including all of the Customer's secondary pressure reducing station outlet stop valves and bypasses, shall be designed for a pressure of 200 psi and a temperature of 413 degrees Fahrenheit; included shall be all piping, fittings, valves, flanges, traps, reducing valves, etc. Unless specifically stated otherwise, all piping shall be joined by welding and welded flange construction, as indicated in the reference drawings by Con Edison. All piping shall be ASTM A-53 Grade B, Seamless.
- 4.02. All pipe connections shall be installed subject to the Company's final approval before steam is turned on, and the Customer shall follow the Company's specifications and otherwise provide for the proper utilization of the Company's service. The Customer shall furnish, install and maintain suitable equipment for cooling of condensate to the sewer and shall comply with the rules and regulations of the Board of Fire Underwriters, New York City Department of Environmental Protection, The Department of Water Supply, Gas and Electricity of the City of New York, and any other proper authorities.

- 4.03. Within a reasonable time after acceptance by the Company of the signed Agreement for Steam Service, the Company will install a service line to a point at the property line or suitable sub sidewalk space, determined by the Company to be convenient and practicable. Where a basement wall or vault wall is located at such point, the Company will extend its service line through a sleeve provided and installed by the Customer in such wall to a point immediately inside the wall. The point to which the Company so extends its service line shall constitute the point of service termination.
- 4.04. Steam service will be supplied to the Customer's premises through a single service line, except where for reasons of Company economy, conditions on the Company's distribution system, improvement of service conditions, or volume of the Customer's requirements, the Company elects to install more than one service line.
- 4.05. The Company reserves the right to determine the location of any service line, and to avoid misunderstanding, the Customer before starting work shall consult the Company as to the exact location of the point of service termination.
- 4.06. The final elevation of a new steam service shall be determined by field conditions. If field conditions require changes, the point to which Con Edison extends its service line will constitute the point of service termination.
- 4.07. The Customer shall design his interior piping such that the pressure drop from the POE to steam meter(s) does not exceed 2 psi at an assumed pressure of 125 psi.
- 4.08. All steam stop valves from the POE up to and including the "House" valve(s) shall be ASME/ANSI B16.34 Class 300, cast or forged steel; cast iron is NOT permitted. The House valve is the first isolation valve(s) after the steam meter outlet stop valve(s) that isolates the Customer's steam piping system from the metered steam service (see Attachment #4).
- 4.09. Pressure Reducing Valve (PRV) stations, including its bypasses, and steam piping shall be designed and installed in accordance with ASME B31.1 - latest revision, Power Piping Code, sections 122.5, 122.6 and 122.14. Hand controlled bypass valves having a capacity ( $c_v$ ) no greater than the corresponding PRV(s) may be installed around the PRV(s).
- 4.010. Adequate means of egress from the meter room shall be addressed in the initial design and must be kept clear at all times. All exit doors must swing outward and away from the steam meter room

## 5.0 Requirements for Energizing the Steam Service

- 5.01. In order to alleviate possible corrosion on services installed in advance of service activation, while the building is being constructed or renovated, the steam service should be energized up to the inside service valve(s) (ISV). The ISV is the first steam isolation valve installed inside the Customer's building directly after the POE (see Attachment #4). The Customer shall install the ISV and temporary trap station(s) upstream of the ISV. The ISV and temporary trap station must be installed in a manner specified by the Company. The trap(s) before the ISV must remain in service and working at all times.
- 5.02. If, by the request or requirement of the Customer, the outside service piping and/or Company equipment is installed more than six months prior to the actual date of the

initial service turn-on, the Customer shall be liable for any damages to the same. The Customer is responsible for the cost to repair or replace Company-furnished equipment and/or outside steam service piping that is damaged as a result of extended service outages.

- 5.03. After the signed application for steam service, the applicable fees and customer charges, and the proper certificate of inspection has been received, the Company shall energize the steam service up to the House valve(s). The House valve(s) must be in the closed position before the Company introduces steam into the service line. The Company shall energize the steam service up to the House valve(s) for all steam turn-ons subsequent to the initial turn-on of the building.
- 5.04. All traps and condensate returns must be installed and ready for service before service activation. All high-pressure trap stations installed before the meter must be installed in a manner specified by the Company.
- 5.05. The flash or dilution tank must be installed and ready for service before steam service activation. The flash tank must be an ASME certified tank rated for 200 psi steam service. The dilution tank must be an ASME certified tank rated for 150 psi steam service.
- 5.06. The Customer should notify the Company forty-eight hours in advance of the desired time for service energization.

## 6.0 Steam Meter Station Requirements

- 6.01. The Company will determine the type, size, make and number of meters best suited to the service requirements. The Customer must design and install (or modify) the steam meter station in a manner specified by the Company.
- 6.02. The Company current requirements for meters, traps, insulation and other applicable specifications can be found at the website address:  
<http://www.coned.com/steam/engspecs.asp>
- 6.03. The Customer shall provide and continue to maintain a clear unobstructed space, in strict accordance with the Company's specifications, for the proper installation, inspection, protection and maintenance of the Company's meters and service equipment. The area below the meter piping shall also be kept clear and unobstructed for periodic maintenance and inspection of Company maintained equipment. The Customer shall furnish, install and maintain all facilities required for his utilization of service including inside service valve(s), meter stop valves, primary and secondary pressure reducing valves, meter supports, and all piping between the point of entry and the Customer's steam-utilization equipment.
- 6.04. **Existing Steam Customer.** The Company may require changes and alterations to the existing steam meter station, if there is a load increase or decrease (as per the load letter submitted by the Customer to the Company) that will affect the Company's ability to accurately meter the Customer's steam consumption. Any changes that are to be made to the steam meter station as a result of a load change shall be governed by the requirements applying to new installations. The Customer must design and install (or modify) the steam meter station in a manner specified by the Company.

- 6.05. Motorized valves (when specified), steam meters, flow computers and accessory equipment shall be installed in an adequately ventilated area such that the ambient temperature does not exceed 100°F (38°C).
- 6.06. The Customer shall arrange to supply a source of 'unmetered' electric from the electric POE/Vault/CT cabinet to the steam meter panel located in the steam meter room. As an alternate, the Customer may choose to supply 110 VAC (single phase) or 220 VAC (3 phase), depending upon the meter equipment requirements, from its distribution panels. This feed must be a dedicated source of power for Con Edison Steam Distribution's use ONLY, under the direct control or lock by Con Edison Steam Distribution. In the latter case, the owner of the facility must submit a letter to Con Edison Steam Distribution Engineering. The letter shall grant Con Edison use of the Customer's metered electric power at no charge.
- 6.07. The Customer shall arrange to have a direct telephone line run from the Customer's demarcation or frame room where the local telephone company's terminations are made to the steam meter panel. The telephone line shall be terminated at Con Edison's meter panel with a duplex RJ11 4-conductor modular plug. The Customer shall also install a modem box that is provided by the Company in proximity to the telephone plug.

## 7.0 Design and Mechanical Drawing Requirements

- 7.01. Prior to any steam piping installation or modification, the Company requires that installation drawings be submitted. Drawings shall indicate interior service piping including anchors, guides, supports etc; pressure reducing stations and their locations, and methods of Condensate disposal. Responsible engineer(s) shall submit five (5) sets of design drawings and one (1) sepia with their PE seal imprinted upon them. Responsible mechanical contractors shall submit six (6) sets of mechanical (shop) drawings and one (1) sepia with the Engineer's approval stamp imprinted upon them.
- 7.02. The Company shall review and return drawings with notations to the Customer within 30 business days of receipt of the drawings. The drawings shall be stamped by the Company as accepted with notations or returned for corrections.

## 8.0 Stress Analysis Requirements

- 8.01. The Customer shall design his interior piping system to accommodate a possible two inch (2") deflection from the Con Edison street service piping in addition to the thermal expansion of his own piping. The consulting engineer or registered architect shall submit stress calculations on the high-pressure steam piping. The limits of the stress analysis shall be from the POE (with the Dresser Coupling modeled as a rigid guide/moving anchor having two inch [2"] movement into the building) up to and including the first anchor or guide point AFTER the secondary PRV station. In addition, the stress analysis should include all high pressure piping systems installed after the steam meter run piping; for example, high pressure service up to a steam turbine's inlet nozzle block. The system shall be modeled for three cases: Pressure & Dead Weight, Thermal & Initial Movement at the POE, and a combination of the preceding. The report shall include results for global forces and moments, deflections and rotations, and stresses (including the Code stresses). Stresses shall not exceed allowable for the actual materials used in the construction of the high pressure piping systems. The piping shall be pitched (and shall remain pitched in the hot condition) such that there is continuous drainage from any point in the system to a

condensate removal location (steam trap). The model shall accurately reflect the approved as-built shop drawings.

- 8.02. The Company shall review and return stress analysis' top page with notations to the Customer within 30 business days of receipt of the analysis. The stress analysis' top page shall be stamped by the Company as accepted with notations or returned for corrections.

## 9.0 Company and Customer Furnished Equipment

- 9.01. After review and acceptance by the Company of the customer's design and shop drawings, Company furnished equipment shall be made available at a designated Company storeroom for pickup and installation by the Customer. The Company will furnish the items of service equipment (steam meters, steam flow computers, meter run strainers, traps and trap strainers before steam meters, etc.) specified in the Steam Service Rules Book which can found at the following website address:

<http://www.coned.com/steam/specification.asp>

- 9.02. The equipment furnished by the Company is to be installed by the Customer's contractor with all other equipment and piping connections required for the supply of steam and disposal of condensate.
- 9.03. Certain customer furnished items, such as valves, flow conditioners and service sleeves (Dresser Coupling) require extended lead-time for procurement. The Customer should therefore review his material requirements and order such components in advance of standard "shelf items". In particular, the Dresser Coupling is a long lead item AND may be needed long before the meter station is constructed if the street piping is to be installed before or during the early stages of building construction.
- 9.04. Spool pieces will be provided by the Company for installation in place of steam meters. The Company, before the time of the initial steam turn-on, will remove the spool pieces from the line and install steam meters in their place.

## 10.0 Welding Requirements

- 10.01. All piping over three (3) inches in diameter shall be butt-welded. Piping 3 inches and under in diameter may be socket welded.
- 10.02. Radiographic (X-ray) examination, when required, shall be performed on butt welds in accordance with ANSI/ASME B31.1, latest edition.
- 10.03. The percentage of butt welds subject to X-ray examination shall be based on the following:
- a. From the POE, up to and including the primary PRV station(s) outlet stop valve(s), and its associated bypass piping and valve(s); including branch connections upstream of the primary PRV that supplies steam to high pressure steam equipment:
    - i. In all cases, 100% X-ray examination of butt welds is required from the POE, up to and including the primary PRV station(s) outlet stop valve(s), and its associated bypass piping and valve(s).

- ii. For installations with single stage reduction only (in other words, lacks a two stage reduction that has a primary and secondary PRV configuration), 100% X-ray examination of butt welds is required from the POE, up to and including the PRV station(s) outlet stop valve(s), and its associated bypass piping and valve(s).
  - iii. 100% X-ray examination of butt welds is required on high-pressure piping system that carries steam from the outlet header of the steam meter station directly to high-pressure steam equipment; i.e., a steam turbine or high-pressure steam absorption chiller. In such cases, the Customer's equipment utilizes the utility street steam at full street pressures or at reduced pressures (approximately 125 psi) via a single stage pressure regulator. In this case 100% of the butt welds must undergo X-ray examination from the meter outlet header up to and including the last butt welded joint just upstream of the intake of the high-pressure steam utilizing equipment.
- b. Between the primary PRV station(s) outlet stop valve(s), up to and including the secondary PRV station (s) outlet stop valve(s), and its associated bypass piping and valve(s):
- i. 100% X-ray examination of butt welds is required after primary PRV station(s) outlet stop valve(s), up to and including the secondary PRV station (s) outlet stop valve(s), and its associated bypass piping and valve(s), if all of the following conditions exist; otherwise, refer to paragraph b, subsection ii:
    - 1. Two-stage PRV station(s) where the primary and secondary PRVs are installed in tandem AND both are installed in the same or adjacent room.
    - 2. There are no branch connections between the primary and secondary PRVs feeding a steam piping system commonly identified as the Medium-Pressure Steam Piping System.
    - 3. **Note:** High-pressure steam systems are defined by DOB as systems transporting and/or utilizing steam at pressures greater than 15 psi. The medium-pressure steam piping system is a system that typically operates at steam pressures between fifteen (15) and one-hundred fifty (150) psi; and, is identified in this section to clarify welding requirements only.
  - ii. 10% (minimum) X-ray examination, at random, of butt welds on the Medium-Pressure Steam Piping System is required after the primary PRV station(s) outlet stop valve(s), up to and including the last butt welded joint just upstream of the intake of the medium pressure equipment and/or up to and including the secondary PRV station(s) outlet stop valve(s), and its associated bypass piping and valve(s), if all of the following conditions exist:
    - 1. Branch connection(s) between the primary and secondary PRVs feeding a medium pressure steam piping system is installed.
    - 2. Safety shut off (SSO) valve(s) or relief valve(s) shall be installed to protect the Medium-pressure steam piping system from over pressurization. The SSO or relief valve(s) shall be located adjoining or as close as possible to the primary PRV(s). The SSO valve(s) shall be set to close at or below the design pressure of the Medium-pressure steam piping system. The relief valve(s) combined relieving capacity shall be such that the design

pressure of the Medium-pressure steam piping system will not be exceeded.

3. SSO or relief valve(s) shall be installed to protect the low-pressure (15 psi or lower) steam piping system from overpressurization. The SSO or relief valve(s) shall be located adjoining or as close as possible to the secondary PRV(s). The SSO valve(s) shall be set to close at or below the design pressure of the low-pressure steam piping system. The relief valve(s) combined relieving capacity shall be such that the design pressure of the low-pressure steam piping system will not be exceeded.

### SECTION III.

## INTERCONNECTING CUSTOMER-OWNED STEAM GENERATING EQUIPMENT TO THE CON EDISON STEAM DISTRIBUTION SYSTEM (BACKUP/SUPPLEMENTARY SERVICE)

### 11.0 Interconnection To Con Edison Steam Distribution System

- 11.01. **Applicability:** This Section III applies to customers who are installing on-site distributed generation with heat recovery steam generators, on-site boilers, or any other on-site steam generating equipment. The requirements set forth herein are subject to the Company's objective that the interconnection should preserve the safety, reliability, and operational efficiency of the steam distribution system, consistent with the need to provide the lowest cost to the customer. Accordingly, the requirements set forth herein may vary for a particular on-site generator.
- 11.02. Interconnection exists inside a Customer's building when high-pressure (greater than 15 psi) steam pipe installed to transport steam from the Customer's generating equipment is connected to high-pressure (greater than 15 psi) steam pipe that is directly supplied by the Company's steam distribution system. The interconnection can occur at one or more junctions (hereinafter referred to as "tie-in points").
- 11.03. Physical separation(s) (hereinafter referred to as "disconnect(s)") at or before the tie-in points must exist and remain in place until the requirements of any authority having jurisdiction and requirements of the Company have been satisfied. If the Customer's steam generating equipment has been installed and tied-in prior to satisfying the Company requirements for interconnection, a disconnect must be installed and remain in place until such requirements have been met.
  - A Disconnect can be a closed valve. The valve must be an ASME/ANSI B16.34 Class 300 valve. A blank, steel plate ("frying pan") must be installed between one of the flanges of the valve and the flange of the pipe. The thickness of the plate must be sized to withstand the total thrust force exerted against the plate by 200 psi steam. The plate's diameter must be slightly less than diameter of the inner-circle formed by the bolt holes of the flange. The valve will be wire sealed in the closed position by the Company.

- A Disconnect can be a physical break in the pipe. All open-ended pipes must either be capped off with a boiler cap or blanked with an ANSI B16.34 Class 300 blind flange.
- A Disconnect can be any means that maintain a complete separation between the high-pressure steam piping system supplied by the Company steam distribution system and the high-pressure steam piping system served by the Customer's steam generating equipment.

## 12.0 Requirements for Interconnection

All of the following Company requirements must be satisfied before the disconnect(s) at or before the tie-in point(s) can be removed:

1. The consulting engineer of record must mail a load letter to Steam Distribution Engineering (SDE). The load letter must provide a detailed breakdown of the winter and summer steam load requirements for the building as it relates to the installation of the steam generating equipment. The load letter should clearly show a breakdown of the peak winter and summer steam load requirements for the building when the Customer's cogeneration plant is in service and not in service. All uses (heat, domestic hotwater, air conditioning, etc.) for the hotwater and/or steam produced by the Customer's cogeneration plant must be clearly defined in the load letter. The steam equivalent in pounds per hour for the hotwater load of the Customer's cogeneration plant must be submitted. The load letter should include the planned operating hours of the Customer's cogeneration plant.
2. The Customer drawings, design and shop, must be reviewed and accepted by SDE. Submittal of drawings must comply with section 7.0. The design drawings must include piping schematics for all piping to/from the CHP/steam generating equipment (i.e., hotwater supply/return piping system and steam piping system). The drawings should clearly show how the CHP/steam generating equipment interconnects with the steam piping system supplied by the Company. Schedules and equipment specifications for all CHP/steam generating equipment (steam generators, heat exchangers, pumps, pressure reducing valves, condensate return system, etc.) shall also be submitted to the Company for review.
3. A stress analysis, as defined in section 8.0, must be reviewed and accepted by SDE.
4. A street service valve, if none exists, shall be installed by the Company at the Customer's expense. The street service valve shall be installed prior to the time steam service is required by the Customer.
5. The steam meter station shall be modified, if required – as defined in section 6.0, in accordance to current Company specifications.
6. The Customer's steam plant design and installation shall have the necessary protection and design features to prevent:
  - Over-pressurization (operating at steam pressures that exceed the 200 psi) of the 200-psi steam piping system
  - Over-pressurization (operating at steam pressures that exceed the design pressure of the Customer's steam generating equipment) of the Customer's steam generating equipment and associated steam piping system

- Backflowing steam that is generated by the Customer's plant through the steam meter station and into Con Edison street steam distribution system.
7. The proper Certificate of Inspection, as defined in section 3.0, must be received by the Company.
  8. The Customer shall pay to the Company any applicable charges, fees and payments required for interconnection.
  9. **For new customers.** A signed Application for Steam Service must be received by the Company.

### 13.0 Backflow Prevention Requirements

13.01. To prevent the steam produced by Customer's steam generating equipment from back flowing through the steam meter station and into the Company's street steam distribution system, the Customer shall install a control system that satisfies the following minimum requirements:

1. The control system shall have automatic pressure regulation such that, when the Customer's plant is supplying steam to the same high-pressure piping system that is being served by the Company, the steam pressure measured downstream of a Customer-installed control valve(s) is less than the Company-delivered steam pressure measured at the Company steam meter outlet header (see Attachment #4). The direction of steam flow will always be towards the Customer's steam utilization equipment as long as a reduction in pressure is maintained. If under any conditions or circumstances that the reduced pressure can not be maintained by the control valve(s), then a trip valve shall be set to close immediately to isolate the high-pressure piping system served by the Company from the high-pressure piping system supplied by the Customer's steam generating equipment.
2. A piping schematic is included as an attachment to this guide (see Attachment #5). The schematic depicts a recommended piping arrangement for the backflow prevention control system. The final placement of the control valve(s) and trip valve(s) shall be determined on a case by case basis in order to best serve the steam energy needs of the building. Final piping schematics and 'As-Built' schematics are to be maintained by the Customer and the Company.
3. Any control valve installed for the sole purpose of preventing backflow must be installed downstream of the "House" valve(s) on a common steam header that supplies steam to all of the high-pressure branches and risers that feed the building's steam-utilization equipment (heating, domestic hotwater and cooling equipment). The House valve is the first isolation valve after the steam meter outlet stop valve(s) that isolate(s) the Customer's building from the metered steam service (see Attachment #5). If there is no House valve, then the Customer must install a House valve.
4. The design features of the steam backflow prevention control system must not include any component of the steam meter station. The steam meter station must operate freely and independently of any control scenario designed to prevent backflow. The steam meter station includes the common headers connecting the individual meter piping runs and all the pipe, fittings, and valves that are installed between the common headers. The common headers are normally designated by

the Company as the meter inlet header and the meter outlet header (see Attachment #4).

5. The control valve(s) installed for the sole purpose of preventing backflow:
  - Must be an ASME/ANSI B16.34 Class 300 valve. The sealing materials must be rated for a steam temperature of 413 degrees Fahrenheit.
  - Must allow positive closure for isolation - ANSI B16.104/FCI 70.2 Class 5 shut off or higher leakage rate classification.
    - The control valve(s) must be certified at least once every five years to have an ANSI B16.104/FCI 70.2 Class 5 shut-off or higher leakage rate classification. The Customer shall maintain all certification documentation for inspection by the Company.
  - Can not be a check valve. The Company does not permit check valves for backflow prevention protection.
  - Must be properly sized and automatically controlled to continuously maintain a steam pressure (hereinafter called “the required reduced pressure”) that is at least seven (7) psi less than the steam pressure measured at the Company steam meter outlet header. The required reduced pressure and other steam pressures required for proper control and monitoring of the backflow prevention control system must be measured by a gauge pressure transmitter that has a high degree of accuracy.
  - Must be designed for throttling service. The control valve(s) can not be a gate valve or any other type of valve that is prone to erosion of the valve seat/disk if throttled.
  - Can not have any provision or means of bypassing the control valve(s) or means of fixing the control valve(s) in one position. The control valve(s) must always modulate to maintain the required reduced pressure in the steam header.
  - Can be a normally-open (fail open) or normally-closed (fail close) valve. If the Customer installs a normally-open control valve, then the Customer must install a trip valve(s) that is set to close immediately after the control valve(s) fail open. The trip valve(s) upon closure must isolate the Customer’s steam generating equipment steam supply line from the high-pressure piping system supplied by Con Edison steam.
6. Trip Valve Requirements.
  - In addition to a control valve(s) that modulate to maintain the required reduce pressure, the Customer shall install a trip valve(s) that shall be set to close immediately under certain conditions that may allow backflowing of customer steam through the Company steam meter station and into the street steam distribution system.
  - The trip valve(s) must be an ASME/ANSI B16.34 Class 300 valve.

- The trip valve(s) must be a non-modulating valve designed for on-off service. It must have an ANSI B16.104/FCI 70.2 Class 5 shut off or higher leak rate classification.
  - A trip valve functionality test must be performed by the Customer at least once every calendar year. The valve must be observed to operate as designed based upon the original installation requirements.
  - To verify that the trip valve(s) are not leaking through when the valve is in the closed position, a valve seat tightness test must be performed at least once every calendar year. The seat tightness test shall be performed while the valve is in the fully closed position and the steam pipe upstream of the valve is fully pressurized with high-pressure steam. The steam pressure in the pipe shall be at normal operating pressure. The steam pipe downstream of the valve should be pressure-free (no steam in the pipe). A blow-off valve must be installed in the steam pipe downstream of the trip valve(s). The blow-off valve must be fully open during the valve seat tightness test. No steam vapor or condensate droplets discharging from the fully opened blow-off valve must be observed visually during the test. If the trip valve(s) is found to be leaking through, then it must be replaced immediately.
  - The Company requires written certification that the functionality test and the valve seat tightness test were successfully performed.
  - The Company reserves the right to witness the functionality test and the valve seat tightness test. The Customer should notify the Company at least ten business days in advance of the test to give the Company the opportunity to determine whether Company personnel should be present during the test.
  - The trip valve(s) must be certified at least once every four years to have an ANSI B16.104/FCI 70.2 Class 5 shut-off or higher leakage rate classification. The Customer shall maintain all certification documentation for inspection by the Company.
- The trip valve(s) shall be installed at any location upstream of (before) the tie-in point(s) – on the Customer’s steam plant side of the tie-in point.
- The trip valve(s) shall immediately close when one or more of the following events occur:
  - Steam pressure measured after the control valve(s) equals the steam pressure measured at the meter outlet.
  - Loss of electric power to the control valve controls, loss of electric power to the trip valve controls, or loss of electric power to any auxiliary equipment needed to maintain control valve or trip valve operation as designed.
  - Loss of electric power to the Master Controller
  - Pressure measured at the meter inlet header is 50 psi or less

- Control valve(s) is out of service for any reason or manually bypassed
  - Loss of pressure signal from any of the gauge pressure transmitters installed
  - The allowable tolerance of plus or minus two (2) psi between the monitoring and control gauge pressure transmitters is exceeded.
- Trip Valve Requirements for Customers installing **Low-Pressure** (less than 15 psi) steam generating equipment that will supply steam to the low-pressure piping system that is also supplied by the Company's high-pressure steam distribution system
    - When there is an emergency or planned outage on the Company's steam distribution system, the potential exists for the low-pressure steam generated by the Customer's equipment to backflow into the Company's street steam distribution piping system. A trip valve must be installed to prevent this from occurring.
    - The trip valve(s) must be a non-modulating valve designed for on-off service. It must have an ANSI B16.104/FCI 70.2 Class 5 shut off or higher leak rate classification.
    - The trip valve(s) must be certified at least once every four years to have an ANSI B16.104/FCI 70.2 Class 5 shut-off or higher leakage rate classification. The Customer shall maintain all certification documentation for inspection by the Company.
    - The trip valve(s) shall immediately close when the pressure measured at the meter inlet header by a gauge pressure transmitter is 50 psi or less.
7. Gauge Pressure (GP) Transmitter Requirements
- The steam pressures must be measured by gauge pressure transmitters.
  - The GP transmitters must have 0.1% of span or better accuracy.
  - Each GP transmitter must have a calibrated measuring range between 0 to 250 psig and send an analog signal (4-20 milliamps or 1-5 volts) to a datalogger capable recording the steam pressure every minute and storing the data electronically for at least forty-five (45) days.
  - GP transmitters must be installed by the Customer at the meter inlet header; at the meter outlet header (or at some location determined on a case-by-case basis after house valve); and at a location directly after each control valve.
  - Each GP transmitter installed for the purpose of controlling the positioning of the control valve(s) or triggering the trip valve(s) must be installed in duplicate. One gauge pressure (GP) transmitter shall be used for normal

operation/control of the valve(s); the other GP transmitter, for performance monitoring and comparison.

- Each GP transmitter sensing line shall be piped to different pressure taps (can not share the same pressure tap) and checked for leakage at least once a week by the Customer.
- The GP transmitter used for monitoring shall be the standard of pressure measurement at that pressure tap location. The allowable tolerance shall be plus or minus two (2) psi – in other words, the control GP transmitter must be within two (2) psi of the monitoring GP transmitter at all times. If the tolerance is exceeded, the associated trip valve shall immediately close. An alarm must be generated immediately to alert the Customer that the control GP transmitter must be calibrated immediately in accordance with Company requirements.
- **GP Transmitter Calibration Test Requirements.**
  - Each GP transmitter must be calibrated with a precision deadweight tester.
  - The deadweight standard shall have an accuracy that is 0.025% of indicated reading or better and traceable to the National Institute of Standards and Technology (NIST).
  - The calibration test shall consist of “as-found” and “as-left” tests. The as-found test readings should be taken before the transmitter is calibrated; the as-left pressure readings, after the transmitter has been calibrated. Each test should show the deadweight pressure input reading, actual pressure reading from transmitter, percent difference between deadweight input and actual pressure reading for each pressure data point. The expected current output, the actual current output and the percent difference between the two should also be recorded at each pressure data point. Pressure data points should be taken as follows: increasing from zero percent (0%) of full scale to one-hundred percent (100%) of full scale and decreasing back to zero percent of full scale at increments of ten percent (10%) of full scale. All data points on the as-left test must be within the allowable accuracy of 0.1% of span or better as compared to the deadweight standard pressure readings or expected current output readings.
  - Each GP transmitter installed for performance monitoring shall be checked once each quarter of the calendar year against a precision deadweight tester. The deadweight standard shall have an accuracy that is 0.025% of indicated reading or better and traceable to the National Institute of Standards and Technology (NIST). The GP transmitter shall be checked at an increment of 10% from 0 to 100% of full scale. The allowable tolerance between the GP Transmitter and the deadweight standard should not exceed plus or minus 0.1% of span. If this tolerance is exceeded, then the monitoring GP transmitter must be calibrated immediately in accordance with the calibration test requirements.

- The Customer must submit a detailed test procedure to the Company for approval. The test procedure must establish that the required tolerances for calibration tests and quarterly performance checks meet Company requirements.
  - The Customer is responsible for the testing and a qualified individual must perform the calibration tests in accordance with the GP transmitter's manufacturer's published calibration procedures. Qualified, trained individuals include professional engineers; factory trained and certified technicians; and experienced instrumentation and controls technicians.
  - The Company reserves the right to witness the testing and require written certification that the testing was successfully performed. The Customer should notify the Company at least ten business days in advance of the calibration test or performance check to give the Company the opportunity to determine whether Company personnel should be present during the test.
  - Each GP transmitter must be calibrated every twelve months; or when the transmitter is out of tolerance; or when the transmitter is replaced. The Company must receive a copy of the factory certification that each newly installed GP transmitter has been tested in accordance to the above standards.
- The Customer should maintain the annual calibration test reports and the quarterly performance check reports for review upon request by the Company to demonstrate that the GP transmitters are maintained and functioning properly. The Company shall be given access to inspect the GP transmitters and associated piping at any time.
  - Raw test data and the completed tests must be stored for a minimum of six (6) years and made available for the Company's review at any time.
8. Datalogger/Master Controller Requirements
- The datalogger must be capable of storing the pressure data for forty-five (45) days minimum (After 45 days, the data recorded at the beginning of the 45-day period shall be overwritten). The recorded data shall then be transferred to a data repository device for a minimum of one year.
  - The Company shall witness the Master controller, control valve(s), and trip valve(s) operation before the disconnect(s) is (are) removed. All protection and design features of the backflow prevention system must be demonstrated to function as designed before the Company shall permit the removal of any - disconnect(s).

#### 14.0 Company Planned Maintenance Steam Outages

- 14.01. Before work is to be performed inside a Customer's facility on any equipment furnished by the Company (traps/strainers before meters, meters, motorized angle globe valves, or motorized ball valves), an authorized Company representative will notify the building's Management Office (usually the engineer's office), and will close

the meter inlet and/or outlet valves of an individual metered run of a multi-metered run station in order to perform the needed work safely.

- In the event the individual metered run isolation is not sufficient to provide a complete isolation of steam for work to be performed safely, the Company will plan a steam outage for the building. In this case, the street service valve and/or inside service valve will be closed.
- If steam outage for the building is required, the following must be done:
  - For ample assurance that steam from the Customer's cogeneration plant shall not flow into the isolated area where Company personnel is working, the Customer must install a double block and bleed arrangement for each house valve associated with the onsite cogeneration plant steam system. The customer must install an additional stop valve ('secondary house valve') downstream of the house valve and a 1" bleed valve in-between the two valves. All valve(s) must be ASME/ANSI B16.34 Class 300 valves. The Customer must close the house valve(s) and the secondary house valve(s) AND open the 1" bleed valve(s) BEFORE Company personnel performs any work. The Company will wire seal and tag the house valves in the closed position and the bleed valves in the open position. The wire seal and tag must remain on the valves until all work has been completed.
  - If the 'house valve' double block and bleed arrangements are not installed, then the Customer must isolate the Customer's onsite steam generating equipment from the high pressure steam piping system served by the Company's steam distribution system. This must be accomplished by closing the main steam stop valve(s) located downstream of the outlet of the Customer's steam generators or upstream of the tie-in points (on the Customer's steam generator supply side).
  - After the work has been completed by the Company, the Company will energize the steam service up to the Customer's "House" valve(s).

14.02. Before work is to be performed on the Con Edison steam distribution system located outside of the Customer's building, an authorized Company representative will notify the building's Management Office (usually the engineer's office).

- The Customer must close the house valve(s) and the secondary house valve(s) AND open the 1" bleed valve(s) BEFORE Company personnel performs any work. The Company will wire seal and tag the house valves in the closed position and the bleed valves in the open position. The wire seal and tag must remain on the valves until all work has been completed.
- If the 'house valve' double block and bleed arrangements are not installed, then the Customer must isolate the Customer's onsite steam generating equipment from the high pressure steam piping system served by the Company's steam distribution system. This must be accomplished by closing the main steam stop valve(s) located directly downstream of the outlet of the Customer's steam generators or upstream of the tie-in points (on the Customer's steam generator supply side).

- After the work has been completed by the Company, the Company will energize the steam service up to the Customer's "House" valve(s).

### **15.0 Maintenance of Customer's Equipment**

- 15.01. The Customer shall perform periodic maintenance and calibration, if applicable, on all components of the backflow prevention control system (datalogger, master controller, control valves, trip valves, traps, GP transmitters and other equipment) to meet the Company's specifications unless the manufacturer recommends a more frequent schedule for maintenance.
- 15.02. Failure by the Customer to perform periodic maintenance as required in this procedure and contractual agreements with the Company will result in a discontinuance of service until this requirement is satisfied.

### **16.0 Reference Documents**

- 16.01. Power Piping Code, ASME B 31.1
- 16.02. Department of Buildings of the City of New York Rules & Regulations
- 16.03. PSC no. 3 Steam Tariff, Schedule for Steam Service

### REVISION 0

Next Scheduled Review: March 2011



ATTACHMENT #1, STEAM SERVICE LOAD LETTER (Page 2 of 2)

**Steam Service Load Letter**

Do you use an alternate source of energy (gas or electric)?  Yes  No

If yes, check one  Gas  Electric

If yes, for what use? \_\_\_\_\_

Will steam be used as a backup source?  Yes  No

If yes,

1. Define the on-site source (check one)

Fired boiler (steam or hot water)

Fired distributed generation equipment

Electric

Other, describe: \_\_\_\_\_

Provide maximum steam capacity of the system used \_\_\_\_\_ lb/hr.

2. Describe the method of interconnection (check one):

Tie into low-pressure system (less than 15 psi).

Tie into medium-pressure system (15 psi – 100 psi).

Tie into high-pressure system (more than 100 psi).

Tie into the hot water system.

Other, describe: \_\_\_\_\_

A professional engineer or a registered architect must stamp the Steam Service Load Letter.

The Steam Service Load Letter may be faxed to the attention of Sheria Stallings at 1-212-473-2538 before being mailed to the address listed below.

Return the Steam Service Load Letter to: Sheria Stallings  
Con Edison  
Business Development Group  
4 Irving Place, Room 1328  
New York, NY 10003  
Tel.: 1-212-460-2013  
Fax: 1-212-473-2538  
[www.conEd.com/steam](http://www.conEd.com/steam)

ATTACHMENT #2, POE SITE DRAWING

Consolidated Edison  
Steam Business Unit



Point of Entry  
Determination for New Services  
Site Drawing

Please provide the following information on the site drawing below. Indicate the point of entry (POE). Note, under Specific Conditions, any other utility penetrations within five feet of that point.

Site reference points are needed in order for Con Edison to locate the point of entry and entry elevation of a proposed steam service. Building line, property line, and curb line references need to originate from a fixed, current, and clearly visible point of reference. The directional words "East," "West," "South," or "North" of the reference point should be used with accurate numerical foot and inch measurements. Elevation should be given from the top of street or top of sidewalk.

The building location should be clearly identified by address and street name. The nearest cross streets or avenues should be identified on the drawing below. If the building number or boundaries are different from those shown in the current Sandborn Manhattan Land

Book, this should be noted, and suitable reference points should be chosen to identify the property in question.

The building line should be accurate, in accordance with the Land Book or with current renovations. The point of entry description should be given from the nearest building line location that presently exists with correct building number. If the nearby building line is not easily determined in the field, alternate reference points should be utilized.

The property line should be accurate, in accordance with the Land Book or with current renovations. The point of entry description should be given from the nearest property line location that has a building at the property line. When the building is not actually at the property line, the measurement between the building or vault and property line should be given. If the property line location is not easily determined in the field, alternate reference points should be utilized.

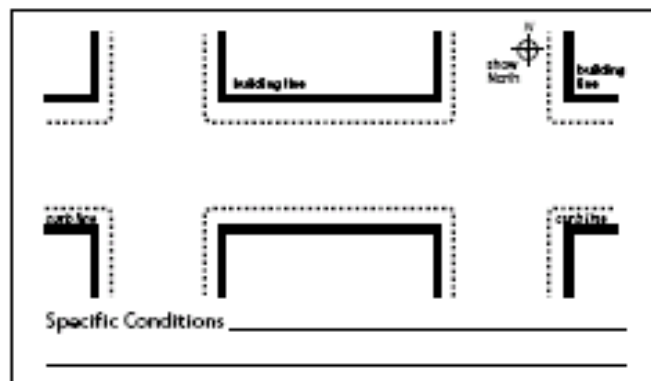
The curb line should be accurate in accordance with present street conditions. The point of entry description should be given from the nearest street curb perpendicular to the point of entry. The width of the sidewalk should also be given. Curb line references should always be used for buildings that span the entire block. In addition to the above point of entry external descriptions, the point of entry should be shown on a site plan of the building. The site plan should show any vaults that exist as well as the location of the meter room within the building.

In summary, the building line, property line, and curb line are important linear references for the point of entry to be accurately located. The nearest, clearly visible, fixed reference point to the point of entry should be utilized for this purpose.

The POE Determination for New Services site drawing may be faxed to the attention of Sheria Stallings at 1-212-473-2538 before being mailed to the address listed below.

Send the POE site drawing to:

Sheria Stallings  
Con Edison  
Business Development  
4 Irving Place, Room 1328  
New York, NY 10003  
Tel. 1-212-460-2013  
Fax. 1-212-473-2538  
www.conEd.com/steam



March 2006



ATTACHMENT #3, PSC RULES ON RIDER PREPAYMENTS

Consolidated Edison Company of New York, Inc.

P.S.C. No. 3 - Steam Fourth Revised Leaf No. 11 Superseding Third Revised Leaf No. 11

GENERAL INFORMATION - Continued

VI Service Classification Riders (Available on Request)

A - PREPAYMENT FOR EXTENSION OR REINFORCEMENT OF MAINS

(Applicable to Service Classification Nos. 1, 2 and 3)

Whereas an extension or reinforcement of the Company's mains is required to serve the Customer's premises, as set forth under General Rule III-1(e), and the two-years' estimated revenue from the Customer connected to such main is insufficient to justify the expenditure involved, the Customer hereby agrees to pay to the Company, before the work is begun, the sum of \$..... to cover the estimated cost of such main extension or reinforcement in excess of the estimated two-year revenue. Estimated revenue is the estimate of the total revenues from the Customer for service from such main extension or reinforcement, less revenues attributable to the Increase in Rates and Charges, less fuel adjustment revenues, and less the base cost of fuel, all as provided in this Rate Schedule. The estimated cost of construction will be based on the size of main required for the service requested but in no event on less than the estimated cost of an 8-inch main. The estimated cost of construction hereunder shall include, where applicable, the cost of a service line and service equipment. During the first ten years starting from the date when service is first supplied, the prepayment will be repaid to the Customer, without interest, in monthly installments equal to one-tenth of the amount of each bill for steam supplied to the Customer and to any other Customer connected to such main extension by a service. The unrefunded prepayment, if any, remaining at the expiration of the said ten-year period or at the end of a lesser period in the event that the use of steam is permanently discontinued at the Customer's premises will be retained by the Company. The mains and service lines at all times shall remain the property of the Company.

Buildings or parts of buildings included in this Rider \_\_\_\_\_ Executed by initialing Customer \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

B - PREPAYMENT FOR INSTALLATION OF SERVICE LINE AND FURNISHING OF SERVICE EQUIPMENT

(Applicable to Service Classification Nos. 1, 2 and 3)

Whereas the furnishing, installing and connecting of a service line and the furnishing of service equipment, as set forth under General Rule III-2(b), or any part of such installation, as determined by the Company, are required to serve the Customer's premises, and the estimated cost to the Company of such installation exceeds an amount equal to two-years' estimated revenue from the Customer, the Customer hereby agrees to pay to the Company, before the work is begun, the sum of \$..... to cover the estimated amount of such excess cost. Estimated revenue is the estimate of the total revenues from the Customer for service from such service line and service equipment, less revenues attributable to the Increase in Rates and Charges, less fuel adjustment revenues, and less the base cost of fuel, all as provided in this Rate Schedule. During the first ten years starting from the date when service is first supplied, the prepayment will be repaid to the Customer, without interest, in monthly installments equal to one-tenth of the amount of each bill for steam supplied to the Customer. The unrefunded prepayment, if any, remaining at the expiration of the said ten-year period or at the end of a lesser period in the event that the use of steam is permanently discontinued at the Customer's premises will be retained by the Company. The service line, meters and service equipment furnished by the Company, as specified in the Company's Rate Schedule, shall remain the property of the Company.

Buildings or parts of buildings included in this Rider \_\_\_\_\_ Executed by initialing Customer \_\_\_\_\_ Company \_\_\_\_\_ Date \_\_\_\_\_

(General Information - Continued on Leaf No. 12)

Date of Issue: October 1, 2004

Date Effective: October 1, 2004

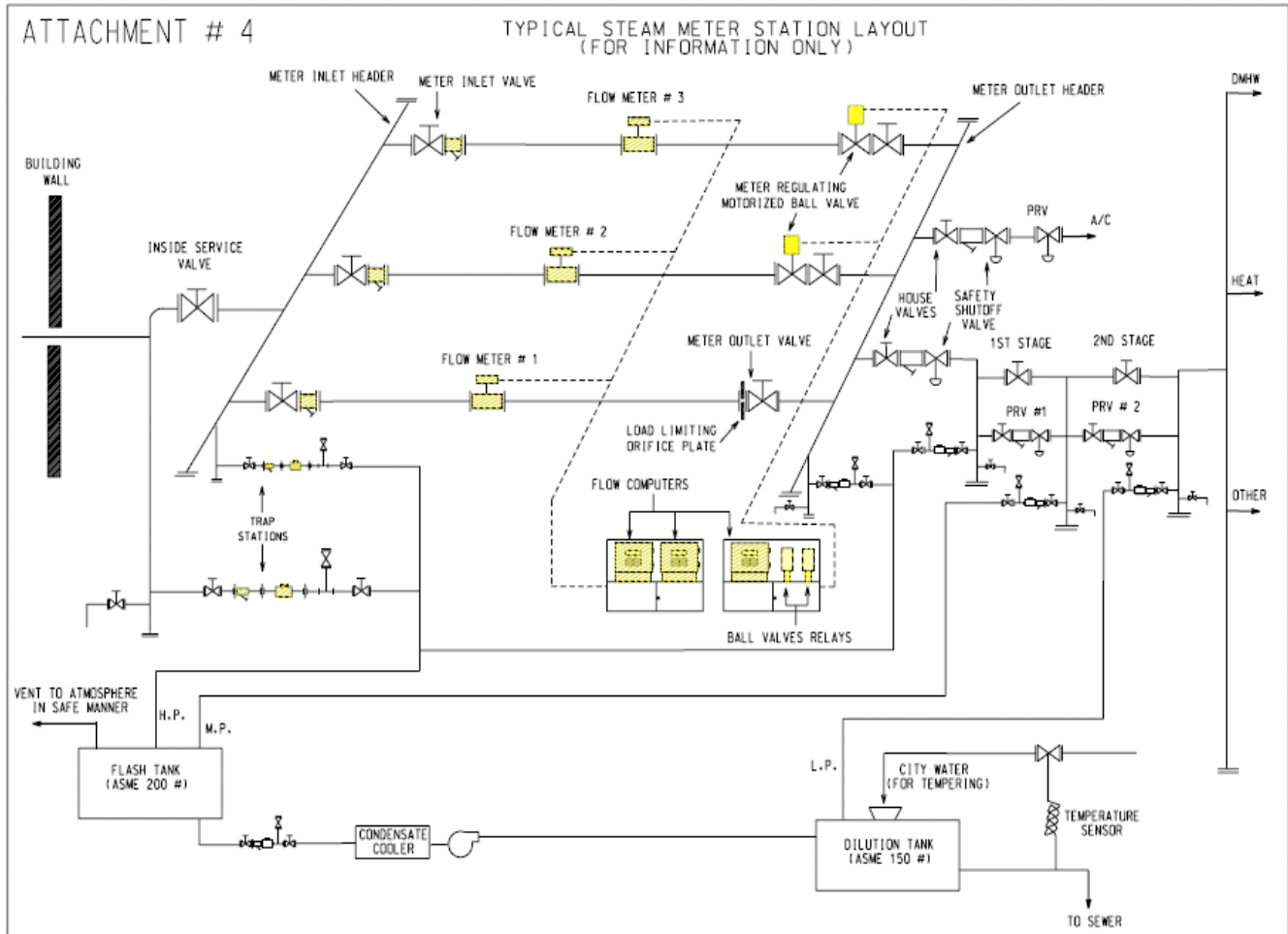
Issued by Joan S. Freilich, Executive Vice President and Chief Financial Officer 4 Irving Place, New York, N.Y. 10003

Issued under authority of order of the Public Service Commission dated September 27, 2004 in Case 03-S-1672.

ATTACHMENT #4, STEAM METER STATION

For Reference and Informational Purposes Only

The meter station and h.p. piping system depicted may not reflect actual installation inside Customer's building



ATTACHMENT #5, BACKFLOW PREVENTION INSTRUMENTATION DIAGRAM  
For Reference and Informational Purposes Only  
The meter station and h.p. piping system depicted may not reflect actual installation inside Customer's building

