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AT Burlington
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SUBJECT Stack Sampling Facilities

Attached is the Texas Air Control Board's guideline for stack sampling facilities, as I promised. This guideline was prepared for Texas stack sampling programs, and responds to EPA and State requirements.

You may want to follow these rules in providing emission sampling locations at Burlington and Flemington.

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CHAPTER 2

STACK SAMPLING FACILITIES

Introduction

The following is a statement of Rule 10 of the General Rules, Texas Air Control Board:

Rule 10

Sampling Ports

Any person, at the request of the Board shall provide in connection with each flue a power source near the point of testing in addition to such sampling and testing facilities and sampling ports, including safe and easy access thereto, exclusive of instruments and sensing devices, as may be necessary for the Board to determine the nature and quality of emissions which are or may be discharged as a result of source operations. Evidence and data based on these samples and calculations may be used to substantiate violations of the Act, Rules and Regulations. Agents of the Board shall be permitted to sample the stacks during operating hours.

New construction or modification regulated by the permits system (Regulation VI) may also require the consideration of stack sampling facilities as specified in Rule 603.14:

Rule 603.14

The proposed facility will have provisions for measuring the emission of significant air contaminants as determined by the Executive Director.

In accordance with the provisions of Rule 10 and Rule 603.14, the Source Sampling Section has established guidelines for stack sampling facilities. It should be noted that these guidelines cannot anticipate all situations, and special cases will often occur. Each source should there-
evaluated on an individual basis; and source operators
to Sampling Section for

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Sampling facilities.

NOTE: Existing sources equipped with stack sampling facilities approved previously by the Source Sampling Section will not in all probability be required to meet the new specifications herein, with the exception of the additional power requirement for a 208/220-volt, 30-amp outlet at the stack base as described in this section under Power Supply, pg. 2-5. This outlet must be provided in conjunction with all existing stack sampling facilities due to the increased power requirements of new Texas Air Control Board monitoring systems.

The following guidelines constitute minimum requirements for safe and accessible stack sampling facilities:

Sampling Ports

Port Location

Ports should be located at least eight stack diameters downstream of any bends, inlets, constrictions, abatement equipment, or other flow disturbances; and at least two stack diameters upstream of the stack exit or other flow disturbances. Stacks which cannot meet these criteria may require a stack extension unless the source operator can demonstrate that this remedy is not feasible, in which case an alternate port location must be approved by the Source Sampling Section.

Port Type

Ports shall be a 3-inch I.D. standard industrial flanged pipe with 6-inch bolt circle diameter. An easily removable blind flange shall be provided to close the port when not in use.

Port sizes larger than 3 inches I.D. are permissible and even desirable on large diameter, double-walled stacks which necessitate longer ports. These ports should also be equipped with a standard industrial flange the same I.D. as the port. Persons intending to install ports larger than 3 inches I.D. should notify the Source Sampling Section.

NOTE: Gate valves should be installed only when extreme stack conditions or the presence of hazardous materials require such devices for safety considerations.

Port Installation

Ports shall be installed flush with the interior stack wall.

Ports shall extend outward from the exterior stack wall no less than 3 inches nor more than 8 inches, unless additional length is required for gate valve installation (See NOTE above).

Ports shall be installed no less than 5 feet nor more than 6 feet above the floor of the platform.

Ports shall be installed with respect to the limitations of the clearance zone mentioned later in this chapter.

Number of Ports Required

If the sum of the stack inside diameter plus one port length (stack inside wall to end of port extension) is less than 10 feet, 2 ports shall be installed on diameters 90° apart.

NOTE: Proposed EPA guidelines for continuous monitoring of certain categories of sources may necessitate the installation of 4 ports on diameters 90° apart for stacks in this size range in order that the TACB may thoroughly evaluate monitor performance at regular intervals.

If the sum of the stack inside diameter plus one port length (stack inside wall to end of port extension) is equal to or greater than 10 feet, 4 ports shall be installed on diameters 90° apart.

Port Loading

The port installations shall be capable of supporting the following loads:

Vertical shear of 200 pounds.

Horizontal shear of 50 pounds.

Radial tension of 50 pounds (along stack diameter).

Work Platform

Size and Extent of Platform

If 2 ports are required at 90°, the work platform shall serve that quarter of the stack circumference between the ports and extending at least 3 feet beyond each port. Minimum platform width shall be 3 feet.

If 4 ports are required at 90°, the work platform shall serve the entire circumference of the stack. Minimum platform width shall be 4 feet unless the sum of the stack inside diameter plus one port length (stack inside wall to end of port extension) is less than 10 feet, in which case

the minimum platform width is 3 feet.

Platform Access

Safe and easy access to the work platform shall be provided via ladder, stairway, or other suitable means.

Guardrails, Ladder Wells, and Stairwells

A safe guardrail shall be provided on the platform. Angular rather than round rail members shall be used if possible.

No ladder well, stairwell, or other such opening shall be located within 3 feet of any port.

Ladder wells shall be covered at the platform and any stairwell leading directly to the platform shall be equipped with a safety bar or the equivalent at the opening.

Platform Loading

The work platform shall be able to support at least 3 men and 200 pounds of test equipment (at least 800 pounds total).

Clearance Zone

A three-dimensional obstruction-free clearance zone shall be provided around each port. The zone shall extend 1 foot above the port, 2 feet below the port, and 2 feet to either side of the port. The zone shall extend outward from the exterior wall of the stack to a distance of at least one stack inside diameter plus one port length (inside wall to end of port extension) plus 3 feet. The clearance zone is illustrated in Figure 2-1.

Power Supply

Power sources shall be provided as follows:

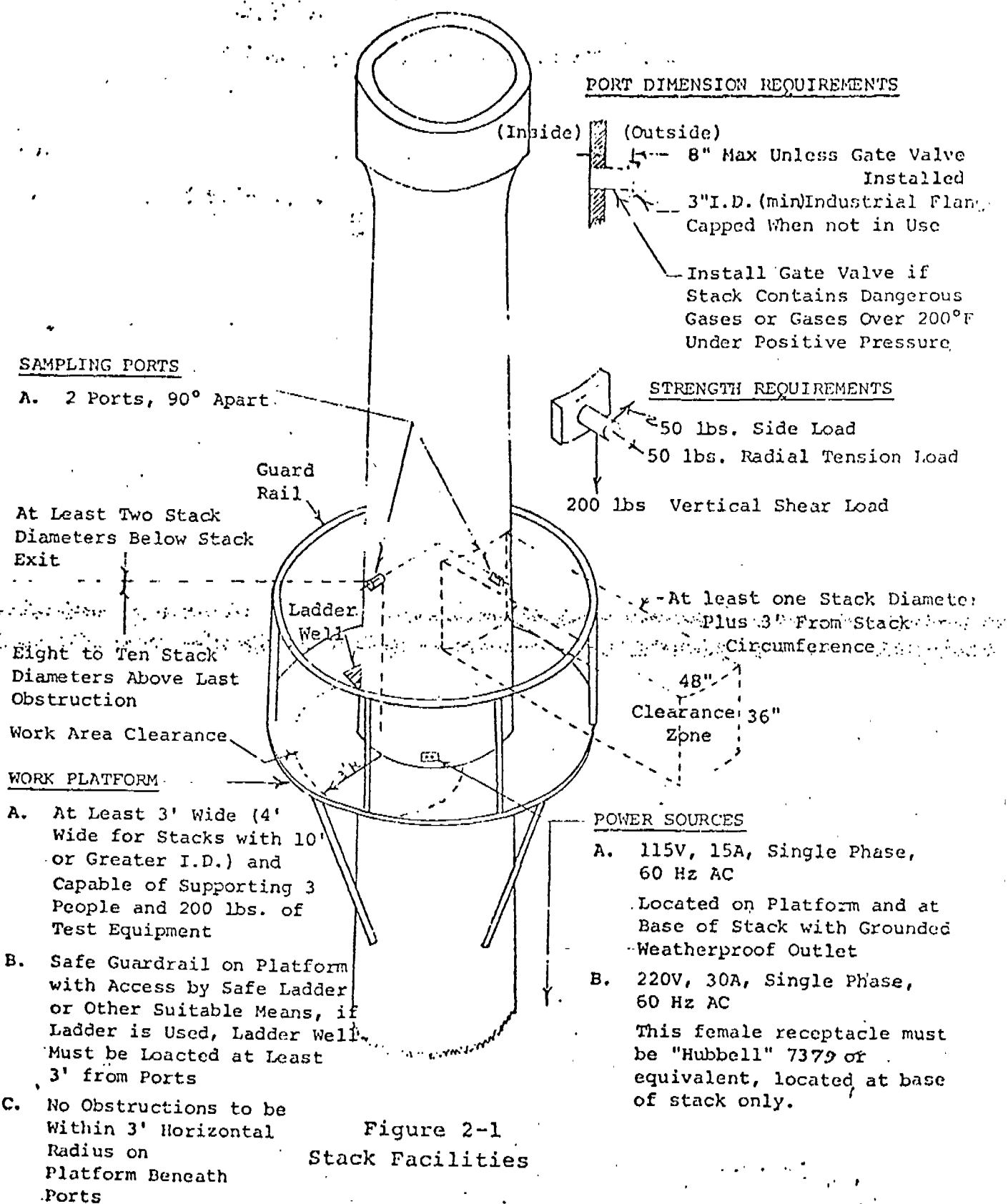


Figure 2-1
Stack Facilities

Revised 3/31/76

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Platform

One 115-volt, 15-amp, single phase, 60 hertz alternating current circuit with a grounded two-receptacle weather-proof outlet. Receptacles shall accept standard three-prong grounded household-type plugs or suitable adapters shall be provided.

Stack Base

One 115-volt, 30-amp, single phase, 60 hertz alternating current circuit with a grounded two-receptacle weather-proof outlet. Receptacles shall accept standard three-prong grounded household-type plugs or suitable adapters shall be provided.

One 208/220-volt, 30-amp, alternating current circuit with a grounded weatherproof outlet. This female receptacle must be a "Hubbell 7379" or equivalent in order to mate with Air Control Board power cords which use male Hubbell plugs.

Vehicle Access and Parking

Except for situations in which sampling operations must be conducted from a rooftop or similar structure, stack sampling will be coordinated and controlled from a cargo van or trailer which will be parked near the base of the stack for the duration of the sampling. Vehicle access and parking space must be provided since various umbilical, communications, and equipment transport lines will be strung from the van or trailer to the stack platform and will remain in position during the operations.

Compliance with Safety Standards

Stack sampling facilities must meet all applicable OSHA requirements and conform to any other relevant safety guidelines.

Optional Permanent Monorail System

Some source operators may wish to install a permanent monorail system to meet TACB requirements and to facilitate self-monitoring as required under Rule 9, especially where the stack in question is greater than 10 feet in diameter. Persons considering such installations should contact the Source Sampling Section for complete details and specifications.

Miscellaneous Requirements

In addition to the specific requirements described in this section, other requirements may be requested for sources with very large stacks or non-standard sampling locations. Examples of such requirements are:

1. Power hoists for sampling platforms in excess of 200 feet above ground level.
2. Additional attachment points above and to each side of the ports for supporting very long monorails.
3. Provisions for sampling vertically in horizontal ducts.

As stated in the introduction to this section source operators are requested to contact the Source Sampling Section for assistance before initiating the construction of stack sampling facilities.

Excess Air

In addition to the above requirements, certain processes, e.g. sulfur recovery units, may require provisions for determining the composition and flow rates of feed stock streams. This information, taken at the time of sampling, is necessary to determine the amount of excess air in the stack effluent.