

# Guidelines for Stack Sampling

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## A. INTRODUCTION

This guideline is intended to provide general guidance only for the specifications for stack sampling facilities. As the basic configuration of both stack and method requirements vary considerably, proponents are encouraged to consult with professional stack sampling Laboratory before any installation occurs. Readers should also note that internal and external specifications of stack sampling equipment varies between manufacturers. CORE Laboratory staff may also be contacted by telephone at **+971 4 8852626** or by email **[mail@corelab.org](mailto:mail@corelab.org)**

## B. SAMPLING PORTS

- Look for the longest straight sections of stack or duct that is also accessible. Ports should be located 8 stack diameters downstream and 2 diameters upstream (8 and 2 criteria) from any flow disturbance, such as bends, expansions, contractions, junctions or dampers.
- If there is not 10 diameters of straight run to place ports, then ports can be placed 80% of the straight run distance downstream or 20% upstream from any flow disturbance, as long as there is a minimum of at least 2 diameters downstream and 0.5 diameters upstream.
- Ports should be installed flush with the inside wall of the stack and a minimum of 3" Inside Diameter (I.D.) for particulate sampling. A simple drill hole is often sufficient for non-particulate testing.
- There should be a minimum of 1.5 stack diameters clearance behind the port for inserting and removing probes.
- For rectangular stacks, determine the port location using the calculated equivalent diameter using the formula  $De = (2 * L * W) / (L + W)$ . e.g. A rectangular stack that measures 30" x 45" has an equivalent diameter of 36".

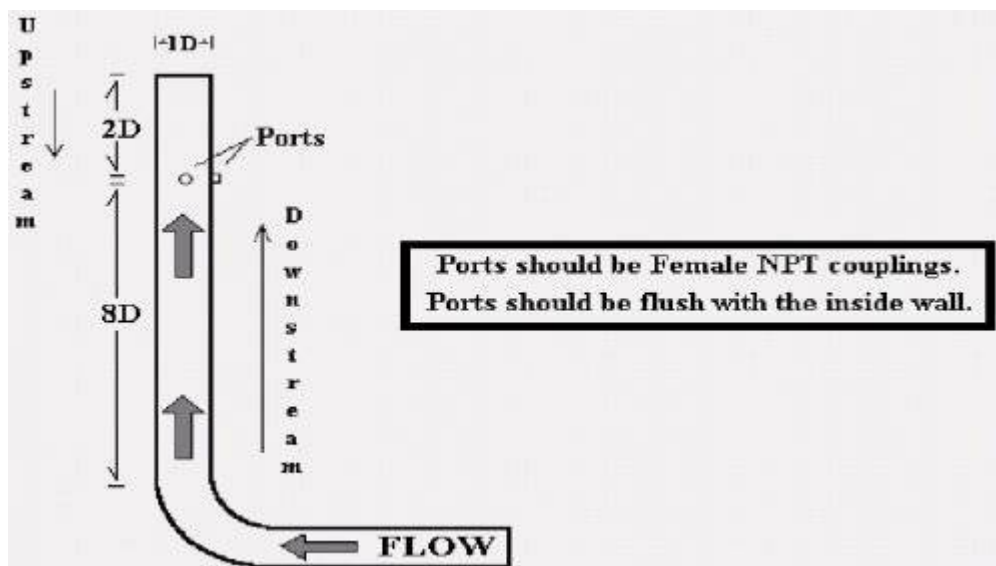


Figure B: Sampling Port

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**C. POWER SUPPLY**

- One, 220 volt, 15 amp. circuit with a grounded two duplex receptacle outlet should be provided within 7.5 metres (25 feet) of each working platform;
- No other equipment should be connected to these circuits;
- The proponent should contact their stack sampling Laboratory to ascertain special electrical requirement for other analysers.

**D. WORK PLATFORM STANDARDS**

a) Workplace Safety Requirements:

The working platform and access must conform to applicable Workplace Safety and Health Regulations and all other applicable local and international laws.

b) Free standing stacks:

1. The work platform should be constructed of angle iron with an iron grate type working surface. This platform should be able to support at least three sampling personnel and 100 Kg of test equipment.
2. Where a platform does not encircle the stack, the platform should extend 1 metre beyond each sampling port.
3. The work platform should serve the entire circumference of a circular stack if sampling requires four ports.
4. The work platform for rectangular stacks should be placed on the side of the stack where ports are located.
5. The floor of the platform should be approximately 1.2 metres (4 feet) below the ports with a minimum width of 1 metre (3 feet) between stack wall and railing.
6. A guard rail, meeting workplace standards, should be secured to the work platform. The guard rail should be designed so that it does not interfere with the sampling train.
7. Safe and easy access to the work platform should be provided via a permanent ladder enclosed in a safety cage. No ladder well or other such opening should be located within 1 metre (3 feet) of any port and any opening to the platform should have a hinged cover at the platform.

c) Roof top access to stack ports:

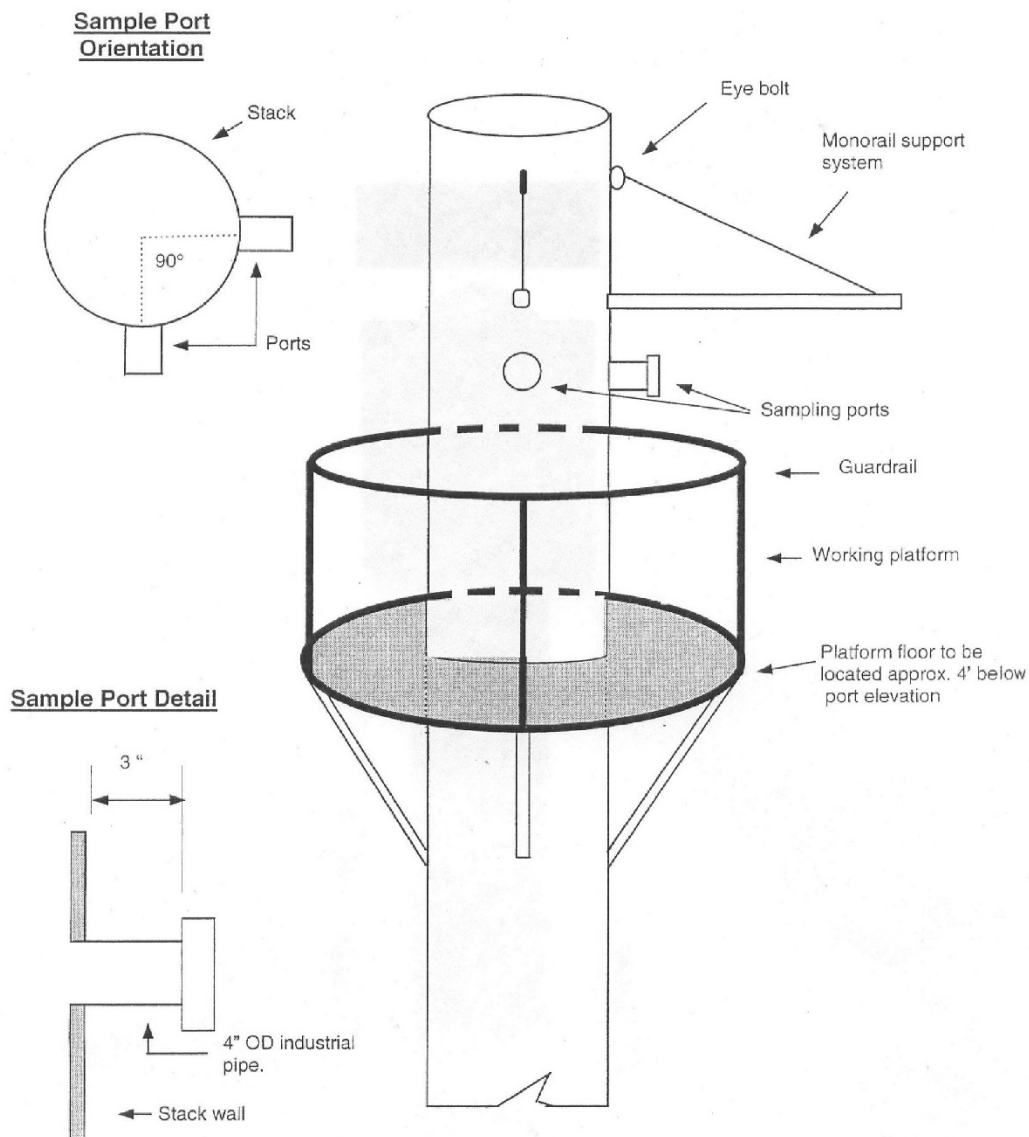
1. Approved scaffolding can be used for ports located not more than 4.5 metres (15 feet) above roof level.
2. If a stack is located near the edge of a building roof a guard rail should be provided on the building roof.
3. If ports are located higher than 4.5 metres (15 feet) above roof level, work platform standards for free standing stacks apply.

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**E. EQUIPMENT LIFTING FOR FREE STANDING STACKS**

An extended overhead beam with a winch or provision for attaching a snatch block and rope should be provided at some point beyond the edge of the platform (above the walkway). Higher sampling platforms are usually equipped with a power winch rather than a manually operated snatch block.

**Figure 1 - Typical Stack Sampling Facility**



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