

Scope of Work

Note:

All works shall be carried out in accordance with the current edition of the Bermuda Building Code and the referenced International Building Codes within.

1. Mobilization

- 1.1. Mobilize a work crew and all their equipment to complete the works including transportation costs, local accommodation costs and site facilities.
- 1.2. Meetings with Tynes Bay Operations to confirm laydown areas, set communications channels and facility use coordination to prevent delays.
- 1.3. Coordinate safety and health programs with Tynes Bay Operations.
- 1.4. Document the pre-mobilization conditions of the site and laydown areas and provide a copy to Tynes Bay operations.

2. Removal of Existing Equipment and Cables

- 2.1. Remove and dispose of all existing equipment, probes, tubes, cabinets and cables to be replaced. Re-used or re-purposed equipment will not be permitted without written approval.
- 2.2. Seal all openings in the building that are not to be reused, including filling of holes, chases and priming and painting patches so they are weatherproof.
- 2.3. All existing unused cable and conduit shall be removed and disposed of in a proper manner.

3. Modification to Monitoring Building

- 3.1. The Proponent shall propose an equipment layout for installing the new equipment in and around the existing equipment that will remain in service. All the equipment in the building requires some kind of maintenance and calibration so it is expected that modifications will be required to best suit the location of the new equipment.
- 3.2. The Proponent shall include painting of the building, inside and outside as well as fixing cracks and re-coating of the roof and the concrete floor. All openings and holes shall be made good and weatherproof.
- 3.3. The Proponent shall replace the exterior doors and vents with similar doors and vents. All doors shall be PVC, complete with exterior marine grade lockable hardware, door closures with hold open hardware and cane bolts, top and bottom.
- 3.4. The Proponent shall supply and install six additional 120V duplex receptacle outlets equally spaced to eliminate the need for power bars and extension cords to power devices. The exact locations and height above finished floor to be agreed on site.

- 3.5. The Proponent shall include repairs to the interior ceiling especially to its joints and fasteners to its supports.
- 3.6. The Proponent shall replace the existing through wall air conditioner with a suitably sized split system.

4. Modification to the Flue Ports

- 4.1. The Proponent shall provide modifications to the existing flue ports to provide secure connections for the new probes and equipment.
- 4.2. It is expected that new external covers will be required to house all probes and their associated equipment.

5. Modification to the Gas Bottle Shed

- 5.1. The gas bottles that service the monitoring equipment are located in a lean-to shed on the western wall of the Monitoring Building. This shed shall be removed and a new masonry shed shall replace it. The modified new gas bottle shed shall have an interior head room clearance of at least 7'-0" clear. The shed shall be painted to match the Monitoring Building.
- 5.2. The modifications shall provide a secure, weatherproof structure with double PVC doors PVC complete with exterior marine grade lockable hardware and cane bolts, top and bottom. The exterior of the shed shall be painted to match the Monitoring Building and the roof shall be re-coated.
- 5.3. New stainless steel tubing shall be run between the gas bottles and the equipment in a neat and professional manner with suitable supports so the tubes remain secured and unbent.
- 5.4. The saddles to secure the gas bottles in place shall be purpose built for standard gas bottles and shall allow for them to be chained vertically in place.
- 5.5. The size of the Gas Bottle Shed shall be sized to fit 8 gas tubes and have suitable clearances to install and remove the tubes easily. The CEMS probe located on the south side of the shed shall be removed from the wall of the shed and the shed wall shall be located to avoid the probe while allowing access for maintenance.

6. Installation of CEMS equipment

- 6.1. The CEMS equipment shall be installed using qualified technicians.
- 6.2. All equipment shall be secured in a professional manner.
- 6.3. All cables shall be installed in a professional manner with sufficient support and ties to secure them in the cable trays. The current cables are very poorly installed with very little support, insufficient ties, hanging cables, and haphazard routing. A similar installation will not be acceptable.

- 6.4. All Flue Ports may be reused provided they have been refurbished for the new probes. The probes in some of the existing ports have seized in place. The Proponent shall propose options to prevent seized probes. All existing Flue Ports not being reused shall be seal welded shut or similar to prevent gases from escaping and maintaining the weatherproofing.
- 6.5. Full access to the equipment is paramount for deciding their locations so that maintenance and calibration can be conducted without removing or shutting down other equipment.
- 6.6. The CEMS reporting computer shall be installed in the Facilities Main Control Room and new cables shall be installed along the existing cable trays and breeching supports from the Monitoring Building into the Main Control Room.

7. Testing and Commissioning of CEMS systems

- 7.1. The Proponent shall provide a complete and detailed testing and commissioning program which will be reviewed and agreed prior to the start of the testing and commissioning.
- 7.2. In addition or as a supplement to the Suppliers testing and commissioning program the following items are to be included;
 - 7.2.1. Provide pre-commissioning activities e.g. site accessibility, checking installation, ensuring documentation is available
 - 7.2.2. Define and follow methods and techniques e.g. start-up procedures, confirming equipment/system meets specification,
 - 7.2.3. Ensure running equipment at recommended initial settings, checking electrical integrity, making sensory checks, running through the operating sequence, checking for correct functioning
 - 7.2.4. Make necessary adjustments to settings to achieve specification parameters,
 - 7.2.5. Conducting a trial run of the equipment at full power/speed/flow,
 - 7.2.6. Monitoring and recording measurements and observations,
 - 7.2.7. Shutting down/isolating the equipment/installation to a safe condition
 - 7.2.8. Completing relevant paperwork e.g. commissioning log/record, job sheet, company specific, and handover report.

8. Reporting

- 8.1. The Proponent shall provide a suitable system to collect and consolidate data directly from the CEMS equipment. The Proponent shall design suitable reporting formats to meet Authorities reporting requirements as outline in the Tynes Bay Operating Licences.
- 8.2. The Proponent shall propose a suitable stand-alone data collection hub computer, complete with a printer, to facilitate the reports requirements for to the Authority.

9. Maintenance and Calibration Services for 3 Years

- 9.1. The Proponent shall prepare a detailed maintenance and calibration program to maximize the performance and accuracy of the installed equipment.
- 9.2. The Proponent will include in the proposed program the following, as a minimum;
 - 9.2.1. A detailed description of the types of service to be provided to each piece of equipment.
 - 9.2.2. A detailed schedule showing the frequency of the site visits, their duration and the number of personnel to be assigned per site visit.
 - 9.2.3. Detailed reporting that describes the service and/or calibration work completed during the site visits. These reports shall include the status of all the equipment at the beginning of the visit, corrective actions completed, corrective items not completed, other observations and items to be put on a watch list. These reports shall be formal, stand-alone reports suitable for maintaining accurate and complete records.
 - 9.2.4. Any maintenance or services that Tynes Bay technicians could perform between Proponent visits.
 - 9.2.5. An option to provide remote service calls and details on what could be evaluated or calibrated remotely.
- 9.3. The Proponent shall be prepared to complete these services for a three year term.

10. De-mobilization

- 10.1. Demobilize the work crew and all their equipment from the facility, including local transportation costs and return flights.
- 10.2. Return the site to the pre-mobilization conditions.
- 10.3. Obtain hand over sign off from Tynes Bay Operations confirming that the construction site and lay down areas are returned in pre-mobilization conditions, clean of all debris and construction equipment.