

## REQUEST FOR PROPOSAL

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**To:** ALL BIDDERS

**CTBTO Ref. No.:** 2024-0123/MAEDA YM  
(PLEASE QUOTE ON ALL COMMUNICATIONS)

**Tel. No.:** +43 (1) 26030-6350

**E-mail:** procurement@ctbto.org

**Attn:**

Phone:

Fax:

Email:

**Date:** 07 Aug 24

**Subject:** Supply and Delivery of Prefabricated Wind Noise Reduction Systems,  
Equipment Vaults, Accessories and Related Services

**Deadline for Submission: 06 Sep 24**

**Vienna Local Time: 17:00**

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter referred to as the 'Commission') hereby invites you to submit a proposal that meets the requirements of the attached documents.

You are kindly requested to complete and return the acknowledgement form by email as soon as possible.

If you have any questions you should contact the email address indicated above.

Yours Sincerely,

*S Bukvic*

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Selma Bukvic  
OiC, Procurement Services Section

**ACKNOWLEDGEMENT FORM**

<b>Solicitation No:</b> 2024-0123	<b>Closing Date:</b> 06 Sep 24
<b>Title:</b> Supply and Delivery of Prefabricated Wind Noise Reduction Systems, Equipment Vaults, Accessories and Relate Services	<b>Vienna Local Time:</b> 17:00

**Procurement Staff:** Yo Maeda

**CTBTO Req. No.:** 0010024809

Please complete 'A' or 'B' or 'C'  
and Return

**WITHIN FIVE (5) DAYS**

THE PREPARATORY COMMISSION FOR THE  
COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (CTBTO)

**by email to**  
procurement@ctbto.org

**A: We shall submit our proposal**

By: \_\_\_\_\_  
(date)

Company Name: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Email/Tel: \_\_\_\_\_

**B: We may submit and will advise**

By: \_\_\_\_\_  
(date)

Company Name: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Email/Tel: \_\_\_\_\_

**C: We will not submit a proposal for the following reason(s)**

\_\_\_ our current workload does not permit us to take on additional work at this time;  
\_\_\_ we do not have the required expertise for this specific project;  
\_\_\_ insufficient time to prepare a proper submission;  
\_\_\_ other (please specify) \_\_\_\_\_

Company Name: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Email/Tel: \_\_\_\_\_

## INSTRUCTIONS FOR PREPARATION AND SUBMISSION OF PROPOSALS

### 1. General

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (the Commission) with its headquarters in Vienna is the International Organization mandated to establish the global verification system foreseen under the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which is the Treaty banning any nuclear weapon test explosion or any other nuclear explosions. The Treaty provides for a global verification regime, including a network of 321 stations worldwide, a communication system, an International Data Centre and on-site inspections to monitor compliance with the Treaty.

The Commission is seeking capabilities, which can supply and deliver the Equipment and the Services as specified in the attached documentation at a reasonable cost.

The Proposal shall meet all requirements stated in these Instructions and the attached Terms of Reference. For this project, the Commission is seeking capabilities, which will ensure that the tasks are accomplished at the best possible value for money for the organization.

### 2. Documents included in this request for Proposal (RFP)

This RFP consists of the following documents:

- (a) Letter of Invitation
- (b) These Instructions for Preparation and Submission of Proposals with the following Attachments:
  - Attachment 1: Technical Evaluation Scoring Matrix
  - Attachment 2: Instructions for Financial Proposals
  - Attachment 3: Financial Offer Form
  - Attachment 4: Procedure for Submission of Electronic Offers in 2 Sealed Files
- (c) Vendor Profile Form
- (d) Statement of Confirmation
- (e) The Commission's Model Contract and its Annexes A through B:
  - Annex A: The Commission's General Conditions of Contract, incorporated herein by reference and available at this link: [CTBTO General Conditions of Contract](#);
  - Annex B: The Commission's Terms of Reference

Note: In the event of award, the Proposal will be incorporated as Annex C to the Contract.

### 3. Amendment of RFP Documents

At any time prior to the closing date for submission of Proposals, the Commission may, for any reason, modify the RFP documents by amendment. The Commission may consider extending the deadline in order to allow adequate time for considering the modifications in the preparation of the Proposal.

### 4. Language of the Proposal

The Proposal and all correspondence and documents relating to it shall be in English.

## 5. **Format and Submission of the Proposal**

The Proposal shall be typed, dated and signed by an official legally authorized to enter into contracts on behalf of your organization. The Bid shall not contain any interlineation, erasures or overwriting except as necessary to correct errors, in which case such corrections shall be initialled by the authorized person(s) signing the Proposal.

**The Proposal shall be submitted electronically according to the attached “PROCEDURE FOR SUBMISSION OF ELECTRONIC OFFERS IN 2 SEALED FILES”.**

**Proposals sent by regular e-mail unless clearly submitted as electronically sealed files as indicated above and following the instructions outlined in Attachment 4 will not be considered and may lead to the rejection of the Proposal.**

The Proposal must be received by the Commission by the closing date indicated in the Letter of Invitation. Any Proposal received after the closing date will be rejected by the Commission. The Commission may, at its discretion, extend the deadline for submission of the Proposal.

## 6. **Request for Clarifications and Contacting the Commission**

The Commission will issue clarifications, if required. Bidders are requested to e-mail any questions pertaining to this RFP as soon as possible after receipt of the solicitation documents, but in any case no later than 7 business days prior to the Closing Date. No requests for clarifications will be entertained after this time. Questions will only be accepted via e-mail and should be sent to:

E-mail: [procurement@ctbto.org](mailto:procurement@ctbto.org)  
Subject: RFP No. 2024-0123/MAEDA - Request for Clarifications

The Commission will make all reasonable efforts to issue the clarifications not later than 5 business days prior to the Closing Date.

Except in the case of responding to a RFP clarification, no bidder shall contact the Commission on any matter relating to the Proposal after its submission and until the award of the Purchase Order. Any attempt to influence the Commission in its evaluation of the Proposal or the award decision may result in rejection of the Proposal.

## 7. **Eligible Goods and Services**

The goods and services (if any) to be rendered under the Contract shall have their origin in the States Signatories of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) which is available in the CTBTO website at [www.ctbto.org](http://www.ctbto.org) under [Status of Signatures and Ratifications | CTBTO](#). For purposes of this paragraph, "the origin" means the place from where the materials, goods and/or from which the services are supplied.

## 8. **Type of Contract and Payment**

The Commission intends to conclude a Call-off Contract based on the attached Model Contract. The terms and conditions of payment for services are described in the attached Model Contract.

## 9. Content of the Proposal

The Proposal shall contain, but not necessarily be limited to, the information described below.

The Proposal shall be composed of the following separate parts:

I. **Technical Proposal;** and

II. **Financial Proposal;**

providing, but not limited to, the following information:

### **PART I: TECHNICAL PROPOSAL**

Please state the reference number and the date of this RFP in the Proposal and any correspondence relating to it.

#### **Contact Person**

The Proposal shall state the contact details and address (name, telephone and fax numbers, and e-mail address) of the person/point of contact in your company dealing with this RFP.

#### **Statement of Confirmation and Vendor Profile Form**

The attached Statement of Confirmation and Vendor Profile Form shall be duly signed and submitted together with the Proposal.

#### **Specifications**

The Proposal shall include a detailed description of the items proposed and include relevant technical literature, including a section-by-section response to the Terms of Reference.

In particular the bidder shall:

- demonstrate in the Proposal that a quality assurance infrastructure is in place as specified in Section 2.B of Annex B Terms of Reference;
- describe in the Proposal the planned method of sealing the manifold as specified in Section 3.1 (e) of Annex B Terms of Reference;
- describe this process in the Proposal, including required pipe-bending tools, minimum bend-radius of supplied pipe parts and methods for field applications.
- Describe in the Proposal a detailed breakdown of the WNRS and Vaults into their components, specify its availability and supply lead time and recommend a set of spare parts as specified in Section 5 of Annex B Terms of Reference.

The Proposal shall also provide any other relevant issue which the bidder would like to bring to the attention of the Commission whether or not having cost implications. This shall include details of warranties/manufacturer's guaranties in respect to any Equipment item.

#### **Qualifications**

Documentary evidence of your qualifications to provide the material and services, which shall establish to the Commission's satisfaction that the bidder has technical capability necessary to perform the work under the Contract and other necessary ongoing services as required.

#### **Personnel**

Curriculum vitae of key staff proposed for this contract, including technical experience to perform the Work.

### **Sub-Contractors**

The Proposal shall include names, legal status, address and qualifications of subcontractor(s), if any, involved in the Project and the scope of the subcontracted services. The bidder shall provide a statement that your organization shall be fully responsible for the performance of sub-contractors. All sub-contractors shall be legally established in one of the CTBT states signatories (the list is available on the CTBTO website at [www.ctbto.org](http://www.ctbto.org) under [Status of Signatures and Ratifications | CTBTO](#)).

### **Model Contract**

A statement that the bidder has carefully reviewed the Model Contract and its Annexes and is in agreement with all its terms and conditions. In addition, the bidder shall provide name(s) and contact details of personnel which would be the Commission's point of contact in case of award of the contract as well as name and position of a person who would sign the contract on behalf of the Contractor.

Deviation, if any, to the Model Contract and/or its Annexes may be a factor to the award decision.

### **Insurance**

Insurance to be included in the Proposal must be for All Risk, covering 110% of the cost of the equipment proposed, and from the date/place of the shipment to the date/place the delivery is completed. The insurance shall be in the name of the supplier and the Commission. You are requested to confirm that you will provide this insurance coverage.

### **Delivery Schedule**

Delivery time shall be indicated in weeks after receipt of an order and shall be firm during the validity of the Proposal.

## **PART II: FINANCIAL PROPOSAL**

- (a) The Financial Proposal shall follow the Instructions of Financial Proposal, included herewith as Attachment 2.
- (b) Attachment 3 Financial Proposal Template dully filled in and signed in PDF format and the Financial Proposal Template dully filed in Excel format shall be submitted as part of the Financial Proposal.
- (c) In presenting the cost for each item, adequate justification and calculation must be included in the Financial Proposal. All individual costs should be stated in **Euro (for EU Companies) or US Dollars**.
- (d) If applicable, the bidder shall provide estimated or fixed costs for the door-to-door shipping of goods, including packing, handling, insurance, shipment, customs clearance and local delivery to Vienna, Austria and the Infrasound Stations.
- (e) Estimated costs for travel and DSA shall not be specified in the Financial Proposal.
- (f) For estimated delivery and travel prices, the Commission will request the Contractor to provide relevant estimates prior to issuance of the FRD, as required. Estimated costs included in the FRD will be invoiced based on actual costs against relevant supporting documentation e.g. invoices for travel, shipping etc. and payment shall not exceed 10% of the estimate. Daily Subsistence Allowance (DSA) for on-site work shall be reimbursed

based on the applicable United Nations DSA rate available at <http://apps.who.int/bfi/tsy/PerDiem.aspx>.

- (g) The default delivery terms should be “DAP (delivered at place)” door-to-door to the destination.
- (h) In principle the Commission is exempt from taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the selected bidder will be informed by the Commission whether tax exemption will occur at source or whether taxes paid by the selected bidder will be reimbursed by the Commission upon submission of the original supporting documentation.

*(1) For Austrian companies*

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal together with information on the nature of the tax and its method of calculation.

*(2) For European Union (EU) Companies [FOR PURCHASE FROM EU COUNTRIES]*

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or separately identified on the Proposal together with information on the nature of the Tax and its method of calculation. Due to the VAT exemption applicable to the Commission, no VAT will be charged to the Commission by the EEC Suppliers under the Contract (Ref. EU VAT Council Directive 2006/112/EC, Article 151).

*(3) For Non-EU Companies (FOR PURCHASE FROM NON-EU OR NON-EUROPE COUNTRIES)*

The price quoted shall be net of Taxes. All applicable Taxes payable by the selected bidder at the conclusion or implementation of the Contract in respect of the goods/services shall be quoted separately or be separately identified on the Proposal together with information on the nature of the tax and its method of calculation. For deliveries to Vienna, Austria, and due to the tax exemption at source, applicable to the Commission, no Taxes shall be charged to the Commission under the Contract.

- (i) Note that clear and detailed explanations would enable us to evaluate the Proposal promptly and proceed with fewer requests for clarifications/justifications in a later stage. This is also a factor influencing the decision for Contract award.

## **10. Completeness and Correctness of the Proposal**

The Commission reserves the right to verify all information furnished in the Proposal through a source of its choice. Any inaccurate information so given may lead to the rejection of the Proposal.

## **11. Evaluation of the Proposal**

(a) The Technical Proposals will be evaluated via a scoring matrix against all minimum technical requirements to determine their overall technical acceptability and technical score, i.e. in accordance with Attachment 1.

(b) Following the technical evaluation above, the Financial Proposal shall be examined for its commercial acceptability and to determine the financial score for each responsive bidder. The Commission will evaluate the following:

- (i) Total Price for Financial Evaluation in accordance with Attachments 2 and 3;
- (ii) contractual compliance;
- (iii) commercial acceptability.

(c) The Commission, based on the evaluation method given above, will determine the Proposal that 'most effectively satisfies the technical and operational requirements set out in the solicitation documents'. The relative weighting of each component of the Proposal is **70%** for the Technical Proposal and **30%** for the Financial Proposal. The Commission will award a Contract to the successful bidder with the highest combined score.

## **12. Correction of Errors**

The Commission will check the Proposal for any arithmetic errors. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected.

## **13. Validity of the Proposal**

The Proposal shall be valid for 90 (ninety) days after the deadline for its submission to the Commission, unless an extension of validity has been requested by the Commission.

## **14. Negotiations of the Proposal and Award**

The Commission reserves the right to request clarifications on the Proposal and to enter into negotiations regarding technical or commercial aspects of the Proposal before awarding the Contract under this RFP. If and when the Proposal, including any amendment resulting from such negotiations, is fully agreed, the Commission will notify the bidder in writing.

## **15. Modification and Withdrawal of Proposal**

Bidders may modify or withdraw their Proposals after its submission, provided that written notice of the modification or withdrawal is received by the Commission by the closing date for the submission of the Proposal. The Proposal may not be modified subsequent to the closing date.



**16. The Commission’s Right to Reject the Proposal**

The Commission reserves the right to accept or reject the Proposal or to annul this procurement process at any time prior to award without having to inform the affected party of the grounds therefore, without thereby incurring any liability to the affected party.

**17. Costs of preparation and submission of the Proposal**

Bidders shall bear all the costs associated with the preparation and submission of Proposal and the Commission will not be responsible or liable for those costs, regardless of the outcome of this RFP.

**18. Proprietary Information**

All documentation and information contained in this RFP are proprietary to the Commission and shall not be duplicated, used or disclosed -in whole or in part- for any purpose other than to evaluate them and respond to the Commission's RFP or otherwise without prior written agreement of the Commission.

**Use of former Preparatory Commission for the CTBTO (“Commission”) employees in the preparation of Proposals:**

A Bidder must not, in the absence of prior written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Proposal or the procurement process if the person:

- a. At any time during the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
- b. At any time during the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates.

## Attachment 1 - Technical Evaluation Scoring Matrix

### Step 1 – Pass / Fail Evaluation

The bidder must meet all the Pass / Fail Evaluation Criteria below.

Only the bidders who Pass all the Evaluation Criteria in Step 1, will be considered for the scoring evaluation (2<sup>nd</sup> step).

### Pass / Fail Evaluation Criteria

Eval ID	TOR Ref	Description
<b>1</b>	<b>2</b>	<b>SCOPE OF WORK</b>
		<b>GENERAL REQUIREMENTS</b>
1.1	B	The Contractor shall have a quality assurance infrastructure in place to ensure that WNRS, Vaults, Accessories and Services provided under this Contract are of a certain quality, fit for purpose and right the first time. The Contractor shall demonstrate in the Proposal that a quality assurance infrastructure is in place. ISO 9001 accreditation is considered as an important asset.
1.2	C	The Contractor shall be able to carry out type approval testing. Type Approval is used to ensure that a particular model of WNRS, Vault or Accessories that has potential use within an IMS measurement system, first meet the Commission-defined acceptance criteria for an extended range of performance parameters.
1.3	D	The Contractor shall be able to carry out device acceptance testing. Device Acceptance, which confirms that each individual device destined for deployment at a specific IMS Station has the performance, indicated during Type Approval.
1.4	F	The Contractor shall list all parts of the standard WNRS in a list for one array element.
1.5	G	The Contractor shall provide a predefined number of sixteen (16) standard WNRS sets hereinafter referred to as “SET”.
1.6		The Contractor shall provide 5 (five) vault types as requested in the ToR.
1.7	H	Lead times shall be provided for each set of WNRS, Vaults and Accessories;

### Step 2 – Scoring Evaluation

The Technical Proposals which passed Step – 1 Pass / Fail Evaluation will be scored against the Scoring Evaluation Criteria below.

Mandatory items, designated with the ‘M’ marking, are evaluated and awarded by the PTS score (0-10).

The rating of the 0-10 score will be carried out as follows:

Score	Requirements
0 - 6	Not met
7-8	Met
9	Partially exceeded
10	Exceeded requirement

Minimum score required to be qualified technically: 70% overall on Mandatory items.

Only the Financial Proposals of those bidders that meet or exceed the minimum technical requirements of 70% overall on Mandatory items will be opened and evaluated for its commercial acceptability.

**Scoring Evaluation Criteria**

<b>Eval ID</b>	<b>TOR Ref</b>	<b>Description</b>	<b>M/O</b>
<b>1</b>	<b>2</b>	<b>SCOPE OF WORK</b>	
		<b>GENERAL REQUIREMENTS</b>	
1.8	I	Curriculum vitae of the project management team and key staff proposed for this Contract shall be provided including technical experience to perform the Work.	M
<b>2.1.</b>	<b>2.1</b>	<b>WIND NOISE REDUCTION SYSTEM</b>	
2.1.1	(a)	Manufacture WNRS in accordance with the Commission’s design as defined in Section 3.1 and Appendix B1.	M
2.1.2	(b)	Provide two types of standard 18m WNRS: SS304 and SS316 pipes or reinforced hoses, as described in Section 3.1 and Appendix B1.	M
2.1.3	(c)	Provide eight (8) sub-SET WNRS for each type of standard 18m WNRS as defined in Section 3.1 and Appendix A1 and B1.	M
2.1.4	(d)	Provide complete WNRS for all array elements and/or their individual components, as spares, as needed, as described in Section 3.1 and Appendix A1 and B1.	M
2.1.5	(e)	Provide pipes, hoses, sealing Accessories and other parts for the implementation of a reference measuring system at Stations as defined in Section 3.1 and Appendix A1 and B1.	M
2.1.6	(f)	Provide packaging of the WNRS components and Accessories in wooden freight crates as defined in Section 7.	M
2.1.7	(g)	Provide secure and insured storage/warehousing of all WNRS and Accessories as defined in Section 7.	M
2.1.8	(h)	Provide on-site installation support Services along with field-testing of the WNRS, as described in Section 3.3.	M
2.1.9	(i)	If required, provide Accessories to adapt WNRS to the Station environment, as described in Section 3.1 and Appendix B1.	M
<b>2.2</b>	<b>2.2</b>	<b>EQUIPMENT VAULTS</b>	
2.2.1	(a)	Provide Vaults in accordance with the Commission’s design, as defined in Section 3.2 and Appendix B2.	M
2.2.2	(b)	The Contractor might propose other types of Vaults as long as they fulfil the requirements outlined in this TOR, as defined in Section 3.2 and Appendix B2.	O
2.2.3	(c)	Provide ancillary and spare components as needed.	M
2.2.4	(d)	Provide adequate packaging of the Vaults to avoid damage during shipping container transport as defined in Section 7.	M
2.2.5	(e)	Provide secure and insured storage/ warehousing of the Vaults and Accessories as defined in Section 7.	M
2.2.6	(f)	Provide on-site Vault installation Services, as defined in Section 3.3.	M
2.2.7	(g)	If required provide Accessories to adapt Vaults to the Station environment, as defined in Section 3.3.	M
2.2.8	(h)	Provide a passive air ventilation system if batteries are to be used in the vaults	M

<b>Eval ID</b>	<b>TOR Ref</b>	<b>Description</b>	<b>M/O</b>
2.2.9	I	Light Vault in sandwich technology for above ground installation, as defined in Section 3.2.1 and Appendix B2.	M
2.2.10	II	Heavy Vault in sandwich technology for underground and above ground installation, as defined in Section 3.2.2 and Appendix B2.	M
2.2.11	III	Heavy duty stainless steel Vault for underground and above ground installation for Stations with very challenging environment, as defined in Section 3.2.3 and Appendix B2.	M
2.2.12	IV	Light Vault for above ground installation (on supporting structure) made either of stainless steel or another material that can withstand the Station environment, as defined in Section 3.2.4 and Appendix B2.	M
2.2.13	V	Pelican Vault for above ground, below ground and completely buried installation, as defined in Section 3.2.5 and Appendix B2.	M
<b>2.3</b>	<b>2.3</b>	<b>SERVICES</b>	
2.3.1	(a)	Prototyping, testing, integration Services and provision of equipment and tools required to carry out such Services for WNRS, Vaults and Accessories, as defined in Section 3.3	M
2.3.2	(b)	Type Approval of WNRS, Vaults and Accessories, as defined in Section 3.3	M
2.3.3	(c)	Device Acceptance of WNRS, Vaults and Accessories, as defined in Section 3.3	M
2.3.4	(e)	On-site Services for the installation or maintenance of WNRS and associated Accessories, as defined in Section 3.3	M
2.3.5	(f)	On-site Services for the installation or maintenance of Vaults and associated Accessories, as defined in Section 3.3	M
2.3.6	(g)	On-site civil Work Services required for the installation of WNRS, Vaults and Accessories, as defined in Section 3.3	M
2.3.7	(h)	On-site Station equipment installation, replacement and troubleshooting, as defined in Section 3.3	O
<b>3.</b>	<b>5.</b>	<b>SPARE PARTS</b>	
3.1	5.	The Commission may choose to order spare components required to maintain operability of the WNRS and Vaults. The Contractor shall include in the Proposal a detailed breakdown of the WNRS and Vaults into their components. For each component, where relevant, the Contractor shall specify its availability and supply lead time. The Contractor shall also recommend in the Proposal a set of spare parts.	M
<b>4.</b>	<b>6.</b>	<b>TOOLS AND CONSUMABLES</b>	
<b>4.1</b>	<b>6.1</b>	<b>WIND NOISE REDUCTION SYSTEMS</b>	
4.1.1	6.1	If requested by the Commission, the Contractor shall provide a tool set for the field installation of each delivery as well as a list of tools and the following consumables of adequate amount. A proposed set of tools can be found under Appendix A6.	M
<b>4.2</b>	<b>6.2</b>	<b>VAULTS</b>	
4.2.1	6.2	If requested by the Commission, the Contractor shall provide a tool set for the field installation of each delivery. The Contractor shall include in the Proposal a list of tools and the following consumables of adequate amount: (a) Sealing compound for all seams and joints; (b) A portable pump with sufficient power to remove water from flooded Vaults at a high rate.	M
<b>5.</b>	<b>7.</b>	<b>DELIVERY, PACKING, STORAGE AND SHIPMENT</b>	
5.1	7.1	(a) The deadline for delivery shall be no longer than three (3) months after release of any FRD, unless otherwise agreed. Delivery shall not be initiated until advised by the Commission.	M

<b>Eval ID</b>	<b>TOR Ref</b>	<b>Description</b>	<b>M/O</b>
5.2	7.2	(a) The preparation for shipment shall be in accordance with the Contractor's standards, though it is the Contractor's responsibility to sufficiently pack all WNRS, Vaults and Accessories accordingly to avoid damage during shipping.	M
5.3		(b) All WNRS components shall be cleaned before being packed for final shipment. Every Vault shall be completely cleaned inside and out before being packed for final shipment.	M
5.4		(c) For each package, a detailed packing list including dimensions and weight shall be prepared and submitted to the Commission prior to shipment. Each crate shall be clearly labelled with an accurate packing list describing the exact contents. If possible, no package shall exceed a height of 2.6 m.	M
5.5		(d) The Contractor shall use only International Plant Protection Convention (IPPC) certified packing Accessories when using wood (i.e. wooden crates or pallets).	M
5.5		(e) The Vaults shall be palletized allowing for easy transport and storage within a standard 20' shipping container.	M
5.6		(f) If not specified otherwise by the Commission, WNRS, Vaults and Accessories shall be protected to withstand ocean transit and extended period of storage at any job site. WNRS, Vaults and Accessories shall be protected to safeguard against all adverse environments, such as humidity, moisture, rain, dust, dirt, sand, mud, salt air, salt spray, and sea water.	M
5.7	7.3	(a) In the case that the Contractor must store items related to an issued FRD, the Contractor shall provide the storage at the Contractor's facility and related insurance.	M
5.8		(b) The WNRS, Vaults and Accessories shall be protected from UV radiation from the sun.	M
5.9	7.4	(a) The WNRS, Vaults and Accessories procured under this Contract shall be delivered to the Station or if requested to the Commission's facilities in Vienna, or otherwise, as agreed between the Commission and the Contractor.	M
5.10		(b) WNRS, Vaults and Accessories might need to be shipped back from the Station to the Contractors facility, if requested to the Commission's facilities in Vienna, or otherwise, as agreed between the Commission and the Contractor. The return shipment might be necessary for repair, refurbishment or testing of WNRS, Vaults and Accessories. Additionally, the return shipment of WNRS, Vaults and Accessories could also cover tools that were used during field activities and test equipment.	M
<b>6.</b>	<b>8.</b>	<b>WARRANTY</b>	
6.1		The Commission requires that the Contractor warranty all products and Work related to the manufacturing and installation of WNRS, Vaults and Accessories performed by either themselves or subcontractors for a period of two (2) years from the day of acceptance of the Final Report/Revised Final Report.	M
<b>7.</b>	<b>9.</b>	<b>WNRS AND VAULTS LIFE EXPECTANCY</b>	

<b>Eval ID</b>	<b>TOR Ref</b>	<b>Description</b>	<b>M/O</b>
7.1		The Contractor shall deliver high quality WNRS and Vaults, workmanship and Accessories. In selection of WNRS, Vaults and Accessories, the Contractor shall consider the environmental extremes typical to the region where the Station is located. Life expectancy of WNRS, Vaults and Accessories installed by the Contractor is defined as a period of time during which the WNRS, Vaults is expected to function properly before a replacement is needed. Under the present Contract, life expectancy of WNRS, Vaults and Accessories installed by the Contractor is a minimum of 20 years.	M
<b>8</b>	<b>10.</b>	<b>REPORTING</b>	
8.1	10.1	After the manufacturing of WNRS, Vaults and Accessories has been completed and it ready to be shipped the Contractor shall prepare a Manufacturing Report within thirty (30) working days including all points listed under 10.1.	M
8.2	10.2	After the installation of WNRS, Vaults and Accessories has been completed the Contractor shall prepare an Installation Report within thirty (30) working days including all points listed under 10.2.	M
8.3	10.3	After the finishing a specific Service the Contractor shall prepare a Service Report within thirty (30) working days including all points listed under 10.3.	M
<b>8.4</b>	<b>10.4</b>	<b>Mechanical Drawings</b>	
8.4.1	10.4.1	<b>WNRS:</b> The Contractor shall provide AutoCAD, Microsoft Visio and PDF drawings or precise manufacturer drawings of every component used in the WNRS and Accessories as described under 10.4.1.	M
8.4.2	10.4.2	<b>Vaults:</b> The Contractor shall provide AutoCAD, Microsoft Visio and PDF drawings or precise manufacturer drawings of every Vault and Accessories procured under this Contract as described under 10.4.2.	M
		<b>TOTAL MAXIMUM SCORE: 10 x 51 = 510</b>	

**ATTACHMENT 2**  
**TO**  
**INSTRUCTIONS FOR PREPARATION AND SUBMISSION OF PROPOSALS**

**Instructions for Financial Proposals**

1. The bidder is requested to use Attachment 3 Financial Offer Form as part of the bidder's Financial Proposal.
2. The bidder shall fill in the yellow cells in Attachment 3 Financial Offer Form.
3. The bidder should not modify the grey and blue cells in Attachment 3 Financial Offer Form.
4. The bidder shall include in the Financial Proposal:
  - 1) Prices for each individual part listed under Appendix A1 to Appendix A10 to the Terms of Reference. The bidder shall create a unique identification number (code) that identifies each individual part in the Proposal.
  - 2) A total price for each group in SETs one (1) to sixteen (16), (Appendix A1 to A4 of the Terms of Reference). The groups for the SETs are called "Main parts (per element)", "Spare parts (per element)" and "Spare parts (per Station)". The bidder shall create a unique identification number (code) that identifies the groups of each SET in the Proposal.
  - 3) A total price by summing the groups "Main parts (per element)" and "Spare parts (per element)" for SETs one (1) to sixteen (16), (Appendix A1 to A4 of the Terms of Reference) together. The bidder shall create a unique identification number (code) that identifies the sum of the groups of each SET in the Proposal.
  - 4) A total price for parts listed under Setup A, Setup B and Setup C under Appendix A6 of the Terms of Reference. The bidder shall create a unique identification number (code) for each setup in the Proposal.
  - 5) A total price for all parts in Appendix A9 "Tools Set" of the Terms of Reference. The bidder shall create a unique identification number (code) for the "Tools Set" in the Proposal.
5. All individual costs should be stated in Euro (for EU Companies) or US Dollars.
6. The bidder is requested to submit the dully signed Financial Offer Form in PDF format.
7. The bidder is requested to submit the Financial Offer Form in Excel format.
8. In principle the Commission is exempt from taxes. The bidder shall state that Taxes are NOT included in the prices; or no taxes are applicable under the contract, or the Financial Proposal includes no taxes.
9. For evaluation and comparison purposes, the Total Price in the summary sheet of Attachment 3 Financial Offer Form will be used. The Total Price in the "summary" sheet of Attachment 3 Financial Offer Form will be compared using 30% scoring system.

10. The Unit Rates and Unit Prices in the Financial Proposal shall be firm and fixed during the Contract duration.

The bidder may propose maximum three sets of unit prices/rates, 1. Unit Prices for the Initial Period of 3 years, 2. Unit Prices for the first Optional Extension of 2 years and 3. Unit prices for the second Optional Extension of 2 years. The bidder shall submit one set of Financial Offer Form for each Period/Extension in this case.

If more than one set of unit prices are proposed by bidders, the following scores will be allocated:

The TOTAL PRICE in the summary sheet for	Scores
Initial Period of 3 years	14 %
First Optional Extension of 2 years	8 %
Second Optional 2 years	8 %
<b>TOTAL for Financial Evaluation</b>	<b>30 %</b>

11. The bidder may add any relevant costs/unit prices in the “other” sheet of Attachment 3 Financial Offer Form.

12. The bidder may insert lines in “services” and “other” sheets of Attachment 3 Financial Offer Form if necessary.

13. Formal Requests for Delivery (FRDs) will be issued on the basis of firm Fixed Unit Prices of the Systems, Equipment, tools or spares, and Fixed Labor Rates for Services.

14. The bidder shall provide a “per meter” price for pipes in the proposal in addition to the prices quoted in Attachment 3 Financial Offer Form. The firm fixed price “per meter” will be used to calculate the cost for the extra length of pipes needed.

15. The bidder shall provide a “per meter” price for hoses in the proposal in addition to the prices quoted in Attachment 3 Financial Offer Form. The firm fixed price “per meter” will be used to calculate the cost for the extra length of hoses needed.

16. The storage and insurance costs per month at the bidder’s facility shall be included in the bidder’s Proposal.

17. Packing and freight costs shall be included in the bidder’s Proposal. If such costs are unknown, the bidder shall provide estimates.



## Attachment 4

### “Procedure for Submission of Electronic Offers in 2 Sealed Files”

The Commission invites you to submit your sealed offer (Bid, or Proposal) in response to the solicitation forming part of this request.

**Please be sure to follow the instructions below very carefully, so that the documents you submit are encrypted, and cannot be opened without an encryption key (password). If the documents are not encrypted, they will not be accepted as part of this tender process.**

#### **CRITICAL INFORMATION:**

Create separate zip files for the technical offer and the financial offer (labelling them clearly in the title) with different encryption keys. Instructions for how to do this are provided below.

**Step 1: You provide the encryption key (password) for the *Technical Offer only* (in accordance with the below instructions)!**

**Step 2: After the Commission has performed the evaluation of the Technical Offer, if your Technical Offer is considered to be acceptable, the Commission will request the encryption key (password) for the Financial Offer you have already submitted by the tender Deadline.**

Should you have any questions, please send an email to [procurement@ctbto.org](mailto:procurement@ctbto.org).

**We recommend that you leave yourself plenty of time to complete the below process (including getting any necessary assistance from the Commission), as late offer will not be accepted.**

#### **INSTRUCTIONS:**

1. In a **WINDOWS** environment, one way of meeting the requirements is as follows.

We recommend using the open-source, free software **7-zip**, but if you are comfortable with other tools, the result should be the same, as long as you can apply encryption to the archive. In the below, we'll use 7-zip as an example. (You can download the 7-zip code for Windows at: [7-zip.org](http://7-zip.org))

2. In **LINUX** environment, you can use, for instance, “sha1sum” on the command line.

## Creating the archives for submission

Regardless of whether the offer is a single file, or a collection of files, the files are easier to manage if delivered as a single, compressed file. Compressing the archive is a common way to meet size limitations in email systems.

As an example of how to submit your offer in the required format: assuming you are supplier “SOFTCOMP” and have the following files related to the offer for “RFP 2020-0010/EDWALD”. (*You will need to replace these elements with the real information for your actual offer in line with the relevant Instructions for Preparation and Submission of Proposals/Bids.*) Assuming further that you have installed the 7-zip software on the Windows system you are using.

We will only go through the creation of the Technical Offer (Proposal/Bid) component; the Financial Offer (Proposal/Bid) component is similar.

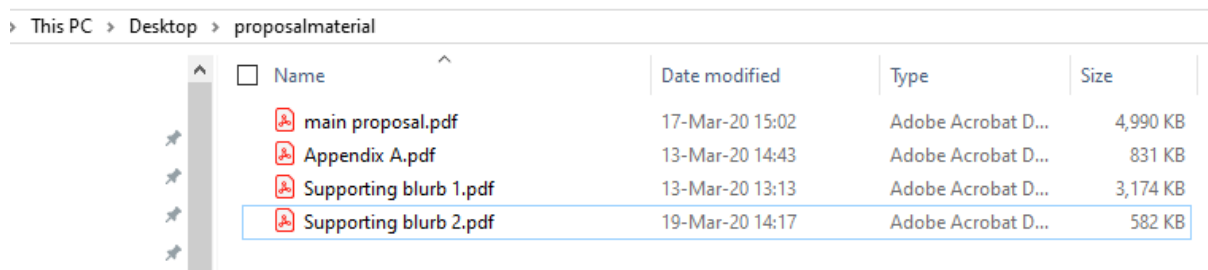


Figure 1 An example set of files to be submitted

Select the four files and right-click; a Dialog box pops up, with one of the options being “7-ZIP >”. Hover your cursor over the “>” part and a few more options appear, select the “Add to archive” option.

Another dialog box pops up (see ‘Figure 2, Creating an Archive’, next page):

Using the standard Windows methods, select a suitable location for the archive (if you don’t change it, the archive gets created right where the selected files are), and give it a name in the form of: “SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID”, of course replacing all the elements with the true values for the offer in question: the actual company indicator, and the actual RFP/ITB identification string. Note that it is not possible to put a slash “/” in the file name, and therefore put a dash “-” instead. Leave the file extension “.zip” as is.

Leave all the other settings as is, except: **add a password to the encryption** (see figure 2 below). This is done by typing the same password (of your choosing) twice in the two text fields in the lower right hand corner.

***Make a note of this password. You must choose different passwords for the two zip archives, that is, the Technical and the Financial Proposal/Bid.***

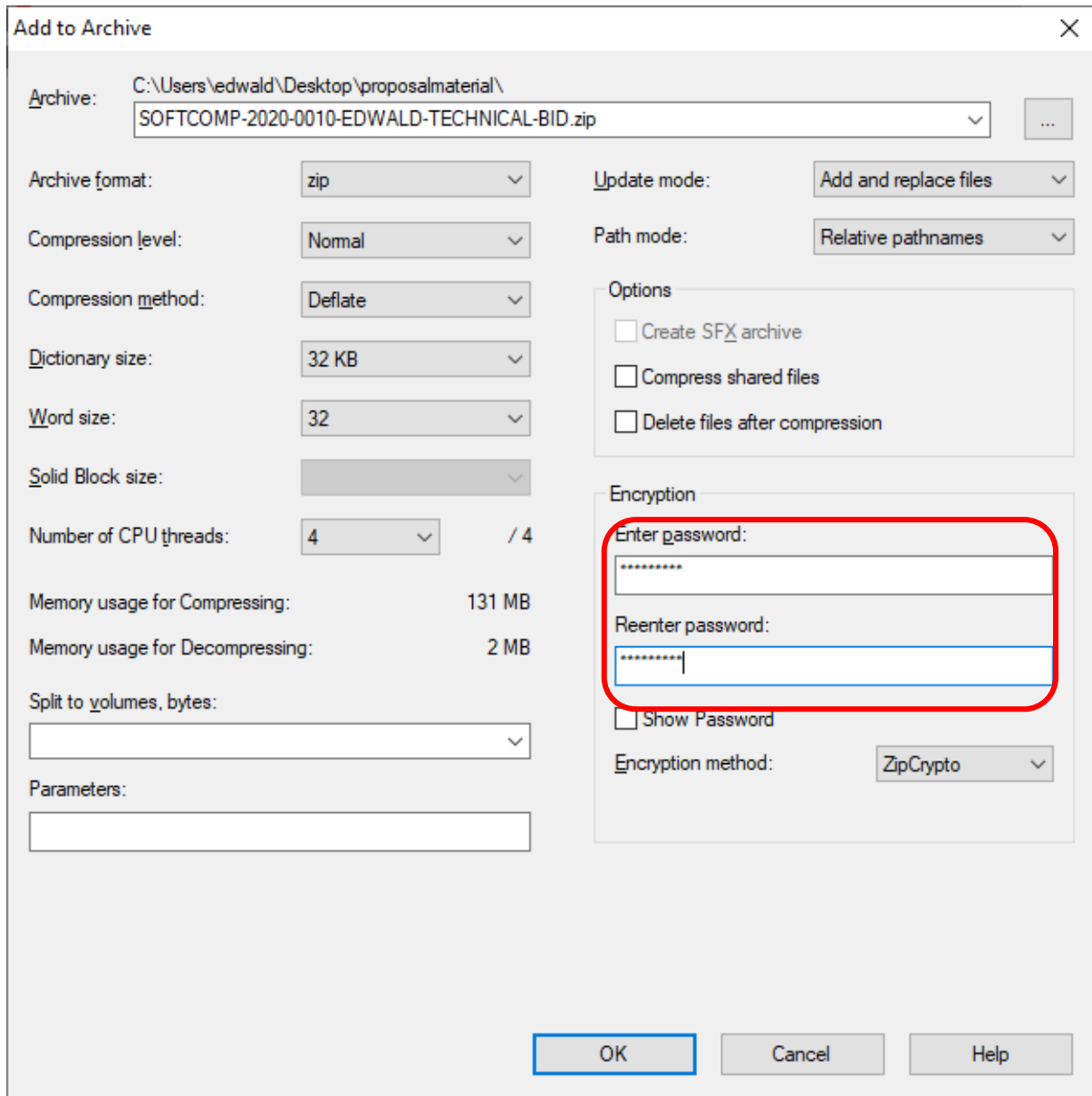


Figure 2 Creating an Archive

Now, we seek the “SHA1 Hash”, and electronic fingerprint of the archive you have just created. The hash is a string calculated from your file(s) and can be used to guarantee that the file has not been modified since you created it. Any change to the file will result in a different hash value.

There are many ways of calculating this; two common options are described below.

If the appropriate functionality is available in your Windows environment: Select the compressed archive in the Windows file manager, (eg. SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip) and right click. One of the options to select is “CRC SHA >”. Hovering over the “ >” brings a few more options to light, select the **SHA-1** option. A smaller dialog pops up: (see Figure 3, SHA1 below).

Clicking Ctrl-C grabs the contents of this box. You can close the box after copying the contents. (You can paste the contents into a mail message, for instance.)

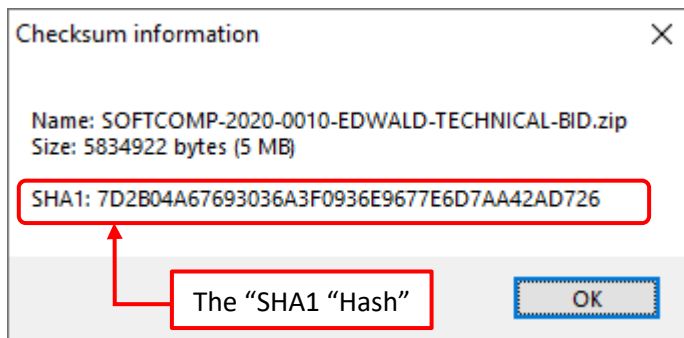


Figure 3 SHA1

If this CRC SHA function is not available by 'right-click' on your Windows version, you can also do this from 'the command line', a slightly more complicated way. Open a CMD window (see sidebar below), move to the folder where your archive is, and execute the command: `"certutil -hashfile SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip sha1"` where you obviously replace the name of the file with your real file name. The output of this command is the SHA1 "hash". You can copy-and-paste the string for use in the email (below).

Sidebar: How to open a CMD window in Windows:

The way to open a Command window (or 'terminal') depends on the version of Windows you have. The different methods are very clearly described in the following article, but a quick internet search will find multiple descriptions.

<https://www.lifewire.com/how-to-open-command-prompt-2618089>

Finally,

1. Create a new email, Subject: example- "SOFTCOMP-2020-0010-EDWALD". Add the two compressed archives, that is, the Technical Offer and the Financial Offer archives as attachments. The text of the email should contain the SHA1 information for both archives. **SEND THIS TO:** [sealed\\_bids@ctbto.org](mailto:sealed_bids@ctbto.org) (note that there is an underscore "\_" between "sealed" and "bids"). (Should the email become larger than your mail system allows, you can try sending the two archives in separate emails. Take care to include the right SHA1 information with each file.)
2. Create a new email, Subject: example- "SOFTCOMP-2020-2010-EDWALD-Technical Offer" the contents of which must contain the Encryption Key for the Technical Offer (the password

you used when creating the Technical Offer). (Again, note the underscore between 'bid' and 'keys'.)

**SEND THIS TO:** [bid\\_keys@ctbto.org](mailto:bid_keys@ctbto.org)

**IMPORTANT NOTE:** As stated above, only send the Encryption Key for the Technical Offer to the [bid\\_keys@ctbto.org](mailto:bid_keys@ctbto.org) mailbox when sending your Technical and Financial Offer to the [sealed\\_bids@ctbto.org](mailto:sealed_bids@ctbto.org) mailbox. You shall only send the Encryption Key for the Financial Offer to the Commission if and when informed by the Commission that your Technical Offer had been evaluated as "technically acceptable".

The Financial Offer Encryption Key will need to be provided by you to the same e-mail ([bid\\_keys@ctbto.org](mailto:bid_keys@ctbto.org)) within 48 hours of the Commission's request, clearly marked in Subject: Encryption Key for (example): "SOFTCOMP 2020-2010 EDWALD-Financial Offer". If your Offer is not considered "technically acceptable", the Commission will not request an Encryption Key for your Financial Offer, and it will remain unopened.

As mentioned above, should you have questions or difficulties, please send an e-mail to [procurement@ctbto.org](mailto:procurement@ctbto.org).

**We recommend that you leave yourself plenty of time to complete the above process (including getting any necessary assistance from the Commission), as late offers will not be accepted.**

## VENDOR PROFILE FORM (VPF) – FOR PRODUCTS/SERVICES/WORK

1. Name of Company:		
2. Street Address:	3. Telephone:	
P.O. Box: City:	4. E-Mail:	
Zip Code: Country:	5. Website:	
6. Contact Person:		Title:
7. Legal Status (e.g. Partnership, Private Limited Company, Government Institution)		
8. Year Established:	9. Number of Employees:	
10. Gross Corporate Annual Turnover (US\$m)*:	11. Annual Export Turnover (US\$m)*:	
12. Type of Business/Products:    Manufacturer <input type="checkbox"/> Sole Agent <input type="checkbox"/> Supplier <input type="checkbox"/> Other <input type="checkbox"/> (please explain)		
13. Type of Business/Services/Work: Engineering <input type="checkbox"/> Civil Work <input type="checkbox"/> Governmental Institution <input type="checkbox"/> Other <input type="checkbox"/> (please explain)		
14. References (your main customers, country, year and technical field of products, services or work): **		
15. Previous Supply Contracts with United Nations Organizations (over the last 3 years)**		
Organization:	Value in US\$ Equivalent:	Year:
Organization:	Value in US\$ Equivalent:	Year:
16. Summary of any changes in your company's ownership during the last 5 years:		

\* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.

\*\* Please provide supplementary documentation on these items.

17. List of Products/Services/Work offered:

Product/Service/Work #	Product/Service/Work Description

18. This section shall be **signed and stamped** by an official legally authorized to enter into contracts on behalf of your organization:

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Bank Details**

Bank Name:

Bank Address:

Exact Account Holder Name:

**Beneficiary Details**

Beneficiary Name:  
(exactly as stated on bank statements)

IBAN:  
(if applicable)

Account number:

SWIFT/BIC:

ABA/Sort Code:

**Additional Details** (if applicable)

Correspondent bank:

Correspondent account number:

Correspondent SWIFT/BIC:

Tax Identification Number:

**FOR CTBTO USE ONLY**

Evaluated By: \_\_\_\_\_ Initials \_\_\_\_\_ Date: \_\_\_\_\_

Updated By: \_\_\_\_\_ Initials \_\_\_\_\_ Date: \_\_\_\_\_

Remarks:

\* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.  
 \*\* Please provide supplementary documentation on these items.

## STATEMENT OF CONFIRMATION

On behalf of (name of firm or organization): \_\_\_\_\_, I hereby attest and confirm that:

- a) The firm/organization possesses the legal status and capacity to enter into legally binding contracts with the Commission for the supply of equipment, supplies, services or work.
- b) The firm/organization is not insolvent, in receivership, bankrupt or being wound up, and not under administration by a court or a judicial officer, and that it is not subject to the suspension of its business or legal proceedings for any of the foregoing reasons.
- c) The firm/organization has fulfilled all its obligations to pay taxes and social security contributions.
- d) The firm/organization has not, and that its directors and officers have not, within the last five years been convicted of any criminal offense related to professional conduct or the making of false statements or misrepresentations as to their capacity or qualifications to enter into a procurement or supply contract.
- e) The Commission, in the event that any of the foregoing should occur at a later time, will be duly informed thereof, and in any event, will have the right to disqualify the firm/organization from any further participation in procurement proceedings.
- f) The firm/organization did not/will not attempt to influence any other bidder, organization, partnership or corporation to either submit or not submit a proposal/bid/quotation.
- g) The firm/organization will not, in the absence of a written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Quotation/Bid/ Proposal or the procurement process if the person:
  - a. at any time during the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
  - b. at any time during the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates.
- h) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) have been identified on, or associated with any individual, groups, undertakings and entities identified on, the list established pursuant to the UN Security Council Resolution 1267 (Consolidated Sanctions List).<sup>1</sup>
- i) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) are subject to any form of sanction imposed by an organization or body within the United Nations System, including the World Bank.

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<sup>1</sup> The Consolidated United Nations Security Council Sanctions List can be found on the following website:  
<https://www.un.org/securitycouncil/content/un-sc-consolidated-list>



- j) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any), is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
- k) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) will use the funds received under contracts/purchase orders with the Commission to provide support to individuals, groups, undertakings or entities associated with terrorism.
- l) The prices in the firm/organization's proposal/bid/quotation have been arrived at independently, without consultation, communication or agreement with any other interested companies, competitor or potential competitor with a view to restricting competition.
- m) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings, if it offers, gives or agrees to give, directly or indirectly, to any current or former staff member of the Commission a gratuity in any form, an offer of employment or any other thing of service or value, as an inducement with respect to an act or a decision of, or a procedure followed by, the Commission in connection with a procurement proceeding.
- n) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings if it does not disclose to the Commission any situation that may appear as a conflict of interest, and if it does not disclose to the Commission if any official or professional under contract with the Commission have an interest of any kind in the firm/organization's business or any kind of economic ties with the firm/organization.
- o) The firm/organization expressly agrees to abide by the United Nations Supplier Code of Conduct.<sup>1</sup>

Name (print): \_\_\_\_\_

Signature: \_\_\_\_\_

Title/Position: \_\_\_\_\_

Place (City and Country): \_\_\_\_\_

Date: \_\_\_\_\_

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<sup>1</sup> <https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct>

## **MODEL CONTRACT**

between

**THE PREPARATORY COMMISSION  
FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY  
ORGANIZATION**

and

**NAME OF CONTRACTOR**

For:

**SUPPLY AND DELIVERY OF PREFABRICATED WIND NOISE  
REDUCTION SYSTEMS, EQUIPMENT VAULTS, ACCESSORIES AND  
RELATED SERVICES ON A CALL-OFF BASIS**

This Contract comprises this cover page, a table of contents,  
16 (sixteen) pages of text, a signatories page, a List of Annexes and  
3 (three) Annexes (A to C)

August 2024

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## MODEL CONTRACT

This Contract is entered into between the **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION** (hereinafter referred to as the “Commission”), having its office located at Wagramer Strasse 5, 1400 Vienna, Austria, and [Name of Contractor] (hereinafter referred to as the “Contractor”), having its principal office located at [address] (both hereinafter individually referred to as the “Party” and collectively as the “Parties”).

The Parties hereto mutually agree as follows:

### 1. DEFINITIONS

In this Contract, words and expressions shall have the same meanings as respectively assigned to them in the General Conditions of Contract and the Terms of Reference. In addition, the following words and expressions shall have the meanings hereby assigned to them:

“**Annex A**” means the Commission’s General Conditions of Contract.

“**Annex B**” means the Commission’s Terms of Reference.

“**Annex C**” means the Contractor’s Proposal.

“**Contract**” means this document, its Annexes, FRD and any further modifications or such further documents as may be expressly incorporated in this Contract by the Parties in accordance with Clause 22 (Contract Amendment) below.

“**Contractor**” means the legal entity named in the preamble of this Contract or its successors. The Contractor shall be the only interface for all matters pertaining to execution of the Work under this Contract.

“**FRD**” means a Formal Request for Delivery to be issued by the Commission specifying goods and/or services to be provided by the Contractor upon request by the Commission in accordance with the provisions of the Contract and Annexes B and C.

“**Goods**” means the equipment items to be supplied and delivered by the Contractor under the Contract as requested by the Commission under FRDs.

“**Party(ies)**” means the Commission and/or the Contractor, as the context requires.

“**Rule(s)**” means any regulation(s), official directive(s), ordinance(s), guideline(s), customs and practices.

“**Services**” means services provided by the Contractor under this Contract as requested by the Commission under FRDs.

“**Taxes**” shall mean all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the Contract, including customs restrictions and

charges of similar nature in respect of articles imported or exported for the Commission's official use.

**“Work”** means all the Goods and/or Services to be provided by the Contractor, including its affiliates and/or subcontractors, in order to fulfil all its obligations under the Contract, and the remedying of any defects therein.

## **2. AIM OF THE CONTRACT**

The aim of this Contract is to provide Supply and Delivery of Prefabricated Wind Noise Reduction Systems, Equipment Vaults, Accessories and related Services on a Call-Off Basis, as and when required by the Commission in accordance with Annexes B and C.

## **3. ENTRY INTO FORCE AND DURATION OF THE CONTRACT**

**3.1** The Contract shall enter into force upon the date of the last signature by the authorized representatives of the Parties and shall be valid for 3 (three) years thereafter and until the Parties fulfill all their obligations hereunder.

**3.2** The Commission has the option, but not the obligation, to extend the Contract for 2 (two) periods of 2 (two) years each under the same terms and conditions as those of this Contract. The Commission will inform the Contractor about the intention to extend the Contract at least 1 (one) month prior to the expiry of the Contract. The optional extensions will be implemented through a written notification to the Contractor by the Commission.

## **4. RESPONSIBILITIES OF THE CONTRACTOR**

**4.1** The Contractor shall supply the Goods and provide the Services as specified in Annexes B and C.

**4.2** The Contractor shall provide qualified English-speaking personnel as necessary to perform the Work under this Contract. The key persons shall be available for possible tasks related to the Work throughout the duration of the Contract period. Any replacement of the key personnel shall be made in accordance with Clause 7 of Annex A.

## **5. FORMAL REQUESTS FOR DELIVERY**

### **5.1 General provisions**

(a) During the Contract duration the Commission will issue individual FRDs based on the firm fixed unit prices of the Goods and/or fixed unit rates for the Services reflected in Annex C. For delivery and travel to required destinations, prior to issuing the FRD, the Commission shall request the Contractor for estimated shipping costs for the Commission's assessment and approval.

(b) Each FRD shall be valid until its successful completion by the Contractor and acceptance by the Commission of the Work performed.

(c) The FRD shall specify, as applicable, the required Work, Goods to be supplied and/or Services to be delivered, details of the consignee (name, address and contact information),

ship-to address, shipping instructions, required delivery date and place, notification party(ies) and any other relevant information.

- (d) The Commission may revise the FRD as and when it may deem necessary.
- (e) The Commission makes no commitment under the Contract to call-off any specific quantities of Goods and/or Services specified in Annex B.
- (f) The Commission may, from time-to-time, need to purchase additional Goods and/or Services that do not form part of the list in Annexes B and/or C of the Contract. To this end, the Commission may request from the Contractor a quote for an item or items that are not contained in Annex C. The Contractor shall provide this information within seven (7) days of the Commission's request.
- (g) The Commission may issue FRDs in accordance with this Clause 5, which may include the item or items in question. Such items, which may be purchased through FRDs and which do not form part of Annex B and/or C, shall henceforth be incorporated by reference into the list of prices in Annex C (hereinafter referred to as the "List of Prices"). The prices for such above-mentioned items shall be firm and fixed from the date of issuance of the relevant FRD including such item(s) and henceforth remain valid in accordance with Clause 12 below and Annex C, until the expiry of the Contract.
- (h) The Contractor shall, on a yearly basis, prepare a list of items "incorporated by reference" through FRDs and submit it to the Commission for its own records.

In the event of any inconsistencies between the List of Prices and the FRD issued, the relevant FRD shall prevail.

(i) Unforeseen work during on-site work

If during an on-site station equipment installation and replacement additional work that is not covered by the FRD is needed, the Contractor may carry out the additional work if (i) no more than seven (7) additional working days are needed and (ii) the cost for the additional spare parts and/or items required to carry out the additional work does not exceed 10 % of the FRD value. The Contractor shall immediately provide the Commission with the relevant technical specifications of the additional work in question, as well as the costs and time associated with the additional work. The Commission shall, as soon as possible, assess the information provided by the Contractor to determine if it is appropriate. A revision of the relevant FRD shall not be issued.

(j) Delivery of Services without prior Commission's approval

Delivery of any Services without prior approval and acceptance by the Commission shall not be subject to financial compensation.

(k) Per Diem Charges

Per diem charges, which cover lodging, meals and incidental travel expenses, shall be based on the United Nations Daily Subsistence Allowance (UN DSA) rates, unless otherwise

specified by the Commission. The Commission may provide a copy of the current UN DSA rates with each request for an estimate and prior to issuing the FRD.

(l) Estimates

(i) For all other required items not addressed above, the Commission shall request the Contractor, prior to the Commission's issuance of an FRD, to provide estimated costs for shipping, airfare, local transportation and/or any other applicable items. The Contractor shall provide such estimates within 1 (one) week from the request. The Commission, at its own discretion, will approve the inclusion of relevant items quoted by the Contractor in accordance with the specific requirements of the FRD.

(ii) Without prejudice to Clauses 23 and 24 of Annex A, if the Commission is not in agreement with the estimates provided, there will be a maximum period of negotiation of 1 (one) month.

(iii) For any of the above-mentioned estimated costs included in a FRD, at the time of payment the Contractor shall submit to the Commission supporting documentation of costs actually incurred, such as copies of air ticket, invoices, insurance policies and shipping documents, as appropriate, and the Commission will pay such costs based on the actual costs documented and up to an amount not exceeding the estimate by more than 10%.

## 5.2 Delivery Terms

**5.2.1.** Unless otherwise instructed in the FRD or authorized by the Commission in writing, the following shall apply in respect to the delivery of the Goods under the Contract:

- (a) The Contractor represents that it shall arrange for the most cost effective means for the delivery of the Goods to the specified destinations.
- (b) Depending on the destination, the trade and shipping terms applicable under the Contract shall be door-to-door "DAP (delivered at place)" or "DDP (delivered duty paid)", based on the INCOTERMS (International Commercial Terms) 2020.
- (c) The Contractor shall be responsible for all shipping arrangements, including customs clearance and local transportation of the Goods to the final delivery address as specified in the FRD.
- (d) As soon as possible prior to effecting the shipment, the Contractor shall send to the Commission and the consignee a detailed delivery schedule and the shipping documentation, such as flight number and date, airway bill and consignment details (content, weight and dimension of the package). The FRD may require that actual shipment is effected only after an authorization from the consignee is obtained.

**5.2.2.** Delivery shall always be made in full in accordance with each FRD. Partial delivery (i.e. delivery not completed per each FRD) is not acceptable without prior written consent by the Commission.

### **5.3 Delivery via the United Nations Development Program**

The Commission may request that the Contractor arranges the delivery of the Goods through the United Nations Development Programme (UNDP) offices in order to utilize the Commission's agreement with UNDP which waives the payment of import taxes into specific countries. This information will be supplied to the Contractor in the FRD. In this case, the Goods may first be delivered to the UNDP office and then re-routed to the Consignee. The Contractor shall be responsible for all delivery arrangements, as instructed by the Commission.

### **5.4 Required Delivery Date**

The Goods shall be received by the consignee within the required date specified in the FRD, or within a longer period, if so agreed by the Commission.

### **5.5 Title and Risk**

Unless stipulated otherwise, title to any Goods supplied by the Contractor or provided by the Commission shall be transferred to the consignee upon the delivery of the Goods to the final destination. A note of acceptance of the Goods shall be obtained by the Contractor from the consignee.

### **5.6 Commitment to Call-off**

The Commission makes no commitment under the present Contract to call-off any specific quantities of equipment, tools, spares or services specified in the Terms of Reference.

## **6. STANDARD OF WORK**

The Contractor shall perform the Work in a workmanlike manner in conformity with standard professional practices, using qualified personnel and in strict accordance with the Contract. The Contractor shall furnish the highest skill and judgement and cooperate with the Commission, including all the Commission's consultants and agents, in best furthering the interests of the Commission and the aim of this Contract. The Contractor shall provide efficient business administration and supervision, and it shall perform the Work in the best way and in the most expeditious and economical manner consistent with the requirements of the Contract.

## **7. INSURANCE**

**7.1** The Contractor shall provide appropriate insurance, as specified in Clause 9 of Annex A.

**7.2** In addition, the Contractor shall, without limiting its own or the Commission's obligations and responsibilities under this Contract, provide and thereafter maintain insurance with respect of the Goods from the date of their receipt by the Contractor from the manufacturer until receipt by the delivery party at the final destination. For this purpose, Global insurance shall be arranged with a single insurance company on an as-arranged basis at the same rate of insurance premium for the execution of each FRD. It shall be in an adequate amount to cover the full replacement cost plus an additional sum of ten percent (10%) of such



replacement cost to cover any additional cost of, and incidental to, the rectification of loss or damage, including professional fees; the insurance shall cover the Contractor against all losses or damages from whatsoever cause arising from the execution of this Contract, from its signature until its successful completion. The insurance referred to in this Clause shall be in the name of the Contractor and the Commission shall be named as an additional insured party.

## **8 WARRANTY**

The provisions of Clause 28 of Annex A shall apply to the Goods and Services performed by the Contractor.

## **9 PERMITS, NOTICES, LAWS AND ORDINANCES**

**9.1** The Contractor shall obtain and pay for all permits and inspections necessary for the proper execution and completion of the Work that are customarily obtained upon execution of this Contract and that are legally required at the time the Proposal is received by the Commission. This shall include, but not be limited to, work permits, visa, or similar documents.

**9.2** The Contractor shall give all notices required by the nature of the Work.

**9.3** If the Contractor notices that the Work or any part thereof required under this Contract is not in accordance with applicable laws and Rules, or with technical or safety standards, it shall promptly notify the Commission thereof in writing.

## **10. PROTECTION OF PERSONS AND PROPERTY**

**10.1** The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programmes in connection with the Work.

**10.2** The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury and loss to:

- (i) all persons on the Commission's or the Station's premises, as applicable, who may be affected thereby;
- (ii) property of the Commission or the Station, as applicable.

**10.3** The Contractor shall give all notices and comply with all applicable laws and Rules bearing on the safety of persons and property and/or their protection from damage, injury and loss.

**10.4** The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for the safety and protection of persons and property, including posting danger signs and other warnings against hazards and promulgating safety regulations.

- 10.5** When the use or storage of combustible, explosive or other hazardous materials is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- 10.6** The Contractor shall be responsible for the prevention of accidents on the Commission's or the Station's premises, as applicable, during the execution of the Work.
- 10.7** In any emergency affecting the safety of persons or property, the Contractor shall promptly act to prevent threatened damage, injury and loss.
- 10.8** The Contractor shall promptly remedy all damage and loss to any property, referred to in Clause 10.2 above, caused in whole or in part by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under Clause 10.2 above, except damage and loss attributable to the acts or omissions of the Commission or anyone directly or indirectly employed by it, or of anyone for whose acts the Commission may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations under Clause 9 of Annex A.

## **11. RESPONSIBILITIES OF THE COMMISSION**

The Commission shall designate members of its staff to act as points of contact for the Contractor to ensure that the Work is carried out in accordance with Annexes B and C and shall promptly notify the Contractor thereof. The Commission shall respond promptly to requests for information by the Contractor regarding the Work.

## **12. PRICES**

- 12.1** The firm fixed unit prices of the Goods and/or fixed unit rates for the Services in Annex C and approved in a FRD (for items added by reference in accordance with Clause 5 above) (hereinafter referred to as the "Prices") shall be firm and fixed and held unchanged for the period indicated in Clause 3 above and shall exclude any applicable Taxes, fees, duties and charges owed by the Contractor in respect to the Goods and/ or Services at the conclusion or implementation of this Contract.
- 12.2** The Prices shall cover all costs and expenses, excluding Taxes, incurred by the Contractor for the full and proper performance of all obligations under the Contract (including travel, allowances, management and remuneration of the personnel, national income tax, medical insurance, and social security contributions). It also includes work performed by the Contractor's personnel outside the Commission's normal working hours.
- 12.3** The Contractor shall not do any work, provide any materials or equipment, or perform any Services, which may result in any charges to the Commission over and above the issued FRD without the prior written consent of the Commission and a formal written amendment to this FRD.

**12.4** The Contractor shall be reimbursed by the Commission for any applicable Taxes on the basis of actual amounts paid and duly documented by the Contractor as per Clause 13.2 (d) below.

OR

No Taxes are applicable under this Contract.

### **13 PAYMENT TERMS**

**13.1** For each FRD the Commission shall pay to the Contractor, in consideration of the full and proper performance of its obligations under the Contract, the relevant Prices, DSA, plus the actual costs, not to exceed the estimates with more than 10% under each issued FRD, unless specified otherwise by the Commission. Upon satisfactory completion of each FRD the Contractor shall submit the following supporting documentation to the Commission for payment, as applicable to the relevant FRD:

- (a) Original invoice submitted in accordance with Clause 13.2(a) below reflecting the actual costs;
- (b) Delivery note countersigned by the consignee listing the Goods delivered and confirming their receipt and acceptance;
- (c) Copy of the airway bill or bill of lading showing the date of the flight or shipment, if applicable;
- (d) Copy of the carrier's invoice supporting the actual shipping costs on the Contractor's invoice;
- (e) Copy of the certificate of transportation insurance;
- (f) Certificate of origin, if applicable;
- (g) Documentation referred to in Clause 13.2 (d) below supporting any Taxes paid, if applicable;
- (h) Any other documentation that might be required under the applicable FRD; and
- (i) Relevant Report(s), as per Annex B.

#### **13.2 General Payment Provisions**

- (a) The Commission shall make the payments to the Contractor on the basis of an invoice submitted by the Contractor. All payments shall be made within 30 (thirty) days of the receipt and acceptance of the original invoice, provided that the Work has been satisfactorily completed and has been accepted by the Commission.

- (b) The making of any payment hereunder by the Commission shall not be construed as an unconditional acceptance by the Commission of the Work accomplished by the Contractor up to the time of such payment.
- (c) The Contractor shall submit an invoice electronically, from the Contractor's official e-mail address in PDF format, duly signed and sealed by the Contractor and submitted to the Commission's email address specified under Clause 23 below. Each invoice shall contain the Contract number (CTBTO and SAP numbers), detailed banking instructions, including the name and address of the Contractor's bank, account number, account holder's name and SWIFT, IBAN and/or ABA codes for payment by electronic transfer.
- (d) Applicable Taxes payable by the Contractor and/or its subcontractor(s) in respect of the Work shall be invoiced separately or be separately identified on the invoice. Actual payment of the Taxes must primarily be supported by original documentation such as invoices, bank account statements, transfer orders, or receipts issued by the local tax or customs authorities. If submission of such original documentation is not possible for justifiable reasons, their copies could be accepted by the Commission provided that they are duly signed and certified by local tax or customs authorities. In case the currency in which the Taxes are levied is not the currency of the Contract, bank statements (or equivalent) showing the exchange rate used for the conversion should be submitted to the Commission, in addition to any other supporting documentation].

## **14. MARKET FLUCTUATION**

- 14.1** The unit prices of the Goods and unit rates for the Services shall be held fixed for the entire duration of the Contract. If the prices increase for reasons not under the control of the Contractor (e.g. Goods supplied by a third party), or the Goods become unavailable, the Contractor shall propose to the Commission, for its approval, a replacement item with equivalent specifications to honor the firm fixed unit price. In the event that an equivalent Good at the fixed unit price cannot be identified, the Contractor shall notify the Commission as soon as possible. Such an item shall be incorporated by reference into Annex C of the Contract.
- 14.2** If the market price of the Goods decreases, the Contractor shall enable the Commission to enjoy the benefit, either by proposing a more efficient replacement item or a lower unit price in accordance with the market price for the Commission's approval. If, however, the market price increases, the agreed firm fixed unit price shall be maintained with the agreed configuration/specifications.
- 14.3** Any discounts for items in the equipment list to be offered by the Contractor, in accordance with Clause 14.2 of the Contract shall be incorporated by reference into Annex C of the Contract.

## **15. TEMPORARY SUSPENSION OF WORK**

The Commission may, at any time, temporarily suspend the Work, in whole or in part, being performed by the Contractor under this Contract by giving 30 (thirty) days' advance notice in writing to the Contractor. The Work so suspended shall be resumed by the Contractor on the basis

of a revised time schedule and on terms and conditions to be mutually agreed upon between the Parties.

## **16. DELAYS AND EXTENSION OF TIME**

**16.1** If the Contractor is delayed at any time in the progress of the Work by any act or omission of the Commission or by any of its employees, or by any other contractor employed by the Commission, or by changes in the Work ordered by the Commission, or by any causes beyond the Contractor's reasonable control, or by any other cause which the Commission determines may justify the delay, then the time for completion of the Work shall be extended by an amendment to this Contract in accordance with Clause 22 below for such reasonable time as the Commission may determine.

**16.2** Any request for extension of the time for reasons referred to in Clause 16.1 above shall be submitted to the Commission not later than 20 (twenty) days after the commencement of the delay, otherwise said request shall be deemed to be waived. Such request shall state grounds for the delay and shall provide an estimate of the probable effect of such delay on the progress of the Work.

## **17. CONTRACTOR'S CLAIMS AND REMEDIES**

In no event shall the Contractor make any claim against the Commission for or be entitled to additional costs or compensation resulting from any delays in the progress or completion of the Work or any portion thereof, whether caused by the acts or omissions of the Commission, including, but not limited to, damages related to overheads, loss of productivity, acceleration due to delay and inefficiency. The Contractor's sole remedy in such event shall be an extension of time for completion of the Work, provided the Contractor otherwise meets the requirements and conditions set forth in this Contract.

## **18. ENTIRE AGREEMENT**

This Contract represents the final agreement in respect of the Goods and/or Services and shall supersede all prior agreements and representations between the Parties in this respect. Annexes A to C and the FRD(s) shall constitute integral parts of this Contract and shall be of full force and effect.

## **19. DISCREPANCIES**

If there are discrepancies or conflicts between any of the documents that are part of this Contract, the document to prevail shall be given precedence in the following order:

- (j) This document;
- (ii) The Commission's General Conditions of Contract (Annex A);
- (iii) The Commission's Terms of Reference (Annex B);
- (iv) The Contractor's Proposal (Annex C);
- (v) The relevant FRD.

## 20. SEVERABILITY

If any term and/or provision of this Contract is or becomes invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Contract shall not in any way be affected or impaired thereby.

## 21. NO WAIVER

Failure by a Party to enforce a right shall not be deemed to be a waiver of that right unless otherwise expressly provided in this Contract.

## 22. CONTRACT AMENDMENT

No modification of, or change in, this Contract, or waiver of any of its provisions, or additional contractual relationship with the Contractor shall be valid unless approved in the form of a written amendment to this Contract, signed by duly authorized Representatives of the Parties.

## 23. TRANSMISSION OF NOTICES AND OTHER DOCUMENTS

Notices, invoices, reports and other documentation under the Contract shall be delivered or sent to the relevant Party at the following address (or such address or email address as the Party may substitute by notice after the date of the Contract):

(a) The Commission:

For Contractual Issues:

*Chief, Procurement Section*

*Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)*

*Vienna International Centre*

*Wagramerstrasse 5, P.O. Box 1200*

*1400 Vienna, Austria*

*Tel: + (43 1) 26030 6350*

*E-mail: [procurement@ctbto.org](mailto:procurement@ctbto.org)*

For submission of invoices:

*Accounts Payable*

*CTBTO Financial Services Section*

*Vienna International Centre*

*Wagramerstrasse 5, P.O. Box 1200*

*1400 Vienna, Austria*

*Tel: + (43 1) 26030 6292*

*E-Mail: [Payable\\_Invoices@ctbto.org](mailto:Payable_Invoices@ctbto.org)*

For invoices related enquiries:

*[Payments@ctbto.org](mailto:Payments@ctbto.org)*

(b) The Contractor:

*Name:*

*Address:*

*Tel:*

*Email:*

## **24. EFFECTIVENESS**

**24.1** Except as provided below, any communication in connection with the Contract will be deemed to be given as follows:

- (i) if delivered in person, at the time of delivery;
- (ii) if by registered mail or courier, when received;
- (iii) if by electronic communication, when retrievable by the Commission in document form.

**24.2** A communication given under Clause 24.1 above that is received or becomes retrievable on a non-working day or after business hours at the seat of the Commission will only be deemed to be given on the next working day of the Commission.

IN WITNESS hereof, the duly authorized representatives of the Parties have executed this Contract in Vienna, Austria:

For and on behalf of the **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION:**

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[Name and Position]

Date: \_\_\_\_\_

Place: Vienna, Austria.

For and on behalf of **[CONTRACTOR]:**

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[Name and Position]

Date: \_\_\_\_\_

Place: \_\_\_\_\_



## **LIST OF ANNEXES**

**ANNEX A:** THE COMMISSION'S GENERAL CONDITIONS OF CONTRACT

**ANNEX B:** THE COMMISSION'S TERMS OF REFERENCE

**ANNEX C:** THE CONTRACTOR'S PROPOSAL

## ANNEX B

### TERMS OF REFERENCE

#### **Supply and Delivery of Prefabricated Wind Noise Reduction Systems, Equipment Vaults, Accessories and related Services**

##### **1. INTRODUCTION**

The Preparatory Commission for the Comprehensive Nuclear Test-Ban Treaty Organization (hereinafter referred to as the “Commission”) requires a standing contract on a call-off basis (hereinafter referred to as “Contract”) with a qualified supplier (hereinafter referred to as the “Contractor”) for the Supply and Delivery of prefabricated Wind Noise Reduction Systems (“WNRS”), prefabricated equipment vaults (“Vaults”), associated accessories (“Accessories”) and related services (hereinafter referred to as “Services”) for the International Monitoring System (IMS) stations (hereinafter referred to as “Stations”).

The duration of the Contract shall be three (3) years with the possibility of two optional extensions of two (2) years each.

The Accessories required under this Contract will be used to adapt standard WNRS and Vaults to the Station specific environment at the time of installation. The Services needed shall consist of testing, installation, repair, removal, and documentation of WNRS and Vaults. In addition, the Services provided under this Contract might be required to prepare the Station environments for the installation of WNRS and Vaults. Each of the Services can be subcontracted.

The Contractor shall provide WNRS, Vaults, Accessories and/or related Services (hereinafter referred to as the “Work”) as when required by the Commission. The Commission will issue Formal Request for Deliveries (hereinafter referred to as “the FRD”) in writing to order any Work required under the Contract.

These ToR define the technical framework of all related activities to be performed during the Work, which shall be carried out by the Contractor.

The WNRS and Vaults are designed for installation at Stations, residing in varying environmental conditions around the world. The purpose of prefabrication is to improve the

quality and long-term stability of WNRS and Vaults, to reduce the complexity and the duration of on-site field installations, while at the same time achieving greater standardization throughout the IMS network.

The Commission anticipates that based on the Contract, orders may be placed for one complete, 4 to 8 element, 18 m WNRS per year. In addition, the Commission anticipates one order of 4 to 8 fully fabricated Vaults per year. This is only indicative information. The Commission, however, does not guarantee the quantity of WNRS, Vaults and Services to be purchased under the Contract.

## **2. SCOPE OF WORK**

### General requirements:

- A.** The Contractor shall carry out the Work in accordance with these ToR, while doing so in the most cost-effective manner possible.
- B.** The Contractor shall have a quality assurance infrastructure in place to ensure that WNRS, Vaults, Accessories and Services provided under this Contract are of a certain quality, fit for purpose and right the first time. ISO 9001 accreditation is considered as an important asset.
- C.** The Contractor shall be able to carry out type approval testing (hereinafter referred to as 'Type Approval'). Type Approval is used to ensure that a particular model of WNRS, Vault or Accessories that has potential use within an IMS measurement system, first meet the Commission-defined acceptance criteria for an extended range of performance parameters. Type Approval is carried out on a representative sample of devices, by the Contractor or by a subcontractor for having the necessary technical competence, expertise, and specialised facilities. The Commission reviews the results of testing provided and along with its own assessment of factors such as suitability for integration into the IMS network, makes the final Type Approval decision. If approved the device type is added to a register of equipment approved for use in the IMS.
- D.** The Contractor shall be able to carry out device acceptance testing (hereinafter referred to as "Device Acceptance"). Device Acceptance, which confirms that each individual device destined for deployment at a specific IMS Station has the performance, indicated during Type Approval. The necessary testing is the responsibility of the supplier of the equipment and consists of a sub-set of the Type Approval tests focussing on the key performance parameters for the given device. A datasheet of results is submitted to the Commission for the supplied device, and the Commission makes the final decision on whether to accept the device, thereby approving it for use in the IMS.
- E.** If not otherwise specified all metallic parts of the WNRS, Vaults and Accessories shall be made of Stainless Steel 304L (hereinafter referred to as "SS304") or of Stainless Steel 316L (hereinafter referred to as "SS316").
- F.** The Contractor shall keep and provide to the Commission a list all parts of the standard WNRS in a list for one array element.
- G.** The Contractor shall provide a predefined number of sixteen (16) standard WNRS sets (hereinafter referred to as "SET").

- H.** Lead times shall be provided for each SET of WNRS, Vaults and Accessories.
- I.** Curriculum vitae of the project management team and key staff proposed for this Contract shall be provided including technical experience to perform the Work.

### **2.1. WNRS**

The Contractor shall be able to:

- (a) Manufacture WNRS in accordance with the Commission's design as defined in Section 3.1 and Appendix B1.
- (b) Provide two types of standard 18m WNRS: SS304 and SS316 pipes or reinforced hoses, as described in Section 3.1 and Appendix B1.
- (c) Provide eight (8) sub-SET WNRS for each type of standard 18m WNRS as defined in Section 3.1 and Appendix A1 and B1.
- (d) Provide complete WNRS for all array elements and/or their individual components, as spares, as needed, as described in Section 3.1 and Appendix A1 and B1.
- (e) Provide pipes, hoses, sealing Accessories and other parts for the implementation of a reference measuring system at Stations as defined in Section 3.1 and Appendix A1 and B1.
- (f) Provide packaging of the WNRS components and Accessories in wooden freight crates as defined in Section 7.
- (g) Provide secure and insured storage/warehousing of all WNRS and Accessories as defined in Section 7.
- (h) Provide on-site installation support Services along with field-testing of the WNRS, as described in Section 3.3.
- (i) If required, provide Accessories to adapt WNRS to the Station environment, as described in Section 3.1 and Appendix B1.

The Commission reserves the right to order specific parts independently from the predefined WNRS SETs with other numbers of the WNRS elements. This will also include different pipe lengths of the WNRS.

### **2.2. Vaults**

The Contractor shall:

- (a) Provide Vaults in accordance with the Commission's design as defined in Section 3.2 and Appendix B2.
- (b) The Contractor might propose other types of Vaults if they fulfill the requirements outlined in this TOR, as defined in Section 3.2 and Appendix B2.
- (c) Provide ancillary and spare components as needed.
- (d) Provide adequate packaging of the Vaults to avoid damage during shipping container

transport as defined in Section 7.

- (e) Provide secure and insured storage/ warehousing of the Vaults and Accessories as defined in Section 7.
- (f) Provide on-site Vault installation Services, as defined in Section 3.3.
- (g) If required provide Accessories to adapt Vaults to the Station environment, as defined in Section 3.3.
- (h) Provide a passive air ventilation system if batteries are to be used in the Vaults.

The Contractor shall provide the following Vault types:

- I) Light Vault in sandwich technology for above ground installation, as defined in Section 3.2.1 and Appendix B2.
- II) Heavy Vault in sandwich technology for underground and above ground installation, as defined in Section 3.2.2 and Appendix B2.
- III) Heavy-duty-stainless-steel Vault for underground and above ground installation for Stations with very challenging environment, as defined in Section 3.2.3 and Appendix B2.
- IV) Light Vault for above ground installation (on supporting structure) made either of stainless steel or another material that can withstand the Station environment, as defined in Section 3.2.4 and Appendix B2.
- V) Pelican Vault for above ground, below ground and completely buried installation, as defined in Section 3.2.5 and Appendix B2.

### **2.3. Services**

The Contractor shall provide all related Services. Such Services include but are not limited to:

- (a) Prototyping, testing, integration Services and provision of equipment and tools required to carry out such Services for WNRS, Vaults and Accessories, as defined in Section 3.3.
- (b) Type Approval of WNRS, Vaults and Accessories, as defined in Section 3.3.
- (c) Device Acceptance of WNRS, Vaults and Accessories, as defined in Section 3.3.
- (d) On-site Services for the installation or maintenance of WNRS and associated Accessories, as defined in Section 3.3.
- (e) On-site Services for the installation or maintenance of Vaults and associated Accessories, as defined in Section 3.3.
- (f) On-site civil Work Services required for the installation of WNRS, Vaults and Accessories, as defined in Section 3.3.
- (g) On-site Station equipment installation, replacement, and troubleshooting, as defined in Section 3.3.

- (h) On-site removal and disposal of obsolete WNRS, Vaults, Accessories and equipment installed at the Station, as defined in Section 3.3.

### 3. TECHNICAL REQUIREMENTS

#### 3.1. WNRS

The Contractor shall ensure that the prefabricated WNRS meet the following technical requirements:

- (a) 18 m diameter WNRS, which shall be designed as circular pipe/ hose array. Detailed drawings of these arrays are shown in Figure 1 and Figure 2 of Appendix B1.
- (b) The Contractor shall supply gooseneck pipes (Figure 3, SET 4 and Figure 4, SET 8) in case of the underground installation as well as bended pipes (Figure 3, SET 2 and Figure 4, SET 4) to allow the WNRS to be installed well above the ground. The extra pipe length for the gooseneck and bended pipe options will depend on how deep the pipes will be installed below the ground or how high the pipes will be installed above the ground. The firm fixed “per meter” price in the Contractor’s Proposal will be used to calculate the cost for the extra length of pipes needed.
- (c) The Contractor shall supply extra length of hoses for the installation of the WNRS below and above ground (Figure 5, SET 10/SET12 and Figure 6, SET 14/SET 16). The extra hose length for “bended hose” and “underground” options will depend on how deep the hoses will be installed below the ground or how high the hose will be installed above the ground (close to the inlet port). The firm fixed “per meter” price in the Contractor’s Proposal will be used to calculate the cost for the extra length of hoses needed.
- (d) The Contractor shall supply different types of inlet ports made of SS304 or SS316 (Figures 3-6 and Figure 8) for the WNRS. In addition, “historical” inlet ports shall be supplied (Figure 12) with different types of fittings as indicated in Appendix A8. The “historical” inlet ports might be ordered to replace older generation inlet ports already installed at infrasound Stations.
- (e) The Contractor shall provide summing manifolds consisting of a single row for 24 (Figure 9) and 4 mating joints (Figure 10). The manifolds threaded holes shall have flat, uniform mating surfaces to ensure a proper seal between manifolds and fittings. The Contractor shall explain the planned method of sealing the manifold. Particular attention should be paid to the offset distance between each manifold inlet to ensure ease of access to each individual pipe/ hose connection, using tools or by hand.
- (f) The WNRS shall include as an option SS304 and SS316 supports (Figures 3-6) for the WNRS. The parts for the supports are listed in Appendix A5.
- (g) The WNRS shall include as an option SS304 and SS316 valve extensions (Figure 11). The valve extension is installed instead the valve handle and provides the means to open and close the valve if the inlet port is covered under gravel.

- (h) Compliance with the WNRS' list of parts in Appendix A. Slight differences to the list of parts can be proposed if the WNRS design is not affected. Any proposed adjustment shall be subject to acceptance by the Commission.
- (i) Any welded part of the WNRS shall be specially treated to make it resistant to corrosion.
- (j) Where at all possible, press fittings shall be used to avoid unnecessary threads at WNRS junctions. All fittings shall be made of SS304 or SS316 and follow BSP(T/P) standards. Where required, accompanying silicon O-rings or gaskets must be provided to ensure a proper seal.
- (k) To ensure the proper seal of the WNRS the thread junctions shall be glued if requested by the Commission. The Contractor shall propose glue(s), which can be used to seal threaded connections and provide the proper torque to tighten and unscrew for glued parts. The Contractor shall ensure that the glued parts of the WNRS remain maintainable.
- (l) All adapters, full bore ball valves and fittings shall follow BSP(T/P) standards.
- (m) If required provide Accessories to adapt WNRS to the Station environment. Such Accessories include but are not limited to:
  - Washed and sieved coarse gravel (15-20 mm) to cover inlet ports.
  - Low quality (crusher run) gravel with a granularity of 0-20mm to cover pipes or hoses and protect them from fire and snow.
  - Stainless steel meshes to protect the gravel placed around the inlet ports.
  - Soil, sand, gravel, and other kind of ground Accessories that will serve to prepare the ground where the WNRS will be installed.
- (n) In addition to the standard WNRS SETs the Contractor shall supply the parts for the "Reference Sensor System Configurations" as shown in Figure 7. All parts needed for "Setups A, B and C" are listed under Appendix A6. A reference sensor system is installed in parallel to the main sensor and the standard 18 m WNRS.
- (o) The Contractor shall provide MB2000 and MB2005 rubber and stainless-steel plugs.

Further to the above, the Contractor shall:

- (p) In some cases, be required to bend a selected number of pipes, to avoid obstructions (e.g. trees, rocks, land features, etc.). The Contractor shall explain this process, including required pipe-bending tools, minimum bend-radius of supplied pipe parts and methods for field applications.
- (q) Provide an appropriate list of tools required for maintenance and/ or installation of the supplied WNRS components.
- (r) Provide suggested torque values for connecting all components/fittings that shall allow for the best possible seal without causing damage to the components.

- (s) If requested by the Commission, provide individual pipes/hoses and parts as needed. The Contractor shall provide a price/meter breakdown.
- (t) Provide a statement of origin and delivery lead times if the supply and delivery of components are to be subcontracted by the Contractor.
- (u) With each delivery provide to the Commission a complete set of mechanical drawings detailing all parts used and their origin, all components, and the full engineering design of the WNRS, according to requirements described in Section 10.

Additional information for the WNRS SETs:

The SETs represent sixteen (16) standard WNRS systems with specific setups that are composed to adapt to the various Station environments and should help to simplify the ordering process. If additional adaptations to specific Station environments are required optional parts (listed under Appendix A5) can be used. SETs one (1) to eight (8) utilize SS304 or SS316 pipes whereas SETs nine (9) to sixteen (16) utilize reinforced hoses. Each of the SETs list groups of parts, which are named: “Main parts (per element)”, “Spare parts (per element)” and “Spare parts (per Station)”. The group “Main parts (per element)” lists all the parts and quantities needed to manufacture one complete 18 m WNRS. The group “Spare parts (per element)” lists all the spare parts and the quantities needed to maintain one complete WNRS. The group “Spare parts (per Station)” lists all the spare parts and quantities needed to maintain one complete infrasound Station.

**3.2. Vaults**

The Contractor shall ensure that the prefabricated Vaults meet the following general technical requirements:

- (a) The types of Vaults outlined in Appendix B2 provide a general overview of the types of Vaults used in the IMS network. The Contractor can propose other types of Vaults if they fulfil the requirements and functionality specified in this TOR.
- (b) All external Vault components shall be manufactured using ultraviolet radiation (UV protection), weather- and corrosion- resistant parts.
- (c) All Vaults components used need to be temperature stable and shall remain in their original form during the entire lifetime of the Vault.
- (d) All hardware (screws, nuts, bolts, etc.) shall be made of SS304 or SS316.
- (e) Adequate insulation to allow a stable temperature inside the Vault. The insulation must be firmly affixed to the inside Vault walls and must withstand the transportation of the Vault to the Station. Insulation on outside Vault surfaces must remain affixed during extreme weather conditions, burial, water inundation and protected against UV radiation.
- (f) Load-bearing I-bolts or cleats shall be located on top or side surfaces to allow pull-chains or straps to be affixed to the Vault for safe transportation.
- (g) Watertight seals for pipes, hoses, and cables (e.g. Roxtec) shall be used.



- (h) All Vaults which are completely airtight shall come with the option to have an overpressure release valve integrated.
- (i) Provide a passive air ventilation system if batteries are to be used in the vault. The ventilation system shall be installed on or near the top of the vault lid. This system shall enable natural air exchange between the inside and outside of the vault to prevent the accumulation of battery gases around the vault lid. An example of a passive air ventilation system can be seen in Figure 18. If required provide Accessories to adapt Vault to the Station environment. Such Accessories include but are not limited to:
- Gravel or soil for protection of the Vault.
  - Drainage system to guide water away from the Vault.
  - Canopy to protect the Vault from sun, rain, and snow.
  - Passive cooling panels attached to the top and side surfaces of Vaults.
  - Mounting structure to fix solar panels on top of the Vault.
  - Lightning protection devices for protection of sensors installed inside the Vault.
  - Tamper protection switches.
  - Cables for the installation of a sensor in a Vault. The required cable types are:
    - i. A signal cable with approximately 20 wires. The cables shall have an overall braid, individually screened pairs, and twisted-pair setup to minimize electrical interference. The wire gage shall be approximately 0.5 mm<sup>2</sup>.
    - ii. A power cable with two wires and an overall braid to minimize electrical interference. The wires gage shall be either 2.5 mm<sup>2</sup> or 4 mm<sup>2</sup>.
    - iii. A tamper protection switch cable with two wires. The wire gage shall be approximately 0.75 mm<sup>2</sup>.
- (j) The design of the Vaults shall allow that they are to be palletized and easily housed inside a standard 20'/40' x 8' shipping container.

In addition, the Contractor shall provide:

- (k) An appropriate list of tools required for maintenance and/or installation of the supplied components.
- (l) A statement of origin and delivery lead times if the supply and delivery of components are to be subcontracted by the Contractor.
- (m) A complete set of mechanical drawings, detailing parts used and their origin, and the full engineering design of the Vaults with each delivery.

- (n) A list of parts for each type of the Vault including optional parts.
- (o) Roof or side through-hole fitting to support a GPS mast of at least 2 m in height, weight of up to 5 kilogram and wind speed up to 60 m/s. A through-hole-mast connection shall serve as a conduit for required GPS antenna cables.
- (p) An antistatic mat to isolate geophysical sensors or other sensitive equipment from electrostatic buildup.
- (q) Shelf systems for vault equipment and for vault batteries.
- (r) An 12-24 VDC or 230 VAC automatic low power vault heating system with thermostat regulation, heating panels, or similar.

The Contractor shall provide the following types of Vaults:

### **3.2.1. Light Vault in sandwich technology for above ground installation**

This Vault will be used in environments where it is difficult to transport the Vault to the element site. The Vault shall withstand heavy rain and shall be completely sealed to protect the internal of the Vault from animal intrusion and high humidity build up. Figure 13 in Appendix B2 shows the principle layout of this type of Vaults. The requirements for this Vault are:

- (a) The Commission proposed that this Vault should be provided in various sizes from 0.6 m x 0.6 m x 0.6 m to 1.4 m x 1.2 m x 1.0 m (L x W x H, inner dimensions).
- (b) The Vault will not be buried and therefore does not need internal structural reinforcement.
- (c) The Vault shall allow to be bolted on the top of to a concrete slab, with the bolts located outside the Vault.
- (d) Optional insulation panels with a thickness of 5, 10, 15 and 20 cm shall be included.
- (e) Passive cooling panels that can be attached to the top and side surfaces of the Vault.

### **3.2.2. Heavy Vault in sandwich technology for underground and above ground installation**

This Vault will be used in environments where it is possible to use machines to transport the Vault to the element site. The Vault shall be designed to be installed underground or above ground, withstand heavy rain and shall be completely sealed to be protected against animal intrusion and high humidity build up inside the Vault. Figure 14 in Appendix B2 shows the principle layout of this type of Vault. The requirements for this Vault are:

- (a) The inner dimension of the Vault is proposed to be 1.4 m x 1.2 m x 1.0 m (L x W x H).
- (b) The Vault might be buried and therefore needs structural reinforcement.
- (c) The inner and outer box of the vault, vault lid, all hardware (screws, nuts, bolts, etc.) shall be made of SS304 or SS316.

- (d) The Vault shall allow to be bolted on the top of to a concrete slab, with the bolts located outside the Vault.
- (e) Optional insulation panels with a thickness of 5, 10, 15 and 20 cm.
- (f) Passive cooling panels that can be attached to the top and side surfaces of the Vault.

### **3.2.3. Heavy-duty-stainless-steel Vault for underground and above ground installation for Stations with very challenging environment**

This Vault will be used in very challenging environments where it is possible to use machines transport the Vault to the element site. The challenging conditions could be very low or very high temperatures, very high airborne and soil salinity, extremely strong winds, regular flooding and very strong rains, fire, damage by falling trees and high snow coverage. The Vault shall be able to be installed underground and above ground and shall be completely sealed. Figure 15 in Appendix B2 shows the principle layout of this type of Vault. The requirements for this Vault are:

- (a) The inner dimension of the Vault is proposed to be and 1 m x 1 m x 0.8 m or 1.2 m x 1.2 m x 1.0 m (inner dimensions, L x W x H).
- (b) The Vault might be buried and therefore needs structural reinforcement.
- (c) The Vault shall allow to be bolted on the top of to a concrete slab, with the bolts located outside the Vault.
- (d) Optional insulation panels with a thickness of 5, 10, 15 and 20 cm shall be included.
- (e) Passive cooling panels that can be attached to the top and side surfaces of the Vault.
- (f) Provide a safety lock mechanism to protect from theft.

### **3.2.4. Light Vault for above ground installation (on supporting structure) made either of stainless steel or other materials that can withstand Station environment**

This Vault will be used in environments where it is difficult to transport the Vault to the element site and flooding is to be expected (Vault installed above ground). The Vault also shall withstand heavy rain and shall be completely sealed to be protected against animal intrusion and high humidity build up inside the Vault. Figure 16 in Appendix B2 shows the principle layout of this type of Vault. The requirements for this Vault are:

- (a) The Vault should be available off the shelf and supplied in various sizes from 0.4 m x 0.4 m x 0.4 m to 0.6 m x 1 m x 1.2 m (L x W x H).
- (b) The Vault will be installed on a mounting structure above the ground. A picture of a typical mounting structure can be seen in Figure 16 in Appendix B2.
- (c) Mounting structures with 0.5 m and 1 m height for the installation of the vault above ground. The mounting structure shall be bolted to a concrete slab.
- (d) Optional insulation panels with a thickness of 5 and 10 cm shall be included.

(e) Passive cooling panels that can be attached to the top and side surfaces of the Vault.

### **3.2.5. Pelican Vault for above ground, below ground and completely buried installation**

This Vault will be used in environments where it is difficult to transport the Vault to the element site and a complete watertight Vault is needed that is easy to install. The Vault shall withstand heavy rain and shall be completely sealed to be protected against animal intrusion and high humidity build up inside the Vault. Figure 17 in Appendix B2 shows the principle layout of this type of Vault. The requirements for this Vault are:

- (a) It is proposed that this type of Vault should be available off the shelf and supplied in various sizes from 0.4 m x 0.4 m x 0.5 m to 1.2 m x 1.2 m x 0.8m (L x W x H).
- (b) The Vault might be installed above ground, half buried or below ground.
- (c) The Vault will be installed on a concrete slab. Mechanisms to fix the Vault to the slab shall be proposed that avoid drilling holes into the Vault.
- (d) Optional insulation panels with a thickness of 5 and 10 cm shall be included.

### **3.3. Services**

The Services under the Contract include but are not limited to:

#### **3.3.1. Prototyping, testing, integration Services and the provision of associated equipment and tools**

The Contractor shall provide prototyping, testing and integration Services relevant to the scope of this Contract. The Contractor shall also provide the associated equipment, full list of tools, sup-sets of tools, required to carry out the aforementioned Services. Such Services will be required for the following tasks:

- (a) Prototyping of new WNRS, Vaults and Accessories. The prototyping could incorporate single components, sub-groups or entirely new WNRS, Vault and Accessory types. Prototyping is required to further improve the performance of WNRS, Vaults and Accessories.
- (b) Testing of WNRS, Vaults and Accessories prototypes is required to ensure that the requirements of Commission are fulfilled. Testing requirements, test descriptions and the test procedures will be provided by the Commission.
- (c) Integration Services might be requested by the Commission to integrate prototypes into existing WNRS, Vaults or Accessories. In addition, integration Services might be required to adapt WNRS, Vaults and Accessories to Station specific environments or to Station specific equipment. Integration Services might be required at the manufacturer facility, at the subcontractor's facility or on-site.
- (d) The Contractor might be requested to provide equipment and tools which are required to carry out prototyping, testing or integration Work.
- (e) Prototyping, testing and integration Works might be required at the Contractors or

subcontractor's facility as well as on-site.

### **3.3.2. Type Approval of WNRS, Vaults and Accessories.**

The Contractor shall be able to provide Type Approval of WNRS, Vaults and Accessories if requested by the Commission. Type Approval might be requested after a new type of WNRS, Vault or Accessories were designed, or new parts are planned to be added to an existing WNRS, Vault. Such testing will ensure that the new type meets all requirements defined by the Commission. In addition to the testing, the Contractor will be requested to provide supporting information, specifications, drawings, and corresponding procedures. The Commission will inform the Contractor when Type Approval is required and how the testing shall be carried out.

The Commission reserves the right to inspect all components of the WNRS, Vaults and Accessories during the testing process and to request test results (data) before final acceptance. The Contractor shall notify the Commission when the WNRS, Vault and Accessories are ready for final acceptance, to facilitate inspection, if needed.

### **3.3.3. Device Acceptance of WNRS, Vaults and their Accessories**

The Contractor shall provide Device Acceptance Services and allow inspection by the Commission as described in this section. The Contractor is required to test one complete WNRS, Vault or Accessory before delivery to the Station. This test is required to ensure that the performance criteria defined at the time of Type Approval are met.

#### **3.3.3.1. Device Acceptance of WNRS part samples, pressure testing**

Device Acceptance of WNRS and their Accessories shall be carried out for each order and performed in three steps: In step one each unique part of the WNRS and Accessories shall be tested by inspection of its physical characteristics and by comparing it to the specifications obtained during Type Approval. In step two, the inspected samples shall be used to assemble one complete WNRS for one element. This means that the number of samples inspected in step one shall be the number of samples needed to build a complete WNRS. In step three, all dimensions of the WNRS shall be measured and compared to the Type Approved dimensions. If a non-standard WNRS was ordered, which was not Type Approved, the dimensions specified in the FRD shall be used for reference. If a WNRS part was not yet Type Approved, its physical characteristics shall be compared to the manufacturer specifications.

#### Step one: Testing of samples

- (a) Samples of each WNRS component and of each delivered package shall be quality-controlled by comparing the sample components with their specifications defined at the time of Type Approval.
- (b) The testing of samples process shall be defined by the Contractor and approved by the Commission.
- (c) Typical examples of sample testing are: Physical dimensions, quality of material, presence of corrosion, quality of welding and quality of packing.
- (d) The testing of samples shall be recorded, and the results provided to the Commission.

#### Step two: Pressure testing of a complete WNRS and Accessories

- (a) One complete WNRS is being assembled by the quality-controlled samples.
- (b) The Type Approved WNRS assembling procedure is being followed during the assembly of the WNRS.
- (c) The assembled WNRS shall then be pressure tested. The pressure test is described below.
- (d) The entire Device Acceptance process shall be followed systematically, and any problems pointed out. The results of the Device Acceptance shall be provided to the Commission for acceptance.

#### Pressure test procedure for Device Acceptance:

For pressure testing, all pipe/ hose ends/ adapters must be sealed. The test shall be carried out indoors, in shade or under sun reflecting material to avoid direct sunlight on the WNRS. The pressure and temperature inside the WNRS and the temperature outside the WNRS shall be recorded once a minute during the test. A compressor shall then be connected to the pipe/hose that normally connects to the microbarometer/central summing manifold and the pressure in the WNRS increased above ambient by about 200 kPa. The valve to the compressor shall be closed at this point and the pressure inside the pipes/hoses observed over an interval of 24 hours. A decrease in pressure by more than 20 kPa in 24 hours indicates the presence of leaks in the system and is unacceptable. If this happens, a search for leaks shall be conducted after re-pressurising the WNRS. A further test of the WNRS shall be carried out after all leaks have been repaired. Each leak shall be logged, and this information provided to the Commission.

The Commission reserves the right to inspect all components of the WNRS during the testing process and to request test results (data) before final acceptance. The Contractor shall notify the Commission when the WNRS is ready for final factory acceptance testing, in order to facilitate inspection, if needed.

#### Step three: Measuring dimensions of the WNRS and Accessories

- (a) All dimensions of the WNRS shall be measured and compared to the dimensions specified during Type Approval.
- (b) All dimensions shall be recorded, and any problems pointed out. The results of the measurements shall be provided to the Commission for acceptance.

#### **3.3.3.2. Device Acceptance pressure test for Vaults and Accessories**

For Device Acceptance of Vaults and Accessories one complete Vault with all external connections shall be assembled and tested. The test shall consist of:

- (a) Quality-control of all Vault components and Accessories by comparison with their specifications defined at the time of Type Approval.
- (b) All dimensions of the Vault and Accessories shall be measured and compared to the dimensions specified during Type Approval.

- (c) If requested by the Commission a water intrusion test shall be carried out. The Commission might request such a test for places with a high risk of flooding and heavy rain as well as high airborne salinity. The Contractor shall propose test equipment and tools as well as procedures to carry out such tests.
- (d) If required a dust intrusion test shall be carried out. The Commission might request such a test for places with a risk of sandstorms, risk of intrusion of small animals and high airborne salinity. The Contractor shall propose test equipment and tools as well as procedures to carry out such tests.
- (e) Intrusion test to make sure that unauthorized access to the equipment inside the Vault cannot happen without triggering an alarm.

### **3.3.4. On-site Services for the installation or maintenance of WNRS and Accessories**

If requested by the Commission, the Contractor shall provide on-site field installation or maintenance Service for WNRS and Accessories. These on-site support Services shall include but are not limited to the following:

- (a) Installation of WNRS and Accessories on-site.
- (b) Pressure testing of WNRS.
- (c) All dimensions of the WNRS shall be measured and compared to the dimensions specified during Type Approval and/or Device Acceptance.
- (d) All dimensions shall be recorded, and any problems pointed out. The results of the measurements shall be provided to the Commission for acceptance.
- (e) Training of local staff in the proper assembly, repair, and maintenance of the WNRS.

In addition to the above on-site WNRS installation Services the Contractor might be required to carry the following measurements:

- (f) System response.
- (g) Sensor response.
- (h) System noise.
- (i) Differential GPS.

#### Pressure testing of WNRS:

The Contractor shall carry out a pressure test of each WNRS installed at the element sites. This test will ensure that all components of a WNRS seat and seal properly and assure that there are no leaks. This test will also determine whether any items were damaged during shipping and need to be repaired. For pressure testing, all pipe/hose ends/adapters must be sealed. A compressor shall then be connected to the pipe/hose that normally connects to the microbarometer/central summing manifold and the pressure in the WNRS increased above ambient by about 200 kPa. The valve to the compressor shall be closed at this point and the pressure inside the pipes/hoses observed over an interval of 30 minutes. A decrease

in pressure by more than 20 kPa in 30 minutes indicates the presence of significant leaks in the system and is unacceptable. If this happens, a search for leaks shall be conducted after re-pressurising the WNRS. A further test of the system under pressure shall be carried out after all leaks have been repaired. The pressure and temperature inside the WNRS during the pressure test shall be recorded. The Contractor shall provide the Commission with all pertinent data recorded during the pressure tests. Data shall be presented in a digital format that can be easily read by the Commission.

System response, sensor response, system noise and Differential GPS measurements:

The Contractor might be requested to carry out on-site system response, sensor response, system noise and Differential GPS measurements if no representative of the Commission is on-site during installation of a new WNRS. The Commission will provide the required measurement equipment as well as all procedures required by the Contractor to carry out such measurements.

**3.3.5. On-site Services for the installation or maintenance of Vaults and Accessories**

If requested by the Commission, the Contractor shall provide on-site field installation and maintenance of any Vault and Accessories. These on-site support Services shall consist of the following:

- (a) Assembly of 1 (one) or all Vaults and Accessories on site.
- (b) Installation of sealing material from Roxtec or Hauff for WNRS and cables at one or all Vaults.
- (c) Testing of Vaults in accordance with the procedures described below and in Section 3.3.3.2. The Commission will inform the Contractor which tests need to be carried out.
- (d) Training of local staff in the proper assembly, installation, repair, and maintenance of Vaults.

The Contractor shall provide on-site testing Services as described in this Section. The Contractor shall inspect the Vault before and after its installation for possible leaks, cracks, or any other failures in structural integrity. The Vault must be completed and assembled before the test (unless an exception is made by the Commission). When requested by the Commission, a test to simulate inundation by water shall be conducted for a suitable period.

Performing grounding measurements shall also be required to ensure that the Vault poses no threat to the instruments it houses.

The Commission reserves the right to inspect all components of the Vaults during the testing process and to request test results (data) before final acceptance.

**3.3.6. On-site civil Work Services required for the installation of WNRS, Vaults and Accessories**

If requested by the Commission, the Contractor shall carry out on-site civil Works, which are required to prepare the Station environment for the integration and installation of WNRS, Vaults and Accessories. These on-site supports civil Work Services shall include but not limited to the following:



- (a) Preparation of ground surface for the installation of WNRS and Accessories.
- (b) Pouring of a concrete slab for fixing the Vaults.
- (c) Excavation Works for the installation of Vaults or WNRS.
- (d) Civil Works for the installation of Vaults and Accessories.
- (e) Deployment Works of gravel to cover inlet ports, pipes/hoses and backfill the area around Vaults.
- (f) Deployment of meshes to protect gravel.
- (g) Disposal Works of old WNRS, Vaults and Accessories.

### **3.3.7. On-site Station equipment installation, replacement and troubleshooting Service**

If requested by the Commission, the Contractor shall provide Station equipment installation and troubleshooting Services at times when the Contractor is present at Stations to carry out WNRS and Vaults upgrades/maintenance. Station equipment is comprised in general of microbarometer, digitizer, communication and power equipment and computer. The Contractor will be provided with the necessary information and procedures on how to install, replace or troubleshoot equipment. Basic knowledge in electrics and computers are required to carry out these Services. The Commission will adapt the complexity of the Service to the capability of the Contractor. Such on-site equipment installation, replacement and troubleshooting Services may include but not limited to:

- (a) Installation of new Station equipment (the equipment will be provided by the Commission).
- (b) If a replacement of a Vault is required, the Contractor might be requested remove Station equipment located in the old Vault and install it in the new Vault.
- (c) Replacement of malfunctioning Station equipment.
- (d) Configuration of Station equipment.
- (e) Analysis of Station problems.
- (f) Provision of photographs and on-site measurements.

Details and procedures for the above tasks will be provided by the Commission as needed.

### **3.3.8. On-site removal and disposal of obsolete WNRS, Vaults, Accessories and Station equipment**

The Contractor might be requested to properly dispose the obsolete Station WNRS, Vaults, and Accessories. The disposal might require shipment of the obsolete Station WNRS, Vaults, Accessories and Station equipment to a location where it can be disposed in accordance with the rules and regulations of the specific country. Proof of the proper disposal shall be provided in the Final Report by the Contractor.

#### **4. ORGANIZATION OF WORK**

The Commission may choose between two approaches to call-off the supply of WNRS, Vaults, Accessories and Services.

- (I) **FRD/ Project Call-off (see Section 4.1):** The Commission may choose to issue an FRD to the Contractor to define the scope of supply of WNRS, Vaults, Accessories and Services and a capped amount for its completion. Before the issuance of the FRD a Written Request together with a TOR shall be sent by the Commission to the Contractor defining the scope of Work. The Contractor shall submit a project plan to the Commission, which lists the WNRS, Vaults, Accessories and Services required to carry out the Work in accordance with the TOR. If the project plan is accepted by the Commission an FRD will be issued that is based on the project plan.
- (II) **FRD Call-off (see Section 4.2):** The Work may be called-off directly through the issuance of an FRD by the Commission to the Contractor.

##### **4.1. FRD/ Project Call-off**

In this mode of Work, an FRD shall be issued after the scope of supply of WNRS, Vaults, Accessories and Services was agreed between the Commission and the Contractor.

##### **4.1.1. FRD issuance**

Before the issuance of an FRD to the Contractor and upon receipt of a Written Request and a TOR from the Commission, containing elaborations and definitions as to the nature of the Work, the Contractor shall provide, at a minimum, within one (1) month of receiving the Written Request, including but not limited to the following information in the form of a project plan:

- (a) Details of the WNRS, Vaults, Accessories and Services that will be provided.
- (b) Cost of the project, broken into supply of WNRS, Vaults, Accessories and Services.
- (c) Detailed project schedule.
- (d) Where applicable, the planned approach to meet IMS Operation Requirements regarding Data Availability and Mission Capability.
- (e) Where applicable, the quantity/quantities and estimated cost of travel(s) to the site(s) based on the most economical and direct option. The Commission reserves the right, based on the information provided by the Contractor, to approve the type of airfare or to purchase a ticket for the Contractor. The Daily subsistence Allowance (DSA) shall be paid in accordance with the United Nations' effective DSA rate for each location.
- (f) Where applicable, the estimated cost of local car rental and local transportation of WNRS, Vaults and Accessories.
- (g) A list of staff who will be working on the project, and the role of each of these staff members.

After review of the Project plan for the Work listed in the Written Request and TOR, and only after acceptance by the Commission, the FRD shall be issued to the Contractor.

The Commission will forward the FRD to the Contractor with adequate advanced notice together with the same TOR that was already sent to the Contractor during the “Written Request” stage.

#### **4.1.2. Initiating Work**

If not otherwise specified in the TOR, the implementation of the Work can start immediately after the Commission issues the FRD. For certain projects, however, the TOR might request a Design Report which shall be sent to the Commission for approval before the Work can be started. Depending on the type of Work the Design Report may include but not limited to the following information:

- (a) Detailed technical drawings fully showing all aspects of the Work.
- (b) Description of WNRS, Vaults and Accessories that will be used.
- (c) Detailed description of planned Work.
- (d) Configuration details of the WNRS, Vaults, Accessories and Services.
- (e) Description of the WNRS, Vaults and Accessories testing.
- (f) Detailed description of how Services will be carried out.

The TOR will specify which of the above-listed information shall be provided in the Design Report.

The Commission will review the Design Report and may comment and/or request changes to the Design Report or the design in accordance with the requirements of the TOR. In case the Commission requests changes, the Contractor shall make all requested modifications and submit a revised Design Report within one month. The acceptance of the Design Report and/ Revised Design Report by the Commission is synonymic to the completion of the Work carried out under this stage of the Work. The Work shall only start after the Design Report was approved by the Commission.

In addition, some projects might require WNRS, Vaults and Accessories mock-up testing before the WNRS, Vaults and Accessories can be integrated at a Station. Mock-up testing will ensure that the WNRS, Vaults and Accessories will Work properly once implemented at the Station. The mock-up testing shall be documented, and the results of the tests provided to the Commission. The TOR attached to each FRD will specify which tests need to be carried out and how the test results shall be provided to the Commission. The Contractor might be requested to stream data from the mock-up test to the Commission. The Commission will send a written confirmation to the Contractor after the successful completion of the mock-up testing. The Contractor shall only start the implementation of the WNRS, Vaults and Accessories at a Station after receiving the confirmation from the Commission.

#### **4.1.3. Completion and Acceptance**

At the end of a particular project, the Contractor shall submit to the Commission documentation requested in the TOR. The documentation may include but are not limited to:

- (a) Drawings of WNRS, Vaults and Accessories.
- (b) Specification and data sheets for parts of WNRS, Vault and Accessories.

- (c) Manufacturing and installation documentation.
- (d) Relevant technical pictures taken at each stage of the Work.
- (e) Any other supporting documentation requested by the Commission.

#### **4.2. FRD Call-off**

In this mode of work, an FRD shall be issued if the scope of supply of WNRS, Vaults, Accessories and Services is known and does therefore not require a TOR.

##### **4.2.1. Initiating Work**

If at the time of issuance of an FRD the required information for the WNRS, Vaults, Accessories and Services is known a Written Request and TOR are not required. The Commission will then issue directly an FRD for the required WNRS, Vaults, Accessories and Services. The FRD might list requirements for documentation, which shall be provided by the Contractor. The documentation may include but is not limited to:

- (a) Provision of a Work plan and time schedule including the commencement date and completion date of the Work.
- (b) Manufacturing and Installation Report summarizing the Work carried out with drawings and pictures.
- (c) Specification and data sheets for parts of WNRS, Vault and Accessories.
- (d) Relevant technical pictures taken at each stage of the Work.
- (e) Any other supporting documentation requested by the Commission.

##### **4.2.2. Completion and Acceptance**

At the end of a particular Work under the FRD, the Contractor shall submit to the Commission the documentation if requested in the FRD. The documentation will be reviewed by the Commission. If there is no documentation required, the Contractor shall inform the Commission in a written form that the Work was carried out and provide information of the implemented Work if required.

## **5. SPARE PARTS**

The Commission may choose to order spare components required to maintain operability of the WNRS and Vaults. The Contractor shall provide and maintain a detailed breakdown of the WNRS and Vaults into their components. For each component, where relevant, the Contractor shall specify its availability and supply lead time. The Contractor shall also recommend a set of spare parts. Details and quantities shall be given for each order with the stipulation that the Commission may order any single WNRS component or Vault component at any given time.

## **6. TOOLS AND CONSUMABLES**

### **6.1. Wind Noise Reduction Systems (WNRS)**

If requested by the Commission, the Contractor shall provide a tool set for the field installation of each delivery as well as a list of tools and the following consumables of

adequate amount. A proposed set of tools can be found under Appendix A6.

## **6.2. Vaults**

If requested by the Commission, the Contractor shall provide a tool set for the field installation of each delivery. The Contractor shall provide and maintain a list of tools and the following consumables of adequate amount:

- (a) Sealing compounds for all seams and joints.
- (b) A portable pump with sufficient power to remove water from flooded Vaults at a high rate.

## **7. DELIVERY, PACKING, STORAGE AND SHIPMENT**

The Contractor will be requested to provide for the packing, storage, and shipment of WNRS, Vaults and Accessories accordingly.

### **7.1. Delivery**

- (a) The deadline for delivery shall be no longer than three (3) months after release of any FRD, unless otherwise agreed. Delivery shall not be initiated until advised by the Commission.

### **7.2. Packing**

- (a) The preparation for shipment shall be in accordance with the Contractor's standards, though it is the Contractor's responsibility to sufficiently pack all WNRS, Vaults and Accessories accordingly to avoid damage during shipping.
- (b) All WNRS components shall be cleaned before being packed for final shipment. Every Vault shall be completely cleaned inside and out before being packed for final shipment.
- (c) For each package, a detailed packing list including dimensions and weight shall be prepared and submitted to the Commission prior to shipment. Each crate shall be clearly labelled with an accurate packing list describing the exact contents. If possible, no package shall exceed a height of 2.6 m.
- (d) The Contractor shall use only International Plant Protection Convention (IPPC) certified packing Accessories when using wood (i.e. wooden crates or pallets).
- (e) The Vaults shall be palletized allowing for easy transport and storage within a standard 20' shipping container.
- (f) If not specified otherwise by the Commission, WNRS, Vaults and Accessories shall be protected to withstand ocean transit and extended period of storage at any job site. WNRS, Vaults and Accessories shall be protected to safeguard against all adverse environments, such as humidity, moisture, rain, dust, dirt, sand, mud, salt air, salt spray, and sea water.

### **7.3. Storage**

- (a) In the case that the Contractor must store items related to an issued FRD, the storage and related insurance costs per month shall be included in the Contractor's Proposal.
- (b) The storage and insurance costs per month at Contractors facility shall be included in the Contractor's Proposal. The WNRS, Vaults and Accessories shall be protected from UV radiation from the sun.

### **7.4. Shipment**

- (a) The WNRS, Vaults and Accessories procured under this Contract shall be delivered to the Station or if requested to the Commission's facilities in Vienna, or otherwise, as agreed between the Commission and the Contractor.
- (b) WNRS, Vaults and Accessories might need to be shipped back from the Station to the Contractors facility, if requested to the Commission's facilities in Vienna, or otherwise, as agreed between the Commission and the Contractor. The return shipment might be necessary for repair, refurbishment or testing of WNRS, Vaults and Accessories. Additionally, the return shipment of WNRS, Vaults and Accessories could also cover tools that were used during field activities and test equipment.

## **8. WARRANTY**

The Commission requires that the Contractor warranty all products and Work related to the manufacturing and installation of WNRS, Vaults and Accessories performed by either themselves or subcontractors for a period of two (2) years from the day of acceptance of the Final Report/Revised Final Report.

## **9. WNRS AND VAULTS LIFE EXPECTANCY**

The Contractor shall deliver high quality WNRS and Vaults, workmanship and Accessories. In selection of WNRS, Vaults and Accessories, the Contractor shall consider the environmental extremes typical to the region where the Station is located. Life expectancy of WNRS, Vaults and Accessories installed by the Contractor is defined as a period during which the WNRS, Vaults is expected to function properly before a replacement is needed. Under the present Contract, life expectancy of WNRS, Vaults and Accessories installed by the Contractor is a minimum of 20 years.

## **10. REPORTING**

The Contractor shall prepare and deliver reports within thirty (30) working days after the completion of Work specified in the FRD. Depending on the type of Work the Contractor shall submit specific reports.

### **10.1. Manufacturing Report**

After the manufacturing of WNRS, Vaults and Accessories has been completed and it ready to be shipped the Contractor shall prepare a Manufacturing Report within thirty (30)

working days. The report shall contain:

- (a) Reference to the FRD, including date of request.
- (b) Documentation stating origin of manufacture, Accessories, and parts specifications, along with any accompanying calibration, specification and/or Accessories data sheets.
- (c) Device Acceptance performed and test results/data sets in digital format, as applicable.
- (d) Mechanical drawings for all components delivered (described in Appendix B).
- (e) Installation procedure for the manufactured goods at Stations.
- (f) Packing list providing details of the number and size of shipping boxes and detailed list of items to be shipped.
- (g) Any other relevant information and recommendations.

### **10.2. Installation Report**

After the installation of WNRS, Vaults and Accessories has been completed the Contractor shall prepare an Installation Report within thirty (30) working days. The report shall contain:

- (a) Reference to the FRD, including date of request.
- (b) Description and drawings providing precise information about how the WNRS, Vaults and Accessories was installed at a Station.
- (c) Tests performed and test results/data sets in digital format, as applicable.
- (d) Pictures of WNRS, Vaults and Accessories at every element site.
- (e) Summary of every leak found at WNRS.
- (f) Lessons learned.
- (g) Details about any Services that might have been carried at a Station.
- (h) Any other relevant information and recommendations.

### **10.3. Service Report**

After the finishing a specific Service the Contractor shall prepare a Service Report within thirty (30) working days. The report shall contain:

- (a) Reference to the FRD, including date of request.
- (b) Description about the Service completed.
- (c) If applicable pictures and drawings related to the completed Service.
- (d) Tests performed and test results/data sets in digital format, as applicable.
- (e) Lessons learned.
- (f) Any other relevant information and recommendations.

## **10.4.Mechanical Drawings**

### **10.4.1. WNRS**

The Contractor shall provide AutoCAD, Microsoft Visio and PDF drawings or precise manufacturer drawings of every component used in the WNRS and Accessories. In addition, any accompanying manufacturer specification sheet will be required.

The drawings shall depict each WNRS component exactly as manufactured. Special importance shall be given in the drawing as to how the Contractor intends to create a proper seal between the adapters and press-fittings (that connect to the manifold). The drawings must also show every gasket or sealing compound and/or component that will be used.

The Contractor shall provide mechanical drawings of every WNRS as manufactured and as installed at Stations. The length of the signal path through the WNRS must be indicated in the drawings and its precision shall be better than 1 cm. The drawing shall include the precise length of all parts of the WNRS. The precise length of the pipes/ hoses will depend on the sizes of the manifolds, fittings, and adapters.

The Contractor shall provide specification sheets for every gasket, sealing compound and glue used for the 18 m WNRS. The specification sheets for the gaskets shall contain information about its Accessories, dimensions, temperature and humidity range, UV resistivity, chemical resistance, pressure range, seal-ability. For the sealing compound and glues, the specification sheets shall include its Accessories, temperature and humidity range, UV resistivity, chemical resistance.

### **10.4.2. Vaults**

The Contractor shall provide AutoCAD, Microsoft Visio and PDF drawings or precise manufacturer drawings of every Vault and Accessories procured under this Contract. In addition, any accompanying manufacturer specification sheet will be required.

The drawings shall depict each Vault and Accessories component exactly as manufactured. Special importance shall be given in the drawing as to how the Contractor intends to create a proper seal between the Vault lid and the Vault bods as well for any cable and pipe/ hose penetration to the Vault. The drawings must also show every gasket or sealing compound and/or component that will be used.

The Contractor shall provide mechanical drawings of every Vault type as manufactured and as installed at Stations.

The Contractor shall provide specification sheets for every Accessories, gasket, sealing compound and glue used for the Vault. The specification sheets for the Accessories, gaskets shall contain information about its Accessories, dimensions, temperature and humidity range, UV resistivity, chemical resistance, seal-ability. For the Accessories, sealing compound and glues the specification sheets shall include its Accessories, temperature and humidity range, UV resistivity, chemical resistance.



## APPENDIX A – LIST OF PARTS

### A.1 18m WNRS SETs with SS Pipes and 4-Way Manifold

<b>SET 1</b>		
Above Ground - Inlet Port with Side Access and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1a	Inlet port - horizontal with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 (96+4) with gasket	100
5	Nipple 1/2" BSPT/BSPP (glued to manifold) (96+4)	100
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
11	Manifold 4-way with 1/2" BSPT	1
13	Knee 90° barbed adapter/ 1/2" BSPP	1
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	1
18	Barbed coupling 1/2" for hose	1
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1a	Inlet port - horizontal with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
<b>Spare parts (per Station)</b>		
13	Knee 90° barbed adapter/ 1/2" BSPP	2
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	2
18	Barbed coupling 1/2" for hose	1

<b>SET 2</b>		
Above Ground – Bended Pipe – Inlet Port with Vertical Access (per element)		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 (96+4) with gasket	100
5	Nipple 1/2" BSPT/BSPP (glued to manifold) (96+4)	100
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
11	Manifold 4-way with 1/2" BSPT	1
13	Knee 90° barbed adapter/ 1/2" BSPP	1
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	1
18	Barbed coupling 1/2" for hose	1
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
<b>Spare parts (per Station)</b>		
13	Knee 90° barbed adapter/ 1/2" BSPP	2
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	2
18	Barbed coupling 1/2" for hose	1

*Part 12 is not included in the list of SET 2. It is available as an option and can to be ordered separately.*

<b>SET 3</b>		
Above Ground – Inlet Port with Vertical Access with 90° Knee and 4-Way Manifold (per element)		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 (96+4) with gasket	100
5	Nipple 1/2" BSPT/BSPP (glued to manifold) (96+4)	100
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
11	Manifold 4-way with 1/2" BSPT	1
13	Knee 90° barbed adapter/ 1/2" BSPP	1
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	1
18	Barbed coupling 1/2" for hose	1
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12 (glued to manifold)	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Spares (per element)	
1c	Inlet port - vertical with 90° knee pressfitting DN12	1
<b>Spare parts (per Station)</b>		
13	Knee 90° barbed adapter/ 1/2" BSPP	2
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	2
18	Barbed coupling 1/2" for hose	1

<b>SET 4</b>		
Underground - Gooseneck Pipe- Inlet Port with Vertical Access and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 (96+4) with gasket	100
5	Nipple 1/2" BSPT/BSPP (glued to manifold) (96+4)	100
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
11	Manifold 4-way with 1/2" BSPT	1
13	Knee 90° barbed adapter/ 1/2" BSPP	1
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	1
18	Barbed coupling 1/2" for hose	1
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
<b>Spare parts (per Station)</b>		
13	Knee 90° barbed adapter/ 1/2" BSPP	2
14	Barbed adapter with rotary nut 1/2" BSPP	1
15	Ferrule DN16	1
16	Hose 1m 1/2" Type#1 Tekno 1SN - 1 metallic mesh, (meter price)	2
17	Hose clamp 1/2" reinforced	2
18	Barbed coupling 1/2" for hose	1

*Part 21 is not included in the above list of SET 4. It is available as an option and can be ordered separately.*

## A.2 18m WNRS SETs with SS Pipes and without 4-Way Manifold

<b>SET 5</b>		
Above Ground - Inlet Port with Side Access		
Part#	Description	Quantity
<b>Main parts (per element)</b>		
1a	Inlet port - horizontal with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 with gasket	96
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	96
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m (meter price)	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1a	Inlet port - horizontal with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m (meter price)	5

<b>SET 6</b>		
Above Ground – Bended Pipe and Inlet Port with Vertical Access		
Part#	Description	Quantity
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 with gasket	96
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	96
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m (meter price)	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2

5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m (meter price)	5

Part 12 is not included in the above list of SET 6. It is available as an option and can be ordered separately.

<b>SET 7</b>		
Above Ground – Inlet Port with Vertical Access and 90° Knee		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 with gasket	96
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	96
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4
19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m (meter price)	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spare parts (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m (meter price)	5

<b>SET 8</b>		
Above Ground – Gooseneck Pipe and Inlet port with Vertical Access		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Pipe 3.25m DN12, 15 x 1 mm	96
3, 4	Pressfitting with rotary nut DN12 with gasket	96
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	96
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° 1/2" BSPP/pressfitting DN12	4
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	4
9	Coupling pipe - pressfitting DN12	4

19	Hose clamp 1/2"	2
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m (meter price)	2
	Device Acceptance	1
	Complete set of drawings	1
	<b>Spare parts (per element)</b>	
1b	Inlet port - vertical with pressfitting DN12	1
2	Pipe 3.25m DN12, 15 x 1 mm	2
3, 4	Pressfitting with rotary nut DN12 with gasket	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° 1/2" BSPP/press fitting DN12	1
8, 10	Pipe 5.75m DN12, 15 x 1 mm (two pipes 3m+2.75m)	1
9	Coupling pipe - pressfitting DN12	1
19	Hose clamp 1/2"	1
20	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m (meter price)	5

*Part 12 is not included in the above list of SET 8. It is available as an option and can to be ordered separately.*

### A.3 18m WNRS SETs with Hoses and 4-Way Manifold

<b>SET 9</b>		
Above Ground - Inlet Port with Side Access and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1a	Inlet port - horizontal with barb fitting	96
2	Ferrule DN16 (2x96+4x2+1)	201
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	105
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
9	Manifold 4-way with 1/2" BSPT	1
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	2
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1a	Inlet port - horizontal with barb fitting	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
<b>Spares (per Station)</b>		
2	Ferrule DN16	1
7	Knee 90° barbed adapter/ 1/2" BSPP	4
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	1
12	Hose clamp 1/2" reinforced	2
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	20

*The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.*



<b>SET 10</b>		
Above Ground - Bended Pipe- Inlet Port with Vertical Access and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Ferrule DN16 (2x96+4x2+1)	201
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	105
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
9	Manifold 4-way with 1/2" BSPT	1
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	2
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
<b>Spares (per Station)</b>		
2	Ferrule DN16	1
7	Knee 90° barbed adapter/ 1/2" BSPP	4
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	1
12	Hose clamp 1/2" reinforced	2
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	20

*The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.*

*Part 10a-10h are not included in the list of SET 10. They are available as options and can to be ordered separately.*

<b>SET 11</b>		
Above Ground - Inlet Port with Vertical Access with 90° Knee and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	96
2	Ferrule DN16 (2x96+4x2+1)	201
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	105
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
9	Manifold 4-way with 1/2" BSPT	1
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	2
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1c	Inlet port - vertical with 90° knee pressfitting DN12	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
<b>Spares (per Station)</b>		
2	Ferrule DN16	1
7	Knee 90° barbed adapter/ 1/2" BSPP	4
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	1
12	Hose clamp 1/2" reinforced	2
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	20

*The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.*

<b>SET 12</b>		
Underground - Gooseneck Pipe- Inlet Port with Vertical Access and 4-Way Manifold		
<b>Part#</b>	<b>Description</b>	<b>Quantity</b>
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Ferrule DN16 (2x96+4x2+1)	201
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	105
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
9	Manifold 4-way with 1/2" BSPT	1
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	2
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
<b>Spares (per Station)</b>		
2	Ferrule DN16	1
7	Knee 90° barbed adapter/ 1/2" BSPP	4
11a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	1
12	Hose clamp 1/2" reinforced	2
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	20

*The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.*

*Parts 10a-10h are not included in the list of SET 12. They are available as options and can to be ordered separately.*

#### A.4 18m WNRS SETs with Hoses and without 4-Way Manifold

<b>SET 13</b>		
Above Ground - Inlet Port with Side Access		
Part#	Description	Quantity
<b>Main parts (per element)</b>		
1a	Inlet port - horizontal with barb fitting	96
2	Ferrule DN16 (2x96+4x2)	200
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	104
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
12	Hose clamp 1/2" reinforced	4
13	Barbed coupler 1/2"	4
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	8
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1a	Inlet port - horizontal with barb fitting	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° barbed adapter/ 1/2" BSPP	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	1
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	40

The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.

<b>SET 14</b>		
Above Ground - Inlet Port with Vertical Access		
Part#	Description	Quantity
<b>Main parts (per element)</b>		
1b	Inlet port - vertical with pressfitting DN12	96
2	Ferrule DN16 (2x96+4x2)	200
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	104
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
12	Hose clamp 1/2" reinforced	4
13	Barbed coupler 1/2"	4

14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	8
	Device Acceptance	1
	Complete set of drawings	1
	<b>Spares (per element)</b>	
1b	Inlet port - vertical with pressfitting DN12	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° barbed adapter/ 1/2" BSPP	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	1
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	40

The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.

Part 10a-10h are not included in the list of SET 14. They are available as options and can be ordered separately.

<b>SET 15</b>		
Above Ground - Inlet Port with Vertical Access with 90° Knee		
Part#	Description	Quantity
	<b>Main parts (per element)</b>	
1c	Inlet port - vertical with 90° knee pressfitting DN12	96
2	Ferrule DN16 (2x96+4x2)	200
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	104
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
12	Hose clamp 1/2" reinforced	4
13	Barbed coupler 1/2"	4
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	8
	Device Acceptance	1
	Complete set of drawings	1
	<b>Spares (per element)</b>	
1c	Inlet port - vertical with 90° knee pressfitting DN12	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° barbed adapter/ 1/2" BSPP	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
12	Hose clamp 1/2" reinforced	1

13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	1
15	Garden hose 5/8" 15mm Kärcher PremioFlex, 1m	40

The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.

<b>SET 16</b>		
Underground - Inlet Port with Vertical Access		
Part#	Description	Quantity
<b>Main parts (per element)</b>		
1a	Inlet port - horizontal with barb fitting	96
2	Ferrule DN16 (2x96+4x2)	200
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	96
4	Barbed adapter with 1/2" rotary nut BSPP	104
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	104
6	Manifold 24-way with 1/2" BSPT	4
7	Knee 90° barbed adapter/ 1/2" BSPP	5
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	4
12	Hose clamp 1/2" reinforced	4
13	Barbed coupler 1/2"	4
14	Hose clamp 1/2"	8
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	8
	Device Acceptance	1
	Complete set of drawings	1
<b>Spares (per element)</b>		
1a	Inlet port - horizontal with barb fitting	1
2	Ferrule DN16	6
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid	2
4	Barbed adapter with 1/2" rotary nut BSPP	2
5	Nipple 1/2" BSPT/BSPP (glued to manifold)	1
7	Knee 90° barbed adapter/ 1/2" BSPP	1
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid	1
12	Hose clamp 1/2" reinforced	1
13	Barbed coupler 1/2"	1
14	Hose clamp 1/2"	1
15	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	40

The standard hose used in this SET is "Type #1 Tekno 1SN DN16 - 1 steel braid". There are seven other hoses as options available. To replace the standard hose a one-time surcharge shall be added to the SET.

Part 10a-10h are not included in the list of SET 16. They are available as options and can to be ordered separately.

## A.5 Optional parts for 18m WNRS SETs

<b>Options (Pipes)</b>	
<b>Part#</b>	<b>Description</b>
12	Pipe 1m "bended" DN12, 15 x 1 mm (meter price) for Sets 2 and 6
21	Pipe 1m "Gooseneck" DN12, 15 x 1 mm (meter price) for Sets 4 and 8
NA	Pipe 1m DN12, 15 x 1 mm (meter price)
22a	Inlet port circular adjustment disc Ø6x0.5 cm
22b	Inlet port anchoring plate 15x15x0.5 cm
22c	Inlet port anchoring plate 30x30x0.5 cm
23a	Nail SS304 or SS316 for anchoring plate 10 cm
23b	Nail SS304 or SS316 for anchoring plate 20 cm
23c	Nail galvanized steel for anchoring plate 10 cm
23d	Nail galvanized steel for anchoring plate 35 cm
24a	Pipe support with round pipe holder, adjustment rod M8 (30 cm) and plate 15x15x0.3 cm
24b	Pipe support with retaining clamp, adjustment rod M8 (30 cm) and plate 15x15x0.3 cm
24c	Pipe support - retaining clamp with two M8 nuts
24d	Pipe support - round pipe holder
24e	Pipe support - plate 15x15x0.3 cm with two M8 nuts
24f	Pipe support - adjustment rod M8 (30 cm)
24g	Pipe support - adjustment rod M8 (100 cm)
25a	Pipe support - brick with drilled hole, threaded rod M8 (30 cm) and round pipe holder
25b	Pipe support - brick with drilled hole, threaded rod M8 (30 cm) and retaining clamp
25c	Pipe support - brick with two nuts and washers
26	Valve extension with 30cm and with 50 cm length

<b>Options (Hoses)</b>	
<b>Part#</b>	<b>Description</b>
<b>Surcharge for the change of standard Type 1# hose to other hose type</b>	
3a	Surcharge for hose Type #1 Tekno 1SN DN16 - 1 steel braid
3b	Surcharge for hose Type #2 Tekno 1SN EV DN16 - 1 steel braid, Evergreen
3c	Surcharge for hose Type #3 Tekno 1SN FV DN16 - 1 steel braid, Forever
3d	Surcharge for hose Type #4 Tekno 2SN DN16 - 2 steel braid
3e	Surcharge for hose Type #5 Tekno 2SN EV DN16 - 2 steel braid, Evergreen
3f	Surcharge for hose Type #6 Tekno 2SN FV DN16 - 2 steel braid, Forever
3g	Surcharge for hose Type #7 Dolomiti 1SN DN16 - 1 steel braid
3h	Surcharge for hose Type #8 Dolomiti 2SN DN16 - 2 steel braid
<b>Other hose types</b>	
3a	Hose 3.25m Type #1 Tekno 1SN DN16 - 1 steel braid
3b	Hose 3.25m Type #2 Tekno 1SN EV DN16 - 1 steel braid, Evergreen
3c	Hose 3.25m Type #3 Tekno 1SN FV DN16 - 1 steel braid, Forever
3d	Hose 3.25m Type #4 Tekno 2SN DN16 - 2 steel braid
3e	Hose 3.25m Type #5 Tekno 2SN EV DN16 - 2 steel braid, Evergreen
3f	Hose 3.25m Type #6 Tekno 2SN FV DN16 - 2 steel braid, Forever
3g	Hose 3.25m Type #7 Dolomiti 1SN DN16 - 1 steel braid
3h	Hose 3.25m Type #8 Dolomiti 2SN DN16 - 2 steel braid
8a	Hose 5.75m Type #1 Tekno 1SN DN16 - 1 steel braid
8b	Hose 5.75m Type #2 Tekno 1SN EV DN16 - 1 steel braid, Evergreen
8c	Hose 5.75m Type #3 Tekno 1SN FV DN16 - 1 steel braid, Forever
8d	Hose 5.75m Type #4 Tekno 2SN DN16 - 2 steel braid

8e	Hose 5.75m Type #5 Tekno 2SN EV DN16 - 2 steel braid, Evergreen
8f	Hose 5.75m Type #6 Tekno 2SN FV DN16 - 2 steel braid, Forever
8g	Hose 5.75m Type #7 Dolomiti 1SN DN16 - 1 steel braid
8h	Hose 5.75m Type #8 Dolomiti 2SN DN16 - 2 steel braid
10a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)
10b	Hose 1m Type #2 Tekno 1SN EV DN16 - 1 steel braid, Evergreen (meter price)
10c	Hose 1m Type #3 Tekno 1SN FV DN16 - 1 steel braid, Forever (meter price)
10d	Hose 1m Type #4 Tekno 2SN DN16 - 2 steel braid (meter price)
10e	Hose 1m Type #5 Tekno 2SN EV DN16 - 2 steel braid, Evergreen (meter price)
10f	Hose 1m Type #6 Tekno 2SN FV DN16 - 2 steel braid, Forever (meter price)
10g	Hose 1m Type #7 Dolomiti 1SN DN16 - 1 steel braid (meter price)
10h	Hose 1m Type #8 Dolomiti 2SN DN16 - 2 steel braid (meter price)
	<b>Other parts</b>
22a	Inlet port circular adjustment disc 6cm
22b	Inlet port anchoring plate 15x15x0.3 cm
22c	Inlet port anchoring plate 30x30x0.3 cm
23a	Nail SS304 or SS316 for anchoring plate 10 cm
23b	Nail SS304 or SS316 for anchoring plate 20 cm
23c	Nail galvanized steel for anchoring plate 10 cm
23d	Nail galvanized steel for anchoring plate 35 cm
26	Valve extension with 30cm and 50 cm length
27a	U-bolt for hoses SS 10 cm
27b	U-bolt for hoses SS 20 cm
27c	U-bolt for hoses galvanised steel 10 cm
27d	U-bolt for hoses galvanised steel 20 cm



## A.6 Reference Sensor Configuration Setups

<b>Setup A - with 4-Way Manifold</b>		
<b>Part#</b>	<b>Description</b>	
1a	Inlet port - horizontal with barb fitting DN12	1
2	Ferrule DN16	1
3a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
4	Hose clamp 1/2" reinforced	1
5	Barbed adapter with rotary nut 1/2" BSPP	1
6	Hose clamp 1/2"	2
7	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
28a	Hose seal with integrated frame	1

<b>Setup B - without 4-Way Manifold</b>		
<b>Part#</b>	<b>Description</b>	
1a	Inlet port - horizontal with barb fitting DN12	1
2	Ferrule DN16	2
3a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	4
4	Hose clamp 1/2" reinforced	2
5	Barbed adapter with rotary nut 1/2" BSPP	2
6	Hose clamp 1/2"	4
7	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	4
28b	Hose seal	2
28c	SS304 or SS316 frame/flange	2

<b>Setup C - with 4-Way Manifold (Sensor Installed Above Ground)</b>		
<b>Part#</b>	<b>Description</b>	
1b	Inlet port - horizontal with barb fitting DN12	1
2	Ferrule DN16	1
3a	Hose 1m Type #1 Tekno 1SN DN16 - 1 steel braid (meter price)	2
4	Hose clamp 1/2" reinforced	1
5	Barbed adapter with rotary nut 1/2" BSPP	1
6	Hose clamp 1/2"	2
7	Garden hose 5/8" 15mm Kärcher PremioFlex , 1m	2
28a	Hose seal with integrated frame	1

*Note: To order spare reference sensor configuration parts purchase one additional Set*

<b>Other Parts for Reference Sensor Configuration Setups</b>		
<b>Part#</b>	<b>Description</b>	
22a	Inlet port circular adjustment disc 6cm	
22b	Inlet port anchoring plate 15x15x0.3 cm	
22c	Inlet port anchoring plate 30x30x0.3 cm	
23a	Nail SS304 or SS316 for anchoring plate 10 cm	
23b	Nail SS304 or SS316 for anchoring plate 20 cm	
23c	Nail galvanized steel for anchoring plate 10 cm	
23d	Nail galvanized steel for anchoring plate 35 cm	
27a	U-bolt for hoses SS 10 cm	
27b	U-bolt for hoses SS 20 cm	
27c	U-bolt for hoses galvanised steel 10 cm	
27d	U-bolt for hoses galvanised steel 20 cm	

28a	Hose seal with integrated frame
28b	Hose seal
28c	SS304 or SS316 frame/flange

### A.7 WNRS Accessories

Description
Pipe compensator coupler, DN12, pressfitting
Gravel 1.5 to 2 cm granularity, washed and sieved to cover inlet ports (estimated price)
Gravel low quality, to cover pipes or hoses (estimated price)
Stainless steel meshes (Size:1000 x 1000mm, mesh: 12 x 12mm , wire: 0,5mm)
Stainless steel meshes (Size:1000 x 1000mm, mesh: 6 x 6mm , wire: 0,5mm)
Stainless steel meshes (Size:1000 x 1000mm, mesh: 17 x 17mm , wire: 0,5mm)
Stainless steel meshes (Size:800 x 800mm, mesh: 17 x 17mm , wire: 0,5mm)
Stainless steel meshes (Size:800 x 1800mm, mesh: 12 x 12mm , wire: 0,5mm)
Stainless steel wire (2.5m)
Stainless steel wire-clamps
Plug 1/2" BSPP for pressure testing
Plug 1/2" BSPT for pressure testing and manifolds inlet blocking
Plug 1/2" NPT for pressure testing
Plug 1/2" BSP for MB2005 with seal
Steel washer M60
T 3-ways barb adapter DN16 for hose

### A.8 WNRS Historic Parts

Description
Inlet Port Male BSPP 1/2"
Inlet Port Male BSPT 1/2"
Inlet Port Male NPT 1/2"
Inlet Port Female BSPP 1/2"
Inlet Port Female BSPT 1/2"
Inlet Port Female NPT 1/2"
Valve full bore, Male BSPP 1/2"
Valve full bore, Male BSPT 1/2"
Valve full bore, Male NPT 1/2"
Valve full bore, Female BSPP 1/2"
Valve full bore, Female BSPT 1/2"
Valve full bore, Female NPT 1/2"

### A.9 Tools Set

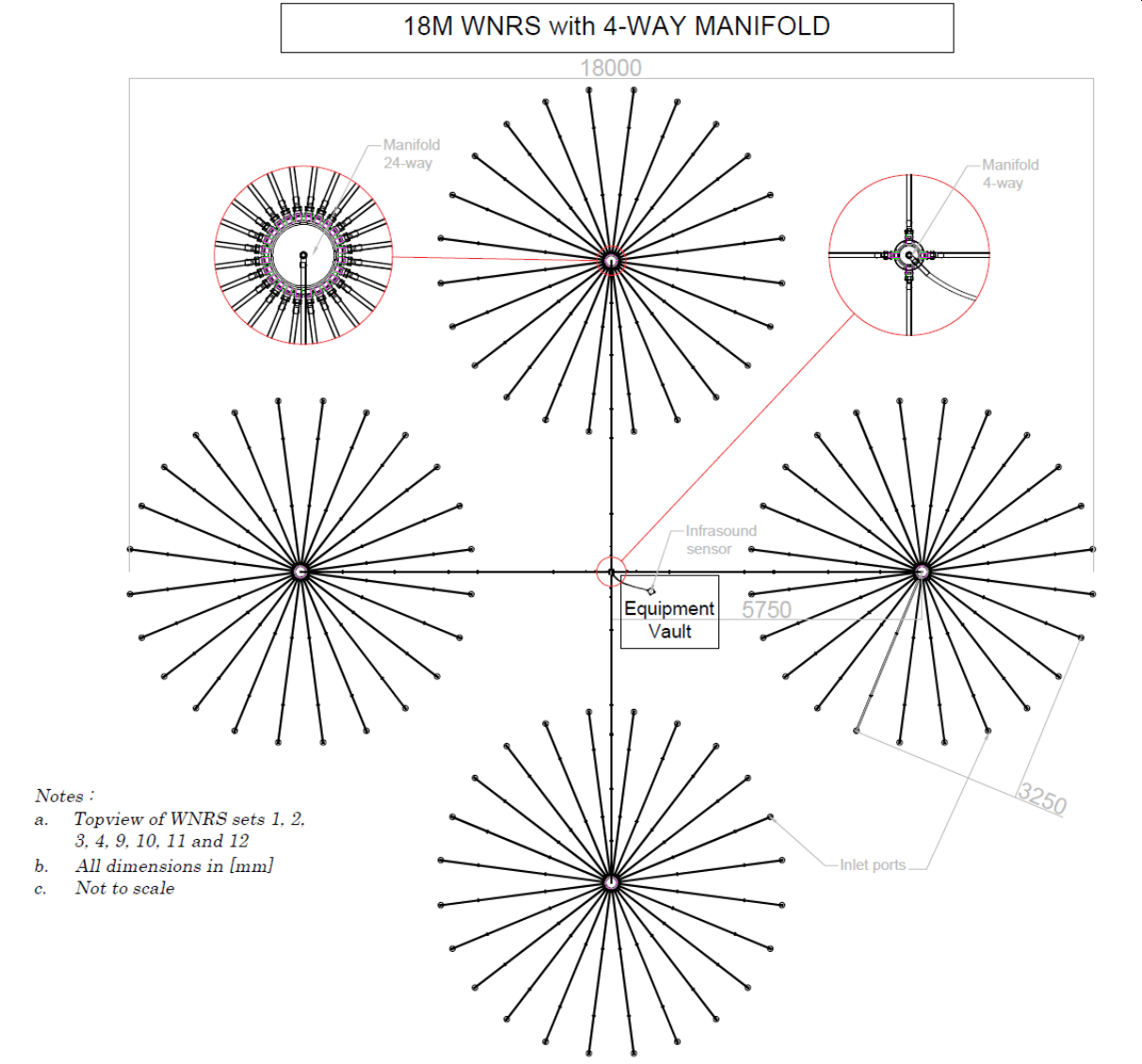
Description	Quantity
Thread seal tape (10m)	4
Crimping tool for press fitting 1/2"	1
Pipe cutter	1
Pipe deburrer	1
Locking plier	1
Tongue and groove plier	1
Screwdrivers set	1
Allen key set	1

Gear wrench set	1
Air compressor with integrated tank (portable)	1
Diesel generator 230V AC (portable)	1
Digital level	1
Torque wrench for the BSP fittings	1
Kit for pressure test - 1 Way	1
Kit for pressure test - 4 Ways	1
Leak detector Aerosol	5
Silicone Gun	1
Silicone UV resistant	2
Glue for threaded fitting (type Loctite) (50mL)	2
Adjustable wrench	1
10L buckets	4

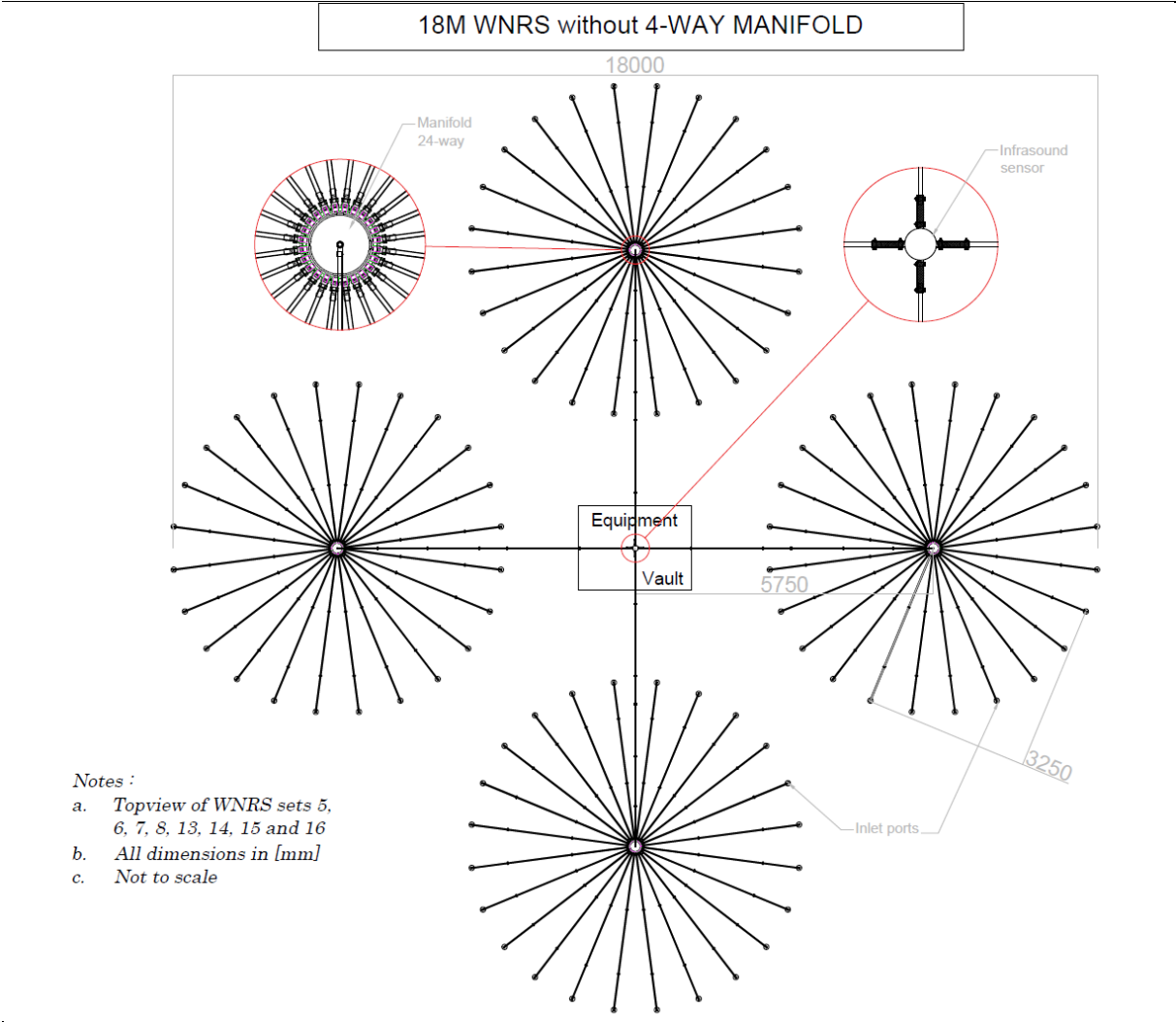
### A.10 Other Tools

Description
Portable pipe bender 3/8" to 1"
Electric sieve
Lifting tool for mesh with gravel
Supply of canopies sun and rain protection

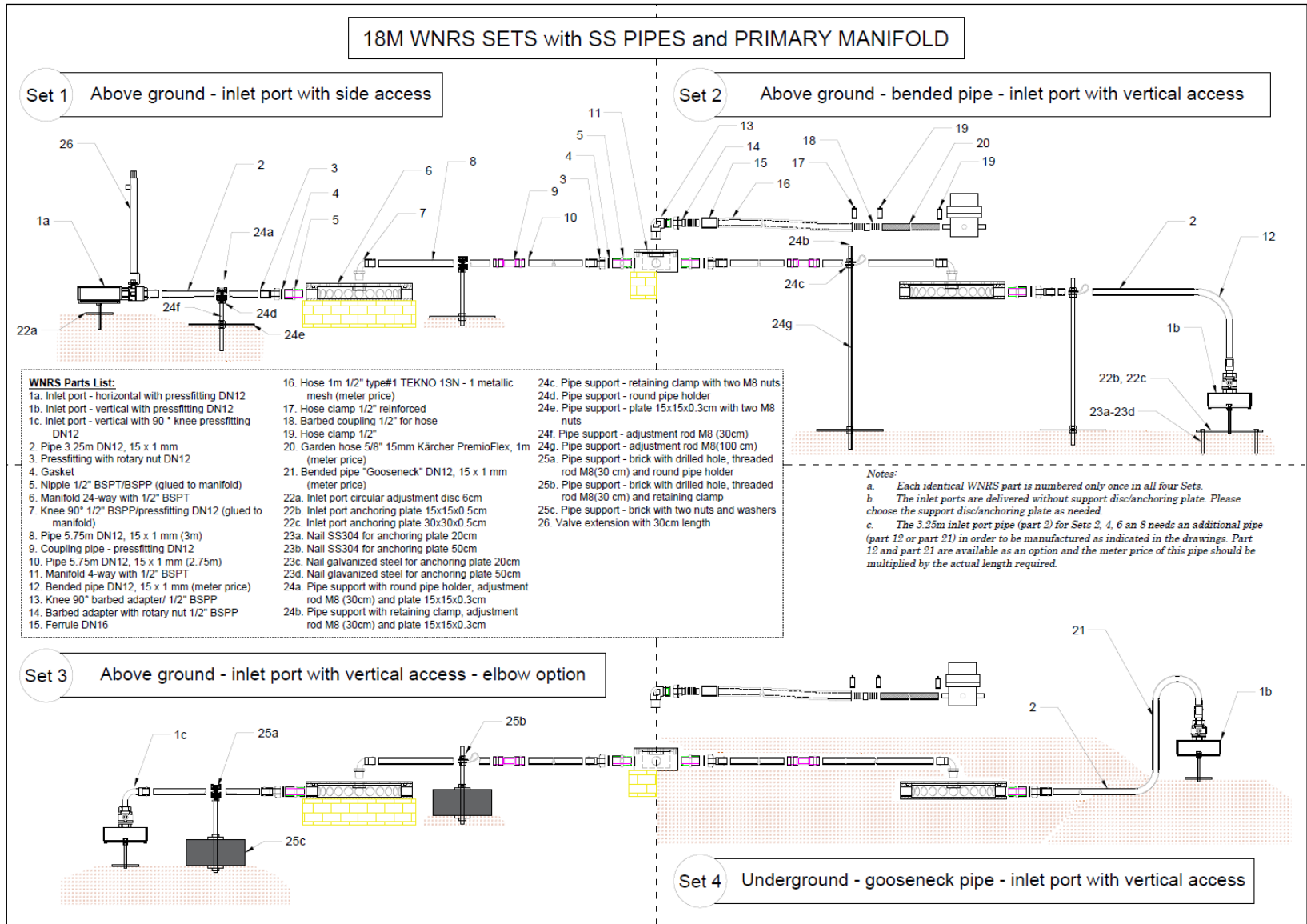
**APPENDIX B – MECHANICAL DRAWINGS**  
**B.1 18m WNRS**



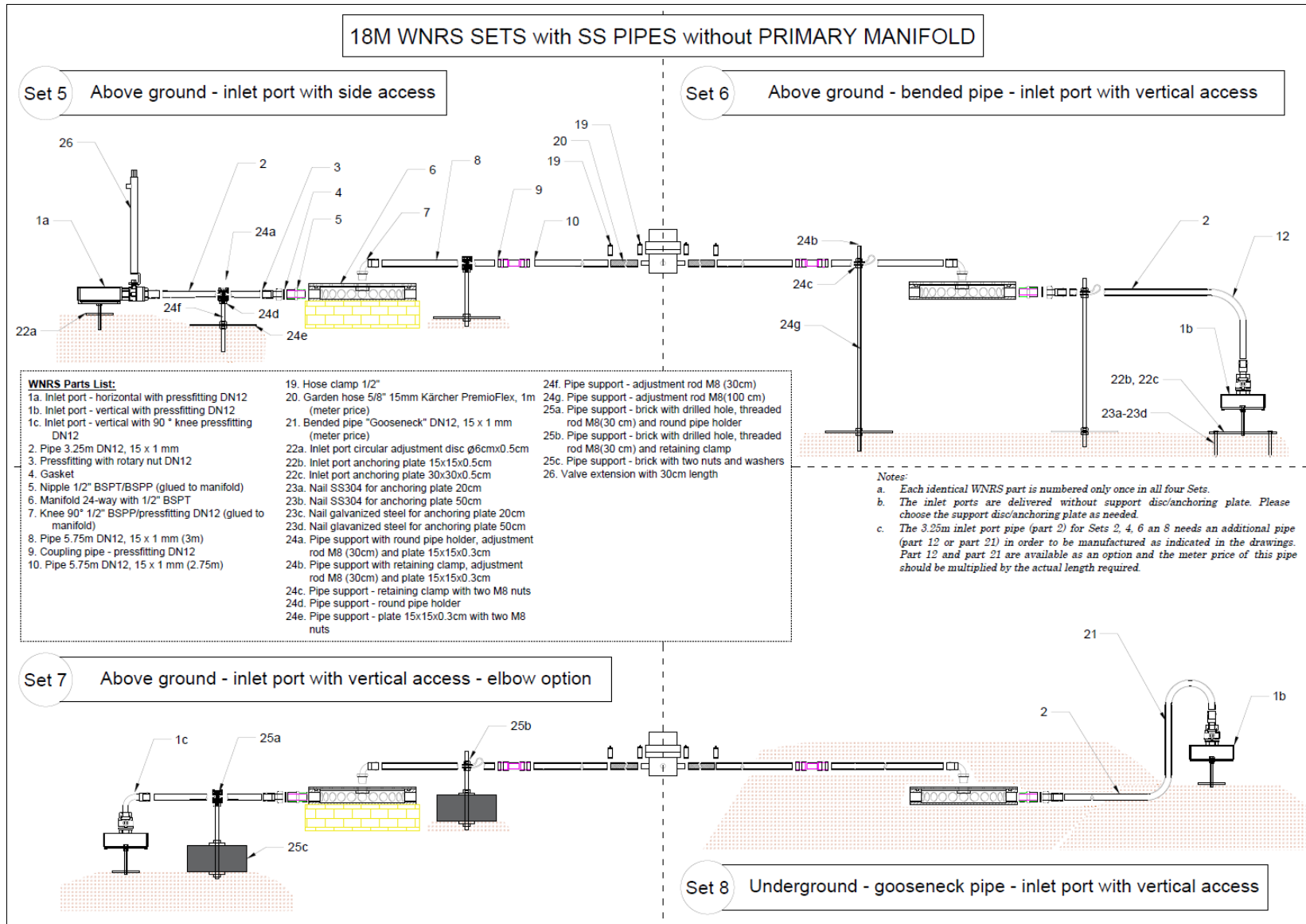
**Figure 1**



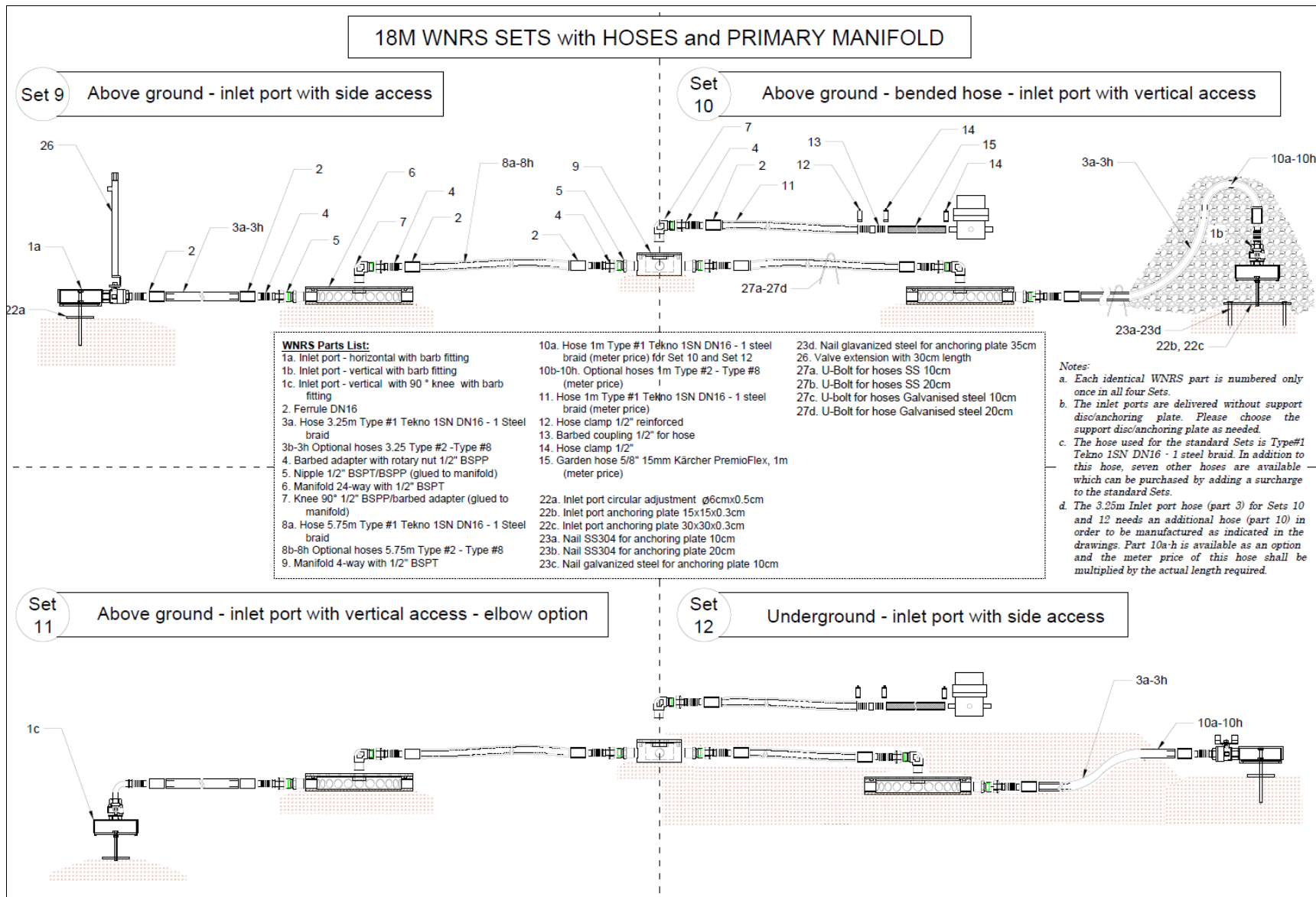
**Figure 2**



**Figure 3**

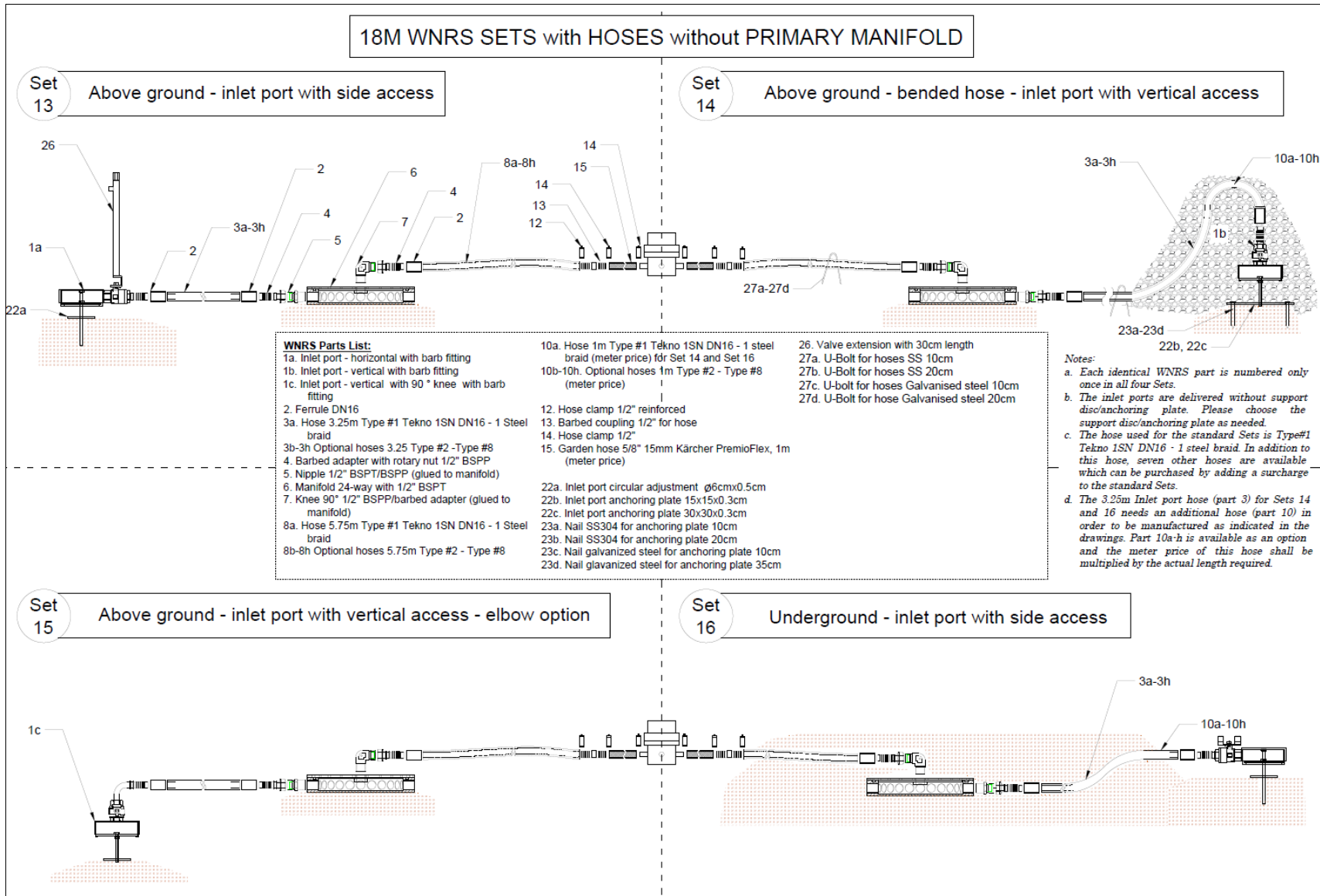


**Figure 4**

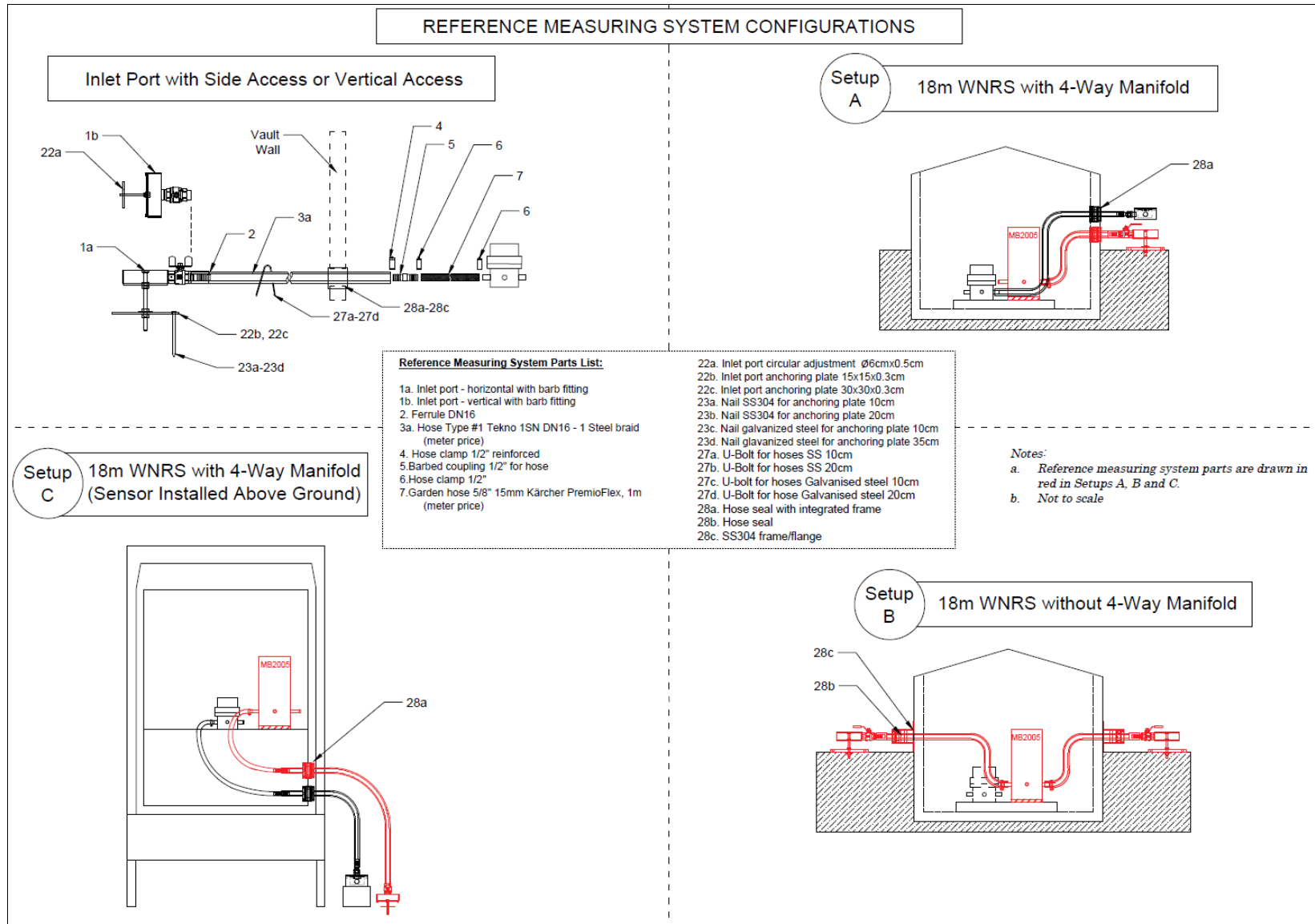


**Figure 5**





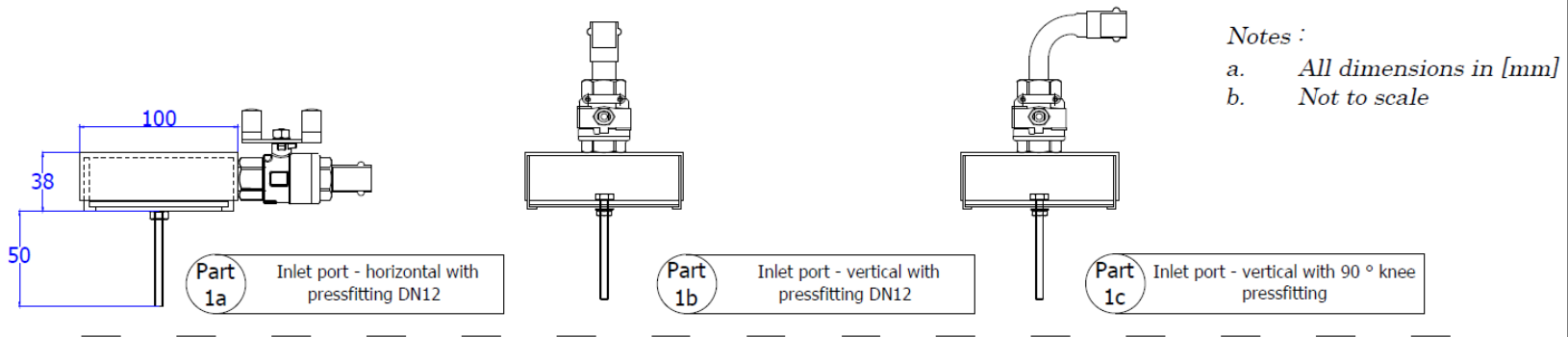
**Figure 6**



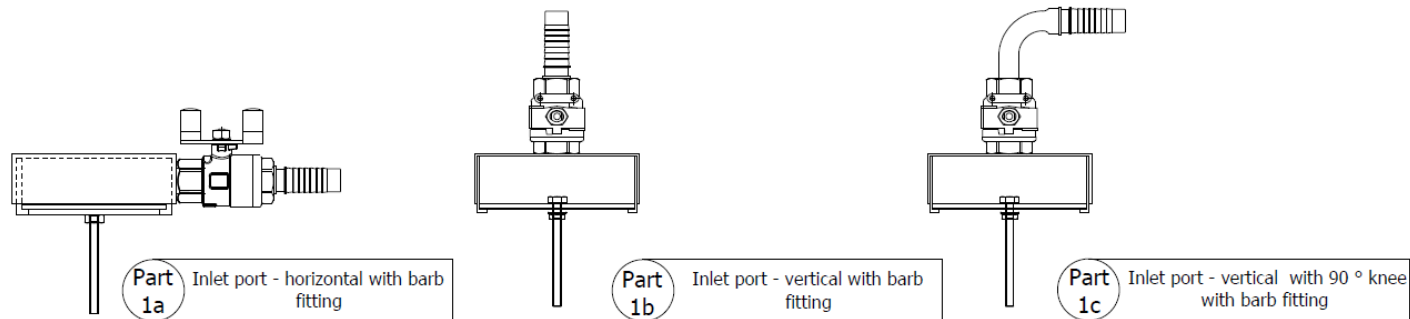
**Figure 7**

## INLET PORTS

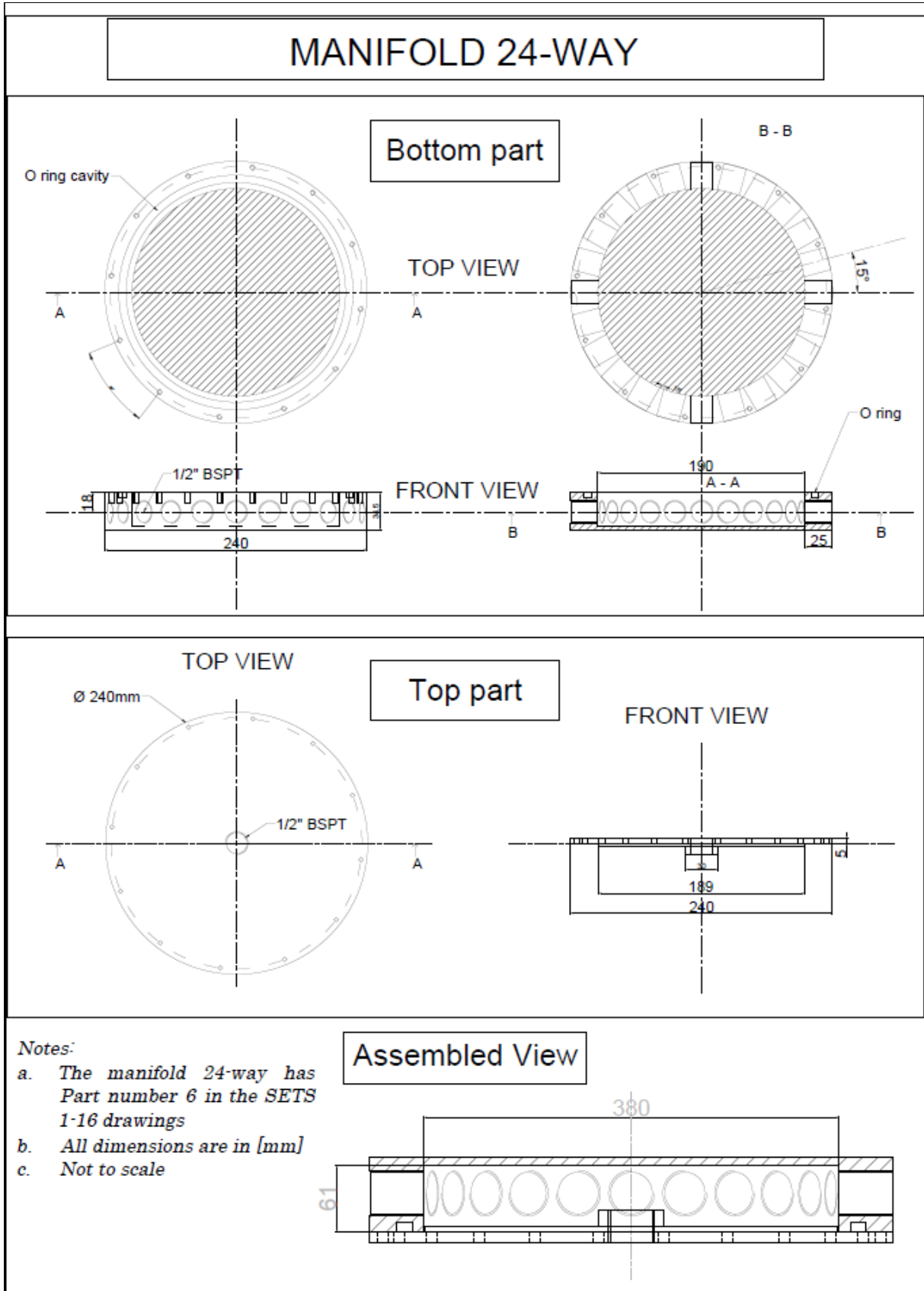
### Inlet Port with Pressfitting for 18m WNRS for SETS 1-8



### Inlet Port with Barb Fitting for 18m WNRS for SETS 9-16

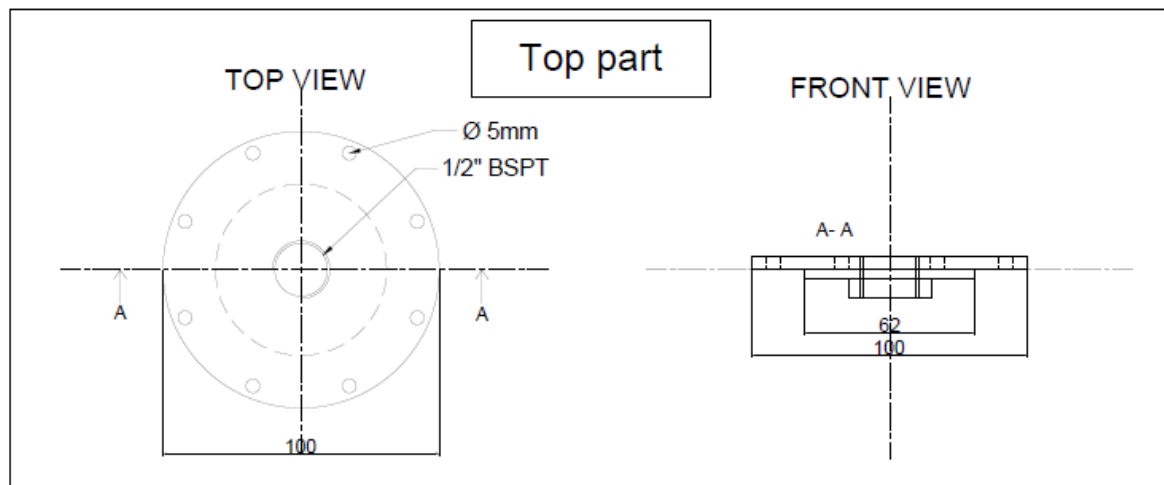
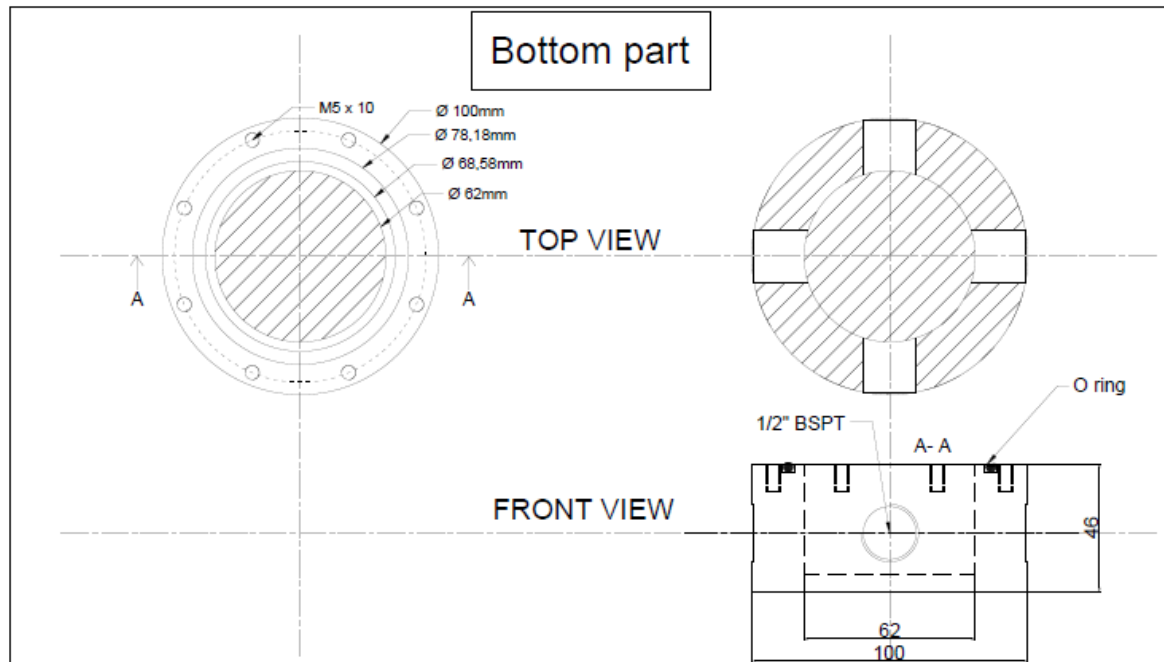


**Figure 8**

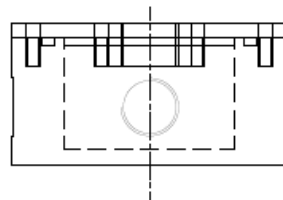


**Figure 9**

# MANIFOLD 4-WAY



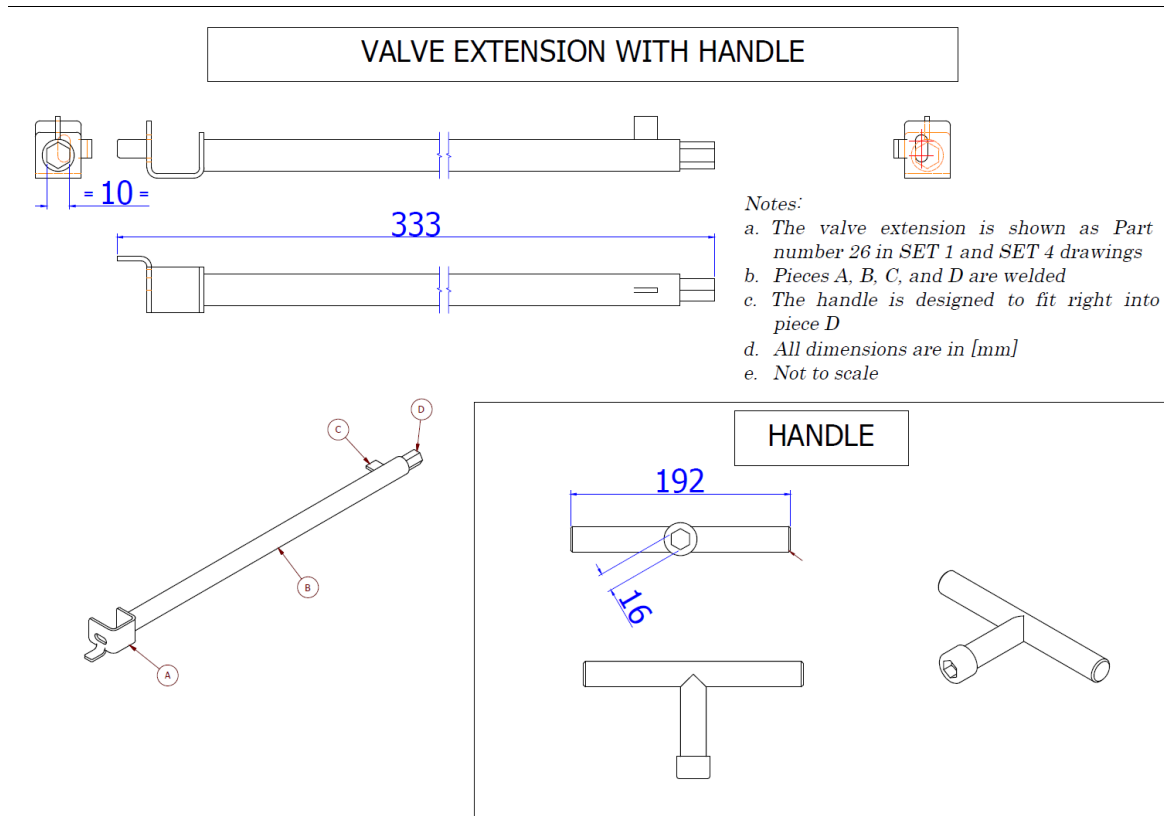
## Assembled view



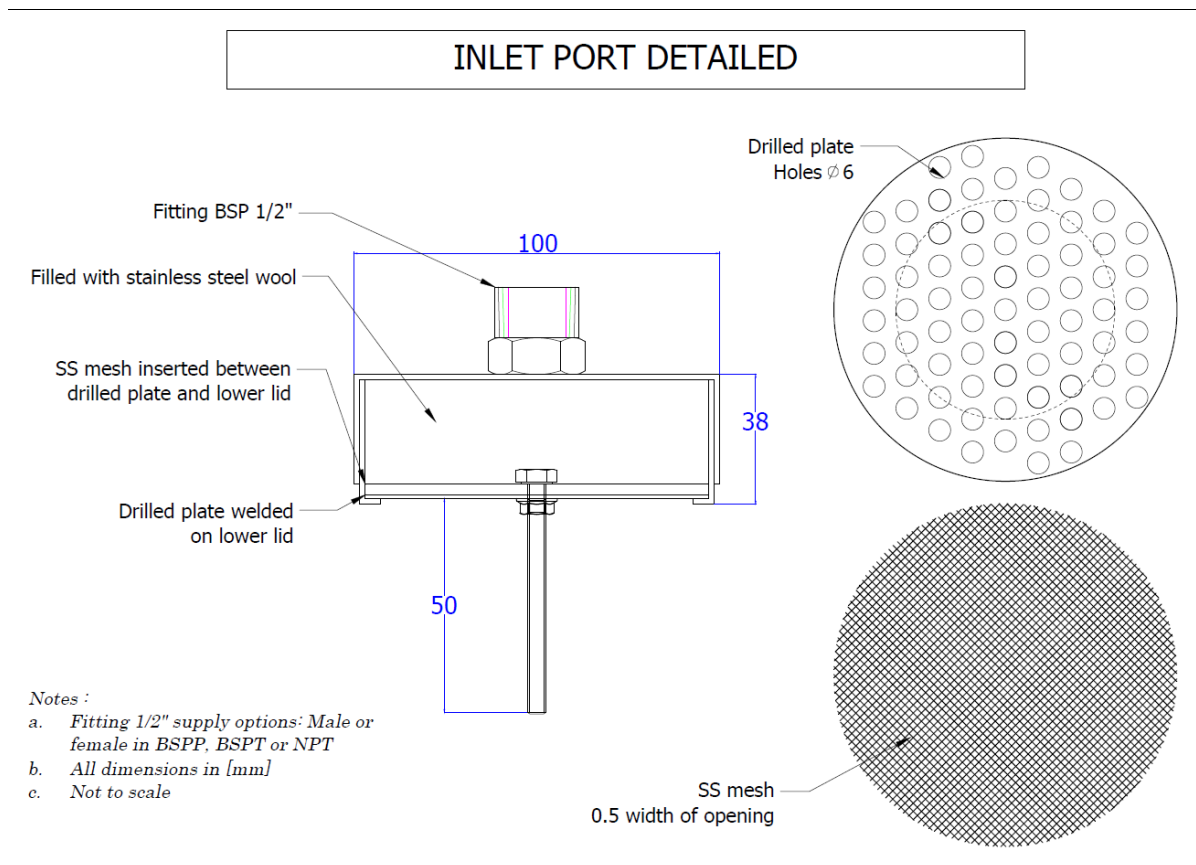
### Notes:

- The manifold 4-way has Part number 11 in the SETS 1-4 drawings and Part number 9 in the SETS 9-12 drawings.
- All dimensions are in [mm]
- Not to scale

**Figure 10**

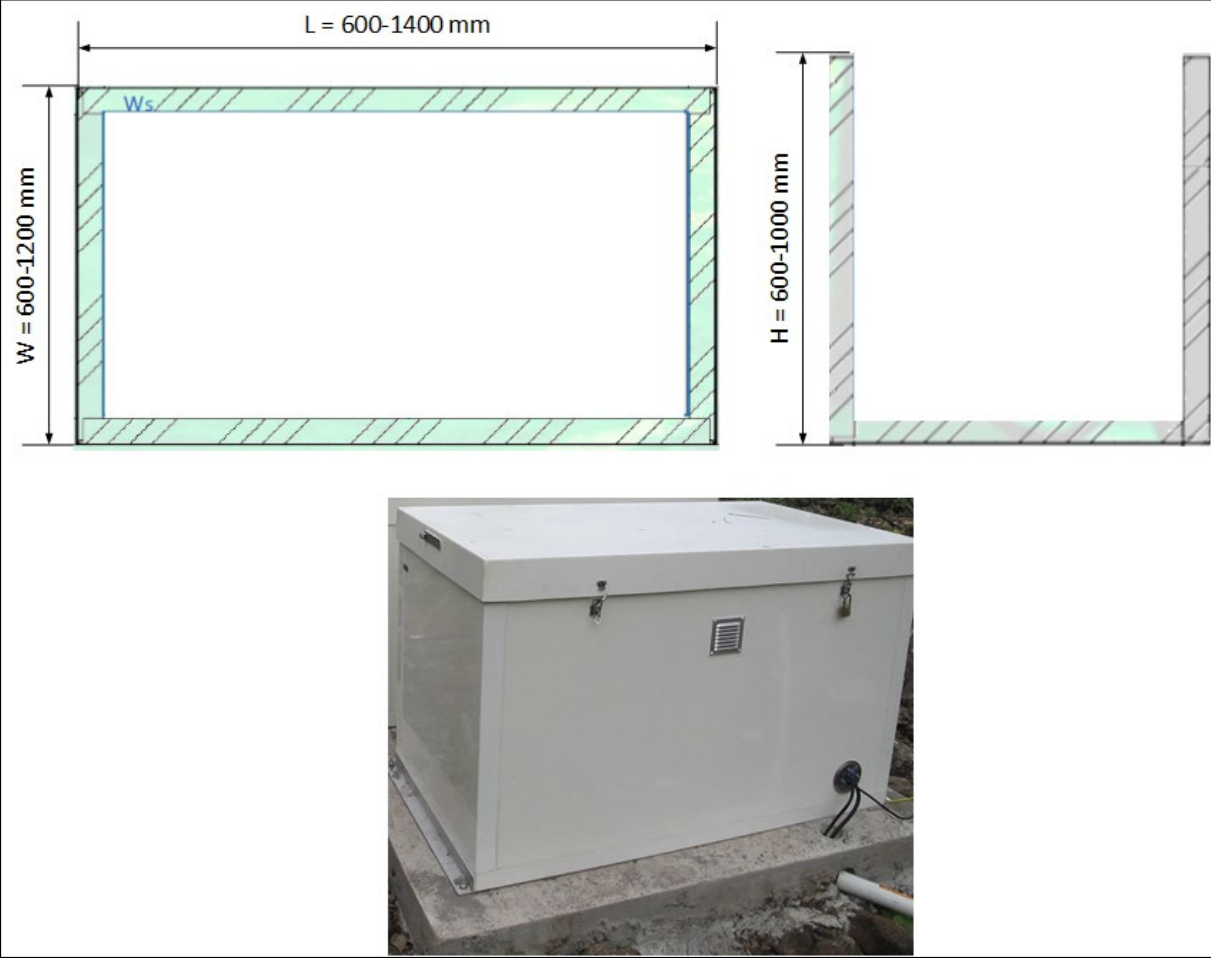


**Figure 11**

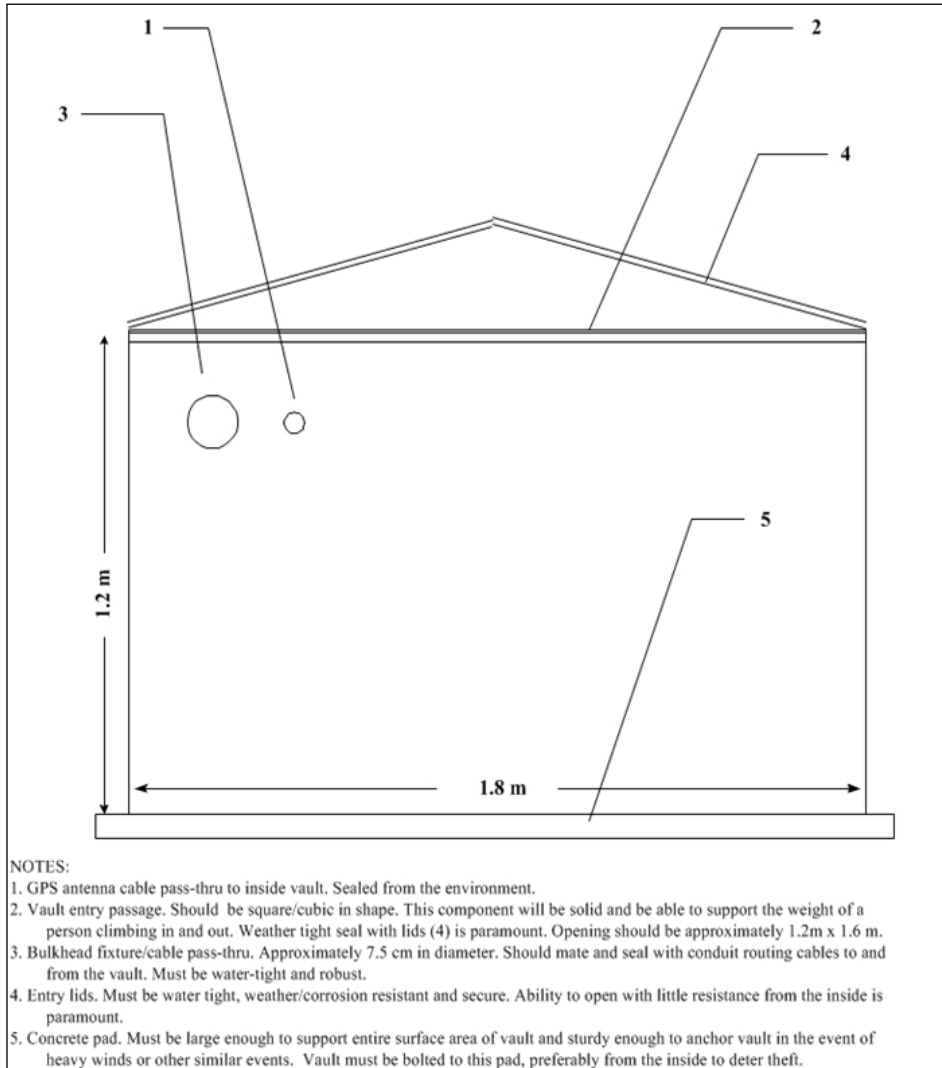


**Figure12**

**B.2 Vaults**

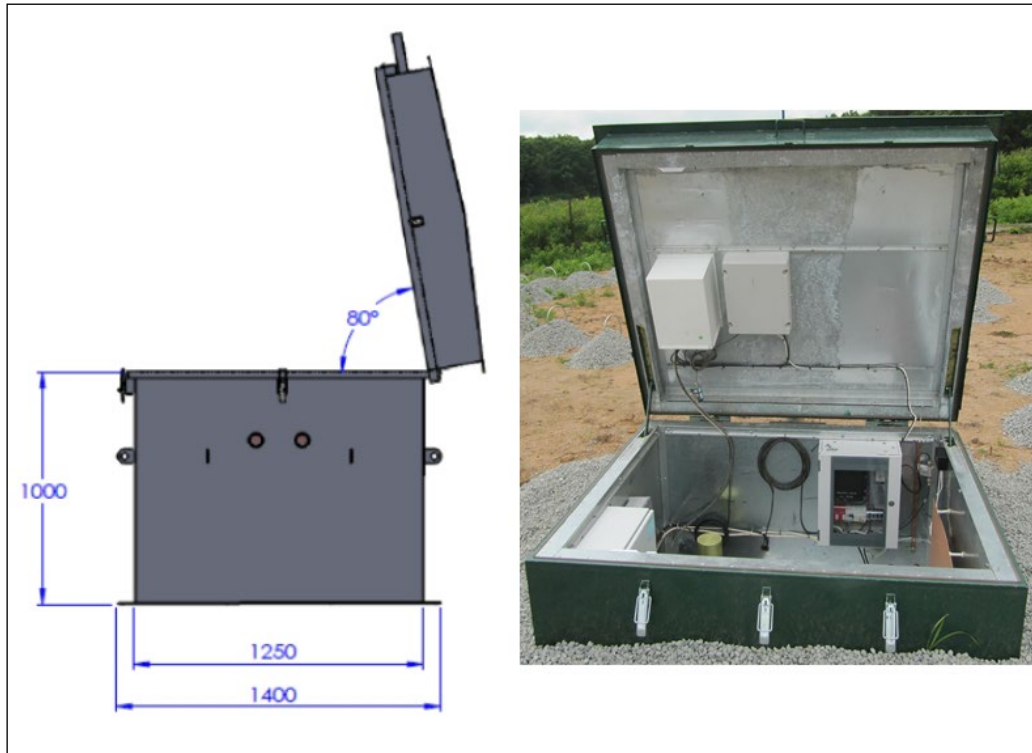


**Figure 13 Light Vault in sandwich technology for above ground installation**

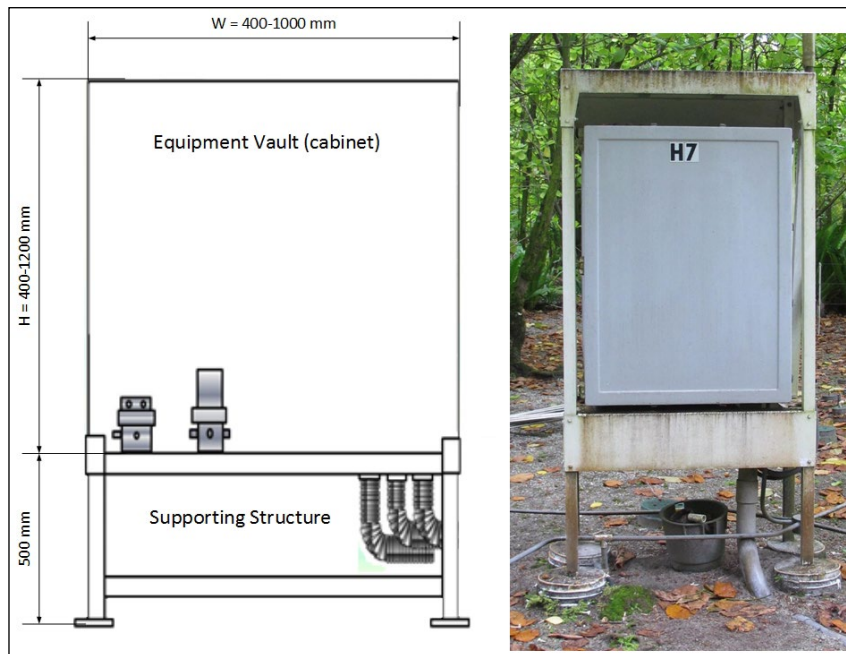


**Figure 14 Heavy Vault in sandwich technology for underground and above ground installation**





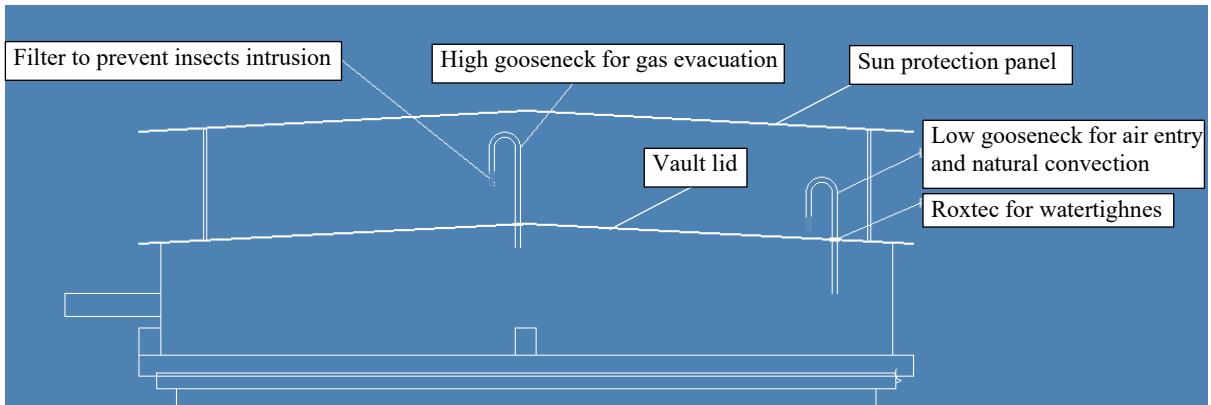
**Figure 15 Heavy-duty-stainless-steel Vault for underground and above ground installation**



**Figure 16 Light Vault for above ground installation (on supporting structure)**



**Figure 17 Pelican Vault for above ground, below ground and completely buried installation**



**Figure 18 Example of a Vault passive air ventilation system**