Annex A Visual inspection / Laboratory Testing Description

Project: Improved Emergency Latrine Slab Project

2020/RFQ/063

Introduction and objective

UNHCR is requesting quotations for laboratory testing services of improved emergency latrine slabs from material testing laboratories or technical testing organizations (herein referred to as "laboratories" or "laboratory").

On 20 October 2020, UNHCR launched a Request for Proposals (RfP) to manufacturers, vendors and traders for an improved emergency latrine slab. An "improved emergency latrine slab" is defined as a light-weight latrine slab that ensures the safe separation of human feces from the environment by including a self-closing mechanism for the drop hole after latrine use. "Self-closing" is defined as: ''without the need for the user to take action to close the cover and without powered inputs". The RfP includes a number of requirements which require visual inspection and/or laboratory testing as follows, where one asterisk * means "tests that could potentially be done by UNHCR, depending on the price of the offers received" and two asterisks ** means "tests that will certainly be conducted by the laboratory":

- Stacking of slabs*
- Measurement of length and height (overall length of slab, keyhole and/or discharge diameter, height of handrails, seat sizes) *
- Measurement of weight**
- Slab and pan surface – ease of drainage*
- Assessment of tactile features (measurements of length and height, and determination of Light Reflectance Values) *
- Pendulum slip resistance test **
- Fatigue testing of self-closing mechanism**
- Pan strength and slab/pan connection under 50 kg load**
- Stability of disability add-ons such as seats and handrails*
- Functionality of self-closing mechanism after exposure to cold **
- Deflection measurements before and after exposure to heat **
- Drop test**

Notes

a. UNHCR is requesting 5 samples of each product to be submitted in response to the RfP
b. UNHCR will receive samples of the slabs by 8 March 2021 and conduct an initial technical evaluation of the products; UNHCR will send the samples of any products that have passed the evaluation to the selected laboratory for further testing.
c. UNHCR will cover the costs of the visual inspection/laboratory testing for each product submitted to the laboratory.
d. UNHCR estimates that there may be 5-10 qualified products, although UNHCR is not able to guarantee the number of products that will be submitted for visual inspection/laboratory testing until response from the RfP is completed.
e. UNHCR cannot predict the products that bidders will be presenting, as this is an innovation-based bidding process, therefore potential adaptations may be required to conduct some of the tests in consultation with UNHCR. Laboratories should take this into consideration when preparing their offer.

f. UNHCR reserves the right to conduct the testing of the requirements marked with an asterisk (*) instead of awarding these tests to a laboratory. This will be subjected to the price and required time for testing offered by the laboratories.
g. UNHCR will give preference to laboratories that can conduct all inspections/tests described in this document (Annex A.1 & A.2). It is acceptable if the bidding laboratories choose to sub-contract another laboratory for one or several tests. It is preferable for UNHCR to award the contract to one laboratory which subcontracts another laboratory rather than UNHCR awarding the contract to multiple laboratories.
h. UNHCR does not accept alternatives to the tests described below.
i. Proposals may provide three options for tests: 1) All 15 tests provided either by the laboratory or sub-contracted laboratories; 2) All tests except the slip resistance/pendulum test are provided; 3) Only the slip resistance/pendulum test is provided. **No other options will be accepted**.

Evaluation criteria

Proposals will be evaluated by the following criteria:

1. The level of understanding shown in the proposal. The laboratory demonstrates clear understanding of the given specifications and provides a well-organised, detailed and comprehensive offer.
2. Capacity to prove that the procedures/methods applied by the laboratory to conduct the described tests/steps have a validated basis. When following any established specific standard, please refer to it.
3. Capacity to conduct all or the highest number of tests. In the case of sub-contracting for tests, the laboratory with the fewest subcontracted tests is preferred.
4. The offer presents only one of the three options: 1) All 15 tests provided either by the laboratory or sub-contracted laboratories; 2) All tests except the slip resistance/pendulum test are provided; 3) Only the slip resistance/pendulum test is provided. Any offer presenting a different option will not be considered.
5. Timeframe of testing. Preference is given for prompt testing, while also completing tests to the standards and quality outlined.
6. Demonstration that the laboratory has the appropriate technical skilled staff to conduct the required tests.
7. Laboratory is equipped with the necessary calibrated instruments/equipment to conduct the tests.
8. Laboratory(ies) should be certified by an internationally recognized accreditation body (such as ILAC, A2LA, APLAC) to perform laboratory tests.

General Testing Requirements

Latrine slab samples including accessories and add-ons will be subjected to 15 tests. The tests are classified in two groups: ***Annex A.1*** are tests that will not damage the samples, called “non-destructive tests” and ***Annex A.2*** are tests that could potentially degrade or damage the samples, called “potentially destructive tests”.

Important note: All tests should have enough narrative and/or visual clear evidence proving that the tests have been conducted with adequate standards, as per specifications and clearly showing the results in detail. If evidence is not sufficient in quantity and/or quality for the evaluator to make a proper judgment, the test will be considered invalid and would need to be conducted again at the laboratory’s expense.

Sample Size

Unless specified otherwise, all tests will be carried out on one (1) single sample per product, selected randomly by the laboratory from those received.

Conditioning

The test samples will be conditioned prior to any testing at (23 ± 2) °C and (50 ± 5) % RH for a minimum of 12 hours.

Testing Order

The order of the tests in this document represent the preferable sequence to be followed by the laboratories when conducting the tests. This specific sequence aims to ensure maximum precision and quality in each test (by using undamaged samples) while minimising the total number of samples required. For this reason, it has been proposed to initially conduct the tests that do not affect the sample (i.e. non-destructive tests listed in Annex A.1), followed by the tests that may degrade or damage the samples (i.e. potentially destructive tests listed in Annex A.2).
The laboratory can alter this order if applying similar logic and justifying that a different sequence would serve the proposed objectives better.

Measurements

All measurements must be conducted using standardized, approved and calibrated equipment. Detailed descriptions, photos and any calibration certificate/record should accompany the offer to demonstrate the quality of the equipment used.

Testing samples

Please keep in mind that as the samples may present innovative solutions, it is not known what type of systems may be presented by bidders. This may result in certain adaptations required from the laboratory to be able to conduct the tests, in consultation with UNHCR. Please consider this factor when preparing the offer.

Important note: After completion of the tests, all samples needs to be kept by the laboratory for a period of 6 weeks until the evaluators accept the tests as valid.

After expiry of the 6-week period, laboratories will be responsible for disposing of the samples safely and in accordance with local and national laws. Laboratories shall therefore consider the costs of storage and final disposal when preparing their offer.

Reporting testing results

Results need to be reported as specified for each test which may include a combination of narrative, videos and photos. In addition, testing results should be summarised in a single table indicating all tests, samples and results. When more than one measurement taken, the highest value should be included in this final table.

TEST	**BIDDER 1**	**BIDDER 2**	**BIDDER 3**	**BIDDER 4**	**……..**
Test 1 Stacking					
Test 2 Dimensions					
…….					

Videos can be provided separately for each test. Files need to be clearly identified with following nomenclature: *laboratory name–Manufacturer name–test or tests number/s)* and properly indexed with the same testing order as outlined in Annexes A.1 and A.2, to facilitate evaluators identifying the relevant videos. This can be sent as individual files per test/manufacturer or combined in a single video file per manufacturer.

Flowchart

In response to this RfQ, bidding laboratories shall **prepare a flowchart indicating the sequence in which the testing will be done and the samples used. Include any subcontracting step if applicable.**

1. Stacking *

Objective: to check that multiple slabs can be safely stacked on top of each other for ease of transportation, without damaging the slabs above/below.

Test method/procedure:

- If samples are already properly stacked (horizontal one on top of another) on receipt, unwrap them and proceed directly with the test as indicated below.
- If samples are not stacked on receipt, then place all samples one on top of the other horizontally and proceed with the test. If the slab and pan are packaged separately, then test the stacking of each group of items separately.
- Observe the level of connection between samples including gaps between slabs, the orientation of the stack (i.e. is it horizontal) and how securely the slabs stack together
- Check any potential damage that stacking may cause to the samples above/below
- If stacking is not possible because it would likely damage the slabs, do not force the stacking but document the likely potential damage that would have occurred.
- Measure the height of all received stacked slabs and – if applicable – all received stacked pans/self-closing mechanisms
- Unstack items and note the relative ease to do so or any challenges encountered (e.g. slabs sticking together). Take footage of the items during stacking, unstacking and when items lying on the floor after stacking to document any potential damage.

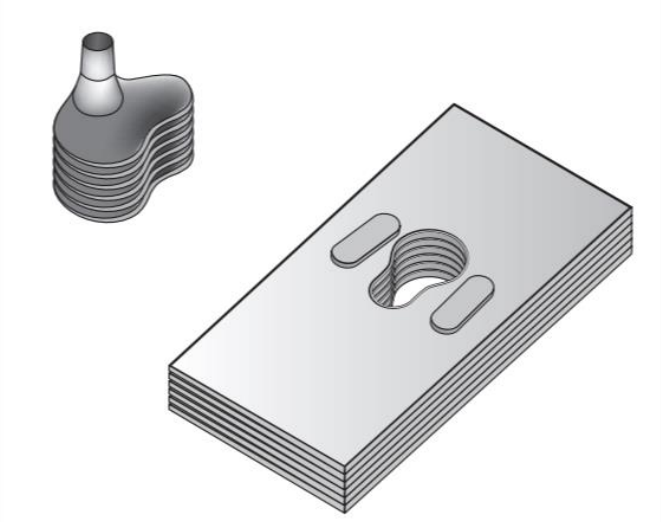


Figure 1: Sample of stacked slabs and pans (random design)

Results/report content:

- Narrative describing the result when stacking and unstacking the items including: ability to stack, potential damage, any unintentional damage incurred, stability of the stack, ability to unstack, any other observations).
- Video or photos of the stacked slabs (and separate stacked components) including all angles

2. Slab Dimensions/Keyhole dimensions *

Objective: to verify if the slab and keyhole dimensions comply with the requirements. Keyhole dimension verification is only applicable if the pan is supplied separately or the sample does not include a pan.

Test method/procedure

- Measure the length and width of the selected sample; take several measurements from corner points and mid-points along any given edge.

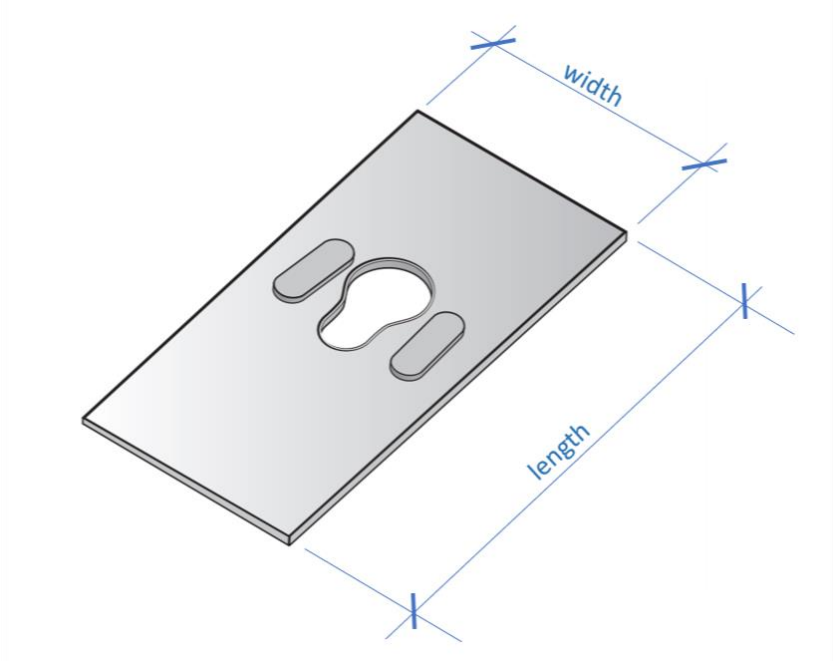


Figure 2: Dimensions of latrine slab

- Measurements must be conducted using tools that provide a minimum accuracy of one millimetre (1 mm).
- Measure dimensions of keyhole: length (mm), widest part of keyhole (mm), area of the largest circle within the keyhole shape (m^2), based on the diameter at the widest part of the keyhole.

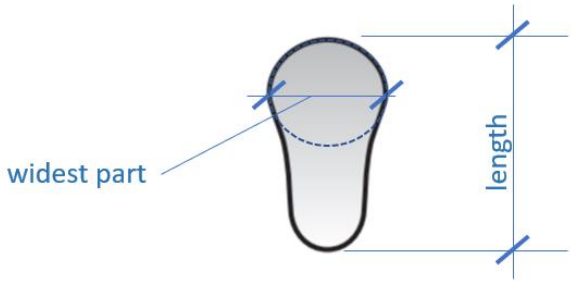


Figure 3: Dimensions of keyhole area

Results/report content

- Measurements to be presented in mm
- The results for area of the keyhole circular largest opening to be given in square meters (m^2)
- In the case of multiple measurements recorded for any sample, provide all varying measurements in the report; the summary results table should show the largest measurements recorded for each dimension.

3. Discharge pipe *

Objective: to verify the discharge pipe diameter for the pan (whether integrated or supplied separately to slab).

Test method/procedure

- Measure the outside diameter of the discharge pipe at the base of the pan.
- Take several measurements across the discharge pipe using tools such as a high-precision calliper that can provide accuracy to one mm.

Results/report content

- Measurements to be presented in mm
- In the case of multiple measurements recorded for any sample, provide all varying measurements in the report; the summary results table should show the largest measurements recorded.

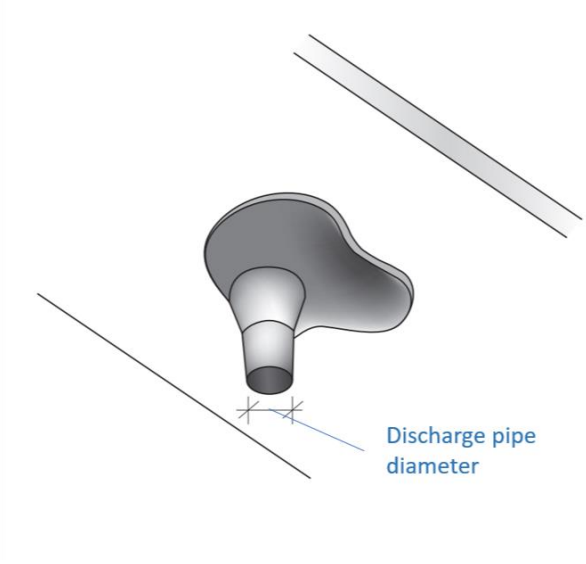


Figure 4: Discharge pipe external/outside diameter measurement

4. Slab weight **

Objective: to verify the slab weight including the self-closing mechanism and all required fixings, but excluding any add-ons such as seat/ handrail accessories and pegs to secure the corners of the slab.

Test method/procedure

- Assemble one slab from each set with the pan, seal, self-closing mechanism and any required fixings to attach these components. Do not include the four pegs used to secure the slab at the corners or any add-ons such as seat/handrail accessories.
- Measure the weight of the assembled slab using a digital high-precision scale (or similar instrument) that can provide accuracy to 0.1 kilograms (kg).

Results/report content

- Measurements to be presented in kg with one digit after decimal
- Report weights taken for each assembled sample in the summary results table

5. Size of add-ons: handrails, seat, stool *

Objective: to verify if the dimensions of the handrails comply with the requirements; to verify if the seat/stool is available in two sizes for children and adults.

Test method/procedure

- Measure the height of the top of the handrails at the point that the user would apply their weight. If multiple hand rest locations, provide measurements from each.
- Use a measuring device that can provide accuracy to one mm.
- Visually confirm that two sizes (e.g. adult and child) are available for the seat and stool.

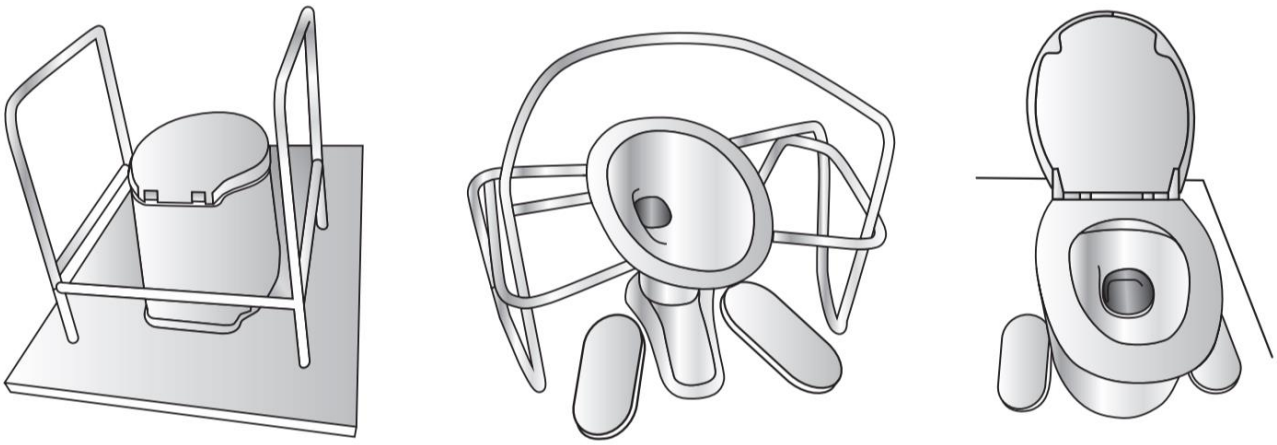


Figure 5: Examples of add-ons models

Results/report content

- Measurements to be presented in mm
- Report all measurements and include comments if there are multiple hand rest points; the summary results table should only show the highest measurements recorded for each size (adult/child).
- Provide narrative of the seat/stool sizes including photos.

6. Slab and pan surface *

Objective: to test the directional flow of fluid over the surface of the slab and pan.

Test method/procedure:

- Place the slab horizontally supported on 100 mm wide strips across each end only — allowing a clear span underneath the slab. Do not secure the slab using the four holes on the corners.
- Pour one litre (1l) of water in a single stream, moving it across all areas of the slab. Water to be poured at the sides of the slab as marked in blue, below.

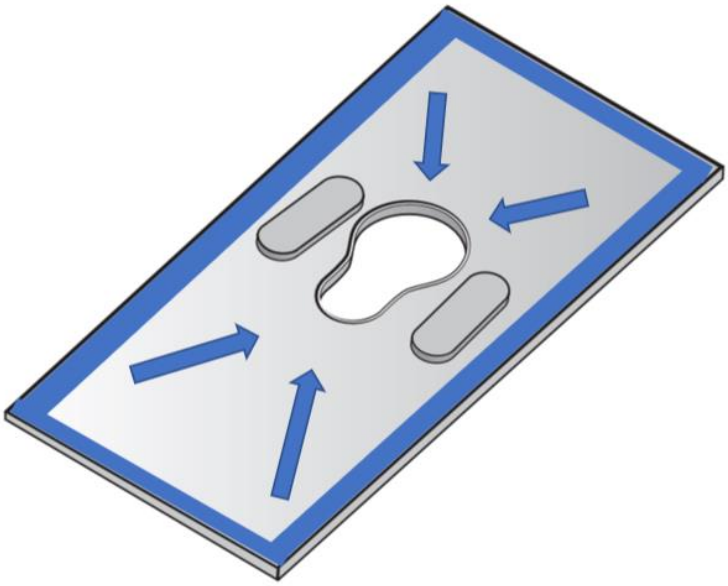


Figure 6: Typical slab showing area where water to be poured and the expected water direction

- Observe and record where the water flows including the relative speed of water draining and whether the entire volume enters the keyhole.
- Record a video of the trials showing the flow of water and indicating any areas where liquid pools or is otherwise restricted from entering the keyhole.

Results/report content

- Provide a narrative describing the places that the water stream was poured onto the slab, general observations on the flow and speed of draining, as well as highlighting any areas where water pooled or was restricted from entering the discharge pipe.
- Provide a video showing water behaviour when poured over the slab.

7. Visual impairment Add-ons

Objective: to verify the presence of aids for visual impairment in the form of tactile features that help guide visually impaired persons.

Test method/procedure:

- If not already present, install the tactile features as per instructions provided by bidder.
- Measure the outermost diameter of each tactile feature (i.e. bump) with an accuracy of 0.5 mm
- Measure the maximum height of several tactile features, with an accuracy of 0.5 mm
- Measure the distance between each tactile feature (i.e. bump), from outermost edge to outermost edge, with an accuracy of 0.5 mm.
- Select the closest colour match of the slab and closest colour match of the tactile features from the chart found here and note the colour codes (e.g. PPG#): https://www.ppgpaints.com/color/color-families/browse-all-colors
- Identify the corresponding Light Reflectance Value (LRV) for the colour codes in the reference table (Light Reflectance Values for PPG colour chart https://vocproduction.blob.core.windows.net/downloads/palettes/VOC_LightReflectanceValue.xlsx)
- Calculate the difference in LRV between the contrasting colours; highlight the results if there is less than a 30 points difference between the colour of the slab and the colour of the tactile features.
- Indicate the shape of the tactile features, and whether there are any sharp angles where waste/water may accumulate.

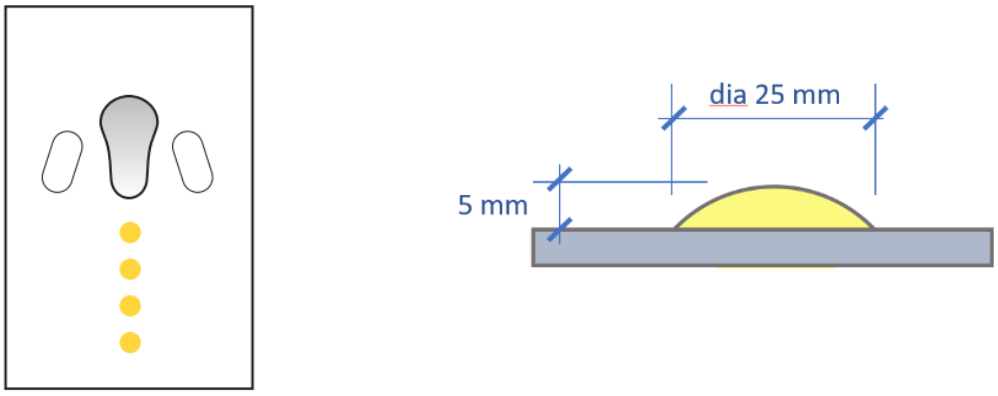


Figure 7: Sample of visual impairment features

Results/report content:

- Report all measurements required as described above, with an accuracy of 0.5 mm
- Report the corresponding colour codes and LRV values for the slab and tactile features.
- Provide photos clearly showing the tactile features as installed on the slab.

8. Slip resistance **

Objective: to measure the slip resistance, in both wet and dry conditions, of the main surface (i.e. not including the footrests) of the top side of the slab.

Test method/procedure:

Follow the test method as per the standard guidelines for ***ASTM E303*** "Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum" for USA, ***BS EN 13036-4:2011*** for British standards or the Australian equivalent standard ***HB198***.

Additional general guidelines include:

- Conduct the test on the area where user would most likely step on while entering the latrine but that is not the footrest area. ***Note****: If the shape of the slab leads to doubt which area for testing to choose, the laboratory should consult UNHCR to confirm.*
- Ensure proper slab conditioning (i.e. temperature and humidity) prior to the test as per previous instructions.
- Ensure the slab is clean and free of grease or any other liquid that would interfere with the test.
- Conduct test in dry conditions and record results as per the guidelines given on the selected standard
- Conduct test in wet conditions (making sure the surface is thoroughly wetted with water) and record results as per the guidelines given on the selected standard
- Both wet and dry tests to be conducted using Slider 96 Rubber, also known as 4S Rubber, developed to represent a shod-foot and slider 55 Rubber, also known as TRL, to represent barefoot traffic.

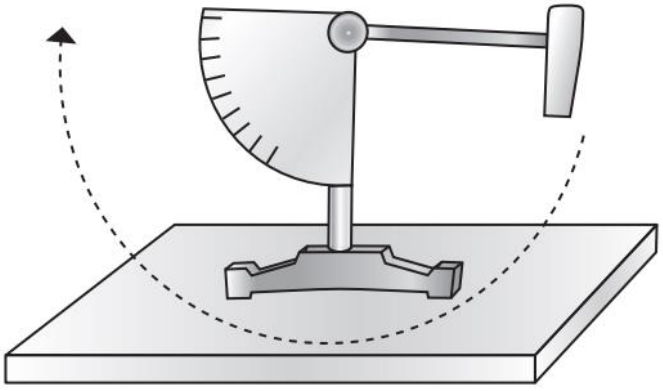


Figure 8: Generic representation of Pendulum test equipment

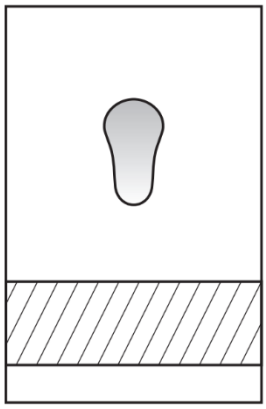


Figure 9: Preferred area for testing. This is where users will enter the latrine. The first step area on the plastic needs to be tested

Results/report content:

- Provide results as Pendulum Test Value (PTVs) for each of the rubber shoes (Slider 96 and Slider 55 rubbers) tested under both dry and wet conditions (4 PTVs in to report in total).
- Indicate the area of the slab selected for testing with a photo or diagram.

9. Fatigue test of self-closing mechanism

Objective: to test the durability of the self-closing mechanism.

Test method/procedure

- Observe the functionality of the self-closing mechanism before the test in terms of the ability to provide a full seal, speed of closing and any gaps between the contact surfaces.
- Install the pan and the self-closing mechanism in a horizontal position.
- Pour 100 ml of water into the pan and repeat 10,000 times, ensuring that enough time is allowed for the self-closing mechanism to fully close before the next instalment of water is poured.
- Ideally this will be conducted by an automated means that are not specified as long as they meet the required volume and number of repetitions. It is likely that the different products may require different setups to achieve the automated test.
- Monitor the system to ensure that the self-closing mechanism continues to provide a full seal between repetitions. If the self-closing mechanism no longer provides a full seal before the 10,000 repetitions are completed, record the number of repetitions before it failed.
- Check the self-closing mechanism for any potential breaks, signs of fatigue such as closing more slowly or any issues affecting functionality in providing a full seal.
- Compare functionality before and after the test including whether a full seal is still achieved, speed of closing and any gaps between the contact surfaces.
- **Note:** It is possible that product submissions will utilise a different self-closing mechanism that does not rely on water to open but involves other mechanical systems. In this case, the laboratory will be responsible to develop a mechanised system that can provide 10,000 consistent repetitions while allowing the mechanism to completely close after each time. This should be developed in consultation with UNHCR to ensure the test is relevant and valid.

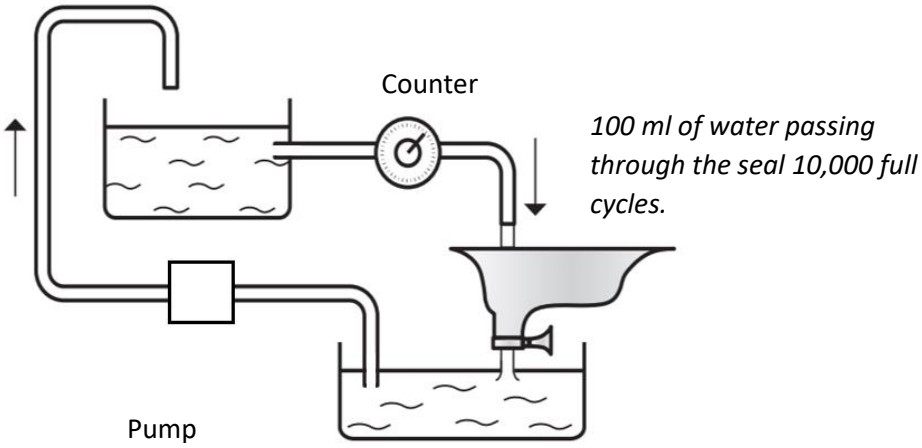


Figure 10: Example of setup for fatigue testing

Results/report content

- Provide a narrative description including any signs of fatigue or changes in functionality noted during and after the test, and comparisons of the self-closing mechanism operation before and after the test
- A video taken during the entire test showing the automated setup and operation, to be sent in 8x high speed video format. If the self-closing mechanism fails before 10,000 uses, please also provide the time in the video at which this can be observed.
- A summary of the number of repetitions conducted and resultant functionality of the self-closing mechanism (i.e. fully functional, partially functional, non-functional).

10. Pan strength and slab/pan connection **

Objective: to test the stability of the connection between the slab and pan, as well as the strength of the pan under a specific load. This dynamic loading test aims to simulate the potential situation of a person falling onto the slab to verify that the slab/pan will contain the load without breaking and risking the individual falling into the pit.

Test method/procedure

- Assemble the pan to the slab, with the slab supported on 100mm wide strips across each end only — allowing a clear span underneath the slab. Do not secure the slab using the four holes on the corners.
- Drop 50kg/0.49kN at the centre of the pan from at least 30cm height and allow it to rest there for three minutes. Make sure the load is distributed uniformly on an area of approximately 10cm by 10cm, where the load will be dropped/released to. *An example could be* a *weighted bag of 50kg dropped onto the pan*.
- Remove the load, wait one minute and repeat the dynamic test.
- Inspect the connection between the slab and the pan looking for any damage of the pan structure or weakening of the connection with the slab.

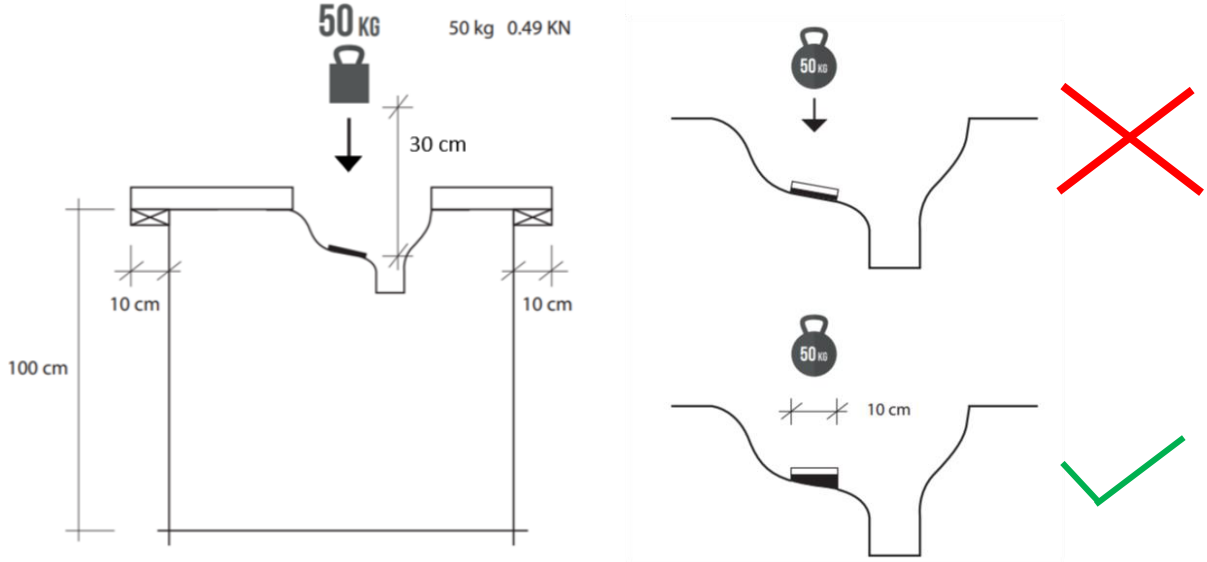


Figure 11: Dynamic load test suggestion. Loading points and base pad details.

Note: The force should not be applied at an angle. A soft weight (weighted bag) should be used. If a weight with hard edges is used, a pad 10 cm x 10 cm should be fixed temporarily to allow for the force to be applied perpendicular and to be the same for all the samples.

Results/report content

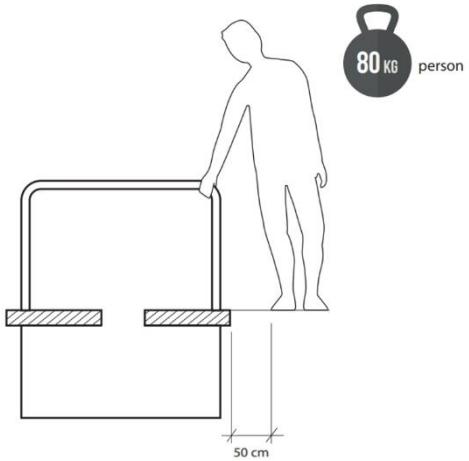
- Provide a narrative including description of the method of applying the load to the pan and any observed damage or weakening of the slab/pan connection.
- Indicate in the summary table if the slab/pan connection or the slab unit itself sustained any damage.
- Provide a video or photos of the assembled slab and pan position during the test; when the load was applied; and close ups of the pan and connection points before and after the test.

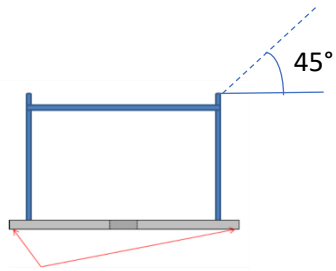
11. Handrail stability *

Objective: to assess stability of the handrails during usage

Test method/procedure

- Assemble the handrails as per bidder´s instructions
- Position slab horizontally with the handrails assembled while the slab is supported on 100mm wide strips across each end only allowing a clear span underneath the slab. Secure the slab for safety by using the four holes on the corners or any other alternative method.
- Allow a person (80-90kg) to lean on one side of the handrails with an approximate angle of 45° from horizontal with feet separated 50cm from the handrail[1] while assessing the stability of the handrail structure in relation to the amount of movement and rigidity in response to the person's weight (i.e. how loose are they, do they bend easily, are they moved out of place, etc.).
- Have the person repeat this one more time, while removing weight from the handrails between tests.
- Inspect the handrail connection points after the test, and check for any signs of damage to the slab or the handrails.
- **Note**: The same person must conduct the test on each different product.





Standing to the side of the handrail, extend arm at approx. 45° from the horizontal. Lean on handrail to assess the rigidity/stability.

Corners of slab held firmly in position

Figure 12: Handrail stability test

Results/report content

- Provide a narrative including a description of the stability of the handrails during the test and any signs of damage following the test.
- Provide a video taken during the test
- Provide any photos of damaged items/areas, if any.

[1] There must be a 50cm distance between the closest foot and the handrail base.

12. Seat/stool stability *

Objective: to assess the stability of the seat/stool while applying a specific load

Test method/procedure:

- Assemble the seat/stool and attach it to the slab as per bidders' instructions.
- Position the slab (with the self-closing mechanism attached) horizontally with the seat/stool assembled, while the slab is supported on 100mm wide strips across each end only allowing a clear span underneath the slab. Secure the slab for safety by using the four holes on the corners or any other alternative method.
- Have a person (80-90kg) sit on the stool/seat and remain seated for at least one minute while assessing the seat/stool for stability and movement (i.e. does the seat/stool sustain their weight, does it remain rigidly in place, does it deform at all, etc.). Ask the person to stand up again and leave the slab area, then repeat the above procedure one more time.
- Inspect the seat/stool, any connection points and the slab for any signs of damage.
- Check that the self-closing mechanism functions as before the test and has not been affected by the test
- Inspect the handrail connection points after the test, and check for any signs of damage to the slab or the handrails.
- **Note**: The same person must conduct the test on each different product.

Results/report content

- Provide a narrative including a description of the stability of the seat/stool during the test and any signs of damage following the test.
- Provide a video taken during the test.
- Provide any photos of damaged items/areas, if any.

13. Functionality of self-closing mechanism after exposure to cold temperatures **

Objective: to verify the functionality of the self-closing mechanism after exposure to extreme cold conditions such as found in an aircraft cargo hold or an airfield in very cold weather.

Test method/procedure:

- Observe the functionality of the self-closing mechanism before the test in terms of the ability to provide a full seal, speed of closing and any gaps between the contact surfaces.
- Expose the self-closing mechanism to minus fifteen degrees Celsius (-15°C) for 12 hours.
- After that period, allow the self-closing mechanism to gradually return to baseline conditioned temperature (23 ± 2°C).
- Inspect the self-closing mechanism for damage and observe functionality noting any changes as compared to before the cooling period.

Results/report content:

- Provide a narrative including description of any changes in functionality and/or signs of damage after the cooling period.
- Provide photos of the cooling system used for the test with the tested item inside.
- Provide a video of the self-closing mechanism being operated at room temperature before and after the cooling period.
- Provide, if available, evidence that the items have been exposed to the required temperature for the required time (e.g. extract of cooling chamber logbook).

14. Strength and Deflection at keyhole before and after heating **

Objective: to test the strength and deflection at the keyhole of the combined slab/pan/seal, before and after a heating period

Test method/procedure:

- Assemble the slab, pan and seal. Place slab in a horizontal position, while the slab is supported on 100mm wide strips across each end only allowing a clear span underneath the slab. Do not secure the slab using the four holes on the corners.
- Apply a total load of 150kg/1.47kN to both footrests (75kg to each footrest), next to the keyhole or pan (contact area limited to the footrest area). Ensure the slab is supported evenly and the force is applied perpendicular to the orientation of the top of the slab surface.
- Measure the deflection of the slab surface at the edge of the keyhole when the weight is applied. A precise measuring tool should be used to provide accuracy to 0.5mm.
- Remove the load and heat the assembled slab to 70°C continuously for 36 hours.
- A temperature measuring device shall be positioned as close as possible to the test specimen (within 10 mm) without touching it to ensure accurate temperature of exposure for the slab.
- Allow the assembled slab to return to baseline conditioned temperature of 23 ± 2°C
- Repeat the above deflection test applying the same load of 150kg/1.47kN at the footrests/next to the keyhole or pan.
- Measure the deflection of the slab surface at the edge of the keyhole when the weight is applied. A precise measuring tool should be used to provide accuracy to 0.5mm. This measurement should be conducted at ambient room temperature.
- Calculate the difference in deflection values between the two deflection tests (before and after heating).
- Inspect the slab for any deformation (swelling, cracking, discolouration, etc.) or damage incurred during heating.
- Note: The laboratory may choose to refer to a standardized test if it is equivalent to that described above.

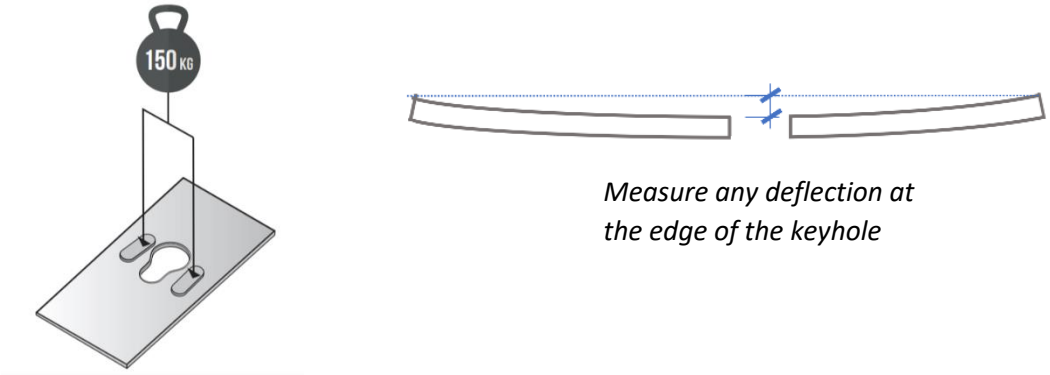


Figure 13: Static load test

Results/report content:

- Provide a narrative description of the method of heating, application of load, method of measurement and any observations of deformation or damage following heating.
- Report the deflection values in mm before and after heating. If multiple deflection values collected during a single load application, report the highest value.
- Report the difference in deflection before and after heating.
- Provide, if available, evidence that the items have been exposed to the required temperature for the required time (e.g. extract of cooling chamber logbook).

15. Drop test of slab and pan/seals (if provided separately) **

Objective: to determine resistance to damage of the slab and components.

Test method/procedure:

- Ensure the slab and components are at baseline conditioned temperature of 23 ± 2°C.
- Raise the slab to a height of two metres from the ground, above a concrete floor.
- Drop the slab on the short side (end on) onto a concrete floor. Repeat the test for a total of two times.
- If any pans/self-closing mechanisms are delivered separately, these should be dropped on their underside from a height of 2 metres, repeated twice.
- Inspect the slab and pans/self-closing mechanisms for any signs of damage, cracks, scuffing or any changes in functionality after each drop test.
- A suggested reference test is the **D2463-10** *Drop Impact Resistance Procedure A*, although this is not required. A similar standardized test is also acceptable, that meets the above requirements.

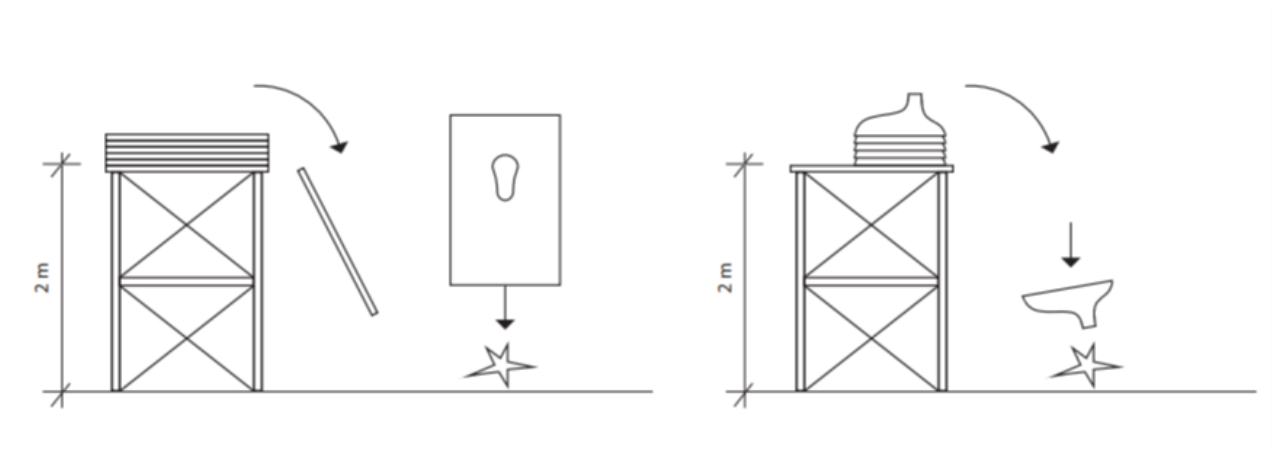


Figure 14: Drop test illustration

Results/report content:

- Provide a narrative including description of the equipment used to conduct the test and observations of the slab and components following each drop test.
- Provide videos taken during the drop test, and photos clearly showing any damage observed.
- Indicate in the summary results table whether the slab/pan/seals were damaged during the drop test.

ANNEX B Background Information

The following information is included as background to provide context regarding the components referred on the laboratory tests Annex A.1 & A.2. Please bear in mind these are just current existing samples, while UNHCR is tendering for innovative ideas. Therefore, UNHCR cannot predict the final product that bidders will be presenting. ***Laboratories should take this into consideration when preparing their offers.***

Emergency slab

Emergency latrine with slab

Sample of latrine slab "keyhole"

Pan

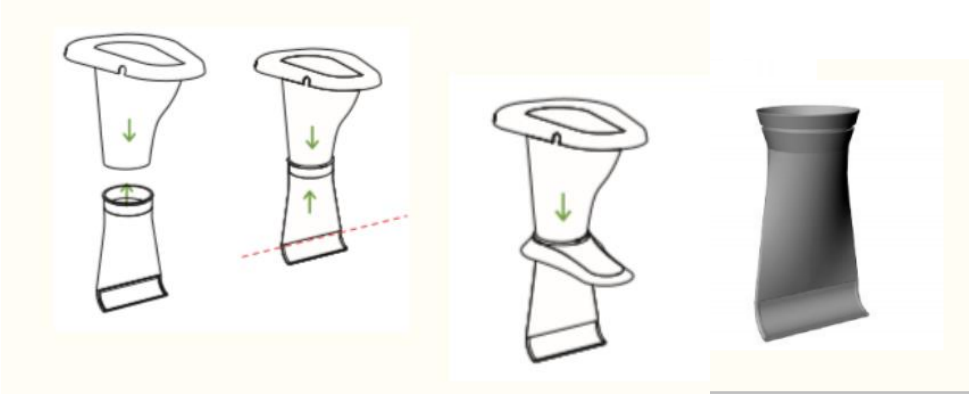
Latrine slab with integrated, attached or installed pan

Integrated pan

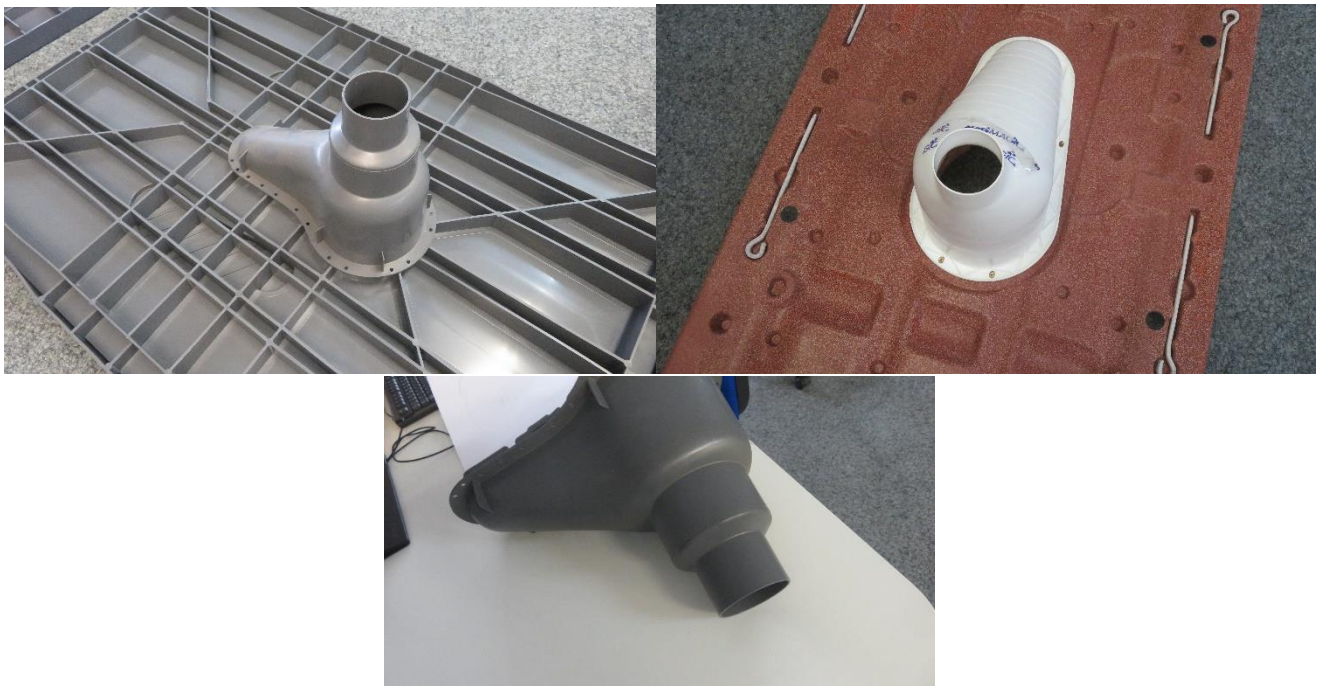
Attached/installed pan

Self-closing mechanism (flapper)

Self-closing mechanism (silicone seal)



Discharge pipe.



Hand rails and Seat/stool