

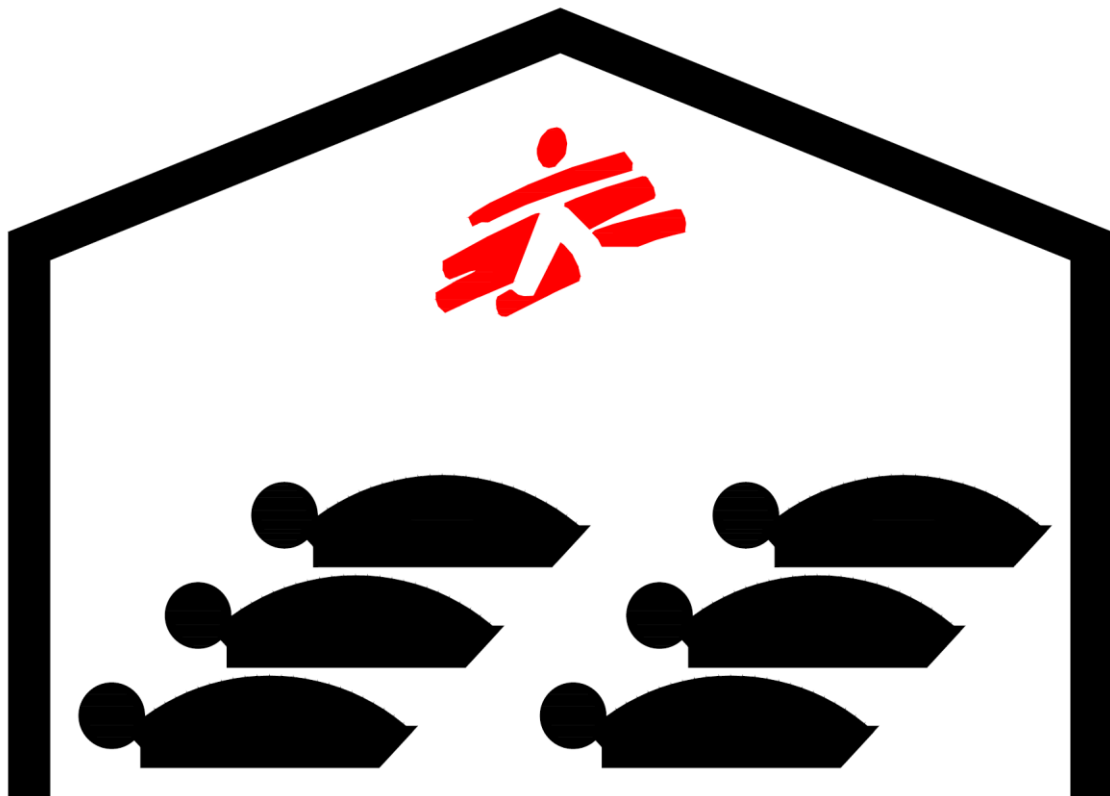
# BASIC REQUIREMENTS FOR EMERGENCY FACILITIES TO RESPOND TO COVID-19

(temporary, semi-temporary and existing structures)

MSF OCB INFRASTRUCTURE

MAY 2020

Version 3



## IN THIS TECHNICAL MANUAL

This manual is an OCB LOG Infrastructure document to provide design guiding principles when planning and building quick temporary structures to respond to COVID-19 emergency. Its content is a theoretical guideline to be used as a technical reference for each context-specific project/mission. The manual is conceived to give guidance in temporary and semi-temporary temporary soft structures, but it can easily be extended to adaptations to existing buildings.

The requirements stated on it reflect the position of OCB and represent the interpretation of international medical and scientific data, and the result of internal transversal meetings during the time of crisis.

As the international scientific and medical basis and respective MSF OCB response is developing every day, this manual needs to be read as a dynamic document being updated regularly by the Infrastructure Team. For an updated version of this manual always check [HERE](#)

This manual is composed of 3 parts:

- **Narrative** with design principles for theoretical reference
- **Example Layouts** as hypothetical illustrated reference
- **Quick Fact Sheet** for quick and easy consultation of OCB required distances and dimensions

Both the blueprints and the fact sheet provide quick illustrated information about the logic and concept of spaces, flows, and minimum dimensions required, but they should be nevertheless read and interpreted together with the explicative narrative.

Every layout produced based on this manual shall in any case be reviewed and validated by a COVID19 task force at field, coordination, or HQ level (including MED, EH and IPC).

## INDEX

### I. GENERAL DESIGN KEYS

- Safe emergency design
- Separation of low-risk and high-risk zones
- Separation of screening, treatment and support/auxiliary spaces

### II. MEDICAL DESIGN PRINCIPLES

- **Flows**
  - ✓ Staff flow
  - ✓ Patient flow
  - ✓ Waste flow
  - ✓ Linen flow
  - ✓ Morgue flow
- **Donning and Doffing**
- **Medical space definition**
  - ✓ Patient brief description
  - ✓ Waiting area
  - ✓ Screening /Triage
  - ✓ Isolation wards
  - ✓ Isolation suspected cases
  - ✓ Isolation confirmed moderate and severe
  - ✓ Isolation confirmed critical/ICU
- **Other important aspects**
  - ✓ Patient mental health
  - ✓ Visitors
  - ✓ Protection of staff's family

### III. LOGISTIC RECOMMENDATIONS FOR TENT SETUPS

- **Tent setup – what it means**
- **Choice of place and site arrangements**
- **Materials**
- **Natural ventilation**
  - ✓ Features in semi-permanent structures
  - ✓ Features in tents
- **Wastezone**
- **Toilets**
- **Ambulance disinfection space**
- **Fire prevention**

### IV. BRIEF LOGISTIC RECOMMENDATIONS FOR ADAPTATIONS TO EXISTING BUILDINGS

- **General check list (urban context)**
  - ✓ Prior to take over
  - ✓ After intervention
- **Program distribution logic**
  - ✓ One floor
  - ✓ More than one floor
  - ✓ Sports pavillons

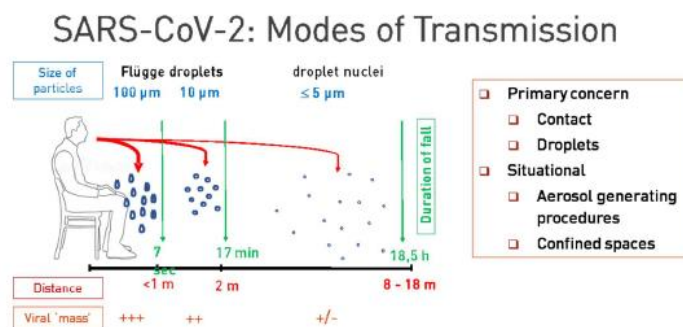
### V. ANNEXES

- **Plan** – screening/triage (without testing)
- **Plan** - isolation (for SUS for referral)
- **Plan** – isolation (for SUS and CONF cases moderate and severe)
- **Plan** – isolation (for SUS and CONF cases severe/ICU)
- **Factsheet** - OCB safe distance - general info
- **Factsheet** - OCB safe distance – suspected cases
- **Factsheet** - OCB safe distance – confirmed cases

## GENERAL DESIGN KEYS

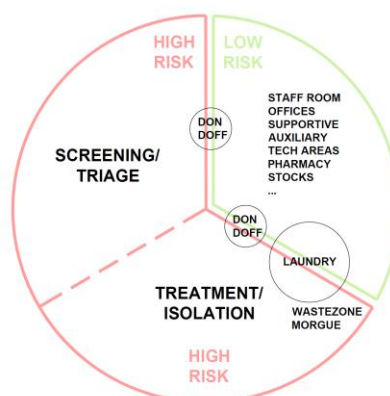
### SAFE EMERGENCY DESIGN

- For OCB the safe space distance between 2 people is 2 meters. This dimension, and other stated along this manual, will “rule” all your design and/or reconversion.
- The recommended response to treat COVID19 patients, is to adapt hospital wards, hotels, or other existing permanent facilities, that can promote a clean, safe, and comfortable treatment to patients. Only in the case such facilities are not available, not salubre, or not able to cope with the demand of number of beds, alternative temporary structures like tents shall be considered.
- In the case of a tent setup, the space around patient bed is obviously reduced. Compromising patient comfort and free movements of staff and increasing cross-contamination risk. Isolation in tents can be an accepted exception to the ideal setup, as much as the distance between beds is never less than 3 meters in suspected patient zone (SUS) and 2 meters in confirmed patient zone (CONF).
- More medical info about droplets and cross-contamination [HERE](#).



### SEPARATION OF “LOW RISK” AND “HIGH RISK” ZONES

- Low-risk – staff quarters, offices, logistics, stocks, kitchen, clean laundry, Laboratory, Sterilization, etc
- High-risk – screening/triage, isolation wards, nursing stations, patient toilets, wastezone, COVID19 laundry entrance, cleaner’s stocks, morgue, etc
- Connection zones – Donning and Doffing
- (transversal spaces in specific cases – Laundry and Laboratory)



## MEDICAL DESIGN PRINCIPLES

### STAFF FLOW

- Flow from SUS to CONF (from less contaminated to more contaminated) always in this sense on “one-way” only.
- As much as possible the medical staff is appointed to work either in SUS zone or CONF zone and not both zones in the same shift. Even if the project does not have enough staff, a protocol of flows needs to be strictly put in place to avoid the staff to cross from CONF back to SUS.
- Setups with dedicated donning (DON) and doffing (DOFF) in both SUS and CONF zones are accepted, allowing INs and OUTs in both zones, but to be highlighted that this can create more physical opportunities for mistakes in the flow protocol.

### PATIENT FLOW

- Patients are split by level of care and should be organized in specific wards. In CONF wards, the beds should also be organized by level of care to facilitate staff organization and medical care.
- Patients should always flow from SUS to CONF through the correct “patient transition/handover passage” while hospitalized.
- Once no longer considered suspected or once recovered, the patient shall leave the hospital by dedicated “discharge exits” in both SUS and CONF.
- Once the patient is confirmed severe case he will stay for recover 2 to 4 weeks. In this case is safe to foresee different stages of recovery, for example a convalescent ward (“step-down”) where he does not need so much surveillance (and no oxygen).
- Though bed-pan service can be considered, some toilets and showers should always be considered for patients that can move alone; even if only a few. If extension is expected toilets blocks can already consider these numbers. (with centralized blocks, consider as much as possible equal distances to all wards).
- In the case of SUS isolation, these patients are more likely to be able to use toilets by themselves, so the bed-pan service is secondary/optional.

### WASTE FLOW

- In a new built setup, the wastezone should be placed in the high-risk zone, considering access, wind direction, nuisances to neighbors, etc
- In setups of extensions or adaptations of existing setups, and if the wastezone remains in the low risk zone a SAS with bag/container disinfection should be created when crossing from zone to zone.
- On an emergency setup the waste zone staff can enter by the same controlled entrance of Medical staff. In the case of big hospitalization setup (ICU or regular) they need to

pass by the same DON and DOFF tents and transit in the compound according to the same logic of flow of “one way only”

- Waste collection points outside the tent are preferable. (For vast compounds trolleys might be considered).
- Incineration of COVID waste in the existing incinerator is allowed (as well as emergency setup burners).
- For more detailed information contact the EH referent of your mission or in HQ.
- More info [HERE](#)

## **LINEN FLOW**

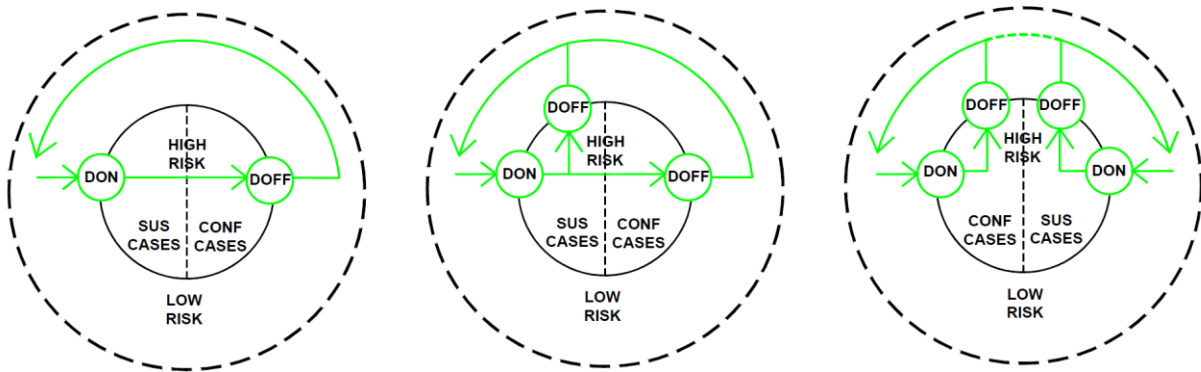
- Laundries to be split in 2 types: a regular one and one for COVID19 contaminated linen (see hypothetical plan annexed in this manual). Being the contaminated laundry located ideally in between low and high risk zones, with the access from high risk zone.
- Non-contaminated linen (e.g. doctors clothes) can go on a regular laundry via Low risk zone.
- Linen contaminated (that as passed by high risk zone) needs to be collected by staff in PPE and dropped on the contaminated side of the “COVID19 Laundry”.
- Used and contaminated Linen, can be deposited in a specific compartment or box outside the ward as long as is well enclosed and marked.
- After being washed and disinfected, both regular and contaminated linen can be put to dry together in the same drying area.
- For further SOP for COVID19 Linen contact the IPC or EH referent of your mission or in HQ.

## **MORGUE FLOW**

- The Morgue needs to be located in the high-risk zone with easy access from SUS and CONF. Ideally the path from wards to morgue is a discreet action and not among patients or visible from zones from where patients might see.
- Ideally close to boundary fence to allow easy access if body is collected by vehicles or if visitors are allowed.
- Inside the high-risk zone all dead bodies need to be handled with a body bag (staff in PPE) in the same direction of the flow: from SUS to CONF.
- Length of permanence of the dead body in the morgue and internal arrangement of the morgue will depend on the local culture. Foresee local cultural aspects and religious habits when orienting the body table, vehicle entrance, waiting area for visitors, etc
- For further information, refer to the SOP for dead body management in COVID19 context
- More info here [HERE](#)

## DONNING & DOFFING (DON&DOFF) LOGIC

- Ideally PPE should be changed between each patient. However, if a DON/DOFF station per patient's cubiculum is not feasible, a single DON/DOFF for the SUS ward is acceptable, provided that medical staff takes all possible measures to avoid cross-contamination. For a ward with CONF cases the same concept does not need to be applied as the medical condition is already confirmed and the level of contagiousness is the same.
- Do not join DON and DOFF in the same 45 m2 tent to avoid crossed flows.
- Staff should not use the toilets inside the high risk zone, simply because to use the toilets the staff needs to doffing.
- See correct practices of DON and DOFF [HERE](#):



Example of donning and doffing flows (first situation is the ideal as it reduces the risk of mistakes in the flow and is more suitable for projects with short staff number).

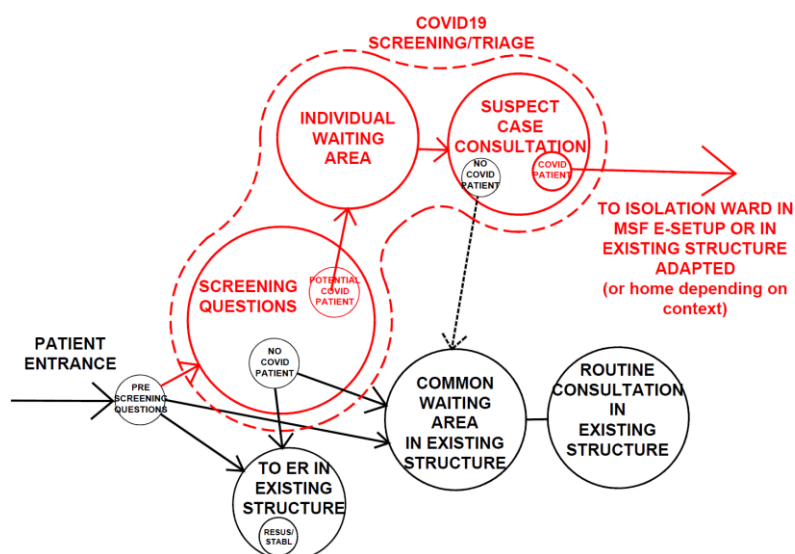
## MEDICAL SPACE DEFINITION

### PATIENT BRIEF DEFINITION

- Mild - can have home care (releases the hospital bed but comes with other potential inconvenient)
- Moderate - some patients can have home care (but some with risk factors for severe disease should be admitted)
- Severe – any patient in need to be hospitalized (e.g. needing oxygen)
- Critical – any patient in need of ICU care (e.g. MSF level 3 ICU care – intubations and assisted oxygen)

## SCREENING/TRIAGE

- Each setup to respond to COVID19 needs a screening/triage process before isolating the patient.
- Ideally the screening zone is integrated in the existing structure triage/reception. However, in most cases this might not be possible due to space and IPC constraints so detached structures might be setup outside the hospital in another location. In both situations IPC measures are needed to avoid contamination.
- Triage includes screening and consultation before the patient can be confirmed a COVID patient and diagnosed the level of care he/she needs.
- The flow of patients must allow the separation of “covid patients” from “non-covid patients” in the first triage unless the patient is already referred and just the status needs to be reassessed upon arrival.
- Each patient pass by a screening person at the entrance.
- Non-COVID19 patients shall have the option to reach the regular medical facility.
- Patients considered potential COVID19 patients receive a mask and are diverted to a specific waiting area in single cabins or spaced 1,5 meters (see fact sheet annexed) where they are called for an individual consultation.
- Consultation spaces:
  - Consultation is recommended to be face to face and not behind a screen or physical partition, therefore the staff in consultation zone must be wearing PPE at all time
  - Contain toilets for patients
  - Include a donning and doffing zone
  - Stabilization/resuscitation space might be required
  - (the capacity of performing a COVID19 testing can define a certain typology of triage but is at the moment not considered by OCB).





## WAITING AREA

- Very important to keep the OCB safe distance of 1,5 m in between seats.
- the distance shall be considered 1,5 m only if all other aspects are in place; good natural ventilation, well oriented winds from non-infected to potentially infected, free corridors allowing enough space for passage/circulation of patients and staff not passing within the 1,5 radius of another patient. Otherwise, if these conditions are not met the distance shall be considered 2 meters in between seats.
- Medical staff or guards at the entrance just need light PPE (physical barrier like a transparent surface can be considered).

## ISOLATION WARDS

### SUSPECTED CASES

- In SUS isolation patients are not yet considered COVID19 patients.
- In SUS the patients stay for minimum of XX hours X days depending on the testing capacity, before being discharged or hospitalized.
- In SUS isolation the patient should have an independent room with a dedicated toilet while waiting to avoid cross-contamination. If by lack of space, time or materials this is not possible, patients should be given a proper independent space with a single bed to improve the patient stay in their bed space during a long stay, partitions in between beds are mandatory in tents and open wards (and a closing curtain for privacy strongly recommended).
- In SUS isolation the minimum distance between beds is 3 meters (partitions are mandatory to block droplet spread, limit physical contact and provide privacy. They cannot be considered to reduce the minimum distance of 3 meters)
- In the case of polyvalent tents the beds shall be physically separated to avoid contact by a partition up to “head level” (2 meters).
- In the case of open spaces and Rubhall structures the partitions must be minimum 2,2 meters (partitions improve privacy but reduce air flow).
- Ideally each patient cubicle/bed should have a dedicated toilet/shower room, but this is rarely possible in the MSF projects so shared toilet/shower blocks can be accepted with increased usage/cleaning protocols put in place. (bucket toilets managed by staff can also be accepted).
- Staff needs PPE at all times.
- Apply gender separation.
- Nursing station needs to be foreseen (ideally no more than 10 beds for one NS).

- Installation of handwashing points. (rule of thumb is: every IN and OUT of each zone or room, everywhere there is a start and end of a medical activity, but this can change from setup to setup and IPC and EH revision is always recommended).

#### CONFIRMED CASES (MODERATE AND SEVERE)

- In CONF isolation all patients are diagnosed COVID19 patients (confirmed that the medical treatment period starts).
- In CONF cases zone the OCB minimum safe space between beds is 2 meters for moderate and severe patients. However, in some severe and critical beds, 2,5 meters is strongly suggested by OCB to allow good cleaning, enough space to the setup of biomedical equipment around the patient and facilitate the medical care. (Partitions are optional but strongly recommended for privacy purposes during the long term stay of the patient).
- In cohort spaces, for obvious medical reasons, moderate and severe cases should be divided and clearly visible for the staff.
- Staff needs PPE at all times.
- Apply gender separation.
- Nursing station needs to be foreseen (ideally no more than 10 beds for one NS).
- Installation of washing points.

#### ISOLATION ICU (CRITICAL)

- Critical cases need ICU care.
- If context allows ICU care should be in individual rooms.
- The rooms (or in case temporary cubicles need to be built), should be prepared to receive ICU care level 1 and 2 (space, HVAC, HVAC energy, etc).
- The rooms and bed surrounding space should be dimensioned properly and equally to allow an efficient medical care and the respective medical equipment around the patient bed. In both closed individual rooms or in cohort with cubicles, all beds should have surrounding free space to allow the use of oxygen concentrators as breathing support equipment, and efficient medical care.
- In Cohort ICU patient beds should be organized by groups depending on the level of care within the same ward/tent to facilitate staff organization and a fluid medical care.
- It should be considered to the principle “patient does not move” he is too sick to move (e.g. requiring an increasing amount of oxygen) so it will be the equipment that is moved and set around the patient. (The oxygen concentrators of 20 L can easily reach up to 100 kg, so the whole setup of patient bed + concentrator is difficult to move).
- In the case of critical patient care, the patient is too weak to go to the toilet, therefore ICU level 1 2 (and 3) require a bed-pan service from nursing staff – a specific sluice, pan washing area, pan stock and respective flow needs to be foreseen.

- Nursing station needs to guarantee permanent visual contact with patients (ideally no more than 10 beds for one NS)
- Installation of washing points.

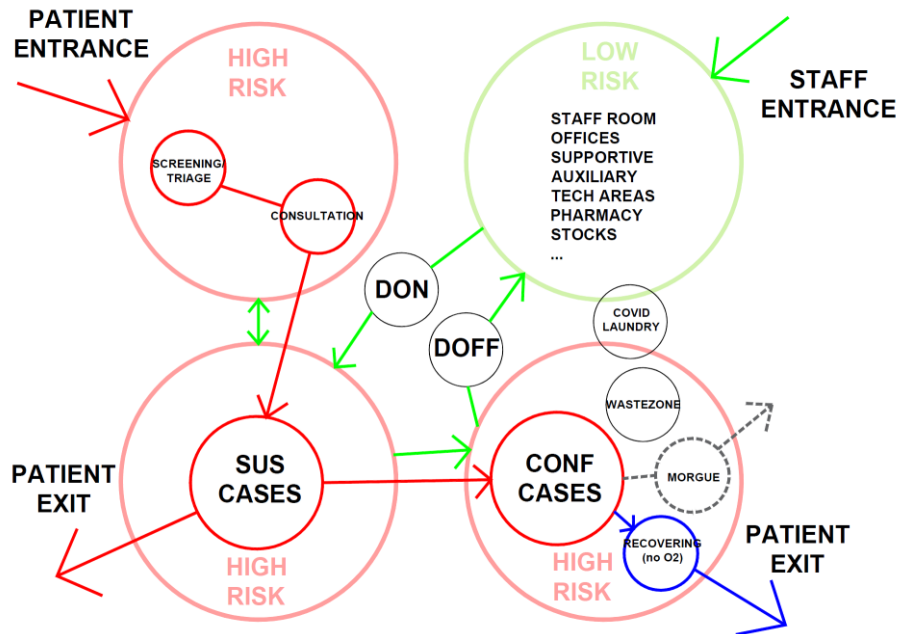


Diagram example of an isolation setup (see layout plan annexed)

For more information about infrastructure and medical requirements on the COVID19 Medical Sharepoint:

OCB Check list per service [HERE](#)

Screening and triage [HERE](#)

Isolation [HERE](#)

## OTHER IMPORTANT ASPECTS (beyond the medical care)

### COMFORTABLE ACCOMMODATION

- Don't forget that a person isolated and under treatment for a few weeks goes through a weak condition alone separated from the family.
- Each individual space should allow direct or quick visibility of staff over patient but in most cases the patients prefer to have privacy during their stay. Cohort in open space is never a comfortable situation for the patient as he knows he/she is being seen, and he/she can also see other patients possibly in worse medical condition.
- An isolation compound should fulfill other essential aspects beyond the medical ones: comfortable accommodation, food, good sanitation and hygiene, and a strong social engagement from the staff in supporting mentally the patient during his/her stay.

### MENTAL HEALTH

- If the structure is meant to hospitalize suspected cases and the patients are not too weak to move, you might consider outdoor seats (distanced 2 or more meters) for the patients

to sit outside and talk with each other and/or relatives outside the fence. Always foresee natural human behavior and cultural aspects when designing healing places (and its common areas, isolation areas, outdoors).

## VISITORS

- Always consider that long-term hospitalizations are difficult periods for both patient and patient family. Family visits are extremely recomforting for the patient and his/her mental health. However, visitors should not be allowed inside the Low or High risk zones.
- Visitors can remain out of the outer boundary fence and communicate verbally with the patients inside (physical buffer space needs to be built in order to physically block touching or object exchange).
- “Visitor’s stations” can be also foreseen in the design, where patients and family can sit comfortably and communicate safely.
- Wards with windows shall be foreseen when possible.
- Beside visits, think of a specific booth along the perimeter fence (treatment zones) where the family can obtain information about the patients inside in case patient cannot move.

## PROTECTION OF STAFF’S FAMILY

- In certain cultures and contexts, it might be that the staff does not want to go back home in the end of their shifts as a way to protect their own families of contamination. Your project might have to think of a safe accommodation in (or nearby) our hospitals for the MSF staff. Renting houses or allocating specific parts of the medical structure to this can be an option. (Be aware of possible contamination and quarantine of all staff tracked as in contact with a case).

## LOGISTIC RECOMMENDATIONS (FOR TENT SETUP in URBAN and RURAL)



Example of 45m<sup>2</sup> polyvalent tent and Rubhall

## TENT SETUP – WHAT IT MEANS

- This manual is addressed to teams setting up temporary structures, but temporary or semi-temporary structures are only expected when adaptations to existing solid

structures are not possible by interfering with existing medical activities, lack of space, not possible to implement IPC standards, lack of budget, lack of time.

## CHOICE OF PLACE AND SITE ARRANGEMENTS

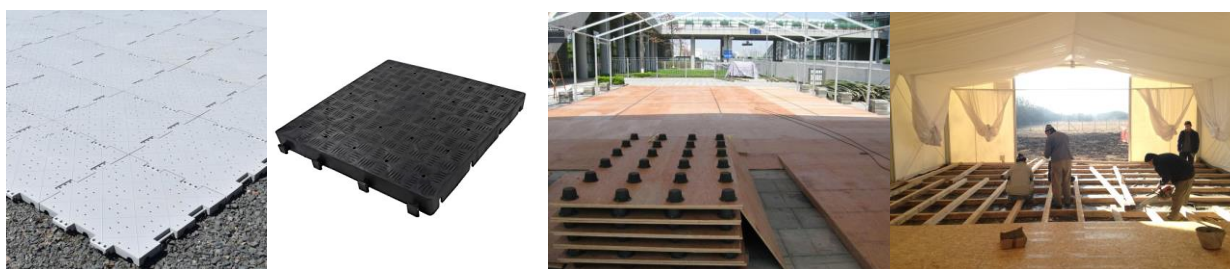
- Preferably closer to the existing medical facility to reduce distances.
- Allow segregation of COVID19 patients from other medical services.
- Possible to be closed or fenced without interfering in the public life - for example outside a hospital in an urban setting with pedestrians circulating around you have to fence your setup (perimeter of high-risk and between low-risk and high-risk). For example, with a blocking barrier like plastic sheeting wall or a double mesh fence spaced 2 meters to guarantee a free space as separation of zones and exterior.
- Good access to pedestrian and vehicles. As much as possible a plot with the maximum sides turned to roads/streets – this allows flexibility of side and/or opposite entrances and discharge exists.
- Separate tents allow more ventilation but for medical care groups of 2 are preferred (8 to 10 people under supervision of same nursing station).
- Consider as much as possible generous spaces in between tents to avoid cable tripping, fire spreading, and allow installation of ventilation, heating and cooling equipment if needed (4 to 5 meters).
- When designing or starting your emergency setup site, consider as much as possible orthogonal alignment of tents to facilitate installation of NRG and plumbing, allow fluid flows during the lifetime of the facility and allow quick extensions.
- Allow extensions (in all directions: screening, treatment and support).
- Consider as much as possible generous spaces in between tents to avoid cable tripping, fire spreading, and allow installation of ventilation, heating and cooling equipment if needed (4 to 5 meters).



Example of “orange fence” to allow visual contact but avoiding physical contact on an MSF Ebola project.

## MATERIALS

- Surfaces contaminated with infected droplets can transmit COVID19 for several hours or days depending on the material and weather conditions. Even though COVID19 virus seems to live longer in materials like stainless steel, plastics, and tiles, rather than in porous materials like wood, cotton and cardboard, it is very important to use non-porous surfaces in medical structures for easy cleaning and disinfection for the infection prevention and control (there is still little or not 100 % clear scientific evidence about the lifetime pattern of the virus in physical surfaces).
- In general: easy to transport, easy to clean, wash and disinfect, and easy to maintain.
- For the polyvalent tent type (45 m<sup>2</sup>), it must be foreseen disinfection from patient to patient. However, it should be considered that this tent has a limited usage time of itself (resistant to microbial growth – example in sub-tropical weather: it lasts 3 months), and this can be even reduced with frequent cleaning and disinfection. Technical specifications of a 45m<sup>2</sup> multipurpose tent [HERE](#)
- The floor needs to be flat, regular and solid enough to receive beds, users walking, trolleys, heavy medical equipment, oxygen concentrators, etc. Built locally with wood and solid plywood. Or purchased nationally or internationally. Needs to be treated or protected with a surface easy to wash and disinfect like linoleum, vinyl, PVC etc.
- In case the project counts on heavy oxygen concentrators moving (up to 100kg), a solid solution needs to be foreseen – always check the technical specifications for the weight capacity when buying plastic cailleboties .
- Partition materials shall also be easy to wash and disinfect (plastic sheeting, PVC, etc, resistant to chlorine, surfanious, ethanol and other detergents in the validated list of IPC/EH). And strongly recommended to be fire retardant.
- Use of LEAD sheeting in case radiology is an option in the project.



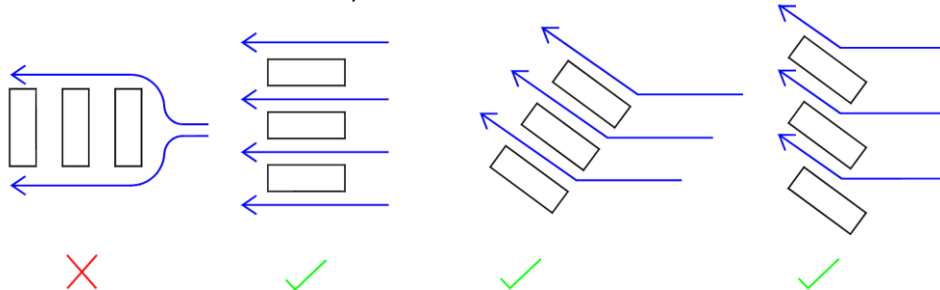
Floor examples

## NATURAL VENTILATION

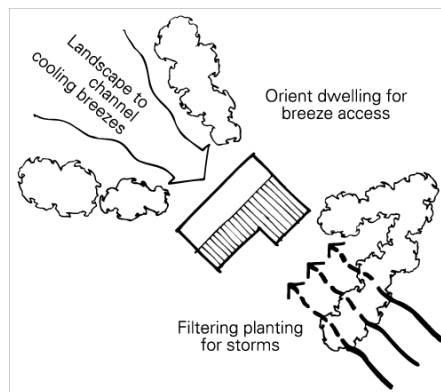
- Know the predominant wind direction of your site (might be different along the years). General rule: Wind shall blow from non-contaminated to contaminated (and from less-contaminated to more-contaminated).



- A building alone perpendicular to the predominant winds receives more crossing winds in its interior.
- If the project counts on several wards the best solution is to place them parallel to the wind to allow airflow along the aisles (the longitudinal side aligned with winds to avoid the first structure to block the others).



- Choose a place near trees if possible, as they help cooling the warm winds and provide shade (be aware too dense vegetation can also block the wind blow).



## FEATURES IN SEMI-PERMANENT STRUCTURES

- Design the floor plan and building form to respond to local climate and site
- Allow internal air movement
- Design higher ceiling height
- Use of passive shading of windows, walls and roofs from direct solar radiation
- Positioning of windows and openings to enhance air movement and cross ventilation
- Design and build wind walls and canopies in openings
- Correct design and size of openings; the bigger the windows the better- (be aware that there is a relation between size of IN and OUT to control the air flow inside)
- Choose climate appropriate type of windows and glazing
- Installing and correctly positioning appropriate insulation
- Use of lighter colored roofs to reflect the heat

- Use of insulation and buffer zones to minimize heat
- Use of reflection of radiation
- Design spaced roof with vent inlet in the eaves
- Installation of solar chimneys
- Installation of whirly birds
- Do not use internal fans

## FEATURES IN TENTS

- If you join tents to create long wards, it shall be ideally oriented in the sense of the predominant winds for the time of the year, to allow air flow in in the aisles.
- Have a wider space in between tents for air flow > 6 meters (roughly that would be: 2 meters safety/technical + 2 m = free space to circulate stretchers and pass ducts and pipes + 2 meters safety/technical)
- Avoid more than 2 polyvalent tents together to facilitate air flow and good circulation, and ensure no more than 10 beds covered by one nursing station.
- Internal partitions in tents have to be sealed in the bottom to block air flow, and open in the top to allow air circulation (2 meters in the case of the multipurpose tent, or, in open spaces or Rubbhall a minimum of 2,2 meters).
- Open (or roll up) all possible openings of the tent for cross ventilation.
- Install roof shadow net.
- Do not use internal fans.
- More info on passive ventilation [HERE](#)

## MECHANIC VENTILATION (HYBRID EMERGENCY KIT)

- Any mechanical exhaustion should not have the outlets directly facing street or places where people can breathe the contaminated air
- More info on “low tech” tent ventilation solutions for COVID 19 emergency [HERE](#)



Example of a hybrid solution for tents (mechanic vent for air IN and OUT + UVGI light treatment)



## WASTEZONE

- Always try to use existing one if your COVID set-up is set on an existing heat structure (and if this has current capacity)
- Wastezone smokes oriented to avoid smoking on wards (and/or neighbors).
- An emergency one can be quickly set-up (see MSF Public Health Engineering Manual).
- For further SOP for COVID Linen contact the EH referent of your mission or in HQ.

## TOILETS

- In case you have available existing toilets blocks you might consider using them (make sure the ratio of toilets/squatting plates/hand washing basins is correct for the number of patients).
- In case your set up is an emergency setup built from scratch than you might have to consider portable or trailer shower blocks with underneath tank (emptied by sludge truck).
- Bucket toilets also allowed with a strong emptying and cleaning protocol in place and if locally culturally accepted.
- For more information [HERE](#).

## AMBULANCE DISINFECTION

- If the project provides the option of MSF or non-MSF ambulances for referrals a space for parking and vehicle disinfection should be considered in the layout of the masterplan.
- For more information [HERE](#).

## FIRE PREVENTION

- Make sure the setup includes a minimum of fire safety; fire retardant materials, space between tents, indicated fire extinguishers, escape routes, refugee zones, free access and attack zone for fire trucks, temporary fire hydrants and hoses, water curtains, smoke detectors, are some examples)
- If the context requires, don't forget to have an approval of the fire department or to guarantee their acknowledge of the setup

## BRIEF LOGISTIC RECOMMENDATIONS FOR ADAPTATIONS TO EXISTING BUILDINGS



### GENERAL CHECK LIST (URBAN CONTEXT)

#### PRIOR TO TAKE OVER

- Evaluate access of patients, staff, medical vehicles, logistic vehicles, visitors.
- Try to get the architectural plans of the building (current user, municipality, etc) for a better understanding of the current situation. Do anyway a crosscheck tour for possible posterior modifications.
- Try to choose a building that has big open spaces and already with heating, cooling, ventilation and functional sanitation (schools, sports centers, event or fairy halls, are the best).
- Try to choose a building, ward or rooms that allow this flexibility all along the expected intervention, in case the setup needs to adapt in the future. Rooms with the same size offer more flexibility and speed than wards with big and small rooms.
- Evaluate existing vertical communication if any (stairs, lifts, dumb waiters).
- Evaluate existing exits/fire escapes (think of hospital beds on wheels and patients with low mobility).
- Evaluate windows natural ventilation in case the building does not have mechanical ventilation.
- Be sure MSF liaised with relevant authorities before any physical intervention.

#### AFTER INTERVENTION

- Layout is as per desired by MED team (zoning, clear clean and dirty flows, and proximity of flows).
- Patients are accommodated in a safe salubre and hygienic way.
- MED staff can perform their activities without design constraints nor physical obstacles.
- Electricity, water supply and wastewater plumbing is calculated, functional and safely installed.
- The current flows match with the existing emergency exits (fire escape) or that new emergency exists were added (consider potential high increase of users inside building)
- Urban contexts are regulated by fire codes, make sure you have a fire department approval on the setup.

## **PROGRAM DISTRIBUTION LOGIC**

ONE FLOOR (ex: schools, warehouses, offices, etc)

- Entrance – triage
- Teacher offices – logistics, staff area,
- Distribution of the different case groups by different corridors/wards
- Gym – mild cases
- Separate entrances for patients and staff if possible

MORE THAN ONE FLOOR (ex: hotels, offices, schools, etc)

- GF - arrival and triage waiting area, staff area, logistic and office, (restaurant, lounge, etc)
- 1st floor rooms –critical cases
- 2<sup>nd</sup> floor rooms – severe cases
- 3<sup>rd</sup> floor rooms – mild cases
- Separate entrances for patients and staff if possible

SPORTS PAVILLONS (ex: Stadiums, etc)

- GF - arrival and triage waiting area, staff area, logistic and office, (restaurant, lounge, etc)
- 1st floor rooms – severe cases
- 2<sup>nd</sup> floor rooms – moderate cases
- 3<sup>rd</sup> floor rooms – mild cases
- Separate entrances for patients and staff if possible

WHO references [HERE](#)

## **ANNEXES**

In the following pages you will find the plans of:

- SCREENING/TRIAGE
- ISOLATION (for SUS – extension of existing structure)
- ISOLATION (for SUS and CONF – full setup)
- ISOLATION (for SUS and CONF in ICU – full setup)
- OCB SAFE DISTANCE FACTSHEET – GENERAL / SCREENING
- OCB SAFE DISTANCE FACTSHEET – SUSPECTED CASES
- OCB SAFE DISTANCE FACTSHEET – CONFIRMED CASES

## DEPARTMENT INPUT/FEEDBACK

Bellow list of inputs to the current version

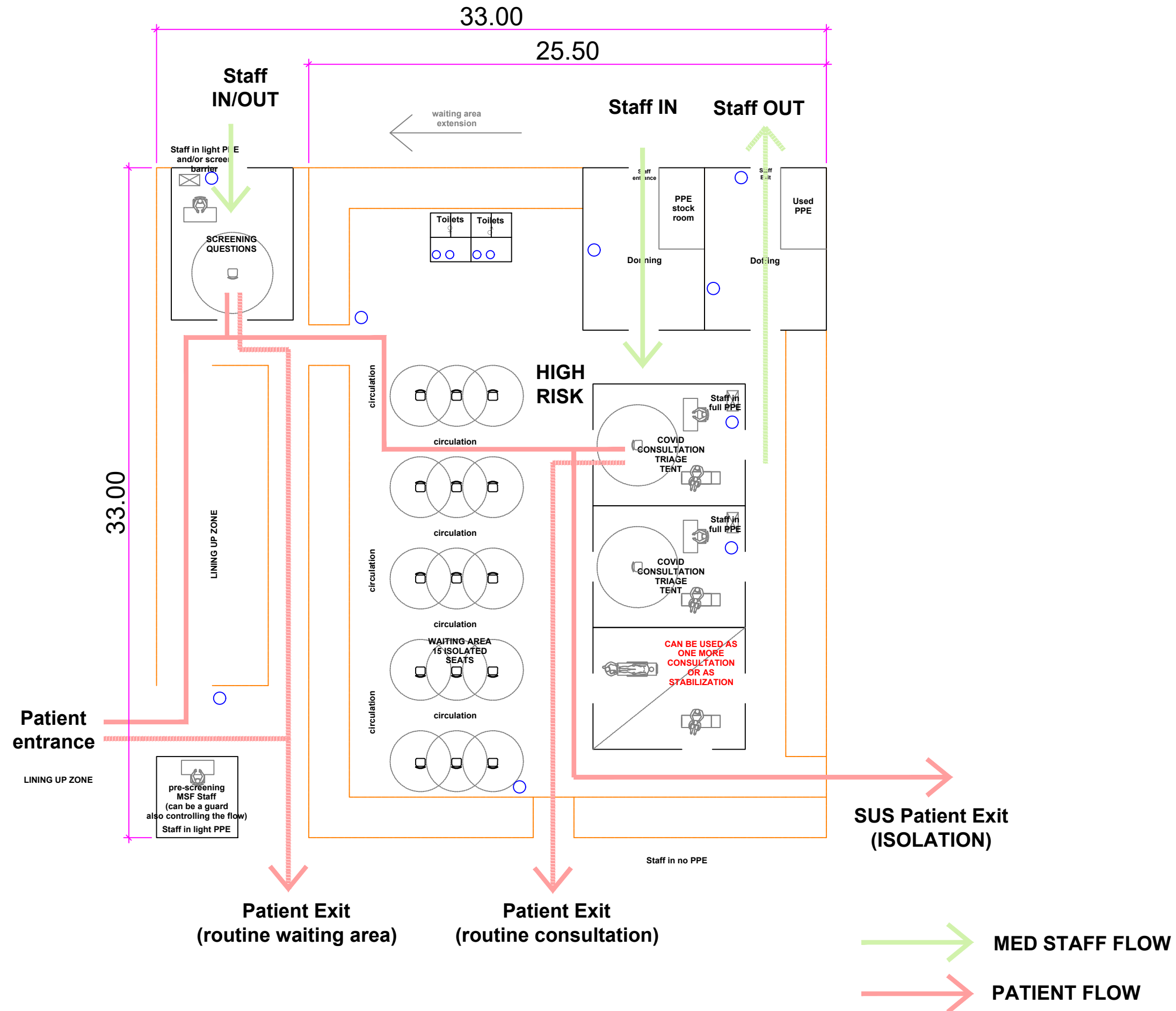
Input included in current version	Related field	30th March V1	16 <sup>th</sup> April V2	15 <sup>th</sup> May V3	
Annick Antierens	MED			yes	
Chiara Martino	IPC			yes	
Innocent Baluhe Muke	IPC		yes	yes	
Azzurra D'Inca	EH	yes		yes	
Francois Cathelain	EH		yes	yes	
Judith Kendell	MED	yes			
James Lee	MED	yes			
Celine Van Lamsweerde	LOG		yes	yes	

Document by: infrastructure team OCB

**Questions, contributions, improvements and corrections to:**

email: [uriel.aboim@brussels.msf.org](mailto:uriel.aboim@brussels.msf.org)

Date: May 2020



	5th ISSUE	15/05/20	UA		
	4th ISSUE	25/03/20	UA		
	THIRD ISSUE	24/03/20	UA		
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	FIRST ISSUE	19/03/20	UA		
Rev	Description	Date	Dgn	Chk	App

Developer  
  
**MSF OCB COVID-19 TASK FORCE**

Project Title  
**SCREENING/TRIAGE multipurpose tent version (45 m2 tent)**

Contractor

Originator  
**MSF OCB TECHNICAL UNIT**

Drawing Title  
**MASTER PLAN**

Drawn	UA	Scale	1/100
Designed			
Checked		Status	
Approved			

Drawing No. **XXX** Rev **-**

AMBULANCE  
DROP OFF



Patient  
entrance

Entrance control  
(MSF Guard)  
Staff in no PPE

RESUS

SCREENING

Waiting area  
for consultation

Consultation

Consultation

Patient  
files

Staff  
entrance

PPE  
stock  
room

Staff  
Exit

Used  
PPE

Donning

Doffing

Staff  
entrance

Staff  
Exit

SHOWER  
SHOWER  
Toilets  
Toilets  
WASTE  
SLUICE

SHOWER  
SHOWER  
Toilets  
Toilets  
WASTE  
SLUICE

SHOWER  
SHOWER  
Toilets  
Toilets  
WASTE  
SLUICE

WARD 7 BEDS

NS

Clean  
Linen  
Closet

Dirty  
Linen

Waste

Patient  
entrance  
MED  
entrance

SUSPECTED  
CASES

WARD 7 BEDS (LEVEL 1 and 2)

NS

Clean  
Linen  
Closet

Dirty  
Linen

Waste

Patient  
entrance  
MED  
entrance

Donning

Staff  
entrance

Patient  
entrance

Doffing

SUSPECTED  
ISOLATION  
1 bed LEVEL 1 or 2

SUSPECTED  
ISOLATION  
1 bed LEVEL 1 or 2

Donning

Staff  
entrance

Patient  
entrance

Doffing

Donning

Staff  
entrance

Patient  
entrance

Doffing

cleaners  
room

Bed pan  
wash and  
stock  
(if needed)

52.99

EXISTING STRUCTURE HAS  
CAPACITY TO PROVIDE  
AUXILIARY AND SUPPORTIVE  
SERVICES

PATIENT  
DISCHARGE  
no longer  
suspected

0 5 10 15 20



MED STAFF FLOW



PATIENT FLOW

	5th ISSUE	15/05/20	UA		
	4th ISSUE	25/03/20	UA		
	THIRD ISSUE	24/03/20	UA		
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Rev	Description	Date	Dgn	Chk	App

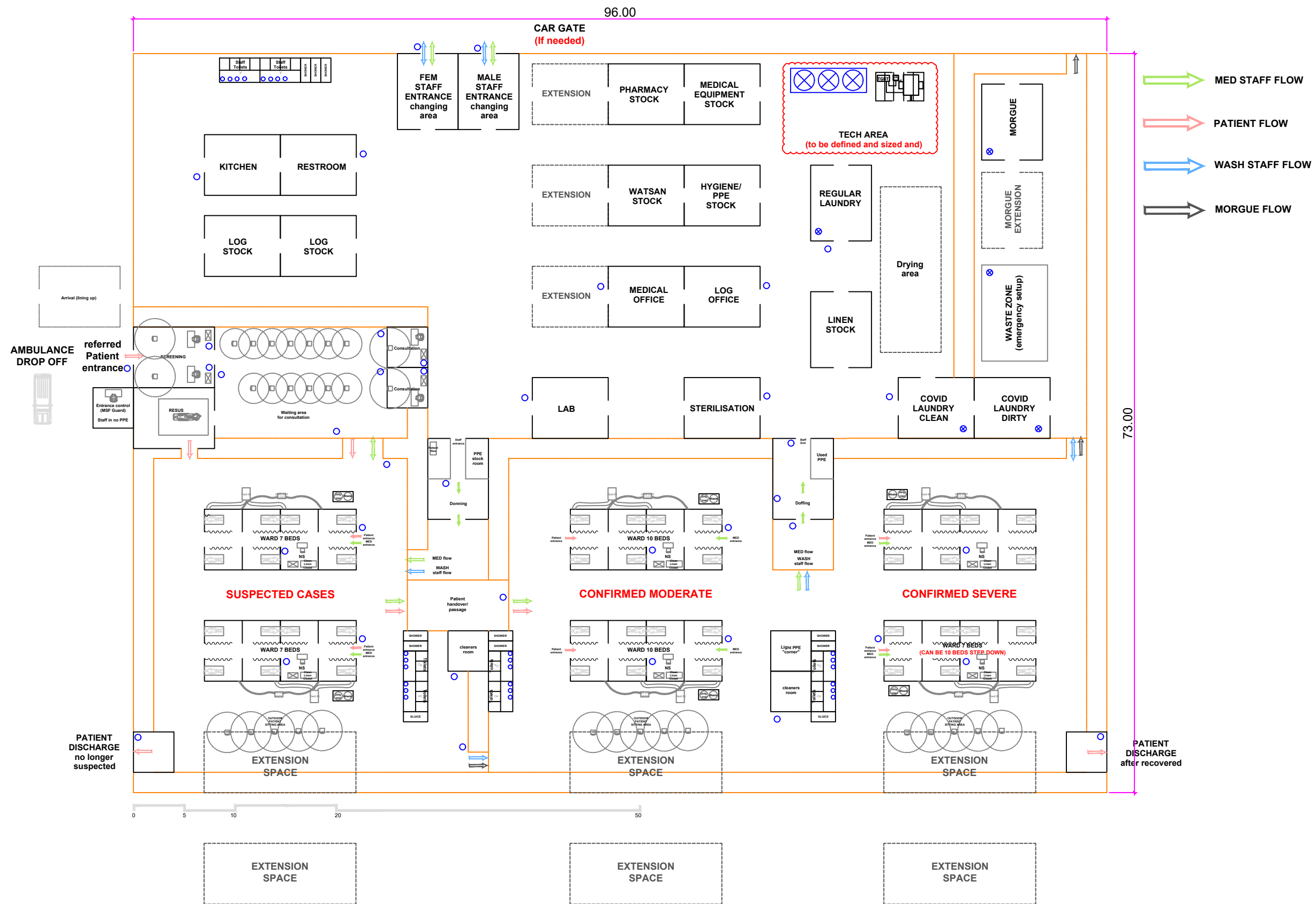
Developer	
Project Title	MSF OCB COVID-19 TASK FORCE


Contractor	ISOLATION SUS multipurpose tent version (45 m2 tent)
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Originator	MSF OCB TECHNICAL UNIT
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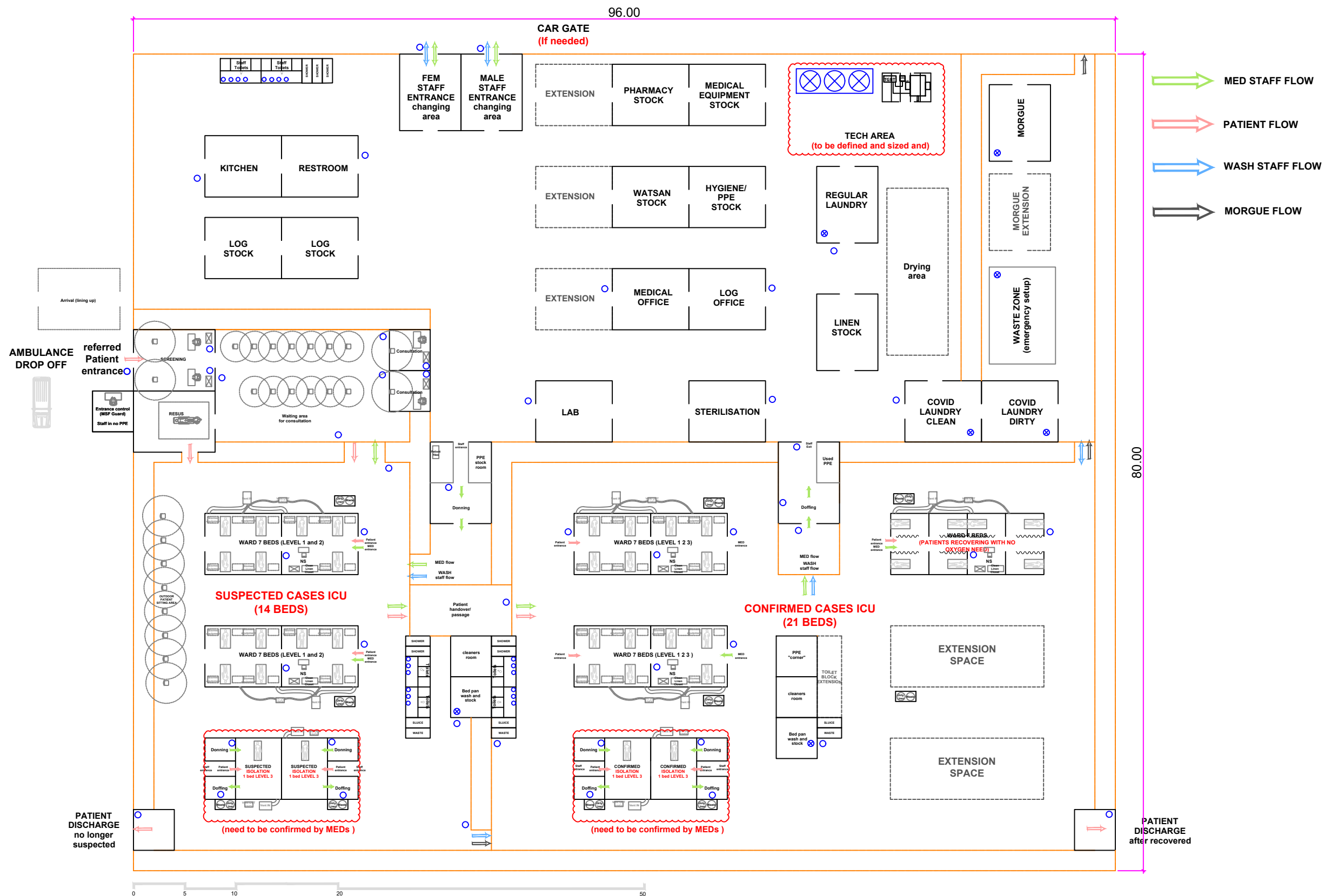
Drawing Title	MASTER PLAN
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Rev	Description	Date	Dgn	Chk	App
Developer					
 MSF OCB           COVID-19 TASK FORCE					
Project Title					
ISOLATION SUS and CONF with support and auxiliary setup multipurpose tent version (45 m2 tent)					
Contractor					
Originator					
MSF OCB TECHNICAL UNIT					
Drawing Title					
MASTER PLAN					
Drawn	UA	Scale			
Designed		1/200			
Checked		Status			
Approved					
Drawing No.					Rev
XXX					-

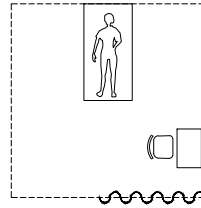




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Rev	Description	Date	Dgn	Chk	App
Developer					
<div><div>MEDECINS SANS FRONTIERES</div></div> <div>MSF OCB COVID-19 TASK FORCE</div>					
Project Title					
ISOLATION ICU SUS and CONF with support and auxiliary setup multipurpose tent version (45 m2 tent)					
Contractor					
Originator					
MSF OCB TECHNICAL UNIT					
Drawing Title					
MASTER PLAN					
Drawn	UA	Scale			
Designed		1/200			
Checked		Status			
Approved					
Drawing No.				Rev	
XXX				-	



## PATIENT COMFORT



ADAPTING TO EXISTING BUILDINGS	DOORS	CORRIDORS	ELEVATORS
Minimum dimensions for hospitalization bed	120 CM	240 CM	240 X 140 CM
Minimum dimensions for stretchers	120 CM	180 CM	240 X 100 CM

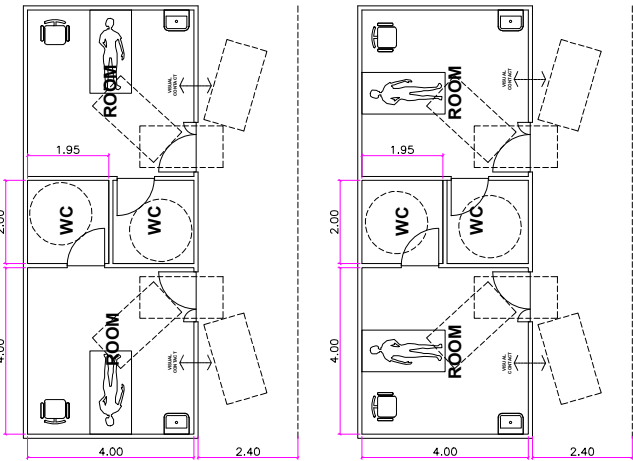
Drawing No.	Rev
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# SUSPECTED CASES ISOLATION

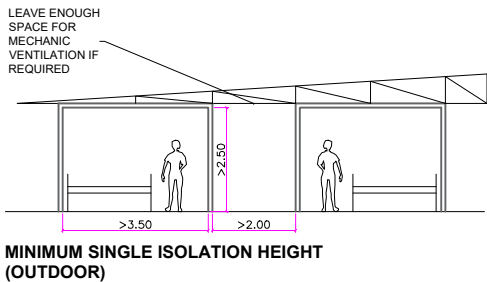
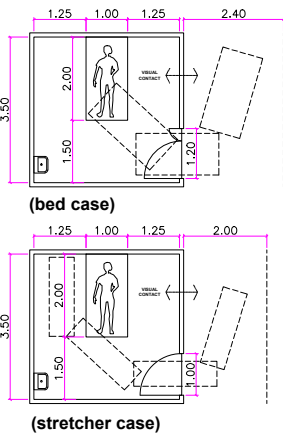
**SINGLE ISOLATION**  
**IS ALWAYS THE FIRST CHOICE RECOMMENDED BY DEFAULT FOR BOTH SUSPECTED AND CONFIRMED.**  
**EITHER EXISTING ROOM/WARD, EITHER A TEMPORARY SETUP BUILT FOR COVID19 EMERGENCY (INDOOR OR OUTDOOR)**

## SINGLE ISOLATION

**RECOMMENDED EXAMPLES OF SINGLE ISOLATION ROOM WITH DEDICATED WC**  
(built in temporary materials - sandwich panel, plastic sheeting, plywood, PVC, etc)

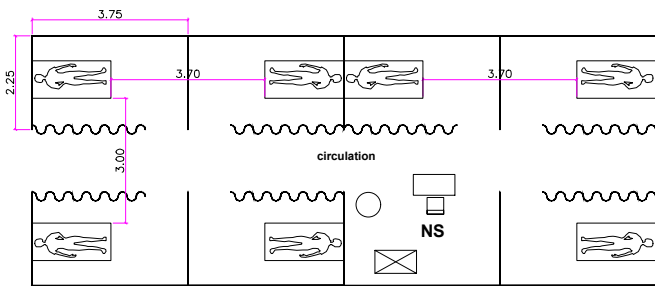


**EXAMPLES OF SINGLE ISOLATION ROOM WITHOUT DEDICATED WC**  
(built in temporary materials - sandwich panel, plastic sheeting, plywood, PVC, etc)

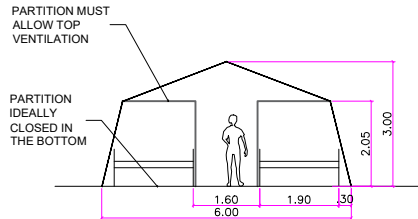


## COHORT IN 45 m² TENT

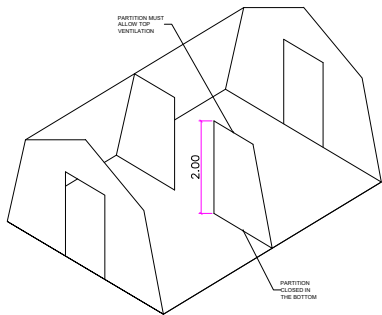
**COHORT IN SUSPECTED CASES IS ALWAYS SECOND CHOICE AS RESULT OF NO ACCESS TO OTHER RESOURCES OR MEANS IN THE PROJECT**



- MULTIPURPOSE TENT**
- in cohort
  - with lateral separation (mandatory)
  - with curtain for privacy
  - recommended maximum 2 tents together to allow nursing station supervision

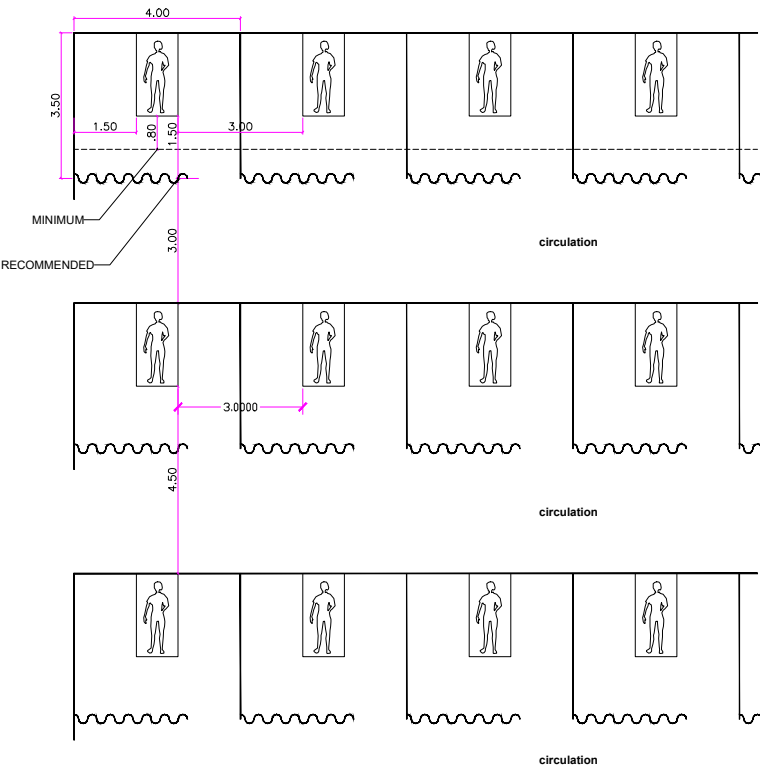


PARTITION HEIGHT FOR TENT CASE

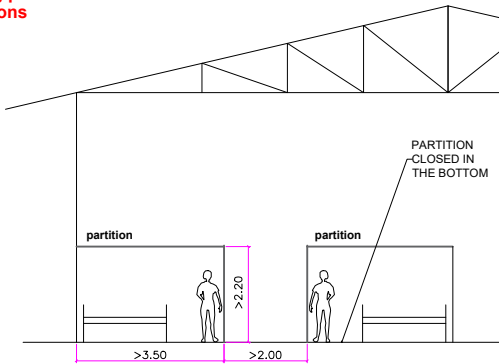


## COHORT IN OPEN SPACE

**COHORT IN SUSPECTED CASES IS ALWAYS SECOND CHOICE AS RESULT OF NO ACCESS TO OTHER RESOURCES OR MEANS IN THE PROJECT**



- OPEN SPACE**
- in cohort
  - 3 meters between beds
  - always with partitions
  - curtain for privacy
  - never head to head
  - wide corridors to allow circulation of staff and patients
  - consider washing points and nursing stations



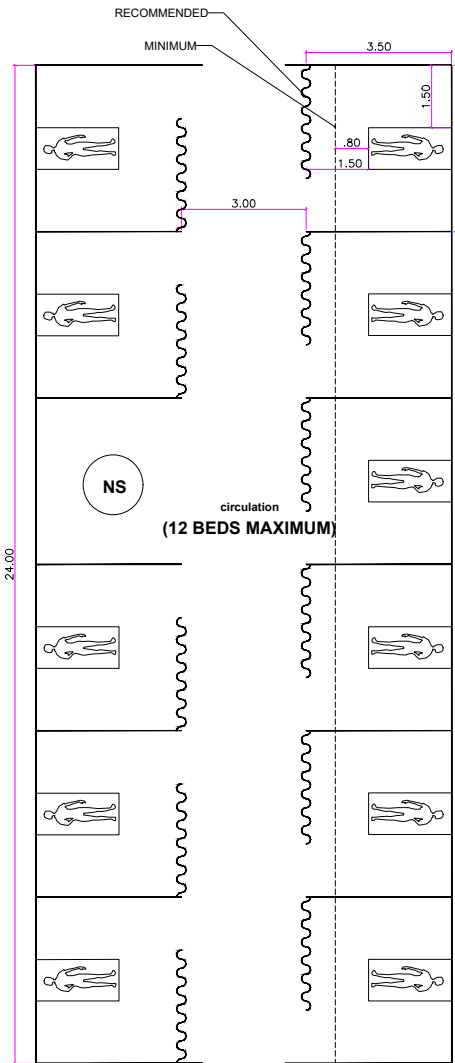
MINIMUM PARTITION HEIGHT IN COHORT (OPEN SPACE INDOOR)

## COHORT IN RUBBHALL 240 m²

**HOSPITALIZATION OF PATEINTS IN RUBBHALLS IS NOT RECOMMENDED**  
**COHORT IN SUSPECTED CASES IS ALWAYS SECOND CHOICE AS RESULT OF NO ACCESS TO OTHER RESOURCES OR MEANS IN THE PROJECT**

### RUBBHALL TENT

- in cohort
- with lateral separation (mandatory)
- with curtain for privacy
- wide corridor for patient and staff circulation
- nursing station space recommended (TBD on the field)



- RUBBHALL
- in cohort
- 3 meters between beds
- always with partitions
- curtain for privacy
- never head to head unless partition is fully from bottom to ceiling and well sealed
- wide corridors to allow circulation of staff and patients
- consider washing points and nursing stations

	5th ISSUE	15/05/20	UA		
	4rd ISSUE	24/04/20	UA	AA	
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	SECOND ISSUE	10/04/20	UA	IBM	
	FIRST ISSUE	09/04/20	UA	IBM	

Rev	Description	Date	Dgn	Chk	App
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**MSF OCB AFGHANISTAN**

Project Title  
**COVID19 - SAFE DISTANCES FOR DESIGN 1/2**

Contractor

Originator  
**BRUSSELS INFRASTRUCTURE TEAM**

Drawing Title  
**DISTANCE AND DIMENSION FACT-SHEET 2**

Drawn	UA	Scale	N.T.S.
Designed	UA	Status	
Checked	UA		
Approved	UA		
Drawing No.	XXX	Rev	-

# CONFIRMED CASES ISOLATION

SINGLE ISOLATION  
IS ALWAYS THE FIRST CHOICE RECOMMENDED BY DEFAULT FOR  
BOTH SUSPECTED AND CONFIRMED.  
EITHER EXISTING ROOM/WARD, EITHER A TEMPORARY SETUP  
BUILT FOR COVID19 EMERGENCY (INDOOR OR OUTDOOR)

## COHORT IN OPEN SPACE

(MILD AND MODERATE)

MINIMUM CUBICLE SPACE  
RECOMMENDED CUBICLE SPACE  
circulation  
FULL PARTITION TO ENSURE SEPARATION BETWEEN AISLES

(SEVERE)

MINIMUM  
RECOMMENDED  
PARTITION TO ENSURE SEPARATION BETWEEN AISLES  
circulation

OPEN SPACE

- in cohort
- lateral separation and curtain is optional (privacy)
- mild and moderate, should be grouped in different zone from severe
- recommended nursing station

## COHORT IN 45 m<sup>2</sup> TENT

(MILD AND MODERATE ONLY)

MULTIPURPOSE TENT

- in cohort
- lateral separation and curtain is optional (for privacy)
- mild and moderate, should be grouped in different zone from severe
- recommended maximum 2 tents together to allow nursing station supervision

(SEVERE)

MULTIPURPOSE TENT

- in cohort (ICU)
- with lateral separation
- without curtain for privacy
- mild and moderate, should be grouped in different zone from severe
- recommended maximum 2 tents together to allow nursing station supervision

MULTIPURPOSE TENT

- split into 4 single room (depending on tent model)
- with middle separations
- mild, moderate, and severe should be grouped in different tents
- a dedicated latrine can be considered at the entrance of each room

## COHORT IN RUBBHALL 240 m<sup>2</sup>

HOSPITALIZATION OF PATEINTS IN RUBBHALLS IS NOT RECOMMENDED  
COHORT IN CONFIRMED CASES IS ACCEPTED

RECOMMENDED CUBICLE SPACE  
MINIMUM CUBICLE SPACE  
circulation  
RUBBHALL 240 m<sup>2</sup> (16 BEDS)

(MILD AND MODERATE)

RUBBHALL TENT

- in cohort
- lateral separation and curtain is optional (privacy)
- mild and moderate, should be grouped in different zone from severe
- recommended nursing station

MINIMUM CUBICLE SPACE  
circulation  
RUBBHALL 240 m<sup>2</sup> (14 BEDS)

(SEVERE)

	5th ISSUE	15/05/20	UA		
	4rd ISSUE	24/04/20	UA	AA	
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	SECOND ISSUE	10/04/20	UA	IBM	
	FIRST ISSUE	09/04/20	UA	IBM	
Rev	Description	Date	Dgn	Chk	App

Developer

MSF OCB  
AFGHANISTAN

Project Title

COVID19 - SAFE DISTANCES FOR DESIGN  
2/2

Contractor

Originator

BRUSSELS  
INFRASTRUCTURE TEAM

Drawing Title

DISTANCE AND DIMENSION  
FACT-SHEET 3

Drawn	UA	Scale	N.T.S.
Designed	UA		
Checked	UA	Status	
Approved	UA		

Drawing No.	XXX	Rev	-
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