

PAHO Check Consultants

Check Consultant Definition

A Check Consultant provides an independent review of the designs for the PAHO Smart retrofitting in conformance or above the relevant codes and standards.

The design teams are solely responsible, liable and accountable for the safety and integrity of the designs.

Role of Check Consultants

- I. To review work of a design consultant in order to achieve a better and more reliable project by providing independent assessments of the work
- II. To reduce the incidence of errors or of unsatisfactory designs and construction
- III. To identify sub-standard work (vital for the fundamental well-being of the project, for the protection of the client and for providing security for the funding agency and insurance underwriter)
- IV. To assist in the development of the construction industry

Brief Guidance Notes / Checklist

Structural Safety	Checked
Ensure appropriate loads (seismic, wind, gravity) used	
Ensure appropriate and consistent codes used for loading, analysis and detailing	
Check appropriate use of materials for durability and maintenance	
Geometry has significant impact on resilience, particularly rooves	
Only work allowed to boundary fences are for soil stability or flood mitigation	
Civil	Checked
Check drainage design and mitigation of flood impact	
Consider soil/ site stability	
Fire Safety	Checked
Check appropriate materials for fire resistance	
National Fire Protection Association (NFPA) codes for life safety useful for detailing and checks	
Emergency egress/ access and signage	
Architectural	Checked
Consider patient flow to improve functionality of the facility	
Disabled accessibility – WCs, showers, stairs, ramps, etc.	
Paint selection has significant impact on appearance of facility	

Seismic restraint of shelving, etc.	
Safety of non-structural partitions, ceilings and flooring	
Mechanical	Checked
AC and ventilation needs differ depending on use of space: offices, patient areas, and specialised systems in laboratories, ORs, kitchens, etc.	
Check refrigeration needs in blood banks, mortuary, pharmacy, kitchens, etc.	
Potable water storage system – check hot water supply, water treatment, filtration, constant circulation of stored water for infection control, water softening	
Rain water harvesting – treatment, design of storage volume	
Check steam plants, if used in (sterilisation) CSSD, Kitchens, etc.	
Fire suppression system – water storage, pumps, piping, hoses, sprinklers, etc.	
Waste water systems – septic tanks, treatment plants	
Equipment checks – appropriate design and use of solar water heaters, incinerators, elevators, laundries, etc.	
Electrical	Checked
Check safety and design of electrical distribution and transmission – cables, panels, circuit breakers, transformer, etc.	
Generator and back-up fuel supply (storage to be designed by structural engineer)	
Photo Voltaic (PV) systems	
UPS	
Lighting and low voltage power	
Other: Information and communication systems (PA system), WiFi, Servers, etc.	
Plumbing Services	Checked
Sanitary ware with consideration for infection control and low-volume flow	
Medical sanitary ware: bedpan washers, sluices, etc.	
Sanitary piping systems	
Grey water traps: kitchens, laundries, etc.	
Wet wells & sewage transfer pumps	
Testing and commissioning of MEP services included prior to works approval	
Greening	Checked
Reduce heat load on building to see significant savings: insulation, direct solar impact, etc.	
Renewable energy is extremely cost effective in the Caribbean Region – PV, wind, solar water heaters, etc. (the economics decides the size of the PV system)	
Low flow WC's – consider existing sewerage piping so that adequate volumes used	
Incorporate natural lighting and natural ventilation	
Use of energy and water efficient fixtures and appliances – target the highest consumers identified in the BAT (electrical and water audit)	

Consider ease of maintenance of all items in scope!	
Post-Contract	Checked
Attend pre-construction (kick-off) meeting to determine if construction contractor is ready to start work with regards to technical drawings, and equipment and systems in accordance with technical specifications requirements.	
Occasional site visits to ensure agreed quality control systems are being implemented	
Not responsible for checking construction works. This is the responsibility of the design team. However, advise PAHO if any observations of concern occur at site visits.	
Professional ethics – identify and communicate any health and safety concerns observed on-site	

MEP codes may include:

- PAN AMERICAN HEALTH ORGANIZATION (PAHO)
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
- AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE)
- AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
- AMERICAN WATER WORKS ASSOCIATION (AWWA)
- AMERICAN WELDING SOCIETY (AWS)
- Consider national (local) codes and standards

Standardised Materials

- Refer to list of non-structural manufactured materials that meet Smart standards, NOA rated materials



For questions about this document, please contact Dr. Dana Van Alphen at vanalphe@paho.org.