

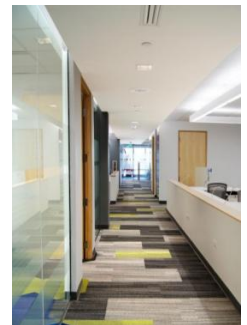


*Hospitals • Outpatient Facilities • Long Term Care*

## *We make the Difference*

**For over 50 years**, CMA Architects & Engineers has provided design and construction management services to the most prominent health care organizations in Puerto Rico.

From designing brand new facilities to renovating while in operation, CMA has been supporting the industry with quality solutions for today's increasing requirements.



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**CMA**  
ARCHITECTS &  
ENGINEERS LLC

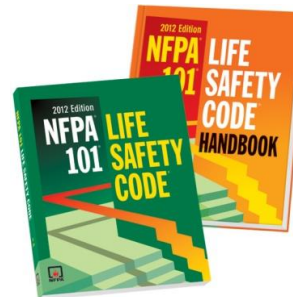




## Expertise

CMA has developed facilities that meet today's regulations and standards with a special focus on best practices, 2012 **NFPA 101** Life Safety code, and the 2014 Guidelines for Design and Construction of Health Care Facilities. The latter, also referred to as the **FGI Guidelines**, sets forth the minimum recommended health care design standards throughout the U.S.

We also comply with design requirements established by accreditation program agencies such as The Joint Commission (JTC) and AAAHC, as well as accessibility standards by ADAAG (ADA 2010) and ANSI/ICC (A117.1 2009).



## Our Commitment

### Confidentiality

We honor our clients. Thus any information share with us, from general information to specific strategic planning, it is treated with the utmost importance it deserves.

Throughout the years, CMA Architects and Engineers has worked hand in hand with leading health care groups. To do this, privileged information has to be shared. CMA provides confidentiality throughout the process by implementing client specific security measures regarding data sharing and distribution through limited access digital media management.





## **Services**

*Improving health care environments  
and building communities*

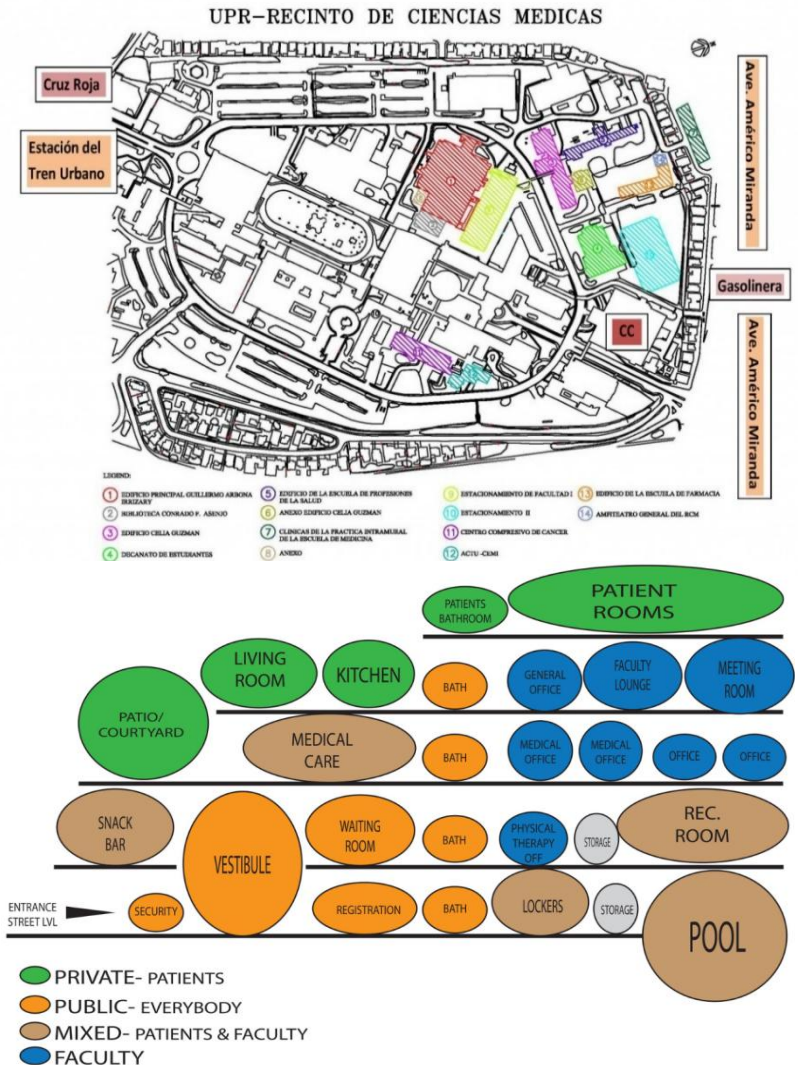
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## Master Planning

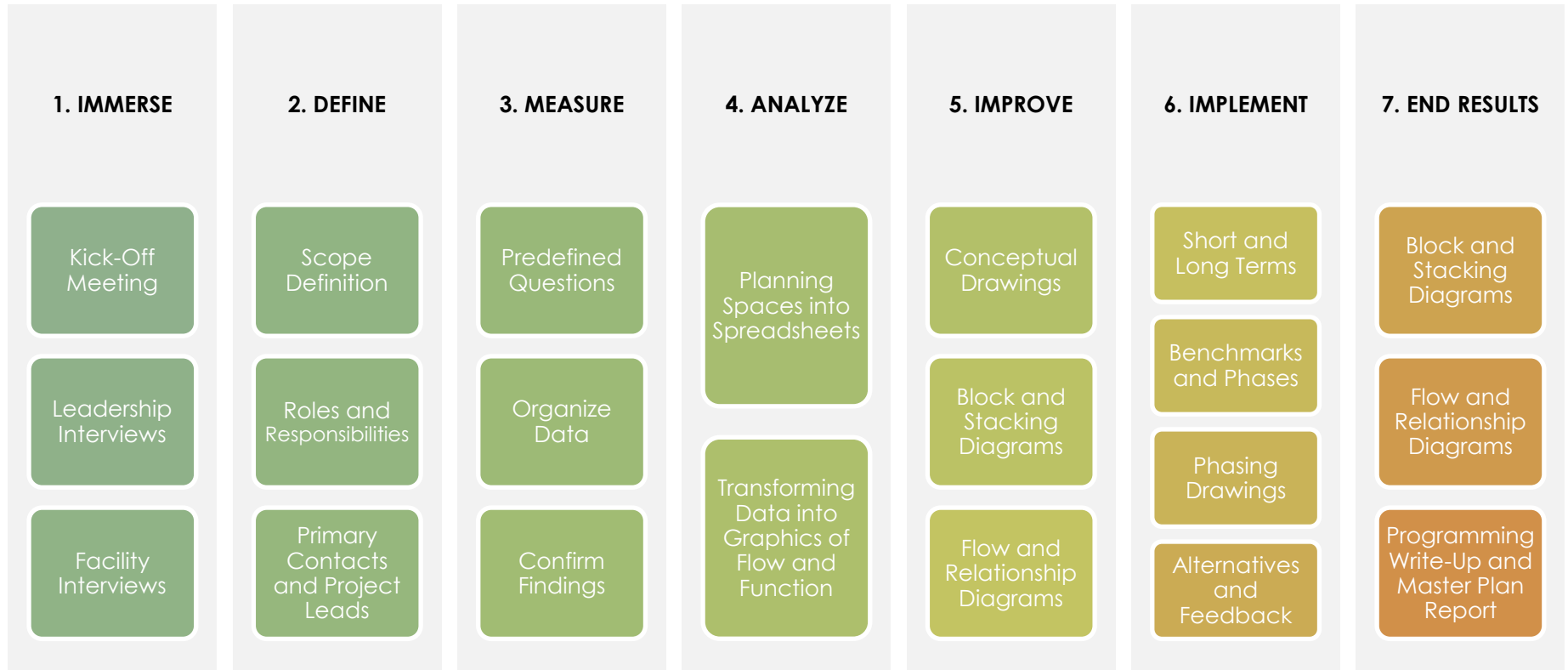
Let's see the 'big picture' view of your facility goals by setting out a clear and logical vision that stakeholders can understand, feel involved in and work towards.

We create a flexible, client-owned strategic development framework for the short, medium or long term. It can be easily adapted to meet changing market and adopt new value-added initiatives.

Working in close collaboration with stakeholders and users, our Master Plans take into account key issues, such as operational needs, current infrastructure, expandability, site locations, and latest code and regulation compliance. We also address evidence-based design practices, energy conservation targets and specific service processes to create solutions that are responsive to our clients' needs.







## CMA's 7 Steps of Strategic Master planning

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## Facility Assessment

Health care facilities and hospitals are ever changing by nature with new technology, services and regulations. A facility assessment is the evaluation of the physical space and infrastructure to offer stakeholders a roadmap that will determine how to distribute resources over time.

Your assessment can be a full facility endeavor. However it can also specific to a building system, such as mechanical, electrical and plumbing infrastructure, or an ADA accessibility review plan.

Once we define the scope to be surveyed, we agree on an easy-to-understand scoring system. The final report will highlight any found deficiencies needing updates, point at underlying costs of future updates, and provide a clear path for improvements going forward in the short and long term.



### Legend

Discipline	Rating	Priority
Structural		
Exterior Envelope		
Interior Spaces		
Mechanical		
Plumbing		
Electrical Power		
Lighting		
Fire Suppression		

Ratings	Priority
5 Optimum	1 Immediate Attention Required
4 Adequate	2 Attention Required in next 5 months
3 Fair	3 Attention Required in next two years
2 Poor	4 Attention Required in next five years
1 Unsatisfactory	5 No Attention Required





## Health Care Design

Whether it is a new building, or an interior renovation, we work closely with stakeholders and health care staff to provide spaces that are responsive to the end user. We refer to the FGI Guidelines for health care facilities, evidence-based design practices and relevant white papers, as well as the latest codes and regulations applicable in your facility:

- Hospitals
- Geriatric Facilities
- Oncology Units
- Pediatric Units
- Ambulatory Care Units
- Dialysis Centers
- Imaging Centers
- Medical Office Buildings

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## Centralized Utility Centers

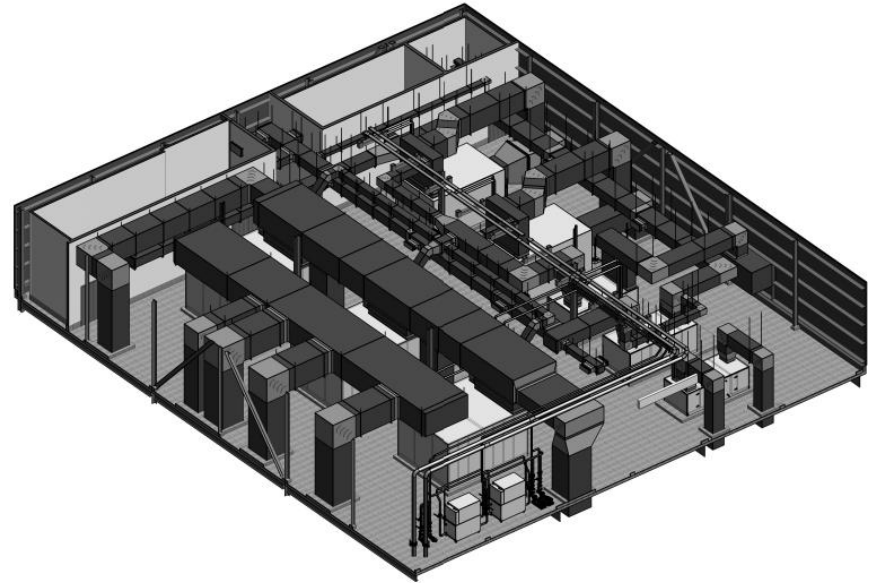
Centralized utility centers allow for low and effective energy management. Furthermore, the waste product of a system can be reused to reduce energy and operational costs.

CMA Architects and Engineers works with you to update utilities and achieve higher levels of safety, comfort and efficiency that result in operational savings.



Among the services we offer are:

- Energy Audits
- HVAC Systems Optimization
- LEED (*Leaders in Energy and Environmental Design of the U.S. Green Building Council*)



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## Support & Assistance

In addition to design services to the healthcare industry, we can also assist our clients through the **permits** acquisition process. Some of the permits we work with for our clients include:

- Environmental Impact Assessment
- Land Use Consultations
- Air Emissions Testing
- Solid Waste Disposal
- Soil Extraction
- Tree Pruning, Cutting and Removal
- Wastewater and Storm Water NPDES
- US Army Corps of Engineers Joint Permit
- Construction
- Use Permits
- SHPO & ICP Consultations
- Federal Agency Endorsements



## ***Representative Projects***

Excellence through value services and  
commitment to our clients

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## *Pediatric Hospital Expansion San Juan, PR*

The expansion to the University Pediatric Hospital consisted of a new 56,000 SF building with three levels. The total project cost was over \$26.8 M. The building houses new oncology, burned victims and neurology units as well as a new emergency department, and a clinical laboratory. These specialty facilities were not available in Puerto Rico prior to the project. The project included a mass decontamination facility.

Since the new expansion was located over an old parking lot and connecting to an existing building, CMA addressed zoning concerns, existing roofing system challenges, and NFPA 101 compliance. Additional parking spaces were also provided within the Centro Medico health care campus. CMA got all operational permits including the hospital accreditation by the Joint Commission. The project was completed on August 2010.

### **Services**

Cost estimating; Architecture; Structural, Civil, Mechanical and Electrical engineering. Services during construction and permitting.





## San Patricio Medflix Building Guaynabo, PR

This 39,000 SF facility offers advanced health care imaging services to the Puerto Rican community and neighboring countries. It houses a parking floor at ground level, a full service imaging department on level 2, and an office suite on level 3. The imaging department includes MRI, CT and PT Scan equipment.

We were involved since the conceptual phase, imaging safety guidelines, future replacement strategy, equipment max vibration tolerances and MRI shielding design. Due to site constraints, the MRI, CT and PT Scan equipment was accommodated on an elevated slab adding structural challenges to the building.

The project cost was over \$13.5 M without imaging equipment. It opened on December 2006.

### Services

Cost estimating; Permits; Architecture; Structural, Civil, Mechanical and Electrical engineering



## *Ambulatory Dialysis Facility*

### *San Juan, PR*

This 9,800 SF ambulatory medical facility provides on-site services to dialysis patients in a convenient setting. It offers 20 patient stations, one of which is a contained unit with separate sanitary facilities. Other patient amenities include examination and consultation spaces and a home dialysis training area for patients seeking home care assistance.

The program also included a waiting room, medical record storage and staff support areas. One of the key features was the construction of its own water treatment area and a 20,000-gallon water tank. A porte-cochere was added to the existing building to provide a covered entrance.

This project was completed by December 2014 and within its anticipated project budget of \$1.6 M. We addressed strict compliance with local health department requirements by the Secretaría Auxiliar para Reglamentación y Acreditación de Facilidades de Salud (SARAFS) , and current NFPA Life Safety standards.

#### **Services**

Architecture; Structural, Civil, Mechanical and Electrical engineering. Services during construction and permitting.



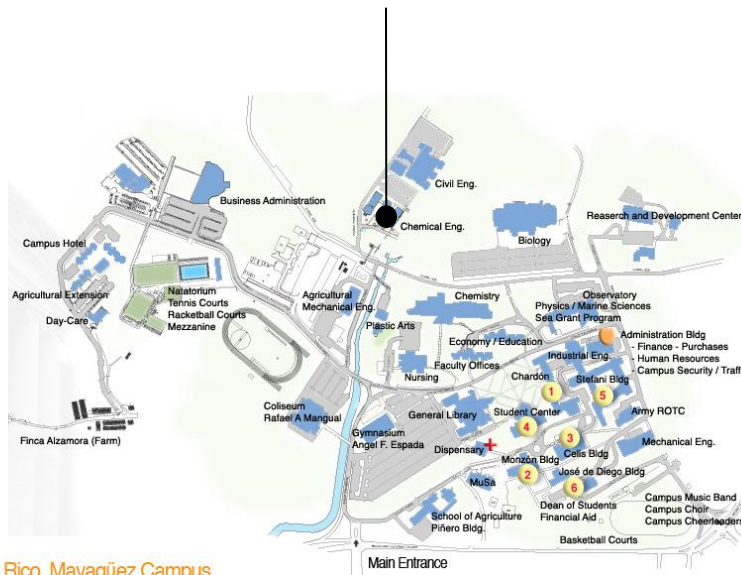




## Chemistry Building Reconstruction University of Puerto Rico, Mayagüez

CMA performed a full assessment of the HVAC infrastructure for the Chemistry Department building at the University of Puerto Rico. The project encompassed 214,000 SF, 4 levels, and multiple chemical laboratories with the upmost strict HVAC requirements.

Built on 1996, the goal was to reduce high humidity levels and increase comfort at the existing facility. We offered a multiple phase approach with short, medium and long term recommendations. The HVAC reconstruction project has been approved by the Board of Directors and is currently underway.



University of Puerto Rico, Mayagüez Campus

### Services

HVAC Facility Assessment; Cost estimating;  
Architecture; Structural, Civil, Mechanical and  
Electrical engineering



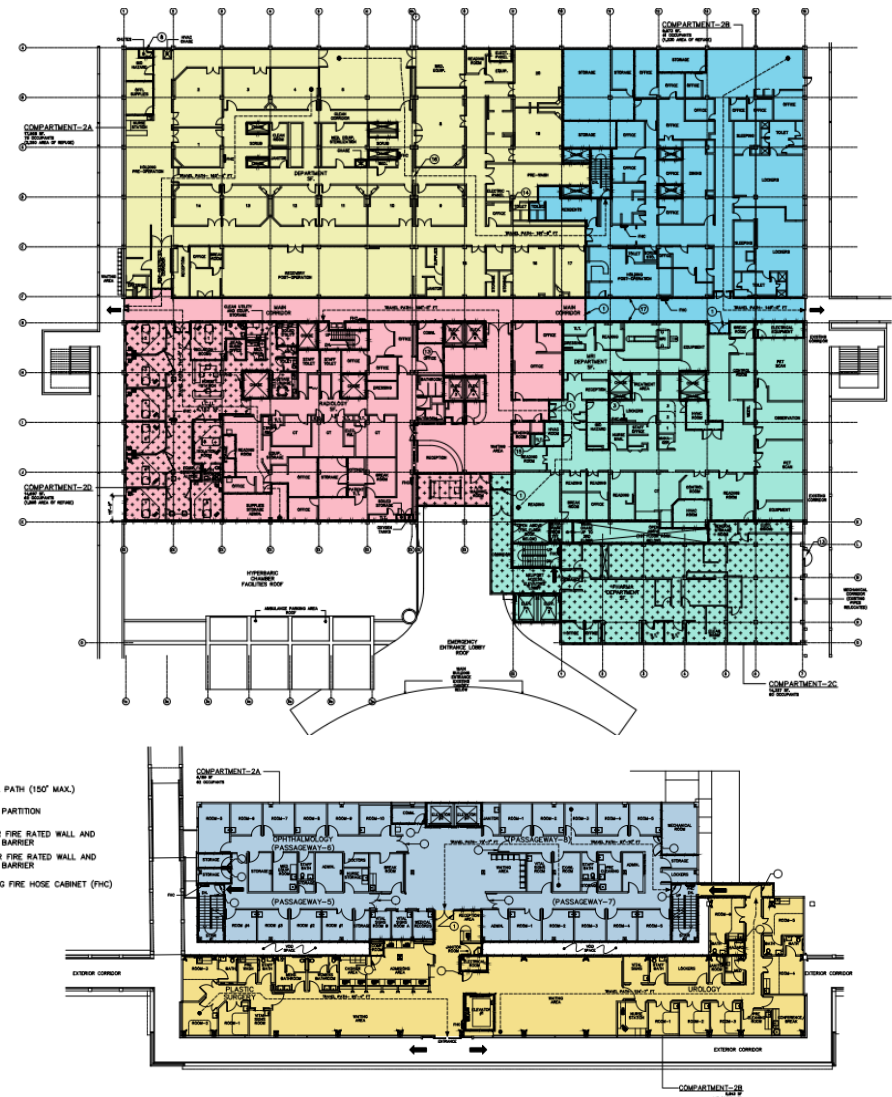
# Centro Medico Life Safety Assessment San Juan, PR

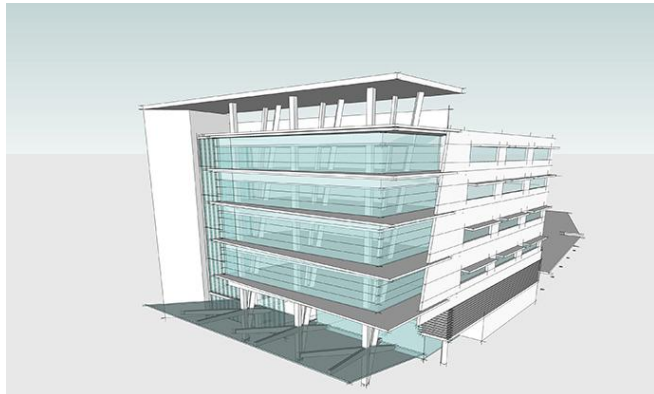
The Administration of Medical Services of Puerto Rico requested a life safety assessment report and a set of updated drawings based on the latest standards adopted by the Joint Commission and Centers for Medicare & Medicaid Services (CMS) in order to : 2012 NFPA 101 Life Safety Code and 2012 NFPA 99 Health Care Facilities Code. This was an important element in their continued accreditation process.

We evaluated over 240,000 SF housed in two buildings at the Centro Medico health care campus: a six level hospital for inpatient treatment, and a three level facility for outpatient services. We reviewed existing architectural and engineering drawings, performed onsite assessments and corroborated record drawings. We made short and long term recommendations based on regulation compliance and budgetary resources.

## Services

NPFA 101 Life Safety Building Assessment





## Guaynabo City Hospital Guaynabo, PR

The city of Guaynabo was considering a 160,000 SF expansion to their municipality hospital for which construction documents were prepared by an stateside based firm. It offered 105 beds and 8 operating rooms. Preliminary cost estimate of \$85M of the project did not fall within their budget.

CMA was asked to do a peer review focusing on the NFPA 101 Life Safety considerations and identifying cost saving opportunities given local construction methods and best practices. We identified over \$1M in savings by relocating the required 38 KV GIS electric substation. CMA designed the new substation meeting the electrical code requirements, and also designed an upgrade to their back-up power system to the existing health care facilities.

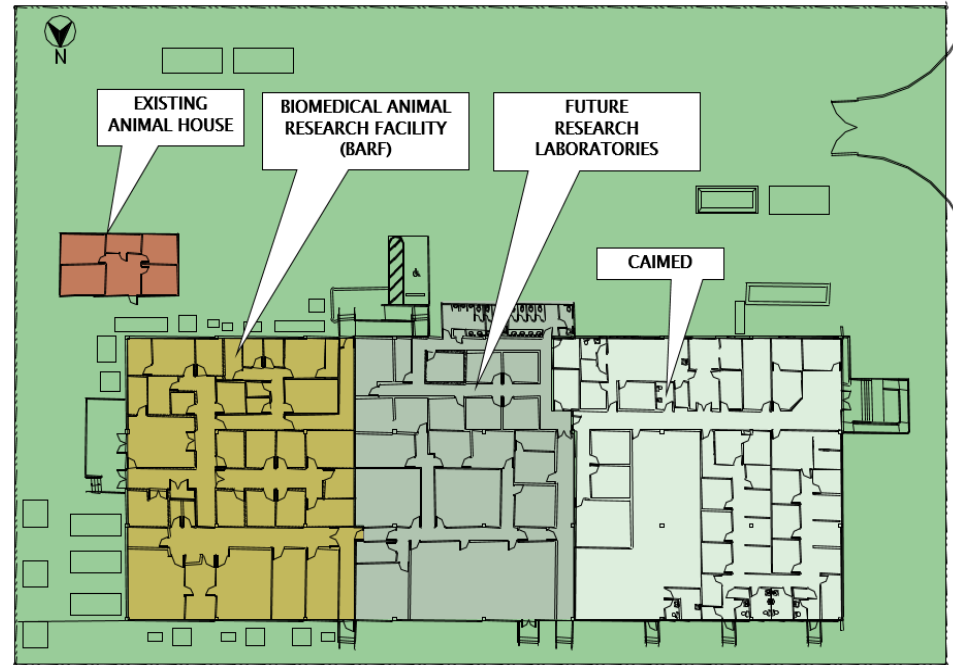
### Services

Cost estimating; Architecture; Structural, Civil, Mechanical and Electrical engineering

## Ponce School of Medicine Ponce, PR

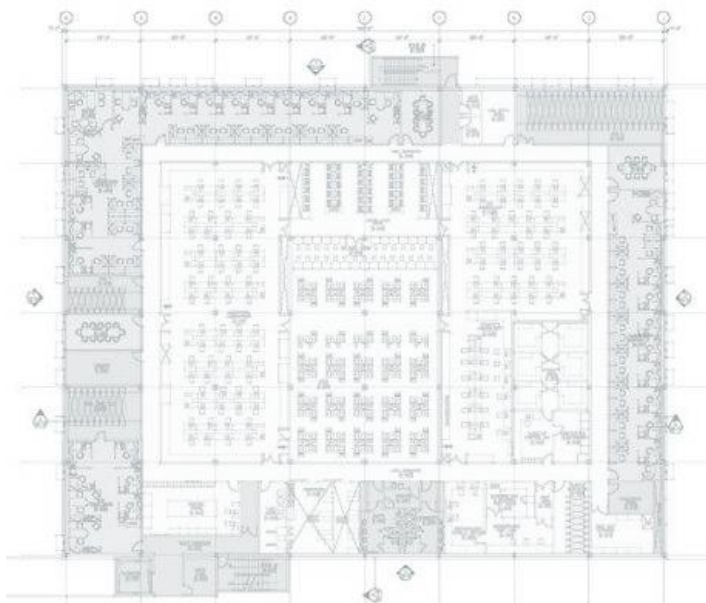
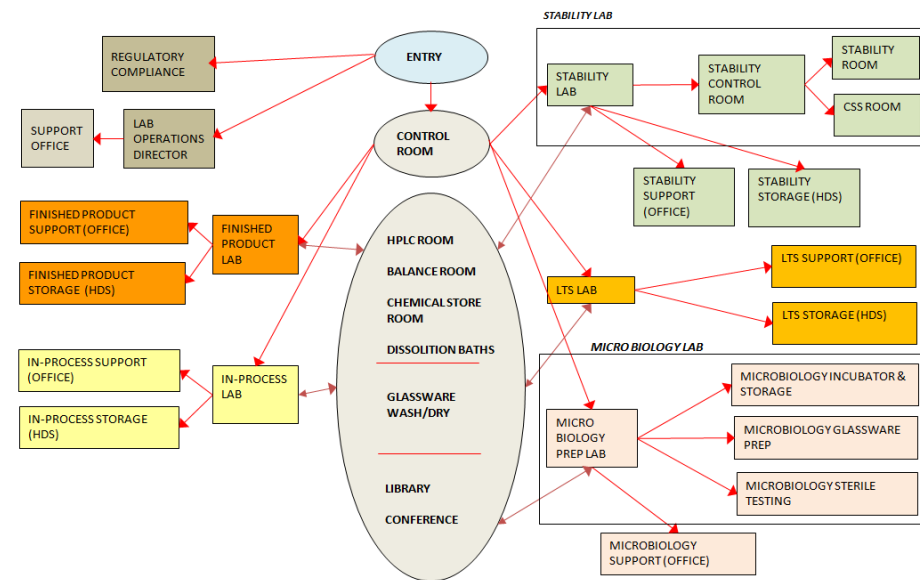
CMA performed a facility assessment for the Ponce School of Medicine, documenting the use of all their existing facilities and identifying areas that needed attention in terms of additional space, code compliance, and underutilization. The project also included the definition a new research lab.

We established opinion of probable cost of the different projects and initiatives, and prepared short and long term phased execution schedule considering need-based priorities for the Board of Directors.



### Services

Facility Assessment; Cost estimating; Architecture;  
Structural, Civil, Mechanical and Electrical  
engineering



## Chemical & Microbiology Laboratory Confidential Client, PR

The goal was to accommodate a complex laboratory program in a 12,500 SF site. We analyzed materials flow and staff traffic, and proposed a plan that would reduce travel distances while maintaining staff safety and quality standards.

Spatial relationship diagrams were used to develop a functional floor plan maximizing available space and optimizing operations. Controlled areas shared by different labs were centralized, and documentation and support areas were accommodated in the perimeter of the building.

### Services

Architecture; Structural, Civil, Mechanical and Electrical engineering





## ***Some of our Clients***

*Quality services that support your mission*

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ARCHITECTS &  
ENGINEERS LLC

Some of our Health Care  
Clients



AUTORIDAD PARA EL  
FINANCIAMIENTO DE LA  
INFRAESTRUCTURA  
Estado Libre Asociado de Puerto Rico



SAN PATRICIO  
MRI & CT CENTER





*Excellence • Commitment • Experience*