

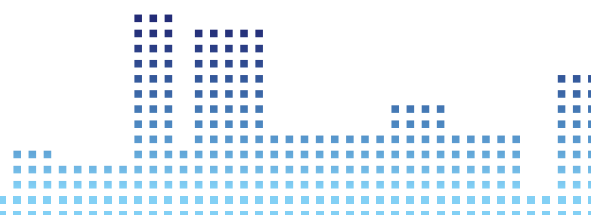
**Erasmus MC**

Universitair Medisch Centrum Rotterdam



## Our New Erasmus MC

Future-proof buildings





# Welcome

## Ernst Kuipers

chairman of Erasmus University Medical Center's Executive Board

“ This is once in a lifetime for us all. The old hospital dates back to 1961, with nurses' stations at the center of the wards and physicians rooms at the far ends of the wards. We have now been given the chance to build an ultramodern building; a chance that comes along only once every sixty years. ”



**Erasmus MC is building a new hospital right in the heart of a city full of architectural icons. The design is sleek, functional and well-considered. The contemporary building elements seamlessly fit in with Sophia Children's Hospital, the innovative Education Center, and the imposing research tower of the Medical School.**

The shell has now largely been completed but you can still feel the dynamics of the construction site, with its construction hoists and helmeted workers. The energy of Rotterdam is captured here: actions speak louder than words, together we can do it. Close by there is activity of another kind; we are in the largest university medical center of the Netherlands.

While the Executive Board holds a meeting in the new building and blood and other materials are analyzed by ultramodern laboratory assembly lines, a research team works on a new vaccine in the medical school building. Trainee physicians receive individual or group training in the spacious and light-filled Education Center and the Skillslab; patients are examined, undergo surgery and are nursed in and around the old ward building.

Employees, patients, and students are aware of a new perspective. The healing environment of the academic hospital of the 21st century can already be experienced at the Rehabilitation Medicine Rijndam outpatient clinic and in the Passage. Plenty of natural light, greenery, and warm and comfortable furnishings, aimed at reducing the stress associated with hospital visits.

The guiding principle of the new buildings is that they should be a place where you are warmly welcomed, treated expertly and with respect, and have a pleasant stay. In addition, it will be a place that radiates ambitions: this is where we provide complex, high-quality care, and where we teach and conduct research for a better quality of life.

Welcome to Our New Erasmus MC. This brochure gives a brief outline of the entire process, from the first sketches of the new hospital through to our ideal for 2018 and the decades to come: a state-of-the-art hospital building, ready for the challenges of the future.

*Executive Board, architects, consultants, construction contractors, and Erasmus MC's new buildings project management*

# The design process

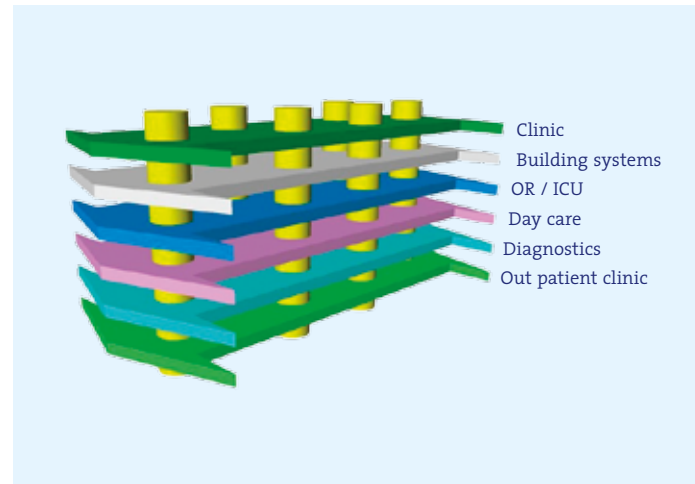
Four partners started the design process for the new hospital together in 2002: Erasmus MC as the principal, EGM architects, Aronsohn (constructing engineers), and Royal HaskoningDHV (building installations engineers). Juurlink [+] Geluk are responsible for the landscape design and the green spaces. Ptg advies manages the programming and conducts consultations with users on the physical arrangement of spaces within the building's shell. Bureau Peutz is a consultant in the field of building physics and wind technology.

The scale and complexity of the project means that the experts face a huge challenge. The new shell has to accommodate all the functions of the university medical center, while making optimal use of the available space and ensuring smart physical connections. The building must be ready for new technologies and high-quality patient care. The goals with regard to energy consumption, comfort and flexibility are substantial.

## Initial sketches

The initial sketches show the conceptual model of the new hospital. At this stage it had already been decided that the new building will arise at the existing location in the city center and that the lay-out at Erasmus MC will be thematic. Additional synergy is achieved by bringing together, where possible, specialisms and facilities related to common clinical syndromes such as oncology and cardiovascular diseases. Every patient theme is assigned a number of square meters based on production figures, together with a corresponding budget for interior and finishes.

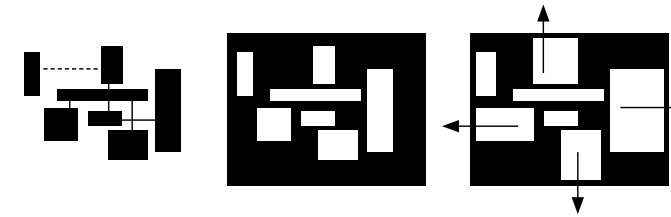
The initial thought is that three themes will be assigned space in the first part of the new building, but not in separate sections of the building, as this would impede knowledge transfer. It is precisely these fringe areas that offer opportunities to accommodate growth, shrinkage or new developments in the future. The design team therefore presents a model of a single large building complex with connected building sections and covered atriums, that reinforces the cohesion between the themes. This model is, to this day, the basis for the new hospital.



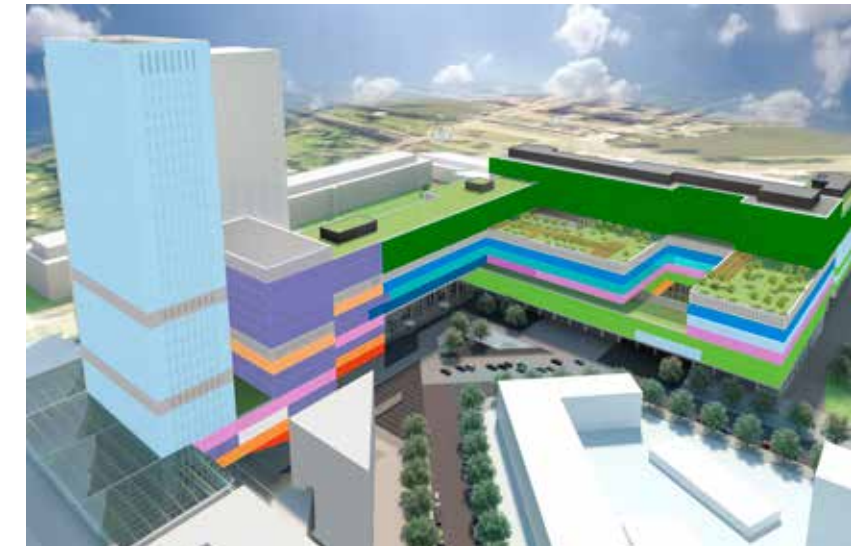
## Functional layering

The thematic lay-out is combined with vertical layering. For example, outpatient clinics on levels 1 to 3 and nursing wards on levels 8 to 12. The Radiology department on level 5 can be reached from several different outpatient clinics. Level 7 is dedicated entirely to building technology: air handling units, chillers, boilers, transformers, and medical gases. Technical features and utilities will also be installed on the ground floor.

The functional layering will enable patients to find their way quickly and easily within their theme. All the functions will be located near the same elevator core and distinct colors and use of materials will identify similar spaces. The functional layering system also has an emergency column (a vertical connecting axis). Trauma patients from the new Emergency department found at street level can be rapidly taken to an ICU or operating room (OR) on the 4th and 6th levels in large elevators.



We now know that the decision in 2004 to separate the development of the shell and the interiors of the new buildings was crucial to the coming in use of an ultramodern hospital in the early months of 2018. The interior design and division of functions will remain flexible, leaving enough room for future innovations.



# Building qualities



## Corina Schols

project leader for interior design, ptg advies

“ The decision to go for single patient rooms will no longer be trendsetting when the building is completed, but it was when we designed the building. If the new hospital had been designed entirely in 2007, we would have found ourselves with an old-fashioned hospital upon completion. I sometimes say: we're actually renovating the building. The shell had been completed by the time we started designing the interior. ”

Building only single patient rooms was an almost revolutionary decision at the start of the 21st century. The reasons behind this choice included the increasing demand for privacy, personalized care, more severe and complex cases, and an increasing emphasis on hygiene and safety.

## Standardized interior

Consultation and examination rooms, as well as the single patient rooms in the new hospital, will all have standard furnishings so that they can be used for a variety of specialisms. Our motto is 'Standard where possible, specific where necessary'. It goes without saying that the radiation bunkers of the Radiotherapy department, for example, required a special design. This also applies to the hybrid ORs, where traditional open surgery and less invasive (keyhole) surgery can be carried out simultaneously. Preparations have already been made in the Radiology department and at the OR level for later changes. These includes additional floor reinforcements for equipment that may be procured in future.



An important guiding principle during the design process was 'Patient-centered care'. One of the first documents related to the new hospital project states that, despite the size of the complex, the 'human scale' had to be taken into account. Our aim has consistently been to develop a healing environment and a safe and sustainable building. The directors, programmers, and architects, as well as the consultants and building contractors, have set high standards for quality throughout the building.

## Healing environment

A building's atmosphere and the perceptions of its users are determined by such factors as form, the use of color and materials, natural light, artificial light, temperature, and noise level. If everything is right, these things will be unnoticeable. If not, it can add to the stress level that patients and visitors already experience in a hospital setting. A pleasant working environment has a positive effect on staff members and the people they meet. This will be reflected in the new hospital. The single patient rooms on the wards will have private bathrooms. Naturally, the rooms will have automated climate control and ventilation, but people can also open the windows for optimal contact with the outside world if desired. Pictures on the walls of the treatment rooms will provide a soothing atmosphere, and the acoustic and calming ceilings of the ICUs will reduce negative incentives for seriously ill patients.





### Cor Geluk

landscape architect, Juurlink [+]  
Geluk

“ We had many long discussions: how public or how private should the public spaces be? We tried to create what feels like a living-room atmosphere, where people feel at ease and can briefly get away from the hospital. We opted for wooden seats and planters with a rim for sitting to give people the impression that they are outdoors. ”



Public areas and the atriums in the new hospital will be provided with as much greenery as possible; after all, it has been proven that green reduces stress and is beneficial to recovery. Hardy plants, particularly bamboo and other exotic flora, have been chosen because of the large temperature differences. A lot of wood will be used to create a warm, natural atmosphere in the public spaces. This will create little oases in and around the hospital.

Plenty of natural light will enter the rooms through glass walls and roofs. Almost all ORs, ICUs and single patient rooms provide access to natural daylight. Where possible, staircases are located along exterior walls with large windows, in reference to the old Dijkzigt Hospital. The combination of stairwells and elevators is designed to encourage people to take the stairs. Orchards will be planted on the large rooftop gardens adjacent to the Erasmus MC wards.

### Sustainable and environmentally friendly

Sustainability and environmental awareness have been subtly incorporated into the design of the new hospital. For example, lights will only switch on when a room is occupied and men’s restrooms will have waterless urinals. Heat produced by equipment and appliances will be recovered where possible and will be reused to reduce energy consumption. The Pharmafilter system that will eventually treat the waste of the new hospital on-site will be concealed under one of the new buildings. Underground heat and cold storage, which stores residual heat and cold from the building for reuse, will be kept out of sight.

The construction and installation technology is also laced with sustainability. The reinforced floors, great spans, and enough space for new technologies should last us at least a hundred years. We have considered everything and taken all possible aspects into account. Special drilling blueprints have been drawn for the floors, for instance, so that new pipes and conduits can be easily installed if the character or primary function of a space changes.



### Safety

Constructing a building that meets all safety requirements is of high priority in a world where we are learning more and more about threats posed by microorganisms, radiation and the like. The design of the air conditioning and air sealing systems for laboratories, diagnostic or treatment departments, for instance, present the consultants with a serious challenge. You cannot afford to take any risks with employees working on for instance TB bacteria, after all. Fortunately, the new building is fully equipped in accordance with all applicable laws and regulations, making it easier for laboratories to get their accreditations than was previously the case.

Extra space for additional facilities is created by installing cladding along the wooden facade adjacent to the atriums on the floors with special functions such as Radiology and ORs. This ensures that the building meets requirements for climate, noise, and other aspects. The wooden facades on the clinical wards have been specially treated to enable thorough cleaning and disinfection.



# Architectural design

The design for the new hospital is characterized by three important elements: maximum flexibility, logical connections, and a functional lay-out and furnishings. Large spans between walls and columns (up to 9.60 meters in places) remove constraints on the use of floor space. The 4-meter ceiling height also gives maximum flexibility; the fact that there is sufficient space for technical installations makes it possible to accommodate laboratories or outpatient clinics everywhere. Accommodating shifts in capacity is made possible by the standardized lay-out and furnishings of the rooms.

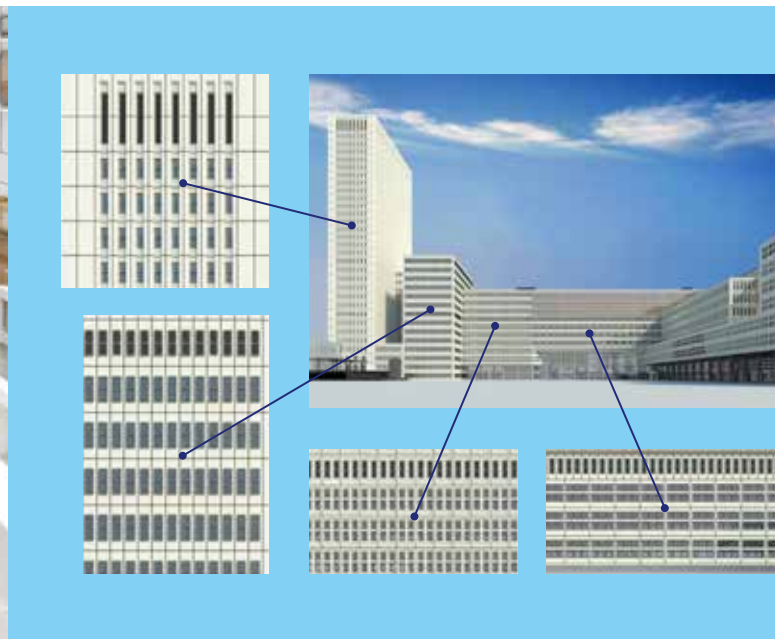
## Public spaces

A backbone is designed to create an inviting and logical connection between the existing and new building sections along 's-Gravendijkwal, Westzeedijk and Wytemaweg. This broad pedestrian route, now renamed the Passage, with a logistics corridor beneath it, encourages interaction between the medical school and the hospital. Distinctive white stairs frame the entrance to and the connection with the Education Center, and further along there is also an entrance to the research tower.



**Willemineke Hammer**  
project architect, EGM architecten

“ The design of Erasmus MC fits in with the city of Rotterdam. It has that Rotterdam ruggedness. Yet the building also has tiny details that, if you take a moment to look more closely, are pleasing to the eye. Nurses who comment that the facade is slightly different in places or protrudes somewhat in others. It's like what you see when on vacation in Italy ... But the design also has a very human element. You see that when laughing children and their loved ones briefly escape the confines of the pediatric hospital to enjoy the greenery of the public spaces. ”



## Different facades

To ensure that the new hospital does not come across as being too massive, the design for the facades includes differences in height and so-called vertical parcellation. Different window sizes are used in each separate building section, with vertical windows in the offices and laboratory tower, for instance, and horizontal windows in the mid-height hospital buildings. This way, the complex looks like it consists of adjacent separate buildings, but they do form a single entity, just as the canal houses in Amsterdam, according to the architects.



**André Broekmeulen**  
consultant building physics, bureau Peutz

“ As a building physics consultant I have an eye for detail such as special glass edge seals to prevent condensation, and for the relationship between a building and its surroundings. I give advice about wind hindrance, fire safety, climate control, and thermal insulation. The sound absorbing beam construction in the ceiling of the Passage is very unusual. The design is not only striking, but it is also functional. ”



### Distinctive interior

The interior of the new hospital consists mainly of sober materials such as concrete, glass, and hard floors, but also wood. The colors range from white to a warm gray. A clear lay-out and subdued colors create a timeless look. The variations give it a friendly and human touch. Patterns and colors inspired by nature and handicrafts are used on the walls and on loose furniture, as well as on lamp shades and upholstery.

### Functional lay-out and furnishings

The architects, together with the users, have regard not only for esthetics, but also for functionality. To ensure hygiene, it is important that materials can be cleaned and that designs do not entail any risk of injury. Furthermore, the following question is often asked: how do patients, visitors, and employees wish to use a space? And what fixed furnishings, equipment, and furniture do they require?

A good example is the Emergency Room waiting area. People are often uneasy when they are here. In addition to a nice, comfortable chair, people also want room to be able to pace up and down. The room must have a table where you can sit and read, but also a corner to escape the crowds.

## Technical infrastructure and logistics



**The focus for the technical and logistical infrastructure of the new buildings is also squarely on the patient with regard to safety and functionality. Primarily a wireless technical infrastructure? No, this is not the case. Provisions for cabling have still been made in the new buildings to ensure secure, continuous communication with medical equipment, for instance. Critical services are designed and implemented for reliability and redundancy.**

### Back-ups

It was decided to install a ring structure for the power supply, internal computer network, and secure internet connection via Wi-Fi, which provides a back-up in case of unexpected emergencies. Furthermore,

it is possible to switch to other providers for electrical power. District heating and drinking water can also be fed from different supply points. There are also six emergency power generators. The sprinkler system is quite unique; this is not something you find in too many hospitals.

### User-friendly

Patients will be able to control the lighting, room temperature, and the TV as well as communicate in their single rooms using a tablet. All these new technologies evolved during the design and construction of the buildings and were included at a later stage. Climate ceilings that radiate heat or coolness are installed for the optimal comfort of the patients and can be controlled separately.



### Hans Ruchti

building technology engineer, Royal HaskoningDHV

“ The rapid technological developments in healthcare made it difficult for users to foresee at the time of the design of the new buildings what they will require years later when the buildings are finished. Despite this, we were able to define not only the key features of the technical infrastructure, but also to ensure that the construction and engineering details are future-proof. ”



### Wayfinding

Finding your way around Erasmus MC has a certain logic to it. Employees, patients, and visitors will enter Erasmus MC via one of the eight entrances, for instance the main entrance or the Erasmus MC Museumpark entrance. They can then find their way using a building code, a floor number, and the number of their destination.

Once they are in the correct building section, the elevators (using the same code) will take them to the appropriate floor. Patients will receive information on the appropriate building section code and destination number prior to their visit to the hospital: the number of the reception in the waiting area at the outpatient clinic or that of the welcoming lounge on a ward, for instance. The first number of the code always indicates the floor.

### Central technical infrastructure on level 7

Level 7 will be dedicated entirely to technical facilities to provide optimal flexibility and spatial planning possibilities. Air, water, and gases will be fed through shafts from loop systems to the right areas. This means that management, maintenance and adjustments are also concentrated and will therefore cause less inconvenience to users.

### Logistics

The lay-out of the new buildings is such that patients, visitors, and employees can easily find their way. The routes for people and goods are clear and, where necessary, separate. There is plenty of light, air, and space. Patients will always be accompanied by natural light; when you turn a corner you will always walk towards light. To this end, openings to atriums and exterior facades are deliberately kept free.

Solutions have also been found for the substantial need for transport of goods and materials. A 'logistics backbone' connects the delivery dock at ground level at the end of Westzeedijk with Sophia Children's

Hospital and the entrances to the new hospital building sections. A pneumatic tube delivery system, the largest in Europe, has been installed for the internal transportation of tissue and blood samples, medical supplies and other small items. Pedestrians in the Passage on level 1 will experience the public space as a part of the city, with its shops, restaurants and lounges.

### Plaza and parking garage

An urban plaza with greenery and outdoor seating is designed in front of the new main entrance. This is where pedestrians and taxis arrive, giving it the feel of an arrival and departure point. Dijkzigt metro station and the bus stops are just a few minutes by foot.

The entrance to Westzeedijk parking garage on the other side of the complex will become, more so than it is now, an entrance specifically for motorists, cyclists, and tram passengers. The Passage can be easily and quickly accessed from Museumpark parking garage by way of a covered walkway.





# Flexibility cast in stone

A flexible shell? The designers of the new hospital invented the concept. The floors, elevators cores, and technical shafts are fixed, but there is room for flexibility in capacity at the interface between themes and departments. This flexibility is needed in both the design and implementation phases: an entire theme is added to the new buildings twice.



## Themes added at a later stage

It is decided in 2009 to add a fourth theme to the new buildings, namely the Brain & Senses theme. This was relatively simple; construction work had yet to commence and temporary facilities could be finalized further, which was favorable for the final investment costs. Later, in the spring of 2013, a request is also made to house the Thorax theme in the new buildings. This is also possible thanks to the building concept and the flexibility inherent to the shell. To be able to provide additional beds at the right place, an extension to the new buildings will have to be built: this will be the connecting building Rg. The Pharmafilter system will be located beneath this extension.

## Flexibility

This last section of the new complex is unusual in that the shell and the interior package are being designed simultaneously. This is a mammoth task. The design of the 6th floor has to be almost completely revised to be able to fit in the Thorax theme and incorporate the additional ORs, cath. labs, and ICUs. The entire grounds lay-out has to be redesigned for external drainage to the Pharmafilter system.

In anticipation of the new drawings, part of the completion of the new buildings is put on hold. Ultimately, it will be possible to achieve the functionality required. In close liaison with the project supervisor and the building contractor, Bouwcombinatie Nieuwbouw Erasmus MC, it will even be possible to include these changes as part of the project's completion in 2017.

## Emergency department

In 2012, it is decided to accelerate the completion of the Emergency department next to Erasmus MC's main entrance. This coincides with the integration of the Emergency departments of Erasmus MC and Sophia Children's Hospital. The brand new department opened on October 1st, 2014. By then, Rehabilitation Medicine Rijndam and Physio therapy outpatient clinic is the first patientcare function to be operational into a new building.



## Stephan Versteeg

project manager realization Erasmus MC

“ We are working on creating the most beautiful hospital building in the Netherlands. The main challenge was and still is: maintaining control despite the great number of changes. The most important change was the extension of the project with the addition of building Rg to house the Thorax theme and, of course, installing the Pharmafilter system in this last building section. ”





### Designers on the shop floor

Early on in the design process – more than ten years before completion of the project – employees are given the opportunity to get involved in the design and lay-out of the new departments. It is a great challenge for them to be able to imagine what the state of affairs in terms of equipment and IT will be by 2017. What will it be like to work in the ORs or in clinical wards with only single patient rooms? Creating work process mock-ups with professionals on the shop floor makes it possible to formulate the principles for what we now call ‘Innovative Working’. The enthusiasm to help in the design process gains momentum once the first pile had been driven. Workshops and design cafés are held. Patients’ organizations also contribute by discussing issues related to the construction project.

### Recipe book and completion specifications

‘How much will it cost’ is a question that comes up repeatedly. How do we keep our ambitions and wish lists within budget? The technical and installation engineers deal with this by compiling a so-called recipe book, with basic recipes and agreed-upon unit prices for the various parts of the completion specifications. This gives a good indication of the final price at the time of procurement even though the final design for completion is not yet available. There are recipes, for instance, for light fittings with a 10-meter cable, for wall sockets, and for a compressed air connection.

While the contractor starts with the construction of the shell, the architects and consultants draw up the completion specifications under the leadership of the programmers. The lay-out of the departments is defined and costed in great detail, and the associated expenses are calculated. This makes it possible to decide: what is and isn’t feasible? The motto ‘Standardized where possible, specific where necessary’ also applies here.

The last completion specifications for the contractor were completed by late 2014. As such, no more changes are possible after this date. However, in practice we see that there is continual close liaison between the project supervisor and building contractor to optimize the planning, and to be able to respond to late adjustments that are required to make the hospital state-of-the-art. In other words, specific where necessary.



# Building our ambitions



2009



2011



2013



2015

# Building together

Undertaking a construction project adjacent to a fully operational hospital requires the project managers, site supervisors and the contractors to meet tight planning deadlines and to use smart techniques to minimize inconvenience. Everything must be fitted in within a few millimeters or minutes. Close liaison and communication are crucial to completing the work on time.

BAM Bouw & Techniek, Ballast Nedam Building & Development Division Special Projects and ULC Installatiegroep join forces in a consortium called Bouwcombinatie (and Installatiecombinatie) Nieuwbouw Erasmus MC. Although the building contractors have collaborated in previous projects, this is an unprecedented and complex project by Dutch standards. The project is divided into seven construction programs in order to manage the huge construction site and the extensive construction period. Each construction program has its own implementing body.

## Safety and construction access routes

Safety and security are a priority during the construction period. Access to the construction site is only possible with an ID pass. An instruction video explains the ground rules to subcontracted staff. Trucks need a ticket to access the construction site. Lost or expired tickets have to be replaced to gain access. This can mean having to come back the next day! Guided tours for special guests and Erasmus MC employees are restricted from late 2015 to minimize construction delays.

Good accessibility to the construction site is a prerequisite for facilitating the movement of construction vehicles. To this end, there is close contact with the Municipality of Rotterdam regarding any roadworks. The Maastunnel is regularly closed for maintenance work, which means that trucks have to take detours.



Maarten Huisman

site supervisor on behalf of EGM architects

“ We are building to achieve the ambitions of Erasmus MC. It's like playing at Champions League level. Furthermore, we're building on a site that is hemmed in on all sides, and the patient care, education, and research taking place all around us must continue unabated. The various parties involved in the project all have their own staff. A project of this size can only be successful by working together and having respect for each other and everyone's ideas and opinions. ”





### Fred Reurings

director of the Bouwcombinatie Nieuwbouw Erasmus MC consortium

“ We have invested in developing close working relationships at all levels, including with the subcontractors. At the start, everyone was busy with their own operations. But we soon became one, right down to the shop floor. The advantage of a long-term construction project is that together you see things from another perspective. The collaboration is raised to a higher level, making project components and phases run more efficiently. ”



### Changes to the specifications

Contractors and project supervisors know from experience that these projects encounter many changes during construction. Obviously, hospital are intent on making optimal use of the latest technologies and insights. This is certainly the case for Erasmus MC. On top of this, the eight-year construction period is exceptionally long.

The necessity for a significant number of changes to the specifications is taken into account from the start. Applications – both large and small – are registered and the practical and financial feasibility is assessed. Only then are they processed further by the project planning department. All changes to the specifications are assigned a number and additional work charges, starting at € 300,-. A total of 3,000 changes has already been registered up to early 2016; the most radical change is the addition of Thorax theme, costing a total of €7 million.

### One construction team for the final effort

The partners in the Bouwcombinatie consortium are working closely together from the start; in fact, they work in tandem. This is particularly helpful at the most critical time: the construction of the last building section, Rg. In some large-scale projects, the subcontractors' project planning may lack coordination, which means that they might find themselves having to wait for each other. The solution here is that all the companies involved, including the architect and consultants, form a single construction team, under the leadership of the Bouwcombinatie consortium.

Construction work on the shell will continue at full speed at least through the summer of 2016, while the completion of the last building sections will continue until the end of 2017. On weekdays, an average of 700 people will be hard at work on the final construction phases. A gradual handover of floors and building sections starts mid-2016. This enables good preparation to ensure that the new buildings can be safely put into full operation in early months of 2018.

# Special construction techniques



The project team and consultants conclude at an early stage of the design process that Rotterdam's soft soil will require a dense network of piles. An innovative method with screw piles will be more time-consuming, particularly given the magnitude of the project. It is decided to use 'silent' hydraulic pile drivers rather than diesel powered pile drivers. The prefabricated cement piles of various lengths are delivered by truck.

A total of 2,850 piles are being driven, the first in 2009, and the last early 2016. Before the pile driving can begin, probes are used to determine the position of the load-bearing substrata and how strong they are. It is discovered that at various points the piles of older buildings (such as the former Ahoy) are still present in the ground. This causes a slight delay, but work soon catches up thanks to the use of an additional pile driver. In addition, the piles of old buildings are left in the ground. These are avoided during the pile driving work.

## Hoisted construction site shed

The first building, a 120-meter high slender tower, calls for customization. There is not much space at the construction site, with room for no more than one crane. It is decided to make use of a construction shed that pushed itself up, a 'hoisted construction site shed', with two overhead traveling cranes. This building technique had previously been used for Nationale Nederlanden's high-rise building, and will certainly also offer great advantages to Erasmus MC.

The precast concrete cores, steel columns, and white ornamental concrete external wall panels are hoisted up into the construction site shed by one of the overhead cranes. The tower can now be assembled like a building kit within the small 'construction plant'. One story is built every week, after which the shed, measuring 60 by 20 meters, will hoist itself up to complete the next floor. The highest point is reached in September 2011, after just nine months of construction, keeping disruption to the surrounding areas to a minimum and with almost no delays due to bad weather.



## George Henkens

construction engineer, Aronsohn raadgevende ingenieurs bv

“ I am proud that we achieved what we had in mind: a design that could be implemented relatively quickly and with minimal disruption. It is a unique project; a new hospital being built right next to the existing and operational hospital. This was made possible by using an assembly method based on just-in-time delivery. ”





### 'Wiggly facade'

The enormous weight of very tall buildings will, over the course of time, cause downward movement or compaction by a few centimeters, also known as 'settlement'. This was first noticed during the construction of the Medical School (in 1965), a building that was unique in terms of height at the time. 20 centimeters of settlement is being anticipated for the new Erasmus MC tower, and 8 centimeters for the lower building sections. The entire complex will be equipped with flexible settlement joints (wiggly walls and floors) to avoid damage. These will accommodate any differences in height caused by settlement.

It is up to the architect to decide which facade is being used for each building section. This is possible because all the floors in the new buildings, with the exception of the tower, consist of columns and beams, whereby the walls do not have a constructive function. This makes the building sustainable, as walls can be replaced as needed. The facades of the tower are comprised of 35-centimeter thick load-bearing wall sections and are anchored in brick fashion. The building has been equipped with two removable casement windows in anticipation of moving large, heavy equipment.



# Facts & Figures



- Design timeframe 2003-2015
- Pile driving work started: December 2009
- Highest point: September 29, 2011
- Hand over first section: January 30, 2013
- Emergency department commissioned: October 1, 2014
- Expected completion of entire project: December 2017
- Commissioning: early 2018



- 18 Dialysis stations
- 5 Pheresis stations
- 12 Radiotherapy bunkers
- 22 Operating rooms, of which 1 brachytherapy OR and 2 hybrid OR's
- 4 Cath. labs

- 203,000 square meters gross floor area
- 2,200,000 cubic meters air circulated/hour
- 7,500 square meters installation area
- 7,5 kilometer sunscreens
- 46 elevators



- 472 medium care patient rooms
- 38 ICU rooms (intensive care unit)
- 18 ICCU rooms (intensive cardiac care units)
- 8 PACU rooms (post-anesthesia care units)
- 10 Observation units
- 94 Day-patient treatment places
- 15,000 m2 laboratories



# Ready for the Future



What will the hospital of the 21st century look like when completed at the end of 2017? The vision of the managers, designers, contractors, employees, and patients has changed over time and will continue to do so in the coming years. While the last parts of the shell are being erected and the interior is progressing, healthcare professionals are giving their input on everything necessary for a safe transition to the new buildings and for an optimal work environment after the move.

The points of reference did not change as the design and construction process progressed: functional, comfortable, flexible, patient-centered. What will this mean?

## Healing environment

Patients will be cared for in comfortable single patient rooms and there will be plenty of natural light in the consultation, treatment, and public areas. The colors and materials used will create a fresh, natural and calming atmosphere in the buildings. Noise-related stress will be prevented where possible and the green surroundings, despite being at the heart of the city, will provide positive distraction.

## Logical connections

The building design, with functional layering and vertical shafts (elevator cores), will help patients find their way easily. There will be plenty of light; patients and goods will have separate routes.

## Attractive public areas

There will be several spots in the hospital where patients and visitors can escape the medical world. The Passage, for instance, features shops, restaurants, and seating areas with plenty of greenery.

## Modern facilities

The new buildings will be equipped with modern medical facilities, including theme Daniel den Hoed's radiation bunkers and hybrid operating rooms for traditional open surgery as well as minimally invasive procedures. An AV connection to ORs and multimedia rooms will facilitate knowledge transfer between medical professionals.



## Welcoming day patient treatment

Minor surgical procedures, IV therapy or same day diagnostic services will be carried out at a central daycare treatment center, where patients and their relatives or carers will receive a warm welcome and expert guidance.

## Sustainable innovations

In addition to underground heat and cold storage, energy-saving lighting, and an on-site waste treatment system, the shell of the new buildings is also sustainable. The clear structure, large spans, ceiling heights, and the capacity of the central installations will make future functional changes possible.

## Future-oriented care

Innovative working will be the new norm for Erasmus MC employees starting in 2018. Even more so than in the old hospital, all care will be centered around patients and their healing process. The new electronic patient record, enabling optimal data exchange, will support the care processes and contribute to greater control for the patient.

## Research and education

New IT systems will make anonymous data for research purposes more readily available to leading Erasmus MC research teams for their studies and investigations. They will focus on new treatments, while medical students continue their training and focus on their specializations.

## Medical School and Children's Hospital

Erasmus MC will continue to renovate its buildings over the coming years. Sophia Children's Hospital (built in 1993) will be renovated in the next construction phase. The high-rise Medical School building, which will be celebrating its 50th anniversary in 2016, will also undergo major renovations in a few years' time.

**We are proud! Our New Erasmus MC is almost ready. Ready for the future, with the university hospital of the 21st century. With patient-centered care always and everywhere.**







## Credits

**Publication:** This brochure, Our New Erasmus MC, is – like the new hospital itself – co-created by the following partners:

Executive Board and Integrated Building Program Erasmus MC, EGM architecten, Royal HaskoningDHV Engineering, Aronsohn raadgevende ingenieurs, ptg advies, Bureau Peutz, Juurlink [+] Geluk landschapsarchitecten.

Bouwcombinatie Nieuwbouw Erasmus MC (BAM Bouw & Techniek and Ballast Nedam Building & Development Division Special Projects; and Installatiecombinatie Nieuwbouw Erasmus MC consisting of ULC Installatiegroep and BAM Bouw & Techniek).

**Text:** Emile Hilgers

**Translation:** Kirsten van Hasselt, Kiko Translations

**Photography and illustrations:** Levien Willemse, EGM architecten, Juurlink [+] Geluk, Erasmus MC, De Jong luchtfotografie, Michel Salters en Rob van Esch

**Editor-in-chief:** Liesbeth van Heel

**Picture editor:** Alie Plug

**Graphic design:** Rogier Hendriks – HERO DC

**Printer:** Het Staat Gedrukt

**Circulation:** 1000 copies

April 2016

