

Summary**INTRODUCTION TO IDEA**

Over the past century the typology of Art Museums has undergone tremendous shift. Aside from merely executing a function of display and conservation, contemporary Art Galleries have become important public venues where arts and culture are being communicated, experienced and consumed. By unequivocally mediating arts to the public, museums inadvertently play a pivotal role in transforming our urban habitats into versatile spaces where people meet and socialize. Our proposal is an attempt to adopt these fundamentals, expanding them further into urban realms of Vestbanen and its adjacent areas. In our view, by initiating the competition for the new premises of the National Museum, Statsbygg and Norwegian State have given us an exciting opportunity to endeavor design challenges of unprecedented magnitude. Hence our firm believe that the success of this project depends on the strength of its total idea. With that in mind we have focused our design efforts on following objectives:

- creating a venue that will give rise to great transformation of Vestbanen and embrace its existing urban energies
- designing a top class museum whose spatial content and architectural appearance will give its visitors a unique and unforgettable cultural experience
- setting up a powerful architectural landmark that firmly and unambiguously promotes Norwegian Contemporary Art & Culture both domestically and internationally
- creating a building that efficiently accommodates all pivotal functionality is highly integrated and sustainable

Our firm believe is that the purpose of this competition is centered around forwarding a powerful design idea that will encompass the vision and inspiration for the great city of Oslo, its government and citizens. When designing this venue we deliberately chose to stay away from typical preconceptions of architectural aesthetics and instead focused on functional emotional and urban content of the brief.

- What does it take to create a venue of truly unique magnitude and how will our architectural solution foster optimal public interaction given the complex spread of museum's user groups?
- How can the future building complement the existing urban energies of Oslo and to what extent will its typology affect public behavior and perception of cultural experience?
- How would we approach the sheer dimensions of given programmatic brief and weave its complexity into interplay of space and function?
- How will the resulting size of the new National Museum affect the existing city fabric and two adjacent buildings of the former Vestbanen Railway Station?

These questions guided our thought continuously, through out the entire design process. We have tasked ourselves with the mission to utilize the tools of architectural design to create the building that is honest, complex, purposeful and contributive.

We believe that the location and the future setting of the building is the most pivotal challenge of this competition and therefore needs to be addressed in the way most simple and straight forward. Our main idea encompasses the expansion of the existing urban landscape of Rådhusplassen further into Vestbanen site. We deliberately decided not to create any square-like spaces or enclosures that so typically pervade the realm of urban fabrics. Instead, our guide was to introduce a simple but generous, open-ended space that would naturally embrace the existing buildings of Vestbanen and therefore give these listed structures vivid centrality. The new building for the Museum will firmly enclose the space behind them by its tall, inviting façade. By locating our future building deeper into the site we attain multiple urban benefits. Our design approach to the site is defined by an introduction of a large diagonal space that runs through the site behind the existing structures of Vestbanen and opens up towards large conglomeration of stairs leading further up, towards Dronning Mauds gate. The resulting area will be imbued by the lavish greenery of planted trees and a range of landscaping features thus becoming an intimate and informal urban park. The area will be extensively utilized as an outdoor serving for the Museum's café during the summers as well as other outdoor activities related to the Museum. Entering this plaza, public will be naturally invited towards the main entrance of New National Museum. The new Museum Plaza will also act as an urban intersection, where all main axes from Aker Brygge, City Hall, National Theater and

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Vika will finally converge thereby strengthening the centrality and importance of Vestbanen. Combined, all these elements will give the future building of National Gallery a firm, magnifying appearance – it will help integrate the newly established and highly intertwined urban context into the realms of public life and unique cultural experience. This solution also sets up a new, positive condition defining the flexibility of its urban use as an array of passages and sightlines are established, providing for free and natural flow of the pedestrian traffic in the area.

We firmly believe that the simplicity and flexibility of our urban concept for the project best accommodates the two old structures of the former Vestbanen. This is achieved by keeping their respective architectural bodies untouched and locating the new building on a good distance behind them. A generous open plain of excess circulation will naturally embrace their parted complex into a dynamic envelope of vital, public activity. In such setting, the existing buildings will get powerfully highlighted. Their low, quirky, historical appearance will starkly contrast with a massive backdrop of porous greenery of the trees and vertically developing structure of New National Museum, thus giving the whole complex more vivid, visual distinction. We were led by our believe that the genuinely respectful way of handling highly cherished, existing monuments can be found in seemingly simple nature of our urban proposal. Our desire was to give the complex of Vestbanen the best physical, mental and visual centrality.

USER EXPERIENCE AND FUNCTIONAL DISPOSITION

Designing public buildings is a complex task that requires thinking on multiple levels. The programmatic brief of this competition poised us to look closer at how the future building will be experienced and utilized. Our aim was to think of a typology that is centered around its users - catering to their functional needs in the way most logical and versatile. With that in mind we first have identified three primary user groups of the building:

- visitors comprising general public and tourists
- public visitors with particular interests in arts such as student groups and individual professionals
- employees of the museum such as conservators, management and servicing staff

A relatively compact footprint of our proposal as well a complex program brief essentially lead us to develop a vertical organization - helping to define an array of dedicated functional zones and logistical connections. We have stayed away from creating extensive basement level and in stead chose to organize all core programs from the ground floor, upwards. As result we believe to have created an architectural structure that is spatially integrated and geometrically intricate. Our building consists of four volumetric components:

- a large enclosed volume at the North-Western end that accommodates areas for dispatch & delivery, art storages and workshops.
- an entrance atrium consisting of public vestibule, library & education center and offices for Museum's administration
- a vertical unit accommodating public ramps
- a diverse constellation of vertically organized exhibition spaces

Public vestibule.

The ground level of the building accommodates a large entrance lobby which contains all key visitor functions such as reception, museum store, café and staffed cloak section. The multi purpose room and an auditorium are put together as a single enclosed unit with all required facilitary functions placed in between. Its largely enclosed volume is located behind the area designated to the museum boutique and naturally separates it from cloak room laying deeper in the mid-section of the ground level. We believe that the proposed location of the museum store best caters to its operational and commercial requirements. The store has an optimal visual exposure to the street and can be freely and independently accessed by the passing public.

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The main vestibule of the museum is shaped as a lavish, three-level tall atrium. We were guided by our desire to create space imbued by generosity, public life and cultural celebration thus offering first-time visitors unique, immediate entrance experience. From here the public will be physically and visually lead towards the upper levels accommodating the art displays. Massively ascending, twin ramps is an infrastructural center piece of the public distribution in the museum that besides their chief functional purpose will perform a role of a spatial element that through its continuous motion will encourage social interaction and provide visitor with versatile visual connections. The museum café will be an integral part of the atrium's grand interior where tables will be flexibly dispersed over the vestibule floor. The café is serviced with a compact kitchen organized at the narrower end part of gradually shrinking atrium hall. It is granted separate, compact entrance in order to accommodate brief deliveries and access for the staff. In order to ensure tight security we have located the guard central and a monitor room right next to the entrance. Here, each entering individual will be identified and checked.

Dispatch & deliveries.

The chosen site for the location of the future Museum is complex and therefore challenging. It goes without saying that probably the most complicated aspect is the existing and highly intertwined infrastructural setting which in turn is amplified by expansive, massively dimensioned ramps. Yet after looking closer at the present situation and naturally recognizing its inevitability we have found an interesting advantage that is central to the location of our Museum's dispatch and delivery. By locating the backdoor entrances under the bridging ramp of Festningstunnelen, we believe to have found a very simple and functional solution that provides ample space for Museum's parking needs as well as turning radius required to reverse large freightliners or smaller lorries. The whole area can be easily shielded off and securitized.

Distribution & logistics.

For obvious reasons, the area for dispatch and delivery naturally continues into the building where it is being directly linked to the first part of the storage program by the means of four meters wide, main logistical path that in turn, directly connects to two freight elevators accommodated in the large vertical unit - building's primary service core. The four meter path defines the museum's building typology of the lower three levels by vividly separating its sole technical functions from the public related spaces. It is instrumental for building's internal logistics - providing for efficient and simple transport of artifacts to storages and workshops as well as distributing the art to its respective displays.

The museum has a separately established staff entrance at the second level (+9.50) of North-Eastern elevation. It will provide a combined access to administrative quarters and workshops.

Technical infrastructure & escape routes.

The service core of the building is located at the center of the building and plays highly integral part in ensuring the success of building's functionality. It contains all essential technical infrastructure such as freight and public elevators, a pair of primary fires escapes, spacious mechanical room as well as smaller area units for public bathrooms, cleaning storages and pause rooms for the security guards. The technical room is accommodated in the basement level and is naturally linked to the service core. The museum has a multitude of escape routs that are positioned within good proximity to all largely populated areas and are directly linked to the main logistical corridor that in the event of fire will serve as a safe route leading directly to the exits at North-East and South-West. A pare of well-dimensioned and integrated staircases will provide for faster evacuation of the public from upper exhibition levels.

Storage facilities.

Our approach to accommodating the areas for museum's art storages and workshops was guided by similar simplicity. Our main aim was to find a thoroughly integrated and functional solution. Given their large dimensions we have organized the storage program over the first two levels of the building. The programs are roughly taking the half of the building's lower base and are accommodated into solidly enclosed, windowless volume. We have decided to give generous heights to all of the Museum's functions hence our choice to dimension all levels with a standard, seven meter ceiling. This may entail a somewhat

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taller building in overall architectural terms, however we believe that its urban impact is going to be minimal. Most importantly, this simple solution will significantly enhance museum's functional flexibility and provide ample space for all required technical infrastructure.

Workshops.

Museum's workshop department is perhaps the most complex and intricate part of the functional brief for it will accommodate a multitude of highly specialized and diversely dimensioned spaces. Most importantly, it will become a permanent workplace for the museum's many specialists. Aside from simply designing a functioning facility, that premise has guided our desire to create a spatial typology that will:

- provide solid support for its user's highly diverse, sophisticated work
- foster informal and positive working environment where different knowledge will be shared
- lay strong fundament for the future expansion of the National Museum's unique skill base and competency as a widely acknowledged cultural institution

With that in mind we have established a single level plan, right above the art storages. The plan is organized into three workshop departments for installations, preservation and photo lab. All three are located alongside and linked to the main logistical corridor providing for simple and efficient deliveries of artifacts. The largest section of the plan contains the preservation departments. It is configured as an intricate system of differently dimensioned spaces where the purely technical, dark functions are organized into a single continuous unit along the internal passage which directly links to workshops with their adjacent storages and individual office cells. A series of large, articulated open courtyards are located at the center, forming one of the intrinsic functional features of the plan. Their prime purpose is to provide for ample daylight into the workshops and offices. During the summers, these spaces can be naturally used as open, common areas imbued by elegant vegetation and landscaping design. Here, the employees will be given opportunity to relax and enjoy private conversation.

Library & educational facilities.

Art museums have become large public institutions where merits of art and culture are communicated by the means of educational programs and good availability of excellent research facilities. With that understanding we have pursued an idea of thoroughly integrated knowledge center which we chose to locate at the heart of the building's public interior - fully exposing its functional significance. The largest and the most visible component of the knowledge center is the museum's library that is organized over two mezzanine floors and freely circulates around an enclosed volume assigned to museum's archives. The library floors have free, flexible plans and are visually exposed to the museum's massive entrance atrium. A series of adjacent study rooms and small offices are equally distributed over two floors and positioned along South-Western elevation. The knowledge center is also conveniently located in respect to internal logistics both in terms of public use and access to the art storages. We have established a special bridge directly linking the library's second floor with the section accommodating museum's administrative premises. The knowledge center will have its own access unit, leading the visitor to the second level where they will be met by spacious foyer with the designated reception both for library and research facilities. The rooms related to studying selected artifacts (art on paper & photography) are rigidly organized into a series of well-dimensioned spaces with the direct but securitized access to the main logistical corridor. This will ensure efficient delivery of relevant study object from adjacent art storages.

Museum's administration & offices.

We wished to design functional and flexible office premises where people will be able to execute their respective tasks joyfully and efficiently. At the same time, we believe that the museum's diverse and articulated spatiality should make the future workplace unique and special. Along with the visitors the employees should as well be able to enjoy and experience the future museum in the way most direct and inclusive. Our solution comprises a compact, four storey office block located at the North-Eastern corner of the public atrium. Its façades are fully exposed to the interior of the atrium insuring perfect visual connectivity of the staff with the flourishing public vibrancy of the museum. A generously protruding,

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open area in the first floor is a flexible space designed to accommodate canteen as well other staff-related activities.

Exhibitions.

Besides merely executing a function of an art display, a contemporary exhibition plays an instrumental role in shaping public perception of art and culture. Each artifact, whether painting, sculpture or a video performance has an interesting story that communicates to its viewer in different ways and on different spiritual levels. It is therefore important to create an exhibition space that inspires a genuine intellectual experience and expands our imagination. An art museum should become an exciting public arena where multiple dialogue between art and visitor fosters fresh and versatile cultural dimension thus enriching the society with refinement, sensation and depth. In our proposal we have attempted to give the exhibitions spatiality and architecture that is functional, intricate and articulated. Experiencing artworks is highly individual process that may require contemplation, intimacy and sometimes complete detachment. With that in mind we chose to organize all exhibitions into a vertical system of massively cantilevering volumes. As they graciously ascend, they gradually unravel powerful versatility of museums architecture as well as the center piece of its exhibition experience – a series of largely expanding roofscapes that raise above the building's base volume. With this feature we wished to introduce a completely new, different dimension in how the museum will be used and experienced. The large terraces will accommodate open, public parks imbued by fine confluence of lavish greenery and open air displays of sculptures. These spaces will give the visitor an opportunity to pause and reflect in subtle tranquility while enjoying commanding views over Oslo's diverse cityscape and its magnificent, natural setting. We believe this design feature will strongly enhance the museum's important public domain as well as it will create a truly unique architectural venue that will set National Museum and the city of Oslo on the international map of exciting cultural destinations. We also propose the use of the building's extensive facade envelope for accommodation of large, graphic posters advertising current and coming events. During the evenings and nights the upper exhibition volumes can as well be illuminated by an array of interactive projections comprising the images of museums most known art exhibits. These features will further strengthen the museum's public appeal thus amplifying its role of a showcase for contemporary urban culture.

The exhibitions are organized as a continuous sequence, ascending over the 4th, 5th and 7th levels of which the 4th has the most intricate lay-out. Our solution for all levels constitutes four distinct, functional elements:

- a series of enclosed display spaces
- an expansive public concourse through which all exhibitions are naturally linked.
- a set of large, dual escalators
- an enclosed service core

We deliberately chose to give the concourse generous dimensions. This will ensure an ample and unimpeded distribution of art pieces to their respective displays as well as provide for free circulation of visitors. A series of large, flexible spaces will be scattered around the concourse area on all levels. They will form a natural part of the circulation providing generous accommodation for pause, information facility or a multi media presentation. These space will be located next to a large window openings where in contrast to the solid enclosures of the exhibition hall the visitor will enjoy daylight and a multitude of defined views over the city. Its spatiality will be additionally amplified by established gaps in between the floors thus powerfully stimulating social connectivity in the building. We believe that our solution will strongly contribute to the museum's total experience as well as help enhance the flexibility in terms of use and operation.

All exhibition levels are vividly organized around a large vertical core which will contain all necessary facilities such as public elevators and bathrooms, separate room for guards as well as storage for cleaning equipment. Two large stairwells will be located at the both ends of the service core thus providing sufficient and quick evacuation in case of fire emergency.

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A pair of generous escalators will be provided in order to distribute the visitor to and from exhibition levels. It will form the building's prime architectural feature, having a clear and discernable appearance by displaying gradually ascending and descending public.

SUSTAINABLE ARCHITECTURE**Green Building**

The building's impact on the environment in our view will chiefly derive from its future energy consume, choice of building materials and close proximity to public infrastructure. With that in mind we've opted for a multitude of technical, interdependent solutions that will help reduce the project's future carbon footprint.

We propose an integrated "low energy" building in which the technical installations and the architecture are integrally intertwined. To this end, the natural potentials of the earth, air and sun are predominantly used to air condition the building.

Energy Concept

The low energy concept follows the approach that energy should not be evaluated solely based on quantity, but also based on quality. That means that, in addition to energy savings, Drees & Sommer Advanced Building Technologies also dealt with how to handle high-quality energy economically.

The key to the optimal energetic design of a building lies in the following factors: the building envelope, the use of thermal masses, the approximation of the system temperatures to the room temperature, the reduction of temperature-dependant and pressure-dependent energy distribution losses, energy displacement within the building and the use of natural and regenerative energy potentials, e.g. from the earth, outside air, sun.

In addition to optimal thermal insulation in summer and in winter, a high-quality building envelope also provides optimal thermal comfort. The central component of the design is the double facade and the roof of the entrance hall. In winter, the facade cavity is completely closed and used as a heat buffer. In summer, the warm air can rise naturally and escapes through ventilation flaps. Highly reflective sun protection lamellae in the facade cavity and under the glass roof prevent the building from overheating. In addition, the lamellae under the roof are acoustically operative and can be used for heating and cooling.

The large thermal masses of the building are used to displace cooling load spikes in the evening hours, which means that, due to the more favorable conditions at night, the cooling processes can run naturally using the existing outside air potential.

Hygroscopic materials are used primarily in the exhibition areas in order to absorb fluctuations in the interior air humidity, which means that humidity is stored in the material and stored or emitted as needed. Thereby, the energy expenditure for the humidification or dehumidification of the air can be reduced.

The sustainable approach also provides for the use of renewable raw materials, regional materials, durable building materials and materials with minor emissions, i.e. no materials that cause climate damage and largely dispensing with organic solvents. This ensures good air quality in the building.

The large roof areas and exterior areas are used as part of the design in many ways. Most of the roof areas will be planted. The plants save most of the rainwater that falls. Through the effects of evaporation, this saved water contributes to a positive microclimate in the area, in which the air humidity is increased and the temperature in summer is reduced by up to two degrees. The rest of the rainwater that is not absorbed by the planted roofs and the water from the other roof areas is collected and kept cold and dark in tanks. The water is used for cooling, watering the exterior facilities and for flushing toilets. In addition, the use of bright surfaces minimizes the heating of the city, i.e. the so-called "heat island effect."

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At the heart of the design is the use of the natural energy potentials from the earth, the air and the sun, as well as the use of the building's existing potentials for heating and cooling the building, which means effective use of the thermal masses and the use of energy displacement systems, e.g. transporting surplus heat from the entrance hall to the exhibition areas. The solar energy is used optimally through the entire year to generate hot water and heat the building. In addition, to help the CO₂ balance, the design provides for a proportion of the electricity to be generated using a photovoltaic system.

For a high level of thermal comfort, the heat transfer in the radiation area occurs through underfloor heating in the entrance hall and thermally active building components in the exhibition areas. Cooling occurs primarily via "free cooling", the use of the earth's energy as well as classic cooling methods to ensure peak load coverage.

Innovative layer ventilation concepts are used in the exhibition areas. The supply air is brought in via source air outlets without current in the floor-level areas. The used and heat-loaded air rises up along the heat sources and is extracted in spots in the roof area. The exhaust air is led to the vertical supply shafts without ducts. Compared to conventional systems, this design features significantly lower ventilation with optimal room comfort and optimal air quality.

In the ventilation and air conditioning area the cooling production is relieved by ventilation systems with adiabatic exhaust air humidification, which is supplied for example with rainwater. The ventilation systems maintain highly efficient warmth and humidity recovery. The ventilation systems are used primarily for ventilation and are thus regulated based on the room air quality.

A central issue in the exhibition areas is the optimal and flexible lighting of the exhibits. Bus bars that are flush to the ceilings with central trigger facilitate maximum flexibility and high efficiency because lights can only be moved or substituted and must be arranged as needed.

The entrance hall, the public thoroughfares and the offices are predominantly lit with natural light. The office areas have workstation-based directly and indirectly luminous pendant lights with micro prisms.

Energy-efficient lights are mainly used. Such lights do not need to be changed frequently, do not require tools and are easy to clean. The side areas have motion detectors.

The focus of the telecommunications system and IT system is an alarm management system. Graded according to priorities and based completely on the floor plan, the alarm management system, all important announcements are provided on a single user interface with the goal of optimally supporting the facility management and reducing operator costs.

"Green IT technology components" are predominately used in the building. In addition to minimized energy consumption, the pollutant content should also be taken into account for IT components.

The transport systems include a modern elevator control system for monitoring and optimizing the target values, e.g. through adaptive wait/stop positioning by monitoring all elevator functions and passenger behavior. The transport systems are equipped with an energy-efficient network resupply system.

A focus of the energy-efficient building operation is the building automation. A major task is the ongoing monitoring and optimization of energy consumption. Energy, e.g. for heating, cooling, lights must only be provided when there is an active need. The systems were designed according to the principles of as few data points as possible, as many as needed.

Through emulation already in planning and construction, it is ensured that the functioning of all functions is tested throughout the course of the year, which will considerably reduce the start-up time of the

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building operation and calibrations. Thus, the building is very energy-efficient from the outset.

However, thanks to the building automation, the facility management and its activities, e.g. with regard to need-based maintenance, is considerably simplified through the compilation of all building data, structured according to a uniform system.

Erecting a large, public program on the site that is currently underdeveloped and occupied by a parking lot will provide powerful impetus for successful, sustainable project. Our proposal is guided by a holistic sustainable strategy which comprehensively integrates social, environmental and economic realms.

Social innovation.

Creating spaces people will enjoy living, working and playing is what we believe, fundamental to sustainable architecture. In this project we have attempted to design a genuinely public building that is highly celebratory of human being. Our quest to create versatile, spatial environment was instrumental in shaping museums's typology. We desired to create an environment that fosters social innovation through which people will get energized and gain interesting, positive experiences. By creating a structure that is diverse and intricate we wished to instill a sensation of continuous discovery and surprise which we believe is paramount to the development of human curiosity. By acting as a central, connective tissue for public activity our building will powerfully regenerate its current urban setting - enhancing the cultural awareness of its occupants.

Arealoppsett

DELIGHT

Motto:

Alle arealer i BTA iht NS 3940

Alle plan skal medtas	Etasjehøyde	Publikumsarealer	Utstillingsarealer	Formidling, bibliotek med mer	Atelier og verksted	Magasin	Mottak og utlevering	Tekniske rom	Kommunikasjon	Administrasjon	Sum
underliggende plan legges til											
plan -1	7,0m / 3,5m							1310	550		1860
plan 1	7,0m / 3,5m	3477				4482	2180	210	1534		11883
plan 1.5	3,5m						283		75		358
plan 2	7,0m / 3,5m			2402		5091		210	1385	950	10038
plan 2.5	3,5m			1680				216	1210	655	3761
plan 3	7,0m / 3,5m		2634		4930			216	1323	765	9868
plan 3.5	3,5m							6	61	682	749
plan 4	7,0m		5248					210	1334		6792
plan 5	7,0m		2875					210	1071		4156
plan 6	7,0m		2008					210	771		2989
Sum		3477	12765	4082	4930	9573	2463	2798	9314	3052	52454
Antatt Innerveggfaktor											

Yttervegg under mark	1663	m2
Yttervegg over mark	19364	m2
Herav glassfasade	8353	m2
Vindu og ytterdører	155	m2
BYA (Fotavtrykk)	12170	m2 BTA
Takflate	13488	m2