HELSINKI DESIGN PROMENADE

The overall solution of the competition area and its functional content, concept

1. *Concept and functional content of the overall solution.*

   The Makasiininranta area is at the very core of Helsinki's historical shoreline. The South Harbour sits at the heart of the capital's iconic profile viewed from the sea, as is evident from dozens of old postcards and photographs. Now, the area is facing a unique transformation that is guided by nature-based solutions, landscape design and solid Finnish architecture. The opportunity to establish a world-class Architecture and Design Museum uplifts the area to the level it deserves.
   During the latter part of the 20th century, the development of Makasiininranta was strongly steered by the infrastructural needs related to port functions. The essential historical urban space of Pakkahuoneentori Square was diminished to serve only as parking lot. The area has developed haphazardly, without an overall vision. The important urban spaces surrounding the historical Old Market Hall, the first in Helsinki, were stuffed with seemingly randomly assembled technical and structural elements that disrupt the natural flow of the urban space.

   The main idea of our plan is to utilise the existing building stock of Makasiininranta wisely and in an economically sustainable way. We seek to respect the values of the environment and develop Helsinki's waterfront areas with consideration for history, views and vibrant urban life. Our aim is to create an easy and versatile urban space that requires a minimum of heavy deck structures and allows for diverse landscaping in the heart of the city, by the sea.
   The cornerstones of our design are ambitious architecture and good everyday life, but we see the task primarily as one of urban design, where the common thread is the "Helsinki Design Promenade", a route that starts at the Market Square and ends at the Olympia Terminal.
   Our proposal consists of three architecturally strong commercial buildings and a museum connected to a small but high-quality hotel and event centre.
   The museum and hotel complex is located in the plan so that it forms the end point of the Design Promenade, while also taking into account the needs of cruise passengers.

   For the shape of the buildings, we looked for inspiration to the glacial erratic boulders found in Finnish nature, which, while having a similar overall appearance, each still have their individual identity. The building layouts allow for varying views from Laivasillankatu towards the sea, linking the buildings loosely yet accurately to the coordinate system of the city.
   Even more important than the architecture are the spaces and views between the buildings.

   Our goal was to integrate the new Makasiininranta buildings (Aino, Wivi and Armi) Helsinki's horizontal profile with light façade strips that highlight the floors of the buildings. The dark top floors of the buildings blend into the dark background of Tähtitorninvuori hill.
   The horizontal architecture aims to create functional buildings with a design based on canopies that protect from excess heat and glazed walls that provide access to natural light and views. The buildings feature terraces and greenery as well as atriums to which the offices and services open.

2. *Functions and business ideas*
   The smartest approach to sustainability is to find new use for existing and decommissioned buildings, ideally replacing new construction.
   Consequently, our plan is based on the idea of locating the Architecture and Design Museum in the old Olympia Terminal and the spaces under the adjacent decks. Correspondingly, we plan to place a park (Aino Aalto Harbour Park) in the space allocated for the museum in the competition programme. This green area extends the visual green connection of Tähtitorninvuori towards the Market Hall. This solution allows us to create valuable green space in the middle of the city and develop an open urban space in front of the buildings along Eteläranta in the form of a parking area.

In our view, the Olympia Terminal and the adjacent spaces under the decks could be converted into multi-purpose museum facilities. We believe that the preliminary room programme of the Architecture and Design Museum could be located in the harbour buildings.
The departure hall of the Olympia Terminal provides an excellent basis for a large, multi-purpose exhibition space.
Connecting the terminal to the under-deck spaces creates a large set of exhibition spaces with a logical circulation route within the exhibitions.
The museum lobby and museum shop provide a direct stairway access for cruise passengers and visitors to the quay level. The terminal restaurant can also function as the museum restaurant.
The facilities serving cruise passengers can be located under the new scenic stairs and observation deck in between the harbour buildings, providing indoor access to both the museum and the hotel and its restaurant and event premises.

Developing the spaces under the deck structures and the connection of the square to Armi Ratia Park will create opportunities for new routes and active urban spaces to *complement* the new "museum quarter".

The premises of the Port House (Satamatalo) office building currently used by the Port of Helsinki are ideally suited for a premium boutique hotel. In order to attain a sufficient number of hotel rooms, we have planned an extension to the hotel in the traffic area currently used for ferry traffic.
The commercial buildings located along the Helsinki Design Promenade – Aino, Wivi and Armi will house not only offices or headquarters for organisations of different sizes, but also diverse venues including restaurants, shops and services at street level. The buildings will not have private staff cafeterias but restaurants, bars and cafés that are open to all and cater to customers even outside office hours. In the spirit of the Design Promenade, the commercial spaces will accommodate a number of design stores and galleries. The buildings can also house public services and everyday services for those working in the area. The street-level commercial premises open towards the shore as well as Laivasillankatu and the squares between the buildings.

The buildings form an entity that can be walked through along a pathway that passes from building to building protected from the weather. The buildings are also linked by an internal, basement-level route. High-quality bicycle parks and gym facilities or other support services for office employees will be located in the basement.

In front of the commercial buildings, we have located a fast ferry terminal that also connects to the closed harbour area. A bar and summer terrace can be placed on the roof of the terminal.

The Old Market Hall will remain a market hall in our plan. Our idea is to direct some of the heavy pedestrian traffic from the narrow walkways on the north and west sides of the Cholera Basin to the square in front of the Market Hall. We plan to move the berths of sightseeing vessels out of the Cholera Basin to separate piers in the Pakkahuone Quay and Lyypekinlaituri quay. A pavilion building would be built in both squares to serve as both a cafeteria and a waiting room for the boats.

Our solution enables a fixed bridge from the Keisarinluoto quay to Lyypekinlaituri quay that also allows small boats to pass under it to the Cholera Basin.

3. Planned floor areas for each function (gross areas).

Office and commercial building Aino	8445 m2 of office space	3770 m2 of commercial space
Office and commercial building Wivi	9700 m2 of office space	4360 m2 of commercial space
Office and commercial building Armi	7510 m2 of office space	6340 m2 of commercial space
Total Gross area above ground	40.125 m2	
Underground space	13.310 m2 (incl. 4000 m2 technical and loading)	
Hotel and event centre	10.370 m2	

Architecture and Design Museum	12.480 m2
Other spaces	2665 gross m2

The identity of the area and its integration into its surroundings

4. *Urban structure and its key ideas*
   The Helsinki Design Promenade is, above all, a route lined with high-quality urban space, services and jobs. The workplaces, museum and hotel, as well as everyday traffic, bring life to the area day and night, all year round.
   Our idea is to develop the urban space at street and deck level, while also making full use of the urban space to be freed up for citizens' use under the quay and deck levels, to which the museum and hotel will connect. By opening the port depot area with landscaped terraces *to* Armi Ratia Park, the Maija Isola Square, which is now sunken, will connect to the surrounding park and urban space. The museum will open onto the square, which will also be flanked by galleries and cafés located in the workshops and warehouses that will be vacated by the port.
   The change will also form new routes in the area in the direction of Kaivopuisto and Ehrenströmintie.

5. *Identity and idea of public areas*
   The main idea of the public spaces is greenery and openness, taking into consideration the views and directions to which they open. The commercial buildings are shaped so as to always open to good views. The buildings also form sheltered squares with a warm microclimate, to which the various functions open, in the direction of Laivasillankatu.

   The main pedestrian route is the actual Makasiininranta quay, which opens to the east and therefore tends to be shady. In our solution, the commercial buildings are located spaciously and in such a way that the seaside promenade is a pleasant walking environment even as the day turns to evening.

   In front of the museum and hotel (Kirsti Paakkanen Square) we envision a continuous square punctuated by glass cubes and greenery. The idea of the glass cubes is to draw attention to and create an identity for the new museum, which is located largely under the deck. The glass cubes introduce natural light into the exhibition spaces and connect the spaces under the deck to the square on top of it.
   The glass cubes act as large lanterns in the urban space, showcasing various artefacts or phenomena.

   KEY LANDSCAPE THEMES

   The landscape concept consists of five themes and strategies.

   1 STRENGHTENING CONNECTIONS BETWEEN THE URBAN CITY CENTRE AND MAKASIININRANTA
   By reinforcing the connection to the historical urban fabric and landscape, the area of Makasiininranta is brought back into the urban context of everyday city life. A key goal is to add a natural and human scale to the harbour area and to establish a strong connection from the Market Square, the historical Empire Centre and the Esplanades to Makasiininranta.

   2. A NEW PARK AND A STRONG CONNECTION TO THE EXISTING PARK SYSTEM AND LANDSCAPE
   The urban green structure is strengthened by establishing the new Aino Aalto Harbour Park next to Pakkahuoneentori square in honour of the designer. The park flows towards the harbour square from the Tähtitorninvuori park, creating a continuous canopy between the two parks.
   Makasiininranta and South Harbour are connected to Helsinki's green structure and park system. Establishing the new Harbour Park introduces a green landscape next to the urban harbour area. The site of the new park is a node between Tähtitorninvuori park, the Market Square and the new office deck. The new Aino Aalto Harbour Park will provide opportunities for enjoying iconic views to the Empire façades, Presidential Palace, Uspenski Cathedral, the Stora Enso headquarters designed by Alvar Aalto, and the Katajanokka area beyond.

3. FINNISH DESIGN COURTYARDS

As the museum is proposed to be situated in the museum quarters of the Olympia Terminal, an inviting pathway of Finnish Design Courtyards is created to lead from the Old Market Hall to the new museum quarter. The pathway consists of design squares and pocket courtyards that are dedicated to Finnish female designers, architects and strong leaders in the fields of design: Aino Aalto, Wivi Lönn, Nanny Still, Rut Bryk, Armi Ratia, Maija Isola and Kirsti Paakkanen.

4. OLD RAIL LINE AS A DESIGN FEATURE

The Satamarata, an old railway line that used to connect the Helsinki harbour areas, is an important design feature and the backbone connecting the Makasiininranta area to Katajanokka and Kaivopuisto. A new pedestrian bridge is built between Keisarinluoto quay and Lyypekinlaituri quay.
Conceptual fragments of the old rail line are to be found in the landscape design. The pattern of the pavement takes its form from the original railway line. The light brown base colour of the pavement originates from old photos and paintings of the area.
In the office deck area, the rail line is visible on the pavement pattern. Upon approaching the museum quarter, the rail line dives to the lower level, leading to the museum entrance. It then follows its original route and continues as "Harbour Baana", a bicycle route and open-air graffiti art gallery. The existing tunnel, connecting the Harbour Baana to Kaivopuisto, will be reopened to serve as an interesting bicycle route between Helsinki's southern shoreline areas.

5. ARCHIPELAGO LANDSCAPE

The connection to Helsinki's archipelago in reinforced at both the functional and conceptual levels. The design provides berths for archipelago cruise boats and water taxis, as well as for small private boats visiting the Market Hall from the nearby islands. At the conceptual level, the presence of the archipelago can be found everywhere near the shoreline. The new office buildings as well as the overall landscape design are inspired by the archipelago of Helsinki: rocks, shoreline and small, rocky and windy islands with plants that are adapted to a tough environment. The vegetation consists of plants that can be found in shoreline groves, beach meadows and archipelago forests, as well as plants that are inspired by the ballast plants that used to spread as ships discharged their solid ballast in harbours. The vegetation planters also borrow their form from small archipelago islands and blocks of ice pushed against the shore

6. *Preserving the values of the cultural environment and its valuable views*

We have followed the current topography of the area and sought to avoid new deck structures and height differences that hamper movement. The commercial buildings are connected to the elevations of Laivasillankatu so that the street-level services open onto the squares and streets as naturally as possible. As required by the competition programme, the height of the buildings is minimised, and the important views are preserved. This has been achieved by tapering the three commercial buildings towards the top floors. The top floors of the buildings are retracted and dark in colour, while the other floors are mainly light. This solution seeks to lighten the top floors of the buildings and connect them visually to the dark Tähtitorninvuori hill in the background.

The low profile, horizontal lines and shape of the commercial buildings and their top floors are intended to preserve the status of Tähtitorninvuori in the larger landscape, especially when viewed from the sea.

Technical feasibility of the competition entry

7. *Maintenance and parking*

The project is primarily based on good public transport and functional pedestrian and bicycle traffic routes. Our idea is to utilise the existing parking facility in the area (P-Tähtitorninvuori), where capacity will presumably be freed up when the port operations end.

Our plan includes expanding the existing cave park and adding underground connections from the facility to both the commercial buildings and the museum.

The plan provides space for bicycles in the basements under the buildings and at street level.

Parking spaces cars:

Offices	max. 1 parking space / 250 gross m2	103 parking
Retail	max. 1 parking space / 150 gross m2	109 parking
Hotel	max. 1 parking space / 350 gross m2	30 parking
Museum	max. 1 parking spaces/ 350 gross m2	36 parking

Parking spaces bicycles:

Offices	max. 1 parking space / 50 gross m2	515 parking
Retail	max. 1 parking space / 50 gross m2	327 parking
Hotel	max. 1 parking space / 100 gross m2	104 parking
Museum	max. 1 parking spaces/ 100 gross m2	125 parking

The developer will solve the possible need for additional parking for cars in the Tähtitorninvuori cave parking facility. The final parking need and any expansion will be resolved during the project. The connection from the Tähtitorninvuori car park to the project area is shown in basement floor plan.

By locating the museum in the Olympia Terminal premises, the existing spaces under the deck can be used, avoiding the construction of a new, extensive underground maintenance facility. The connection to the museum's service space from Ehrenströmintie is short and clear.
Due to the relatively low level of service traffic to the commercial buildings, we believe that the service vehicles can use the quay level, as is generally the case on city streets. The service yard serving the commercial buildings is located under the deck between the two southernmost buildings (Armi and Wivi). There is a further corridor connection from this service yard to the northernmost building (Aino).

8. Public pedestrian and cycling routes
Our plain seeks to ensure accessible pedestrian routes throughout the area. The main walking route is directed to the shoreline area between the commercial buildings and the sea, so that the route can be continued either in the direction of Ehrenströmintie past the museum, or through Maija Isola Square and Armi Ratia Park to Kaivopuisto. We believe that it would be justified to investigate the opening of the closed railway tunnel for pedestrian and bicycle traffic and convert the railway shaft and tunnel leading to Kaivopuisto into a “Street gallery”.

The main route for pedestrians and cyclists would continue to be along Laivasillankatu, which will be developed into a green park street.

9. *Key technical solutions, foundation and structur*e
The idea of the plan is to avoid heavy deck structures and to utilise the existing soil for both planting and permeable surface structures.
The new buildings will be implemented as structural hybrids, using wood as the main material for the above-ground structures. The building's pillar system, intermediate floors and shafts are also mainly of wood.
Steel and metal structures are used in the building's shading canopies and façades exposed to moisture stress. Reinforced concrete is used in the foundation structures and the footing of the buildings.
The buildings will feature basements with watertight foundation walls and a base slab that resist earth and water pressure. The buildings will be built on pile foundations.

The watertight base slab will be anchored to the rock to resist water uplift.

10. *Consideration of noise and air quality impacts*
The planning of Makasiininranta can follow the same principles as other ongoing projects in the port area. As shipping traffic decreases, the need for noise abatement will decrease. The low-frequency noise caused by cruise ships must be taken into account in the window structures of the hotel rooms. During the renovation

and conversion work, the windows of the hotel rooms will be double-glazed to allow for sufficient air space between the two window panes. The glazing will be optimised to block out low-frequency noise.
The windows of the office and retail premises and the glazed walls opening to the outdoor spaces can be built using conventional glass structures.

A well soundproofed, muted and noiseless acoustic environment can be created in the museum's exhibition spaces by means of sound absorption and good window sound insulation.

The buildings along Laivasillankatu protect the outdoor areas on the shore from traffic noise, so that the sounds of the sea and harbour dominate the soundscape by the sea.

Once the daily car ferry traffic ends, the air quality in the quay area will improve. Air quality can also be influenced by the quantity and quality of landscaping and surface materials. Some street areas can be heated, which reduces the amount of sanding required and thus the amount of street dust in the spring.

11. *Phasing and implementation schedule*
Our solution to locate the museum in the existing Port premises will allow the project to start as soon as the premises are vacated.
The three commercial buildings and the fast ferry terminal can be implemented as a single, continuous construction project and the facilities can be taken into use in stages.
The existing market and pier areas around the Market Square can be developed as a separate project, which can be seamlessly integrated into the design and implementation of the Makasiininranta outdoor areas.

The construction schedule is approximately two years per building once the plan comes into force and upon completion of the infrastructure works. Construction will be started at about one-year intervals. The order of construction will be planned so as to be most sensible for the overall project (for example, starting at the Old Market Hall end of the site).

12. *Fire and rescue solutions.*
The office and commercial buildings in Makasiininranta follow the principles of normal, functional building in terms of fire safety and fire rescue operations. Details related to wood construction will be taken into account in further planning, but the starting point for planning is unproblematic due to factors such as the low height of the buildings.

The previous use of the port buildings as office and terminal premises, with direct connections to the outdoors at ground level, provide an excellent basis for reuse. As concrete structures, the buildings are inherently non-combustible.

Sustainable construction solutions

13. *Environmental sustainability and circular economy considerations.*
Reusing the existing harbour buildings as efficiently as possible for valuable, long-term use will save natural resources and space while increasing the green mass in the city centre.
In the new buildings, our idea is to use wood to the maximum extent possible both as frame material and in the interior, for example in the ceiling surfaces that extend from the interior to the undersurface of the canopies shading the façade. Glass is used extensively as a façade material to make the most of natural light and the views. The façades of the buildings (the terrace railings and sun canopies of the office buildings as well as the façades of the hotel extension) are clad with glazed, light-coloured ceramic panels, continuing the light and low silhouette of Helsinki.
The requirements of the marine climate will be taken into consideration in all material choices.

14. *Energy efficiency of buildings.*
The goal of Helsinki is to be carbon neutral by 2035. This has been considered when selecting the energy solutions. Environmentally friendly and energy-efficient technical solutions, such as geothermal heating, solar panels and LED lights, are used. Geothermal heating covers 90% of the heating demand, with the rest

covered by electricity. Surplus heat is used to charge the geothermal wells during the summer. Energy demand can be covered, for example, by using semideep (800 – 1000 m, one well per building) geothermal wells. An energy-efficient ventilation system is used, and the ventilation machines have high heat recovery efficiencies. Another example of energy efficient solutions in the building is the use of LED lights. Solar panels are installed on the roof to produce electricity for building services.
In order to minimise the cooling need, the balconies are deep and the windows have low g-values. Installing a geothermal system enables the use of geothermal cooling. This is an effective and environmentally friendly cooling method. The electricity consumption of the system is considerably lower compared to traditional air conditioning. Use of the above-mentioned solutions leads to the highest Energy Performance Certificate rating, A.

15. *Flexible modifiability and lifecycle thinking.*
    We believe that the reuse of the existing buildings is an economically advantageous solution for decades to come. The solidly built buildings can even go on to be repurposed for other uses over their lifespan, as the proposed activities do not require measures that would definitively exclude other uses during their future lifecycle.

    The office and retail premises are planned as modern, flexible spaces that can be divided into units of different sizes ranging from smaller office or retail units to the headquarters of a single company.

    Our idea is that, even in the headquarters option, the street-level services are open public space and the actual offices start from an upper floor.

16. *Renewable energy production solutions, opportunities for local energy production.*
    The buildings will utilise geothermal heating and cooling. Our technical and architectural goal is to make the dark top floors of the buildings into large solar collectors by integrating solar cells into the dark roof surface. This solution, which is familiar from the latest electric cars or modern superyachts, aims at the restrained appearance of the roofs whether viewed from Tähtitorninvuori or the sea.

17. *Green structures and adapting to climate change.*
    The plan for the area complies with a flood elevation of +3.4 as the construction elevation of the new buildings, as instructed by the City. The existing quay line is kept at the current elevation, and elevation differences are addressed by scenic stairs and ramps.
    We have planned a flood wall in the area between the museum and the quay at level +3.4 to protect the ground floors of the museum and the hotel.
    We have sought to design the flood wall as a landscape structure that serves as a pier for cruise ships and, outside the cruise season, as a pedestrian area. The southern end of the flood wall merges with the current street area elevations so that no structural *embankment* is needed at the southern end of the area.

18. *Carbon balance for new construction.*
    To lower carbon emissions and ensure the flexibility of the floor plans, the chosen frame system is a column beam frame. Wood is used for all bearing structures, except for the beams, which are made of low carbon steel to ensure a longer span distance between columns. Wooden CLT is used to stiffen the frame.
    The basement floors are made of concrete structures, but the use of low-carbon concrete, coupled with the lower weight of the buildings enabled by their lighter structures, reduces the carbon footprint of the buildings.

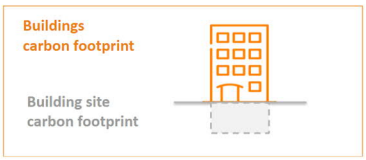
Carbon footprint and carbon handprint conclusions

Carbon footprint and handprint according to ministry of enviroment calculation method (2021).

Buildings carbon footprint and handprint

Stages YM	kg CO2e/m2/a	tCO2e
A1-5 manufacture	3,50	2512
B4, B6 maintenance	8,05	5774
C1-4 demolition	3,17	2274
Sum of carbon footprint A+B+C	**14,72**	**10560**

Stages YM	kg CO2e/m2/a	tCO2e
D1 Uudelleenkäyttö ja kierrätys	-0,22	-155
Sum of carbon handprint D1-5	**-0,22**	**-155**



Building site carbon footprint and handprint

Stages YM	kg CO2e/rp-m2/a	tCO2e (site)
A1-5 manufacture	0,48	30
C1-4 demolition	0,03	2
B4, B6 maintenance	0,00	0
Sum of carbon footprint A+B+C	**0,52**	**31**

Stages YM	kg CO2e/rp-m2/a	tCO2e (site)
D1 Uudelleenkäyttö ja kierrätys	-0,11	-7
Sum of carbon handprint D1-5	**-0,11**	**-7**

Scope of construction

19. *Floor area and parking space calculations and their locations in the competition area.*
    See Appendix 1

20. *A breakdown of the functions.*
    See Appendix 2

Bicycle parking Calculations			
Building	Gross Area (m²)	Bicycle parking space requirements	Bicycle parking space units / building area
"Aino" – Office building North	12215	1 bps / 50 gross m²	245
"Wivi" – Office building Middle	14 060	1 bps / 50 gross m²	281
"Armi" – Office building South	13850	1 bps / 50 gross m²	277
Office buildings Combined	40125	1 bps / 50 gross m²	803
Satamatalo Hotel	10370	1 bps / 100 gross m²	104
Common Lobby - Cruise Liner Waiting	870	1 bps / 100 gross m²	87
Architecture and Design Museum	12480	1 bps / 100 gross m²	125
M5-M7 Retail and Commercial	1865	1 bps / 50 gross m²	38
Grand Total	65 710		1 157

Car parking Calculations			
Building	Gross Area (m²)	Parking space requirements	Parking space units total
"Aino" – Office building North - Commercial	3770	1 ps / 150 gross m²	25
"Aino" – Office building North - Office	8445	1 ps / 250 gross m²	34
"Wivi" – Office building Middle - Commercial	4360	1 ps / 150 gross m²	29
"Wivi" – Office building Middle - Office	9 700	1 ps / 250 gross m²	39
Armi – Office building South - Commercial	6 340	1 ps / 150 gross m²	42
"Armi" – Office building South - Office	7510	1 ps / 250 gross m²	30
Office buildings Combined	40125	1 ps / 250 gross m²	199
Satamatalo Hotel	10370	1 ps / 350 gross m²	30
Common Lobby - Cruise Liner Waiting	870	1 ps / 350 gross m²	2
Architecture and Design Museum	12480	1 ps / 350 gross m²	36
M5-M7 Retail and Commercial	1865	1 ps / 150 gross m²	13
Grand Total	65 710		280

Gross building areas

Building	Space	Basement* (m^2)	Floor 1. (m^2)	Mezzanine (m^2)	Floor 2. (m^2)	Floor 3. (m^2)	Floor 4. (m^2)	Floor 5. (m^2)	Combined area (m^2)	Gross Area (m^2)
"Aino" – Office building North	Commercial	2970	3770						3770	12215
	Office				3240	3280	1925		8445	
	Technical	800								
"Wivi" – Office building Middle	Commercial	3560	4360						4360	14 060
	Office				3750	3915	2035		9700	
	Technical	800								
"Armi" – Office building South	Commercial	2 780	3570		2770				6340	13850
	Office					2980	2950	1580	7 510	
	Technical	800								
	Loading	1 600								
Office buildings total										**40125**
Satamatalo – Hotel	Satamatalo Hotel		1640	1755	2020	1575			6990	**10370**
	Loading Hotel		340						340	
	Hotel Extension		930	545	525	520	520		3040	
	Basement*	1987								
	Common Lobby		870						870	**870**
Architecture and Design Museum	Museum		7055	875	2495	240			10665	**12480**
	Museum Loading		1815						1815	
M5-M7 Retail and Commercial	Commercial		1865						1865	**1865**
Grand Total										**65710**

*Basement excluded from the gross area calculations