

Vondelkerkstraat 14

Feasibility research



5 October 2018

Feasibility study

Construction of a basement
beneath Vondelkerkstraat 14

Client: N.F. Dyhr

Authors:
ing. Michael Croese
ir. Sandra Merlijn
ir. Steven Bekkers

Kamsma Bouwadvies

Feasibility study

Research into the possibilities for constructing a basement beneath the existing souterrain of Vondelkerkstraat 14.

Goal of this research is to determine the possibilities for planning permission, construction, spatial layout and financial feasibility. This is done in 6 chapters:

_ Planning permission	page 3
_ Construction	page 6
_ Spatial layout	page 8
_ Reference projects	page 13
_ Cost estimation	page 16
_ Conclusion	page 21

Planning permission

Research into the possibilities for an application for planning permission

_Building codes (Bestemmingsplan)

The prevailing municipal building code dates back to 2007. Another building code is currently 'being prepared'. As long as this is not definitely set by the municipality ('geheel onherroepelijk in werking') the building code from 2007 remains the ruling one.

For determining the possibilities for the creation of an extra building layer beneath the current bottom layer we first have to look at the definitions of 'basement' and 'ground floor'.

_ "Bestemmingsplan Oud West 2007" (prevailing building code)

Quote:

Artikel 1: Begripsomschrijvingen

- Bouwlaag: een doorlopend gedeelte van een gebouw, . . . Bij de bepaling van het aantal bouwlagen wordt de bouwlaag, . . . evenals de bouwlagen, die grotendeels onder de begane grond zijn gelegen (zogenaamde kelder/souterrain) niet meegerekend"
- Souterrain: een ruimte gelegen onder de eerste bouwlaag (begane grond), zodanig dat de bovenkant van de vloer van de eerste bouwlaag ten hoogste 2,0 meter boven de hoogte van de weg ter plaatse van de hoofdtoegang is gelegen. Onder souterrains worden mede kelders begrepen.

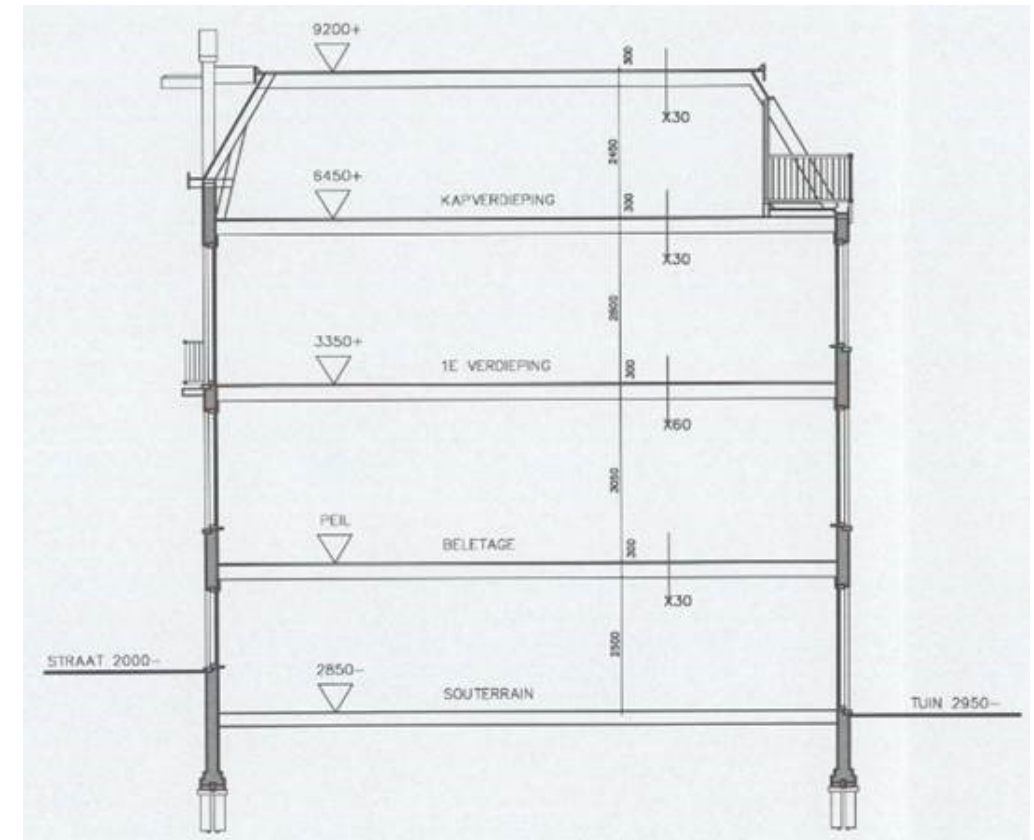
This means a floor is only defined as a basement if the ground floor above is no more than 2,0 meters above street level. In the drawings for the building permit of Vondelkerkstraat 24/26 (similar buildings) the height difference between street and the raised ground floor is exactly 2,0 meters. In this building permit the ground floor is determined as the floor at 2,0 m above street level. According to the building code the semi-souterrain at 850-/- below street level could also be determined as ground floor. This would define the building layer bordering the garden the ground floor, and the layer 2 meters above street level the first floor.

The building code defines the main function of the building as Woongebied 1 (house/dwelling). With no further exceptions stated this allows one to live on all the floors including the basement.

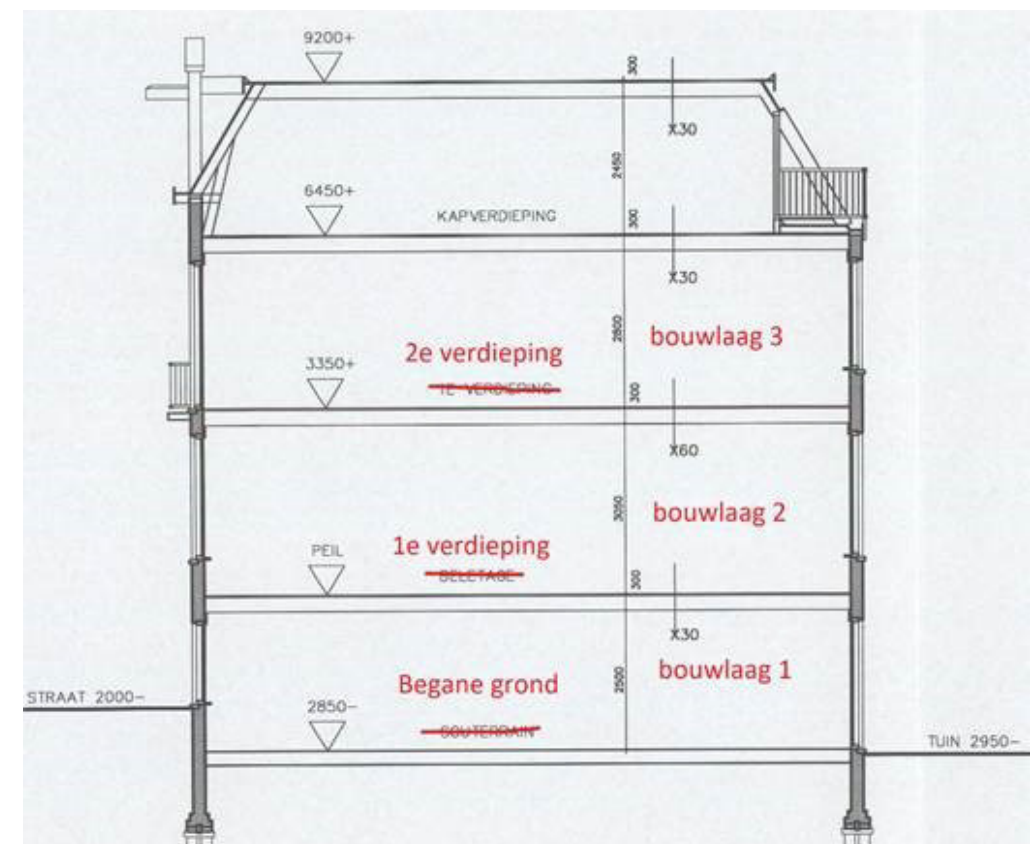
The building code states the maximum amount of building layers is 4, with exemption of basements and roof. By defining the semi-souterrain as ground floor the total amount of layers is 3 (and the roof). Apart from this, the building code makes no further mention of building layers or basements. This means that the construction of a basement layer is not ruled out and could therefore be possible.

_Archaeology

The building code defines the area around the Vondelkerkstraat as 'archaeologically valuable'. This means that one is not allowed to 'disturb' the soil lower than 0,3m, without sufficiently proving that the archaeological value of the soil will not be harmed by building in it. This obliges one to do archaeological research to prove no harm will be done to the value of the soil. Such research might already be done when the foundations were first improved, so we could offer this again when applying for planning permission. If not an expert will have to do such research beforehand.



Section with floor heights and layer names



Section with floor heights and redefined layer names

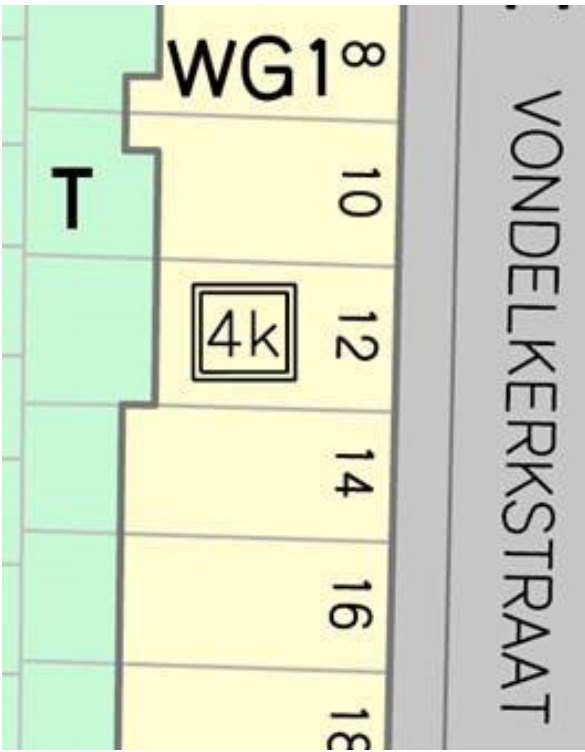
The maximum possible surface to be created in the basement is:
65 m2 gross basement beneath existing house
12,5 m2 gross extension beyond rear façade
----- +
77,5 m2 gross added to current surface area of the house.
(Nett m2 depends on construction thickness)

Conclusion

The prevailing building code leaves room to apply for planning permission for constructing a basement underneath the entire ground floor, if we can prove that archaeological values will not be harmed during construction. Furthermore an exemption ruling states one is allowed to build on a maximum of 50% of the space allocated to 'garden' in the building code. This means the basement can be extended beyond the rear façade of the house.

New building code

For we are not able to determine when the municipality will definitely set the new building code ('Oud West 2018'), that could happen during the design and engineering process of this project. Therefore we have checked whether the construction of a basement would be allowed under the new rules, and concluded that also the upcoming building code leaves room for application for a building permit.



Building code plan with function house/dwelling



Plot size from Kadaster

Construction Method

A step by step explanation of the construction method devised by the construction engineer.

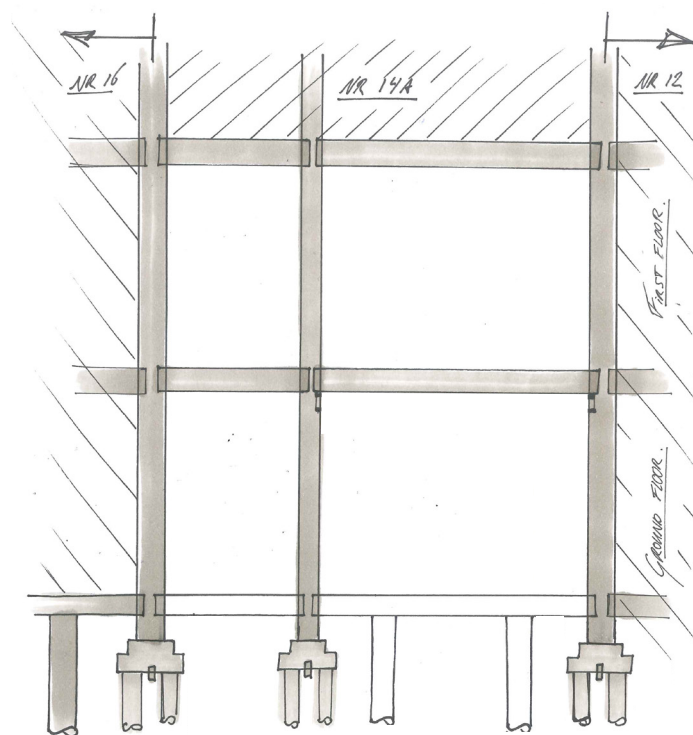


Figure 1

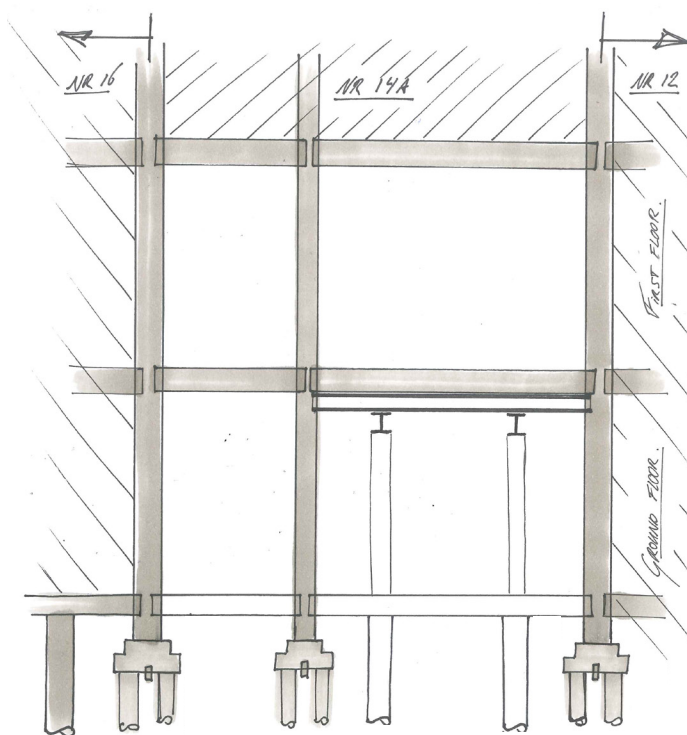


Figure 2

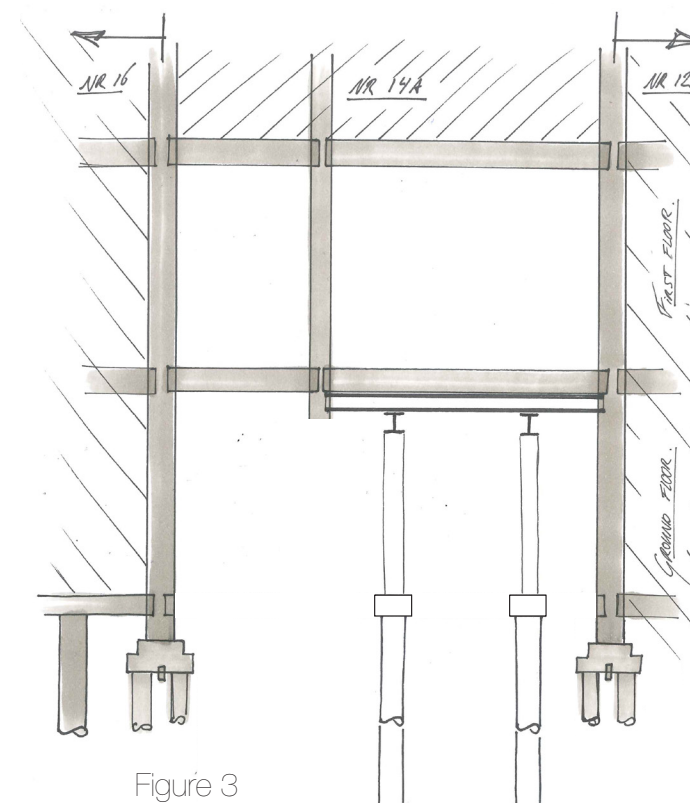


Figure 3

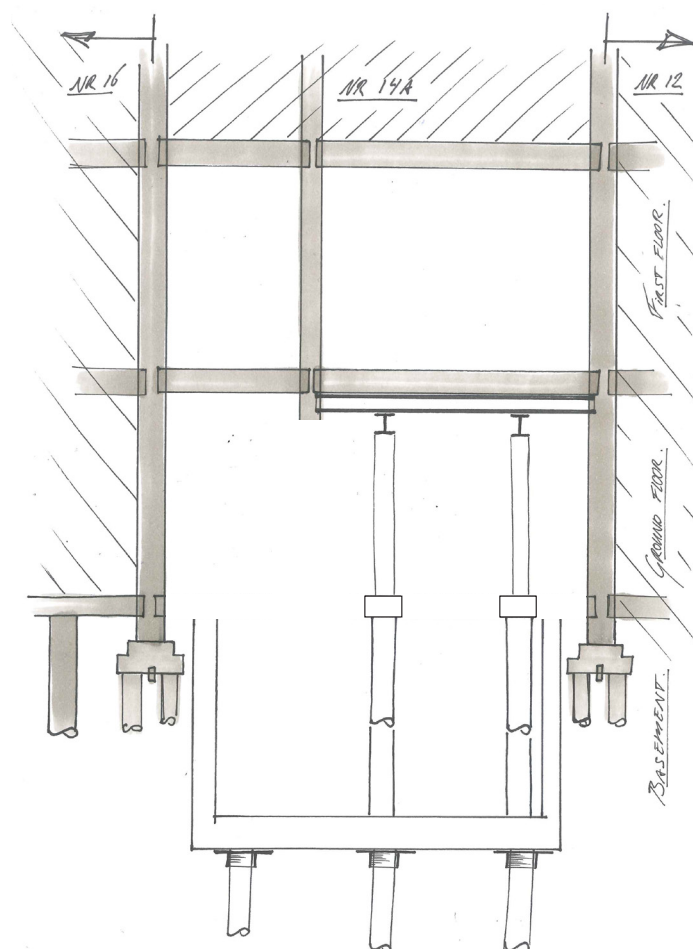


Figure 4

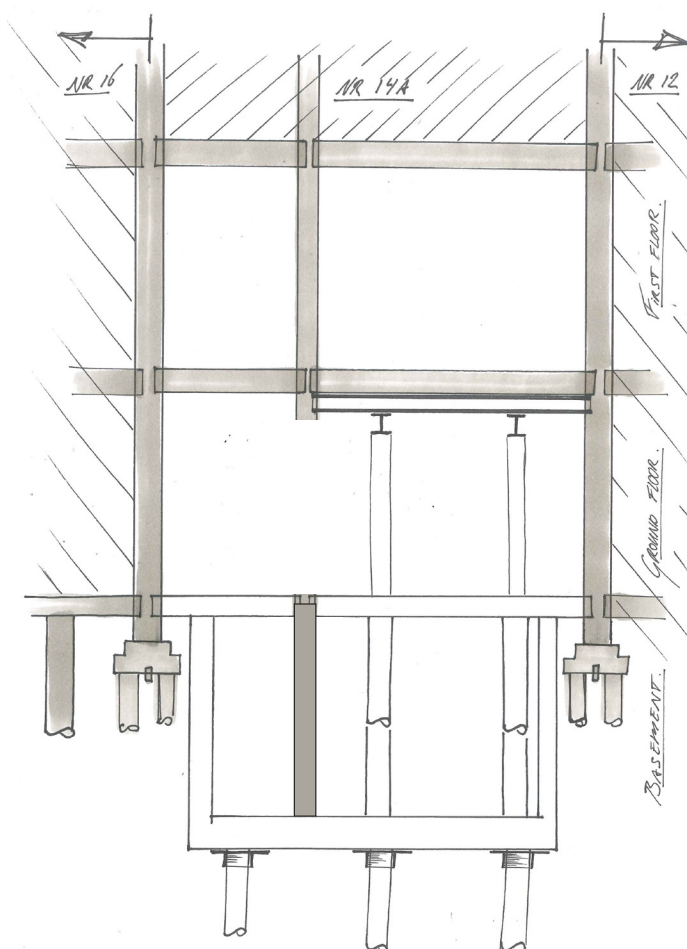


Figure 5

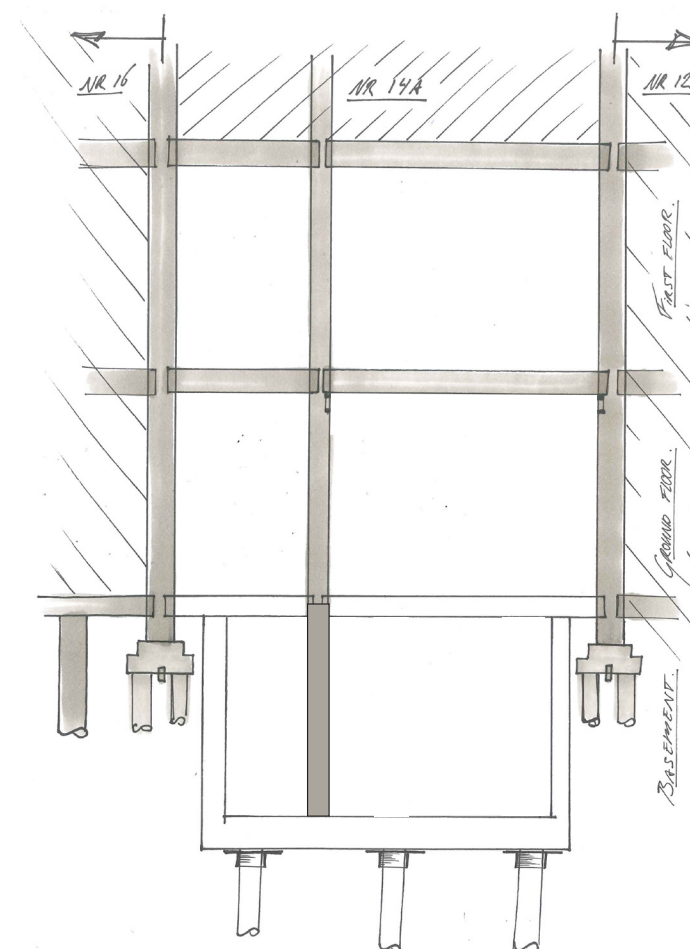


Figure 6

Construction method

The construction engineer responsible for the original foundation improvement, Tentij construction, was consulted and has devised a way to create a basement underneath the current ground floor. A temporary support construction will be placed while the basement is constructed and later removed. The construction will take place as follows:

1. Current situation. The house consists of a ground floor and first floor. The foundation beneath the wider section has been improved in 1992. The original foundation is still in place.

2. Temporary steel support. On the ground floor a temporary steel support will be placed to carry the weight of the house directly to the piles, relieving the ground floor walls of any weight.

3. Demolition. Ground floor walls and floor will be demolished and a steel retaining wall placed to be able to dig the new basement.

4. Basement floor and walls. New piles are placed and existing piles are given a cuff to be able to support basement and the rest of the house. The new basement will be constructed in concrete and connected to the bottom of the walls on ground floor level.

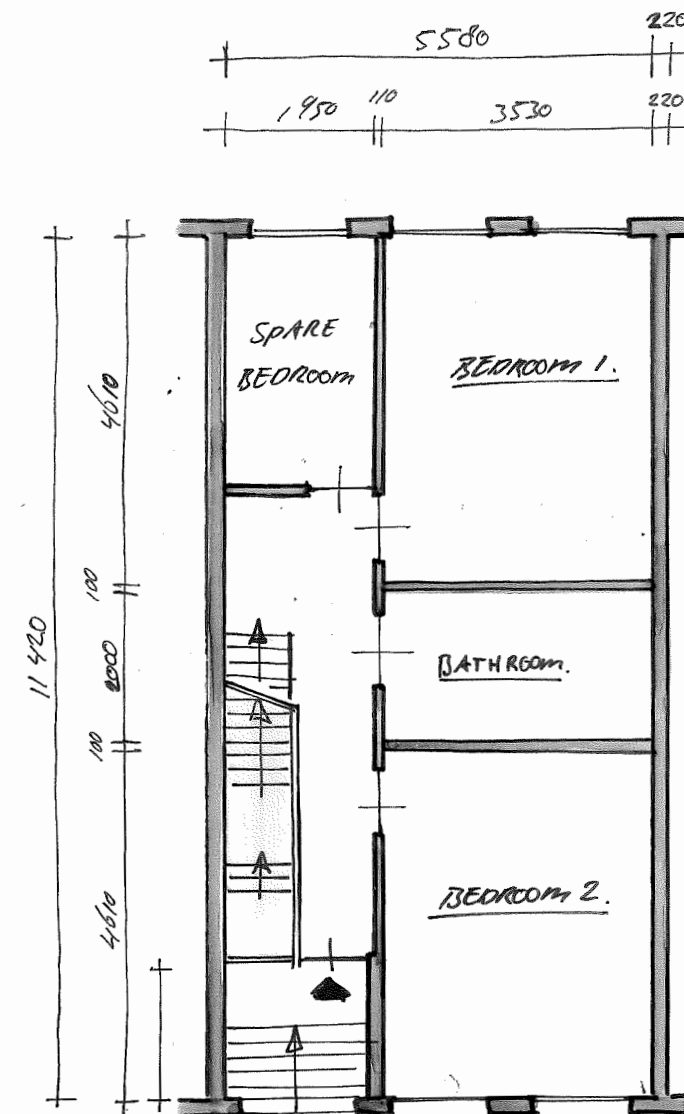
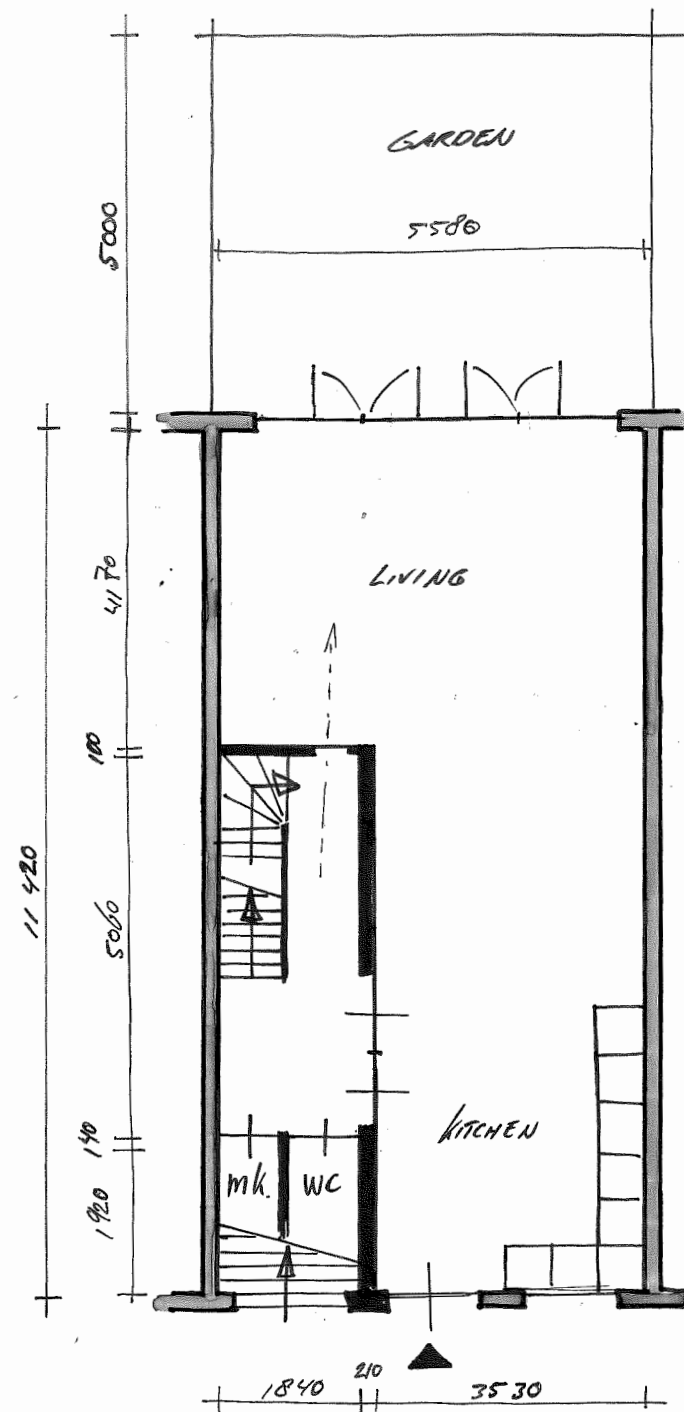
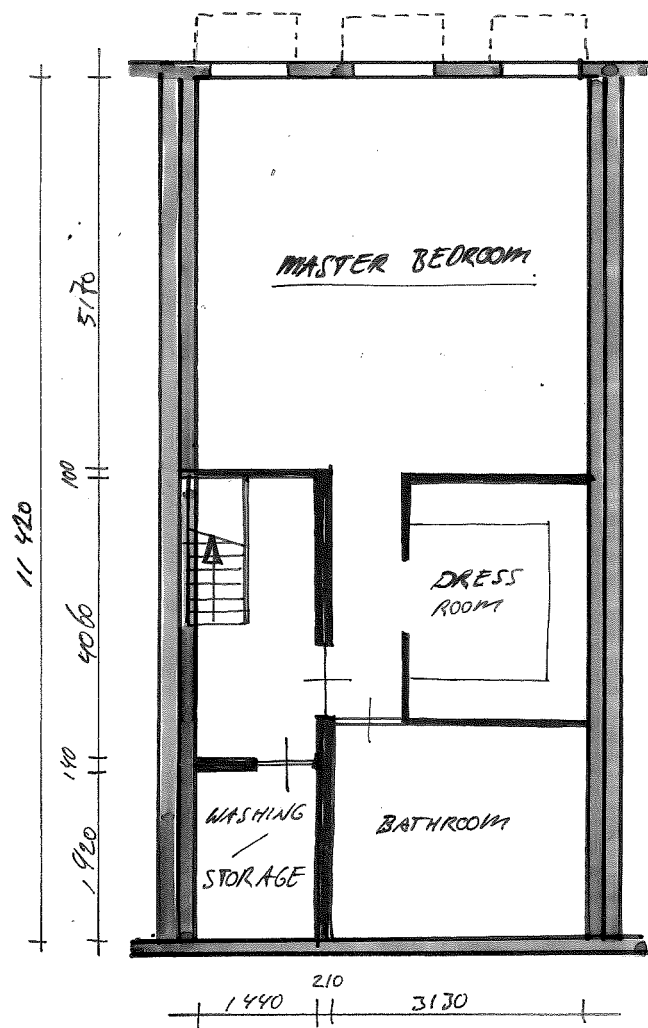
5. Floor construction. A new load bearing wall will be built in the basement that carries the new ground floor together with the basement walls.

6. Removal of temporary support. A new load bearing wall will be placed on the ground floor and the temporary support construction removed.

Spatial layout

Four variants of the floor plan from basement to first floor, with different layouts for bedrooms and master bedroom with accompanying bathrooms and dressing room.

_Variant 1



The first variant consists of a basement within the current outer walls of the house. The basement will be home to a new master bedroom that receives daylight via a so called 'Koekoek', covered with glass or steel bars in the garden. A dressing room and bathroom will accompany the master bedroom, the remaining space near the stairs can be used as storage of washing room.

The layout of the ground floor will be relatively unchanged, apart from the toilet moving towards the front facade in order to make room for the stairs to the basement. Although the layout is as current, the construction of the basement entails the demolition and reconstruction of the entire ground floor, including the kitchen. The glass wall in the rear facade can remain in place.

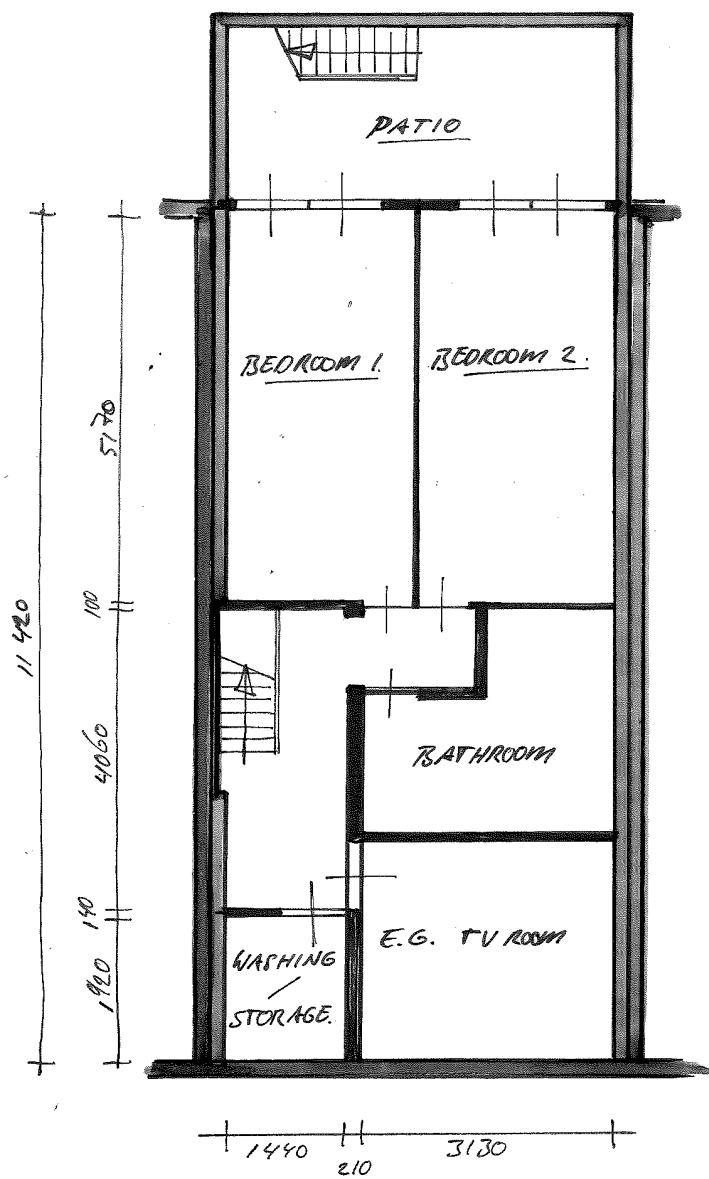
The layout of the first floor can be a traditional Amsterdam floor plan: Bedrooms near the facades and a bathroom separating them, accessible from the landing. The narrow section of the house at the rear can serve as e.g. a spare bedroom or fitness room.

_Estimated cost:

€ 626.140

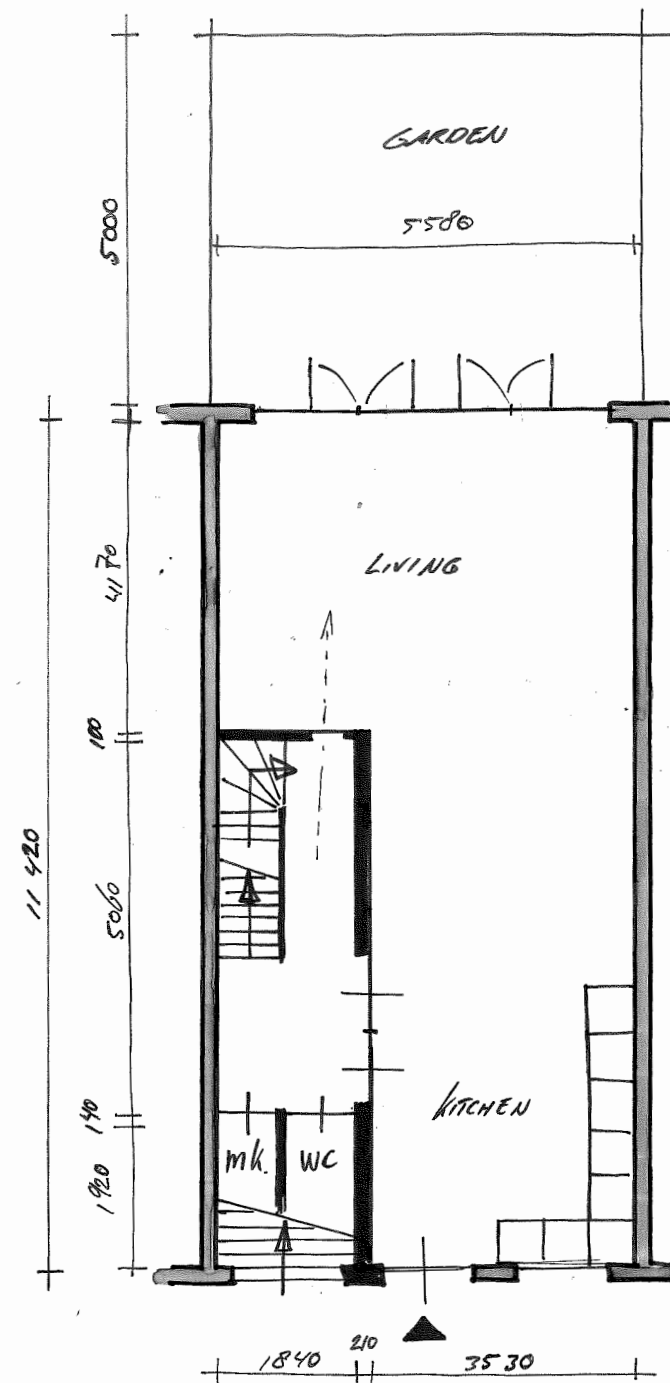
Please refer to cost estimation option B for a detailed explanation.

_Variant 2



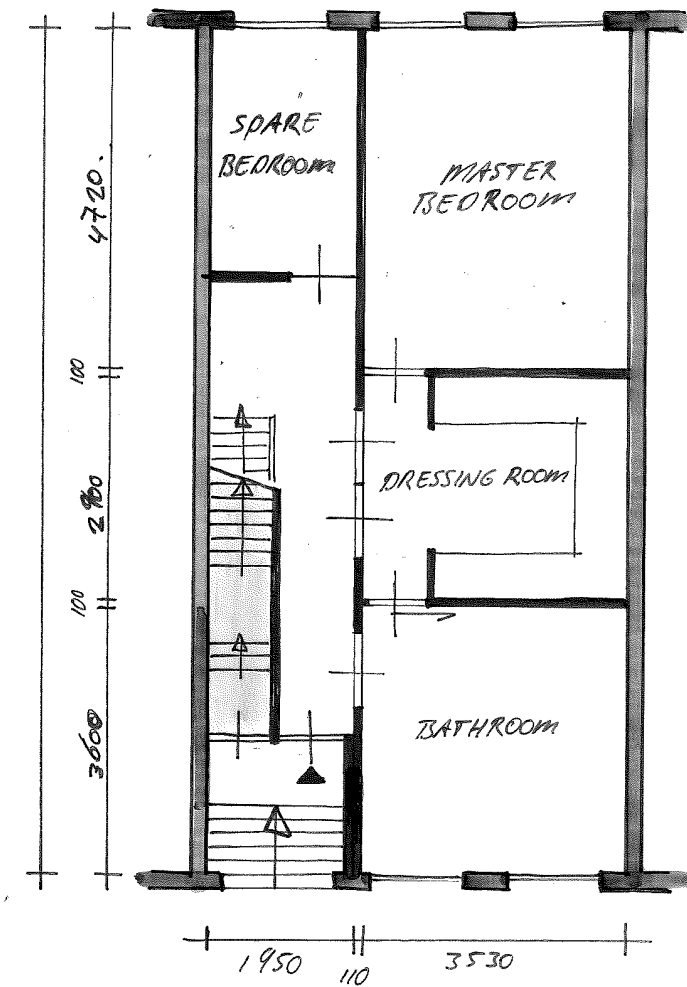
_Estimated cost:

€ 736.454 with a patio outside the current outer walls
Please refer to cost estimation option C for a detailed explanation.



_Estimated cost:

€ 662.626 with a basement within the current outer walls (no patio)
Please refer to cost estimation option D for a detailed explanation.



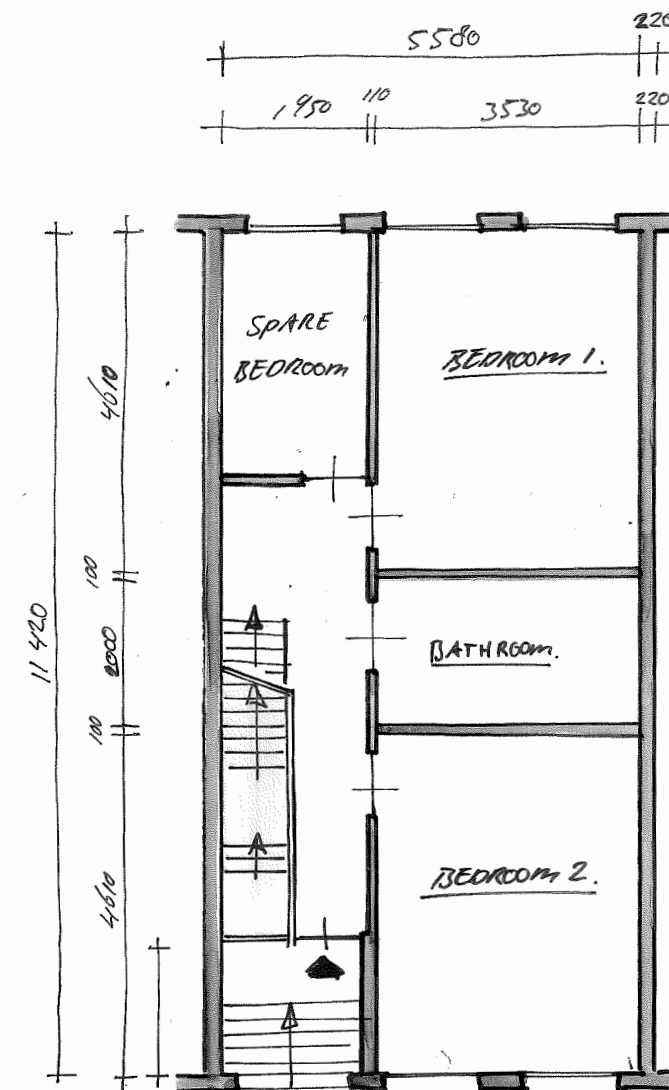
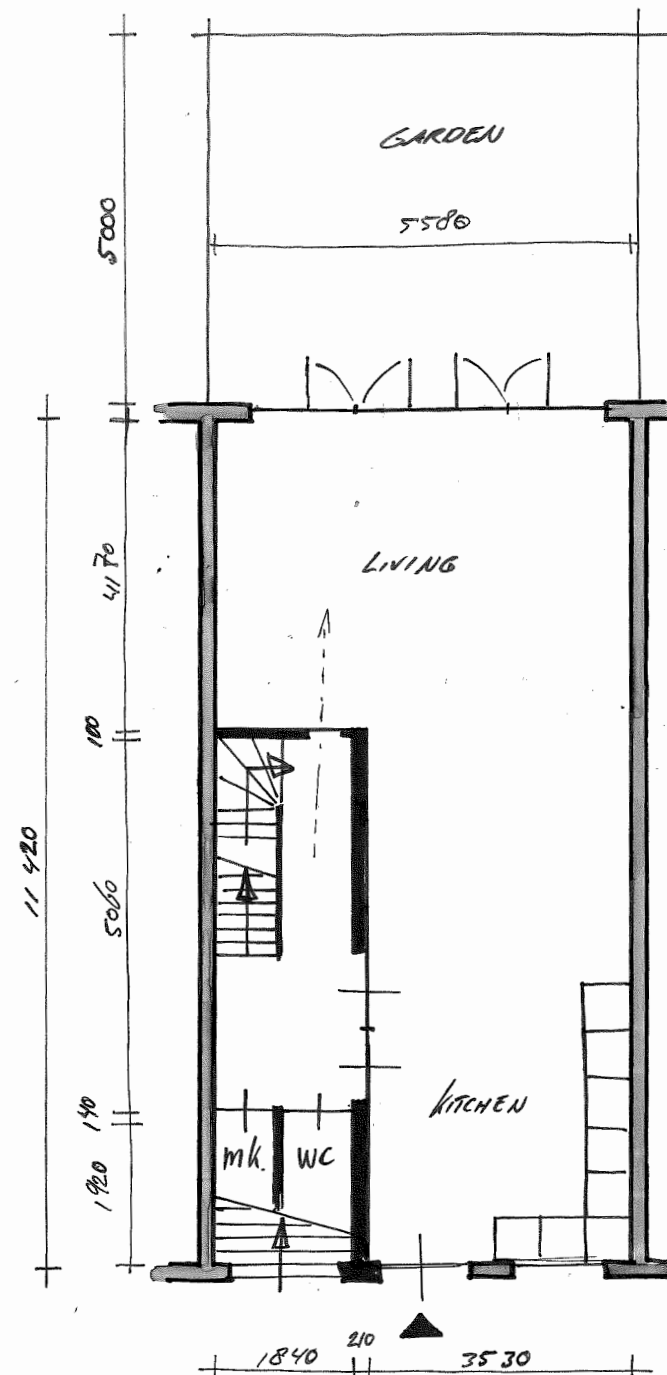
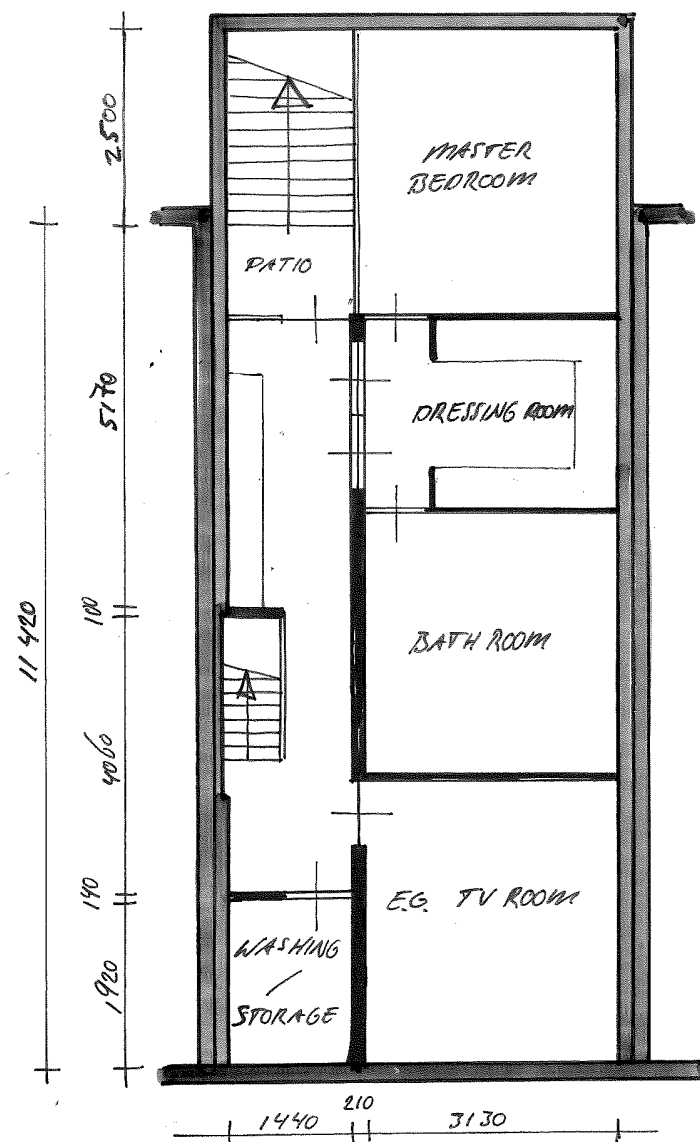
The second variant consists of a basement deeper than the current outer walls of the house. The basement will house two bedrooms that share a bathroom, and receive daylight from a basement patio accessible from both bedrooms. For examples of such a patio please refer to the chapter 'Reference projects'. Near the front of the house a room can be created for use as for example a tv room. This room can unfortunately not receive daylight, as the aforementioned 'keekoek' is not allowed at the front facade. The remaining space near the stairs can be used as storage of washing room.

The layout of the ground floor will be relatively unchanged, apart from the toilet moving towards the front facade in order to make room for the stairs to the basement. Although the layout is as current, the construction of the basement entails the demolition and reconstruction of the entire ground floor, including the kitchen. The glass wall in the rear facade can remain in place.

The wider section of the first floor can be turned into a master bedroom on the garden side with ensuite dressing room and bathroom. The narrow section of the house at the rear can serve as e.g. a spare bedroom or fitness room.

This variant is relatively expensive due to the extended basement, but also the extensive remodeling of the first floor. Please refer to cost estimations C and D for more details (two variants, with a small or deeper basement).

_Variant 3



The third variant consists of a basement deeper than the current outer walls of the house. The basement will be home to a new master bedroom that receives daylight via a patio, longitudinally positioned in the basement. This patio will also offer stairs to the garden. For images of this patio please refer to the chapter 'Reference projects'. A dressing room and bathroom will accompany the master bedroom. The extra surface of the basement results in the ability to create an extra room near the front for use as for example a tv room. This room can unfortunately not receive any direct daylight. The remaining space near the stairs can be used as storage of washing room.

The layout of the ground floor will be relatively unchanged, apart from the toilet moving towards the front facade in order to make room for the stairs to the basement. Although the layout is as current, the construction of the basement entails the demolition and reconstruction of the entire ground floor, including the kitchen. The glass wall in the rear facade can remain in place.

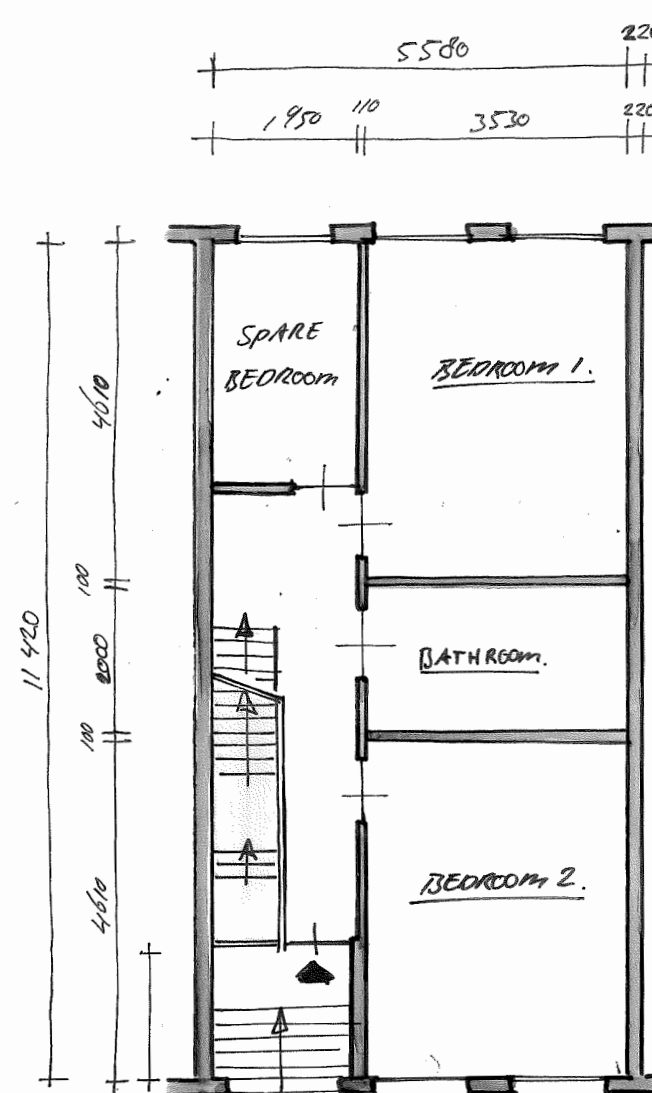
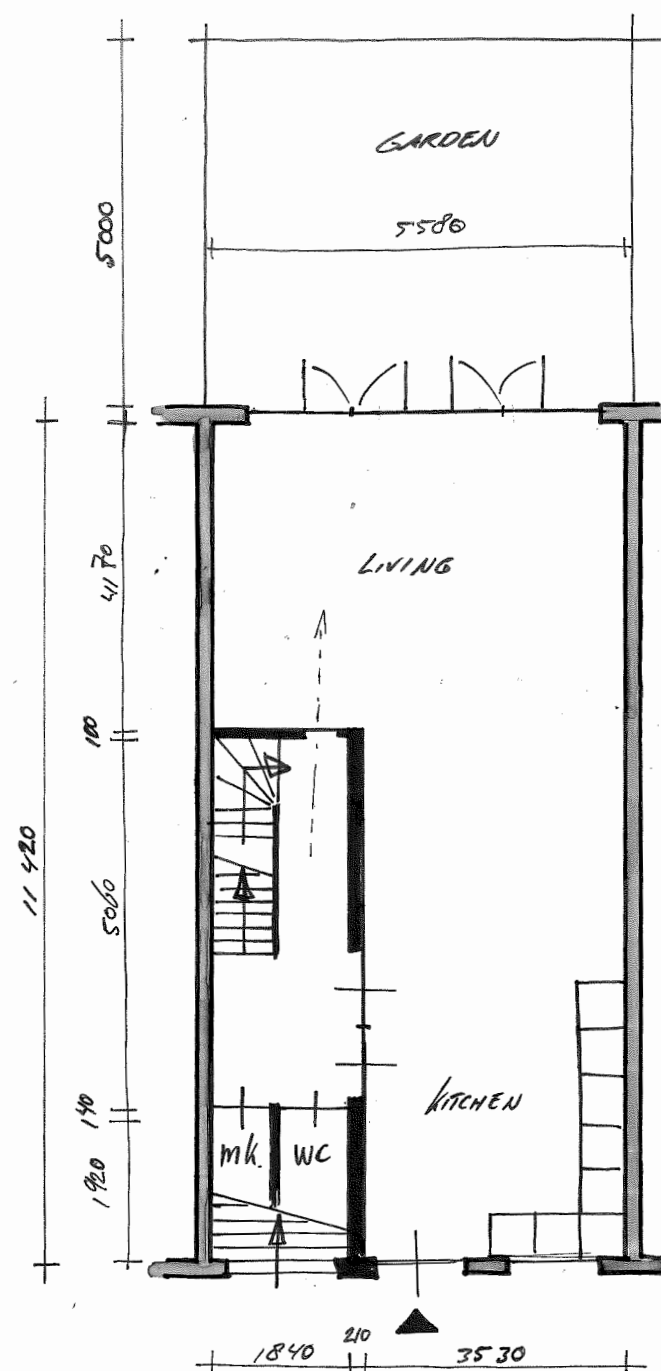
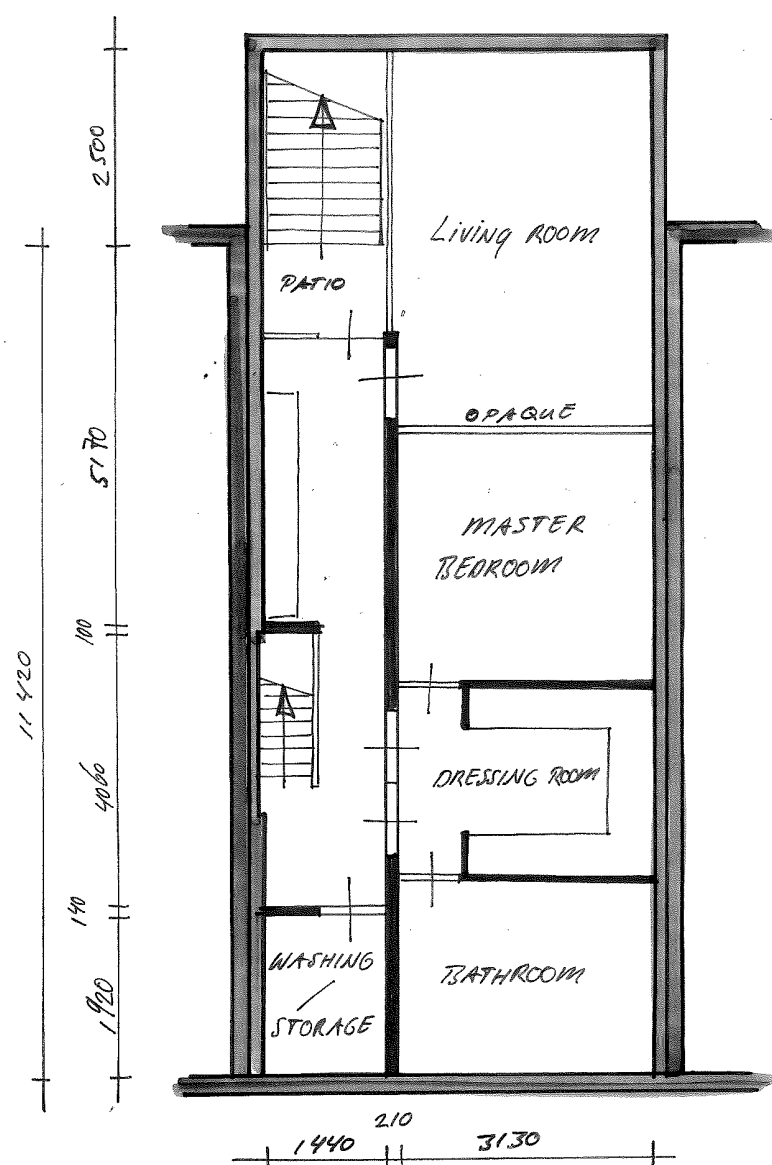
The layout of the first floor can be a traditional Amsterdam floor plan: Bedrooms near the facades and a bathroom separating them, accessible from the landing. The narrow section of the house at the rear can serve as e.g. a spare bedroom or fitness room.

_Estimated cost:

€ 703.961

Please refer to cost estimation option A for a detailed explanation.

Variant 4



The fourth variant consists of a basement deeper than the current outer walls of the house. This variant differs from variant 3 in the layout of the basement: Instead of the master bedroom along the patio this variant has a second living room in that place. The Master bedroom lies further back. This can result in the bedroom not receiving direct daylight, but this can be solved by having an opaque glass wall separating the second living room and the master bedroom. For images of this patio please refer to the chapter 'Reference projects'. A dressing room and bathroom will accompany the master bedroom. The remaining space near the stairs can be used as storage of washing room.

The layout of the ground floor will be relatively unchanged, apart from the toilet moving towards the front facade in order to make room for the stairs to the basement. Although the layout is as current, the construction of the basement entails the demolition and reconstruction of the entire ground floor, including the kitchen. The glass wall in the rear facade can remain in place.

The layout of the first floor can be a traditional Amsterdam floor plan: Bedrooms near the facades and a bathroom separating them, accessible from the landing. The narrow section of the house at the rear can serve as e.g. a spare bedroom or fitness room.

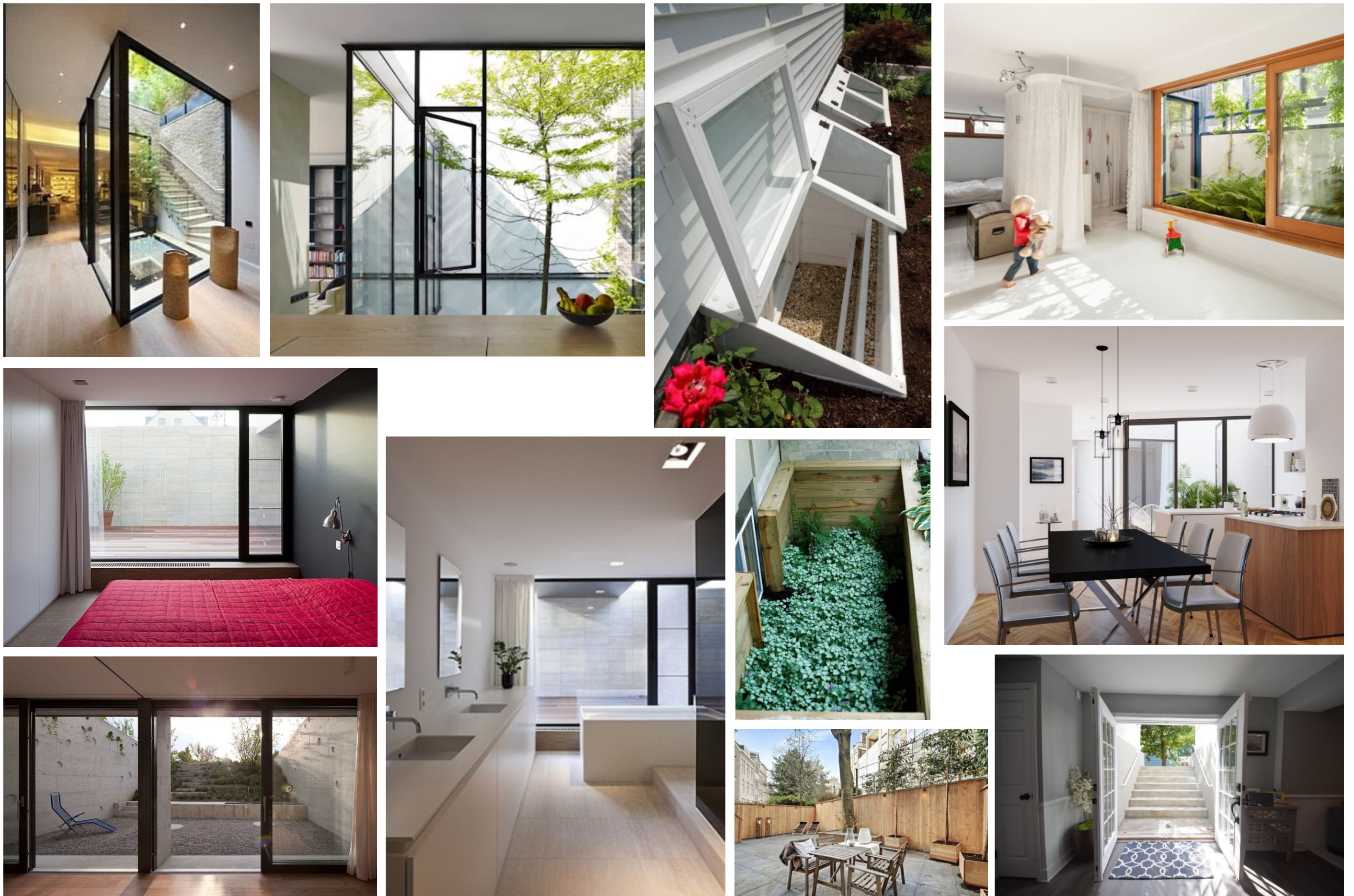
Estimated cost:

€ 703.961

Please refer to cost estimation option A for a detailed explanation.

Reference projects

A collage of references to the different uses of a basement patio



Referentiebeelden "patio in souterrain"

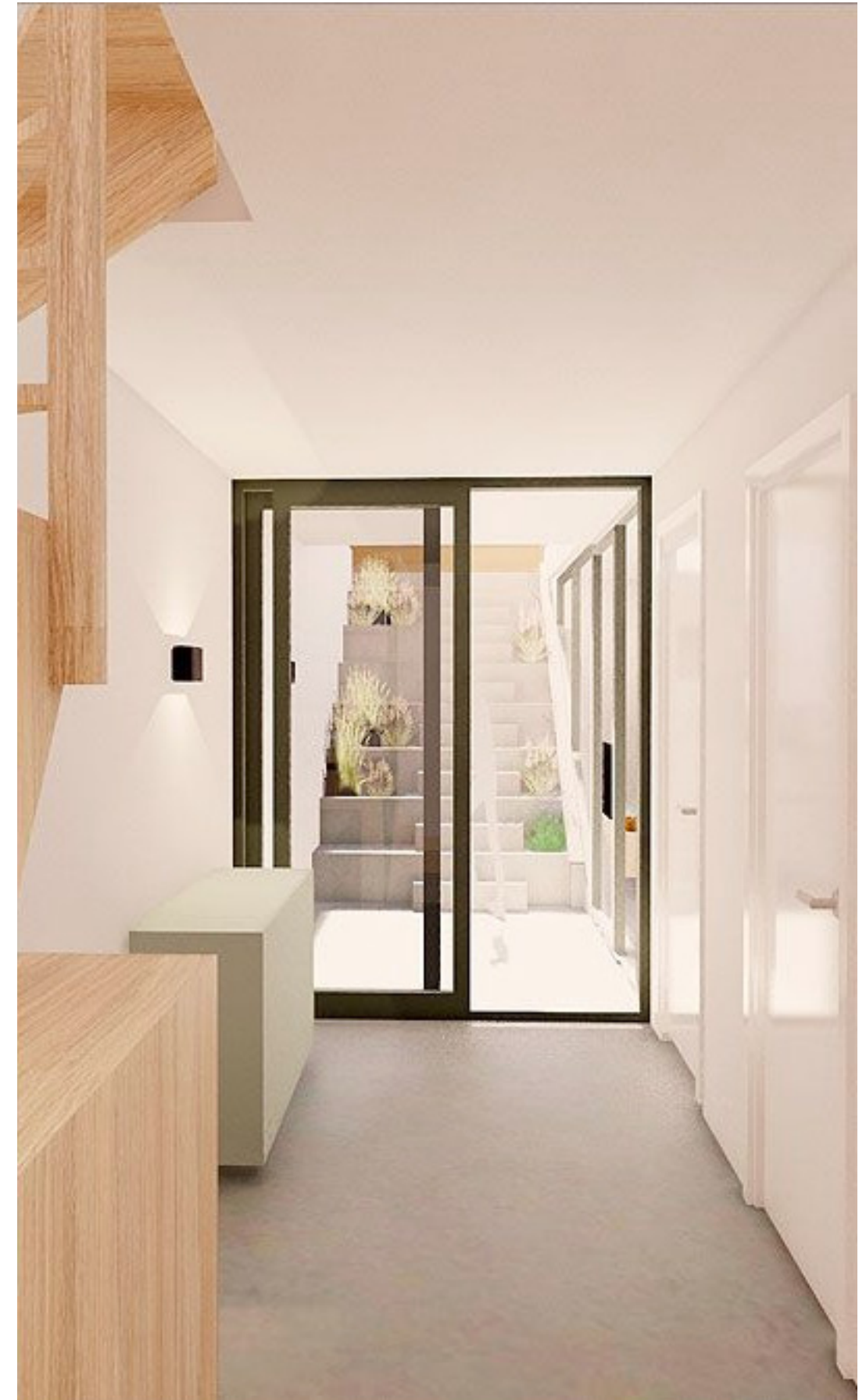
05 oktober 2018

Kamsma Bouwadvies B.V.

_ Longitudinal patio

The images on this page represent the possibilities for the basement spaces bordering a longitudinal patio. In variants 3 and 4 we have designed such a patio along the master bedroom or a second living room. The space above this room on ground floor level can of course be used as garden or terrace.

source: BNLA



Cost estimation

Cost estimations of the four variants of the floor plan with additional construction works.

Cost estimation A

Design variant 3 & 4

Vondelkerkstraat 14 Design option A					
element	unit	quantity	price per unit	Total ex. VAT	
Structural work					
demolition work (including existing ground floor)	st.	1	8000	€	8.000,00
basement construction under existing building	m2	64	3750	€	240.000,00
extra basement construction in the garden	m2	12,5	2500	€	31.250,00
new floor construction (ground floor) including floorheating and finishing	m2	64	400	€	25.600,00
Total structural work				€	304.850,00
interior construction and finishes					
interior construction and finishes basement under existing building	m2	55	1500	€	82.500,00
interior construction and finishes basement in the garden	m2	10	1500	€	15.000,00
interior construction and finishes groundfloor	m2	64	400	€	25.600,00
1st floor: refresh painting and floor finishes	m2	42	200	€	8.400,00
new staircase to basement	st.	1	4000	€	4.000,00
total interior construction and finishes				€	135.500,00
contractors general costs, profit and risk	%	12%	€	440.350,00	€ 52.842,00
unforeseen expenses	%	4%	€	440.350,00	€ 17.614,00
total construction costs				€	510.806,00

Additional costs					
new Kitchen	st	0		PM	
new bathroom (1st floor)	st	0		PM	
new toilet (groundfloor)	st	1	€	6.000,00	€ 6.000,00
built-in furniture	st	0		PM	
home decor	st	0		PM	
garden adjustments	m2	30	€	100,00	€ 3.000,00
total additional costs				€	9.000,00
Advisors (climate, constructor, ...), architect	%	10%	€	519.806,00	€ 51.980,60
estimation permits fees (municipality)			€	304.850,00	€ 10.000,00
Investment costs ex. VAT				€	581.786,60
Investment costs incl. VAT (21%)				€	703.961,79

Cost estimation B

Design variant 1

Vondelkerkstraat 14 Design option B					
element	unit	quantity	price per unit	Total ex. VAT	
Structural work					
demolition work (including existing ground floor)	st.	1	8000	€	8.000,00
basement construction under existing building	m2	64	3750	€	240.000,00
	m2	0	2500	€	-
new floor construction (ground floor) including floorheating and finishing	m2	64	400	€	25.600,00
Total structural work				€	273.600,00
interior construction and finishes					
interior construction and finishes basement under existing building	m2	55	1500	€	82.500,00
	m2	0	1500	€	-
interior construction and finishes groundfloor	m2	64	400	€	25.600,00
1st floor: refresh painting and floor finishes	m2	42	200	€	8.400,00
new staircase to basement	st.	1	4000	€	4.000,00
total interior construction and finishes				€	120.500,00
contractors general costs, profit and risk	%	12%	€	394.100,00	€ 47.292,00
unforeseen expenses	%	4%	€	394.100,00	€ 15.764,00
total construction costs				€	457.156,00
Additional costs					
new Kitchen	st	0		PM	
new bathroom (1st floor)	st	0		PM	
new toilet (groundfloor)	st	1	€	6.000,00	€ 6.000,00
built-in furniture	st	0		PM	
home decor	st	0		PM	
garden adjustments	m2	0	€	100,00	€ -
total additional costs				€	6.000,00
Advisors (climate, constructor, ...), architect	%	10%	€	463.156,00	€ 46.315,60
estimation permits fees (municipality)			€	273.600,00	€ 8.000,00
Investment costs ex. VAT				€	517.471,60
Investment costs incl. VAT (21%)				€	626.140,64

Cost estimation C

Design variant 2

Vondelkerkstraat 14 Design option A					
element	unit	quantity	price per unit	Total ex. VAT	
Structural work					
demolition work (including existing ground floor)	st.	1	8000	€	8.000,00
basement construction under existing building	m2	64	3750	€	240.000,00
extra basement construction in the garden	m2	12,5	2500	€	31.250,00
new floor construction (ground floor) including floorheating and finishing	m2	64	400	€	25.600,00
Total structural work				€	304.850,00
interior construction and finishes					
interior construction and finishes basement under existing building	m2	55	1500	€	82.500,00
interior construction and finishes basement in the garden	m2	10	1500	€	15.000,00
interior construction and finishes groundfloor	m2	64	400	€	25.600,00
1st floor: refresh painting and floor finishes	m2	42	200	€	8.400,00
new staircase to basement	st.	1	4000	€	4.000,00
total interior construction and finishes				€	135.500,00
contractors general costs, profit and risk	%	12%	€	440.350,00	€ 52.842,00
unforeseen expenses	%	4%	€	440.350,00	€ 17.614,00
total construction costs				€	510.806,00
Additional costs					
new Kitchen	st	0		PM	
new bathroom (1st floor)	st	0		PM	
new toilet (groundfloor)	st	1	€	6.000,00	€ 6.000,00
built-in furniture	st	0		PM	
home decor	st	0		PM	
garden adjustments	m2	30	€	100,00	€ 3.000,00
total additional costs				€	9.000,00
Advisors (climate, constructor, ...), architect	%	10%	€	519.806,00	€ 51.980,60
estimation permits fees (municipality)			€	304.850,00	€ 10.000,00
Investment costs ex. VAT				€	581.786,60
Investment costs incl. VAT (21%)				€	703.961,79

Cost estimation D

Design variant 2

Vondelkerkstraat 14 Design option A					
element	unit	quantity	price per unit	Total ex. VAT	
Structural work					
demolition work (including existing ground floor)	st.	1	8000	€	8.000,00
basement construction under existing building	m2	64	3750	€	240.000,00
extra basement construction in the garden	m2	12,5	2500	€	31.250,00
new floor construction (ground floor) including floorheating and finishing	m2	64	400	€	25.600,00
Total structural work				€	304.850,00
interior construction and finishes					
interior construction and finishes basement under existing building	m2	55	1500	€	82.500,00
interior construction and finishes basement in the garden	m2	10	1500	€	15.000,00
interior construction and finishes groundfloor	m2	64	400	€	25.600,00
1st floor: refresh painting and floor finishes	m2	42	200	€	8.400,00
new staircase to basement	st.	1	4000	€	4.000,00
total interior construction and finishes				€	135.500,00
contractors general costs, profit and risk	%	12%	€	440.350,00	€ 52.842,00
unforeseen expenses	%	4%	€	440.350,00	€ 17.614,00
total construction costs				€	510.806,00
Additional costs					
new Kitchen	st	0		PM	
new bathroom (1st floor)	st	0		PM	
new toilet (groundfloor)	st	1	€	6.000,00	€ 6.000,00
built-in furniture	st	0		PM	
home decor	st	0		PM	
garden adjustments	m2	30	€	100,00	€ 3.000,00
total additional costs				€	9.000,00
Advisors (climate, constructor, ...), architect	%	10%	€	519.806,00	€ 51.980,60
estimation permits fees (municipality)			€	304.850,00	€ 10.000,00
Investment costs ex. VAT				€	581.786,60
Investment costs incl. VAT (21%)				€	703.961,79

Conclusion

We have researched the possibilities for building a basement beneath the bottom floor of Vondelkerkstraat 14 in several directions. In conclusion we can say:

The building code does not rule out construction of a basement of archaeological value is not harmed. Application for planning permission must include such research and will determine whether construction is allowed.

Construction of a basement is technically possible, although slightly more difficult than usual due to the previous foundation improvements that took place in 1992. A construction engineer has devised a method of circumventing this.

Several spatial layouts are possible if the basement spaces are added to the surface area of the house. Living room and kitchen will stay at ground floor, with bedrooms on upper and lower levels. Extra space can be created for an additional living room, tv room or other functions.

Reference projects prove that a basement extended beyond the rear facade of the house can have a high quality, both as garden space or living space.

Cost estimation depends on the spatial layout and the size of the basement.

In short we can conclude that there are good possibilities for building a basement beneath Vondelkerkstraat 14.

If the matter is pursued further following steps would include a design proposal, construction calculations and report and making of an archaeological report in order to apply for planning permission.

ing. Michael Croese

ir. Sandra Merlijn

ir. Steven Bekkers

Kamsma Bouwadvies 2018