

Bethlehem City

Development Strategies – On Going Projects.

NOVEMBER 2019



**Ajuntament
de Barcelona**

Urban Projects Department
Global Justice amb International Cooperation Direction
Barcelona Municipality



Planning and Development Department
Public Relations Department
Bethlehem Municipality

- 
- 
- 1. Bethlehem general overview**
 2. Rehabilitation of Beit Sahour Road

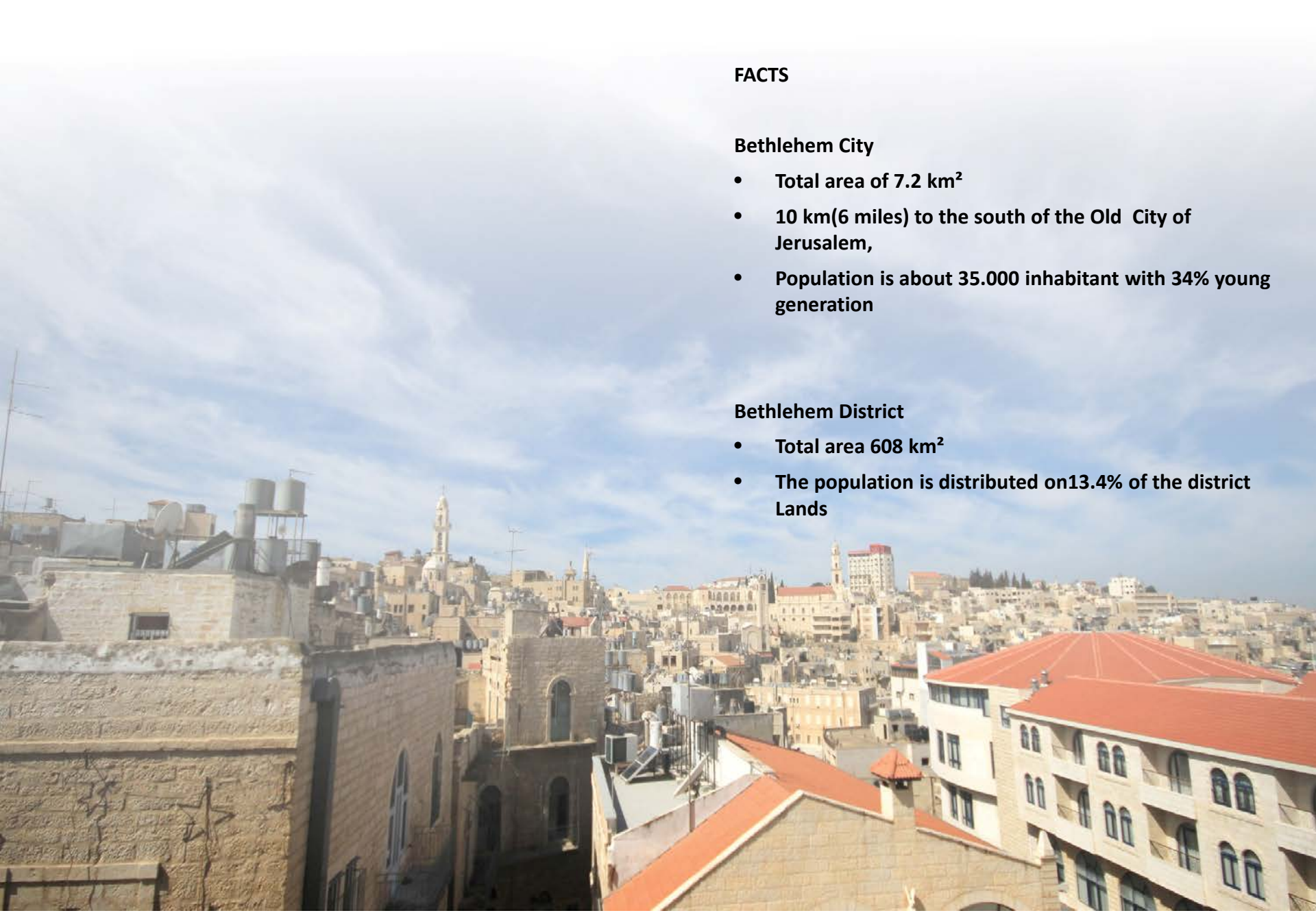


Barcelona

Bethlehem



- **The Centre city of South West Bank Between Hebron and Jerusalem.**
- **750 m above sea level.**
- **1918 – 1948 under the British Mandate.**
- **Bethlehem under the resolution 181 in 1947 of The United Nations was in a Corpus separatum managed by international Administration.**
- **1949 – 1967 under the Kingdom of Jordan Rules.**
- **1967 – 1995 under the Israeli Occupation.**
- **1995 – till present State of Palestine.**



FACTS

Bethlehem City

- Total area of 7.2 km²
- 10 km(6 miles) to the south of the Old City of Jerusalem,
- Population is about 35.000 inhabitant with 34% young generation

Bethlehem District

- Total area 608 km²
- The population is distributed on 13.4% of the district Lands

Bethlehem Area.....World Heritage Site

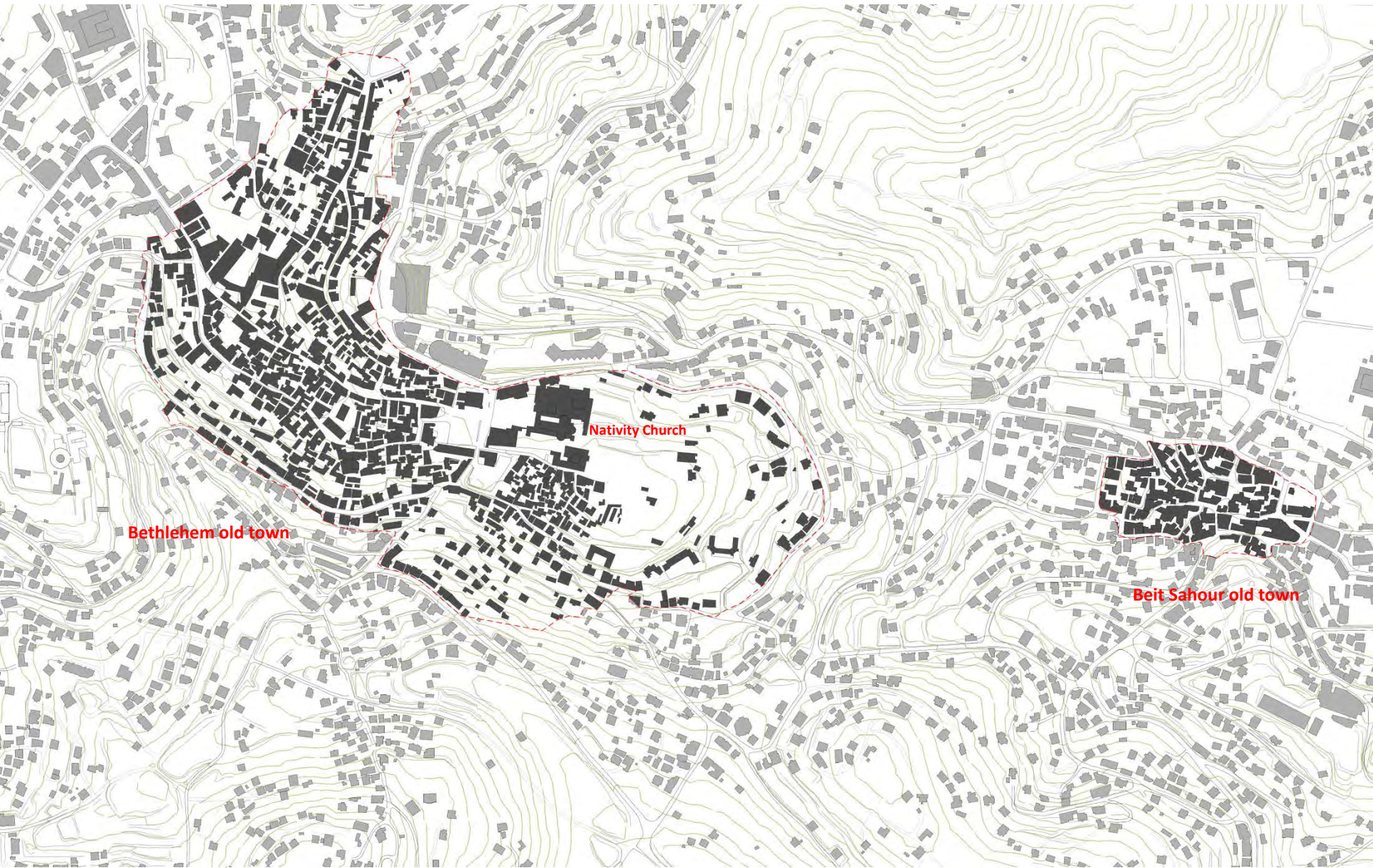


In June 2012 the Star street (pilgrimage route) and the Church of the Nativity were inscribed in the World Heritage Site list of the UNESCO.









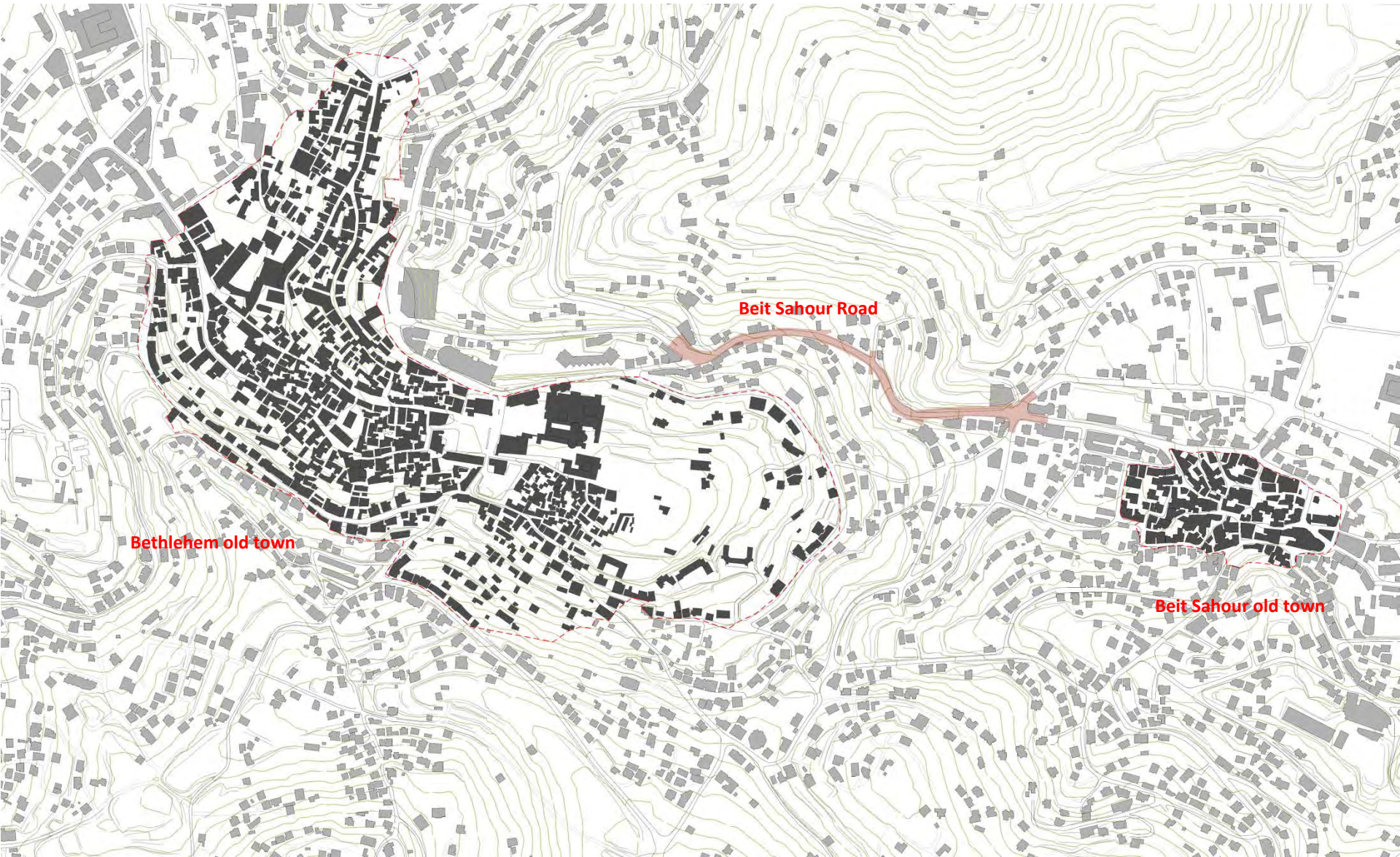
Bethlehem Area.....pictures old town



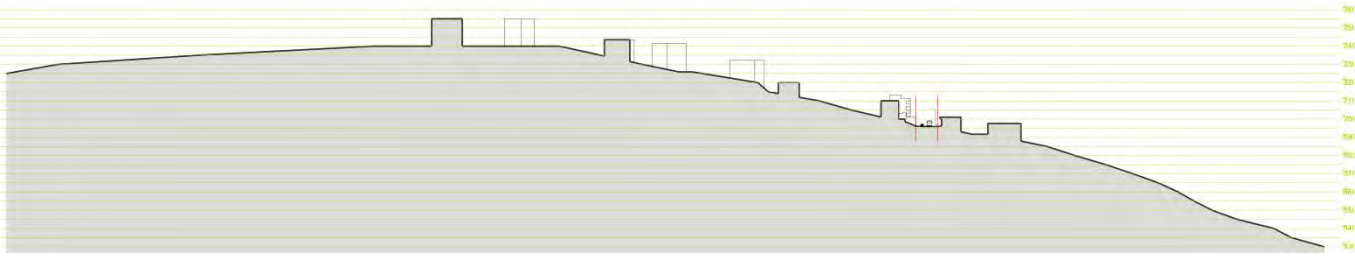
Beit Sahour Area.....pictures old town



- 
1. Bethlehem general overview
 2. Rehabilitation of Beit Sahour Road



Beit Sahour Road.....Cartography



CROSS SECTION



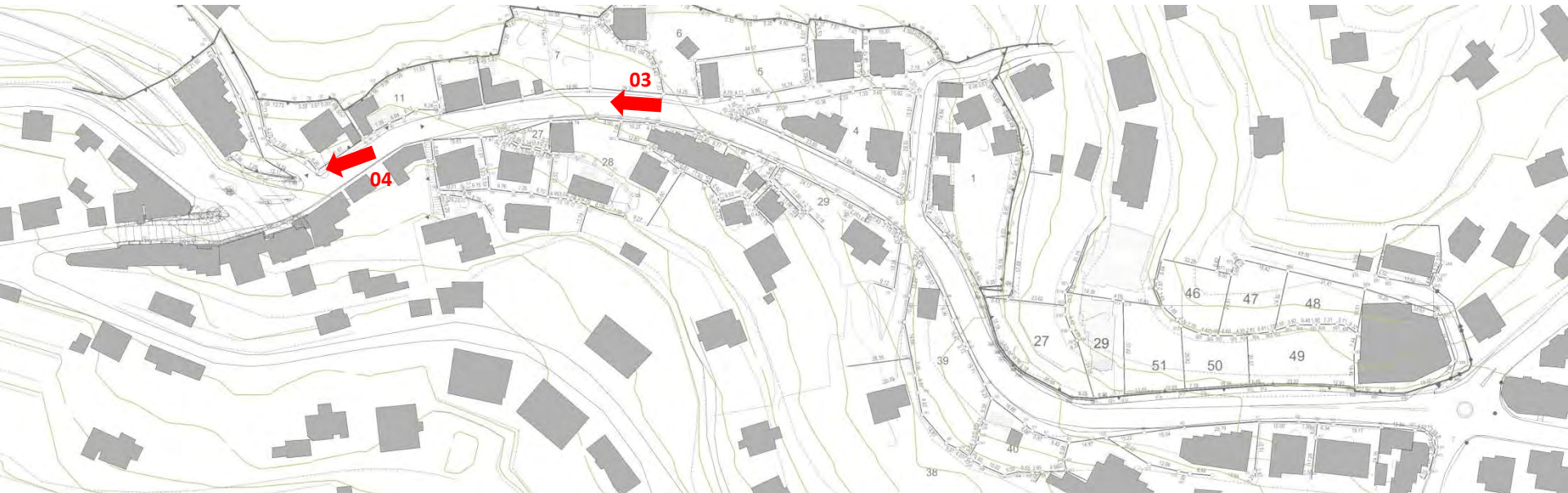
Beit Sahour Road.....Current status pictures



PICTURE 01 (Beit Sahour Ararat circle)

PICTURE 02

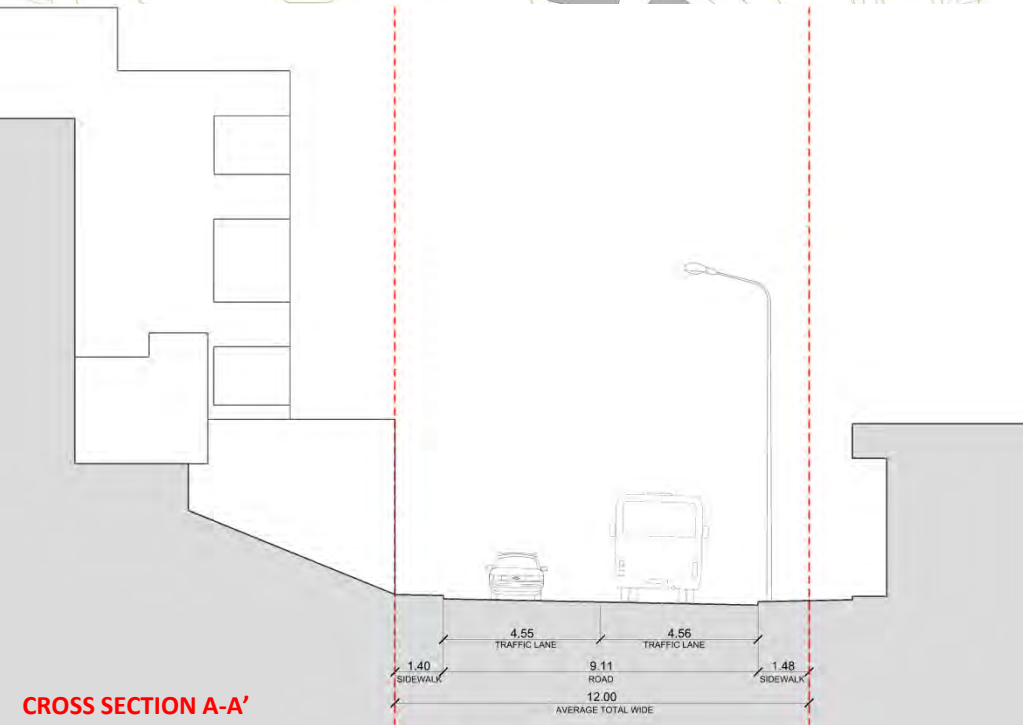
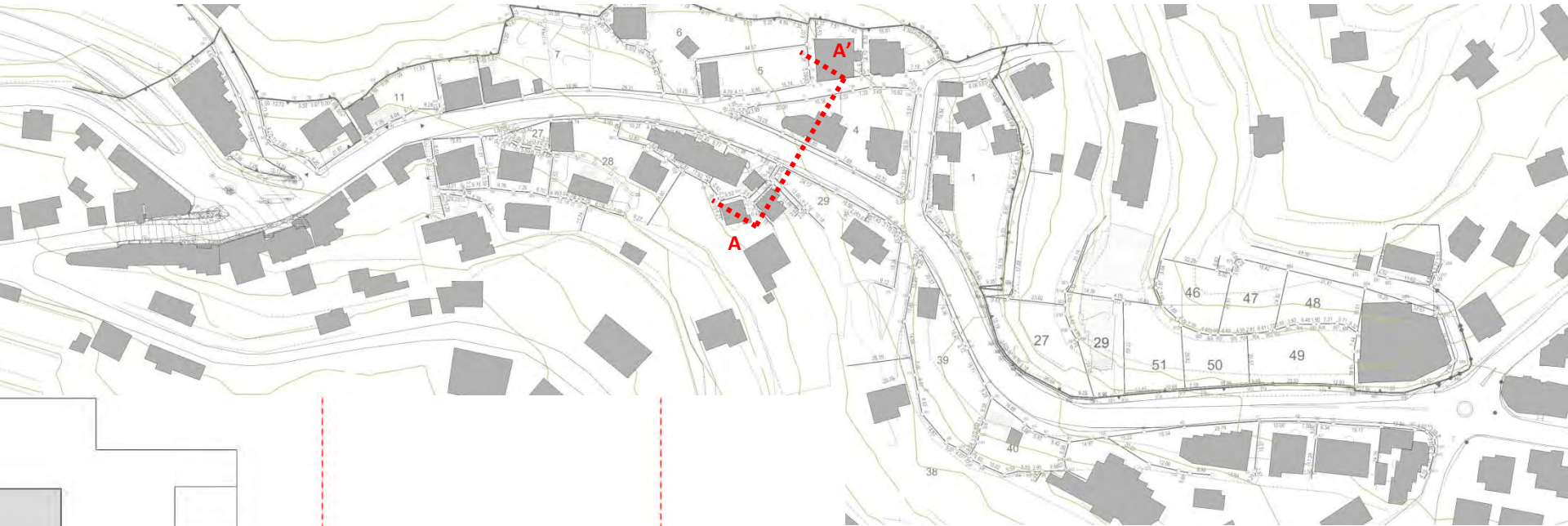
Beit Sahour Road.....Current status pictures



PICTURE 03

PICTURE 04 (Bethlehem Water Authority Junction)

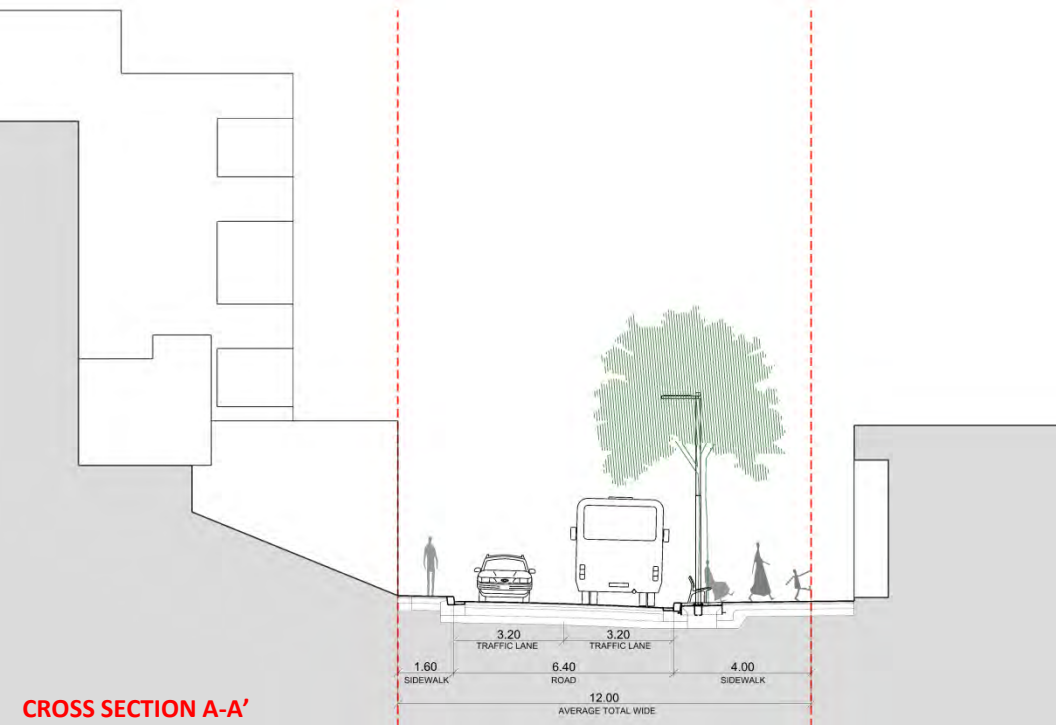
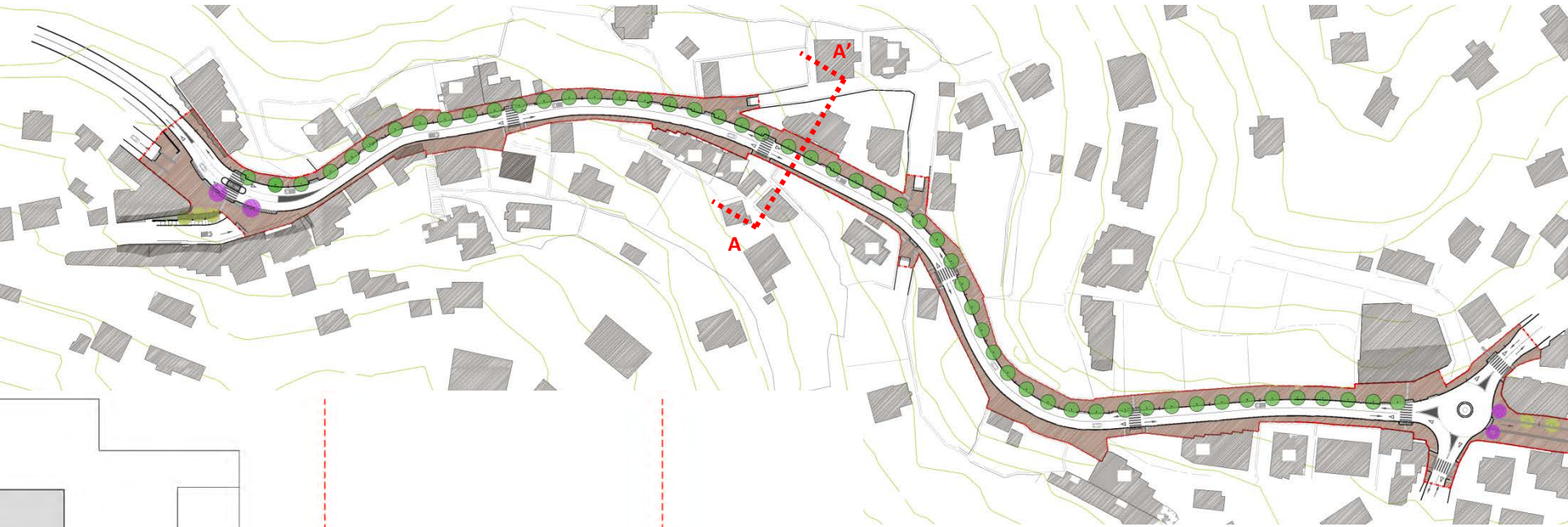
Beit Sahour Road.....Current Status



Main features to be improved

- Very narrow sidewalks
- Very old street lighting units (High pressure sodium units)
- No pedestrian crossing ramps
- No greening
- No safety measures
- Air electric cables
- Cars parked on the sidewalks
- No street furniture
- Very bad asphalt surface and overdimensioned road

Beit Sahour Road.....Proposal



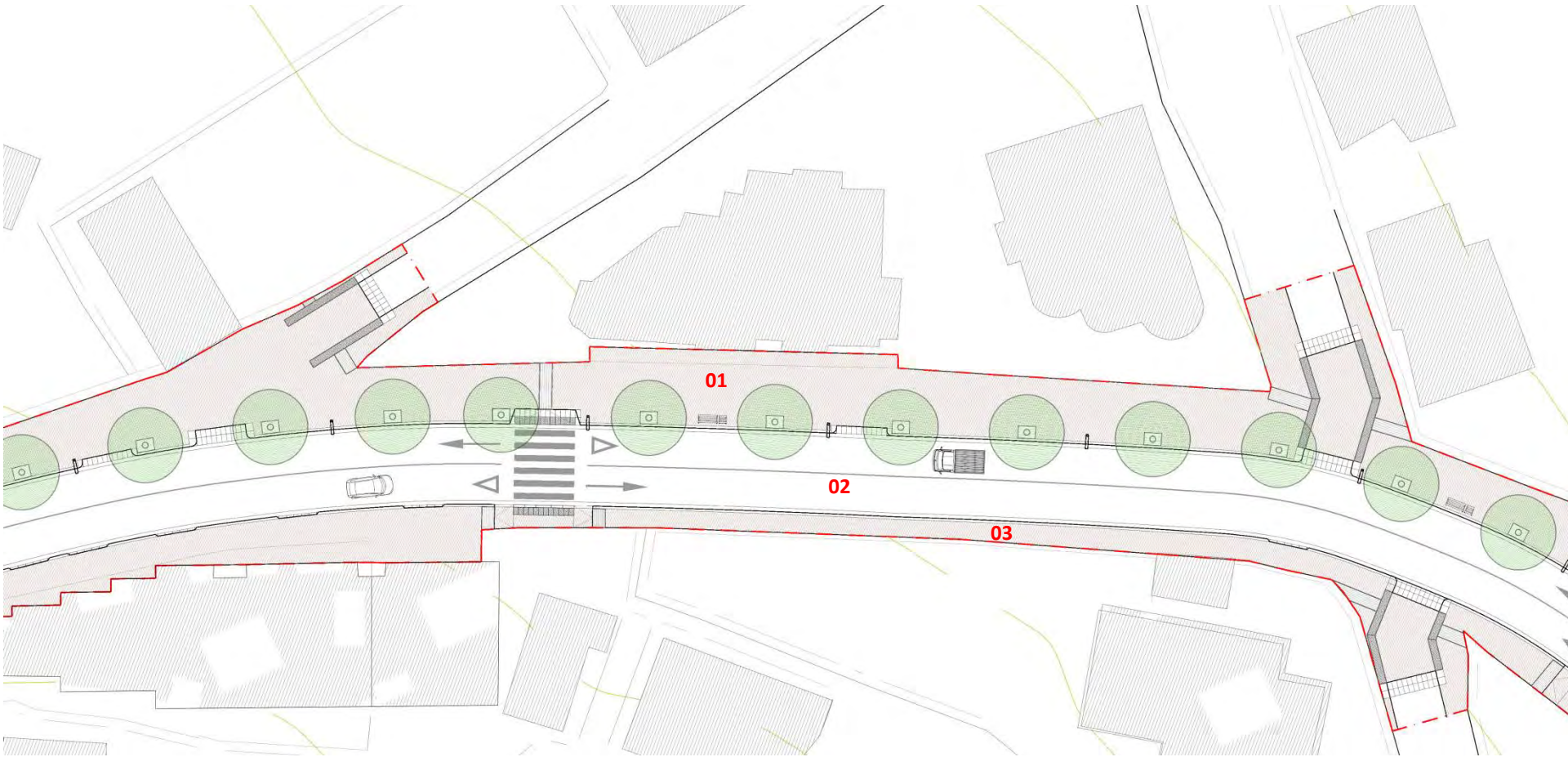
Main features of the proposal

- Assimetric layout with:
 - 1.6 m sidewalk
 - 6.4 m road
 - 4.0 m sidewalk
- 4.0 m sidewalk equipped with:
 - Trees
 - New lighting
 - Street furniture elements: benches, dustbins...
 - Special car access ramps
- 1.6 m sidewalk equipped with special car access ramps
- 6 pedestrian crossing points
- Underground utilities
- Adapted design to handicaped people

CROSS SECTION A-A'

Beit Sahour Road.....Current status zoom



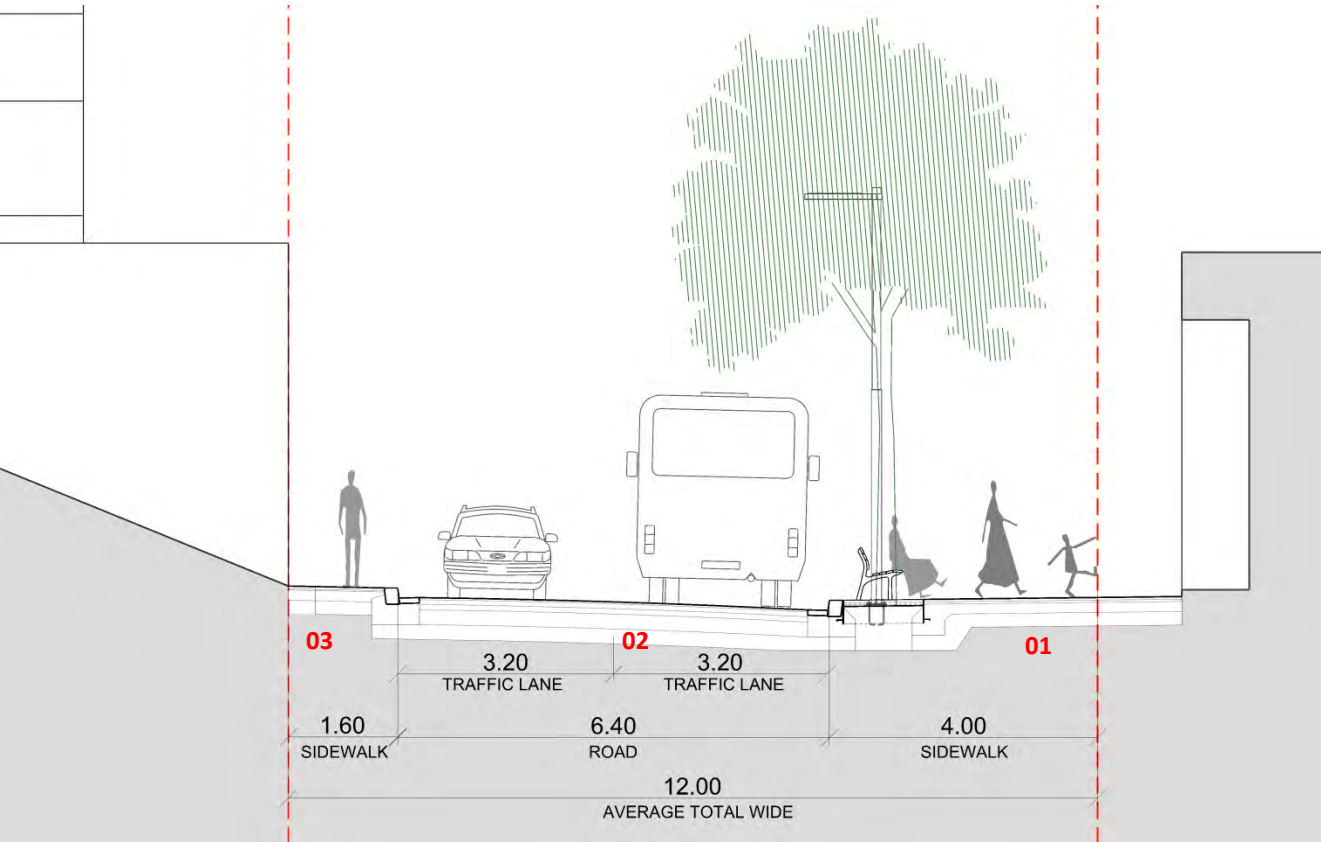


Main features of the proposal

- 1. 4.00 m sidewalk
- 2. 6.40 m two lanes road
- 3. 1.60 m sidewalk



Beit Sahour Road.....Proposal section zoom



Main features of the proposal

1. 4.00 m sidewalk
2. 6.40 m two lanes road
3. 1.60 m sidewalk

The 4.00 m sidewalk is projected this side of the street so that it provides good sights to the pedestrians and also shadow because it's south oriented.

It's equipped with trees, new lighting, outdoor furniture (benches, dustbins, etc) , special urban elements to handicaped people accessibility, and special cars access ramps.

CROSS SECTION ZOOM

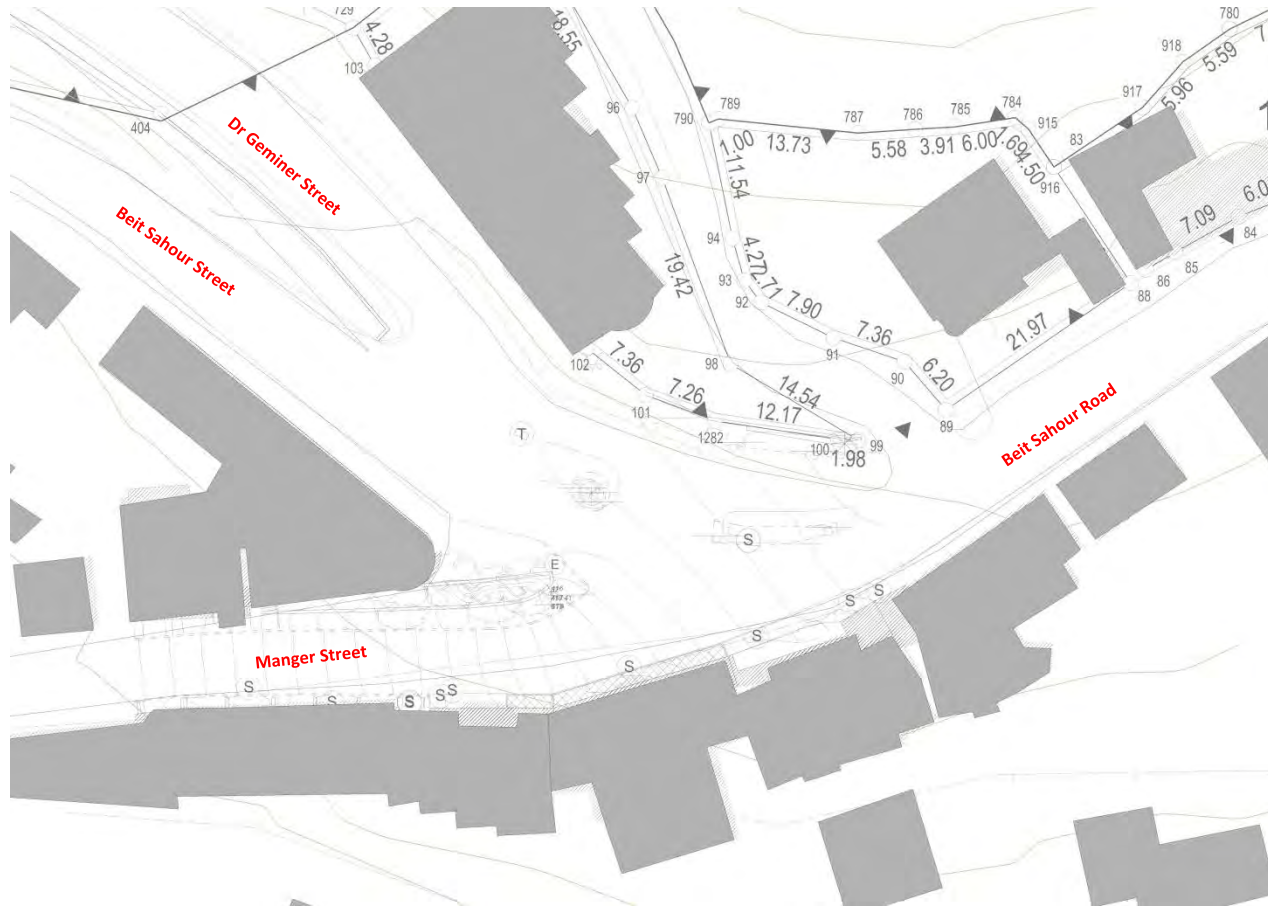


GOOD SIGHTS TO THE NORTH



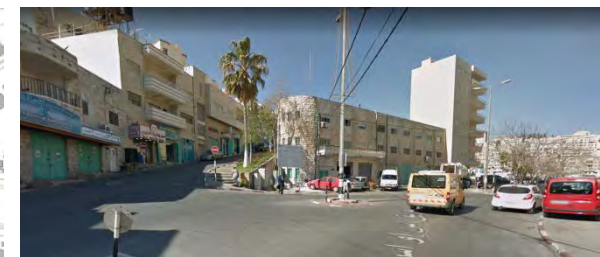
TREES PROVIDE SHADOW TO THE SOUTH ORIENTED SIDEWALK

Beit Sahour Road.....Current status Water Authority Junction

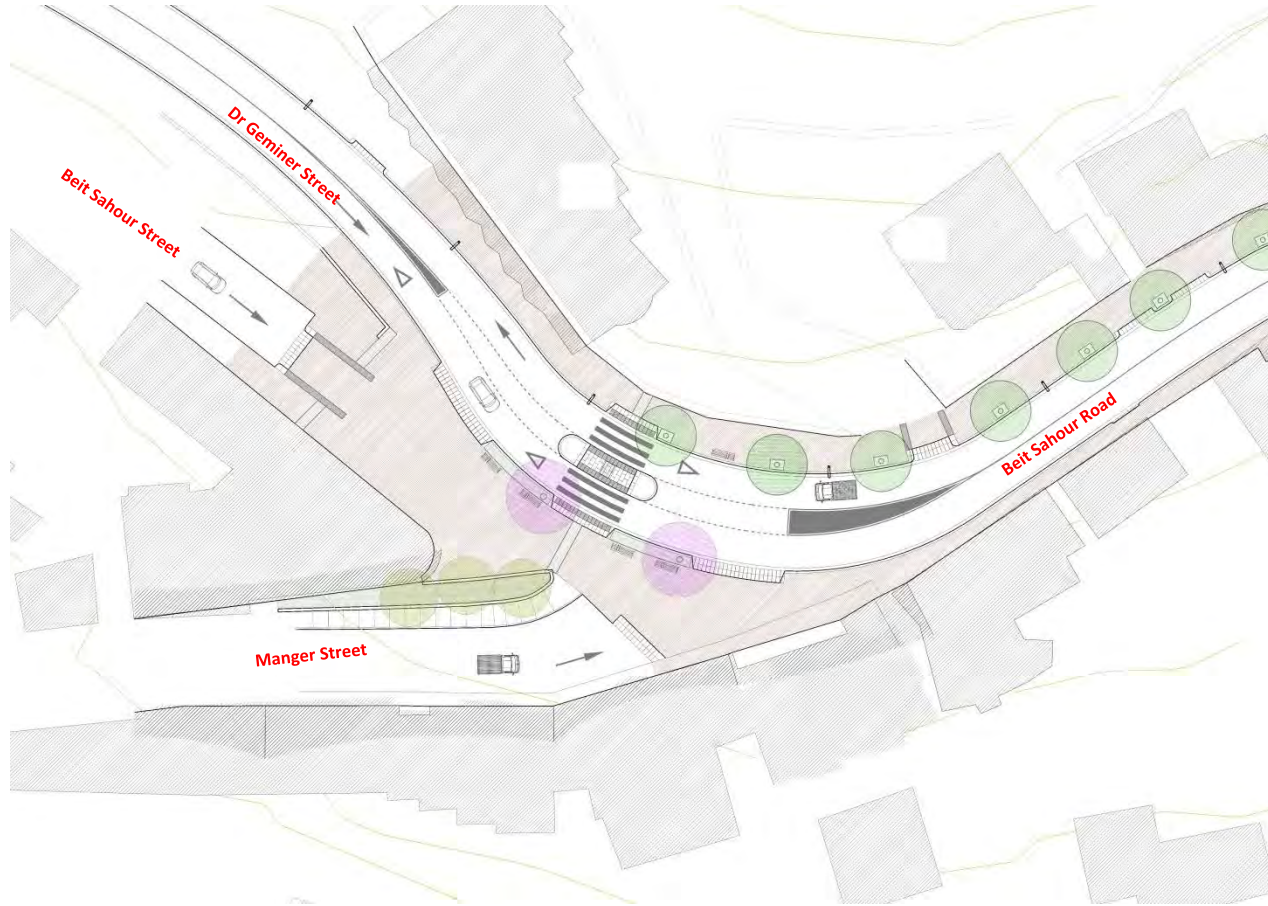


There's no jerarchy among the several streets meeting in this end point of the road.

So that there's no way to guess which streets lead to the ancient area.

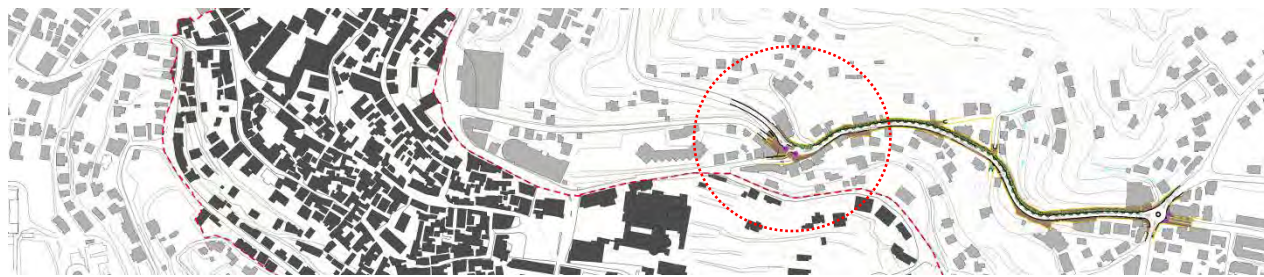


Beit Sahour Road.....Proposal Water Authority Junction

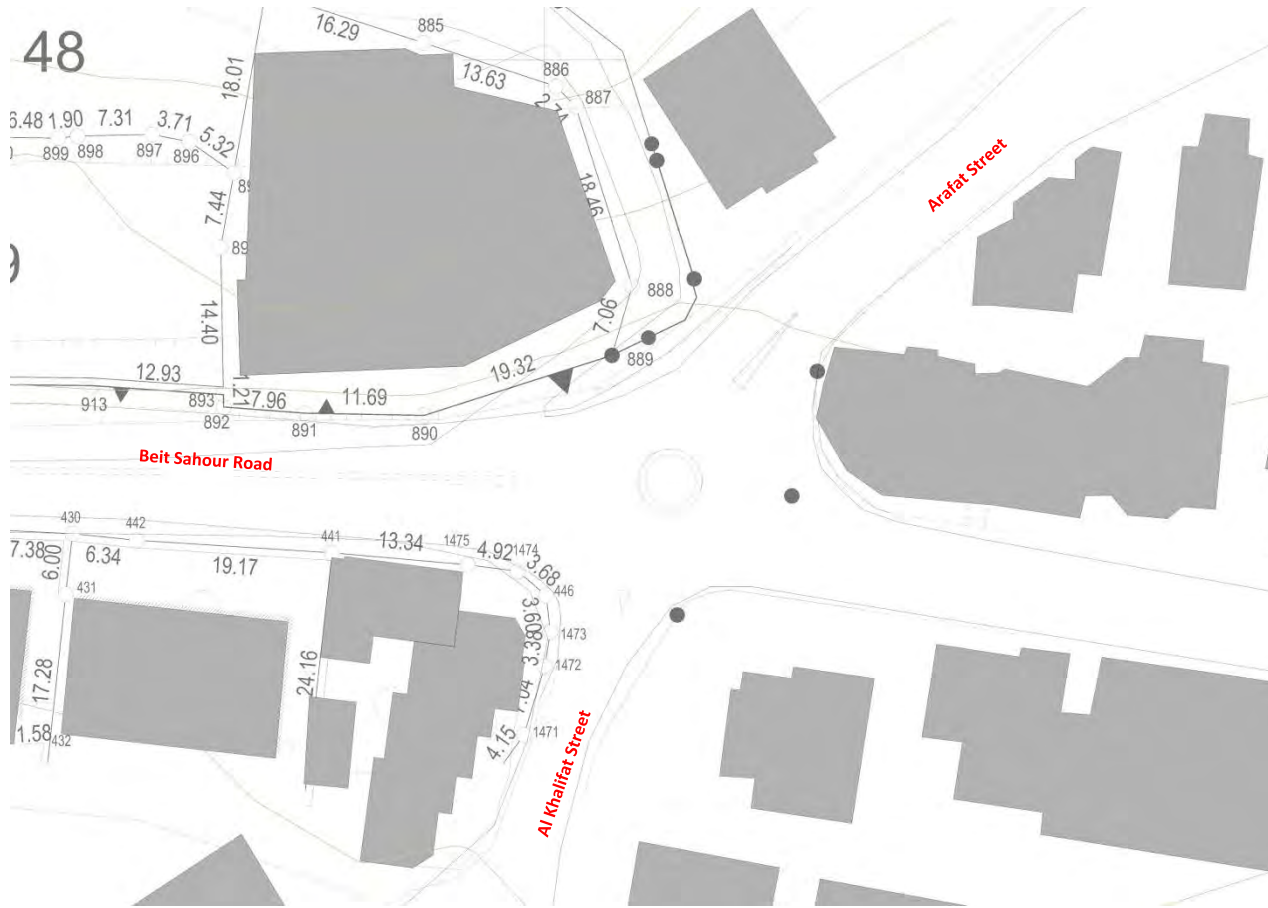


The proposal provides asphalt road continuity between Beit Sahour Road and Dr Geminer Street, whereas Manger Street and Beit Sahour Street have to cross the sidewalk to incorporate to the road.

That way, pedestrian can make out the streets leading to the ancient area, and in the specific case of Manger Street (leading to the Nativity church), that fact is emphasized with special trees.

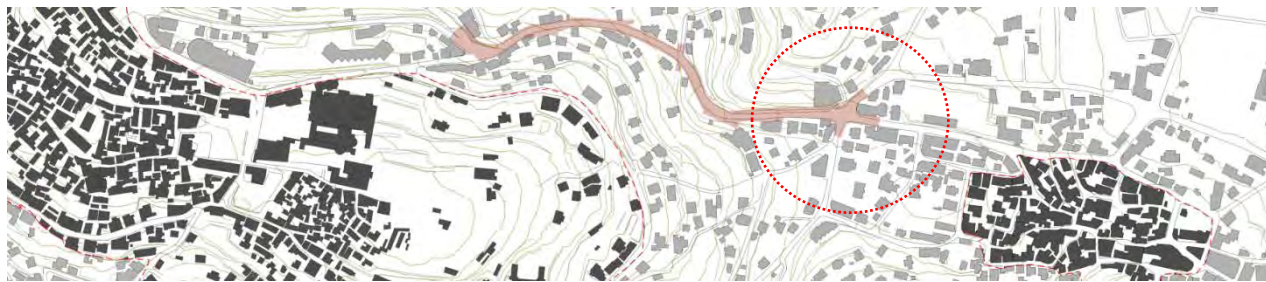


Beit Sahour Road.....Current status Ararat circle



There's no jerarchy among the several streets meeting in this end point of the road.

So that there's no way to guess which streets lead to the ancient area.



Beit Sahour Road.....Proposal Ararat Circle



The proposal provides asphalt road continuity between Beit Sahour Road, Arafat Street, and Al Khalifat Street, whereas the street leading to the ancient area of Beit Sahour has to cross the sidewalk to incorporate into the roundabout.

That way, pedestrians can make out the street leading to the ancient area; that fact is emphasized with special trees.

Bethlehem Bus Station..... Current status view



Bethlehem Bus Station..... Proposal view



Beit Sahour Road.....Barcelona Urban elements examples

Ajuntament de Barcelona elements urbans | URBANITZACIÓ

* requisiu de col·locació

* Els paviments que es mostren són un exemple de possibles solucions, excepte el PANOT que s'ha determinat les dimensions dels mòduls per còdex normatiu.

DIFFERENT KIND OF PAVEMENTS AND TILES INCLUDING TACTILE TILES

TIPUS DE PAVIMENTS

AUTOR: DEPARTAMENT D'ENGINYERIA I PRODUCCIÓ D'OBRES PÚBLIQUES

D1... paviment de panot de moxos complet de 20x20x2cm

D2... 4 pastilles de 5x5cm

D3... mosaic de panot en fide amb albatres artístic

D4... llosa de pedra

D5... pedres blanques 40x20cm / 40x30cm

D6... canel·les de fide

D7... canel·les de fide

D8... figures de fide blanques 30x30x2cm

D9... canel·les de fide

D10... canel·les de fide

D11... paviment de fide

STONE KERBS

GUAL VEHICLES 40/60

AUTOR: DEPARTAMENT D'ENGINYERIA I PRODUCCIÓ D'OBRES PÚBLIQUES

D1... paviment de panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D2... paviment de panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D3... paviment de panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D4... paviment de panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D5... paviment de panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

CAR ACCESS RAMPS IN WIDE SIDEWALKS

GUAL DEPRIMIT

AUTOR: DEPARTAMENT D'ENGINYERIA I PRODUCCIÓ D'OBRES PÚBLIQUES

D1... format per panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D2... format per panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D3... format per panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D4... format per panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

D5... format per panot de moxos complet de 20x20x2cm, amb les canes blanques i canel·les artístic, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm, amb un què de circulació de 50cm.

CAR ACCESS RAMPS IN NARROW SIDEWALKS

GUAL VIANANTS 100/120

AUTOR: FERRAN GARCIA LLIBRE
 PRODUCTOR: SORBUS MOBILITAT

1. pesse de granit de 40x120 (diferent / diferent) fabricat amb la cara superior fregada, col·locada entre asfals de fregada.
2. pesse de granit de 40x120cm amb les cares vistes fregades.
3. pesse de granit de 40x120cm amb les cares vistes fregades.
4. perfilada de 120mm al centre de la peça per a la col·locació de senyalització.
5. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
6. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
7. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
8. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
9. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
10. perfilada de 120mm per cobrir el buit amb un senyalitzador incorporat.
11. zona de treball rodent.

PEDESTRIAN CROSSING RAMPS

ESCOCELL BRICO QUADRAT

AUTOR: ANTONI GARCIA LLIBRE
 PRODUCTOR: SORBUS MOBILITAT

1. escocell de base de 50x50cm amb superfície interior rugosa per a la fixació del fregat.
2. base de fregat.
3. capa de granit fregada per anclament amb fregat col·locat a una zona rodent.
4. capa de granit fregat.
5. zona de treball rodent.

TREE SURROUNDS

FANAL RAMA

AUTOR: FERRAN GARCIA LLIBRE
 PRODUCTOR: SORBUS MOBILITAT

1. columna fabricada de acer pintat blanc galvanitzat en calent, amb acabat en pintura blanca i alumini (sense referència del fabricant).
2. columna fabricada de acer pintat blanc galvanitzat en calent, amb acabat en pintura blanca i alumini (sense referència del fabricant).
3. columna fabricada de acer pintat blanc galvanitzat en calent, amb acabat en pintura blanca i alumini (sense referència del fabricant).

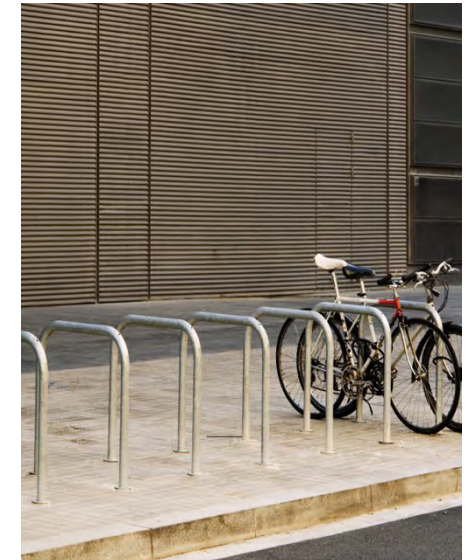
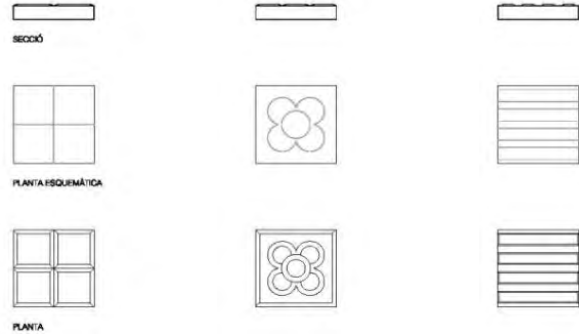
LIGHTING

NEOROMÀNTIC POTA LIVIANA

AUTOR: ANTONI GARCIA LLIBRE
 PRODUCTOR: SORBUS MOBILITAT

BENCHES

Beit Sahour RoadPavements, tree-surrounds, pedestrian crossing, outdoor elements



Beit Sahour Road.....Outdoor furniture and lighting



Beit Sahour Road.....Trees also provide color, life and calm



TIPUANA. Tp.



Tipuana tipu



XICRANDA. JACARANDA. Xr.



Jacaranda mimosifolia



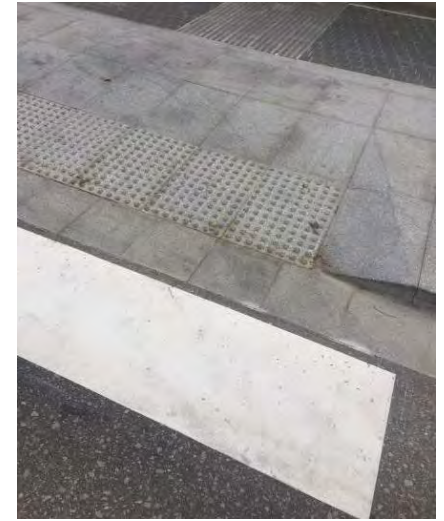
PONCIANA. Po



Caesalpinia pulcherrima



Beit Sahour Road.....Barcelona implementation examples

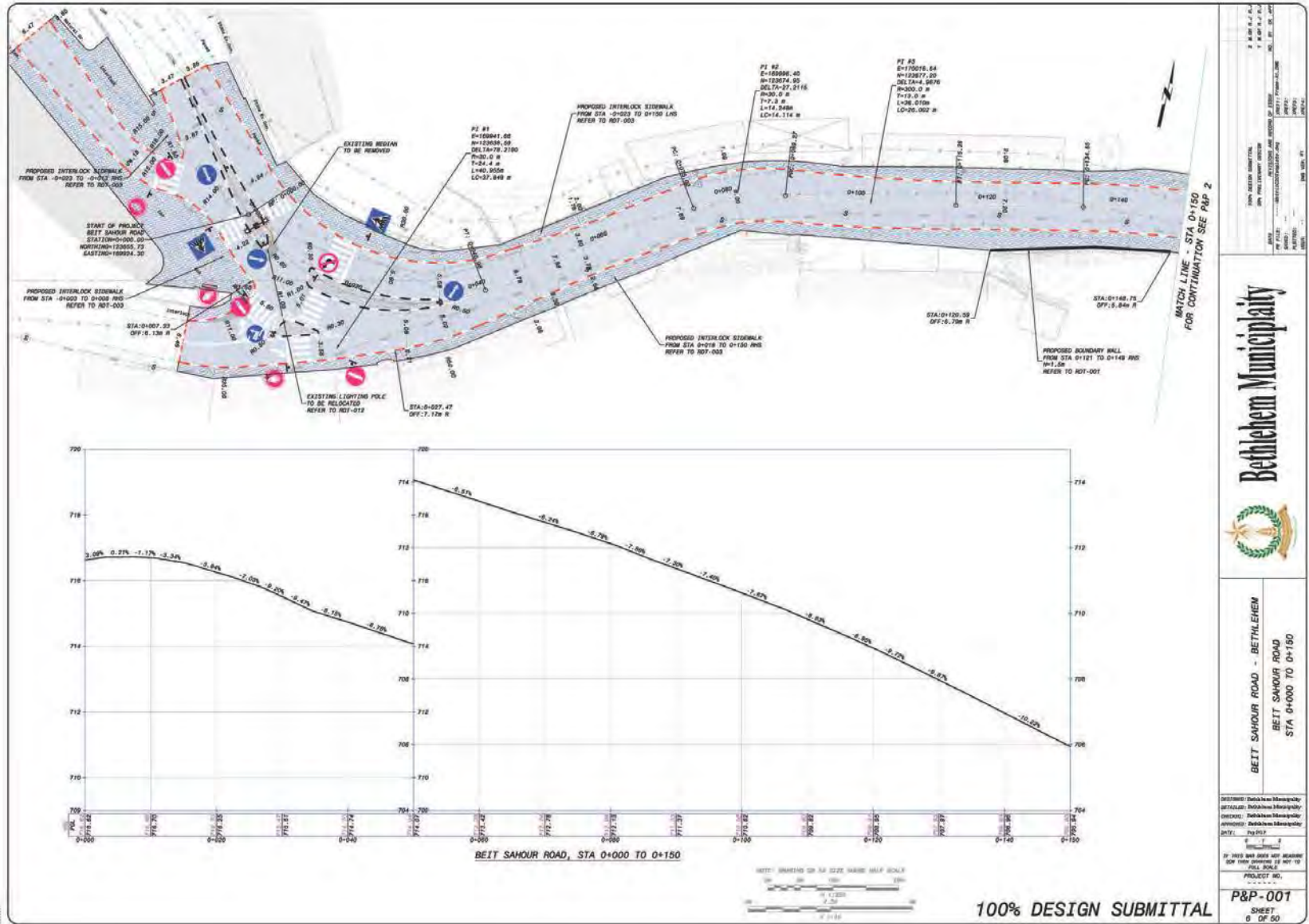


Beit Sahour Road.....Barcelona implementation examples

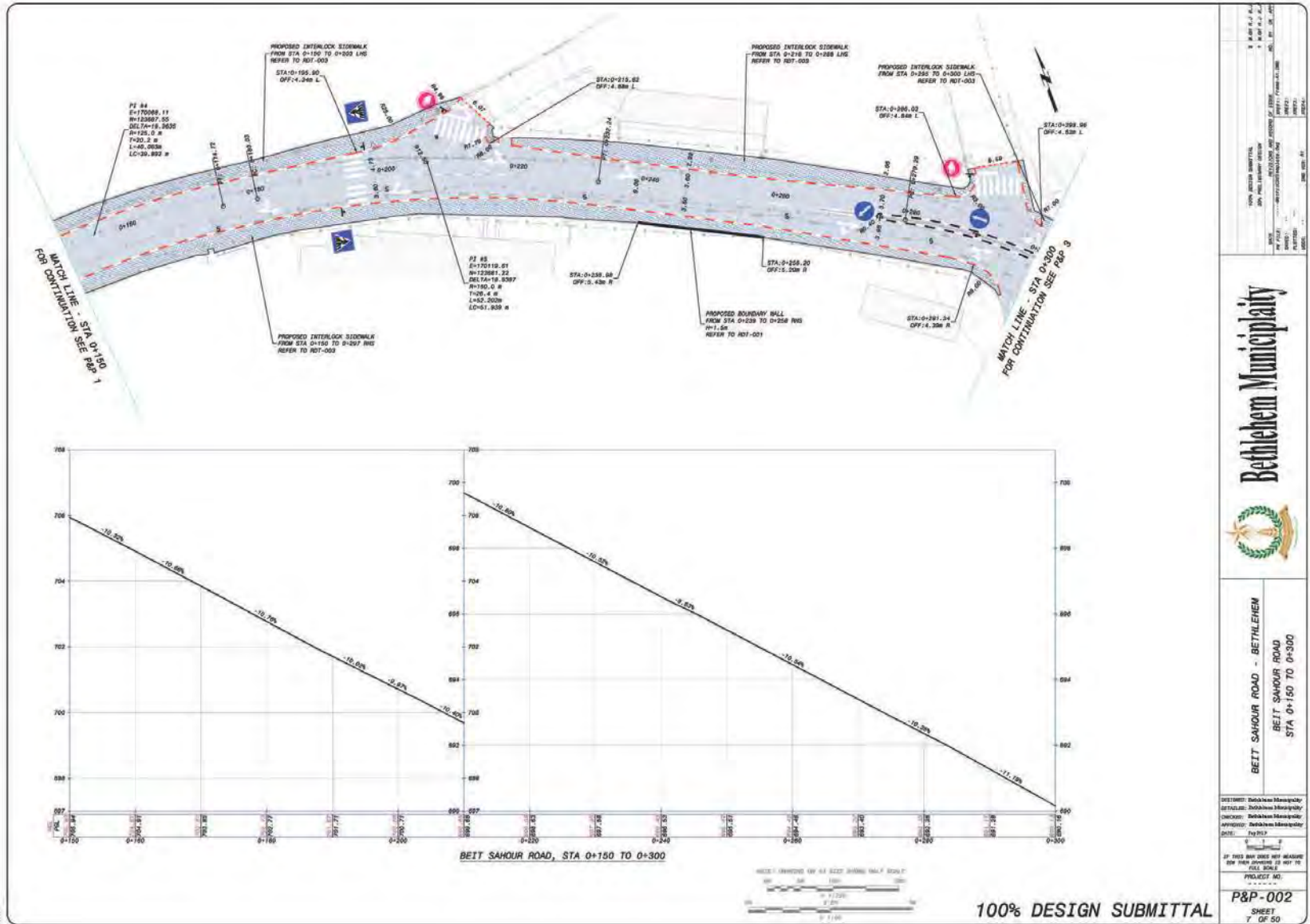


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1. Bethlehem general overview
 2. Rehabilitation of Beit Sahour Road (**october 2019**)

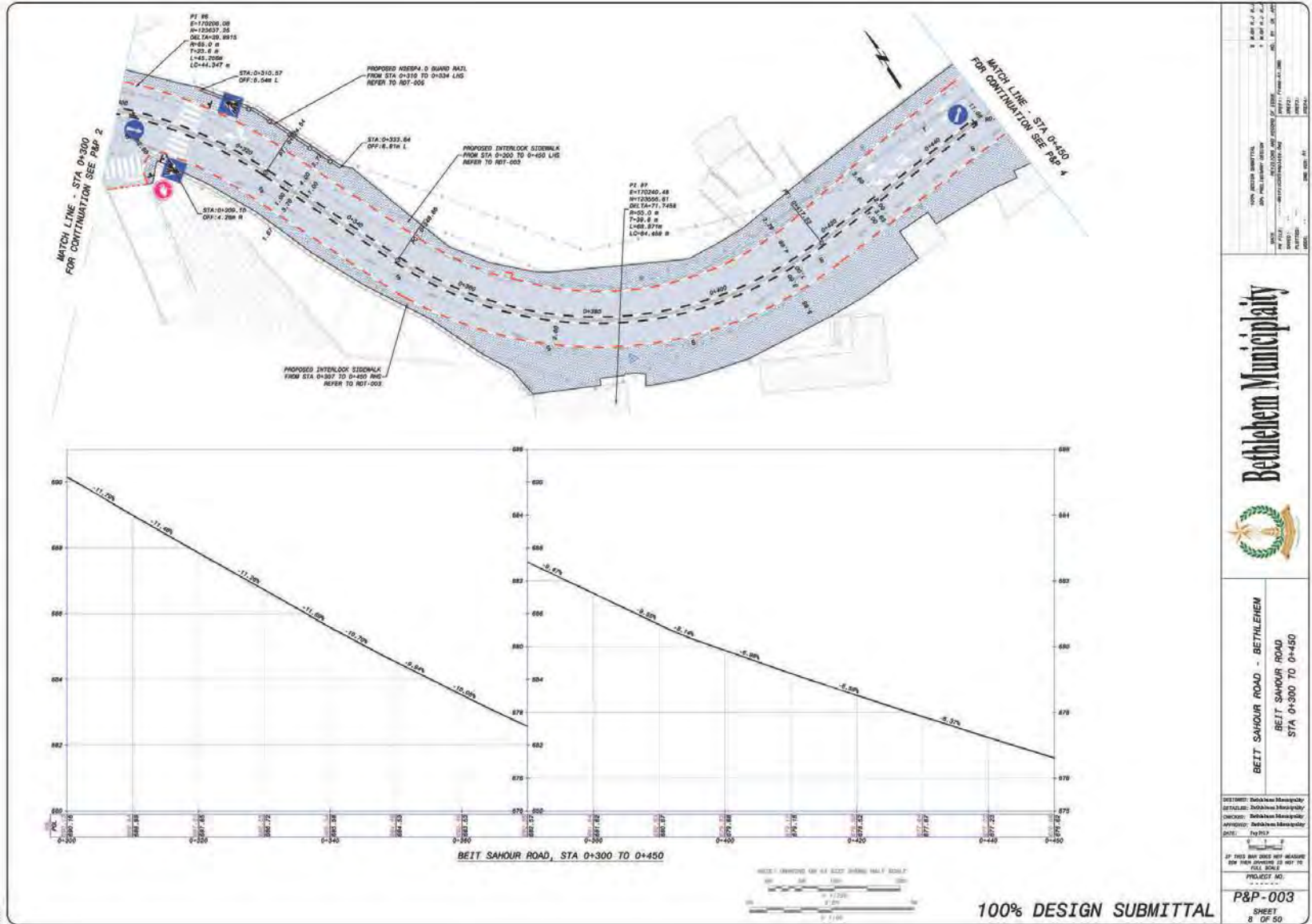
Beit Sahour Road.....Bethlehem Municipality drawings



Beit Sahour Road.....Bethlehem Municipality drawings



Beit Sahour Road.....Bethlehem Municipality drawings



DATE	10/10/2019	BY	...
SCALE	1:1000	CHECKED	...
PROJECT NO.	...	APPROVED	...
SHEET NO.	8	DATE	10/10/2019

Bethlehem Municipality

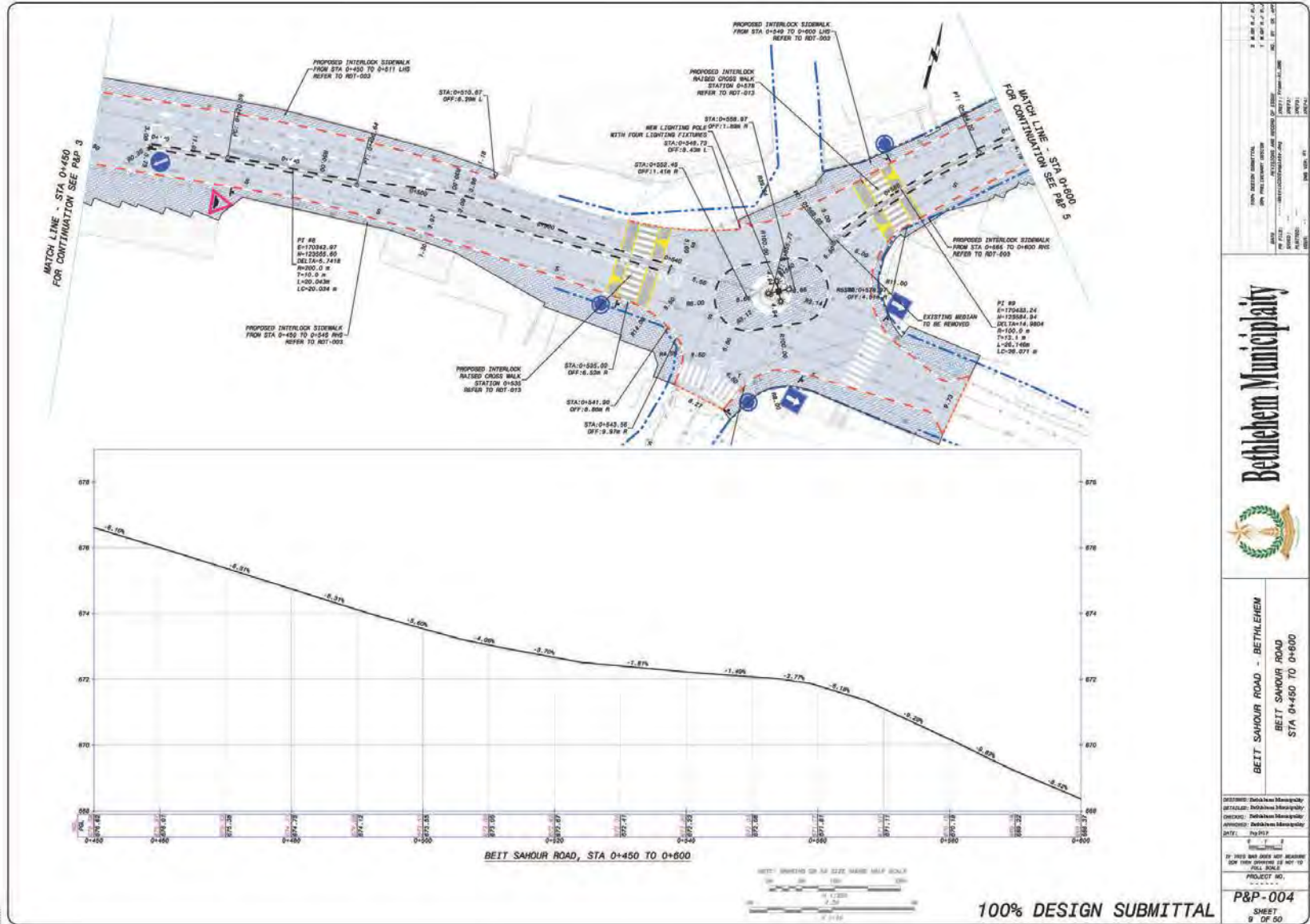


BEIT SAHOUR ROAD - BETHLEHEM
 BEIT SAHOUR ROAD
 STA 0+300 TO 0+450

DESIGNED: Bethlehem Municipality
 DETAILING: Bethlehem Municipality
 CHECKED: Bethlehem Municipality
 APPROVED: Bethlehem Municipality
 DATE: 10/10/2019

PROJECT NO.: ...
 SHEET 8 OF 50

Beit Sahour Road.....Bethlehem Municipality drawings



BETHLEHEM
 MUNICIPALITY
 BEIT SAHOUR ROAD
 STA 0+450 TO 0+600

DESIGNED: Bethlehem Municipality
 ESTABLISHED: Bethlehem Municipality
 CHECKED: Bethlehem Municipality
 APPROVED: Bethlehem Municipality
 DATE: 01/01/2019

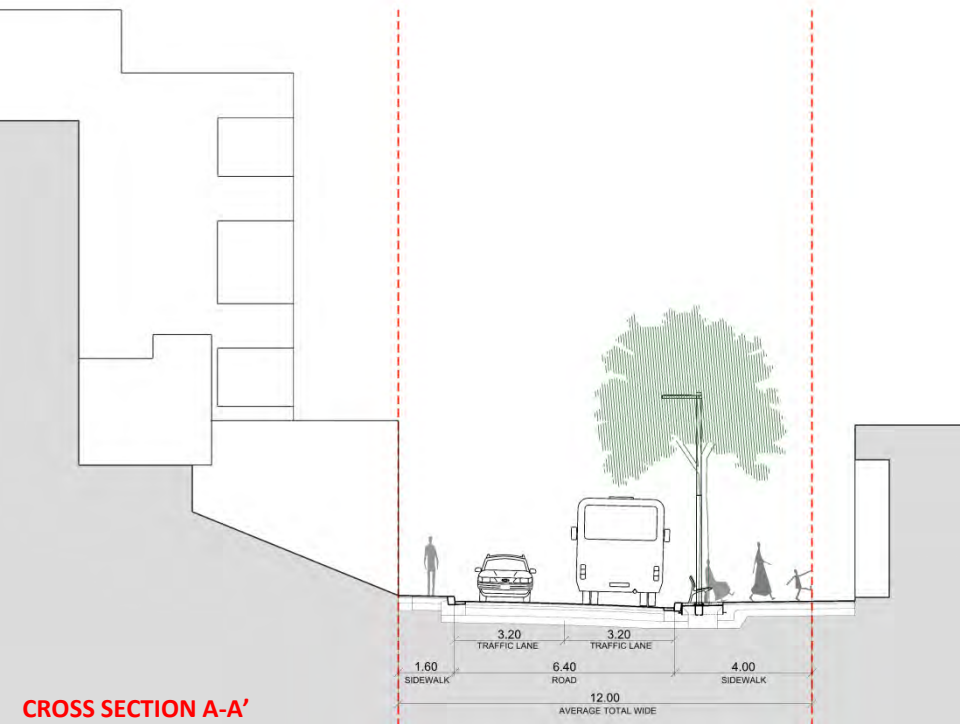
IF THIS SHEET AREA AND MEASUREMENTS
 DO NOT CORRESPOND TO THE TOTAL SHEET
 AREA, THE TOTAL SHEET AREA SHALL BE
 THE FINAL BASIS.

PROJECT NO. P&P-004
 SHEET 9 OF 50

Beit Sahour Road.....Overlap of both proposals



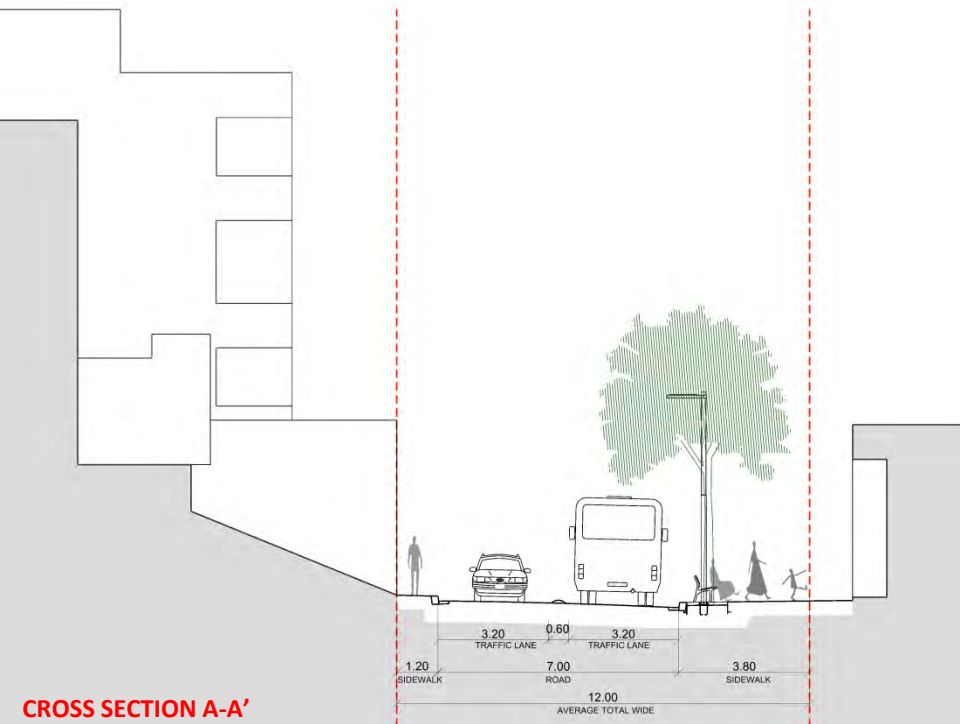
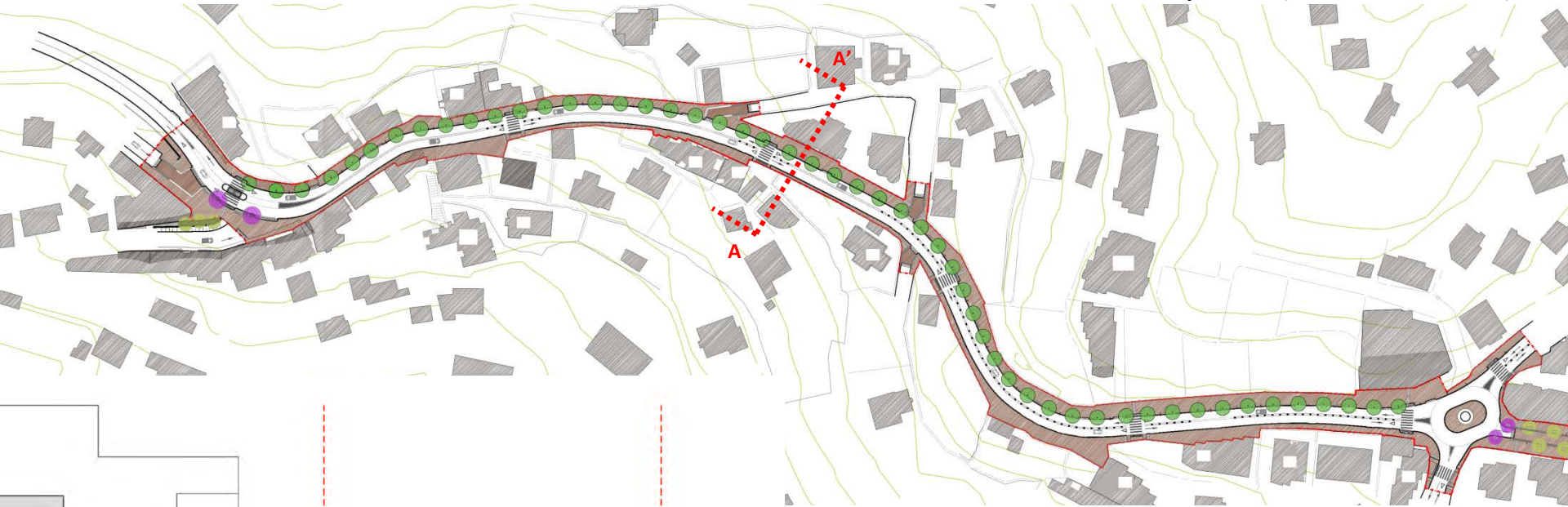
Beit Sahour Road.....Proposal (september 2019)



Main features of the proposal

- Assimetric layout with:
 - 1.6 m sidewalk
 - 6.4 m road
 - 4.0 m sidewalk
- 4.0 m sidewalk equipped with:
 - Trees
 - New lighting
 - Street furniture elements: benches, dustbins...
 - Special car access ramps
- 1.6 m sidewalk equipped with special car access ramps
- 6 pedestrian crossing points
- Underground utilities
- Adapted design to handicaped people

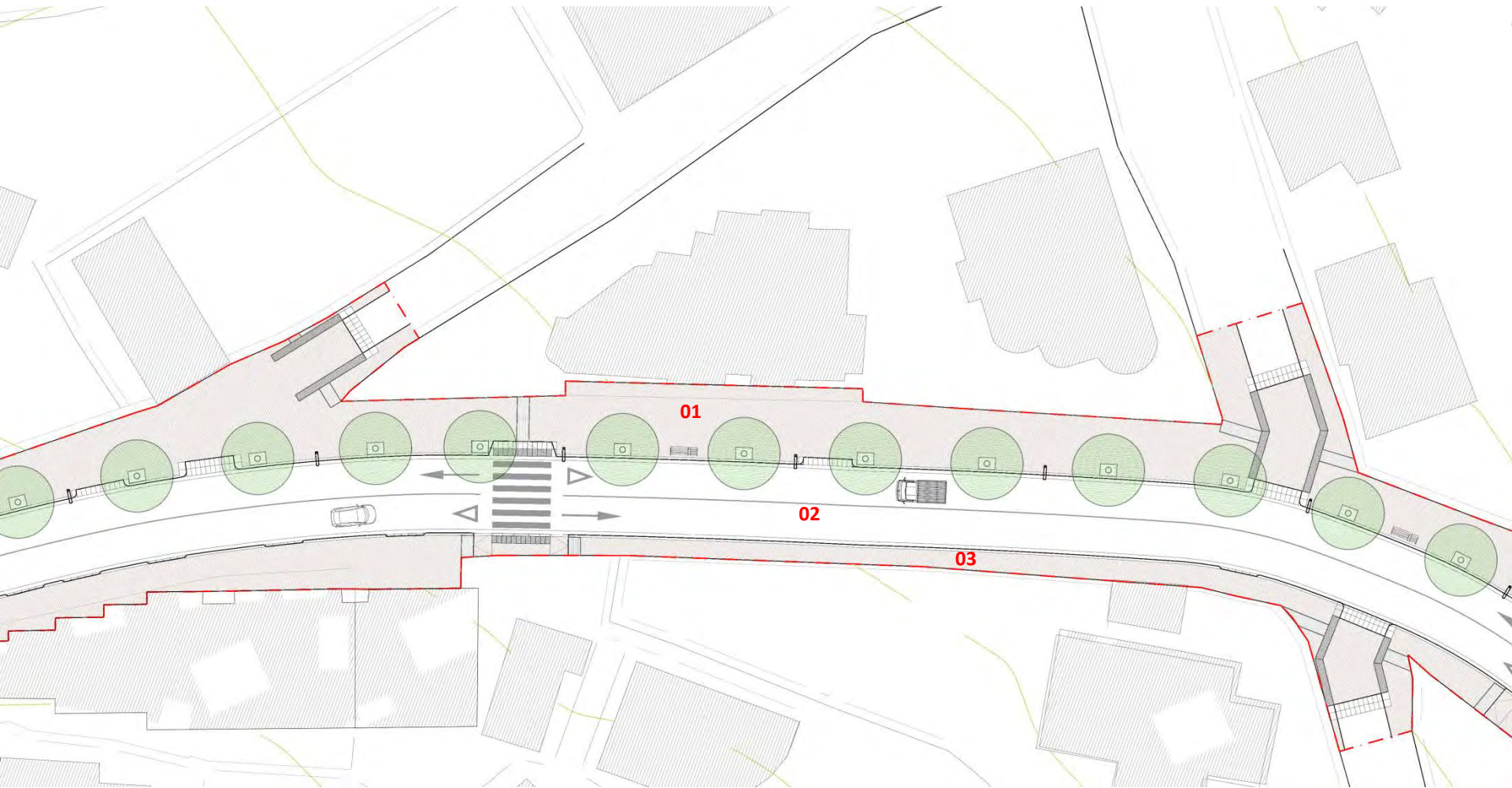
Beit Sahour Road.....Proposal (october 2019)



Main features of the proposal

- Assimetric layout with:
 - 1.2 m sidewalk
 - 7.0 m road
 - 3.8 m sidewalk
- 3.8 m sidewalk equipped with:
 - Trees
 - New lighting
 - Street furniture elements: benches, dustbins...
 - Special car access ramps
- 1.2 m sidewalk equipped with special car access ramps
- 6 pedestrian crossing points
- Underground utilities
- Adapted design to handicaped people

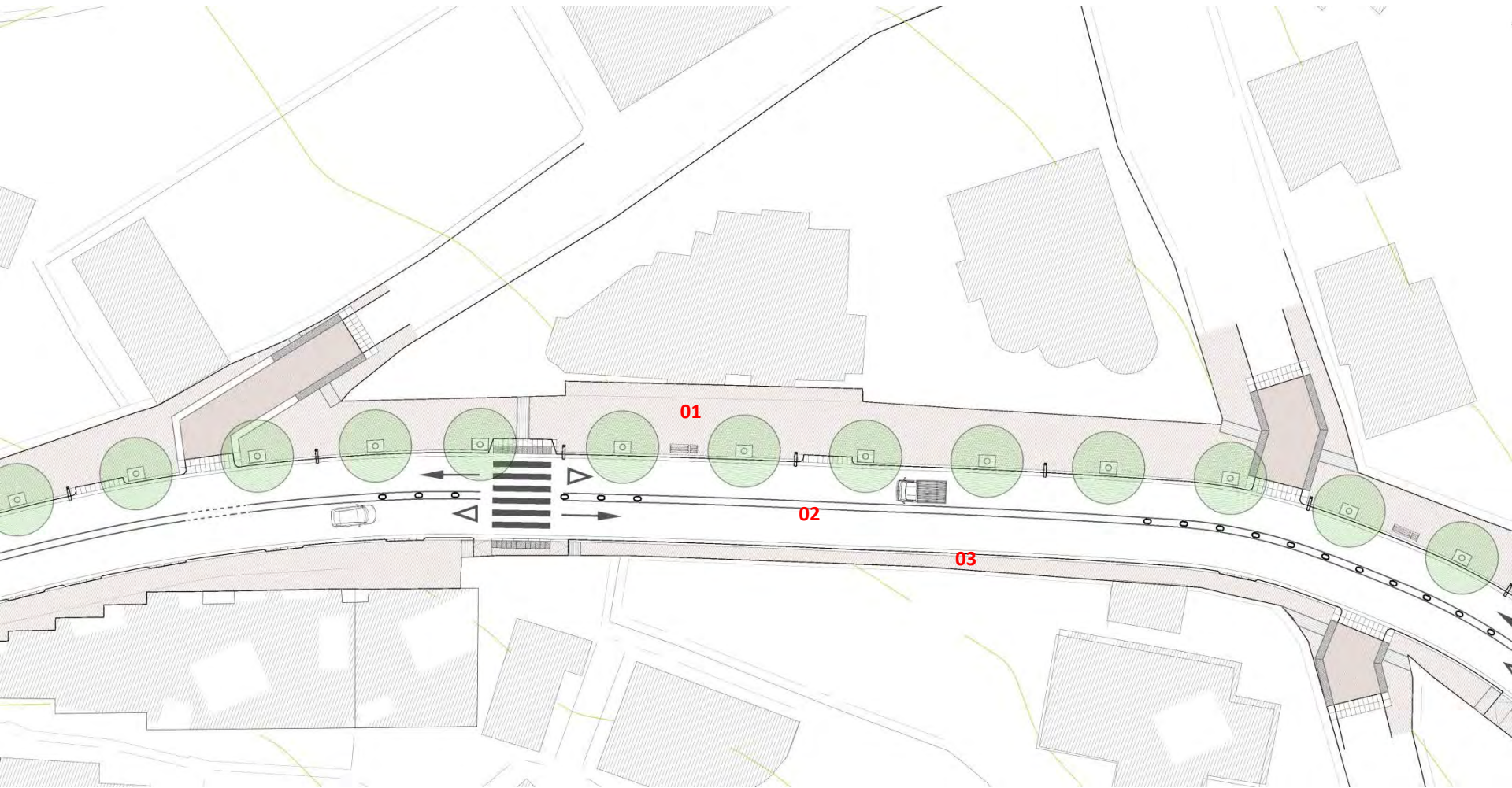
Beit Sahour Road..... Proposal zoom (september 2019)



Main features of the proposal

1. 4.00 m sidewalk
2. 6.40 m two lanes road
3. 1.60 m sidewalk

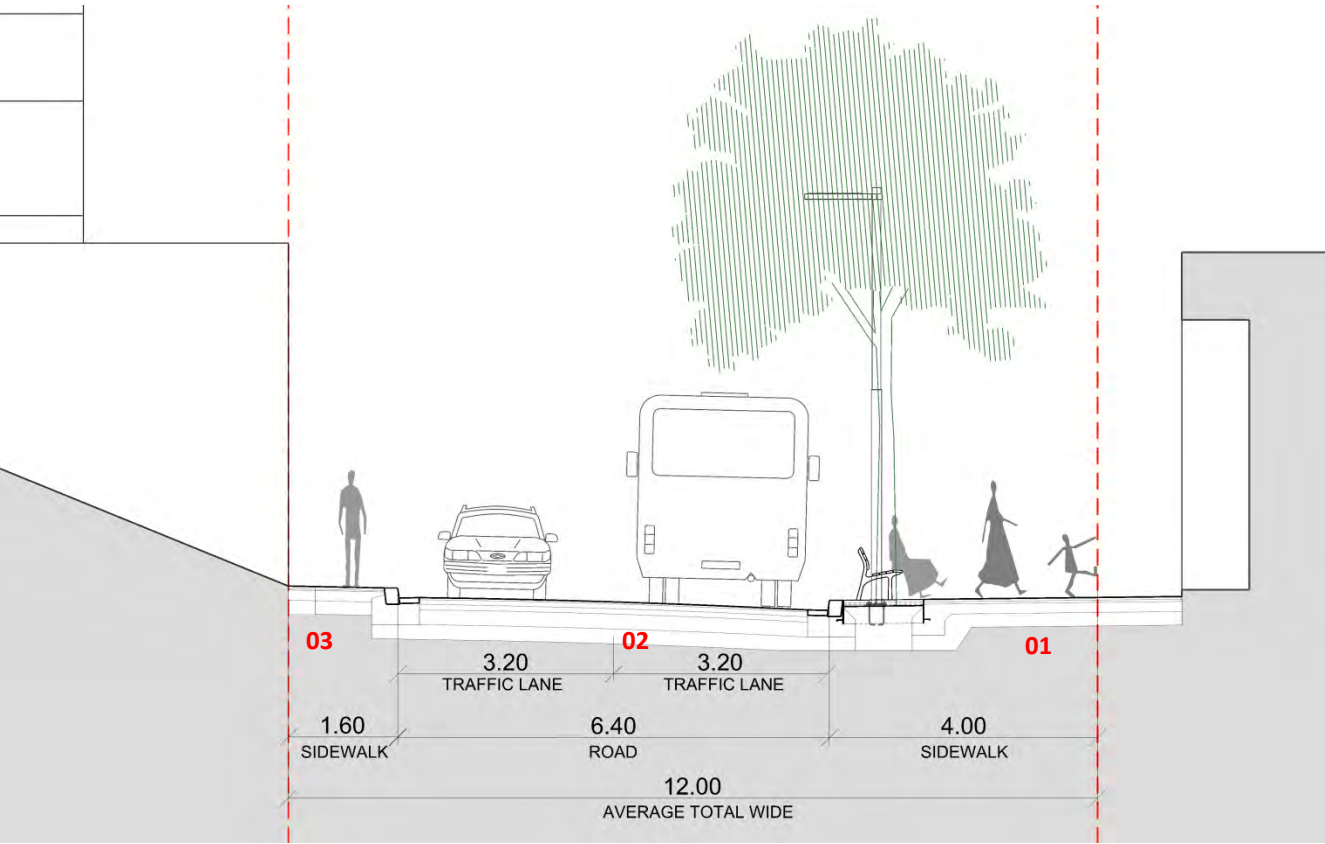
Beit Sahour Road.....Proposal zoom (october 2019)



Main features of the proposal

1. 3.80 m sidewalk
2. 7.00 m two lanes road
3. 1.20 m sidewalk

Beit Sahour Road.....Proposal section zoom (september 2019)



Main features of the proposal

1. 4.0 m sidewalk
2. 6.40 m two lanes road
3. 1.60 m sidewalk

The 4.00 m sidewalk is projected this side of the street so that it provides good sights to the pedestrians and also shadow because it's south oriented.

It's equipped with trees, new lighting, outdoor furniture (benches, dustbins, etc) , special urban elements to handicaped people accessibility, and special cars access ramps.

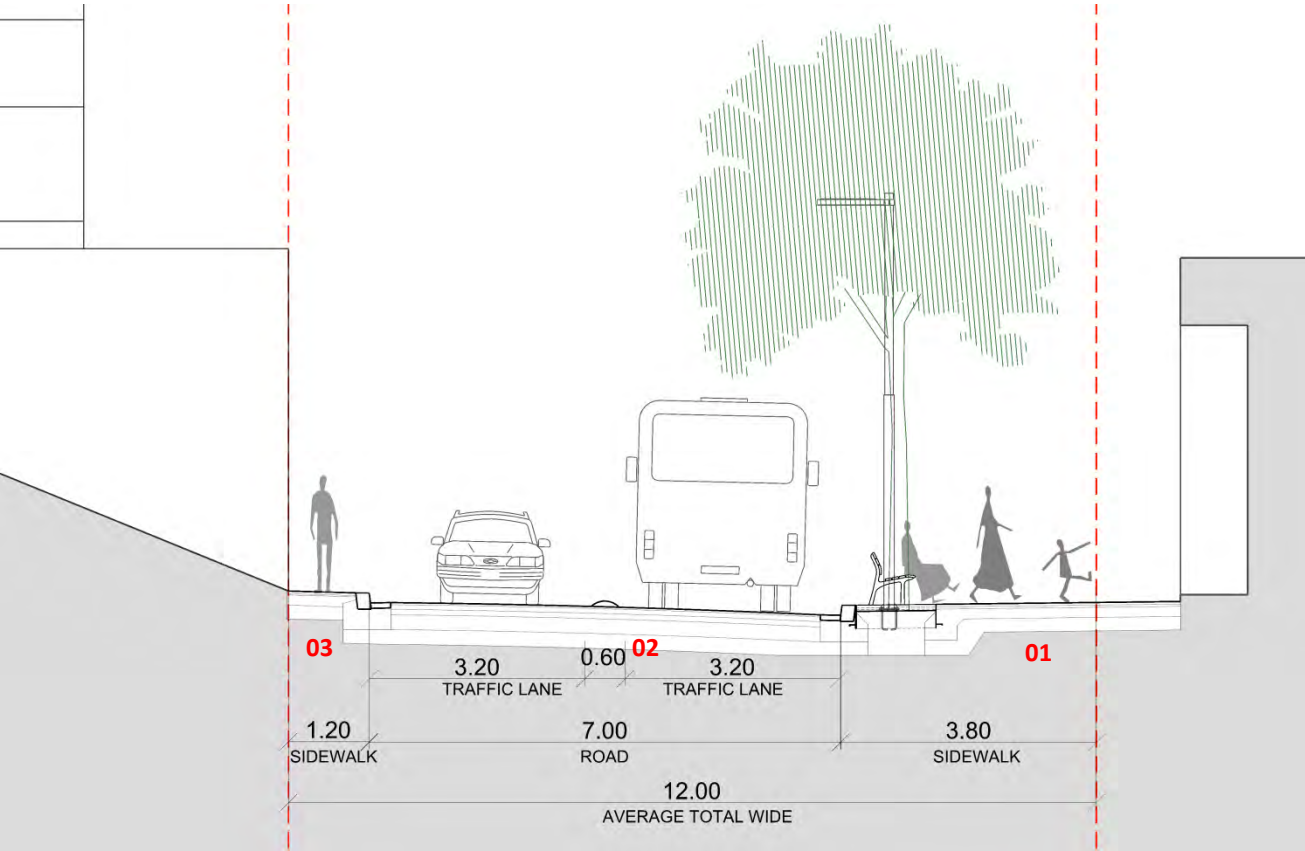
CROSS SECTION ZOOM



GOOD SIGHTS TO THE NORTH



Beit Sahour Road.....Proposal section zoom (october 2019)



Main features of the proposal

1. 3.80 m sidewalk
2. 7.00 m two lanes road
3. 1.20 m sidewalk

The 3.80 m sidewalk is projected this side of the street so that it provides good sights to the pedestrians and also shadow because it's south oriented.

It's equipped with trees, new lighting, outdoor furniture (benches, dustbins, etc) , special urban elements to handicaped people accessibility, and special cars access ramps.

CROSS SECTION ZOOM

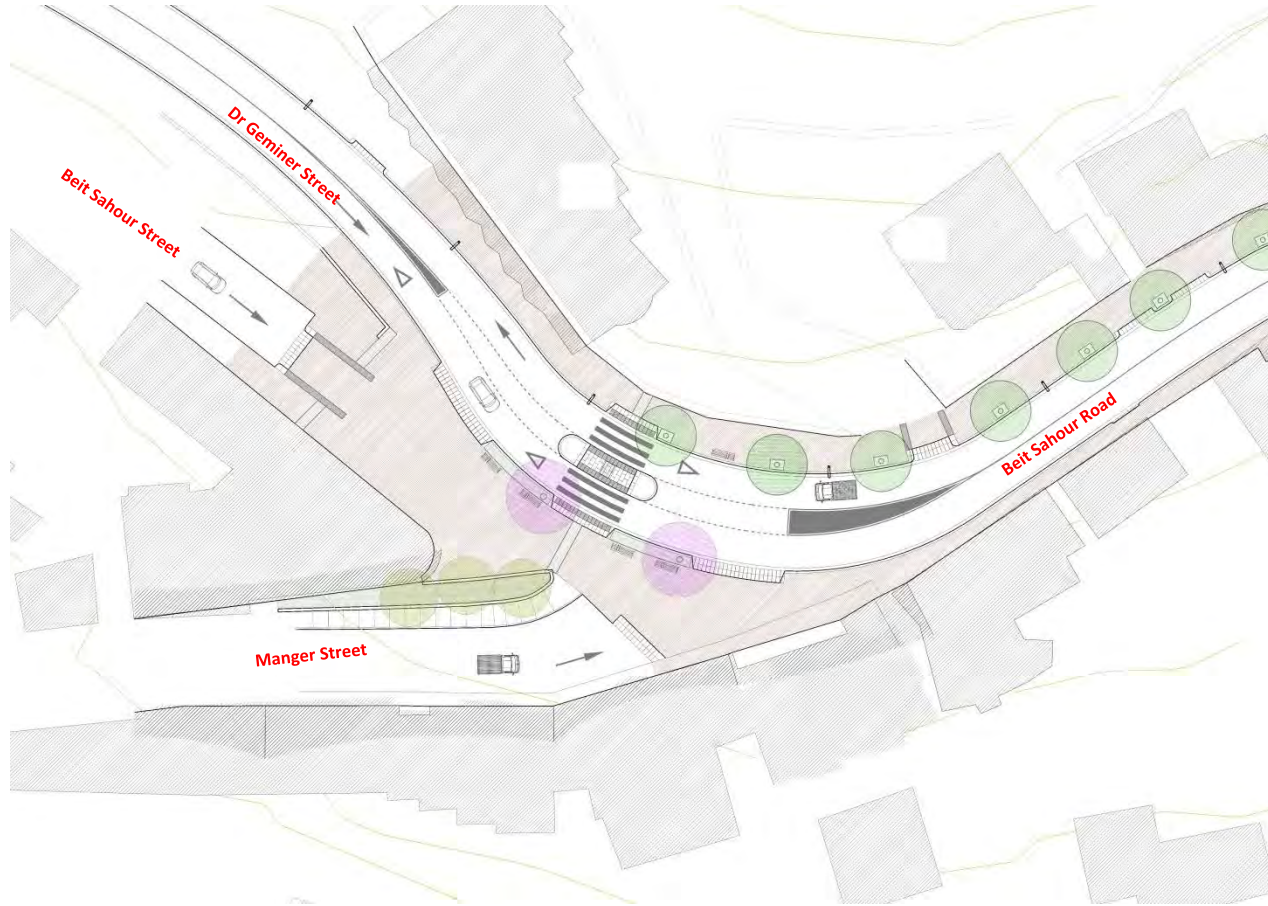


GOOD SIGHTS TO THE NORTH



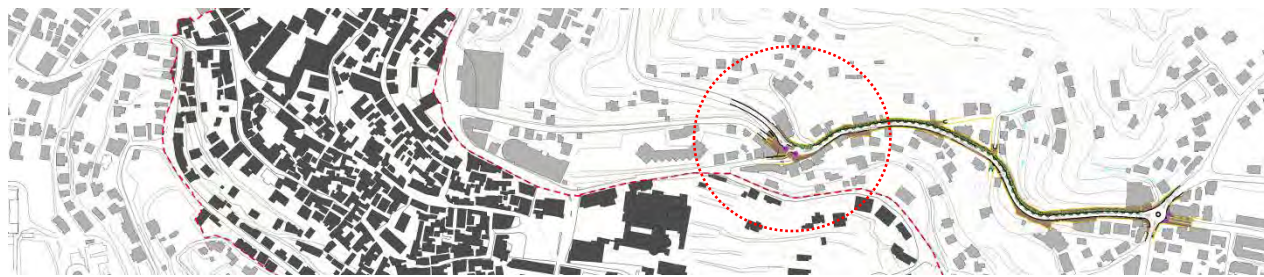
TREES PROVIDE SHADOW TO THE SOUTH ORIENTED SIDEWALK

Beit Sahour Road.....Proposal Water Authority Junction (September 2019)

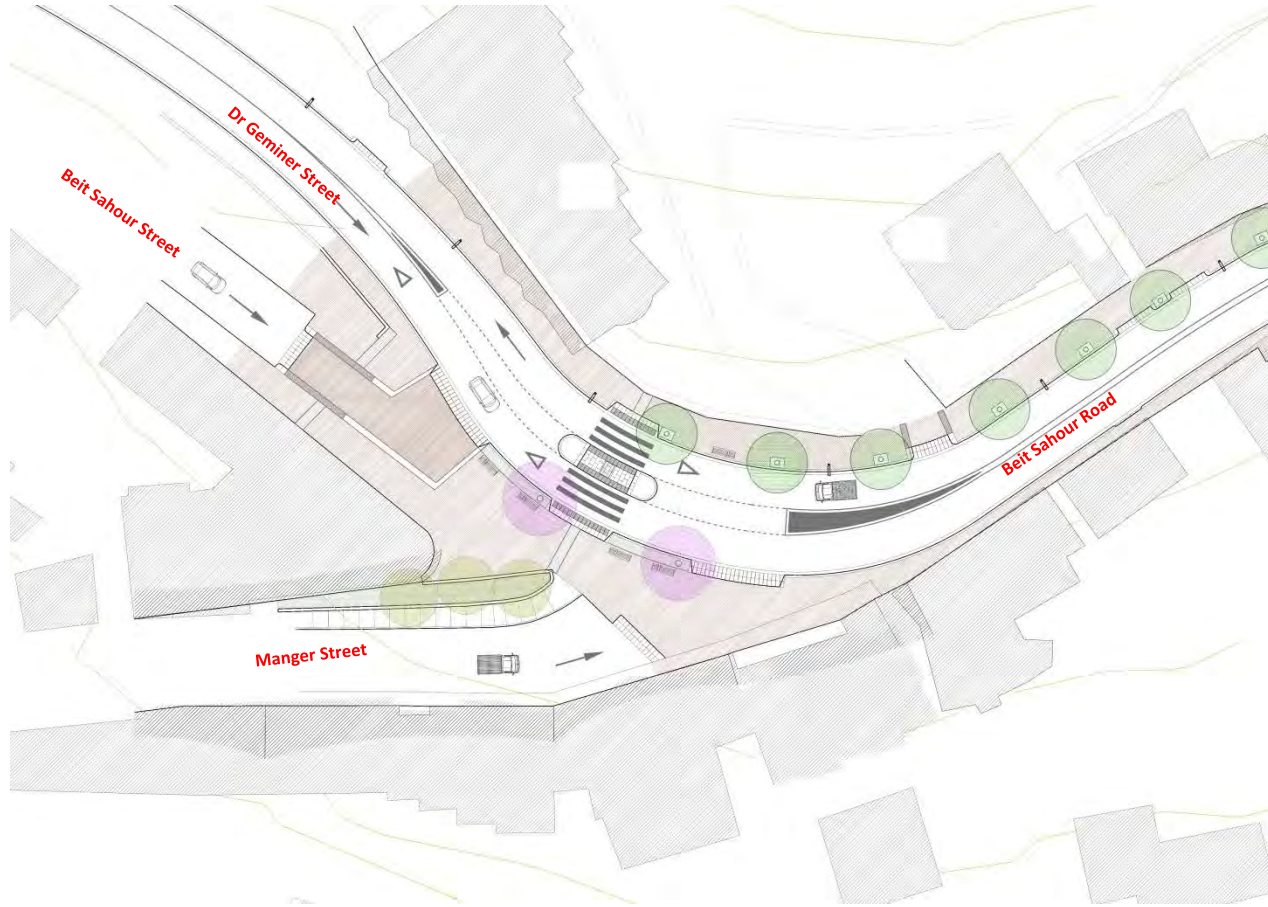


The proposal provides asphalt road continuity between Beit Sahour Road and Dr Geminer Street, whereas Manger Street and Beit Sahour Street have to cross the sidewalk to incorporate to the road.

That way, pedestrian can make out the streets leading to the ancient area, and in the specific case of Manger Street (leading to the Nativity church), that fact is emphasized with special trees.

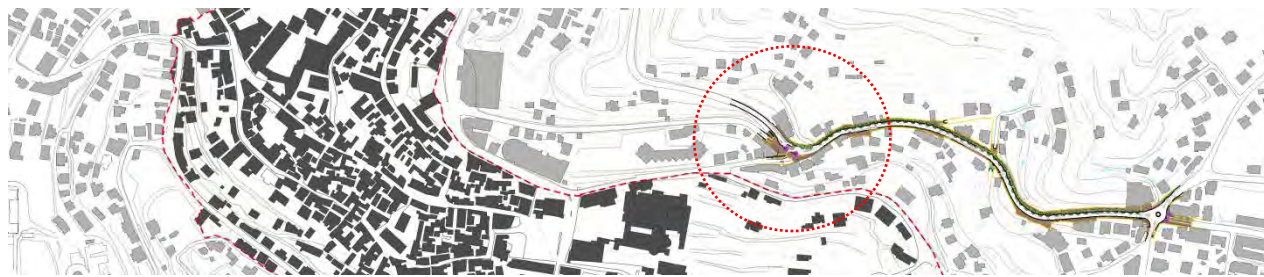


Beit Sahour Road.....Proposal Water Authority Junction (October 2019)



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That way, pedestrian can make out the streets leading to the ancient area, and in the specific case of Manger Street (leading to the Nativity church), that fact is emphasized with special trees.



Beit Sahour Road.....Proposal Ararat Circle (September 2019)



The proposal provides asphalt road continuity between Beit Sahour Road, Arafat Street, and Al Khalifat Street, whereas the street leading to the ancient area of Beit Sahour has to cross the sidewalk to incorporate into the roundabout.

That way, pedestrians can make out the street leading to the ancient area; that fact is emphasized with special trees.

Beit Sahour Road.....Proposal Ararat Circle (October 2019)



The proposal provides asphalt road continuity between Beit Sahour Road, Arafat Street, and Al Khalifat Street, whereas the street leading to the ancient area of Beit Sahour has to cross the sidewalk to incorporate into the roundabout.

That way, pedestrians can make out the street leading to the ancient area; that fact is emphasized with special trees.

ANNEX A. Final Concept Design





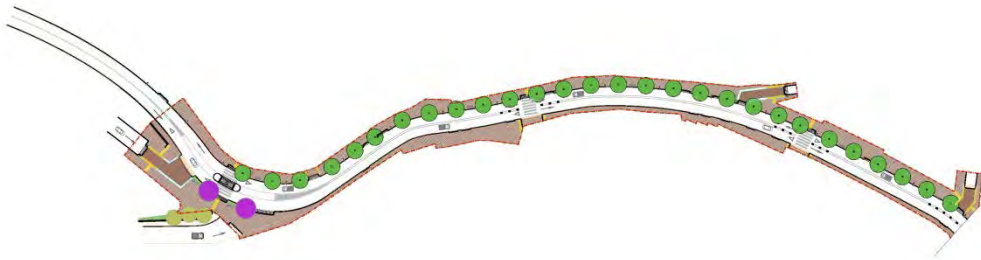
BEIT SAHOUR ROAD CURRENT STATE PLAN e_1/500
(october 2019)



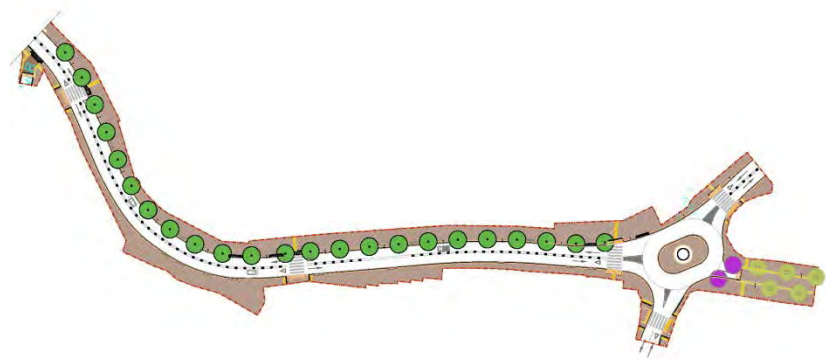
BEIT SAHOUR ROAD PROPOSAL PLAN e_1/500
(october 2019)

Rehabilitation of Beit Sahour Road. Bethlehem District (Palestine)
Urban Projects Department (october 2019)





Phase 1



Phase 2

ANNEX B. Bill of Quantities



Bethlehem Municipality



Bill Of Quantity

for

Rehabilitation of Beit Sahour Road in Bethlehem

Design By:

PLANNING AND DEVELOPMENT DEPARTMENT
BETHLEHEM MUNICIPALITY

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PLANNING AND DEVELOPMENT
DEPARTMENT

Job Description

The project consist of redesign and reconstruction of Urban Rehabilitation of Internal St. with a total length of 1300m The works includes:

Excavations, backfilling, basecourse, Asphalt, Street painting , street lighting , concrete works, sidewalk , Stone works and Storm Water Works

Preambles

1 PREAMBLE

Tenderers must price each item in the bill of quantities separately and follow the instructions regarding the transfer of various totals in the summary.

The bill of quantities must be read with all the other contract documents and the Contractor shall be deemed to have thoroughly acquainted himself with the detailed descriptions of the works to be done and the way in which they are to be carried out. All the works must be executed to the satisfaction of the Supervisor.

1.1 Quantity of items

The quantities set forth against the items in the bill of quantities are an estimate of the quantity of each kind of the work likely to be carried out under the contract and are given to provide a common basis for bids. There is no guarantee to the Contractor that he will be required to carry out the quantities of work indicated under any one particular item in the bill of quantities or that the quantities will not differ in magnitude from those stated.

When pricing items, reference should be made to the conditions of contract, the specifications and relevant drawings for directions and descriptions of work and materials involved.

The quantities given in the bill of quantities are provisional and reflect the estimates made at the time of approval to provide a basis for this dossier and tenders. Tenderers must consider every aspect of the dossier carefully.

Any comments concerning the quantities must be made in the form of an attachment, following the system of itemisation, quoting the codes and brief descriptions, as in the present documents, including the rates and prices.

Save where the technical specifications or the bill of quantities specifically and expressly state otherwise, only permanent works are to be measured. Works will be measured net to the dimensions shown on the drawings or ordered in writing by the Supervisor, save where described or prescribed elsewhere in the contract.

In adjusting extras or variations on the contract, works will be measured on the same basis as that on which the quantities were prepared. All works not specifically mentioned in the bill of quantities will be taken as included in the prices of various items.

Where, in the opinion of the Supervisor, extra works cannot be properly measured or valued, the Contractor may, if so directed by the Supervisor, carry out the work at the daywork rates shown in the schedule of daywork. All completed daywork sheets must be signed by the Supervisor on or before the end of the week in which the works are executed.

No allowance will be made for loss of materials or volume thereof during transport or compaction.

1.2 Units of measurement

The units of measurement used in the annexed technical documentation are those of the International System of Units (SI). No other units may be used for measurements, pricing, detail drawings etc. (Any units not mentioned in the technical documentation must also be expressed in terms of the SI.)

Abbreviations used in the bill of quantities are to be interpreted as follows:

mm	means	millimetre
m	means	metre
mm ²	means	square millimetre
m ²	means	square metre
m ³	means	cubic metre
kg	means	kilogram
to	means	tonne (1000 kg)
No	means	number
h	means	hour
L.s.	means	Lump sum
km	means	kilometre
M.r	means	Linear meter
%	means	per cent
N.d	means	nominal diameter
m/m	means	man-month
m/d	means	man-day

1.3 TERMS RELATING TO PAYMENTS

The method for measuring completed works for payment must be in accordance with the General/ Special Conditions (net measurement),

The provisional sums in the bill of quantities must be used in whole or in part at the discretion of the Supervisor.

Each item in the bill of quantities for which payment is to be made in a lump sum, and for which no payment schedule is provided, must be paid after the work covered by the lump sum has been completed to the satisfaction of the Supervisor. A break down of price should be provided for lump sum item.

1.4 PRICING

The prices and rates inserted in the bill of quantities are to be the full inclusive values of the works described under the items, including all costs and expenses which may be required in and for the construction of the works described together with any temporary works and installations which may be necessary and all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based. It will be assumed that establishment charges, profit and allowances for all obligations are spread evenly over all the unit rates.

The rates and prices tendered in the priced bill of quantities will be quoted at the rates current prior to the date of submission.

Rates and prices must be entered against each item in the bill of quantities. The rates will cover all tax, duty or other liabilities which are not stated separately in the bill of quantities and the tender.

Rates and prices include the submittal of shop drawings, and getting the engineer written approval before proceeding with works.

Lump sum offers will be rejected.

1.5 TAXES

(Vat) INCLUDED

1.6 COMPLETING THE BILL OF QUANTITIES

in Bethlehem

1.7 General

- A. These Bills of Quantities are to be read in conjunction with the Tender Conditions of Contract, agreement, Specifications, and Drawings. The various documents making up the contract shall be deemed to be mutually explanatory. The method of measurement followed shall be the "principles of measurement (international) for works of construction " amended to suit local practice .
- B. The general direction and descriptions of works given in the specifications are not necessarily repeated in the bills of quantities. Reference must be made to the specification for this information.
- C. The contractor shall be deemed to have revised all the tender documents, inspected and examined the site and its surroundings, and have satisfied himself to the nature of the ground and subsoil before submitting his tender. He shall also be deemed to have taken into account the form and nature of the site, the extent and nature of the work and materials necessary for the completion of the works, the means of communication with and access to the site, the accommodation he may require and in general to have obtained for himself all necessary information as to the risks, contingencies and any other circumstances influencing and affecting his tender.
- D. The contractor shall be deemed to have satisfied himself before submitting his tender as to the correctness and sufficiency of the tender and of the rates and prices stated in the bill of quantities or price schedule, where shall, save where otherwise provided, cover all his obligations under the contract.
- E. Since the contractor is deemed to have determined his price on the basis of his own calculations, operations and estimates, he shall, at no additional charge, carry out any work that is the subject of any item whatsoever in his tender for which he indicates neither a unit price nor a lump sum.
- F. PLANNING AND DEVELOPMENT DEPARTMENT

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

- G. The Contractor should note that the cost of all work carried out in the construction of junctions, access roads or access to properties shall be based on tendered rates under the appropriate items in the Bills of Quantities and no claim for additional payment for this work shall be considered. The Contractor shall use special equipments and take care when compacting the layers of basecourse and asphalt near the historical walls in mar Yousef and Beir Althagra st.
- H. The Contractor shall note that there are no haulage items given in these Bill of Quantities, and that allowance must be made in the tendered rates for any haulage in the appropriate items.
- I. Payments due under the contract shall be determined by applying the unit rates to the quantities executed for the respective items, in accordance with the BoQ and contract.
- J. The utility diversions work shall include the workmanship needed. The work shall be according to the Specifications and Engineer's satisfaction.
- K. Unless otherwise mentioned in the Bill item, all services items expect relocation works, not directly measured under this bill item shall include for excavation (including rock), back filling, dewatering, compaction, temporary works and placement and testing of pipes etc. Excavation width for various services shall be as agreed by Engineer on site. The width of trench excavation for the relocation of existing cables shall be as directed by the Engineer on site .
- L. Items for the preparation of formation to receive subsequent embankment layers shall include for shaping, watering and compaction.
- M All pipes and ducts for drainage works shall be pre-cast concrete except gully connections.
- N Rates of concrete works are to include for placing, compacting, forming any joints, all necessary frame works, curing and protecting, etc

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

Bill No (1)

EXCAVATION AND EARTH WORKS

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
1,1	Excavation to specified or directed levels (up to 50 cm depth) in all materials inclusive of structural excavation. Unclassified excavation in the cut sections of the road, including removing existing pavement layers (in cut or fill sections), watercourses, ditches and Wadi relocations and removing of subgrade material classified unsuitable all as and where shown on the drawings, including trimming & grading, mixing & shaping, watering, compaction, testing, all tests required, and hauling the excavated material either to locations for road embankments or to stockpiles or to waste, all according to specifications, drawings and/or as directed by the Engineer. (Note: Suitable Excavated materials to be used for embankment construction along the road will not be paid for as Embankment Materials such as filling layers or rockfill inclusive of processing, transportation and installation and any other works deemed necessary).	m2	2,000	3,00	6,000,00
TOTAL - CARRIED TO SUMMARY					6,000

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

Bill No (2)
BASE COURSE

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
2,1	Furnishing crushed aggregate base course material class A CBR not less than 80% 200 mm thick after compaction to (100) % as per modified proctor, including watering mixing, spreading on prepared sub-base course or sub-grade, compacting and finishing. . All according to specifications drawings, cross-sections and directions of the Engineer.	m²	700	4	2.800
2,2	Furnishing crushed aggregate base course material class A for Side walk CBR not less than 80% 1500 mm thick after compaction to (95-100) % as per modified proctor, including watering mixing, spreading on prepared sub-base course or sub-grade, compacting and finishing. . All according to specifications drawings, cross-sections and directions of the Engineer.	m²	2200	3	6.600
TOTAL - CARRIED TO SUMMARY					9.400

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

Bill No (3)
ASPHALT WORKS

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
3,1	1. Milling for existing road The milling requested is 3cm.	m²	7000	3	21000
3,2	Leveling /Asphalt 1/2" for street where needed	Ton	100	70	7000
3,3	Furnishing and applying bituminous Prime coat (MC70) or (RC70) (rate of application 1.0 - 1.5 kg/m2), all according to specifications, drawings and/or as directed by the Engineer.	m²	5000	0,5	2500
3,4	Supplying, spreading and compacting (60)mm thick after compaction to reach 98% Asphalt wearing course 3/4" , including all tests required by specifications, drawings and/or as directed by the Engineer (price shall include but is not limited to frame and manhole cover adjustment to match the new P.G.L where applicable).	m²	5000	11	55000
3,5	Supplying, spreading and compacting (45)mm thick after compaction to reach 98% Asphalt wearing course 1/2" , including all tests required by specifications, drawings and/or as directed by the Engineer (price shall include but is not limited to frame and manhole cover adjustment to match the new P.G.L where applicable). for side walk .	m²	500	8	4000
TOTAL - CARRIED TO SUMMARY					89.500

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

Bill No (4)

Precast Concrete Curbstone & Construction of stony walls

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
4.1	Supply and install precast concrete curbstone 17*25*100 cm as specified. Work includes excavation, compaction, foundation, backing, bedding, joints pointing, acrylic painting and all necessary works all according to drawings, specifications and/or directed by the Engineer.	L.m	2.000	24	48.000
4.2	Supply and install precast concrete edgebeam 10*20*100 cm as specified. Work includes excavation, compaction, foundation, backing, bedding, joints pointing, acrylic painting and all necessary works all according to drawings, specifications and/or directed by the Engineer.	L.m	200	15	3.000
4.3	Supply and install interlock tiles 6*10*20 cm with minimum comprehensive strength 40N/mm ² at 28 days, distributed randomly 50% light grey and 50% charcoal. Work includes 100mm Sea Sand underneath, pointing with Sea Sand and compacting the interlock by plate compactor, and all necessary works all according to drawings, specifications and/or directed by the Engineer.	m ²	3.600	25	90.000
TOTAL - CARRIED TO SUMMARY					141.000

Rehabilitation of Internal Roads in Bethlehem
Bill of Quantities

Bill No (6)

MISCELLANEOUS WORKS

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
5.1	Supply and fix traffic signs. Work includes but not limited to: excavation, concrete foundations, galvanized mounting poles with black and white paint stripes complete with cap and all other accessories, backfill and any other requirements deemed necessary for the proper performance and completion of the works under this contract as per project specifications, drawings and/or as directed by the Engineer.				
a	Circular sign face 600 mm dia.	No.	6	100	600
b	Triangular sign face 600 mm deep	No.	6	100	600
c	Octagonal sign face 600 mm deep	No.	7	100	700
d	Rectangular chevron signs Type (RS1)	No.	7	100	700
5.2	Painting alternatively black and white acrylic paint or/as specified on road and all necessary works all according to drawings, specifications and directions of the Engineer.	M.r	2.100	1	2.100
5.3	Continuous and/or intermittent Termo-plastic paint white/yellow as shown on drawings, all according to specifications and/or as directed by the Engineer.. (W=15cm) & for parking	M.r	400	4	1.600
5.4	Ditto but for pavement marking (arrows, chevrons, ...etc)	m ²	300	20	6.000
5.5	Supply and install Steel Handrail as shown on drawings, all according to specifications and/or as directed by the Engineer.	M.r	50	100	5.000
	Install trees concrete grate shown in the drawing details, according to the project specifications, and having the engineer approval	unit	30	120	3.600
5.8	Supply and plant trees not less than 2 meter height according to the project specifications, and having the engineer approval. The rate should include all the necessary soil for the plant.	unit	30	150	4.500
5.9	Supply and install the selected Type as shown in the drawing details for the garbage cans, according to the project specifications, and having the engineer approval	unit	10	110	1.100
5.10	perforated steel and wooden bench -as shown in the drawings	unit	6	300	1.800
TOTAL - CARRIED TO SUMMARY					28.300

Bill (7)
Street Lighting Works

Item	Description	Unit	Quantity	Unit Rate (Euro)	Amount (Euro)
7,1	Supply and install connect and complete test street lighting luminary Light fixtures to be European Standard. illumination unit phillips type or equ. 12000 lumn (Led type) .Guarantee: 5 years , including a connection box with 2x10A circuit breaker and earthing. The works include all needed fitting to complete the work according to JDECO requirements and the Municipality	No	26	€ 250,00	6500,0
7,2	Supply and install 8 m long galvanized steel, street lighting pole, . Type and shape to be approved by the municipality The works include Excavation and concrete and all needed fitting to complete the work according to JDECO requirements and the Municipality	No	12	€ 250,00	3000,0
7,3	Supply and install ABC cable 3x 25mm2 aerial power cable between poles. The works include all needed fitting to complete the work according to JDECO requirements and the Municipality...the cable length to be measured from one pole to onther horizontaly .	L.m	200	€ 4,00	800,0
7,4	Extracting electrical and Telecom Poles accordind to municipality engineer instructions	unit	10	€ 100,00	1000,0
7,5	MDB according to JDECO instruction, Change existing panel in site 63A . In the same position-cabente water proof include Breakers , cables 5*10mm ,locks , Shop drawing to by done by contractor and to be approved by Municipality .The works include all needed fitting to complete the work according to JDECO requirements and the Municipality . Note:- All needed Fees for testing and connection required by JDECO to be Paid by the contractor	No	1	€ 2.000,00	2000,0
TOTAL - CARRIED TO SUMMARY					25.800

SUMMARY SHEET

BILL NO.	Description	Total (Euro)
BILL NO. 1	EXCAVATION AND EARTH WORKS	6.000
BILL NO. 2	BASE COURSE	9.400
BILL NO. 3	ASPHALTIC WORKS	89.500
BILL NO. 4	Precast Concrete Curbstone	141.000
BILL NO. 5	MISCELLANEOUS WORKS	28.300
BILL NO. 6	Street Lighting Works	25.800
GRAND TOTAL (including Vat)		300.000,0

The sum of: _____ Euro

Contractor: _____

Signature with stamp: _____

Date: / /2018

Bethlehem City

Development Strategies – On Going Projects.

NOVEMBER 2019



**Ajuntament
de Barcelona**

Urban Projects Department
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Planning and Development Department
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