

MALTA TRANSPORT AUTHORITY



**GUIDELINES FOR THE STANDARD PRESENTATION
OF DESIGN DOCUMENTS FOR**

ROAD CONSTRUCTION

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0. Introduction

To construct a road, thoroughly designed planning documents are an absolute necessity. This forms the basis for the judgement of the project to be carried out in the fields of technical, ecological and economical feasibility, their legal aspects and their realisation. "The Guidelines for the standardised presentation of Design Documents for Road Construction" are dealing with their uniform shape. For the technical details reference to the relevant specifications for the design of roads is to be made. In the design process, documents that distinguish features of a road construction project from the pre-investigation phase to the actual road building plans are being presented here in this document. The contents of each of the documents should be orientated to their respective range of application.

1. Design Documents

1.1 Explanatory Report (Example 1)

The explanatory report describes the construction measure and answers all questions related to its design. Its structure should be conforming to the given example.

1.2 Overview Chart (Example 2)

The overview chart serves to convey an overview of the construction measures within the road network and their topographical condition. The scale depends on the dimension of the project and its specific location and should be between $Sc=1:25000$ and $Sc=1:100000$. In the overview chart the construction site length (in kilometres) should be registered. The overview chart has to be North orientated and has to contain all major rural and urban roads as well as all major cities and villages located along the construction site. The overview chart has to be fitted with an arrow that indicates the North direction.

1.3 Overview Plan (Example 3a and 3b)

The Overview Plan shows an overview about the location of the construction site including all alternatives. The Scale has to be $1:5000$ or $1:25000$. Additional to the information given in the overview, the overview plan should include all Local Council boundaries, environmentally protected areas, building areas, watercourses / valleys etc., monuments/heritage buildings, airports, important infrastructure under the roads and traffic count installations. Beside this, all important plans of other governmental institutions have to be presented in this section.

1.4 Overview Longitudinal Section (Example: 4a and 4b)

The Overview Longitudinal Section Plan serves the purpose to give an overview of the gradients of the construction measures and of the topography of the site. For

clarity the vertical scale should be 10x the horizontal scale. This Section has to provide the following information:

- The topography and the planned road level according to its centre line,
- the stations in kilometres (from the left to the right),
- the levels of the centre line,
- inclinations with all vertical curve radii and their transition between the gradients,
- all junctions and linking roads,
- all crossing roads or bridges,
- all waterways and all major infrastructure under the road,
- a curve band for the judgement of the space demand,
- the headroom of small bridges,
- total length of large bridges and tunnels,
- areas of cut and fill have to be shown in different colour/hatching.

1.5 Cost Calculations (no Example)

The cost calculations have to be presented according to EU-Guidelines.

1.6 Cross-Sections (Example 6a and 6b)

The cross-sections should show the typical profile of the road perpendicular to its axis in scale 1:50. This section also shows dimensions and the super-elevation of the road, the noise protection and storm water installations, the pavement thickness and their components as well as the construction class and the inclination of the embankments. For special areas where noise protection measures, in environmentally sensitive areas or in tunnels, are included these have to be presented on separate cross-sections.

1.7 Layout Plan (Example 7a,7b,7c,7d)

The layout plan shows the construction measures at road level. Outside urban areas a scale between 1:1000 and 1:5000 can be used. If there would be the necessity of important information to be given, for example in highly urbanised areas or on loaded urban roads, the scale has to be 1:250. The layout plan contains the following information:

- network co-ordinates,
- north point,
- lengths (km),
- levels of embankments,
- levels of bridges and other engineering constructions,
- noise protection walls and dams,
- land to be acquired,
- waterways and valleys,
- all radii and transition curves,
- dimensions of all the traffic areas,
- the location of the cross-sections and the super elevation of the road.

In addition all information which is was already provided on the overview plan have to be presented. The change of the infrastructure under the road, all visibility triangles, all cuts and fills, all crossing angles at junctions, all levels at bridges and tunnels as well as their length and their width, characteristic technical data for retaining walls and noise protection constructions should also be presented.

1.8 Longitudinal Section (Example 8a and 8b)

The Longitudinal Section is to be presented in the same scale as that of the Layout Plan and has to correspond to it. The vertical scale is to be ten times that of the layout plan. The longitudinal section should include:

- all length of the tangents together with vertical radii and gradients,
- the crossing and linking roads,
- the groundwater levels,
- all important storm water facilities,
- infrastructure underneath of the road and their levels,
- soil investigations,
- levels at embankments,
- cuts and fills,
- bridges, tunnels and their length,
- ramp band, a curve band presented,
- the visibilities and a speed limits.

1.9 Soil Investigations (no Example)

Results of the Soil Investigation and other reports related to soil conditions have to be attached to the Design Documents.

1.10 Engineering Constructions

1.10.1 List of Bridges and other Engineering Constructions (Example 10.1)

The list has to be presented as shown in the standardised sample sheet 10.1.

1.10.2 Construction sketch (Example 10.2)

If there are constructions that are of a great importance for the project, beside the building plan, a sketch that shows in a simplified form the layout, the cross section and all important levels are to be provided.

1.10.3 Construction Details (Example 10.3)

The Construction Plan shows, in scale 1:100 / 1:50, a detail layout, cross-section and longitudinal section of the construction. It also shows the structural details.

1.11 Results of the sound-technical investigation

1.11.1 Results of the sound-technical Calculations (Example 1.11)

The results are presented as shown in the example 11.1.

1.11.2 Layout Plan of noise protection measures (no Example)

Noise Protection measures together with the results of the calculations are presented in the main layout plan (example 1.7). A separate layout plan for noise protection measures can be necessary if:

- the existing layout plan gets too confusing
- the volume of the noise protection measure requires a separate plan

Active Noise Protection: Noise protection walls/dams and noise protection planting are shown differently. The levels and the areas with their limits where the sound technical investigation took place are shown on the plan.

Passive Noise Protection: In the layout plan such building sites and the different floors are presented to show at which level the emission limits have been exceeded. In addition to that the mean value in dB (A) between Day and Night measurements has to be shown.

1.11.3 Longitudinal Section Plan of the Noise Protection measures (no Example)

The presentation of the noise protection measures in a separate longitudinal section plan will be necessary if:

- the existing longitudinal section plan gets too confusing,
- the volume of the measures require a separate plan.

1.12 Results of the Landscape Design Planning

1.12.1 Conflict Plan (no Example)

Presentation of the conflicts between population of nature and landscape as a result of the planned road construction measure. For the purpose of the judgement of the impact on landscape and the ecology there has to be a separate plan.

1.12.2 Layout Plan of Landscape Design Measures (Example 12.2)

All intended measures for the protection of nature and the landscape have to be presented in their own standardised form in the layout plan.

1.13 Results of the Storm water - technical Investigations

1.13.1 Results of the Storm water - technical Calculations (no Example)

The results of the storm water - technical calculations have to be presented in a tabular form and in an overview plan with the related contents. All dimensions, levels and slopes have to be given.

1.13.2 Layout Plan for the storm water drainage measures (no Example)

The storm water drainage measures for road construction projects are in general shown in the layout plan 1.7. A separate layout plan has to be presented if:

- the existing layout plan gets confusing,
- the volume of the measures for storm water drainage requires a separate plan.

1.13.3 Longitudinal Section for Storm water Drainage measures (no Example)

All storm water drainage measures are to be presented in the longitudinal section plan 1.8. A separate longitudinal section plan has to be presented if:

- the existing longitudinal section plan gets confusing,
- the volume of the measures require a separate longitudinal section.

1.14 Acquisition of land

1.14.1 Acquisition Plan (Example 14.1)

The Acquisition plan shows all areas and buildings to be acquired. Border lines, the plot numbers, the name of the owners, the location and any walls, fences, trees etc. have to be marked.

1.14.2 List of Acquisition Measures (Example 14.2)

The List of Land Acquisition has to be presented as shown on the standardised sheet number 14.2.

1.15 Other Plans

1.15.1 Junctions (no example)

Junctions have to be presented in their own layout and if necessary longitudinal section are provided. They should be presented in a scale of at least 1:200 or 1:100. All important measurements such as radii, levels, traffic lights, visibilities and traffic flows have to be shown.

1.15.2 Cross-sections (no example)

For the improved judgement of construction measures a detailed cross section may be necessary for critical points, for example in the case of critical emission points, waterway crossings, noise protection measures etc.

1.15.3 Lay bys, Parking Places etc.(no example)

If the presentation in the existing layout plan is not sufficient to judge the construction of such measure, a separate plan will have to be presented.

1.15.4 Special Plans and Documents (no example)

Other documents and plans for the judgement of road construction projects could be:

- Existing Plans,
- Structure Plans of areas,
- technical traffic plans,
- traffic counts,
- traffic management plans,
- traffic sign plans,
- street lightning plans,
- ecological Investigations,
- photo montages,
- perspectives,
- traffic accident diagrams during construction time,
- traffic management during construction time etc.

2. List of Planning and Design Symbols (Example: Symbols for Design Documents)

Attached to these guidelines find the standardised symbols for road construction project, their colours and description.

3. Presentation of the Design Documents

Design Documents have to be presented in colour. Copies are to be presented in black and white. These have to be presented in a digitised format. The usage of aerial photos in an appropriate scale is permitted. Explanations of the applied symbols and colours have to be present on the plans.

The letter sizes and lines should be suitable to be projected onto micro films. The letter fields are standardised (see Examples). Above the letter fields of Longitudinal Section and Layout plans there should be an indication of the location of the specific area the plan is showing.

All Plans and Documents have to be numbered and being presented in a folder accordingly in A4 Format. Preferably Design Documents should not be longer than 135cm and not wider than 3 x 29.7 cm. On the inside of the folder one should find the Contents of the same folder.

Symbols for Design Documents

Layout Plan 1:500 to 1:250		Description	
coloured	black - white	Description	
brown bright blue bright green grey bright green bright red green grey			Embankment Ditch Hard shoulder Water duct Pedestrian/Cycling Lane Embankment Rural Road
green brown			fill cut
bright blue			Waterway with flowing direction
yellow / grey			Planned demolition of building Building already demolished
yellow / grey			Tree to remove

Noise Protection

green red			Noise protection dam Noise protection wall
yellow red			Calculated profile passive noise protection
			number of elements to be protected mean value day / night in dB(A)

Land Acquisition

bright brown bright green bright blue			area to purchase for road construction area to temporarily purchased or needed continuously limited areas
			Linking arrow

4. Symbols and Colours for Design Documents

Overview chart 1:100 000 or 1: 50 000	Overview layout plan 1:25 000 to 1:500 (i.M. 1:5 000 all rows have to be presented in scale)		Description
coloured	coloured	black - white	

Boundaries

	Local Council Roads
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Road Classification

		Arterial road Distributor road Rural road Urban road
		Traffic counts
		Parking (with WC) Hotel Fuel Station Road maintenance set-up

Road construction measures

		two lane road one lane road
		Alternatives
	Presentation of layout	
		Bridge
		Tunnel

5. Letter Fields

Document
Scale Drawn _____ on _____ 2 _____
Approved by:

Letterfield for Design Documents

Road Administration: _____		Drawing No.	
_____		Page No.	
Road: _____ Construction _____		Reg. No.	
Village: _____		Date	Signature
	Engineer		
	Drawn by		
	Checked by		
	Scale		
Drawn by			
, on _____ 2 _____			

Letter Fields for Design Documents

Amendments

Designer:		Date	Signature
	drawn by		
	signed by		
	approved by _____		

Amendment Letter Field for the Design presentation through Third parties

No.	Type of Amendments	Date	Name

Additional Letter Field for changes in the plans

Layout plan drawn by:	Additional Amendments	
Surveyor:		
Field work:		
Archives:		

Additional Letter Field for Information through the Producer

6. Contents of Design Documents

Number of Design Documents	Description of Design Documents
1	Explanatory Report
2	Overview Chart
3	Overview layout plan
4	Overview longitudinal section
5	Cost Calculation
6	Cross Section
7	Layout Plan
8	Longitudinal Section
9	Soil Investigation
	<u>Engineering Buildings</u>
10.1	List of bridges and other Engineering Buildings
10.2	Buildings sketches
10.3	Building plan
	<u>Results of the noise protection investigations</u>
11.1	Results of the noise protection calculation
11.2	Layout plan of the noise protection measures
11.3	Longitudinal section of noise protection measures
	<u>Results of the Landscape Design planning</u>
12.1	Conflict plan
12.2	Layout plan of landscape design measures
	<u>Results of the storm water technical investigations</u>
13.1	Storm water technical results
13.2	Layout plan of the storm water drainage
13.3	Longitudinal section of the storm water drainage
	<u>Land Acquisition</u>
14.1	Land Acquisition plan
14.2	List of land owners
	<u>Other plans</u>
15...	Other plans like for example junctions, signage, structure plans, accident diagrams, existing plans, waterways, etc.

7. Contents of the Examples

Example No.	Description of example	Scale
1	Structure of the Explanatory Report	
2	Overview Chart	1:100 000
3a	Overview Layout Plan	1:25 000
3b	Overview Layout Plan	1:10 000
4a	Overview Longitudinal Section	1:25 000/2500
4b	Overview Longitudinal Section	1:10 000/1000
6a	Cross Section	1:50
6b	Cross Section with active noise protection measure	1:50
7a	Layout Plan	1: 5000
7b	Layout Plan	1: 1000
7c	Layout Plan	1: 1000
7d	Layout Plan	1: 500
8a	Longitudinal Section Plan	1:5000/500
8b	Longitudinal Section	1:1000/100
10.1	List of Bridges and other Engineering Constructions	
10.2	Construction Sketch	
10.3	Construction Plan	
11.1	Results of sound levels - calculations	
12.2	Layout Plan of the Landscape Design measures	
14.1	Expropriation Plan	
14.2	List of Acquisition measures	

8. Examples

Structure of the Explanatory Report

0. Prefax

The Explanatory Report should describe the road construction project and should give an explanation on all relevant planning and design concerning questions. All deviations from Standards have to be justified.

1. Presentation of the Road Construction Project

1.1 Description of the Design Documents

- Characteristics and Volume of the Project
- Location of the project within the Road Network

1.2 Road Construction Description

- Length of the project, costs, client
- existing design and traffic characteristics
- planned design and traffic characteristics

2. Necessity of the Road Construction Project

2.1 History of the Design Process with remarks to previous Investigations and Procedures

- Start of Design Process
- Developments within the Design Process
- Change of Targets of the Design Process

2.2 Presentation of inadequate Traffic Conditions and their negative Impact

2.3 Planning Targets of the Structure Plan and their reflection within the Design

- Development of peripheral regions
- Link between two city or village centres
- Development of the economy of a region
- Meeting the demands of the Structural Plan

2.4 Demands of the Road Construction Infrastructure

- Adaptation of the Road Condition to the demands resulting out of changing traffic volumes
- Prognosis of future traffic developments
- Relieve of the existing road network
- Connection to the over-regional, wider network
- Closure of gaps in the road network
- Improvement or Standardisation of road stretch characteristics
- Improvement of the Traffic Safety
- Improvement of the Economy for the Road Users
- Elimination of Bottle necks

2.5 Elimination of existing threats for the Environment

- Improvement of the existing emission-and Emission situation
- Improvement of the Functionality of City or Village centres
- Relieve of Recreational Centres

3. Suitability of the Road Construction Project / Comparison between the various alternatives (The Comparison should be carried out in Tabular Form)

3.1 Description of the alternative routes

- Location within the Road Network and Links
- Length of the Project
- Alignment of the Road
- Cross-Sections
- Design of Junctions
- Technical Evaluations

3.2 Brief Characterisation of Nature and Landscape

3.3 Evaluation of the various Alternatives

3.3.1 Structural Plan, Town Development Plan

3.3.2 Traffic Conditions

Road Infrastructure

3.3.4 Environmental impact Assessments

3.3.4.1 Noise and Pollution

- existing and planned usage of space
- existing noise-and pollution situation
- immission limit values
- consequences

3.3.4.2 Nature and Landscape

- existing usage of space
- structure of natural environment
- protected Areas
- consequences

3.3.4.3 Agriculture and Forestry

- soil quality and classification
- Intensity of Agriculture and Forestry
- Forest Functions
- Consequences

3.3.4.4 Space Demand

- Space Demand of the various Alternatives
- Impact on personal Property

3.3.4.5 Hydrous Areas

- existing situation
- areas earmarked for water usage
- consequences

3.3.4.6 Flooding Areas

- existing situation
- consequences

3.3.4.7 Build-up Areas

- existing situation
- maintenance of heritage

- consequences

3.4 Comments of third parties to the various alternatives

- Comments from Public Hearings
- Comments of other persons involved in the planning

3.5 Economy of the various Alternatives

- costs which the client has to carry
- user costs

3.6 Chosen Alignment

- Results of the Evaluation and Justification of the chosen Alignment on the basis of functionality, Traffic and Road Construction Techniques and the Economy

4. Technical Design of the Road Construction Measure

4.1 Location Route

- chosen design speed and alignment elements
- exceeding or remain under the alignment limits
- compulsory points which are distinctive for the layout and their levels
- results of the visibility analysis
- considerations of environment and landscape within the horizontal and vertical alignment
- alignment within the three dimensional space

4.2 Cross-Section

- existing and future traffic load (incl. heavy traffic)
- justification of the cross-section
- distribution of the cross section
- elements of the pavement construction
- efficiency
- constructional details of embankments, pedestrian and cycling facilities, stand-by lanes etc.
- Landscape design of embankments and centre strips
- Noise and emission protection measures
- Technical measures in ground water protected areas

4.3 Junctions

- Proof of Efficiency
- Traffic Management
- Technical set-up
- Environmental design

4.4 Earthworks / Soil

- Types of Soil, Classification, Condition
- Groundwater
- Storage of soil
- Volume of earthworks, mass balance
- Technical measures
- Cuts and fills incl. their landscape design

4.5 Storm water Drainage

- Receiving water conditions
- Storm water drainage facilities for the road, the recipient, changes at the recipient incl. their landscape design

4.6 Engineering Buildings

- Bridges, Tunnels, Retaining walls, Culverts
- Justification of necessity and their main dimensions
- Aesthetically, emission technological and landscape design considerations influencing the dimensions

4.7 Road Furniture

- Description and separate plan of all road furniture

4.8 Special Buildings

- Resting places, Cable houses, Pumping Stations etc.
- Justification of the main dimensions
- Aesthetical, environmental and emission technical considerations
- Exploitation

4.9 Public Transport Facilities

- Description of all public transport facilities incl. changes or improvements in the existing infrastructure

4.10 Cables and Pipes

- utility lines
- oil / gas pipelines
- other long distance supply lines

5. Protection and Compensation Measures

5.1 Noise Protection Measures

- active Noise Protection Measures
- passive Noise Protection Measures

5.2 Ground Water and Surface Water Protection Areas

5.3 Compensation and replacements for the protection of Nature and Landscape

- ecological measures
- landscape design measures
- design of embankments and centre strips

5.4 Measures for the homogeneous integration into existing settlements

- design of the roadside environment
- safety measures

6. Explanation to the cost calculation

6.1 Costs

6.2 Employer

6.3 Participation of Third Parties

7 Procedures

Intended procedures to carry out the project

8 Carrying out the project

- project sections
- timetable
- expropriation, purchase of land
- traffic management during construction time
- development of construction site, impacts
- others

List of Bridges and other Engineering Buildings

No.	Description of Building Road or Waterway	Const	Existing Cross section of the roads or waterway which will be crossed	Bridges		Other buildings Noise Dimensions	Remarks Costs
				Include passes in the plan incl. road width, height, etc.	Overpass over the road width, height, etc.		
1	Construction No. 20 Combined Cycling and Pedestrian facilities	2 + 780		B = 13.10m LW = 24.0m (17+7) LH = 2.50m Kr < = 100 ^g Br KI = 60			
2	Construction No. 22 Cycling and Pedestrian facilities over B515n	3 + 014	<p>Existing construction</p>		B = 2.50m LW = 30.0m LH = 4.70m Kr < = 77.5 ^g Br KI = 30		
5	BW No. 129 Bridge over A46	3 + 954		B = 16.60m LW = 30.0m LH = 4.70m Kr < = 65.7994 ^g Br KI = 60			

Results of noise protection calculations
For the noise protection measure B515n Hal-Muxi Bypass

Page No.:

Basic Data: DTV: [Kfz/24h] P_T: [%] P_N: [%] V_{Zul} = [Km/h] Road surface:

Calculation point	Emission level		S _{LO} *	H*	ΔL _{SL} *	ΔL _B *	Mean Value Without Noise protection		Erf. ΔL _{LS} *	h _{LS}	d _{s(x)}	Vorh. ΔL _{LS(x)} *	Mean Value with Noise protection		Remarks
	Day dB(A)	Night dB(A)					Day dB(A)	Night dB(A)					Day dB(A)	Night dB(A)	

Abbreviations:

- | | | | |
|------------------|---|------------------------------|---|
| S _{LO} | Non critical vertical distance between driving lane and are of emission | Erf., vorh. ΔL _{LS} | necessary reduction of noise level through protection |
| H | Height over the emission area over the driving lane | h _{LS} | height of noise proection over the driving lane |
| ΔL _{SL} | Correction for different vertical distances | d _{s(x)} | additional length of noise protection |
| ΔL _B | Correction for topography | P _{T, N} | amount of heavy traffic (day / night) |
| | | V _{Zul} | allowed speed |

Results of noise protection calculations
For the noise protection measure B515n Hal-Muxi Bypass

Page No.: 1

Basic Data: DTV: 15 000[Kfz/24h] P_T: 15[%] P_N: 10[%] V_{Zul} = 100[Km/h] Road surface: Asphalt

Calculation point	Emission level		S _{LO} *	H*	ΔL _{SL} *	ΔL _B *	Mean Value Without Noise protection		Erf. ΔL _{LS} *	h _{LS}	d _{s(x)}	Vorh. ΔL _{LS(x)} *	Mean Value with Noise protection		Remarks
	Day dB(A)	Night dB(A)					Day dB(A)	Night dB(A)					Day dB(A)	Night dB(A)	
km 2 + 815	69.8	61.6	160.6	+ 3.5	11.3	-	58.5	50.3	-	5.5	190	5.5	53.0	44.8	
km 2 + 911	69.8	61.6	52.0	+ 11.5	4.3	-	65.5	57.3	5.3	5.5	129	7.5	58.0	49.8	
km 2 + 940	69.8	61.6	52.5	+17.8	4.3	-	65.5	57.3	5.3	5.5	132	7.6	57.9	49.7	5 & 6 level have to be protected passively
km 2 + 990	69.8	61.6	44.0	+20.6	3.3	-	66.5	58.3	6.3	6.0	112	8.1	58.4	50.2	5 - 7 level have to be protected passively
km 3 + 170	69.8	61.6	55.0	+15.0	4.6	-	65.2	57.0	5.0	8.0	108	7.0	58.2	50.0	

Abbreviations:

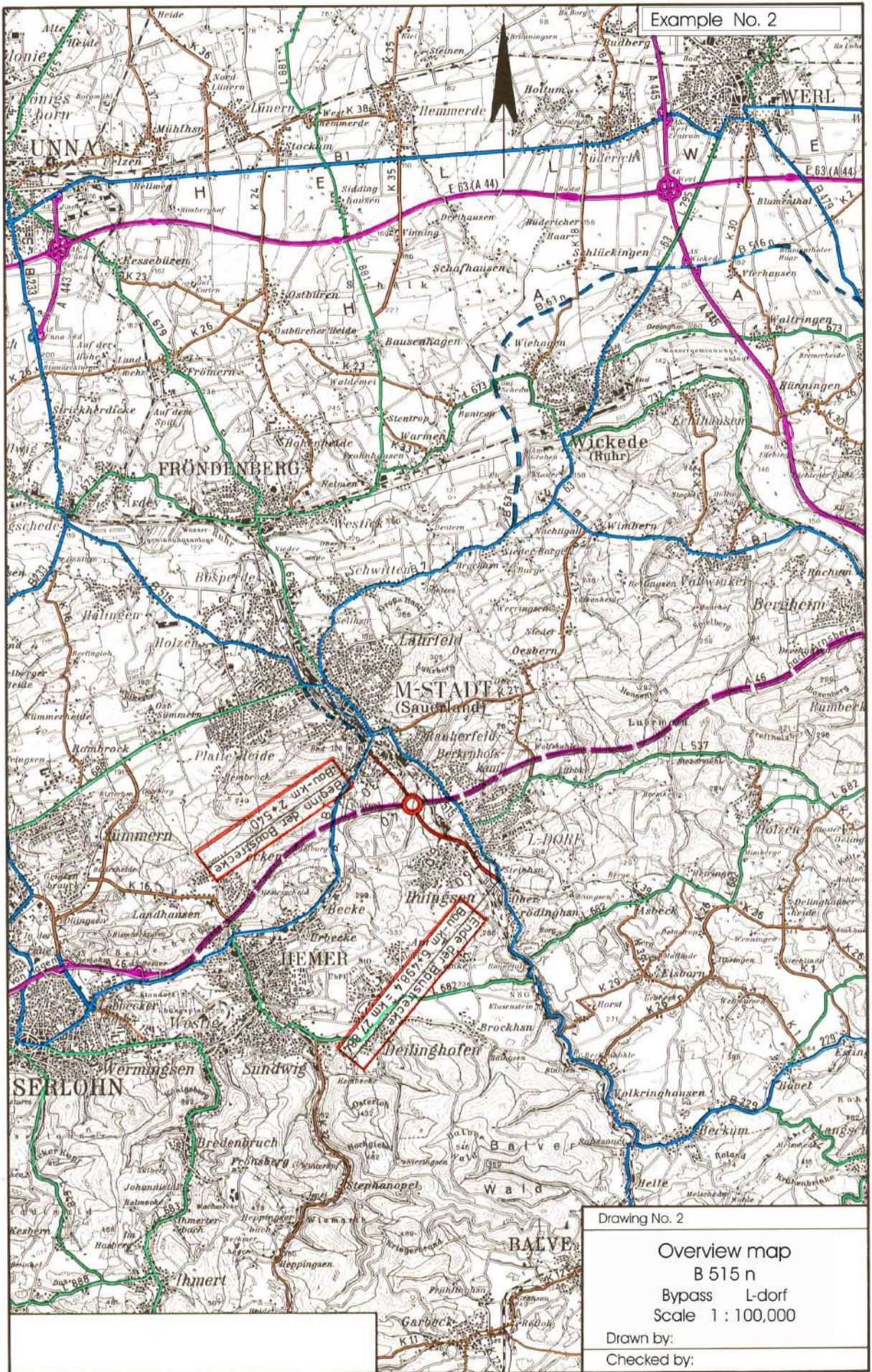
S _{LO}	Non critical vertical distance between driving lane and are of emission	Erf., vorh. ΔL _{LS}	necessary reduction of noise level through protection
H	Height over the emission area over the driving lane	h _{LS}	height of noise proection over the driving lane
ΔL _{SL}	Correction for different vertical distances	d _{s(x)}	additional length of noise protection
ΔL _B	Correction for topography	P _{T, N}	amount of heavy traffic (day / night)
		V _{Zul}	allowed speed

Land Acquisition List
For the street name: B515n, Hal-Muxi Bypass

Page No.: 1

Land Acquisition plan no.	Const	Name, Surname and town of owner	Master plan		Local Council		Usage	Size of plot m ²	Size of area to purchase m ²	Area to be used temporarily m ²	Continuously limited area m ²	Remaining Area	Remarks
			Volume	Page	Area	Plot							
2.01.1	2+648	Borg Ganni 18, Triq in-Nemel Hal-Muxi	3	17	19	155	S	3502	200				a
2.06.1 2 3	2+795	Maria Meli 108, Triq il-Ward Hal-Muxi	4	39	19	407	Anl	15000	685 195	120			a a c
2.21.1 2	3+065	George Debattista 24, Triq Dun Bert Santa Lucija	1	3	19	95	A	27600	2060			700	a c
2.27.1 2 3	3+065	Charles Mifsud 225, Triq Mdina Hamrun	27	369	19	92	Agr	2601	970			355	a c a
2.34.1 2 3	3+350 3+240 3+000	Concetta Vella 3, Triq Dingli Rabat	16	184	18	315	A Gr Gr	250005	11110			805 5735	a a c

SAMPLE DRAWINGS

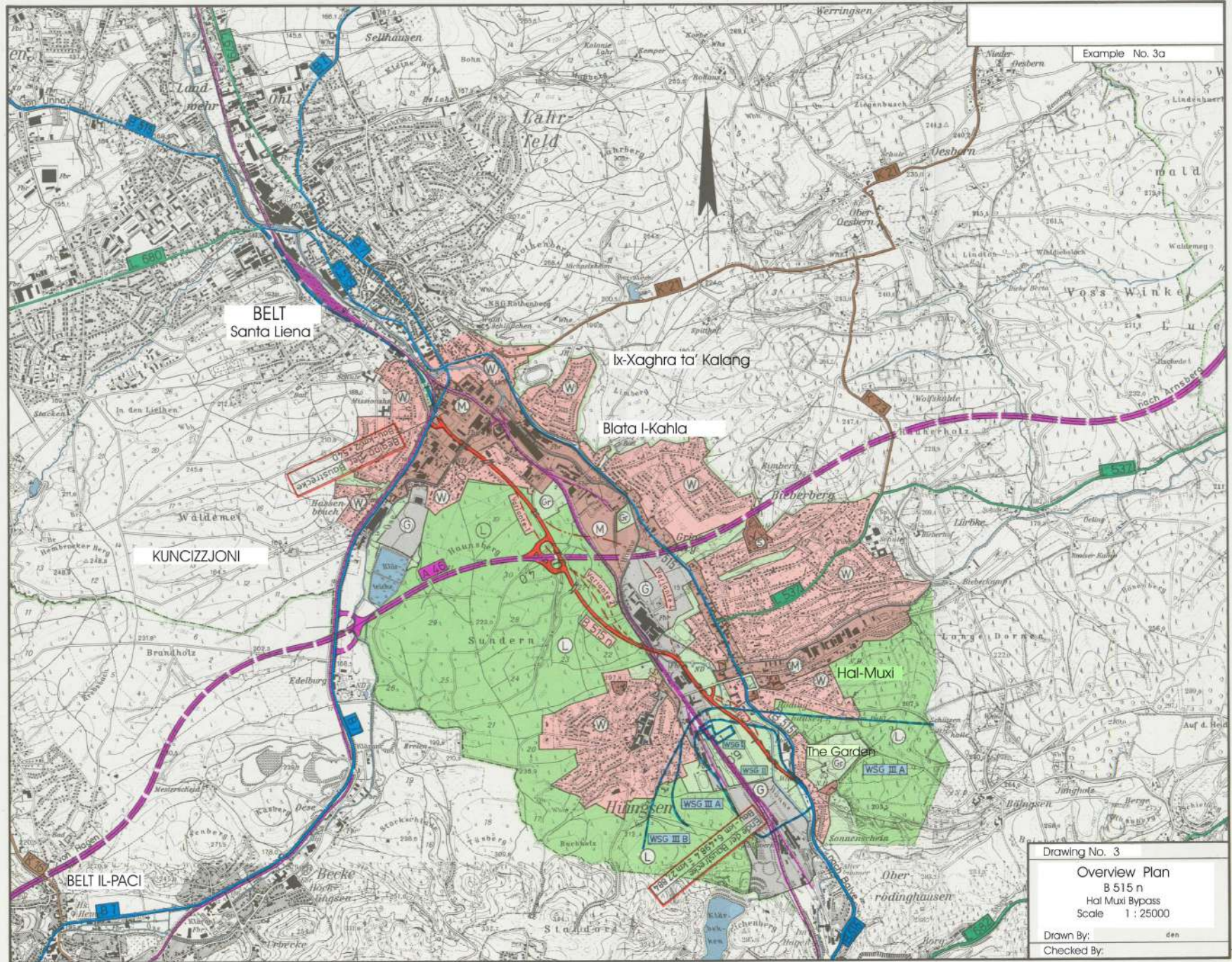


Drawing No. 2

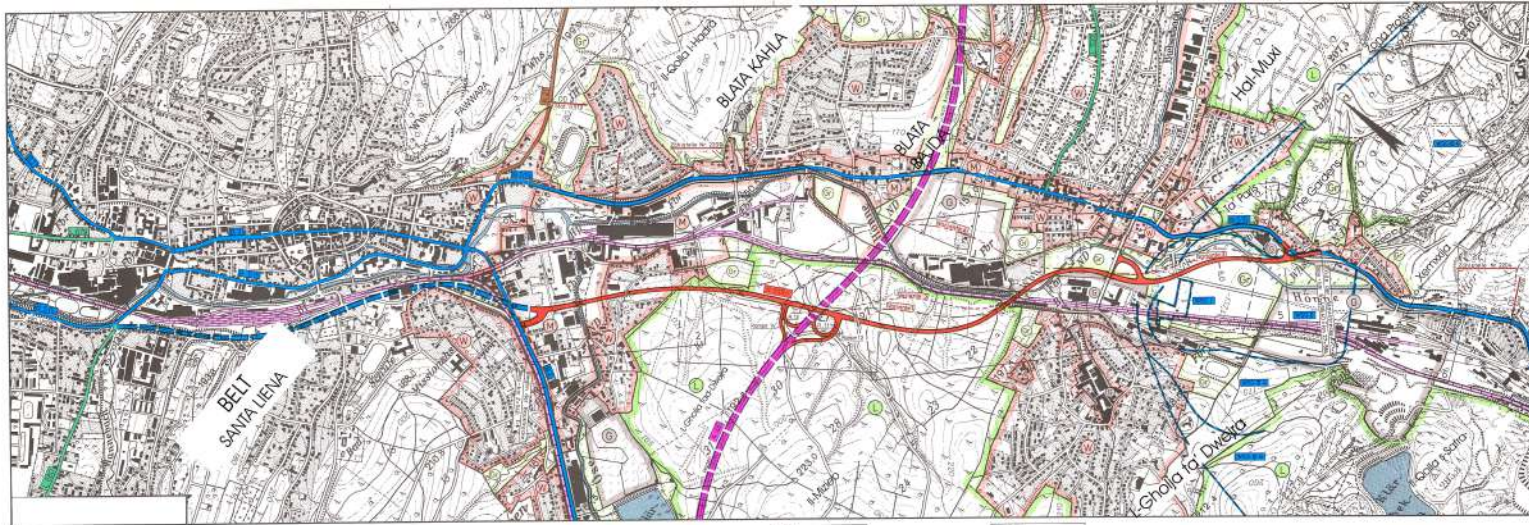
Overview map
B 515 n
Bypass L-dorf
Scale 1 : 100,000

Drawn by:

Checked by:



Drawing No. 3
 Overview Plan
 B 515 n
 Hal Muxi Bypass
 Scale 1 : 25000
 Drawn By: den
 Checked By:



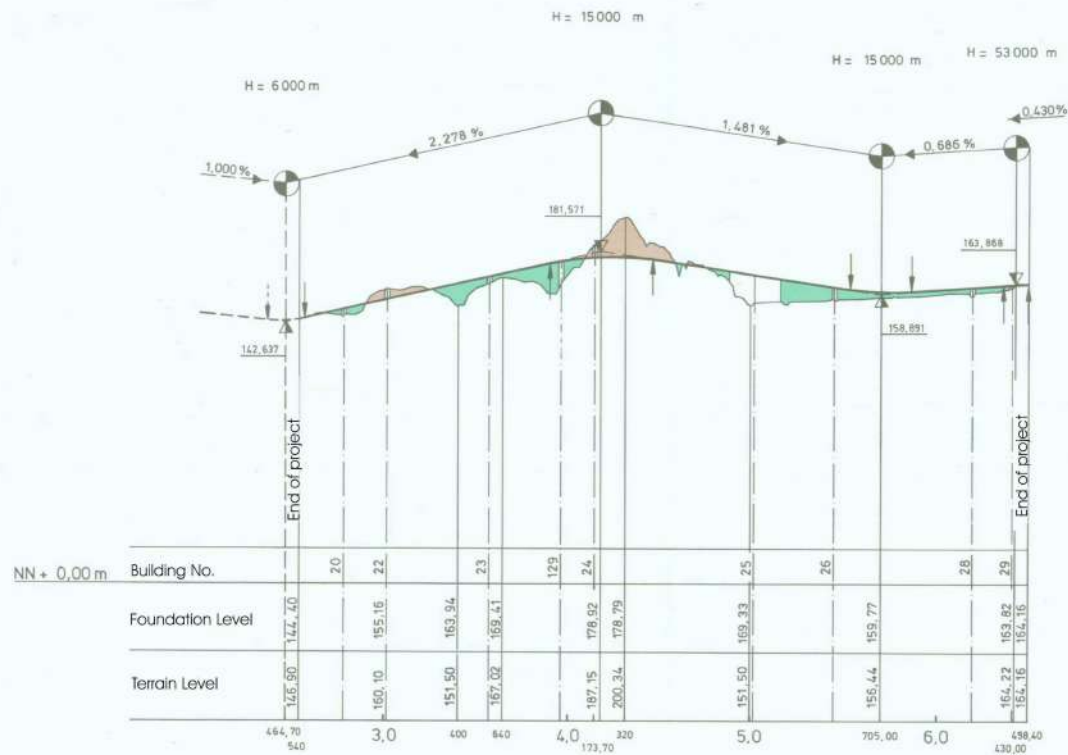
LEGEND

Settlement	Railway
Village area	Arterial road
Insulated area	District road
Special areas (hospitals, schools, etc.)	Road & urban road
Environmental protected area	Planned - construction project
Protected water zone	Green area
Natural monuments / heritage	Waterway

<p>BRIDGE Bridge over A-45</p> <p>Code: BR-101-01-101-01</p> <p>4 - 46.78m x 10 - 30.00m x 10m</p> <p>10 - 10.00m x 10 - 10.00m</p> <p>10 - 10.00m x 10 - 10.00m</p>	<p>BRIDGE Bridge over D6</p> <p>Code: BR-101-01-101-01</p> <p>4 - 46.78m x 10 - 30.00m x 10m</p> <p>10 - 10.00m x 10 - 10.00m</p> <p>10 - 10.00m x 10 - 10.00m</p>
---	---

<p>License No. 10</p> <p>Drawing No. 3</p> <p>Overview Plan</p> <p>1:10,000</p> <p>Red Map, Special</p> <p>Scale 1: 10,000</p> <p>Drawn by:</p> <p>Checked by:</p>

Nr 20 Construction - km 2+782 L.W. = 24,00 m	Nr 23 Construction - km 3+565 L.W. = 5,50 m	Nr 24 Construction - km 4+140 L.W. = 34,50 m	Nr 25 Construction - km 5+451 L.W. = 11,50 m	Nr 29 Construction - km 6+412 L.W. = 6,50 m
Nr 22 Construction - km 3+014 L.W. = 33,00 m	Nr 129 (A.46) Construction - km 3+954 L.W. = 30,00 m	Nr 25 Construction - km 5+063 L.W. = 365,50 m	Nr 28 Construction - km 6+196 L.W. = 36,75 m	



Example No. 4a

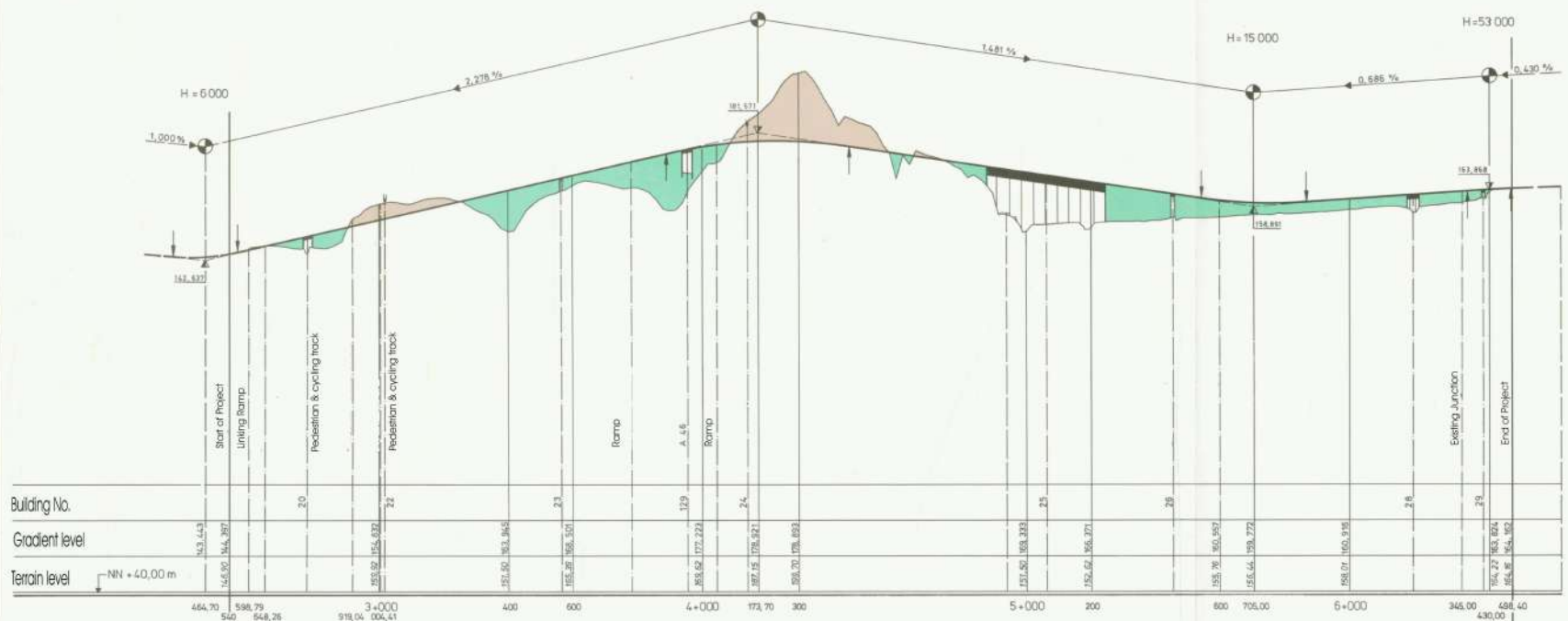
Drawing No. 4a
 Overview longitudinal section Plan
 B 515 n
 Hal Mux Bypass
 Scale 1 : 25000
 Drawn By: _____ Date: _____
 Checked By: _____

Building Nr. 129 (A 46)
 Bridge over A46
 Const-km 3+954,28 ± 22+766,84
 ± = 65,7984⁹ LW = 30,00 LW = 151m
 KH = 0,80 m LH = 4,70 m
 Br-Kl 50 / 30 R Br = 16,60 m

Building Nr. 25
 Bridge
 Const-km 5+062,75
 ± =
 KH = 2,50 m LH = >10 m
 Br-Kl 60 / 30 N Br = 13,10 m

Legend
 Road without connection

H=15 000



Building No.	Gradient level	Terrain level	Station
	163,443	166,80	464,70
	164,397	168,80	548,26
	165,037	169,52	919,04
	165,836	170,50	004,41
	166,501	171,15	400
	167,271	172,02	600
	168,927	173,70	4+000
	169,833	174,70	300
	169,997	175,50	5+000
	170,371	176,54	200
	170,997	177,72	800
	171,915	179,00	705,00
	172,915	180,00	6+000
	173,898	181,00	245,00
	174,898	182,00	430,00
	175,898	183,00	498,40

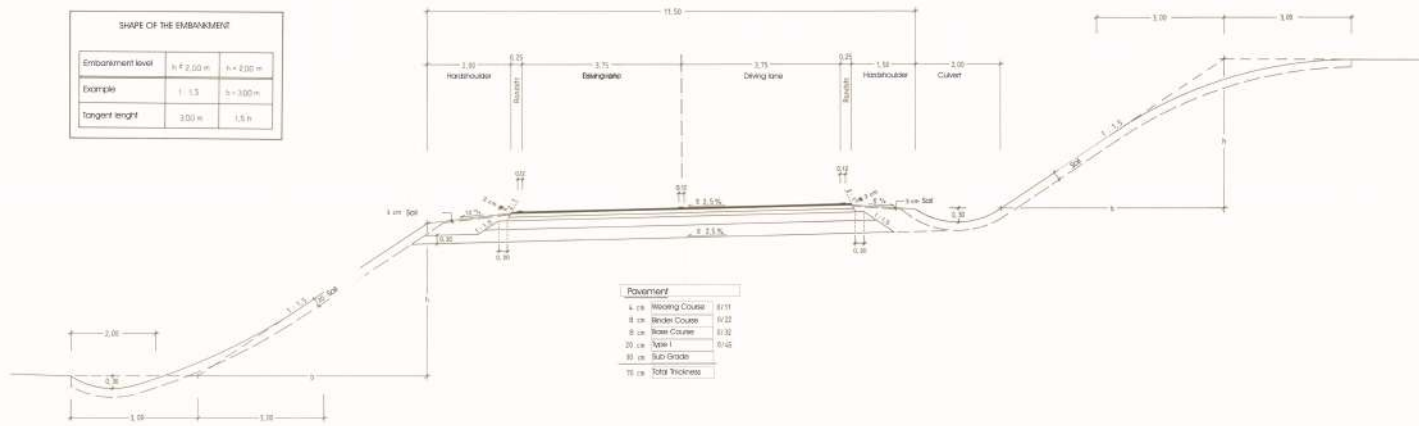


Example No. 4b

Drawing No. 4b
 Overview Plan
 B 515 n
 Hal Muhl Bypass
 Scale 1 : 10000 / 1000
 Drawn By: Date:
 Checked By:

SHAPE OF THE EMBANKMENT

Embankment level	$h = 2,00 \text{ m}$	$h = 2,00 \text{ m}$
Example	$1 : 1,5$	$5 : 100 \text{ m}$
tangent length	300 m	$1,5 \text{ h}$

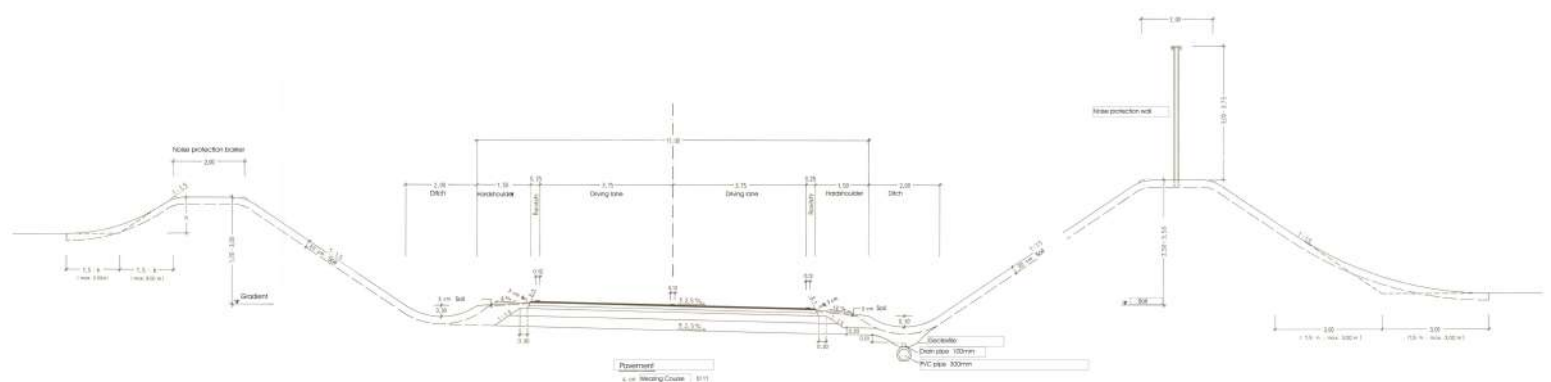


Pavement

4 cm	Binding Course	0.17
8 cm	Base Course	0.32
20 cm	Asphalt	0.45
15 cm	Sub Grade	
47 cm	Total thickness	

Example No.: 8.11

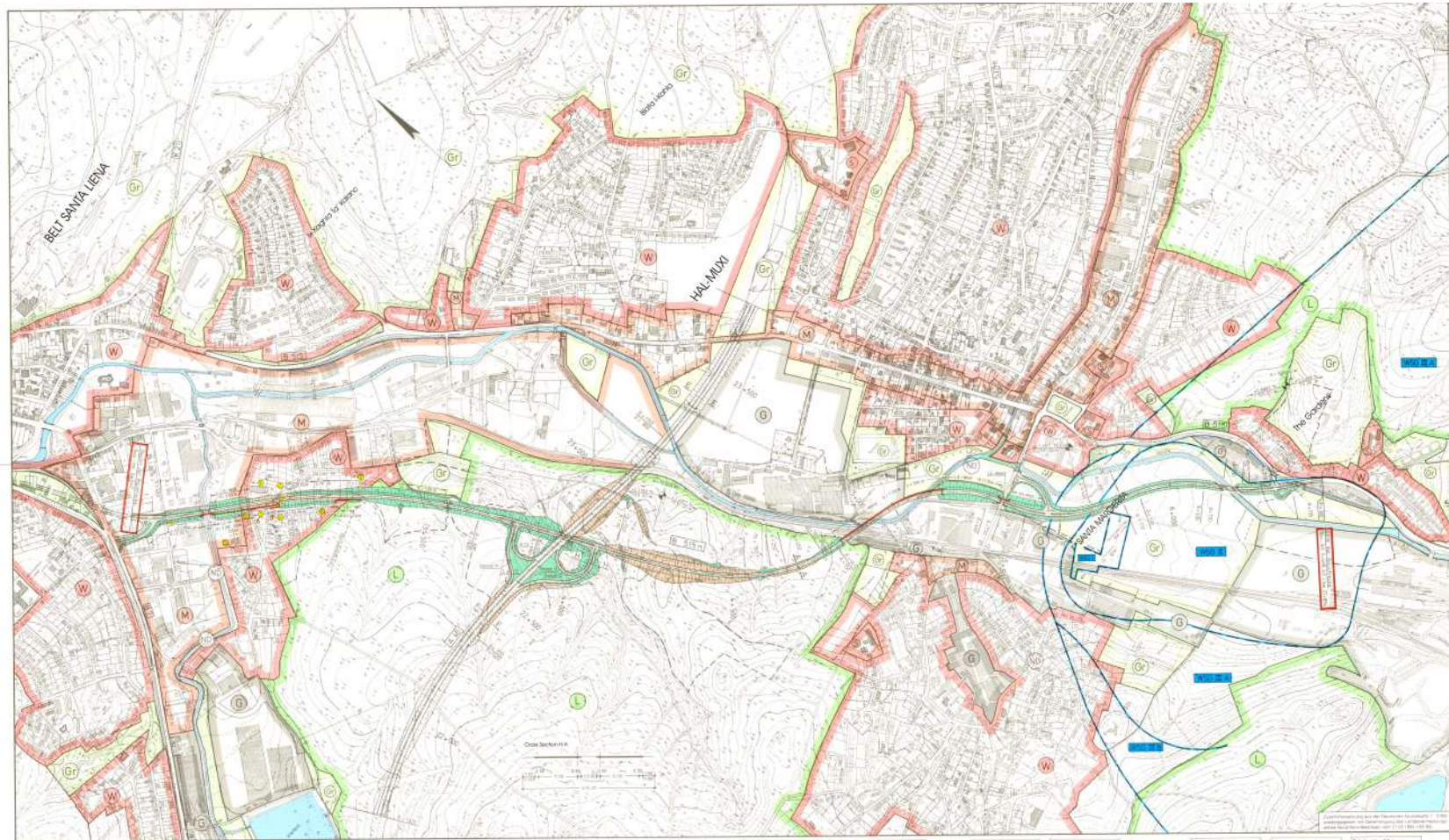
MALTA TRANSPORT AUTHORITY		Drawing No. 6	
Road B 515 (r)		Page No.: 1	
Here Village		Rev. No.	
New Construction of the bypass		Date	Symbol
Drawn by		Checked by	
		checked by	
		MALTA TRANSPORT AUTHORITY	
		scale	1:50



Pavement	
100 mm	Subgrade
100 mm	Base Course
100 mm	Binder Course
100 mm	Wearing Course

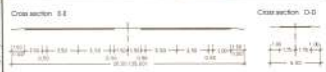
Example No. 1.1.1

MALTA TRANSPORT AUTHORITY		Drawing No. 0	
Road B 515 N - 10km SW, L-100, L-100-01		Page No. 2	
Road Village		Date	
New Construction of the Road		Scale	
Drawn by		Checked by	
MAJKA TRANSPORT AUTHORITY		Scale 1:50	



LEGEND

- Green area
- Settlement
- Village area
- Industrial class
- Special areas (schools, hospitals, etc.)
- Environmentally protected areas
- Water reserve protected areas
- Natural heritage
- Water ways
- Protection with slope
- In-patient
- Area origin
- Noise protection
- Calculations
- Positive noise protection measures of buildings
- Number of buildings to protect
- Mean noise level (dB) without noise protection
- Noise protection (dB)
- Noise protection wall
- Enticement
- Changepoint
- Enticement



Calculation results

Level 100m

Level 200m

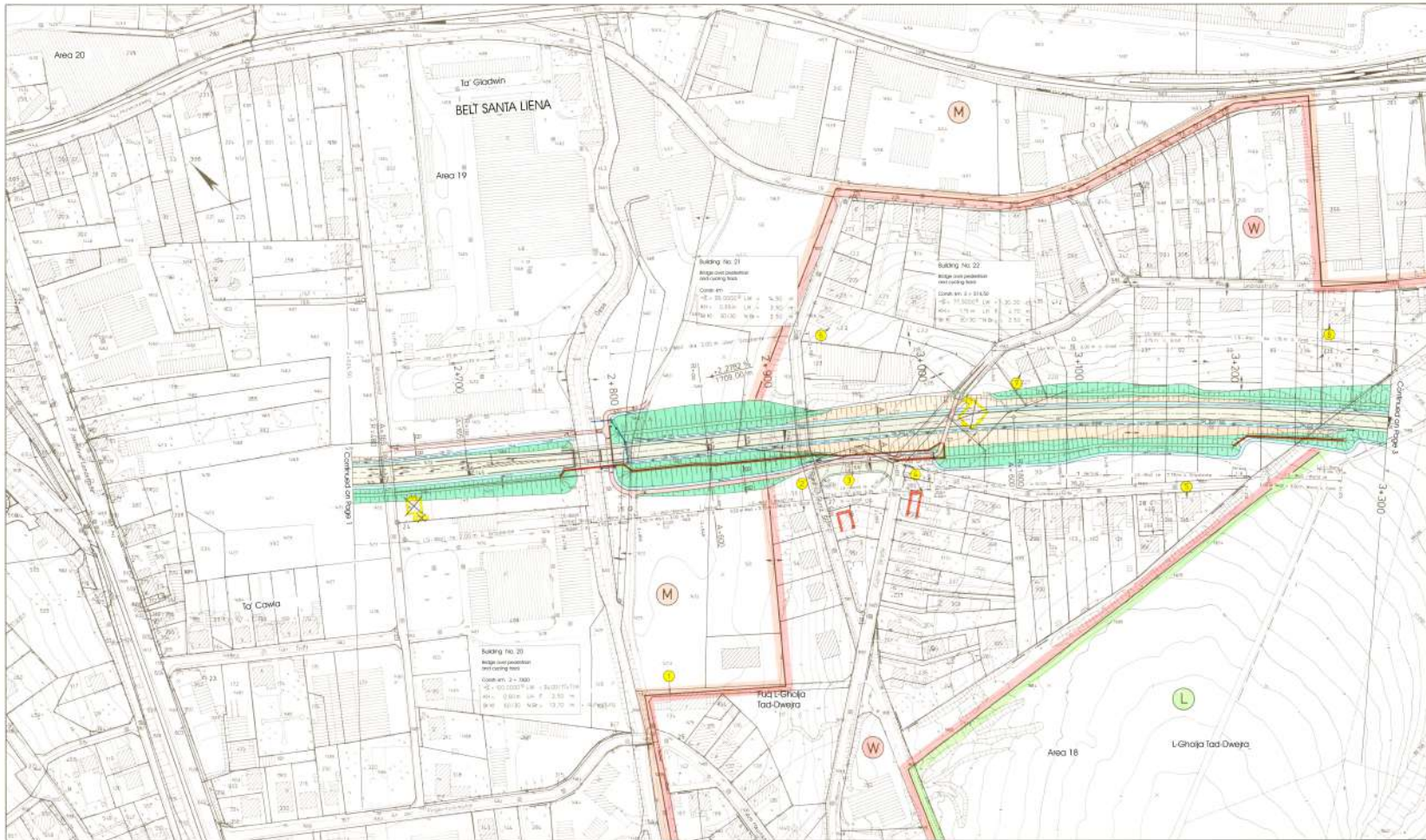
Level 300m

Level 400m

Level 500m

Multi Transport Authority		Drawing No. 1	
Road: B.S.12.1		Region No. 1	
Construction: 423-581-8818		Scale: 1:1000	
Project:		Sheet:	
New Construction of Highway		Date:	
Drawn by:		Checked by:	
		2022 National Landmark Design Project	
		Scale: 1:1000	

<p>Building No. 20 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 21 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 22 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 23 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 24 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 25 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 26 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 27 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 28 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 29 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>	<p>Building No. 30 High rise residential and parking area</p> <p>Area: 10,000 sq.m</p> <p>Volume: 10,000 cu.m</p> <p>Height: 100m</p> <p>Code: 100-100-100</p>
---	---	---	---	---	---	---	---	---	---	---



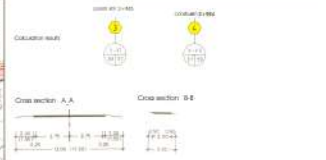
LEGEND

- Green area
- Settlement
- Village area
- Industrial area
- Special areas (schools, hospitals, etc.)
- Environmentally protected areas
- Water resource protected areas
- Natural heritage
- Water ways
- Environment damage (air, noise, vibration)
- Drinking water
- Cultural sites
- Archaeological findings
- Environment
- Forest wood / trees

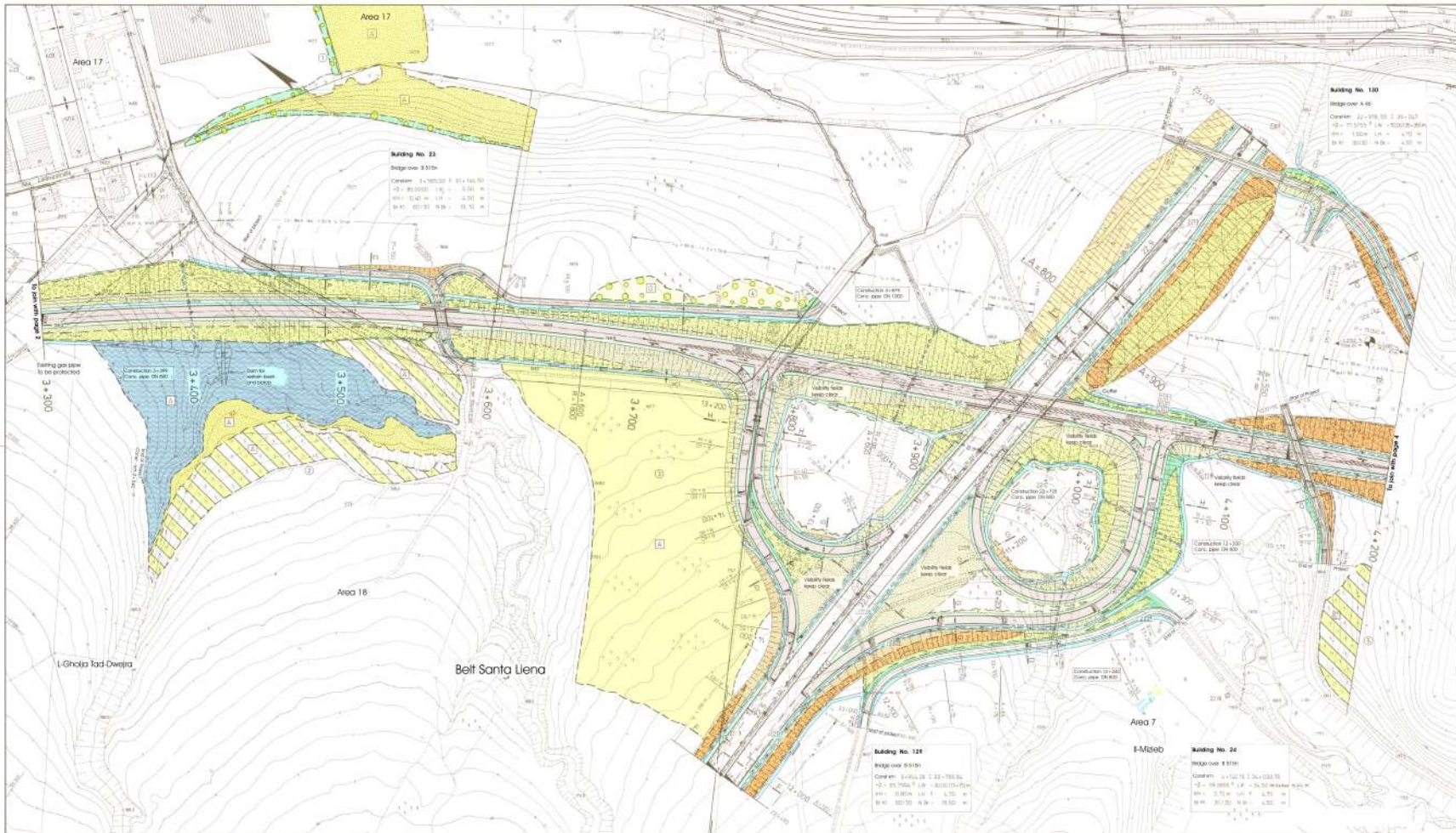
Noise protection

- Calculations
- Positive noise protection measures of buildings
- Number of buildings to protect
- Mean noise level (dB) without noise protection
- Noise protection dam
- Noise protection wall
- Indication with slope
- + / - in percent
- As shown

300mm collecting pipe / 100mm drain pipe with direction arrow
 Gully
 Control manhole
 0.000 m
 0.000 m
 Cross section A-A
 Cross section B-B
 0.000 m
 0.000 m

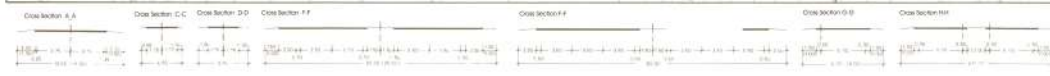


Motto Transport Authority		Drawing No. 7	
Weg 2.215m	Construction 40120201.01.01.01	Page No.	1
Weg		Reg. No.	
		Obj.	appt. 0.0
New Construction of Bridge		Scale	
Construction km 2+426.50 - 2+300		Scale	1:500
Drawn by			



Legend

Name	Description	Description
Foundation	Foundation	Foundation
Drainage	Drainage	Drainage
Water pipe	Water pipe	Water pipe
Stormwater	Stormwater	Stormwater
Construction	Construction	Construction
Foundation	Foundation	Foundation
Drainage	Drainage	Drainage
Water pipe	Water pipe	Water pipe
Stormwater	Stormwater	Stormwater
Construction	Construction	Construction
Foundation	Foundation	Foundation
Drainage	Drainage	Drainage
Water pipe	Water pipe	Water pipe
Stormwater	Stormwater	Stormwater
Construction	Construction	Construction



Mata Transport Authority		Project No. 7
Max. 8.515 n	Construction	Page No. 3
Scale	1:100	Date
New Construction of Road		
Construction: 3-300 - 4-200	Design: 1:100	Scale: 1:200
Design		



Legend

- Enchantment
- Retention facilities
- Drainage
- Drainage line with line
- Enchantment

Notes:

- Indication of in percent and length
- Proposed stormwater drainage: 100mm with concrete manhole
- Proposed gutter: existing grade
- High point
- Low point
- 2.0% cross slope
- Green area
- Existing trees
- Planned tree planted green area
- Boundary point
- Width: 0.5 - 1.0 - 1.5 - 2.0 - 3.0m
- Block pavement
- Existing pavement and new location

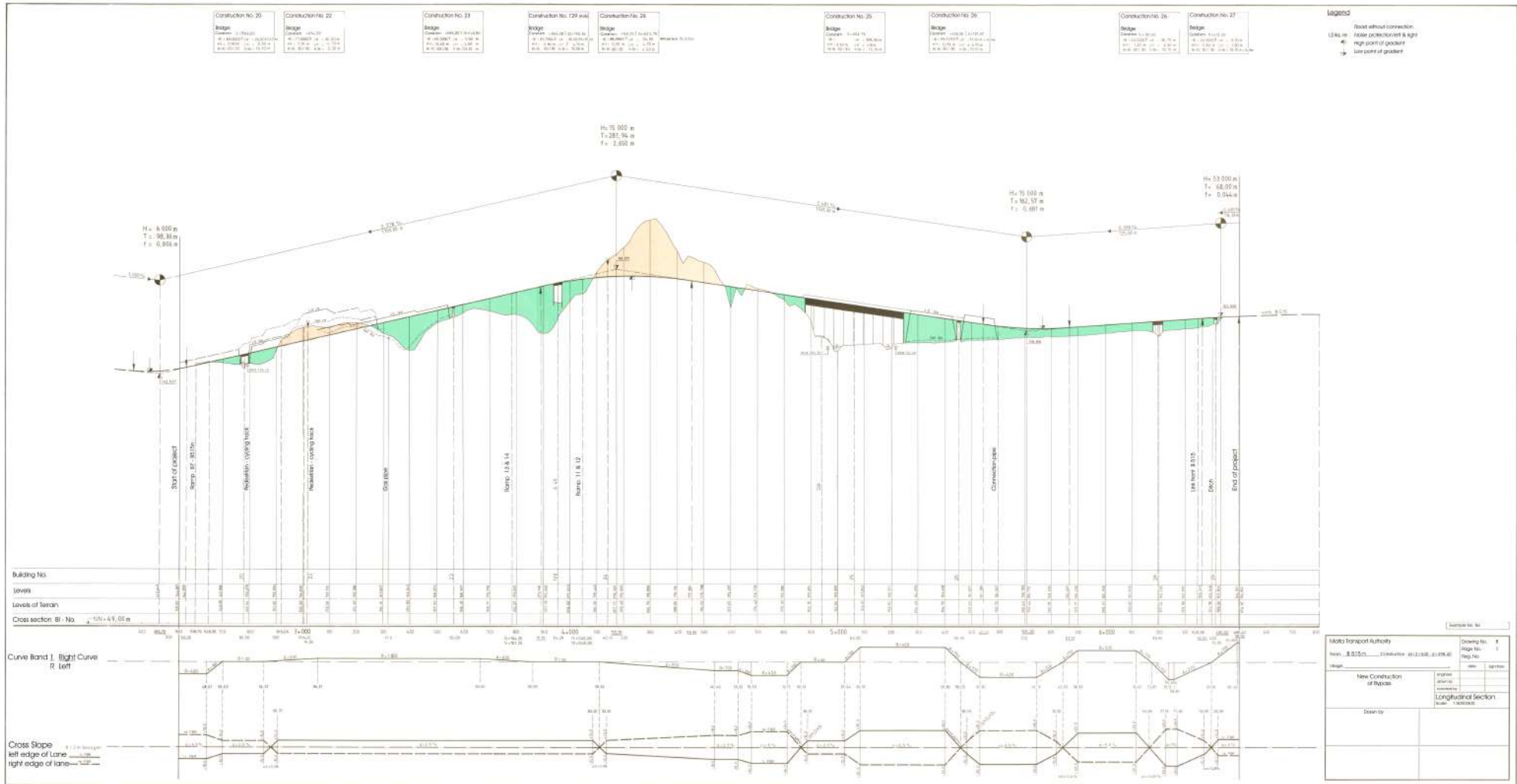
Replace existing Monument

Building #101
 Ridge over 1.827
 Diameter: 0-20x30
 H: 10.000' (3.048 m)
 W: 0.600' (0.183 m) x 0.750' (0.229 m)
 W: 0.750' (0.229 m) x 1.000' (0.305 m)

As per plan
 Width of road is reduced to 6m

Section No. 101

Metro Toronto Authority		Drawing No.	7
Project: B-100 - Construction - 100-000-1-1-10		Page No.	1
Stage:		Scale:	AS IS
New Construction of Road		Author:	
Construction: 0+000 - 0+450		Designer:	
Green by:		Design Manager:	
		Date:	1/2001



Construction No. 20
 Stage
 Construction km 0+782.00
 H = 102.000' R = 343017.77m
 H = 0.00m L = 2.00m
 H = 0.00 L = 1.00m
 H = 0.00 L = 1.00m

Construction No. 22
 Stage
 Construction km 3+014.50
 H = 17.000' R = 30.00m
 H = 1.00m L = 4.00m
 H = 0.00 L = 2.00m

Legend

Left Side: $\frac{1}{2}$ P, $\frac{1}{2}$ R, $\frac{1}{2}$ L, $\frac{1}{2}$ R, $\frac{1}{2}$ L

Right Side: $\frac{1}{2}$ P, $\frac{1}{2}$ R, $\frac{1}{2}$ L, $\frac{1}{2}$ R, $\frac{1}{2}$ L

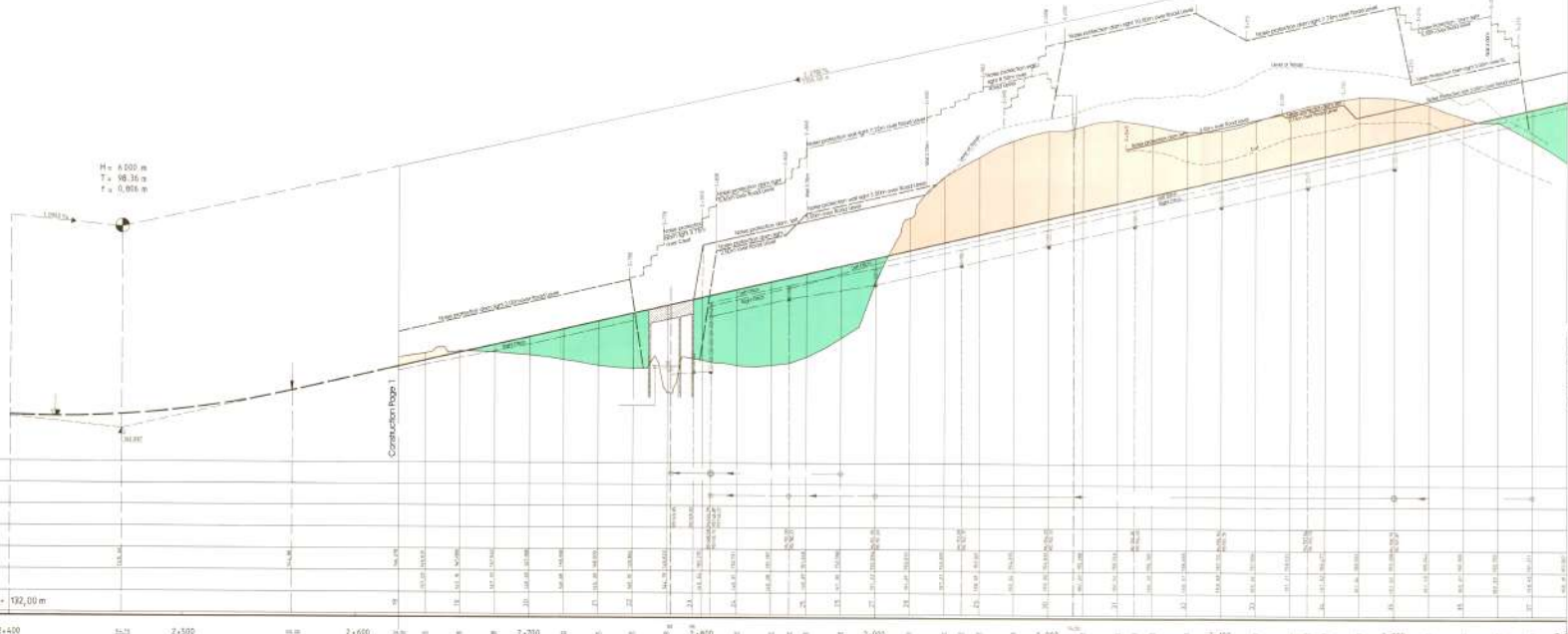
Change of Direction: $\frac{1}{2}$ R, $\frac{1}{2}$ L

Change of Diameter: $\frac{1}{2}$ R, $\frac{1}{2}$ L

SS = Bottom pipe
 SLS = Section start pipe
 A = Change
 R = Curve

KL = Center marking
 SLS = Curve start pipe
 SLS = Right hand curve
 SLS = Left hand curve
 SLS = 100m curve
 SLS = 50m curve

Left side pipe
 Middle structure
 Right structure
 Middle right structure



Left Drainage Pipes
 Right Drainage Pipes
 Left Drainage Levels
 Right Drainage Levels
 Levels of Road Surface
 Levels of Terrain
 Cross Sections

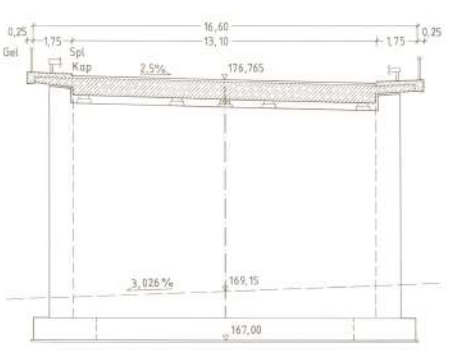
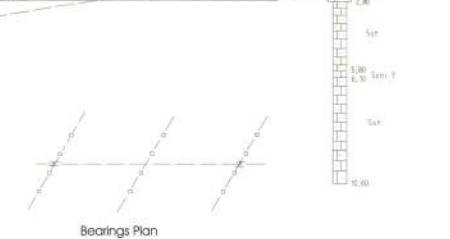
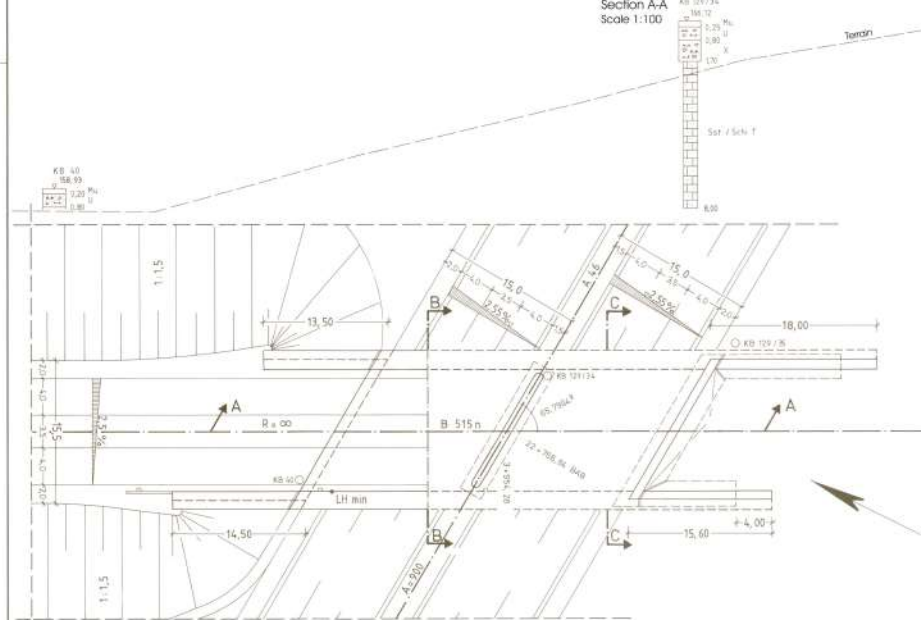
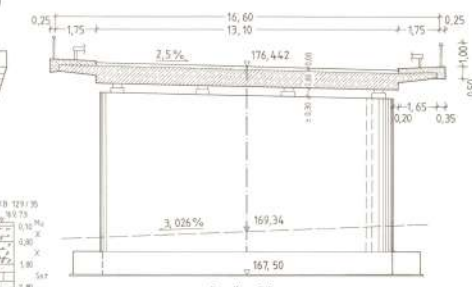
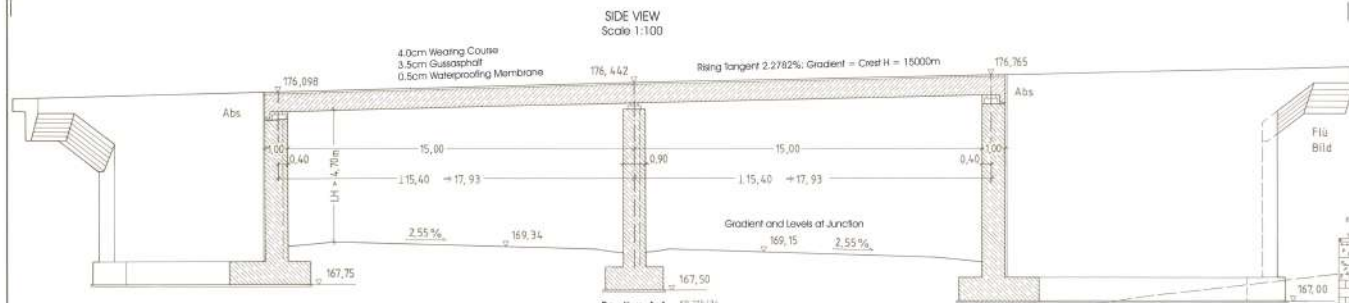
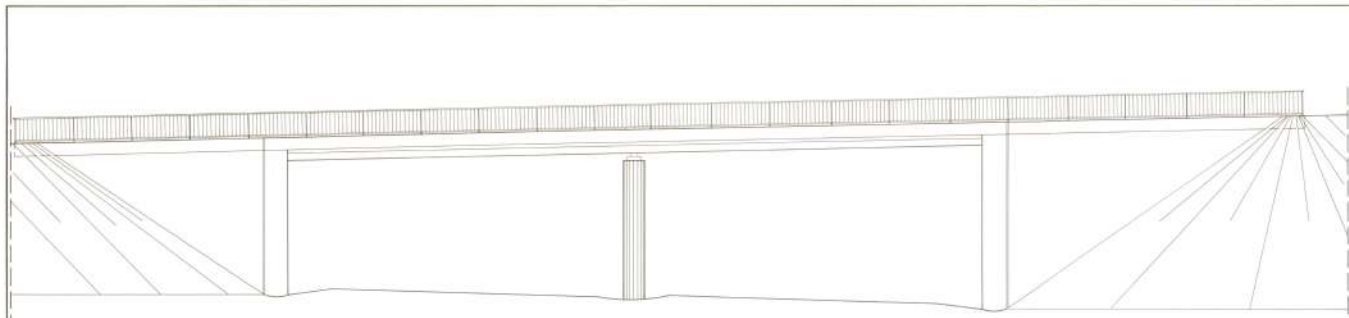
Curve Band 1 Right Curve
 R: Left
 A = 165
 L = 14.11 m
 A = 165
 L = 14.11 m

Cross Slope
 left edge of lane
 right edge of lane

Visibility
 full overlapping visibility
 visibility from left to right
 visibility from right to left
 overlapping visibility from left to right
 overlapping visibility from right to left

Scale: 1:1000

Multi Transport Authority
 Level: 8.515.2
 Project: 442-000-04-000-00
 Stage: New Construction of Bypass
 Drawing No: 1
 Page No: 2
 Date: 1/10/2018
 Engineer: [Name]
 Designer: [Name]
 Checker: [Name]
 Approver: [Name]



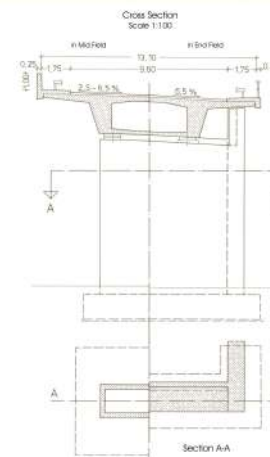
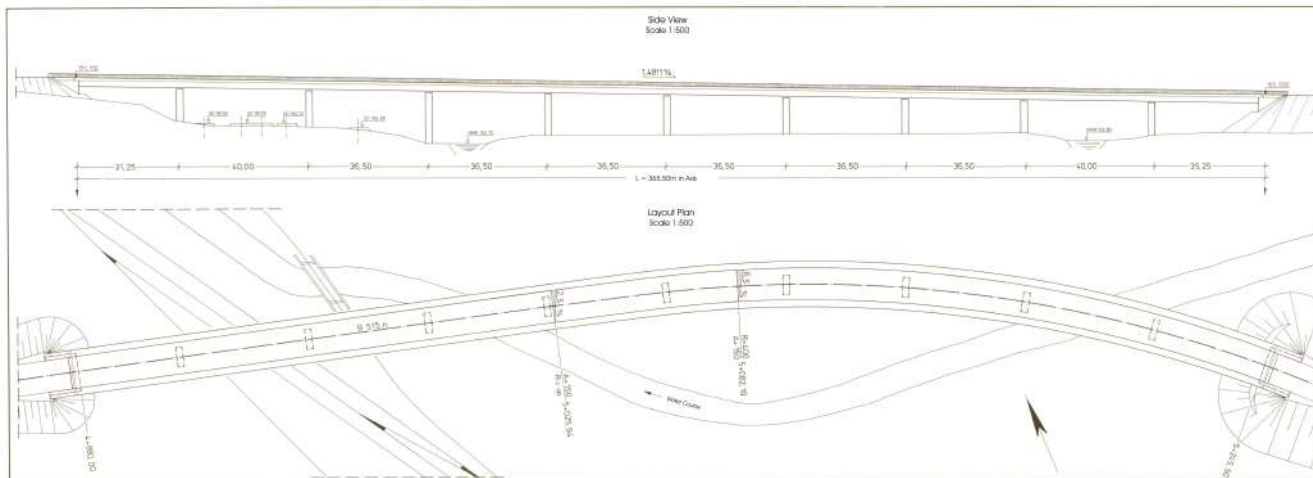
Load Estimations:
Bridge Class 60/30

Main Dimensions

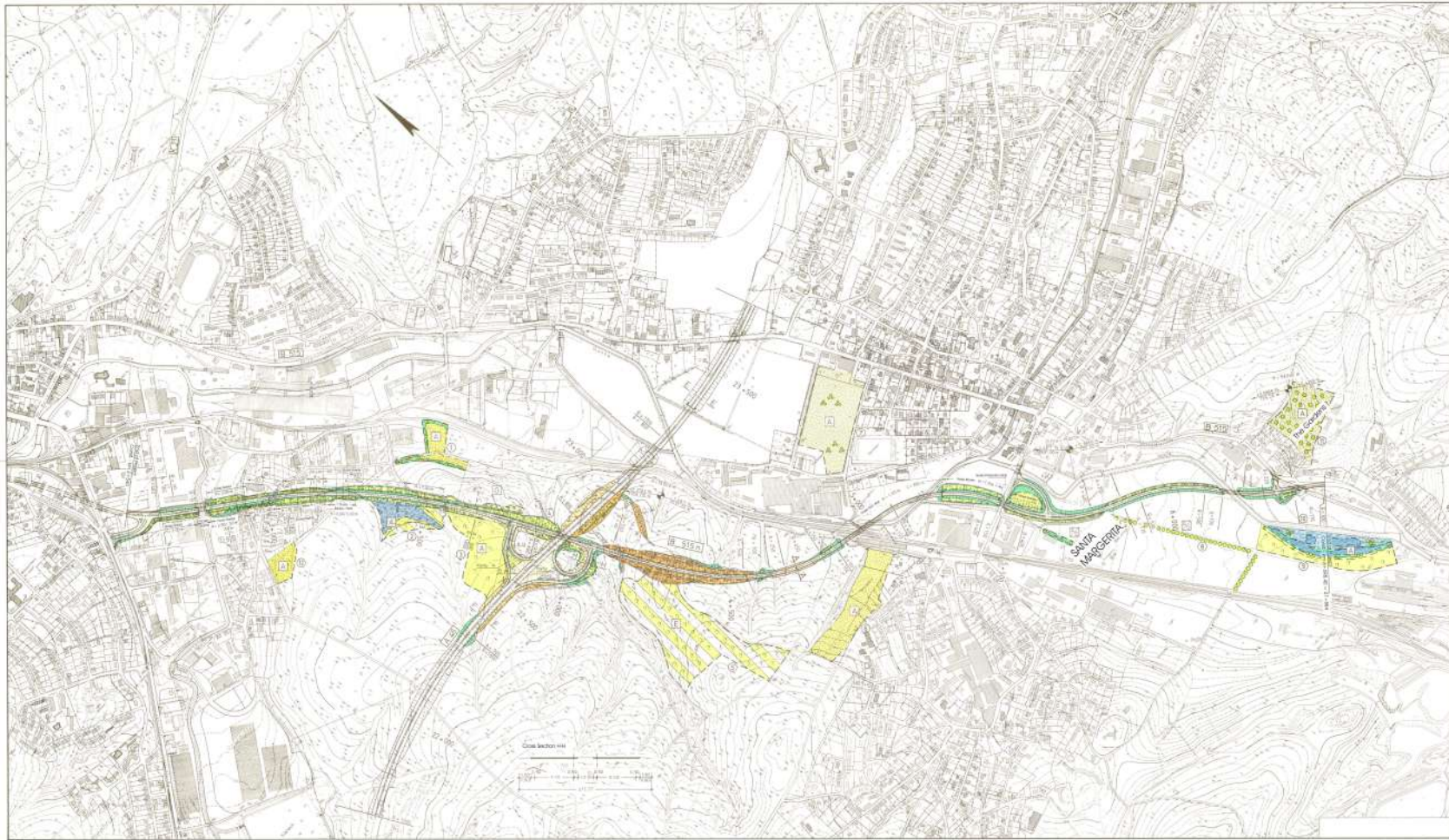
Overall Width	30,00m
Distance between the Piers	2 x 17,93m
Distance between the Railings	16,60m
Total Length between end Bearings	35,86m
Total Length	37,25m
Lowest Height	-5,00m
Lowest Height	-4,70m
Crossing Angle	65,7994g

Example No. 10.3

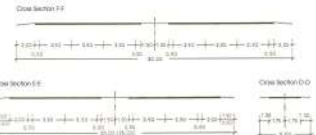
Mata Transport Authority		Drawing No. 10.3	
Road: B.515 n Construction - km.2+348.0-2+398.00		Page No. 1	
Village:		Reg. No.:	
New Construction of Bypass		Project:	
Building No. 120046		Drawn by:	
Bridge Over A45		Checked by:	
Construction - km 3+954.28		Construction Plan	
Scale 1:100 / 250		Scale 1:100 / 250	
Drawn by:		Checked by:	



Moto Transport Authority		Drawing No.	102
Sheet	B.313.1	Project No.	1
Author		Scale	1:500/1:100
New Construction of Bridge		Project	
Bridge over water course		Location	
Construction No. 102/100		Construction Date	
Name of			

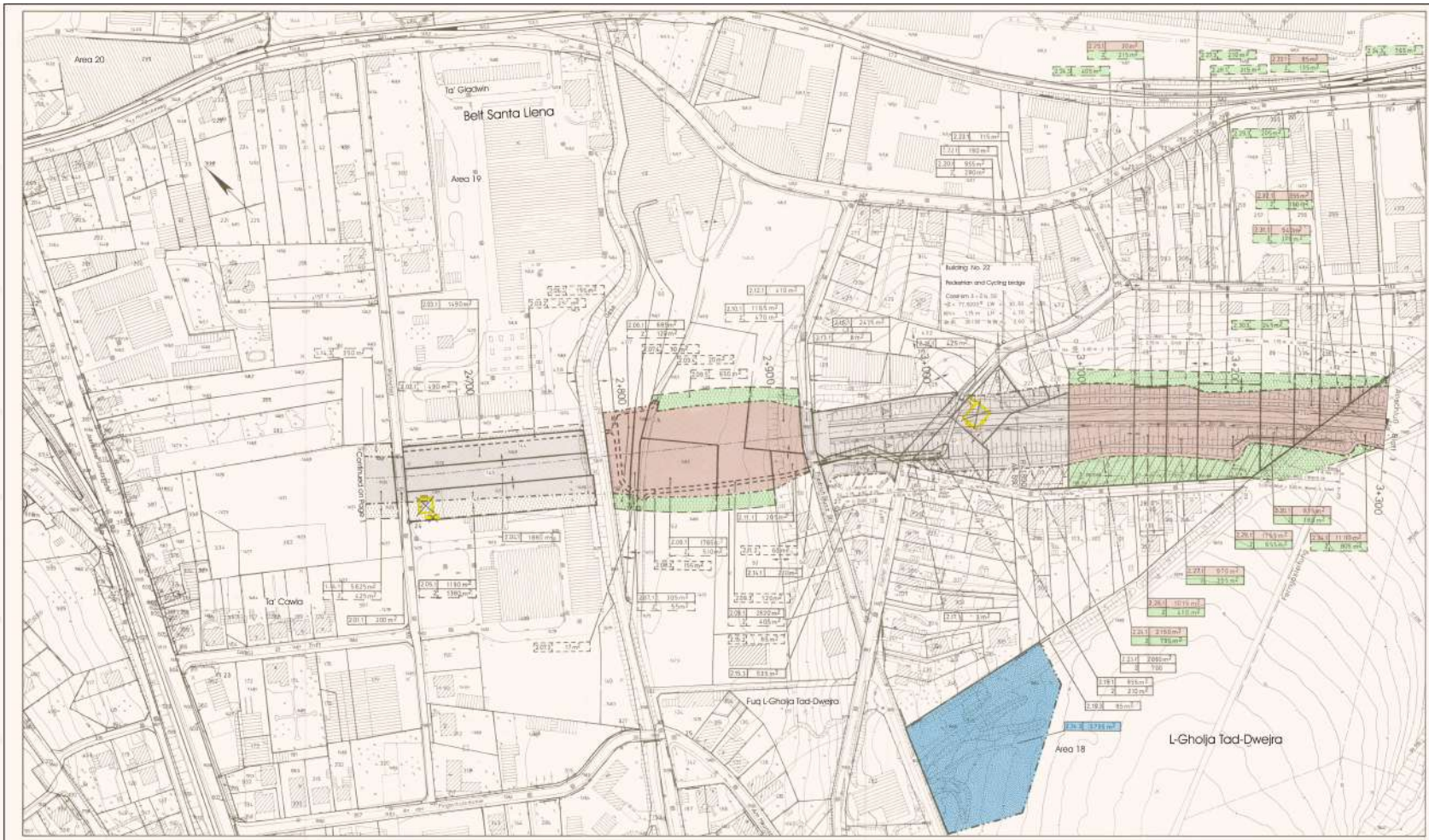


Legend		Remarks
Normal standards of Urban World Protection and Infrastructure Design		Topography
Symbol	Meaning	
(Yellow rectangle)	Substation	See the notes on the map
(Blue rectangle)	City Bridge	Compartments
(Yellow rectangle with blue border)	Water supply	modules
(Blue rectangle)	Water supply with different water depth	modules
(Blue rectangle)	Water	Design / Module
(Blue rectangle)	Land Form	Number of
(Blue rectangle)	Concrete Street	equipment or
(Blue rectangle)	Asphalt Road	materials
(Yellow rectangle)	Change of level	
(Yellow rectangle)	Ridge	
(Yellow rectangle)	Ridge of trees	
(Yellow rectangle)	Slope of trees	
(Yellow rectangle)	Tree	
(Yellow rectangle)	Ridge	
(Yellow rectangle)	Existing construction	
(Yellow rectangle)	Low	
(Yellow rectangle)	Boundary of 1:1 scale and above	



Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.	Building No.
12	11	10	9	17	15	14	13	12	11	10	9
Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope	Ridge (or position) and roof slope
Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details	Coord. and details
Cross-sections FF, EE, DD, HH, GG, CC											

Malta Transport Authority House: 8515 N, Telephone: 01151981, 01185842 Website: www.mta.gov.mt				Drawing No.: 13.1 Page No.: 1
New Construction of Bikes				Project: Bikes Discipline: Infrastructure Project No.: 13/09/2013 Design Module: 1300
Date: 15/03/2013 Time: 10:00 AM				Scale: 1:1000
Drawing: 13.1				Scale: 1:1000



Local Council	Belt Santa Uena	
Area No.	Plot No.	Owner
19	370	Micahel Willem, Bennej
	48	Mfoud Charles, Mistrudobba
	144, 145, 146	Pace Edgar, Penti
	407, 50, 52	Vassallo Saviour, Bidwi
	53	Fenech Felix, Optician
	65, 66	Azzaz Jeffrey, Author
	123, 124, 165	Local Council
	210, 94	
	350	
	729	Cassan Design, Designer
	437	Pulicino Ross, Account
	442, 226	Gaudi Odette, Nurse
	95	Dimitri Walter, Shoemaker
	227	Zammit Lawrence, Episcop
	228	Grech Mario, Dentist
	237	Falson Joe, Draughtsman
	338, 339	Yalla Emanuel, Writer
	92, 91, 99	Baldacchino Samuel, Tabb
	89	Elui Tony, Engineer
	234	Portelli Claire, Signaller
	96, 97	Agus Mark, Consultant
	310	Caruana John, IT Consultant
		Borg David, Contractor

Legend	
[Brown Box]	area to acquire
[Green Box]	area to be temporarily acquired
[Blue Box]	continually limited area
[Hatched Box]	Remaining Space
[Yellow Hatched Box]	Building to be demolished
[Red Hatched Box]	Building already demolished
[Box with 1, 2, 3]	No. of the land to be acquired 1, no. of the land acquisition plan 2, no. of the plot 3, part of the plot
[Arrow]	Linking Arrow

Abbreviations	
A	IT = Courtyard
AB1	IB1 =
Ag1	Emblem Area
AGR	Farm - Green Land
AG1	Green Area
Rg1	Railway Area
Rp1	Road
IR	Industrial Area
D	Diam
FR	Country
FR1	Alpport
G	Garden land
GR	Green Land
GR1	Green Land - Farm Land
H	Hol
HM	HM
IT	Courtyard
IP1	Cattle Area
MA	Market
P	Parking Area
PI	Area - Place
S	Sport
SP1	Sport Field
TR	Training Area
U	Urban
WA	Water Area
WY	Vine yard



Mofa Transport Authority		Drawing No.	14.1
Rev.	0.01/01	Construction	01/12/2016 11:08:58
Project	New Construction of Buses	Project No.	
Client	Malta Transport Authority	Scale	1:1000
Construction	Rev 0 - 01/12/2016 11:08:58	Acquisition Plan	
Drawn by		Date	1/12/2016

← without Project
→ with Project
← Non coloured Presentation
→ Coloured Presentation