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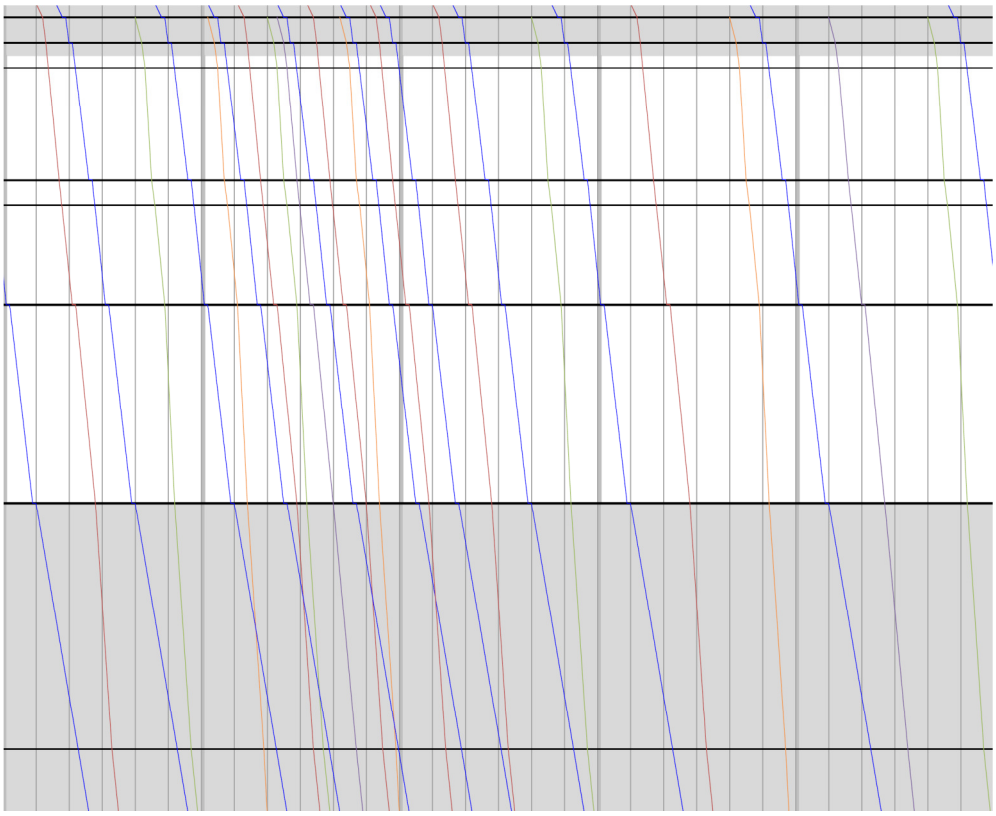

Traffic Capacity for a High Speed Railway between Gothenburg and Borås

Master of Science Thesis in the Master's Programme Geo and Water Engineering

YLVA HÖGLUND

Department of Civil and Environmental Engineering
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Road and Traffic Research Group

CHALMERSUNIVERSITY OF TECHNOLOGY
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Master's Thesis 2011:138

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Cover:
A part of the graphic timetable for US3,see whole report and especially chapter 9.

Chalmers reproservice/ Department of Civil and Environmental Engineering
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ABSTRACT

This master thesis investigates the part of the suggested high speed railway that might go between Gothenburg and Borås. The focus is on the suggested traffic load on the section from the Swedish Transport Administration (4 suggestions) and the local public transport company Västtrafik (2 suggestions). The thesis will answer questions as how the train traffic can be organized, how the commuter traffic impact the other types of trains and if the suggested infrastructure is enough for the suggested traffic load on this section. This has been done by studying relevant reports and calculations in excel. From the reports and the calculations, timetables have been made for comparisons between the different suggestions. The result contains ten timetables in each direction with different traffic loads and infrastructure. These timetables have been compared with each other to see which ones are the best to use in reality. Of all the suggestions, the alternative called US3 is the best one. One of the critical reasons is that the slow commuter trains have their own track part of the section. One of the suggestions from Västtrafik was better the US3 but since the difference in clarity of the in-data, the suggestions from the Swedish transport Administration have been investigated more thoroughly and are therefore more reliable.

Keywords: High speed railway, Sweden, Gothenburg, Borås, traffic planning, public transport, Götaland line.

Contents

Appendix

Notations

Bs	Borås
CT	Commuter train
CtC	Coast-to-coast train
Gbg	Gothenburg
HST	High speed train
LRT	Large regional train
STA	Swedish Transport Administration

a	Acceleration/Retardation
s	Distance
t	Time
v	End Velocity
v_0	Start velocity
k_{acc}	Acceleration/retardation change depending on velocity constant
t/d	Trains per day
t/h	Trains per hour
ph	Peak hour

Glossary

English-Swedish

Gothenburg	Göteborg
Götaland Line, the	Götalandsbanan
Investigation scenario	Utredningsscenario
Region Västra Götaland	Västra Götaland regionen
Swedish Transport Administration	Trafikverket

Swedish-English

Götalandsbanan	Götaland Line, the
Göteborg	Gothenburg
Trafikverket	Swedish Transport Administration
Västra Götaland regionen	Region Västra Götaland
Utredningsscenario	Investigation scenario

1 Introduction

How a high speed railway system can be designed in Sweden has been investigated by the Swedish Transport Administration and they have come up with four major designs. The designs have different focuses and therefore different infrastructure, trains and traffic frequency alternatives. The largest differences between the scenarios are the national or the regional transport needs and if the system is integrated or separated from the old railway lines. On the section Gothenburg-Borås the different designs will have different effects. The high amount of commuters in both directions makes this a unique part of the railway system and should therefore be investigated further.

The part of the high speed railway that the section Gothenburg-Borås belongs to is the Götaland line that goes between Stockholm and Gothenburg (Trafikverket, 2010). This section, Gothenburg-Borås, is the slowest large city railway connection in Sweden according to the West Swedish Chamber of Commerce with a mean velocity of 69 km/h. The only other connection that has a slower connection is between Borås and Jönköping but there are no direct connections, transfer is needed. This can be compared to the two large city connections that today that have more commuters than Gothenburg-Borås; Uppsala-Stockholm and Malmö-Lund. The travelling time between these connections are 140 km/h between Stockholm and Uppsala and 126 km/h between Malmö and Lund (Gustavsson, 2011). This is a large problem for the railway and the environment because the incentives to choose the railway over the road decrease when the railway is not as efficient as the road.

The high speed railway differs from conventional rail and some of those differences can be seen in Table 1.1.

Table 1.1 The difference between common rail and high speed rail (Frihiof, Claesson, & Salomonsson, 2010)

	Conventional railway	*High speed railway*
Definition	Upgraded or newly built track for passenger and freight trains	Newly built track designed for fast passenger trains
Track geometry	Variable radius Small inclusions (<1 %)	Large minimum curve radius Major inclusions can be accepted
Maximum velocity	200-250 km/h (with or without carriage tilt)	250-350 km/h (carriage tilting get a small effect on straight paths)
Mean velocity	120-160 km/h	200-250 km/h
Train type	Fast trains Local and regional trains Light and heavy freight trains	High-speed trains, Fast regional trains, Fast and light freight trains
Level crossing: *Road/Railway*	Occur	Are not accepted on the line

1.1 Problem identification

How can the traffic on the new railway be organized and the commuting be managed between Gothenburg and Borås in the future?

1.2 Aim

The aim is to see how the traffic flows between Gothenburg and Borås can be organized after the new railway, Götaland line, has been built. The report will look at how trains with different speed capacity will affect each other.

1.2.1 Goals

The reports goal is to make timetables for the different suggestions for the section Göteborg-Borås and see which of these alternatives that is best.

1.2.1.1 Research questions

How can the train traffic be organized?
How do the commuter trains impact the other types of trains?
What will the traffic load be on the section during a workday?
Is the suggested infrastructure enough?

1.3 Method

The research for this was mainly performed by studying reports and analysing the content. Simulations were also performed to study different scenarios. The simulations were calculated and made in Excel. The analyses have been done by comparing the different outputs from the simulations.

1.4 Delimitations

This master thesis will not examine infrastructural solutions. The different sections that will be examined are the ones that the Swedish Transport Administration has developed in the "Höghastighetsutredningen" and suggestions from the local public transport company Västtrafik. When constructing timetables the directions to and from Gothenburg will not be connected or affected by each other. The cost will not be examined thoroughly and will not be a base for the comparisons made. Two other factors that have not been included in this analysis is the maintenance and how fast delays would grow in the system and both these questions are very important to make the train traffic work in reality.

1.5 Outline

A short presentation of what the Chapters in the report will contain.

1 Introduction

The problem identification and the aim of this thesis are presented. The aim includes some research questions that the thesis is going to answer.

2 The Swedish high speed project

Both the national plan and the regional plan for the high speed project and the project to lower emissions will shortly be presented.

3 The railway section today between Gothenburg and Borås

The current traffic and infrastructure state is presented and why a new railway is needed.

4 Different scenarios for the high speed train project

The four different scenarios proposed by the Swedish Transport Administration are presented and the focus is on the section Gothenburg-Borås.

5 The railway infrastructure in the high speed project

The infrastructure that will be used in the calculations will be presented, as well as the other suggestions for the layout.

6 Trains on the high speed track

The different train types that operate on the track between Gothenburg and Borås are presented with their specific properties.

7 Train traffic on the high speed railway

Here are the bases of the actual timetables. To get the timetables, the travel time, the traffic frequency alternatives and the basic timetable structure needed and those are presented here.

8 Results

The results of the calculations and resulting timetables are presented, mostly in text. Associated with the text are there Appendixes that contains graphic and table timetables (appendix 4 and 5).

9 Analysis

The resulting timetables are analysed to be able to determine which of the scenarios for the section Göteborg-Borås is the preferred choice.

10 Discussion

The results and analysis are discussed where for example sources of errors are discussed.

11 Conclusions

The best alternative is declared and why.

12 Further studies

I recommend further studies for the future. Both, areas I have excluded and further deepening of my results.

2 The Swedish high speed project

In the beginning of 2011, the Swedish Transport Administration released a report that investigates the potential for high speed trains in Sweden. In the report four scenarios are investigated, see Figure 2.1. The scenarios include, traffic, infrastructure, cost benefit and construction costs, among other things. High speed trains have been suggested to increase the railway capacity and competitiveness against cars and airplanes. To move the traffic from the roads and the air to rail is a step in the national plan to lower the emissions of greenhouse gases (Trafikverket, 2010). As a step towards the national goal, Västra Götaland region has developed a plan to increase the use of public transport and thus lowering the emissions from cars. The project is called K2020 and its goal is that the public transport in the region will account for 40 % of all journeys in 2025.In 2005, the public transport journeys amounted for 20 % of the total volume of journeys in the Gothenburg region (K2020 Framtidens kollektivtrafik i Göteborgsområdet, 2008) and the market share for public transport was 10-12% over the municipality border. The project K2020 also aims to strengthen the region and the Götaland Line is an important step in linking the two largest labour markets in the western part of Sweden, Gothenburg and Borås. To construct the railway between Gothenburg and Borås is also a step in the process of making Gothenburg and Landvetter airport important traffic nodes for people and as well as for goods. (Frihiof, Claesson, & Salomonsson, 2010).

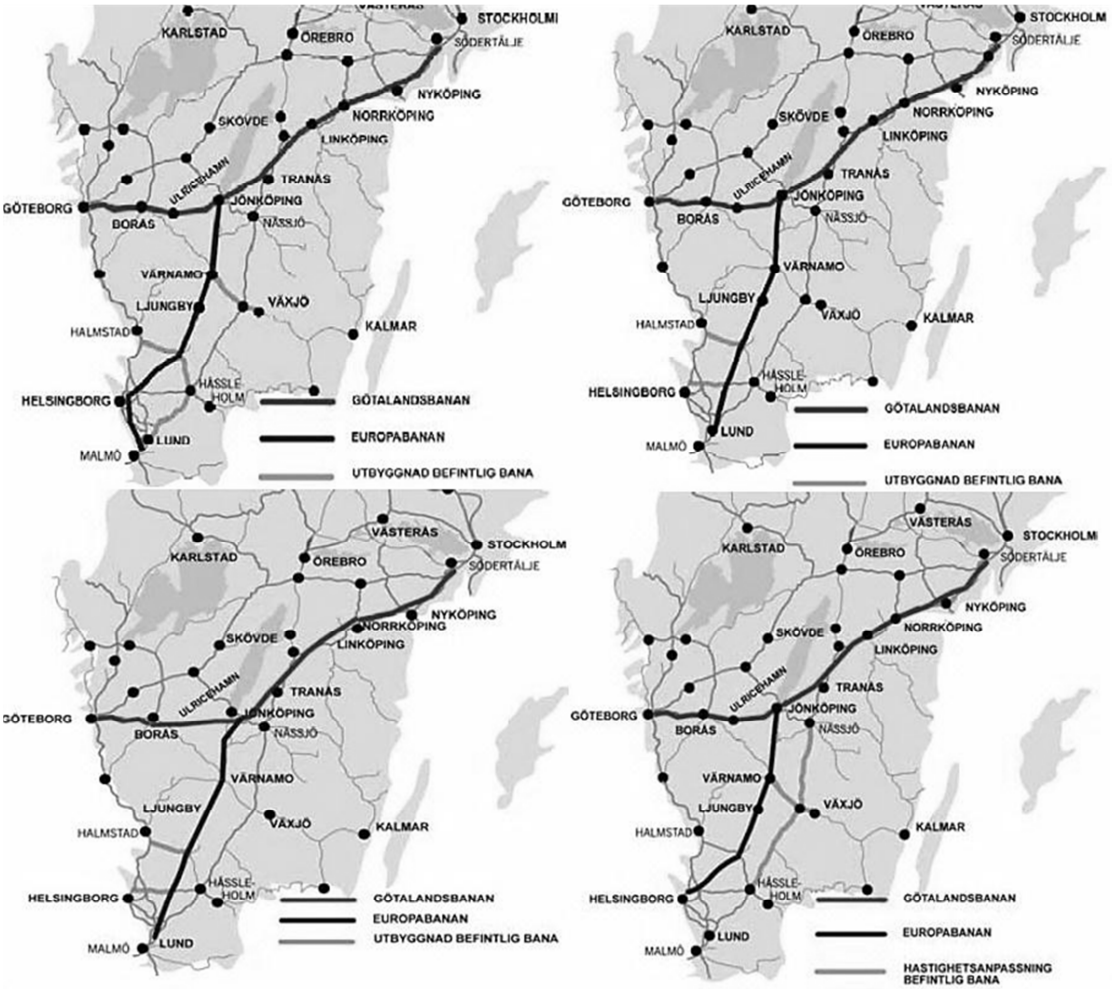


Figure 2.1. An approximated layout of the four scenarios from the Swedish Transport Administration, first row: US1, US2, second row: US3, US4. (Trafikverket, 2010)

3 The railway section today between Gothenburg and Borås

The section between Gothenburg and Borås has today 9.5 million travellers per year, counting all traffic modes. This makes it the relation in Sweden with the third heaviest traffic load. This section is also the part of the Götaland Line which has the largest travel market on the whole line. (Frihiof, Claesson, & Salomonsson, 2010) The only commuter distances with heavier traffic loads are Lund-Malmö and Uppsala-Stockholm.[1]The relation between Gothenburg and Borås is unique in the Swedish railway system. This is due to the high amount of commuters in both directions, in contrast with the other commuter relations in the Gothenburg region, where the traffic load is in a much greater extent is in one direction[2]. In 2010, there were 54000 trips, both with car and public transport between Gothenburg and Borås. (Frihiof, Claesson, & Salomonsson, 2010)

Today there is no good way to travel by train between Gothenburg and Borås. Figure 3.1 shows the railway track between the two cities, which today is a single track with low capacity (Västtrafik, 2004). The majority of the section has a speed limit of less than 100 km/h[3]. The suggested new railway coincides with the national highway 40 (Trafikverket, 2010). According to National Institute for Transport analysis (Statens institut för kommunikationsanalys, SIKA, 2009), rail projects that coincide with major national ways are better from a national economic point of view because the major highways coincides more with the inhabitants' routes than the existing railways are doing. This is due to that the car have been the primary mode and the roads have therefore been constructed in the path people want to travel more so than railways.

Figure 3.1 The railway and road between Gothenburg and Borås 2011 (© Lantmäteriverket, 2008)

[1] Sterky, Patrik 2011. Ramböll
[2] Sterky, Patrik 2011. Ramböll
[3] Sterky, Patrik 2011. Ramböll

4 Different scenarios for the high speed train project

In the report from the Swedish Transport administration there are four different scenarios for the implementation of the high speed railway. A scenario is defined by that it has an infrastructure, trains and a traffic frequency alternative, see Figure 4.1. The scenarios are called US1, US2, US3 and US4 where US stands for investigation scenario (*in Swedish utredningsscenario*). What the different scenarios contains, especially in relation to the section Gothenburg-Borås, will be presented below. All the layouts can be seen in Appendix 1.

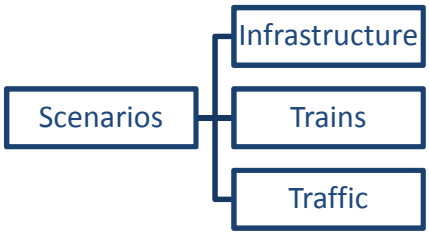


Figure 4.1. The different parts a scenario have to contain to be a scenario.

In scenario US1, US2 and US3 the new track will be designed for a top speed of 320 km/h. The high speed trains will only operate on the high speed railway while the large regional trains either only operates on the high speed railway or both on the new and the old track. The restriction on the new high speed railway is that the trains that travel on it have to be able to travel at a minimum speed of 250 km/h. As a result, new region trains have to be bought or the existing trains have to be upgraded, because their capacity today is too low. In scenario four the new track is designed for a top speed of 250 km/h (Trafikverket, 2010).

The difference between the US scenarios lies on the wanted market. This translates to that in US1 there are a lot of trains that travels far and fast, high speed trains and large regional trains while in US2 there are more coast-to-coast trains. The reason for more coast-to-coast trains in US2 is because here the idea is that there are slower traffic to the larger nodes in the systems where the passenger can change to faster trains unlike US1 where an objective is that it should be possible for as many as possible to reach Stockholm without having any transits. In US3 are there are more large regional trains than in any other US scenarios and that is because the market in not only the end point market or on the local market, but on all the large cities along the line. US4 is the scenario that differs most among the US scenarios because in this alternative there are no high speed trains at all, the fastest trains have a top speed of 250 km/h. The wanted market for US2 is the regional market and even though there are a lot of high speed trains and large regional trains in this alternative, they are slower than in the rest of the alternatives. (Trafikverket, 2010)

4.1 US1

The main goal for this scenario is to connect as many counties to Stockholm as possible and that have led to, for instant, that the stations are located at the central parts and not in the outskirts of the towns. This will result in a lot of access points between the new railway and the old one, to enable as many direct travels as possible. The track will be design for 320 km/h which will result in a travel time between Gothenburg and Stockholm of 2 hours and 2.5 hour between Malmö and Stockholm. The traffic load on the new high speed rail will be high and the surrounding railway will also have an increased traffic. The high speed trains will have few stops between the large cities. The large regional trains are arranged in the same way but they will have more stops.

The separation of train types will have some exceptions, for example between Gothenburg and Borås where all trains, with different speeds, will share the same track. The new track between Gothenburg and Borås will amount in new stations and the closing of old stations. The station in Mölnlycke will remain and the station in Bollebygd will be moved to Kråktorp, while the stations in Sandared and Rävlanda will be closed and a new station will be built under Landvetter airport. The old railway will mainly be used for freight trains instead. (Trafikverket, 2010)

4.2 US2

The high speed network is more separated in US2 than in scenario US1. This mean that the trains from the surrounding railways do not continue on the high speed rail but stops at transit points where passengers can change to the high speed train or other large regional trains or commuter trains. One example is that the coast-to-coast train that goes from Karlskrona or Kalmar to Gothenburg will no longer be a direct train but the passengers will have to change trains in Borås. It is assumed in this report, that the coast-to-coast train to and from Kalmar, will have the same properties both east and west of Borås. As in US1 the travel time Stockholm-Gothenburg will be two hours and the high speed trains will have few stops while the large regional trains have more stops. The large regional trains will not travel the entire distance, instead, the large regional trains will be feeder traffic on the high speed network. There are fewer direct trains and more transit points in this scenario compared to US1. (Trafikverket, 2010)

4.3 US3

In scenario US3, the focus is on the end point markets, Gothenburg and Stockholm. As a result, the stations in the intermediate cities will be placed outside the city and the public transport in those cities will be feeder traffic to the high speed rail. Some cities will get passed, for example Borås. Borås will have a bypass track and in order to get to the station, the trains have to change from the main line to the track that goes in to the station in the city. In this scenario it is not possible to travel with high speed trains from Stockholm or Gothenburg to Jönköping without a change of trains. The coast-to-coast trains do continue after Borås (in direction to Gothenburg) but will use the old track between Borås and Landvetter. Even though there is no direct travel between Gothenburg and Stockholm the travel time will only be 1 hour and 51 minutes. (Trafikverket, 2010)

4.4 US4

US4 is the most integrated of the four scenarios, where the focus lies on the regional expansion instead of the end point market. The infrastructure for the Götaland Line, that is to say also for Gothenburg-Borås, is the same as in US1. The large regional trains will traffic the section between Gothenburg and Borås but unlike the three earlier scenarios, the trains do not contusions to Jönköping. The main difference between this scenario and the three others is that it is not a true high speed suggestion, the fastest trains have a top speed of 250 km/h and the large regional trains have 200 km/h. (Trafikverket, 2010)

5 The railway infrastructure in the high speed project

The train travelling distance between Gothenburg and Borås depend on the layout that in turn depends on what stations there will be and how they are placed in relation to the main line. The Swedish Transport Administration has developed four national plans for how the high speed railway could be design. Although the infrastructure differs a lot between the different scenarios on the national level, the infrastructure between Gothenburg and Bo8rås is almost the same for the four proposed designs. It can be seen in Figure 5.1 that Mölnlycke and Bollebygd has bypass tracks. Faster trains could drive pass the slower trains that stops but in Sweden this is not common and not recommended[4]. In the calculation, these stations are seen as the all the other stations on the line, trains that stops are not over taken by other trains.

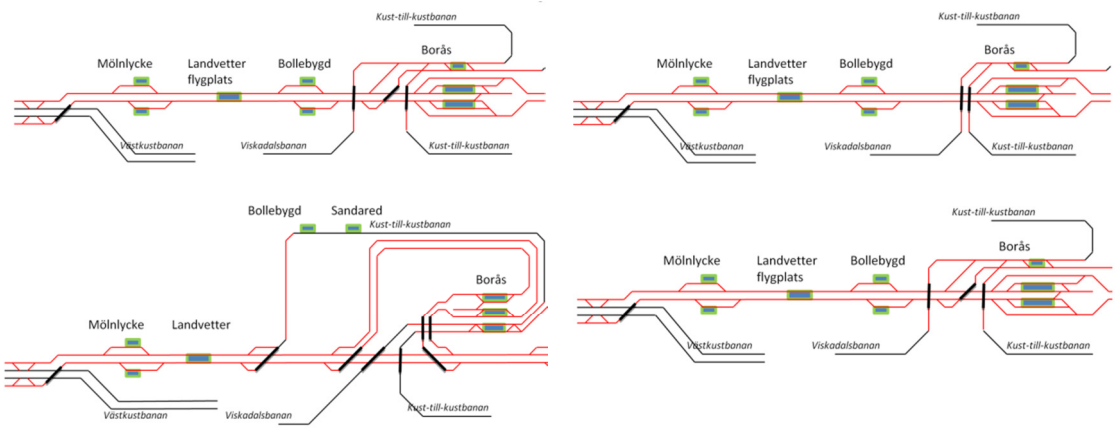


Figure 5.1 The suggested infrastructure between Gothenburg and Borås. First row: US1, US2. Second row: US3, US4. (Trafikverket, 2010)

Only scenario three differs significantly compared to the other scenarios. The main difference is the station in Borås. In scenario three the station is outside the main line while in the other scenarios, the railway goes through Borås (Trafikverket, 2010). Another difference is the layout between Bollebygd and Borås where the old track is used in addition to the new.

The communities with stops are the same for all the scenarios from the Swedish Transport Administration. The local public transport company, Västtrafik, have developed their own plan where there are two additional stations, Mölndal and Landvetter S, see Appendix3. To simplify the comparison of the different traffic suggestion, only two different alternatives are used from the Swedish Transport Administration, US1 and US3, Figure 5.2. That means that some of the infrastructure for scenario three is not included in the comparison as the old stations, Sandared and Rävlanda. The difference between US1 and US3 that is used in the calculations is that between Bollebygd and Borås do the commuter train use the old track, the old track is assumed to be as long as the new railway.

[4] Sterky, Patrik 2011. Ramböll

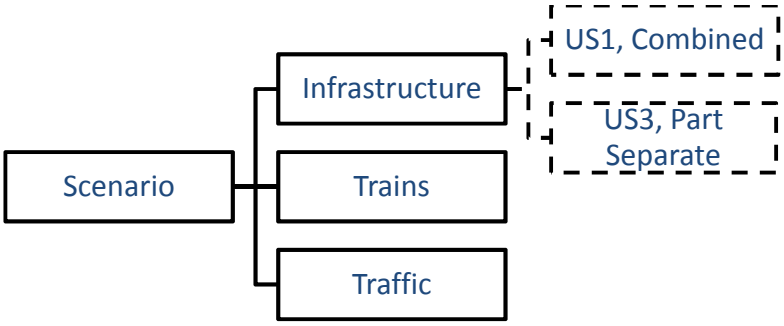


Figure 5.2. A scenario must contain an infrastructure, which can be either US1 Combined or US3 Part Separate, trains and a traffic frequency alternative.

In Gothenburg the infrastructure varies as well depending if the trains go in the old tunnel or the new one, the Western link. These tunnels give a length difference of one kilometre between the infrastructures. The distance between the two cities depend on the amount of stations and the trains' path in Gothenburg, see Figure 5.3. This difference is in all the scenarios and only depends on the type of trains and not the scenario.

The infrastructural variation used in the calculations:

- 65 km, the trains going through Western link and have stations as planned by the Swedish Transport Administrations.
- 64 km, the trains do not go through Western link and have stations as planned by the Swedish Transport Administrations.

[5]

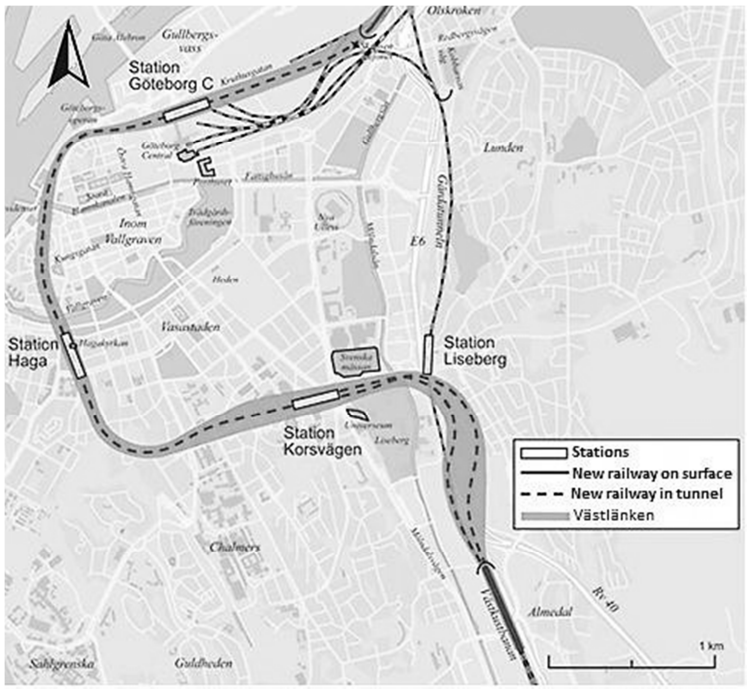


Figure 5.3 The railway lay out in Gothenburg. The high speed trains and coast-to-coast goes in the eastern tunnel and the commuter trains and large regional trains go in the new tunnel Western link (Trafikverket, 2011).

[5] Gunnervall, Markus 2011. Trafikverket. See Appendix 1

6 Trains on the high speed track

In the calculations preformed, four kinds of trains have been used:

- High speed train (HST), between Stockholm and Gothenburg.
- A large region train (LRT), between Gothenburg and Jönköping.
- Regional train (CT), between Gothenburg and Borås.
- Coast-to-Coast train (CtC), between Gothenburg and Kalmar.

(Trafikverket, 2010)

Table 6.1The properties for the different trains on the railway between Gothenburg and Borås and the assumed properties for the coast-to-coast train (Transitio, 2010)

	HST	*LRT*	*CT*	*CtC*
Maximum velocity [km/h]	320	250	200	200
Start acceleration [m/s^2]	0,7	0,5	0,7	0,5
Acceleration at 200 km/h [m/s^2]	0,3	0,2	0,05	-
Retardation [m/s^2]	0,6	0,6	0,8	0,6

The properties for the trains are obtained from Markus Gunnervall from the Swedish Transport Administration except for the properties for the Coast-to-Coast trains that are assumed to be slower large region trains where the properties have been taken from the train model X50-3, a so called intercity train. If the minimum acceleration for the trains is set to 0.1 m/s^2, the maximum velocity will be change and the new maximum velocity can be seen in Table 6.2.

Table 6.2 The new maximum speed if there is a restriction of the minimal acceleration (0.1 m/s^2) for the different train types[6]

	HST	*LRT*	*CT*	*CtC*
Maximum velocity [km/h]	300	267	182	171

To take into account some of the uncertainties of the input in the calculation and the behaviour of the driver, an addition of 3 %[7] have been added to every sections' travel time.

The acceleration is not constant and by only knowing two values for each train type the assumption is made that the acceleration is linear. In Figure 6.1the function for the acceleration is illustrated.

[6] Sterky, Patrik 2011. Ramböll
[7] Sterky, Patrik 2011. Ramböll

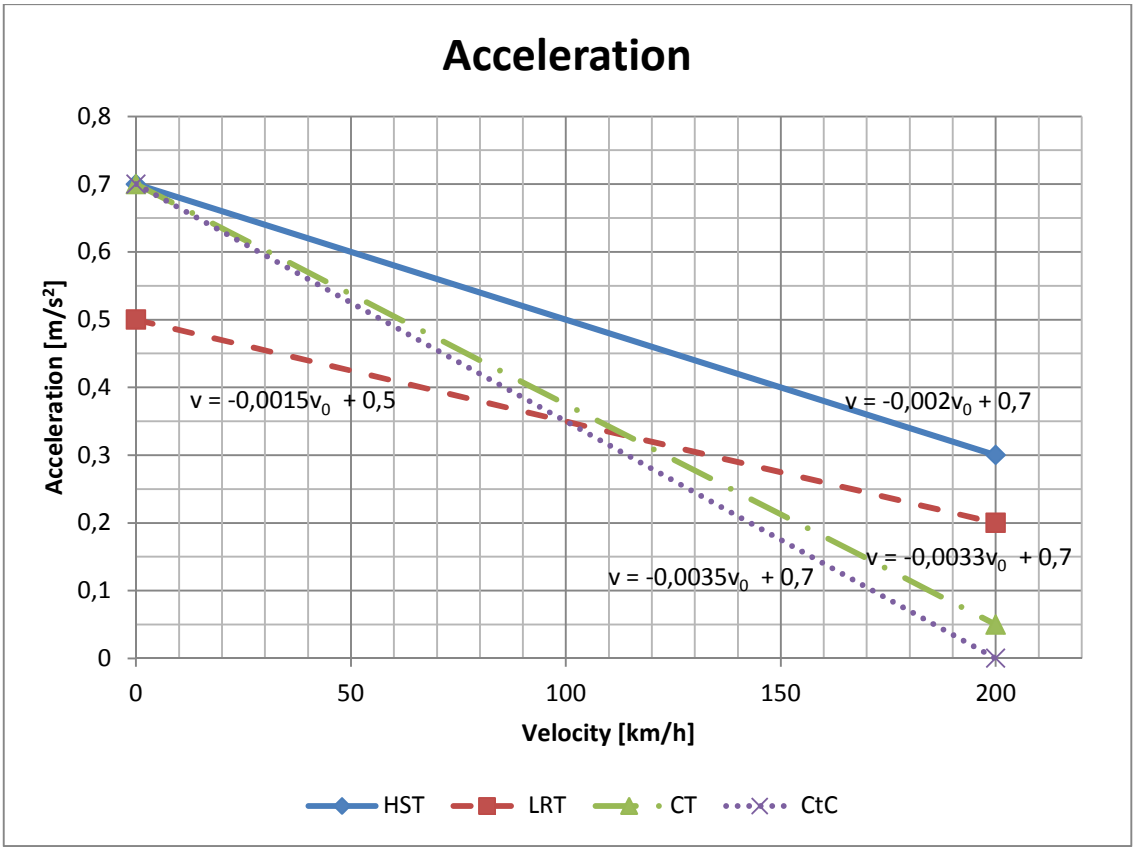


Figure 6.1 The relationship between acceleration and velocity and the equation for the acceleration for the different train types. The tilts of the graphs are presented in Table 6.3.

Table 6.3. The k_{acc} is the change of the acceleration depending on velocity.

Train	k_{acc}
High speed train	0,002
Large regional train	0,0015
Coast-to-coast	0,0035
Commuter train	0,0033

The types of trains used are the same in the different scenarios except that in scenario US4. In scenario four the acceleration properties are the same but the maximum speed are lower for the high speed train and for the large regional train, Table 6.4.[8] The different groups of trains used in the calculations are either the fast trains where the high speed trains have a maximum speed of 320 km/h or the slow trains from US4, where the high speed trains have a maximum speed of 250 km/h, Figure 6.2.

[8] Gunnervall, Markus 2011. Trafikverket. See Appendix 1

Table 6.4. The maximum speed for the trains in scenario US4.

	HST	*LRT*	*CT*	*CtC*
Maximum velocity [km/h]	250	200	200	200

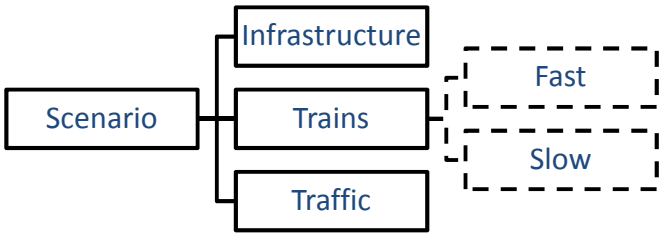


Figure 6.2. A scenario must contain an infrastructure, trains, which can be either fast train with a high speed train with maximum speed 320 km/h or slow trains with a high speed train with maximum speed 250 km/h and a traffic frequency alternative.

6.1 Basic calculations for the trains travel time

To be able to calculate the time it takes for a train to travel between Gothenburg and Borås the section have been divided into part sections, which are defined by the speed limit and/or the location of a station. Each section part is in turn divided into acceleration, retardation and constant velocity distances. The time it takes for the train to travel when the velocity is constant is calculated by equation (6.1)

$$t = \frac{s}{v} \tag{6.1}$$

The distance when the trains have a constant velocity is calculated by subtracting the acceleration distance and retardation distance from the total section part. To calculate the acceleration and retardation section equation (6.2) is used.

$$s = \frac{v^2 - v_0^2}{2 \cdot a} \tag{6.2}$$

$\mathrm{s} = \text{distance}$

$v = \text{final velocity}$

$v_0 = \text{initial velocity}$

$a = \text{acceleration/retardation} = a_{start} - k_{acc} \cdot \left(\frac{v + v_0}{2}\right)$

k_{acc}=the slope of the acceleration equation, see Figure 6.1 and Table 6.3

Another way to calculate the acceleration length is to use Figure 6.3 and with start and end velocity get the specific distance.

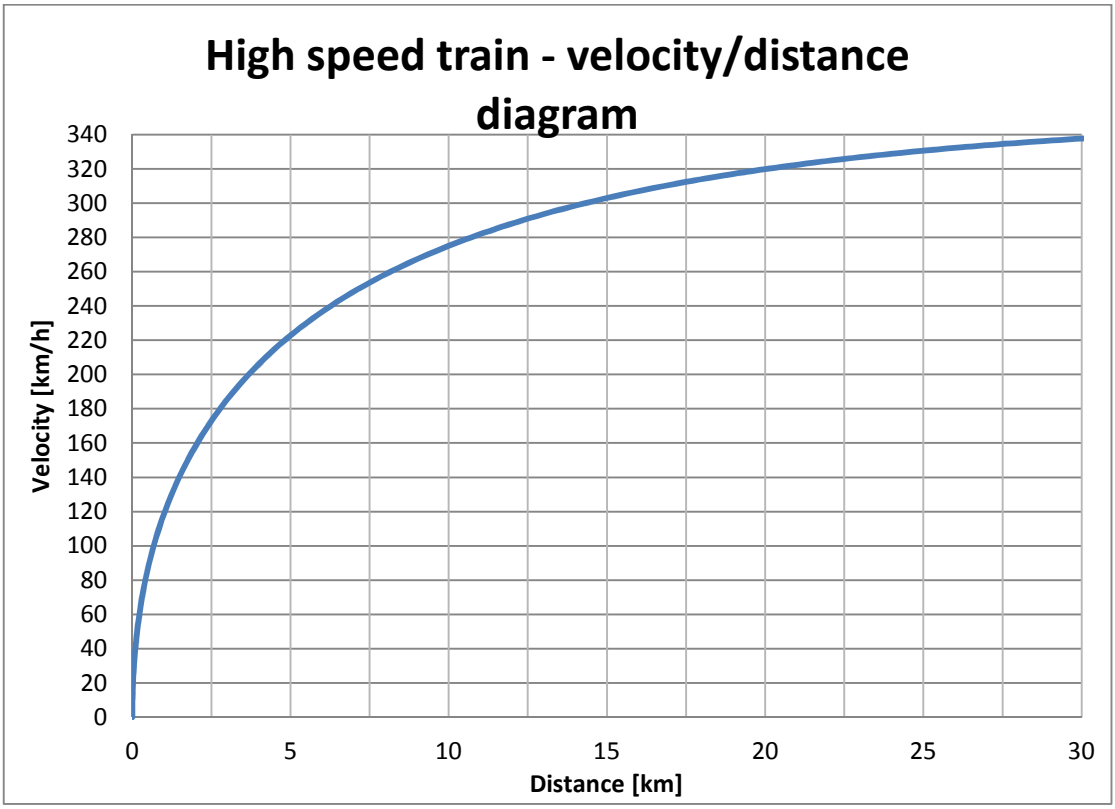


Figure 6.3 The relationship between velocity and distance.

To calculate the time for acceleration and retardation, the same equation, equation (6.1), is used as when calculating the time for the constant velocity distance. The velocity used is the mean velocity, equation (6.3).

$$\bar{v} = \frac{v + v_0}{2} \tag{6.3}$$

The acceleration time can be found in the same kind of diagram as the acceleration length, Figure 6.4.

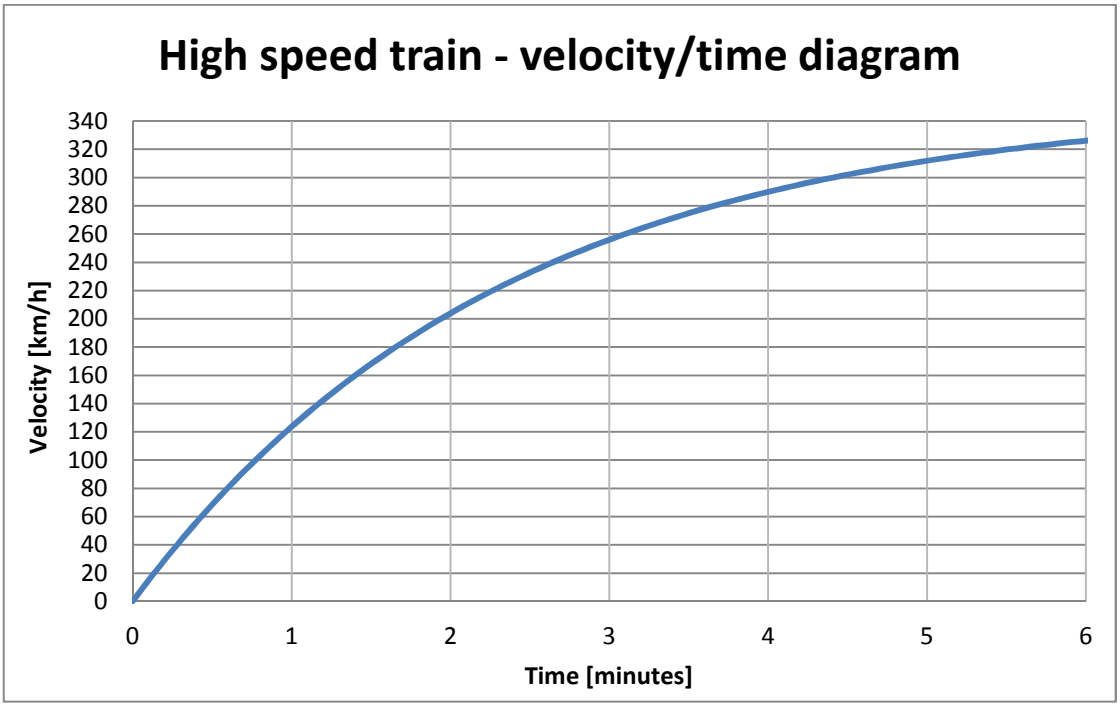


Figure 6.4The relationship between time and velocity.

Due to the acceleration and retardation distances and the change of speed limits and stations, the trains are not always capable to reach the set speed limits but have to start decelerate before.

7 Train traffic on the high speed railway

One way to evaluate the train traffic on the high speed section between Gothenburg and Borås for the different scenarios is to compare their different timetables. To construct the timetables, both travel times and traffic frequency alternatives are needed.

Travel time for the different train types have a large impact on the overall flow of the traffic. To calculate the travel time, the different train types' acceleration, retardation and velocity properties are used as well as the duration time at stations. The different trains have different stops. The high speed trains always stop in Gothenburg and one of the high speed train types stops in Borås while the others do not. The large regional trains always stop in Gothenburg and Borås and the coast-to-coast trains have an additional stop at Landvetter airport. The commuter trains have the largest amount of stops and stop in Gothenburg, Haga, Korsvägen, Mölnlycke, Bollebygd and Borås. As mentioned in Chapter5, the infrastructure in Gothenburg varies, the high speed trains and coast-to-coast trains goes in the old tunnel while the large regional trains and commuter trains goes in the new one, Western link. The different speed limits also affects the travel time, see Figure 7.1, especially for the trains that could higher speed capacity. Besides the travel times, the amount of trains per day and hour are needed as well as the amount and frequency of the different train types. This is in the Subchapter *Traffic frequency alternatives* below.

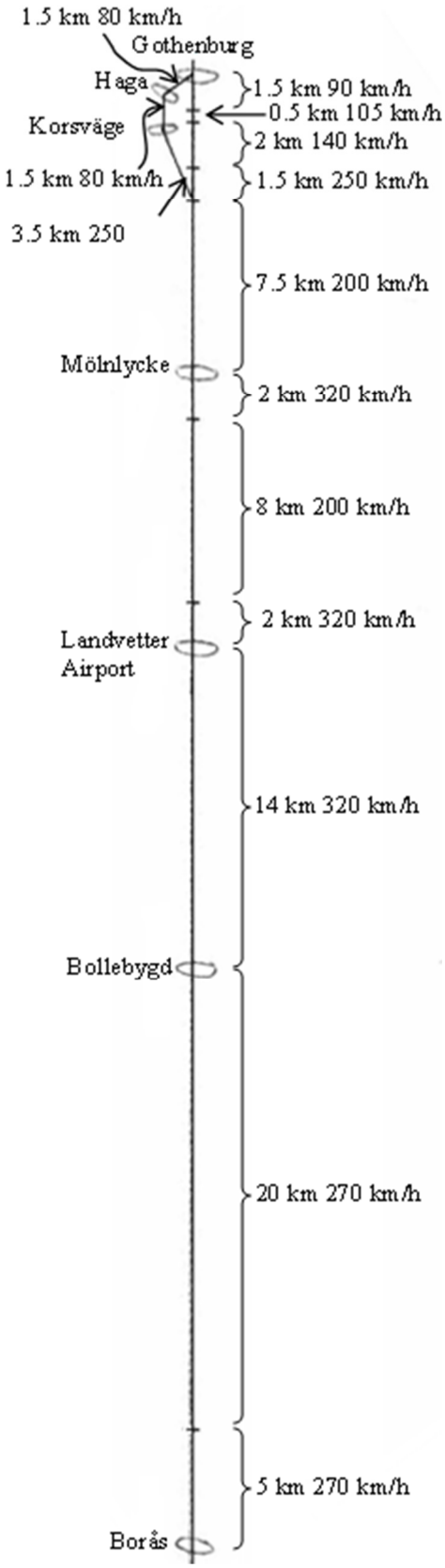


Figure 7.1 The speed limit section between Gothenburg and Borås.

7.1 Travel time

When calculating the travel time for the different types of trains, the velocity for every section had to be calculated and due to the acceleration and deceleration the maximum speed could not be obtained for every part section. On the next page, some of the travel times are presented and all the times can be found in Appendix 2.

The travel time have been calculated for the infrastructure that the Swedish Transport Administration has suggested in their report. There are several different combinations of travel times that have been calculated, as seen in

Appendix 2. Each train type has two top speeds that generate different times and some of the train types can have different stations. In total there are 16 different combinations of travel times between Gothenburg and Borås and equally as many in the opposite direction. All these sixteen travel times have been calculated in two different ways where the main difference is how the acceleration is calculated.

The first method use the acceleration calculated with the mean velocity for the specific part section. In the second method a table is used to get the length and time for each section. As explained in Chapter6, the distance to come to the start speed and the length it takes to come to the end speed is withdrawn from the total length of the section part. The lengths are calculated with the same equation, as in method one, but in steps of 5 km/h instead of using the mean velocity for the whole section. The different travel times for US1, US2 and US3 are presented in Table 7.1 and Table 7.2.

Table 7.1 The travel time Gothenburg-Borås and Borås-Gothenburg for the different trains for the given maximum velocity. Calculated with the mean acceleration.

Train type	v_{max} *[km/h]*	*Difference*	*Travel time Gothenburg–Borås [minutes]*	*Travel time Borås–Gothenburg [minutes]*
HST	320	Stop at airport and Borås	22.81	22.65
		Stop in Borås	18.84	19.11
		No stops	17.93	17.95
	300	Stop at airport and Borås	22.78	22.67
		Stop in Borås	18.93	19.16
		No stops	18.01	17.99
LRT	250	Stop at airport	25.17	24.84
		No stop at airport	21.12	21.03
	267	Stop at airport	24.84	24.45
		No stop at airport	20.43	20.59
CT	200	All stops	31.71	31.71
	182	All stops	33.07	33.07
CtC	200	Stop at airport	25.81	25.83
		No stop at airport	22.15	22.17
	171	Stop at airport	28.27	28.04
		No stop at airport	25.07	25.09

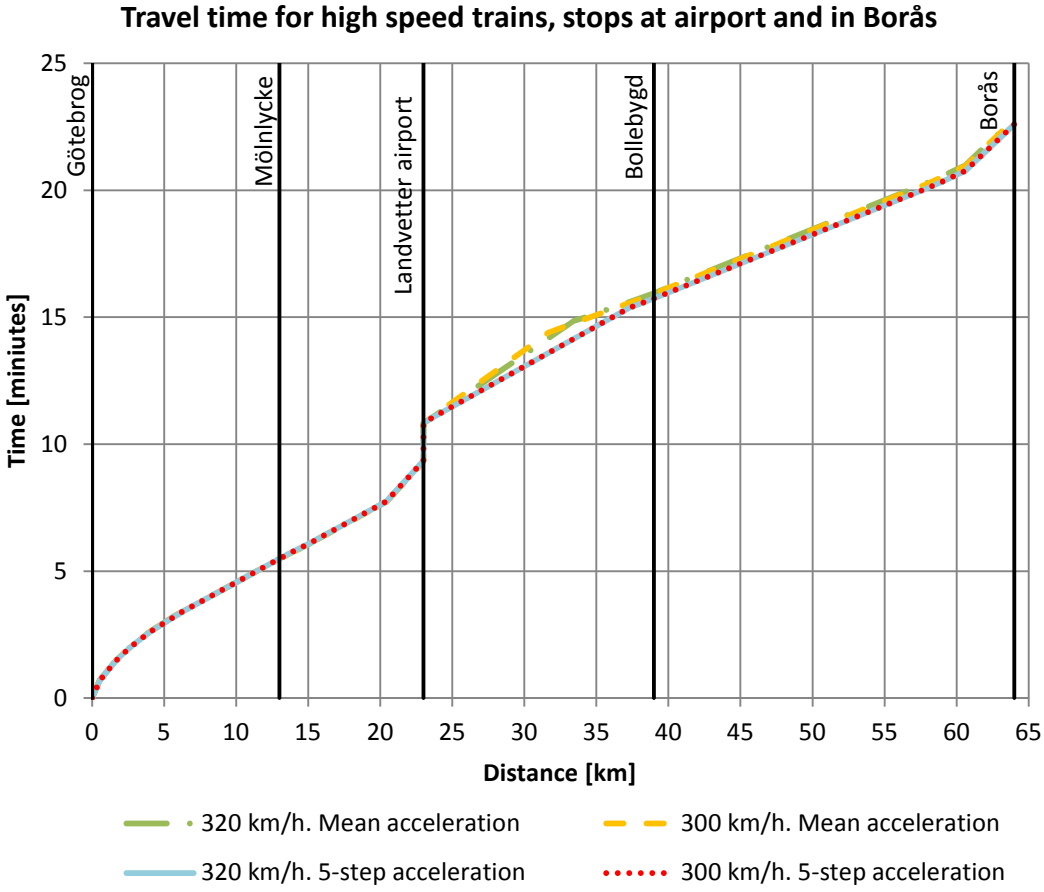
Table 7.2The travel time Gothenburg-Borås and Borås-Gothenburg for the different trains for the given maximum velocity. Calculated with 5 step acceleration.

Train type	v_{max} *[km/h]*	*Difference*	*Travel time Gothenburg–Borås [minutes]*	*Travel time Borås–Gothenburg [minutes]*
HST	320	Stop at airport and Borås	22.60	22.44
		Stop in Borås	19.04	18.99
		No stops	18.13	17.92
	300	Stop at airport and Borås	22.60	22.47
		Stop in Borås	19.09	19.05
		No stops	18.15	17.98
LRT	250	Stop at airport	24.88	23.66
		No stop at airport	21.03	20.21
	267	Stop at airport	24.52	23.21
		No stop at airport	20.58	19.85
CT	200	All stops	32.79	39.29
	182	All stops	33.79	37.12
CtC	200	Stop at airport	25.93	30.94
		No stop at airport	22.35	25.76
	171	Stop at airport	28.17	29.69
		No stop at airport	25.09	27.41

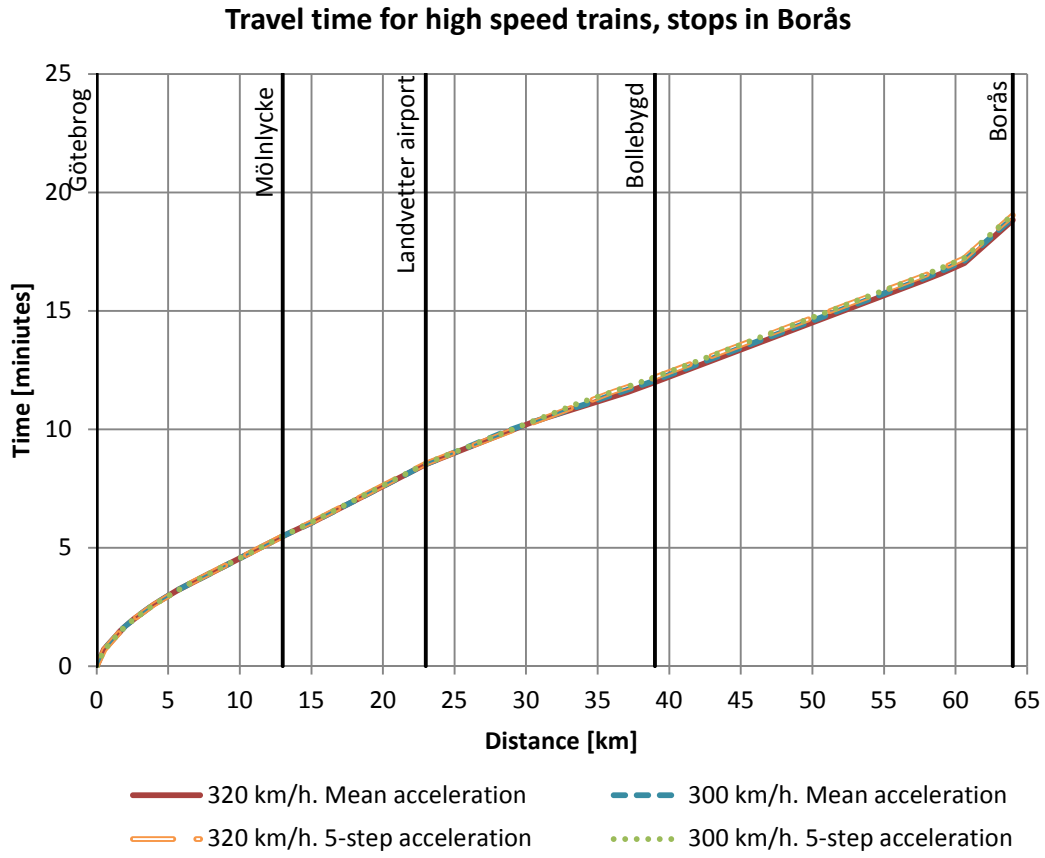
The only trains that stop at every station are the commuter trains. The other types of trains either have a stop at the airport or not, except the high speed train that in addition also have the option to not stop in Borås. The stop in Gothenburg and Borås is not included in the calculated travel time while all the intermissions in the intermediate stations are. The CT stops for 40 seconds at every stations except at the airport where it stays for one minute, this have been done because it can be expected that the average passenger to and from the airport have more luggage than at the other stations and therefore more time to get on and off the train is necessary. That the duration time is greater for the other trains than for the CT depends on the assumption that more passengers from a larger region can travel with these trains and that there are fewer stops so the amount of passengers getting off at the same stop is greater.

As seen in Figure 7.2, what affect the travel time the most is not whether or not the top speed is 320 km/h or if the acceleration is calculated with mean velocity or in five km/h steps. The largest effect on the travel time is the amount of stops on the way, and not the maximum speed for the train.

A)



B)


Travel time for high speed trains, stops in Borås
Time [miniutes]
Distance [km]
Götebrog
Mölnlycke
Landvetter airport
Bollebygd
Borås
320 km/h. Mean acceleration
300 km/h. Mean acceleration
320 km/h. 5-step acceleration
300 km/h. 5-step acceleration

C)


Travel time for high speed trains, only stops in Gothenburg
Time [miniutes]
Distance [km]
Götebrog
Mölnlycke
Landvetter airport
Bollebygd
Borås
320 km/h. Mean acceleration
320 km/h. 5-step acceleration
300 km/h. Mean acceleration
300 km/h. 5-step acceleration

D)

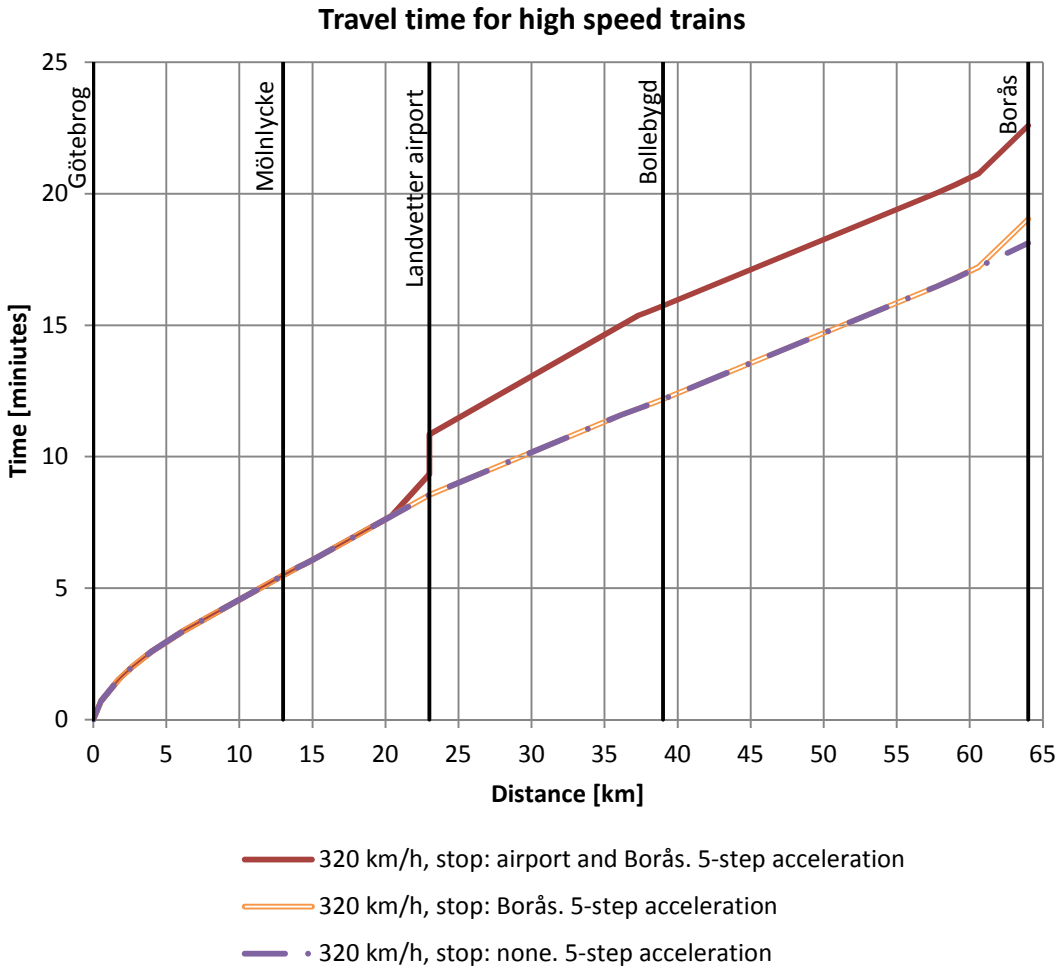


Figure 7.2 Travel time for the high speed trains, with different velocities (320km/h and 300 km/h) and stops, between Gothenburg and Borås with the assumed speed limits for the high speed track. A) The different speed and the different calculating methods for trains with stops in Gothenburg, Landvetter airport and Borås. B) The different speed and the different calculating ways for trains with stops in Gothenburg and Borås. C) The different speed and the different calculating ways for trains with stop in Gothenburg. D) The comparison between the trains with different stops with trains with a velocity of 320 km/h and with the calculating method of 5-step acceleration.

The high speed train is allowed to use its maximum speed for 18 km of the section due to the speed limit and that is 28% of the total length. Since the distance is not in one continuous section, which results in accelerations and retardation distances for each section part, the train are not going to be able to use their top speed for those 18 km. The calculation results show that the top speed for the high speed trains israrely reached. When the maximum speed is 320 km/h, the trains travel with that top speed on average of 3% of the section in the direction Gothenburg to Borås and 1% of the section in the opposite direction. When the maximum speed instead is 300 km/h, the average use of the trains' top speed is 8% to Borås and 11% to Gothenburg. This can be compared to the other train types, the large regional trains are allowed to use their top speed on approximately 60% of the section and do so on average 40% (to Borås)

when the top speed for the train is 250km/h and 39% (to Borås) when the trains maximum speed is 267 km/h. In the other direction, the large regional trains use its top speed on 47% of the section, when the maximum speed is 250 km/h, and 42% when the peak speed is 267 km/h. The two other train types can use their top speed on almost the whole section and do so. The commuter trains use their top speed a little bit more often than the coast-to-coast trains because they have a better acceleration capacity.

7.2 Traffic frequency alternatives

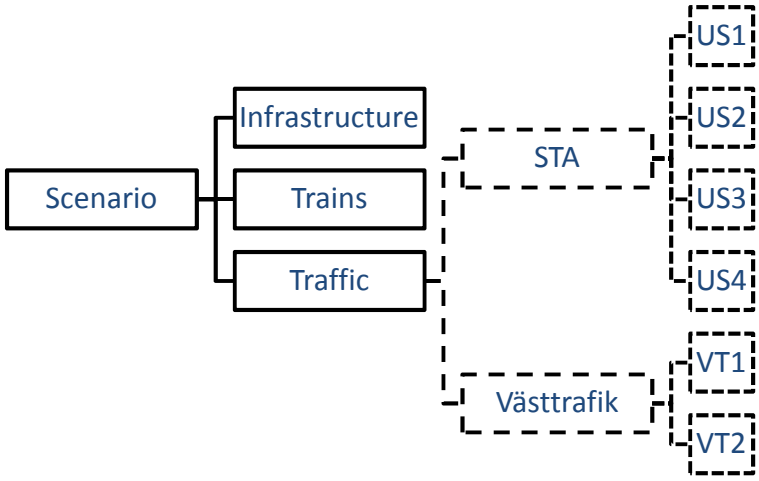
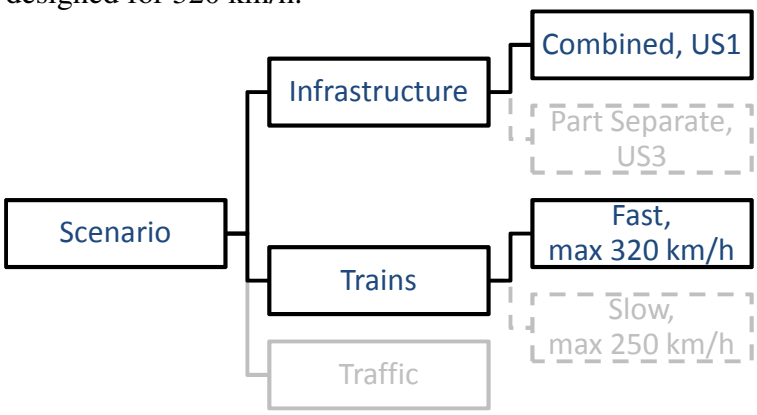


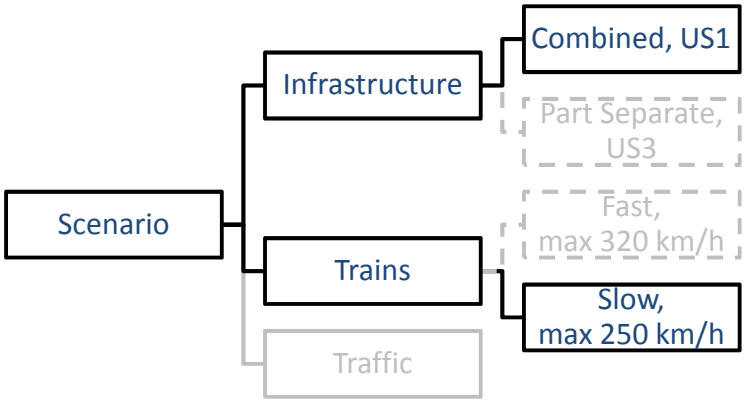
Figure 7.3. A scenario must contain an infrastructure, train and a traffic frequency alternative. The traffic frequency alternatives are either one of the four Swedish transport administrations alternatives or one of the two alternatives from Västtrafik.

In Chapter 5 it is mentioned that in addition to the four traffic frequency alternatives from the Swedish Transport Administration there are two suggestions from Västtrafik, in total there are six traffic frequency alternatives, Figure 7.3. The first four traffic frequency alternatives are connected with their special infrastructure and are taken from the high speed train report (Trafikverket, 2010), the scenarios US1, US2, US3 and US4. The two remaining alternatives are suggestions from the local public transport company Västtrafik, see Appendix 3, and are called VT1 and VT2.Those two suggestions are applied on the scenarios from the Swedish Transportation Administration. This results in ten suggestions for the section in between Gothenburg and Borås. To be able to see what the different alternatives are, the infrastructure and train types can be grouped in three groups:

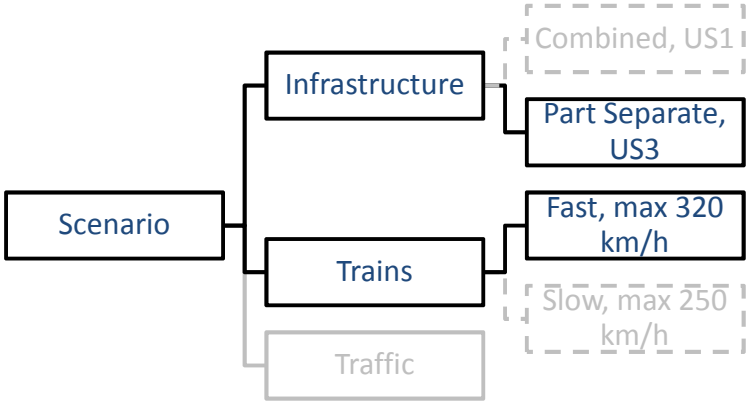
1. The infrastructure as in US1, US2 and US4 and the high speed trains are designed for 320 km/h.



2. The infrastructure as in US1, US2 and US4 and the high speed trains are designed for 250 km/h and the large regional trains and coast-to-coast trains are slower than in group one as well.



3. The infrastructure as in US3 and the high speed trains are designed for 320 km/h.



That there is no alternative that combines the infrastructure from US3 and slower trains depends on that there are no such combination in the high speed train report (Trafikverket, 2010). The traffic frequency alternatives are applied on these three groups of infrastructure and train types. As explained above, the traffic frequency alternatives from the Swedish transportation administration are only applied on the corresponding infrastructure and train types while the traffic suggestions from Västtrafik is applied on all the infrastructure and train types. The combinations of the traffic frequency alternatives, the infrastructure and train types are presented in Table 7.3.

Table 7.3. The X indicates the combination of traffic frequency alternative and infrastructure which there are timetables for.

Traffic alternatives	Infrastructure and train speed		
	1	2	3
US1	US1		
US2	US2		
US3			US3
US4		US4	
VT1	VT1(US1-2)	VT1(US4)	VT1(US3)
VT2	VT2(US1-2)	VT2(US4)	VT2(US3)

The traffic frequency alternatives represent is the frequency of the trains, the number of trains during the day and throughout the hour. Presented in the table on page 27, is the frequency for a non-holiday weekday for the ten different traffic scenarios. The different trains that are included in the timetables are:

- High speed train, stops in Gothenburg and Borås
- High speed train, stop in Gothenburg
- Regional train, stops in Gothenburg, Landvetter Airport and Borås
- Commuter train, stop in Gothenburg, Haga, Korsvägen, Mölnlycke, Landvetter Airport, Kråktorp/Bollebygd and Borås
- Coast-to-Coast train, stop in Gothenburg, Landvetter airport and Borås

The frequency of trains per day and the frequency of trains per hour are fixed in the suggestion from the Swedish Transport Administration. This has resulted in hours with only one or two trains and that there are sometimes two or more hours between departures for some train types. The greatest similarities between the US-frequency alternatives are the amount of commuter trains during the day. Both of the VT-frequency alternatives have a lot more commuter trains. VT1 and VT2 differ from the US-frequency alternatives by having a lot more trains per day and hour and having a larger focus on the local market. The difference between the VT-frequency alternatives is the amount of commuter trains per hour during their peak hours. VT1 has four trains per hour while VT2 has three.

Table 7.4 The amount of trains in one direction during one workday. +Bs = stop in Borås, –Bs = no stop in Borås (Trafikverket, 2010)

	Trains per		HST + Bs	HST - Bs	LRT	CT	CtC
US1	Day	79	16	8	24	23	8
	Peak Hour	13	4	1	3	4	1
US2	Day	75	12	12	8	23	20
	Peak Hour	11	2	2	1	4	2
US3	Day	69	8	12	20	23	6
	Peak hour	11	1	2	3	4	1
US4	Day	73	16	6	20	23	8
	Peak Hour	12	2	2	3	4	1
VT1	Day	112	13	13	26	50	10
	Peak Hour	9	1	1	2	4	1
VT2	Day	112	13	13	26	50	10
	Peak Hour	8	1	1	2	3	1

7.3 Timetables

From the travel times, frequency and infrastructure, graphic timetables have been made for all the different combination described, and in both directions: In total 20 separate timetables.

The frequency is first for trains per day, where a day in this case is 20 hours, from 5 AM to 1 AM the following night and then for trains per hour. During the day, in the morning and in the afternoon, there are peak hours when the heaviest traffic load occurs. When the peak hour is, depends on the day of the week and on the type of train. The travel patterns on week days differ enormously from the patterns during the weekend. The peak hour for commuters in the surrounding area differs from the passengers who are travelling longer distances. The peak hours for local commuters are between 6:30-9:30 AM (in the timetables this translate to the hours between 7 AM and 8 AM) in the morning and 3:00-6:00 PM in the afternoon. For long distance travellers, the peak hours are between 5:30-7:30 AM (in the timetables this translate to the hours between 6 AM and 7 AM) and 4:00-5:00 PM[9].This results in that the designing peak hour for all the train types are between 4 and 5 PM.

When constructing the graphic timetables, a goal has been made to have the same departure time every hour for the trains. It was evident from a short time into the making of the timetables that it was hard to be able to have fixed departures time the whole day. Therefore the day has been divided into two categories: high demand hours and low demand hours. High demand is defined as when the quantity of trains are more than five per hour or if any of the train types have a peak hour, if not peak hour traffic is one train per hour. The high demand hour for the different traffic frequency alternatives are presented in Figure 7.4. A high demand hour in the morning does not have to have the same traffic as a high demand hour in the evening. The last goal for the scheduling of the train services is that the same train type should not depart from the station in sequence of each other. This has not been possible all the time, especially during the peak hour.

[9]Sterky, Patrik 2011. Ramböll

A prerequisite for the timetable is that there has to be at least three minutes between the trains at all times. The three minutes headway is a security precaution that is in place to give the trains a chance to stop if the train in front has a malfunction and have been forced to stop.

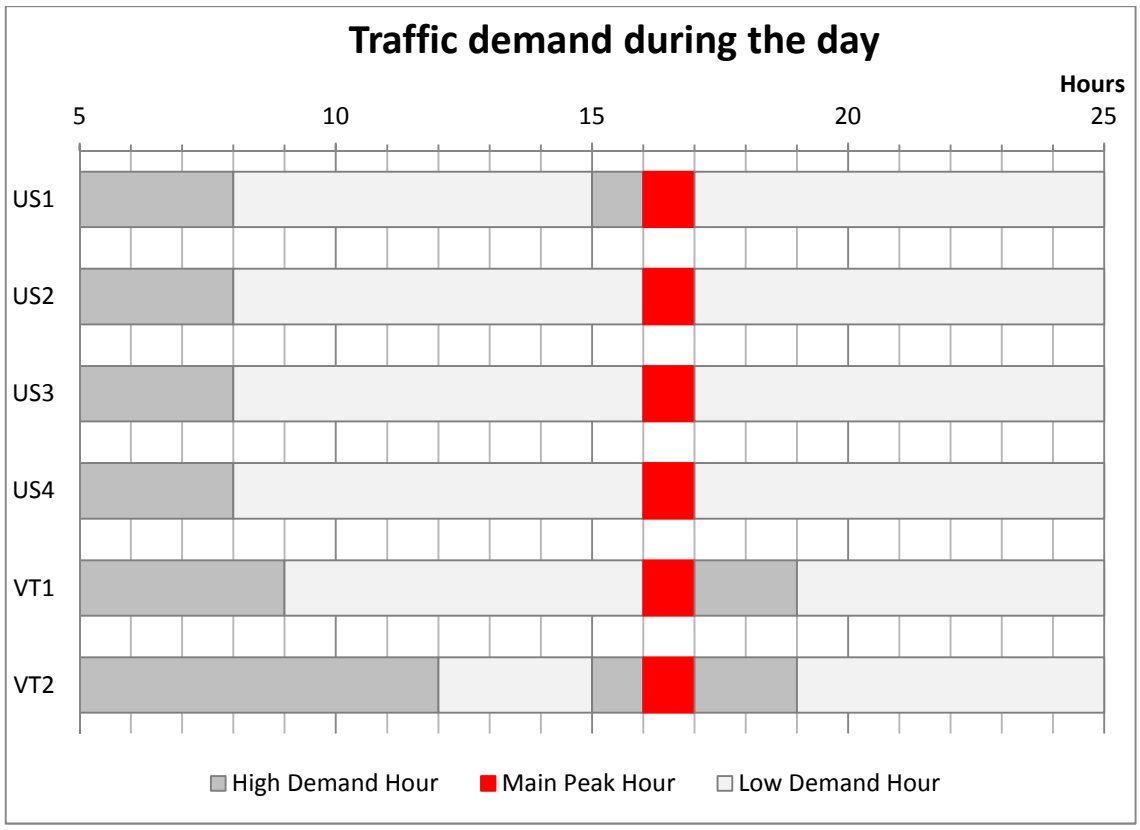


Figure 7.4. The demand during the travelling day.

8 Result

When setting the timetables it has been a goal to have no trains of the same type leaving directly after one another. If trains of the same type are going to leave right behind one another there should be a gap of time between where no trains leave. This has not always been possible and when the trains leave in sequence it is because no other way was found to be able to have as many trains per hour as suggested. As explained before the most critic hour of the day is the peak hour at 4 PM and then it is most common for trains in sequence but it happens other times of the day as well.

Timetable US1

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.1. During the main peak hour is there 13 trains and the hours that have the second largest amount of trains have 10 trains per hour and that it between 6 AM and 8 AM.

Table 8.1. The disruption of the trains during the day or scenario US1. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

US1	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	3	1		6
|	6 AM	4	1	3	1	1	10
|	7 AM	3	1	2		4	10
|	8 AM			1		2	3
Low Demand	9 AM	1			1	1	3
|	10 AM			1		1	2
|	11 AM		1				1
|	12 AM			1	1	1	3
|	13 PM	1					1
|	14 PM			1		1	2
High Demand	15 PM		1	3	1	2	7
Main Peak Hour	16 PM	4	1	3	1	4	13
Low Demand	17 PM	1		2		2	5
|	18 PM			1		1	2
|	19 PM		1		1	1	3
|	20 PM			1			1
|	21 PM	1				1	2
|	22 PM			1	1		2
|	23 PM		1			1	2
|	00 PM			1			1
Total:		16	8	24	8	23	79

Gothenburg-Borås

The departures during low demand hours are kind of regular. The commuter trains depart at 41 every hour while the high speed trains usually leave at 21 past except for 8 AM, 9 AM and 5 PM. Coast-to-coast is the least frequent train type and have the most fixed departure time, the only time it do not manage to leave at 15 minutes past is during the peak hour and the departure after. The large regional trains almost never leave at the same time, but usually there is one train per hour that leaves at 21 past during low demand, while the other large regional trains in the same hour are more random.

During the high demand hours there is almost no regularities, the main goal have instead been to have as few successive departure as possible. But to fit all the trains it has been required to have some continual departures. In the morning there are two trains of the same type following each other at three occasions. One pair of high speed trains to Borås, in the beginning of the hour 6-7 AM, and two pairs of commuter trains during the hour between 7 AM and 8 AM. During the afternoon it is only at the main peak hour there are conflicts but then the conflicts are substantial and almost all trains leave in pairs, as seen in Figure 9.1.

Borås-Gothenburg

As in the opposite direction the commuter trains leave at a set minute every hour during low demand hours. The same applies for the coast-to-coast trains but in this direction are they not as consistent because they do not keep the regular departure during the high demand hours. The large regional train and the two different high speed trains are more regular in this direction at low demand hour except for 8 AM and 5 PM. When there is only one high speed train or large regional train during an hour, the departure time is fixed while the kind of trains varies. In the morning during the high demand hours there are trains of the same type leaving after one another but this time it is only the commuter trains which happens twice. Also, during the high demand hours, in the afternoon does the traffic situation resemble the traffic in the other direction, but with a sequent departure less than from Gothenburg.

Timetable US2

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.2. During the main peak hour is there 11 trains and the hours that have the second largest amount of trains have 8 trains per hour and that it between 6 AM and 8 AM.

Table 8.2. The disruption of the trains during the day or scenario US2. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

US2	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	1	2		5
|	6 AM	2	2	1	2	1	8
|	7 AM	1	2		1	4	8
|	8 AM	1		1	1	2	5
Low Demand	9 AM		1		1	1	3
|	10 AM	1		1	1	1	4
|	11 AM				1		1
|	12 AM		1		1	1	3
|	13 PM				1		1
|	14 PM	1		1		1	3
|	15 PM		1		1	2	4
Main Peak Hour	16 PM	2	2	1	2	4	11
Low Demand	17 PM	1			1	2	4
|	18 PM		1	1	1	1	4
|	19 PM	1			1		2
|	20 PM			1	1	1	3
|	21 PM		1		1		2
|	22 PM					1	1
|	23 PM	1			1		2
|	00 PM					1	1
Total:		12	12	8	20	23	75

Gothenburg-Borås

The basic for the timetable have been to have the commuter trains leave one minute pass for every hour they have departures. This has been done successfully for the whole travelling day except for the first departure at 06:31 AM and for the main peak hour (4 PM). The commuter trains have two peak hours with four trains departure per hour and have one train leaving per hour during low demand. In addition to the peak hours there are three hours in connection to the peak hours that have two trains per hour. The first trains leave as the other commuter trains does during the day while the second train depart at 35 past. During the main peak hour and the last high demand hour in the morning the commuter trains and a faster train, the trains that do not goes via the Western link, leave the station in Gothenburg at the same time. The large regional trains leaves at fixed time during low demand except for the hour after high demand hours in the morning. The two different types of high speed trains alternates on the low demand hours and leaves at 53 except for the hour 8-9 AM when a high speed train leaves earlier. This also applies for the coast-to-coast train which leaves at 21 every hour.

Borås-Gothenburg

During high demand all the train types have a specific departure pattern but the number of trains per hour is not the same for all the train types during this period. The commuter trains, the coast-to-coast train and the high speed train with stop in Borås have more trains per hour some of the hours but the extra trains per hour have a pattern as well. During low demand the coast-to-coast and the large regional trains have the same pattern as during high demand besides at 5 AM when the coast-to-coast have an additional train. The nonstop high speed train have the same departure minute during low demand except at 5 AM when it leaves at 35 instead of at 10 as it does the rest of the low demand hours. While the other high speed train have a fixed departure time, except for 5 AM and 8 AM. The commuter trains have one main pattern during low demand, at 9 AM-12 PM and 6 PM-1 AM, when the train depart at 14 minutes pass but the hours in connection with the high demand have their own departures.

Timetable US3

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.3. During the main peak hour is there 11 trains and the hours that have the second largest amount of trains have 8 trains per hour and that it between 6 AM and 7 AM.

Table 8.3. The disruption of the trains during the day or scenario US3. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

US3	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	3	1		6
|	6 AM	1	2	3	1	1	8
|	7 AM	1	1	1		4	7
|	8 AM	1		1		2	4
Low Demand	9 AM		1		1	1	3
|	10 AM			1		1	2
|	11 AM		1				1
|	12 AM			1	1	1	3
|	13 PM		1				1
|	14 PM			1		1	2
|	15 PM	1		1		2	4
Main Peak Hour	16 PM	1	2	3	1	4	11
Low Demand	17 PM	1		1		2	4
|	18 PM		1	1		1	3
|	19 PM	1			1	1	3
|	20 PM			1			1
|	21 PM		1			1	2
|	22 PM			1			1
|	23 PM		1			1	2
|	00 PM			1			1
Total:		8	12	20	6	23	69

Gothenburg-Borås

During the low demand hours all the train leave at set minutes every hour. The commuter trains during the morning high demand period are regular but not matched with the low demand commuter trains. The early commuter trains leaves at half pass and the next hour every quarter of an hour. All the other train types are scheduled around these trains. During the main peak hour the train departures are planned so all the trains fit and not have any trains of the same type leaving after one another.

Borås-Gothenburg

The low demand hours are regular while the trains during high demand hours are infrequent. All the trains during the low demand periods of the day have fixed departures except for the large regional train that, in the hours in connection with the high demand periods, have different departures compared to the rest of the section. There is no pattern for the train departures during the high demand and two occasions there are commuter trains leaving right after one another.

Timetable US4

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.4. During the main peak hour is there 12 trains and the hours that have the second largest amount of trains have 9 trains per hour and that it between 6 AM and 7 AM.

Table 8.4. The disruption of the trains during the day or scenario US4. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

US4	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	3	1		6
|	6 AM	2	2	3	1	1	9
|	7 AM	2	1	1		4	8
|	8 AM	1		1		2	4
Low Demand	9 AM	1			1	1	3
|	10 AM			1		1	2
|	11 AM	1					1
|	12 AM			1	1	1	3
|	13 PM	1					1
|	14 PM			1		1	2
|	15 PM	1		1	1	2	5
Main Peak Hour	16 PM	2	2	3	1	4	12
Low Demand	17 PM	1		1		2	4
|	18 PM			1		1	2
|	19 PM	1			1	1	3
|	20 PM			1			1
|	21 PM	1				1	2
|	22 PM			1	1		2
|	23 PM	1				1	2
|	00 PM			1			1
Total:		16	6	20	8	23	73

Gothenburg-Borås

In this timetable there are several occasions when the same type of train leaves Gothenburg after one another. Even at one point there are three commuter trains that depart closely in sequence, all leaving just before and at 5PM. The low demand periods of the day has a more consistent timetable with the commuter trains leaving every hour sharp and the large regional trains and high speed trains also having set timeslots. The coast-to-coast trains only have fixed times in the evening and the large regional trains have a transition hour at 8 AM when they do not follow the regular pattern. The commuter trains as well have such an hour but at 3 PM instead of at 8 AM. In addition, the commuter trains, at two occasions have a second train leaving in the same hour and those trains are scheduled where they fit and do not have any pattern.

Borås-Gothenburg

Even though the trains leave at different times than in another direction the setup is similar. The commuter trains have during low demand mostly one train leaving per hour but in connection to their high demand hours there are often one more train departing. When there is one train per hour, the trains leave in fixed intervals and when there are two trains, one train follows the fixed pattern the trains have when there is only one per hour, while the second train depart when it can in relation with the other trains. Of the three hours with double commuter trains per hour, two have the same pattern. That there is the same type of trains leaving after on another happens one more time in this direction than from Gothenburg and even though three commuter trains leaving after one another on two occasions there is a longer period of time between the second and the third. The other types of trains leave at a regular pattern during the low demand hours and here the coast-to-coast trains also follow the pattern. The high demand departures are, as in the other direction, done to fit all the trains and do not have fixed departure times.

Timetables VT1

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.5. During the main peak hour is there 9 trains and there are three hours more that have the same amount of traffic as the main peak hour. The hours that have the second largest amount of trains have 8 trains per hour and that it between 18 AM and 19 AM.

Table 8.5. The disruption of the trains during the day or scenario VT1. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

V1	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	1	1	2	6
|	6 AM	1	1	2	1	2	7
|	7 AM	1	1	2	1	4	9
|	8 AM		1	2		4	7
|	9 AM	1		1		2	4
Low Demand	10 AM		1	1	1	2	5
|	11 AM	1		1		2	4
|	12 AM		1	1		2	4
|	13 PM	1		1	1	2	5
|	14 PM		1	1		2	4
|	15 PM	1	1	1		2	5
Main Peak Hour	16 PM	1	1	2	1	4	9
High Demand	17 PM	1	1	2	1	4	9
|	18 PM	1		2	1	4	8
Low Demand	19 PM			1	1	2	4
|	20 PM	1	1	1		2	5
|	21 PM			1		2	3
|	22 PM	1	1	1	1	2	6
|	23 PM			1		2	3
|	00 PM	1	1	1		2	5
Total:		13	13	26	10	50	112

Timetable VT1(US1-2)

Gothenburg-Borås

During the peak hours for the commuter trains, that is to say when four departures per hour, the trains always leave in pairs with no other type of train in between. The pair leave in even intervals and the depart time of the first train in the pair has the same depart time as the commuter train have the rest of the day, regardless if the demand is high or low. The large regional train have a pattern as well but it does not follow it in the beginning of the day, until after 7 AM. During the large regional trains peak hours there are two trains per hour departing and the second train do not follow a common pattern but have several. Of the six high demand hours the additional train per hour have the same departing minute for half of them. The hours the coast-to-coast have departures they always leave on the hour and the two types of high speed train also have fixed departures during the whole day.

Borås-Gothenburg

The large regional trains have regular departure during the low demand hours except in the hour previous to the main peak hour. During the high demand hours there are only two departures that match. The rest of the departures during high demand are irregular. The coast-to-coast trains leave at the same time every low demand hour while there is no pattern

to the departures during high demand. The high speed trains are irregular during the whole day; they do have some hours when trains have the same departure minute. The commuter trains almost always leave in pairs with four minutes between the trains during high demand and in the end of both sections there are three trains in a row. Of the 24 trains operating during high demand two thirds leave in sequence of another commuter train. During low demand the commuter trains have two patterns, one between 9 AM and 4 PM and another between 7 PM and 1 AM.

Timetable VT1(US3)

Gothenburg-Borås

In this traffic lay out it is the coast-to-coast trains that have the most irregular traffic pattern. During the day there areten trains departing and half of them have the same departure minute for each corresponding hour, three times during low demand and two at high. Of the five remaining departures four leave at five past. The commuter trains leave every half hour during low demand and in the morning, 5 AM and 6 AM, while leaving every quarter during the remaining high demand hours. The two patterns do not match but there are never two trains of the same type leaving after one another. During the low demand periods the two types of high demand trains alternate on leaving at the same time but 3 PM both types of trains have departures so it is only the high speed train with no stops that can leave at 3 PM. The pattern during high demand is not as regular but the division of the hours is the same for the two types, the pattern at 7 AM is the same as at 4 PM and 5 PM and 5 AM and 6 AM have the same pattern while 8 AM and 6 PM are not part of any pattern. At high demand when the large regional trains have two departures an hour, they leave with half an hour intervals. During the rest of the day the trains leave at the same time but at 6 PM and 7 PM they leave at a half an hour earlier.

Borås-Gothenburg

All trains have a set traffic constellations during low demand, in addition they also have the same pattern at 5 AM and 6 AM. Except of the commuter trains, the other train types have a fixed pattern during high demand. The commuter trains leave in pairs and the first pair always leaves at the same type while the second pair leaves either at 41 or 42.

Timetable VT1(US4)

Gothenburg-Borås

The high speed trains without stops have the same departure minute the entire day, the large regional trains also have the same departure minute both for the first train that leave every hour and for the second train during high demand. The coast-to-coast and high speed train with stop in Borås follows two patterns, one for high demand and one for low. They both have the low demand pattern at 5 AM and the high speed trains also have it at 6 AM. The commuter trains have one pattern for low demand

and 5-6 AM and one during high demand. Those trains during high demand are paired with a second train leaving four minutes after.

Borås-Gothenburg

The nonstop high speed train have the same operation pattern the whole day and the coast-to-coast, high speed train with stop in Borås and the large regional trains have one pattern for the hours 7-8 AM and 4-6 PM and another for the rest of the day. When the commuter trains goes twice an hour the train runs with equal intervals of 30 minutes. During the hours with four trains per hour they depart in pairs.

Timetables VT2

If it will be possible to follow the criteria and goals for the timetable depends on the disruption of the trains during the day. How the trains are arranged in scenario US1 is presented in Table 8.6. During the main peak hour is there 8 trains and there are three hours more that have the same amount of traffic as the main peak hour. The hours that have the second largest amount of trains have 7 trains per hour and that it between 18 AM and 19 AM.

Table 8.6. The disruption of the trains during the day or scenario VT2. HST+Bs = High speed trains that stops in Borås and Gothenburg. HST-BS = High speed train that stops in Gothenburg.

V2	Time	HST(+Bs)	HST (-Bs)	LRT	CtC	CT	Total
High Demand	5 AM	1	1	1	1	2	6
|	6 AM	1	1	2	1	3	8
|	7 AM	1	1	2	1	3	8
|	8 AM		1	2		3	6
|	9 AM	1		1		3	5
|	10 AM		1	1	1	3	6
|	11 AM	1		1		3	5
Low Demand	12 AM		1	1		2	4
|	13 PM	1		1	1	2	5
|	14 PM		1	1		2	4
High Demand	15 PM	1	1	1		3	6
Main Peak Hour	16 PM	1	1	2	1	3	8
High Demand	17 PM	1	1	2	1	3	8
|	18 PM	1		2	1	3	7
Low Demand	19 PM			1	1	2	4
|	20 PM	1	1	1		2	5
|	21 PM			1		2	3
|	22 PM	1	1	1	1	2	6
|	23 PM			1		2	3
|	00 PM	1	1	1		2	5
Total:		13	13	26	10	50	112

Timetable VT2(US1-2)

Gothenburg-Borås

The traffic at low demand and at 5 AM is fixed. The two types of high speed trains are paired with the commuter trains. During high demand the commuter trains depart every twenty minutes and the high speed trains are still paired with on train each. At one point there are two commuter trains with no other train in between but it is still twenty minutes between these trains. The large regional trains have a regular but different pattern during high and low demand. But the first hour is low demand for the large regional trains, that is to say it is only one train per hour and therefor have the same pattern as the rest of the low demand trains. While the other types of trains have two different patterns during the day the coast-to-coast have one same during the day.

Borås-Gothenburg

The coast-to-coast trains have the same departure every hour and the commuter train have two operating schedules, one for high demand and one for low. There are trains leaving after one another without any other train type between. This happens after every high demand hour. In an hour there can be either one (high and low demand) or two (high demand) large regional trains departing, the minutes when they can leave are set but when there is only one train in the hour it can be in either one of the two time slots. The high speed train with stop in Borås do not have a fixed minute when it departs but leaves nearly the same minute every hour. The other high speed train have two patterns that it follows, one for high demand except for the first hour and one for that hour and low demand.

Timetable VT2(US3)

Gothenburg-Borås

All trains have two patterns they follow the whole traffic day, one for low demand and 5 AM and one for high demand. The large regional trains have the low demand schedule for 3 PM as well. The commuter trains leave every half an hour when there are two trains an hour and every twenty minutes when there are three trains per day. The high speed trains have thirty minutes between their departures, both during high demand and low demand even though the two types do not usually leave in the same hour during low demand.

Borås-Gothenburg

The different train types have a fixed operating schedule for the whole day with half an hour difference between the commuter trains. When there are one more train an hour for the large regional trains and commuter trains those are put where there is room. The second large regional train depart 12 minutes after the first one and the third commuter trains leave 4 minutes before the first.

Timetable VT2(US4)

Gothenburg-Borås

The trains, except the high speed trains with no stops, have two operating schedules for the day. The nonstop high speed train have one pattern for the whole day. The other high speed train, coast-to-coast train and the commuter train have one pattern during low demand plus 5 AM and one for the high demand. The first departure for the commuter train is the same during the whole traffic day while the other train depart at different minutes depending if there are one or two more trains per hour. The additional trains either leave in 30 minutes or 20 minute intervals from the original train. Because there are is no coast-to-coast train or no nonstop high speed train at 11 AM there are three commuter trains leaving in a row.

Borås-Gothenburg

The coast-to-coast train and the commuter train have the same departure minutes all day. But when a third commuter train is in the same hour, that train depart only five minutes before the second train, consequently they always leave in sequence of each other. The high speed trains and the large regional train have the same division of the day, the high demand minus 5 AM and low demand with 5 AM. During high demand when there is two large regional trains per hour they leave every 30 minute. When there is one train per hour they have the same departure minute as the second when there are two trains per hour.

9 Analysis

Of the four traffic suggestion from the Swedish Transport Administration the first one have the most trains both during the day and during the peak hour but the suggestions from the municipality have more trains in total during the day but less during peak hours. The difference between the traffic suggestions are more the concentration of a type of train more than the total amount of train per day and trains per hour, the amount of trains per day lies between 69 and 79 for the scenarios from the Swedish Transport Administration.

Traffic load suggested by the Swedish Transport Administration

The main goal when planning the timetables was to spread out the trains as much as possible and to have them leave in even intervals. The time period that shows if this have been done successfully is the peak hour, between 4 PM and 5 PM. It can be seen in Figure 9.1, Figure 9.2, Figure 9.3 and Figure 9.4 that it is only in scenario US2 and US3, from Gothenburg to Borås, this have been made efficiently.

All the timetables can be found in Appendix4 and 5. There are both graphic timetables (Appendix 4) as well as the ones in tables (Appendix 5).

If the high demand hours are reviewed instead of the peak hour it can be seen that none of the basic timetables (US1-US4) pass the requirement of no same train type in sequence. The scenario from the Swedish Transport Administration that is closes to manage this is scenario US3 which do manage it in the direction Gothenburg to Borås but not on the way back.

US2 has most CtC trains of all the alternatives and they are more similar to CT when it comes to speed, which makes them fit better together. The CtC trains can depart closely before a CT, as the other trains can and especially high speed trains from Gothenburg to Borås, but the CtC trains follow the CT speed more so than the other train type and this allows another train to leave closely before both the CT and the CtC train. This can be seen in Figure 9.2 but also make it easy to plan the departures after train type and with that the train types depart in sequence. This way of planning can be seen in all the different alternatives.

The scenario with most trains is US1, Figure 9.1, and this is obvious when the peak hours are compared. During the low demand US1 have the same concentration of trains as the other scenarios. That US3 have a different infrastructure have made it easier to get the commuter trains to leave in more even intervals but the problem with them are still there, because they still hinder the flow between Göteborg and Landvetter. And it is not only the commuter trains that delay the traffic, the CtC trains do this as well and they are not on the separate track.

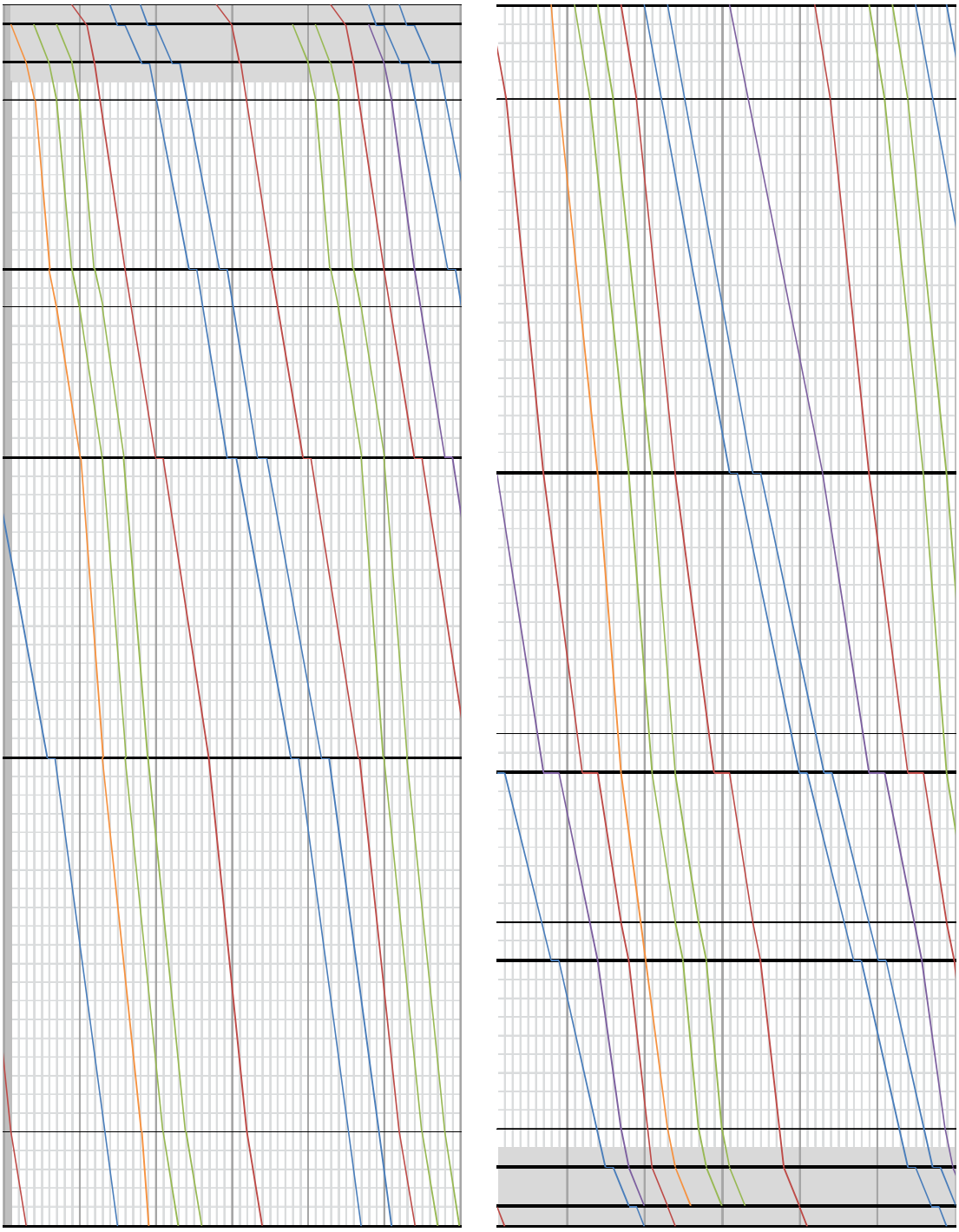


Figure 9.1. The peak hour (4 PM-5 PM) for US1. Left: Traffic going from Gothenburg to Borås, right: Traffic going from Borås to Gothenburg. Orange=HST without stop in Bs, green=HST with stop in Bs, red= LRT, purple=CtC, blue=CT. X-axes is the time in ten minute steps and the y-axes is the distance, total 65 km. The horizontal lines are where the speed limits changes. The horizontal lines where the commuter trains lines are horizontals are stations, in the left graph: Gothenburg, Haga, Korsvägen, Mölnlycke, Landvetter airport, Bollebygd and Borås. In the right graph: the opposite order to in the left graph.

Figure 9.2. The peak hour (4 PM-5 PM) for US2. Left: Traffic going from Gothenburg to Borås, right: Traffic going from Borås to Gothenburg. Orange=HST without stop in Bs, green=HST with stop in Bs, red= LRT, purple=CtC, blue=CT.X-axes is the time in ten minute steps and the y-axes is the distance, total 65 km. The horizontal lines are where the speed limits changes. The horizontal lines where the commuter trains lines are horizontals are stations, in the left graph: Gothenburg, Haga, Korsvägen, Mölnlycke, Landvetter airport, Bollebygd and Borås. In the right graph: the opposite order to in the left graph.

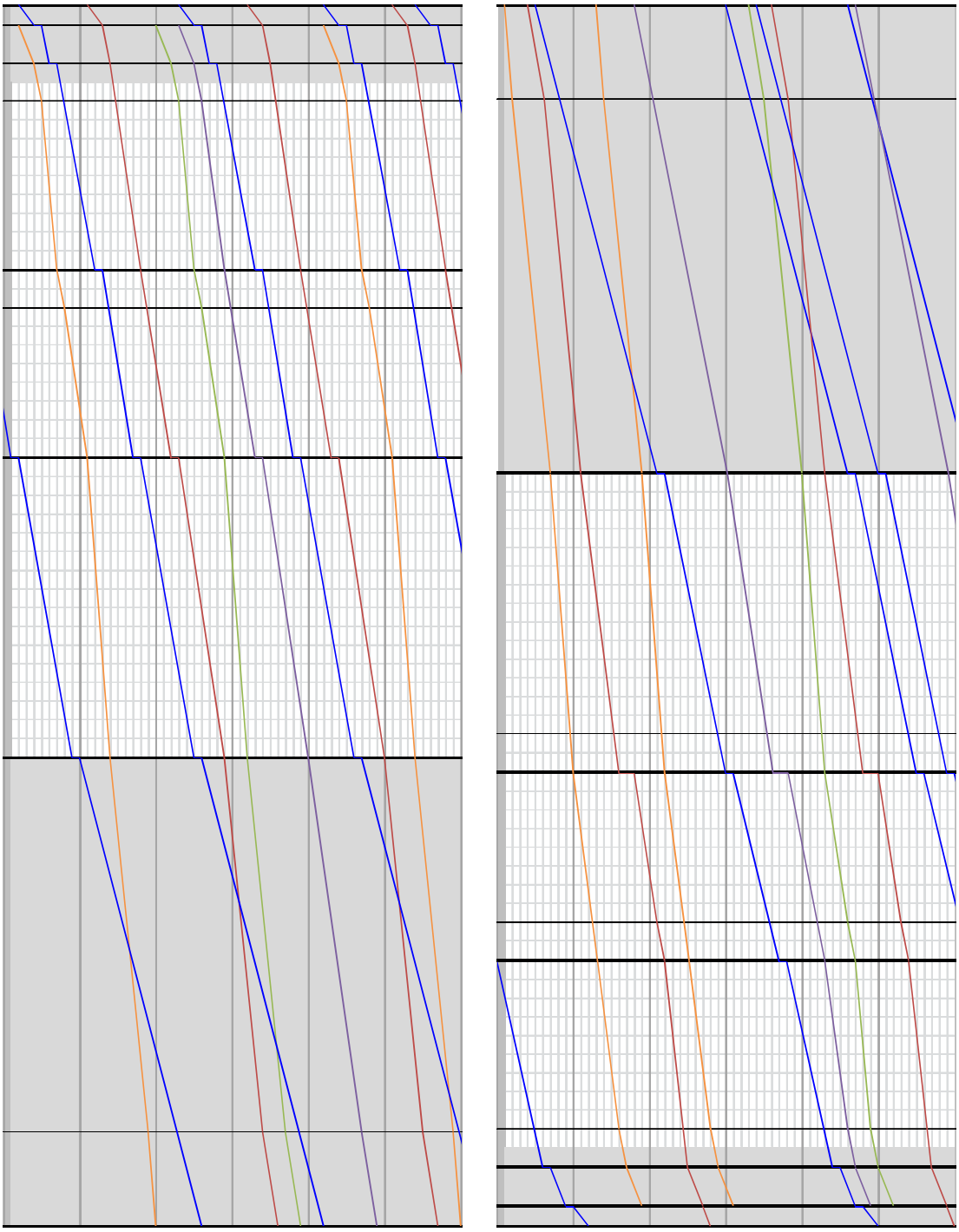


Figure 9.3. The peak hour (4 PM-5 PM) for US3. Left: Traffic going from Gothenburg to Borås, right: Traffic going from Borås to Gothenburg. Orange=HST without stop in Bs, green=HST with stop in Bs, red= LRT, purple=CtC, blue=CT. X-axes is the time in ten minute steps and the y-axes is the distance, total 65 km. The horizontal lines are where the speed limits changes. The horizontal lines where the commuter trains lines are horizontals are stations, in the left graph: Gothenburg, Haga, Korsvägen, Mölnlycke, Landvetter airport, Bollebygd and Borås. In the right graph: the opposite order to in the left graph.

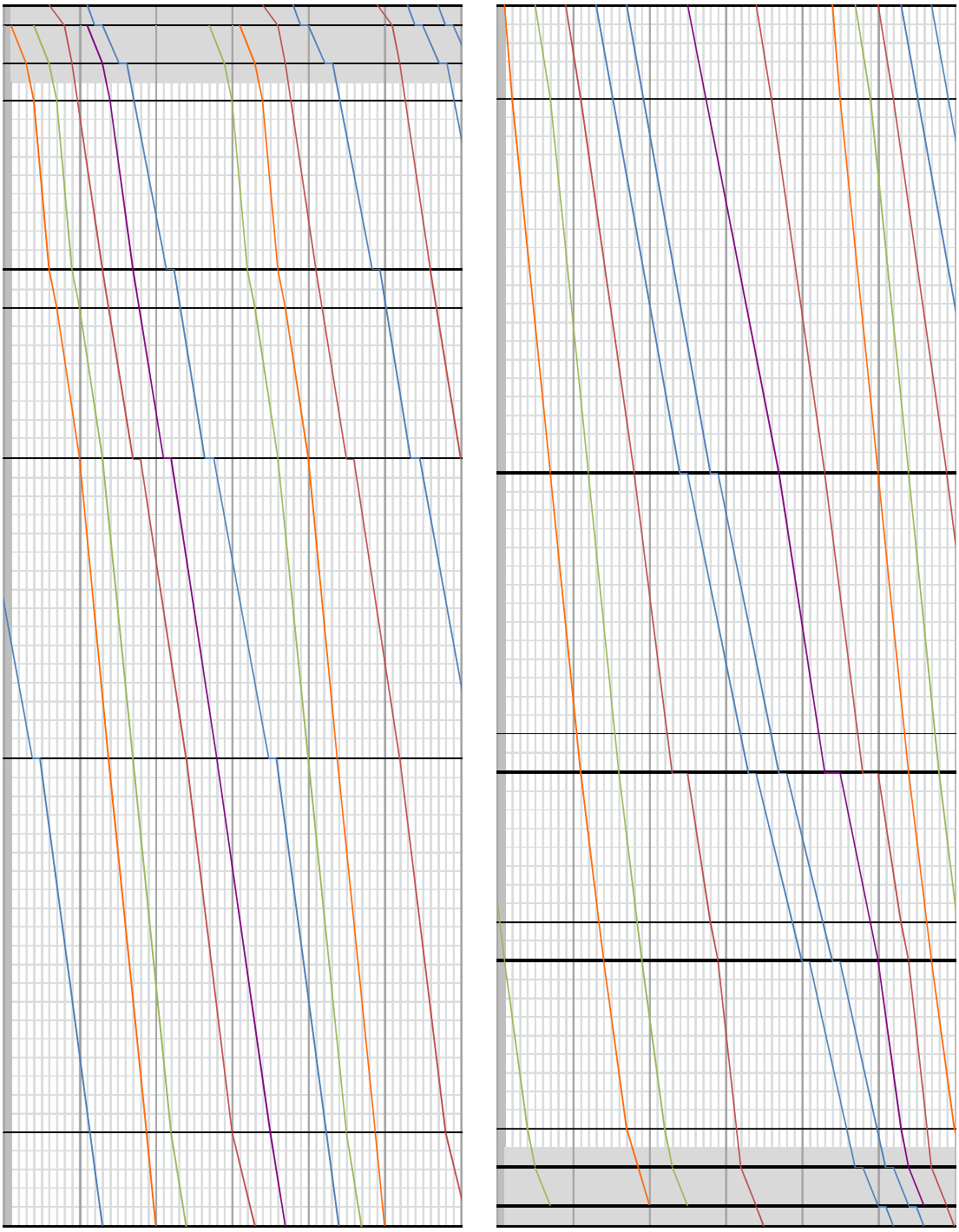


Figure 9.4. The peak hour (4 PM-5 PM) for US4. Left: Traffic going from Gothenburg to Borås, right: Traffic going from Borås to Gothenburg. Orange=HST without stop in Bs, green=HST with stop in Bs, red= LRT, purple=CtC, blue=CT. X-axes is the time in ten minute steps and the y-axes is the distance, total 65 km. The horizontal lines are where the speed limits changes. The horizontal lines where the commuter trains lines are horizontals are stations, in the left graph: Gothenburg, Haga, Korsvägen, Mölnlycke, Landvetter airport, Bollebygd and Borås. In the right graph: the opposite order to in the left graph.

Traffic load suggested by Västtrafik

The only difference between the V-alternatives is that the commuter trains have different amount of trains during their peak hours. VT1 have 4 trains per hour while VT2 have 3 trains per hours, this mean that that there are more peak hours in VT2 than VT1 because the amount of trains during the day is the same in both alternatives, 50 trains per day.

Comparison of the three alternatives with US1 and US2 infrastructure and high speed trains, v = 320 km/h and traffic frequency alternative US1 or VT1 or VT2

For commuters between Gothenburg and Borås and the communities on the way, are the alternatives from Västtrafik better than the suggestions from Swedish Transport Administration because in those alternatives there are at least two commuter trains that leave Gothenburg and Borås hourly. That enables workers and students to have irregular hours, but still be able to get to and from without having to wait toomuch. For travellers to and from Gothenburg and Stockholm the US alternative is better during high demand with several departures, even though some of them leave directly after one another. While during low demand the VT-alternatives are better because in those there are at least one departure per hour of one of the high speed train types. This applies to the large regional trains and coast-to-coast trains that have commuters from for example Jönköping. During low demand hours in the US-alternatives there are sometimes as few trains as one per hour and that gives time for regular and quick check-ups and maintenance every day. And that there is time in between the high demand with fewer trains makes it easier to correct delays from earlier during the day.

Comparison of the three alternatives with US1 and US2 infrastructure and high speed trains, v = 320 km/h and traffic frequency alternative US2 or VT1 or VT2

All the scenarios are rather regular in the direction Gothenburg to Borås but in the other direction it is not the same flow. For these scenarios is it more of a rule that the same train type leave in pairs than rather leave in even intervals. There are more trains in both the VT-alternatives than in US2 and the largest difference is of the LRT and the CtC. There are more than three time as many LRT in the VT-alternatives but when it comes to the CtC it is US2 that have more, in fact double the amount.

Comparison of the three alternatives with US3 infrastructure and high speed trains, v = 320 km/h and traffic frequency alternative US3 or VT1 or VT2

Even though the commuter traffic is separated between Landvetter and Borås, those trains still hinder the traffic of the rest of the section. It is not only the commuter trains that are obstacles in the traffic, also the CtC trains hold up the flow. However, CtC are quicker than the commuter trains and they have fewer stops but in comparison with the large regional trains they are slow. From Borås to Gothenburg, the trains leave in groups more or less, especially in VT1 (US3) while in the other two scenarios the groups can be seen but they are more spread out. In the opposite direction the traffic flows more even, in all the scenarios.

Comparison of the three alternatives with US1 and US2 infrastructure and fast trains, v = 250 km/h and traffic frequency alternative US4 or VT1 or VT2

In both VT1 (US4) and US4, in the direction Gothenburg to Borås, the commuter trains leave in pairs or even in triple groups. And in US4 the different high speed trains leave after one another, even thou one stops in Borås while the other one do not they are too similar to leave in sequence. The commuter trains leave in pair in the other direction both in US4 and in VT2 (US4).

10 Discussion

To get a clear result is hard because there are more ways to organize the timetables than these suggestions and the early once are maybe not as good as the last.

The objectives for the planning of the timetable were that the trains should go at the same time every hour and if the same type of train goes more than once an hour they should be in equal intervals. Another thing, which was not a goal in these timetables, is that the trains in one direction should be connected to the ones in the other direction; the operators do not have a specific train for every departure so if this is not done there could be a shortage of train in one direction. None of the two objectives were met for any of the US-alternatives for the whole travelling day except at the low demand parts. When there are two or more trains of the same type leaving in sequence of one another, it is usually during high demand or in connection with high demand hours. The timetable during the peak hour is more modelled to make every train fit than to have a good and regular system. This can also be applied for the rest of the hours, especially in the direction Borås to Gothenburg. What determines the lay out the most is the concentration of trains and secondly the commuter trains. The number of commuter trains is the same in all the US-alternatives but since the amount of other trains varies, the timetables for the alternatives are totally different from each other. The amount of trains during low demand is similar in all the US-alternatives.

Of the four US-alternatives, US1 have most trains but this is only evident during high demand hours. That the US1 have a lot of trains can be both positive and negative. The more trains, the more people can travel However; the whole system becomes more sensitive for delays to propagate in the system. In the second US alternative there are the most CtC trains. There are a lot of trains in this alternative as well but not as crowded as is in US1. One of the disadvantages of this alternative is that there are few high speed trains so the end point market is smaller. The main advantage with US3 is that the commuter trains and the rest of the train types are separated between Landvetter airport and Borås, which makes it possible for the faster trains to pass the slow commuter trains. As in US2, this alternative has few high speed trains. In US4, the speeds for the different trains are more similar and can therefore be planned closer together and thereby use the track more efficiently. No really fast high speed trains mean that this alternative is not for the big cities, the end point markets, but is more for the region.

The timetables are more often better in the direction Gothenburg-Borås than the opposite direction. This is because of the separation of the train types in Gothenburg thou to the western link. The separation in Gothenburg enables the different train types to leave more closely together and the speed difference will increase the distance between the trains the further they come from Gothenburg. In the other direction there is no such separation and the separation between the train types have to be from start in Borås. The only time this is not true is in scenario US3 where the commuter trains are separated between Borås and Landvetter. This simplifies the planning but it is only one train type that is separated where as in Gothenburg there are two train types for each separation.

It is difficult to compare the US-alternatives and the VT-alternatives. They are suggested with different precision, the US-alternatives are more specific than the VT-alternative. In the US-alternatives there are in general too many trains during high demand and too few during low demand while in the V-alternatives the distribution is more even. This may be due to the fact that the US-alternatives all have regulations

about how many trains in total there should be and how many trains there where during high demand, while the V-alternatives only mention how many trains per hour there should be during high and low demand and the total was added up from that information.

One question is whether people travelling to and from Borås should be allowed to use the high speed and the large region trains or should it be that trains coming from beyond Borås only have disembarking in Borås and the trains coming from Gothenburg only have boarding? This is a good idea if the purpose for the new rail is the end point market and not only for the region. That the close commuters cannot take the high speed trains will make room for the passengers that are travelling longer distances and will in turn make the tickets cheaper.

If the politicians invest in building the high speed rail, the high speed trains should be the trains that the other trains are planned around. To make this possible, the commuter traffic and other slow trains should be separated to their own track for the whole section or for some parts. If it is not possible to have two high speed tracks and two commuter tracks, maybe the high speed track should be downgraded to a slower track; still fast but not high speed. There is no point in having high speed track between Gothenburg and Borås if it cannot be used to its full capacity. Another way to get a better flow of the traffic is to use the existing bypasses in Mölnlycke and Borås. Then the faster trains can get past the commuter trains. This can result in commuter trains having to wait at the stations a longer time than previously needed.

11 Conclusion

The goal was to evaluate what was the best choice of the suggested alternatives by the Swedish Transport Administration and Västtrafik. Because it is the amount of stops and not the type of train or the acceleration that are the most crucial part of the travel time, it would be better to separate the trains with a lot of stops from the trains with few or no stops. The trains with the most stops are the commuter trains and they are also slow which make them the largest obstacle in these scenarios. If they had their own track they could have more departures and the faster trains would also operate more efficiently. Furthermore, the focus of the traffic should be on the end market because the separation would take care of the local demand and even some of the regional. If it is easier and faster to get to Borås it would also be so for the travellers to and from Jönköping.

In the US-alternatives there are in general too many trains during high demand and too few during low demand while in the V-alternatives the distribution is more even. This may be due to the US-alternatives have regulations about how many trains there should be in total and how many trains there is during high demand, while the V-alternatives only said how many trains per hour there should be during high and low demand and the total was convoluted from that. That there are hours with only one train in the US-alternatives and not in the VT-alternatives depends on that there are too few trains left in the US-alternatives to be able to let all train types have trains departing every hour. In comparison, in the VT-alternatives there is no limit on the total amount of trains and that have made it possible to let all the train types to have departures every hour.

This has resulted in that the traffic flow in the VT-alternatives are more flowing while the traffic in the US-alternatives have hours when there are almost no trains and hours when there are too many trains. This is because

When evaluating the basis of the initial in-data and delimitation the preferred traffic design is V2with the infrastructure in scenario US4 but since Västtrafik's suggestions are not as thought through as the Swedish transport administrations', the top choice is US3. It is the preferred one because there are the least double departures and have the most consistent timetable of all the suggestions. But none of these timetables are very good since none of them manage to have regular departures during the whole day and are all very crowded.

There should be further investigations, both for the traffic load and the infrastructure. I have suggested that there should be an additional pair of tracks for the commuter traffic. If the extra track will only be between Landvetter and Borås the coast-to-coast trains should travel on that as well to create a little bit better flow for the fast and high speed trains.

12 Further studies

As mention earlier, further studies should be made. Aspects to investigate are if it is possible to have more bypasses or to use the ones that exist, if it is more efficient to have slower trains overall which means that the railway is built for maybe a maximum speed of 280 km/h or 250 km/h. Other questions that should be investigated are if the commuter trains could have alternating stops, if there are better traffic structures and if it is possible to separate the commuter traffic for the whole section.

Could the systems flow depend on scheduled bypasses or should the ability to overtake other trains be reserved for trains that have been delayed? Should the speed limit for the whole section be lower so the trains have more of the same speed. This could make the flow of the traffic go more fluently. Another option that should be investigated is if the commuter train could have different stops? Maybe there should be some trains that only have half the stops, either in the beginning or the end, or maybe the trains should have alternate stops on this section.

Further studies should also be made of other traffic structures than the one suggested from Swedish Transport Administration and Västtrafik. Things that should be investigated are the amount of traffic overall and the amount commuter trains in particular. Is it necessary to have more than two per hour? If there are more than two commuter trains per hour how many other trains can fit in the timetable? Or should the commuter trains have their own track? Will the fact that the commuter trains and coast-to-coast trains share the track with the high speed trains and large regional trains between Gothenburg and Borås affect the national high speed railway system?

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Appendix 1 – Information from Markus Gunnervall

In this appendix contains emails and document that Markus Gunnervall from the Swedish Transport Administration has sent to Ylva Höglund during 2011. This information is a basis for the calculations in the report “Traffic capacity for a high speed railway between Gothenburg and Borås”

1. Email from Markus Gunnervall 2011-03-15
2. Hastigheter och längder Göteborg-Borås.xlsx
3. Systemskisser Almedal-Borås.pptx
4. Email from Markus Gunnervall 2011-04-14
5. Email from Markus Gunnervall 2011-05-16
6. Tidtabell US1 100708 nya gångtider PJ (ELgranskad)_antal tåg.xls
7. Tidtabell US2 100831 (ELgranskad)_antal tåg.xls
8. Tidtabell US3 100803 nya gångtider och längder MG 100811.xls
9. Tidtabell US4 100824 LL (PLgranskad)_antal tåg.xls

Höglund Ylva

Från: markus.gunnervall@trafikverket.se
Skickat: den 15 mars 2011 10:52
Till: Höglund Ylva
Ämne: SV: Ylvas Exjobb
Bifogade filer: Hastigheter och längder Göteborg-Borås.xlsx; Systemskisser Almedal-Borås.pptx

Hej Ylva

Bifogar sammanställning av hastigheter och längder, bifogar även systemskisser för de fyra alternativen Alla alternativen är egentligen väldigt lika infrastrukturmässigt. Det som skiljer är placeringen av några kopplingspunkter samt att i US3 är dragningen genom Borås helt annorlunda.

Stationerna i Mölnlycke och Kråktorp är utformade som fyrspårstationer med sidoplattformar, detta framgår av systemskisserna. Även utformningen av Borås station framgår. I Västlänken är det tvåspårstationer vid Haga och Korsvägen och fyrspårstation vid Göteborg C.

/Markus

Fordon	Höghastighetståg (till Stockholm)	Storregionala tåg (till Jönköping)	Regionala tåg (till Borås)
hastighet km/h	320	250	200
startacc. m/s2	0,7	0,5	0,7
acc vid 200 km/h	0,3	0,2	0,05
retardation. m/s2	0,6	0,6	0,8

Infrastruktur med utgångspunkt Göteborg C

Station	Avstånd från	Hastighet km/h US1, US2, US4
Göteborg	0	60
	1,5	90
	2	105
	4	140
	5,5	250
Mölnlycke	13	200
	15	320
Landvetter flp	23	200
	25	320
Kråktorp	39	320
	59	270
	61	230
Borås	64	230

Infrastruktur med utgångspunkt Västlänken

Station	Avstånd från	Hastighet km/h US1, US2, US4
Göteborg	0	80
Haga	1,5	80
Korsvägen	3	80
	6,5	250
Mölnlycke	14	200
	16	320
	24	200
Landvetter flp	26	320
Kråktorp	40	320
	60	270
	62	230
Borås	65	230

Infrastruktur med utgångspunkt Göteborg C

Station	Avstånd från	Hastighet km/h US3
Göteborg	0	60
	1,5	90
	2	105
	4	140
	5,5	250
Mölnlycke	13	200
	15	320
Landvetter flp	23	200
	25	320
Kråktorp	39	320
Kopplingspunkt ktk-	42	320
	59	270
	61	230
Kopplingspunkt förbifart Borås	63,5	100
	65,5	80
Borås	66,5	80

Infrastruktur med utgångspunkt Västlänken

Station	Avstånd från	Hastighet km/h US3
Göteborg	0	80
Haga	1,5	80
Korsvägen	3	80
	6,5	250
Mölnlycke	14	200
	16	320
	24	200
Landvetter flp	26	320
Kråktorp	40	320
Kopplingspunkt ktk-	43	320
	60	270
	62	230
Kopplingspunkt förbifart Borås	64,5	100
	66,5	80
Borås	67,5	80

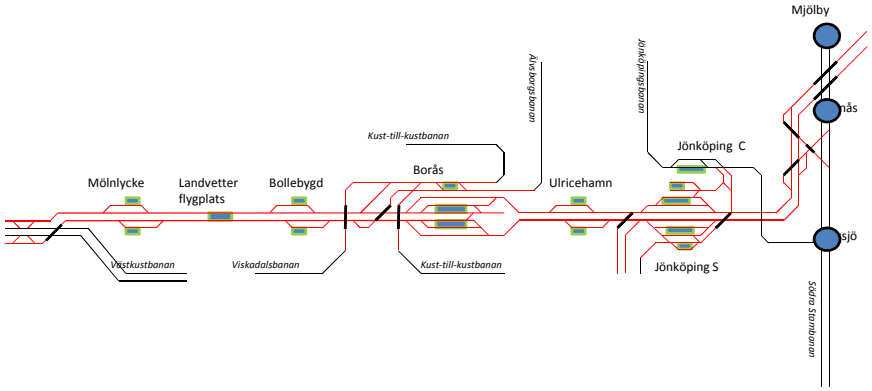
System sketches

System sketches over the section Almedal-Borås for the four scenarios from the Swedish Transport Administration.

Author: Markus Gunnervall
Company: Trafikverket
Created: 2011-03-15

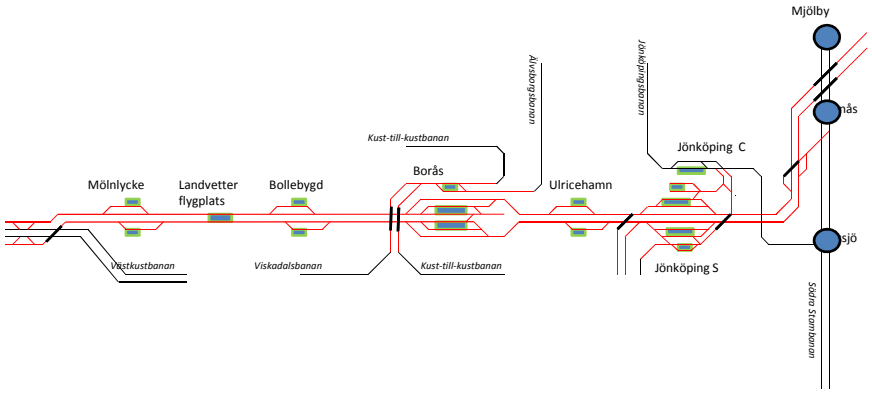
Mantorp-Almedal

US1



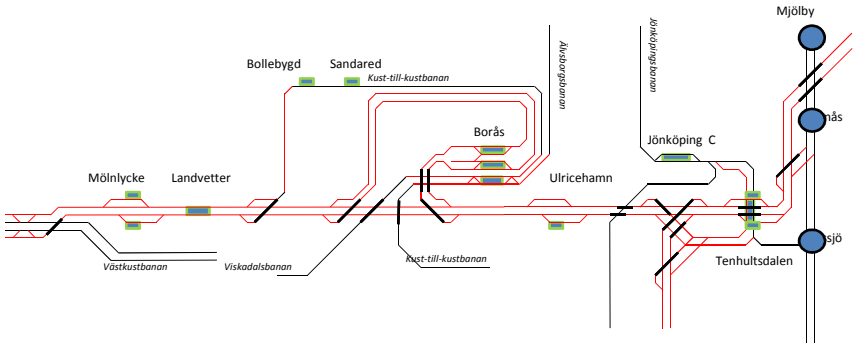
Mantorp-Almedal

US2



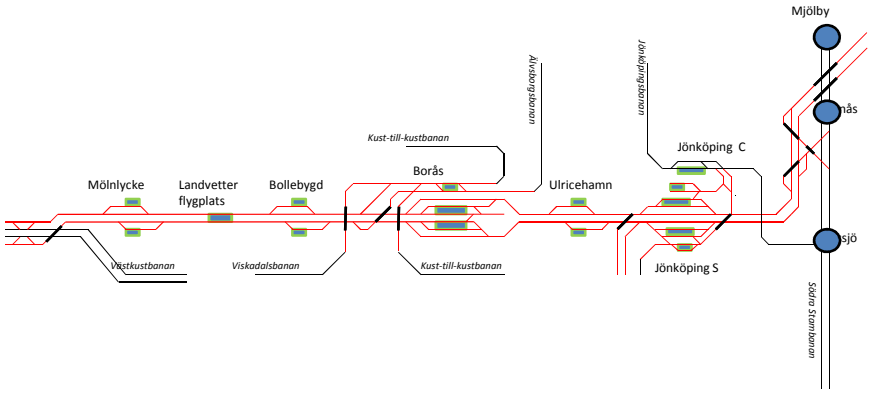
Mantorp-Almedal

US3



Mantorp-Almedal

US4



Höglund Ylva

Från: markus.gunnervall@trafikverket.se
Skickat: den 14 april 2011 22:22
Till: Höglund Ylva
Ämne: SV: Examensarbete

Hej Ylva

Här kommer lite snabba men inte helt utömmande svar:

Från: Höglund Ylva [mailto:Ylva.hoglund@ramboll.se]
Skickat: den 13 april 2011 14:34
Till: Gunnervall Markus, SVÄpg
Ämne: Examensarbete

Hej Markus,

Jag har lite mer frågor som jag hoppas du har tid att svara på. Vissa av dom förstår jag att du inte vet svaret på men jag tar med dom ändå så att det inte visar sig tillslut att det var dig jag borde ha frågat hela tiden.

Har du någon aning vilka hastighetsbegränsningar det skulle kunna tänkas vara på sträckan korsvägen-mölndal-mölnlycke?

Till Mölndal samma som dagens hastighet, jag tror att det är 160. Mellan Mölndal och Mölnlycke kan du också anta 160.

Vad är det för slags tåg du har använt och hur många passagerare tar dom? Varför har du valt dessa typer?

Jag har i tidtabellsanalyserna utgått från ICE3-tåg för höghastighetståg, växlat för 320 km/h. För snabba regionaltåg som bara stannar i Landvetter och Borås och går hela vägen till Jönköping har jag utgått från ett framtida fordon för 250 km/h. Fordonet finns definierat i vårt gångtidsberäkningsprogram.

Vilkenheadway har de olika tågen?

Ca 3 min. Men vi försöker lägga lite marginal, åtminstone 4 min mellan tågen på linjen.

Var ligger Landvetter södra? Hur skulle hastighetsbegränsningarna se ut runt Landvetter S?

Ca 3 km väster om Landvetter flygplats. VI har sagt att det är 200 km/h som gäller fram till flygplatsen, men det skulle eventuellt gå att höja lite om man vill för korridoren är rak från Mölnlycke till Landvetter flygplats. Det är tunnelstationen som begränsar. I Järnvägsutredningen har man gjort antagandet att det blir hastighetsbegränsningen 200 km/h under Landvetter flygplats, men egentligen vet vi väldigt lite om detta.

Vad för sorts tåg är vilka egnskaper har kust-till-kust tågen?

Anta dagens Regina 200 km/h. Det är lite av en strategisk fråga om vi ska ha så ”långsamma” fordon på Götalandsbanan. Ett alternativ är att klassa banan på sådant sätt att man måste köra minst 250 km/h på

banan.

Det här är några av frågorna jag har just nu.

Tack på förhand

Varsågod. Hör av dig igen om du har fler frågor. Om eller när du har något skrivet som du vill ha synpunkter på så får du gärna skicka över.

/Markus

Ylva Höglund

Höglund Ylva

Från: markus.gunnervall@trafikverket.se
Skickat: den 16 maj 2011 13:32
Till: Höglund Ylva
Ämne: SV: Examensarbete

Bifogade filer: Tidtabell US4 100824 LL (PLgranskad)_antal tåg.xls; Tidtabell US3 100803 nya gångtider och längder MG 100811.xls; Tidtabell US2 100831 (ELgranskad)_antal tåg.xls; Tidtabell US1 100708 nya gångtider PJ (ELgranskad)_antal tåg.xls

Hej Ylva.

Jag gör så att jag skickar över prognostidtabellerna för de fyra scenarierna. Dessa är inte tidtabeller i vanlig mening utan listor över trafikupplägg som används som indata vid prognoskörningar i Sampers. Titta i fliken Tidtabell. Där finns för varje linje information om t.ex. mellanliggande stationer, restider, antal turer per dygn (kolumn M) och antal turer per timme under högtrafik (kolumn N).

/Markus

Trafikering Europakorridoren US1 Rev mot tdt 100624 rödmarkerat (NODNUMMERKONTROLLERAD)

Linjenr	Typ	Mode	Vehtype	Linjesträckning	Stn med uppehåll	Nod	Länk	Länktid	Ank.tid	Uh-tid	ent./d	dbt/d	ht	Tut
6011	HH	k	**3**	Stockholm-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	24	12	2	80
6011	HH	k	**3**	Stockholm-Göteborg	Göteborgs C	4300	4300601051	02:01:00	02:01	00:00:00	24	12	2	80
6013	HH	k	**3**	Uppsala-Göteborg	Uppsala C	1400	14004300	00:00:00	00:00	00:00:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Arlanda central	691281	6912811400	00:18:00	00:18	00:02:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Solna	684081	684081691281	00:15:00	00:35	00:01:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Stockholms C	601051	601051684081	00:05:00	00:41	00:04:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Södertälje syd undre	681101	681101601051	00:17:00	01:02	00:01:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Norrköpings C	2000	2000681101	00:30:00	01:33	00:02:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Linköpings C	1900	19002000	00:12:00	01:47	00:02:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Jönköping S	2110	21101900	00:29:00	02:18	00:02:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Borås C	4600	46002110	00:23:00	02:43	00:02:00	16	8	1	120
6013	HH	k	**3**	Uppsala-Göteborg	Göteborgs C	4300	43004600	00:23:00	03:08	00:00:00	16	8	1	120
6014	HH	k	**3**	Gävle C-Halmstad C	Gävle C	6600	66004300	00:00:00	00:00	00:00:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Uppsala C	1400	14006600	00:45:00	00:45	00:02:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Arlanda central	691281	6912811400	00:17:00	01:04	00:02:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Solna	684081	684081691281	00:16:00	01:22	00:01:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Stockholms C	601051	601051684081	00:04:00	01:27	00:04:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Göteborgs C	4300	4300601051	01:59:00	03:30	00:05:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Mölndals nedre	4386	43864300	00:07:00	03:42	00:01:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Varberg	4200	42004386	00:30:00	04:13	00:02:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Falkenberg	4201	42014200	00:11:00	04:26	00:01:00	4	2	1	480
6014	HH	k	**3**	Gävle C-Halmstad C	Halmstads C	4100	41004201	00:17:00	04:44	00:00:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Gävle C	6600	66004100	00:00:00	00:00	00:00:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Uppsala C	1400	14006600	00:45:00	00:45	00:02:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Arlanda central	691281	6912811400	00:17:00	01:04	00:02:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Solna	684081	684081691281	00:16:00	01:22	00:01:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Stockholms C	601051	601051684081	00:04:00	01:27	00:04:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Göteborgs C	4300	4300601051	01:59:00	03:30	00:05:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Trollhättan	4500	45004300	00:30:00	04:05	00:02:00	4	2	1	480
6015	HH	k	**3**	Gävle-Uddevalla	Uddevalla C	4400	44004500	00:20:00	04:27	00:00:00	4	2	1	480
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Stockholms C	601051	6010514400	00:00:00	00:00	00:00:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Flemingsberg	626091	626091601051	00:11:00	00:11	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Södertälje syd undre	681101	681101626091	00:09:00	00:21	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Nyköping C	1500	1500681101	00:22:00	00:44	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Norrköpings C	2000	20001500	00:19:00	01:04	00:02:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Linköpings C	1900	19002000	00:14:00	01:20	00:02:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Mjölby	1801	18011900	00:14:00	01:36	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Tranås	2200	22001801	00:18:00	01:55	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Jönköping S	2110	21102200	00:22:00	02:18	00:10:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Ulricehamn	4602	46022110	00:16:00	02:44	00:01:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Borås C	4600	46004602	00:11:00	02:56	00:02:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Landvetter	4317	43174600	00:15:00	03:13	00:02:00	16	8	1	120
6016	I250	j	**4**	Sthlm-Tranås-Göteborg	Göteborgs C	4300	43004317	00:14:00	03:29	00:00:00	16	8	1	120
6512	I250	j	**4**	Nässjö-Göteborg	Nässjö C	2300	23002600	00:00:00	00:00	00:00:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Forserum	2305	23052300	00:11:00	00:11	00:01:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Tenhult	2107	21072305	00:07:00	00:19	00:01:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Huskvarna	2108	21082107	00:06:00	00:26	00:01:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Jönköpings C	2100	21002108	00:05:00	00:32	00:05:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Jönköping S	2110	21102100	00:03:00	00:40	00:02:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Ulricehamn	4602	46022110	00:16:00	00:58	00:01:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Borås C	4600	46004602	00:11:00	01:10	00:02:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Landvetter	4317	43174600	00:14:00	01:26	00:02:00	32	16	2	60
6512	I250	j	**4**	Nässjö-Göteborg	Göteborgs C	4300	43004317	00:14:00	01:42	00:00:00	32	16	2	60
9501	I	j	**1**	Kalmar-Göteborg	Kalmar C	3000	300064626	00:00:00	00:00	00:00:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Nybro	3001	30013000	00:18:00	00:18	00:01:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Emmaboda	3003	30033001	00:17:00	00:36	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Lessebo	2603	26033003	00:14:00	00:52	00:01:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Växjö	2600	26002603	00:20:00	01:13	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Alvesta	2602	26022600	00:10:00	01:25	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Värnamo	2400	24002602	00:20:00	01:47	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Gnosjö	2404	24042400	00:20:00	02:09	00:01:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Hestra	2410	24102404	00:08:00	02:18	00:01:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Limmared	4613	46132410	00:12:00	02:31	00:01:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Borås C	4600	46004613	00:31:00	03:03	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Landvetter	4317	43174600	00:17:00	03:22	00:02:00	8	4	1	240
9501	I	j	**1**	Kalmar-Göteborg	Göteborgs C	4300	43004317	00:13:00	03:37	00:00:00	8	4	1	240
9502	I	j	**1**	Karlskrona-Göteborg	Karlskrona C	3200	32004300	00:00:00	00:00	00:00:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Emmaboda	3003	30033200	00:33:00	00:33	00:02:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Lessebo	2603	26033003	00:15:00	00:50	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Hovmantorp	2604	26042603	00:06:00	00:57	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Växjö	2600	26002604	00:14:00	01:12	00:02:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Alvesta	2602	26022600	00:10:00	01:24	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Värnamo	2400	24002602	00:20:00	01:45	00:02:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Gnosjö	2404	24042400	00:20:00	02:07	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Hestra	2410	24102404	00:08:00	02:16	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Limmared	4613	46132410	00:12:00	02:29	00:01:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Borås C	4600	46004613	00:31:00	03:01	00:02:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Landvetter	4317	43174600	00:17:00	03:20	00:02:00	8	4	0	240
9502	I	j	**1**	Karlskrona-Göteborg	Göteborgs C	4300	43004317	00:13:00	03:35	00:00:00	8	4	0	240
9701	I	j	**1**	Göteborg-Borås	Göteborgs C	4300	43003000	00:00:00	00:00	00:00:00	46	23	4	42
9701	I	j	**1**	Göteborg-Borås	Liseberg	4385	43854300	00:05:00	00:05	00:01:00	46	23	4	42
9701	I	j	**1**	Göteborg-Borås	Mölnlycke	4305	43054385	00:06:00	00:12	00:01:00	46	23	4	42
9701	I	j	**1**	Göteborg-Borås	Landvetter	4317	43174305	00:06:00	00:19	00:01:00	46	23	4	42
9701	I	j	**1**	Göteborg-Borås	Bollebygd	4609	46094317	00:08:00	00:28	00:01:00	46	23	4	42
9701	I	j	**1**	Göteborg-Borås	Borås C	4600	46004609	00:11:00	00:40	00:00:00	46	23	4	42

Trafikering Europakorridoren US2 Skillnader mot fd US2-tdt i rött (NODNUMMERKONTROLLERAD)

Linjenr	Typ	Mode	Vehtype	Linjesträckning	Stn med uppehåll	Nod	Länk	Länktid	Ank.tid	Uh-tid	ent./d	dbt/d	ht	Tut
6011	HH	k	**3**	Stockholm-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	8	4	1	240
6011	HH	k	**3**	Stockholm-Göteborg	Göteborg C	4300	4300601051	02:01:00	**02:01**	00:00:00	8	4	1	240
6021	HH	k	**3**	Stockholm-Borås-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	16	8	1	120
6021	HH	k	**3**	Stockholm-Borås-Göteborg	Linköpings C	1900	1900601051	00:56:00	00:56	00:02:00	16	8	1	120
6021	HH	k	**3**	Stockholm-Borås-Göteborg	Borås C	4600	46001900	00:46:00	01:44	00:02:00	16	8	1	120
6021	HH	k	**3**	Stockholm-Borås-Göteborg	Göteborg C	4300	43004600	00:23:00	**02:09**	00:00:00	16	8	1	120
6022	HH	k	**3**	Stockholm-Jönköping-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	16	8	1	120
6022	HH	k	**3**	Stockholm-Jönköping-Göteborg	Norrköpings C	2000	2000601051	00:45:00	00:45	00:02:00	16	8	1	120
6022	HH	k	**3**	Stockholm-Jönköping-Göteborg	Jönköping S	2110	21102000	00:39:00	01:26	00:02:00	16	8	1	120
6022	HH	k	**3**	Stockholm-Jönköping-Göteborg	Göteborg C	4300	43002110	00:41:00	**02:09**	00:00:00	16	8	1	120
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Södertälje syd undre	681101	6811014300	00:18:00	00:18	00:01:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Skavsta flygplats	1503	0	00:00:00	00:00	00:33:00	0	0	0	0
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Norrköpings C	2000	2000681101	00:30:00	00:49	00:02:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Linköpings C	1900	19002000	00:11:00	01:02	00:02:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Jönköping S	2110	21101900	00:29:00	01:33	00:02:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Borås C	4600	46002110	00:20:00	01:55	00:02:00	8	4	1	240
6023	HH	k	**3**	Sthlm-Nr-LpJö-Bs-Göteborg	Göteborg C	4300	43004600	00:23:00	**02:20**	00:00:00	8	4	1	240
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Flemingsberg	626091	626091601051	00:11:00	00:11	00:01:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Södertälje syd undre	681101	681101626091	00:09:00	00:21	00:01:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Nyköping C	1500	1500681101	00:22:00	00:44	00:01:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Norrköpings C	2000	20001500	00:19:00	01:04	00:02:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Linköpings C	1900	19002000	00:14:00	01:20	00:02:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Mjölby	1801	18011900	00:14:00	01:36	00:01:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Tranås	2200	22001801	00:18:00	01:55	00:01:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Jönköping S	2110	21102200	00:22:00	02:18	00:10:00	16	8	1	120
6024	I250	j	**4**	Sthlm-Tranås-Göteborg	Jönköpings C	2100	21002110	00:03:00	**02:31**	00:00:00	16	8	1	120
6512	I	j	**4**	Jönköping-Göteborg	Jönköpings C	2100	21002600	00:00:00	00:00	00:00:00	40	20	2	48
6512	I	j	**4**	Jönköping-Göteborg	Jönköping S	2110	21102100	00:04:00	00:04	00:02:00	40	20	2	48
6512	I	j	**4**	Jönköping-Göteborg	Ulricehamn	4602	46022110	00:15:00	00:21	00:01:00	40	20	2	48
6512	I	j	**4**	Jönköping-Göteborg	Borås C	4600	46004602	00:12:00	00:34	00:02:00	40	20	2	48
6512	I	j	**4**	Jönköping-Göteborg	Landvetter	4317	43174600	00:13:00	00:49	00:02:00	40	20	2	48
6512	I	j	**4**	Jönköping-Göteborg	Göteborg C	4300	43004317	00:14:00	**01:05**	00:00:00	40	20	2	48
9701	I	j	1	Göteborg-Borås	Göteborg C	4300	43003000	00:00:00	00:00	00:00:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Liseberg	4385	43854300	00:05:00	00:05	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Mölnlycke	4305	43054385	00:06:00	00:12	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Landvetter	4317	43174305	00:06:00	00:19	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Bollebygd	4609	46094317	00:08:00	00:28	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Borås C	4600	46004609	00:11:00	**00:40**	00:00:00	46	23	4	42

Trafikering Europakorridoren US3 (NODNUMMERKONTROLLERAD)

Linjenr	Typ	Mode	Vehtype	Linjesträckning	Stn med uppehåll	Nod	Länk	Länktid	Ank.tid	Uh-tid	ent./d	dbt/d	ht	Tut
6011	HH	k	3	Stockholm-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	12	6	1	160
6011	HH	k	3	Stockholm-Göteborg	Skavsta flygplats	1503	0	00:00:00	00:00	00:33:00	0	0	0	0
6011	HH	k	3	Stockholm-Göteborg	Norrköping F	0	0	00:00:00	00:00	00:33:00	0	0	0	0
6011	HH	k	3	Stockholm-Göteborg	Tenhult	2107	0	00:00:00	00:00	00:33:00	0	0	0	0
6011	HH	k	3	Stockholm-Göteborg	Göteborgs C	4300	4300601051	01:56:00	**01:56**	00:00:00	12	6	1	160
6021	HH	k	3	Stockholm-Borås-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	16	8	1	120
6021	HH	k	3	Stockholm-Borås-Göteborg	Skavsta flygplats	1503	0	00:00:00	00:00	00:33:00	0	0	0	0
6021	HH	k	3	Stockholm-Borås-Göteborg	Linköpings C	1900	1900601051	00:54:00	00:54	00:02:00	16	8	1	120
6021	HH	k	3	Stockholm-Borås-Göteborg	Borås C	4600	46001900	00:49:00	01:45	00:02:00	16	8	1	120
6021	HH	k	3	Stockholm-Borås-Göteborg	Göteborgs C	4300	43004600	00:23:00	**02:10**	00:00:00	16	8	1	120
6022	HH	k	3	Stockholm-Jönköping-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	12	6	1	160
6022	HH	k	3	Stockholm-Jönköping-Göteborg	Skavsta flygplats	1503	0	00:00:00	00:00	00:33:00	0	0	0	0
6022	HH	k	3	Stockholm-Jönköping-Göteborg	Norrköping F	0	601051	00:45:00	00:45	00:02:00	12	6	1	160
6022	HH	k	3	Stockholm-Jönköping-Göteborg	Tenhult	2107	2107	00:35:00	01:22	00:02:00	12	6	1	160
6022	HH	k	3	Stockholm-Jönköping-Göteborg	Göteborgs C	4300	43002107	00:42:00	**02:06**	00:00:00	12	6	1	160
6025	I250	j	4	Norrköping-Göteborg	Norrköpings C	2000	#REF!	00:00:00	00:00	00:00:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Norrköping F	0	2000	00:03:00	00:03	00:02:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Linköpings C	1900	1900	00:19:00	00:24	00:02:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Mjölby	1801	18011900	00:16:00	00:42	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Tranås	2200	22001801	00:17:00	01:00	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Tenhult	2107	21072200	00:21:00	01:22	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Ulricehamn	4602	46022107	00:17:00	01:40	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Borås C	4600	46004602	00:12:00	01:53	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Landvetter	4317	43174600	00:15:00	02:09	00:01:00	16	8	1	120
6025	I250	j	4	Norrköping-Göteborg	Göteborgs C	4300	43004317	00:13:00	**02:23**	00:00:00	16	8	1	120
6026	I250	j	4	Jönköping-Göteborg	Jönköpings C	2100	21004300	00:00:00	00:00	00:00:00	24	12	2	80
6026	I250	j	4	Jönköping-Göteborg	Tenhult	2107	21072100	00:09:00	00:09	00:01:00	24	12	2	80
6026	I250	j	4	Jönköping-Göteborg	Ulricehamn	4602	46022107	00:17:00	00:27	00:01:00	24	12	2	80
6026	I250	j	4	Jönköping-Göteborg	Borås C	4600	46004602	00:12:00	00:40	00:01:00	24	12	2	80
6026	I250	j	4	Jönköping-Göteborg	Landvetter	4317	43174600	00:16:00	00:57	00:01:00	24	12	2	80
6026	I250	j	4	Jönköping-Göteborg	Göteborgs C	4300	43004317	00:12:00	**01:10**	00:00:00	24	12	2	80
9501	I	j	1	Kalmar-Göteborg	Kalmar C	3000	300064626	00:00:00	00:00	00:00:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Nybro	3001	30013000	00:18:00	00:18	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Emmaboda	3003	30033001	00:17:00	00:36	00:02:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Lessebo	2603	26033003	00:14:00	00:52	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Växjö	2600	26002603	00:20:00	01:13	00:02:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Alvesta	2602	26022600	00:13:00	01:28	00:02:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Rörstorp	2401	24012602	00:23:00	01:53	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Värnamo	2400	24002401	00:04:00	01:58	00:02:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Gnosjö	2404	24042400	00:19:00	02:19	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Hestra	2410	24102404	00:09:00	02:29	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Limmared	4613	46132410	00:11:00	02:41	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Borås C	4600	46004613	00:29:00	03:11	00:02:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Landvetter	4317	43174600	00:29:00	03:42	00:01:00	12	6	1	160
9501	I	j	1	Kalmar-Göteborg	Göteborgs C	4300	43004317	00:13:00	**03:56**	00:00:00	12	6	1	160
9701	I	j	1	Göteborg-Borås	Göteborgs C	4300	43003000	00:00:00	00:00	00:00:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Liseberg	4385	43854300	00:05:00	00:05	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Mölnlycke	4305	43054385	00:06:00	00:12	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Landvetter	4317	43174305	00:06:00	00:19	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Bollebygd	4609	46094317	00:09:00	00:29	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Sandared	4610	46104609	00:12:00	00:42	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Borås C	4600	46004610	00:08:00	**00:51**	00:00:00	46	23	4	42

Trafikering Europakorridoren US4 (NODNUMMERKONTROLLERAD)

Linjenr	Typ	Mode	Vehtype	Linjesträckning	Stn med uppehåll	Nod	Länk	Länktid	Ank.tid	Uh-tid	ent./d	dbt/d	ht	Tut
6011	I250	k	**3**	Stockholm-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	8	4	1	240
6011	I250	k	**3**	Stockholm-Göteborg	Göteborgs C	4300	4300601051	02:18:00	**02:18**	00:00:00	8	4	1	240
6017	I250	k	**3**	Sthlm C-Halmstad	Stockholms C	601051	6010514900	00:05:00	00:00	00:00:00	4	2	1	480
6017	I250	k	**3**	Sthlm C-Halmstad	Göteborgs C	4300	43004605	02:18:00	02:18	00:04:00	4	2	1	480
6017	I250	k	**3**	Sthlm C-Halmstad	Mölndals nedre	4386	43864703	00:07:00	02:29	00:01:00	4	2	1	480
6017	I250	k	**3**	Sthlm C-Halmstad	Varberg	4200	42004520	00:26:00	02:56	00:02:00	4	2	1	480
6017	I250	k	**3**	Sthlm C-Halmstad	Falkenberg	4201	42014501	00:11:00	03:09	00:01:00	4	2	1	480
6017	I250	k	**3**	Sthlm C-Halmstad	Halmstads C	4100	41004400	00:21:00	**03:31**	00:00:00	4	2	1	480
6021	I250	k	**3**	Stockholm-Göteborg	Stockholms C	601051	6010514300	00:00:00	00:00	00:00:00	32	16	2	60
6021	I250	k	**3**	Stockholm-Göteborg	Norrköpings C	2000	2000601051	00:50:00	00:50	00:02:00	32	16	2	60
6021	I250	k	**3**	Stockholm-Göteborg	Linköpings C	1900	19002000	00:14:00	01:06	00:02:00	32	16	2	60
6021	I250	k	**3**	Stockholm-Göteborg	Jönköping S	2110	21101900	00:34:00	01:42	00:02:00	32	16	2	60
6021	I250	k	**3**	Stockholm-Göteborg	Borås C	4600	46002110	00:24:00	02:08	00:02:00	32	16	2	60
6021	I250	k	**3**	Stockholm-Göteborg	Göteborgs C	4300	43004600	00:25:00	**02:35**	00:00:00	32	16	2	60
6514	I250	j	**4**	Jönköping-Göteborg	Jönköpings C	2100	21002600	00:00:00	00:00	00:00:00	40	20	3	48
6514	I250	j	**4**	Jönlöping-Göteborg	Jönköping S	2110	21102100	00:04:00	00:04	00:02:00	40	20	3	48
6514	I250	j	**4**	Jönlöping-Göteborg	Ulricehamn	4602	46022110	00:17:00	00:23	00:01:00	40	20	3	48
6514	I250	j	**4**	Jönlöping-Göteborg	Borås C	4600	46004602	00:11:00	00:35	00:02:00	40	20	3	48
6514	I250	j	**4**	Jönlöping-Göteborg	Landvetter	4317	43174600	00:14:00	00:51	00:02:00	40	20	3	48
6514	I250	j	**4**	Jönlöping-Göteborg	Göteborgs C	4300	43004317	00:12:00	**01:05**	00:00:00	40	20	3	48
9501	I	j	1	Kalmar-Göteborg	Kalmar C	3000	300064626	00:00:00	00:00	00:00:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Nybro	3001	30013000	00:18:00	00:18	00:01:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Emmaboda	3003	30033001	00:17:00	00:36	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Lessebo	2603	26033003	00:14:00	00:52	00:01:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Växjö	2600	26002603	00:20:00	01:13	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Alvesta	2602	26022600	00:11:00	01:26	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Värnamo	2400	24002602	00:25:00	01:53	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Gnosjö	2404	24042400	00:20:00	02:15	00:01:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Hestra	2410	24102404	00:08:00	02:24	00:01:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Limmared	4613	46132410	00:12:00	02:37	00:01:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Borås C	4600	46004613	00:29:00	03:07	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Landvetter	4317	43174600	00:17:00	03:26	00:02:00	8	4	1	240
9501	I	j	1	Kalmar-Göteborg	Göteborgs C	4300	43004317	00:14:00	**03:42**	00:00:00	8	4	1	240
9502	I	j	1	Karlskrona-Göteborg	Karlskrona C	3200	32004300	00:00:00	00:00	00:00:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Emmaboda	3003	30033200	00:33:00	00:33	00:02:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Lessebo	2603	26033003	00:15:00	00:50	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Hovmantorp	2604	26042603	00:06:00	00:57	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Växjö	2600	26002604	00:14:00	01:12	00:02:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Alvesta	2602	26022600	00:11:00	01:25	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Värnamo	2400	24002602	00:25:00	01:51	00:02:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Gnosjö	2404	24042400	00:20:00	02:13	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Hestra	2410	24102404	00:08:00	02:22	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Limmared	4613	46132410	00:12:00	02:35	00:01:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Borås C	4600	46004613	00:31:00	03:07	00:02:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Landvetter	4317	43174600	00:17:00	03:26	00:02:00	8	4	0	240
9502	I	j	1	Karlskrona-Göteborg	Göteborgs C	4300	43004317	00:13:00	**03:41**	00:00:00	8	4	0	240
9701	I	j	1	Göteborg-Borås	Göteborgs C	4300	43003000	00:00:00	00:00	00:00:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Liseberg	4385	43854300	00:05:00	00:05	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Mölnlycke	4305	43054385	00:06:00	00:12	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Landvetter	4317	43174305	00:07:00	00:20	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Bollebygd	4609	46094317	00:08:00	00:29	00:01:00	46	23	4	42
9701	I	j	1	Göteborg-Borås	Borås C	4600	46004609	00:11:00	**00:41**	00:00:00	46	23	4	42

Appendix 2 - Calculations of travel time

1. Train properties and time at station
2. Traveling time: High speed train in US1, US2, US3
3. Traveling time: Large regional train in US1, US2, US3
4. Traveling time: Commuter train in US1, US2, US3
5. Traveling time: Coast-to-coast train in US1, US2, US3
6. Traveling time: High speed train in US4
7. Traveling time: Large regional train in US4
8. Traveling time: Commuter train in US4
9. Traveling time: Coast-to-coast train in US4

Appendix 2

3. Traveling time: Large regional train in US1, US2, US3

LRT - mean acceleration	**max = 250 km/h**	**Stops:**	**Gothenburg,**	**airport,**	**Borås**							
	Distance from Gothenburg [km]	*Sections [km]*	*[m]*	*[km/h]*	*Speed [m/s]*		*Distance Between [m]*	*Between [km]*	*Total [km]*	*Time [minutes] Between*	*Total*
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		561,167	0,561	0,561	0,867	0,867
					80	22,222	938,833	0,939	1,500	0,725	1,592
				|	|		0,000	0,000	1,500	0,000	1,592
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,592
				|	|		0,000	0,000	1,500	0,000	1,592
				80	22,222		1500,000	1,500	3,000	1,159	2,751
				|	|		0,000	0,000	3,000	0,000	2,751
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,751
				|	|		0,000	0,000	3,000	0,000	2,751
	3	0	0	80	22,222		0,000	0,000	3,000	0,000	2,751
				+	+		4469,987	4,470	7,470	1,973	4,724
					200	55,556	6530,013	6,530	14,000	2,018	6,742
				|	|		0,000	0,000	14,000	0,000	6,742
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,742
				+	+		1272,382	1,272	15,272	0,379	7,121
	16	2	2000	215	59,722		327,348	0,327	15,600	0,094	7,215
				-	-		400,270	0,400	16,000	0,119	7,334
				200	55,556		5427,984	5,428	21,428	1,677	9,011
				-	-		2572,016	2,572	24,000	1,590	10,601
Landvetter flp	24	8	8000	0	0,000		0,000	0,000	24,000	1,500	12,101
				+	+		7716,049	7,716	31,716	3,815	15,916
	24	0	0	250	69,444		0,000	0,000	31,716	0,000	15,916
				|	|		0,000	0,000	31,716	0,000	15,916
				250	69,444		8283,951	8,284	40,000	2,048	17,964
				|	|		0,000	0,000	40,000	0,000	17,964
Kråktorp	40	16	16000	250	69,444		0,000	0,000	40,000	0,000	17,964
				|	|		0,000	0,000	40,000	0,000	17,964
	60	20	20000	250	69,444		19382,716	19,383	59,383	4,791	22,755
				-	-		617,284	0,617	60,000	0,159	22,914
				230	63,889		1598,508	1,599	61,599	0,430	23,343
				-	-		3401,492	3,401	65,000	1,828	25,171
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	25,171

LRT - mean acceleration	**max = 250 km/h**	**Stops:**	**Gothenburg,**		**Borås**							
	Distance from Gothenburg [km]	*Sections [km]*	*[m]*	*[km/h]*	*Speed [m/s]*		*Distance Between [m]*	*Between [km]*	*Total [km]*	*Time [minutes] Between*	*Total*
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		561,167	0,561	0,561	0,867	0,867
					80	22,222	938,833	0,939	1,500	0,725	1,592
				|	|		0,000	0,000	1,500	0,000	1,592
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,592
				|	|		0,000	0,000	1,500	0,000	1,592
				80	22,222		1500,000	1,500	3,000	1,159	2,751
				|	|		0,000	0,000	3,000	0,000	2,751
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,751
				|	|		0,000	0,000	3,000	0,000	2,751
	3	0	0	80	22,222		0,000	0,000	3,000	0,000	2,751
				+	+		4469,987	4,470	7,470	1,973	4,724
					200	55,556	6530,013	6,530	14,000	2,018	6,742
				+	+		0,000	0,000	14,000	0,000	6,742
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,742
				+	+		1272,382	1,272	15,272	0,379	7,121
	16	2	2000	215	59,722		327,348	0,327	15,600	0,094	7,215
				-	-		400,270	0,400	16,000	0,119	7,334
				200	55,556		8000,000	8,000	24,000	2,472	9,806
				|	|		0,000	0,000	24,000	0,000	9,806
Landvetter flp	24	8	8000	200	55,556		0,000	0,000	24,000	0,000	9,806
				+	+		5341,880	5,342	29,342	1,467	11,273
	24	0	0	250	69,444		0,000	0,000	29,342	0,000	11,273
				|	|		0,000	0,000	29,342	0,000	11,273
				250	69,444		10658,120	10,658	40,000	2,635	13,908
				|	|		0,000	0,000	40,000	0,000	13,908
Kråktorp	40	16	16000	250	69,444		0,000	0,000	40,000	0,000	13,908
				|	|		0,000	0,000	40,000	0,000	13,908
	60	20	20000	250	69,444		19382,716	19,383	59,383	4,791	18,700
				-	-		617,284	0,617	60,000	0,159	18,858
				230	63,889		1598,508	1,599	61,599	0,430	19,288
				-	-		3401,492	3,401	65,000	1,828	21,116
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	21,116

LRT - mean acceleration	**max = 250 km/h**	**Stops:**	**Gothenburg,**	**airport,**	**Borås**							
	Distance from Gothenburg [km]	*Sections [km]*	*[m]*	*[km/h]*	*Speed [m/s]*		*Distance Between [m]*	*Between [km]*	*Total [km]*	*Time [minutes] Between*	*Total*
Borås	0	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		4967,559	4,968	4,968	2,924	2,924
	5	5	5000	210	58,333		32,441	0,032	5,000	0,010	2,933
				+	+		4579,849	4,580	9,580	1,231	4,164
				250	69,444		15420,151	15,420	25,000	3,812	7,976
				|	|		0,000	0,000	25,000	0,000	7,976
Bollebyg	25	20	20000	250	69,444		0,000	0,000	25,000	0,000	7,976
				|	|		0,000	0,000	25,000	0,000	7,976
	25	0	0	250	69,444		0,000	0,000	25,000	0,000	7,976
				|	|		0,000	0,000	25,000	0,000	7,976
				250	69,444		11981,224	11,981	36,981	2,962	10,938
				-	-		4018,776	4,019	41,000	1,987	12,924
Landvetter	41	16	16000	0	0,000		0,000	0,000	41,000	1,500	14,424
				+	+		4409,171	4,409	45,409	2,725	17,149
	49	8	8000	200	55,556		3590,829	3,591	49,000	1,110	18,259
				+	+		1272,382	1,272	50,272	0,379	18,638
				215	59,722		327,348	0,327	50,600	0,094	18,732
				|	|		0,000	0,000	50,600	0,000	18,732
Mölnlycke	51	2	2000	215	59,722		0,000	0,000	50,600	0,000	18,732
				-	-		400,270	0,400	51,000	0,119	18,851
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	21,169
				+	+		821,709	0,822	59,322	0,248	21,416
				210	58,333		254,165	0,254	59,576	0,075	21,491
				|	|		0,000	0,000	59,576	0,000	21,491
Korsvägen	62	3,5	3500	210	58,333		0,000	0,000	59,576	0,000	21,491
				-	-		2424,126	2,424	62,000	1,033	22,524
				80	22,222		1500,000	1,500	63,500	1,159	23,683
				|	|		0,000	0,000	63,500	0,000	23,683
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	23,683
				|	|		0,000	0,000	63,500	0,000	23,683
				80	22,222		1500,000	1,500	65,000	1,159	24,842
				|	|		0,000	0,000	65,000	0,000	24,842
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	24,842

LRT - mean acceleration	**max = 250 km/h**	**Stops:**	**Gothenburg,**		**Borås**							
	Distance from Gothenburg [km]	*Sections [km]*	*[m]*	*[km/h]*	*Speed [m/s]*		*Distance Between [m]*	*Between [km]*	*Total [km]*	*Time [minutes] Between*	*Total*
Borås	0	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		4967,559	4,968	4,968	2,924	2,924
	5	5	5000	210	58,333		32,441	0,032	5,000	0,010	2,933
				+	+		4579,849	4,580	9,580	1,231	4,164
				250	69,444		15420,151	15,420	25,000	3,812	7,976
				|	|		0,000	0,000	25,000	0,000	7,976
Bollebyg	25	20	20000	250	69,444		0,000	0,000	25,000	0,000	7,976
				|	|		0,000	0,000	25,000	0,000	7,976
	39	14	14000	250	69,444		14000,000	14,000	39,000	3,461	11,437
				|	|		0,000	0,000	39,000	0,000	11,437
				250	69,444		0,000	0,000	39,000	0,000	11,437
				|	|		0,000	0,000	39,000	0,000	11,437
Landvetter	41	2	2000	250	69,444		553,241	0,553	39,553	0,137	11,573
				-	-		1446,759	1,447	41,000	0,397	11,971
	49	8	8000	200	55,556		8000,000	8,000	49,000	2,472	14,443
				+	+		1272,382	1,272	50,272	0,379	14,822
				215	59,722		327,348	0,327	50,600	0,094	14,916
				|	|		0,000	0,000	50,600	0,000	14,916
Mölnlycke	51	2	2000	215	59,722		0,000	0,000	50,600	0,000	14,916
				-	-		400,270	0,400	51,000	0,119	15,035
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	17,352
				+	+		821,709	0,822	59,322	0,248	17,600
				210	58,333		254,165	0,254	59,576	0,075	17,675
				|	|		0,000	0,000	59,576	0,000	17,675
Korsvägen	62	3,5	3500	210	58,333		0,000	0,000	59,576	0,000	17,675
				-	-		2424,126	2,424	62,000	1,033	18,708
				80	22,222		1500,000	1,500	63,500	1,159	19,867
				|	|		0,000	0,000	63,500	0,000	19,867
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	19,867
				|	|		0,000	0,000	63,500	0,000	19,867
				80	22,222		1500,000	1,500	65,000	1,159	21,026
				|	|		0,000	0,000	65,000	0,000	21,026
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	21,026

Appendix 2

3. Traveling time: Large regional train in US1, US2, US3

LRT - mean acceleration	max = 267 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg	Sections			Speed		Distance			Time [minutes]		
	[km]	[km]	[m]	[km/h]	[m/s]		Between [m]	Between [km]	Total [km]	Between	Total	
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		561,167	0,561	0,561	0,867	0,867	
					80	22,222	938,833	0,939	1,500	0,725	1,592	
				|	|		0,000	0,000	1,500	0,000	1,592
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,592	
				|	|		0,000	0,000	1,500	0,000	1,592
				80	22,222		1500,000	1,500	3,000	1,159	2,751	
				|	|		0,000	0,000	3,000	0,000	2,751
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,751	
				|	|		0,000	0,000	3,000	0,000	2,751
	3	0	0	80	22,222		0,000	0,000	3,000	0,000	2,751	
				+	+		4469,987	4,470	7,470	1,973	4,724	
				200	55,556		6530,013	6,530	14,000	2,018	6,742	
				|	|		0,000	0,000	14,000	0,000	6,742
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,742	
				+	+		1272,382	1,272	15,272	0,379	7,121	
	16	2	2000	215	59,722		327,348	0,327	15,600	0,094	7,215	
				-	-		400,270	0,400	16,000	0,119	7,334	
				200	55,556		5427,984	5,428	21,428	1,677	9,011	
				-	-		2572,016	2,572	24,000	1,590	10,601	
Landvetter flp	24	8	8000	0	0,000		0,000	0,000	24,000	1,500	12,101	
				+	+		9175,470	9,175	33,175	4,248	16,348	
	24	0	0	267	74,167		0,000	0,000	33,175	0,000	16,348	
				|	|		0,000	0,000	33,175	0,000	16,348
				267	74,167		6824,530	6,825	40,000	1,580	17,928	
				|	|		0,000	0,000	40,000	0,000	17,928
Kråktorp	40	16	16000	267	74,167		0,000	0,000	40,000	0,000	17,928	
				|	|		0,000	0,000	40,000	0,000	17,928
	60	20	20000	267	74,167		18817,580	18,818	58,818	4,356	22,284	
				-	-		1182,420	1,182	60,000	0,294	22,578	
				230	63,889		1598,508	1,599	61,599	0,430	23,007	
				-	-		3401,492	3,401	65,000	1,828	24,835	
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	24,835	

LRT - mean acceleration	max = 267 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg	Sections			Speed		Distance			Time [minutes]		
	[km]	[km]	[m]	[km/h]	[m/s]		Between [m]	Between [km]	Total [km]	Between	Total	
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		561,167	0,561	0,561	0,867	0,867	
					80	22,222	938,833	0,939	1,500	0,725	1,592	
				|	|		0,000	0,000	1,500	0,000	1,592
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,592	
				|	|		0,000	0,000	1,500	0,000	1,592
				80	22,222		1500,000	1,500	3,000	1,159	2,751	
				|	|		0,000	0,000	3,000	0,000	2,751
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,751	
				|	|		0,000	0,000	3,000	0,000	2,751
	3	0	0	80	22,222		0,000	0,000	3,000	0,000	2,751	
				+	+		4469,987	4,470	7,470	1,973	4,724	
				200	55,556		6530,013	6,530	14,000	2,018	6,742	
				|	|		0,000	0,000	14,000	0,000	6,742
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,742	
				+	+		1272,382	1,272	15,272	0,379	7,121	
	16	2	2000	215	59,722		327,348	0,327	15,600	0,094	7,215	
				-	-		400,270	0,400	16,000	0,119	7,334	
				200	55,556		8000,000	8,000	24,000	2,472	9,806	
				|	|		0,000	0,000	24,000	0,000	9,806
Landvetter flp	24	8	8000	200	55,556		0,000	0,000	24,000	0,000	9,806	
				+	+		8061,017	8,061	32,061	2,133	11,940	
	24	0	0	267	74,167		0,000	0,000	32,061	0,000	11,940	
				|	|		0,000	0,000	32,061	0,000	11,940
				267	74,167		7938,983	7,939	40,000	1,838	13,777	
				|	|		0,000	0,000	40,000	0,000	13,777
Kråktorp	40	16	16000	267	74,167		0,000	0,000	40,000	0,000	13,777	
				|	|		0,000	0,000	40,000	0,000	13,777
	60	20	20000	267	74,167		18817,580	18,818	58,818	4,356	18,133	
				-	-		1182,420	1,182	60,000	0,294	18,427	
				230	63,889		1598,508	1,599	61,599	0,430	18,856	
				-	-		3401,492	3,401	65,000	1,828	20,684	
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	20,684	

LRT - mean acceleration	max = 267 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg	Sections			Speed		Distance			Time [minutes]		
	[km]	[km]	[m]	[km/h]	[m/s]		Between [m]	Between [km]	Total [km]	Between	Total	
Borås	0	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		4967,559	4,968	4,968	2,924	2,924	
	5	5	5000	210	58,333		32,441	0,032	5,000	0,010	2,933	
				+	+		7374,048	7,374	12,374	1,911	4,844	
				267	74,167		12625,952	12,626	25,000	2,922	7,766	
				|	|		0,000	0,000	25,000	0,000	7,766
Bollebyg	25	20	20000	267	74,167		0,000	0,000	25,000	0,000	7,766	
				|	|		0,000	0,000	25,000	0,000	7,766
	25	0	0	267	74,167		0,000	0,000	25,000	0,000	7,766	
				|	|		0,000	0,000	25,000	0,000	7,766
				267	74,167		11416,088	11,416	36,416	2,642	10,409	
				-	-		4583,912	4,584	41,000	2,122	12,531	
Landvetter	41	16	16000	0	0,000		0,000	0,000	41,000	1,500	14,031	
				+	+		4409,171	4,409	45,409	2,725	16,756	
	49	8	8000	200	55,556		3590,829	3,591	49,000	1,110	17,865	
				+	+		1272,382	1,272	50,272	0,379	18,244	
				215	59,722		327,348	0,327	50,600	0,094	18,338	
				|	|		0,000	0,000	50,600	0,000	18,338
Mölnlycke	51	2	2000	215	59,722		0,000	0,000	50,600	0,000	18,338	
				-	-		400,270	0,400	51,000	0,119	18,458	
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	20,775	
				+	+		821,709	0,822	59,322	0,248	21,023	
				210	58,333		254,165	0,254	59,576	0,075	21,098	
				|	|		0,000	0,000	59,576	0,000	21,098
Korsvägen	62	3,5	3500	210	58,333		0,000	0,000	59,576	0,000	21,098	
				-	-		2424,126	2,424	62,000	1,033	22,131	
				80	22,222		1500,000	1,500	63,500	1,159	23,289	
				|	|		0,000	0,000	63,500	0,000	23,289
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	23,289	
				|	|		0,000	0,000	63,500	0,000	23,289
				80	22,222		1500,000	1,500	65,000	1,159	24,448	
				|	|		0,000	0,000	65,000	0,000	24,448
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	24,448	

LRT - mean acceleration	max = 267 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg	Sections			Speed		Distance			Time [minutes]		
	[km]	[km]	[m]	[km/h]	[m/s]		Between [m]	Between [km]	Total [km]	Between	Total	
Borås	0	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		4967,559	4,968	4,968	2,924	2,924	
	5	5	5000	210	58,333		32,441	0,032	5,000	0,010	2,933	
				+	+		7374,048	7,374	12,374	1,911	4,844	
				267	74,167		12625,952	12,626	25,000	2,922	7,766	
				|	|		0,000	0,000	25,000	0,000	7,766
Bollebyg	25	20	20000	267	74,167		0,000	0,000	25,000	0,000	7,766	
				|	|		0,000	0,000	25,000	0,000	7,766
	39	14	14000	267	74,167		13931,584	13,932	38,932	3,225	10,991	
				|	|		0,000	0,000	38,932	0,000	10,991
				267	74,167		0,000	0,000	38,932	0,000	10,991	
				-	-		68,416	0,068	39,000	0,016	11,007	
Landvetter	41	2	2000	265	73,611		56,520	0,057	39,057	0,013	11,020	
				-	-		1943,480	1,943	41,000	0,517	11,537	
	49	8	8000	200	55,556		8000,000	8,000	49,000	2,472	14,009	
				+	+		1272,382	1,272	50,272	0,379	14,388	
				215	59,722		327,348	0,327	50,600	0,094	14,482	
				|	|		0,000	0,000	50,600	0,000	14,482
Mölnlycke	51	2	2000	215	59,722		0,000	0,000	50,600	0,000	14,482	
				-	-		400,270	0,400	51,000	0,119	14,601	
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	16,919	
				+	+		821,709	0,822	59,322	0,248	17,166	
				210	58,333		254,165	0,254	59,576	0,075	17,241	
				|	|		0,000	0,000	59,576	0,000	17,241
Korsvägen	62	3,5	3500	210	58,333		0,000	0,000	59,576	0,000	17,241	
				-	-		2424,126	2,424	62,000	1,033	18,274	
				80	22,222		1500,000	1,500	63,500	1,159	19,433	
				|	|		0,000	0,000	63,500	0,000	19,433
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	19,433	
				|	|		0,000	0,000	63,500	0,000	19,433
				80	22,222		1500,000	1,500	65,000	1,159	20,592	
				|	|		0,000	0,000	65,000	0,000	20,592
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	20,592	

Appendix 2

3. Traveling time: Large regional train in US1, US2, US3

LRT - 5-step acceleration	max = 250 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	[km/h]	Speed [m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		585,095	0,585	0,585	0,865	0,865
					80	22,222	914,905	0,915	1,500	0,707	1,572
				|	|		0,000	0,000	1,500	0,000	1,572
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,572
				|	|		0,000	0,000	1,500	0,000	1,572
					80	22,222	1500,000	1,500	3,000	1,159	2,730
				|	|		0,000	0,000	3,000	0,000	2,730
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,730
				+	+		4763,459	4,763	7,763	2,012	4,743
	3	0	0	200	55,556		0,000	0,000	7,763	0,000	4,743
				|	|		0,000	0,000	7,763	0,000	4,743
				200	55,556		6236,541	6,237	14,000	1,927	6,670
				|	|		0,000	0,000	14,000	0,000	6,670
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,670
				+	+		1249,641	1,250	15,250	0,372	7,042
	16	2	2000	215	59,722		350,088	0,350	15,600	0,101	7,143
				-	-		400,270	0,400	16,000	0,119	7,262
				200	55,556		5427,984	5,428	21,428	1,677	8,939
				-	-		2572,016	2,572	24,000	1,590	10,529
Landvetter flp	24	8	8000	0	0,000		0,000	0,000	24,000	1,500	12,029
				+	+		10704,837	10,705	34,705	4,336	16,365
	24	0	0	250	69,444		0,000	0,000	34,705	0,000	16,365
				|	|		0,000	0,000	34,705	0,000	16,365
				250	69,444		5295,163	5,295	40,000	1,309	17,674
				|	|		0,000	0,000	40,000	0,000	17,674
Kråktorp	40	16	16000	250	69,444		0,000	0,000	40,000	0,000	17,674
				|	|		0,000	0,000	40,000	0,000	17,674
	60	20	20000	250	69,444		19382,716	19,383	59,383	4,791	22,465
				-	-		617,284	0,617	60,000	0,159	22,624
				230	63,889		1598,508	1,599	61,599	0,430	23,054
				-	-		3401,492	3,401	65,000	1,828	24,882
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	24,882

LRT - 5-step acceleration	max = 250 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	[km/h]	Speed [m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000
				+	+		585,095	0,585	0,585	0,865	0,865
					80	22,222	914,905	0,915	1,500	0,707	1,572
				|	|		0,000	0,000	1,500	0,000	1,572
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,572
				|	|		0,000	0,000	1,500	0,000	1,572
					80	22,222	1500,000	1,500	3,000	1,159	2,730
				|	|		0,000	0,000	3,000	0,000	2,730
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,730
				+	+		4763,459	4,763	7,763	2,012	4,743
	3	0	0	200	55,556		0,000	0,000	7,763	0,000	4,743
				|	|		0,000	0,000	7,763	0,000	4,743
				200	55,556		6236,541	6,237	14,000	1,927	6,670
				|	|		0,000	0,000	14,000	0,000	6,670
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,670
				+	+		1249,641	1,250	15,250	0,372	7,042
	16	2	2000	215	59,722		350,088	0,350	15,600	0,101	7,143
				-	-		400,270	0,400	16,000	0,119	7,262
				200	55,556		8000,000	8,000	24,000	2,472	9,734
				|	|		0,000	0,000	24,000	0,000	9,734
Landvetter flp	24	8	8000	200	55,556		0,000	0,000	24,000	0,000	9,734
				+	+		5356,282	5,356	29,356	1,459	11,193
	24	0	0	250	69,444		0,000	0,000	29,356	0,000	11,193
				|	|		0,000	0,000	29,356	0,000	11,193
				250	69,444		10643,718	10,644	40,000	2,631	13,824
				|	|		0,000	0,000	40,000	0,000	13,824
Kråktorp	40	16	16000	250	69,444		0,000	0,000	40,000	0,000	13,824
				|	|		0,000	0,000	40,000	0,000	13,824
	60	20	20000	250	69,444		19382,716	19,383	59,383	4,791	18,615
				-	-		617,284	0,617	60,000	0,159	18,774
				230	63,889		1598,508	1,599	61,599	0,430	19,204
				-	-		3401,492	3,401	65,000	1,828	21,032
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	21,032

LRT - 5-step acceleration	max = 250 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	[km/h]	Speed [m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total
Borås	0	0	0	0	0,000		0,000	0,000	0,000	0,000	0,000
				+	+		4818,364	4,818	4,818	2,333	2,333
	5	5	5000	220	61,111		181,636	0,182	5,000	0,000	2,333
				+	+		2333,323	2,333	7,333	0,612	2,945
				250	69,444		17666,677	17,667	25,000	4,367	7,312
				|	|		0,000	0,000	25,000	0,000	7,312
Bollebyg	25	20	20000	250	69,444		0,000	0,000	25,000	0,000	7,312
				|	|		0,000	0,000	25,000	0,000	7,312
	25	0	0	250	69,444		0,000	0,000	25,000	0,000	7,312
				|	|		0,000	0,000	25,000	0,000	7,312
				250	69,444		11981,224	11,981	36,981	2,962	10,274
				-	-		4018,776	4,019	41,000	1,987	12,261
Landvetter	41	16	16000	0	0,000		0,000	0,000	41,000	1,500	13,761
				+	+		3678,318	3,678	44,678	1,998	15,758
	49	8	8000	200	55,556		4321,682	4,322	49,000	1,335	17,094
				+	+		1140,047	1,140	50,140	0,335	17,429
				220	61,111		319,830	0,320	50,460	0,090	17,519
				|	|		0,000	0,000	50,460	0,000	17,519
Mölnlycke	51	2	2000	220	61,111		0,000	0,000	50,460	0,000	17,519
				-	-		540,123	0,540	51,000	0,159	17,678
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	19,995
				+	+		829,262	0,829	59,329	0,247	20,242
				215	59,722		109,975	0,110	59,439	0,032	20,274
				|	|		0,000	0,000	59,439	0,000	20,274
Korsvägen	62	3,5	3500	215	59,722		0,000	0,000	59,439	0,000	20,274
				-	-		2560,764	2,561	62,000	1,073	21,347
				80	22,222		1500,000	1,500	63,500	1,159	22,505
				|	|		0,000	0,000	63,500	0,000	22,505
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	22,505
				|	|		0,000	0,000	63,500	0,000	22,505
				80	22,222		1500,000	1,500	65,000	1,159	23,664
				|	|		0,000	0,000	65,000	0,000	23,664
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	23,664

LRT - 5-step acceleration	max = 250 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	[km/h]	Speed [m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total
Borås	0	0	0	0	0,000		0,000	0,000	0,000	0,000	0,000
				+	+		4818,364	4,818	4,818	2,333	2,333
	5	5	5000	220	61,111		181,636	0,182	5,000	0,000	2,333
				+	+		2333,323	2,333	7,333	0,612	2,945
				250	69,444		17666,677	17,667	25,000	4,367	7,312
				|	|		0,000	0,000	25,000	0,000	7,312
Bollebyg	25	20	20000	250	69,444		0,000	0,000	25,000	0,000	7,312
				|	|		0,000	0,000	25,000	0,000	7,312
	39	14	14000	250	69,444		14000,000	14,000	39,000	3,461	10,773
				|	|		0,000	0,000	39,000	0,000	10,773
				250	69,444		553,241	0,553	39,553	0,000	10,773
				|	|		0,000	0,000	39,553	0,000	10,773
Landvetter	41	2	2000	250	69,444		0,000	0,000	39,553	0,000	10,773
				-	-		1446,759	1,447	41,000	0,397	11,170
	49	8	8000	200	55,556		8000,000	8,000	49,000	2,472	13,642
				+	+		1140,047	1,140	50,140	0,335	13,977
				220	61,111		319,830	0,320	50,460	0,090	14,067
				|	|		0,000	0,000	50,460	0,000	14,067
Mölnlycke	51	2	2000	220	61,111		0,000	0,000	50,460	0,000	14,067
				-	-		540,123	0,540	51,000	0,159	14,226
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	16,544
				+	+		829,262	0,829	59,329	0,247	16,790
				215	59,722		109,975	0,110	59,439	0,032	16,822
				|	|		0,000	0,000	59,439	0,000	16,822
Korsvägen	62	3,5	3500	215	59,722		0,000	0,000	59,439	0,000	16,822
				-	-		2560,764	2,561	62,000	1,073	17,895
				80	22,222		1500,000	1,500	63,500	1,159	19,054
				|	|		0,000	0,000	63,500	0,000	19,054
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	19,054
				|	|		0,000	0,000	63,500	0,000	19,054
				80	22,222		1500,000	1,500	65,000	1,159	20,212
				|	|		0,000	0,000	65,000	0,000	20,212
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	20,212

Appendix 2

3. Traveling time: Large regional train in US1, US2, US3

LRT - 5-step acceleration	max = 267 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	Speed [km/h]	[m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total		
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		585,095	0,585	0,585	0,865	0,865	
					80	22,222	914,905	0,915	1,500	0,707	1,572	
				|	|		0,000	0,000	1,500	0,000	1,572
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,572	
				|	|		0,000	0,000	1,500	0,000	1,572
				80	22,222		1500,000	1,500	3,000	1,159	2,730	
				|	|		0,000	0,000	3,000	0,000	2,730
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,730	
				+	+		4763,459	4,763	7,763	2,012	4,743	
	6,5	3,5	0	200	55,556		0,000	0,000	7,763	0,000	4,743	
				|	|		0,000	0,000	7,763	0,000	4,743
				200	55,556		6236,541	6,237	14,000	1,927	6,670	
				|	|		0,000	0,000	14,000	0,000	6,670
Mölnlycke	14	7,5	11000	200	55,556		0,000	0,000	14,000	0,000	6,670	
				+	+		1249,641	1,250	15,250	0,372	7,042	
	16	2	2000	215	59,722		350,088	0,350	15,600	0,101	7,143	
				-	-		400,270	0,400	16,000	0,119	7,262	
				200	55,556		5427,984	5,428	21,428	1,677	8,939	
				-	-		2572,016	2,572	24,000	1,590	10,529	
Landvetter flp	24	8	8000	0	0,000		0,000	0,000	24,000	1,500	12,029	
				+	+		13250,305	13,250	37,250	4,947	16,975	
	24	0	0	267	74,167		0,000	0,000	37,250	0,000	16,975	
				|	|		0,000	0,000	37,250	0,000	16,975
				267	74,167		2749,695	2,750	40,000	0,636	17,612	
				|	|		0,000	0,000	40,000	0,000	17,612
Kråktorp	40	16	16000	267	74,167		0,000	0,000	40,000	0,000	17,612	
				|	|		0,000	0,000	40,000	0,000	17,612
	60	20	20000	267	74,167		18817,580	18,818	58,818	4,356	21,967	
				-	-		1182,420	1,182	60,000	0,294	22,261	
				230	63,889		1598,508	1,599	61,599	0,430	22,691	
				-	-		3401,492	3,401	65,000	1,828	24,519	
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	24,519	

LRT - 5-step acceleration	max = 267 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	Speed [km/h]	[m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total		
Göteborg	0			0	0	0,000	0,000	0,000	0,000	0,000	0,000	
				+	+		585,095	0,585	0,585	0,865	0,865	
					80	22,222	914,905	0,915	1,500	0,707	1,572	
				|	|		0,000	0,000	1,500	0,000	1,572
Haga	1,5	1,5	1500	80	22,222		0,000	0,000	1,500	0,000	1,572	
				|	|		0,000	0,000	1,500	0,000	1,572
				80	22,222		1500,000	1,500	3,000	1,159	2,730	
				|	|		0,000	0,000	3,000	0,000	2,730
Korsvägen	3	1,5	1500	80	22,222		0,000	0,000	3,000	0,000	2,730	
				+	+		4763,459	4,763	7,763	2,012	4,743	
	3	0	0	200	55,556		0,000	0,000	7,763	0,000	4,743	
				|	|		0,000	0,000	7,763	0,000	4,743
				200	55,556		6236,541	6,237	14,000	1,927	6,670	
				|	|		0,000	0,000	14,000	0,000	6,670
Mölnlycke	14	11	11000	200	55,556		0,000	0,000	14,000	0,000	6,670	
				+	+		1249,641	1,250	15,250	0,372	7,042	
	16	2	2000	215	59,722		350,088	0,350	15,600	0,101	7,143	
				-	-		400,270	0,400	16,000	0,119	7,262	
				200	55,556		8000,000	8,000	24,000	2,472	9,734	
				|	|		0,000	0,000	24,000	0,000	9,734
Landvetter flp	24	8	8000	200	55,556		0,000	0,000	24,000	0,000	9,734	
				+	+		7901,750	7,902	31,902	2,069	11,803	
	24	0	0	267	74,167		0,000	0,000	31,902	0,000	11,803	
				|	|		0,000	0,000	31,902	0,000	11,803
				267	74,167		8098,250	8,098	40,000	1,874	13,678	
				|	|		0,000	0,000	40,000	0,000	13,678
Kråktorp	40	16	16000	267	74,167		0,000	0,000	40,000	0,000	13,678	
				|	|		0,000	0,000	40,000	0,000	13,678
	60	20	20000	267	74,167		18817,580	18,818	58,818	4,356	18,033	
				-	-		1182,420	1,182	60,000	0,294	18,327	
				230	63,889		1598,508	1,599	61,599	0,430	18,757	
				-	-		3401,492	3,401	65,000	1,828	20,585	
Borås	65	5	5000	0	0,000		0,000	0,000	65,000	0,000	20,585	

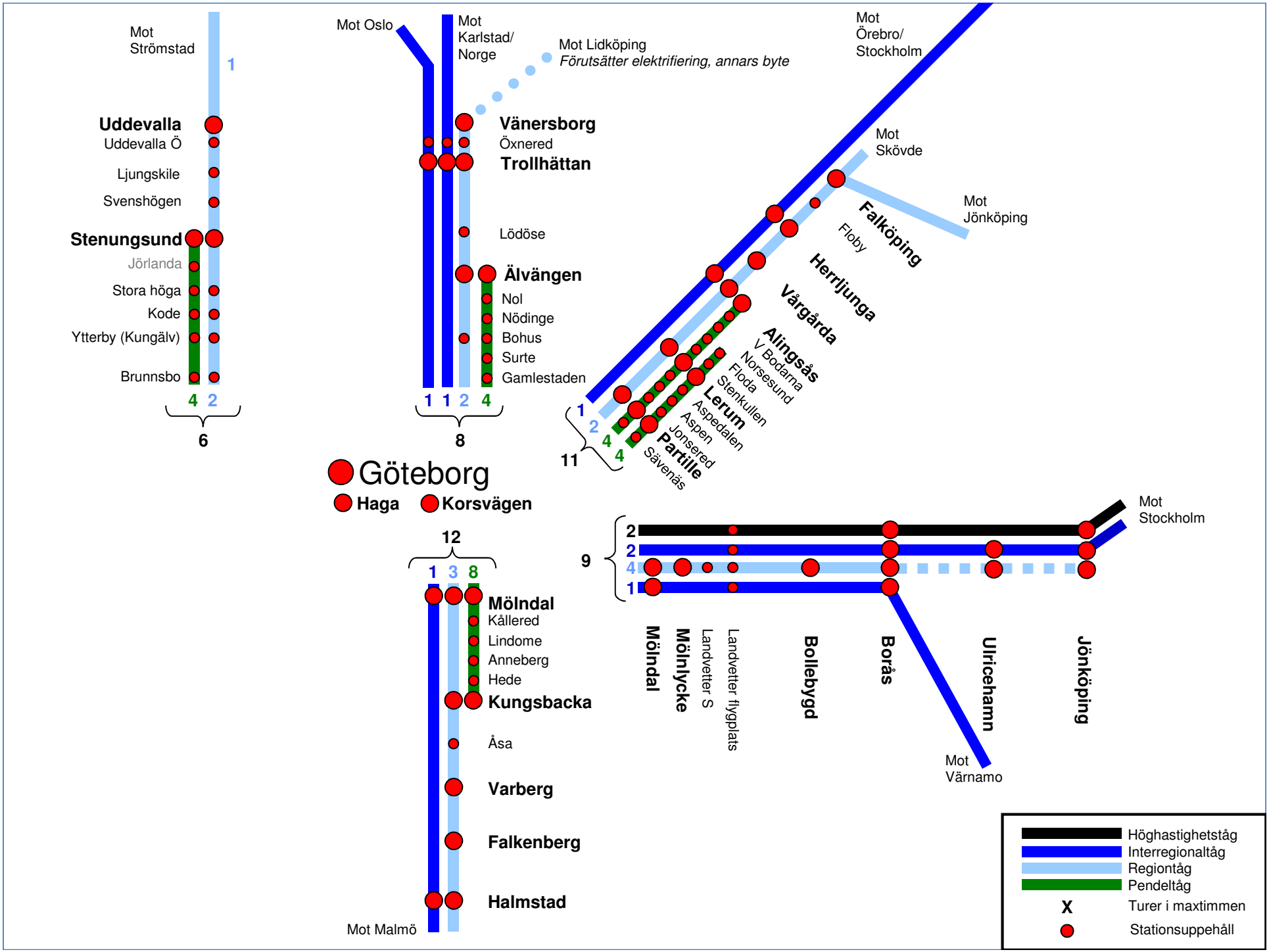
LRT - 5-step acceleration	max = 267 km/h	Stops:	Gothenburg,	airport,	Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	Speed [km/h]	[m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total		
Borås	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000		
				+	+		4818,364	4,818	4,818	2,333	2,333	
	5	5	5000	220	61,111		181,636	0,182	5,000	0,000	2,333	
				+	+		3905,891	3,906	8,906	0,989	3,322	
				267	74,167		16094,109	16,094	25,000	3,725	7,047	
				|	|		0,000	0,000	25,000	0,000	7,047
Bollebyg	25	20	20000	267	74,167		0,000	0,000	25,000	0,000	7,047	
				|	|		0,000	0,000	25,000	0,000	7,047
	25	0	0	267	74,167		0,000	0,000	25,000	0,000	7,047	
				|	|		0,000	0,000	25,000	0,000	7,047
				267	74,167		11416,088	11,416	36,416	2,642	9,689	
				-	-		4583,912	4,584	41,000	2,122	11,811	
Landvetter	41	16	16000	0	0,000		0,000	0,000	41,000	1,500	13,311	
				+	+		3678,318	3,678	44,678	1,998	15,309	
	49	8	8000	200	55,556		4321,682	4,322	49,000	1,335	16,645	
				+	+		1140,047	1,140	50,140	0,335	16,980	
				220	61,111		319,830	0,320	50,460	0,090	17,070	
				|	|		0,000	0,000	50,460	0,000	17,070
Mölnlycke	51	2	2000	220	61,111		0,000	0,000	50,460	0,000	17,070	
				-	-		540,123	0,540	51,000	0,159	17,228	
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	19,546	
				+	+		829,262	0,829	59,329	0,247	19,793	
				215	59,722		109,975	0,110	59,439	0,032	19,824	
				|	|		0,000	0,000	59,439	0,000	19,824
Korsvägen	62	3,5	3500	215	59,722		0,000	0,000	59,439	0,000	19,824	
				-	-		2560,764	2,561	62,000	1,073	20,897	
				80	22,222		1500,000	1,500	63,500	1,159	22,056	
				|	|		0,000	0,000	63,500	0,000	22,056
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	22,056	
				|	|		0,000	0,000	63,500	0,000	22,056
				80	22,222		1500,000	1,500	65,000	1,159	23,215	
				|	|		0,000	0,000	65,000	0,000	23,215
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	23,215	

LRT - 5-step acceleration	max = 267 km/h	Stops:	Gothenburg,		Borås							
	Distance from Gothenburg [km]	Sections [km]	[m]	Speed [km/h]	[m/s]	Distance Between [m]	Between [km]	Total [km]	Time [minutes] Between	Total		
Borås	0	0	0	0	0,000	0,000	0,000	0,000	0,000	0,000		
				+	+		4818,364	4,818	4,818	2,333	2,333	
	5	5	5000	220	61,111		181,636	0,182	5,000	0,000	2,333	
				+	+		3905,891	3,906	8,906	0,989	3,322	
				267	74,167		16094,109	16,094	25,000	3,725	7,047	
				|	|		0,000	0,000	25,000	0,000	7,047
Bollebyg	25	20	20000	267	74,167		0,000	0,000	25,000	0,000	7,047	
				|	|		0,000	0,000	25,000	0,000	7,047
	39	14	14000	267	74,167		13931,584	13,932	38,932	3,225	10,272	
				-	-		68,416	0,068	39,000	0,016	10,288	
				265	73,611		56,520	0,057	39,057	0,000	10,288	
				|	|		0,000	0,000	39,057	0,000	10,288
Landvetter	41	2	2000	265	73,611		0,000	0,000	39,057	0,000	10,288	
				-	-		1943,480	1,943	41,000	0,517	10,804	
	49	8	8000	200	55,556		8000,000	8,000	49,000	2,472	13,276	
				+	+		1140,047	1,140	50,140	0,335	13,611	
				220	61,111		319,830	0,320	50,460	0,090	13,701	
				|	|		0,000	0,000	50,460	0,000	13,701
Mölnlycke	51	2	2000	220	61,111		0,000	0,000	50,460	0,000	13,701	
				-	-		540,123	0,540	51,000	0,159	13,860	
	58,5	7,5	7500	200	55,556		7500,000	7,500	58,500	2,318	16,178	
				+	+		829,262	0,829	59,329	0,247	16,424	
				215	59,722		109,975	0,110	59,439	0,032	16,456	
				|	|		0,000	0,000	59,439	0,000	16,456
Korsvägen	62	3,5	3500	215	59,722		0,000	0,000	59,439	0,000	16,456	
				-	-		2560,764	2,561	62,000	1,073	17,529	
				80	22,222		1500,000	1,500	63,500	1,159	18,688	
				|	|		0,000	0,000	63,500	0,000	18,688
Haga	63,5	1,5	1500	80	22,222		0,000	0,000	63,500	0,000	18,688	
				|	|		0,000	0,000	63,500	0,000	18,688
				80	22,222		1500,000	1,500	65,000	1,159	19,847	
				|	|		0,000	0,000	65,000	0,000	19,847
Göteborg	65	1,5	1500	80	22,222		0,000	0,000	65,000	0,000	19,847	

K2020 - Local

Power Point presentation sent to Ylva Höglund from Jan Efraimsson [Jan.Efraimsson@vasttrafik.se] 16 February 2011

Title: Dubbelt upp! Lokala 2020
Author: Lillemor Bulukin
Created: 2010-12-10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Svenshögen
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Stora höga
Kode
Ytterby (Kungälv)
Brunnsbo
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6
Mot Oslo
Mot Karlstad/ Norge
Mot Lidköping
Förutsätter elektrifiering, annars byte
Vänersborg
Öxnered
Trollhättan
Lödöse
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Bohus
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Falköping
Floby
Herrljunga
Vårgårda
Alingsås
V Bodarna
Norsesund
Floda
Stenkullen
Lerum
Aspedalen
Aspen
Jonsered
Partille
Sävenäs
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Göteborg
Haga
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Lindome
Anneberg
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Åsa
Varberg
Falkenberg
Halmstad
Mot Malmö
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1
Mot Stockholm
Mölndal
Mölnlycke
Landvetter S
Landvetter flygplats
Bollebygd
Borås
Ulricehamn
Jönköping
Mot Värnamo
Höghastighetståg
Interregionaltåg
Regiontåg
Pendeltåg
X
Turer i maxtimmen
Stationsuppehåll

Appendix 4 - Graphic timetables

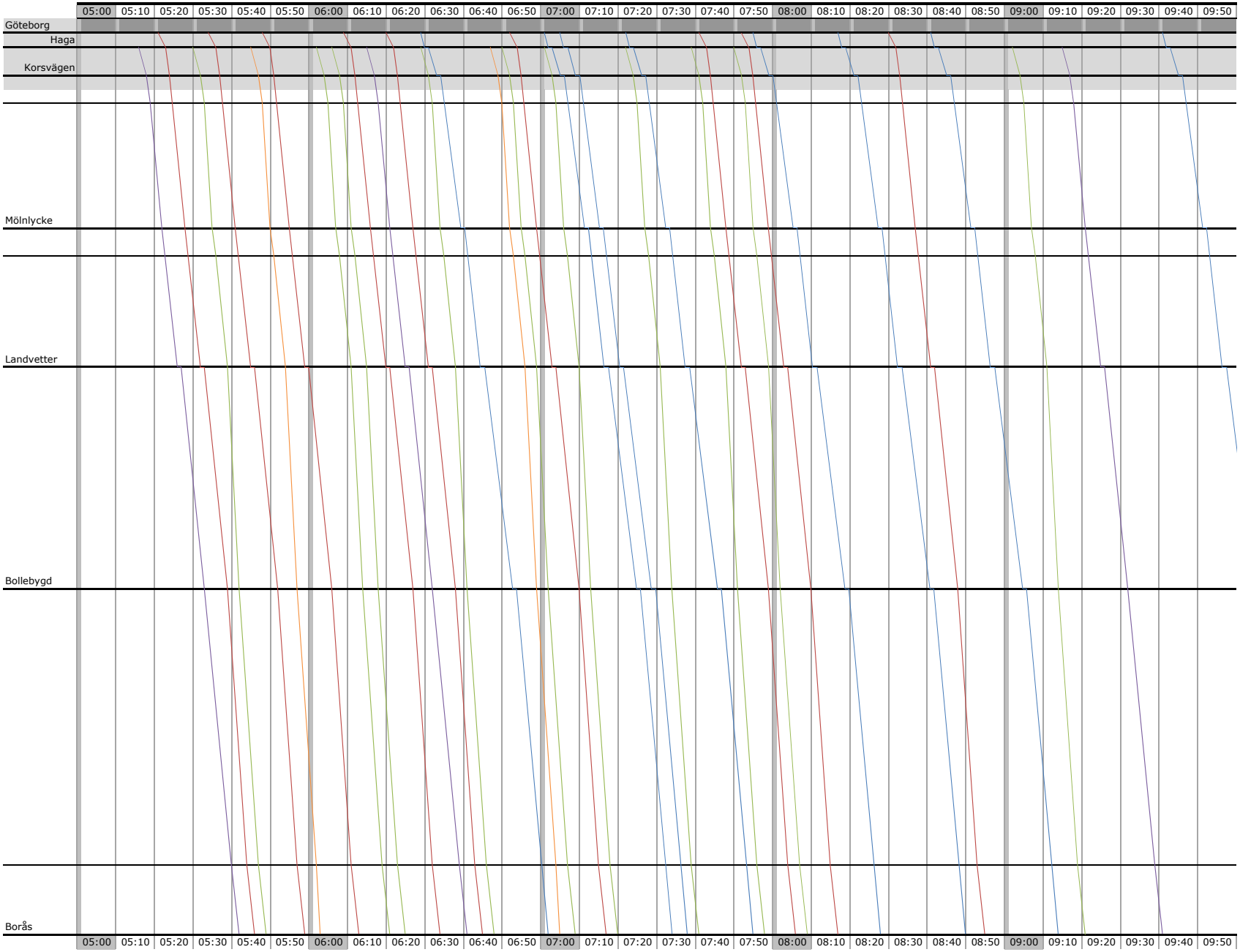
Graphic timetables:

1. US1
2. US2
3. US3
4. US4
5. VT1 (US1-2)
6. VT1 (US3)
7. VT1 (US4)
8. VT2 (US1-2)
9. VT2 (US3)
10. VT2 (US4)

Colour Key	
Orange:	High speed train without stop in Borås
Green:	High speed train with stop in Borås
Red:	Large regional train
Purple:	Coast-to-coast train
Blue:	Commuter train

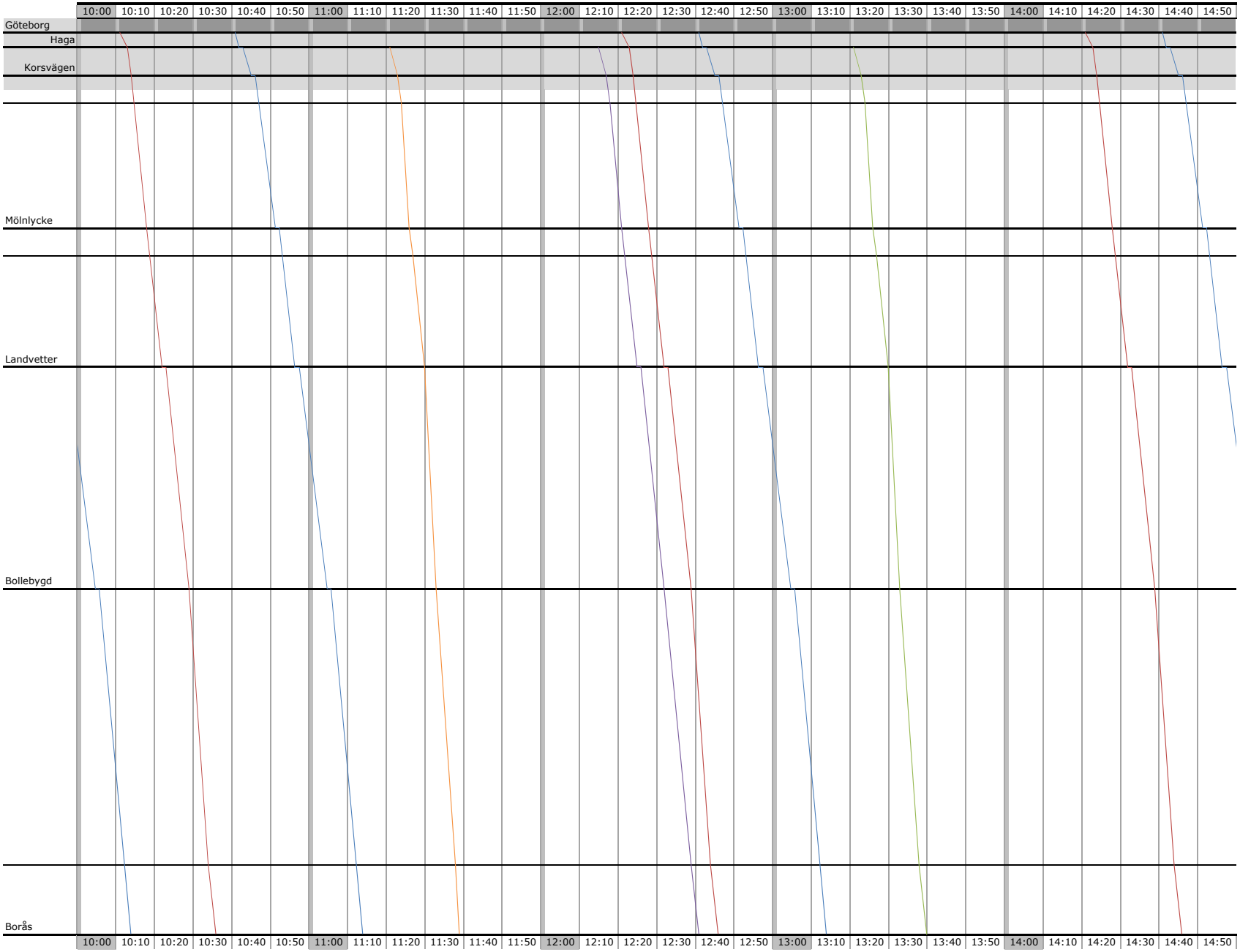
Graphic time table for US1

From Göteborg to Borås



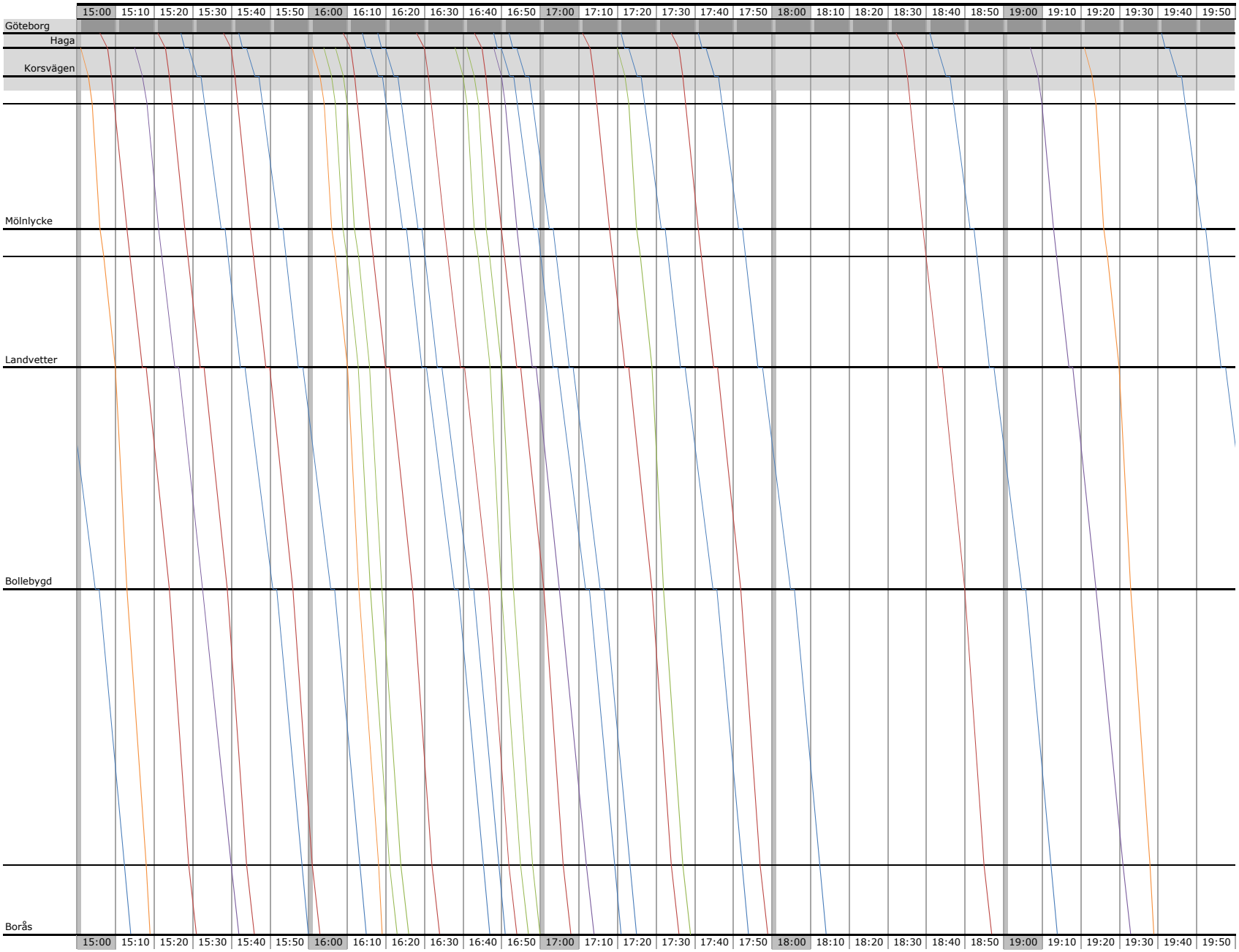
Graphic time table for US1

From Göteborg to Borås



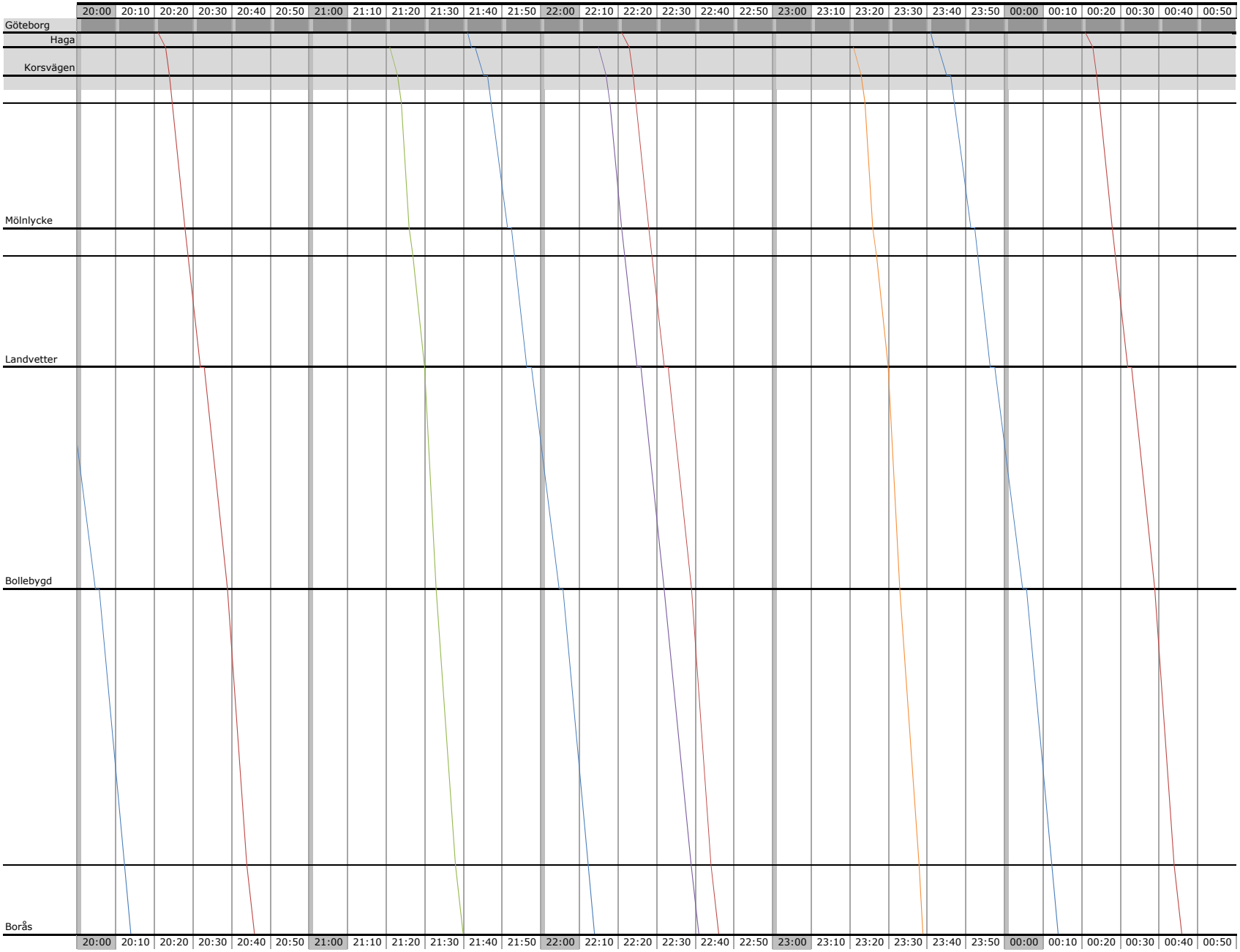
Graphic time table for US1

From Göteborg to Borås



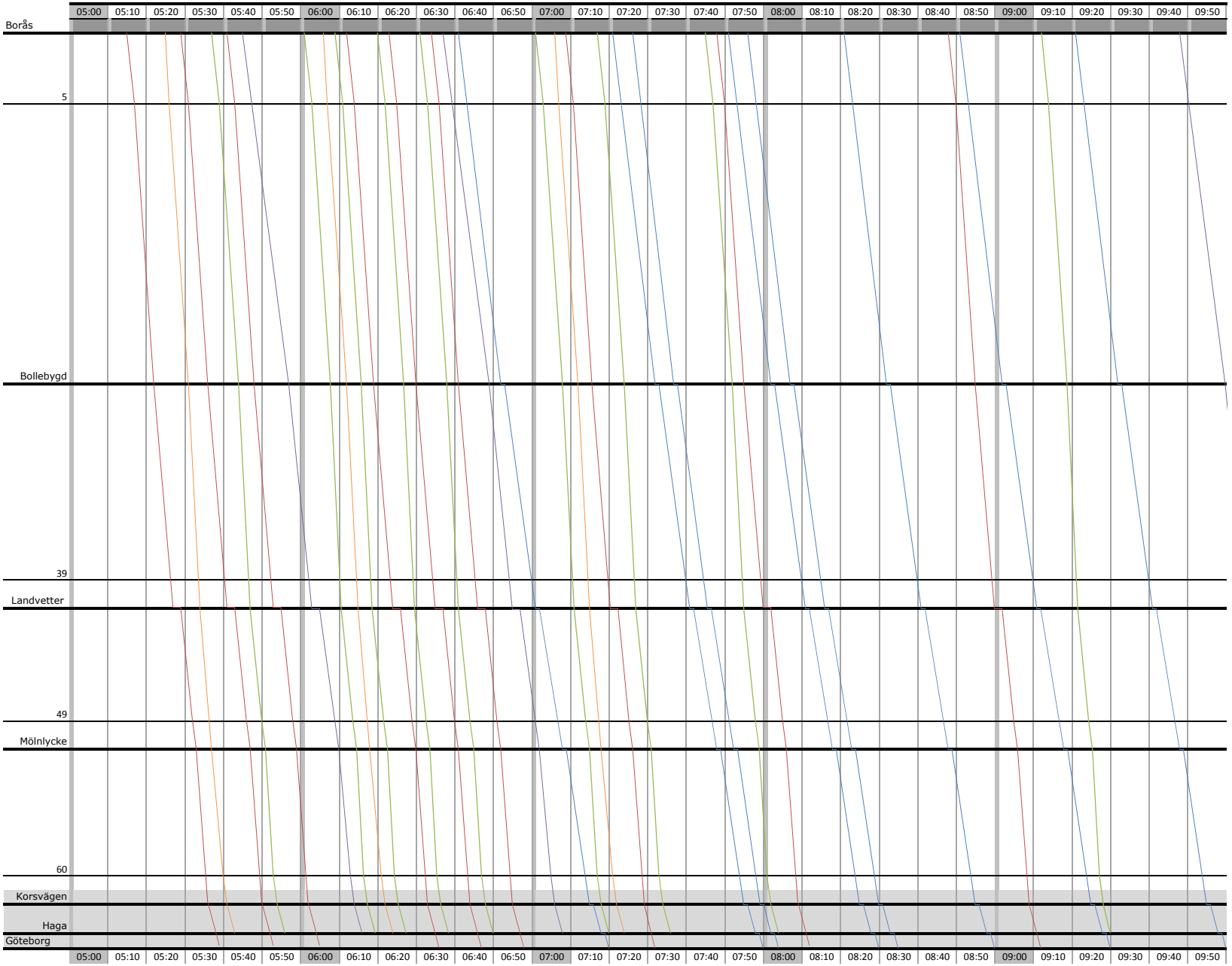
Graphic time table for US1

From Göteborg to Borås



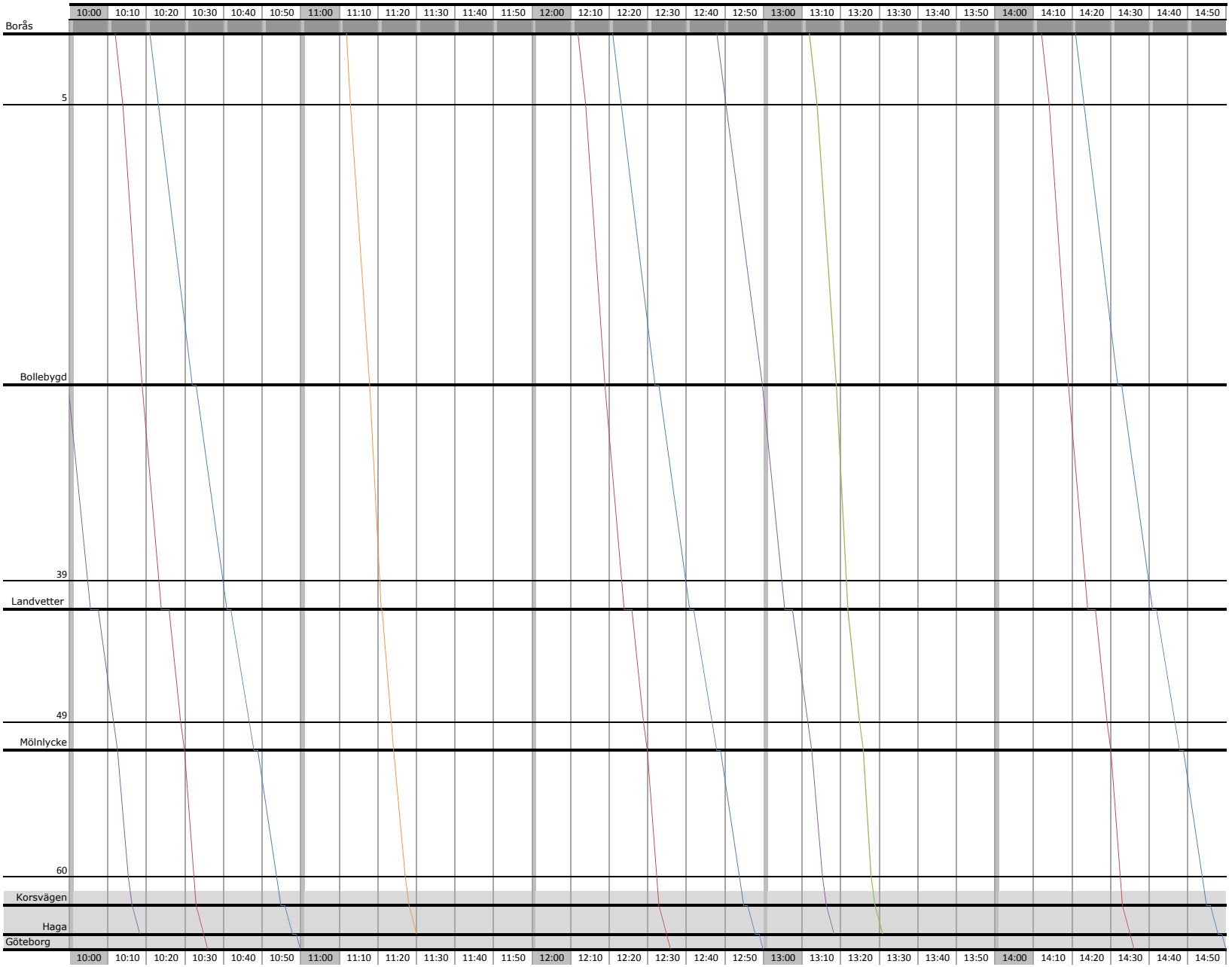
Graphic time table for US1

From Borås to Göteborg



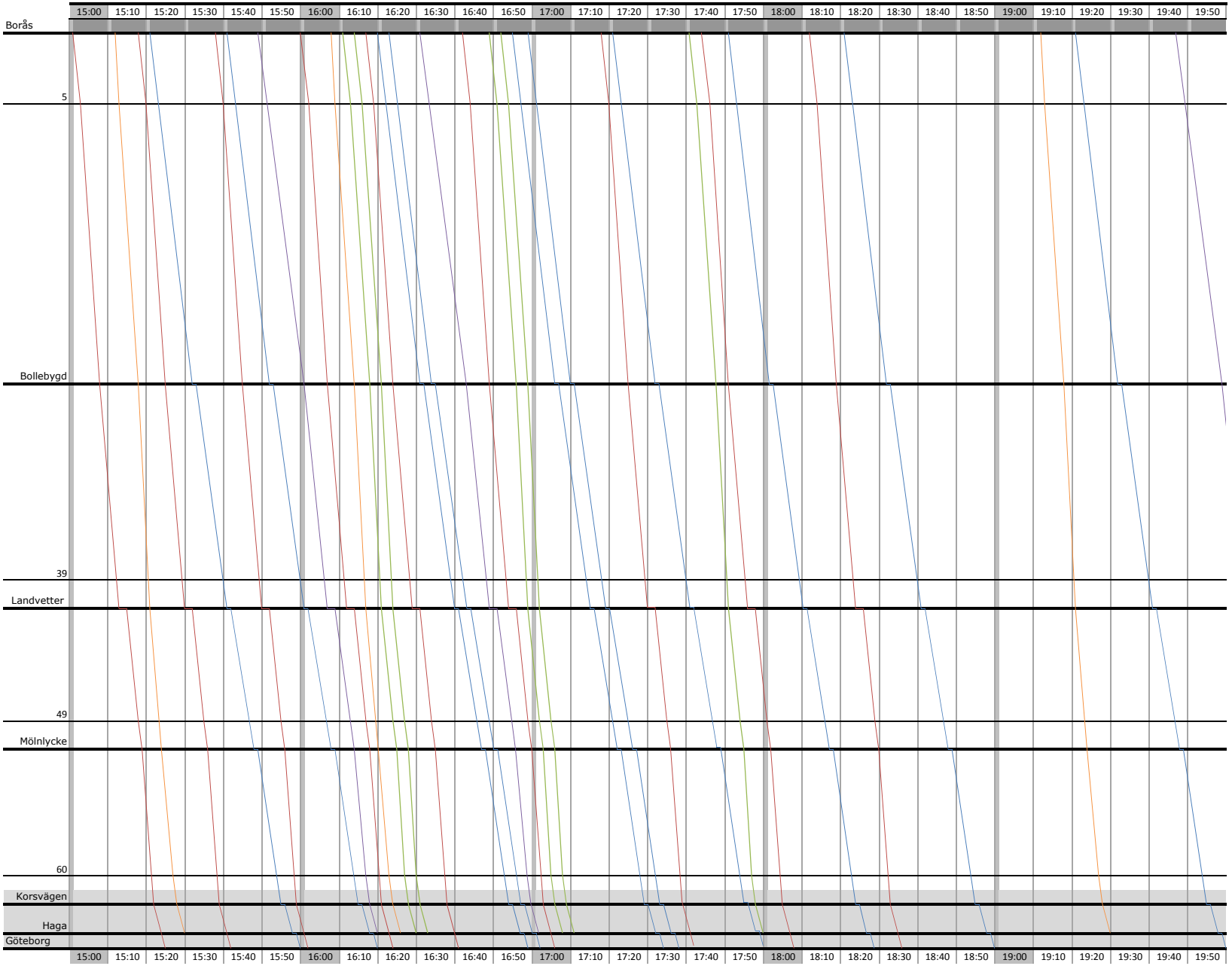
Graphic time table for US1

From Borås to Göteborg



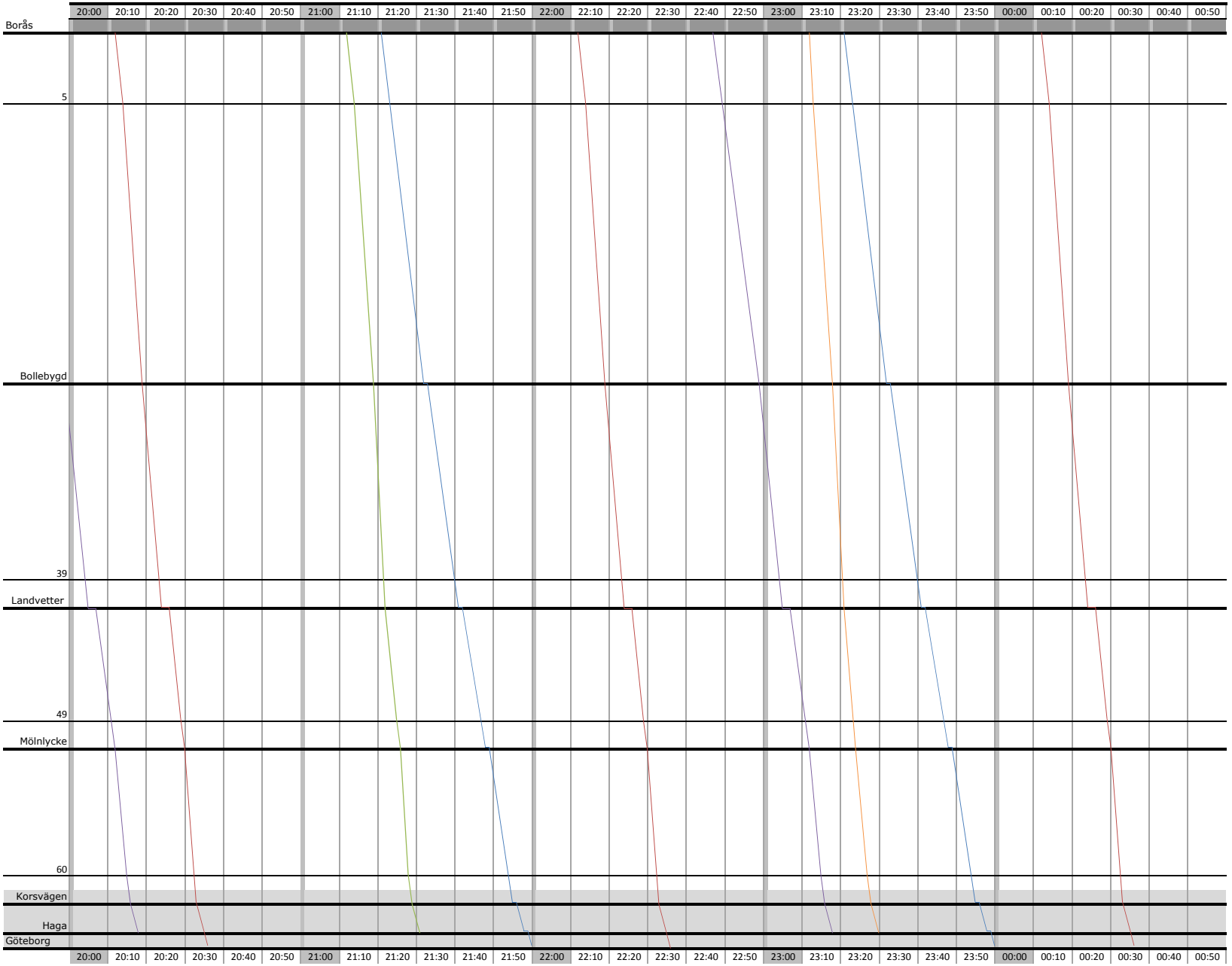
Graphic time table for US1

From Borås to Göteborg



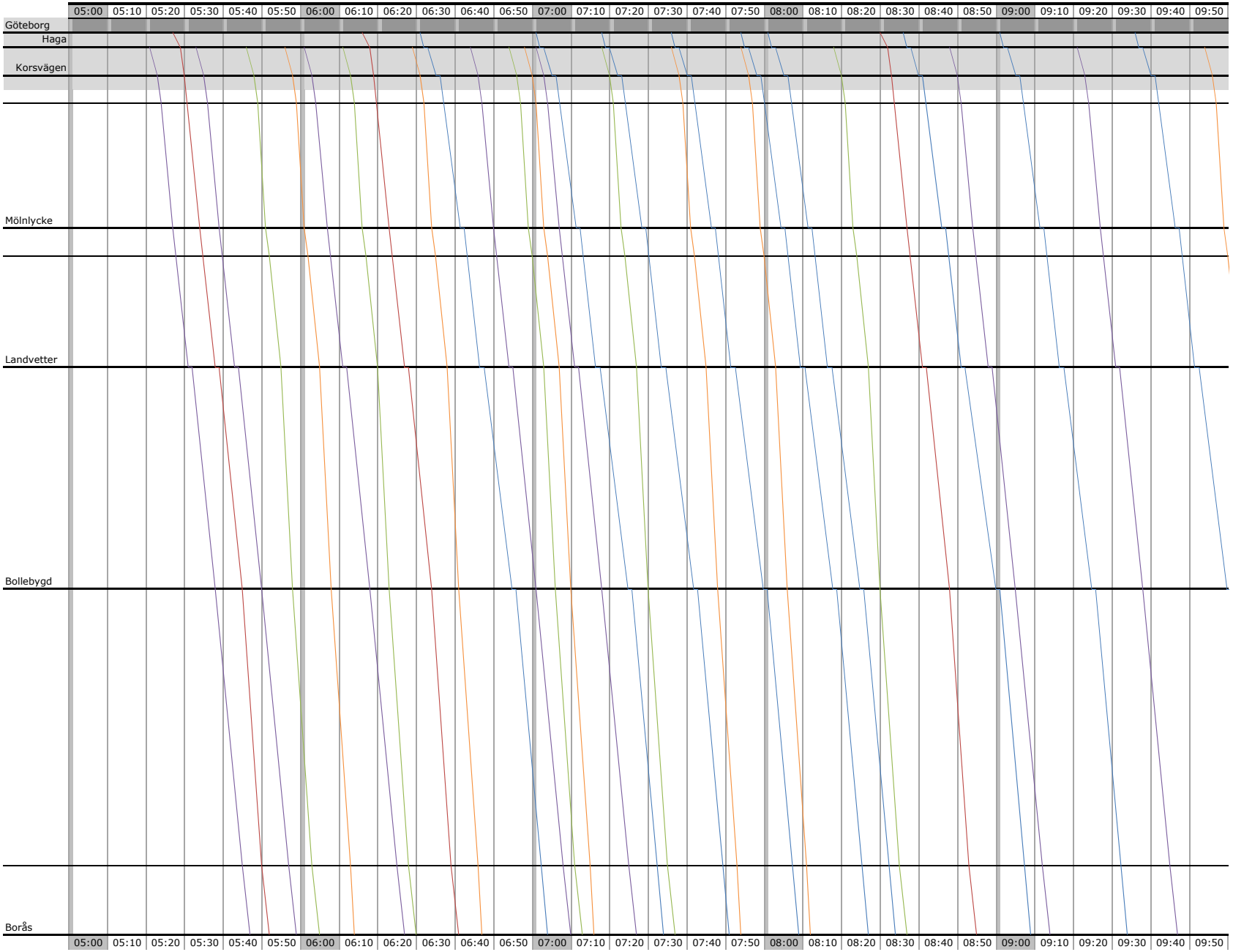
Graphic time table for US1

From Borås to Göteborg



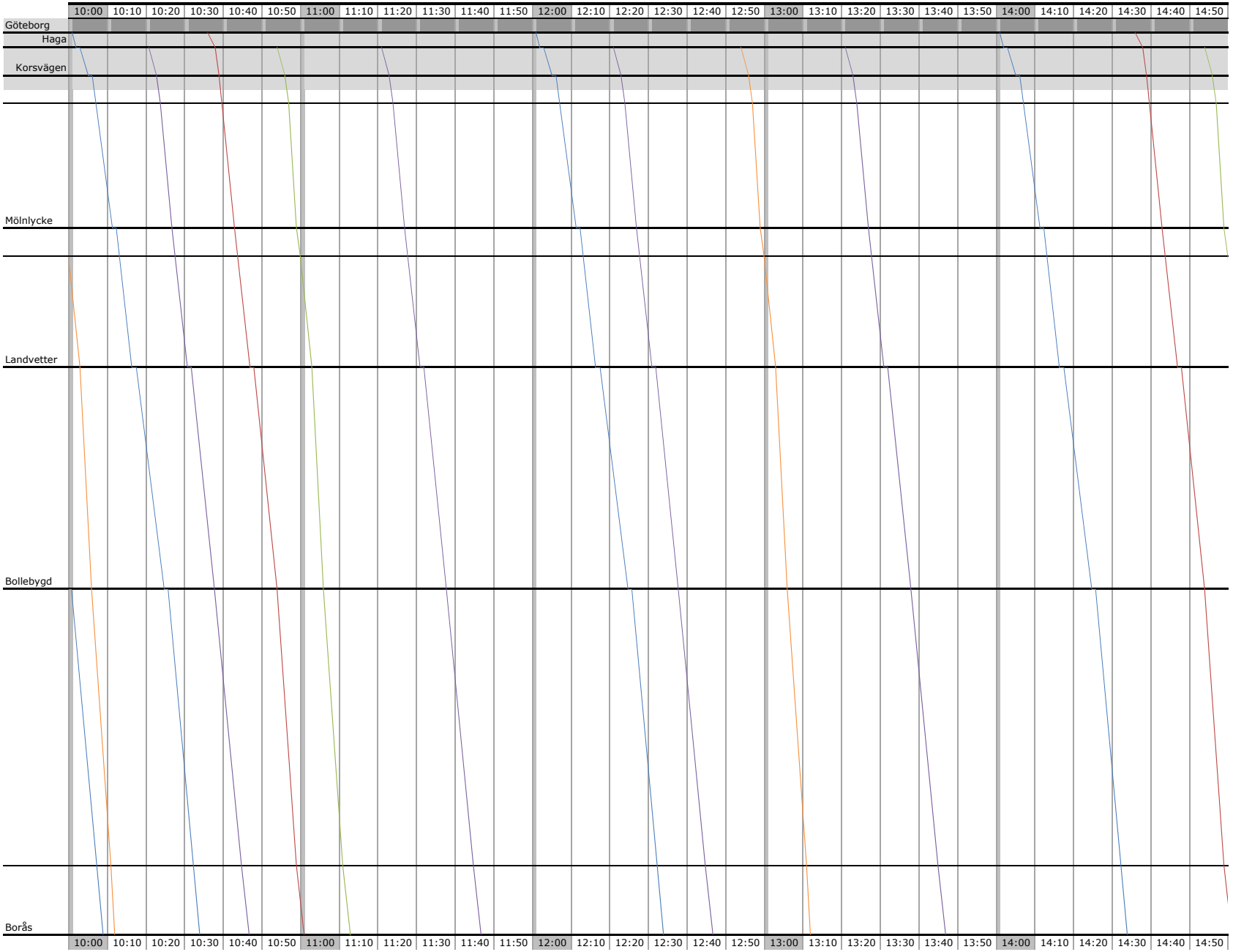
Graphic time table for US2

From Göteborg to Borås



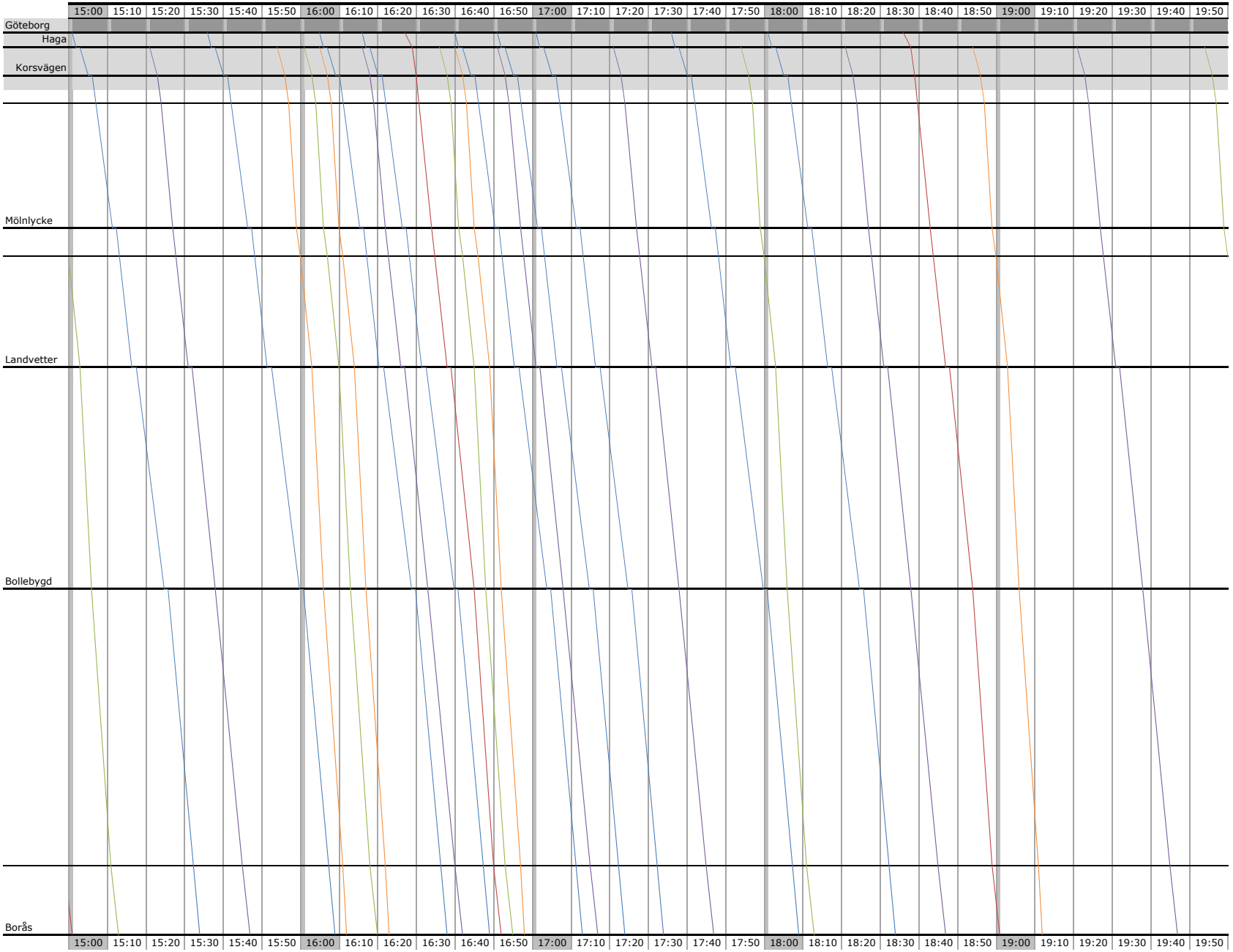
Graphic time table for US2

From Göteborg to Borås



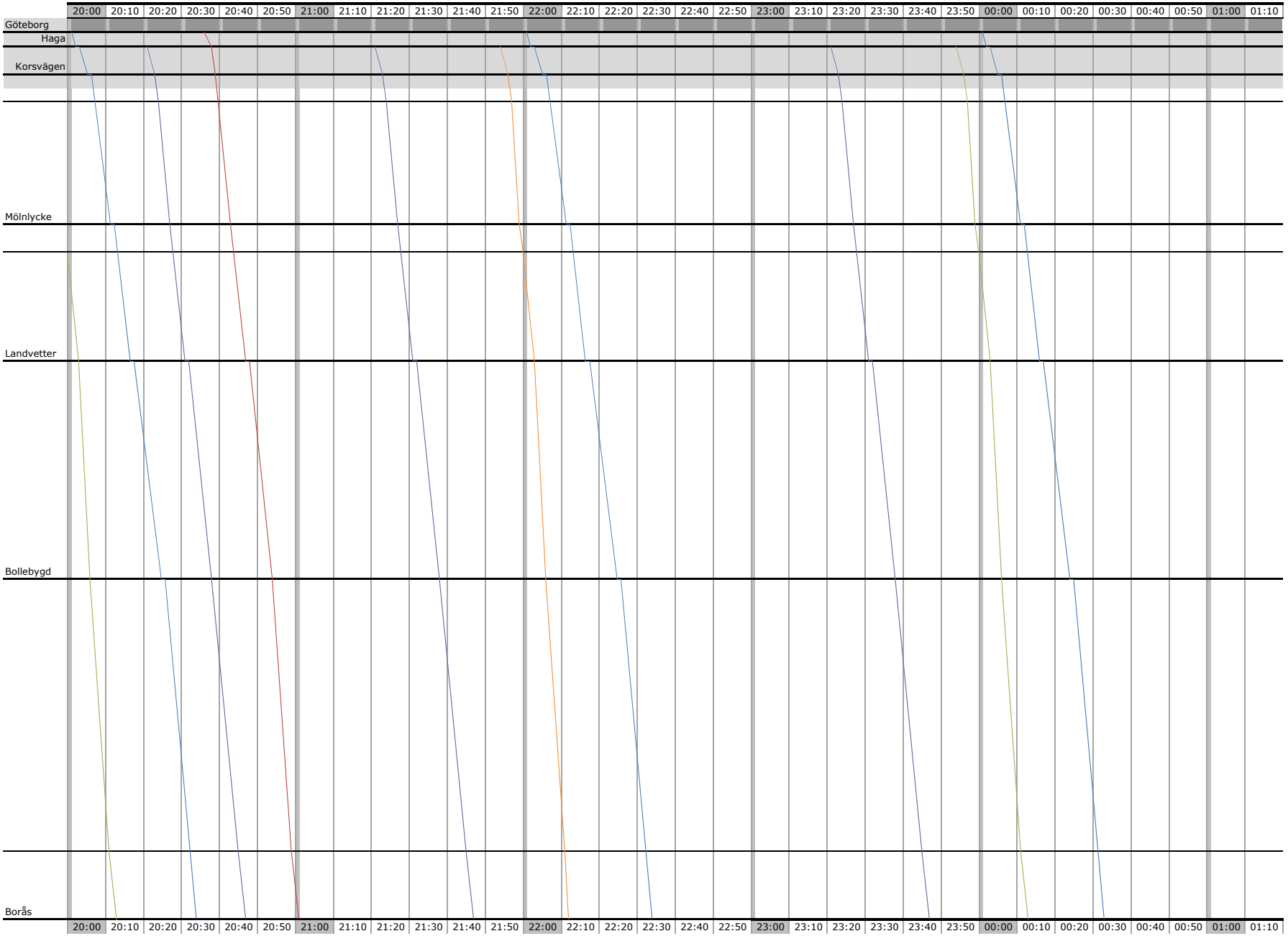
Graphic time table for US2

From Göteborg to Borås



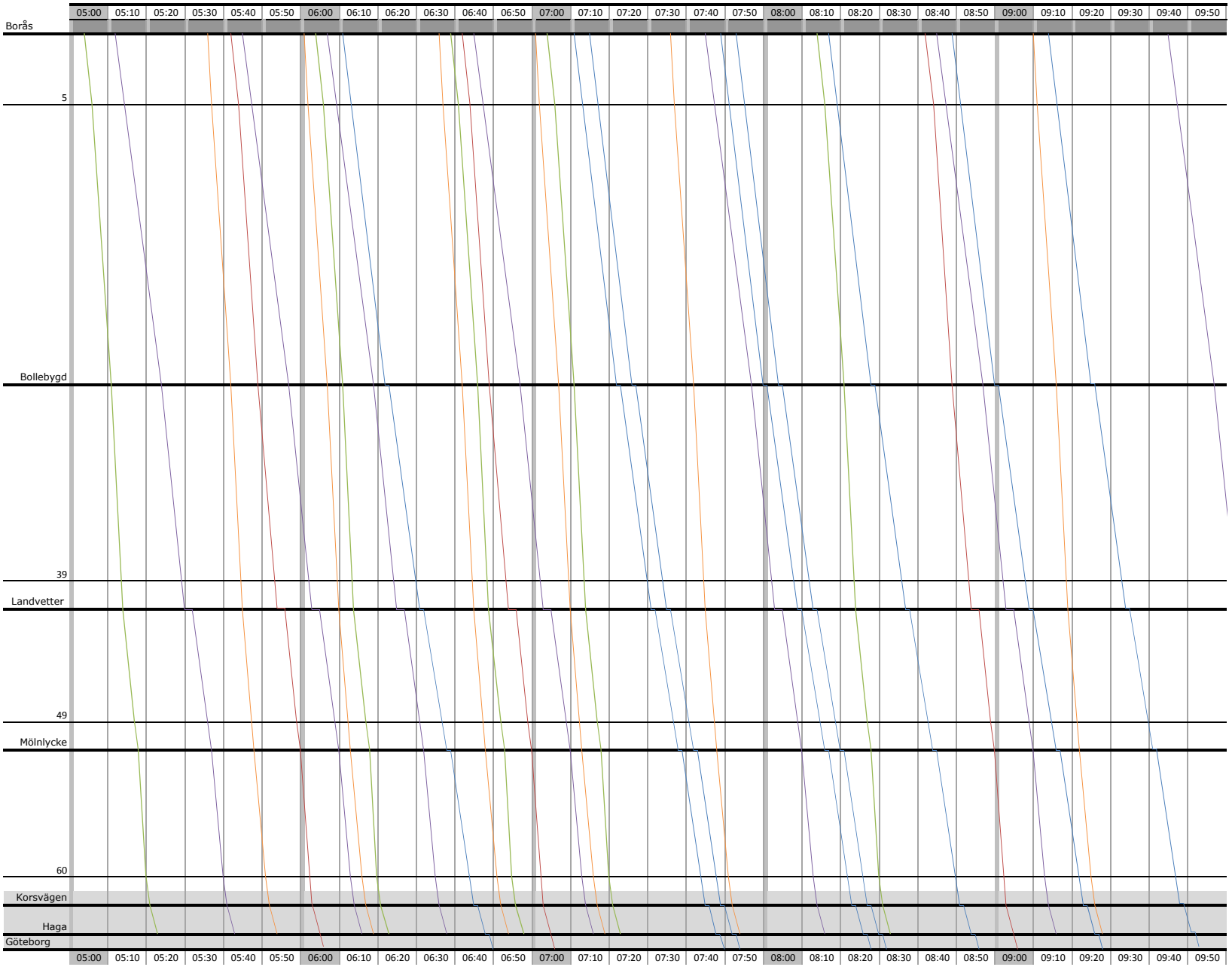
Graphic time table for US2

From Göteborg to Borås



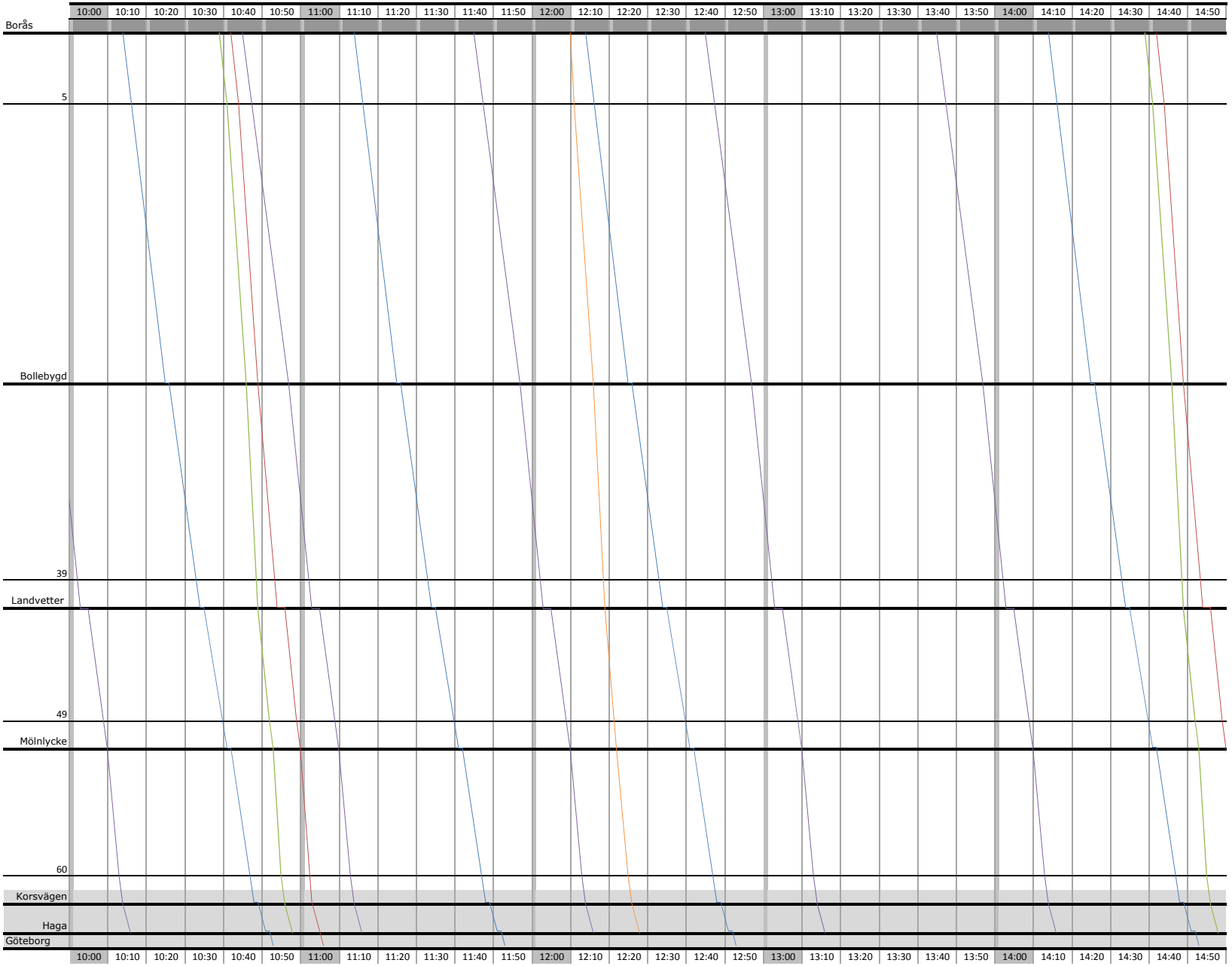
Graphic time table for US2

From Borås to Göteborg



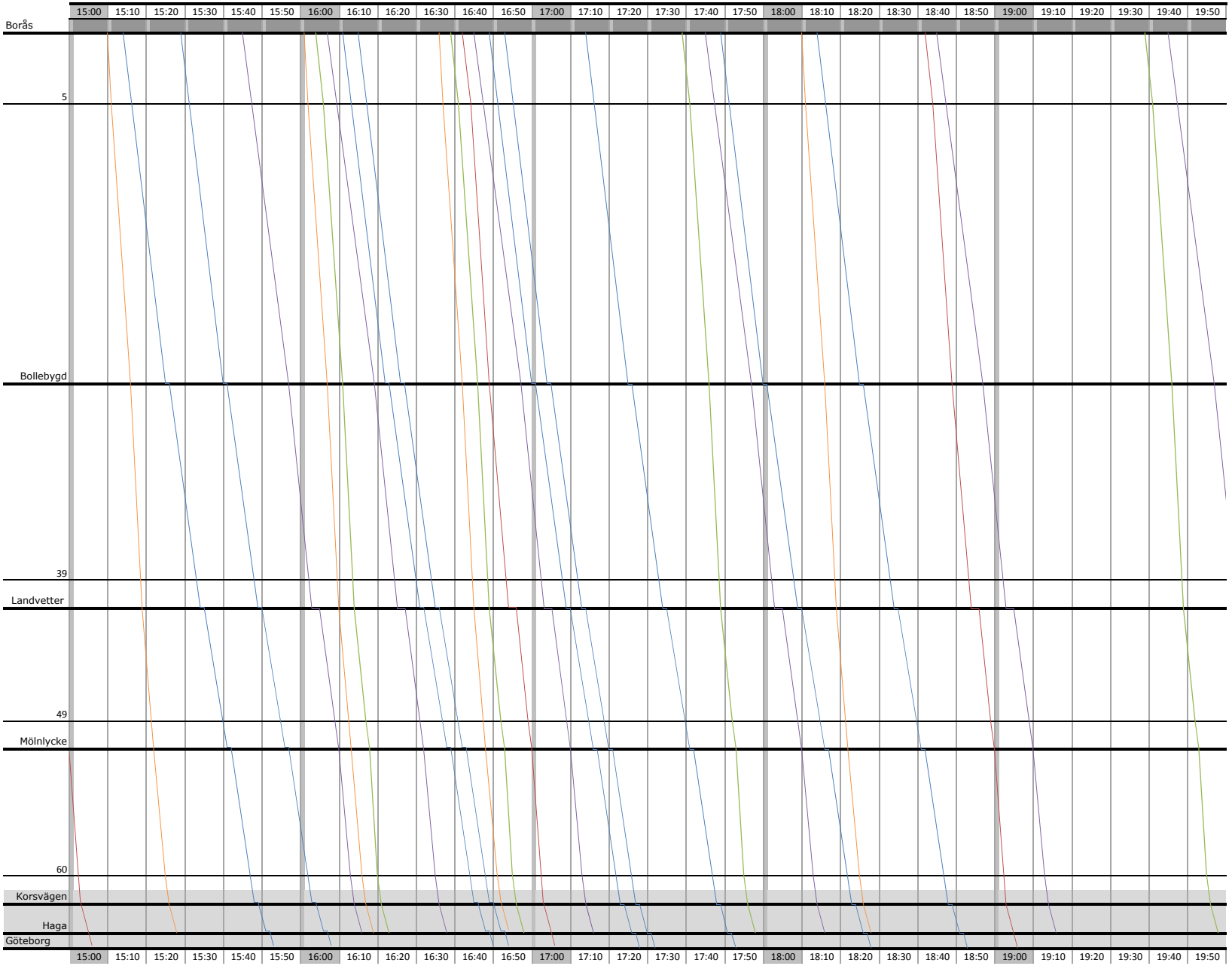
Graphic time table for US2

From Borås to Göteborg



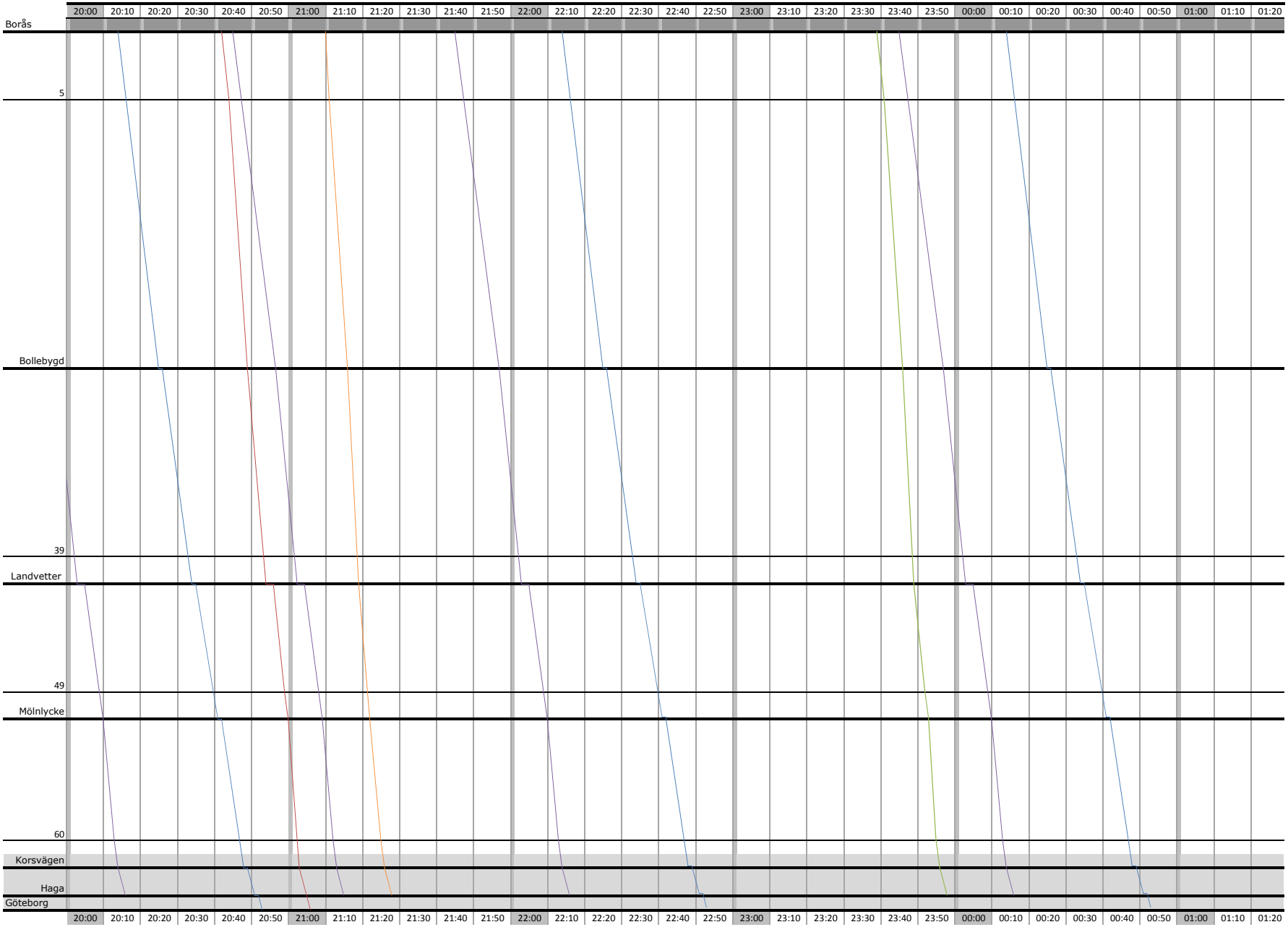
Graphic time table for US2

From Borås to Göteborg



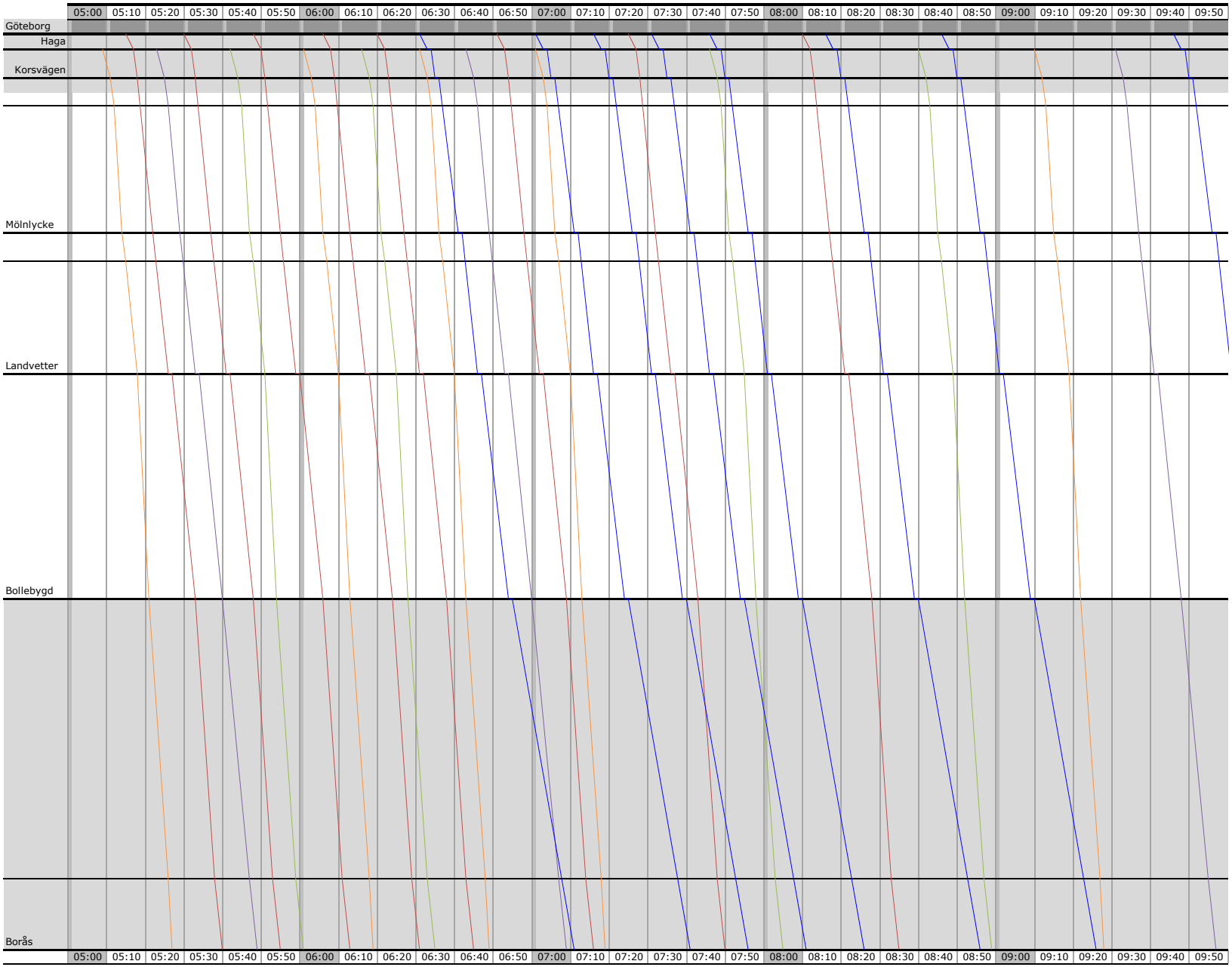
Graphic time table for US2

From Borås to Göteborg



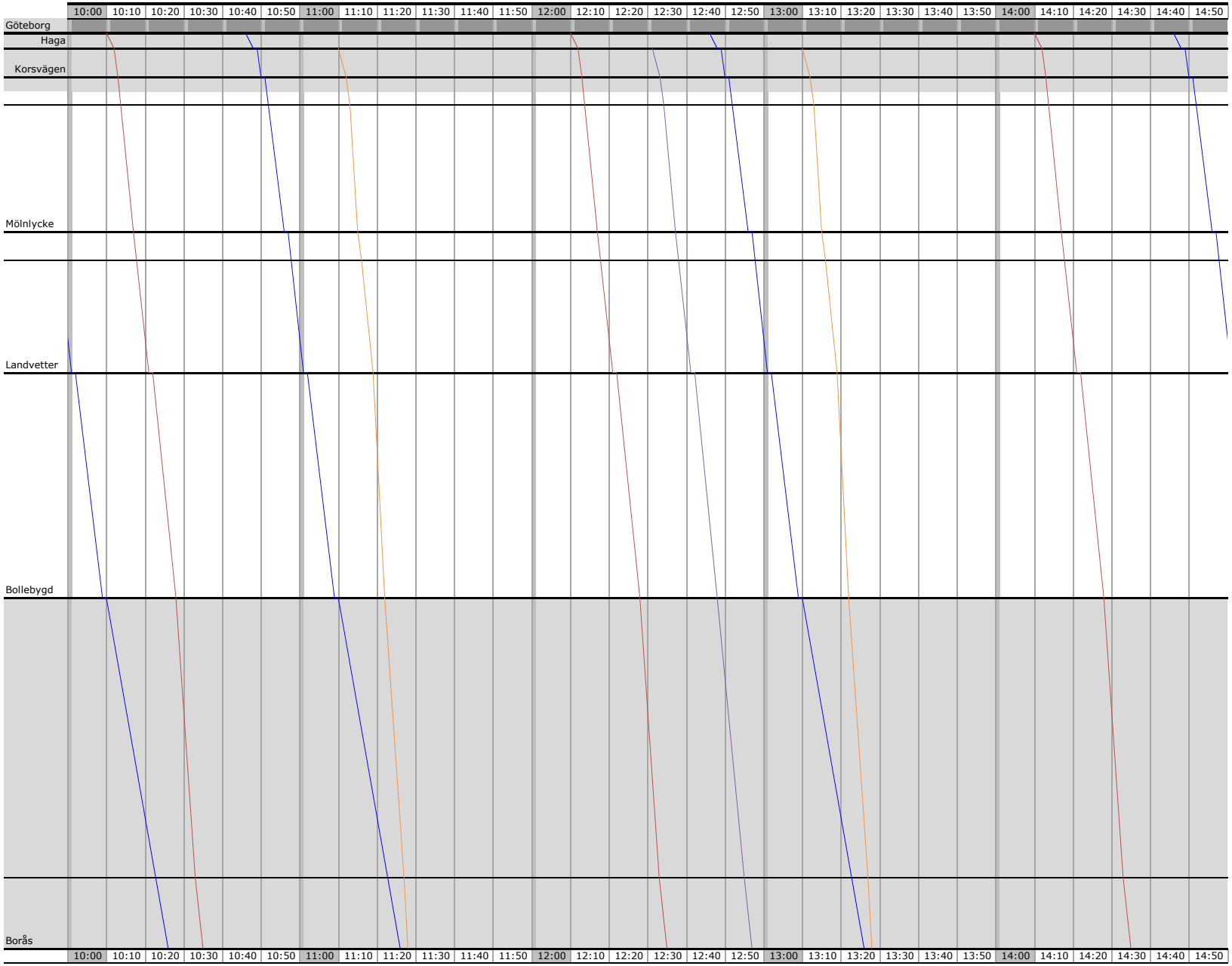
Graphic time table for US3

From Göteborg to Borås



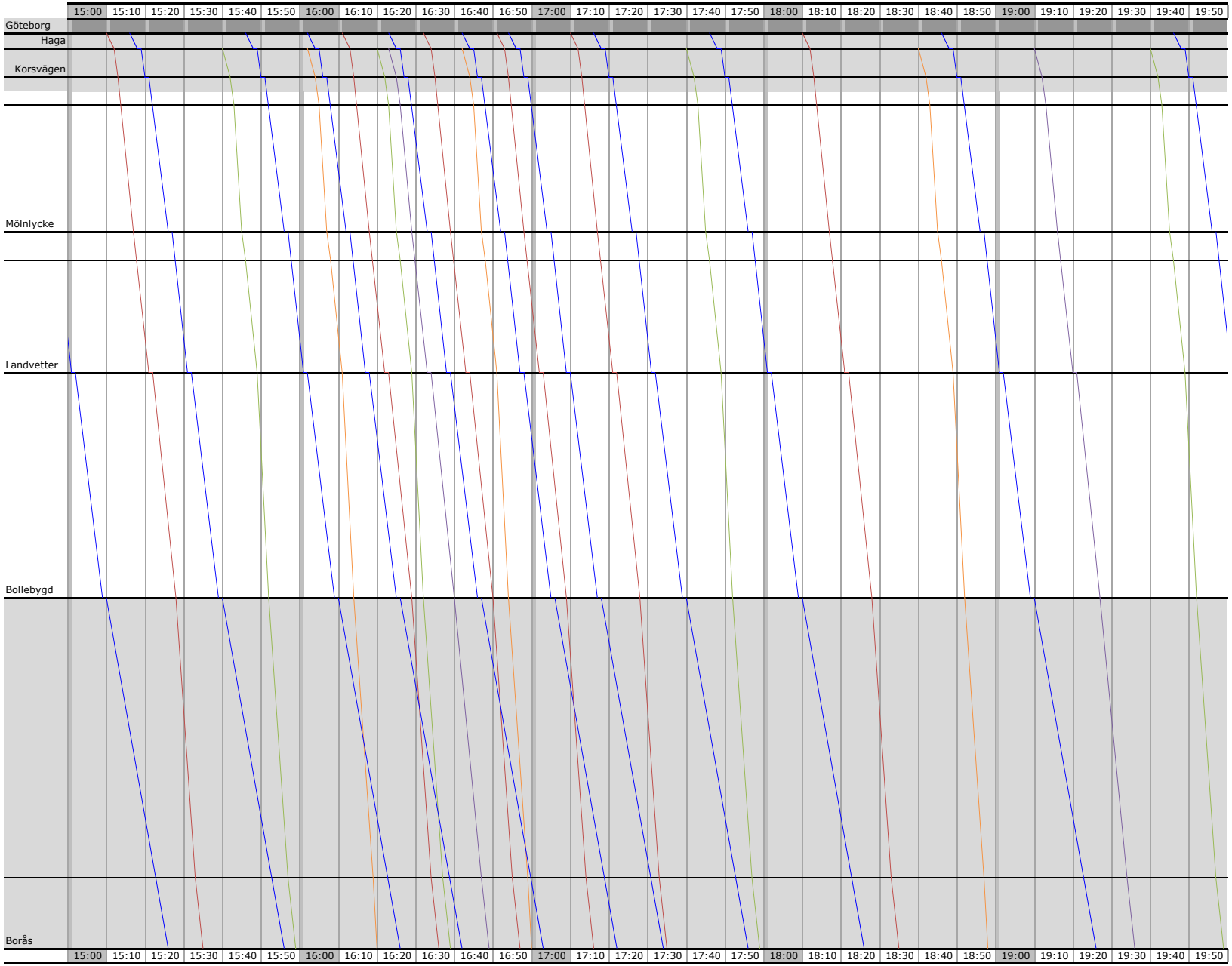
Graphic time table for US3

From Göteborg to Borås



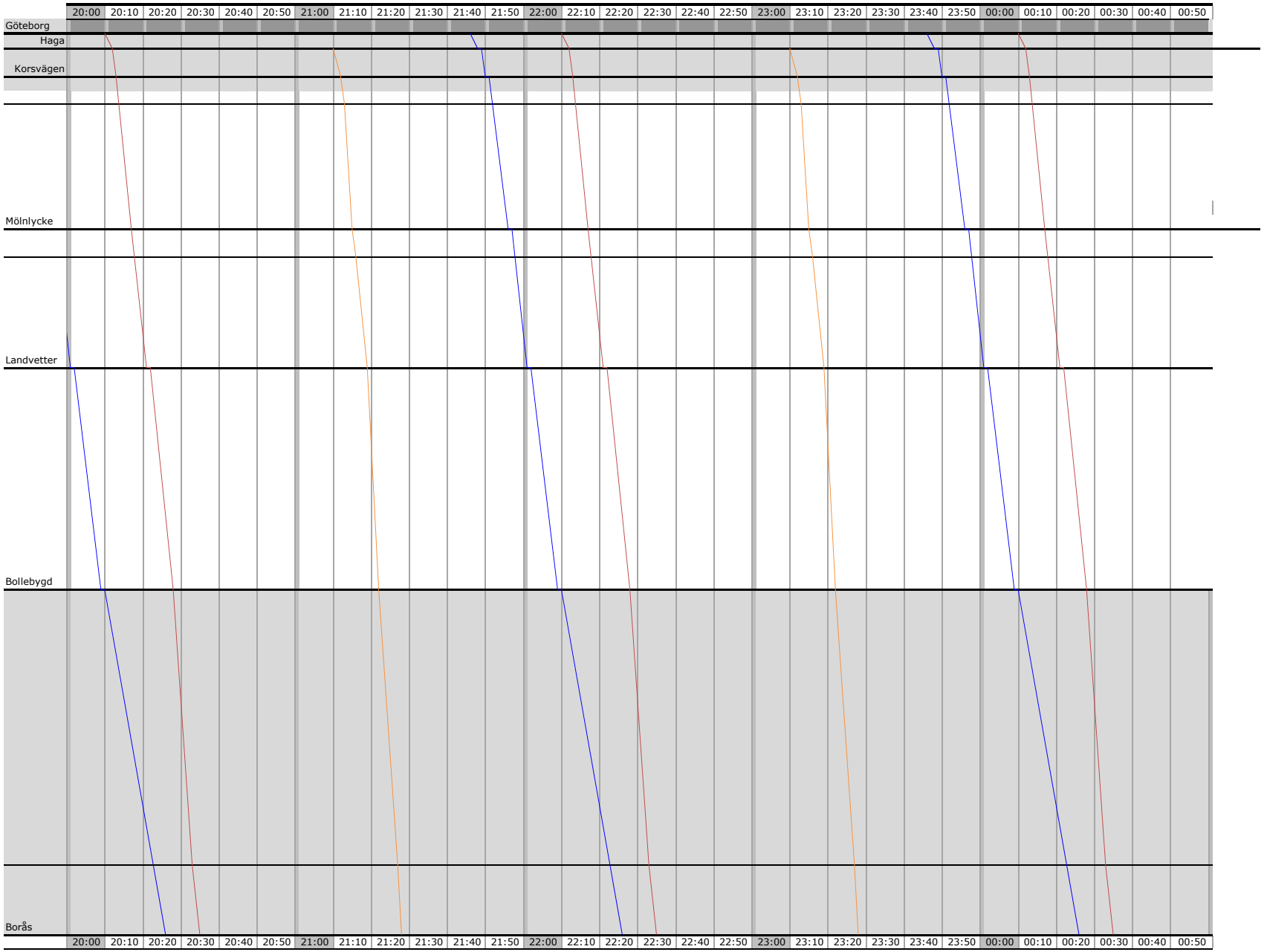
Graphic time table for US3

From Göteborg to Borås



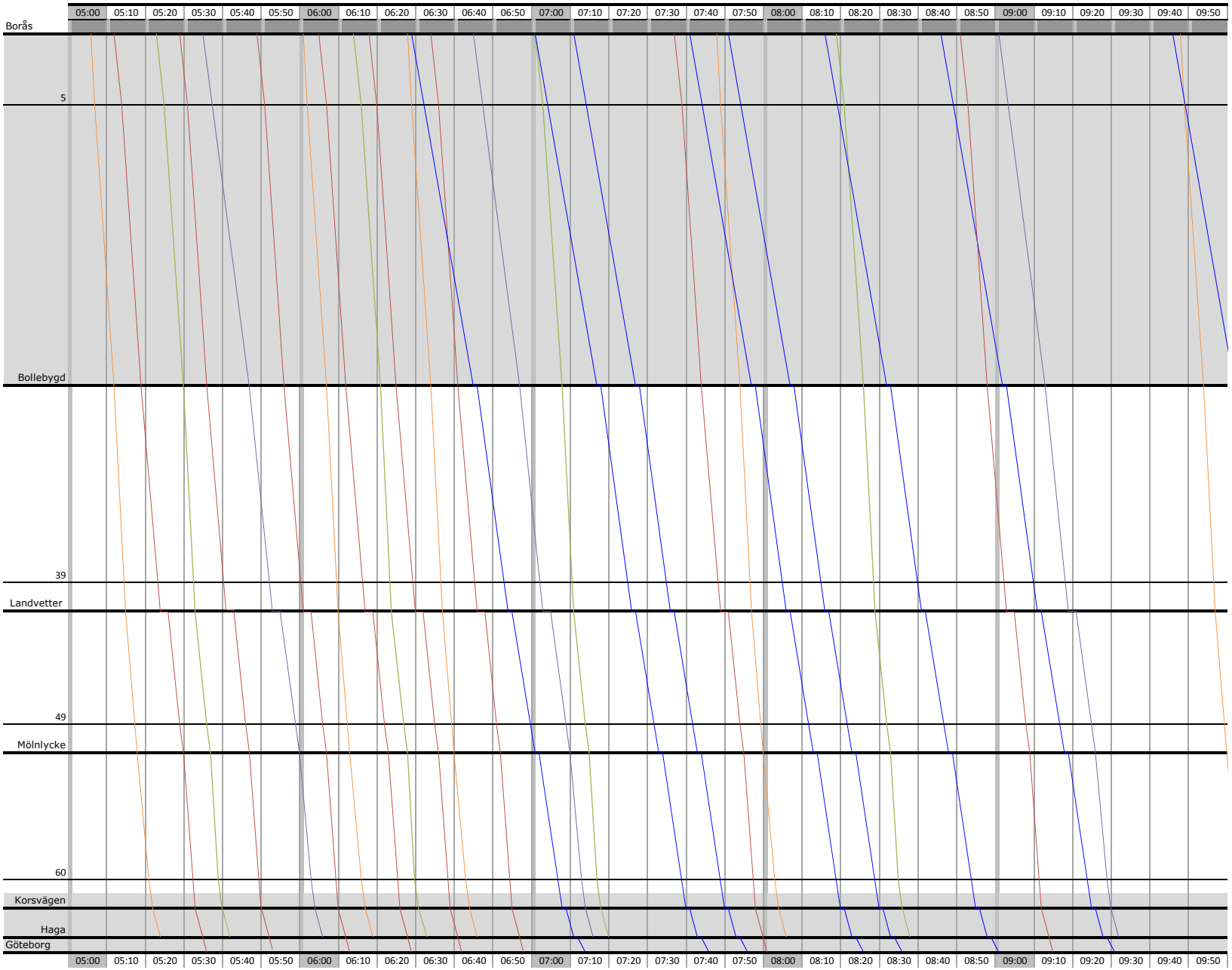
Graphic time table for US3

From Göteborg to Borås



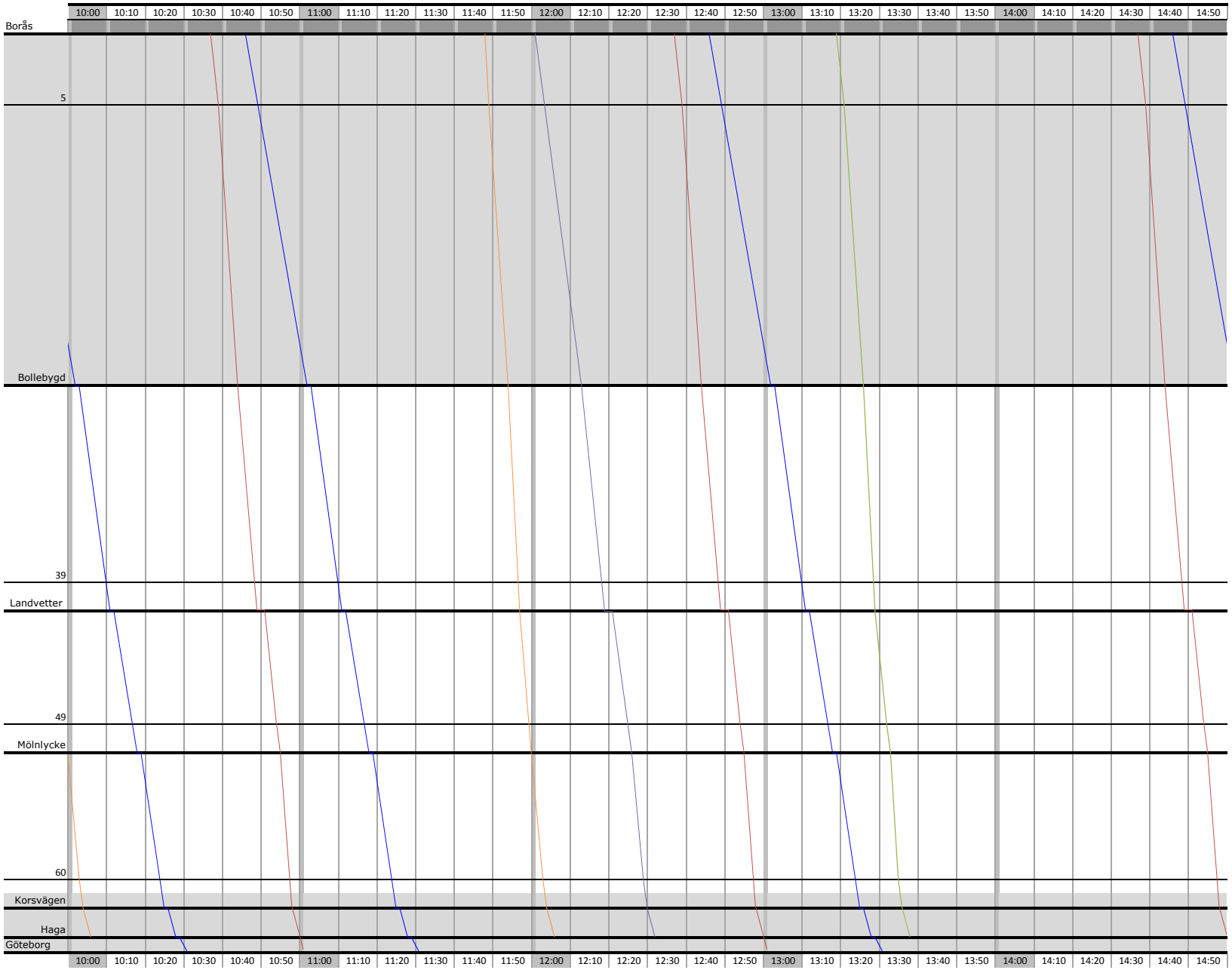
Graphic time table for US3

From Borås to Göteborg



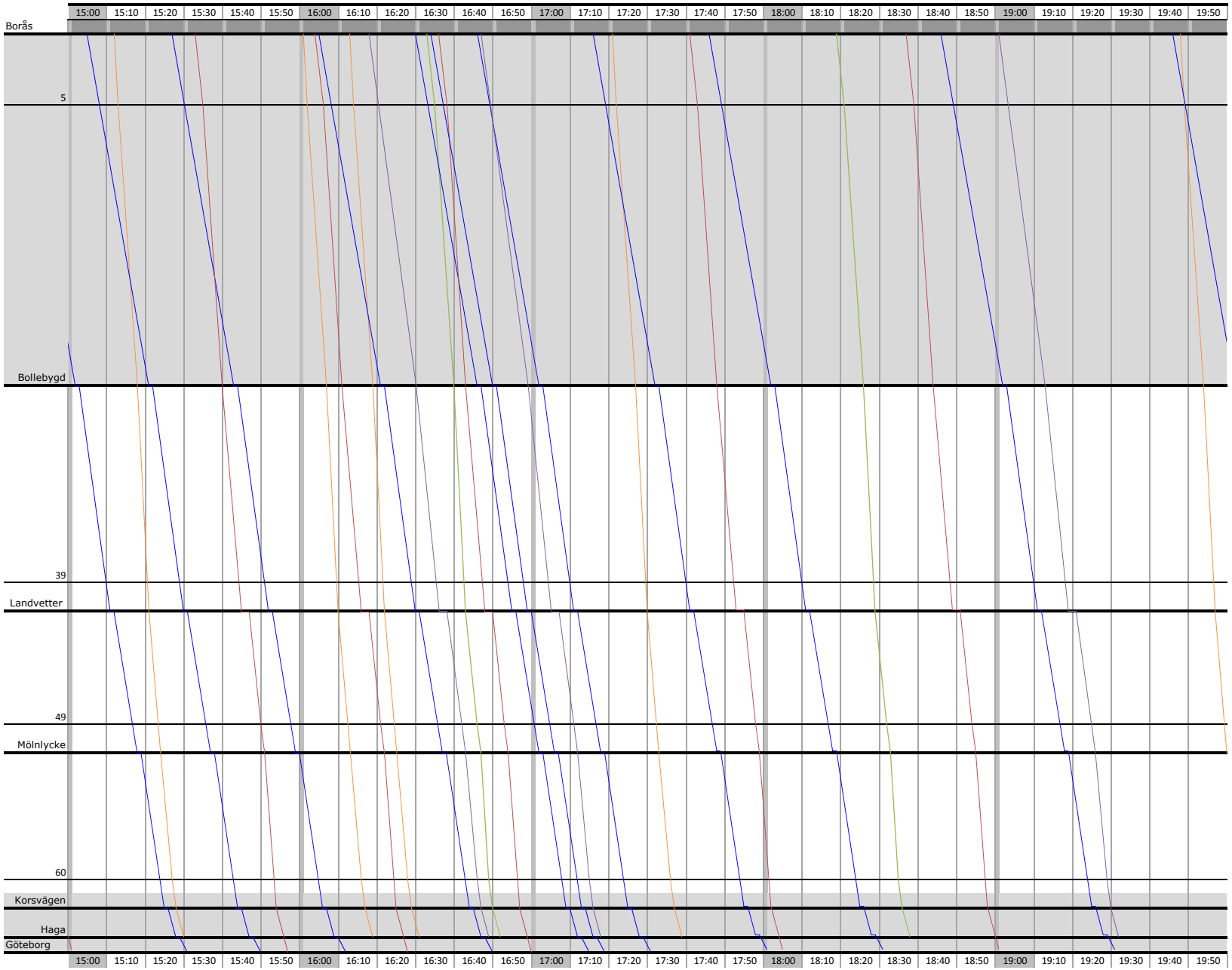
Graphic time table for US3

From Borås to Göteborg



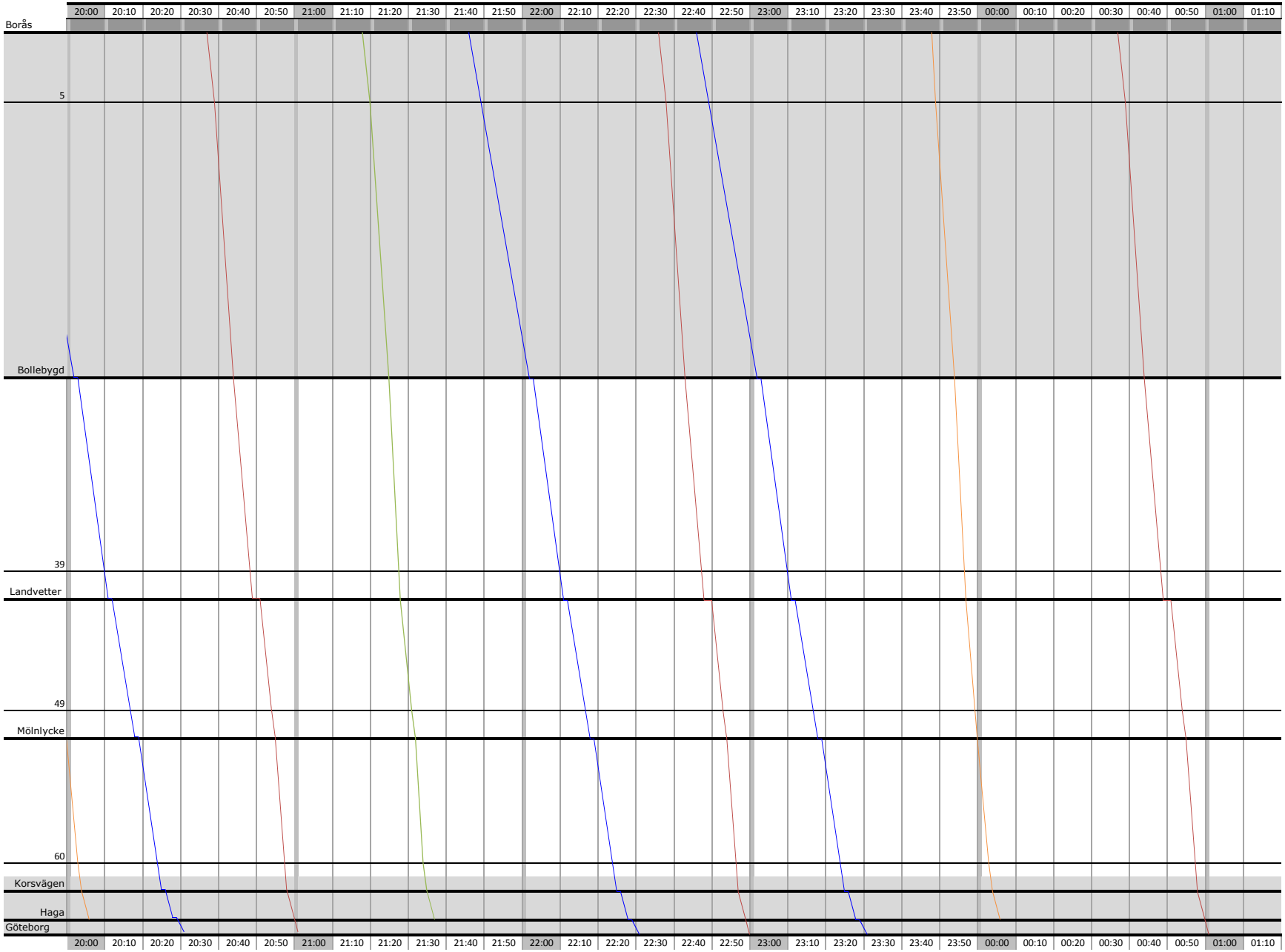
Graphic time table for US3

From Borås to Göteborg



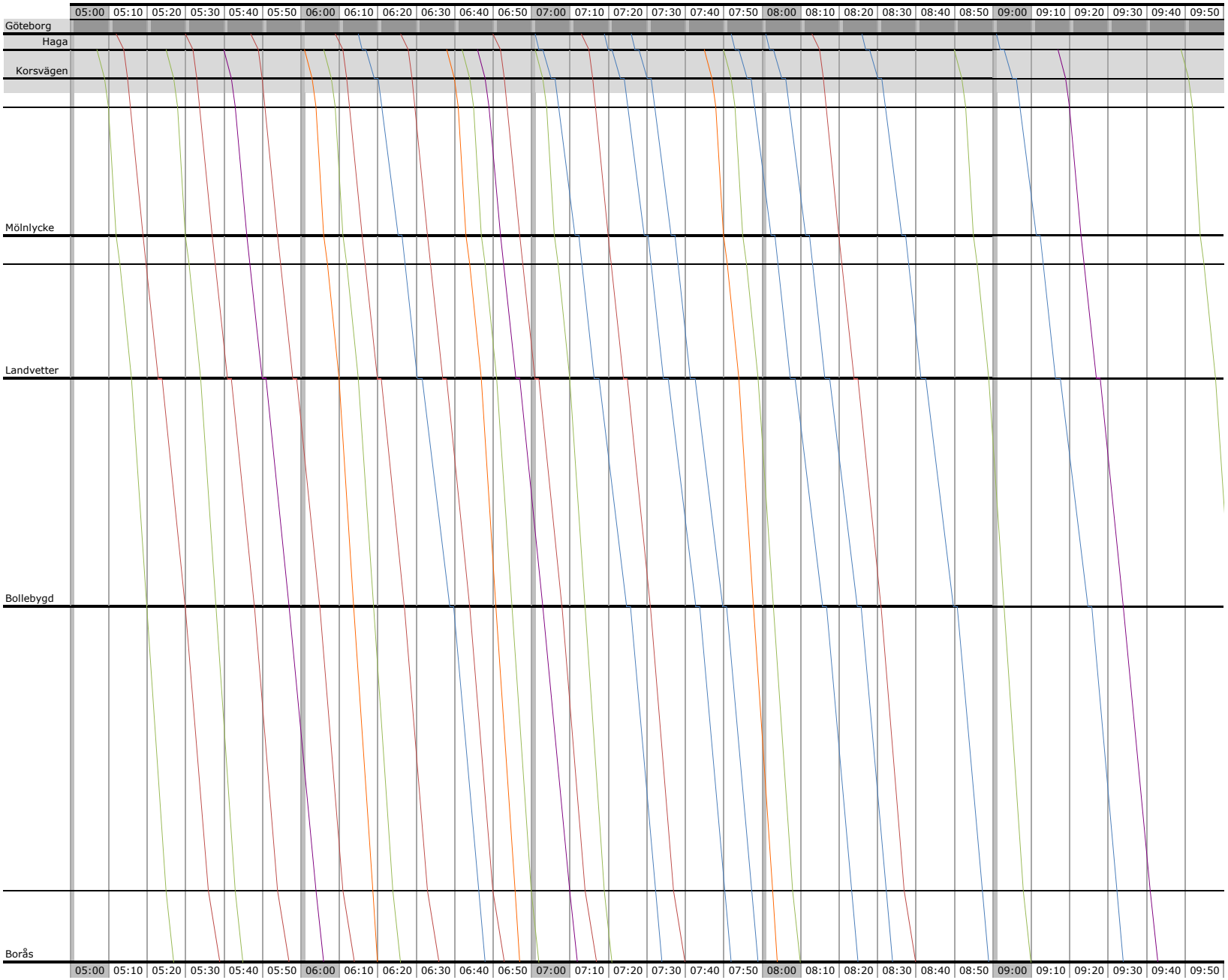
Graphic time table for US3

From Borås to Göteborg



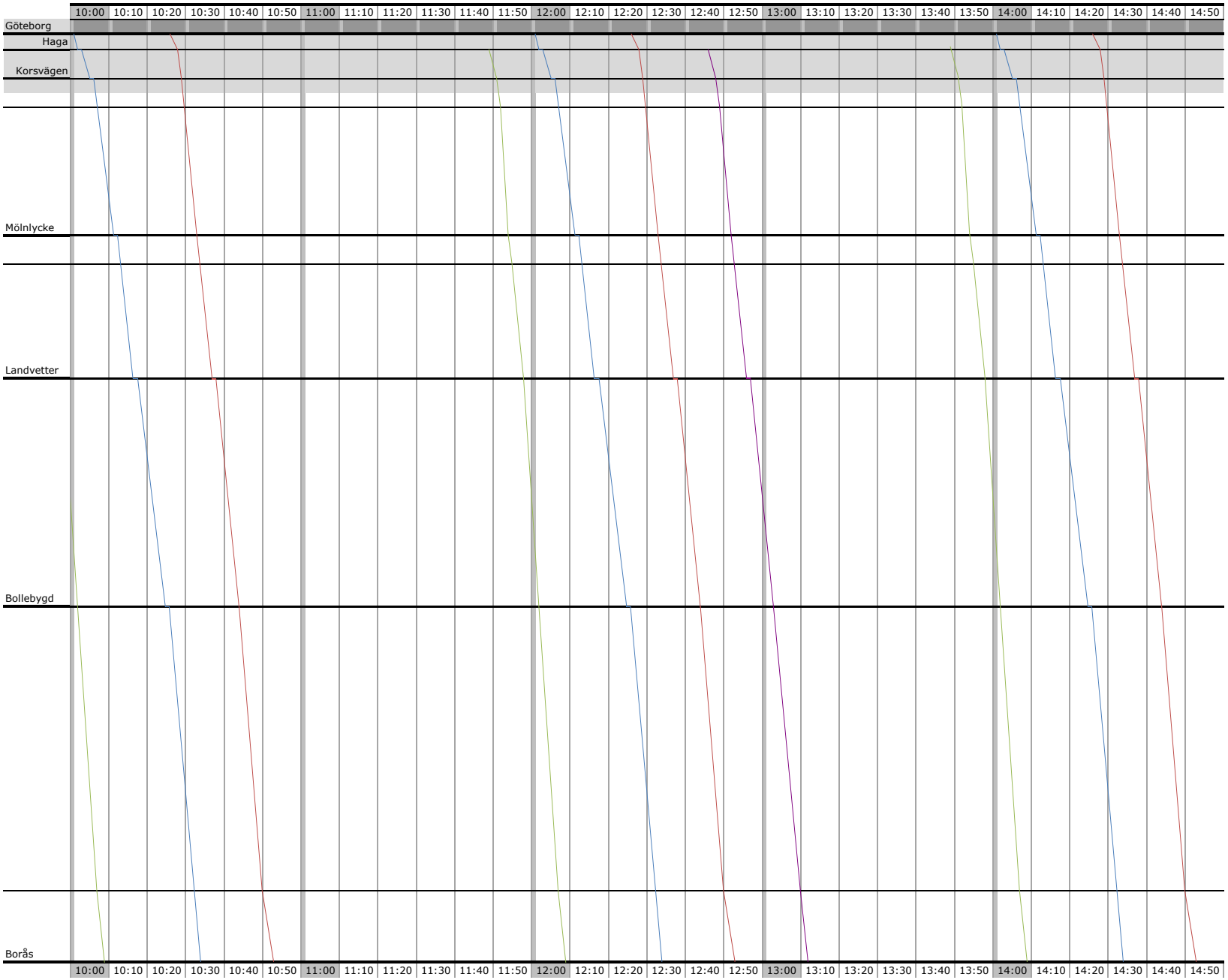
Graphic time table for US4

From Göteborg to Borås



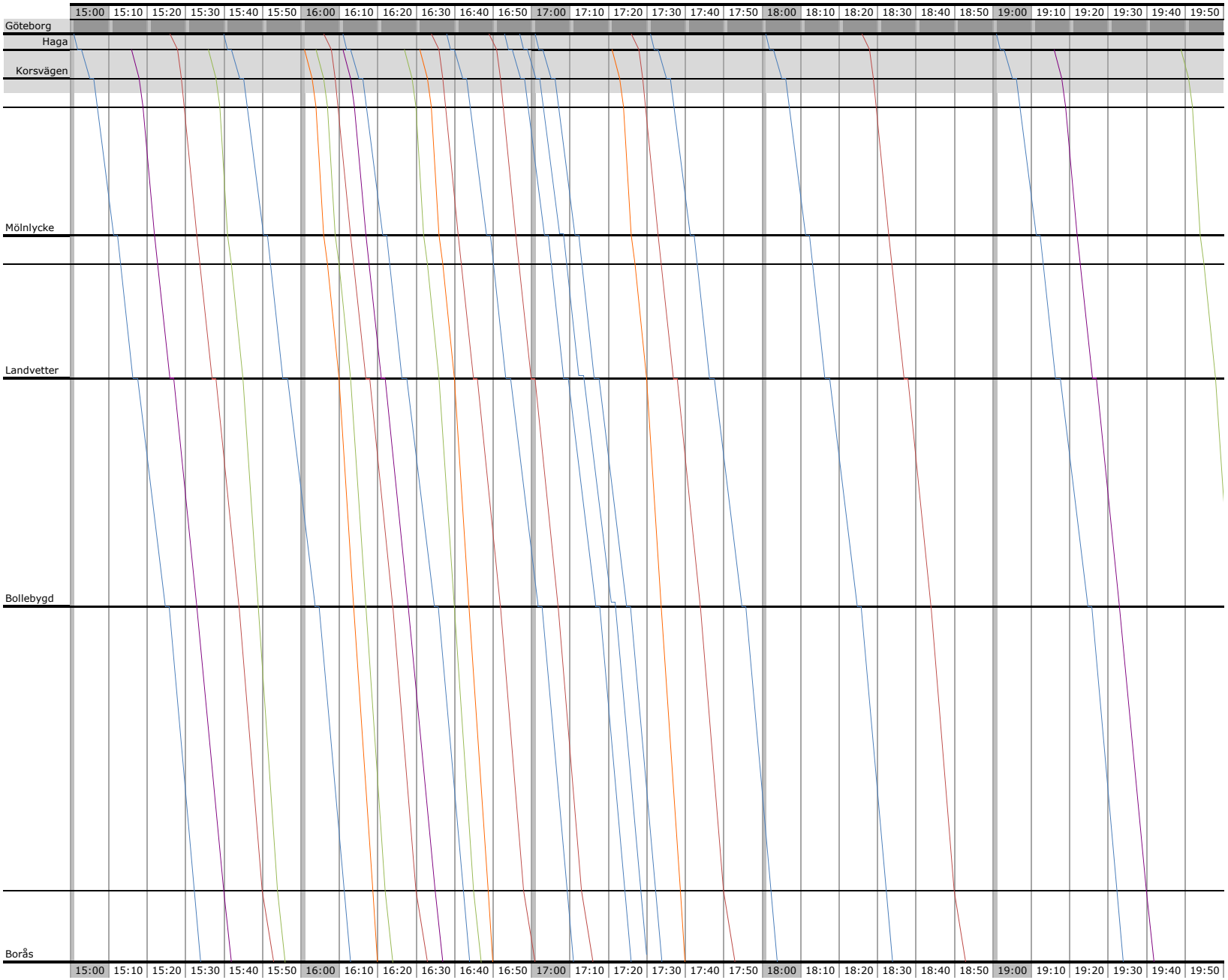
Graphic time table for US4

From Göteborg to Borås



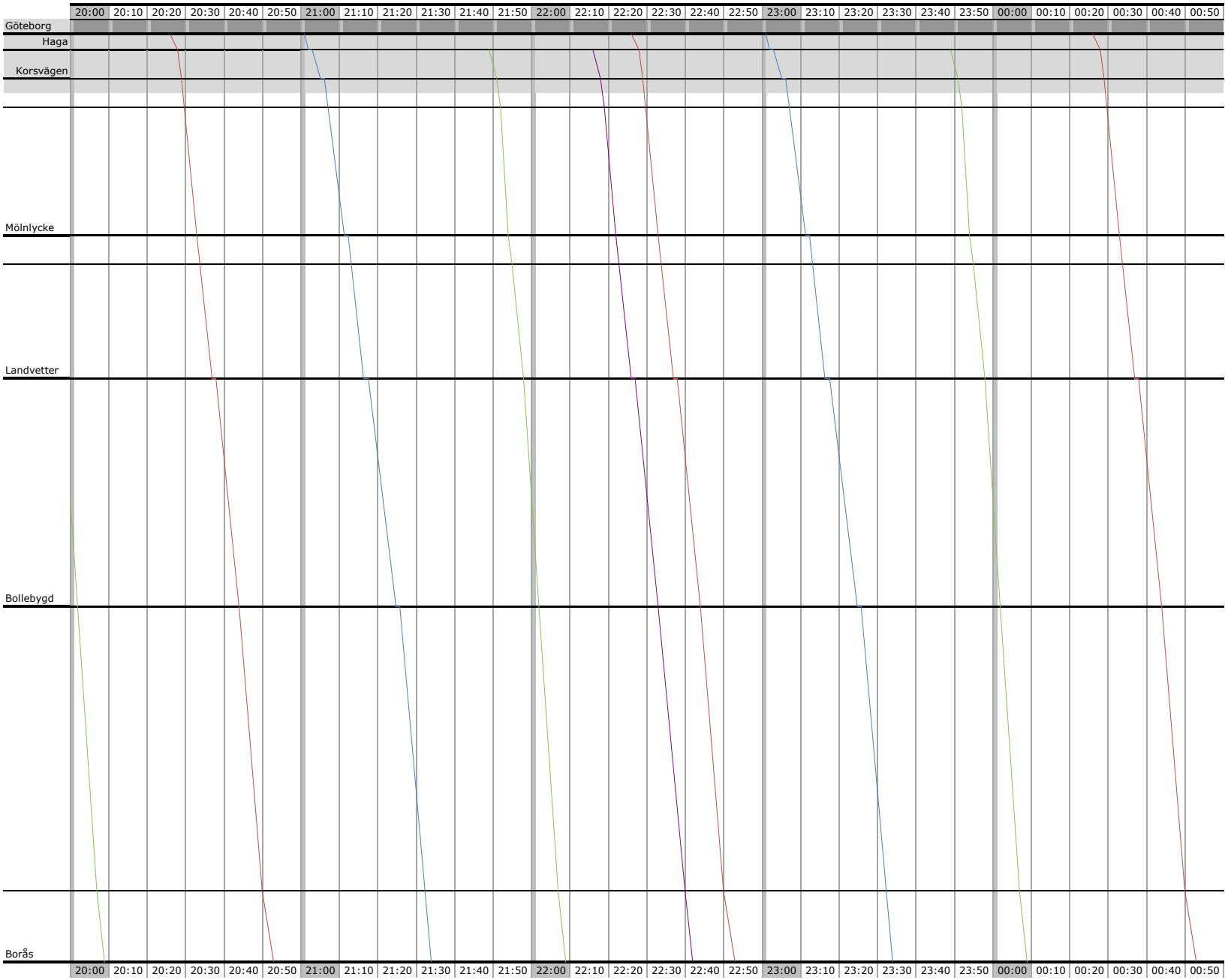
Graphic time table for US4

From Göteborg to Borås



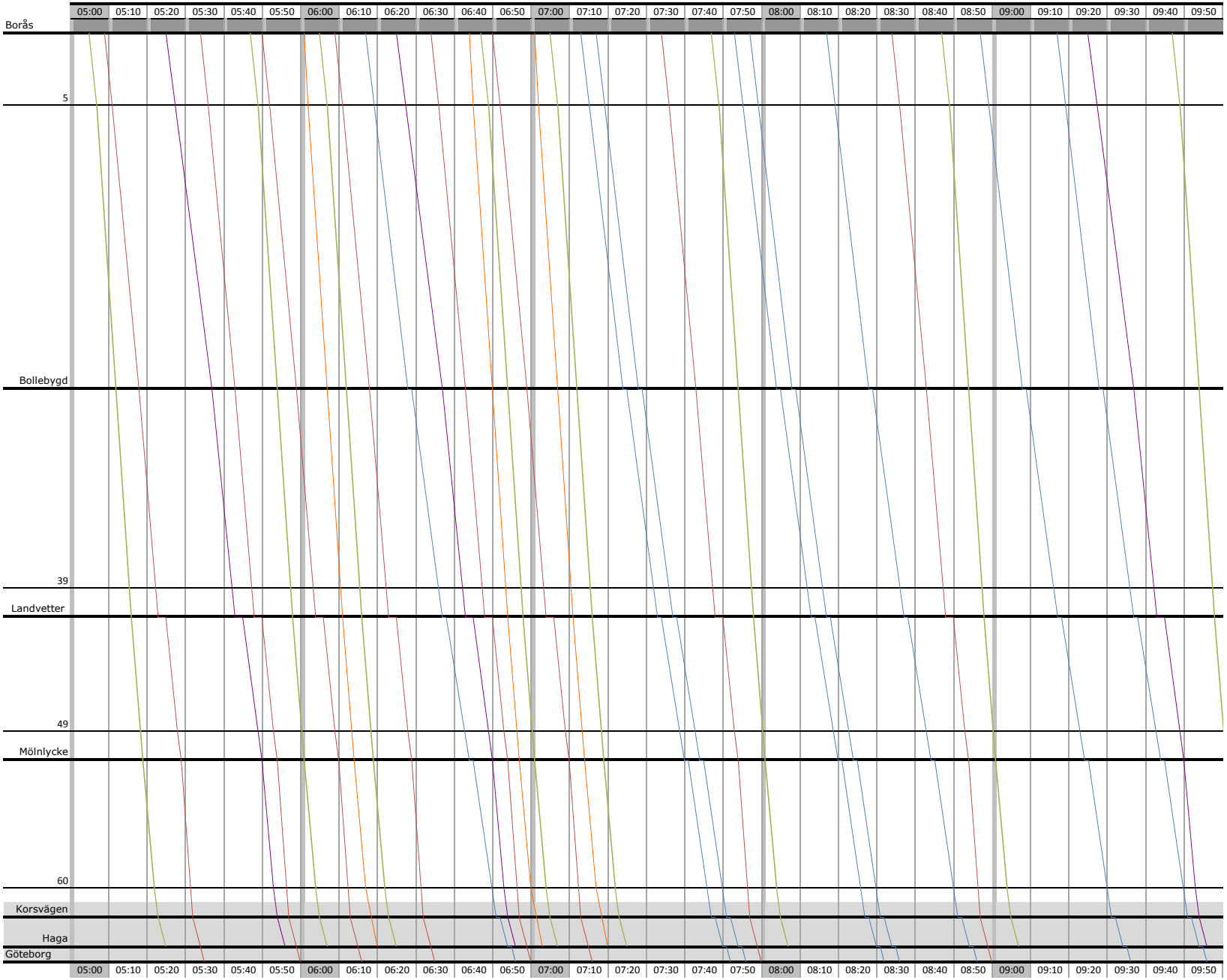
Graphic time table for US4

From Göteborg to Borås



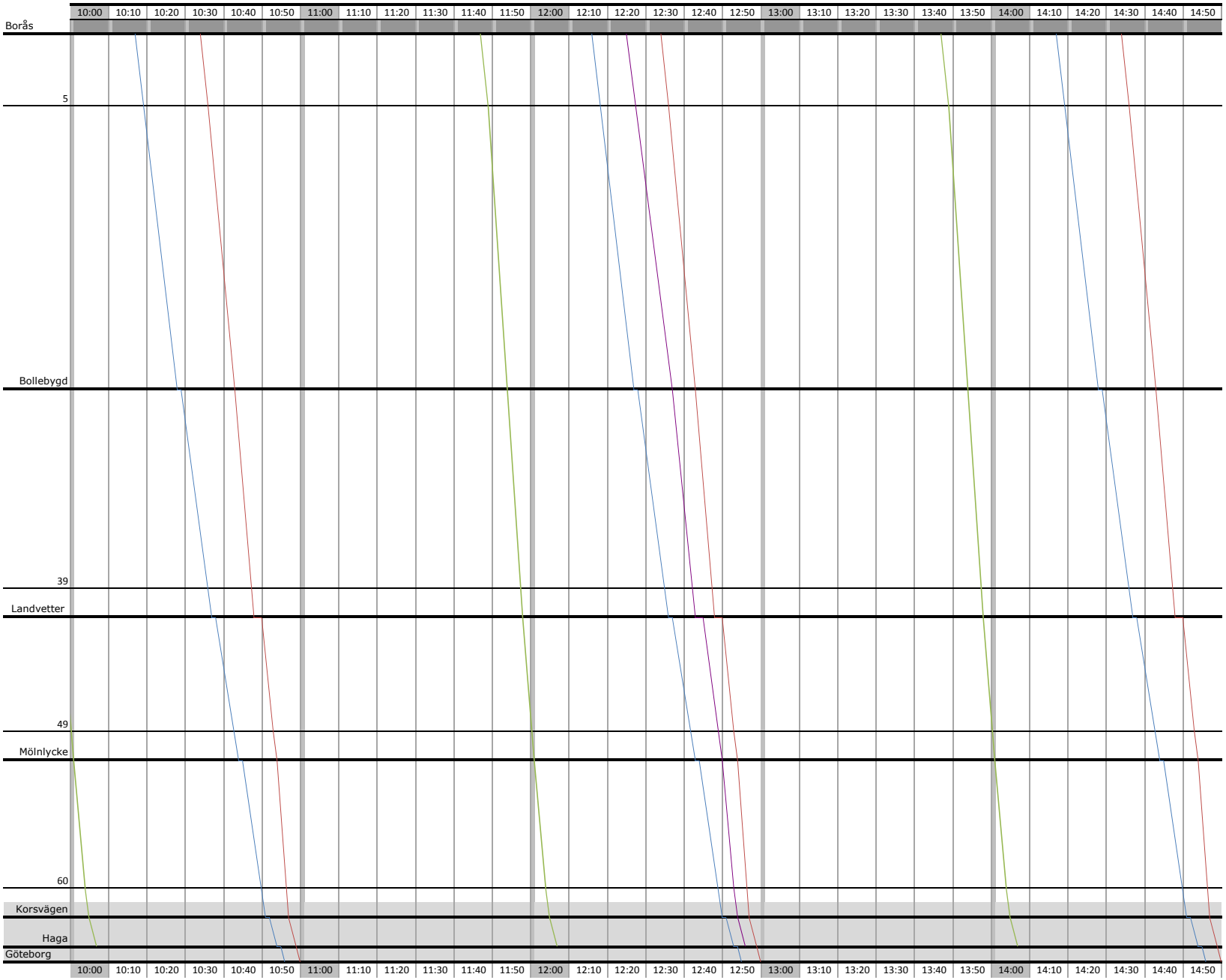
Graphic time table for US4

From Borås to Göteborg



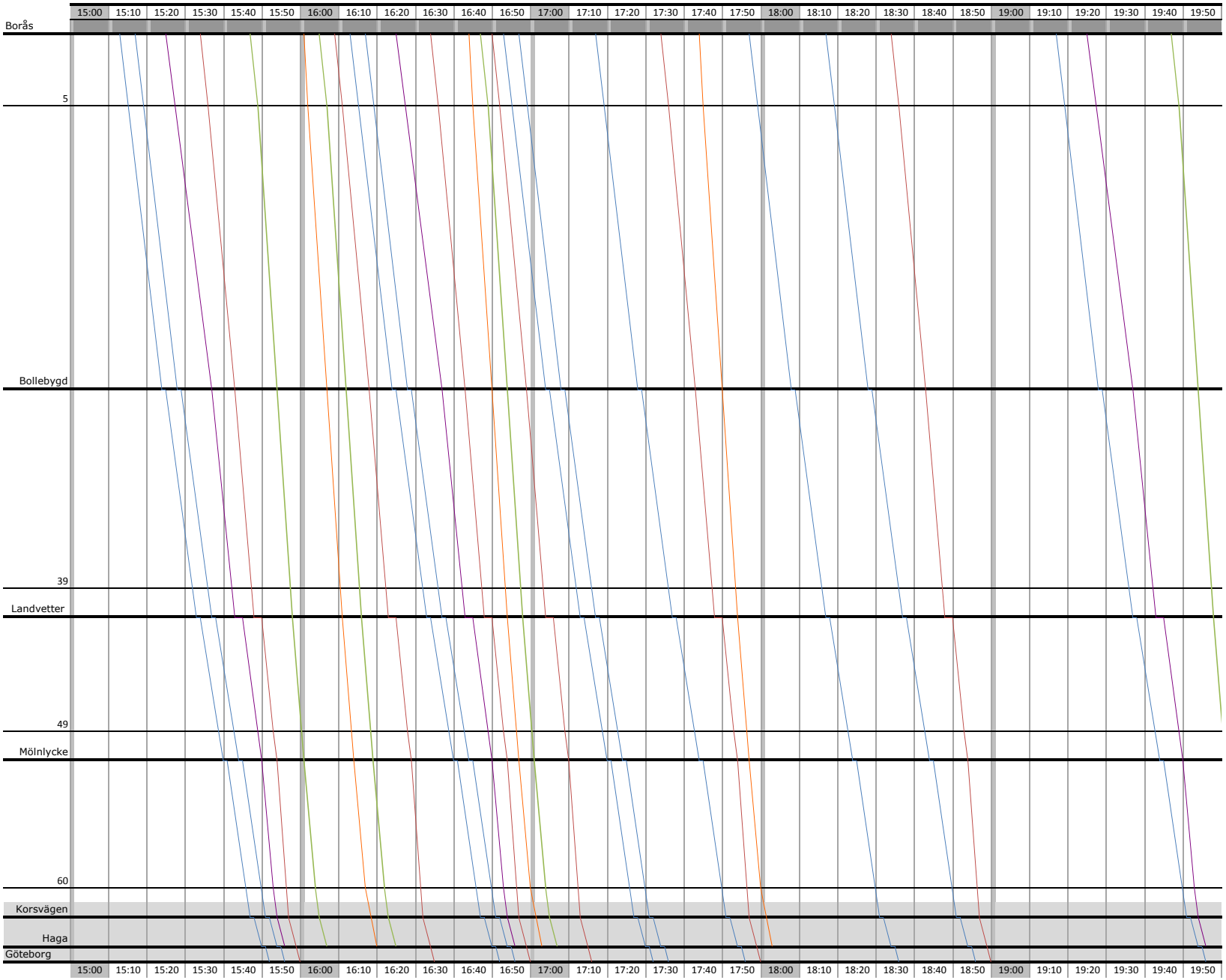
Graphic time table for US4

From Borås to Göteborg



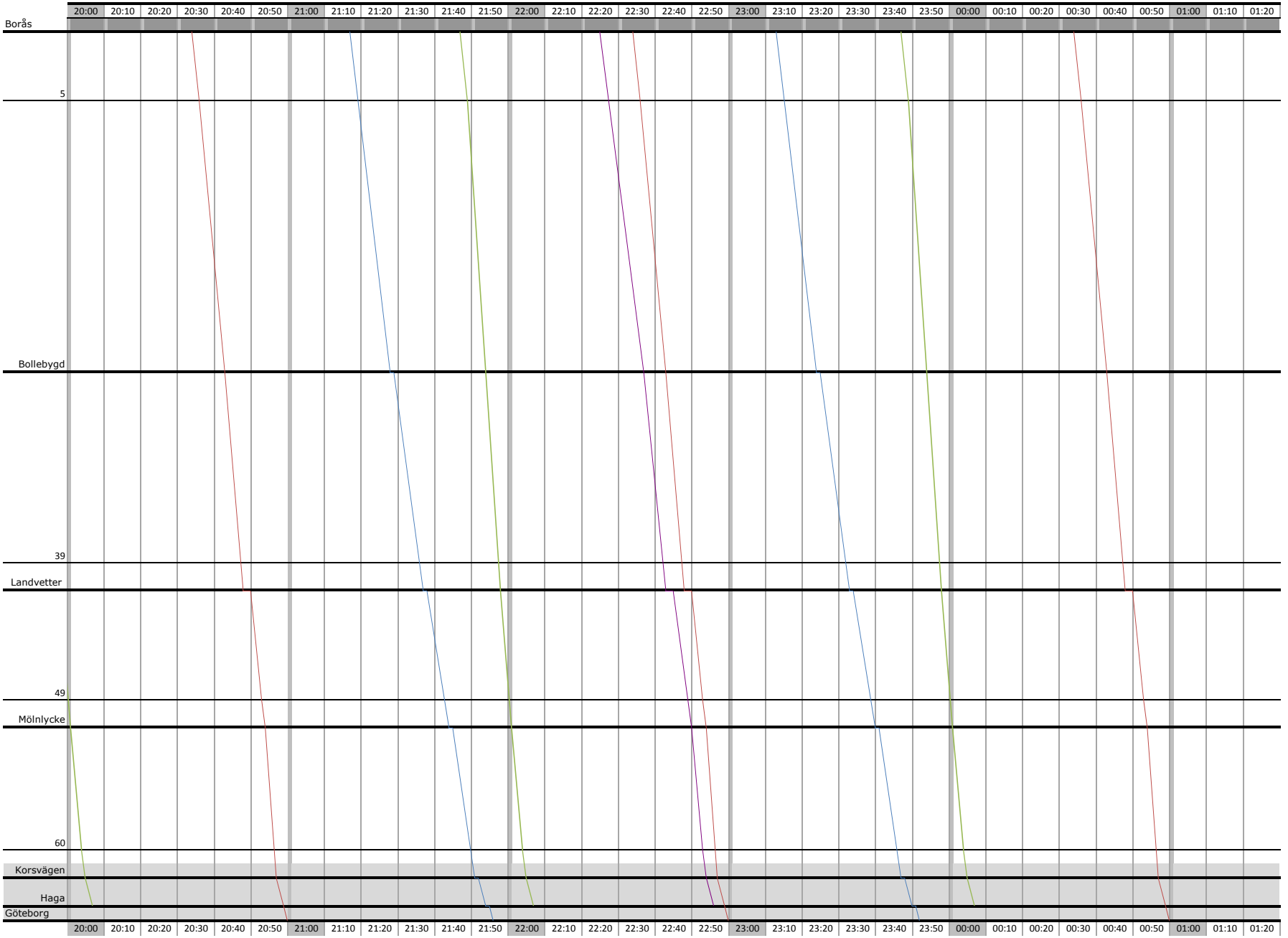
Graphic time table for US4

From Borås to Göteborg



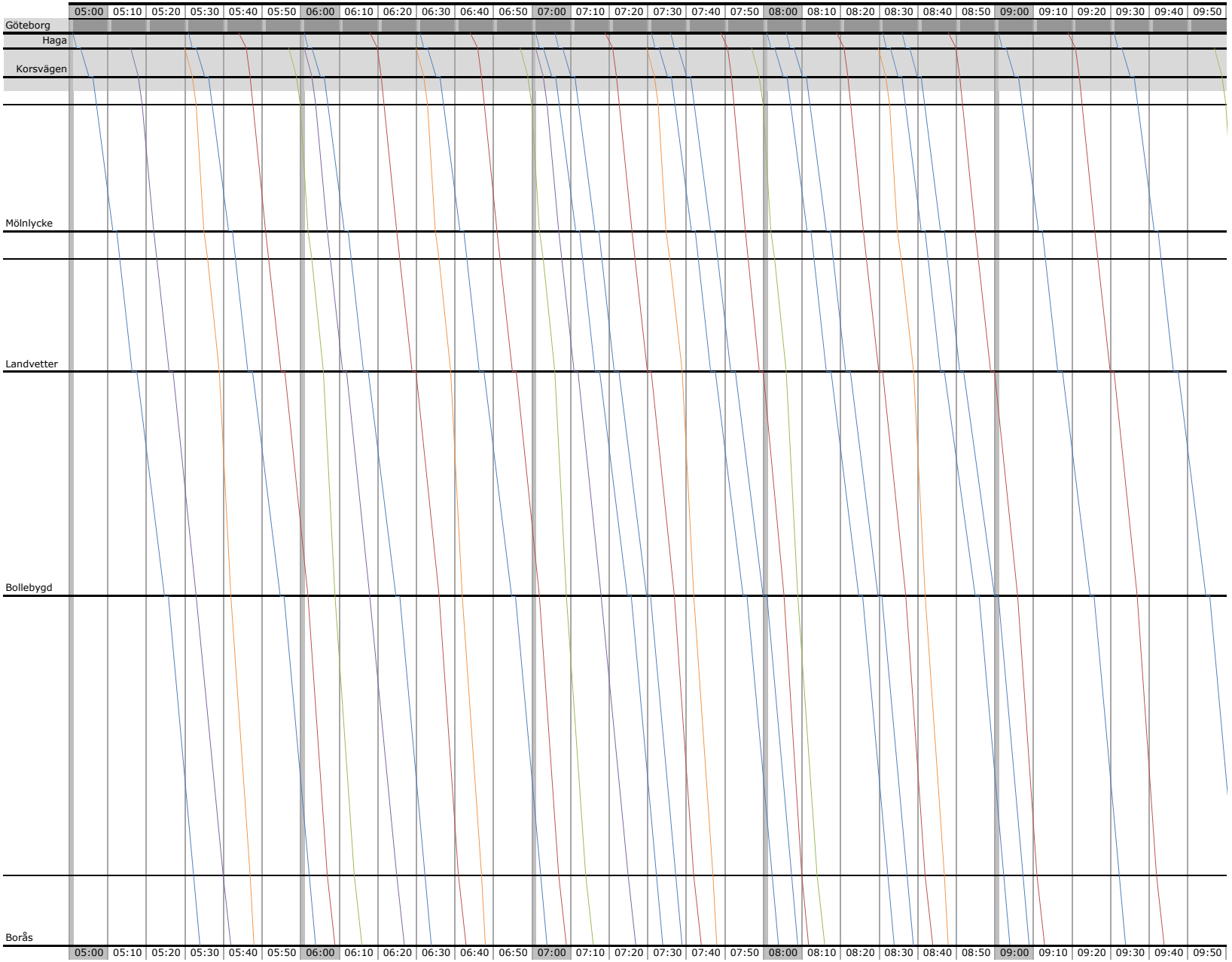
Graphic time table for US4

From Borås to Göteborg



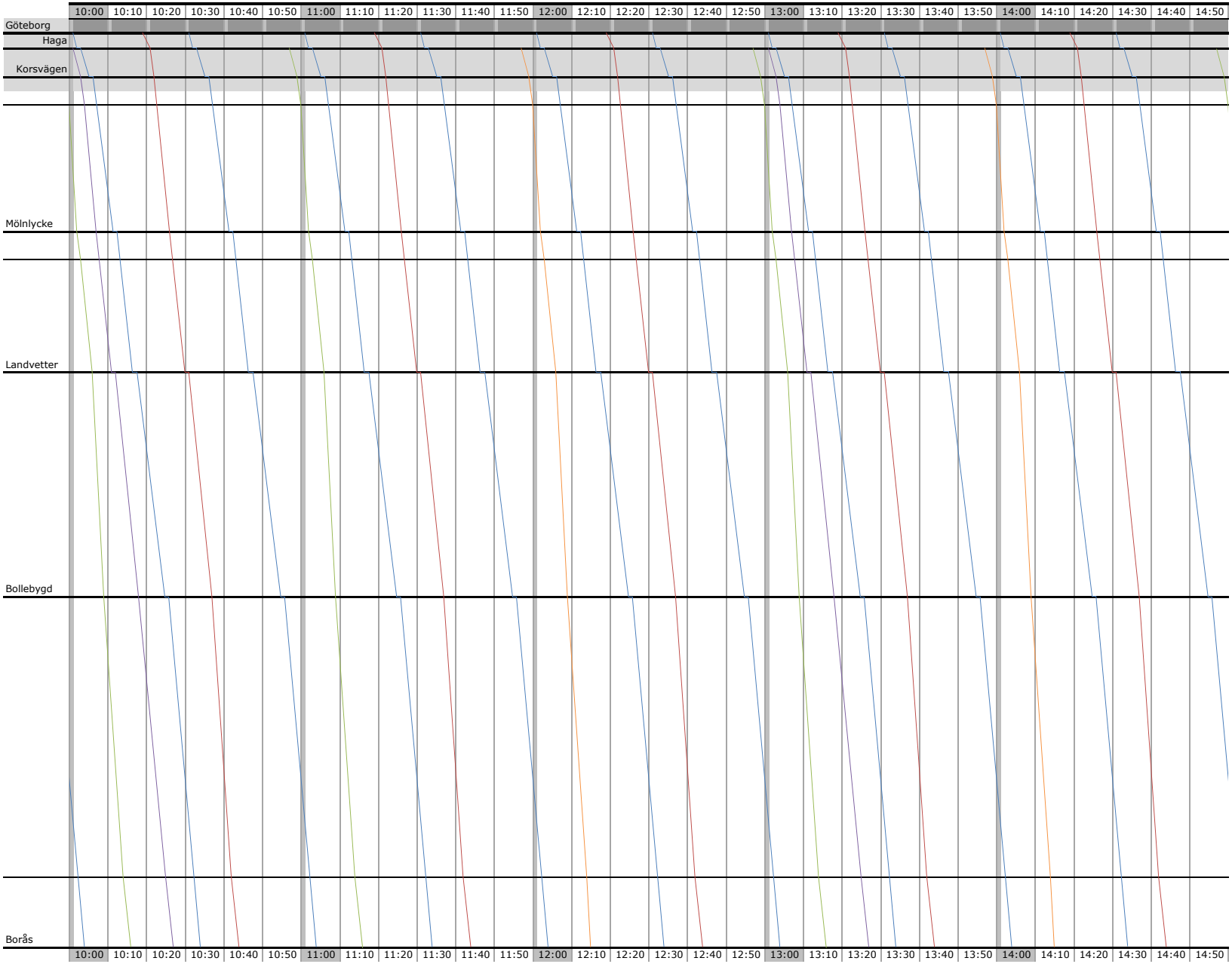
Graphic time table for VT1 (US1-2)

From Göteborg to Borås



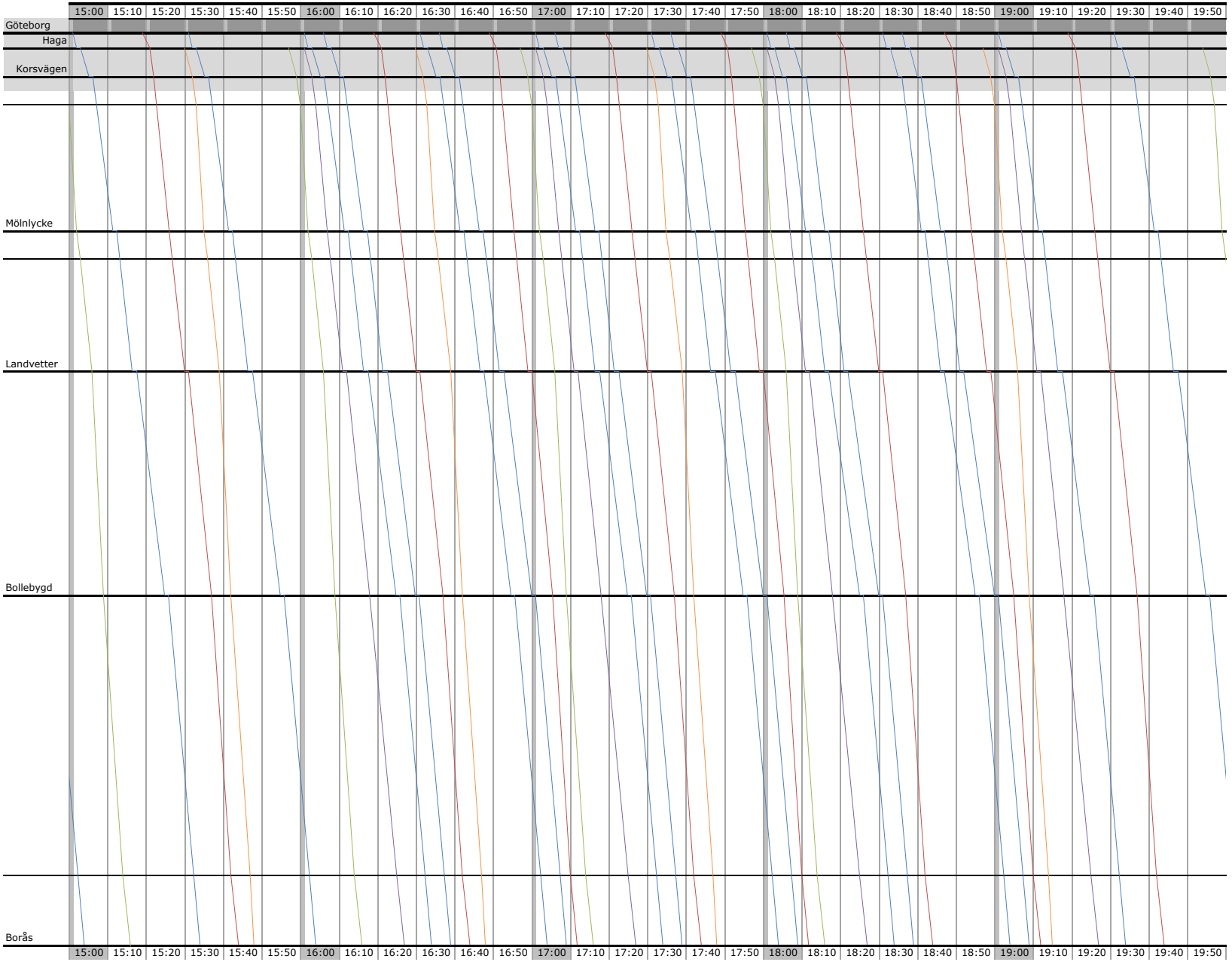
Graphic time table for VT1 (US1-2)

From Göteborg to Borås



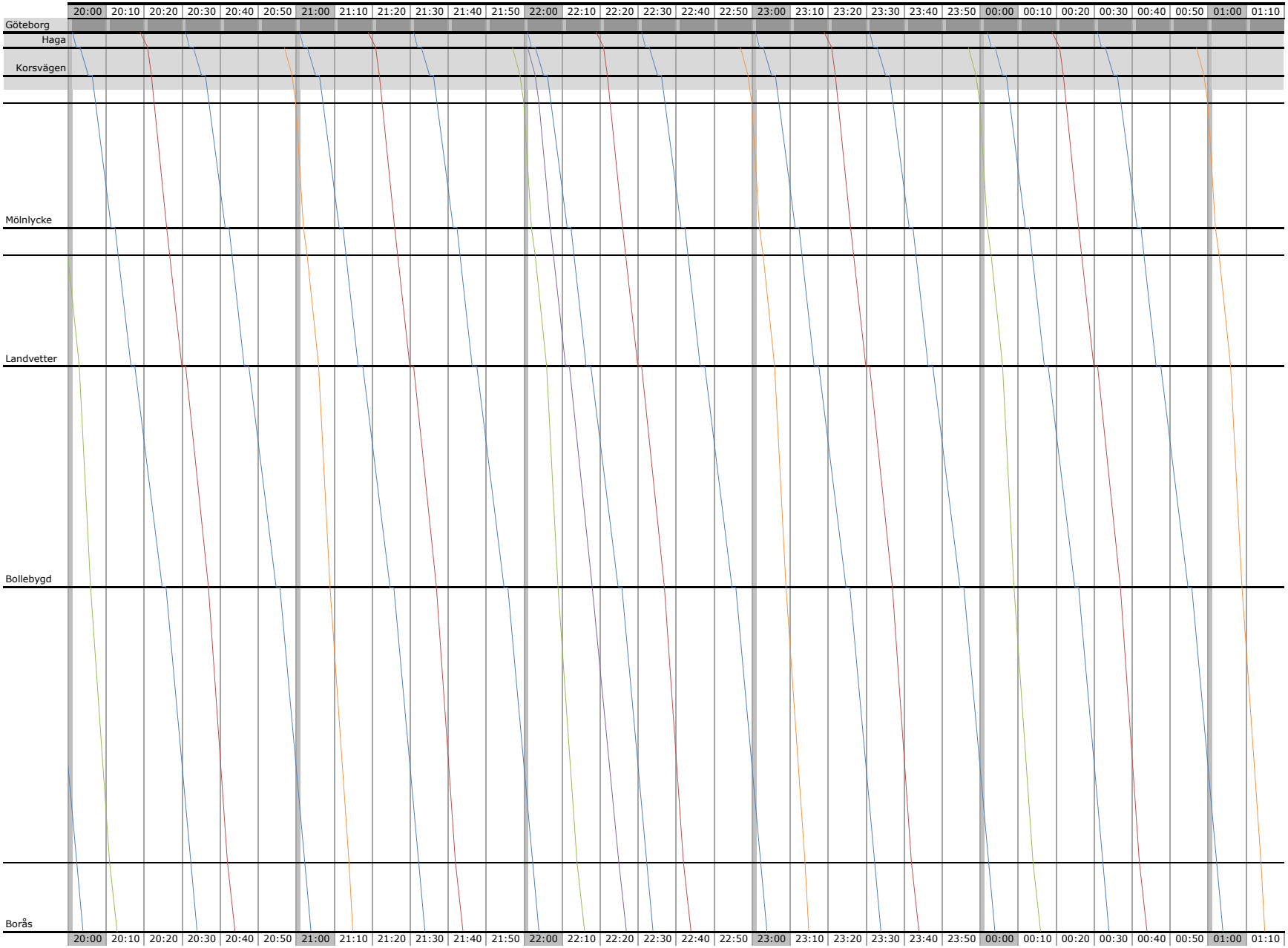
Graphic time table for VT1 (US1-2)

From Göteborg to Borås



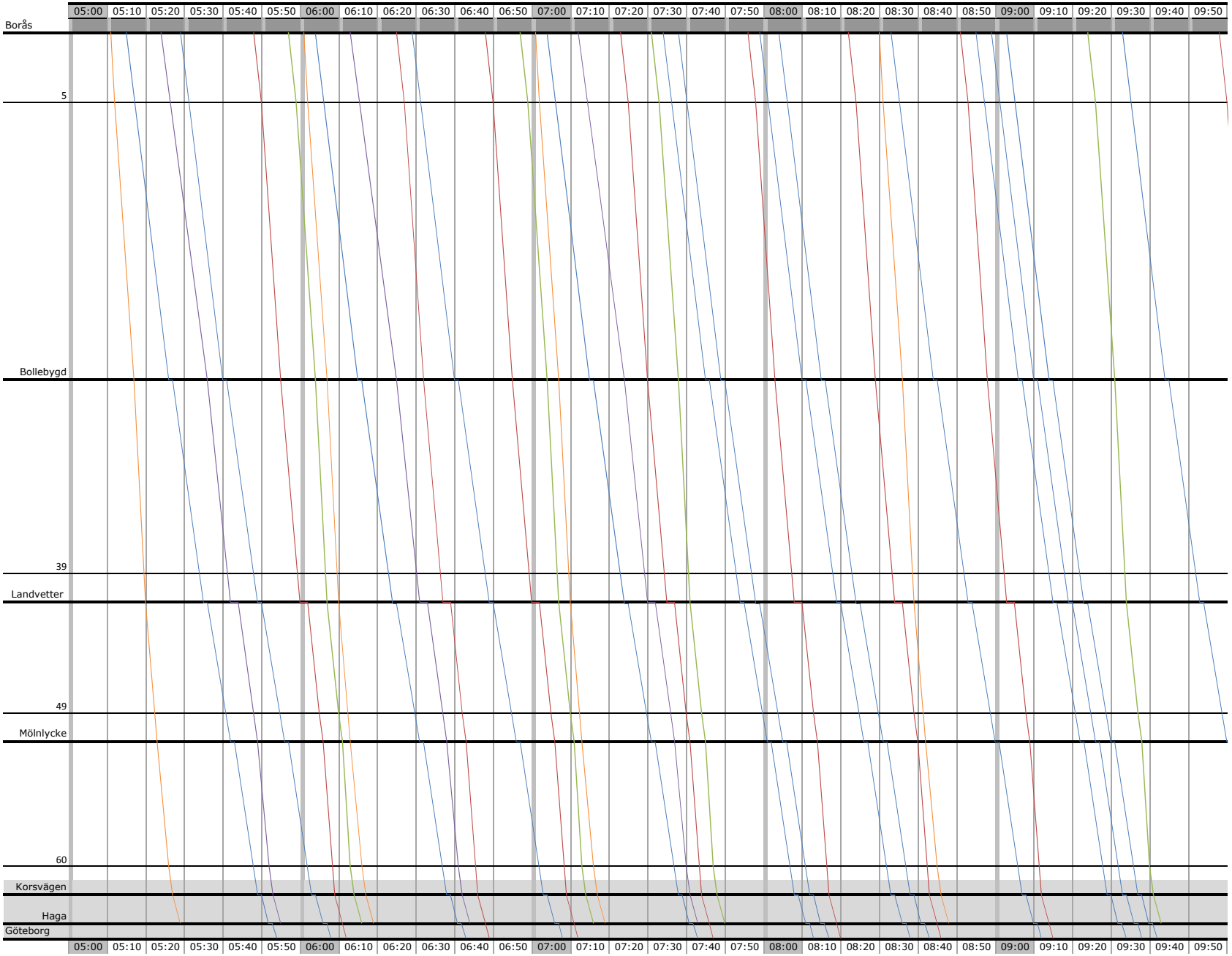
Graphic time table for VT1 (US1-2)

From Göteborg to Borås



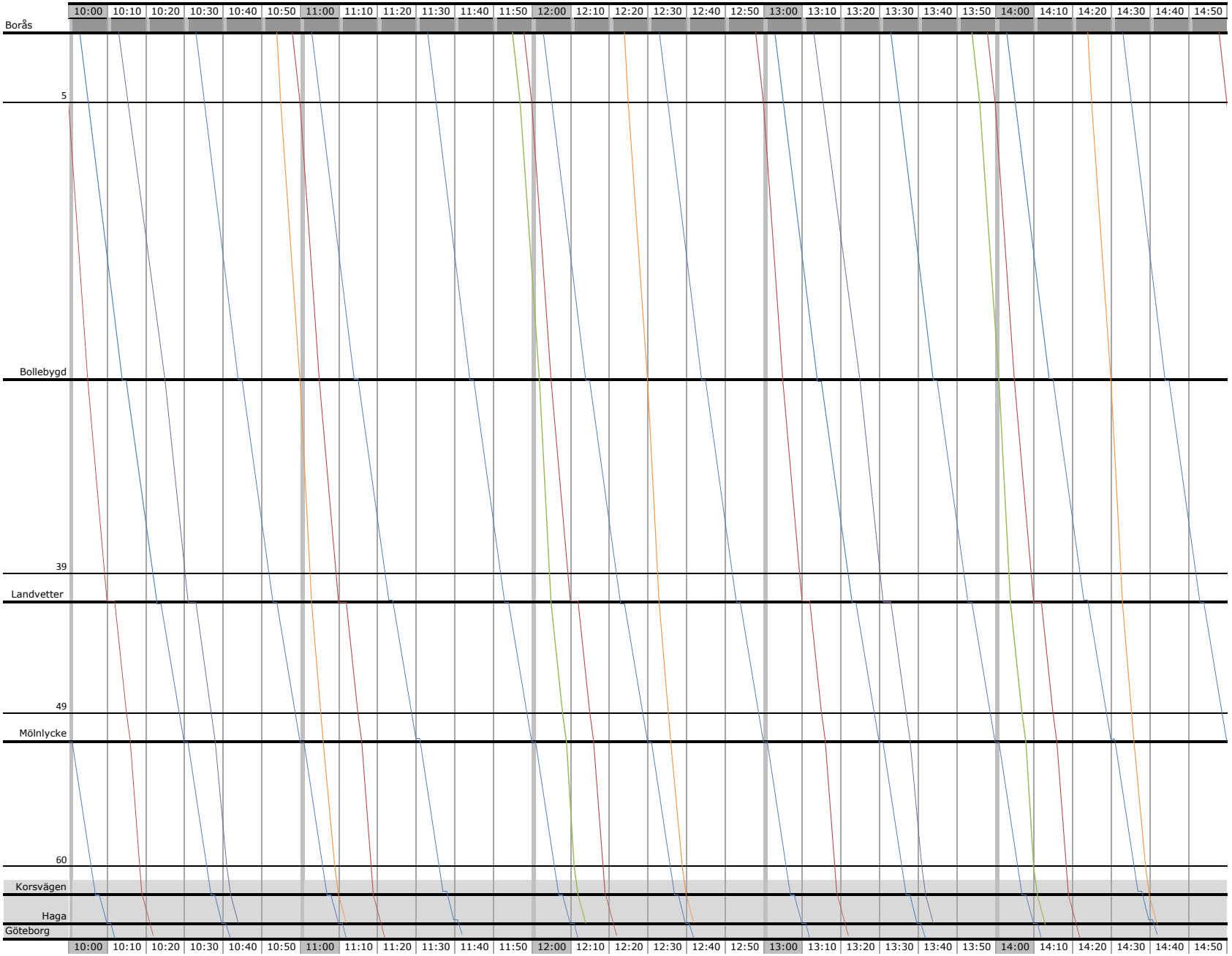
Graphic time table for VT1 (US1-2)

From Borås to Göteborg



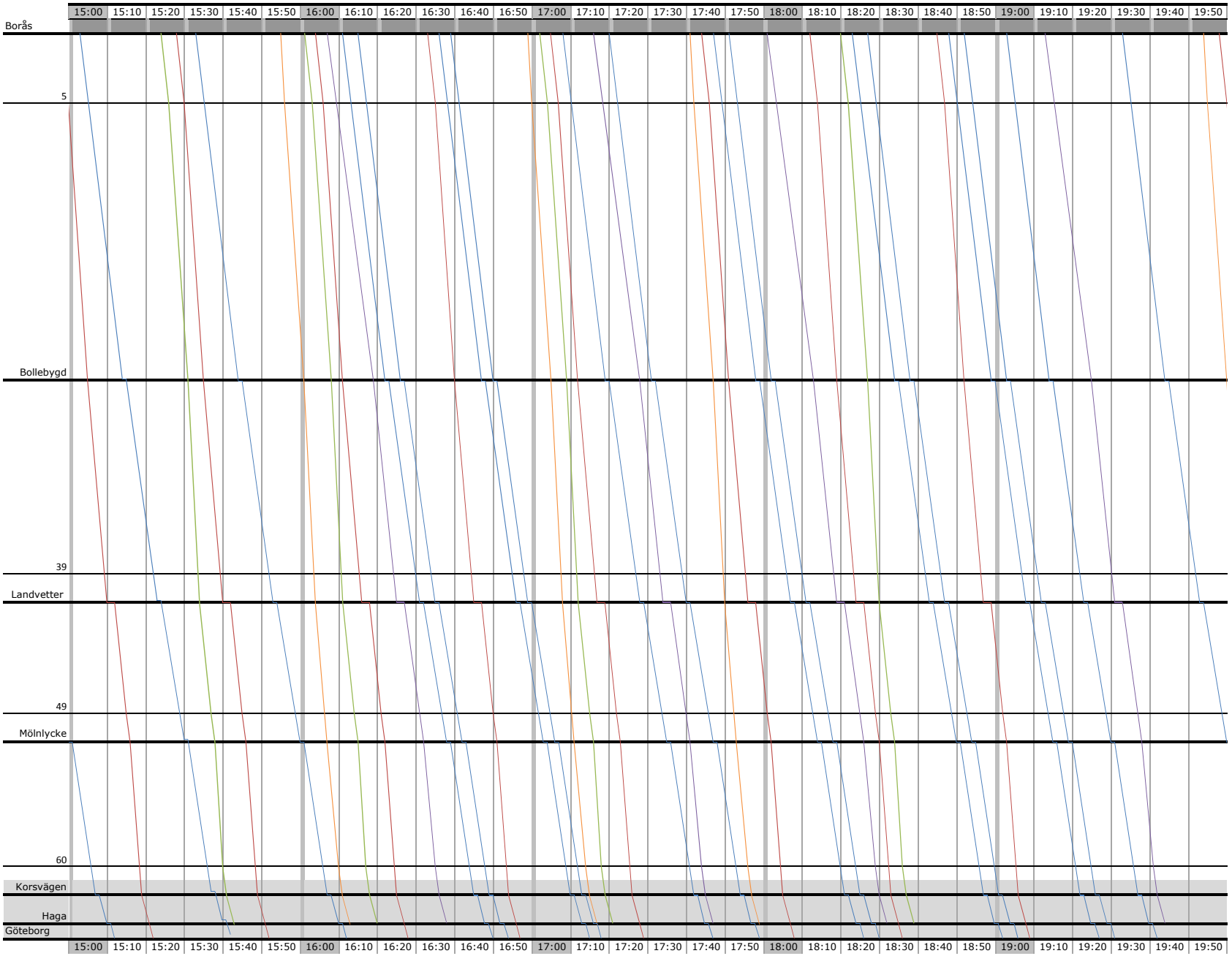
Graphic time table for VT1 (US1-2)

From Borås to Göteborg



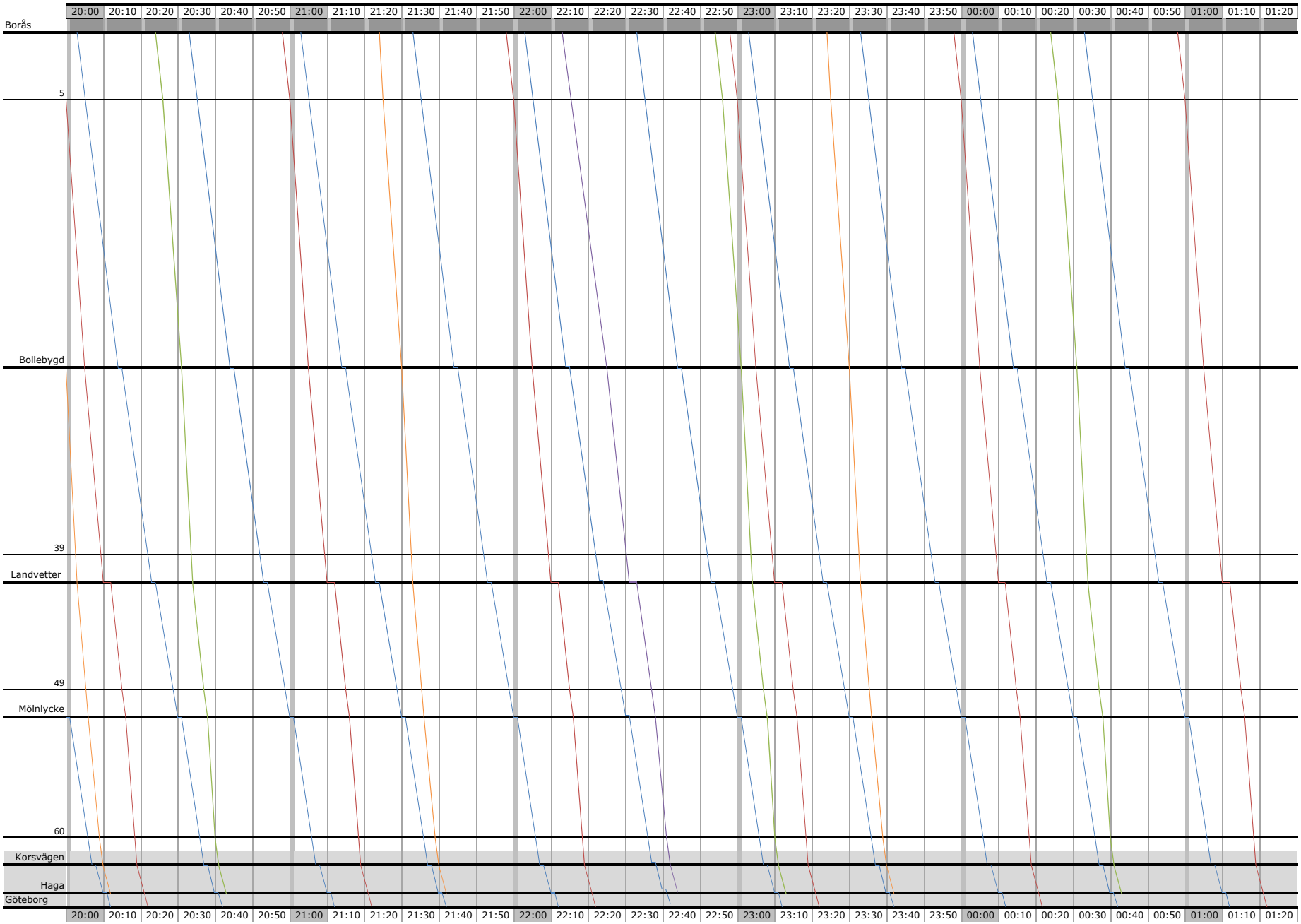
Graphic time table for VT1 (US1-2)

From Borås to Göteborg



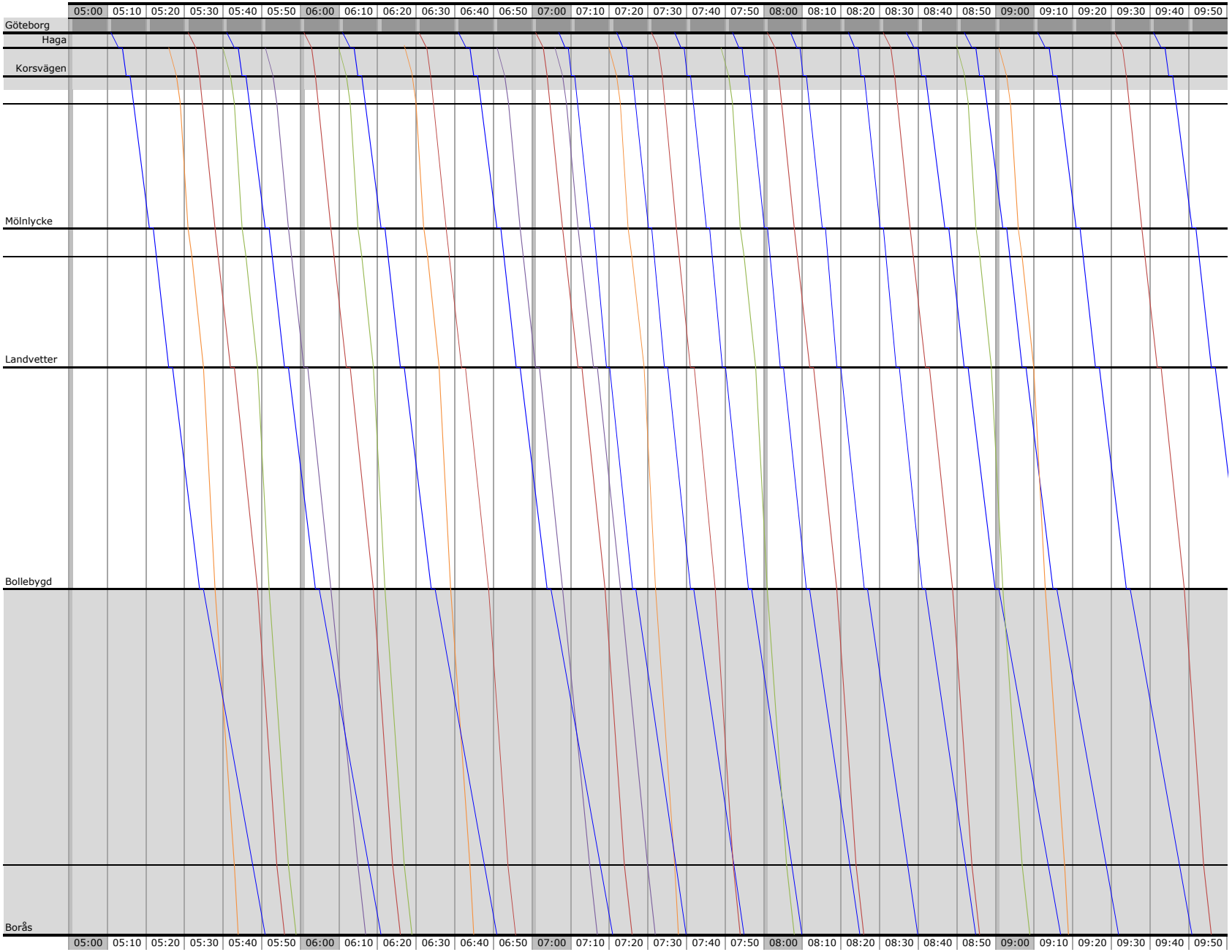
Graphic time table for VT1 (US1-2)

From Borås to Göteborg



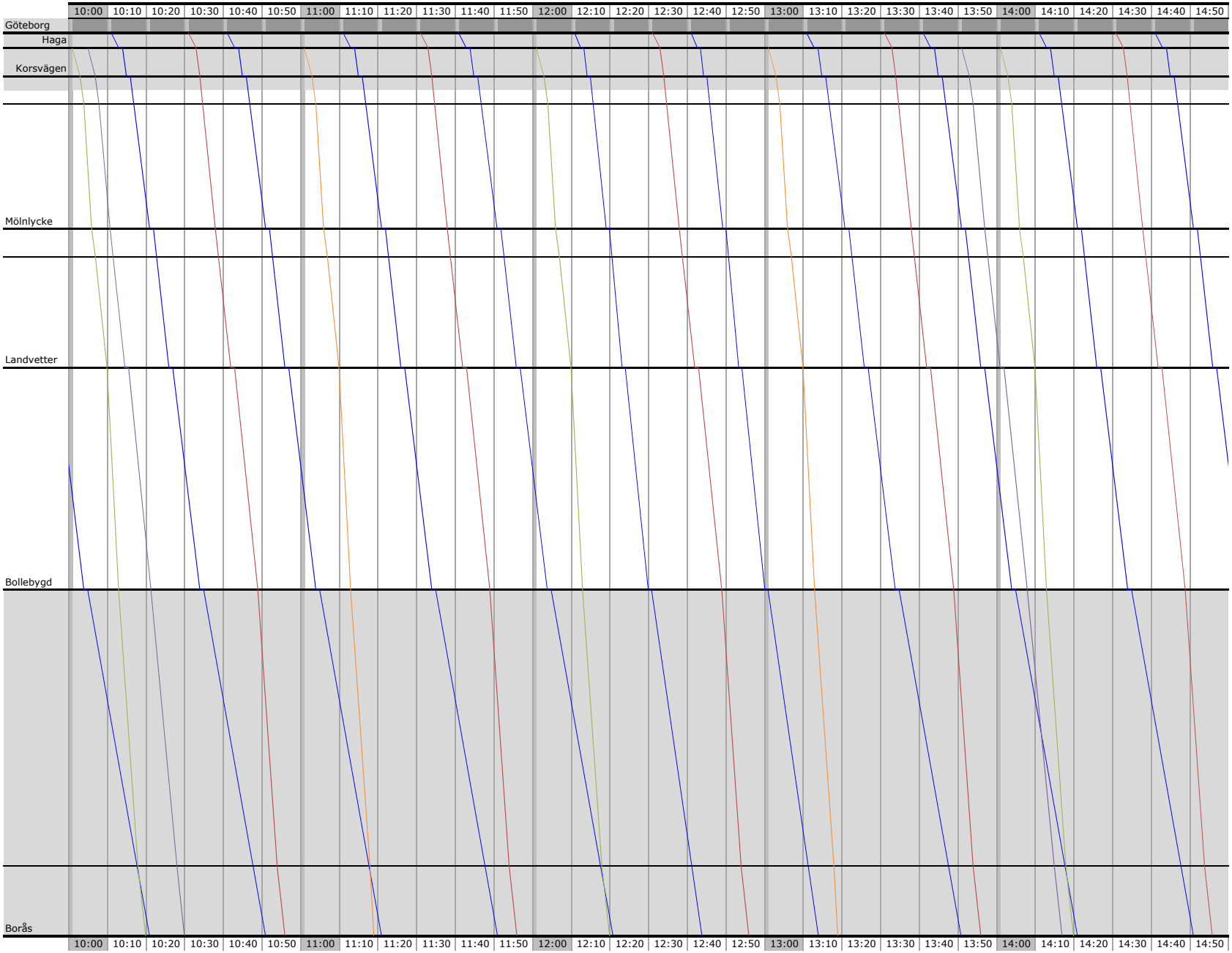
Graphic time table for VT1 (US3)

From Göteborg to Borås



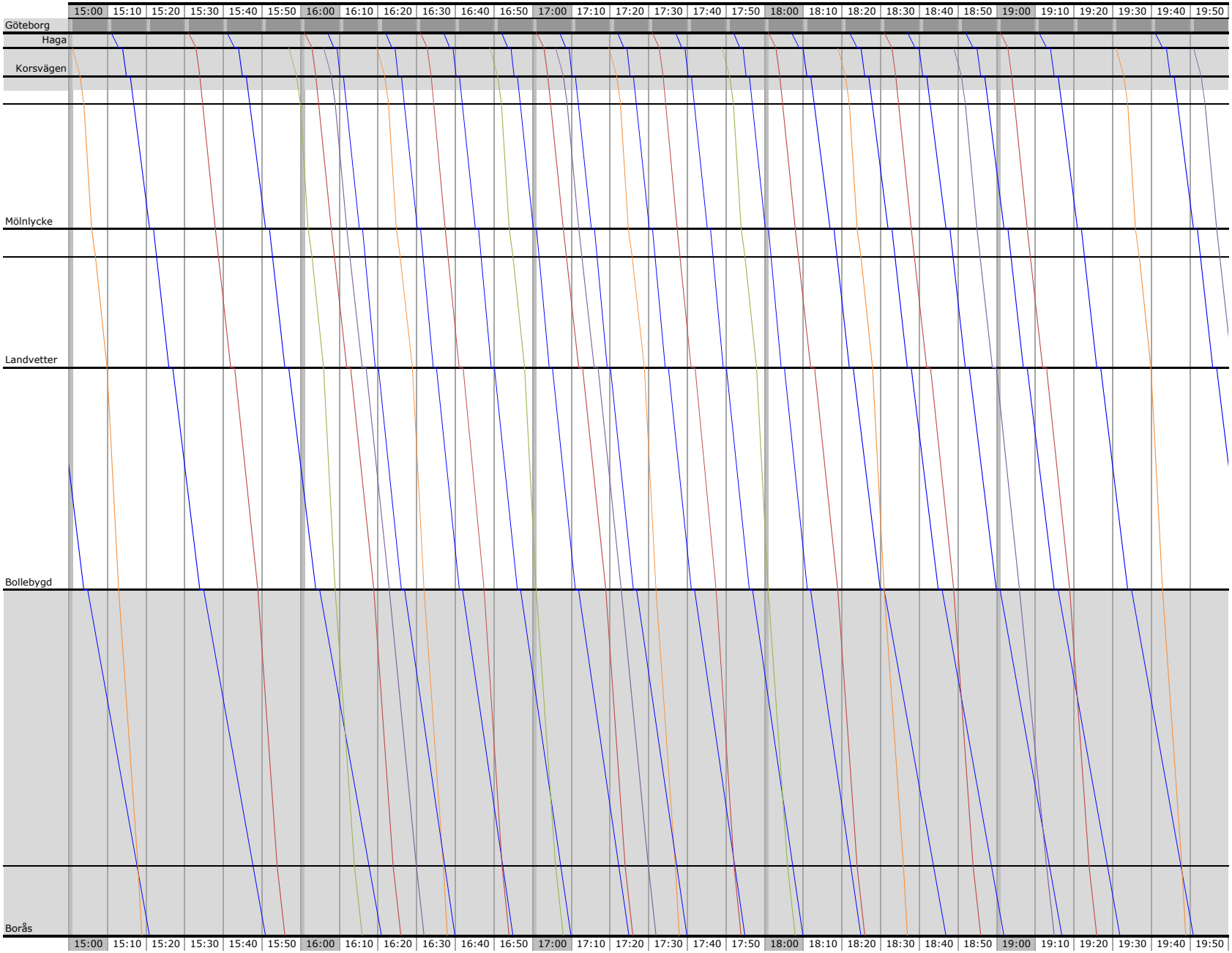
Graphic time table for VT1 (US3)

From Göteborg to Borås



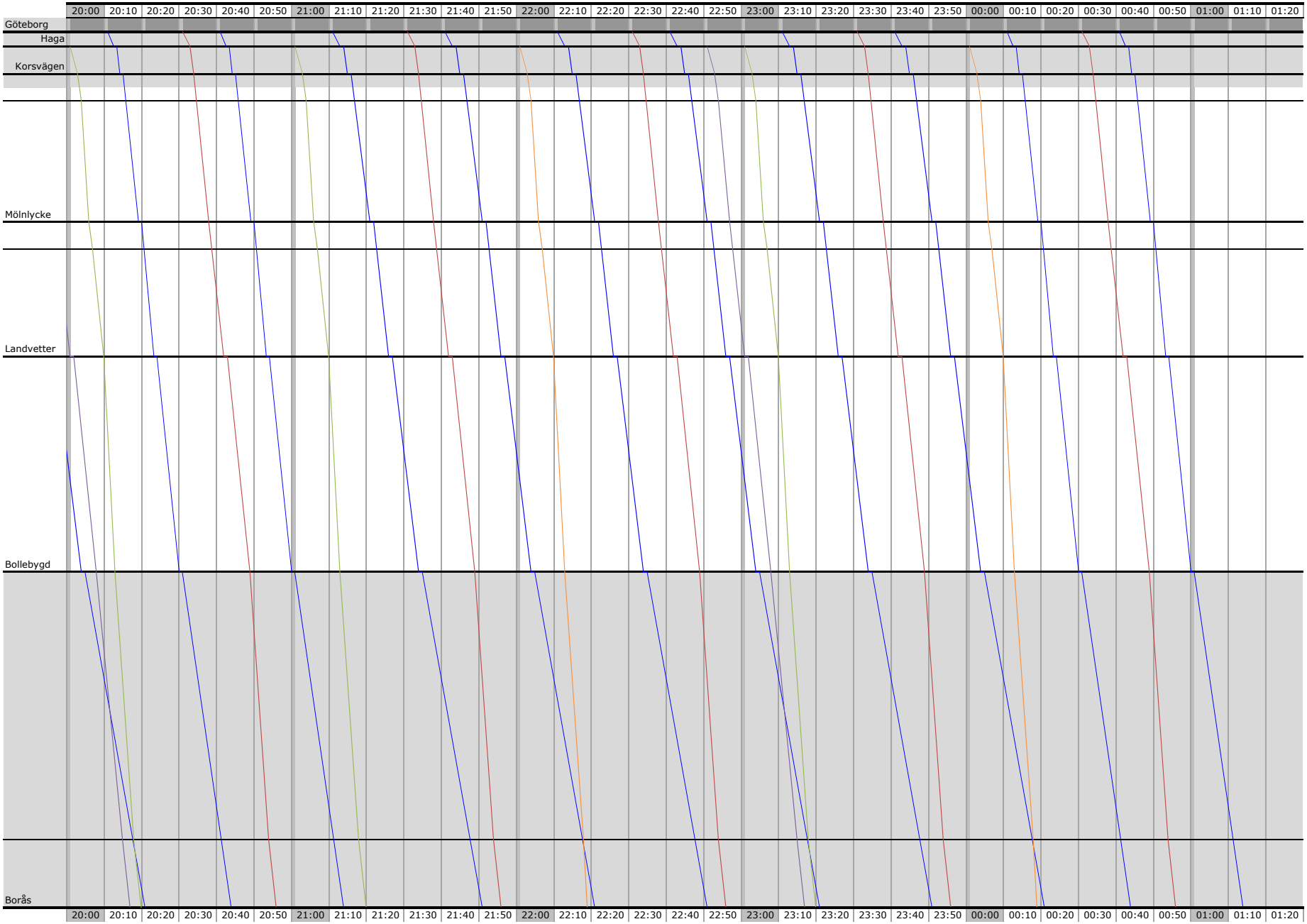
Graphic time table for VT1 (US3)

From Göteborg to Borås



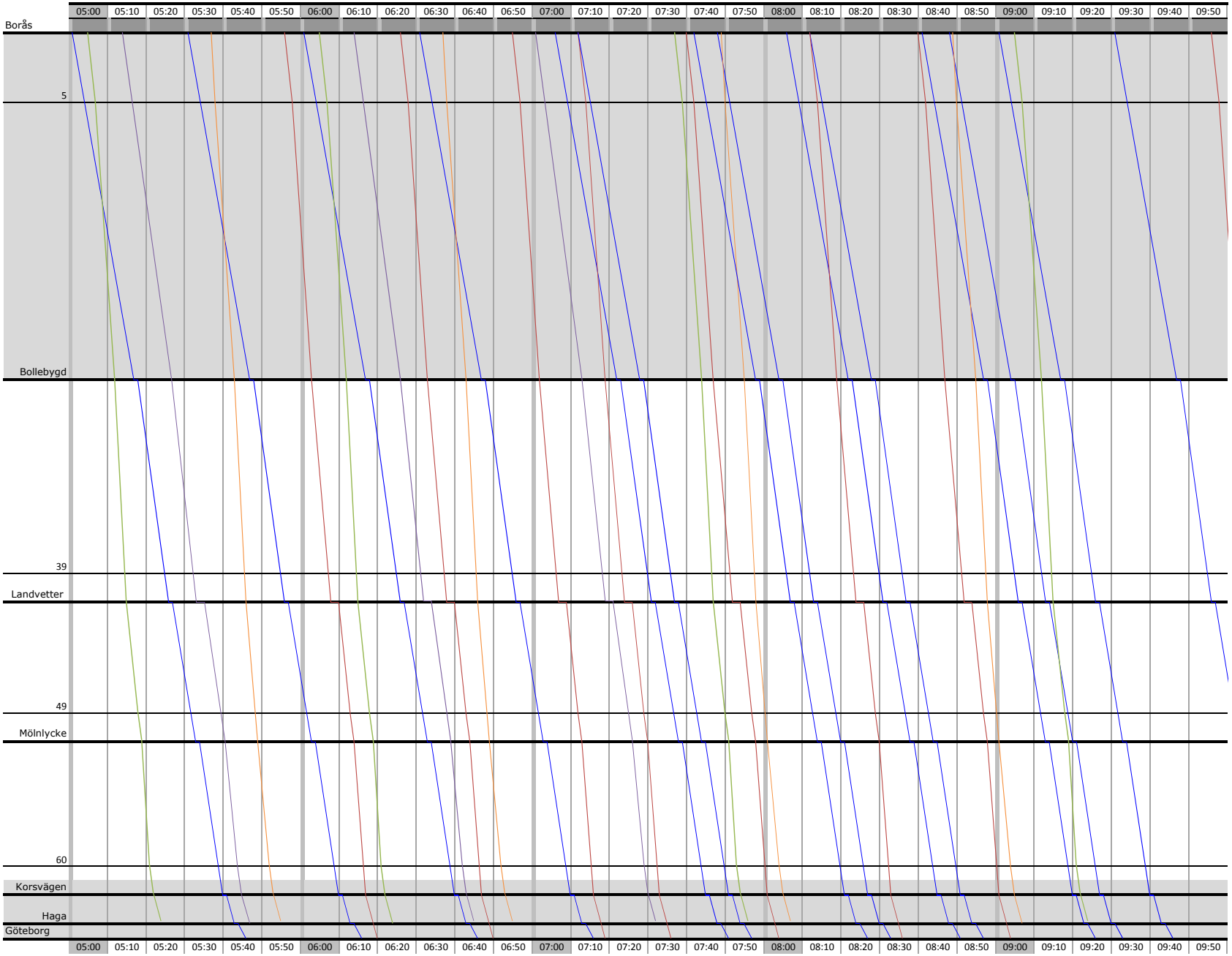
Graphic time table for VT1 (US3)

From Göteborg to Borås



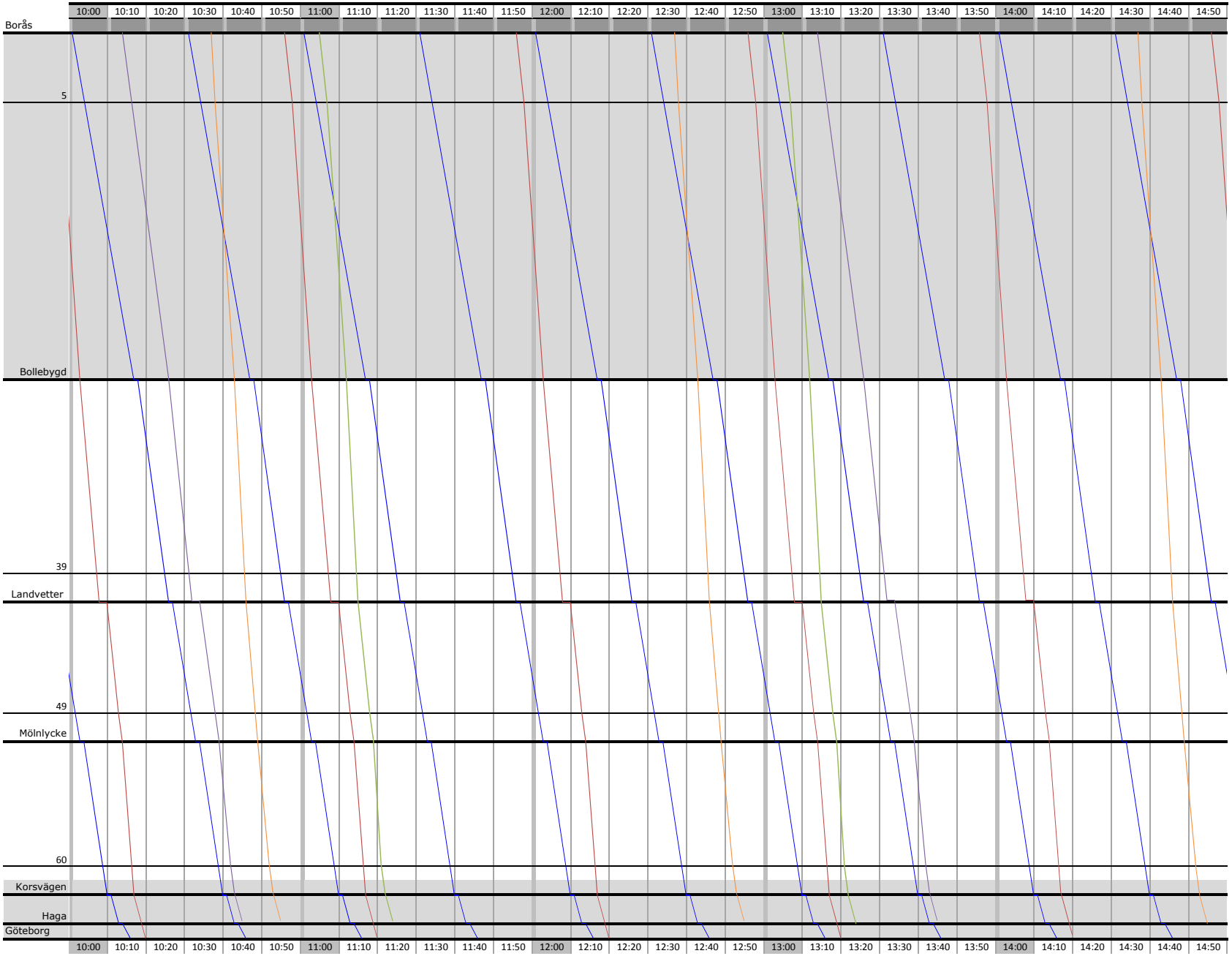
Graphic time table for VT1 (US3)

From Borås to Göteborg



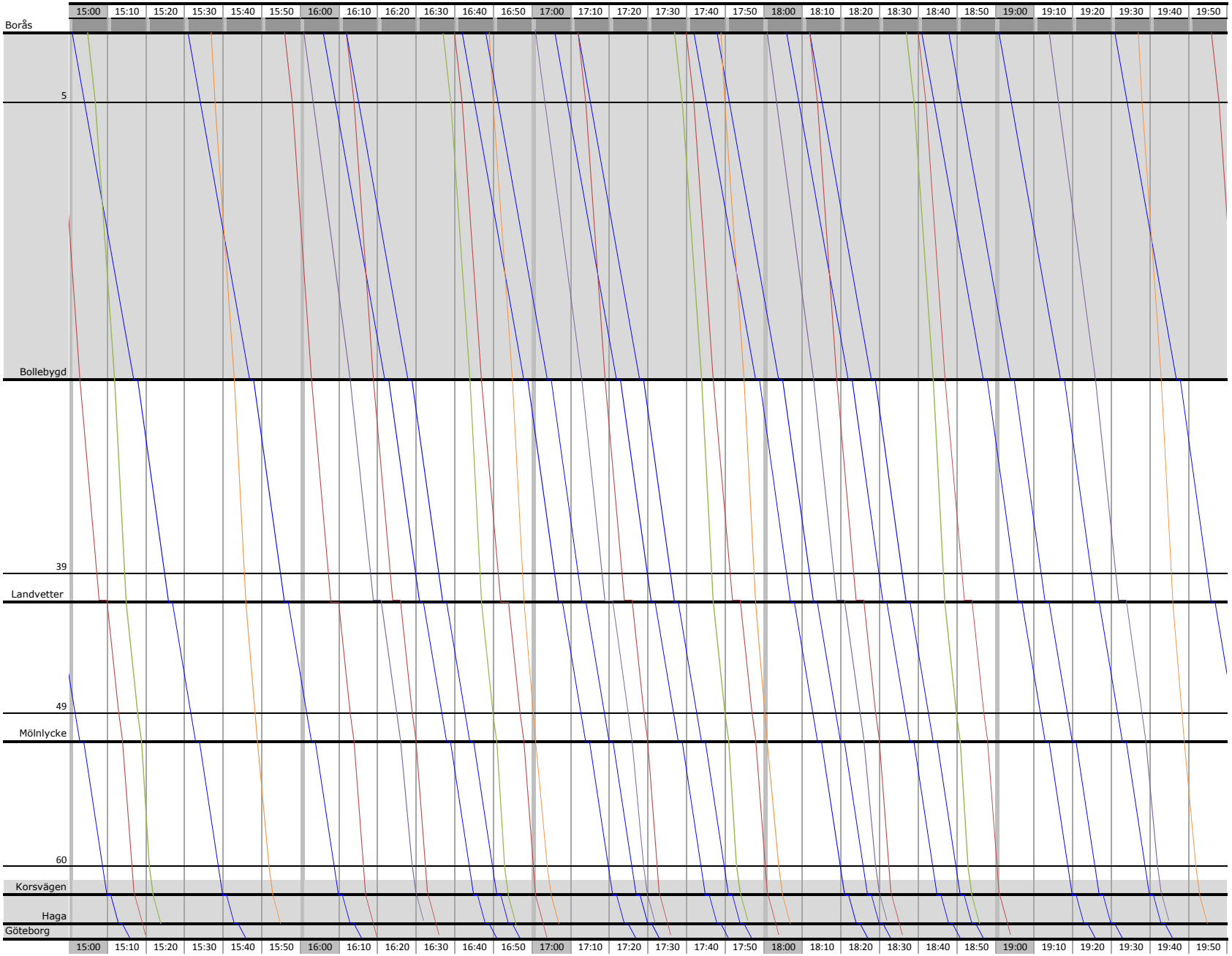
Graphic time table for VT1 (US3)

From Borås to Göteborg



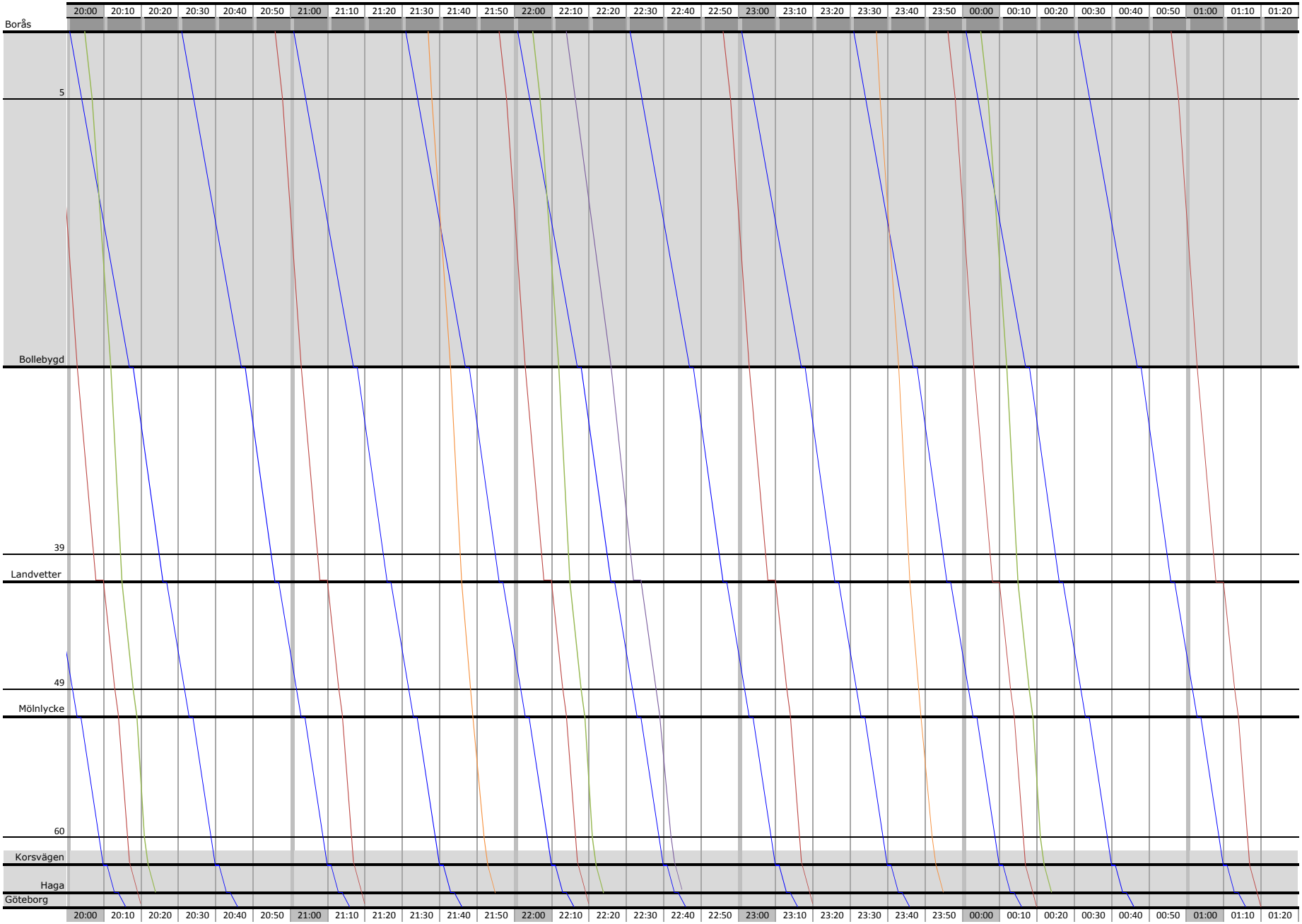
Graphic time table for VT1 (US3)

From Borås to Göteborg



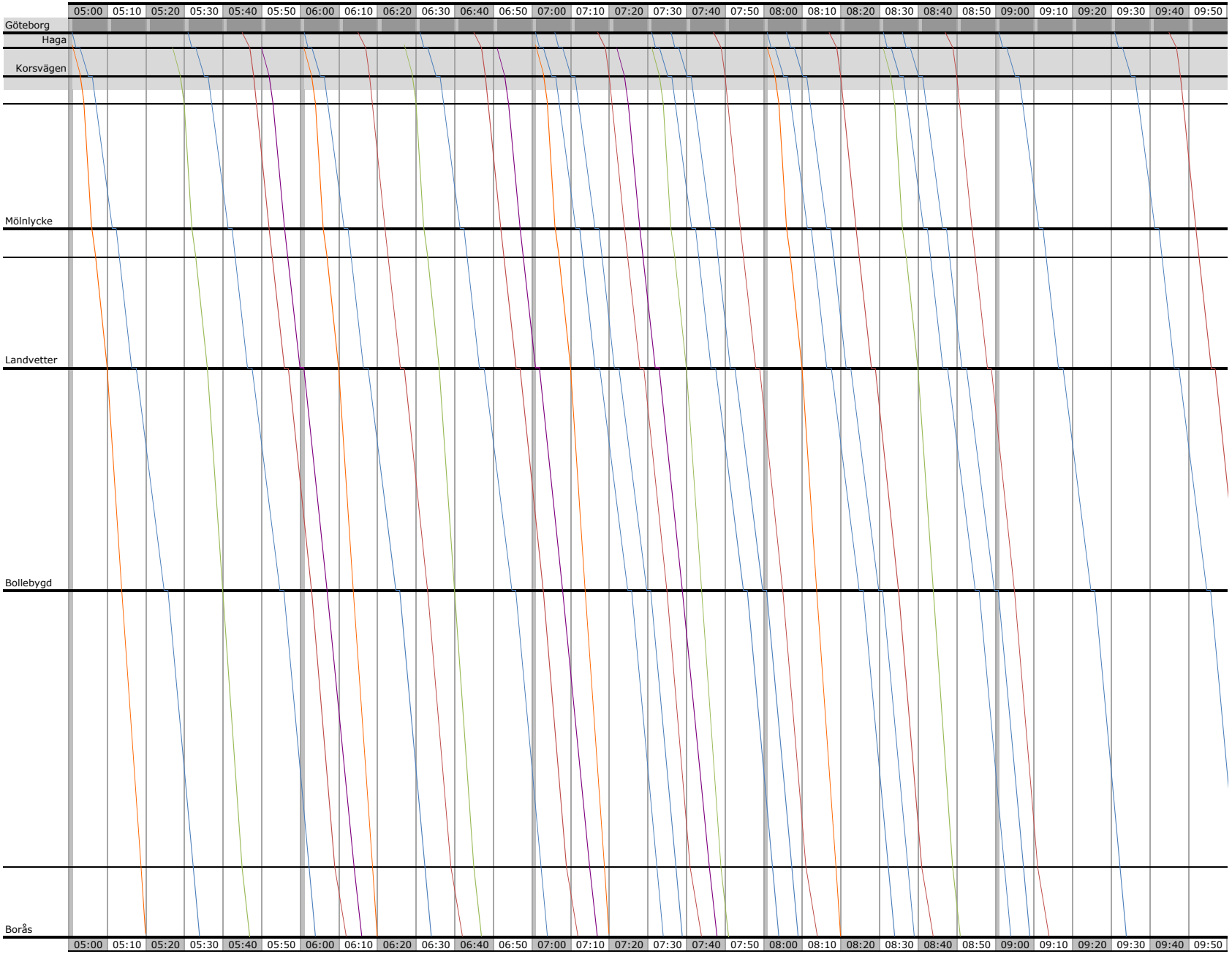
Graphic time table for VT1 (US3)

From Borås to Göteborg



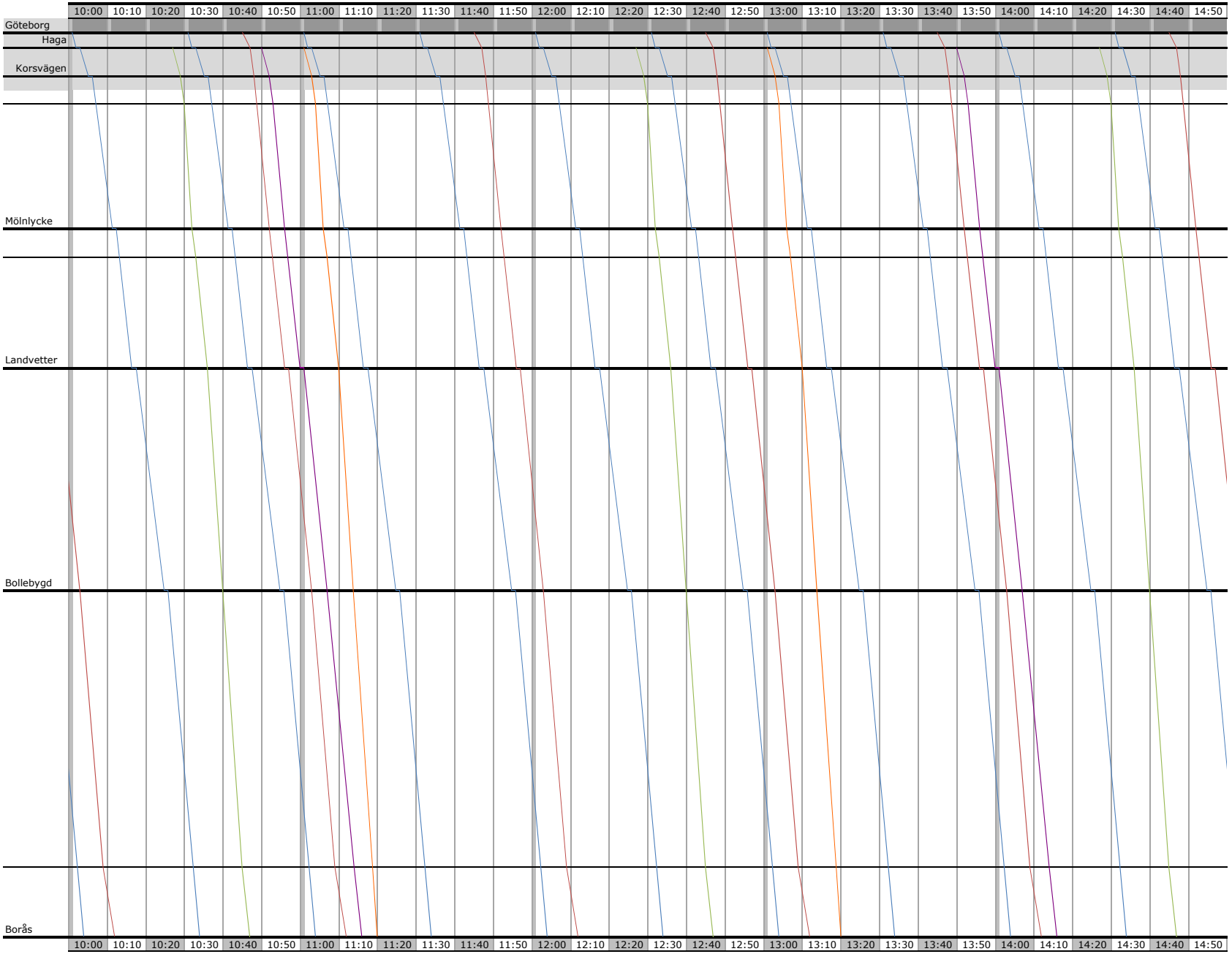
Graphic time table for VT1 (US4)

From Göteborg to Borås



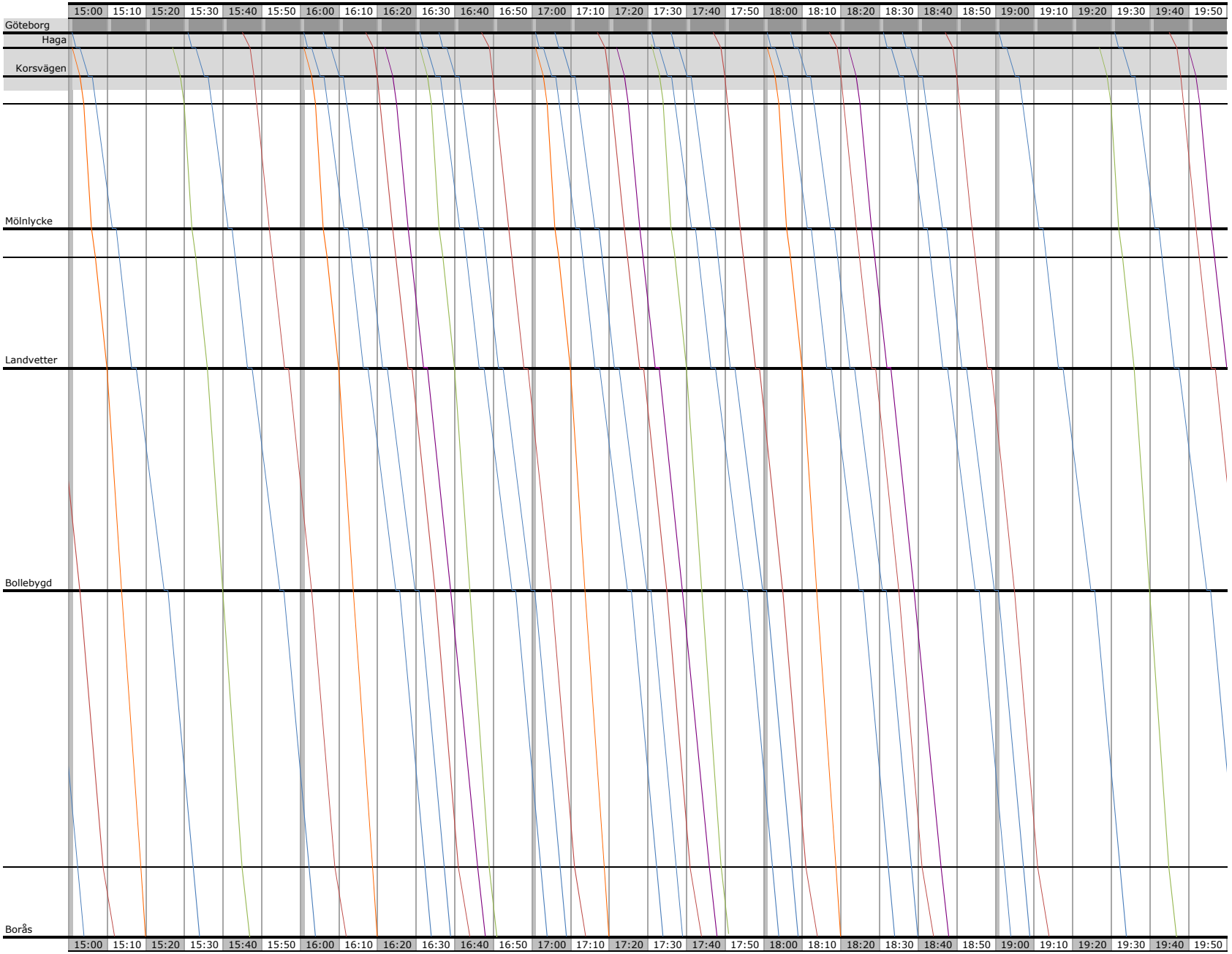
Graphic time table for VT1 (US4)

From Göteborg to Borås



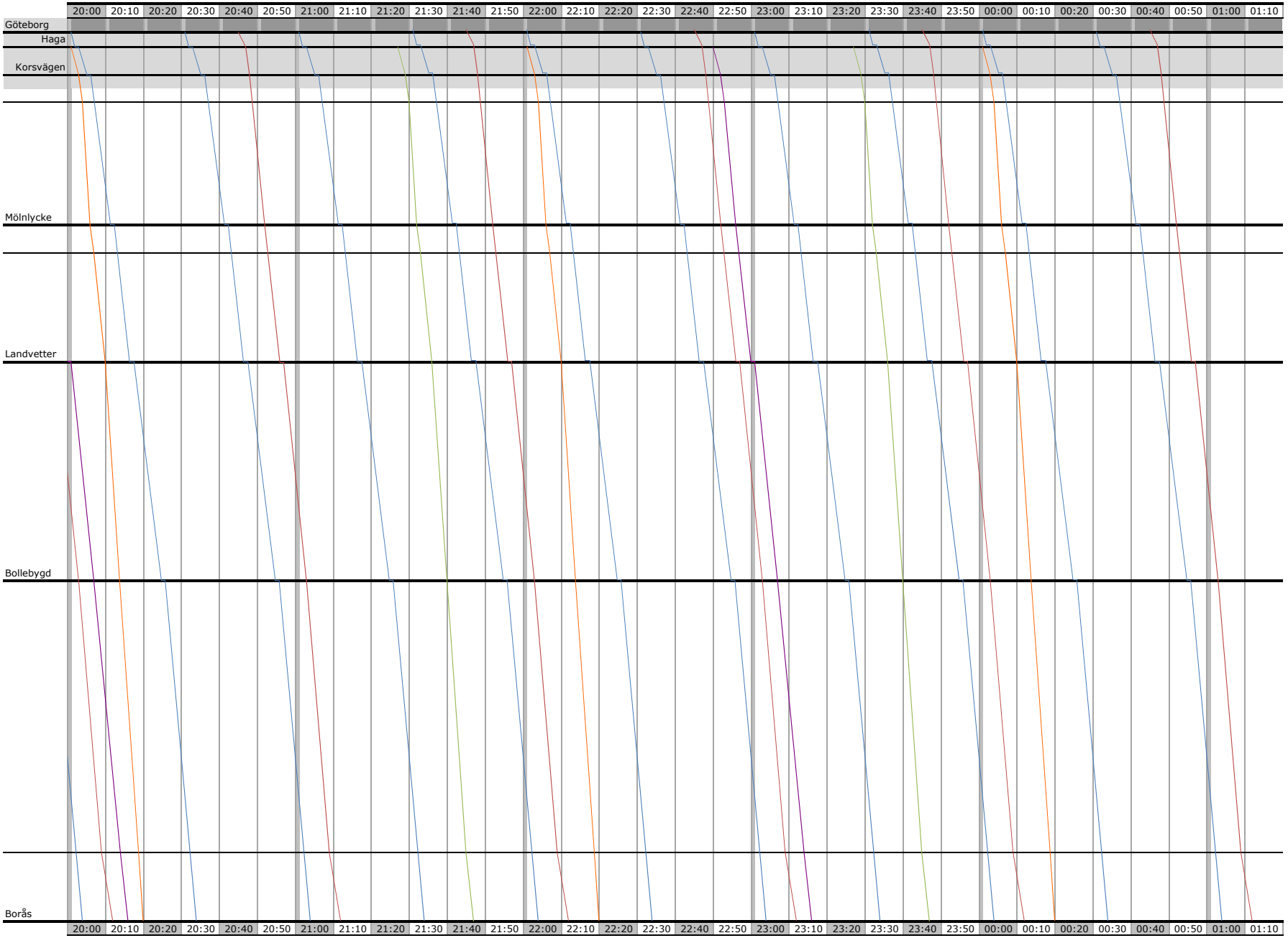
Graphic time table for VT1 (US4)

From Göteborg to Borås



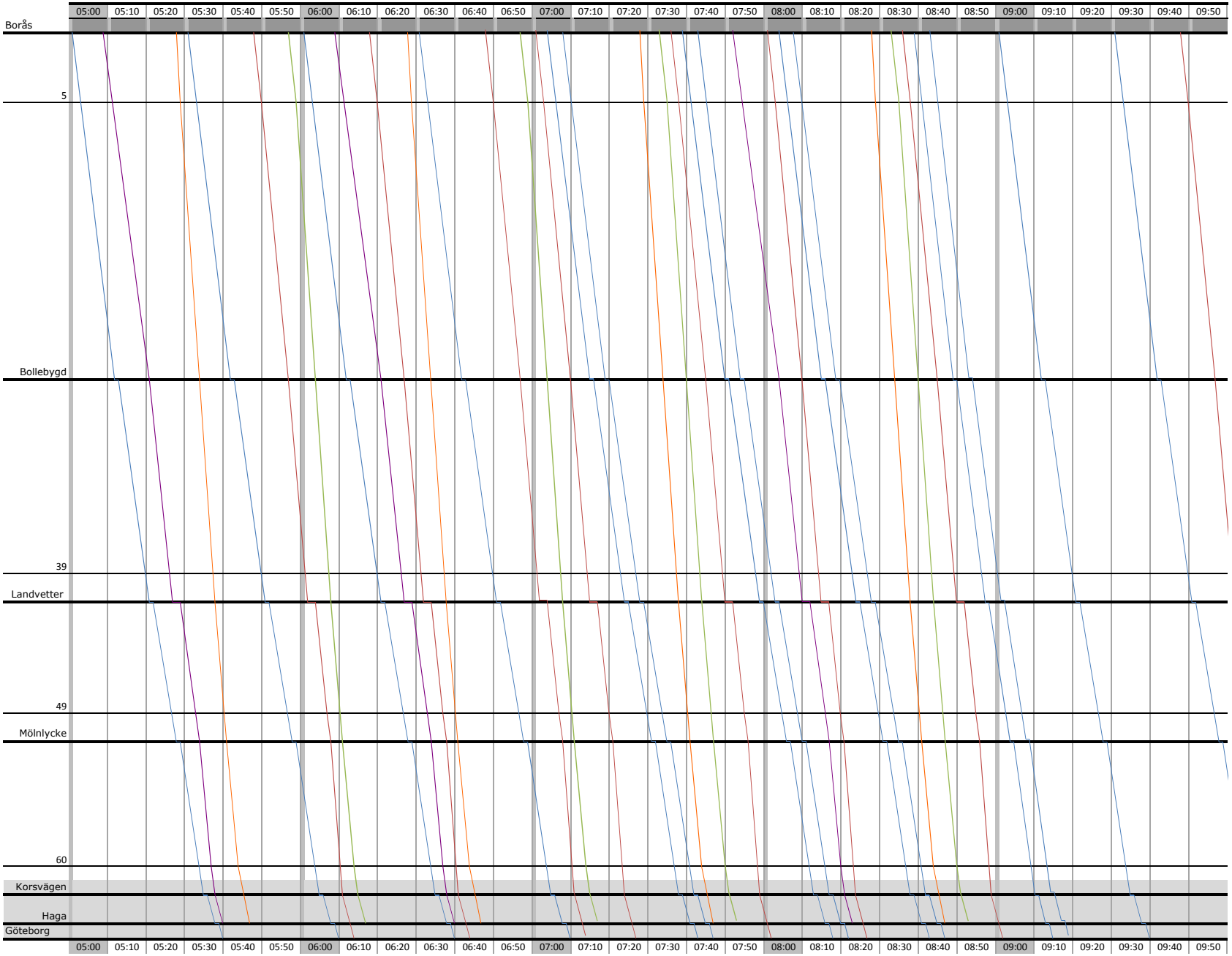
Graphic time table for VT1 (US4)

From Göteborg to Borås



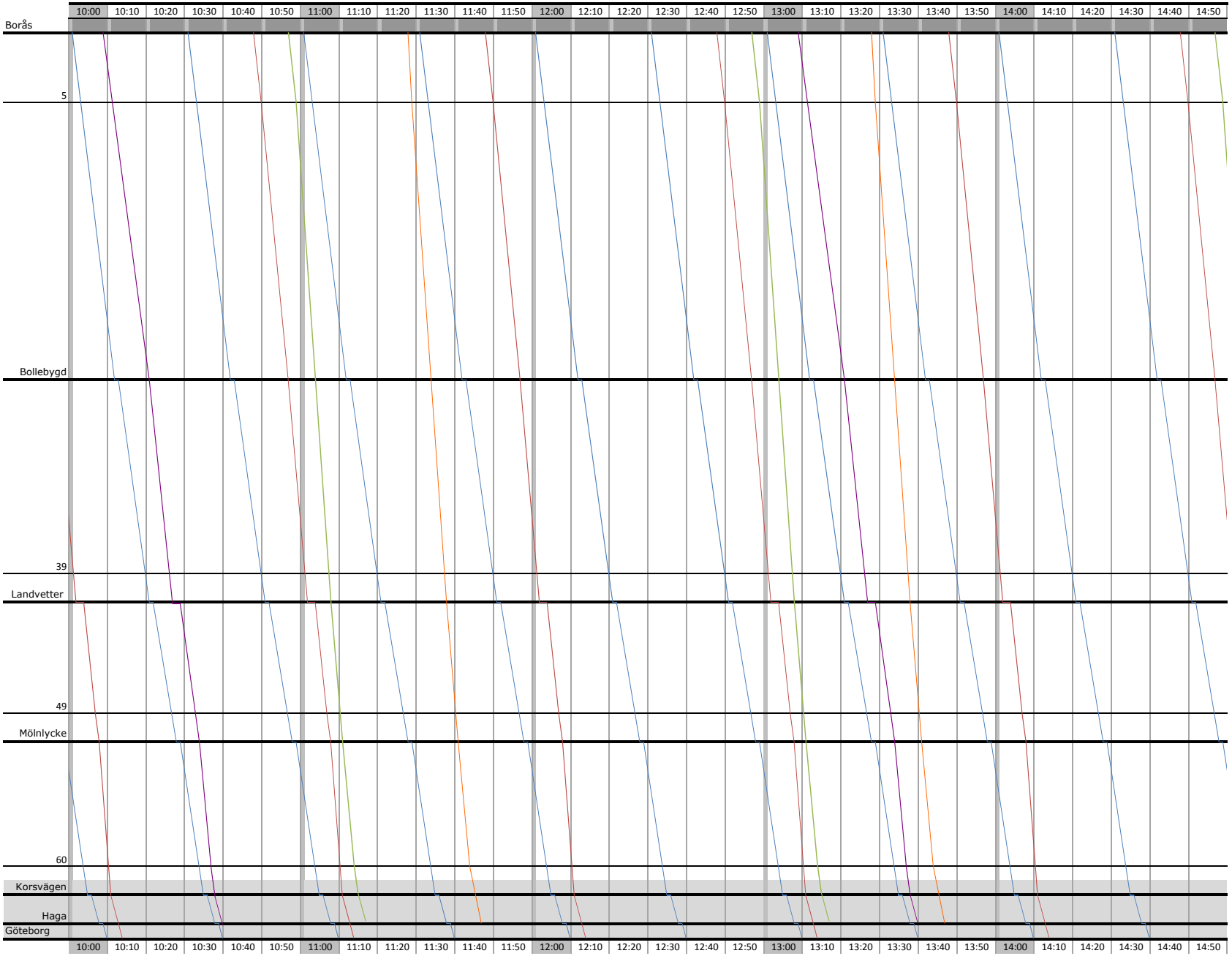
Grapgic time table for VT1 (US4)

From Borås to Göteborg



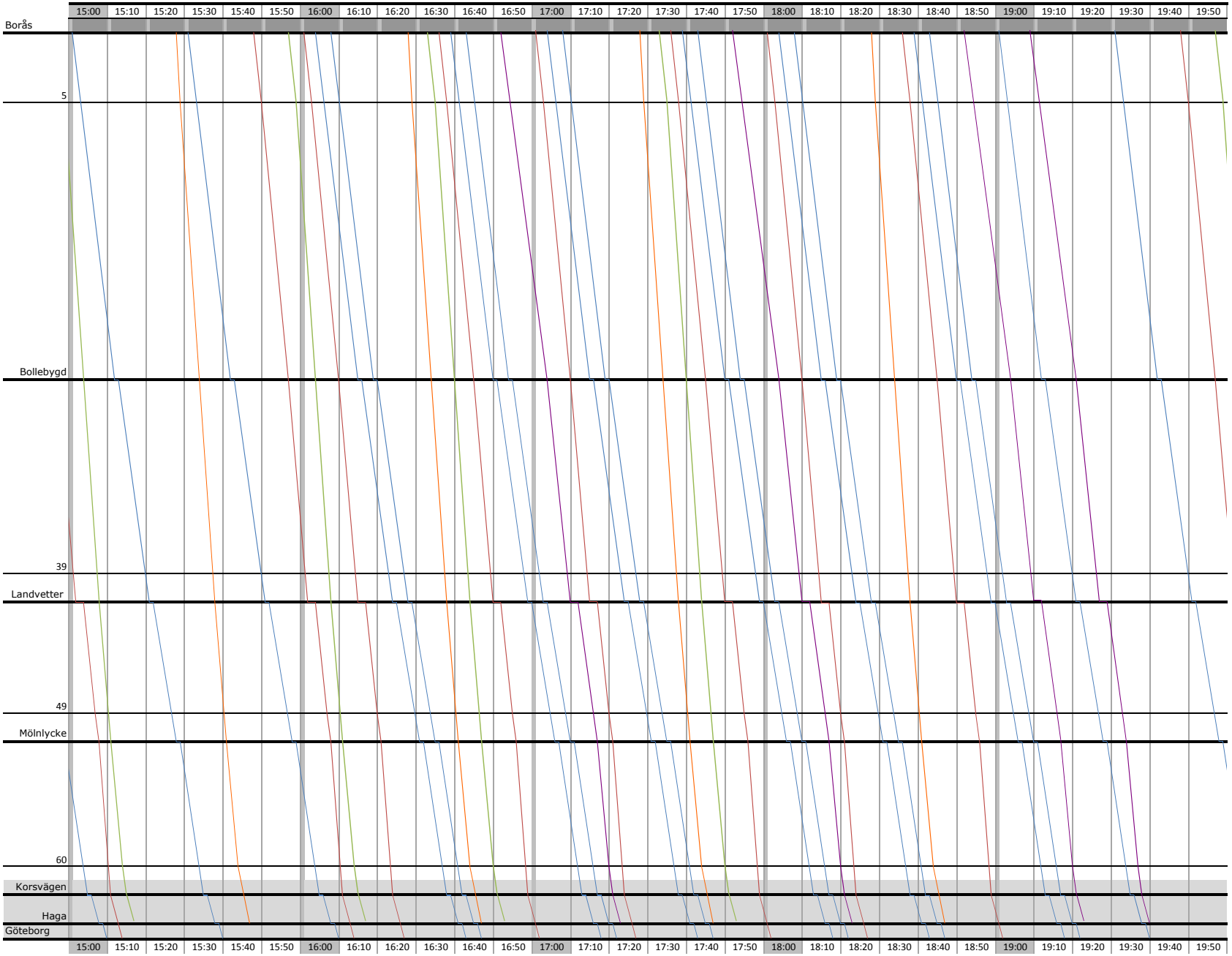
Grapgic time table for VT1 (US4)

From Borås to Göteborg



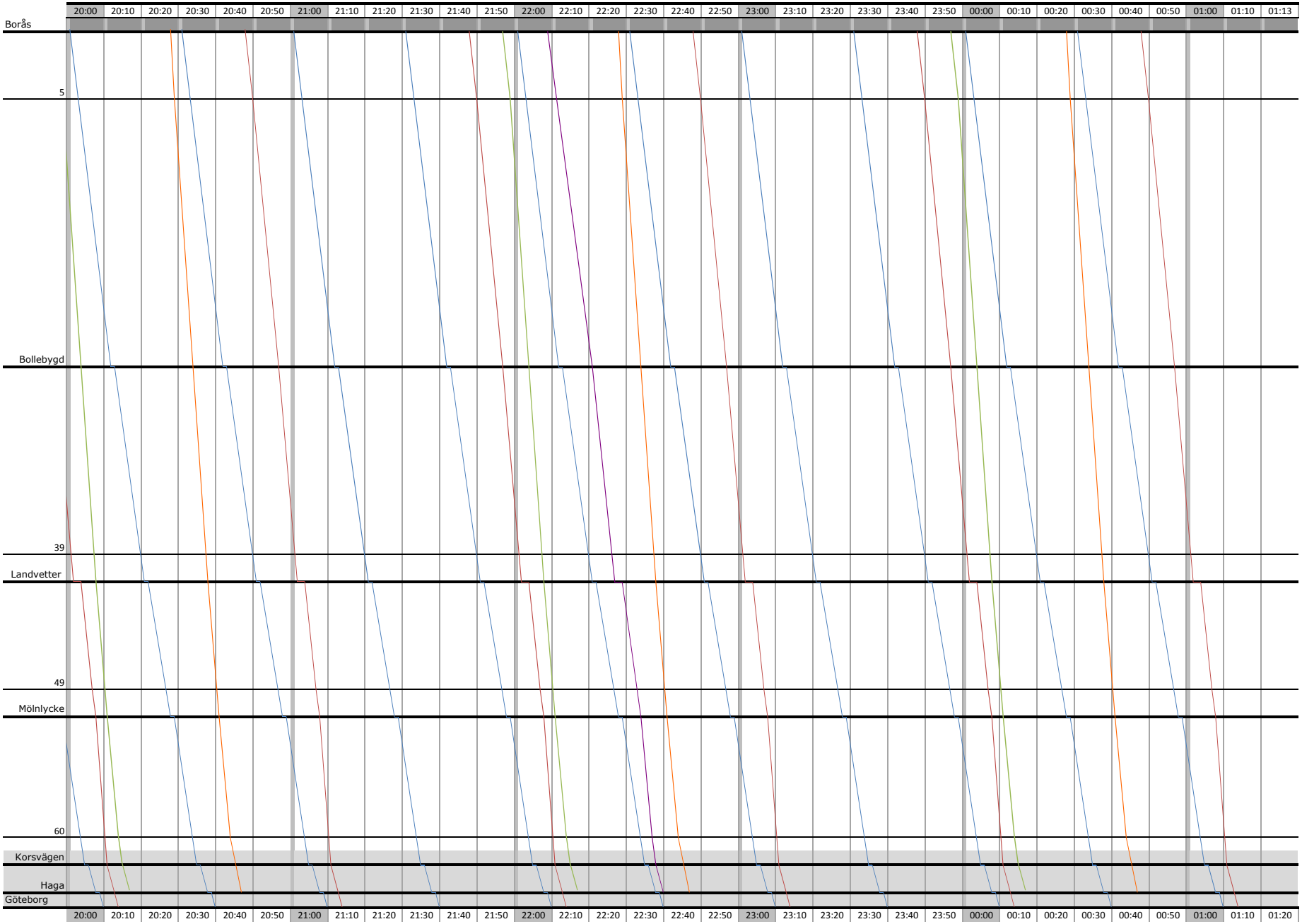
Grapgic time table for VT1 (US4)

From Borås to Göteborg



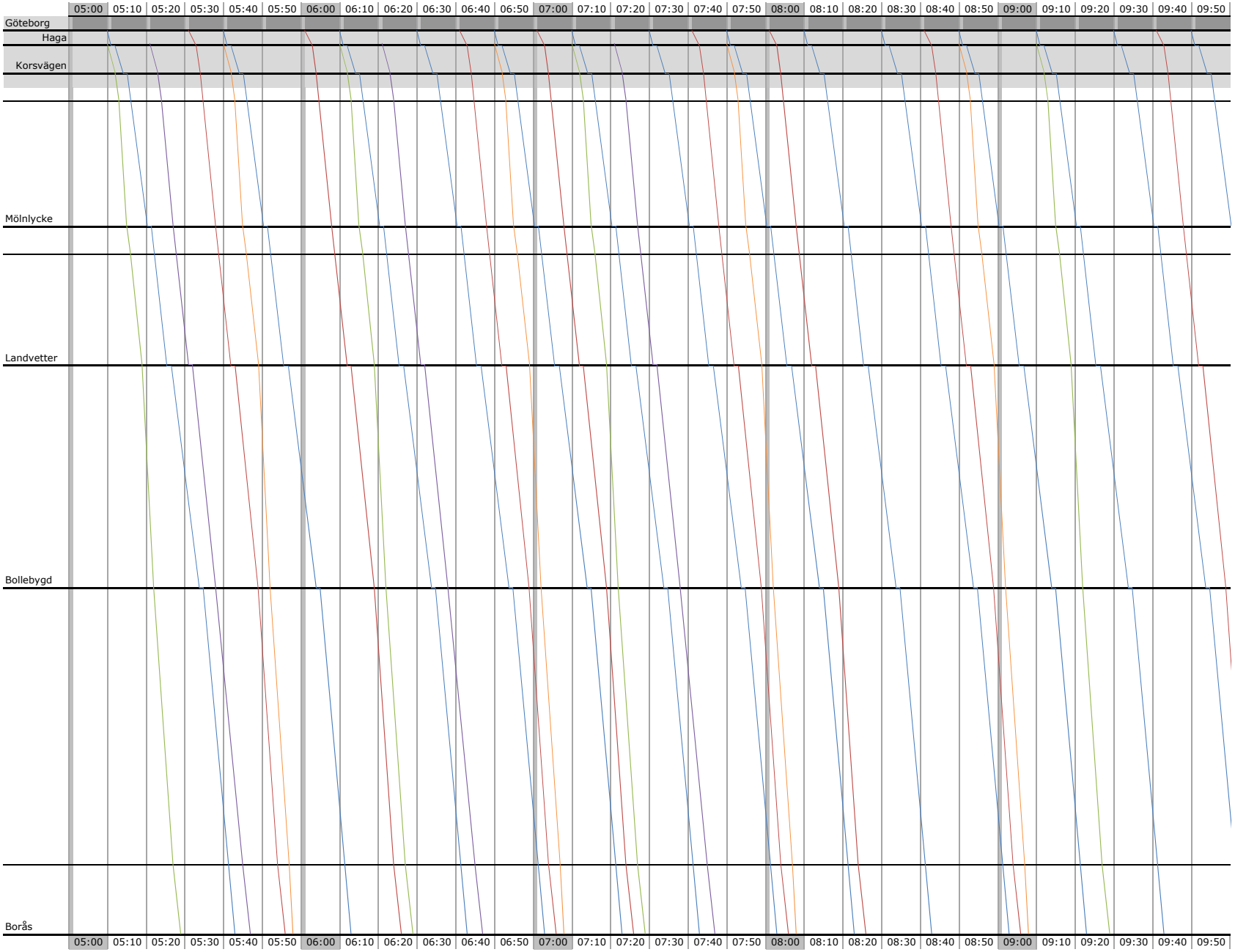
Grapgic time table for VT1 (US4)

From Borås to Göteborg



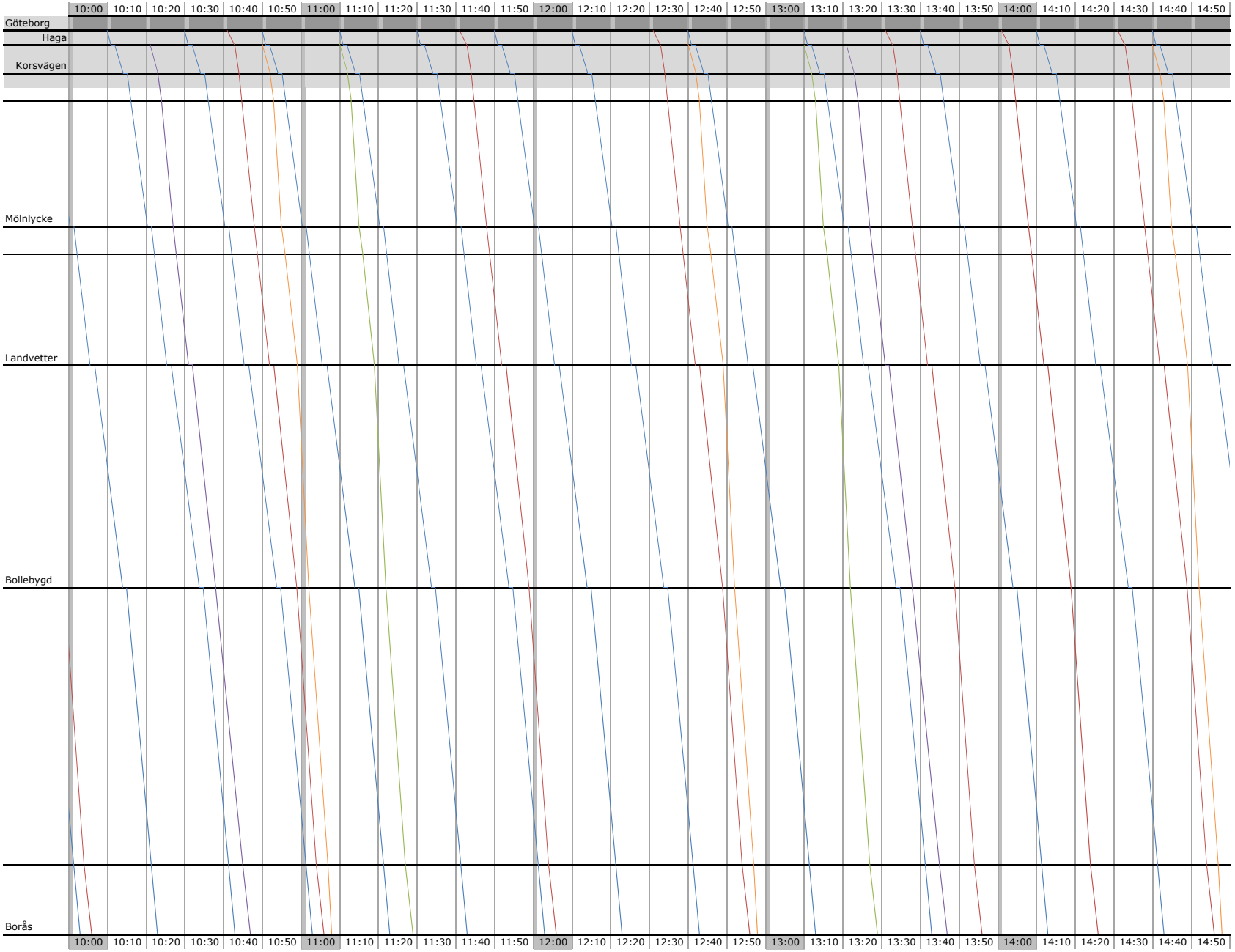
Graphic time table for VT2 (US1-2)

From Göteborg to Borås



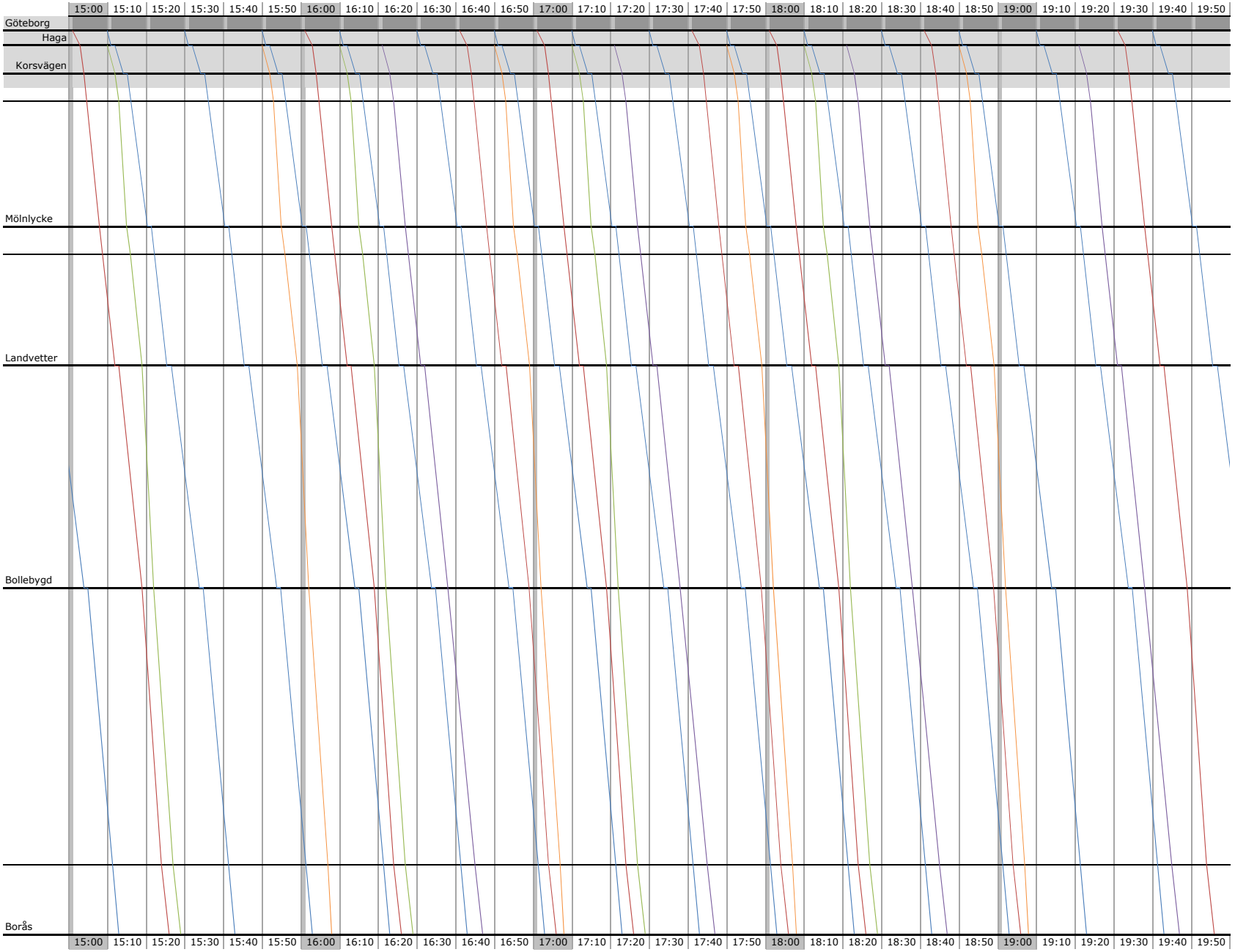
Graphic time table for VT2 (US1-2)

From Göteborg to Borås



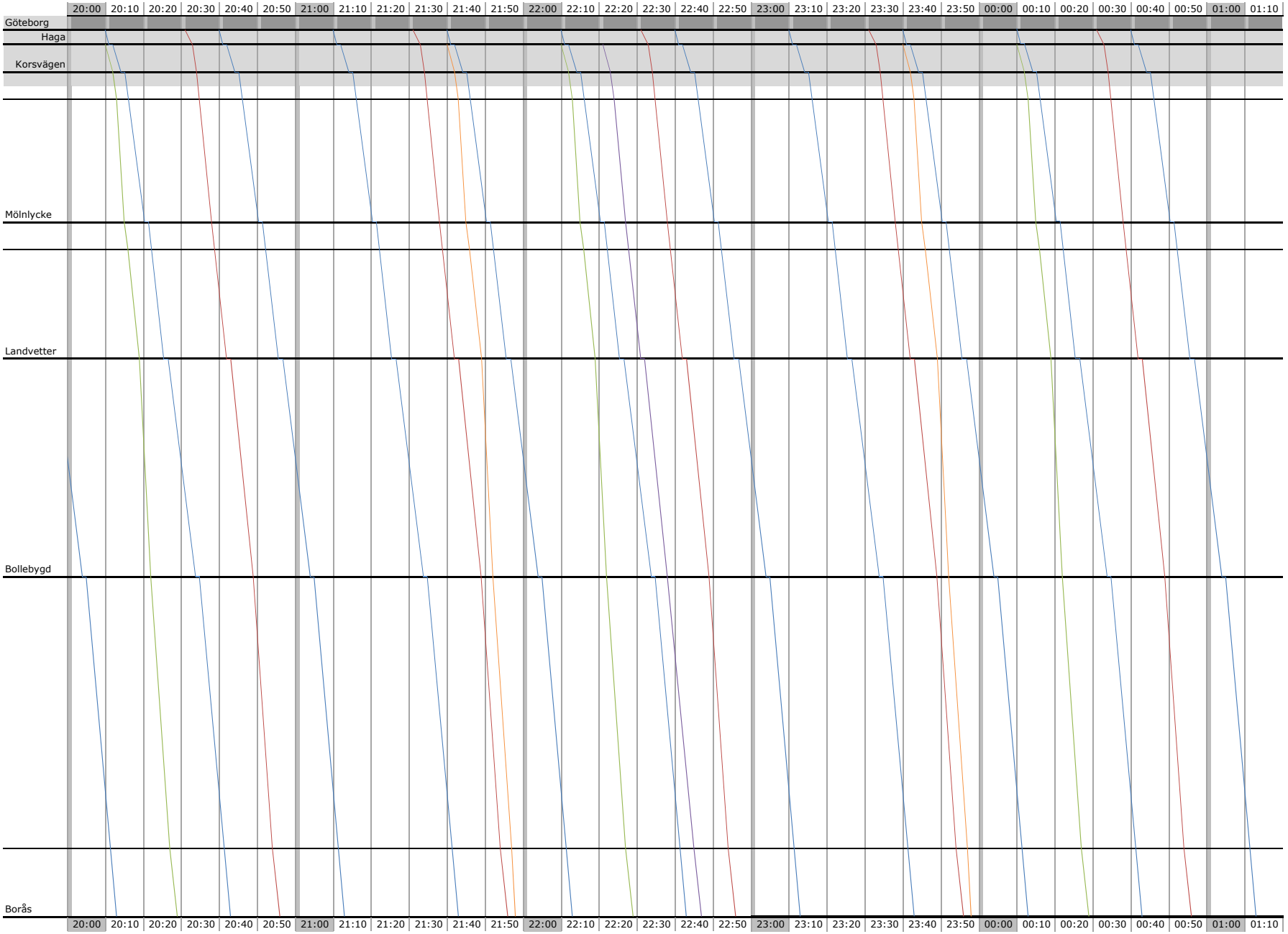
Graphic time table for VT2 (US1-2)

From Göteborg to Borås



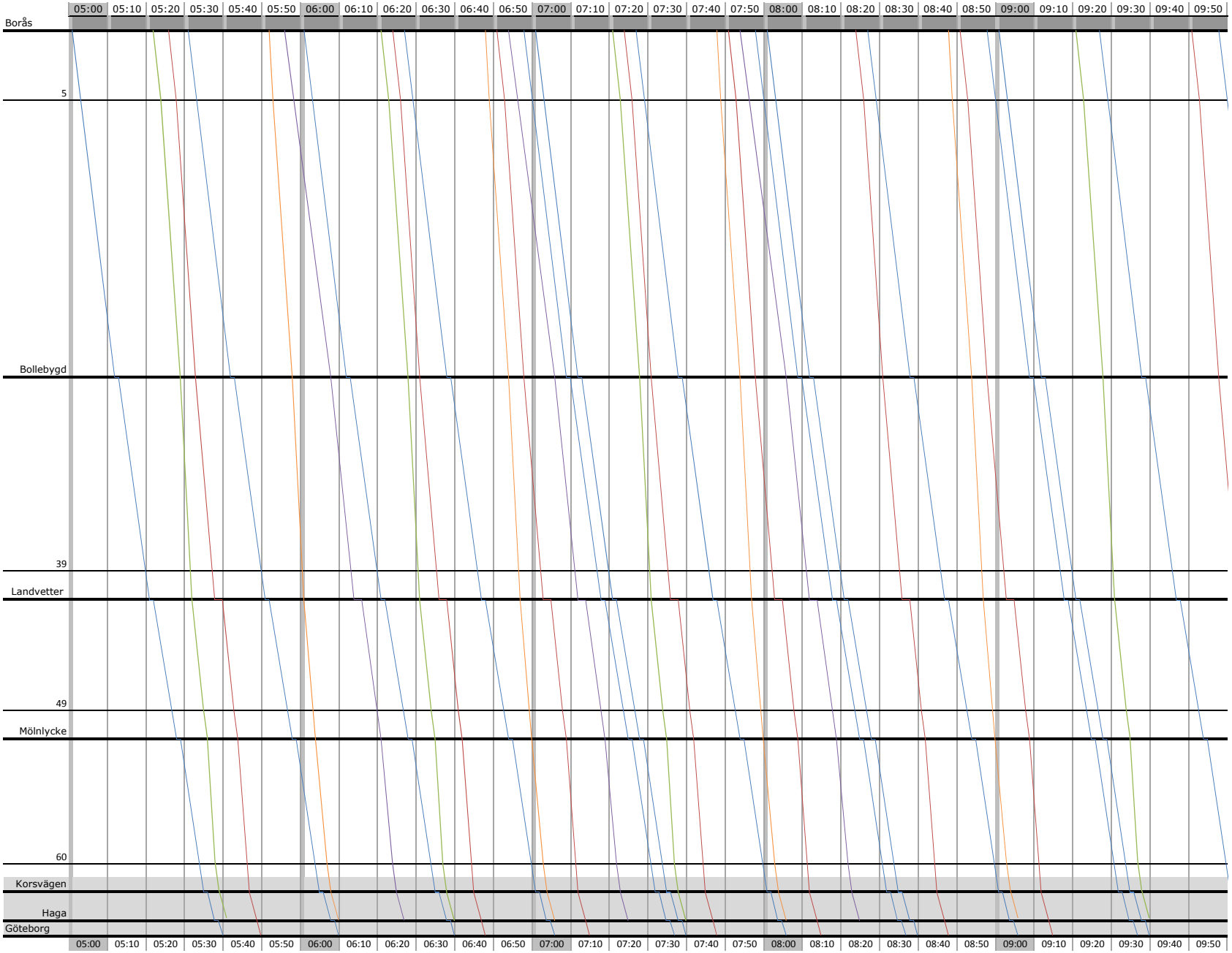
Graphic time table for VT2 (US1-2)

From Göteborg to Borås



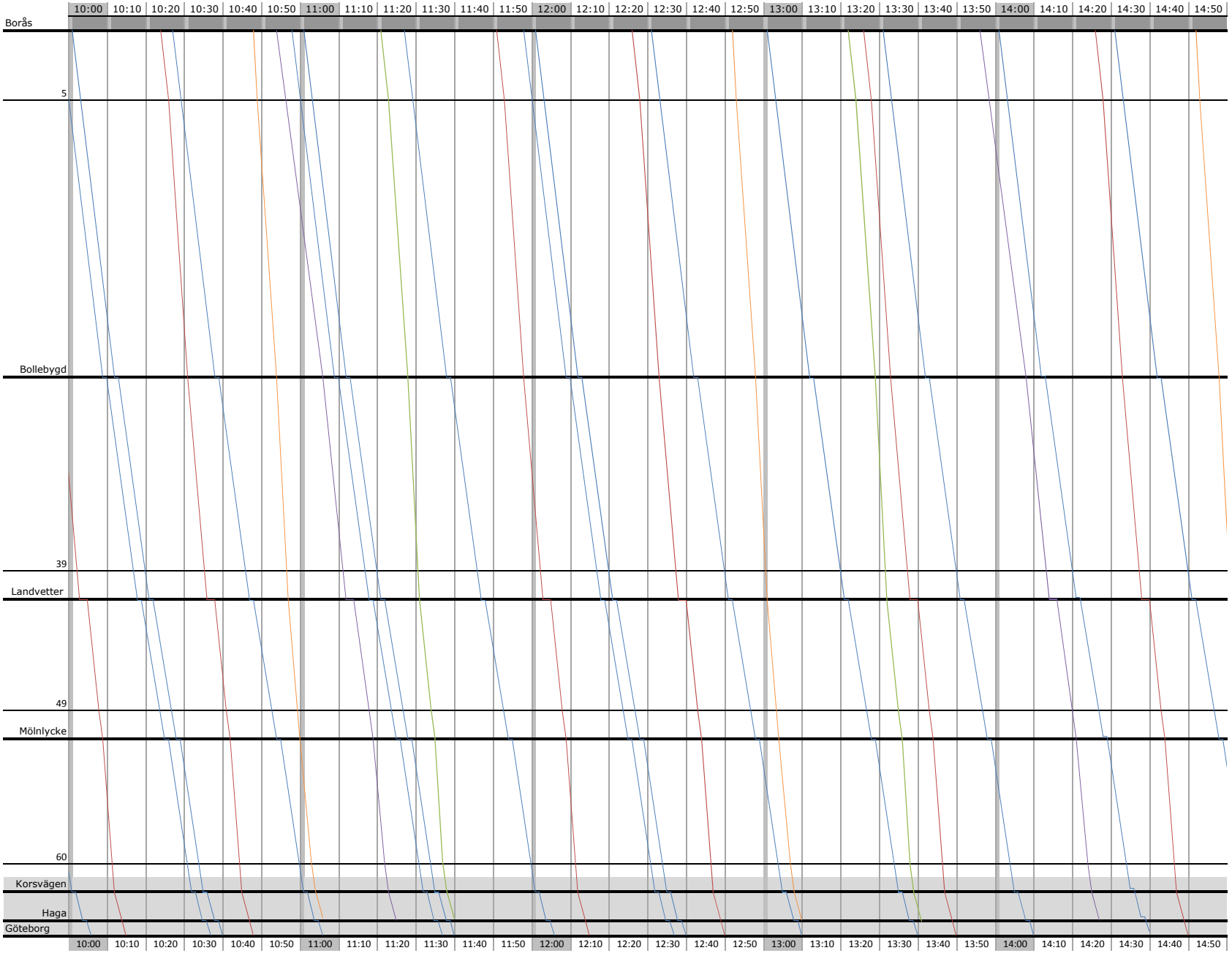
Graphic time table for VT2 (US1-2)

From Borås to Göteborg



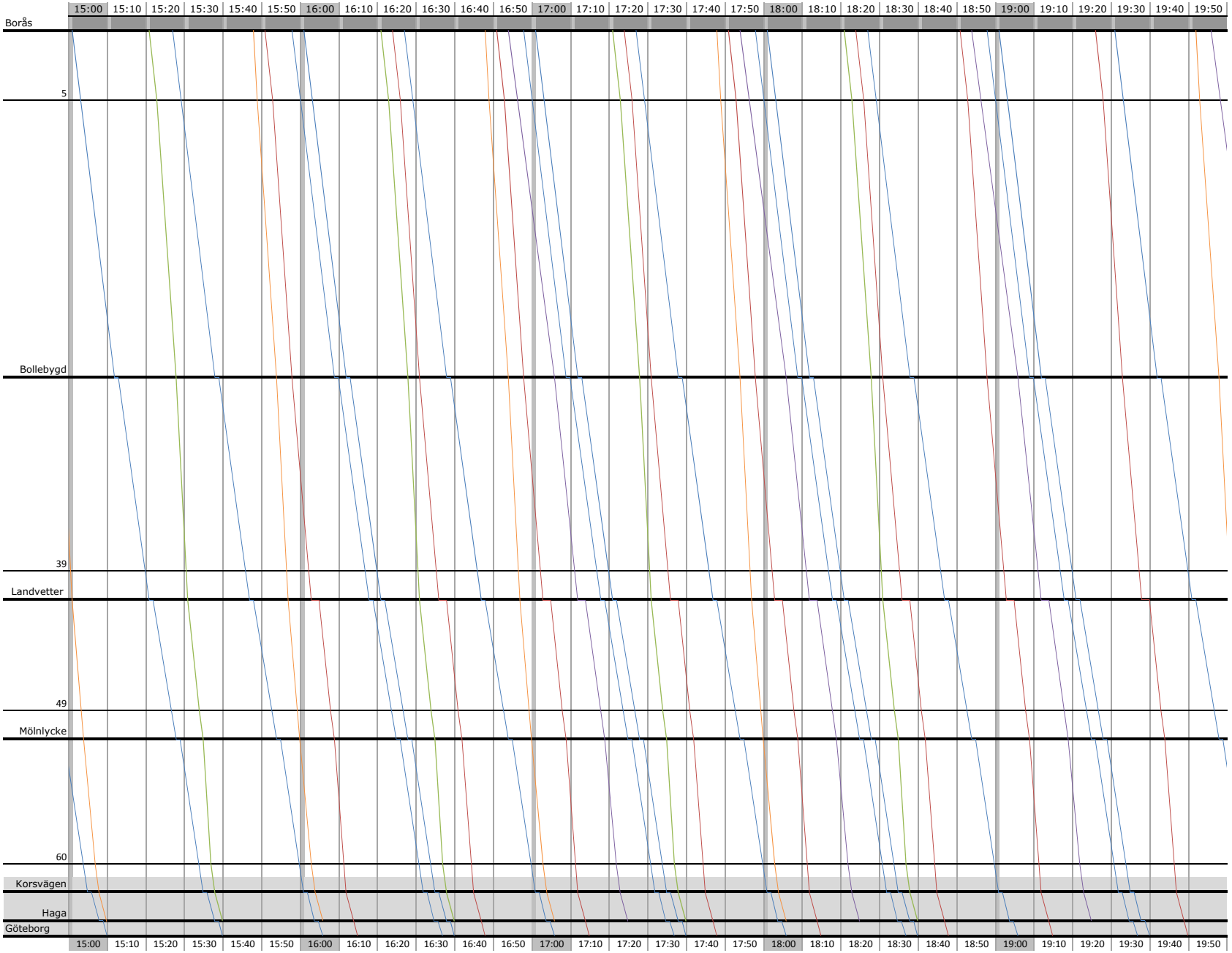
Graphic time table for VT2 (US1-2)

From Borås to Göteborg



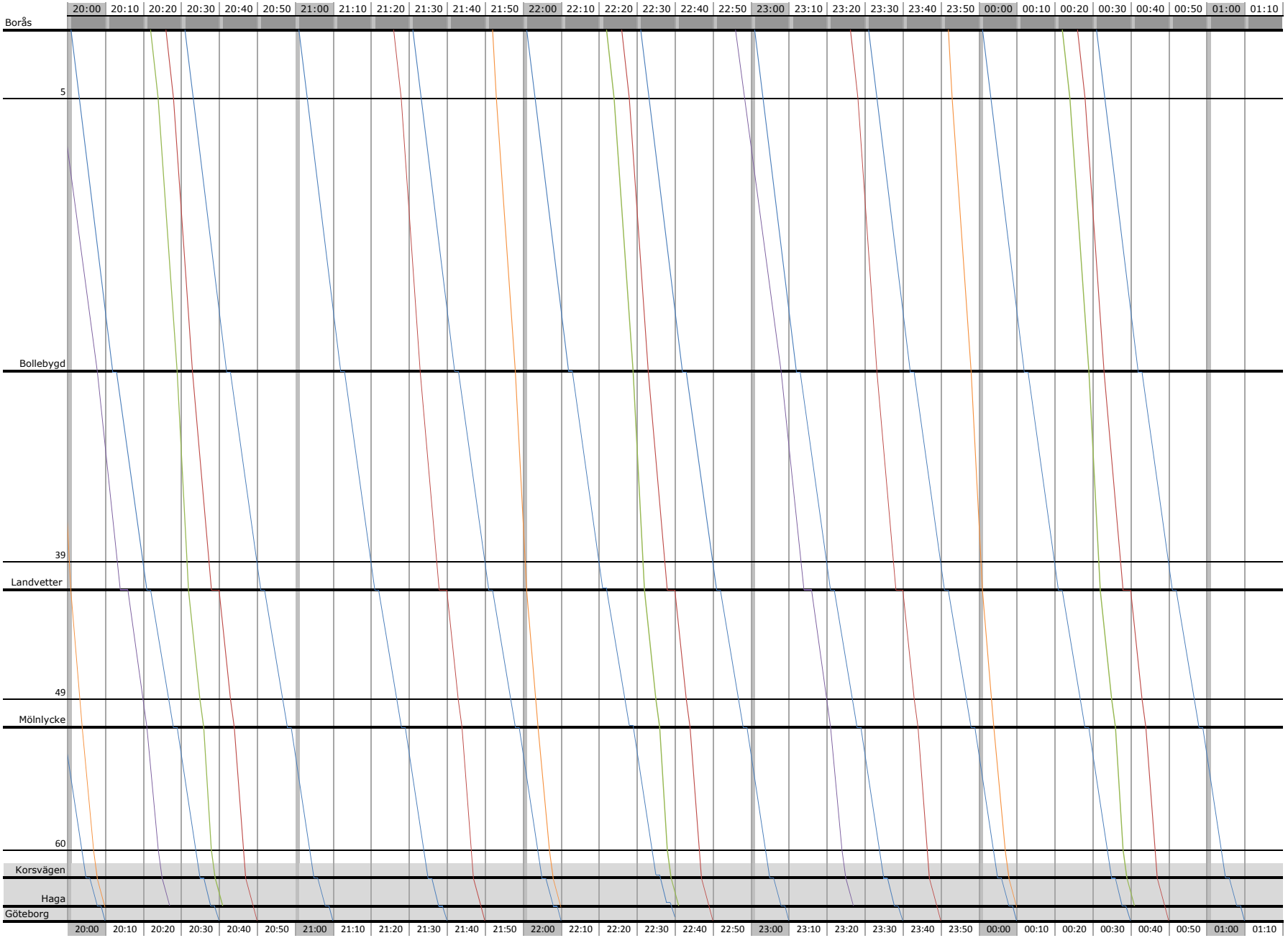
Graphic time table for VT2 (US1-2)

From Borås to Göteborg



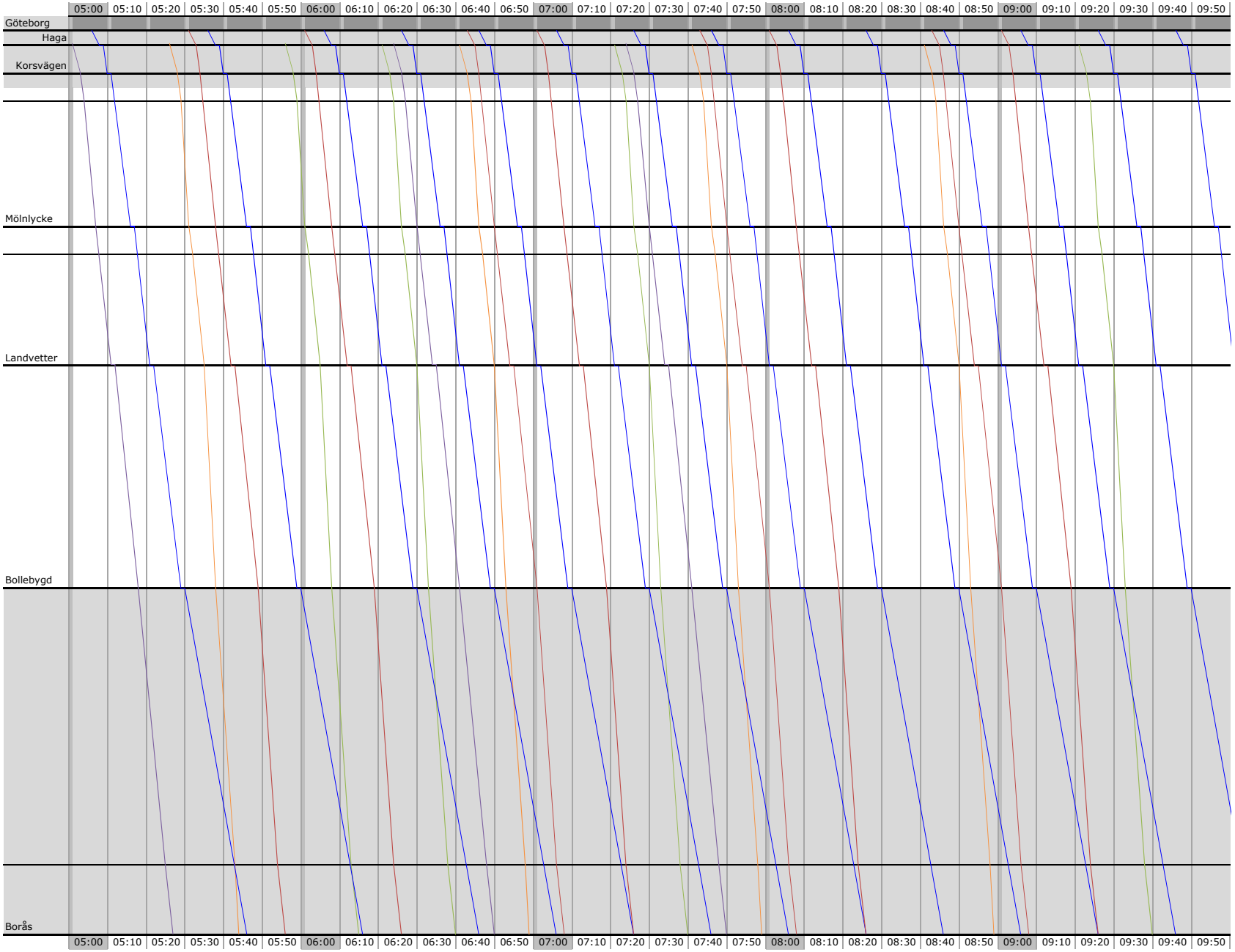
Graphic time table for VT2 (US1-2)

From Borås to Göteborg



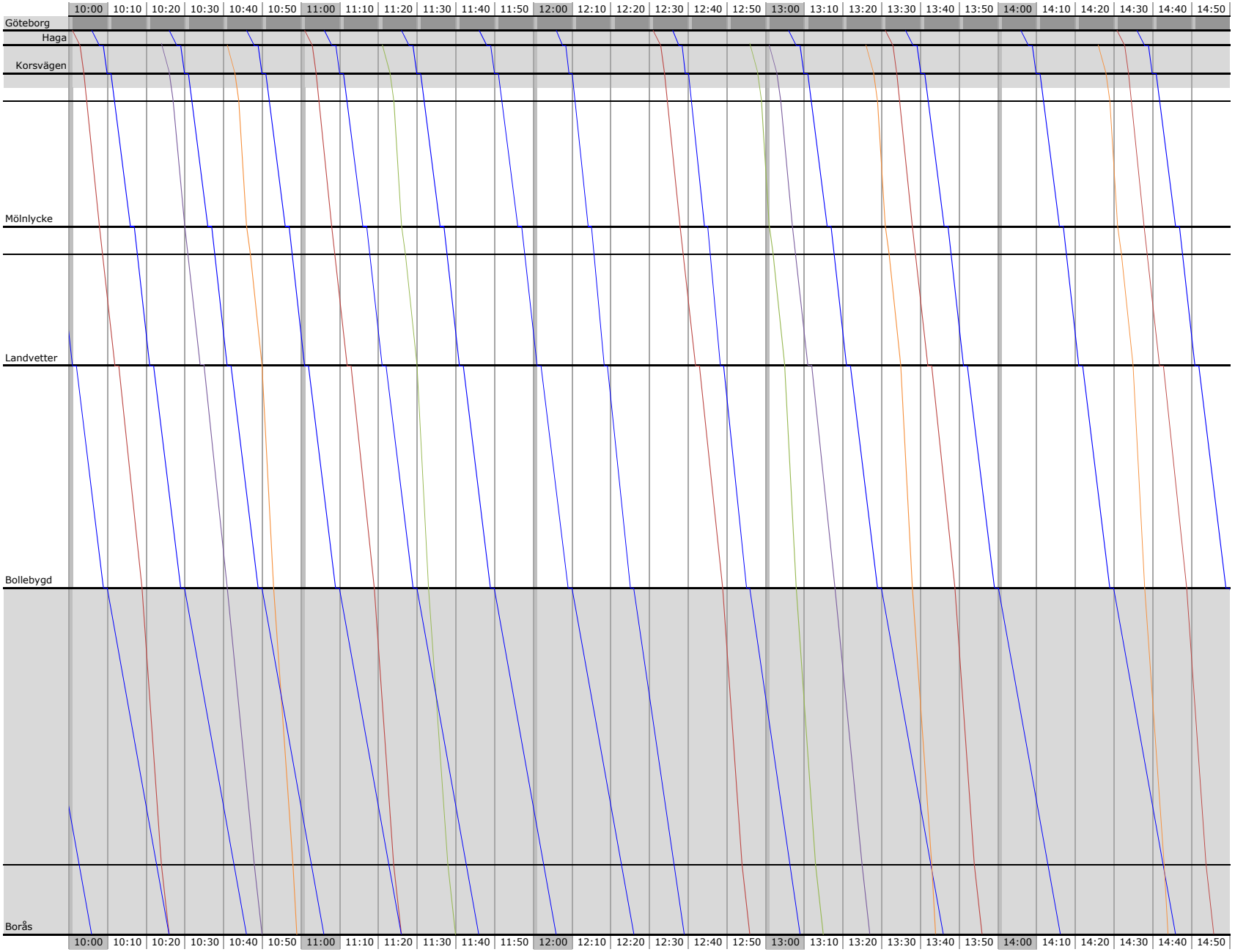
Graphic time table for VT2 (US3)

From Göteborg to Borås



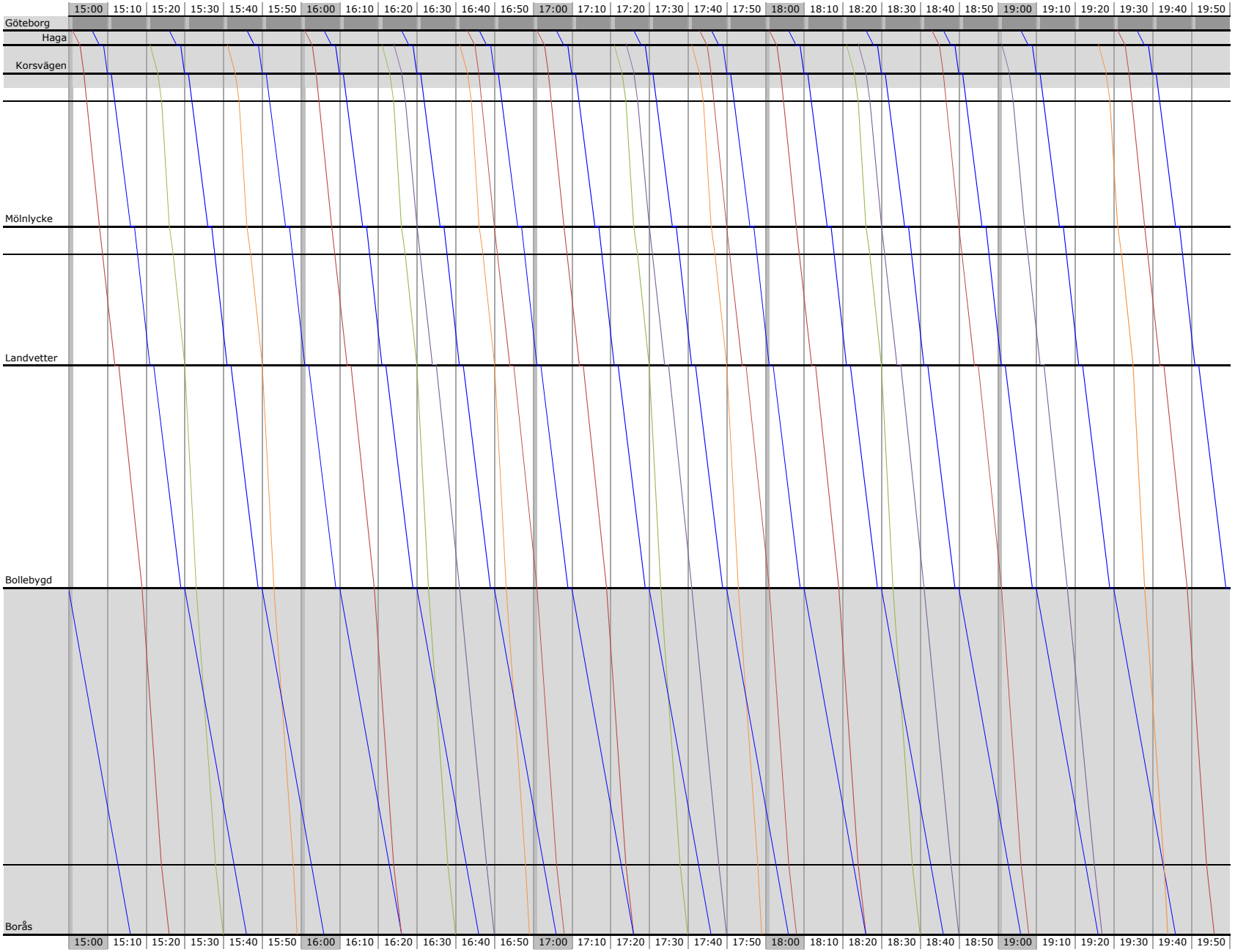
Graphic time table for VT2 (US3)

From Göteborg to Borås



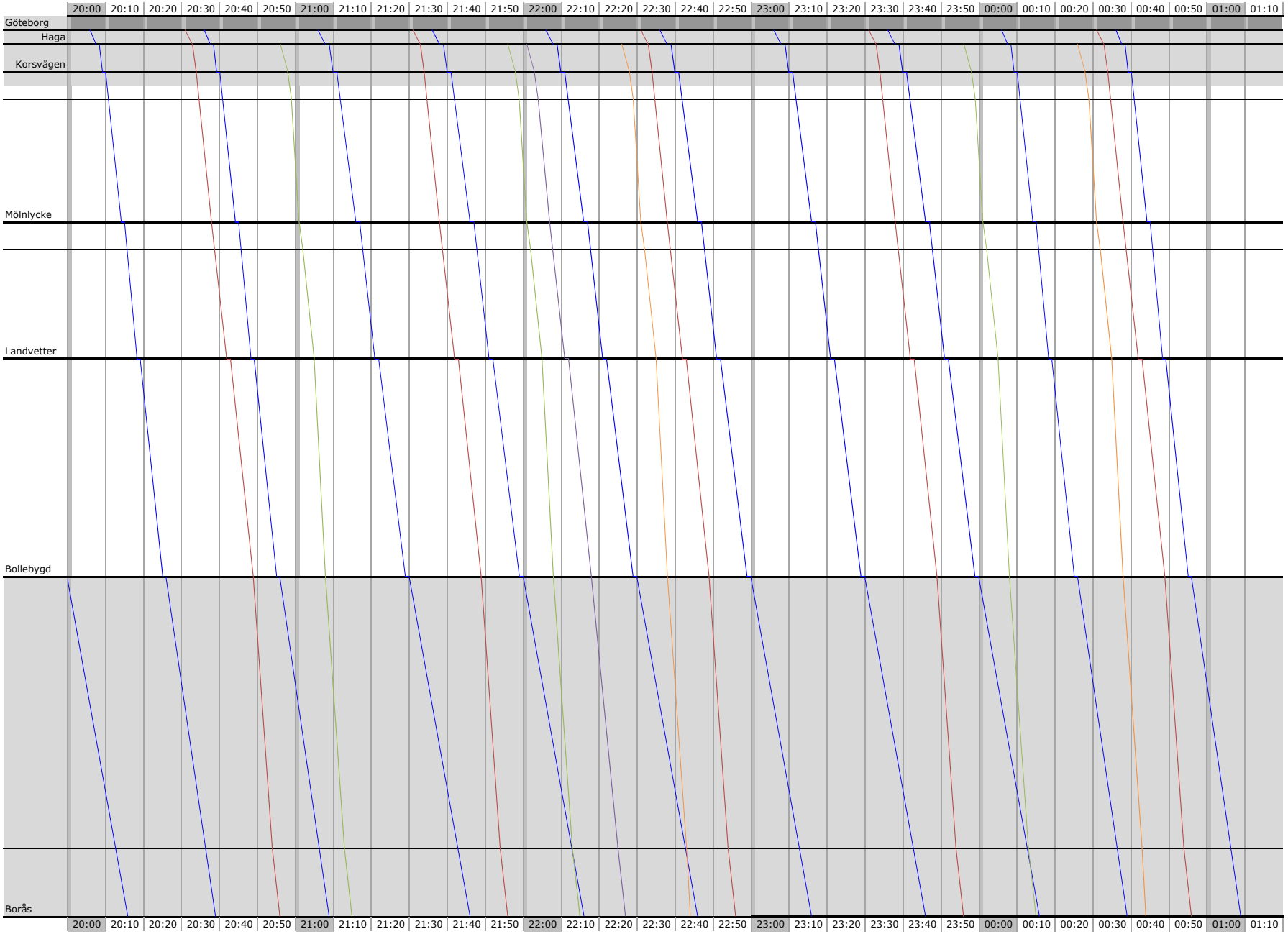
Graphic time table for VT2 (US3)

From Göteborg to Borås



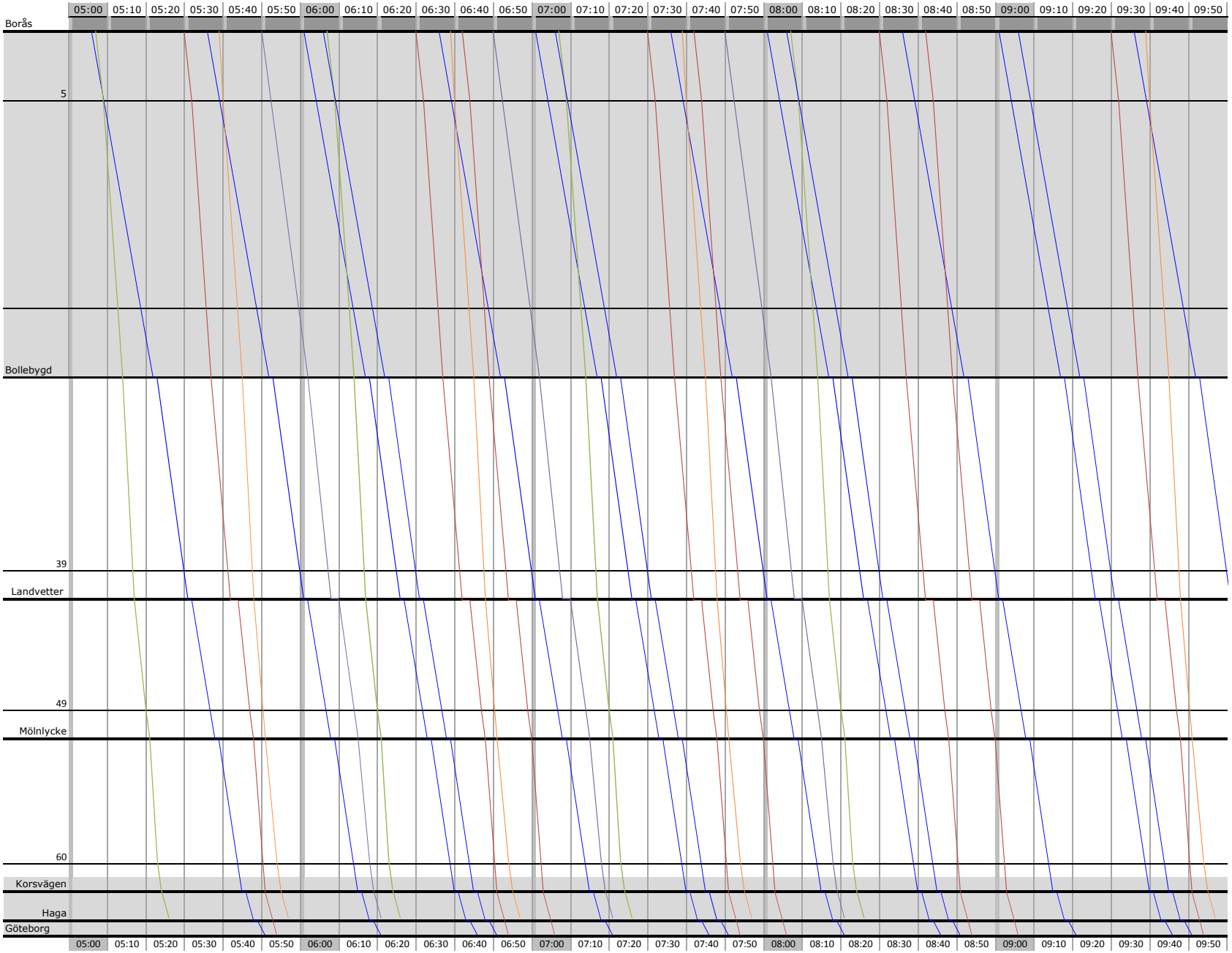
Graphic time table for VT2 (US3)

From Göteborg to Borås



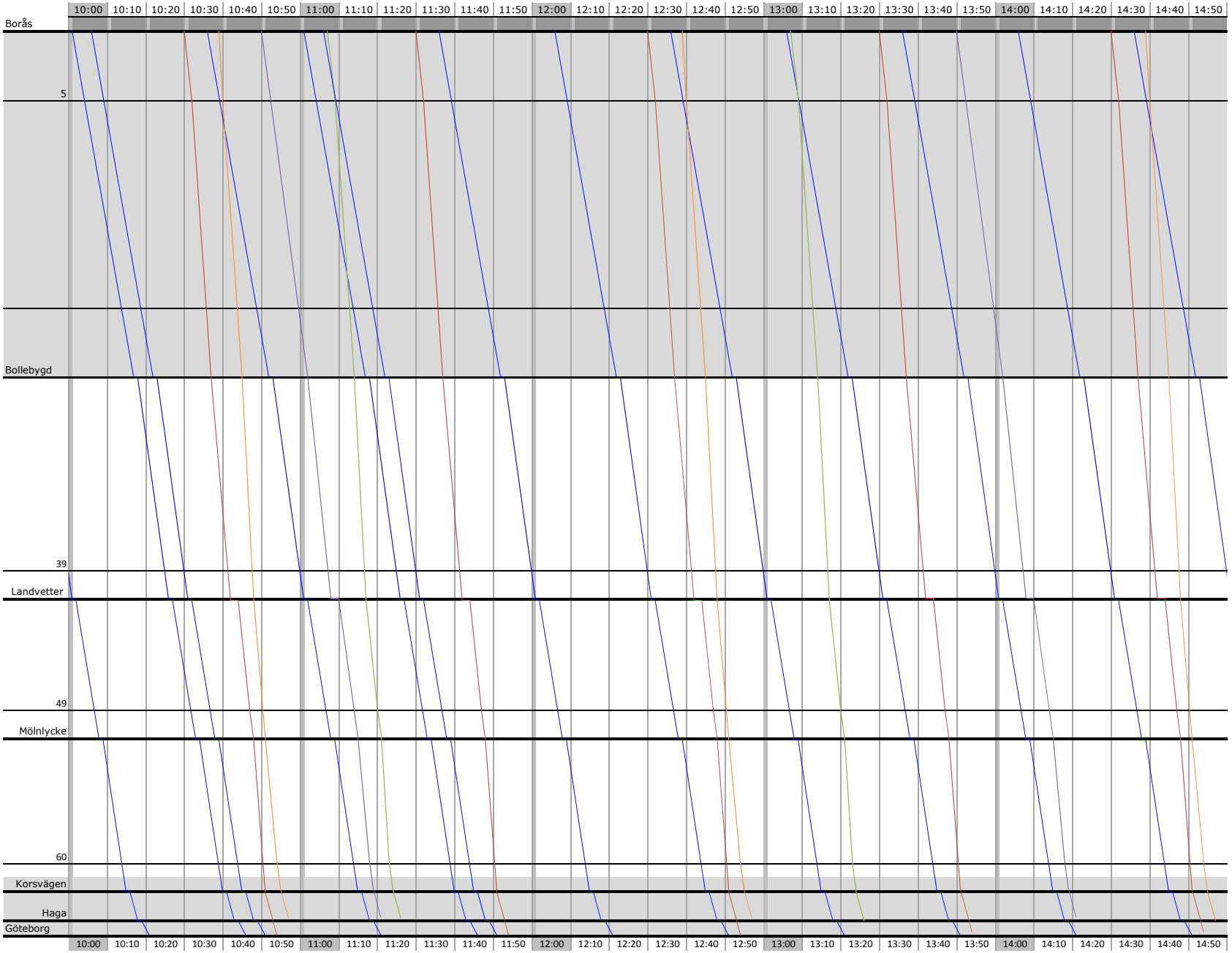
Graphic time table for VT2 (US3)

From Borås to Göteborg



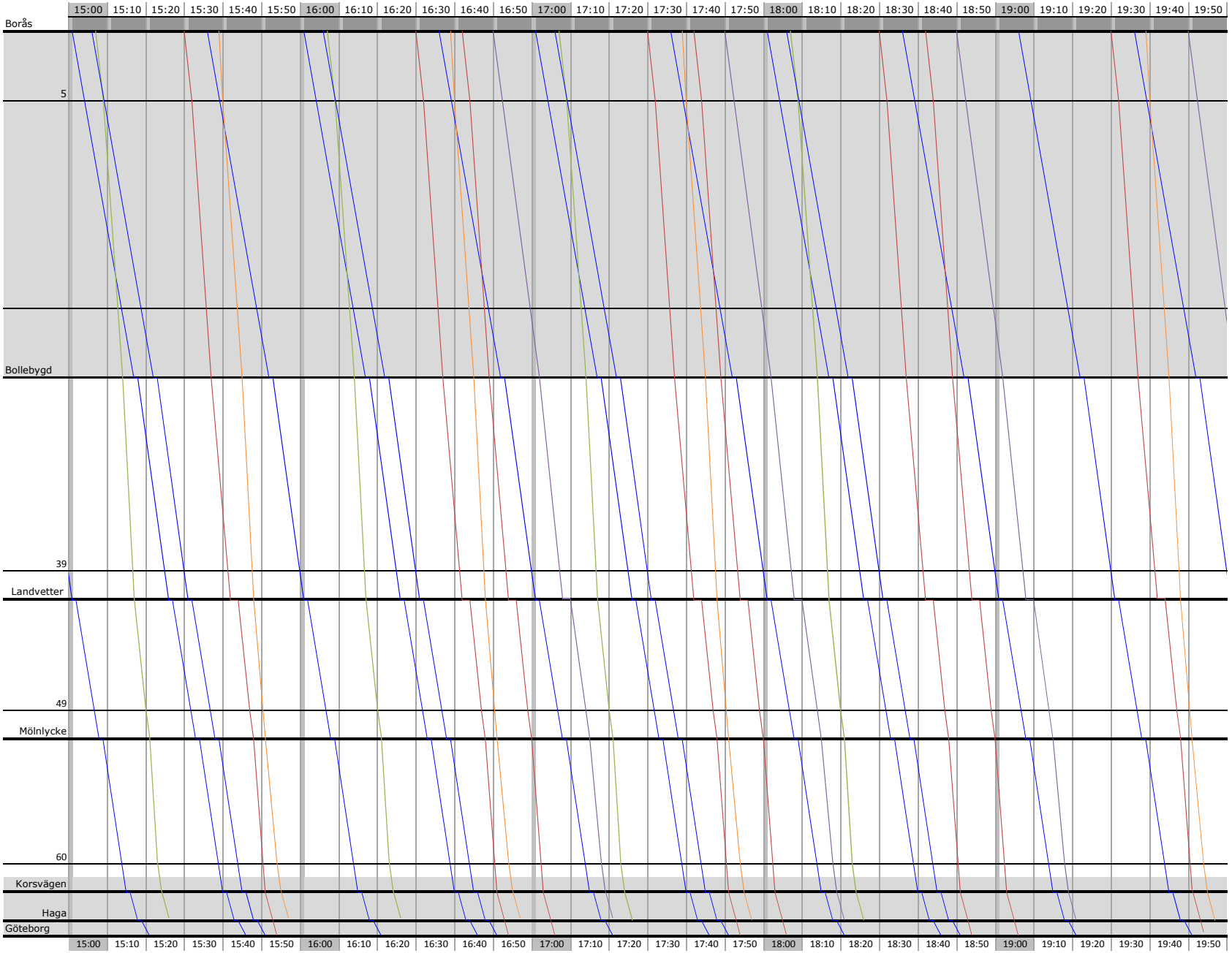
Graphic time table for VT2 (US3)

From Borås to Göteborg



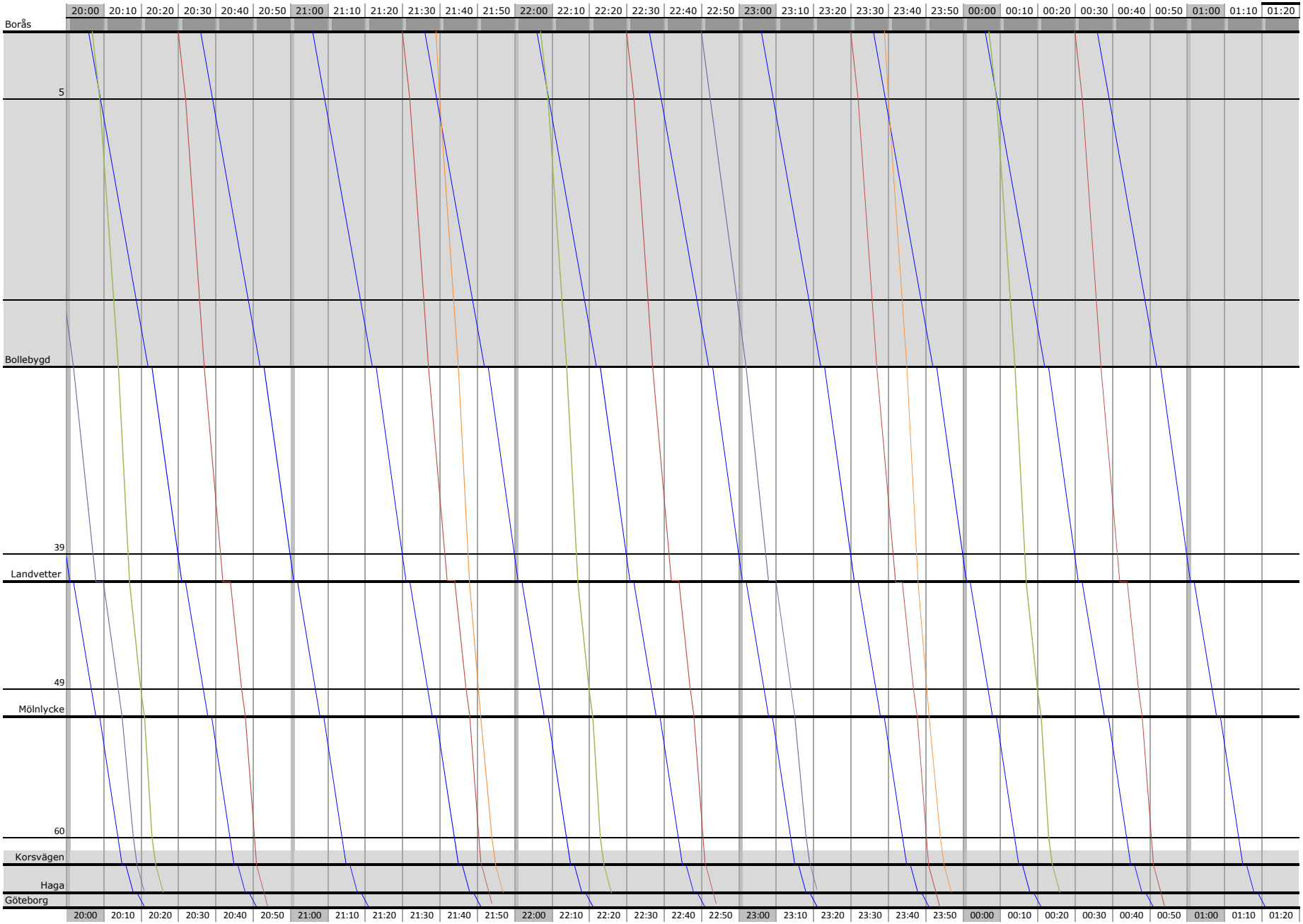
Graphic time table for VT2 (US3)

From Borås to Göteborg



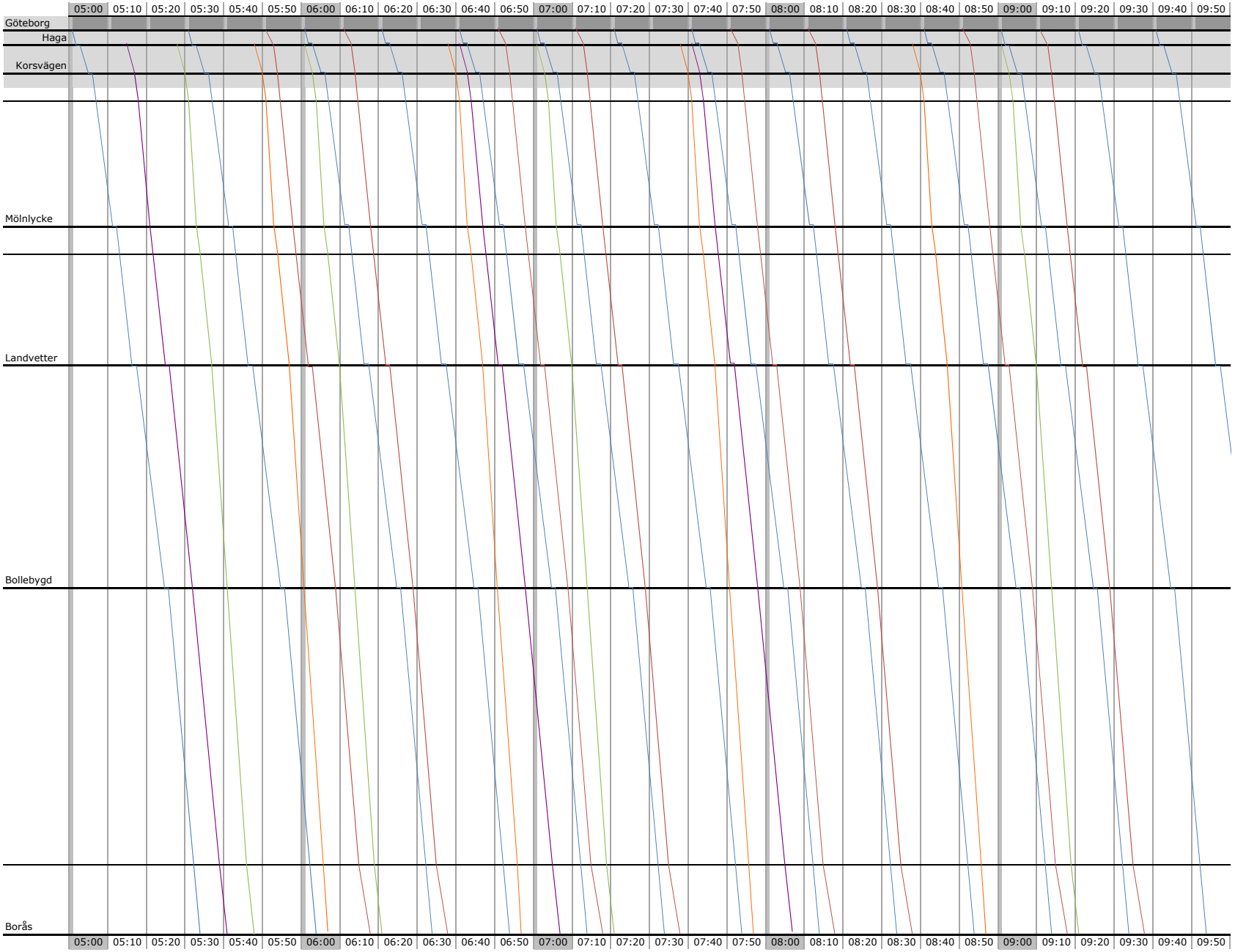
Graphic time table for VT2 (US3)

From Borås to Göteborg



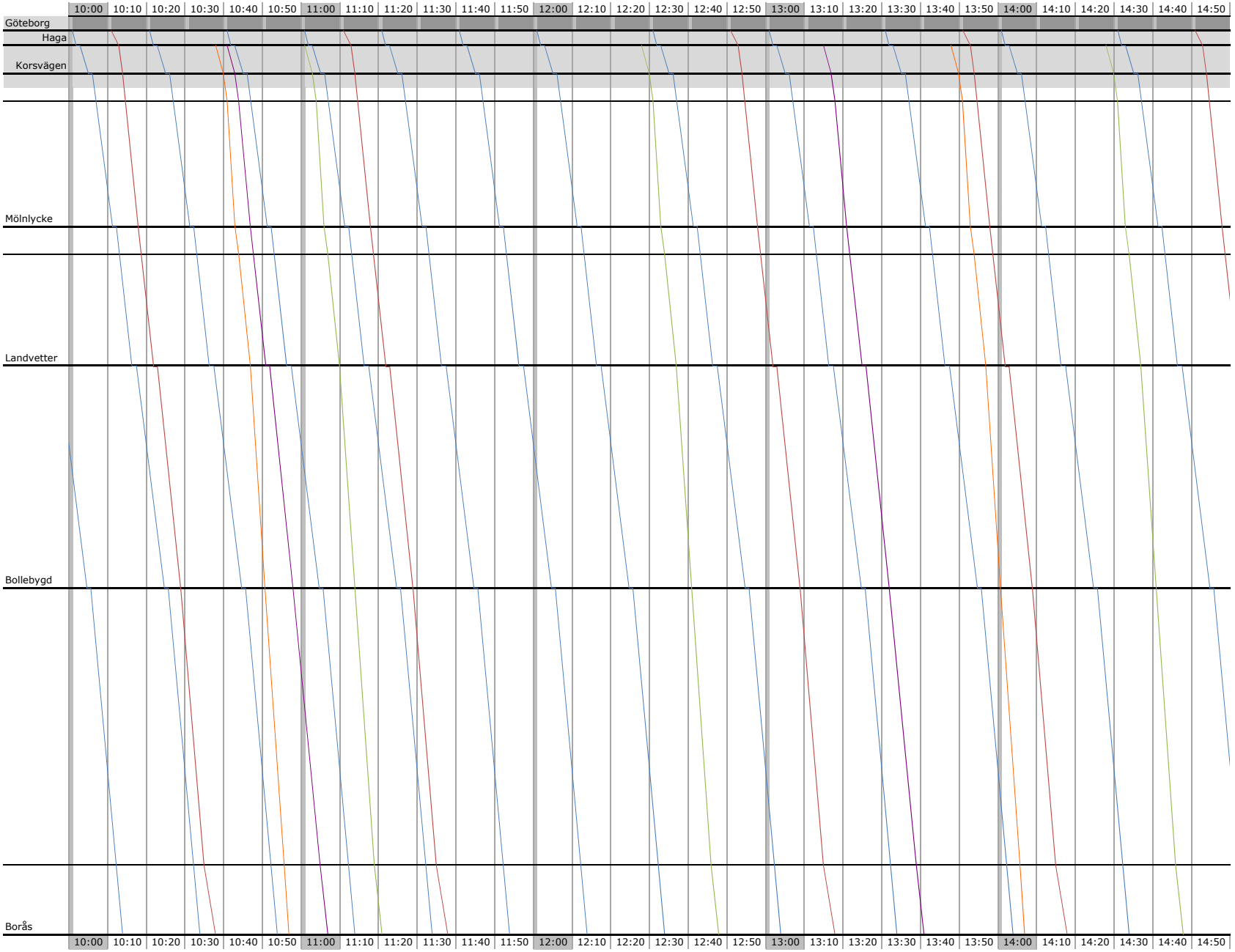
Graphic time table for VT2 (US4)

From Göteborg to Borås



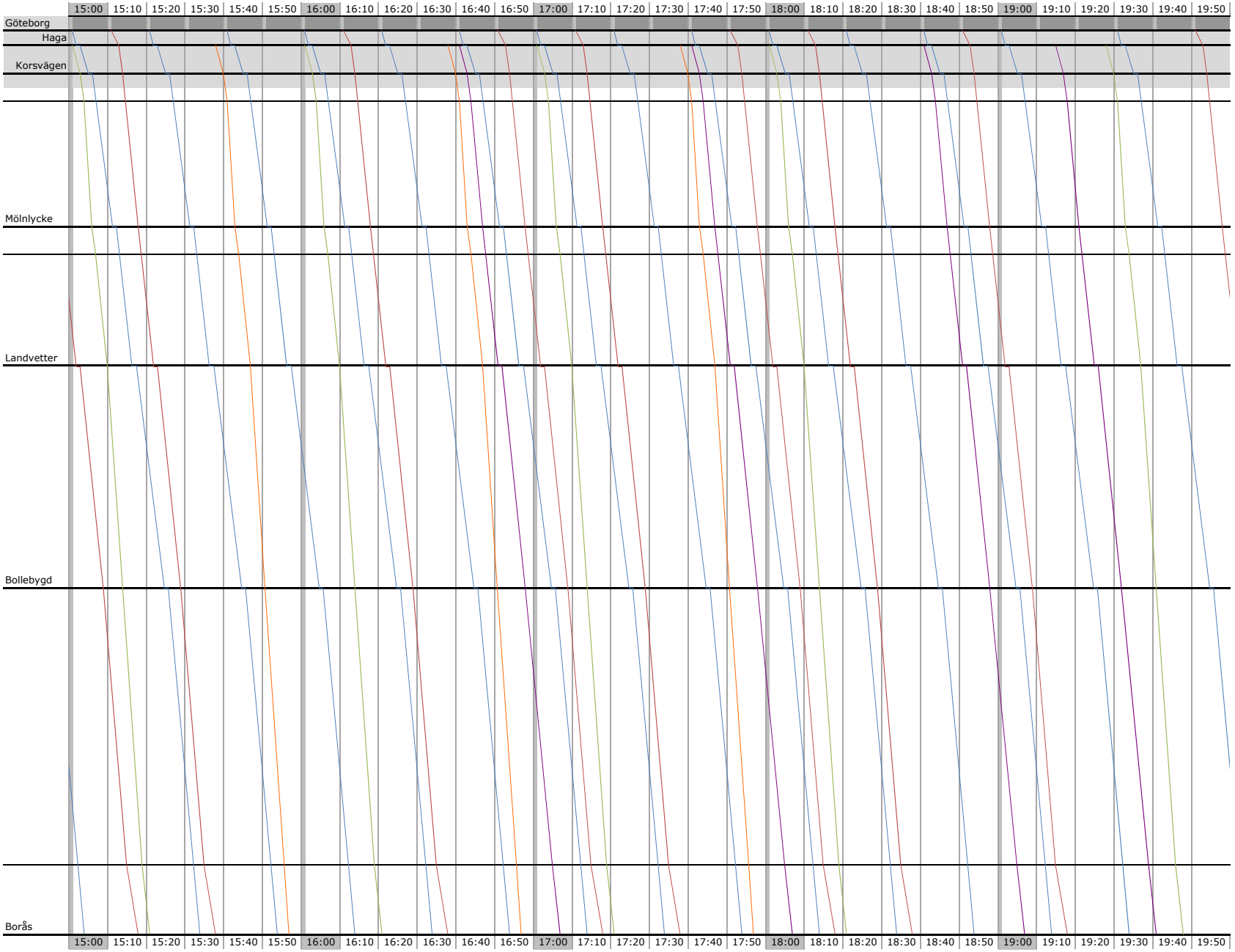
Graphic time table for VT2 (US4)

From Göteborg to Borås



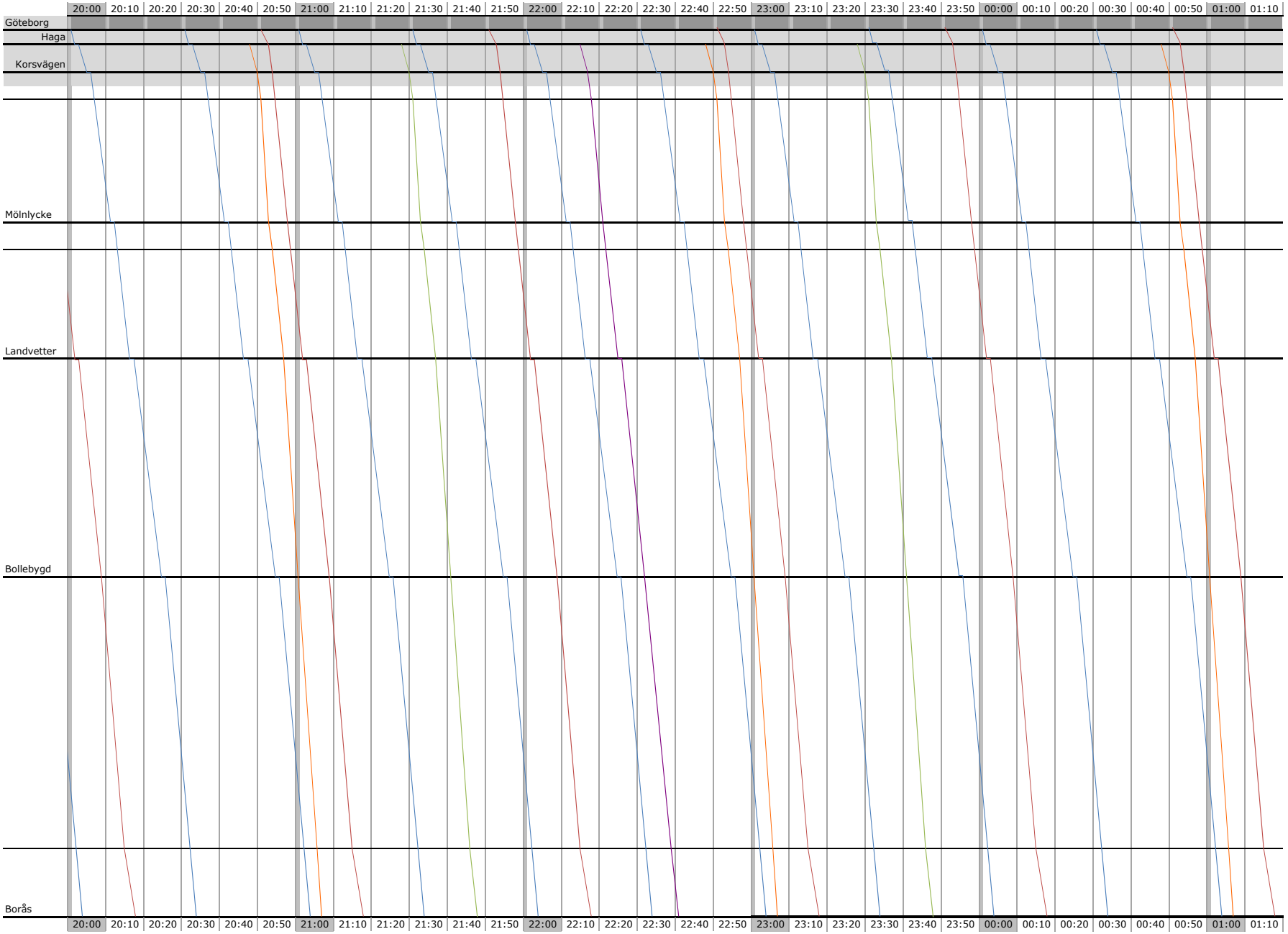
Graphic time table for VT2 (US4)

From Göteborg to Borås



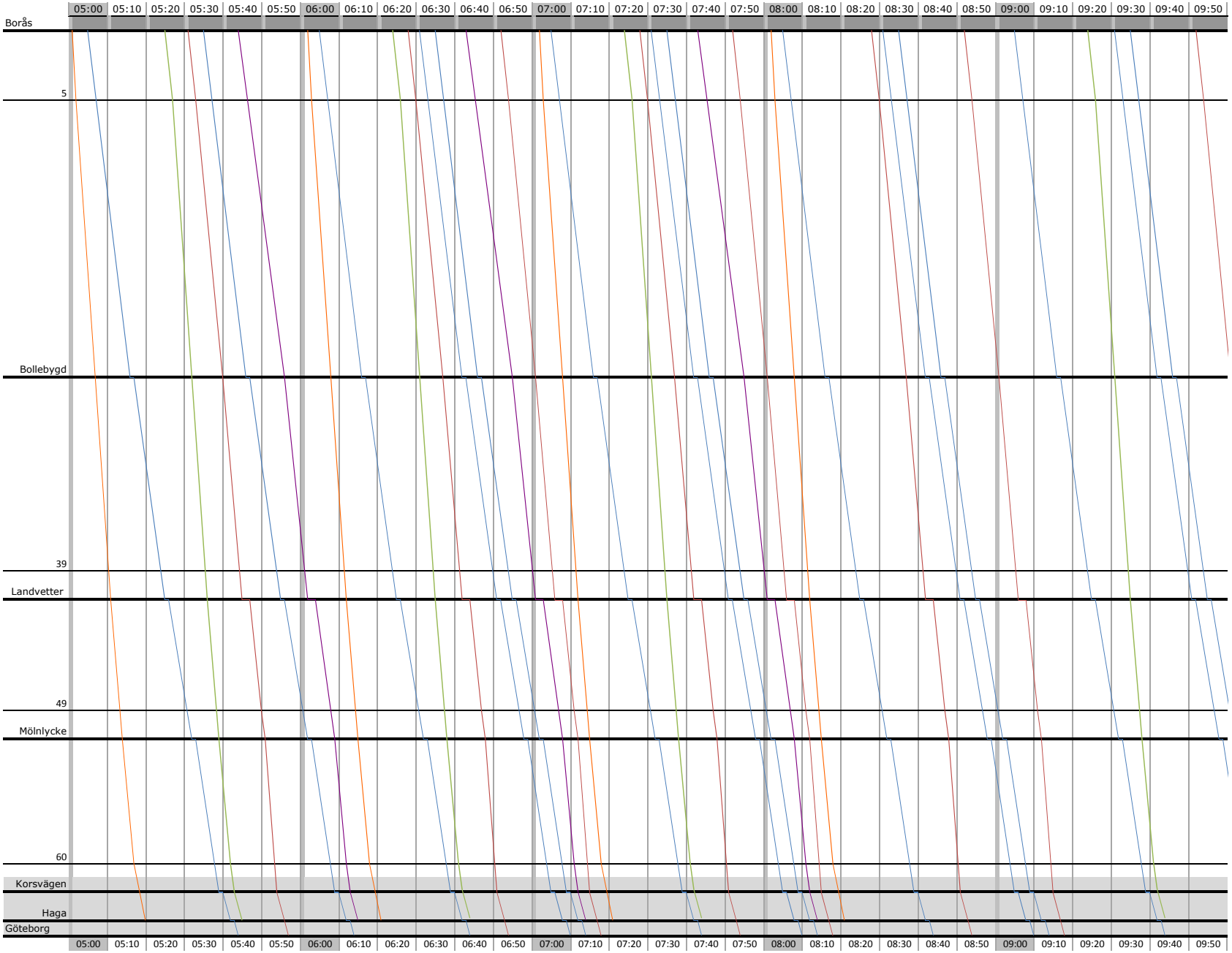
Graphic time table for VT2 (US4)

From Göteborg to Borås



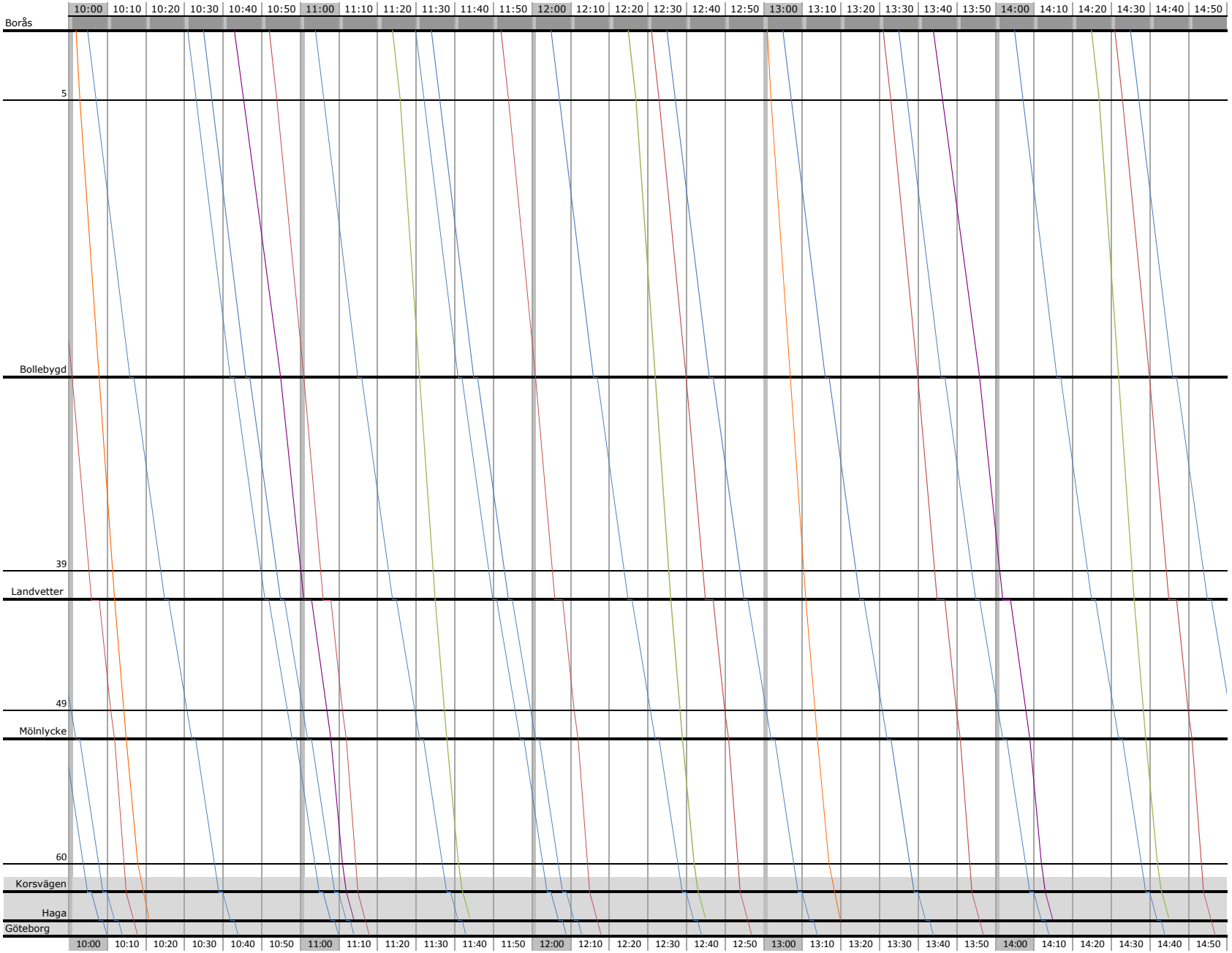
Graphic time table for VT2 (US4)

From Borås to Göteborg



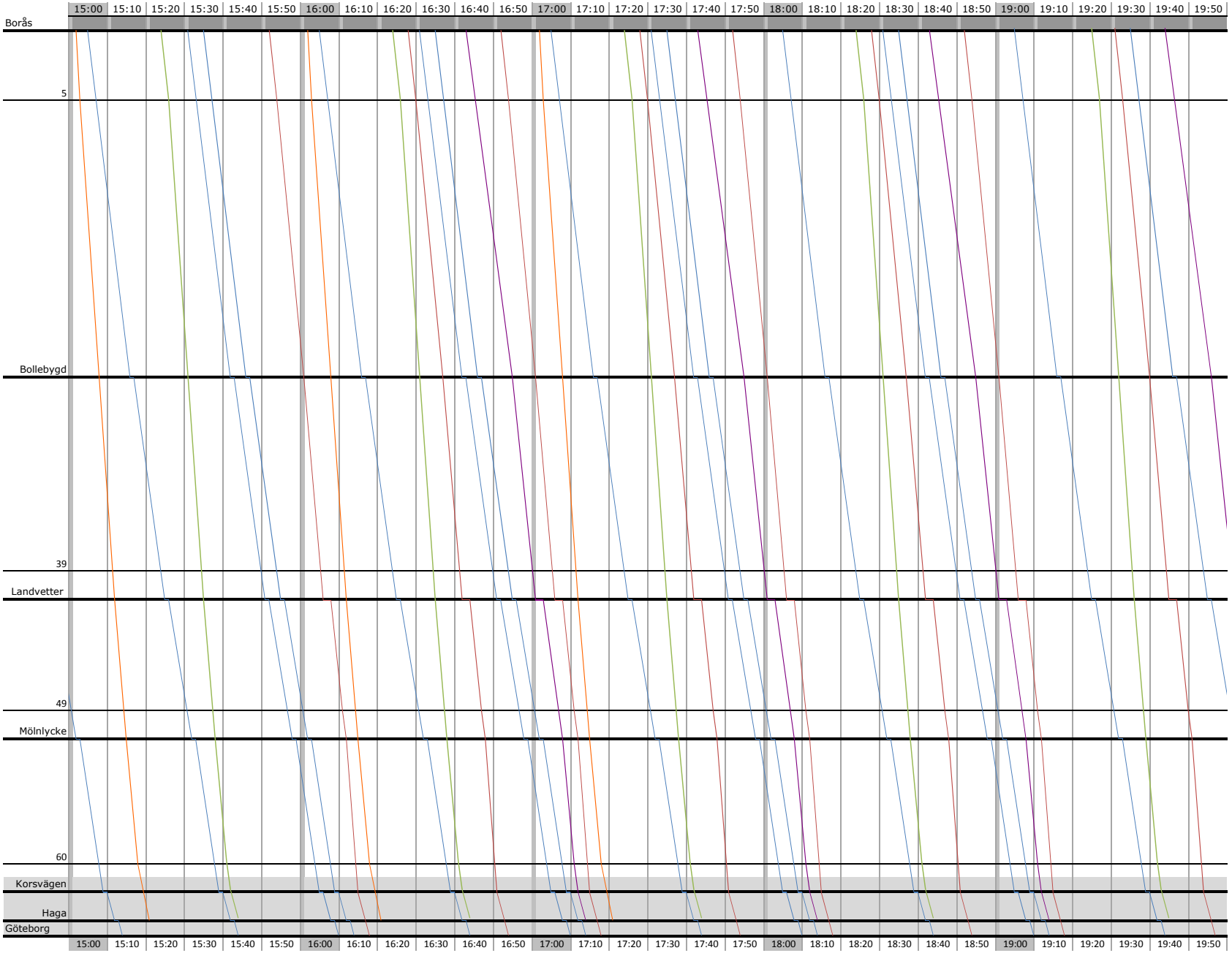
Graphic time table for VT2 (US4)

From Borås to Göteborg



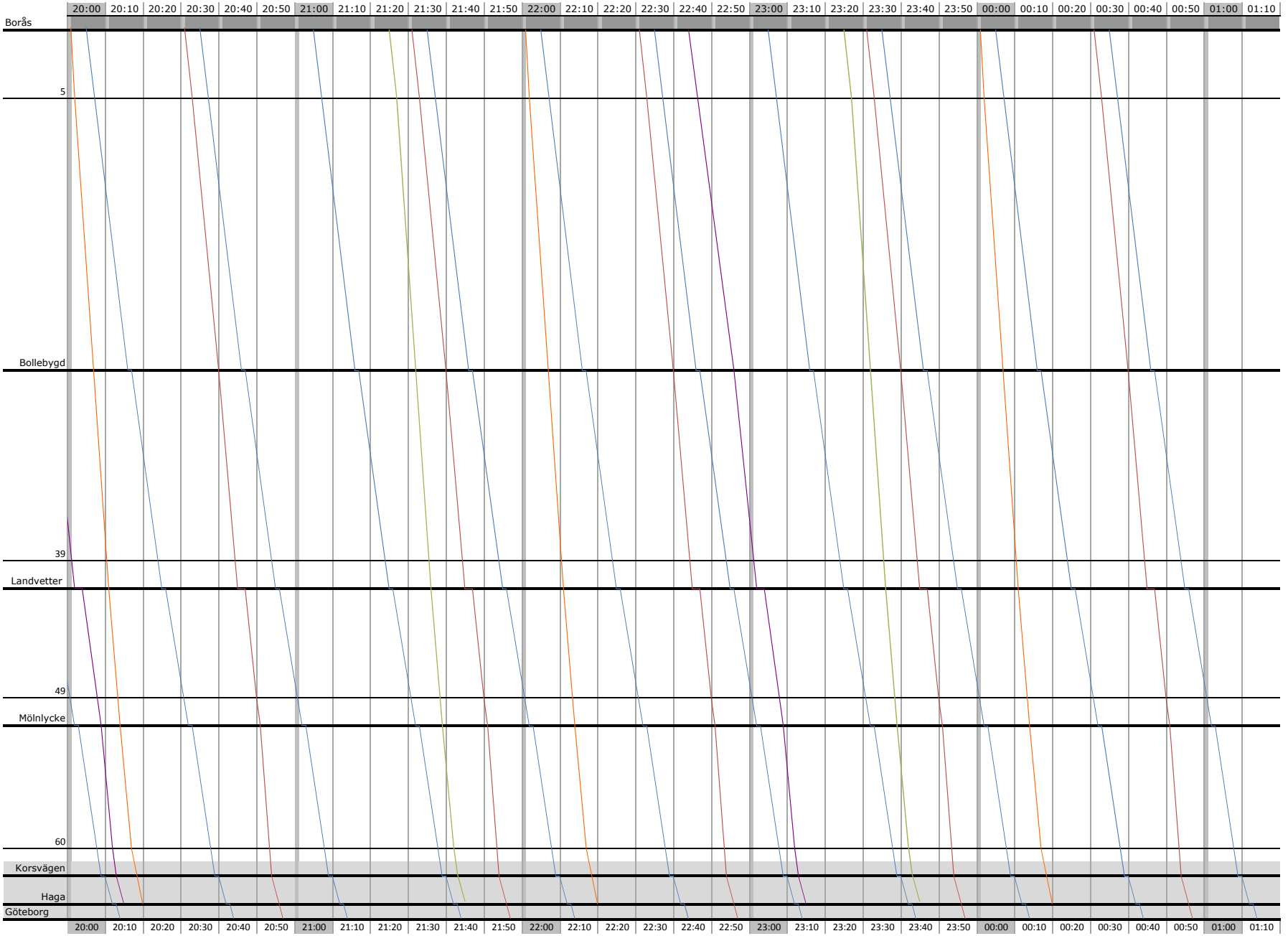
Graphic time table for VT2 (US4)

From Borås to Göteborg



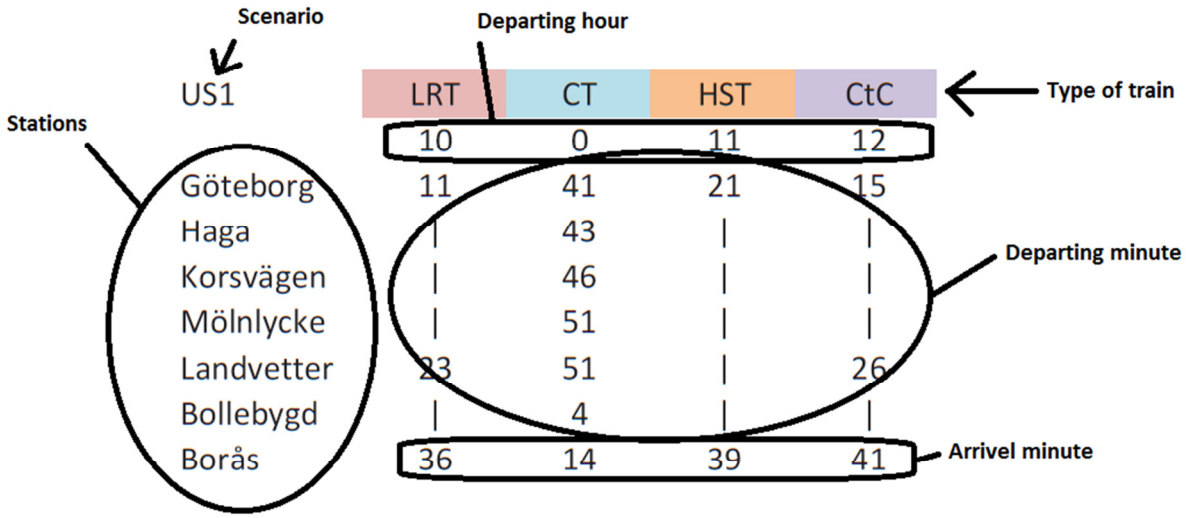
Graphic time table for VT2 (US4)

From Borås to Göteborg



Appendix 5 – Timetables (tables)

In this appendix are the timetables for all the scenarios. Are in tables and below is a key how you read the timetable.



Type of train:

HST – High speed train, orange is without stop in Borås and green is with.

LRG – Large regional train

CtC – Coast-to-coast

CT – Commuter train

US1	CtC	LRT	HST (Bs)	LRT	HST	LRT	HST (Bs)	HST (Bs)	LRT	CtC	LRT	HST (Bs)	CT	HST	HST (Bs)	LRT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
Göteborg	15	20	30	34	45	48	2	6	9	15	20	29	29	47	50	52
Haga	|	|	|	|	|	|	|	|	|	|	|	|	31	|	|	|
Korsvägen	|	|	|	|	|	|	|	|	|	|	|	|	34	|	|	|
Mölnlycke	|	|	|	|	|	|	|	|	|	|	|	|	39	|	|	|
Landvetter	26	32	|	46	|	0	|	|	21	26	32	|	39	|	|	4
Bollebygd	|	|	|	|	|	|	|	|	|	|	|	|	52	|	|	|
Borås	41	45	49	59	3	13	21	25	34	41	45	48	2	5	9	17

	LRT	HST	LRT	HST (Bs)	LRT	CtC	HST (Bs)	HST	HST (Bs)	LRT	HST (Bs)	LRT	HST (Bs)	LRT	CtC	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
Borås	15	25	29	37	41	45	1	6	9	12	20	23	31	34	37	41
Bollebygd	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	53
Landvetter	29	|	43	|	55	5	|	|	|	26	|	37	|	48	57	2
Mölnlycke	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	9
Korsvägen	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	16
Haga	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	19
Göteborg	39	43	53	56	5	16	20	24	28	36	39	47	50	58	8	20

US1	HST (Bs)	CT	CT	HST (Bs)	CT	HST (Bs)	LRT	HST (Bs)	LRT	CT	CT	LRT	CT	HST (Bs)	CtC	CT
	7	0	0	0	0	0	0	0	0	0	8	0	0	9	0	0
Göteborg	1	1	5	22	22	39	41	50	52	53	17	30	41	2	15	41
Haga	|	3	7	|	24	|	|	|	|	55	19	|	43	|	|	43
Korsvägen	|	6	10	|	27	|	|	|	|	58	22	|	46	|	|	46
Mölnlycke	|	11	15	|	32	|	|	|	|	3	27	|	51	|	|	51
Landvetter	|	11	15	|	32	|	53	|	4	3	27	42	51	|	26	51
Bollebygd	|	24	28	|	45	|	|	|	|	16	40	|	4	|	|	4
Borås	20	34	38	41	55	58	6	9	17	26	50	55	14	21	41	14

	HST (Bs)	HST	LRT	HST (Bs)	CT	CT	HST (Bs)	LRT	CT	CT	CT	LRT	CT	HST (Bs)	CT	CtC
	7	0	0	0	0	0	0	0	0	0	8	0	0	9	0	0
Borås	1	6	9	17	21	26	45	48	51	56	21	48	51	12	21	48
Bollebygd	|	|	|	|	33	38	|	|	3	8	33	|	3	|	33	|
Landvetter	|	|	23	|	42	47	|	2	12	17	42	2	12	|	42	8
Mölnlycke	|	|	|	|	49	54	|	|	19	24	49	|	19	|	49	|
Korsvägen	|	|	|	|	56	1	|	|	26	31	56	|	26	|	56	|
Haga	|	|	|	|	59	4	|	|	29	34	59	|	29	|	59	|
Göteborg	20	24	33	36	0	5	4	12	30	35	0	12	30	31	0	19

US1	LRT	CT	HST	CtC	LRT	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	LRT	CT	LRT	CT
	10	0	11	12	0	0	13	14	0	15	0	0	0	0	0	0
Göteborg	11	41	21	15	21	41	21	21	41	1	6	15	22	27	38	42
Haga	|	43	|	|	|	43	|	|	43	|	|	|	|	29	|	44
Korsvägen	|	46	|	|	|	46	|	|	46	|	|	|	|	32	|	47
Mölnlycke	|	51	|	|	|	51	|	|	51	|	|	|	|	37	|	52
Landvetter	23	51	|	26	33	51	|	33	51	|	18	26	34	37	50	52
Bollebygd	|	4	|	|	|	4	|	|	4	|	|	|	|	50	|	5
Borås	36	14	39	41	46	14	40	46	14	19	31	41	47	0	3	15

	LRT	CT	HST	LRT	CT	CtC	HST (Bs)	LRT	CT	LRT	HST	LRT	CT	LRT	CT	CtC
	10	0	11	12	0	0	13	14	0	15	0	0	0	0	0	0
Borås	12	21	12	12	21	48	12	12	21	1	12	18	21	38	41	49
Bollebygd	|	33	|	|	33	|	|	|	33	|	|	|	33	|	53	|
Landvetter	26	42	|	26	42	8	|	26	42	15	|	32	42	52	2	9
Mölnlycke	|	49	|	|	49	|	|	|	49	|	|	|	49	|	9	|
Korsvägen	|	56	|	|	56	|	|	|	56	|	|	|	56	|	16	|
Haga	|	59	|	|	59	|	|	|	59	|	|	|	59	|	19	|
Göteborg	36	0	30	36	0	19	31	36	0	25	30	42	0	2	20	20

US1	HST	HST (Bs)	HST (Bs)	LRT	CT	CT	LRT	HST (Bs)	HST (Bs)	LRT	CtC	CT	CT	LRT	HST (Bs)	CT
	16	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0
Göteborg	1	4	7	9	14	18	28	38	41	43	48	48	52	11	20	21
Haga	|	|	|	|	16	20	|	|	|	|	|	50	54	|	|	23
Korsvägen	|	|	|	|	19	23	|	|	|	|	|	53	57	|	|	26
Mölnlycke	|	|	|	|	24	28	|	|	|	|	|	58	2	|	|	31
Landvetter	|	|	|	21	24	28	40	|	|	55	59	58	2	23	|	31
Bollebygd	|	|	|	|	37	41	|	|	|	|	|	11	15	|	|	44
Borås	19	23	26	34	47	51	53	57	0	8	14	21	25	36	39	54

	LRT	HST	HST (Bs)	HST (Bs)	LRT	CT	CT	CtC	LRT	HST (Bs)	HST (Bs)	CT	CT	LRT	CT	HST (Bs)
	16	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0
Borås	0	8	11	14	17	20	23	31	42	49	52	55	59	18	21	41
Bollebygd	|	|	|	|	|	32	35	|	|	|	|	7	11	|	33	|
Landvetter	14	|	|	|	31	41	44	51	56	|	|	16	20	32	42	|
Mölnlycke	|	|	|	|	|	48	51	|	|	|	|	23	27	|	49	|
Korsvägen	|	|	|	|	|	55	58	|	|	|	|	30	34	|	56	|
Haga	|	|	|	|	|	58	1	|	|	|	|	33	37	|	59	|
Göteborg	24	26	30	33	41	59	2	2	6	8	11	34	38	42	0	0

US1	LRT	CT	LRT	CT	CtC	HST	CT	LRT	HST (Bs)	CT	CtC	LRT	HST	CT	LRT
	0	0	18	0	19	0	0	20	21	0	22	0	23	0	0
Göteborg	34	41	32	41	6	21	41	21	21	41	15	21	21	41	21
Haga	|	43	|	43	|	|	43	|	|	43	|	|	|	43	|
Korsvägen	|	46	|	46	|	|	46	|	|	46	|	|	|	46	|
Mölnlycke	|	51	|	51	|	|	51	|	|	51	|	|	|	51	|
Landvetter	46	51	44	51	17	|	51	33	|	51	26	33	|	51	33
Bollebygd	|	4	|	4	|	|	4	|	|	4	|	|	|	4	|
Borås	59	14	57	14	32	39	14	46	40	14	41	46	39	14	46

	LRT	CT	LRT	CT	HST	CT	CtC	LRT	HST (Bs)	CT	LRT	CtC	HST	CT	LRT
	0	0	18	0	19	0	0	20	21	0	22	0	23	0	0
Borås	44	51	12	21	12	21	47	12	12	21	12	47	12	21	12
Bollebygd	|	3	|	33	|	33	|	|	|	33	|	|	|	33	|
Landvetter	58	12	26	42	|	42	7	26	|	42	26	7	|	42	26
Mölnlycke	|	19	|	49	|	49	|	|	|	49	|	|	|	49	|
Korsvägen	|	26	|	56	|	56	|	|	|	56	|	|	|	56	|
Haga	|	29	|	59	|	59	|	|	|	59	|	|	|	59	|
Göteborg	8	30	36	0	30	0	18	36	31	0	36	18	30	0	36

US2	CtC	LRT	CtC	HST (Bs)	HST	CtC	HST (Bs)	LRT	HST	CT	CtC	HST (Bs)	HST	CtC	CT	HST (Bs)
	5					6								7		
Göteborg	21	27	33	46	56	1	11	16	29	31	44	54	58	1	1	18
Haga	|	|	|	|	|	|	|	|	|	33	|	|	|	|	3	|
Korsvägen	|	|	|	|	|	|	|	|	|	36	|	|	|	|	6	|
Mölnlycke	|	|	|	|	|	|	|	|	|	41	|	|	|	|	11	|
Landvetter	32	39	44	|	|	12	|	28	|	41	55	|	|	12	11	|
Bollebygd	|	|	|	|	|	|	|	|	|	54	|	|	|	|	24	|
Borås	47	52	59	5	14	27	30	41	47	4	10	13	16	27	34	37

	HST (Bs)	CtC	HST	LRT	CtC	HST	HST (Bs)	CtC	CT	HST	HST (Bs)	LRT	CtC	HST	HST (Bs)	CT
	5					6								7		
Borås	4	12	36	42	45	1	4	7	11	36	39	42	45	1	4	11
Bollebygd	|	|	|	|	|	|	|	|	28	|	|	|	|	|	|	28
Landvetter	|	32	|	56	5	|	|	27	37	|	|	56	5	|	|	37
Mölnlycke	|	|	|	|	|	|	|	|	44	|	|	|	|	|	|	44
Korsvägen	|	|	|	|	|	|	|	|	51	|	|	|	|	|	|	51
Haga	|	|	|	|	|	|	|	|	54	|	|	|	|	|	|	54
Göteborg	23	43	54	6	16	19	23	38	56	54	58	6	16	19	23	56

US2	CT	HST	CT	HST	CT	CT	HST (Bs)	LRT	CT	CtC	CT	CtC	CT	HST	CT	CtC
						8			0	0	9	0	0	0	10	0
Göteborg	18	36	36	54	54	1	18	30	36	48	1	21	36	54	1	21
Haga	20	|	38	|	56	3	|	|	38	|	3	|	38	|	3	|
Korsvägen	23	|	41	|	59	6	|	|	41	|	6	|	41	|	6	|
Mölnlycke	28	|	46	|	4	11	|	|	46	|	11	|	46	|	11	|
Landvetter	28	|	46	|	4	11	|	42	46	59	11	32	46	|	11	32
Bollebygd	41	|	59	|	17	24	|	|	59	|	24	|	59	|	24	|
Borås	51	54	9	12	27	34	37	55	9	14	34	47	9	12	34	47

	CT	HST	CtC	CT	CT	HST (Bs)	CT	LRT	CtC	CT	HST	CT	CtC	CT	HST (Bs)	LRT
						8			0	0	9	0	0	10	0	0
Borås	15	36	45	49	53	14	17	42	45	49	10	14	45	14	39	42
Bollebygd	32	|	|	6	10	|	34	|	|	6	|	31	|	31	|	|
Landvetter	41	|	5	15	19	|	43	56	5	15	|	40	5	40	|	56
Mölnlycke	48	|	|	22	26	|	50	|	|	22	|	47	|	47	|	|
Korsvägen	55	|	|	29	33	|	57	|	|	29	|	54	|	54	|	|
Haga	58	|	|	32	36	|	0	|	|	32	|	57	|	57	|	|
Göteborg	0	54	16	34	38	33	2	6	16	34	28	59	16	59	58	6

US2	LRT	HST (Bs)	CtC	CT	CtC	HST	CtC	CT	LRT	HST (Bs)	CT	CtC	CT	HST	HST (Bs)	HST
	0	0	11	12	0	0	13	14	0	0	15	0	0	0	16	0
Göteborg	36	54	21	1	21	54	21	1	36	54	1	21	36	54	1	5
Haga	|	|	|	3	|	|	|	3	|	|	3	|	38	|	|	|
Korsvägen	|	|	|	6	|	|	|	6	|	|	6	|	41	|	|	|
Mölnlycke	|	|	|	11	|	|	|	11	|	|	11	|	46	|	|	|
Landvetter	48	|	32	11	32	|	32	11	48	|	11	32	46	|	|	|
Bollebygd	|	|	|	24	|	|	|	24	|	|	24	|	59	|	|	|
Borås	1	13	47	34	47	12	47	34	1	13	34	47	9	12	20	23

	CtC	CT	CtC	HST	CT	CtC	CtC	CT	HST (Bs)	LRT	HST	CT	CT	CtC	HST	HST (Bs)
	0	11	0	12	0	0	13	14	0	0	15	0	0	0	16	0
Borås	45	14	45	10	14	45	45	14	39	42	10	14	29	45	1	4
Bollebygd	|	31	|	|	31	|	|	31	|	|	|	31	46	|	|	|
Landvetter	5	40	5	|	40	5	5	40	|	56	|	40	55	5	|	|
Mölnlycke	|	47	|	|	47	|	|	47	|	|	|	47	2	|	|	|
Korsvägen	|	54	|	|	54	|	|	54	|	|	|	54	9	|	|	|
Haga	|	57	|	|	57	|	|	57	|	|	|	57	12	|	|	|
Göteborg	16	59	16	28	59	16	16	59	58	6	28	59	14	16	19	23

US2	CT	CtC	CT	LRT	HST (Bs)	HST	CT	CtC	CT	CT	CtC	CT	HST (Bs)	CT	CtC	LRT
	0	0	0	0	0	0	0	0	0	17	0	0	0	18	0	0
Göteborg	5	16	16	27	36	40	40	51	51	1	21	36	54	1	21	36
Haga	7	|	18	|	|	|	42	|	53	3	|	38	|	3	|	|
Korsvägen	10	|	21	|	|	|	45	|	56	6	|	41	|	6	|	|
Mölnlycke	15	|	26	|	|	|	50	|	1	11	|	46	|	11	|	|
Landvetter	15	27	26	39	|	|	50	2	1	11	32	46	|	11	32	48
Bollebygd	28	|	39	|	|	|	3	|	14	24	|	59	|	24	|	|
Borås	38	42	49	52	55	58	13	17	24	34	47	9	13	34	47	1

	CtC	CT	CT	HST	HST (Bs)	LRT	CtC	CT	CT	CT	HST (Bs)	CtC	CT	HST	CT	LRT
	0	0	0	0	0	0	0	0	0	17	0	0	0	18	0	0
Borås	7	11	15	36	39	42	45	49	53	14	39	45	49	10	14	42
Bollebygd	|	28	32	|	|	|	|	6	10	31	|	|	6	|	31	|
Landvetter	27	37	41	|	|	56	5	15	19	40	|	5	15	|	40	56
Mölnlycke	|	44	48	|	|	|	|	22	26	47	|	|	22	|	47	|
Korsvägen	|	51	55	|	|	|	|	29	33	54	|	|	29	|	54	|
Haga	|	54	58	|	|	|	|	32	36	57	|	|	32	|	57	|
Göteborg	38	56	0	54	58	6	16	34	38	59	58	16	34	28	59	6

US2	HST	CtC	HST (Bs)	CT	CtC	LRT	CtC	HST	CT	CtC	HST (Bs)	CT
	0	19	0	20	0	0	21	0	22	23	0	0
Göteborg	54	21	54	1	21	36	21	54	1	21	54	1
Haga	|	|	|	3	|	|	|	|	3	|	|	3
Korsvägen	|	|	|	6	|	|	|	|	6	|	|	6
Mölnlycke	|	|	|	11	|	|	|	|	11	|	|	11
Landvetter	|	32	|	11	32	48	32	|	11	32	|	11
Bollebygd	|	|	|	24	|	|	|	|	24	|	|	24
Borås	12	47	13	34	47	1	47	12	34	47	13	34

	CtC	HST (Bs)	CtC	CT	LRT	CtC	HST	CtC	CT	HST (Bs)	CtC	CT
	0	19	0	20	0	0	21	0	22	23	0	0
Borås	45	39	45	14	42	45	10	45	14	39	45	14
Bollebygd	|	|	|	31	|	|	|	|	31	|	|	31
Landvetter	5	|	5	40	56	5	|	5	40	|	5	40
Mölnlycke	|	|	|	47	|	|	|	|	47	|	|	47
Korsvägen	|	|	|	54	|	|	|	|	54	|	|	54
Haga	|	|	|	57	|	|	|	|	57	|	|	57
Göteborg	16	58	16	59	6	16	28	16	59	58	16	59

US3	HST	LRT	CtC	LRT	HST	LRT	HST	LRT	HST (Bs)	LRT	HST	CT	LRT	HST (Bs)	HST	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Göteborg	9	15	23	30	42	48	1	6	16	20	31	31	43	51	1	1
Haga	|	|	|	|	|	|	|	|	|	|	|	33	|	|	|	3
Korsvägen	|	|	|	|	|	|	|	|	|	|	|	36	|	|	|	6
Mölnlycke	|	|	|	|	|	|	|	|	|	|	|	41	|	|	|	11
Landvetter	|	27	34	42	|	0	|	18	|	32	|	41	55	|	|	11
Bollebygd	|	|	|	|	|	|	|	|	|	|	|	54	|	|	|	24
Borås	27	40	49	55	0	13	19	31	35	45	49	11	8	10	19	41

Notis

	HST	LRT	HST (Bs)	LRT	CtC	LRT	HST	LRT	HST (Bs)	LRT	HST	CT	LRT	CtC	HST (Bs)	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Borås	6	12	23	29	35	49	1	5	14	18	28	29	34	45	1	1
Bollebygd	|	|	40	|	|	|	|	|	31	|	|	46	|	|	18	18
Landvetter	|	26	|	43	55	3	|	19	|	32	|	55	48	5	|	27
Mölnlycke	|	|	|	|	|	|	|	|	|	|	|	2	|	|	|	34
Korsvägen	|	|	|	|	|	|	|	|	|	|	|	9	|	|	|	41
Haga	|	|	|	|	|	|	|	|	|	|	|	12	|	|	|	44
Göteborg	24	36	42	53	6	13	19	29	33	42	46	14	58	16	20	46

US3	CT	LRT	CT	HST (Bs)	CT	LRT	CT	HST (Bs)	CT	HST	CtC	CT	LRT	CT	HST	LRT
	0	0	0	0	0	8	0	0	0	9	0	0	10	0	11	12
Göteborg	16	25	31	46	46	10	16	40	46	10	31	46	10	46	10	10
Haga	18	|	33	|	48	|	18	|	48	|	|	48	|	48	|	|
Korsvägen	21	|	36	|	51	|	21	|	51	|	|	51	|	51	|	|
Mölnlycke	26	|	41	|	56	|	26	|	56	|	|	56	|	56	|	|
Landvetter	26	37	41	|	56	22	26	|	56	|	42	56	22	56	|	22
Bollebygd	39	|	54	|	9	|	39	|	9	|	|	9	|	9	|	|
Borås	56	50	11	5	26	35	56	59	26	28	57	26	35	26	28	35

Notis

	CT	LRT	CT	HST	CT	CT	HST (Bs)	CT	LRT	CtC	CT	HST	LRT	CT	HST	CtC
	0	0	0	0	0	8	0	0	0	9	0	0	10	0	11	12
Borås	11	37	41	48	51	16	19	46	51	1	46	48	37	46	19	1
Bollebygd	28	|	58	|	8	33	36	3	|	|	3	|	|	3	|	|
Landvetter	37	51	7	|	17	42	|	12	5	21	12	|	51	12	|	21
Mölnlycke	44	|	14	|	24	49	|	19	|	|	19	|	|	19	|	|
Korsvägen	51	|	21	|	31	56	|	26	|	|	26	|	|	26	|	|
Haga	54	|	24	|	34	59	|	29	|	|	29	|	|	29	|	|
Göteborg	56	1	26	6	36	1	38	31	15	32	31	6	1	31	37	32

US3	CtC	CT	HST	LRT	CT	LRT	CT	HST (Bs)	CT	HST	CT	LRT	HST (Bs)	CtC	CT	LRT
	0	0	13	14	0	15	0	0	0	16	0	0	0	0	0	0
Göteborg	31	46	10	10	46	10	16	40	46	2	2	11	20	23	23	32
Haga	|	48	|	|	48	|	18	|	48	|	4	|	|	|	25	|
Korsvägen	|	51	|	|	51	|	21	|	51	|	7	|	|	|	28	|
Mölnlycke	|	56	|	|	56	|	26	|	56	|	12	|	|	|	33	|
Landvetter	42	56	|	22	56	22	26	|	56	|	12	23	|	34	33	44
Bollebygd	|	9	|	|	9	|	39	|	9	|	25	|	|	|	46	|
Borås	57	26	28	35	26	35	56	59	26	20	42	36	39	49	3	57

Notis

	LRT	CT	HST (Bs)	LRT	CT	CT	HST	CT	LRT	HST	LRT	CT	HST	LRT	CT	HST (Bs)
	0	0	13	14	0	15	0	0	0	16	0	0	0	0	0	0
Borås	37	46	19	37	46	5	12	27	33	1	4	5	13	18	30	33
Bollebygd	|	3	36	|	3	22	|	44	|	|	|	22	|	|	47	50
Landvetter	51	12	|	51	12	31	|	53	47	|	18	31	|	32	56	|
Mölnlycke	|	19	|	|	19	38	|	0	|	|	|	38	|	|	3	|
Korsvägen	|	26	|	|	26	45	|	7	|	|	|	45	|	|	10	|
Haga	|	29	|	|	29	48	|	10	|	|	|	48	|	|	13	|
Göteborg	1	31	38	1	31	50	30	12	57	19	28	50	31	42	15	52

US3	HST	CT	LRT	CT	LRT	CT	HST (Bs)	CT	LRT	HST	CT	CtC	HST (Bs)	CT	LRT	HST
	0	0	0	0	17	0	0	0	18	0	0	19	0	0	20	21
Göteborg	42	42	51	54	10	16	40	46	10	40	46	10	40	46	10	10
Haga	|	44	|	56	|	18	|	48	|	|	48	|	|	48	|	|
Korsvägen	|	47	|	59	|	21	|	51	|	|	51	|	|	51	|	|
Mölnlycke	|	52	|	4	|	26	|	56	|	|	56	|	|	56	|	|
Landvetter	|	52	3	4	22	26	|	56	22	|	56	21	|	56	22	|
Bollebygd	|	5	|	17	|	39	|	9	|	|	9	|	|	9	|	|
Borås	0	22	16	34	35	56	59	26	35	58	26	36	59	26	35	28

Notis

	CT	LRT	CT	CtC	CT	HST	LRT	CT	HST (Bs)	LRT	CT	CtC	CT	HST	LRT	HST (Bs)
	0	0	0	0	17	0	0	0	18	0	0	19	0	0	20	21
Borås	34	36	46	47	16	21	41	46	19	37	46	1	46	48	37	18
Bollebygd	51	|	3	|	33	|	|	3	36	|	3	|	3	|	|	35
Landvetter	0	50	12	7	42	|	55	12	|	51	12	21	12	|	51	|
Mölnlycke	7	|	19	|	49	|	|	19	|	|	19	|	19	|	|	|
Korsvägen	14	|	26	|	56	|	|	26	|	|	26	|	26	|	|	|
Haga	17	|	29	|	59	|	|	29	|	|	29	|	29	|	|	|
Göteborg	19	0	31	18	1	39	5	31	38	1	31	32	31	6	1	37

US3	CT	LRT	HST	CT	LRT
	0	22	23	0	0
Göteborg	46	10	10	46	10
Haga	48	|	|	48	|
Korsvägen	51	|	|	51	|
Mölnlycke	56	|	|	56	|
Landvetter	56	22	|	56	22
Bollebygd	9	|	|	9	|
Borås	26	35	28	26	35

Notis

	CT	LRT	CT	HST	LRT
	0	22	0	23	0
Borås	46	36	46	48	37
Bollebygd	3	|	3	|	|
Landvetter	12	50	12	|	51
Mölnlycke	19	|	19	|	|
Korsvägen	26	|	26	|	|
Haga	29	|	29	|	|
Göteborg	31	0	31	6	1

US4	HST (Bs)	LRT	HST (Bs)	LRT	CtC	LRT	HST	HST (Bs)	LRT	CT	LRT	HST	HST (Bs)	CtC	LRT	HST (Bs)
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	0	7
Göteborg	7	12	25	30	40	47	1	6	9	15	26	38	42	46	50	1
Haga	|	|	|	|	|	|	|	|	|	17	|	|	|	|	|	|
Korsvägen	|	|	|	|	|	|	|	|	|	20	|	|	|	|	|	|
Mölnlycke	|	|	|	|	|	|	|	|	|	25	|	|	|	|	|	|
Landvetter	|	24	|	42	51	59	|	|	21	25	38	|	|	57	2	|
Bollebygd	|	|	|	|	|	|	|	|	|	38	|	|	|	|	|	|
Borås	27	39	45	57	6	14	20	26	36	48	53	57	2	12	17	21

	HST (Bs)	LRT	CtC	LRT	HST (Bs)	LRT	HST	HST (Bs)	LRT	CT	CtC	LRT	HST	HST (Bs)	LRT	HST
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	0	7
Borås	5	9	25	34	47	50	1	5	9	17	25	34	44	47	50	1
Bollebygd	17	|	|	|	59	|	|	17	|	29	|	|	|	59	|	|
Landvetter	|	25	45	50	|	6	|	|	25	38	45	50	|	|	6	|
Mölnlycke	|	|	|	|	|	|	|	|	|	45	|	|	|	|	|	|
Korsvägen	|	|	|	|	|	|	|	|	|	52	|	|	|	|	|	|
Haga	|	|	|	|	|	|	|	|	|	55	|	|	|	|	|	|
Göteborg	25	35	56	0	7	16	20	25	35	56	56	0	3	7	16	20

US4	CT	LRT	CT	CT	HST	HST (Bs)	CT	CT	LRT	CT	HST (Bs)	CT	CtC	HST (Bs)	CT	LRT
	0	0	0	0	0	0	0	8	0	0	0	9	0	0	10	0
Göteborg	1	13	19	26	45	50	52	1	13	26	50	1	16	49	1	26
Haga	3	|	21	28	|	|	54	3	|	28	|	3	|	|	3	|
Korsvägen	6	|	24	31	|	|	57	6	|	31	|	6	|	|	6	|
Mölnlycke	11	|	29	36	|	|	2	11	|	36	|	11	|	|	11	|
Landvetter	11	25	29	36	|	|	2	11	25	36	|	11	27	|	11	38
Bollebygd	24	|	42	49	|	|	15	24	|	49	|	24	|	|	24	|
Borås	34	40	52	59	4	10	25	34	40	59	10	34	42	9	34	53

	HST (Bs)	CT	CT	LRT	HST (Bs)	CT	CT	CT	LRT	HST (Bs)	CT	CT	CtC	HST (Bs)	CT	LRT
	0	0	0	0	0	0	0	8	0	0	0	9	0	0	10	0
Borås	5	13	17	34	47	53	57	17	34	47	57	17	25	47	17	34
Bollebygd	17	25	29	|	59	5	9	29	|	59	9	29	|	59	29	|
Landvetter	|	34	38	50	|	14	18	38	50	|	18	38	45	|	38	50
Mölnlycke	|	41	45	|	|	21	25	45	|	|	25	45	|	|	45	|
Korsvägen	|	48	52	|	|	28	32	52	|	|	32	52	|	|	52	|
Haga	|	51	55	|	|	31	35	55	|	|	35	55	|	|	55	|
Göteborg	25	52	56	0	7	32	36	56	0	7	36	56	56	7	56	0

US4	HST (Bs)	CT	LRT	CtC	HST (Bs)	CT	LRT	CT	CtC	LRT	HST (Bs)	CT	HST	HST (Bs)	LRT	CtC
	11	12	0	0	13	14	0	15	0	0	0	0	16	0	0	0
Göteborg	49	1	26	46	49	1	26	1	16	26	36	40	1	4	6	11
Haga	|	3	|	|	|	3	|	3	|	|	|	42	|	|	|	|
Korsvägen	|	6	|	|	|	6	|	6	|	|	|	45	|	|	|	|
Mölnlycke	|	11	|	|	|	11	|	11	|	|	|	50	|	|	|	|
Landvetter	|	11	38	57	|	11	38	11	27	38	|	50	|	|	18	22
Bollebygd	|	24	|	|	|	24	|	24	|	|	|	3	|	|	|	|
Borås	9	34	53	12	9	34	53	34	42	53	56	13	20	24	33	37

	HST (Bs)	CT	CtC	LRT	HST (Bs)	CT	LRT	CT	CT	CtC	LRT	HST (Bs)	HST	HST (Bs)	LRT	CT
	11	12	0	0	13	14	0	15	0	0	0	0	16	0	0	0
Borås	47	16	25	34	47	17	34	13	17	25	34	47	1	5	9	13
Bollebygd	59	28	|	|	59	29	|	25	29	|	|	59	|	17	|	25
Landvetter	|	37	45	50	|	38	50	34	38	45	50	|	|	|	25	34
Mölnlycke	|	44	|	|	|	45	|	41	45	|	|	|	|	|	|	41
Korsvägen	|	51	|	|	|	52	|	48	52	|	|	|	|	|	|	48
Haga	|	54	|	|	|	55	|	51	55	|	|	|	|	|	|	51
Göteborg	7	55	56	0	7	56	0	52	56	56	0	7	20	25	35	52

US4	CT	HST (Bs)	HST	LRT	CT	LRT	CT	CT	CT	HST	LRT	CT	CT	LRT	CT	CtC
	0	0	0	0	0	0	0	0	17	0	0	0	18	0	19	0
Göteborg	11	27	31	34	38	49	53	57	1	21	26	31	1	26	1	16
Haga	13	|	|	|	40	|	55	59	3	|	|	33	3	|	3	|
Korsvägen	16	|	|	|	43	|	58	2	6	|	|	36	6	|	6	|
Mölnlycke	21	|	|	|	48	|	3	7	11	|	|	41	11	|	11	|
Landvetter	21	|	|	46	48	1	3	7	11	|	38	41	11	38	11	27
Bollebygd	34	|	|	|	1	|	16	20	24	|	|	54	24	|	24	|
Borås	44	47	50	1	11	16	26	30	34	40	53	4	34	53	34	42

	CT	CtC	LRT	HST	HST (Bs)	LRT	CT	CT	CT	LRT	HST	CT	CT	LRT	CT	CtC
	0	0	0	0	0	0	0	0	17	0	0	0	18	0	19	0
Borås	17	25	34	44	47	50	53	57	17	34	44	57	17	34	17	25
Bollebygd	29	|	|	|	59	|	5	9	29	|	|	9	29	|	29	|
Landvetter	38	45	50	|	|	6	14	18	38	50	|	18	38	50	38	45
Mölnlycke	45	|	|	|	|	|	21	25	45	|	|	25	45	|	45	|
Korsvägen	52	|	|	|	|	|	28	32	52	|	|	32	52	|	52	|
Haga	55	|	|	|	|	|	31	35	55	|	|	35	55	|	55	|
Göteborg	56	56	0	3	7	16	32	36	56	0	3	36	56	0	56	56

US4	HST (Bs)	LRT	CT	HST (Bs)	CtC	LRT	CT	HST (Bs)	LRT
	0	20	21	0	22	0	23	0	0
Göteborg	46	26	1	49	16	26	1	49	26
Haga	|	|	3	|	|	|	3	|	|
Korsvägen	|	|	6	|	|	|	6	|	|
Mölnlycke	|	|	11	|	|	|	11	|	|
Landvetter	|	38	11	|	27	38	11	|	38
Bollebygd	|	|	24	|	|	|	24	|	|
Borås	6	53	34	9	42	53	34	9	53

	HST (Bs)	LRT	CT	HST (Bs)	CtC	LRT	CT	HST (Bs)	LRT
	0	20	21	0	22	0	23	0	0
Borås	47	34	17	47	25	34	13	47	34
Bollebygd	59	|	29	59	|	|	25	59	|
Landvetter	|	50	38	|	45	50	34	|	50
Mölnlycke	|	|	45	|	|	|	41	|	|
Korsvägen	|	|	52	|	|	|	48	|	|
Haga	|	|	55	|	|	|	51	|	|
Göteborg	7	0	56	7	56	0	52	7	0

V1 US1-2	CT	CtC	HST	CT	LRT	HST (Bs)	CtC	CT	LRT	HST	CT	LRT	HST (Bs)	CtC	CT	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Göteborg	1	16	30	31	44	57	1	1	18	30	31	44	57	1	1	6
Haga	3	|	|	33	|	|	|	3	|	|	33	|	|	|	3	8
Korsvägen	6	|	|	36	|	|	|	6	|	|	36	|	|	|	6	11
Mölnlycke	11	|	|	41	|	|	|	11	|	|	41	|	|	|	11	16
Landvetter	11	27	|	41	56	|	12	11	30	|	41	56	|	12	11	16
Bollebygd	24	|	|	54	|	|	|	24	|	|	54	|	|	|	24	29
Borås	34	42	48	4	9	16	27	34	43	48	4	9	16	27	34	39

	HST	CT	CtC	CT	LRT	HST (Bs)	HST	CT	CtC	LRT	CT	LRT	HST (Bs)	HST	CT	CtC
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Borås	11	15	24	29	48	57	1	4	13	25	29	48	57	1	4	12
Bollebygd	|	27	|	41	|	|	|	16	|	|	41	|	|	|	16	|
Landvetter	|	36	44	50	2	|	|	25	33	39	50	2	|	|	25	32
Mölnlycke	|	43	|	57	|	|	|	32	|	|	57	|	|	|	32	|
Korsvägen	|	50	|	4	|	|	|	39	|	|	4	|	|	|	39	|
Haga	|	53	|	7	|	|	|	42	|	|	7	|	|	|	42	|
Göteborg	29	54	55	8	12	16	19	43	44	49	8	12	16	19	43	43

V1 US1-2	LRT	HST	CT	CT	LRT	HST (Bs)	CT	CT	LRT	HST	CT	CT	LRT	CT	LRT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	0	9	0	0
Göteborg	19	30	31	36	49	57	1	6	19	30	31	36	48	1	19	31
Haga	|	|	33	38	|	|	3	8	|	|	33	38	|	3	|	33
Korsvägen	|	|	36	41	|	|	6	11	|	|	36	41	|	6	|	36
Mölnlycke	|	|	41	46	|	|	11	16	|	|	41	46	|	11	|	41
Landvetter	31	|	41	46	1	|	11	16	31	|	41	46	0	11	31	41
Bollebygd	|	|	54	59	|	|	24	29	|	|	54	59	|	24	|	54
Borås	44	48	4	9	14	16	34	39	44	48	4	9	13	34	44	4

	LRT	HST (Bs)	CT	CT	LRT	CT	CT	LRT	HST	CT	LRT	CT	CT	CT	HST (Bs)	CT
	0	0	0	0	0	0	8	0	0	0	0	0	0	9	0	0
Borås	23	31	34	38	56	59	4	22	30	33	51	55	59	3	24	33
Bollebygd	|	|	46	50	|	11	16	|	|	45	|	7	11	15	|	45
Landvetter	37	|	55	59	10	20	25	36	|	54	5	16	20	24	|	54
Mölnlycke	|	|	2	6	|	27	32	|	|	1	|	23	27	31	|	1
Korsvägen	|	|	9	13	|	34	39	|	|	8	|	30	34	38	|	8
Haga	|	|	12	16	|	37	42	|	|	11	|	33	37	41	|	11
Göteborg	47	50	13	17	20	38	43	46	48	12	15	34	38	42	43	12

V1 US1-2	HST (Bs)	CtC	CT	LRT	CT	HST (Bs)	CT	LRT	CT	HST	CT	LRT	CT	HST (Bs)	CtC	CT
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Göteborg	57	1	1	19	31	57	1	19	31	57	1	19	31	57	1	1
Haga	|	|	3	|	33	|	3	|	33	|	3	|	33	|	|	3
Korsvägen	|	|	6	|	36	|	6	|	36	|	6	|	36	|	|	6
Mölnlycke	|	|	11	|	41	|	11	|	41	|	11	|	41	|	|	11
Landvetter	|	12	11	31	41	|	11	31	41	|	11	31	41	|	12	11
Bollebygd	|	|	24	|	54	|	24	|	54	|	24	|	54	|	|	24
Borås	16	27	34	44	4	16	34	44	4	15	34	44	4	16	27	34

	LRT	CT	CtC	CT	HST	LRT	CT	CT	HST (Bs)	LRT	CT	HST	CT	LRT	CT	CtC
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Borås	58	3	13	33	54	58	3	33	55	58	3	24	33	58	3	13
Bollebygd	|	15	|	45	|	|	15	45	|	|	15	|	45	|	15	|
Landvetter	12	24	33	54	|	12	24	54	|	12	24	|	54	12	24	33
Mölnlycke	|	31	|	1	|	|	31	1	|	|	31	|	1	|	31	|
Korsvägen	|	38	|	8	|	|	38	8	|	|	38	|	8	|	38	|
Haga	|	41	|	11	|	|	41	11	|	|	41	|	11	|	41	|
Göteborg	22	42	44	12	12	22	42	12	14	22	42	42	12	22	42	44

V1 US1-2	LRT	CT	HST	CT	LRT	CT	HST (Bs)	CT	LRT	HST	CT	HST (Bs)	CtC	CT	CT	LRT
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Göteborg	19	31	57	1	19	31	57	1	19	30	31	57	1	1	6	19
Haga	|	33	|	3	|	33	|	3	|	|	33	|	|	3	8	|
Korsvägen	|	36	|	6	|	36	|	6	|	|	36	|	|	6	11	|
Mölnlycke	|	41	|	11	|	41	|	11	|	|	41	|	|	11	16	|
Landvetter	31	41	|	11	31	41	|	11	31	|	41	|	12	11	16	31
Bollebygd	|	54	|	24	|	54	|	24	|	|	54	|	|	24	29	|
Borås	44	4	15	34	44	4	16	34	44	48	4	16	27	34	39	44

	CT	HST (Bs)	LRT	CT	HST	CT	LRT	CT	HST (Bs)	LRT	CT	HST	HST (Bs)	LRT	CtC	CT
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Borås	33	54	58	3	24	33	58	3	24	28	33	55	1	4	7	11
Bollebygd	45	|	|	15	|	45	|	15	|	|	45	|	|	|	|	23
Landvetter	54	|	12	24	|	54	12	24	|	42	54	|	|	18	27	32
Mölnlycke	1	|	|	31	|	1	|	31	|	|	1	|	|	|	|	39
Korsvägen	8	|	|	38	|	8	|	38	|	|	8	|	|	|	|	46
Haga	11	|	|	41	|	11	|	41	|	|	11	|	|	|	|	49
Göteborg	12	13	22	42	42	12	22	42	43	52	12	13	20	28	38	50

V1 US1-2	HST	CT	CT	LRT	HST (Bs)	CtC	CT	CT	LRT	HST	CT	CT	LRT	HST (Bs)	CtC	CT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Göteborg	30	31	36	49	57	1	1	6	19	30	31	36	49	57	1	1
Haga	|	33	38	|	|	|	3	8	|	|	33	38	|	|	|	3
Korsvägen	|	36	41	|	|	|	6	11	|	|	36	41	|	|	|	6
Mölnlycke	|	41	46	|	|	|	11	16	|	|	41	46	|	|	|	11
Landvetter	|	41	46	1	|	12	11	16	31	|	41	46	1	|	12	11
Bollebygd	|	54	59	|	|	|	24	29	|	|	54	59	|	|	|	24
Borås	48	4	9	14	16	27	34	39	44	48	4	9	14	16	27	34

	CT	LRT	CT	CT	HST	HST (Bs)	LRT	CT	CtC	CT	HST	LRT	CT	CT	CtC	LRT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Borås	15	33	36	39	59	2	5	8	16	20	41	44	47	51	1	12
Bollebygd	27	|	48	51	|	|	|	20	|	32	|	|	59	3	|	|
Landvetter	36	47	57	0	|	|	19	29	36	41	|	58	8	12	21	26
Mölnlycke	43	|	4	7	|	|	|	36	|	48	|	|	15	19	|	|
Korsvägen	50	|	11	14	|	|	|	43	|	55	|	|	22	26	|	|
Haga	53	|	14	17	|	|	|	46	|	58	|	|	25	29	|	|
Göteborg	54	57	15	18	17	21	29	47	47	59	59	8	26	30	32	36

V1 US1-2	CT	LRT	CT	CT	LRT	HST	CtC	CT	LRT	CT	HST (Bs)	CT	LRT	CT	HST	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Göteborg	6	19	31	36	47	57	1	1	19	31	54	1	19	31	57	1
Haga	8	|	33	38	|	|	|	3	|	33	|	3	|	33	|	3
Korsvägen	11	|	36	41	|	|	|	6	|	36	|	6	|	36	|	6
Mölnlycke	16	|	41	46	|	|	|	11	|	41	|	11	|	41	|	11
Landvetter	16	31	41	46	59	|	12	11	31	41	|	11	31	41	|	11
Bollebygd	29	|	54	59	|	|	|	24	|	54	|	24	|	54	|	24
Borås	39	44	4	9	12	15	27	34	44	4	13	34	44	4	15	34

	HST (Bs)	CT	CT	LRT	CT	CT	CT	CtC	CT	HST	LRT	CT	HST (Bs)	CT	LRT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	20	23	27	45	48	52	3	13	33	54	58	3	24	33	58	3
Bollebygd	|	35	39	|	0	4	15	|	45	|	|	15	|	45	|	15
Landvetter	|	44	48	59	9	13	24	33	54	|	12	24	|	54	12	24
Mölnlycke	|	51	55	|	16	20	31	|	1	|	|	31	|	1	|	31
Korsvägen	|	58	2	|	23	27	38	|	8	|	|	38	|	8	|	38
Haga	|	1	5	|	26	30	41	|	11	|	|	41	|	11	|	41
Göteborg	39	2	6	9	27	31	42	44	12	12	22	42	43	12	22	42

V1 US1-2	LRT	CT	HST (Bs)	CtC	CT	LRT	CT	HST	CT	LRT	CT	HST (Bs)	CT	LRT	CT	HST
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	19	31	57	1	1	19	31	57	1	19	31	57	2	19	31	57
Haga	|	33	|	|	3	|	33	|	3	|	33	|	4	|	33	|
Korsvägen	|	36	|	|	6	|	36	|	6	|	36	|	7	|	36	|
Mölnlycke	|	41	|	|	11	|	41	|	11	|	41	|	12	|	41	|
Landvetter	31	41	|	12	11	31	41	|	11	31	41	|	12	31	41	|
Bollebygd	|	54	|	|	24	|	54	|	24	|	54	|	25	|	54	|
Borås	44	4	16	27	34	44	4	15	34	44	4	16	35	44	4	15

	HST	CT	LRT	CT	CtC	CT	HST (Bs)	LRT	CT	HST	CT	LRT	CT	HST (Bs)	CT	LRT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	24	33	58	3	13	33	54	58	3	24	33	58	3	24	33	58
Bollebygd	|	45	|	15	|	45	|	|	15	|	45	|	15	|	45	|
Landvetter	|	54	12	24	33	54	|	12	24	|	54	12	24	|	54	12
Mölnlycke	|	1	|	31	|	1	|	|	31	|	1	|	31	|	1	|
Korsvägen	|	8	|	38	|	8	|	|	38	|	8	|	38	|	8	|
Haga	|	11	|	41	|	11	|	|	41	|	11	|	41	|	11	|
Göteborg	42	12	22	42	44	12	13	22	42	42	12	22	42	43	12	22

V1 US3	CT	HST	LRT	HST (Bs)	CT	CtC	LRT	HST (Bs)	CT	HST	LRT	CT	CtC	LRT	CtC	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Göteborg	11	26	31	40	41	51	1	10	11	27	31	41	51	1	6	7
Haga	13	|	|	|	43	|	|	|	13	|	|	43	|	|	|	9
Korsvägen	16	|	|	|	46	|	|	|	16	|	|	46	|	|	|	12
Mölnlycke	21	|	|	|	51	|	|	|	21	|	|	51	|	|	|	17
Landvetter	21	|	43	|	51	2	13	|	21	|	43	51	2	13	17	17
Bollebygd	34	|	|	|	4	|	|	|	34	|	|	4	|	|	|	30
Borås	51	44	56	59	21	17	26	29	51	45	56	21	17	26	32	47

	CT	HST (Bs)	CtC	CT	HST	LRT	CT	HST (Bs)	CtC	LRT	CT	HST	LRT	CtC	CT	LRT
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Borås	1	5	14	31	37	56	1	5	14	26	31	37	55	1	6	12
Bollebygd	18	22	|	48	|	|	18	22	|	|	48	|	|	|	23	|
Landvetter	27	|	34	57	|	10	27	|	34	40	57	|	9	21	32	26
Mölnlycke	34	|	|	4	|	|	34	|	|	|	4	|	|	|	39	|
Korsvägen	41	|	|	11	|	|	41	|	|	|	11	|	|	|	46	|
Haga	44	|	|	14	|	|	44	|	|	|	14	|	|	|	49	|
Göteborg	46	24	45	16	55	20	46	24	45	50	16	55	19	32	51	36

V1 US3	HST	CT	LRT	CT	HST (Bs)	CT	LRT	CT	CT	LRT	CT	HST (Bs)	CT	HST	CT	LRT
	0	0	0	0	0	0	8	0	0	0	0	0	0	9	0	0
Göteborg	20	22	31	37	49	52	1	7	22	31	37	50	52	1	10	31
Haga	|	24	|	39	|	54	|	9	24	|	39	|	54	|	12	|
Korsvägen	|	27	|	42	|	57	|	12	27	|	42	|	57	|	15	|
Mölnlycke	|	32	|	47	|	2	|	17	32	|	47	|	2	|	20	|
Landvetter	|	32	43	47	|	2	13	17	32	43	47	|	2	|	20	43
Bollebygd	|	45	|	0	|	15	|	30	45	|	0	|	15	|	33	|
Borås	38	2	56	17	8	32	26	47	2	56	17	9	32	19	50	56

	CT	HST (Bs)	LRT	CT	CT	HST	CT	LRT	CT	LRT	CT	CT	HST	CT	HST (Bs)	CT
	0	0	0	0	0	0	8	0	0	0	0	0	0	9	0	0
Borås	12	37	40	42	48	49	6	12	12	40	41	48	49	1	5	31
Bollebygd	29	54	|	59	5	|	23	|	29	|	58	5	|	18	22	48
Landvetter	38	|	54	8	14	|	32	26	38	54	7	14	|	27	|	57
Mölnlycke	45	|	|	15	21	|	39	|	45	|	14	21	|	34	|	4
Korsvägen	52	|	|	22	28	|	46	|	52	|	21	28	|	41	|	11
Haga	55	|	|	25	31	|	49	|	55	|	24	31	|	44	|	14
Göteborg	57	56	4	27	33	7	51	36	57	4	26	33	7	46	24	16

V1 US3	CT	HST (Bs)	CtC	CT	LRT	CT	HST	CT	LRT	CT	HST (Bs)	CT	LRT	CT	HST	CT
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Göteborg	41	1	5	11	31	41	1	11	31	41	1	11	31	41	1	11
Haga	43	|	|	13	|	43	|	13	|	43	|	13	|	43	|	13
Korsvägen	46	|	|	16	|	46	|	16	|	46	|	16	|	46	|	16
Mölnlycke	51	|	|	21	|	51	|	21	|	51	|	21	|	51	|	21
Landvetter	51	|	16	21	43	51	|	21	43	51	|	21	43	51	|	21
Bollebygd	4	|	|	34	|	4	|	34	|	4	|	34	|	4	|	34
Borås	21	20	31	51	56	21	19	51	56	21	20	51	56	21	19	51

	LRT	CT	CtC	CT	HST	LRT	CT	HST (Bs)	CT	LRT	CT	CT	HST	LRT	CT	HST (Bs)
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Borås	56	1	14	31	37	56	1	5	31	56	1	31	37	56	1	5
Bollebygd	|	18	|	48	|	|	18	22	48	|	18	48	|	|	18	22
Landvetter	10	27	34	57	|	10	27	|	57	10	27	57	|	10	27	|
Mölnlycke	|	34	|	4	|	|	34	|	4	|	34	4	|	|	34	|
Korsvägen	|	41	|	11	|	|	41	|	11	|	41	11	|	|	41	|
Haga	|	44	|	14	|	|	44	|	14	|	44	14	|	|	44	|
Göteborg	20	46	45	16	55	20	46	24	16	20	46	16	55	20	46	24

V1 US3	LRT	CT	CtC	HST (Bs)	CT	LRT	CT	HST	CT	LRT	CT	HST (Bs)	LRT	CtC	CT	HST
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Göteborg	31	41	51	1	11	31	41	1	11	31	41	57	1	6	7	20
Haga	|	43	|	|	13	|	43	|	13	|	43	|	|	|	9	|
Korsvägen	|	46	|	|	16	|	46	|	16	|	46	|	|	|	12	|
Mölnlycke	|	51	|	|	21	|	51	|	21	|	51	|	|	|	17	|
Landvetter	43	51	2	|	21	43	51	|	21	43	51	|	13	17	17	|
Bollebygd	|	4	|	|	34	|	4	|	34	|	4	|	|	|	30	|
Borås	56	21	17	20	51	56	21	19	51	56	21	16	26	32	47	38

	CtC	CT	LRT	CT	CT	HST	LRT	CT	HST (Bs)	CT	HST	LRT	CtC	CT	LRT	CT
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Borås	14	31	56	1	31	37	56	1	5	31	37	56	1	6	12	12
Bollebygd	|	48	|	18	48	|	|	18	22	48	|	|	|	23	|	29
Landvetter	34	57	10	27	57	|	10	27	|	57	|	10	21	32	26	38
Mölnlycke	|	4	|	34	4	|	|	34	|	4	|	|	|	39	|	45
Korsvägen	|	11	|	41	11	|	|	41	|	11	|	|	|	46	|	52
Haga	|	14	|	44	14	|	|	44	|	14	|	|	|	49	|	55
Göteborg	45	16	20	46	16	55	20	46	24	16	55	20	32	51	36	57

V1 US3	CT	LRT	CT	HST (Bs)	CT	LRT	CtC	CT	HST	CT	LRT	CT	HST (Bs)	CT	LRT	CT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Göteborg	22	31	37	49	52	1	6	7	20	22	31	37	49	52	1	7
Haga	24	|	39	|	54	|	|	9	|	24	|	39	|	54	|	9
Korsvägen	27	|	42	|	57	|	|	12	|	27	|	42	|	57	|	12
Mölnlycke	32	|	47	|	2	|	|	17	|	32	|	47	|	2	|	17
Landvetter	32	43	47	|	2	13	17	17	|	32	43	47	|	2	13	17
Bollebygd	45	|	0	|	15	|	|	30	|	45	|	0	|	15	|	30
Borås	2	56	17	8	32	26	32	47	38	2	56	17	8	32	26	47

	HST (Bs)	LRT	CT	CT	HST	CtC	CT	LRT	CT	HST (Bs)	LRT	CT	CT	HST	CtC	CT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Borås	37	40	42	48	49	1	6	12	12	37	40	42	48	49	1	6
Bollebygd	54	|	59	5	|	|	23	|	29	54	|	59	5	|	|	23
Landvetter	|	54	8	14	|	21	32	26	38	|	54	8	14	|	21	32
Mölnlycke	|	|	15	21	|	|	39	|	45	|	|	15	21	|	|	39
Korsvägen	|	|	22	28	|	|	46	|	52	|	|	22	28	|	|	46
Haga	|	|	25	31	|	|	49	|	55	|	|	25	31	|	|	49
Göteborg	56	4	27	33	7	32	51	36	57	56	4	27	33	7	32	51

V1 US3	HST	CT	LRT	CT	CtC	CT	LRT	CT	HST	CT	CtC	HST (Bs)	CT	LRT	CT	HST (Bs)
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Göteborg	19	22	31	37	49	52	1	11	31	41	51	1	11	31	41	1
Haga	|	24	|	39	|	54	|	13	|	43	|	|	13	|	43	|
Korsvägen	|	27	|	42	|	57	|	16	|	46	|	|	16	|	46	|
Mölnlycke	|	32	|	47	|	2	|	21	|	51	|	|	21	|	51	|
Landvetter	|	32	43	47	0	2	13	21	|	51	2	|	21	43	51	|
Bollebygd	|	45	|	0	|	15	|	34	|	4	|	|	34	|	4	|
Borås	37	2	56	17	15	32	26	51	49	21	17	20	51	56	21	20

	LRT	CT	HST (Bs)	LRT	CT	CT	CT	CtC	CT	HST	LRT	CT	HST (Bs)	CT	LRT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	12	12	37	40	41	48	1	14	31	37	56	1	5	31	56	1
Bollebygd	|	29	54	|	58	5	18	|	48	|	|	18	22	48	|	18
Landvetter	26	38	|	54	7	14	27	34	57	|	10	27	|	57	10	27
Mölnlycke	|	45	|	|	14	21	34	|	4	|	|	34	|	4	|	34
Korsvägen	|	52	|	|	21	28	41	|	11	|	|	41	|	11	|	41
Haga	|	55	|	|	24	31	44	|	14	|	|	44	|	14	|	44
Göteborg	36	57	56	4	26	33	46	45	16	55	20	46	24	16	20	46

V1 US3	CT	LRT	CT	HST	CT	LRT	CT	CtC	HST (Bs)	CT	LRT	CT	HST	CT	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	11	31	41	1	11	31	41	51	1	11	31	41	1	11	31	41
Haga	13	|	43	|	13	|	43	|	|	13	|	43	|	13	|	43
Korsvägen	16	|	46	|	16	|	46	|	|	16	|	46	|	16	|	46
Mölnlycke	21	|	51	|	21	|	51	|	|	21	|	51	|	21	|	51
Landvetter	21	43	51	|	21	43	51	2	|	21	43	51	|	21	43	51
Bollebygd	34	|	4	|	34	|	4	|	|	34	|	4	|	34	|	4
Borås	51	56	21	19	51	56	21	17	20	51	56	21	19	51	56	21

	CT	HST	LRT	CT	HST (Bs)	CtC	CT	LRT	CT	CT	HST	LRT	CT	HST (Bs)	CT	LRT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	31	37	56	1	5	14	31	56	1	31	37	56	1	5	31	57
Bollebygd	48	|	|	18	22	|	48	|	18	48	|	|	18	22	48	|
Landvetter	57	|	10	27	|	34	57	10	27	57	|	10	27	|	57	11
Mölnlycke	4	|	|	34	|	|	4	|	34	4	|	|	34	|	4	|
Korsvägen	11	|	|	41	|	|	11	|	41	11	|	|	41	|	11	|
Haga	14	|	|	44	|	|	14	|	44	14	|	|	44	|	14	|
Göteborg	16	55	20	46	24	45	16	20	46	16	55	20	46	24	16	21

V1 US4	HST	CT	HST (Bs)	CT	LRT	CtC	HST	CT	LRT	HST (Bs)	CT	LRT	CtC	HST	CT	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Göteborg	1	1	27	31	45	50	1	1	15	27	31	45	51	1	1	6
Haga	|	3	|	33	|	|	|	3	|	|	33	|	|	|	3	8
Korsvägen	|	6	|	36	|	|	|	6	|	|	36	|	|	|	6	11
Mölnlycke	|	11	|	41	|	|	|	11	|	|	41	|	|	|	11	16
Landvetter	|	11	|	41	57	1	|	11	27	|	41	57	2	|	11	16
Bollebygd	|	24	|	54	|	|	|	24	|	|	54	|	|	|	24	29
Borås	20	34	47	4	12	16	20	34	42	47	4	12	17	20	34	39

	CT	CtC	HST	CT	LRT	HST (Bs)	CT	CtC	LRT	HST	CT	LRT	HST (Bs)	LRT	CT	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	7	0	0
Borås	1	9	28	31	48	57	1	9	18	28	31	48	57	1	4	8
Bollebygd	13	|	|	43	|	9	13	|	|	|	43	|	9	|	16	20
Landvetter	22	29	|	52	4	|	22	29	34	|	52	4	|	17	25	29
Mölnlycke	29	|	|	59	|	|	29	|	|	|	59	|	|	|	32	36
Korsvägen	36	|	|	6	|	|	36	|	|	|	6	|	|	|	39	43
Haga	39	|	|	9	|	|	39	|	|	|	9	|	|	|	42	46
Göteborg	40	40	47	10	14	17	40	40	44	47	10	14	17	27	43	47

V1 US4	LRT	CtC	HST (Bs)	CT	CT	LRT	HST	CT	CT	LRT	HST (Bs)	CT	CT	LRT	CT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	0	0	9	0
Göteborg	17	22	31	31	36	47	1	1	6	17	31	31	36	47	1	31
Haga	|	|	|	33	38	|	|	3	8	|	|	33	38	|	3	33
Korsvägen	|	|	|	36	41	|	|	6	11	|	|	36	41	|	6	36
Mölnlycke	|	|	|	41	46	|	|	11	16	|	|	41	46	|	11	41
Landvetter	29	33	|	41	46	59	|	11	16	29	|	41	46	59	11	41
Bollebygd	|	|	|	54	59	|	|	24	29	|	|	54	59	|	24	54
Borås	44	48	51	4	9	14	20	34	39	44	51	4	9	14	34	4

	HST	HST (Bs)	LRT	CT	CT	CtC	LRT	CT	CT	HST	HST (Bs)	LRT	CT	CT	CT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	0	0	9	0
Borås	28	33	36	39	43	52	1	4	8	28	33	36	39	43	1	31
Bollebygd	|	45	|	51	55	|	|	16	20	|	45	|	51	55	13	43
Landvetter	|	|	52	0	4	12	17	25	29	|	|	52	0	4	22	52
Mölnlycke	|	|	|	7	11	|	|	32	36	|	|	|	7	11	29	59
Korsvägen	|	|	|	14	18	|	|	39	43	|	|	|	14	18	36	6
Haga	|	|	|	17	21	|	|	42	46	|	|	|	17	21	39	9
Göteborg	47	53	2	18	22	23	27	43	47	47	53	2	18	22	40	10

V1 US4	LRT	CT	HST (Bs)	CT	LRT	CtC	HST	CT	CT	LRT	CT	HST (Bs)	CT	LRT	HST	CT
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Göteborg	45	1	27	31	45	50	1	1	31	45	1	27	31	45	1	1
Haga	|	3	|	33	|	|	|	3	33	|	3	|	33	|	|	3
Korsvägen	|	6	|	36	|	|	|	6	36	|	6	|	36	|	|	6
Mölnlycke	|	11	|	41	|	|	|	11	41	|	11	|	41	|	|	11
Landvetter	57	11	|	41	57	1	|	11	41	57	11	|	41	57	|	11
Bollebygd	|	24	|	54	|	|	|	24	54	|	24	|	54	|	|	24
Borås	12	34	47	4	12	16	20	34	4	12	34	47	4	12	20	34

	LRT	CT	CtC	CT	LRT	HST (Bs)	CT	HST	CT	LRT	CT	CT	LRT	HST (Bs)	CT	CtC
	0	10	0	0	0	0	11	0	0	0	12	0	0	0	13	0
Borås	48	1	9	31	48	57	1	28	31	48	1	31	48	57	1	9
Bollebygd	|	13	|	43	|	9	13	|	43	|	13	43	|	9	13	|
Landvetter	4	22	29	52	4	|	22	|	52	4	22	52	4	|	22	29
Mölnlycke	|	29	|	59	|	|	29	|	59	|	29	59	|	|	29	|
Korsvägen	|	36	|	6	|	|	36	|	6	|	36	6	|	|	36	|
Haga	|	39	|	9	|	|	39	|	9	|	39	9	|	|	39	|
Göteborg	14	40	40	10	14	17	40	47	10	14	40	10	14	17	40	40

V1 US4	CT	LRT	CtC	CT	HST (Bs)	CT	LRT	HST	CT	HST (Bs)	CT	LRT	HST	CT	CT	LRT
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Göteborg	31	45	50	1	27	31	45	1	1	27	31	45	1	1	6	17
Haga	33	|	|	3	|	33	|	|	3	|	33	|	|	3	8	|
Korsvägen	36	|	|	6	|	36	|	|	6	|	36	|	|	6	11	|
Mölnlycke	41	|	|	11	|	41	|	|	11	|	41	|	|	11	16	|
Landvetter	41	57	1	11	|	41	57	|	11	|	41	57	|	11	16	29
Bollebygd	54	|	|	24	|	54	|	|	24	|	54	|	|	24	29	|
Borås	4	12	16	34	47	4	12	20	34	47	4	12	20	34	39	44

	HST	CT	LRT	CT	CT	LRT	HST (Bs)	CT	HST	CT	LRT	HST (Bs)	LRT	CT	CT	HST
	0	0	0	14	0	0	0	15	0	0	0	0	16	0	0	0
Borås	28	31	48	1	31	48	57	1	28	31	48	57	1	4	8	28
Bollebygd	|	43	|	13	43	|	9	13	|	43	|	9	|	16	20	|
Landvetter	|	52	4	22	52	4	|	22	|	52	4	|	17	25	29	|
Mölnlycke	|	59	|	29	59	|	|	29	|	59	|	|	|	32	36	|
Korsvägen	|	6	|	36	6	|	|	36	|	6	|	|	|	39	43	|
Haga	|	9	|	39	9	|	|	39	|	9	|	|	|	42	46	|
Göteborg	47	10	14	40	10	14	17	40	47	10	14	17	27	43	47	47

V1 US4	CtC	HST (Bs)	CT	CT	LRT	HST	CT	CT	LRT	CtC	HST (Bs)	CT	CT	LRT	HST	CT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Göteborg	22	31	31	36	47	1	1	6	17	22	31	31	36	47	1	1
Haga	|	|	33	38	|	|	3	8	|	|	|	33	38	|	|	3
Korsvägen	|	|	36	41	|	|	6	11	|	|	|	36	41	|	|	6
Mölnlycke	|	|	41	46	|	|	11	16	|	|	|	41	46	|	|	11
Landvetter	33	|	41	46	59	|	11	16	29	33	|	41	46	59	|	11
Bollebygd	|	|	54	59	|	|	24	29	|	|	|	54	59	|	|	24
Borås	48	51	4	9	14	20	34	39	44	48	51	4	9	14	20	34

	HST (Bs)	LRT	CT	CT	CtC	LRT	CT	CT	HST	HST (Bs)	LRT	CT	CT	CtC	LRT	CT
	0	0	0	0	0	17	0	0	0	0	0	0	0	0	18	0
Borås	33	36	39	43	52	1	4	8	28	33	36	39	43	52	1	4
Bollebygd	45	|	51	55	|	|	16	20	|	45	|	51	55	|	|	16
Landvetter	|	52	0	4	12	17	25	29	|	|	52	0	4	12	17	25
Mölnlycke	|	|	7	11	|	|	32	36	|	|	|	7	11	|	|	32
Korsvägen	|	|	14	18	|	|	39	43	|	|	|	14	18	|	|	39
Haga	|	|	17	21	|	|	42	46	|	|	|	17	21	|	|	42
Göteborg	53	2	18	22	23	27	43	47	47	53	2	18	22	23	27	43

V1 US4	CT	LRT	CtC	CT	CT	LRT	CT	HST (Bs)	CT	LRT	CtC	HST	CT	CT	LRT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Göteborg	7	17	22	31	36	47	1	27	31	45	50	1	1	31	45	1
Haga	9	|	|	33	38	|	3	|	33	|	|	|	3	33	|	3
Korsvägen	12	|	|	36	41	|	6	|	36	|	|	|	6	36	|	6
Mölnlycke	17	|	|	41	46	|	11	|	41	|	|	|	11	41	|	11
Landvetter	17	29	33	41	46	59	11	|	41	57	1	|	11	41	57	11
Bollebygd	30	|	|	54	59	|	24	|	54	|	|	|	24	54	|	24
Borås	40	44	48	4	9	14	34	47	4	12	16	20	34	4	12	34

	CT	HST	LRT	CT	CT	CtC	CT	CtC	CT	LRT	HST (Bs)	CT	HST	CT	LRT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	8	28	36	39	43	52	1	9	31	48	57	1	28	31	48	1
Bollebygd	20	|	|	51	55	|	13	|	43	|	9	13	|	43	|	13
Landvetter	29	|	52	0	4	12	22	29	52	4	|	22	|	52	4	22
Mölnlycke	36	|	|	7	11	|	29	|	59	|	|	29	|	59	|	29
Korsvägen	43	|	|	14	18	|	36	|	6	|	|	36	|	6	|	36
Haga	46	|	|	17	21	|	39	|	9	|	|	39	|	9	|	39
Göteborg	47	47	2	18	22	23	40	40	10	14	17	40	47	10	14	40

V1 US4	HST (Bs)	CT	LRT	HST	CT	CT	LRT	CtC	CT	HST (Bs)	CT	LRT	HST	CT	CT	LRT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	27	31	45	1	1	31	45	50	1	27	31	45	1	1	31	45
Haga	|	33	|	|	3	33	|	|	3	|	33	|	|	3	33	|
Korsvägen	|	36	|	|	6	36	|	|	6	|	36	|	|	6	36	|
Mölnlycke	|	41	|	|	11	41	|	|	11	|	41	|	|	11	41	|
Landvetter	|	41	57	|	11	41	57	1	11	|	41	57	|	11	41	57
Bollebygd	|	54	|	|	24	54	|	|	24	|	54	|	|	24	54	|
Borås	47	4	12	20	34	4	12	16	34	47	4	12	20	34	4	12

	CT	LRT	HST (Bs)	CT	CtC	HST	CT	LRT	CT	CT	LRT	HST (Bs)	CT	HST	CT	LRT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	31	48	57	1	9	28	31	48	1	31	48	57	1	28	31	48
Bollebygd	43	|	9	13	|	|	43	|	13	43	|	9	13	|	43	|
Landvetter	52	4	|	22	29	|	52	4	22	52	4	|	22	|	52	4
Mölnlycke	59	|	|	29	|	|	59	|	29	59	|	|	29	|	59	|
Korsvägen	6	|	|	36	|	|	6	|	36	6	|	|	36	|	6	|
Haga	9	|	|	39	|	|	9	|	39	9	|	|	39	|	9	|
Göteborg	10	14	17	40	40	47	10	14	40	10	14	17	40	47	10	14

V2 US1-2	HST (Bs)	CT	CtC	LRT	HST	CT	LRT	HST (Bs)	CT	CtC	CT	LRT	HST	CT	LRT	HST (Bs)
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Göteborg	10	10	21	31	40	40	1	10	10	21	30	41	50	50	1	10
Haga	|	12	|	|	|	42	|	|	12	|	32	|	|	52	|	|
Korsvägen	|	15	|	|	|	45	|	|	15	|	35	|	|	55	|	|
Mölnlycke	|	20	|	|	|	50	|	|	20	|	40	|	|	0	|	|
Landvetter	|	20	32	43	|	50	13	|	20	32	40	53	|	0	13	|
Bollebygd	|	33	|	|	|	3	|	|	33	|	53	|	|	13	|	|
Borås	29	43	47	56	58	13	26	29	43	47	3	6	8	23	26	29

	CT	HST (Bs)	LRT	CT	HST	CtC	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT	HST (Bs)
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Borås	1	22	26	31	52	56	1	21	24	27	48	51	54	58	1	21
Bollebygd	13	|	|	43	|	|	13	|	|	39	|	|	|	10	13	|
Landvetter	22	|	40	52	|	16	22	|	38	48	|	5	14	19	22	|
Mölnlycke	29	|	|	59	|	|	29	|	|	55	|	|	|	26	29	|
Korsvägen	36	|	|	6	|	|	36	|	|	2	|	|	|	33	36	|
Haga	39	|	|	9	|	|	39	|	|	5	|	|	|	36	39	|
Göteborg	40	41	50	10	10	27	40	40	48	6	6	15	25	37	40	40

V2 US1-2	CT	CtC	CT	LRT	HST	CT	LRT	CT	CT	LRT	HST	CT	HST (Bs)	CT	CT	LRT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Göteborg	10	21	30	41	50	50	1	10	30	41	50	50	10	10	30	41
Haga	12	|	32	|	|	52	|	12	32	|	|	52	|	12	32	|
Korsvägen	15	|	35	|	|	55	|	15	35	|	|	55	|	15	35	|
Mölnlycke	20	|	40	|	|	0	|	20	40	|	|	0	|	20	40	|
Landvetter	20	32	40	53	|	0	13	20	40	53	|	0	|	20	40	53
Bollebygd	33	|	53	|	|	13	|	33	53	|	|	13	|	33	53	|
Borås	43	47	3	6	8	23	26	43	3	6	8	23	29	43	3	6

	LRT	CT	HST	LRT	CtC	CT	CT	LRT	CT	HST	LRT	CT	CT	HST (Bs)	CT	LRT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Borås	24	27	48	51	54	58	1	24	27	48	51	58	1	21	27	51
Bollebygd	|	39	|	|	|	10	13	|	39	|	|	10	13	|	39	|
Landvetter	38	48	|	5	14	19	22	38	48	|	5	19	22	|	48	5
Mölnlycke	|	55	|	|	|	26	29	|	55	|	|	26	29	|	55	|
Korsvägen	|	2	|	|	|	33	36	|	2	|	|	33	36	|	2	|
Haga	|	5	|	|	|	36	39	|	5	|	|	36	39	|	5	|
Göteborg	48	6	6	15	25	37	40	48	6	6	15	37	40	40	6	15

V2 US1-2	CT	CT	CtC	CT	LRT	HST	CT	HST (Bs)	CT	CT	LRT	CT	CT	LRT	HST	CT
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Göteborg	50	10	21	30	41	50	50	10	10	30	41	50	10	31	40	40
Haga	52	12	|	32	|	|	52	|	12	32	|	52	12	|	|	42
Korsvägen	55	15	|	35	|	|	55	|	15	35	|	55	15	|	|	45
Mölnlycke	0	20	|	40	|	|	0	|	20	40	|	0	20	|	|	50
Landvetter	0	20	32	40	53	|	0	|	20	40	53	0	20	43	|	50
Bollebygd	13	33	|	53	|	|	13	|	33	53	|	13	33	|	|	3
Borås	23	43	47	3	6	8	23	29	43	3	6	23	43	56	58	13

	CT	CT	LRT	CT	HST	CtC	CT	CT	HST (Bs)	CT	LRT	CT	CT	LRT	CT	HST
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Borås	58	1	24	27	48	54	58	1	21	27	51	58	1	26	31	52
Bollebygd	10	13	|	39	|	|	10	13	|	39	|	10	13	|	43	|
Landvetter	19	22	38	48	|	14	19	22	|	48	5	19	22	40	52	|
Mölnlycke	26	29	|	55	|	|	26	29	|	55	|	26	29	|	59	|
Korsvägen	33	36	|	2	|	|	33	36	|	2	|	33	36	|	6	|
Haga	36	39	|	5	|	|	36	39	|	5	|	36	39	|	9	|
Göteborg	37	40	48	6	6	25	37	40	40	6	15	37	40	50	10	10

V2 US1-2	HST (Bs)	CT	CtC	LRT	CT	CT	LRT	HST	CT	LRT	HST (Bs)	CT	CT	HST	CT	LRT
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Göteborg	10	10	21	31	40	10	31	40	40	1	10	10	30	50	50	1
Haga	|	12	|	|	42	12	|	|	42	|	|	12	32	|	52	|
Korsvägen	|	15	|	|	45	15	|	|	45	|	|	15	35	|	55	|
Mölnlycke	|	20	|	|	50	20	|	|	50	|	|	20	40	|	0	|
Landvetter	|	20	32	43	50	20	43	|	50	13	|	20	40	|	0	13
Bollebygd	|	33	|	|	3	33	|	|	3	|	|	33	53	|	13	|
Borås	29	43	47	56	13	43	56	58	13	26	29	43	3	8	23	26

	CT	HST (Bs)	LRT	CT	CtC	CT	LRT	CT	HST	CT	HST (Bs)	CT	HST	LRT	CT	CT
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Borås	1	22	26	31	56	1	26	31	52	1	21	27	48	51	58	1
Bollebygd	13	|	|	43	|	13	|	43	|	13	|	39	|	|	10	13
Landvetter	22	|	40	52	16	22	40	52	|	22	|	48	|	5	19	22
Mölnlycke	29	|	|	59	|	29	|	59	|	29	|	55	|	|	26	29
Korsvägen	36	|	|	6	|	36	|	6	|	36	|	2	|	|	33	36
Haga	39	|	|	9	|	39	|	9	|	39	|	5	|	|	36	39
Göteborg	40	41	50	10	27	40	50	10	10	40	40	6	6	15	37	40

V2 US1-2	HST (Bs)	CT	CtC	CT	LRT	HST	CT	LRT	HST (Bs)	CT	CtC	CT	LRT	HST	CT	LRT
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Göteborg	10	10	21	30	41	50	50	1	10	10	21	30	41	50	50	1
Haga	|	12	|	32	|	|	52	|	|	12	|	32	|	|	52	|
Korsvägen	|	15	|	35	|	|	55	|	|	15	|	35	|	|	55	|
Mölnlycke	|	20	|	40	|	|	0	|	|	20	|	40	|	|	0	|
Landvetter	|	20	32	40	53	|	0	13	|	20	32	40	53	|	0	13
Bollebygd	|	33	|	53	|	|	13	|	|	33	|	53	|	|	13	|
Borås	29	43	47	3	6	8	23	26	29	43	47	3	6	8	23	26

	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Borås	21	24	27	48	51	54	58	1	21	24	27	48	51	54	58	1
Bollebygd	|	|	39	|	|	|	10	13	|	|	39	|	|	|	10	13
Landvetter	|	38	48	|	5	14	19	22	|	38	48	|	5	14	19	22
Mölnlycke	|	|	55	|	|	|	26	29	|	|	55	|	|	|	26	29
Korsvägen	|	|	2	|	|	|	33	36	|	|	2	|	|	|	33	36
Haga	|	|	5	|	|	|	36	39	|	|	5	|	|	|	36	39
Göteborg	40	48	6	6	15	25	37	40	40	48	6	6	15	25	37	40

V2 US1-2	HST (Bs)	CT	CtC	CT	LRT	HST	CT	CT	CtC	LRT	CT	HST (Bs)	CT	LRT	CT	CT
	0	0	0	0	0	0	0	19	0	0	0	20	0	0	0	21
Göteborg	10	10	21	30	41	50	50	10	21	31	40	10	10	31	40	10
Haga	|	12	|	32	|	|	52	12	|	|	42	|	12	|	42	12
Korsvägen	|	15	|	35	|	|	55	15	|	|	45	|	15	|	45	15
Mölnlycke	|	20	|	40	|	|	0	20	|	|	50	|	20	|	50	20
Landvetter	|	20	32	40	53	|	0	20	32	43	50	|	20	43	50	20
Bollebygd	|	33	|	53	|	|	13	33	|	|	3	|	33	|	3	33
Borås	29	43	47	3	6	8	23	43	47	56	13	29	43	56	13	43

	HST (Bs)	LRT	CT	LRT	CtC	CT	CT	LRT	CT	HST	CtC	CT	HST (Bs)	LRT	CT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	21	24	27	51	54	58	1	26	31	52	56	1	22	26	31	1
Bollebygd	|	|	39	|	|	10	13	|	43	|	|	13	|	|	43	13
Landvetter	|	38	48	5	14	19	22	40	52	|	16	22	|	40	52	22
Mölnlycke	|	|	55	|	|	26	29	|	59	|	|	29	|	|	59	29
Korsvägen	|	|	2	|	|	33	36	|	6	|	|	36	|	|	6	36
Haga	|	|	5	|	|	36	39	|	9	|	|	39	|	|	9	39
Göteborg	40	48	6	15	25	37	40	50	10	10	27	40	41	50	10	40

V2 US1-2	LRT	HST	CT	HST (Bs)	CT	CtC	LRT	CT	CT	LRT	HST	CT	HST (Bs)	CT	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	31	40	40	10	10	21	31	40	10	31	40	40	10	10	31	40
Haga	|	|	42	|	12	|	|	42	12	|	|	42	|	12	|	42
Korsvägen	|	|	45	|	15	|	|	45	15	|	|	45	|	15	|	45
Mölnlycke	|	|	50	|	20	|	|	50	20	|	|	50	|	20	|	50
Landvetter	43	|	50	|	20	32	43	50	20	43	|	50	|	20	43	50
Bollebygd	|	|	3	|	33	|	|	3	33	|	|	3	|	33	|	3
Borås	56	58	13	29	43	47	56	13	43	56	58	13	29	43	56	13

	LRT	CT	HST	CT	HST (Bs)	LRT	CT	CtC	CT	LRT	CT	HST	CT	HST (Bs)	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	26	31	52	1	22	26	31	56	1	26	31	52	1	22	26	31
Bollebygd	|	43	|	13	|	|	43	|	13	|	43	|	13	|	|	43
Landvetter	40	52	|	22	|	40	52	16	22	40	52	|	22	|	40	52
Mölnlycke	|	59	|	29	|	|	59	|	29	|	59	|	29	|	|	59
Korsvägen	|	6	|	36	|	|	6	|	36	|	6	|	36	|	|	6
Haga	|	9	|	39	|	|	9	|	39	|	9	|	39	|	|	9
Göteborg	50	10	10	40	41	50	10	27	40	50	10	10	40	41	50	10

V2 US3	CtC	CT	HST	LRT	CT	HST (Bs)	LRT	CT	HST (Bs)	CtC	CT	HST	LRT	CT	LRT	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Göteborg	1	6	26	31	36	56	1	6	21	24	26	41	43	46	1	6
Haga	|	8	|	|	38	|	|	8	|	|	28	|	|	48	|	8
Korsvägen	|	11	|	|	41	|	|	11	|	|	31	|	|	51	|	11
Mölnlycke	|	16	|	|	46	|	|	16	|	|	36	|	|	56	|	16
Landvetter	12	16	|	43	46	|	13	16	|	35	36	|	55	56	13	16
Bollebygd	|	29	|	|	59	|	|	29	|	|	49	|	|	9	|	29
Borås	27	46	44	56	16	15	26	46	40	50	6	59	8	26	26	46

	CT	HST (Bs)	LRT	CT	HST	CtC	CT	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Borås	6	7	30	36	39	50	1	6	7	30	36	39	42	50	1	6
Bollebygd	23	24	|	53	|	|	18	23	24	|	53	|	|	|	18	23
Landvetter	32	|	44	2	|	10	27	32	|	44	2	|	56	10	27	32
Mölnlycke	39	|	|	9	|	|	34	39	|	|	9	|	|	|	34	39
Korsvägen	46	|	|	16	|	|	41	46	|	|	16	|	|	|	41	46
Haga	49	|	|	19	|	|	44	49	|	|	19	|	|	|	44	49
Göteborg	51	26	54	21	57	21	46	51	26	54	21	57	6	21	46	51

V2 US3	HST (Bs)	CtC	CT	HST	LRT	CT	LRT	CT	CT	HST	LRT	CT	LRT	CT	HST (Bs)	CT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Göteborg	21	24	26	41	43	46	1	6	26	41	43	46	1	6	21	26
Haga	|	|	28	|	|	48	|	8	28	|	|	48	|	8	|	28
Korsvägen	|	|	31	|	|	51	|	11	31	|	|	51	|	11	|	31
Mölnlycke	|	|	36	|	|	56	|	16	36	|	|	56	|	16	|	36
Landvetter	|	35	36	|	55	56	13	16	36	|	55	56	13	16	|	36
Bollebygd	|	|	49	|	|	9	|	29	49	|	|	9	|	29	|	49
Borås	40	50	6	59	8	26	26	46	6	59	8	26	26	46	40	6

	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT	HST (Bs)	LRT	CT	LRT	CT	CT	LRT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Borås	7	30	36	39	42	50	1	6	7	30	36	42	1	6	30	36
Bollebygd	24	|	53	|	|	|	18	23	24	|	53	|	18	23	|	53
Landvetter	|	44	2	|	56	10	27	32	|	44	2	56	27	32	44	2
Mölnlycke	|	|	9	|	|	|	34	39	|	|	9	|	34	39	|	9
Korsvägen	|	|	16	|	|	|	41	46	|	|	16	|	41	46	|	16
Haga	|	|	19	|	|	|	44	49	|	|	19	|	44	49	|	19
Göteborg	26	54	21	57	6	21	46	51	26	54	21	6	46	51	54	21

V2 US3	CT	LRT	CT	CtC	CT	HST	CT	LRT	CT	HST (Bs)	CT	CT	CT	LRT	CT	HST (Bs)
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Göteborg	46	1	6	24	26	41	46	1	6	21	26	46	6	31	36	56
Haga	48	|	8	|	28	|	48	|	8	|	28	48	8	|	38	|
Korsvägen	51	|	11	|	31	|	51	|	11	|	31	51	11	|	41	|
Mölnlycke	56	|	16	|	36	|	56	|	16	|	36	56	16	|	46	|
Landvetter	56	13	16	35	36	|	56	13	16	|	36	56	16	43	46	|
Bollebygd	9	|	29	|	49	|	9	|	29	|	49	9	29	|	59	|
Borås	26	26	46	50	6	59	26	26	46	40	6	26	46	56	16	15

	HST	CT	CT	LRT	CT	HST	CtC	CT	CT	HST (Bs)	LRT	CT	CT	LRT	CT	HST
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Borås	39	1	6	30	36	39	50	1	6	7	30	36	6	30	36	39
Bollebygd	|	18	23	|	53	|	|	18	23	24	|	53	23	|	53	|
Landvetter	|	27	32	44	2	|	10	27	32	|	44	2	32	44	2	|
Mölnlycke	|	34	39	|	9	|	|	34	39	|	|	9	39	|	9	|
Korsvägen	|	41	46	|	16	|	|	41	46	|	|	16	46	|	16	|
Haga	|	44	49	|	19	|	|	44	49	|	|	19	49	|	19	|
Göteborg	57	46	51	54	21	57	21	46	51	26	54	21	51	54	21	57

V2 US3	CtC	CT	HST	LRT	CT	CT	HST (Bs)	LRT	CT	LRT	CT	HST (Bs)	CT	HST	CT	LRT
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Göteborg	1	6	26	31	36	6	26	31	36	1	6	21	26	41	46	1
Haga	|	8	|	|	38	8	|	|	38	|	8	|	28	|	48	|
Korsvägen	|	11	|	|	41	11	|	|	41	|	11	|	31	|	51	|
Mölnlycke	|	16	|	|	46	16	|	|	46	|	16	|	36	|	56	|
Landvetter	12	16	|	43	46	16	|	43	46	13	16	|	36	|	56	13
Bollebygd	|	29	|	|	59	29	|	|	59	|	29	|	49	|	9	|
Borås	27	46	44	56	16	46	45	56	16	26	46	40	6	59	26	26

	CT	HST (Bs)	LRT	CT	CtC	CT	LRT	CT	HST	CT	CT	HST (Bs)	LRT	CT	HST	CT
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Borås	6	7	30	36	50	6	30	36	39	1	6	7	30	36	39	1
Bollebygd	23	24	|	53	|	23	|	53	|	18	23	24	|	53	|	18
Landvetter	32	|	44	2	10	32	44	2	|	27	32	|	44	2	|	27
Mölnlycke	39	|	|	9	|	39	|	9	|	34	39	|	|	9	|	34
Korsvägen	46	|	|	16	|	46	|	16	|	41	46	|	|	16	|	41
Haga	49	|	|	19	|	49	|	19	|	44	49	|	|	19	|	44
Göteborg	51	26	54	21	21	51	54	21	57	46	51	26	54	21	57	46

V2 US3	CT	HST (Bs)	CtC	CT	HST	LRT	CT	LRT	CT	HST (Bs)	CtC	CT	HST	LRT	CT	LRT
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Göteborg	6	21	24	26	41	43	46	1	26	21	24	26	41	43	46	1
Haga	8	|	|	28	|	|	48	|	28	|	|	28	|	|	48	|
Korsvägen	11	|	|	31	|	|	51	|	31	|	|	31	|	|	51	|
Mölnlycke	16	|	|	36	|	|	56	|	36	|	|	36	|	|	56	|
Landvetter	16	|	35	36	|	55	56	13	36	|	35	36	|	55	56	13
Bollebygd	29	|	|	49	|	|	9	|	49	|	|	49	|	|	9	|
Borås	46	40	50	6	59	8	26	26	6	40	50	6	59	8	26	26

	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	CT	CT	HST (Bs)	LRT	CT	HST	LRT	CtC	CT
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Borås	6	7	30	36	39	42	50	1	6	7	30	36	39	42	50	1
Bollebygd	23	24	|	53	|	|	|	18	23	24	|	53	|	|	|	18
Landvetter	32	|	44	2	|	56	10	27	32	|	44	2	|	56	10	27
Mölnlycke	39	|	|	9	|	|	|	34	39	|	|	9	|	|	|	34
Korsvägen	46	|	|	16	|	|	|	41	46	|	|	16	|	|	|	41
Haga	49	|	|	19	|	|	|	44	49	|	|	19	|	|	|	44
Göteborg	51	26	54	21	57	6	21	46	51	26	54	21	57	6	21	46

V2 US3	CT	HST (Bs)	CtC	CT	LRT	CT	CtC	CT	HST	LRT	CT	CT	LRT	CT	HST (Bs)	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Göteborg	6	21	24	26	43	46	1	6	26	31	36	6	31	36	56	6
Haga	8	|	|	28	|	48	|	8	|	|	38	8	|	38	|	8
Korsvägen	11	|	|	31	|	51	|	11	|	|	41	11	|	41	|	11
Mölnlycke	16	|	|	36	|	56	|	16	|	|	46	16	|	46	|	16
Landvetter	16	|	35	36	55	56	12	16	|	43	46	16	43	46	|	16
Bollebygd	29	|	|	49	|	9	|	29	|	|	59	29	|	59	|	29
Borås	46	40	50	6	8	26	27	46	44	56	16	46	56	16	15	46

	CT	HST (Bs)	LRT	CT	LRT	CtC	CT	LRT	CT	HST	CtC	CT	HST (Bs)	LRT	CT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	6	7	30	36	42	52	6	30	36	39	50	6	7	30	36	6
Bollebygd	23	24	|	53	|	|	23	|	53	|	|	23	24	|	53	23
Landvetter	32	|	44	2	56	12	32	44	2	|	10	32	|	44	2	32
Mölnlycke	39	|	|	9	|	|	39	|	9	|	|	39	|	|	9	39
Korsvägen	46	|	|	16	|	|	46	|	16	|	|	46	|	|	16	46
Haga	49	|	|	19	|	|	49	|	19	|	|	49	|	|	19	49
Göteborg	51	26	54	21	6	23	51	54	21	57	21	51	26	54	21	51

V2 US3	LRT	CT	HST (Bs)	CtC	CT	HST	LRT	CT	CT	LRT	CT	HST (Bs)	CT	HST	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	31	36	56	1	6	26	31	36	6	31	36	56	6	26	31	36
Haga	|	38	|	|	8	|	|	38	8	|	38	|	8	|	|	38
Korsvägen	|	41	|	|	11	|	|	41	11	|	41	|	11	|	|	41
Mölnlycke	|	46	|	|	16	|	|	46	16	|	46	|	16	|	|	46
Landvetter	43	46	|	12	16	|	43	46	16	43	46	|	16	|	43	46
Bollebygd	|	59	|	|	29	|	|	59	29	|	59	|	29	|	|	59
Borås	56	16	15	27	46	44	56	16	46	56	16	15	46	44	56	16

	LRT	CT	HST	CT	HST (Bs)	LRT	CT	CtC	CT	LRT	CT	HST	CT	HST (Bs)	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	30	36	39	6	7	30	36	50	6	30	36	39	6	7	30	36
Bollebygd	|	53	|	23	24	|	53	|	23	|	53	|	23	24	|	53
Landvetter	44	2	|	32	|	44	2	10	32	44	2	|	32	|	44	2
Mölnlycke	|	9	|	39	|	|	9	|	39	|	9	|	39	|	|	9
Korsvägen	|	16	|	46	|	|	16	|	46	|	16	|	46	|	|	16
Haga	|	19	|	49	|	|	19	|	49	|	19	|	49	|	|	19
Göteborg	54	21	57	51	26	54	21	21	51	54	21	57	51	26	54	21

V2 US4	CT	CtC	HST (Bs)	CT	HST	LRT	HST (Bs)	CT	LRT	CT	HST	CtC	CT	LRT	HST (Bs)	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Göteborg	1	15	28	31	48	51	1	1	11	21	38	41	41	51	1	1
Haga	3	|	|	33	|	|	|	3	|	23	|	|	43	|	|	3
Korsvägen	6	|	|	36	|	|	|	6	|	26	|	|	46	|	|	6
Mölnlycke	11	|	|	41	|	|	|	11	|	31	|	|	51	|	|	11
Landvetter	11	26	|	41	|	3	|	11	23	31	|	52	51	3	|	11
Bollebygd	24	|	|	54	|	|	|	24	|	44	|	|	4	|	|	24
Borås	34	41	48	4	7	18	21	34	38	54	57	7	14	18	21	34

0

	HST	CT	HST (Bs)	LRT	CT	CtC	HST	CT	HST (Bs)	LRT	CT	CT	CtC	LRT	HST	CT
	5	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
Borås	1	5	25	31	35	44	2	5	24	28	31	35	43	52	2	5
Bollebygd	|	17	37	|	47	|	|	17	36	|	43	47	|	|	|	17
Landvetter	|	26	|	47	56	4	|	26	|	44	52	56	3	8	|	26
Mölnlycke	|	33	|	|	3	|	|	33	|	|	59	3	|	|	|	33
Korsvägen	|	40	|	|	10	|	|	40	|	|	6	10	|	|	|	40
Haga	|	43	|	|	13	|	|	43	|	|	9	13	|	|	|	43
Göteborg	20	44	45	57	14	15	21	44	44	54	10	14	14	18	21	44

V2 US4	LRT	CT	HST	CtC	CT	LRT	CT	LRT	CT	HST	CT	LRT	HST (Bs)	CT	LRT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Göteborg	11	21	38	41	41	51	1	11	21	38	41	51	1	1	11	21
Haga	|	23	|	|	43	|	3	|	23	|	43	|	|	3	|	23
Korsvägen	|	26	|	|	46	|	6	|	26	|	46	|	|	6	|	26
Mölnlycke	|	31	|	|	51	|	11	|	31	|	51	|	|	11	|	31
Landvetter	23	31	|	52	51	3	11	23	31	|	51	3	|	11	23	31
Bollebygd	|	44	|	|	4	|	24	|	44	|	4	|	|	24	|	44
Borås	38	54	57	7	14	18	34	38	54	57	14	18	21	34	38	54

0

	HST (Bs)	LRT	CT	CT	CtC	LRT	HST	CT	LRT	CT	CT	LRT	CT	HST (Bs)	CT	CT
	0	0	0	0	0	0	8	0	0	0	0	0	9	0	0	0
Borås	24	28	31	35	43	52	2	5	28	31	35	52	5	24	31	35
Bollebygd	36	|	43	47	|	|	|	17	|	43	47	|	17	36	43	47
Landvetter	|	44	52	56	3	8	|	26	44	52	56	8	26	|	52	56
Mölnlycke	|	|	59	3	|	|	|	33	|	59	3	|	33	|	59	3
Korsvägen	|	|	6	10	|	|	|	40	|	6	10	|	40	|	6	10
Haga	|	|	9	13	|	|	|	43	|	9	13	|	43	|	9	13
Göteborg	44	54	10	14	14	18	21	44	54	10	14	18	44	44	10	14

V2 US4	CT	CT	LRT	CT	HST	CtC	CT	HST (Bs)	CT	LRT	CT	CT	CT	HST (Bs)	CT	LRT
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Göteborg	41	1	11	21	38	41	41	1	1	11	21	41	1	28	31	51
Haga	43	3	|	23	|	|	43	|	3	|	23	43	3	|	33	|
Korsvägen	46	6	|	26	|	|	46	|	6	|	26	46	6	|	36	|
Mölnlycke	51	11	|	31	|	|	51	|	11	|	31	51	11	|	41	|
Landvetter	51	11	23	31	|	52	51	|	11	23	31	51	11	|	41	3
Bollebygd	4	24	|	44	|	|	4	|	24	|	44	4	24	|	54	|
Borås	14	34	38	54	57	7	14	21	34	38	54	14	34	48	4	18

0

	LRT	HST	CT	CT	CT	CtC	LRT	CT	HST (Bs)	CT	CT	LRT	CT	HST (Bs)	LRT	CT
	0	10	0	0	0	0	0	11	0	0	0	0	12	0	0	0
Borås	52	2	5	31	35	43	52	4	24	30	34	52	5	25	31	35
Bollebygd	|	|	17	43	47	|	|	16	36	42	46	|	17	37	|	47
Landvetter	8	|	26	52	56	3	8	25	|	51	55	8	26	|	47	56
Mölnlycke	|	|	33	59	3	|	|	32	|	58	2	|	33	|	|	3
Korsvägen	|	|	40	6	10	|	|	39	|	5	9	|	40	|	|	10
Haga	|	|	43	9	13	|	|	42	|	8	12	|	43	|	|	13
Göteborg	18	21	44	10	14	14	18	43	44	9	13	18	44	45	57	14

V2 US4	CT	CtC	CT	HST	LRT	CT	HST (Bs)	CT	LRT	HST (Bs)	CT	LRT	CT	HST	CT	HST (Bs)
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Göteborg	1	15	31	48	51	1	28	31	51	1	1	11	21	38	41	1
Haga	3	|	33	|	|	3	|	33	|	|	3	|	23	|	43	|
Korsvägen	6	|	36	|	|	6	|	36	|	|	6	|	26	|	46	|
Mölnlycke	11	|	41	|	|	11	|	41	|	|	11	|	31	|	51	|
Landvetter	11	26	41	|	3	11	|	41	3	|	11	23	31	|	51	|
Bollebygd	24	|	54	|	|	24	|	54	|	|	24	|	44	|	4	|
Borås	34	41	4	7	18	34	48	4	18	21	34	38	54	57	14	21

0

	HST	CT	LRT	CT	CtC	CT	HST (Bs)	LRT	CT	HST	CT	HST (Bs)	CT	CT	LRT	HST
	13	0	0	0	0	14	0	0	0	15	0	0	0	0	0	16
Borås	1	5	31	35	44	5	25	31	35	2	5	24	31	35	52	2
Bollebygd	|	17	|	47	|	17	37	|	47	|	17	36	43	47	|	|
Landvetter	|	26	47	56	4	26	|	47	56	|	26	|	52	56	8	|
Mölnlycke	|	33	|	3	|	33	|	|	3	|	33	|	59	3	|	|
Korsvägen	|	40	|	10	|	40	|	|	10	|	40	|	6	10	|	|
Haga	|	43	|	13	|	43	|	|	13	|	43	|	9	13	|	|
Göteborg	20	44	57	14	15	44	45	57	14	21	44	44	10	14	18	21

V2 US4	CT	LRT	CT	HST	CtC	CT	LRT	HST (Bs)	CT	LRT	CT	HST	CtC	CT	LRT	HST (Bs)
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Göteborg	1	11	21	38	41	41	51	1	1	11	21	38	41	41	51	1
Haga	3	|	23	|	|	43	|	|	3	|	23	|	|	43	|	|
Korsvägen	6	|	26	|	|	46	|	|	6	|	26	|	|	46	|	|
Mölnlycke	11	|	31	|	|	51	|	|	11	|	31	|	|	51	|	|
Landvetter	11	23	31	|	52	51	3	|	11	23	31	|	52	51	3	|
Bollebygd	24	|	44	|	|	4	|	|	24	|	44	|	|	4	|	|
Borås	34	38	54	57	7	14	18	21	34	38	54	57	7	14	18	21

0

	CT	HST (Bs)	LRT	CT	CT	CtC	LRT	HST	CT	HST (Bs)	LRT	CT	CT	CtC	LRT	CT
	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	18
Borås	5	24	28	31	35	43	52	2	5	24	28	31	35	43	52	5
Bollebygd	17	36	|	43	47	|	|	|	17	36	|	43	47	|	|	17
Landvetter	26	|	44	52	56	3	8	|	26	|	44	52	56	3	8	26
Mölnlycke	33	|	|	59	3	|	|	|	33	|	|	59	3	|	|	33
Korsvägen	40	|	|	6	10	|	|	|	40	|	|	6	10	|	|	40
Haga	43	|	|	9	13	|	|	|	43	|	|	9	13	|	|	43
Göteborg	44	44	54	10	14	14	18	21	44	44	54	10	14	14	18	44

V2 US4	CT	LRT	CT	CtC	CT	LRT	CT	CtC	HST (Bs)	CT	LRT	CT	CT	HST	LRT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Göteborg	1	11	21	41	41	51	1	15	28	31	51	1	31	48	51	1
Haga	3	|	23	|	43	|	3	|	|	33	|	3	33	|	|	3
Korsvägen	6	|	26	|	46	|	6	|	|	36	|	6	36	|	|	6
Mölnlycke	11	|	31	|	51	|	11	|	|	41	|	11	41	|	|	11
Landvetter	11	23	31	52	51	3	11	26	|	41	3	11	41	|	3	11
Bollebygd	24	|	44	|	4	|	24	|	|	54	|	24	54	|	|	24
Borås	34	38	54	7	14	18	34	41	48	4	18	34	4	7	18	34

0

	HST (Bs)	LRT	CT	CT	CtC	LRT	CT	HST (Bs)	LRT	CT	CtC	HST	CT	LRT	CT	CT
	0	0	0	0	0	0	19	0	0	0	0	20	0	0	0	21
Borås	24	28	31	35	43	52	5	25	31	35	44	1	5	31	35	5
Bollebygd	36	|	43	47	|	|	17	37	|	47	|	|	17	|	47	17
Landvetter	|	44	52	56	3	8	26	|	47	56	4	|	26	47	56	26
Mölnlycke	|	|	59	3	|	|	33	|	|	3	|	|	33	|	3	33
Korsvägen	|	|	6	10	|	|	40	|	|	10	|	|	40	|	10	40
Haga	|	|	9	13	|	|	43	|	|	13	|	|	43	|	13	43
Göteborg	44	54	10	14	14	18	44	45	57	14	15	20	44	57	14	44

V2 US4	HST (Bs)	CT	LRT	CT	CtC	CT	HST	LRT	CT	HST (Bs)	CT	LRT	CT	CT	HST	LRT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Göteborg	28	31	51	1	15	31	48	51	1	28	31	51	1	31	48	51
Haga	|	33	|	3	|	33	|	|	3	|	33	|	3	33	|	|
Korsvägen	|	36	|	6	|	36	|	|	6	|	36	|	6	36	|	|
Mölnlycke	|	41	|	11	|	41	|	|	11	|	41	|	11	41	|	|
Landvetter	|	41	3	11	26	41	|	3	11	|	41	3	11	41	|	3
Bollebygd	|	54	|	24	|	54	|	|	24	|	54	|	24	54	|	|
Borås	48	4	18	34	41	4	7	18	34	48	4	18	34	4	7	18

0

	HST (Bs)	LRT	CT	HST	CT	LRT	CT	CtC	CT	HST (Bs)	LRT	CT	HST	CT	LRT	CT
	0	0	0	22	0	0	0	0	23	0	0	0	0	0	0	0
Borås	25	31	35	1	5	31	35	44	5	25	31	35	1	5	31	35
Bollebygd	37	|	47	|	17	|	47	|	17	37	|	47	|	17	|	47
Landvetter	|	47	56	|	26	47	56	4	26	|	47	56	|	26	47	56
Mölnlycke	|	|	3	|	33	|	3	|	33	|	|	3	|	33	|	3
Korsvägen	|	|	10	|	40	|	10	|	40	|	|	10	|	40	|	10
Haga	|	|	13	|	43	|	13	|	43	|	|	13	|	43	|	13
Göteborg	45	57	14	20	44	57	14	15	44	45	57	14	20	44	57	14