

Antelope Valley Line Study



Appendix 4 Task 7: Second Stage Evaluation of Capital Projects

ANTELOPE VALLEY LINE STUDY
Contract No. PS-2415-3024-03

Appendix 4
**Task 7: Second Stage Evaluation of
Capital Projects**

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May 10, 2019

Task 7 – Second Stage Evaluation – Capital Projects		
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ACRONYMS AND ABBREVIATIONS

AVL	Antelope Valley Line
CP	Control Point
LAUS	Los Angeles Union Station
Metro	Los Angeles County Metropolitan Transportation Authority
MRP	Metrolink Rehabilitation Plan
PRE	Pacific Railway Enterprises
QA/QC	Quality Assurance/Quality Control
ROM	Rough-order-of-Magnitude
ROW	Right-of-way

1 INTRODUCTION

The approved Work Plan for the Antelope Valley Line (AVL) Study called for a two-stage evaluation process for determining the recommended service improvements and supporting capital projects to increase service on the line. In Task 4, the modeling efforts used to identify capital projects were reviewed, and that information was used as part of the Stage 1 multi-variable evaluation process to identify which service scenario provided the best overall service improvement, considering cost and other factors.

Meetings were held with stakeholders and the North County Transportation Coalition as the study progressed, on the following dates:

Stakeholder Meetings:

- June 6, 2018 – Kickoff Meeting
- December 12, 2018 – Review of draft service scenarios and required infrastructure
- February 11, 2019 – Review updated revised scenarios, capital and operating costs
- May 22, 2019 (scheduled) – Final study results, findings, and next steps

North County Transportation Coalition:

- July 23, 2018 – Study Background and Update
- April 22, 2019 – Review revised service scenarios, capital project requirements, Operations and Maintenance Costs, and recommended investment priorities

Based on the Stage 1 evaluation findings and sensitivity analysis, and input from Stakeholders and Metro staff, it became clear that improvements to service on the AVL (and the capital projects needed to support those improvements) should be viewed as an incremental service improvement continuum as funding permits, rather than any one scenario being an end-all objective.

The purpose of the Stage 2 evaluation process was to focus on prioritizing the capital projects to determine the best project phasing plan, commensurate with the near- and mid-term service scenarios that can be funded.

This Technical Memorandum reviews the methodology for the Stage 2 evaluation, and offers findings and recommendations regarding capital project priorities and phasing to achieve the desired service levels.

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2 SECOND STAGE EVALUATION CRITERIA AND RESULTS

2.1 Second Stage Evaluation Criteria and Methodology

With a focus on capital projects, as opposed to service scenarios, the Stage 2 Evaluation Criteria were designed to assess each individual capital project on five factors related to their contribution to improving AVL corridor service, and are displayed in Table 2-1. Metro staff approved the use of these criteria during the Team call on March 25, 2019.

Table 2-1: Antelope Valley Line Study Stage 2 Evaluation Criteria focused on Capital Projects

Category #	Criterion	Proposed Category Weight	Scoring System/Range	Range Definitions
1	Degree to which Capital Project supports sequential service scenario improvements	40%	10 - 50 points	<ul style="list-style-type: none"> ▪ 50 pts = Supports Service Scenarios 2, 3, and 4, 5, or 6 ▪ 40 pts = Supports Service Scenarios 3, 4, and 5 or 6 ▪ 30 pts = Supports Service Scenarios 4 and 5 or 6 ▪ 10 pts = Supports only Service Scenario 5 or 6
2	Total Capital Cost of Project	20%	10 - 50 points	<ul style="list-style-type: none"> ▪ 50 pts = In lowest 20% of project costs ▪ 40 pts = in the lowest 20% to 30% of project costs ▪ 30 pts = in the lowest 30% to 50% of project costs ▪ 20 pts = in the lowest 50% to 70% of project costs ▪ 10 pts = in the highest 30% of project costs
3	Independent Utility of the Project	20%	10 - 50 points	<ul style="list-style-type: none"> ▪ 50 pts = Provides significant independent utility to AVL operations ▪ 30 pts = Provides some independent utility to AVL operations ▪ 10 pts = Provides no independent utility to AVL operations unless applicable service scenario is implemented
4	Environmental or Community Impact Issues	10%	10 - 50 points	<ul style="list-style-type: none"> ▪ 50 pts = No significant environmental impacts on sensitive resources or communities ▪ 30 pts = Some significant environmental impacts which can be mitigated at reasonable cost ▪ 10 pts = Significant environmental impacts which will be costly to mitigate
5	Required ROW Acquisitions	10%	10 - 50 points	<ul style="list-style-type: none"> ▪ 50 pts = No permanent ROW acquisitions required ▪ 30 pts = Some limited permanent ROW acquisition required which is not expected to be problematic ▪ 10 pts = Significant ROW acquisition required which could be difficult to obtain, may require Eminent Domain

Total 100% Max Score = 50 points

The five evaluation criteria categories, their rationale, and their category weight in the overall evaluation, are briefly described as follows:

1. Degree to which Capital Project Supports Sequential Service Scenario Improvements (40%) – The concept was to evaluate each project in terms of how many, and which, Service Scenarios, it supports, with higher points assigned to projects that support the earlier service scenarios in the phasing plan.
2. Total Capital Cost of the Project (20%) – Evaluates each capital project in terms of its overall cost (as identified in Tasks 5 and 6), and assigns points based on which quintile the projects fall within, with highest points awarded to lowest-cost projects.
3. Independent Utility of the Project (20%) – Rates each project in terms of its value to AVL operations, independent of the service scenarios. Higher points were assigned to projects that yielded independent benefits, regardless of service scenario.
4. Environmental or Community Impact Issues (10%) – Evaluates each project in terms of its relative impact on the local environment or community. All the projects occur within the disturbed railroad right-of-way, but some require work over sensitive habitat such as waterway crossings, or may occur near developed residential communities, which could require additional mitigation measures. Projects with more impacts were scored lower.
5. Required Right-of-Way Acquisitions (10%) – Three of the projects required acquisition of right-of-way to construct, including from Union Pacific Railroad. Projects with such required acquisitions were scored lower on this criterion.

Each capital project was rated on each of the five criteria, on a scale of 10 points to 50 points. After consideration of criteria category weighting, the maximum possible score in the evaluation for any one project was 50 points.

2.2 Second Stage Evaluation Results

The capital projects that were evaluated are the same projects identified in Task 4 as part of the modeling of service scenarios. The summary capital project information, and the Stage 2 Evaluation Results using the above criteria, are displayed in Table 2-2. A color-coding scale was used to group the projects with relatively similar evaluation scores. The evaluation results are summarized as follows.

2.2.1 Highest-Rated Project

The Balboa - Tunnel project, which would extend double track between Control Point (CP) Balboa and the south portal of Tunnel 25, was the highest rated project. This project, with an estimated total capital cost of \$41.8 million, is necessary to support Service Scenarios 2 through 6 and scored well on all criteria. This project alone is sufficient to enable hourly, off-peak headways, as called for in Service Scenario 2.

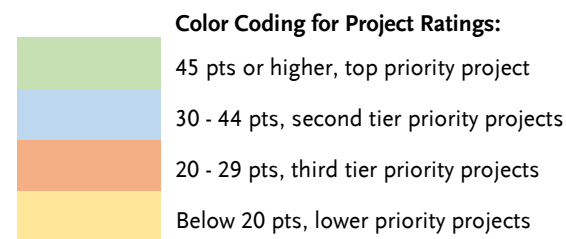
2.2.2 Second Highest Rated Group of Projects

After the Balboa – Tunnel project, the next four highest rated projects are those needed to improve AVL service up to Scenario 3's level, which preserves the current peak-period service configuration and allows up to semi-hourly off-peak service between Los Angeles Union Station (LAUS) and the Via Princessa station. This service level has been identified by the Stakeholders as a service goal to achieve in the next few years. The four projects in this group

include Lancaster Terminal train storage improvements (two variants) to store up to six trainsets (\$27.3 million) or up to eight trainsets (\$30.1 million) for higher-numbered scenarios, Canyon – Santa Clarita siding extension (additional double-track - \$48.8 million), and Brighton – McGinley double-track extension (\$57.3 million). The total estimated capital cost of the projects required to achieve Service Scenario 3 (with Lancaster Terminal Improvements for six trainsets) is \$175.2 million.

Table 2-2: Antelope Valley Line Study Stage 2 Evaluation for Capital Projects

Capital Project Information					Capital Project Evaluation										Project Evaluation Totals	
Milepost	Project Name	Track-feet	Description	Estimated ROM Capital Cost ^{1,2}	1		2		3		4		5			Total Weighted Score
					Capital Project supports sequential service improvements (Score/Weighted Score)	Total Capital Cost of Project (Score/Weighted Score)	Independent Utility of the Project (Score/Weighted Score)	Environmental or Community Impact Issues (Score/Weighted Score)	Required ROW Acquisitions (Score/Weighted Score)	40%	Wt. Score	20%	Wt. Score	20%		
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	\$ 27,300,000	40	16	40	8	30	6	37	4	10	1	35	
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	\$ 30,100,000	30	12	40	8	30	6	37	4	10	1	31	
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	\$ 127,300,000	10	4	10	2	30	6	25	3	10	1	16	
55.0-57.5	Acton Siding	13,200	New siding	\$ 40,200,000	10	4	30	6	10	2	32	3	50	5	20	
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	\$ 56,300,000	10	4	30	6	10	2	37	4	50	5	21	
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	\$ 26,400,000	10	4	40	8	10	2	38	4	50	5	23	
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	\$ 48,800,000	40	16	30	6	50	10	30	3	30	3	38	
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	\$ 41,600,000	10	4	30	6	10	2	27	3	50	5	20	
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	\$ 41,800,000	50	20	30	6	50	10	42	4	50	5	45	
21.9-23.6	Sylmar-Roxford	8,976	New double track	\$ 42,700,000	10	4	30	6	10	2	18	2	50	5	19	
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	\$ 22,900,000	10	4	50	10	30	6	37	4	50	5	29	
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	\$ 47,400,000	0	0	30	6	30	6	17	2	50	5	19	
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	\$ 67,000,000	10	4	20	4	30	6	33	3	50	5	22	
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	\$ 57,300,000	40	16	30	6	50	10	37	4	50	5	41	
Total ROM Capital Cost				\$ 677,100,000												



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2.2.3 Third and Fourth Tiers of Rated Projects

The third tier of rated projects includes six separate capital projects, which are needed for one or more of Scenarios 4, 5, and 6. The fourth tier consists of another three projects. Since all these projects would be in support of service levels beyond Service Scenario 3 and are some distance out in the future, the precise projects among this group to prioritize would require decisions on which of the longer-term scenarios (Scenarios 4, 5, or 6) Metro and Stakeholders ultimately choose to pursue. All three of these scenarios provide relatively similar levels of service, but in slightly different configurations of train spacing and the location of the northern terminus of the short-turn trains (Via Princessa station vs. Sylmar station). Thus, the required capital projects among this grouping differ depending on the scenario chosen. Those scenarios require a total capital outlay (including the \$175.2 million that brings the system up to Scenario 3) of between \$328.9 million and \$448.7 million. Given the funding requirement and longer time frame before any of these scenarios could be implemented, decisions about which of these longer-range projects should be implemented, and in which sequence, can be deferred.

3 ATTACHMENTS

1. Detailed tables from Stage 2 Evaluation

Table A-1: Degree to which Capital Project Supports Sequential Service Scenario Improvements

Milepost	Project Name	Track-feet	Description	Sequential Service Scenario Support - Score	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	40			X			X
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	30				X	X	
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	10					X	X
55.0-57.5	Acton Siding	13,200	New siding	10				X		
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	10					X	X
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	10				X		
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	40			X	X	X	X
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	10				X		
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	50		X	X	X	X	X
21.9-23.6	Sylmar-Roxford	8,976	New double track	10				X		
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	10						X
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	0						
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	10					X	X
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	40			X	X	X	X

Table A-2: Assessment of Capital Cost by Capital Project

Milepost	Project Name	Track-feet	Description	Project Cost - Score	Estimated ROM Capital Cost ^{1,2}
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	40	\$ 27,300,000
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	40	\$ 30,100,000
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	10	\$ 127,300,000
55.0-57.5	Acton Siding	13,200	New siding	30	\$ 40,200,000
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	30	\$ 56,300,000
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	40	\$ 26,400,000
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	30	\$ 48,800,000
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	30	\$ 41,600,000
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	30	\$ 41,800,000
21.9-23.6	Sylmar-Roxford	8,976	New double track	30	\$ 42,700,000
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	50	\$ 22,900,000
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	30	\$ 47,400,000
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	20	\$ 67,000,000
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	30	\$ 57,300,000

Range	Estimated ROM Cost	Points	Scale	Low - High Scale Ranges	
Highest	\$ 127,300,000	10	10 pts = in the highest 30% of project costs	\$ 89,110,000	\$ 127,300,000
		20	20 pts = in the lowest 50% to 70% of project costs	\$ 63,650,000	\$ 89,110,000
		30	30 pts = in the lowest 30% to 50% of project costs	\$ 38,190,000	\$ 63,650,000
		40	40 pts = in the lowest 20% to 30% of project costs	\$ 25,460,000	\$ 38,190,000
Lowest	\$ 22,900,000	50	50 pts = in lowest 20% of project costs	\$ 22,900,000	\$ 25,460,000

Table A-3: Assessment of Independent Utility by Capital Project

Milepost	Project Name	Track-feet	Description	Assessment of Independent Utility - Score	Rationale
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	30	This project, at minimum, is needed to support Scenario 3 level of service improvement
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	30	This project supports Scenario 3 level of service improvement and supports Metrolink's future increases in service and need to service more trains at outer terminals.
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	30	This project would not be needed until Scenarios 5 or 6 are implemented. However, to accommodate potential HSR blended service, this project provides capacity for HSR to be implemented sooner.
55.0-57.5	Acton Siding	13,200	New siding	10	This project only supports Scenario 4; otherwise, it is not needed for passing opportunities on any other scenario.
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	10	This project does not provide needed utility unless Scenarios 5 or 6 are implemented, which are a long time out. In lower-numbered Scenarios, this improvement is not needed for the planned level of service in this area.
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	10	This project only supports Scenario 4; otherwise, it is not needed for passing opportunities on any other scenario.
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	50	This project is needed for all Scenarios #3 or higher, and supports this segment as a potential turnaround point for short-turn train trips.
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	10	This project only supports Scenario 4; otherwise, it is not needed for passing opportunities on any other scenario.
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	50	This project is needed for all Scenarios #2 or higher, and makes hourly off-peak clockface headways possible.
21.9-23.6	Sylmar-Roxford	8,976	New double track	10	This project only supports Scenario 4; otherwise, it is not needed for passing opportunities on any other scenario.
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	30	This project provides some independent utility in that it supports Scenarios involving short-turn trains at either Santa Clarita or Sylmar
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	30	Due to geographic location, this project supports earlier turnback option of Sylmar.
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	30	This project provides some independent utility in that it supports Scenarios involving short-turn trains at either Santa Clarita or Sylmar
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	50	This project is needed for all Scenarios #3 or higher as a passing opportunity

Table A-4: Assessment of Environmental or Community Impact Issues by Capital Project

Milepost	Project Name	Track-feet	Description	Environmental Community Impact - Score	# Sensitive Enviro Resources	# Sensitive Community Resources Impacted	Properties Adjacent to the ROW - Residential or School
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	37	50 Points 0 Projects	10 Points 5 Resources	50 Points No Impact
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	37	50 Points (0 Projects)	10 Points 5 Resources	50 Points No Impact
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	25	10 Points 5 Projects (4 Large)	15 Points 3 Resources	50 Points No Impact
55.0-57.5	Acton Siding	13,200	New siding	32	15 Points 10 Projects	30 Points 1 Resources	50 Points No Impact
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	37	10 Points 21 Projects (5 Large)	50 Points 0 Resources	50 Points No Impact
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	38	15 Points 8 Projects	50 Points 0 Resources	50 Points No Impact
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	30	10 Points 13 Projects (2 Large)	30 Points 1 Resources	50 Points No Impact
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	27	20 Points 4 Projects	50 Points 0 Resources	10 Points Adjacent to Residential
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	42	25 Points 2 Projects	50 Points 0 Resources	50 Points No Impact
21.9-23.6	Sylmar-Roxford	8,976	New double track	18	30 Points 1 Projects	15 Points 3 Resources	10 Points Adjacent to Residential
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	37	30 Points 1 Projects	30 Points 1 Resources	50 Points No Impact
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	17	30 Points 1 Projects	10 Points 5 Resources	10 Points Adjacent to a School
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	33	20 Points 5 Projects	30 Points 1 Resources	50 Points No Impact
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	37	30 Points 1 Projects	30 Points 1 Resources	50 Points No Impact

Score Rationale	Points Scale	Points Scale	Points Scale
The score for this evaluation criteria is the average of the 3 subcategories's scores.	10 Points 10+ Projects (Or 3+ Large Projects)	10 Points 5 Sensitive Resources Impacted	10 Points Adjacent to Sensitive Property
	15 Points 6 to 10 Projects	15 Points 3 Sensitive Resources Impacted	50 Points No Impact
	20 Points 3 to 5 Projects	30 Points 1 Sensitive Resources s Impacted	
	25 Points 2 Projects	50 Points 0 Sensitive Resources Impacted	
	30 Points 1 Projects		
	50 Points 0 Projects		

Table A-5: Assessment of Required Right-of-Way Acquisitions by Capital Project

Milepost	Project Name	Track-feet	Description	Required ROW Acquisitions - Score	Property Takes
76.1 -76.6	Lancaster Terminal -- 6 trainsets	3,440	New double track and second station platform face, plus two new 1,000' storage tracks	10	Large Take (70,400 SqFt)
76.1 -76.6	Lancaster Terminal -- 8 trainsets	4,300	New double track and second station platform face, plus three new 1,000' storage tracks	10	Large Take (70,400 SqFt)
68.5-72.0	Palmdale North	18,480	New double track and 2 platform tracks at station (integrated with HSR)	10	Large Take (63, 400 SqFt)
55.0-57.5	Acton Siding	13,200	New siding	50	
50.0-52.5	Ravenna South	13,200	Extend existing siding (new double track)	50	
37.5-38.6	Via Princessa-Honby	5,808	Extend existing siding (new double track)	50	
33.4-35.0	Canyon-Sta. Clarita	8,448	Extend existing siding (new double track)	30	Small Take (4,900 SqFt)
30.2-32.4	Hood-Saugus	11,616	Connect sidings and convert to double track	50	
25.3-26.5	Balboa-Tunnel	6,336	Extend double track	50	
21.9-23.6	Sylmar-Roxford	8,976	New double track	50	
21.5-22.1	Sylmar Station	3,168	Second track at station (Costs included in Van Nuys - Sylmar)	50	
19.5-21.9	Van Nuys Blvd-Sylmar	12,672	New double track	50	
17.0-19.5	Sheldon-Van Nuys Blvd	13,200	New double track	50	
12.7-15.6	Brighton-McGinley	15,312	Extend and connect double track sections	50	