

C620 – Signalling

ATS COS Block Schematic

CRL Document Number: C620-SIC-R2-RSP-CR001-50218

Supplier Document Number: A6Z00041759163, K

Contract MDL Reference A10.054

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YES NO

Stakeholder submission required: LU RfL Purpose of submission: For no objection
 NR LO For information
 DLR Other: _____

This document has been reviewed by the following individual for coordination, compliance, integration and acceptance and is acceptable for transmission to the above stakeholder for the above stated purpose.


Sign: _____ Role: _____ Name: _____ Date: _____

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2b. Review by Stakeholder (if required):

Stakeholder Organisation	Job Title	Name	Signature	Date	Acceptance
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Document History

Rev. CRL	Date	Rev. SAP	Chapter	Reason for Issue:
1.0	2017-06-22	A	all	First version
2.0	2017-08-24	B	all	Considered comments from C620-PMC-02992
3.0	2017-12-18	C	2	Added Berth 0296 and deleted berth 0236 based on NAA3E-ESG-TQN-DRA-000076 (TQ NR 16-Aug-2017) Added Switches at Pudding Mill Lane Portal based on TD Stepping Tables – Stratford VDU (NAA3E-ESG-DRG-DRA-000120 A02)
4.0	2018-06-08	D	2 all	Added links (due to new signals, e. g. 115) to the GWML/CRL overlay area (labelled in purple)* Added internal/external naming of berth 0095 to the translation table Described internal/external naming
-	2018-10-23	E	2 1 Note	Considered findings from VPN test window 2 with Resonate for GWML ATS Interface, refer to CFX00405824. Changes are highlighted in red in the TC version of this document. Considered review comments Internal pre-release due to delivery of E04/001.
5.0	2019-01-24	F	All Note	Considered review comments The changes between Rev. SAP D and F are tracked in the TC version of this document.
6.0	2019-04-05	G	Chapter 2 Handover Figure 1	Error correction Better highlighted Updated
-	2019-08-08	H	All	Updated for P_D+10 (NKL fringe) Error correction GWML

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Rev. CRL	Date	Rev. SAP	Chapter	Reason for Issue:
7.0	2019-09-17	J	Chapter 2 All	Updated for P_D+11 (NKL fringe) The changes between Rev. SAP G and J are tracked in the TC version of this document.
8.0	2020-03-13	K	All Chapter 2 Chapter 1	Update for TR2: CI and CIINTL configuration Drawings corrected Removed 017B and 009C as requested by NR New Section "Failure Scenarios"

**Note: colour removed from drawings*

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List of References

Ref.	Document Code	SAG Number	SRA Number	Document Title
[R01]	C620-SIC-R2-DWG-CR001-50047, Rev. 9.0	A6Z00037389060, M	n/a	Crossrail Scheme Plans: Area 1 and 2
	C620-SIC-R2-DWG-CR001-50048, Rev. 10.0	A6Z00038251930, L		Area 3
	C620-SIC-R2-DWG-CR001-50049, Rev. 11.0	A6Z00037585953, P		Area 4
	C620-SIC-R2-DWG-CR001-50050, Rev. 9.0	A6Z00037727635, L		Area 5
	C620-SIC-R2-DWG-CR001-50051, Rev. 11.0	A6Z00037586032, N		Area 6
	C620-SIC-R2-DDE-CR001-00006, Rev. 6	A6Z00040614185, H		Area 7
	[R02]	C620-SIC-R2-RSP-CR001-50025, Rev. 7.0	A6Z00035220843, J	n/a
C620-SIC-R2-RSP-CR001-50026, Rev. 6.0		A6Z00035220873, H	n/a	DIR ATS-005-ANK C620/NR ATS Data Exchange NKL (CRL)
C620-SIC-R2-RSP-CR001-50024, Rev. 7.0		A6Z00035220836, G	n/a	DIR ATS-003-AGW C620/NR ATS Data Exchange GWML (CRL)
C620-SIC-R2-RSP-CR001-50028, Rev. 6.0		A6Z00035220929, F	n/a	IRS ATS-008-TRU C620/NR TRUST (CRL)
[R03]	C620-SIC-R2-RSP-CR001-50105, Rev. 6.0	A6Z00037431456, H	n/a	ATS Engineering of Interlocking Area View
[R04]	C620-SIC-R2-RSP-CR001-50219, Rev. 5.0	A6Z00041759097, E	n/a	ATS Moving Block Berth Principle
[R05]	C620-SIC-R2-RSP-CR001-50217, Rev. 7.0	A6Z00041759149, H	n/a	ATS COS-MBB-Configuration

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[R06]	C620-SIC-R2-RSP-CR001-50214, Rev. 7.0	A6Z00041759126, G	n/a	NR ATNS Berth Mapping Table
[R07]	This document	This document	This document	ATS COS Block Schematics

Table 1 List of References

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1 Introduction

1.1 Purpose and Scope

This document is part of the implementation of the PS9-interface, which is the interface to exchange train stepping messages between CRL ATS and the GWML, GEML, NKL and TRUST (SMART) systems.

The structure of this implementation is shown in Figure 1. Main document for the software is “ATS Moving Block Berth Principle”, [R04]. Within this document all values and rules are defined, which are fixed and cannot be changed by configuration. The values which can be configured, are described and defined in [R05], [R06] and [R07].

“ATS COS Block Schematic” [R07] defines the configuration of the NR Berths received from GWML, GEML, NKL and its relationships to the COS Berths, based on [R02], [R05] and [R06].

“ATS COS-MBB-Configuration” [R05] defines the configuration of the berths itself for the COS (e. g. how many, where to place, boarders), based on [R01]. The berths for the NR area are defined in the respective DIRs and cannot be changed.

"NR ATNS Berth Mapping Table" [R06] defines the mapping between the NR berths received via TD.net and the ATNS fields on CRL LWOD. These berths are given by NR and cannot be changed.

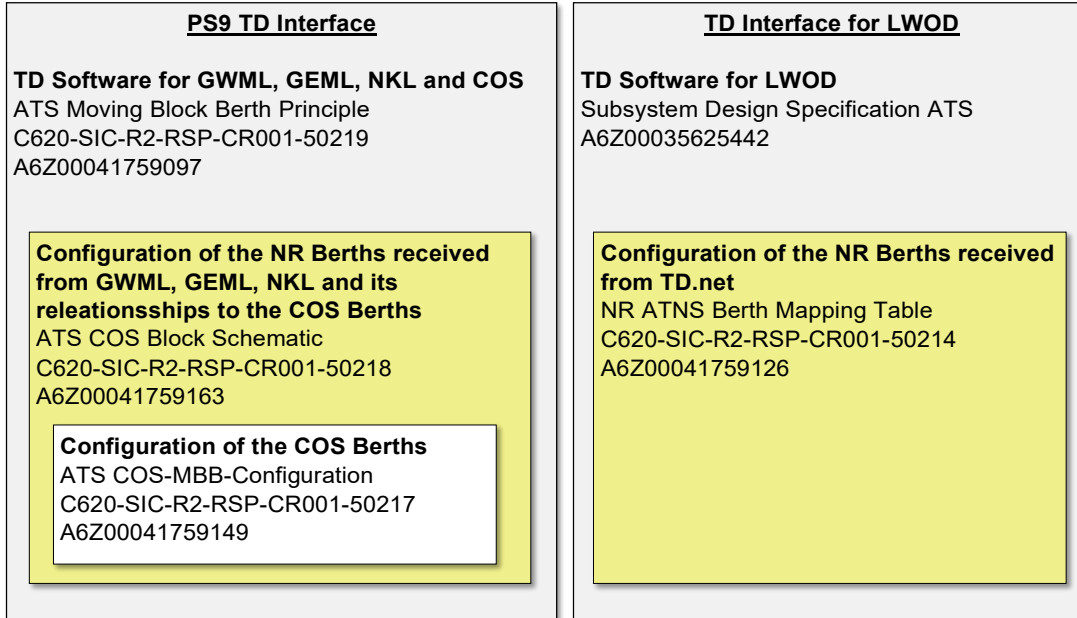


Figure 1 How to classify this Document

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1.2 Terms and Abbreviations

The following terms and abbreviations are used in this document:

Term / Abbreviation	Explanation
DCC	Document Classification Code
GEML	Great Eastern Main Line
GWML	Great Western Main Line
NKL	North Kent Line
NR	Network Rail
PS9	Serial Train Describer interface for exchanging telegrams between <ul style="list-style-type: none"> GWML ATS – CRL ATS GEML ATS – CRL ATS, NKL ATS – CRL ATS and for transmitting telegrams to <ul style="list-style-type: none"> NR TRUST
SAG	Now refers to Siemens Mobility GmbH Note: As of August 1, 2018, the Mobility Division of Siemens AG has been transferred into Siemens Mobility GmbH.
SRA	Now refers to Siemens Mobility Limited Note: As of June 1, 2018, Siemens Rail Automation Holdings Ltd has been renamed to Siemens Mobility Limited.

Table 2 Terms and Abbreviations

1.3 Sources

The figures from section 2 are based on [R02] and [R05].

1.4 Assumptions

In this section all assumptions are listed.

1.4.1 Unique Berth Naming

There are differences in the internal and the external berth naming. This differentiation is necessary to have unique berth names for all berths inside the CRL ATS system.

ATS will expect the external naming to be received from the adjacent systems and handle them internally with a different ID. The conversion table is shown on the last page. All affected berths are highlighted as well in orange in the respective figures.

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1.4.2 Relationship to ATS Engineering of Interlocking Area View

Please be aware that this document differentiates to ATS Engineering of Interlocking Area View, [R03]. The Automatic Train Tracking for the Interfaces GWML, GEML, NKL and TRUST behaves differently to the Automatic Train Tracking for the CRL ATS. This means, on Vicos Views can be train number fields, which are not shown as berth in this document and vice versa.

Refer to [R04] for further details about this differentiation.

1.5 CI and CIINTL Configuration

For each fringe area a CI or a CIINTL flag can be configured. This defines which telegram format is used when transmitting data to the adjacent system. The setup required for CRL is:

- GWML: CIINTL
- GEML: CIINTL
- NKL: CI

1.6 CI and CY Configuration

For each fringe area there must be a configuration, how the initialisation shall be handled. A detailed explanation is listed in the subchapters below (caused by CFX00460459). The setup required for CRL is:

- GWML: CI and CY function
- GEML: CI and CY function
- NKL: CI function only

1.6.1 CI Function

ATT sends a CI message to the adjacent train describer when

- It receives the first non-CQ message following link restoration from an adjacent train describer, i.e. after start-up or connection loss
- Hint: In this case: ATT sends also CB and CC messages for all engineered transmit berths of the adjacent train describer

When ATT receives a CI message from the adjacent train describer

- It sends an Ack for the CI to the adjacent train describer
- It sends CB and CC messages for all engineered transmit berths of the adjacent train describer

1.6.2 CI and CY Function

ATT sends a CI message to the adjacent train describer when

- It receives the first non-CQ message following link restoration from an adjacent train describer, i.e. after start-up or connection loss
- Hint: In this case ATT sends also CB and CC messages for all engineered transmit berths of the adjacent train describer

ATT receives a CI message from the adjacent train describer

- It sends an Ack for the CI to the adjacent train describer
- It sends CB and CC messages for all engineered transmit berths of the adjacent train describer (no change)
- It sends CY messages for all engineered receive berths of the adjacent train describer

1.7 Failure Scenario

If a connection to an adjacent train describer system fails, all HC shall remain at the last known position on the screens, as long as the connection is not restored. In Addition, the operator will get an alarm about this failure.

Parameter TimeOutTDDeletion shall be set therefore to "0".

1.8 Baseline

This document is valid for TR2.

1.9 Hints for Engineering

All changes in the COS Block schematic drawings are highlighted in red.

2 COS Block Schematic

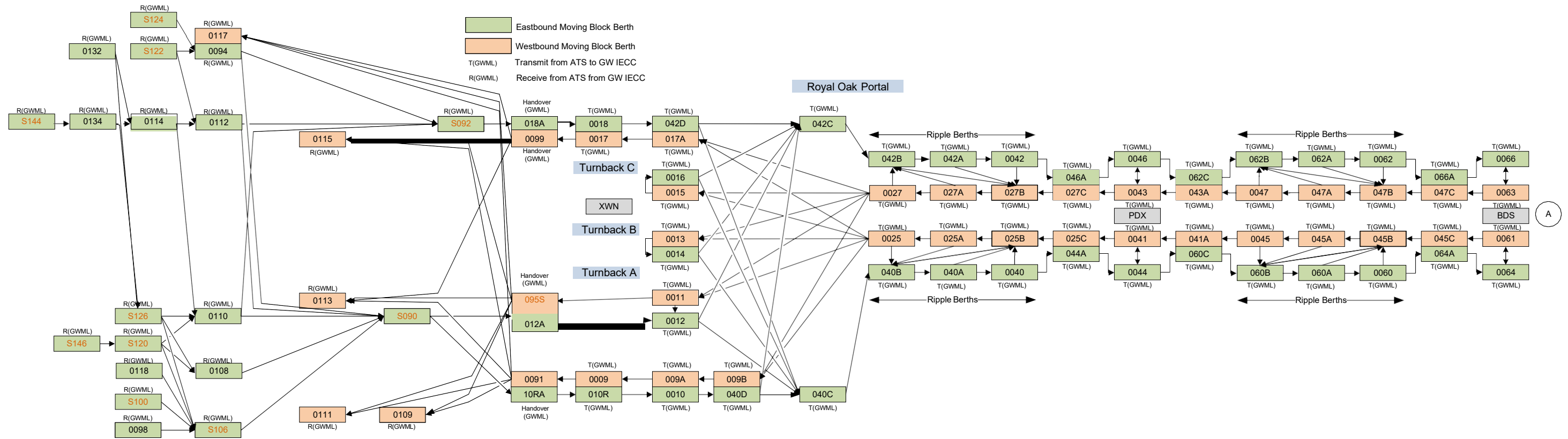


Figure 2 COS Block Schematic – Part A

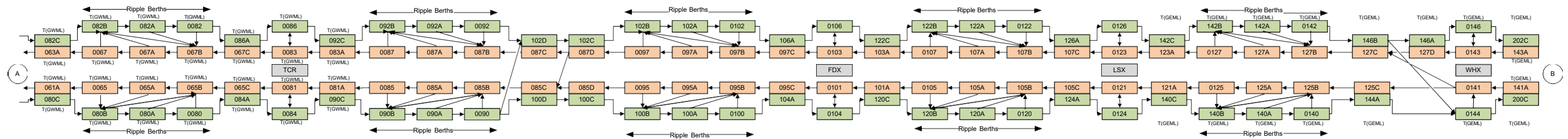


Figure 3 COS Block Schematic – Part B

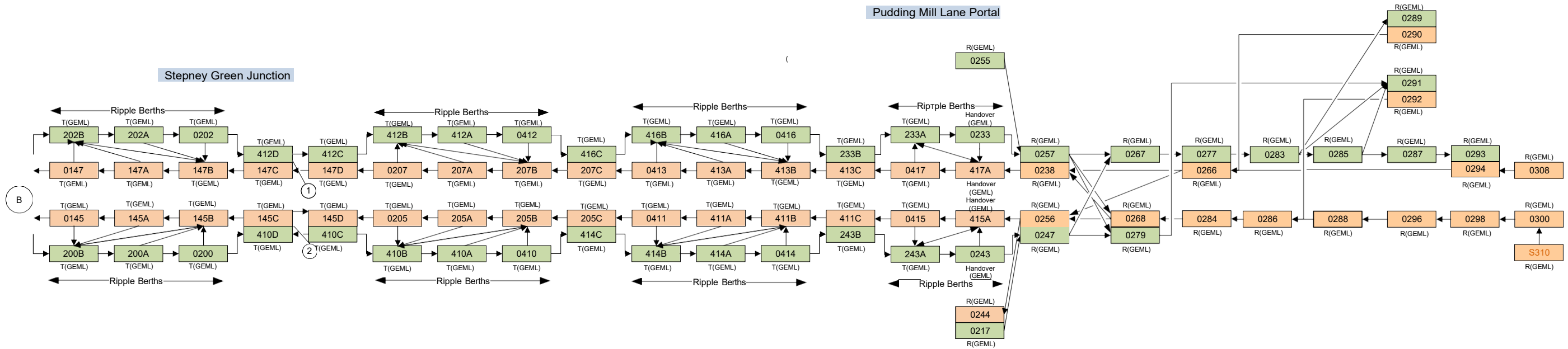


Figure 4 COS Block Schematic – Part C

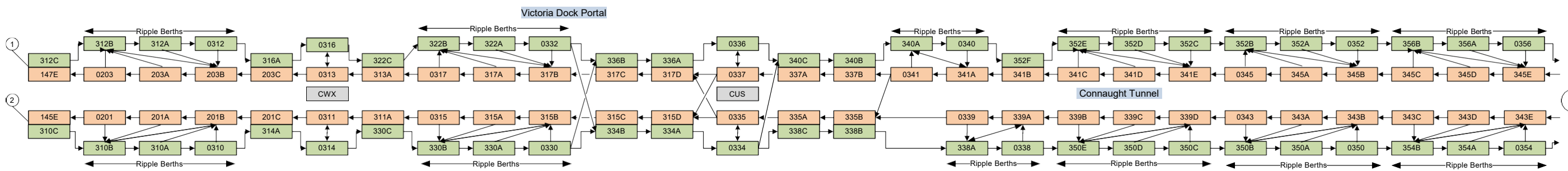


Figure 5 COS Block Schematic – Part D

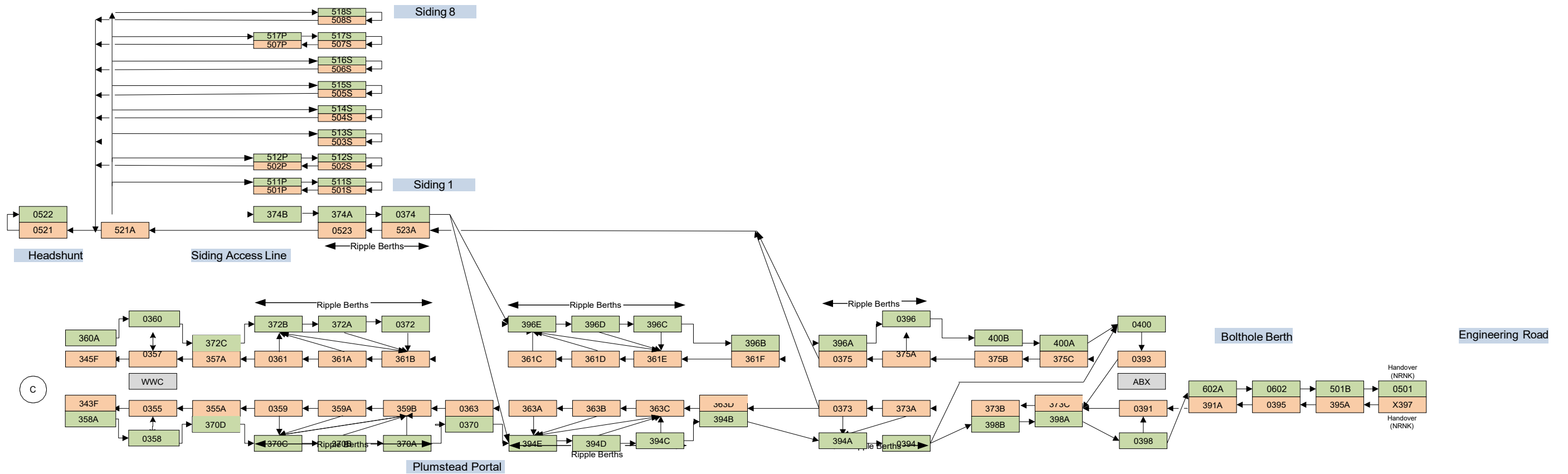


Figure 6 COS Block Schematic – Part E

The following translations of berths have to be considered:
 Internal berth name -> external berth name:

- S090 -> 0090
- S092 -> 0092
- 095S -> 0095
- S100 -> 0100
- S106 -> 0106
- S122 -> 0122
- S124 -> 0124
- S126 -> 0126
- S144 -> 0144
- S146 -> 0146
- S310 -> 0310
- S120 -> 0120