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Federal Department of the Environment
Transport, Energy and Communications DETEC

Federal Office of Transport FOT
Infrastructure Division

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-001**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Calcualtion of fixed installation gauge						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**		3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.4.1 paras. 1) and 2)						
Reference in Swiss regulation:	IP-RailO on Art. 18.2/47.2 IP-RailO on Art. 18 (esp. IP 18.2)						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	Justification according to A-deviation from EN 15273 (see page 2)						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to the leaflets EN 15273:2013 (esp. Swiss A-deviation) and UIC 505 and 506.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.						

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a) In Switzerland, the dimensions of the gauges and their scope of application are specified in the provisions for the implementation of the railways ordinance (DE-OCF, RS 742.141.11 / http://www.admin.ch/ch/d/sr/c742_141_11.html):

— for the kinematic reference profiles in Clause 18.2/47.1;

— for the free space profile for the infrastructure in Clause 18;

— for the vehicle gauge in Clause 47.

In accordance with these regulations, for all types of gauge (for example: OCF O1, OCF O2, OCF O4), the rules associated with the kinematic reference profile correspond to EN 15273-1:2013, Annex C, C.1.1. (notably the Formulae (C.1), (C.2) and (C.3)), for all values of height *h*.

In Switzerland, the use of the rules for the calculation of kinematic gauges given in EN 15273-1:2013, Annex C, C.2.2 and C.2.3 (notably Formulae (C.8), (C.9), (C.10) and (C.11)) is not authorized for the upper part (h > 3,250 m).

As a result, the compatibility of OCF gauges with the international gauges of EN 15273-2 is as follows:

- Gauge G1
  Admission without restrictions.

- Gauge GA
  Admission with restrictions for gauge OCF O1. The formulae associated with gauge G1 are to be applied for the calculation of the kinematic gauge of the rolling stock (upper part), for all heights h. In Switzerland, the use of the features provided for in EN 15273-2:2013, Annex B, B.3.3.1, B.3.4.1, B.3.5.1, B.3.6.1 is not authorized for heights h > 3,250 m. Gauge OCF O1 accepts standard loads for gauge GA, specified in File UIC506, Annex B article B.1.1.

- Gauge GB
  Admission with restrictions for gauge OCF O2. The formulae associated with gauge G1 are to be applied for the calculation of the kinematic gauge of the rolling stock (upper part), for all heights h. In Switzerland, the use of the features provided for in EN 15273-2:2013, Annex B, B.3.3.1, B.3.4.1, B.3.5.1, B.3.6.1 is not

  authorized for heights h > 3,250 m. Gauge OCF O2 accepts standard loads for gauge GB, specified in File UIC506, Annex B, Clause B.1.2.

- Gauge GC
  Admission without restrictions for gauge OCF O4.

The gauge for the infrastructure (upper part) for all types of gauge (OCF O1, OCF O2, OCF O4) is calculated according to EN 15273-3:2013, Annex C, C.2.1, Table C.1 (respectively Annex C, C.2.3, Table C.4).

In Switzerland, the use of the formulae given in EN 15273-3:2013, Annex C, Tables C.2 and C.3, is not authorized for heights h > 3,250 m.

Rationale

In Switzerland, the provisions for the implementation of the railways ordinance (DE-OCF, RS 742.141.11 / http://www.admin.ch/ch/d/sr/c742_141_11.html) shall be complied with in order to ensure the interoperability of the different gauges.

Switzerland has never accepted the features for the upper part (h > 3,250) in accordance with File UIC 506, notably for gauges GA and GB, now contained in EN 15273-1, EN 15273-2 and EN 15273-3.

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-002**	**State:**	Switzerland	**Status**	**In force**	**since:**	Juli 2016
Title:	Rolling stock gauge and cargo limits						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**		3003 Bern SWITZERLAND
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.4.1 para 2)
Reference in Swiss regulation:	IP-RailO on Art. 18.2/47.2
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	Justification according to A-deviation from EN 15273 (see page 2) Access doors that comply with the UIC leaflet 560 provisions Sections 1.1.4 to 1.1.4.3 are, however, permitted.
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to the leaflets EN 15273:2013 (esp. Swiss A-deviation) and UIC 505 and 506, and esp. 560.
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.

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National deviation (A-deviation) in EN 15273

b) In Switzerland, the provisions for the implementation of the railways ordinance (DE-OCF, RS 742.141.11 / http://www.admin.ch/ch/d/sr/c742_141_11.html) must be complied with, together with the conditions in EN 15273-2:2013, Annex A, A.3.1.14 "Specific rules for doors and steps in the open position".

In accordance with Clause 47.2 point 7 of these rules, it is forbidden to exceed the maximum construction gauge of vehicles, with access doors, less than 0,6 m in height.

Justification

In Switzerland, a large number of platforms are built on curves with cant levels of up to 100 mm (or more, in specific cases). As a consequence, exceeding the maximum construction gauge of vehicles wi, without exceeding 0,035 m, is not allowed for access doors, less than 0,6 m in height (platform height 0,56 m in relation to the running surface).

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-003**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Calcualtion of fixed installation gauge						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.4.2 para 1						
Reference in Swiss regulation:	IP-RailO on Art. 19, IP 19, IP 19.1 and IP-RailO on Art. 18.2/47.2 and IP-RailO on Art. 18 (esp. IP 18.2)						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The minimum necessary distance between track centres is determined by the fixed installation gauge. Justification according to NNTR CH-CR INF TSI 001 and A-deviation from EN 15273 (see page 2).						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to the leaflets EN 15273:2013 (esp. Swiss A-deviation) and UIC 505 and 506.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.						

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Country-specific derogation (A-derogation) in EN 15273

a) In Switzerland, the dimensions of the gauges and their scope of application are specified in the provisions for the implementation of the railways ordinance (DE-OCF, RS 742.141.11 / http://www.admin.ch/ch/d/sr/c742_141_11.html):

— for the kinematic reference profiles in Clause 18.2/47.1;

— for the free space profile for the infrastructure in Clause 18;

— for the vehicle gauge in Clause 47.

In accordance with these regulations, for all types of gauge (for example: OCF O1, OCF O2, OCF O4), the rules associated with the kinematic reference profile correspond to EN 15273-1:2013, Annex C, C.1.1. (notably the Formulae (C.1), (C.2) and (C.3)), for all values of height *h*.

In Switzerland, the use of the rules for the calculation of kinematic gauges given in EN 15273-1:2013, Annex C, C.2.2 and C.2.3 (notably Formulae (C.8), (C.9), (C.10) and (C.11)) is not authorized for the upper part (h > 3,250 m).

As a result, the compatibility of OCF gauges with the international gauges of EN 15273-2 is as follows:

- Gauge G1
  Admission without restrictions.

- Gauge GA
  Admission with restrictions for gauge OCF O1. The formulae associated with gauge G1 are to be applied for the calculation of the kinematic gauge of the rolling stock (upper part), for all heights h. In Switzerland, the use of the features provided for in EN 15273-2:2013, Annex B, B.3.3.1, B.3.4.1, B.3.5.1, B.3.6.1 is not authorized for heights h > 3,250 m. Gauge OCF O1 accepts standard loads for gauge GA, specified in File UIC506, Annex B article B.1.1.

- Gauge GB
  Admission with restrictions for gauge OCF O2. The formulae associated with gauge G1 are to be applied for the calculation of the kinematic gauge of the rolling stock (upper part), for all heights h. In Switzerland, the use of the features provided for in EN 15273-2:2013, Annex B, B.3.3.1, B.3.4.1, B.3.5.1, B.3.6.1 is not

  authorized for heights h > 3,250 m. Gauge OCF O2 accepts standard loads for gauge GB, specified in File UIC506, Annex B, Clause B.1.2.

- Gauge GC
  Admission without restrictions for gauge OCF O4.

The gauge for the infrastructure (upper part) for all types of gauge (OCF O1, OCF O2, OCF O4) is calculated according to EN 15273-3:2013, Annex C, C.2.1, Table C.1 (respectively Annex C, C.2.3, Table C.4).

In Switzerland, the use of the formulae given in EN 15273-3:2013, Annex C, Tables C.2 and C.3, is not authorized for heights h > 3,250 m.

Rationale

In Switzerland, the provisions for the implementation of the railways ordinance (DE-OCF, RS 742.141.11 / http://www.admin.ch/ch/d/sr/c742_141_11.html) shall be complied with in order to ensure the interoperability of the different gauges.

Switzerland has never accepted the features for the upper part (h > 3,250) in accordance with File UIC 506, notably for gauges GA and GB, now contained in EN 15273-1, EN 15273-2 and EN 15273-3.

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-004**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Maximum cant in small curve radii						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.5.2 para. 5						
Reference in Swiss regulation:	IP-RailO on Art. 17, Section 3.4.2.1 and Section 6.3.1.2 IP-RailO on Art. 17, Section 4.2.4						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The maximum cant may be exceeded in existing installations in Switzerland as the following other measures exist: – high quality track (twist < 3 mm/m); – wheel flange lubrication on locomotives/traction units. An exception to this, in new installations only in special cases, is a curve in the diverging track of a switch with constant cant within and, respecting the maximum cant, along a stretch of at least 10 m on both sides of the this curve.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to EN 13848-5:2008+A1:2010 (esp. the Swiss A-deviation) and R RTE 49410.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.						

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-005**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	In-service geometry of switches and crossings						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.6.2 and Section 4.2.6.3
Reference in Swiss regulation:	IP-RailO on Art. 32 R RTE 22066, R RTE 22067 and D RTE 22056
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	Description of in-service geometry of switches and crossings maximum unguided length of fixed obtuse crossings The permitted dimensions of existing switches and crossings in Switzerland are stipulated in IP-RailO in Art. 32 esp. para. 6 and R RTE 22066, D RTE 22056 and R RTE 22067. Based on long experience with these operating limits, the interoperability can be considered to be given.
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to R RTE 22066, D RTE 22056 and R RTE 22067 .
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-006**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Longitudinal track resistance; compatibility with braking systems						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**		3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.7.2.2
Reference in Swiss regulation:	IP-RailO on Art. 31, Section 2.1. and Section 5 R RTE 220.41 RailO Art. 47 (esp. para. 1)
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	The use of braking systems independent of wheel-rail adhesion conditions (e.g. eddy current track brakes, magnetic track brakes) for service braking is not permissible in Switzerland. The superstructural constructions used in Switzerland and calculated according to IP-RailO on Art. 31, para. 2.1 are not designed for the additional forces and temperatures generated by these braking systems. The weldability limits of continuous welded rails set according to the stability calculation (IP-RailO on Art. 31, para. 5; set in R RTE 220.41) do not take account of the additional forces and temperatures generated by these braking systems. Magnetic track brakes may be used for emergency braking as required by the INF TSI. *These requirements must be contained in the network access requirements and in the infrastructure register.*
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to R RTE 220.41.
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-007**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Lateral track resistance; exploitation of curve < 250 m						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**		3003 Bern SWITZERLAND
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.7.3						
Reference in Swiss regulation:	IP-RailO on Art. 31, para. 2.1 IP-RailO Art. 47						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The Swiss rail network has a relatively large number of lines with curves (R < 250 m) that are not covered by the prescribed technical assessment. Regulations for assessment area 5 (R < 250 m) referring to EN 14363 in progress (FOT, SBB I, BLS I, SOB I working group). The current status can be found in the interim guideline (SBB R I 50127).						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to regulation SBB R I 50127.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50127).						

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-008**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Lateral track resistance; passage through switches						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.7.3
Reference in Swiss regulation:	IP-RailO on Art. 31, para. 2.1 RailO Art. 47 SBB R I 50007
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	In comparison with other European countries, the line layout in some station areas in Switzerland is technically difficult to exploit due to the presence of tight deflection curves and short intermediate sections of track with correspondingly small distance between track centres. This places specific requirements on the homologation of new rolling stock that must be taken account of with special technical verification.
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to regulation SBB R I 50007 and UIC leaflets 505 and 506.
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50007).

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-009**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Lateral track resistance; rolling stock homologation for tilting trains on specific lines Cant deficiency on plain track and on the through of switches and crossings						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern SWITZERLAND		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.7.3 Section 4.2.5.4.1, para 3)						
Reference in Swiss regulation:	IP-RailO on Art. 31, para. 2.1 IP-RailO on Art.17 para. 8.5 RailO Art. 47 SBB R I 20019						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	In Switzerland tilting trains run on tracks designed for the R-series. For rolling stock homologation on specific lines, it must be shown that tilting trains can be driven at the envisaged speed. In Switzerland, only trains constructed with an active tilting system to achieve high cant deficiency are currently regulated by law and authorised under the term 'tilting trains'. Where necessary, other systems are correspondingly defined according to the specifications for tilting trains.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to regulation SBB R I 20019.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 20019).						

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-010**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Lateral track stability; sum of guiding forces (∑Y)						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.7.3 para. 1 a)						
Reference in Swiss regulation:	IP-RailO on Art. 31, para. 2.1 IP-RailO Art. 47						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The maximum permitted sum of guiding forces of rolling stock per wheelset is limited by the permitted track displacement resistance of the infrastructure. Due to the design of the superstructure, in Switzerland a coefficient of α = k1 = 0.85 should be generally used as the control value when calculating the maximum sum of guiding forces. A coefficient of α = k1 = 1.0 can only be applied in exceptional cases and specific clarification must take place. On track tests should be carried out on the basis of α = k1 = 0.85.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to EN 14363:2016 and UIC leaflet 518.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. EN 14363:2005 and UIC leaflet 518).						

Notified national technical rules (NNTRs)

ID	CH-CR INF TSI-012	State:	Switzerland	Status	In force	since:	July 2016
Title:	Immediate action limits, invervention limits and alert limits						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**		3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.9.1 para. 1)						
Reference in Swiss regulation:	IP-RailO on Art. 13, IP 13.3, paras. 8 and 9 SBB R I 22070						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The maintenance concept in Switzerland only defines immediate action limits and intervention limits. There are no alert limits.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to the railway's own maintenance regulations (e.g. SBB R I 22070).						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above.						

Notified national technical rules (NNTRs)

ID	**CH-CR INF TSI 013**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Cant deficiency						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.5.4.1, para. 1)						
Reference in Swiss regulation:	IP-RailO on Art. 17 (esp. para. 3.6.2) RailO Art. 47						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	When speed limits are defined on the Swiss railway network, cant deficiency in the track of 130 mm (freight trains) and 150 mm (passenger trains) is applied without further operating tests (for V > 200 km/h see IP-RailO on Art. 17, standard gauge, IP 17, para. 3.6.2). It is therefore essential that rolling stock be tested for these levels of cant deficiency. Rolling stock not tested for these cant deficiency levels may not be used on the Swiss railway network.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to EN 14363:2016.						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above.						

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-014**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Minimum radius						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.4.4 para. 2) and para. 3)						
Reference in Swiss regulation:	IP-RailO on Art. 17, paras. 3.3.1, 5.2 and 10.2.3.1 SBB R I 22046 and SBB R I 50007 IP-RailO on Art. 18						
Current NNTR classification:	☐ NNTR on an 'open point' in the TSI ☒ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
Full description:	The minimum radius in Switzerland for the free use of rolling stock is: - in running lines: 150 m - in sidings lines: 135 m - in connecting lines: 80 m (free use of shunting locomotives and bogie wagons) and 35 m (smallest permitted radius of horizontal curve for certain wagons in extreme case) For the minimum permitted radius on platforms with a platform edge P55 or P35, type approval ZR44TZ2009-02-0004 of 19.2.2009 issued by the FOT on the basis of IP-RailO on Art. 18 applies.						
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to SBB R I 20046, para. 5.2 and SBB R I 50007 (paras. 2.7.1, 2.7.2 and 2.7.3).						
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above.						

Notified national technical rules (NNTRs)

ID	**CH-TSI INF CR-015**	**State**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Categories of line and gradient						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.1 Section 4.2.4.3, paras. 1), 2), 3) 4) 5) and 6)
Reference in Swiss regulation:	RailO IP-RailO on Art. 17 (esp. para. 7.1.1)
Current NNTR classification:	☒ NNTR on an 'open point' in the TSI ☐ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	Section 4.2.1 - Types of traffic: The railway network in Switzerland is principally designed for mixed traffic. This corresponds to the traffic type 'mixed traffic (M)'. - Types of line: The minimum requirements in terms of interoperability for new lines are "New other TEN line (VI)" and for upgraded existing line "upgraded other TEN line (VII)" - Categories of line The categories of line applicable in Switzerland are therefore for new lines "VI-M" and for upgraded existing line "VII-M". *N.B.:* *The above requirements specify only the technical requirements for the verification of compliance with the TSI.* *The actual performance parameters to be met in upgraded and new lines should be set in the order or usage agreement.* Section 4.2.4.3 - paras. 1) and 2) Not relevant for Switzerland (see NNTR on Section 4.2.1) - paras. 3) 4) 5) and 6) Only applies to lines which are explicitly declared to be new lines (line category VI-M) under the TSI (see NNTR on Section 4.2.1).
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply.
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above.

Notified national technical rules (NNTRs)

ID	**CH-CR INF TSI 016**	**State:**	Switzerland	**Status**	**In force**	**since:**	July 2016
Title:	Open points						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern SWITZERLAND	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CR INF TSI (2011/275/EU) Section 4.2.4.2, para. 2) Section 4.2.5.5.2, para. 1) Section 4.2.5.8, para. 1) Section 4.2.11.2, para. 1) and para. 2) Section 4.2.11.5, para. 2)
Reference in Swiss regulation:	IP-RailO on Art. 16, (esp. para. 4.4.2)
Current NNTR classification:	☒ NNTR on an 'open point' in the TSI ☐ NNTR due to difference between Swiss regulation and corresponding requirements in the TSI ☐ NNTR due to additional requirements in Swiss regulation without equivalent in the TSI
Full description:	Section 4.2.4.2, Para. 2) - Speed rang V ≤ 160 km/h: covered by Section 4.2.4.2, para. 1), no special requirements. - Speed rang 160 km/h < V ≤ 250 km/h: The minimum distance between track centres is 4.2 m. Section 4.2.5.5.2, Para. 1) - The specifications in IP-RailO on Art. 16, standard gauge, IP 16, para. 4.4, esp. para. 4.4.2 are applicable. Section 4.2.5.8, para. 1) - No national requirements for interoperability Section 4.2.11.2, para. 1) and para. 2) - No national requirements for interoperability Section 4.2.11.5, para. 2) - No national requirements
Current applicable norms in Switzerland:	The norms set out in the implementing provisions of the Railway Ordinance (version 01.07.2016) apply. Please also refer to SBB W Bau GD 23/96.
Test specification for certificate of conformity:	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB W Bau GD 23/96).