

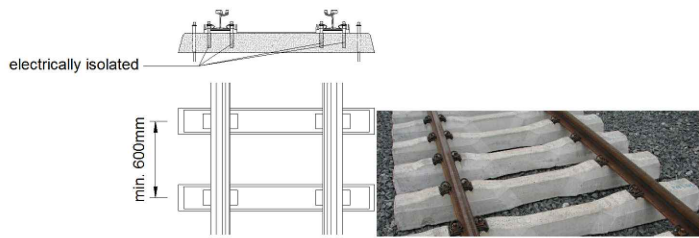
- Quality of the metal-free area is defined by the distance of the metal objects from the bottom/side of the rail:
- 40cm metal free area: Perfect function of the track circuit is ensured
 - 20-40cm metal free area: The track circuit should usually work except for special situations (needs to be consulted with Elektroline)
 - Less than 20cm metal free area: The track circuit can work even in this situation, however, the specific location always needs to be discussed with Elektroline and necessary measurements (find out parameters of track circuit) need to be done in order to ensure safe operation

At any time, no metal objects are allowed to create electrical connection of the left and the right rail (see also the transverse insulation requirement).

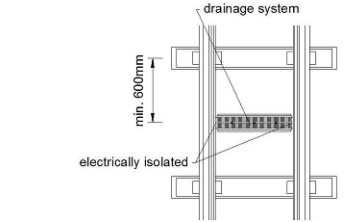
TIP: In order to ensure safe mechanical strength of the concrete in the area of resonant track circuit, Elektroline recommends using fiber-glass bars reinforcement instead of steel nets.

Using of reinforced concrete sleepers is possible only in case of electrical insulation between the rails

WARNING: The distance between the sleepers must not be smaller than 600mm (axis-axis).

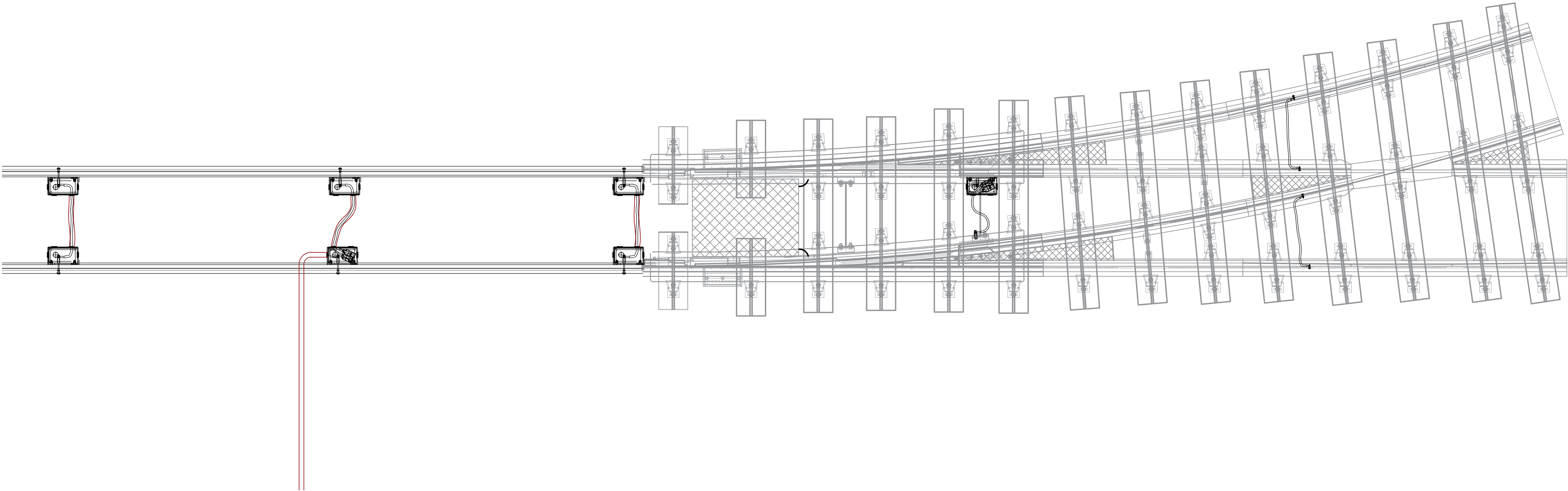
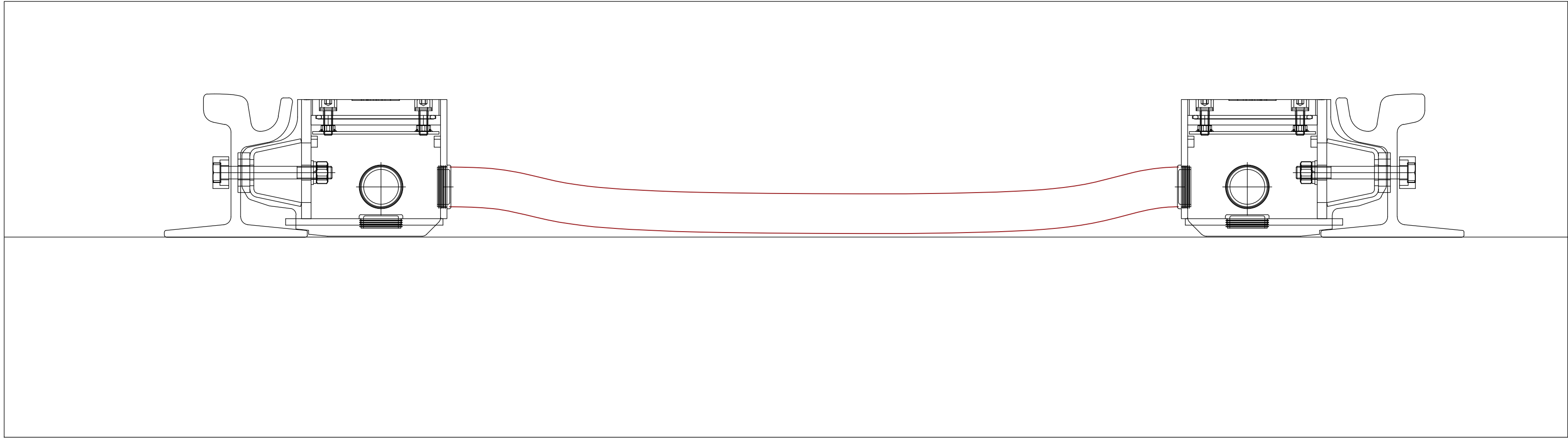


- Using of the drainage system can be used in the area of the track circuits under the following conditions:
- the system is reliably insulated from both rails
 - the TC length is at least 9 meters
 - the TC does not include any other large metal objects in the proximity of the drainage system
 - the drainage system is not present in the ends of the TWC TC (see the metal-free area for TWC TC)
 - max. 1 drainage system is present in the TC
 - the distance between the sleeper and drainage system must not be smaller than 600mm (axis-axis).



- For the following tram detection systems, metal-free area must be respected in the whole area of detection:
- track circuit
 - Inductive coupled track circuit
 - metal detector

In case of *Twin-cap track circuit*, metal-free area must be respected only at the ends of the track circuit (two areas – both between shunt and neighbouring capacitor + 40 centimetres outside these areas). In the middle part, metal objects can be present in the track as long as the transverse insulation is ensured.



RTI Progettisti:



PROGETTO DEFINITIVO DELLA SECONDA LINEA TRAMVIARIA DI BOLOGNA (TRATTO NORD LINEA VERDE)

SISTEMA DI SEGNALEMENTO SCHEMI TIPICI E PARTICOLARI TIPOLIGICI Tipologico installazione circuito di binario

COMUNE DI BOLOGNA SETTORE MOBILITA' SOSTENIBILE E INFRASTRUTTURE		GRUPPO DI PROGETTAZIONE	
IL DIRETTORE DEL SETTORE ING. CLETO CARLINI	IL RESPONSABILE DEL PROCEDIMENTO ING. GIANCARLO SGUBBI	IL DIRETTORE DELL'ESECUZIONE DEL CONTRATTO ING. MIRKA RIVOLA	RESPONSABILE DI COMMESSA ING. PAOLO MARCHETTI
			COORDINATORE TECNICO ING. ALESSANDRO PIAZZA
			SISTEMA TRAMVIARIO ING. SANTI CAMINITI
			ARCHITETTURA E INSERIMENTO URBANISTICO ARCH. SEBASTIANO FULCI DE SARNO
SEGRETARIA TECNICA ing. Barbara Baraldi arch. Virginia Borrello ing. Giulio Cimballi geom. Agnese Fero ing. Stefania Guadagnini geom. Luciano Notte ing. Lisa Ombrà ing. Marco Pesare	OPERE A VERDE ARCH. NICOLA CANTARELLI OPERE STRUTTURALI ING. STEFANO TORTELLA SEGNALEMENTO E TELECOMUNICAZIONI ING. ANGELA TORTORELLA AMBIENTE PROF. MATTEO MATTIOLI SICUREZZA ARCH. SERGIO MOSCHEO ARCHEOLOGIA DOTT. CRISTINA BIGAZZI BIM MANAGER ING. MIRKO CASAROLI	BESIP INTEGRAZIONE PRESTAZIONI SPECIALISTICHE ING. SANTI CAMINITI IMPIANTI TECNOLOGICI ING. SIMONE VILLA STUDI TRASPORTISTICI ING. ANDREA SPINOSA AMBITI INTERFERENZE E SOTTOSERVIZI DEPOSITO ING. GIORGIO COLETTI ARMAMENTO ING. MAURIZIO FALZEA GEOLOGIA E GEOTECNICA DOTT. GEOL. ANTONIO PAONE TRASFORMAZIONE ELETTRICA ING. DOMENICO D'APOLLONIO IMPIANTI MECCANICI ING. SALVATORE GIUA	BESIP INTEGRAZIONE PRESTAZIONI SPECIALISTICHE ING. SANTI CAMINITI IMPIANTI TECNOLOGICI ING. SIMONE VILLA STUDI TRASPORTISTICI ING. ANDREA SPINOSA AMBITI INTERFERENZE E SOTTOSERVIZI DEPOSITO ING. GIORGIO COLETTI ARMAMENTO ING. MAURIZIO FALZEA GEOLOGIA E GEOTECNICA DOTT. GEOL. ANTONIO PAONE TRASFORMAZIONE ELETTRICA ING. DOMENICO D'APOLLONIO IMPIANTI MECCANICI ING. SALVATORE GIUA

COMMESSA	FASE	LOTTO	WBS	DISCIPLINA	TIPO	NUMERO	REV.	SCALA	NOME FILE
B381C	D	X00	SEG	XXX	DG	12	A	1:10	B381C-D-X00-SEG-XXX-DG-12-A

REV.	DATA	DESCRIZIONE	REDATTO	VERIFICATO	APPROVATO
A	Ago. 2023	PRIMA EMISSIONE	G. IASEVOLI	A. TORTORELLA	S. CAMINITI
B					
C					
D					