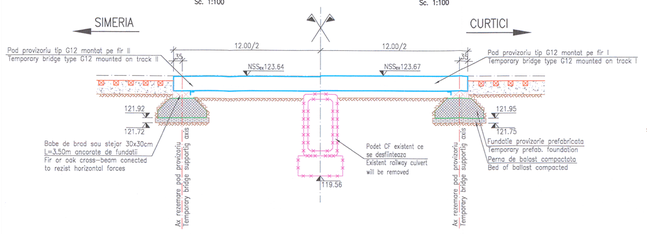
FAZA I – LUCRARI PREGATITOARE
STAGE I – PRELIMINARY WORKS

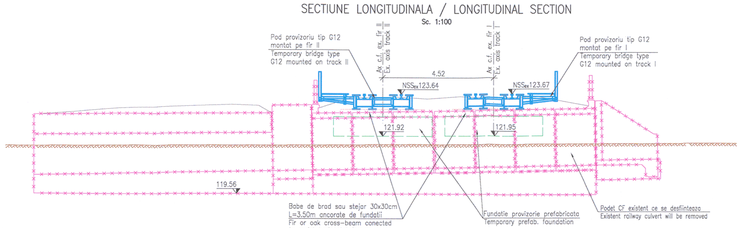
FAZA II si III – MONTAREA PODURILOR PROVIZORII
STAGE II and III – MOUNTING THE TEMPORARY BRIDGES

SECTIUNE FIR II / SECTION TRACK II
Sc. 1:100

SECTIUNE FIR I / SECTION TRACK I
Sc. 1:100



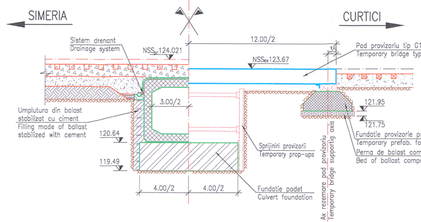
SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:100



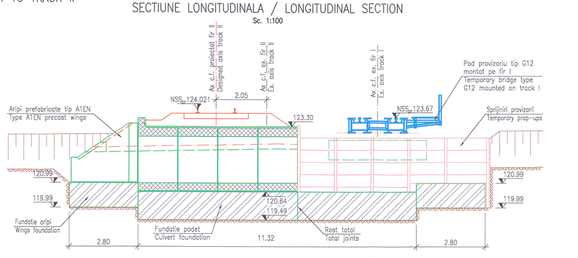
FAZA IV – DEMOLAREA PODETULUI EXISTENT SI EXECUTIA FUNDATIEI PODETULUI NOU LA ADAPOSTUL PODURILOR PROVIZORII:
STAGE IV – DEMOLISHING THE EXISTING CULVERT AND EXECUTION OF THE FOUNDATION OF THE NEW CULVERT UNDER THE TEMPORARY BRIDGES:
FAZA V – DEMONTAREA PODETULUI PROVIZORIU DE PE FIR II SI EXECUTIE PODET NOU AFERENT FIRULUI II
STAGE V – DEMOUNTING THE TEMPORARY BRIDGE FROM TRACK II AND EXECUTING THE NEW CULVERT AFFERENT TO TRACK II

SECTIUNE FIR II / SECTION TRACK II
Sc. 1:100

SECTIUNE FIR I / SECTION TRACK I
Sc. 1:100



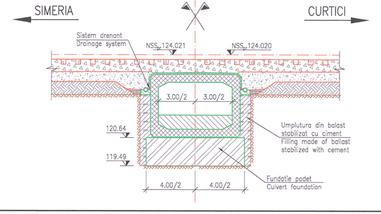
SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:100



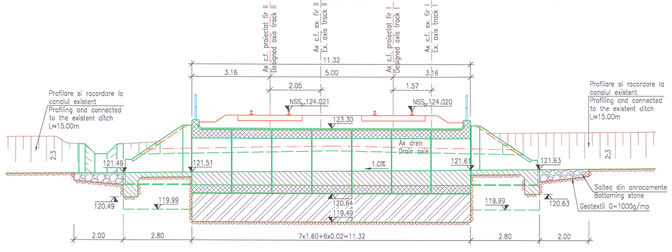
FAZA VI – DEMONTAREA PODETULUI PROVIZORIU DE PE FIR I SI EXECUTIE PODET NOU AFERENT FIRULUI I
STAGE VI – DEMOUNTING THE TEMPORARY BRIDGE FROM TRACK I AND EXECUTING THE NEW CULVERT AFFERENT TO TRACK I
FAZA VII – ALTE TIPURI LUCRARI
STAGE VII – OTHER TYPES OF WORKS

SECTIUNE FIR II / SECTION TRACK II
Sc. 1:100

SECTIUNE FIR I / SECTION TRACK I
Sc. 1:100



SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:100



FAZA I – LUCRARI PREGATITOARE:
Sub circulatie pe ambele fire cu viteza normala
1. Se amenajeaza drumul de acces, platforma tehnologica si organizarea de santier.
2. Se executa lucrari de picheterare, de protectie si/sau devieire instalatii semnalizare si telecomunicatii din zona lucrarilor.

FAZA II – MONTAREA PODULUI PROVIZORIU PE FIR I:
Firul I – circulatie cu 50 Km/h
1. Se scoate de sub tensiune firul I si se asigura protectia electrica.
2. Se detensioneaza si se taie sinele de pe fir I, se creeaza rosturile de dilatatie.
3. Se demonteaza si se scoate calea pe zona afectata de lucrari.
4. Se executa lucrarile de protectie a instalatiilor existente in cale si vecinatate.
5. Se executa saparturile de terasament si se pozeaza rezemele prefabricate ale podului provizoriu pe perne de balast bine compactate.
6. Se degajeaza terasamentul si se introduce in cale podul provizoriu tip G12.
7. Se monteaza suprastructura de pod provizoriu si se racordeaza la capete pe terasament.
8. Se asigura continuitatea circulatiei de cale, se asigura electrolizarea sinelor si se asigura protectia electrica a podului provizoriu.
9. Se pune sub tensiune si se deschide circulatia in trepte de viteza pana la Vmax=30km/h conform normelor in vigoare.

FAZA III – MONTAREA PODURILOR PROVIZORII PE FIR II:
Firul I – circulatie cu 30 Km/h
Firul II – circulatie inchisa
1. Se scoate de sub tensiune firul II si se asigura protectia electrica.
2. Se detensioneaza si se taie sinele de pe fir II, se creeaza rosturile de dilatatie.
3. Se demonteaza si se scoate calea pe zona afectata de lucrari.
4. Se executa lucrarile de protectie a instalatiilor existente in cale si vecinatate.
5. Se executa saparturile de terasament si se pozeaza rezemele prefabricate ale podului provizoriu pe perne de balast bine compactate.
6. Se degajeaza terasamentul si se introduce in cale podul provizoriu tip G12.
7. Se monteaza suprastructura de pod provizoriu si se racordeaza la capete pe terasament.
8. Se asigura continuitatea circulatiei de cale, se asigura electrolizarea sinelor si se asigura protectia electrica a podului provizoriu.
9. Se pune sub tensiune si se deschide circulatia in trepte de viteza pana la Vmax=30km/h conform normelor in vigoare.

FAZA IV – DEMOLAREA PODETULUI EXISTENT SI EXECUTIA FUNDATIEI PODETULUI NOU LA ADAPOSTUL PODURILOR PROVIZORII:
Sub circulatie cu restrictie de viteza Vmax=30km/h pe ambele linii, la adapostul podurilor provizorii tip G12
1. Se asigura tranzitarea apelor pe zona podetului.
2. Se degajeaza restul terasamentului din jurul podetului, se demoleaza podetul existent si rocambelle cu terasamentul, inclusiv fundatiile acestora.
3. Se executa saparturi cu sprijinii pentru realizarea fundatiilor noi (podet si aripi).
4. Se betoneaza fundatiile podetului si aripilor, tar in rosturile dintre fundatii se introduc doua foi de carton bitumat.

FAZA V – DEMONTAREA PODETULUI PROVIZORII DE PE FIR II SI EXECUTIE PODET NOU AFERENT FIRULUI II:
Firul I – circulatie cu 30 Km/h
Firul II – circulatie inchisa
1. Se scoate de sub tensiune firul II si se asigura protectia electrica.
2. Se demonteaza si se scoate calea pe zona podului provizoriu.
3. Se desfiinteaza din cale podul provizoriu tip G12 si fundatiile provizorii ale acestuia.
4. Se pozeaza grinzile 4 elemente prefabricate tip C3EN cu inaltime redusa si elementele prefabricate tip A1EN aferent firului II, pe fundatiile monolite si se trateaza rosturile dintre elementele prefabricate conform detaliilor din proiect.
5. Se executa umplutura in spatele podetului, conform detaliilor de sarcini. Umplutura se realizeaza cu straturi usor sprijinii longitudinale intre linii.
6. Se executa drenurile laterale la cota, conform detaliilor din proiect.
7. Se executa hidroizolatia si apa de protectie a hidroizolatiei.
8. Se completeaza umplutura, conform detaliilor de sarcini, se reface terasamentul si calea in zona podetului racordand linia la nivelul si pozitia existenta la data executiei.
9. Se asigura continuitatea circulatiei de cale, se asigura electrolizarea sinelor si se asigura protectia electrica.
10. Se repune sub tensiune linia de contact, si se deschide circulatia in trepte de viteza corespunzator lucrarilor executate si normelor in vigoare.

FAZA VI – DEMONTAREA PODETULUI PROVIZORII DE PE FIR I SI EXECUTIE PODET NOU AFERENT FIRULUI I:
Firul I – circulatie inchisa
Firul II – circulatie cu 30 Km/h
1. Se scoate de sub tensiune firul I si se asigura protectia electrica.
2. Se demonteaza si se scoate calea pe zona podului provizoriu.
3. Se scoate din cale podul provizoriu tip G12 si fundatiile provizorii ale acestuia.
4. Se pozeaza grinzile 4 elemente prefabricate tip C3EN cu inaltime redusa si elementele prefabricate tip A1EN aferent firului I, pe fundatiile monolite si se trateaza rosturile dintre elementele prefabricate conform detaliilor din proiect.
5. Se executa umplutura in spatele podetului, conform detaliilor de sarcini. Umplutura se realizeaza cu straturi usor sprijinii longitudinale intre linii.
6. Se executa drenurile laterale la cota, conform detaliilor din proiect.
7. Se executa hidroizolatia si apa de protectie a hidroizolatiei.
8. Se completeaza umplutura, conform detaliilor de sarcini, se reface terasamentul si calea in zona podetului racordand linia la nivelul si pozitia existenta la data executiei.
9. Se asigura continuitatea circulatiei de cale, se asigura electrolizarea sinelor si se asigura protectia electrica.
10. Se repune sub tensiune linia de contact, si se deschide circulatia in trepte de viteza corespunzator lucrarilor executate si normelor in vigoare.

FAZA VII – ALTE TIPURI LUCRARI:
Sub circulatie cu viteza normala pe ambele linii
1. Se monteaza parapetul de protectie metalic.
2. Se executa pereul in podet si intre aripi.
3. Se executa solelele din anrocamente de la capetele podetului.
4. Se calibreaza albia in amonte si aval de podet conform proiectului.
5. Se desfiinteaza organizarea de santier si platforma de lucru.

STAGE I – PRELIMINARY WORKS:
During normal speed traffic on both lines
1. Arranging the access road, the technological platform and the site organization.
2. Executing pegging-out, protection and/or deviation works for signaling and telecommunication installations.

STAGE II – MOUNTING THE TEMPORARY BRIDGE TRACK I:
Track I – closed traffic
Track II – traffic with speed limits of 50km/h
1. Cutting-off the voltage on track I and ensuring the electric protection
2. Cutting and dimensioning the track I.
3. The track is dismantled and removed outside the area affected by works.
4. Execution of protection works at the installations existing in the track and nearby.
5. Execution of embankment excavations and lay-down of precast bearings of the temporary bridge on well-compacted ballast pillows.
6. Removing the embankment and placing the temporary bridge type G12 into the track.
7. Montage of the railway superstructure on the temporary bridge and connection to the ends on the embankment.
8. Ensuring the continuity of track circuits, electric insulation of the rails and electric protection of the temporary bridge.
9. Restoring the voltage and opening the traffic with speed limits up to Vmax=30km/h according to the norms in force.

STAGE III – MOUNTING THE TEMPORARY BRIDGE TRACK II:
Track I – traffic with speed limits of 30km/h
Track II – closed traffic
1. Cutting-off the voltage on track II and ensuring the electric protection
2. Cutting and dimensioning the track II.
3. The track is dismantled and removed outside the area affected by works.
4. Execution of protection works at the installations existing in the track and nearby.
5. Execution of embankment excavations and lay-down of precast bearings of the temporary bridge on well-compacted ballast pillows.
6. Removing the embankment and placing the temporary bridge type G12 into the track.
7. Montage of the railway superstructure on the temporary bridge and connection to the ends on the embankment.
8. Ensuring the continuity of track circuits, electric insulation of the rails and electric protection of the temporary bridge.
9. Restoring the voltage and opening the traffic with speed limits up to Vmax=30km/h according to the norms in force.

STAGE IV – DEMOLISHING THE EXISTING CULVERT AND EXCLUTION OF THE FOUNDATION OF THE NEW CULVERT UNDER THE TEMPORARY BRIDGES:
Under 30 km/h speed restriction traffic on both lines, under protection of the temporary bridges type G12
1. Ensuring the waters flowing on the culvert area.
2. Removing the remaining embankment from around the culvert, demolishing the existing culvert and the connections to the embankment, including their foundations.
3. Performing the propped excavations for executing the new foundations (culvert and wings).
4. Concreting the culvert and wings foundations and introducing two asphalt board foils into the joints between foundations.

STAGE V – DEMOUNTING THE TEMPORARY BRIDGE FROM TRACK II AND EXECUTING THE NEW CULVERT AFFERENT TO TRACK II:
Track I – traffic with speed limits of 30km/h
Track II – closed traffic
1. Cutting-off the voltage on track II and ensuring the electric protection.
2. Dismantling and taking out the track on the area of the temporary bridge.
3. Taking out of the track the temporary bridge type G12 and its temporary foundations.
4. Laying-down the first 4 precast elements type C3EN with reduced height and the precast elements type A1EN afferent to track II, on the monolith foundations and treating the joints between the precast elements, according to the details from the design.
5. Executing the filling behind the culvert, according to the technical specifications. The filling is executed by help of some longitudinal propping-ups between the lines.
6. Executing side drains to level acc. to the project's details.
7. Placing the waterproofing and the protection blanket of the waterproofing.
8. Supplementing the filling according to the technical specifications, renewing the embankment and the track in the area of the culvert by connecting the line to the quota and location existent on the execution date.
9. Ensuring the continuity of the track circuits, the electrical insulation of rails and the electrical protection.
10. Remounting the contact line, applying the voltage on it and reopening the railway traffic on speed levels corresponding to the executed works and to the norms in force.

STAGE VI – DEMOUNTING THE TEMPORARY BRIDGE FROM TRACK I AND EXECUTING THE NEW CULVERT AFFERENT TO TRACK I:
Track I – closed traffic
Track II – traffic with speed limits of 30km/h
1. Cutting-off the voltage on track I and ensuring the electric protection.
2. Dismantling and taking out the track on the area of the temporary bridge.
3. Taking out of the track the temporary bridge type G12 and its temporary foundations.
4. Laying-down the other 3 precast elements type C3EN with reduced height and the precast elements type A1EN afferent to track I, on the monolith foundations and treating the joints between the precast elements, according to the details from the design.
5. Executing the filling behind the culvert, according to the technical specifications. The filling is executed by help of some longitudinal propping-ups between the lines.
6. Executing side drains to level acc. to the project's details.
7. Placing the waterproofing and the protection blanket of the waterproofing.
8. Supplementing the filling according to the technical specifications, renewing the embankment and the track in the area of the culvert by connecting the line to the quota and location existent on the execution date.
9. Ensuring the continuity of the track circuits, the electrical insulation of rails and the electrical protection.
10. Remounting the contact line, applying the voltage on it and reopening the railway traffic on speed levels corresponding to the executed works and to the norms in force.

STAGE VII – OTHER TYPES OF WORKS:
During traffic with normal speed on both lines:
1. Mounting the metallic guard rails.
2. Executing the pitching in the culvert and between the wings.
3. Execution of mattresses out of boulder stones at the ends of the culvert.
4. Calibration of the culvert riverbed according to the design.
5. Removing the site organization and the work platform.

NOTA:
1. Podetul se va executa obligatoriu inainte de executia lucrarilor la linii.
2. Tehnologia de executie se poate adapta in functie de datorea constructorului.
3. Orice nepotrivire cu proiectul in executie se va aduce la cunostinta proiectantului pentru a stabili solutia.
4. Convoiul de calcul pentru podurile provizorii: 0.9T8.5.
5. Circulatia pe podurile provizorii se face cu viteza de maxim 30 km/h.

NOTE:
1. The culvert will be mandatorily executed before the execution of the line works.
2. The execution technology may be adapted depending on the constructor's endowment.
3. Any incongruity at execution with the design will be notified to the designer in order to find a solution.
4. Calculation convoy for the temporary bridges: 0.9T8.5.
5. Traffic on the temporary bridges takes place with maximum speed 30 km/h.

ROMANIA
MINISTERUL TRANSPORTURILOR
INGINER
Nr. 07
Ad. Bd. D.
VERIFICATOR DE PROIECTE

Prezentul plan anuleaza si inlocuieste versiunea anterioara
This plan cancels and replaces previous version

Verificator / Expert Checker / Expert	Cerinta Requirement	Semnatura Signature	Referat / Raport / Expertiza Report / Expertise

European Investment Bank

MINISTERUL TRANSPORTURILOR

BENEFICIAR / BENEFICIARY :

COMPANIA NAȚIONALĂ DE CĂI FERATE "CFR" SA

PROIECTANT / DESIGNER: PÖYRY			Data Date	Semnatura Signature
Aprobat Approved	Sef de echipa Team leader	C. Teodorescu	01.2013	
Verificat Checked	Expert Cheie Key Expert	R. Tudorascu	01.2013	
Subcontractant / Subcontractor VIOTOP				
Aprobat Approved	Adjunct Sef de echipa Deputy Team leader	A.M. Baicu	01.2013	
Proiectat Designed	Inginer Engineer	A. Negrei	01.2013	

"Reabilitarea liniei c.f. Frontier à - Curtici - Simeria , parte componentă a coridorului IV Pan - European pentru circulia ția trenurilor cu viteză maximă de 160 km/h"
Transonul 2-A : km 614 - cap Y Bârzava
"Rehabilitation of the Railway Line Border - Curtici - Simeria , component Part of the IV Pan - European Corridor for the Trains Circulation with maximum speed of 160 km/h"
Section 2-A : km 614 - end Y Bârzava

Project 9i 35311.1

Faza / Phase: PTH+CS / TD+TS

Denumire desen / Drawing name:

TEHNOLOGIE DE EXECUTIE / EXECUTION TECHNOLOGY
PODET / CULVERT KM pr. 604+047 (KM ex. 607+395)

Scara / Scale	Revizia / Revision	Cod desen / Drawing Code	Nr / No
1:100	1 / 04.2013	PT.02.02.02.PO.01.04	04