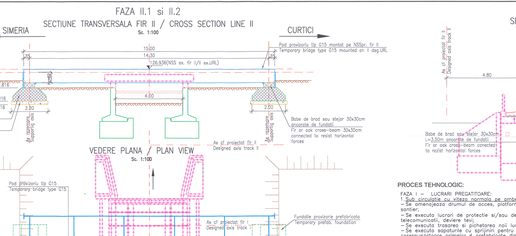
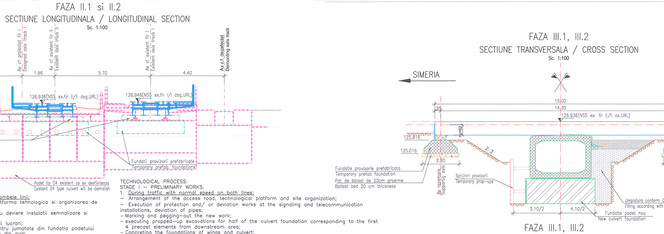
## FAZA II.1 si II.2
## SECTIUNE TRANSVERSALA FIR II / CROSS SECTION LINE II
Sc. 1:100



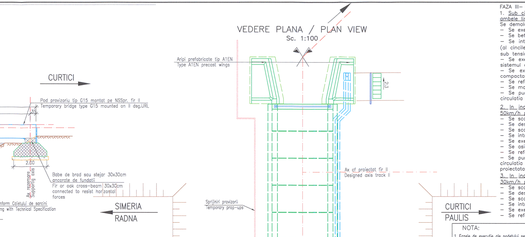

## FAZA II.1 si II.2
## SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:100



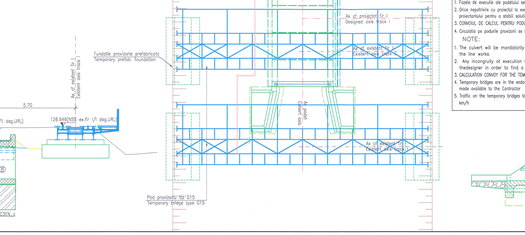
PROCES TEHNOLOGIC:

FAZA I – LUCRARI PREGATITOARE:
1. Sub circulatie cu vehicul normal pe ambele linii:
– Amenajarea drumului de acces, platforma tehnologica si organizarea de santier;
– Se executa lucrari de protectie si/sau deviere instalatii semnalizare si telecomunicatii, devieri linii;
– Se executa trasarea si picheterea noii variante;
– Se executa lucrarile de terasamente pe noua amplasare din fundatia pedelului corespunzatoare primelor 4 prefabricate din viitoarea cale;
– Se betonesteaza fundatiile aripilor si a podetului;
– Se executa lucrarile de terasamente pe prefabricate din zona;
FAZA II – LUCRARI PENTRU INFIINTAREA PODURILOR PROVIZORII TIP G15 C.M. IN CALE:
1. In timpinere de circulatie pe linia I si restricte de viteza de 50km/h pe linia II:
– Se scoate de sub tensiune linia de contact si se asigura protectia electrica a liniei I;
– Se sectionesca si detensionesca linia I c.f. existenta;
– Se demoleaza partea de sud a podului existent cu deschidere 4.70m si se demoleaza infrastructura pana la nivelul banketei ballastate;
– Se executa asapturi pentru introducerea in cale a fundatiilor provizorii si a podului provizoriu G15;
– Se introduc in cale fundatiile provizorii si podul provizoriu G15 la NSS existent;
– Se reface calea pe podul provizoriu. Nu se admit joante mecanice pe podul provizoriu. Se ne vor amplasa la minim 3.00m de capetele podului provizoriu.
– Se reface instalatia de contact, se redeschide circulatia, cu restrictie de viteza 30 km/h conform instructiilor si se verifica electrosizarea;
– Se repune sub tensiune linia de contact, se redeschide circulatia, cu restrictie de viteza 30 km/h conform instructiilor si se verifica electrosizarea; se monteaza podul provizoriu pe fundii durnite de executie pentru a permite executia lucrarilor de defecte si aducerea lor in limita admisa de toleranta.
2. Sub circulatie cu restrictie de viteza de 50km/h pe ambele linii I si inchidere de circulatie pe linia II:
– Se scoate de sub tensiune linia de contact si se asigura protectia electrica a liniei II;
– Se sectionesca si detensionesca linia II c.f. existenta;
– Se demoleaza partea de nord a podului existent cu deschidere 4.70m si se scot doua tip D4 si se demoleaza pe o inaltime de aproximativ 50cm infrastructurile existente astfel incat sa se poata introduce podul provizoriu G15;
– Se executa asapturi pentru introducerea in cale a fundatiilor provizorii si a podului provizoriu G15;
– Se introduc in cale fundatiile provizorii si podul provizoriu G15 la NSS existent;
– Se reface calea pe podul provizoriu. Nu se admit joante mecanice pe podul provizoriu. Se ne vor amplasa la minim 3.00m de capetele podului provizoriu.
– Se reface instalatia de contact, se redeschide circulatia, cu restrictie de viteza 30 km/h conform instructiilor si se verifica electrosizarea;
– Se repune sub tensiune linia de contact, se redeschide circulatia, cu restrictie de viteza 30 km/h conform instructiilor si se verifica electrosizarea; se monteaza podul provizoriu pe fundii durnite de executie pentru a permite executia lucrarilor de defecte si aducerea lor in limita admisa de toleranta.

## FAZA III.1, III.2
## SECTIUNE TRANSVERSALA / CROSS SECTION
Sc. 1:100




## FAZA III.1, III.2
## SECTIUNE LONGITUDINALA
## LONGITUDINAL SECTION
Sc. 1:100



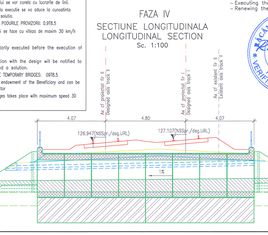
TECHNOLOGICAL PROCESS:
STAGE I – PRELIMINARY WORKS:
1. During traffic without closure on both lines:
– Arrangement of the access road, technological platform and site organization;
– Execution of protection and/ or deviation works at the signaling and telecommunication installations, deviation of pipes;
– Execution of the access road to the new work;
– executing propping-up excavations for half of the culvert foundation corresponding to the first 4 precast elements from downstream end;
– Concreting the foundations of wings and culvert;
– Placing the 4 precast elements from downstream ones by help of crane.
FAZA II – WORKS FOR PLACING THE TEMPORARY BRIDGE TYPE G15 TRACK ON THE MIDDLE INTO THE TRACK:
1. During traffic closure on line I and speed limit of 50km/h on line II:
– Cutting-off the voltage on the contact line and ensuring the electric protection of the line I;
– Sectioning and cutting-off the voltage on the existing railway line I;
– Demolishing the south half of the existing bridge with a span of 4.70m and demolishing the infrastructures up to the level of the bearing banquettes;
– Executing the excavation in order to place into the track the temporary foundations and the temporary bridge G15;
– Placing into the track the temporary foundations and the temporary bridge G15 at the existing NSS (top of the rail);
– Renewing the track on the temporary bridge. No mechanical joints are allowed on the temporary bridge. They will be placed at minimum 3.00 m away from the ends of the temporary bridge.
– Executing the works of electric protection at the temporary bridge placed into the track and checking the electric insulation;
– Restoring the voltage on the contact line, reopening the traffic with speed limit of 30 km/h according to the railway instructions in force and keeping under surveillance the temporary bridge during its operation, while remedying the eventual defects and restoring them to the allowed limit of tolerance.
2. During traffic with speed limit of 30km/h on line I and traffic closure on line II:
– Cutting-off the voltage on the contact line and ensuring the electric protection of the line II;
– Sectioning and cutting-off the voltage on the existing railway line II;
– Removing the south space between the precast elements (4x2 #150cm);
– Removing the slabs type D4 and demolishing the existent infrastructures for a height of approximate 50 cm so that the temporary bridge G15 can be placed;
– Executing the excavation in order to place into the track the temporary foundations and the temporary bridge G15;
– Placing into the track the temporary foundations and the temporary bridge G15 at the existing NSS (top of the rail);
– Renewing the track on the temporary bridge. No mechanical joints are allowed on the temporary bridge. They will be placed at minimum 3.00 m away from the ends of the temporary bridge.
– Executing the works of electric protection at the temporary bridge placed into the track and checking the electric insulation;
– Restoring the voltage on the contact line, reopening the traffic with speed limit of 30 km/h according to the railway instructions in force and keeping under surveillance the temporary bridge during its operation, while remedying the eventual defects and restoring them to the allowed limit of tolerance.

FAZA III– LUCRARI PENTRU EXECUTAREA PODETULUI NOU:
1. Sub circulatie cu restrictie de viteza de 50km/h la adaposturi podurilor provizorii pe ambele linii:
– Se demoleaza podetul existent;
– Se executa asapturile cu aprijiri pentru fundatiile noi;
– Se betoneaza fundatiile aripilor si podetului;
– Se introduc cu macaraua elementele prefabricate corespunzatoare zonei liniei II pe (al circilea element prefabricat, se montezza in pauze de circulatie si cu scooterea de sub tensiune a liniei II pr), se montezza aripa prefabricata din exst;
– Se executa umplutura prin retrogerea aprijinitor din lungul podetului si se executa protectia hidroizolatiei cu membrana de la baza tuturor fundatiilor;
– Se executa umplutura rampei de la nivel elementului drenant, in strafuri bine compactate, conform cotelului de aprijin;
– Se reface terasamentul la cotele protectiei;
– Se montezza calea pentru linia II protejat;
– Se executa umplutura rampei de la nivel refac circulatie de cale si se redeschide circulatia feroviara in trepte de vitezo conform instructiilor si vigoare.
2. In timpinere de circulatie pe linia I, se ex. si circulatie cu restrictie de vitezo de 50km/h pe linia II cu 30km/h pe linia I:
– Se scoate de sub tensiune linia de contact si se asigura protectia electrica;
– Se deshiza calea de pe podul provizoriu;
– Se scot din cale podul provizoriu, fundatiile prefabricate de ocestuia;
– Se executa asapturile pentru introducerea in cale a noii podete;
– Se executa umplutura prin retrogerea aprijinitor din lungul podetului;
– Se asigura protectia cotelolui;
– Se reface terasamentul la cotele protectiei si se montezza suprastructura;
– Se pune sub tensiune linia de contact, se refac circulatie de cale si se deschide circulatia feroviara in trepte de vitezo conform instructiilor si in vigoare pe linia I.
3. In timpinere de circulatie pe linia I, se ex. si circulatie cu restrictie de vitezo de 50km/h pe linia II cu 30km/h pe linia I:
– Se scoate de sub tensiune linia de contact si se asigura protectia electrica;
– Se deshiza calea de pe podul provizoriu;
– Se scot din cale podul provizoriu, fundatiile prefabricate de ocestuia;
– Se executa asapturile pentru introducerea in cale a noii podete;
– Se executa umplutura prin retrogerea aprijinitor din lungul podetului;
– Se reface terasamentul la cotele protectiei.

STAGE III – WORKS TO EXECUTE THE NEW CULVERT:
1. Sub circulatie cu restrictie de viteza de 50km/h to adaposturi podurilor provizorii pe ambele linii:
– Demolishing the existing culvert;
– Executing the excavations with prop-ups for the new foundations;
– Concreting the foundations of the wings and culvert;
– Placing into the track, by help of crane, the precast elements corresponding to the area of dep. line II (the fifth precast element is mounted during traffic breaks and while cutting-off the voltage on dep. line II), mounting the precast wings;
– Executing the fillings by removing the prop-ups from along the culvert and executing the drainage system, including the waterproofing on the entire length of the culvert;
– Executing the fillings left from the level of the drainage system into well-compacted layers, according to the Technical Specifications;
– Renewing the embankment at the desing levels;
– Mounting the track for the designed line II;
– Restoring the voltage on the contact line, renewing the track circuits and reopening the railway traffic with speed limits according to the railway instructions in force.
2. During traffic closure on existing line II and traffic with speed limit of 50km/h on design line II and with speed limit of 30km/h on existing line I:
– Cutting-off the voltage on the contact line and ensuring the electric protection; – Sectioning and cutting-off the existing railway line I;
– Removing from the track the temporary bridge, its precast foundations;
– Placing into the track, by help of crane, the precast elements corresponding to the area of line I (5,7, 8);
– Executing the fillings by removing the prop-ups from along the culvert and executing the drainage system, including the waterproofing on the entire length of the culvert;
– Ensuring the cathode protection;
– Renewing the embankment at the desing levels and mounting the track;
– Restoring the voltage on the contact line, renewing the track circuits and reopening the railway traffic with speed limits according to the railway instructions in force and keeping under surveillance.
3. During traffic closure on existent line I and with traffic speed limit of 50km/h on designed line I:
– Cutting-off the voltage on the contact line and ensuring the electric protection; – Sectioning and cutting-off the existing railway line I;
– Removing the temporary bridge and its precast foundations from the track;
– Placing the precast wings, the slab 4;
– Executing the fillings by removing the propping-ups from along the culvert;
– Renewing the embankment at the designed quotas.

FAZA IV – ALTE TIPURI LUCRARI:
1. Sub circulatie cu vitezo normala pe ambele linii:
– Se executa pervaz pe podet si intre orje;
– Se executa asfaltus din amrocamente de la capetele si podetului;
– Se calibreaza albia podului conform proiectului;
– Se dezafectezza platformele, accesele din zona de lucru, organizarea de santier.

STAGE IV – OTHER TYPE OF WORKS:
1. During traffic with normal speed on both lines:
– Executing the pitching in the culvert and between the wings;
– Executing the riprap mattresses at the end of downstream culvert;
– Calibrating the culvert riverbed according to the design;
– Dismantling the platforms, access to the work areas, the site organization.




NOTA:
1. Toate le executie ale podului se vor corela cu lucrarile de linii.
2. Orice neprevizion cu proiectul la executie se va aduce la cunoastere proiectantului pentru a obtine solutia.
3. CONSOLI DE CALCUL PENTRU PODURILE PROVIZORII: G15/S
4. 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. Any incongruity at execution with the design will be notified to theDesigner in order to find a solution.
3. CALCULATION CONVOY FOR THE TEMPORARY BRIDGES: G15/S
4. Temporary bridges are in the endowment of the Beneficiary and can be made available to the Contractor
5. Traffic on the temporary bridges takes place with maximum speed 30 km/h

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

| Verificator / Expert Checker / Expert | Cerinta Requirement | Semnatura Signature | Numele / Expertiza Name / Expertise |
|---|---|---|---|
| | | | |

European Investment Bank

MINISTERUL TRANSPORTURILOR

BENEFICIAR / BENEFICIARY:
CFR
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 |

Subcontractor / Subcontractor: IOTOP

| | | | |
|---|---|---|---|
| Aprobat Approved | Adjunct Sef de echipa Deputy Team leader | A.M. Baicu | 01.2013 |
| Proiectat Designed | Inginer Engineer | F. Ioanidi | 01.2013 |

**"Reabilitarea linie c.f. Frontier à - Curtici - Simeria, parte component a coridorului IV Pan - European pentru circula cu trenuri cu viteza maxima de 160 km/h"**
**Tronsonul 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**

Proiect Nr / Project Nr: 35311.1

Faza / Phase: PTH+CS +TD+TS

Denumire desen / Drawing name:

**TEHNOLOGIE DE EXECUTIE / EXECUTION TECHNOLOGY**
**PODET / CULVERT KM pr. 597+516 (KM ex. 600+850)**

| Scara / Scale | Revizia / Revision | Cod desen / Drawing Code | Nr / No |
|---|---|---|---|
| 1:100 | 1 / 04.2013 | PT.02.02.04.PO.01.04 | 04 |

Format/Size: 1540x297mm