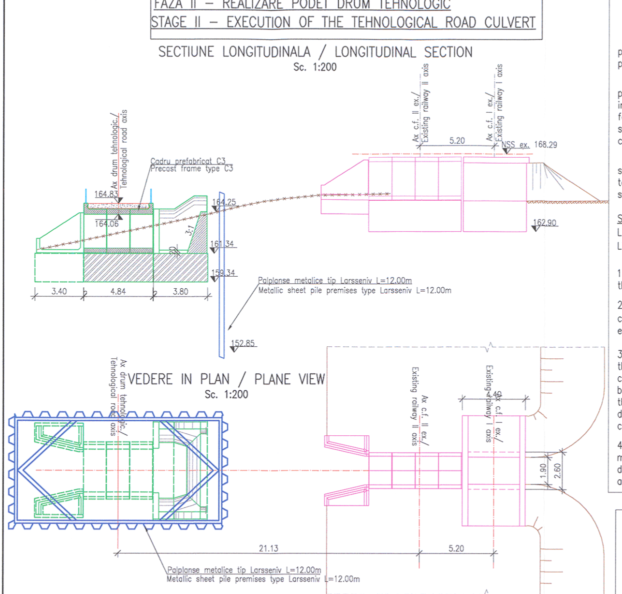
FAZA I – LUCRARI PREGATITOARE
STAGE I – PRELIMINARY WORKS

FAZA II – REALIZARE PODET DRUM TEHNOLOGIC
STAGE II – EXECUTION OF THE TEHNOLOGICAL ROAD CULVERT

SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:200

VEDERE IN PLAN / PLANE VIEW
Sc. 1:200


Ax drum tehnologic./ Tehnological road axis
168.29
162.90
3.40
4.84
3.80
21.13
5.20
Palplanse metalice tip Larsseniv L=12.00m
Metallic sheet pile premises type Larsseniv L=12.00m

FAZA I: LUCRARI PREGATITOARE
Linia I: circulatie cu viteza normala;
Linia II: circulatie cu viteza normala;

1. Se amenajeaza drumul de acces si platforma tehnologica.
2. Se realizeaza organizarea de santier.
3. Se identifica, se picheteaza si se pun in siguranta cablurile SCB, TTR de pe zona lucrarilor.
4. Se executa lucrari de protectie si/sau deviere instalatii de semnalizare si telecomunicatii.

STAGE I: PRELIMINARY WORKS
Line I: traffic with normal speed;
Line II: traffic with normal speed.

1. Arranging the access road and the technological platform.
2. Making the site organization.
3. Identifying, pegging-out and securing the SCB, TTR cables on the works' area.
4. Making works for protecting and/or deflecting the signalling and telecommunication installations.

FAZA II:
Linia II ex.–circulatie cu viteza normala;
Linia I ex. –circulatie cu viteza normala;

1. Se executa incinta de palplanse;
2. Se executa sapaturile pentru fundatia podetului nou, montand elemente de sprijinire pe masura ce avanseaza sapatura.
3. Se betoneaza fundatiile podetului, aripilor si camerei de colectare iar in rosturile dintre fundatii se introduc doua foi de carton bitumat. Demontarea sprijinirilor se face dupa atingerea a 80% din clasa betonului.
4. Se monteaza elementele prefabricate si se realizeaza racordarea podetului cu terenul in aval cu aripi prefabricate tip A2EN si in amonte cu camera de colectare;

STAGE II
Line II ex.–normal speed traffic;
Line I ex. –normal speed traffic;

1. Executing the sheet-piles premises for the foundations;
2. Making the excavations for the new culvert's foundation, by mounting propping elements as the excavation progresses.
3. Covering with concrete the foundations of the culvert, of the wings and of the collecting manhole and introducing two bitumen board sheets in the joints between the foundations. The propping-ups are dismantled after reaching 80% of the concrete class.
4. Mounting the precast elements 1÷3 and making the connection of the culvert to the downstream site with A2EN precast wings and downstream with the collecting manhole.

NOTA:
Lucrarile la podet se vor corela cu lucrarile de suprastructura c.f. si cu lucrarile de consolidari (realizare zid de sprijin aval si zid de sprijin intre liniile proiectate si linia I existenta.

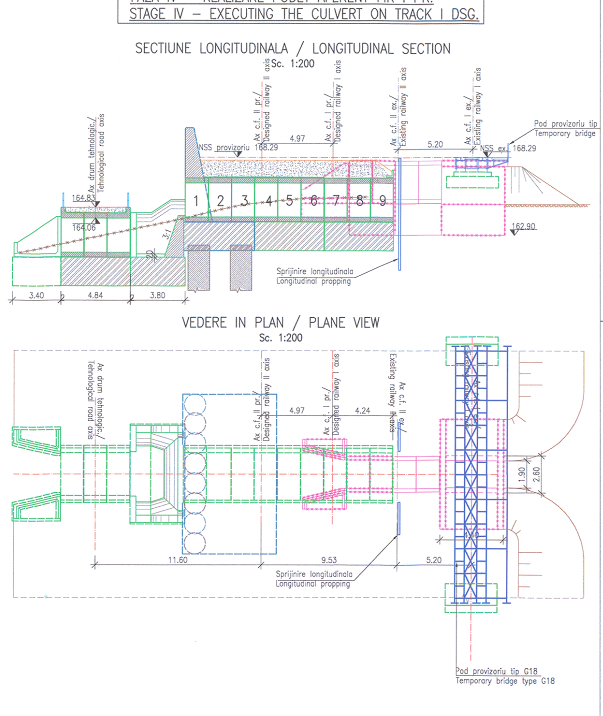
NOTE:
The culvert works will be correlated with suprastructure works and the consolidation works (execution of the downstream retaining wall and the retaining wall between designed tracks and existing track I.

FAZA III – REALIZARE PODET AFERENT FIR II PR.
STAGE III – EXECUTION OF THE CULVERT ON TRACK II DSG.

FAZA IV – REALIZARE PODET AFERENT FIR I PR.
STAGE IV – EXECUTING THE CULVERT ON TRACK I DSG.

SECTIUNE LONGITUDINALA / LONGITUDINAL SECTION
Sc. 1:200

VEDERE IN PLAN / PLANE VIEW
Sc. 1:200



FAZA II a: INTRODUCERE PODURI PROVIZORII PE LINIA I ex.
Linia I ex.: inchidere de circulatie feroviara;
Linia II ex: restrictie de viteza de 30 km/h;

1. Se scoate de sub tensiune linia I si se asigura protectia electrica.
2. Se sectioneaza si se detensioneaza linia, se demonteaza suprastructura c.f. pe zona podetului, pe linia I, pe o lungime de 70 m.
3. Se dezafecteaza tablieru metalic existent si se transporta in depozit.
4. Se demoleaza partial podetul existent, pentru a permite introducerea in cale a podurilor provizorii tip G18 (hc=1.30 m).
5. Se executa sapaturile pe terasament, se monteaza sprijiniri in lungul liniei pe zona fundatiilor podurilor provizorii si se pozeaza reazemele prefabricate al podului provizoriu pe perne de balast bine compactat.
6. Se introduce in cale podul provizoriu G18;
7. Se moteaza suprastructura c.f. pe podul provizoriu si se racordeaza la capete la situatia exitenta. Montarea suprastructurii c.f. se va face la cota 168.29.
8. Se executa lucrarile de protectie electrica a podului provizoriu introdus in cale si se verifica electroizolarea.
9. Se repune sub tensiune linia de contact si se redeschide circulatia, cu restrictie de viteza de 30 km/h conform instructiilor c.f. in vigoare.
10. Se tine sub observatie podul provizoriu pe toata durata de exploatare, cu remedierea eventualelor defecte si aducerea lor in limita admisa de tolerante.

STAGE III a: INTRODUCING THE TEMPORARY BRIDGES ON LINE I ex:
Line I ex: closure of railway traffic;
Line II ex: speed limit of 30 km/h;

1. Cutting off under voltage line I and ensuring electric protection.
2. Sectioning and removing the stress of the line, demounting the railway superstructure on the area of the culvert, on line I, on a length of 70 m.
3. Closing-down the existing metallic deck and transporting it in the store.
4. Demolishing partially the existing culvert in order to allow the introduction into the track of the temporary bridges of G18 type (height system=1.30 m).
5. Executing the excavations on the embankment, mounting the propping-ups along the line on the area of the foundations of the temporary bridges and laying-down the precast bearings of the temporary bridge on well compacted ballast layer.
6. Introducing into the track G18 temporary bridge.
7. Mounting the railway superstructure on temporary bridge and connecting it to the existing situation. The montage of the railway superstructure will be carried-out at the level 168.29.
8. Executing the electric protection works of the temporary bridge introduced into the track and checking the electric insulation.
9. Restoring the voltage of the contact line and reopening the traffic, with speed limit of 30 km/h according to the railway instructions in force.
10. Keeping under observance the temporary bridge on the entire operation period, by remedying the eventual defects and bringing them under the limit admitted by the tolerances.

FAZA III b – REALIZAREA PODETULUI NOU PE FIR II POIECTAT
Linia I ex.–restrictie de viteza 50km/h;
Linia II ex.– inchidere de circulatie feroviara;

1. Se scoate de sub tensiune, se asigura protectia electrica si se demonteaza linia de contact.
2. Se asigura tranzitarea apelor pe zona podetului.
3. Se degajeaza terasamentul din jurul podetului, se demoleaza partial podetul existent de pe linia II existenta (zona aval), racordarile cu terasamentul din aval, inclusiv fundatiile acestora.
4. Realizare sprijinire longitudinala (in pauze de circulatie pe linia I si cu scoatere de sub tensiune)
5. Se realizeaza fundatiile zidului de sprijin de pe zona podetului; Se betoneaza fundatiile podetului. Demontarea sprijinirilor se face dupa atingerea a 80% din clasa betonului. Lucrarile de podet se vor corela cu lucrarile de consolidari (realizare zid de sprijin aval);
6. Se monteaza 6 elementele prefabricate sub linia II conform tehnologiei de montare prezentata in dispozitia generala;
7. Se executa umplutura conform caietului de sarcini, se reface terasamentul si calea in zona podetului pana la cota finala NSS provizoriu 168.34 ,asigurand racordarea in plan orizontal si vertical cu situatia existenta.
8. Se monteaza suprastructura c.f. pe linia II si se racordeaza la capete pe terasament.
9. Se executa lucrari de LC provizorii pentru linia II;
10. Se asigura continuitatea circuitelor de cale, se asiugra electroizolaarea sinelor si protectia catodica.
11. Se remonteaza linia de contact, se pune sub tensiune si se deschide circulatia in trepte de viteza pana la Vmax=30km/h conform normelor in vigoare.

STAGE III b – EXECUTION OF THE NEW CULVERT ON DESIGNED TRACK II
Line I ex.– speed limit 50km/h;
Line II ex. – railway traffic closure;

1. Cutting-off the voltage, ensuring the electric protection and dismantling the contact line.
2. Ensuring the water transit on the culvert area.
3. Clearing the embankment around the culvert, partially dismantling the existing culvert from existing line II (downstream area), the connections to the embankment from downstream, including their foundations.
4. Making the longitudinal propping (during traffic breaks on line I and by cutting-off the voltage)
5. Making the foundations of the retaining wall from the culvert area; the culvert foundations are covered with concrete. The propping-ups are dismantled after reaching 80% of the concrete class. The culvert works will be correlated with the consolidation works (execution of the downstream retaining wall);
6. Mounting 6 precast elements under line II according to the mounting technology presented in the general layout;
7. Making the filling according to the Technical Specifications, renewing the embankment and the track in the culvert area up to the final temporary NSS level 168.34, by ensuring the connection in horizontal and vertical plan to the existing situation.
8. Mounting the railway superstructure on line II and connecting at the ends on the embankment.
9. Making temporary contact line works for line II;
10. Ensuring the continuity of track circuits, ensuring the rails' electric insulation and the cathode protection.
11. Remounting the contact line, restoring the voltage and opening the traffic in speed levels up to Vmax=30km/h according to the norms in force.

FAZA IV – REALIZAREA PODETULUI NOU PE FIRUL I:
Linia I pr.– inchidere de circulatie feroviara;
Linia II pr.– restrictie de viteza 30 km/h;

1. Se scoate de sub tensiune, se asigura protectia electrica si se demonteaza linia de contact.
2. Se executa umplutura, conform caietului de sarcini, se reface terasamentul si calea în zona podetuluisi se monteaza suprastructura c.f. pe linia I pana la cota finala NSS provizoriu 168.34 pe linia I, asigurand racordarea in plan orizontal si vertical cu situatia existenta.
3. Se asigura continuitatea circuitelor de cale, se asigura electroizolarea sinelor protectia catodica.
4. Se remonteaza linia de contact, se pune sub tensiune si se deschide circulatia in trepte de viteza conform normelor in vigoare.

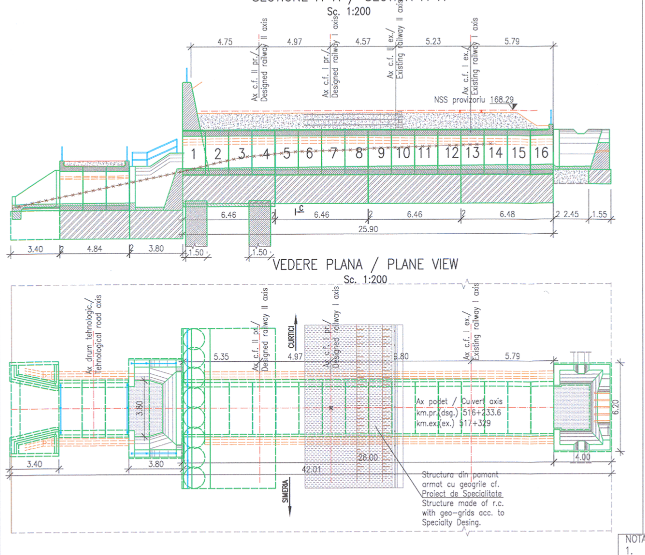
STAGE IV – EXECUTION OF THE NEW CULVERT ON TRACK I
Line I dsg. – railway traffic closure;
Line II dsg. – speed limit 30 km/h;

1. Cutting-off the voltage, ensuring the electric protection and dismantling the contact line.
2. Making the filling according to the Technical Specifications, renewing the embankment and the track in the culvert area and mounting the railway superstructure on line I up to final temporary NSS level 168.34 on line I, by ensuring the connection in horizontal and vertical plan to the existing situation.
3. Ensuring the continuity of track circuits, ensuring the rails' electric insulation and the cathode protection.
4. Remounting the contact line, restoring the voltage and opening the traffic in speed levels according to the norms in force.

FAZA V – FINALIZAREA NOULUI PODET
STAGE V – FINISHING THE NEW CULVERT

SECTIUNE A–A / SECTION A–A
Sc. 1:200

VEDERE PLANA / PLANE VIEW
Sc. 1:200


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
NSS provizoriu 168.29
3.40
4.84
3.80
4.75
4.97
4.57
5.23
5.75
6.46
6.48
25.90
2.45
1.55
62.01
4.00
6.20
Structura de pamant armat cu geogrile cf. Proiect de Specialitate
Structure made of r.c. with geo-grids acc. to Specialty Desing.

Tehnologia de pozare a prefabricatelor:
–pe betonul de fundatie intarit se astern 2cm de mortar de ciment pentru nivelare si 1cm pentru pozare;
–prefabricatele se aseaza in amplasament, dupa care se ridica si se observa urma lasata pe stratul de mortar proaspat. In cazul in care nu s–a realizat asezarea pe toata suprafata, se completeaza cu mortar de ciment de poza.
Operatia se repeta pana cand se obtine rezemarea pe toata suprafata.

Prefabricated elements laying tehnology:
–2cm cement mortar for levelling and 1cm for laying are placed on the hardened foundation concrete;
–the prefabricated elements are placed on site, after than there are rising and the track leaved on the fresh mortar layer is observed. If the laying is not done on the whole surface, cement mortar is cast on.
The operation is repeated till the whole supporting surface is obtained.

NOTA:
Prezentul plan s–a intocmit in baza urmatoarelor date:
- ridicarea topografica,
- dispozitie generala,
- date culese pe teren.

NOTE:
This plan has been drawn up on the basis of the following data:
- topo layout;
- general layout,
- acquisition of data to area.

FAZA V – FINALIZAREA NOULUI PODET:
Linia I pr.– restrictie de viteza 30km/h;
Linia II pr.– restrictie de viteza 30km/h;

1. Se executa sapaturile pentru ultimul tronson de fundatie a podetului nou, montand elemente de sprijinire pe masura ce avanseaza sapatura.
2. Se betoneaza fundatiile podetului si a camerei de colectare iar in rosturile dintre fundatii se introduc doua foi de carton bitumat. Demontarea sprijinirilor se face dupa atingerea a 80% din clasa betonului.
3. Se monteaza 7 elementele prefabricate conform tehnologiei de montare prezentata in dispozitia generala;
4. Se executa camera de colectare din amonte;
5. Se executa hidroizolatia si sistemul drenant.
6. Se executa umplutura, conform caietului de sarcini, se reface terasamentul si calea în zona podetului;

STAGE V – COMPLETION OF THE NEW CULVERT
Line I dsg. – speed limit 30km/h;
Line II dsg. – speed limit 30km/h;

1. Making the excavations for the last foundation section of the new culvert, by mounting propping elements as the excavation progresses.
2. Covering with concrete the foundations of the culvert and of the collecting manhole and introducing two bitumen board sheets in the joints between the foundations. The propping-ups are dismantled after reaching 80% of the concrete class.
3. Mounting 7 precast elements according to the mounting technology presented in the general layout;
4. Making the collecting manhole from upstream;
5. Making the waterproofing and the draining system.
6. Making the filling, according to the Technical Specifications, renewing the embankment and the track on the culvert area;

FAZA VI – ALTE LUCRARI
STAGE VI – OTHER WORKS

FAZA VI – ALTE TIPURI LUCRARI:
Linia I – circulatie cu viteza normala;
Linia II – circulatie cu viteza normala;

1. Se executa pereul in podet si in camera de colectare conform dispozitiei generale, scarile de acces pe terasament si parapetul metalic.
2. Se executa pereul in podetul de drum tehnologic si intre aripi;.
3. Se executa salteaua din anrocamente in aval la podetul de drum tehnologic si in amonte de podetul de CF.
4. Se realizeaza racordarea santurilor de colectare existente pe zona podetului cu camera de colectare din amonte.
5. Se dezafecteaza platformele, accesele din zona de lucru, organizarea de santier.

STAGE VI – OTHER TYPES OF WORKS
Line I – traffic with normal speed;
Line II – traffic with normal speed;

1. Executing the pitching in the culvert, between the wings and in the collecting chamber, according to the general layout, access stairs on the embankment and metallic handrail.
2. Arranging the riverbed downstream with concrete pitching laid-down on a sand layer.
3. Executing the riprap mattress downstream.
4. Executing the connection of the collecting ditches existent on the culvert's area with the collecting chamber from upstream.
5. Closing-down the platforms, accesses from the working area and site organization.

NOTA:
1. Lucrarile la pod vor fi executate obligatoriu inainte de lucrarile la linie.
2. Detaliile prezentate in acest plan nu sunt obligatorii si pot fi modificate sau adaptate in functie de dotarile constructorului cu respectarea conditiilor de realizare a lucrarilor definitive prevazute in caietele de sarcini si cu acordul proiectantului.
3. Orice neconcordanta intre elementele avute in vedere la elaborarea proiectului si teren va fi anuntata proiectantului pentru adaptare la situatia existenta.

NOTE:
1. The bridge works will be carried-out obligatorily before the line works.
2. The details presented in this plan are not compulsory and can be modified or adapted depending on the constructor's endowments by observing the execution conditions of the final works provided in the Technical Specifications and the designer's approval.
3. Any incongruity between the elements taken into account when preparing the design and the site will be announced to the designer so that he can adapt to the existing situation.

RĂCANEL I. IONUȚ RADU
Nr. 07230

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

CHIRICA C. ANTON

Verificator / Expert Checker / Expert	Cerinta Requirement	Semnatura Signature	Referat / 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	S. Amăricăi	01.2013	

"Reabilitarea liniei c.f. Frontieră - Curtici - Simeria, parte componentă a coridorului IV Pan - European pentru circulaţia trenurilor cu viteză maximă de 160 km/h"
Tronsonul 2-C : cap Y Ilteu - cap Y Gurasada
"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-C : end Y Ilteu - end Y Gurasada

Project 9i
35311.1

Faza / Phase:
PTH+CS / TD+TS

Denumire desen / Drawing name:
TEHNOLOGIE DE EXECUTIE / TECHNOLOGICAL PROCESS
PODET / CULVERT KM.PR.(DSG.) 516+233.6 KM.EX. 517+329

Scara / Scale	Revizia / Revision	Cod desen / Drawing Code	Nr / No
1:200	1 / 04.2013	PT.02.02.18.PO.08.04	04