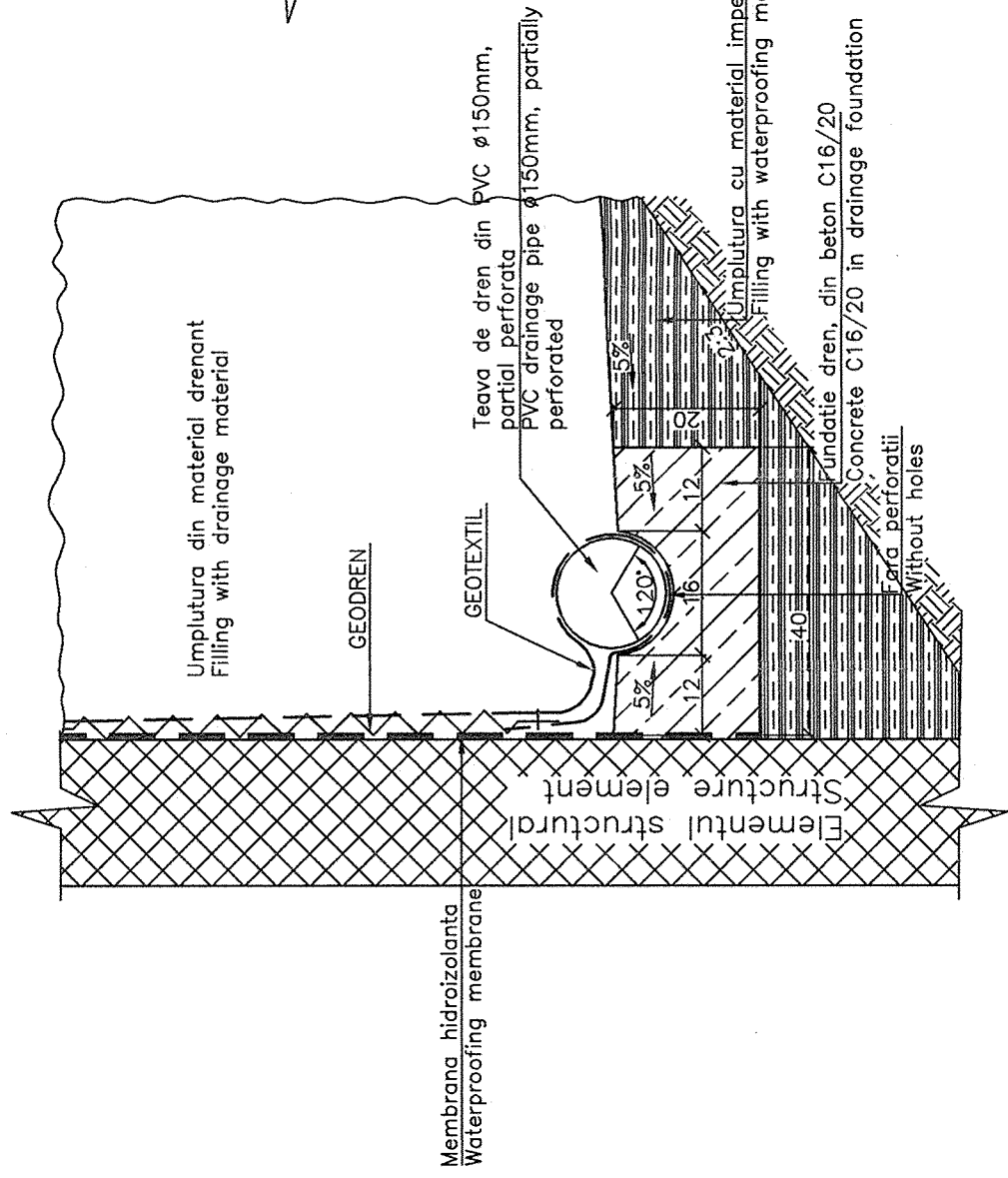


### SISTEM DE DRENARE A APELOR DIN SPATELE PODETELOR SYSTEM FOR DRAINAGE THE WATER BEHIND THE CULVERTS

Sc.1:10



#### MEMBRANA PENTRU HIDROIZOLATII:

- Conditii de utilizare:
- grosimea minima a membranei 4mm;
  - realizata pe baza de bitum aditivat;
  - sa prezinte strat din granule minerale care sa asigure aderenta betonului de protectie;
  - sa prezinte insertie de geotextil netesut din polistiren cu greutate min. 200g/mp;
  - sa se aplice cu flacara in aderenta totala la suport.
- Caracteristici fizico-mecanice:
- rezistenta la tractiune - longitudinal min. 180N/5cm;
  - rezistenta la tractiune - transversal min. 120N/5cm;
  - alungire la rupere - longitudinal min. 30%;
  - alungire la rupere - transversal min. 30%;
  - rezistenta la poansonare statica - min. 25kg(L4);
  - flexibilitate la temperaturi scazute (dorn cu diametru 20mm) - fara fisuri la -20°C;
  - aderenta la suport - min. 0.53 MPa.

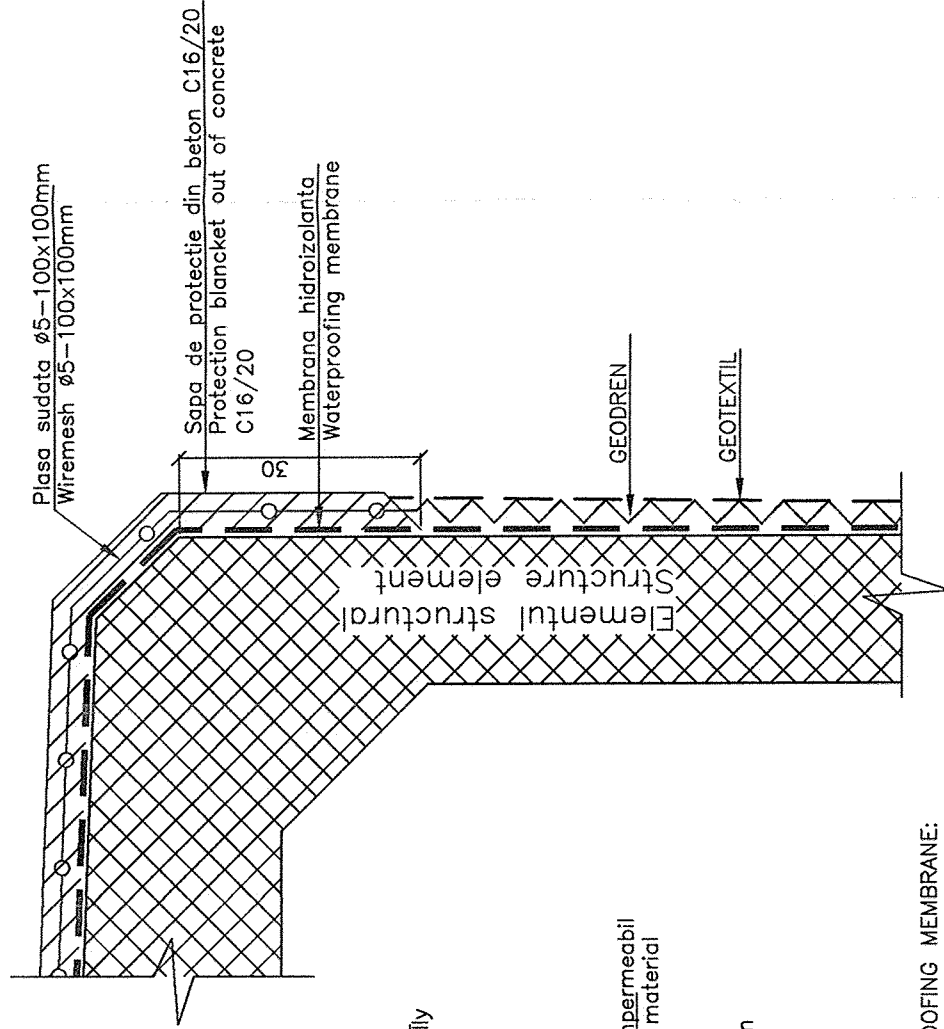
#### LEGENDA BETOANELOR:

##### CONCRETE LIST:

	Beton in elementele structurale Concrete for structure elements
	Beton de panta si protectie a hidroizolatiei C 16/20, expunere XF3+XA1 (RO), Cl 0.2, agregate D <sub>max</sub> 16, densitate D 2.5, consistenta S3 Slope concrete and protection of waterproofing C 16/20, exposure XF3+XA1 (RO), Cl 0.2, aggregates D/max 16, density D 2.5, consistency S3
	Beton simplu in fundatie dren C 16/20, expunere XF3 (RO), Cl 0.2, agregate D <sub>max</sub> 32, densitate D 2.5, consistenta S2 Plain concrete in drain foundations C 16/20, exposure XF3 (RO), Cl 0.2, aggregates D/max 32, density D 2.5, consistency S2

### RACORDAREA SAPEI DE PROTECTIE SI FIXAREA GEODRENULUI PROTECTION BLANKET FILLET AND GEODREN CONNECTION

Sc.1:10

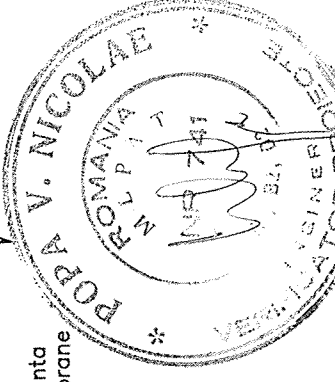
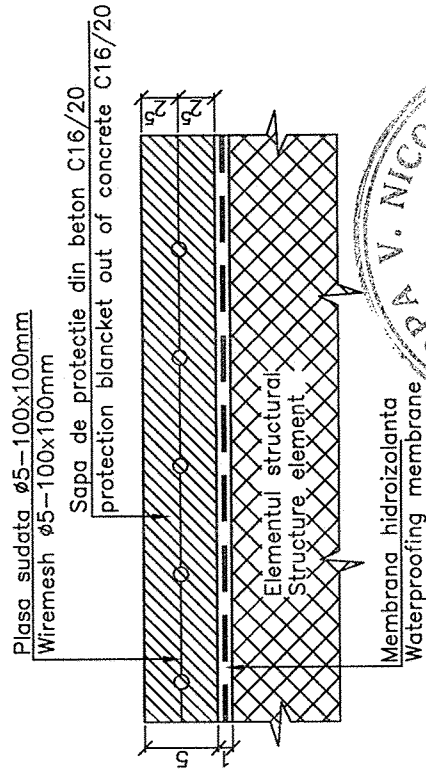


#### WATERPROOFING MEMBRANE:

- Using conditions:
- the minimum membrane thickness 4mm;
  - additive bitumen membrane;
  - it shall have a layer with mineral granule which should provide the protection concrete adherence;
  - it shall have non-woven geo-textile insertion of polyester with minimum weight 200g/mp;
  - it shall be applied by flame gluing in total adherence with the support.
- Physical-mechanical properties:
- tensile strength - longitudinal min. 180N/5cm;
  - tensile strength - transversal min. 120N/5cm;
  - elongation ultimate - longitudinal min. 30%;
  - elongation ultimate - transversal min. 30%;
  - static punching resistance - min. 25kg(L4);
  - low temperature flexibility (mandrel with 20mm diameter) - without cracks at -20°C;
  - support adherence - min. 0.53 MPa.

### DETALIU STRAT DE PROTECTIE A HIDROIZOLATIEI WATERPROOFING PROTECTION BLANKET DETAIL

Sc.1:5



GEODREN:  
Foaie de polipropilena cu sectiune alveolara, imbracata la fata superioara cu un netesut din polipropilena cu rol de geotextil filtrant, iar fata inferioara se lipeste de membrana hidroizolanta.

#### Caracteristici fizico-mecanice:

- masa unitara - 0,61kg/mp;
- forta de rupere la tractiune (T/L) - >880x760N/5cm
- alungire la rupere (T/L) - >45x40%
- rezistenta la perforare statica - >15daN
- rezistenta la compresiune - 450kN/mp
- permeabilitate la apa - 0,062m/s

#### GEODREN:

Cellular polypropylene sheet, protected at the upper side by a polypropylene non-woven for filter purpose and glued at the lower side by waterproofing membrane.

#### Physical-mechanical properties:

- unitary weight - 0,61kg/mp;
- ultimate tensile strength (T/L) - >880x760N/5cm
- breaking tensile (T/L) - >45x40%
- static penetration resistance - >15daN
- compression resistance - 450kN/mp
- water permeability - 0,062m/s

B	Data / Date	Modificare / Revision	AUTORITATEA CONTRACTANTA / CONTRACTING AUTHORITY	CFOU	Contract / Contract: 1303/2007
A			AUTORITATEA DE IMPLEMENTARE / IMPLEMENTUNG AUTHORITY		
ROMANIAN RAILWAY NATIONAL COMPANY		Ministerul Transporturilor / Ministry of Transport		Ministerul Economiei si Finanelor / Ministry of Economy and Finance	Ministerul Economiei si Finanelor / Ministry of Economy and Finance
prointec		consis PROIECT		EUROPEAN UNION	EUROPEAN UNION
Intocmit / Designed	Ing. Razvan STERIE	Scara / Scale: 1:10		POS Transport 2007-2013	PORTOFOLIUL DE PROIECTE PHARE CES 2005 / PHARE CES 2005 PROJECTS PORTFOLIO
Verificat / Checked	Ing. Ioan Dachin	1:5			Asistenta tehnica pentru pregatirea unor lucrari de reabilitare pentru tuneluri si poduri de cale ferata / Technical assistance for preparing rehabilitation works required by railway tunnels and bridges
Sef echipa / Team leader	Ing. Stelian Vara-Oros	Data / Date: 05.2009			Denumire desen / Drawing title: Poduri / Culvert km 101+311 Sustrasala RCF Railway district IASI, Liniile de cale ferata / Railway line Damianesti-Domisoara
					Cod desen / Drawing Code: PT 241
					Nr. / No: P09