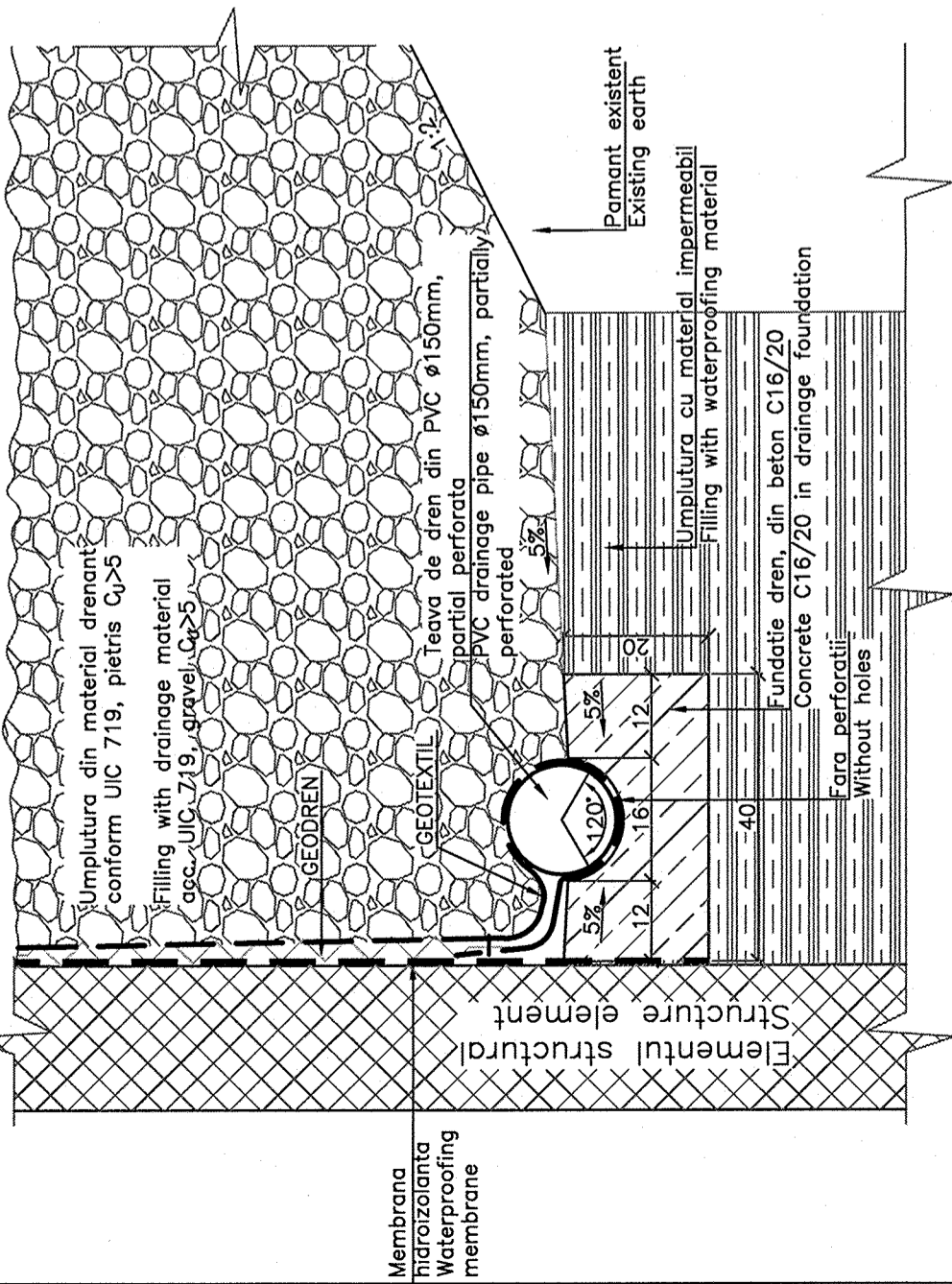


**SISTEM DE DRENARE A APELOR DIN SPATELE PODTELOR  
SYSTEM FOR DRAINAGE THE WATER BEHIND THE CULVERTS**

Sc.1:10



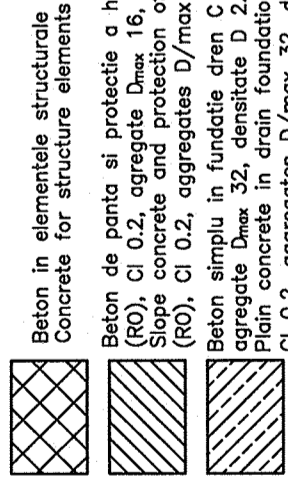
**MEMBRANA PENTRU HIDROIZOLATII:**

- Conditii de utilizare:
- grosimea minima a membranei 4mm;
  - realizata pe baza de bitum aditivat;
  - sa prezinte strat din granule minerale care sa asigure aderența betonului de protecție;
  - sa prezinte inserție de geotextil netesut din poliester cu greutate min. 200g/mp;
  - sa se aplice cu flacara in aderenta totala la suport.

**Caracteristici fizico-mecanice:**

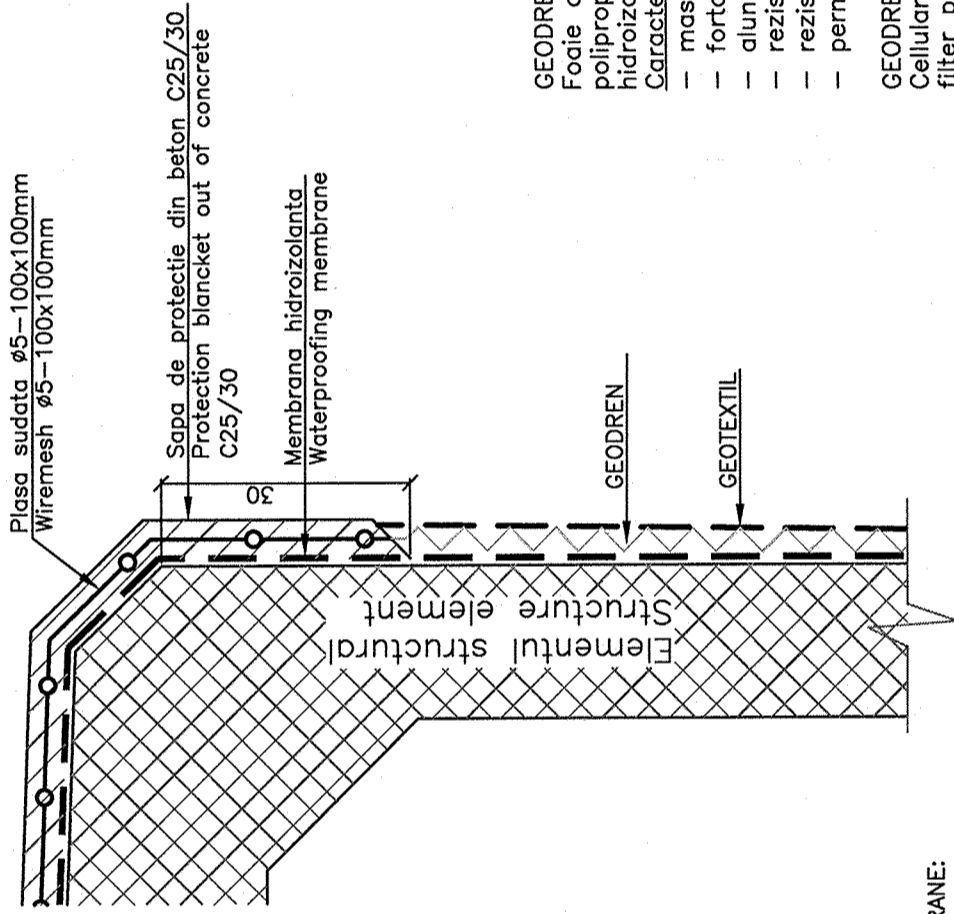
- rezistența la tractiune - longitudinal min. 180N/5cm;
- rezistența la tractiune - transversal min. 120N/5cm;
- alungire la rupere - longitudinal min. 30%;
- alungire la rupere - transversal min. 30%;
- rezistența la poansonare statica - min. 25kg(L4);
- flexibilitate la temperaturi scăzute (dorn cu diametrul 20mm) - fara fisuri la -20°C;
- aderența la suport - min. 0.53 MPa.

**LEGENDA BETOANELOR:  
CONCRETE LIST:**



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

Sc.1:10



**WATERPROOFING MEMBRANE:**

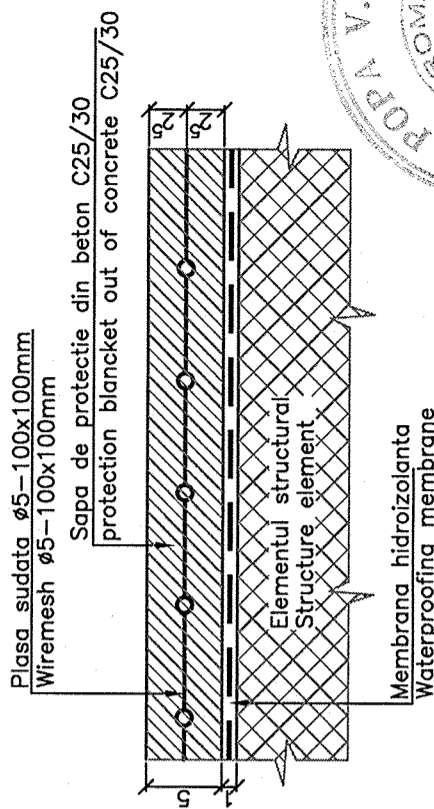
- Using conditions:
- the minimum membrane thickness 4mm;
  - additive bitumen membrane;
  - it shall have a layer with mineral granule which should provide the protection concrete adherence;
  - it shall have non-woven geo-textile insertion of polyester with minimum weight 200g/mp;
  - it shall be applied 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:**

Foie 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%
- rezistența la perforare statica - >15daN
- rezistența 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 tension (T/L) - >45x40%
- static penetration resistance - >15daN
- compression resistance - 450kN/mp
- water permeability - 0,062m/s

<b>B</b>		<b>A</b>	
BENEFICIAR/BENEFICIARY: ROMANIAN RAILWAY NATIONAL COMPANY 		MODIFICARE Modificare AUTORITATEA DE IMPLEMENTARE/ IMPLEMENTUNG AUTHORITY Ministerul Transporturilor Ministry of Transports 	
Intocmit Designed <b>Ing. Cristina Vara-Oros</b>		Scara / Scale: 1:10	
Verificat Checked <b>Ing. Viorel ALDESCU</b>		Data / Date: 05.2009	
Sef echipa Team leader <b>Ing. Stelian Vara-Oros</b>			
CONTRACT/Contract: 1303/2007		AUTORITATEA CONTRACTANTA/ CONTRACTING AUTHORITY <b>CFCU</b>	
Faza / Phase: PTH+DD/ TP+DD		Ministerul Economiei si Finantelor Oficiul de Plati si Contractare Phare Ministry of Economy and Finance Phare Payments & Contracting Office Proiect finantat de UNIUNEA EUROPEANA Project financed by EUROPEAN UNION 	
PORTOFOLIUL DE PROIECTE PHARE CES 2005 / PHARE CES 2005 PROJECTS PORTFOLIO LOT 1		POS Transport 2007- 2013 	
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 Denumire desen / Drawing Title: Sursula RCF / Railway district IAS. Liniile de Railway line Damnest-Domisoara Podet / Culvert km 47+885		Cod desen / Drawing Code Nr. / No: PT 23 08	

