REMEDIEREA DEFECTELOR DE TIP DS – DEFECTE DE SUPRAFATA
RETRIEVAL OF DEFECTS TYPE DS – SURFACE DEFECTS

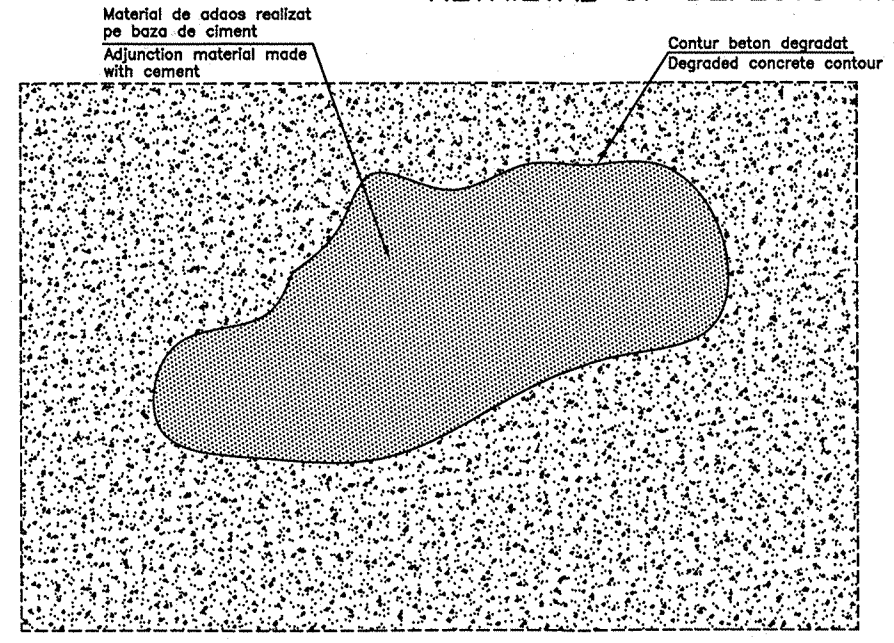

FIG. 1 MARCAREA SUPRAFETEI DEGRADATE
MARKING OF THE DEGRADED SURFACE

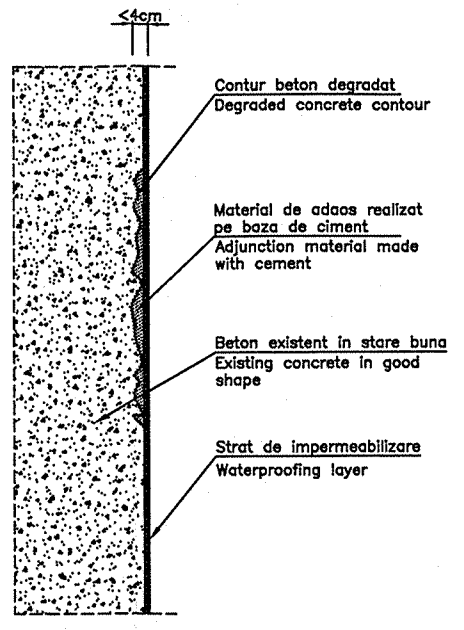

FIG. 2 SECTIUNE PRIN SUPRAFATA REPARATA
SECTION THRU THE REPARED SURFACE

Tehnologia lucrarilor de reparatie a suprafetelor de beton cu defecte de tip DS, conf. C149-87:

1. Se identifica si se marcheaza suprafetele de beton degradate;
2. Se periaza intreaga zona marcata cu o perie de sarma, iar in cazul in care este necesar suprafata degradata se va spitui in vederea inlaturarii betonului degradat;
3. Se curata cu jet de aer sub presiune;
4. Se aplica stratul de amorsa care va asigura legatura cu betonul existent;
5. Se aplica pasta pe baza de ciment si se finiseaza cu mistria sau cu spaclul;
6. Se protejeaza suprafata contra evaporarii rapide a apei;
7. Se aplica stratul de impermeabilizare si uniformizare a aspectului betonului (aplicarea stratului de impermeabilizare se va face dupa uscarea intregii zone reparate).

Technology of repair works to the concrete areas with type DS damages, acc. to C149-87:

1. Identifying and marking the damaged concrete areas;
2. Brushing the entire marked area with wire brush and remove damaged area by chiseling if necessary;
3. Clearing with compressed air stream;
4. Placing on the adherence layer such as to close all the voids of the existent mass;
5. Placing on the cement–based paste and pressing it with either trowel or spatula;
6. Protecting the area against sudden evaporation of water;
7. Placing on the waterproofing and leveling layer of the concrete surface (the waterproofing layer shall be placed on when the entire repaired area is dried).

CARACTERISTICI TEHNICE ALE MATERIALELOR UTILIZATE:

A. Amorsa conform caietului de sarcini si avand urmatoarele caracteristici:

- Rezistenta la tractiune >1.5N/mm²;
- Durata lucrabilitate la 20°C >45min;
- Numar straturi necesar 1 de 1mm grosime;
- Temperatura de aplicare +5° ÷ +40°C;
- Cantitatea de apa 18%;
- Rezistent la inghet–dezghet;
- Aplicabil pe suport umed;

B. Material de adaos pe baza de ciment conform caietului de sarcini si avand urmatoarele caracteristici:

- Granulatie 0.1÷2.0mm;
- Grosimea stratului aplicat 6÷40mm;
- Rezistenta la tractiune >1.5N/mm²;
- Rezistenta la compresiune >60N/mm² la 28zile;
- Rezistenta la tractiune din incovoiere>6.0N/mm²
- Durata lucrabilitate la 20°C >45min;
- Temperatura de aplicare +5° ÷ +40°C;
- Cantitatea de apa 11%;
- Expansiunea <0.5%

C. Strat de impermeabilizare conform caietului de sarcini ce se va aplica cu pensula sau cu pistolul de torcretat si avand urmatoarele caracteristici:

- Material de baza ciment;
- Numar minim de straturi 2;
- Grosimea min. a stratului aplicat 2mm;
- Vascozitate la 10°C cca. 1000–1500 MPas;
- Vascozitate la 20°C cca. 500–700 MPas;
- Durata lucrabilitate la 20°C >45min;
- Temperatura min. de aplicare pe stratul suport +10°C;

TECHNICAL SPECIFICATION OF THE USED MATERIALS:

A. Primer according to technical specification shall have the following requirements:

- Stretching resistance >1.5N/mm²;
- Time before hardening at 20°C >45min;
- Number of necessary layer 1 of 1mm thickness;
- Applying temperature +5° ÷ +40°C;
- Quantity of water 18%;
- Frost cleftness resistance;
- Applicable on wet surfaces;

B. Adjunction material made with cement according to technical specification shall have the following requirements:

- Granulosity 0.1÷2.0mm;
- Thickness of the layer 6÷40mm;
- Stretching resistance >1.5N/mm²;
- Compression resistance >60N/mm² la 28zile;
- Stretching resistance from bending >6.0N/mm²
- Time before hardening at 20°C >45min;
- Applying temperature +5° ÷ +40°C;
- Quantity of water 11%;
- Expansion <0.5%

C. Waterproofing layer according to technical specification which will be applied using paintbrush or shotcrete gun and shall have the following requirements:

- Base material cement;
- Number of necessary layer 2;
- Minumum thickness of the layer 2mm;
- Viscosity at 10°C cca. 1000–1500 MPas;
- Viscosity at 20°C cca. 500–700 MPas;
- Time before hardening at 20°C >45min;
- Minimal temperature for applying of support layer +10°C;

REMEDIEREA DEFECTELOR DE TIP DASM – DEFECTE DE ADANCIME SI/SAU SUPRAFATA MARE
RETRIEVAL OF DEFECTS TYPE DASM – DEFECTS WITH LARGE SURFACE AND/OR HIGHT DEPTH

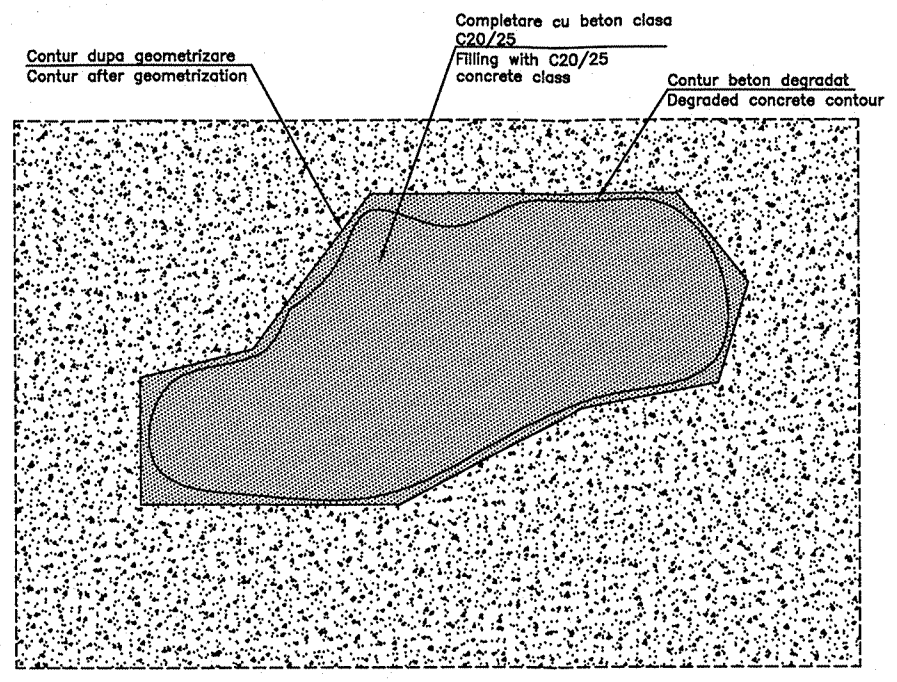

FIG. 3 MARCAREA SUPRAFETEI DEGRADATE SI GEOMETRIZAREA ACESTEIA
MARKING THE DEGRADED SURFACE AND MAKEING THE GEOMETRIZATION

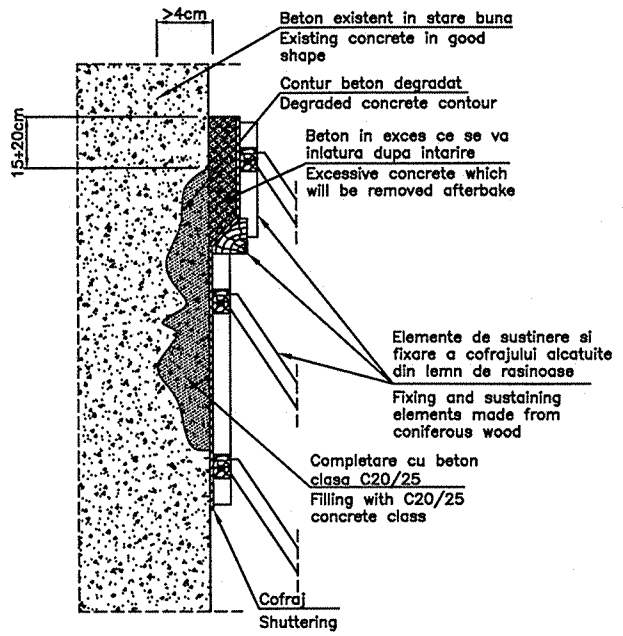

FIG. 4 SECTIUNE PRIN SUPRAFATA IN CURS DE REPARARE
SECTION THRU THE SURFACE DURING THE REPAIRING WORKS

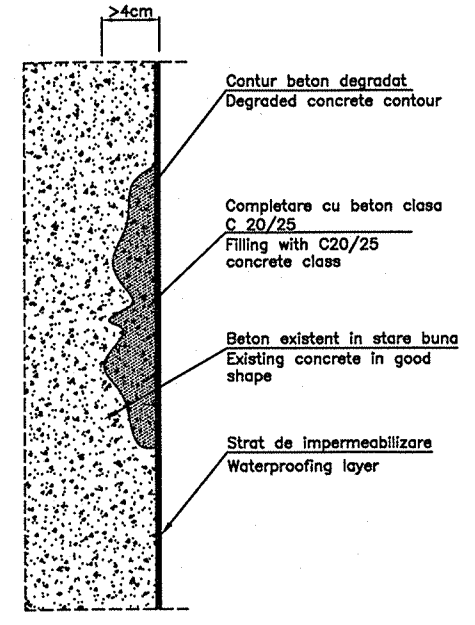

FIG. 5 SECTIUNE PRIN SUPRAFATA REPARATA
SECTION THRU THE REPARED SURFACE

Tehnologia lucrarilor de reparatie a suprafetelor de beton cu defecte de tip DASM conf. C149-87 (fig.3, fig.4 si fig.5):

1. Se identifica si se marcheaza suprafetele de beton degradate;
2. Se inlatura betonul degradat prin spituire si se creiaza un contur regulat al suprafetei degradate;
3. Se inlatura praful cu jet de aer sub presiune;
4. Se uda suprafata de beton pana la saturatie;
5. Se monteaza cofrajul;
6. Se completeaza golul cu beton clasa C16/20;
7. Se compacteaza betonul;
8. Se decofreaza;
9. Se inlatura surplusul de beton (numai dupa intarirea acestuia fara a avea rezistente ridicate);
10. Se protejeaza suprafata contra epavorarii rapide a apei;
11. Se finiseaza suprafata reparata si/sau se trateaza eventualele defecte dupa decofrare conform remedierilor tip DS (fig.1 si fig.2);
12. Se aplica stratul de impermeabilizare si uniformizare a aspectului betonului (acest strat se va aplica la final pe intreaga suprafata de beton vizibila, dupa realizarea lucrarilor de reparatii).

Technology of repair works to the concrete areas with type DASM damages, acc. to C149-87 (fig.3, fig.4 and fig.5):

1. Identifying and marking the damaged concrete areas;
2. Removing the damaged concrete by chiselling and creating a regular perimeter of the damaged area;
3. Clearing the dust with compressed air stream
4. Wetting the area to saturation;
5. Mounting the shuttering;
6. Filling the hole with C16/20 concrete class;
7. Vibrating the concrete;
8. Removing the shuttering;
9. Removing excessive concrete (only afterbake of the concrete);
10. Protecting the area against sudden evaporation of water;
11. Repaired surface finishing and/or repairing eventual defects occurred after the shuttering is removed in according to DS technology (fig.1 and fig.2);
12. Placing on the waterproofing and levelling layer of the concrete surface (this layer shall be placed on finally on the entire visible concrete area after executing the repairs works).

CARACTERISTICI TEHNICE ALE MATERIALELOR UTILIZATE:

A. Beton clasa C20/25 conform caietului de sarcini si avand urmatoarele caracteristici:

- Agregate 0÷16mm;
- Ciment CEM II A–S 32.5 (R);
- Raport Apa/Ciment 0.55
- Tasare T3–T4
- Gelivitate G100
- Impermeabilitate P8

B. Strat de impermeabilizare conform caietului de sarcini ce se va aplica cu pensula sau cu pistolul de torcretat si avand urmatoarele caracteristici:

- Material de baza ciment;
- Numar minim de straturi 2;
- Grosimea min. a stratului aplicat 2mm;
- Vascozitate la 10°C cca. 1000–1500 MPas;
- Vascozitate la 20°C cca. 500–700 MPas;
- Durata lucrabilitate la 20°C >45min;
- Temperatura min. de aplicare pe stratul suport +10°C;

TECHNICAL SPECIFICATION OF THE USED MATERIALS:

A. C20/25 concrete class according to technical specification shall have the following requirements:

- Aggregates 0÷16mm;
- Cement CEM II A–S 32.5 (R);
- Water/Cement ratio 0.55;
- Settlement T3–T4;
- Frost cleftness G100;
- Proofing P8

B. Waterproofing layer according to technical specification which will be applied using paintbrush or shotcrete gun and shall have the following requirements:

- Base material cement;
- Number of necessary layer 2;
- Minumum thickness of the layer 2mm;
- Viscosity at 10°C cca. 1000–1500 MPas;
- Viscosity at 20°C cca. 500–700 MPas;
- Time before hardening at 20°C >45min;
- Minimal temperature for applying of support layer +10°C;

NOTA:
1. La executie se vor respecta cu strictete prevederile din "Codul de practica pentru executarea lucrarilor din beton, beton armat si beton precomprimat", indicativ NE 012–99, din "Instructiunile tehnice privind procedeele de remediere a defectelor pentru elementele de beton si beton armat" indicativ C149–87, din "Normativul pentru verificarea calitatii si receptia lucrarilor de constructii aferente" indicativ C56–85, si a Caietului de Sarcini.
2. Daca in timpul lucrarilor se vor constata anumite neconcordante intre datele avute in vedere la proiectare si situatia de pe teren, va fi convocat proiectantul pentru adaptarea proiectului la noua situatie.

NOTE:
1. There will be strictly respected the provisions from "Practice code for plain concrete, reinforced concrete and prestressed concrete works execution" ind. NE012–99, "Technicali instructions regarding remedial procedures of plain concrete and reinforced concrete" ind. C149–87, from "Normative for quality checking and works reception for afferent construction" ind. C56–85 and Technical Specifications of this project.
2. If unconformities between the designed data and the site situation are found out during works execution, the designer will be convened to adjust the design according to the new situation.

1. Conform H.G. 766/1997 lucrarea se incadreaza in categoria "B" a constructiilor de importanta deosebita.
2. Proiectul va fi verificat de verificatori atestati MLPAT la exigentele A.4, B.2 si D.2.

1. Complying with H.G. 766/1997 this structure belongs to category "B" of importance.
2. The project will be verified at A.4, B.2 and D.2 requirements.

B			
A			
	Data / Date	Modificare / Modification / Revision	

BENEFICIAR/ BENEFICIARY : ROMANIAN RAILWAY NATIONAL COMPANY — AUTORITATEA DE IMPLEMENTARE/ IMPLEMENTUNG AUTHORITY: Ministerul Transporturilor / Ministry of Transports

AUTORITATEA CONTRACTANTA / CONTRACTING AUTHORITY: CFCU — Ministerul Economiei si Finantelor Oficiul de Plati si Contractare Phare / Ministry of Economy and Finances Phare Payments &Contracting Office

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prointec — CONSIS PROIECT

Intocmit / Designed	Ing.Leonard Olteanu	Scara / Scale : %	PORTOFOLIU DE PROIECTE PHARE CES 2005 / PHARE CES 2005 PROJECTS PORTFOLIO LOT 1
Verificat / Checked	Ing. Ioan Dachin	Data / Date : 05.2009	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		Denumire desen / Drawing Title : Sucursala RCF /Railway district IASI. Linia cf /Railway line Darmanesti-Domisoara Pod / Bridge km 031+620 REPARATII SUPRAFETE DE BETON SIMPLU / PLAIN CONCRETE SURFACES REPARATION

Cod desen / Drawing Code: PD 265 — Nr. / No: 10