

Installation of Waterproofing and Protection Geomembranes on Canals and Hydraulic Tunnels Executed by CARPI

Updated JANUARY 2006

Name of plant Name of owner	Canals and Tunnels		Geomembrane							
	Country	Type	Installation completed	Type	Thickness [mm]	Quantity [m ²]	Protection/ Ballast	Support	Geotextile [g/m ²]	Drainage
Malong & Janlou Aqueducts Hunan Water Resources (*trial section)	China	Irrigation canal	2004	PVC	2.5	4990	No	Geotextile	200	-
Dionysen Verbund-Austrian Hydro Power AG	Austria	Power supply canal	2004	PVC	2.5	830	No	Geotextile	500	Geonet at bottom of slopes
Mittlerer Isar Strogenbauwerk E.ON Wasserkraft GmbH	Germany	Power supply canal	2000	PVC	2.0	34560	No	Geotextile	200	Geonet partly on bottom
Laufnitzdorf STEWEAG AG	Austria	Power supply canal	2000 on walls	PVC	2.5	9800	No	Geotextile	500	Geonet at bottom of walls
Binn RHOWAG	Switzerland	Pressure tunnel	1999	PVC	2.5	175	No	Geotextile	500	Geonet
Alvor Associação de Regantes e Beneficiários de Alvor	Portugal	Irrigation canal	1999	PVC	1.5	30000	No	Geotextile	200	-
Spalov Východo Eská Energetika, a.s.	Czech Rep.	Pressure tunnel	1999 1998	PVC	2.5	1500	Partial on vault, with steel plates	Geotextile	500	Geonet on bottom + clapet
Idanha Mota & Cia.	Portugal	Irrigation canal	1998	PVC	1.5	9000	No	Geotextile	200	-

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Chaves D R A Tras-os-Montes	Portugal	Irrigation canal	1998	PVC	1.5	33500	No	Geotextile	200	-
Thissavros Public Power Corporation	Greece	Pressure tunnel	1997	PVC	2.5	1064	Concrete on bottom	Geotextile	500	Geonet
Frailino Gestioni Industriali Rivarolo	Italy	Power supply canal and free flow tunnel	1997	PVC	2.0	10000	No	Geotextile	200	-
Villoresi (Syphon) Consorzio del Villoresi	Italy	Irrigation canal	1997	PVC	2.0	200	No	Geotextile	500	-
Mira Associação de Beneficiários do Mira	Portugal	Irrigation canal	1997	PVC	2.0	25000	No	Geotextile	200	-
Mira - Odemira Associação de Beneficiários	Portugal	Irrigation canal	1997	PVC	1.5	35800	No	Geotextile	200	-
Campilhas - Section II Associação de Regantes e Beneficiários de Campilhas e Alto Sado	Portugal	Irrigation canal	1997	PVC	1.5	19300	No	Geotextile	200	-
Campilhas Associação de Regantes e Beneficiários de Campilhas e Alto Sado	Portugal	Irrigation canal	1996/97	PVC	2.0	16000	No	Geotextile	200	-
Echirolles (Trial section) Electricité de France	France	Power supply canal	1996	PVC	2.5	400	No	Geotextile	500	-
Itutinga Cemig	Brazil	Power supply canal	1996	PVC	2.0	1500	No	Geotextile	200	-

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Signayes Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply canal and free flow tunnel	1996	PVC	3.0	23000	Concrete on bottom	Geotextile	200	Geonet
Mollasco Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply canal	1996	PVC	2.0	364	Concrete on bottom	Geotextile	200	Geonet
Dronero Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply canal	1996	PVC	2.0	10790	Concrete on bottom	Geotextile	200	Geonet
Senhora do Porto Electricidade de Portugal	Portugal	Power supply canal	1995	PVC	2.5	26300	No	Geotextile	500	Geonet
Villoresi (Syphon) Consorzio del Villoresi	Italy	Irrigation canal	1995	PVC	2.0	400	Concrete on bottom	Geotextile	200	-
Mira Associação de Beneficiários do Mira	Portugal	Irrigation canal	1994	PVC	2.0	20800	No	Geotextile	200	-
Armisa-Gaggio Società Nord Elettrica	Italy	Power supply free flow tunnel	1994	PVC	2.0	500	No	Geotextile	500	Geonet
Roncaglia Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply canal and free flow tunnel	1993/94	PVC	2.0	5100	Concrete on bottom	Geotextile	200	Geonet
Clanezzo Ente Nazionale Energia Elettrica S.p.A. SOIC	Italy	Power supply canal	1993/94	PVC	2.0	9000	No	Geotextile	200	-
Souste * RHOWAG (*trial section)	Switzerland	Power supply canal	1993	PVC	2.5	1000	Concrete on bottom	Geotextile	500	Geonet

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Chavonne Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply free flow tunnel	1992	PVC	2.0	8600	No	Geotextile	200	Geonet
Flumendosa Ente Autonomo del Flumendosa S.p.A.	Italy	Irrigation canal	1991	PVC	2.0	1900	No	Geotextile	200	-
Gaggio Società Nord Elettrica	Italy	Power supply canal	1991	PVC	2.0	7800	No	Geotextile	200	Geonet
Pointis Électricité de France, Paris	France	Power supply canal	1989	PVC	1.5	20000	Concrete on bottom	Geotextile	200	-
Filago Ente Nazionale Energia Elettrica S.p.A.	Italy	Power supply canal	1989	PVC	1.5	3200	No	Geotextile	200	-
Gandellino Ente Nazionale Energia Elettrica	Italy	Pressure tunnel	1983/1988	PVC	2.0	3700	Rigid PVC on vault	Geotextile		-
Soulom Societe Nationale de Chemins de Fer	France	Power supply canal	1988	PVC	1.5	1960	Concrete on bottom	Geotextile		Geonet
Zogno Ente Nazionale Energia Elettrica	Italy	Power supply canal	1978/1987	PVC	1.5	9900	Concrete on bottom	Geotextile		Geonet
Ponte Giulio Ente Nazionale Energia Elettrica	Italy	Pressure tunnel	1986	PVC	3.0	4200	Concrete	Geotextile		-
San Fiorano Ente Nazionale Energia Elettrica	Italy	Pressure tunnel	1986	PVC	4.0	4400	Concrete	Geotextile		-

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Gorghiglio Ente Nazionale Energia Elettrica	Italy	Pressure tunnel	1984	PVC	2.0	6000	Metal grid	Geotextile		Geonet
Cuccio Ente Nazionale Energia Elettrica	Italy	Power supply canal	1980	PVC	1.5	5100	No	Geotextile		-
Poschiavino Ente Nazionale Energia Elettrica	Italy	Power supply canal	1979	PVC	1.5	8000	No	Geotextile		-
Ente Nazionale Energia Elettrica Mallero	Italy	Pressure tunnel	1977	PVC	1.5	3800	No	Geotextile		-
Ala Bussolengo Ente Nazionale Energia Elettrica	Italy	Power supply canal	1973	PVC	1.5	150000	Concrete	-		-

PVC : Polyvinylchloride