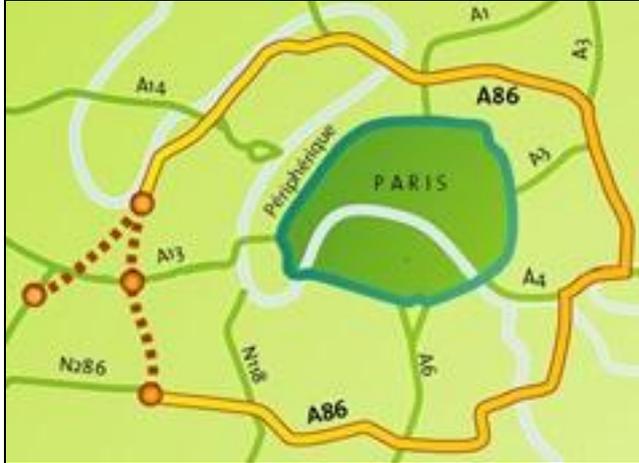




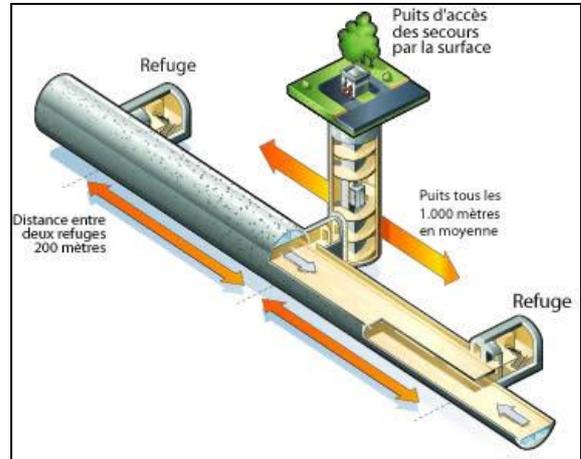
SOCATOP A86 BYPASS / PARIS , FRANCE

DOUBLE - DECK 3 LANE ROAD TUNNEL

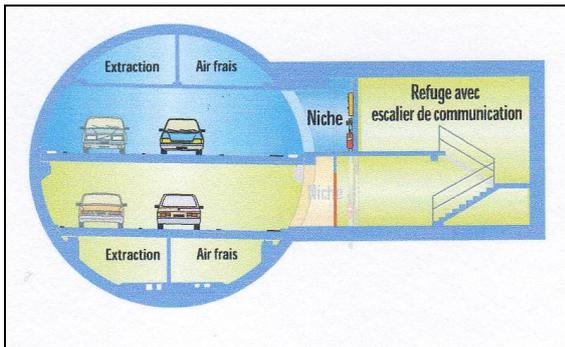
CONCESSIONAIRE : COFIROUTE, PARIS ,FRANCE



LOCATION



3D VIEW OF SAFETY NICHES AND SHAFTS



TUNNEL CROSS SECTION WITH NICHE

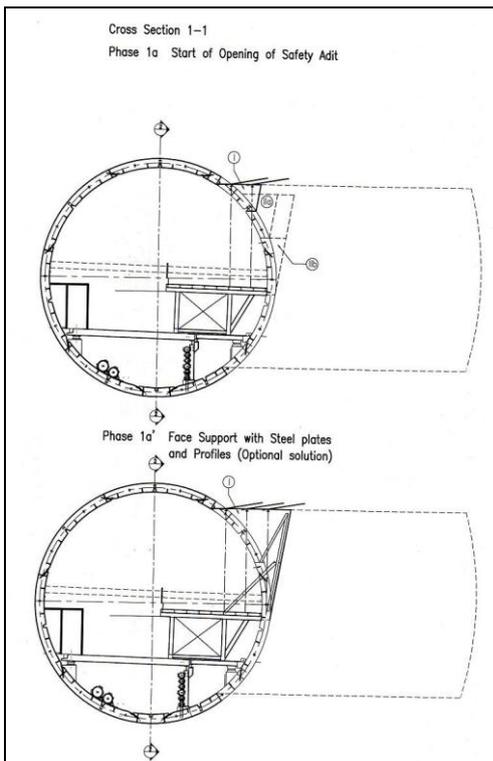
PROJECT DESCRIPTION

THE LAST PART OF THE SECOND RING ROAD OF PARIS IS A TUNNEL VL1 ON THE HIGHWAY A86 , WEST FROM THE PARIS. THE TUNNEL IS DESIGNED AS THE FIRST IN THE WORLD DOUBLE-DECK 3 LANE TUNNEL WITH SAFETY NICHES AND SAFETY SHAFTS EVERY 500 METERS.

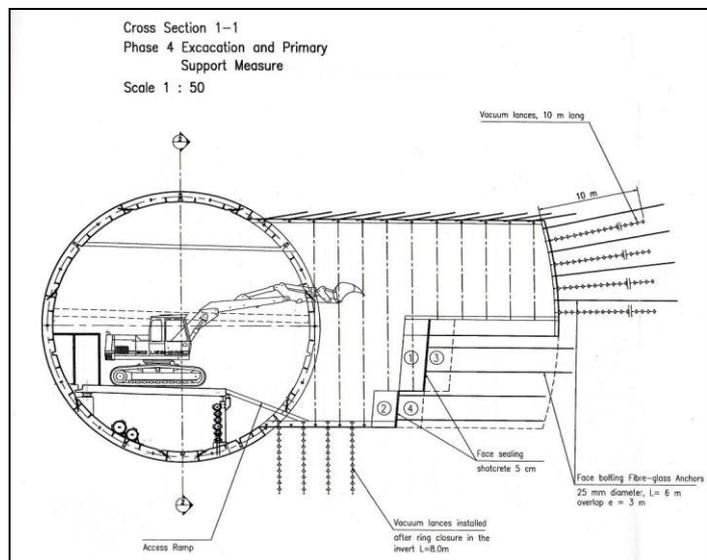
THE DESIGN AND ANALYSIS OF NATM PRICIPLES HAS BEEN REQUIRED TO SECURE THE EXCAVATION OF 52 NICHES IN DIFFERENT DIFFICULT UNSTABLE SOFT GROUND CONDITIONS WITH THE PRESSURE OF THE UNDERGROUND WATER LEVELS.

SERVICES PROVIDED

- * FINAL DESIGN OF NATM EXCAVATED 52 NICHES IN SOFT SOIL (SAND, MARL, CLAY) UNDER GROUNDWATER PRESSURE.
 - * RISK ANALYSES OF EXCAVATION SEQUENCES IN DIFFERENT SOILS.
- PERIOD OF WORK: 2001 – 2002, 2005-2006



EXCAVATION SEQUENCE : PHASE I



EXCAVATION SEQUENCE : PHASE 4 USING NATM PRINCIPLES