

## Darlex Digital Video Recorder Application

### Bank and Monument Underground Complex 148 Cameras

The Bank Monument complex is a conglomeration of 5 stations, consisting of 3 ticket halls, 6 lifts, 10 platforms and 15 escalators. This makes it the world's **largest and most complex subterranean railway station**. Four lines converge here, District & Circle, Central, Waterloo & City, Northern and the most recent addition, Docklands Light Railway. In fact, it is so complex that the quickest way to get between the 2 stations is to walk down King William Street !.

#### The Upgrade

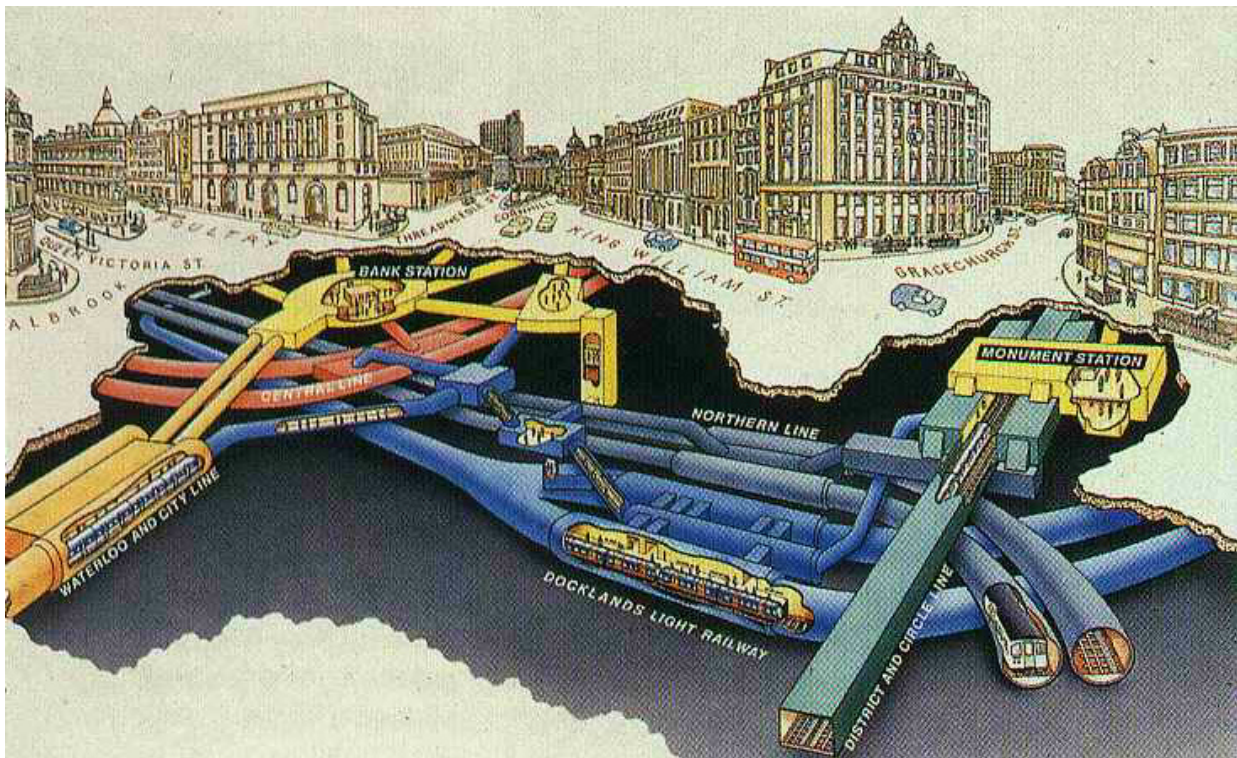
The task was to replace the existing recording system, as VCR maintenance and tape replacement was becoming expensive, and tape changing a chore. Some cameras were also unreliable.



Twenty Tecton Kramplex Multiplexers and 20 Mitsubishi VCR's were originally fitted to record 148 cameras. The Tecton Kramplex were operating perfectly (of course!) despite being 10 years old.

#### The Design Problem

Recording takes place in two areas in the complex. It was a requirement that the viewing and replaying of the cameras took place at one location. The second requirement was to allow recorded information to be extracted rapidly in the event of a terrorist attack.



**Simplified 3 dimensional view of the underground complex.**

# Darlex Digital Video Recorder Application

## The Solution

From the users point of view, operation is very simple. There is a keyboard and monitor in the replay suite, with an SVHS VCR connected beneath the monitor. The user selects any camera to view or playback, just by entering the station camera number with the keyboard ( note: The station camera numbering is non-consecutive on the Darlex inputs).

Playback and viewing is pure high resolution video. Played back events can also be copied to SVHS video tape, just by pressing the VCR record button.

The user also has the option to use a PC to copy data over an ethernet link from each Darlex. Data from single or multiple cameras can be downloaded and saved to a high capacity DVD-RAM drive. The facility exists to copy to a lower capacity CD drive with/without replay software. Although PC's are unreliable, in this application they are not essential for the operation of the system.

Behind the scenes connectivity is achieved by a fibre optic link carrying video, ethernet and RS232 data between two recording locations. There are 8 Darlex at Monument and 2 at Bank. The Darlex are designed to work together to make one large system. The installation and design was done by transport CCTV specialists, IPS of Coulsden.

Each Darlex has been modified to provide two removable discs from its front panel. All 600 GB of recorded data can be extracted in seconds.



**Monument platform**



## Video Monitoring

Video monitoring in the control room is implemented using a large video matrix and is independent of the video recorders. However, if required, the Darlex can also provide live / replayed images from any camera which can be viewed in multiple locations.

## Remote Monitoring

In principle incidents could be down loaded from the station to a central location, such as British Transport Police HQ, which would save evidence gathering visits. Any camera on the system could be viewed over the network. Unfortunately someone sold off the connectivity between stations .....



**Darlex modified with 2 removable disk drives. Other variations are also possible**

## Technical Facilities

The reason the Darlex were chosen include:

- A) Exceptionally high resolution, 500TVL
- B) Its ability to work with a variety of imperfect video signals.

- C) Its reliability, especially when compared to a PC and video card solution.
- D) The lack of license fees and other hidden costs. (Compared to PC solutions).
- E) A company that has been stable for 18 years and continues to support its products. (Look how many companies have gone bust, been taken over etc.)