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VTA

– Santa Clara Valley Transportation Authority –

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The County of Santa Clara is a county at the center of the State of California on West Coast, and centers around the City of Santa Clara with a population of about 1.6 million.

The county has a mild weather, and includes an area that represents a most part of so-called Silicon Valley. Therefore, the Santa Clara area is famous as one on which the bases of many world-class high tech companies are concentrated.

VTA is the public transport bureau of the County of Santa Clara, and is responsible for the planning and management of public transports in the entire county. Kinki Sharyo received an order from VTA for the manufacture of low-floor vehicles, and has delivered a total of 100 vehicle units to the organization. In 1999, a base contract was concluded for 30 units, which were delivered in 2001. These units were assigned to an existing line as reinforcement, in conjunction with an extension plan for the Santa Clara area. In 2001, we received an additional order for 70 units to replace vehicles currently in use. These units were delivered in 2002 and 2003 in 18 installments. After the delivery of 2 trial production units in February 2001, semi-finished vehicles were shipped to a local FA plant for final assembly.

VTA Light Rail consists of two main lines and one branch line (operating extension: about 68 km). It runs through the San Jose district home to electronic industries, which is part of Silicon Valley; and links to the suburban Santa Clara area to the north. For the extended section of the line, the platform height was set at a low level to facilitate the movement of passengers in or out of a car. Our new LRV also has a low-floor construction accordingly. Formerly, it was difficult to operate the LRVs in conventional sections, because of a greater platform height. At present, however, low-floor LRVs run in all sections, with the reconstruction of all stations already completed.

As our vehicles were to run on an existing line, both the base and additional contracts envisaged the delivery of vehicles only; and the supply of aboveground facility-related articles, as well as maintenance, was excluded from their scope. Also, the special form of the contracts with VTA precluded the application of the “By American” law (see page 18) to them. This enabled us to use air conditioners and other parts manufactured in Japan.



#### Vehicle Characteristics

A cubic design was adopted for the front of the vehicle to inherit the design concept for existing vehicles while economizing production and maintenance. The color scheme for the body exterior is largely the same as that for existing vehicles (a white ground, with blue and red stripes below windows). This simple and bright scheme matches the image of West Coast.



Regarding the finish of painted body surfaces, the customer made us a quality demand more stringent than in any other past project of Kinki Sharyo. Accordingly, our divisions concerned had to join forces to achieve a high quality in a short period of time. Eventually, we managed to meet the demand through all conceivable efforts, including the check of evaluation criteria, inspection methods and approval procedures; the improvement of painting equipment and conditions; and the consciousness raising and education of workers. This experience has proved a valuable asset in our efforts to maintain and improve our technology level.

LAHT, weatherproof high-tension steel, is used for the body structure. In view of the need to run on a road, the

structure is so designed as to withstand an end compressing force of 100 tons (2G) and a side compressing force of 4 tons. A low-floor design is adopted for 70% of the body floor for the convenience of the handicapped (as envisaged by the ADA Law). The side entrance in the low-floor portion facilitates the movement of wheelchair users between a car and a platform 360 mm above the road surface. Formerly, the platform of each station was equipped with a lift and a folding flight of steps to allow wheelchairs to move into or out of the entrance of a high-floor vehicle. However, our vehicles of a new design eliminated the need for this equipment.

The body design is a departure from the conventional articulated car with three bogies and two bodies. The new vehicle has an articulated construction with three bodies, for which the construction of the middle accompanying bogie is changed to mount a middle body on it. The passage between couplings features a flat low floor. Even with this construction, there is no problem with a run on a curve at the minimum speed of 25 mR.

As for the construction of the body coupling interior, the construction of already delivered vehicles (MBTA, DART, NJT) were reviewed, and a simple construction was developed using decorative panels and rubber boards. This development resulted in the establishment of a standard coupling interior design for subsequent LRVs (VMR, ST, reinforcements for DART and NJT).

The low-floor portion of the body at either end is provided with eight side entrances with plug type sliding doors, and four emergency escape windows. Also, it is equipped not only with general cantilever seats, but with a seat for three which can be sprung up to provide a space for four wheelchairs. The middle body has a space for four bicycles, to accommodate a local need as in the case of conventional vehicles.

The overhead wiring voltage is DC750 V. An electric bogie, inverter controlled to run at a maximum speed of 55 miles (88 km) per hour, is installed below a standard floor at a position close to each vehicle end.

With the development of the Santa Clara area, the railway line has expanded to comprise two stations in 2001 and nine in 2004. This means that the stage for, and the role of our LRVs are growing. I hope that they will keep winning the favor of citizens and visitors as safe and comfortable means of transportation which can be used by everyone, and which impose only a limited environmental burden.