

Table 1 Chronology

June 1950	Nishi Nagoya-ko Line (freight line) opened
April 1987	Took over by JR Central and operated by JR Freight after JNR privatization
January 1992	Reported to Transport Policy Board
June 1992	Established Nishi Nagoya-ko Line Development Consideration Committee
October 1997	Held organizing committee meeting to establish third sector
December 1997	Established Nagoya Seaside Rapid Railway Obtained category-1 licence
December 1998	Applied for construction permission
July 1999	Approved to construct
February 2000	Started construction at Nagoya Station
November 2003	Nicknamed Aonami Line
October 2004	Opened

passenger line from Nagoya Station to Kinjo-futo via Sasashima and Inaei by converting the 12-km freight line to a passenger line, extending 4 km and operate the line by the third sector. The line was appointed as a line to be improved by 2008. After the report, Nagoya City, Aichi Prefecture, Nagoya Port maintenance union and JR Central established a third sector company, Nagoya Seaside Rapid Railway, in December 1997 toward the early realization.

The company obtained a category-1 licence (providing passenger and/or freight transport using own infrastructure) between Nagoya and Kinjo-futo in the same month, started construction in 2000, and opened the Aonami Line in October 2004 (Table 1).

Operation Overview

Route plan

Nishi Nagoya-ko freight line was closed in March 2001 to convert the line into a passenger line. The line was extended to Kinjo-futo in Nagoya Port, with whole section double tracked and electrified (Fig. 2). (15.2 route-km, 15.4 km of construction)

Between Nagoya and Nakajima stations, infrastructure of former freight line is improved and stations are built. Tracks between Nakajima and Kinjo-futo stations were originally level crossed but were elevated at main east-west roads to avoid road congestion.

Figure 2 Cross-section of Aonami Line

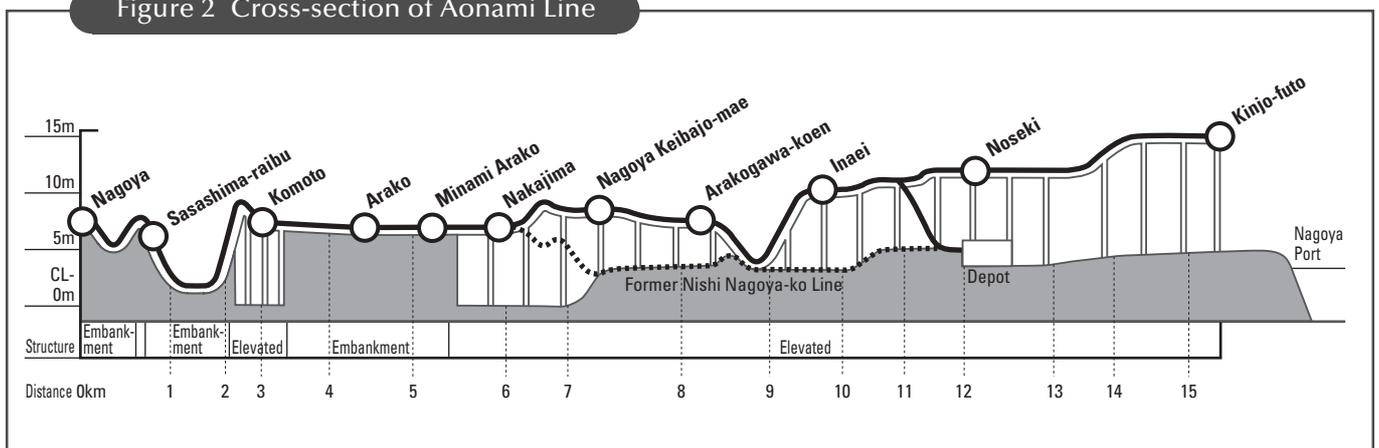


Table 2 Specification of Aonami Line

Specification	Gauge Rackrail Voltage Signalling	1067 mm 60 kg (50 kg) DC 1500 V Automatic block
Operation safety facility		Automatic train stop, interlocking device, centralized traffic control system, train radio

Rolling stock

Series 1000 runs on the Aonami Line, with capacity of 582 passengers and maximum speed of 110 km/h. A 20-m body is all-stainless with corporate colour of violet-blue and blue, that images a railway line connecting a city centre and a port.

The indoor seats use a recyclable material. Independent seating was adapted to facilitate seat changes. Also, spaces for wheelchairs and indoor indicator at the top of each door are available for people-friendly cars. Especially at the first carriage, there is a belt to fix wheelchair while train is running.



Rolling stock of Aonami Line
(Nagoya Seaside Rapid Railway)



Interior
(Nagoya Seaside Rapid Railway)



Space for wheelchair
(Nagoya Seaside Rapid Railway)



Indoor indicator
(Nagoya Seaside Rapid Railway)

Station and architectural plan

There are 11 stations on Aonami Line from the consideration of development plan etc. for the future in the area. Also for

user's convenience, most stations are located near intersections of main roads, and the distances between the stations are at the subway level (Table 3).

Table 3 Stations

Structure	
Sasashima-raibu	Concourse at first floor, platforms at second floor
Kinjo-futo	Concourse at second floor, platforms at third floor
Others	Concourse at first floor, platforms at second floor

Platforms	
Sasashima-raibu, Nakajima, Arakogawa-koen, Inaei	Opposite platforms
Others	Island platform

Roofs over platforms	
All stations	Wave-like roofs reflecting image of sea wave



Gap between carriage and platform
(Nagoya Seaside Rapid Railway)

Minimum gap between platform and rolling stock floor allows easy boarding for passengers using wheelchairs.



Gap between carriage and platform
(Nagoya Seaside Rapid Railway)



Elevator at station (Nagoya Seaside Rapid Railway)

Elevators are installed on all Aonami Line stations. Elderly and disabled passengers can move platforms smoothly. Also, escalators are installed at Nagoya and Kinjo-futo stations.



Audio navigation (Nagoya Seaside Rapid Railway)

Voice guidances are available at ticket gates, stairs, escalators and toilet entrances. Also, different voices are used to announce train arrivals on different directions.



Braille guidance (Nagoya Seaside Rapid Railway)

Guide system for visually impaired passengers such as Braille fare tables and guardrails are installed on all stations.



Multi-purpose toilet (Nagoya Seaside Rapid Railway)

Guardrails are installed in toilets for barrier-free purpose. Also, ostomates, chairs for infants and emergency alarm system are installed.



Platform door (Nagoya Seaside Rapid Railway)



Mobile platform door (Nagoya Seaside Rapid Railway)

Kinjo-futo Station is installed with platform doors and other stations are installed with mobile platform gates to prevent passengers from falling to the track. Doors and gates are operated by a driver, checking passengers' safety through monitor.

Operation plan and fares

The base fare is ¥200, and ¥30 is added every section. The Aonami Line passengers may purchase a ticket card called Transpass, which can be used on Nagoya City subways, Nagoya City buses, Nagoya Railroad (Meitetsu), Meitetsu buses, etc. Passengers will receive discounts when they transit between city subway and city bus, or purchase a combined-season ticket for both city subway and city bus. Also, under same conditions with city subways and buses, passengers with Nagoya City's senior pass or welfare pass can use those passes on the Aonami Line.

Safety approach

Each train facilitates automatic train stop (ATS), centralized traffic control (CTC), and emergency brake (EB) to stop the train when any accident occurs. Also, ATS is located at the end of each stations for overrun prevention.

Each train facilitates Train Automatic Stopping Controller (TASC) so the train can stop at exact place in station. Also, a train image transmission device to check passenger movements at the station is installed to open and close doors safely for a driver-only operation.

A train radio is used for communications between a driver and an operation control centre at the time of unusual circumstances. When a driver needs stop the train for emergency, the driver will push a button and immediately notify other train drivers running near.

Environmental approach

For soundproofing prevention, soundproofing walls are placed at elevated sections and long rails with fewer seams are used.

The rolling stock adopts the electric power resurrection brake, which energy at the brake may be converted into the electric power energy, return to the overhead wiring, and other trains may accelerate energy.

Conclusion

After 2 years since the Aonami Line opened, there were neither a big accident nor a trouble. The line is gradually established as the transportation of local residents, and 24,000 passengers use the line a day in average.

However, changes in a social economic situation caused the development delay around the region and the prolongment of the development project, and the number of the Aonami Line's passengers are 1/3 of the expectations.

We have tried to cut expenses by cutting initial investment from the construction phase, and have promoted the line through PR campaign. However, the business environment is still very severe. At this point, we are working under the 5-Year Plan of Aonami Line Management Improvement.

We will continue to offer safe train services with business efforts and management rationalization and to encourage trackside development to increase passengers.

Table 4 Operations

Operation method	Driver only
Train set configuration	4 × 8

Table 5 Headway

During rush hours (7 am–9 am, 5 pm–9 pm)	10 minutes
Daytime (9 am–5 pm)	15 minutes



Platform confirmation monitor
(Nagoya Seaside Rapid Railway)