

Utilization of Modern Cultural Properties



Chapter 3

Meiji tunnels discovered by coincidentally
-Regeneration and a blueprint for the future created by citizen-

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1. Introduction

In 2006, in Kasugai City, which is a city of 300,000 people adjacent to the northeast of Nagoya City, Aichi Prefecture, roughly in the center of the Japanese archipelago, abandoned railway lines and tunnels from a former Japanese National Railways (JNR) era, which had even been forgotten by its own citizens, were suddenly discovered. The discovery site was located in the middle of the mountainside in a deep V-shaped valley that borders Kasugai City and neighboring Tajimi City in Gifu Prefecture. Hidden by dense trees and bushes that grew after the discontinuation of the railway line, and blocked by the massif in the background and the Shonai River, which is a first-class river that flows beneath, it was an almost perfect place for stopping any human intrusion, as nobody could reach it. Therefore, for 40 years, it luckily (?) lay dormant without being seen by

people. In this report, I would like to introduce to everyone the preservation and utilization of the tunnels that were discovered by chance.

2. Aigi Tunnel

2-1. Overview

The Aigi Tunnel Group (**Fig. 1**), which straddles Kasugai City in Aichi Prefecture and Tajimi City in Gifu Prefecture, is a group of 13 abandoned tunnels (14 at the time of tunnel construction) located between Jokoji and Tajimi Stations on the Chuo Main Line, and it was used for over half a century since the opening of the section between Nagoya and Tajimi Stations on the JNR Chuo Line in 1900. After the Chuo Main Line was opened, timber such as Tono cypress, high-quality pottery clay, and pottery were transported to Nagoya via this railway line. Wood was exported to automobile

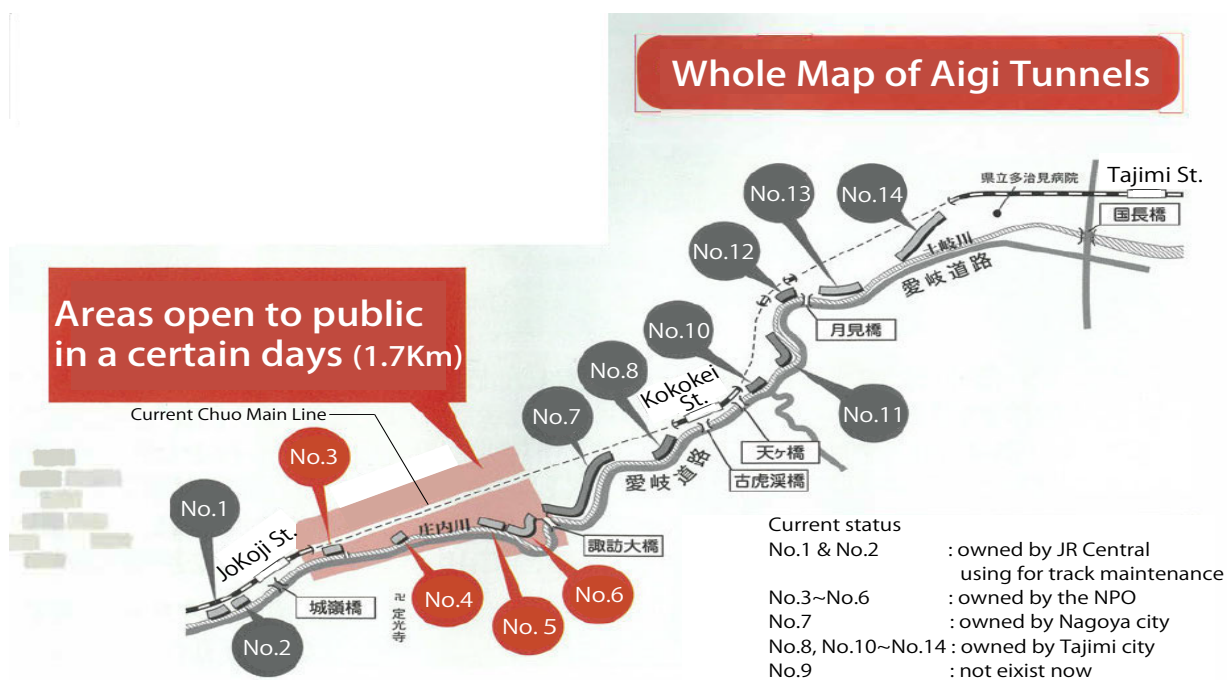


Figure 1 Whole map of Aigi tunnels (prefectural border is between No.6 and No7)

manufacturers (e.g., Nippon Sharyo) and automatic loops (e.g., Toyota Industries), and pottery clay was exported overseas as Japan china, the representative example of which was Noritake. Thus, this railway line is said to have played a major role as a material supply source for creating the prototype of “Monozukuri Chubu” (“manufacturing center”). Following electrification and double-line development in the post-war period, new routes were opened with a long tunnel, and the railway service ended in 1966, ending the role of the 8-km track bed and group of 13 tunnels between Jokoji Temple and Tajimi Stations. After the end of this service, the area was completely untouched by human hands, and until recently, it was buried in thick bushes. **(Photo 1)**

2-2. Historical background

When constructing the railway section between Nagoya and Tajimi Stations on the JNR Chuo Line, which includes the Aigi Tunnel Group, the Ministry of Railways chose a route to dig 13 tunnels along the Shonai River valley. In 1896, construction work on the tunnel began. The Annual Report of the Ministry of Communications stated that “the geology is extremely rigid, and

construction is easily progressing,” and completing all tunnels was estimated to take almost two years. However, in April 1897, heavy rain caused Tunnel No. 6 to collapse, followed by Tunnel No. 5 in November 1897, leading to a tragic accident where workers were buried alive. In response to such collapse accidents and fragile ground conditions, designs were changed multiple times. However, the construction of Tunnel No. 6 continued to be difficult, and in the same year, construction of the tunnel was conducted using a square winding structure, which was rare in Japan in order to prevent collapse, with a “structure where the earth and sand from the upper part of the mountain is cut off, an embankment is built at the lower part, and a square winding tunnel is built in the embankment.” Furthermore, in June 1899, cracks appeared in the tunnel due to the uneven pressure of the earth and sand caused by rainfall, so construction work involved making the ceiling and side walls of the tunnel even thicker and implementing an invert structure. Such difficult construction work was conducted for its completion, and as a result, Aigi Tunnel may be the only one of its kind where an invert structure is currently visible locally. **(Fig. 2 and Photo 2)**

As a result of the above, the construction work was

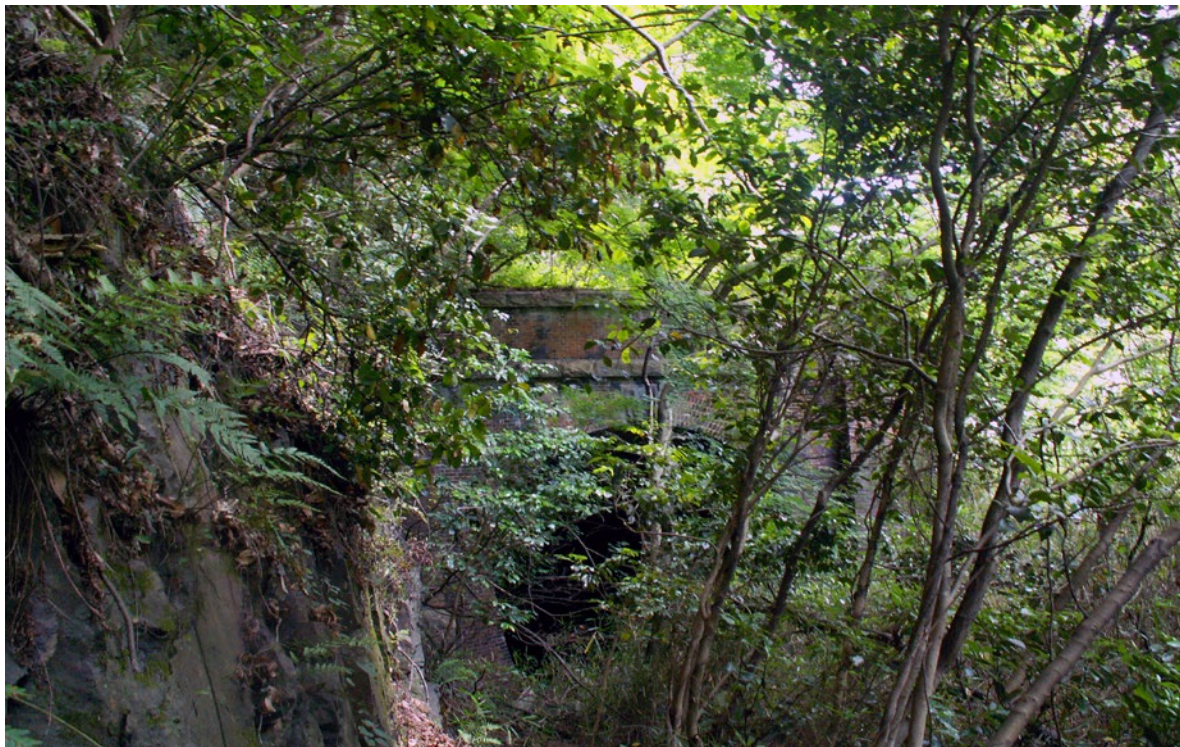


Photo 1 No.3 tunnel at the time of discovery

twice as difficult as planned, and its construction was completed on May 31, 1900, only two months before the scheduled opening of the Chuo Line on July 25, 1900.

As previously mentioned, after the end of the railway service and the discontinuation of the railway line in 1966, the existing 13 tunnels and the 8-km track bed that had been owned by JNR were privatized and transferred to the Japan National Railways Settlement Corporation (JNRSC). The railway tracks from Nos. 3–6 (approximately 13 ha) on the Aichi Prefecture side, excluding Nos. 1 and 2, were transferred to a medium-sized general contractor in Nagoya City via a major construction consultancy. Meanwhile, the track bed Nos. 7–14 on the Gifu Prefecture side were transferred to the local Tajimi City as is. Afterwards, in 1978, Nagoya City acquired Tunnel No. 7 and its surrounding land along with the construction of the final waste disposal site. Therefore, there was a mix of landowners of the abandoned approximately 8-km railway line such as JR Tokai, Aigi Tunnel Group Preservation and Restoration Committee, Nagoya City, and Tajimi City; and unified intentions for future utilization or re-use is likely to be an issue.



Figure 2 Many experts cooperated in the Invert investigation



Photo 2 Invert excavation scene

3. Efforts toward preservation

3-1. From the faint memories of elders

In 2006, when the JR Kachigawa Station building in Kasugai City was being renovated, removal of the Meiji-era disused brick platform was initiated, and citizens began efforts to preserve the brick platform (**Photo 3**). At that time, a local elder blurted out “Maybe the brick tunnel remains?”, and based on those words, a search for the tunnel was initiated, and half a year later, the remains of a tunnel that lay dormant in the mountains were discovered. In 2007, the Former JNR Tunnel Group Preservation and Restoration Committee was established by citizen volunteers. In 2009, they acquired legal status and re-organized as the NPO Aigi Tunnel Group Preservation and Restoration Committee (henceforth, “Committee”), where the citizens’ group has been responsible for preservation activities to the present day.

3-2. Debut to national district

In 2009, Tunnel Nos. 3–6 on the Aichi Prefecture side, along with nine railway-related heritages nationwide, such as the Former Ousakayama Tunnel in Otsu City, Shiga Prefecture, and the Usuitōge Tunnel Group in Annaka City, Gunma Prefecture, were certified as part of the “33 Heritages of Industrial Modernization (Continued)” as the “Group of Heritages of Industrial Modernization that tells the story of the tunnel construction that overcame mountains and straits and contributed to the formation of the national railway network.” In

2016, Tunnel Nos. 3 and 4 (Tamano Tunnel Nos. 3 and 4) and Kasaishi-hora Culvert were selected as National Registered Tangible Cultural Properties (Buildings) by the Agency for Cultural Affairs, with official registration in November of the same year.

The “railway tunnel” is a legacy of the technology of our predecessors who contributed to the industrial development of Japan through the formation of the national railway network, while also being a Heritage of Modernization that has little connection with the daily lives of citizens. Furthermore, in the case of the Aigi Tunnel Group, this had a historical background of being abandoned in the mountains for nearly half a century and forgotten by local residents until it was excavated by citizens, but its historical value was established following an assessment by the Japanese government.

3-3. Largest number of bricks used in Japan

Digressing a bit here, I would like to discuss the number of bricks used.

After four years of difficult construction work, all 14 tunnels of the Aigi Tunnel Group were completed in 1900. Table 3 shows the number of bricks in constructing the group of tunnels. Incidentally, as is well-known, when ranking the number of bricks used in buildings, the highest count is Tokyo Station, with approximately eight million bricks, followed by the Osaka City Central Public Hall with three million bricks, and the Hokkaido Government Office with 2.5 million bricks (excluding warehouses, among others). In that case, where is the



Photo 3 Newspaper article about brick removal

“most impressive” brick building in Japan? Something where, no matter how gorgeous the building is, the building has a presence that keeps everything else away, and whose status is solidly assured. My belief is that this title goes to the Hiroshima Peace Memorial, which bears the negative history of early-modern Japan, or rather, the world, and whose presence is deeply imprinted in our hearts.

Meanwhile, the structure with the largest number of bricks is Usuitōge Tunnel, which is the first railway tunnel in Japan to be nationally designated as a Important Cultural Property and is a representative of the railway world, with 15 million bricks; followed by the Lake Biwa Canal, which is a water supply facility that runs from Otsu City, Shiga Prefecture, to Nanzenji Temple in Kyoto, with 14.5 million bricks. These are the top-ranking structures that use the largest number of bricks in Japan. However, what about the recently discovered and utilized Aigi Tunnel Group? Results of research by the members showed that, according to the Meiji Chuo Line construction summary found in the National Diet Library, 18 million bricks were actually used. (Fig. 3) Unfortunately, this is a new facility where it has only been 16 years since its discovery, and although it has hardly any name recognition nationwide, “the numbers speak for themselves.” Over time, when this group of facilities becomes more well-known, I hope the day will come when this number, which is the highest in Japan, will shine.

Furthermore, numerous bricks are present around the group of tunnels that were no longer deemed necessary and dumped due to collapses during construction. The Committee collected them, and proceeded with surveys to identify the manufacturer by searching for the original address of the brick stamp. It became clear that a considerable number of bricks for construction were transported from the neighboring Tajimi area, as well as Nagoya, Mikawa, Yokkaichi, Ogaki, and even from the Osaka area (Fig. 3).

3-4. National trust

The Committee initially operated with permission from the general contractor to obtain entry permission for surveys, but as more surveys were conducted, the

Committee recognized that this was a valuable heritage of the region that should be kept, and learning from the citizen fundraising campaigns for nature conservation in the United Kingdom, in 2009, the Committee launched a “National Trust movement” with the aim of acquiring land for the first time in Aichi Prefecture. In the present day, the concept of crowdfunding has begun to be established, but at the time, the purchasing of land by citizens’ donations for the purpose of preserving civil engineering structures was reported as a rare and unique case in Japan by newspapers and on television.

Five years later, a total of 11,143 citizens raised approximately 15 million yen in funds, which led to the acquisition of the former JNR Chuo railway line, including four tunnels (Tunnel Nos. 3–6) on the Aichi Prefecture side in June 2014.

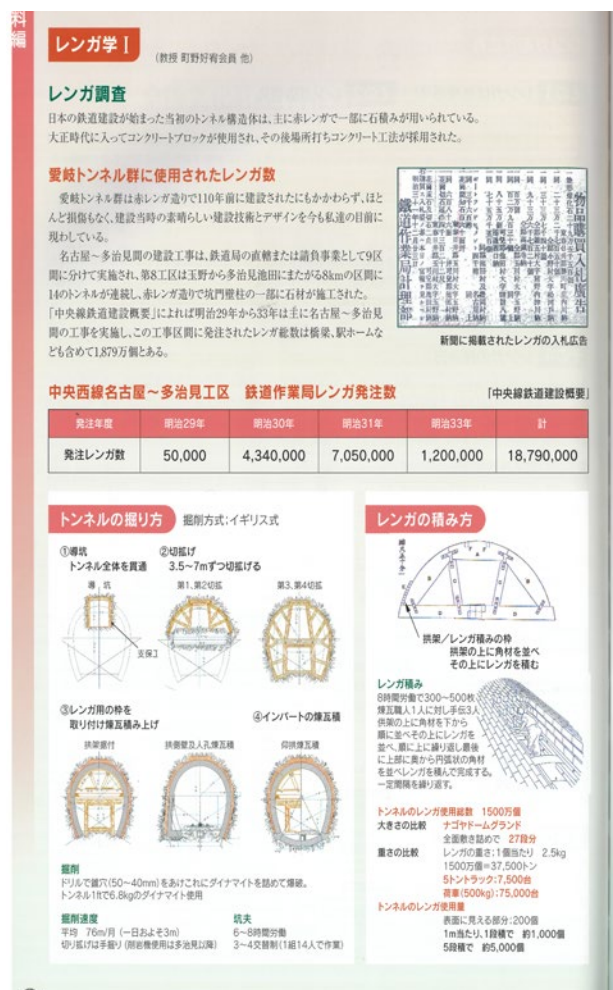


Figure 3 Number of bricks used in Aigi Tunnels

3-5. Start of preservation activities

The 1.7-km abandoned railway line between Tunnel Nos. 3–6 on the Aichi Prefecture side, which had become the Committee's private property in this way, is normally set as off-limits using steel gates. At the time of its discovery, the abandoned railway line between Tunnel Nos. 3–6 was open to the general public for one day under the name of a "Pioneering Site Tour," but owing to the massive influx of aspiring visitors, it has since been opened to the general public for a total of about two weeks each spring and fall as "Special Openings to the Public" (**Photos 4 and 5**).

The first turning point was encountered at the beginning of activities in 2006. Is it possible for citizens alone to protect such a large group of public facilities, especially one that is so widespread? When conducting surveys of the status of utilization of abandoned railway lines nationwide, most local governments were involved in some form of preservation. However, there were also scattered cases where "money would be given, as well as an opinion." In fact, when looking at other cases of conservation of abandoned railway lines, there were many cases where natural features on abandoned railway lines were completely cut down and covered with asphalt pavement in order not to incur a large amount of expenses for year-round maintenance and management of the abandoned railways, such as weeding. The above tendency was particularly strongly observed in cases where local governments managed and maintained the railway lines, and there were a considerable number of cases where the railway lines were transformed into simple forms for maintenance purposes. For example, a zelkova forest that had been revived on the site of a local abandoned railway line in a region of Nagano Prefecture was clear-cut in the name of regeneration, and the site reverted to an unremarkable linear abandoned railway track. Using such cases as lessons, the Committee chose to cut off contact with governments as much as possible from the outset of development. Preserving the tree flora that had revived on the discontinued railway line was given top priority, so the abandoned railway line, which was born with a winding figure that avoids the trees that grow on the abandoned track, was transformed into a nature trail rather than an

abandoned railway line, taking a route that prioritizes the citizens' perspectives, kindness, and attention to detail.

At the root of this effort was the realization from a member's comment that "a tree can be cut down at any time, but restoring a tree that has been cut down takes decades of time and effort." In the half century after the end of service, this abandoned railway line has witnessed the revival of many trees and flowers, with nearly 50-year old trees thriving on the track bed, and over 600 trees across 50 species growing on the entire abandoned line, and it has the appearance of a nature zone, with the discovery of endangered flowering plants listed on the Regional Red List. In particular, nearly 300 maple trees grow wild on and around the abandoned railway line, and during the spring and fall public openings, people have come to enjoy the spring maple and autumn foliage by strolling around the abandoned railway line. Despite the railway site, railway fans are not conspicuous, and most visitors are citizens who came to enjoy the nature, so this seems to be playing a very important role in the sense of connecting the historical heritage of the tunnel with ordinary citizens. (**Photo 6**)

Creating the rule of "not eradicating the natural fauna and flora that has been revived due to over 40 years of neglect," the Committee has made efforts to prioritize nature conservation.

The result is a notable phenomenon in which the 300 maple trees that grow wild on the abandoned railway line are becoming a famous spot for viewing the autumn foliage. Though in hindsight, these nature conservation efforts are also linked to the opinion of visitors who come seeking natural beauty.

4. Other aspects of preservation and utilization of Aigi Tunnel Group

4-1. Preservation and utilization efforts

As of 2022, the Committee, which is a civic organization, has approximately 70 active members. The average age is over 70 years, and with participating residents from nearby areas such as Kasugai City, Tajimi City, Komaki City, Seto City, and Nagoya City.

Preservation activities began with the excavation of overgrown bushes on the abandoned railway track,



Photo 4 100 carp dancing in the wind every year during the special public exhibition in spring



Photo5 The special public exhibition in autumn is becoming popular as a hidden spot for autumn leaves

and over a period of about one year, the Committee developed the 1.7-km abandoned railway track between Tunnel Nos. 3–6 on the Aichi Prefecture side such that people could walk through it. Many innovations were made to ensure that visitors can enjoy themselves on the promenade that was developed through the above

efforts. As mentioned above, while cutting and thinning the bushes on the surrounding mountain surface to protect the endangered flower species with the aim of creating a scenery where visitors could feel the surrounding nature and feel the seasons, the Committee members discovered a colony of maple trees on the ground



Photo 6 Autumn leaves on abandoned railroad tracks



Photo 7 Autumn leaves growing in clusters on the ground above tunnel no.6

surface of Tunnel No. 6. When developing a 300-m circuit around this colony of maple trees and naming it “Momijiyama” (“Maple Tree Mountain”), it was well received by many people, including photographers, due

to the denseness of the colony. (Photo 7) Moreover, we planted thoroughwort plants, which are a favorite food of the Chestnut Tiger Butterfly, which flies across long distances, and by doing so, visitors could now see these

butterflies fluttering wildly in the area. Furthermore, we prepared activities so that not only adults but families with children could enjoy, such as a massive swing measuring over 8 m called a Tarzan Swing that uses the surrounding trees (Photo 8), and preparing the thickets along the river as a thicket maze. Interestingly, we developed the area around a 30-m rocky outcrop found on the side of a mountain on the side of the abandoned railway line, and we placed shimenawa rope around it as the “God of the Mountain of the Tongari-Iwa,” striving to make the most of what is locally available.

Furthermore, in parallel with such field work, we actively conducted public awareness activities for raising awareness, such as setting up panel exhibitions and lectures mainly in Kasugai City and Tajimi City (Photos 9 and 10), and we have also strived to accumulate know-how and knowledge regarding preservation and utilization, such as visiting facilities that utilized abandoned railway lines in various places, such as the Usuitōge Tunnel Group in Gunma Prefecture and the abandoned railway track of the former Fukuchiyama Line in Hyogo Prefecture. (Photo 11)

4-2. Utilization examples

In 2009, the driving wheel of a C57 steam locomotive was presented as a monument by the local Lions Club, and it was installed near the Tajimi side entrance of Tunnel No. 5. Based on the opinion of the members that simple static preservation was not interesting, we built a mechanism that allowed the driving wheels to be turned manually. The wheels of the C57 locomotive rotate slowly when visitors pedal a bicycle installed next to the driving wheel, and we have a hard time managing the children who line up when the park is opened to the public. The Committee announced that it was the first human-powered dynamic preservation of driving wheels in Japan. (Photo 12)

Events that were held using the characteristics of the tunnels are as follows:

In 2009, we held a Solar Eclipse Observation Party (Photo 13), where visitors can enjoy a solar eclipse by projecting the sun’s light onto a screen in the tunnel; in 2013, we held a contemporary art exhibition entitled Aigi Tunnel Group Art Project 2013: Light of the Wil-



Photo 8 Tarzan Swing is popular with children



Photo 9 Exhibiting at railway fairs



Photo 10 Exhibited at Tajimi Pottery Festival



Photo 11 Abandoned Railway Tunnel Summit



Photo 12 Driving C57 driving wheels



Photo 13 Viewing the annular solar eclipse from inside the tunnel

derness, where we used sound and light performances in the darkness of the tunnels and abandoned railway lines (**Photo 14**); and in 2019, we held a Explosive Classical Concert, presided by Reiko Yuyama, which toured four tunnels and played classical music of different genres, with the S seats (7,500 yen) immediately selling out (**Photo 15**).

We also promoted the utilization of the “characteristics” of the tunnel in addition to the charm of natural beauty, such as opening beer halls from the summer of 2018 by utilizing the temperature difference between that in the tunnel, which is about 10 ° lower than the ground below (**Photo 16**).



Photo 14 Art event flyer “Hikari in the wilderness”



Photo 15 Explosive classical concert



Photo 16 Forest beer hall

4-3. Many obstacles along the way

Though the Committee is proposing utilization through such revitalization, they have simultaneously announced a permanent revitalization vision for the original abandoned railway line. This is the “footpath concept” that uses the abandoned railway track of the former Chuo Line, which exists along the current JR Chuo Main Line between Jokoji Station and Kokokei Station (Fig. 4).

The plan is to form a course of approximately 3.5 km in total length that includes not only Tunnel Nos. 3–6, which are owned by the Committee and are specially open to the public, but also Tunnel Nos. 7 and 8, and enable people to walk through the abandoned nature trail without having to take the train from Jokoji Station to the next Kokokei Station. However, many issues need to be resolved, such as coordinating with the local governments that own Tunnel Nos. 7 and 8, and protecting the bats living in Tunnel No. 7.

Meanwhile, there are many more problems behind these preservation activities. For example, multiple temporary toilets were installed in the premises of the group of tunnels owned by the Committee in preparation for the large number of visitors and for use during events. These are simple mobile toilets that are used during civil engineering work, but these are in an environment that are far removed from human settlements, where there are no lifelines for electricity and water, and is inaccessible for heavy machinery, so vacuuming up the human waste in the tanks or arranging sewage treatment equipment is not possible. Therefore, we are forced to use a soil infiltration (dripping) method, where the waste is treated on site. We are researching all types of options such as a biological type and a simple water-washing type, but under the current circumstances of short-term intensive visits of approximately two weeks in a year, we unfortunately are forced to use dripping style toilets, which is a disappointing develop-

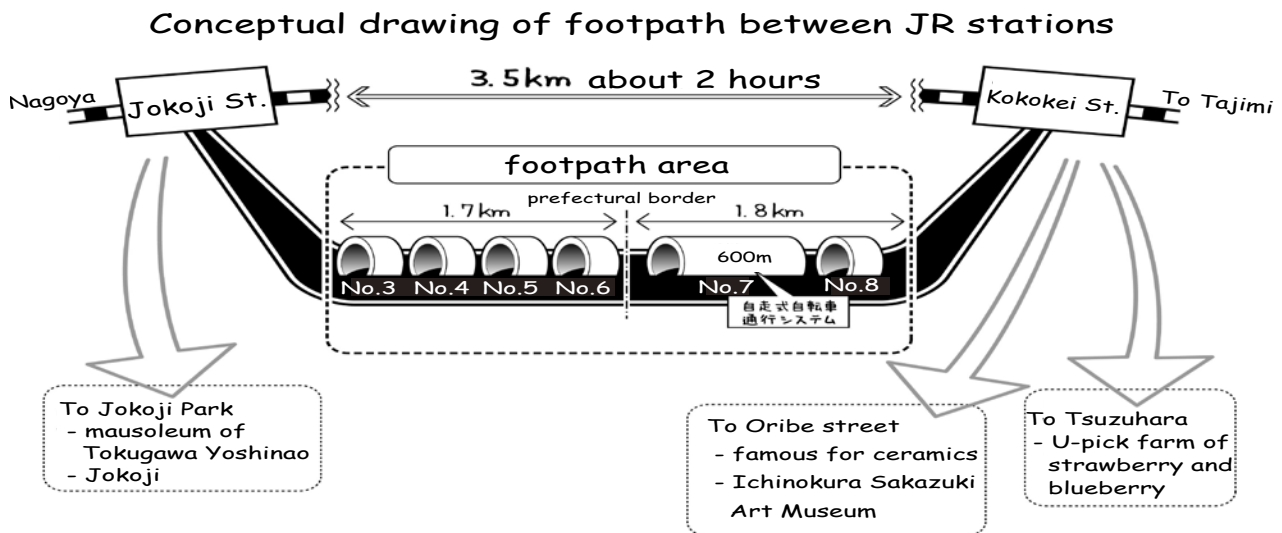


Figure 4 Footpass concept diagram

ment for us as we strive to make the site a tourist destination.

4-4. "Value" movement

Since its special opening to the public from 2008, the Aigi Tunnel Group has attracted people from all over the country. It subsequently was "valued by the national government" in the form of designation by the Ministry of Economy, Trade and Industry and the Agency for Cultural Affairs led to a re-assessment by the citizens of Kasugai City and others of the site as a phenomenon of re-importing from external parties and even from the national government. While the valuing of these tunnels themselves continues, visitors to the tunnels are also valuing the rich flora and fauna and scenic valley views that have been revived on the discontinued railway line. (Fig. 5) The Tamano area of Kasugai City, where the Aigi Tunnel Group is located, has always been popular as a health resort where visitors can enjoy cherry blossoms and autumn foliage along with the valley scenery, and in the pre-war period, was an area that was bustling with tourists, mainly Nagoya citizens, as "Nagoya's inner parlor." In the Questionnaire Survey for Tourism Resources conducted by the Chubu University Research Institute for Industry and Economics in 2011, 71% of respondents highly rated the fact that "the old tunnels exist together," followed by 60% of respondents highly

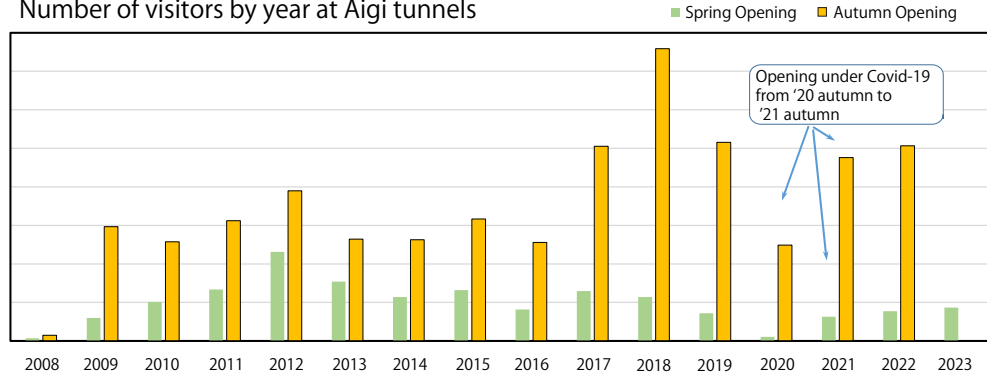
rating the "scenery of the flowers and trees around the promenade." As natural beauty has been added to the railway site in this manner, the perspectives of the fans have considerably expanded, and I think that we have succeeded in attracting a wide range of visitors who are not just limited to railway and abandoned railway line enthusiasts. (Fig. 6)

Meanwhile, though "cultural valuation" has been promoted, there has been hardly any activity regarding "economic valuation." The Aigi Tunnel Group was originally discovered with the intent of utilizing it as a resource for urban development, but the reluctance of Kasugai City to implement tourism measures became a major obstacle, and creating an initiative that would lead to the revitalization of the entire city was not possible.

However, following its transfer to the Kasugai City Chamber of Commerce and Industry in 2014, the tourist association began to collaborate with the Committee, and finally, with the theme of "aiming for the industrialization of tourism, and how to connect tunnel visitors to the economic effect of the city," the two organizations began to make efforts to connect their activities to economic valuation, such as mobilizing related organizations during the public period to locally sell food and drinking water.

With these efforts, the Aigi Tunnel Group is seeing

Number of visitors by year at Aigi tunnels



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of visitors in spring opening	350	2,993	5,059	6,683	11,559	7,703	5,718	6,596	4,101	6,467	5,701	3,596	526	3,154	3,868	4,337
Number of visitors in autumn opening	730	14,838	12,873	15,591	19,483	13,221	13,135	15,830	12,794	25,263	37,931	25,776	12,440	23,795	25,332	
Total number of visitors	1,080	17,831	17,932	22,274	31,042	20,924	18,853	22,426	16,895	31,730	43,632	29,372	12,966	26,949	29,200	4,337
Cumulative number of visitors	1,080	18,911	36,843	59,117	90,159	111,083	129,936	152,362	169,257	200,987	244,619	273,991	286,957	313,906	343,106	347,443

Figure 5 Number of visitors (cumulative total of over 340,000people)

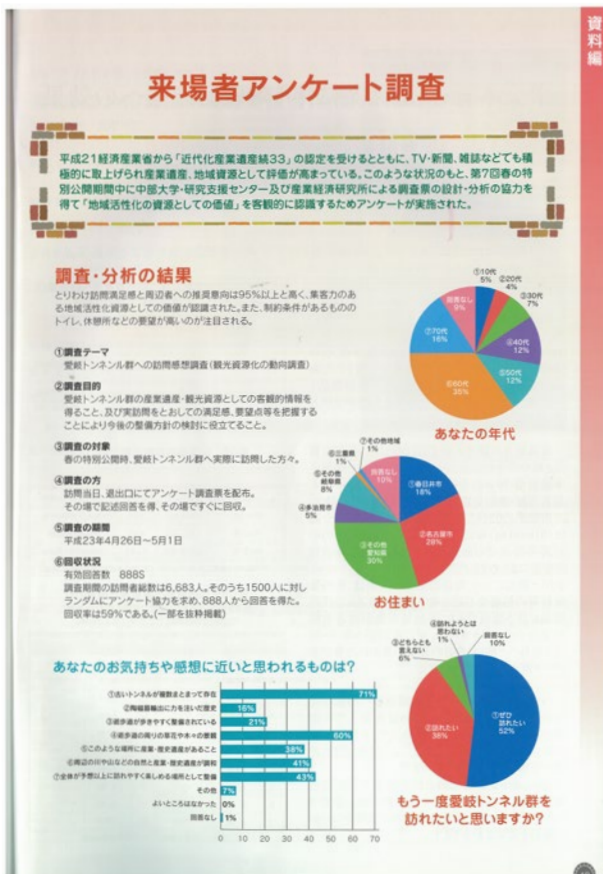


Figure 6 Survey results

an increased number of visitors each year, and its name recognition is steadily increasing, but when reflecting on the current situation where special exhibitions and various events are held on a dozen or so days a year, it is precisely this “limitation” that enables it to attract a certain number of visitors. Therefore, if the footpath concept is completed in the future, and the promenade that runs through the tunnels is made open to the public at all times, it is doubtful whether it will become a base for tourism in neighboring areas such as Kasugai City and Tajimi City. Therefore, a future task is not only for the private sector but also the government and academia to devise methods for developing a major base for regional tourism and making it even more attractive for visitors.

5. Conclusion

In addition to the nature of the “tunnel” itself, which has little direct relation with the activities of citizens, and the historical background of its existence being forgotten by local residents for a long period of time, government reluctance to utilize the site was a major obstacle to external expansion. However, a proponent of the Aigi Tunnel Group was elected in the local mayoral election last spring. Nurturing the Aigi Tunnel Group as a resource for city revitalization in the future will likely

require using this as an opportunity to fully explain the significance of preservation and utilization of this site to the government and local residents, and to pass it down to future generations with a better understanding of its utilization. In the future, if we can obtain the understanding and cooperation of administrative authorities, then we would like to propose the implementation of “field lectures” to elementary and junior high schools in the city. We aim to establish an emerging identity by nurturing and maturing a sense of pride in the area where the students live by sharing a recognition of value among children who will be responsible for its future.

If we could continue these field lectures for 10 years, then the Aigi Tunnel Group will live on as a form of “civic pride” in the hearts of all young people in a city of 300,000 people.

What an exhilarating prospect!

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