

FROM HISTORY TO DECAY: CONDITION SURVEY OF FACADES ON KARET STREET, SURABAYA

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Received: August 2025; Accepted: October 2025; Published: November 2025

ABSTRACT

Karet street corridor is one of the historical street corridors in Surabaya that picture the blend character of Colonial and Chinese architecture. These unique characteristics started to decrease and even vanish in some buildings in the street, through the development of Surabaya. This research aims to map the existing condition of the facade and outlining possible conservation strategies by using field observation with qualitative analysis. All the sixty two buildings alongside the street corridor will be grouped into four condition levels: excellent, good, fair, and poor that were based on integrity of the facade, the suitability of materials, and the quality of surface finishes. The result showed that in areas with low activity, the damage is more commonly found than one in busy commercial zones. It also revealed that a combination of deterioration pattern and user behaviour affect the conservation strategies that could be applied in these buildings. This study recommends a zoning-based conservation in response to the deterioration of the facade, including full restoration, maintenance for good and fair condition, and preventive action for well preserved buildings. Overall, this research recommends preservation alternatives to maintain the authenticity and cultural significance of Karet street for years to come.

Keywords: deterioration of facade; heritage street corridor; site survey; conservation strategy

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INTRODUCTION

Ever since the 16th century, Surabaya has emerged as one of the biggest port cities in the Dutch East Indies, or Indonesia (Gunawan et al., 2021). The basis of urban development areas were developed alongside the Kalimas River, and transformed into a commercial hub. The river enabled water transportation to inland regions with ports, connecting the commercial areas with the settlements for diverse ethnicities, such as Dutch, Chinese, and Arab communities (Handinoto & Hartono, 2007; Adi, 2019). The change in transportation mode has led to a decline in the use of the river as a trade path. Furthermore, this condition has caused significant urban deterioration in nearby areas (Puspita & Dharmatanna, 2024). This condition sets the urgency for examining how modifications along the Kalimas corridor, particularly on Karet street (Figure 1), have impacted the state of historic building exteriors.

While Kalimas was still used as an active waterways for commercial activities, Karet street emerged as a key road in the trade infrastructure and ethnic residential landscape, especially during the colonial period (Harto & Pandia, 2021). This street, which extends through Surabaya, contains multiple historical structures (Figure 2). Previously designated as Chinesvoorstraat due to its Chinese inhabitants (D Andrian et al., 2021). Karet street features historic buildings that represent the cultural synthesis and socio-economic conditions of their era. These building facades are instrumental in establishing the area's visual identity (Farisa et al., 2024). However, shifts in transportation modes have eliminated water transport as a primary means of movement. (Agustianti & Dharmatanna, 2025).



Figure 1. Roadmap of Karet Street
(Source: Leiden University, 2025)



Figure 2. Karet Street in Old Days
(Source: Leiden University, 2025)

With the change of transportation routes in Surabaya city, the Kalimas River has gradually shifted from its function as a trade route to a tourist attraction (Puspita & Dharmatanna, 2024). The buildings along Kalimas especially Karet street became unkempt and abandoned. Surabaya's Karet street map corridor is supposed to be a Chinatown place for several important historical and cultural buildings, along with the rapid growth of the community, the once bustling Karet street has now begun to deteriorate, disappear, and even be replaced by new buildings with different functions. The shift in the function of the building from being a residential area to changing functions such as warehouses, places of worship, offices, and residential with changes in building facades that are not in harmony with the characteristics of Chinese architectural facades (D Andrian et al., 2021). Facade changes can occur due to a variety of factors, including age, chemicals, humidity, weather, changes in building function, and lack of maintenance (Yacub & Salleh, 2025).

Karet street, a historic street corridor in Surabaya, displays distinctive Colonial and Chinese architectural characteristics (Meigayani, 2018), that defines its cultural significance and historical importance. In heritage conservation practice, facades represent visual expressions of authenticity and shared memory; their decay typically reflects declining sustainability of urban heritage resources (Sudikno, 2016; Mansouri et al., 2023). The decay includes flaking paint, the disappearance of various facade components, as well as the lack of public awareness regarding the preservation efforts.

The effectiveness of conservation relies on utilizing suitable materials and building techniques to preserve the integrity of the structure, which can be described as the principle of minimal intervention (Mutia, 2017). Frequent urban changes can hinder the preservation process due to alterations in building usage and difficulties in upkeep, particularly when economic activities move away from the corridor region (Mansouri et al., 2023;Yacub & Salleh, 2025). Changes in transportation route also affect the facade of the building along the Kalimas river, as found in the previous research (Agustianti & Dharmatanna, 2025). Consequently, a thorough comprehension of the architectural facade design on Karet Road is essential to record and evaluate the existing damage. This study will picture the real condition of the heritage buildings alongside the Karet street, evaluate the issues in the building facade, and offer recommendations for the preservation of building exteriors, aiming to gain a deeper insight into heritage deterioration in Surabaya's historic center.

METHODS

This research uses a descriptive qualitative approach, combined with site survey to picture the visual conditions as a data, to assess the condition of building facade along the Karet street. This approach aligns with the aim of the research, which is to document the current condition of the heritage buildings, to analyze the deterioration patterns and recommend conservation priorities for the buildings, instead of testing certain hypotheses nor proving correlations using statistics (Groat & Wang, 2013). The data from the field observation are then analysed by comparing with the literature found in the literature review. The literature review on Karet street focused on identifying similar studies and collecting theoretical studies. A series of field investigations were carried out to record and assess the state of the building exteriors along this corridor.

As the Karet street has nearly 375 meters in length, the field observations were

divided into nine segments. The evaluation of every segment was carried out considering the facade's condition, the level of upkeep, and modifications to architectural features over the years. The Karet street map as seen in Image 3 offered direction for evaluating each section by designating alleyways and smaller road openings. The facade of sixty two buildings were documented and analyzed to map the existing condition of the Karet street corridor. This field assessment divided these buildings into segments for more detailed observations, to obtain a more organized overview of the specific characteristics. This process used a four-level scoring system, placing each facade into groups: excellent, good, fair or poor, to keep the consistency of the observations.

The four categories from previous research were reused in this study to assess the building facades along Karet Street (Mutia,2017). The assessment focused on three main points, namely: (1) structural integrity, (2) material appropriateness, and (3) paint condition in the walls and frames, and became the main emphasis of the assessment. These three aspects help indicate how much of the original architectural character has survived and how well the buildings have been maintained over time. This approach is widely applied in studies of historical buildings, because it offers a consistent way to read their physical state within their specific context. The classification of each building's condition is shown in Table 1.

After collecting facade condition data, the analysis aims to classify each building into four maintenance categories, calculate the percentage distribution across the entire corridor, and identify spatial patterns of deterioration among different segments (zones). The results are then presented through tables and graphs to visually illustrate trends in facade conditions, which subsequently inform the identification of priority zones and support the development of conservation and revitalization strategies.



Figure 3. Karet Street Roadmap Over Time
(Source : Author, 2025)

Table 1. The Heritage Building Condition

	Well	Reasonably Well	Poor	No Maintenance
Structural Integrity	75% - 100%	50% - 74%	25% - 49%	0% - 24%
Material	Well-preserved	There were some new materials with good quality that blends seamlessly into the original building's material	New materials that replaced the original one does not blend well with the overall building facade	The building has lost its elements, whether they are disrepair, vanished or destroyed
Paint	Vivid wall paint, seems as always maintained	Fading dan dull wall paint, yet still in good condition	Peeled dull paints were found both in walls and frames, with moldy condition	Moldy, unpainted and dull wall and frame surface

(Source : Author, 2025)

RESULT AND DISCUSSION

Since the Dutch East Indies, seen on the Karet street map in 1787 (Figure 4), there has been a settlement or association building along the street, where it became one of the founding places of Chinatown (Purwono, 2023). The intersection between the Karet and Kembang Jepun street began to increase on its own starting 1821, until 1923 the Karet street had begun to be filled by dwellings (Figure 4).

Along the Karet Street itself there are 2 types of architectural styles, namely colonial architecture and Chinese architecture (Meigayani, 2018). The colonial style is visible through the use of gables on the front of the building, the presence of towers as landmarks, and dormers as roof ventilation elements. Most of the buildings use exposed brick, wood, and tile roofing materials and feature symmetrical facades with large openings (Handinoto, 2008). Meanwhile, the influence of Chinese architecture is reflected in the shape of curved roofs, red ornaments, and the presence of ash houses and prayer houses (Sudikno, 2016).

Table 2 shows the overall facade along the Karet street, where each segment has several facades in varying conditions. The data in Table 2 will then be grouped according to the condition of the facade, namely poor, fair, good, and excellent as seen in Table 3.



Figure 4. Karet Street Roadmap OverTime
(Source: Author, 2025)

Table 2. Level of Maintainability of Building Facades on Karet street

Segment	No	Building Façade	Description	Building Integrity	Maintainability Level
A	A1		- Building elements: Many elements are no longer exist or been replaced - Building surface: Paint is very faded, moldy, dirty, and full of patches	20 %	Poor
	A2		- Building elements: Openings are closed, ornaments no longer visible. - Building surface: wall paint looks dull and dirty	20 %	Poor
	A3		- Building elements: Openings are closed, and building ornaments are A3 no longer visible. - Building surface: The wall paint appears faded and dirty	65 %	Good
	A4		- Building elements: There are banners covering the façade - Building surface: Dull and slightly moldy paint	40 %	Fair
	A5		- Building elements: The building components are still in great shape and the addition of a matching canopy - Building surface: Wall surfaces look rough and poorly maintained.	60 %	Good
	A6		- Building elements: Material is badly damaged and its shape is lost. - Building surface: Peeling paint, dirty, poorly, maintained	15 %	Poor
B	B1		- Building elements: elements of the facade are overlaid - Building surface: The paint on the building is chipping	60 %	Good
	B2		- Building elements: The openings are pristine - Building surface: Some of the paint is starting to fade	70 %	Good
C	C1		- Building elements: Windows and opening are still neat and functional, the façade is quite symmetrical - Building surface: The paint is new and bright in color, but there are some dirty parts	80 %	Excellent
	C2		- Building elements: Symmetrical glass window openings - Building surface: There are some parts of the wall whose color has faded	70 %	Good
D	D1		- Building elements: Details of ornaments and doors are still well preserved - Building surface: The exterior looks neat with only some faded paint	80 %	Excellent
	D2		- Building elements: Façade dominated by frosted glass windows. - Building surface: Walls are covered with tiles that look dirty	75 %	Good
E	E1		- Building elements: Original and harmonious facades, windows, and doors - Building surface: Paint looks dirty and some parts have peeled off	65 %	Good

Segment	No	Building Façade	Description	Building Integrity	Maintainability Level
F	F1		- Building elements: Walls covered with iron panels - Building surface: Metal panels are clean	90 %	Excellent
	F2		- Building elements: Addition of some materials that are less harmonized - Building surface: Some parts of the wall look dirty and peeling paint.	60 %	Good
	F3		- Building elements: Dirty doors and missing windows - Building surface: The walls are dirty, peeling, and some of the top parts are not painted	15%	Poor
	F4		- Building elements: Doors and windows no longer work - Building surface: Paint is dirty and moldy, overgrown with wild vegetation	10 %	Poor
	F5		- Building elements: Symmetrical and pristine doors and windows - Building surface: Peeling and dirty paint	50 %	Good
	F6		- Building elements: Door elements that have changed and are not misaligned - Building surface: Walls that look dull, dirty, and have a lot of paint peeling off	35%	Fair
	F7		- Building elements: Wooden windows and doors are still fully installed - Building surface: The wall surface is quite neat, but some parts are starting to fade	75 %	Excellent
	F8		- Building elements: The ornaments, sills, and shape of the facade are still quite clearly visible. - Building surface: Paint has started to fade but still harmonious	75 %	Excellent
	F9		- Building elements: The facade elements are neatly arranged - Building surface: Walls look clean and repainted	90 %	Excellent
	F10		- Building elements: Original windows and doors - Building surface: Walls look good but some parts look dirty	80 %	Excellent
	F11		- Building elements: There are cracks in the balcony area - Building surface: The paint on many buildings has started to peel off	55 %	Good
G	G1		- Building elements: Windows and doors still look original but less maintained - Building surface: The paint on the wall has started to fade and there is a lot of mold growth	60 %	Good
	G2		- Building elements: Openings look modern and function well, with harmonious proportions - Building surface: The surface is clean and smooth, using new paint material.	90 %	Excellent
	G3		Building elements: Windows and facades are still maintained	90 %	Excellent

Segment	No	Building Façade	Description	Building Integrity	Maintainability Level
G	G4		- Building surface: Tiled walls and curved glass windows - Building elements: The facade of the building is dominated by Chinese architecture.	90 %	Excellent
	G5		- Building surface: The paint on the wall is still clean and well-maintained - Building elements: Openings such as windows and doors are still functioning properly	60 %	Good
	G6		- Building surface: The paint on the walls is starting to mold and peel off - Building elements: Facades and ornamental details are still well preserved	85 %	Excellent
	G7		- Building surface: Walls are tiled but some of the paint is peeling off. - Building elements: Openings such as doors and windows have been destroyed	15 %	Poor
	G8		- Building surface: The wall is filled with wild vegetation and is dirty - Building elements: Many architectural elements have begun to disintegrate	10 %	Poor
	G9		- Building surface: Many walls have begun to crumble and are no longer functional - Building elements: Ornaments are still preserved and original	50 %	Fair
	G10		- Building surface: The walls are chipped, filled with wild vegetation, and dirty. - Building elements: The building's facade is still intact and well preserved.	60 %	Good
	G11		- Building surface: Walls are peeling and dirty - Building elements: Facades and openings are still preserved	85 %	Excellent
	G12		- Building surface: Some brick-clad walls that are still maintained and preserved - Building elements: The facade and columns are also still preserved	49 %	Fair
H	H1		- Building surface: Dirty tiled walls with some parts that have come off - Building elements: 3-story building structure is still sturdy and actively used.	60%	Good
	H2		- Building surface: The paint looks a bit faded and the patches are visible, but it's still decent. - Building elements: Elements are intact and still functional.	55 %	Good
	H3		- Building surface: There is some paint that has started to fade - Building elements: There is a large billboard on this building	55 %	Good
			Building surface: The surface is partially covered with billboards and the bottom paint is slightly faded.		

Segment	No	Building Façade	Description	Building Integrity	Maintainability Level
I	I1		- Building elements: Details on the facade are still preserved - Building surface: The surface looks clean and tidy.	80 %	Excellent
	I2		- Building elements: Windows and doors are still maintained and preserved - Building surface: Paint is still maintained but there is mold in some parts	75 %	Excellent
	I3		- Building elements: Elements of this building are still preserved - Building surface: The paint is starting to fade, and the bottom of the wall looks filthy.	60%	Good
	I4		- Building elements: The openings of this building are still well maintained - Building surface: The walls of this building are already peeling off	60%	Good
	I5		- Building elements: Columns in the building have started to erode - Building surface: Paint looks dirty and has not been maintained	30%	Fair
	I6		- Building elements: Openings and ornament details are still maintained and look symmetrical - Building surface: The wall surface is rough and a lot of paint has peeled off	60%	Good
	I7		- Building elements: There are some parts of the gutter that have come loose and are not maintained - Building surface: The paint on the wall has started to mold	55%	Good
	I8		- Building elements: Ornaments and openings are still well preserved - Building surface: There is faded and peeling paint	75%	Excellent
	I9		- Building elements: The façade is not maintained - Building surface: Many facades have fallen off	55%	Good
	I10		- Building elements: The window are maintained - Building surface: parts of the wall have cracks	80%	Excellent
	I11		- Building elements: Well-preserved glass - Building surface: Many of the walls are peeling	70%	Good
	I12		- Building elements: doors and windows are still maintained - Building surface: Tiled walls that are starting to become overgrown with wild vegetation	65%	Good
	I13		- Building elements: The roof structure has started to become brittle - Building surface: There is vandalism in some parts	35 %	Fair
	I14		- Building elements: Ornaments on the building are still visible - Building surface: The paint on the	55%	Good

Segment	No	Building Façade	Description	Building Integrity	Maintainability Level
	I15		- wall has started to mold - Building elements: The window is no longer functioning properly - Building surface: Lots of rust and vandalism on the front of the building	55%	Good
	I16		- Building elements: Openings and windows look symmetrical - Building surface: The paint on the wall has started to mold	60%	Good
	I17		- Building elements: Elements of this building are still well maintained - Building surface: Clean wall paint with no mold	80%	Excellent
	I18		- Building elements: Zinc roof that is starting to rust - Building surface: Walls that look dull and dirty	60%	Good
	I19		- Building elements: Well-preserved glass facade - Building surface: Wall paint that has almost completely faded	65%	Good
	I20		- Building elements: Elements of the building that still look original - Building surface: There is a difference in paint color that is not harmonized on the wall	70%	Good
	I21		- Building elements: Details of the facade carvings that are still preserved - Building surface: Peeling wall paint	70%	Good
	I22		- Building elements: Large, symmetrical window openings - Building surface: Paint the walls in matching colors and clean	85%	Excellent
	I23		- Building elements: Carving details are still clearly visible - Building surface: Moldy walls and peeling paint	55%	Good

(Source: Authors, 2025)

Figure 5 displays the distribution of the building conditions found in the Karet street field observation, where only 6 buildings (9.7%) are categorized as fair and 18 buildings (29%) as excellent. The majority of the building is in a good condition (31 buildings - 50%), yet there are 7 buildings (11.3%) that have been assessed as poor quality heritage buildings.

Table 3. .Total of Facades by Maintenance Level Classification on Karet

Segments	Facade Maintenance				Total
	Poor	Fair	Good	Excellent	
A	3	1	2	0	6
B	0	0	2	0	2
C	0	0	1	1	2
D	0	0	1	1	2
E	0	0	1	0	1
F	2	1	3	5	11

Segments	Facade Maintenance				Total
	Poor	Fair	Good	Excellent	
G	2	2	3	5	12
H	0	0	3	0	3
I	0	2	15	6	23

(Source: Authors, 2025)

Three buildings located in zone A have poor qualities, that makes zone A as the most deteriorated zone amongst the others. These buildings have low intensity of usage, as the result of functions with inactive tendency, such as tire service and storage. Therefore, the upkeep and attention to these buildings are minimal in nature, which makes the damage of the buildings progressively fast. The conditions are worsened by vehicular traffic and congestion that bring along the pollution, accompanied by limited maintenance from the building owners. On the other hand, the buildings in active areas with functions such as trading and commerce tend to be far more well maintained. The commercial activities make the building owners care more about the maintenance, and therefore, the buildings show much better performance. There are fifteen buildings in good condition and six that are classified as excellent, specifically in zone I.

In zone F and G, we can find mixed function buildings with higher value on historical traits that are still well maintained with good performance. Other well maintained buildings can be found in zone C and D, which are buildings with religious function, in relation to ancestral customs, that form a community that shares the same family name. The community shared the responsibility to maintain the building, as part of their customs, that resulted in consistently good facade conditions.

From these findings, it has shown that the facade quality is significantly affected by the type of the building functions, the intensity of activity and building use, the user involvement on the maintenance and the historical - cultural value of the building. These parameters help guide the conservation strategies, especially for zone A with the most declined buildings, due to low intensity activities and environmental conditions. This means, zone A will require urgent attention and refurbishment, such as structural reinforcement, facade repair, and loss building element replacement, in order to prevent further character loss within the buildings and the zone. Furthermore, financial policies and incentives can be a solution to help building owners with limited financial ability to maintain their own properties.

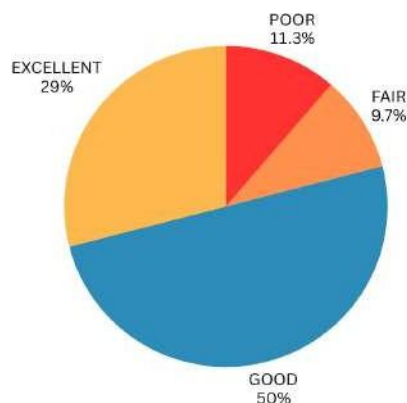


Figure 5. Percentage of Facades by Maintenance Level Classification on Karet street
(Source: Author, 2025).



Figure 6. Poor and excellent condition of building facades on Karet Street
(Source: Author, 2025).

More focused interventions should be considered for zone F and G, where the material selection for the exterior facade of the building should be aligned with the design and history of the heritage corridor of Karet street. Choosing materials that resemble the original condition of the building could help match the building's design value as it was initially in the street corridor, while keeping the quality of the material up to date (Figure 6). Zone I should emphasize on preventive and protective measures for the building from improper modifications, as it has the most number of well-preserved buildings in it. The zone pictures a successful community driven preservation.

The religious and cultural functions in smaller buildings in zone C and D proves that the community also actively contributes to the regular maintenance of the building. This communal action could be reinforced with the knowledge sharing of conservation strategies on the building, that protects the assets and encourages local participation. These observations and mapping also offer practical guidance for conservation as a response to the zone's unique context.

CONCLUSION

Karet street is one of the historical streets in Surabaya that is rich in architectural character. This research aims to map the present condition of the buildings alongside the historical street corridor, to suggest conservation strategies that are fit to the context, using qualitative field observation and quantitative assessment on the quality of the building, including the alternation and decay. The division of the street corridor into zones finds that there are contrasts between the buildings with intense decay and vulnerability, with the well-preserved ones. It was found that the social and economic changes will affect the maintainability of the building, in relation to the owners' motivation. The decreasing qualities of the building does not happen merely as the building gets older, but also depends on the activities taking place, upkeep and awareness of the historical value.

The buildings located in active commerce zones and or maintained by communities are proved to be more well preserved. This indicates that the daily use, social, cultural and historical values play an important role in the maintenance of the buildings, which is reflected in the building facade's condition. This can be the indicators for effective strategies on determining the conservation strategies on the buildings. Zones with the most deterioration need urgent attention with repair of the structure and also the replacement of the missing or damaged building elements.

The maintenance of the facade includes the cleaning and repair of the facade. While buildings with moderate condition require a more delicate consideration on the material compatibility with the historical corridor value, the well-preserved buildings

should protect the building's design from improper modification in the future, and focus on routine maintenance. This study recommends a zone-specific action based on the observation mapping, rather than implying a uniform policy for the whole street. The result also highlights both the challenges and opportunities present along Karet street corridor. By linking observed facade conditions with the factors that shape them, this research offers a foundation for heritage management strategies that considers the local context and actual conditions of each zone.

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