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Building São Januário Hospital in Macau: Portuguese technical perspectives on Chinese labour

Abstract

The historical context of the Conde de São Januário Central Hospital (CHCSJ) in Macau dates to the 1870s. It began as a military hospital under Portuguese administration. The original structure was later replaced in the 1950s with facilities that complied with the rigorous technical standards required for treating tropical diseases. This construction process aligned with the concept of "welfare colonialism," as described by Bradley (1955), whereby infrastructure became a tool for legitimising the colonial presence.

This research is part of the LabourMap-Macau project and examines the construction of the CHCSJ during two key periods, corresponding to different contracts and interventions: the 19th century and the post-World War II era. Archival documents from 1873 highlight the Portuguese technical team's deep interest in the Chinese workforce and the gradual "Westernisation" of architectural practices adopted by local labourers. The hospital's initial construction involved complex bidding processes with companies from both Macau and Hong Kong. During this phase, Portuguese staff faced significant challenges, such as the absence of the metric system among local teams. These challenges required the development of conversion tables and practical solutions to overcome language barriers and ensure the implementation of European design ideas. By the mid-20th century, global construction systems had been fully integrated into Macau. There was a consolidated confidence in the quality of Chinese labour, and recruitment processes had become more streamlined. Notably, official reports from this period show that women were present on construction sites as part of the workforce, with their names explicitly included in technical records. Although both the 1873 pavilion and the 1954 Estado Novo representative building have since been demolished – replaced by a modern structure in 1989 – the histories linked to their construction and the dynamics of their labour force remain vital aspects that revive their historiographical presence and cultural legacy in Macau.

Keywords
Macau, Portuguese colonialism, Hospital, Construction site, Chinese labour

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[Cover] Archival material on the CHCSJ collected by Rui Leão. Rui Leão Archive.

1. Introduction

The historical trajectory of the Conde de São Januário Hospital Center (CHCSJ) is inextricably linked to the tenure of its founder, Januário Correia de Almeida (1829–1901). While serving as Governor of Macau, between 1872 and 1874, the then-Viscount oversaw a period of territorial and administrative upheaval. During this period, the Macau peninsula and the islands of Taipa and Coloane existed under a "relative p*ax portucalensis*," as recently described by Regina Campinho.[1] It was a transformative epoch for the Macanese landscape, characterised by an unprecedented acceleration in urban development that laid the groundwork for the contemporary Special Administrative Region (SAR). The establishment of the military hospital was a pivotal consequence of the reforms initiated during the administration of João Maria Ferreira do Amaral (1803–1849). Amaral's assassination, orchestrated by Chinese mandarins in response to his fervent support for European colonial imperialism, catalysed a period of infrastructure consolidation. This materialised in the modernisation of the inland port, the establishment of a formal water supply, and extensive road construction – works that would fundamentally redefine the pre-existing urban fabric.

The CHCSJ's origins were also deeply rooted in the 19th-century flourishing of tropical medicine and the ascendancy of positivist ideals. According to historian Isabel Amaral, the "new scientific discipline" of tropical medicine[2] sought to mitigate the risks of contagion within colonial outposts.[3] In Macau, this shift was led by Lúcio Augusto da Silva (1825–1906), a surgeon born in Goa who was trained at the University of Coimbra and served as President of the local Health Board.[4] His leadership was instrumental in the decision to build a facility initially dedicated to military personnel stationed in Macau and those returning from the Timor campaign.

Figure 1. São Januário Military Hospital. Welcome Collection, ref. 665295i.

Subsequent health reforms, influenced by the work of Ricardo Jorge (1858–1939), a renowned Portuguese doctor and medical researcher, furthered the understanding of tropical health as a specialised field.[5] This specialisation directly impacted hospital architectural typologies across Asian and African colonies. The original 1873 structure in Macau, located on São Jerónimo Hill – the former site of the gunpowder magazine – became a centrepiece of colonial iconography. Its evolution, documented in research projects such as *Arquitecturas da Saúde – A Cura e a Arquitectura, História da Arquitectura Hospitalar Portuguesa na Época Contemporânea* (Health Architectures – Healing and Architecture, History of Portuguese Hospital Architecture in the Contemporary Era) coordinated by Helena Gonçalves Pinto, illustrates a facility that, while central to the population, faced persistent operational criticism and underwent numerous expansions until its eventual demolition eight decades later.[6]

Following World War II, the Portuguese administration declared the 19th-century infrastructure obsolete. This resulted in the facility being replaced entirely under a new legislative framework established by the *Estado Novo* dictatorship. This was partly in response to growing international pressure for decolonisation. The regime adopted "colonial welfare" policies,[7] designed to reinforce the dependency of local populations on medical services provided by the colonial state.

1. Regina Campinho, *Modernizing Macao, Public Works and Urban Planning in the Imperial Network, 1856-1919 (*PhD Thesis, University of Coimbra/ Université de Lorraine, 2022), 23 ff.
2. In the 1960s, tropical diseases were those "consisting of parasitic infections (malaria, dysentery, typhoid fever)". Lucínio Cruz, António Moreira Veloso, Alfredo da Silva e Castro, *Hospital Structuring*, Luanda, Directorate-General for Public Works and Communications, 5 (1966). AHU, IPAD 15813.
3. Isabel Amaral. "The emergence of tropical medicine in Portugal: The School of Tropical Medicine and the Colonial Hospital of Lisbon (1902-1935)", *Dynamis* 28 (2008), 301-328.
4. António Aresta, *A Tribuna de Macau* [Newspaper], 4 March 2021.
5. Campinho, *Modernizing Macao*, 184 ff. Campinho discusses Jorge's role in developing a health policy that had an impact in Macau.
6. Rui Leão, "The Contribution of the GUU (Overseas Urbanization Office) to the modernization of Macau society" [typed article; unpublished, 2019/2025].
7. The term originates from C. Paul Bradley, *Welfare colonialism in the British West Indies; a study of development and welfare policy, 1938-1954* (PhD thesis, Columbia University, 1955).

In Macau, this phenomenon had a unique symbolic significance. While the Chinese community maintained a degree of organisational autonomy through its own healthcare networks, the colonial state used the hospital's design to project its power and authority. The symbolic value of this medical structure was further enhanced by the direct involvement of technicians based in Lisbon. In 1951, the central government "censored"[8] the initially proposed layout, forcing the local Technical Department of Public Works[9] – then headed by engineer José dos Santos Baptista[10] – to submit a revised plan that aligned with standardised models implemented in other Portuguese colonies. This centralisation ensured that Macau's built environment reflected the unified image of the empire, regardless of local particularities.

Beyond the architectural debate, this article examines the Macanese building site (*estaleiro*) as a complex social structure. Building upon the pioneering work of Campinho on the technical strategies of colonial personnel,[11] this study investigates the still overlooked organisation of construction guilds and the recruitment dynamics of an ethnically diverse labour force. Drawing on recent scholarship concerning British imperial experiences in Hong Kong and 19th-century China – notably the work of researchers such as Cole Roskam[12] and Jingliang Du[13] – this analysis intersects contemporary accounts of Chinese workers with official administrative reports from the 20th century. The colonial construction site is thus revealed not as a site

Figure 2. São Januário Military Hospital, Henrique Augusto Dias de Carvalho and António Alexandrino de Melo, c. 1873. *Arquitecturas da Saúde* [Redrawing LabourMap-Macao/ Nayara Alcantara, 2025].

of unilateral command, but as a space of negotiation. The implementation of Western designs presented major technical and cultural challenges, including the lack of the metric system among local teams, which necessitated the development of conversion tables between metres and Chinese cubits (*chi*).

A vital component of this historiography is the explicit presence of women in the labour force. Records from the 1950s reveal that women played an integral role on the construction site, with workers such as I Cá and A Sou being named in official technical logs. Their names' inclusion in these registers – commonly omitted in other colonial contexts – highlighted their formal participation in the industry.

The visual hierarchy of the site was clear: foremen were distinguished by the colonial salacot (pith helmet), while Chinese labourers wore the traditional dǒulì (conical hat).[14] These details, preserved in reports from the Overseas Historical Archive in Lisbon and the Macau Historical Archive, provide insight into the lived experiences of the actual builders of colonial infrastructures.

Although both the 1873 pavilion and the 1954 *Estado Novo* building have been replaced by the modern 1989 structure, their historical and cultural legacy remains essential to understanding Macau's landscape production. As part of the LabourMap-Macau project, which measures the impact of workers on public works during the Portuguese administration (1849–1999), this research aims to shed light on histories extend beyond

8. Rogério A. Cavaca, *Opinion*, Directorate-General for Colonial Development (1948-1955) [Subject: Colony of Macau; Hospital Buildings; Macau Hospital], Ministry of Colonies/Overseas Territories, 19 April 1948. AHU, OP06637.
9. RTOPM [Technical Department of Public Works] "Project for Alterations to the Conde de S. Januário Central Hospital, Macau" [plans and elevations to scale 1:100], [project by Dr. Abel de Carvalho/ drawing executed by José Lei]. AHU, OP5736.
10. Helena Gonçalves Pinto, *Arquitecturas da Saúde*, "A Cura e a Arquitectura: História da Arquitectura Hospitalar Portuguesa na Época Contemporânea"; "Hospital Militar São Januário" (2014). www.arquitecturasdasaude.pt.
11. Campinho, *Modernizing Macao*.
12. Cole Roskam, "Architects, Contractors, and Building Sites in Late Nineteenth-Century Anglo-China", *IASTE Alexandria, Cosmopolitanism and Tradition*, May 23-26, 2025 [paper communication].
13. Jingliang Du, "Hong Kong Granite in the Construction of Modern Shanghai, 1900s–1930s," *SAH Atlanta*, Session: *Colonial Public Works: Architecture Beyond Labor Subalternity*, April 30–May 4, 2025 [paper communication].
14. Ana Vaz Milheiro, "Getting to know workers and construction processes through photographic records of works in Macau (1932-1973)," *VI AEAULP Seminar: Arquipélagos em diálogo*, Praia, December 4, 2025 [paper communication].

mortar and stone.[15] The CHCSJ stands as evidence of permanent tension between metropolitan ambition and local expertise – a place where Western scientific modernity was physically forged by Chinese resilience and craftsmanship. In this light, the hospital was not just a landmark of public health, but also a palimpsest of the resistances, collaborations, and hybrid identities that characterised the Portuguese presence in East Asia.

2. The First Contract: 19th-Century Chinese Labour through the Portuguese Lens

The original São Januário Military Hospital was an example of 19th-century "pavilion architecture,"[16] a typological design choice based on contemporary European research into miasma theory and infection control.[17] The design prioritised natural ventilation through a "comb structure" – five wards connected by a horizontal block, anchored by two prominent towers. This ambitious project, developed between 1872 and 1874, was the product of a diverse technical team: Captain Henrique Augusto Dias de Carvalho[18] served as construction manager and interim designer for the Public Works Department of Macau and Timor (DOPMT), working alongside Macanese engineer António Alexandrino de Melo[19] and designer João Maria de Souza Brito. The engineering team was further strengthened by Francisco Jerónimo Luna[20] and later, in 1883, by Constantino José de Brito, a Goa-born officer trained at Lisbon's elite military and polytechnic schools.[21]

The primary documentary source for this period is the 1873 report authored by Dias de Carvalho.[22] Written during the preparatory phases of the contract, the text revealed a profound fascination with and reliance on the Chinese workforce. Carvalho's reflections went beyond mere project management; they documented the "Westernisation" of local architectural practices and established a framework of interdependence between Western theoretical knowledge and local material and building expertise.[23]

Carvalho implemented rigorous planning measures to standardised budget proposals, employing Chinese teams to conduct preliminary "work tests." These tests were essential for anticipating the impact of Macau's volatile weather on project timelines. However, the building site was also a place of risk. Carvalho noted the "recklessness" of workers who attempted to expedite procedures, a concern underscored by the recorded death of at least one labourer during the early phases of the project.[24] The logistical challenges were immense. Preparing the site on São Jerónimo Hill required the construction of new access roads, retaining walls to stabilise the support platform,[25] and

15. *LabourMap-Macau. The impact of workers on public works in Macau during the Portuguese administration* (1849-1999), FCT Exploratory Project, 2023.14980.PEX, "São Januário Hospital (1872-1958)".
16. Pinto, *Arquitecturas da Saúde*.
17. "Doctors and architects had originally developed the pavilion typology based on the belief that contagious miasmas emanated from the soil, and that maximum ventilation thus prevented infection". Simon De Nys-Ketels, "A Hospital Typology Translated: Transnational Flows of Architectural Expertise in the Clinique Reine Elisabeth of Coquilhatville, in the Belgian Congo," *ABE Journal* 19 (2021).
18. Campinho, *Modernizing Macao*, 99-100.
19. Ibid., 146.
20. Campinho states that Luna was the author of the hospital project. Campinho, *Modernizing Macao*, note 251, 100. Carvalho, however, attributes the authorship to himself. H.A. Dias de Carvalho, *Memoria dos Trabalhos que se Empreenderam para a Edificação do Hospital Militar* [Memoir of the Work Undertaken for the Construction of the Military Hospital] (Typographia Mercantil, 1873), 26 [Building project].
21. Campinho, *Modernizing Macao*, note 251, 131.
22. Carvalho, *Memoria dos Trabalhos*.
23. Ibid., v.
24. Ibid., 10.
25. Ibid., 18-24.

Figure 3. São Januário Hospital. ACTD, PRAPO018.

the drilling of wells. When the on-site water supply proved insufficient, barges were deployed from Ribeira Grande,[26] while Chinese porters – the backbone of the site's logistics – manually transported materials to the hill's high elevation.

The contracting system for the hospital reflected a sophisticated understanding of regional market dynamics. Tenders were launched simultaneously in Macau and Hong Kong to ensure competitive pricing. The colonial administration strategically timed these tenders to coincide with the Chinese New Year, when market conditions typically favoured buyers. The winning firm, based in Hong Kong, secured its advantage through superior vertical integration. By owning timber warehouses in Canton and lime deposits in Hong Kong, and capitalising on cyclical drops in brick prices,[27] the contractor offered a level of resource security that local Macanese firms could (probably) not match. After the "laying of the first stone," the contractor turned the building site into a semi-permanent residence, by erecting wooden huts to house specialised workshops for various trades.[28]

As noted by Cole Roskam regarding British Hong Kong, a contractor's power was also measured by his access to material networks and professional guilds.[29] In Macau, however, the Portuguese administration added a layer of military coercion. The colonial state used its police forces to shield construction firms from the demands of labour unions. This was particularly true for the carpenters' guilds, which were "feared" by constructors for their organisational strength and ability to demand higher wages. By recruiting through a Hong Kong-based firm, the administration reduced potential local labour conflicts, leveraging the contractor's external centre of influence to maintain discipline.

Technical translation was equally critical for the construction process. As the local workforce was unfamiliar with the Western metric system, Carvalho had to develop specialised conversion tables between metres and Chinese cubits (*chi*).[30] This "expeditious measure" allowed the (more) abstract Western solutions depicted in architectural drawings to be realised physically on site by craftsmen using traditional measuring tools. A similar process was employed in the introduction of Western systems in Hong Kong and can be traced back to accounts by British architects such as Edward Ashworth from the mid-19th century.[31]

The Portuguese military engineer categorised workers into Western *métiers*: masons,[32] stonecutters (*cabouqueiros* or *canteiros*),[33] carpenters,[34] blacksmiths,[35] and painters.[36] While the materials included traditional lime,[37] earth,[38] and timber, the project also saw the introduction of Portland cement to the territory in 1871.[39] The interaction between building materials and local traditions revealed deep-seated technical friction. For instance, Carvalho criticised the local masonry practise of laying foundations in "poorly cut dry stone" regardless of the terrain, a practice that the Portuguese blamed for subsequent subsidence.[40] To adress this issue, the technical team conducted comparative studies of previous local works to adjust the value of labour and the quantity of materials required for (more) "European standard" foundations.[41]

Roofing presented another significant challenge. The Chinese-manufactured tiles were smaller and had a shallower curvature than those used in Portugal

26. Carvalho, *Memoria dos Trabalhos*, 64.
27. Ibid., 36.
28. Ibid., 42.
29. Roskam, "Architects, Contractors".

Figure 4. Henrique Augusto Dias de Carvalho, (1873). *Memoria dos Trabalhos que se Empreenderam para a Edificação do Hospital Militar.* Macau: Typographia Mercantil. ref. 665295i.

30. Carvalho, *Memoria dos Trabalhos*, Table 1 – Table for converting meters to Chinese cubits; Table 2 Table for converting Chinese cubits to meters (idem for m2; m3), currency, and angles/tangents.
31. Edward Ashworth, "How Chinese Workers Built an English House," *Builder* 1 (1851): 686–688, cited by Du, ""Hong Kong Granite".
32. Carvalho, *Memoria dos Trabalhos*, 57-59.
33. Carvalho, *Memoria dos Trabalhos*, 59-61. Carvalho called these workers "liars," "slackers," and deserters [sic].
34. Ibid., 61-62.
35. Ibid., 62.
36. Ibid., 62-63.
37. Ibid., 63-64.
38. Ibid., 66.
39. Ibid., 66-69.
40. Ibid., 69-73 (70).
41. Ibid., 73-74.

("*telhas do reino*").[42] This discrepancy required Portuguese technicians to devise hybrid solutions, blending local materials with Western knowledge of hydrology to ensure the roofs could withstand Macau's heavy tropical rainfall. Such modifications were so significant that they often required direct authorisation from the Governor, highlighting the exceptional nature of these technical negotiations.[43] Ultimately, Carvalho's 1873 report was intended to be more than just a progress update; it was designed as a manual of "best practices" for Colonial Public Works in the East. By detailing the construction of other devices as latrines, storage rooms, and kitchens, and providing exhaustive data on carpentry[44] and hardware,[45] Carvalho sought to institutionalise the knowledge acquired at the São Januário building site.[46]

Therefore, the legacy of this first contract lies in the recognising that the São Januário Military Hospital was a product of hybridity. It was a space where the rigorous engineering mind trained in Goa and Lisbon met the pragmatic, resource-rich networks of the Chinese contractor. The building itself became a physical manifestation of this encounter: a Western pavilion-style hospital with foundations and roofs that had been meticulously "translated" from local traditions to meet the aesthetic and political demands of the "Portuguese Empire" in Asia.

2.1. The Impact of São Januário Military Hospital on 19th-Century Portuguese Culture

The design and construction of the São Januário Hospital had an impact on the more erudite spheres of Portugal's national architectural discourse. Shortly before the building's inauguration, Joaquim Possidónio Narciso da Silva (1806–1896), President of the Royal Association of Portuguese Civil Architects and Archaeologists (RAACAP), published an admiring report in the *Boletim Architectónico e d'Archeologia*.[47] Silva described the project as a "magnificent building"[48] and a testament to Portuguese modernity.[49] He specifically recognised its "Orientalist" design – a stylistic by-product of Macau's proximity to British Hong Kong – and praised its innovative programme, which drew inspiration from the renowned St. Raphael's Hospital in Belgium, even considering its unreasonable form from an artistic point of view. For the metropolitan elite, the São Januário project proved that Portugal could implement cutting-edge healthcare infrastructure even in the furthest reaches of the empire.

Figure 5. Joaquim Possidónio Narciso da Silva, "Public utility building: The new Hospital in Macau", *Bulletin Architectural and Archaeology*, vol. I (1874), 39-41.

Beyond aesthetics, Silva's article provided a detailed sociological analysis of the Chinese workforce (in his own words: "*operários chinas*"), categorising masons into three distinct "trades": *stone masons* (responsible for foundations), *brick masons* (walls and roofs), and *experts* (highly skilled craftsmen tasked with mouldings, stucco, and ornamentation).[50] The construction site operated under a rigid four-tier hierarchy: the Construction Superintendent (*cabeça*, Head), Foremen (*cabecilha*, Task Supervisors), Officers (*oficiais*, managing small teams), and Laborers (*serventes*). Working nine-hour days, these workers earned wages ranging from 85 to 173 *réis* (the currency of the time).

42. Carvalho, *Memoria dos Trabalhos*, 78-80 (78).
43. Ibid., 78.
44. Ibid., 83-91.
45. Ibid., 91-92
46. Ibid., 92-93.
47. It was the only architectural magazine in publication in Portugal at the time. Cf. Ana Vaz Milheiro, "Gothic and Design Systems in Nineteenth-Century Architecture. European theoretical productions and the Portuguese review in the written work of Possidónio da Silva," (Master's thesis, Technical University of Lisbon [unpublished], 1998).
48. Joaquim Possidónio Narciso da Silva, "Public utility building – the new hospital in Macau", *Royal Association of Portuguese Civil Architects and Archaeologists, Bulletin, Architectural and Archaeology*, volume I, 2nd series (1874), 40.
49. Silva, "Public utility building," 40.
50. Ibid., 41.

Figure 6. "Barracks at Portas do Cerco, before the construction of the barracks," Macau Public Works Services Directorate (1934-1935), 1934-35 financial year report. AHU, OP01961.

Echoing the earlier observations of Captain Henrique Carvalho, Silva's analysis was characterised by a mix of professional admiration and colonial prejudice. While he dismissed the work of certain trades – such as the *cabouqueiros* (quarrymen), whom he labelled "imperfect" –, he held Chinese carpenters in high regard. These skilled labourers were considered diligent professionals who underwent five years of training, including rigorous instruction in geometry, and consequently earned higher wages. Conversely, painters remained among the lowest-paid day labourers. Silva's comments also reflected contemporary racial biases, including the association of specific labour categories to opium consumption – a sensitive topic given the region's recent history of conflict.

Technical peculiarities of the Macanese further fascinated the Portuguese architectural community. Silva documented the specialised use of lime (*cal*): "cotton lime" for stucco, "paper lime" for plaster, and "straw lime" for structural use. He also noted exotic material compositions, such as tile-laying mortar reinforced with iron filings and palm oil. The analysis concluded with a catalogue of regional timbers – including ironwood, teak, and Singapore wood[51] – essential to the hybrid construction techniques that defined this landmark project.

51. Silva, "Public utility building," 41.

3. The Second Contract: Typological Homogenisation and Labour Hierarchies

Despite the decades separating the 19th-century building practices from the early years of the Estado Novo regime, the daily operations of Macau's construction sites remained remarkably consistent, not only in the representation of everyday life and labour tensions, but also in the materials and construction systems employed. Photographic evidence from the 1930s Public Works reports reveals the enduring presence of traditional bamboo scaffolding – a technique that is still used in Macau today. Even during modern interventions, such as the replacement of the National Press Building's tiled roof with reinforced concrete in 1934,[52] workers utilised temporary "shelters" made of plant-based materials, echoing ancestral rural construction methods.

The supply chains servicing both public and private enterprises exposed a complex and pervasive "web of complicity" between the Portuguese colonial administration and the local Chinese business elite. This interdependence was exemplified by the construction of "300 brick houses" for the impoverished

52. Macau Public Works Services Directorate (1934-1935), *1934-35 Financial Year Report*. AHU, OP01961. A similar technological shift is visible in the photographic record of the Port Authority's main roof replacement (original design by engineer Alexandre Melo, 1874).

Chinese community on Ilha Verde.[53] Public records from the *Jornal de Macau*, a local newspaper, traced the logistical routes required for this project: the Public Works Department granted access to stone from Mong-Há Hill, while timber and cement were transported by the Tong-On Shipping Company and steamers such as the *Chun-Chao*. Even the provision of basic utilities was a collaborative effort, with the President Hotel supplying water and the Electric Light Company providing power. The building site itself was guarded by colonial police, thereby reinforcing the state's role in securing private investment of beneficent origin.

This period also saw the gradual integration of industrial materials, such as cement, into traditional construction praxis. This technological diffusion was influenced by the growing presence of British architects and engineers across mainland China between the end of the 19th century and 1910,[54] whose expertise helped to popularise Western construction systems in the region. In Macau, while Portuguese technicians also considered certain cultural aspects of design, the influence of Western engineering was more evident. By 1925, foreign visitors noted that the city's architectural fabric was increasingly defined by European traits, though not always executed in a way that was considered "honourable".[55]

In a context of the increasing Westernisation of the built environment, the construction site served as a microcosm of colonial social stratification. This fact was not only expressed through ethnicity, as there were not many Portuguese staff on site, but was most visibly expressed through clothing, which distinguished the Chinese workers. In reports regarding the Portas do Cerco Barracks in 1934, two distinct groups were captured in photographic records. The managers and foremen, often seen resting near shaded material depots, wore the salacot (colonial pith helmet), a potent symbol of Portuguese administrative power. In contrast, the labouring masses wore the traditional conical hat, or dǒulì (斗笠)[56] – a garment still worn by Macau's sanitation and repair workers today

53. "The Chinese Quarter in the North of Ilha Verde," *Jornal de Macau*, I, 5 September 1929, 2 [in Tiago Saldanha Quadros, *Macau. Architecture and Changes in the Urban Fabric: An Anthology* (Circo de Ideias, 2024), 56-59].
54. This presence stabilised in the interwar period after a phase of sharp decline. Cf. Hideo Izumida, "A Study on British Architects in East and Southeast Asia: 1830 - 1940," *Journal of Asian Architecture and Building Engineering* 2, 2 (2003), 134.
55. Heinrich Schmitthenner, *Chinesische Landschaften und Städte* (1925), 289-295 [Quadros, *Macau*, 42].
56. "Barracks at Portas do Cerco, before the construction of the barracks". AHU, OP01961.

These visual markers of socio-professional hierarchy persisted throughout the 1940s,[57] emphasising a rigid structure in which Western technical knowledge (represented by the salacot) oversaw traditional manual labour (symbolised by the dǒulì). This dynamic remained a constant through the hiatus in reporting that preceded the 1956 Technical Department of Public Works (RTOPM) report, which coincided with the construction of the new hospital.[58]

The introduction of reinforced concrete also represented a significant shift in technological and scientific knowledge. A prime example of this transition was the renovation of the Port Authority (*Capitania dos Portos*) in 1932 – formerly the headquarters of the Goa Indian Regiment. The Public Works Department specifically highlighted the installation of a reinforced concrete roof as a milestone of modernisation.[59] This shift signalled ambitions for typological homogenisation across the Portuguese empire. Under the *Estado Novo*, Macau's unique characteristics were increasingly subordinated to the "standardised projects" developed in Lisbon, thereby aligning the

57. Ana Vaz Milheiro, "Getting to know workers". In addition to reports from 1932 and 1934-35, the following are also mentioned: José Rodrigues Moutinho, (1938, Technical Department of Public Works of Macau (RTOPM), *Report for the year 1938*, AHU, OP01962; idem (1939), RTOPM, *1939 Report*, AHU, OP01963]; and Gastão Borges (1940), RTOPM, *1940 Report*, AHU, OP01964.
58. Arnaldo Luiz de Siqueira Basto, RTOPM, *1956 Report* (1956), AHU, OP03394.
59. Image no. 25, Macao Public Works Department, *Report* (1932). AHU, OP02832.

Figure 7. Infirmary: Conditions at São Januário Hospital c. 1951, [José dos Santos Baptista (Head of the Technical Department of Public Works) and Abel de Carvalho (Radiologist)], *Study on the Renovation and Expansion of the Conde de São Januário Central Hospital in Macau*, 1951. AHM, MO/AM/DA/031/1

territory with the broader imperial image seen in African colonies such as Angola and Mozambique. The adoption of standard designs was consistent with the approach taken by other colonial powers, such as Belgium, which based its network on standard designs adapted to regional contexts.[60]

Ultimately, the second contract for the hospital would not just be a building project; it was a construction site where traditional Chinese techniques and modern Western systems coexisted in a state of permanent tension. While the materials became more industrial and the designs more centralised, the human element of the building site – defined by ethnic stratification and the indispensable role of the Chinese worker – remained the foundation of Macau's urban transformation.

Figure 8. Demolishing of the CHCSJ's 19th-century pavilion. Arnaldo Luiz de Siqueira Basto, RTOPM, 1956 Report (1956). AHU, OP03394.

3.1. The Design of the New Hospital: Imperial Standardisation and Local Reality

By the mid-20th century, the 19th-century pavilion structure of the São Januário Hospital was deemed functionally obsolete, falling under the legislative reforms that transformed colonial medical architecture during the *Estado Novo* dictatorship. This shift was officially showcased at the First National Congress of Tropical Medicine, held in Lisbon, in 1952,[61] emerging from two pivotal Decree-Laws published between 1944 and 1945. The first established the Colonial/Overseas Urbanisation Office (GUC/GUU)[62] – later the Directorate-General for Public Works and Communications (DGOPC)[63] – while the second reorganised the health services of the Portuguese Empire.[64] These regulations codified a preference for low-rise, interconnected pavilions,[65] explicitly rejecting "concentrated, high-rise blocks"[66] in favour of sprawling "comb" or "spine" structures. Although these models were primarily designed for the perceived vastness of Africa, they institutionalised a healthcare architecture of racial segregation and settler priority.

The transition to a new facility began in 1948 when engineer Tito Lívio da Cruz Esteves, former head of the Technical Department of Public Works of Macau (RTOPM), submitted a preliminary draft to Lisbon.[67] Under the 1944 decree, the GUC held the authority to supervise and "censor" all colonial hospital plans.[68] The response from GUC Director Rogério A. Cavaca was highly critical.[69] Cavaca criticised the local project for its lack of descriptive documentation[70] and for departing radically from the Portuguese state norms. The proposal featured a nine-storey high-rise building with three basements, extensive glazed surfaces, and a reinforced concrete terrace.

Cavaca argued that such architectural elements were unsuited to tropical climates, raising concerns

60. Simon De Nys-Ketels, et al, "Planning Belgian Congo's network of medical infrastructure: type-plans as tools to construct a medical model-colony, 1949–1959," *Planning Perspectives* 34, no.5 (2019), 757–778.
61. Documentary Exhibition of Overseas Health Activities, April 1952. João Miguel Couto Duarte, *et al*, "Models of health service structures in the former Portuguese overseas territories: science, architecture, and politics (IHMT museum collection) – design and use of standard projects in Mozambique in the first half of the 20th century," *Saber Tropical em Moçambique* (Instituto de Investigação Científica Tropical, Lisboa, 2013).
62. *Diário da República (DR)*, Decree-Law 34:173, December 4, 1944.
63. *DR*, Decree-Law 41169, June 29, 1957.
64. *DR*, Decree 34:417, February 21, 1945, 95.
65. *Ibid*. Point 8, 96.
66. *Ibid*. The specificities of Macau in the context of Portuguese colonialism were limited to the "treatment and internment of drug addicts." Article 40, point 1, 101.
67. Tito Livio da Cruz Esteves, *Information*, 16 January 1948. AHU, OP06637.
68. *DR*, Decree-Law 34:173, December 4, 1944, 1167.
69. Ana Vaz Milheiro, "Colonial Africa: Architecture and Infrastructures in the latter years of the Estado Novo regime", Milheiro, coord., *Colonial and Post-Colonial Landscapes I: Architecture, Cities, Infrastructures in Africa, Coast to Coast Researcher's book* (Iscte, 2025), 27-42.
70. General plan 1:500; 2 perspectives of the proposal; plans of the various floors, elevations, and sections compiled in 4 folios at a scale of 1:200. Cavaca, *Opinion*, 1. AHU, OP06637.

Figure 9. "Project for Alterations to the Conde de S. Januário Central Hospital, Macau" [ground floor], RTOPM [project by Dr. Abel de Carvalho/ drawing executed by José Lei]. AHU, OP5736 [Redrawing LabourMap-Macao/ Nayara Alcantara, 2025].

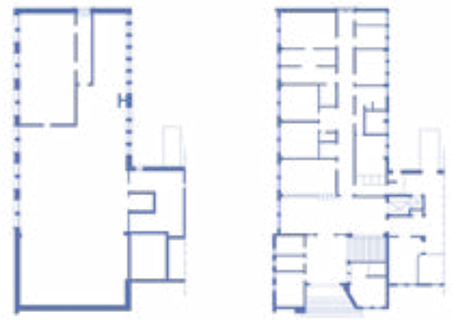

Figure 10. São Januário Hospital [ground floor], Lucinio Cruz (1954). AHU, Macau, roll 19 [Redrawing LabourMap-Macao/Nayara Alcantara, 2025].

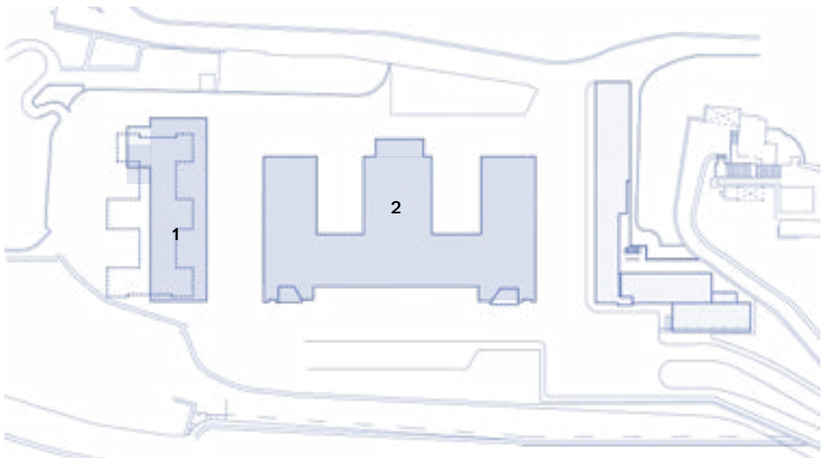

Figure 11. Implementation Plan. A. Sousa Mendes, E. Pinto Lopes, Pavilion for Tuberculosis Patients (1) and Central Pavilion (2), Macau Hospital, DGOPC (1961). AHU, OP07330 [Redrawing LabourMap-Macao/Nayara Alcantara, 2025].

Figure 12. Concreting of the 1st Floor. Arnaldo Luiz de Siqueira Basto, RTOPM, 1956 Report (1956). AHU, OP03394.

about the building's lighting, ventilation, and vertical access.[71] However, the Macanese services' emphasis on height was probably a pragmatic response to the territory's high population density – a stark contrast to the expansive, so-called "empty" colonial landscapes prejudicially managed by GUC architects in Africa. As a result of this critical assessment, the project was returned to the Governor of Macau in May 1949 for complete reformulation.[72]

Between 1948 and 1951, the GUC fine-tuned its designs for medical buildings through projects such as the Bafatá Infirmary in Guinea (designed by João Simões)[73] and the Central Hospital of Nova Lisboa in Angola. The latter, designed by the architect Lucínio Cruz,[74] established the H-shaped isolated structure[75] and linear pavilion models that would define this period.[76] Cruz, who also designed the Liceu Nacional Infante D. Henrique in Macau, was appointed as the primary technical consultant for the new hospital.[77] Before Cruz's intervention, the 1951 revised plan for Macau had finally aligned with metropolitan standards by adopting the "comb structure" that favoured horizontal expansion.[78] While the drawings credited local men, including radiologist Abel de Simões de Carvalho Júnior as the designer and José Lei as the draughtsman, the elevations and the final spatial organisation bore the distinct imprint of Lisbon's centralised aesthetic. Cruz personally "corrected" the 1954 plan by reorganising the internal layout and reocating ground-floor

71. Cavaca, *Opinion*, 2.
72. Sanches da Gama, 15 May 1948. AHU, OP06637.
73. Milheiro, "Colonial Africa," 33. The same technician was responsible for the first establishment of standard designs for sanitary structures that would consolidate the main aspects of adaptation to the climate.
74. Cruz would head the Architecture and Monuments Service from 1957 onwards, within the organizational chart of the renewed Directorate-General for Public Works and Communications of the Ministry of Overseas Territories.
75. As in the preliminary design for the Regional Hospital of Sá da Bandeira, now Lubango, in 1953.
76. In 1947, the GUC's design for Central Hospital in Nova Lisboa (Huambo), formalized a large-scale tropical medical model that optimized resources and institutionalized racial segregation. This template evolved into the complex linear pavilion structures that characterized imperial healthcare architecture through 1950, exemplified by the expansion of the Luanda Central Hospital; Pinto, *Arquitecturas da Saúde*, "Hospital Maria Pia".
77. Ana Vaz Milheiro, and Beatriz Serrazina "Creolizar" para resistir: A escola de Chorão Ramalho em Macau" (Creolised resistance: The School of Chorão Ramalho in Macau), *Docomomo Portugal* (2025) [paper communication].
78. This contrasted with the first generation of hospital infrastructure based on isolated pavilions, such as the central hospitals in Bissau, São Tomé, and Praia.

entrances to align with the desired Portuguese imperial standard.[79] This spatial organisation (in plan) was used latter in other colonial healthcare facilities, such as the central block of the Miguel Bombarda Central Hospital in former Lourenço Marques (now Maputo), Mozambique. Designed in modern language in the late 1950s by architects Francisco de Assis and Luiz de Vasconcelos, the project was managed by the Mozambican colonial public works department.[80]

According to the RTOPM report in 1956, the construction of the new Macanese hospital was carried out in three phases. The primary contract was awarded to a consortium of firms: Lei Chü (carpentry, masonry, and finishing), Wha Tung (electrical work), Agência Técnica Comercial (plumbing), and H. Nolasco (lifts).[81] Meanwhile, the engineer Arnaldo Luiz de Siqueira Basto, reported on the demolitions in progress.[82] The original 19th-century annexes were eventually replaced by the Tuberculosis Pavilion in 1961 – a project designed by architects A. Sousa Mendes and Eurico Pinto Lopes under the auspices of the established Directorate-General for Public Works and Communications (DGOPC), which had been established recently.[83]

Photographic records from the 1950s provide an interesting insight into the social atmosphere of the building site. One notable image, from the same report, documenting the "Concreting of the 1st Floor," captures the rigid hierarchical distinctions of that period. Senior Chinese supervisors, presumably representing the contractors, dressed in Western attire, are seen alongside foremen with their colonial *salacots* on their heads. However, most of the workforce consisted of Chinese labourers in traditional clothes and conical hats. Four women could be depicted serving as water carriers. Significantly, the "day labourer" (*jornaleiros*) lists for Section 1 (Public Buildings and Monuments) recorded the names of these four female workers (although more women may have participated in the construction): I Cá, I Sou, A Sou e Chau Ieng .[84] Their presence in these technical records – alongside a full and varied team of masons, pavers, and plasterers (in which the names of minors were also listed) – highlights the formal, albeit subordinated, role of women in the heavy construction industry of Macau.[85]

The central pavilion was completed in 1959, serving as a monument to the *Estado Novo*'s efforts to unify its diverse colonial territories in Africa and Asia through architecture and the built form. However, reports from the 1960s continued to highlight a persistent issue: the Portuguese colonial authorities remained structurally dependent on the "goodwill" and professional networks of the local Chinese elites.[86] Despite the imposition of Lisbon-designed elevations and "comb structures," the manipulation of prices by Chinese contractors and the indispensable expertise of local guilds proved that the hospital was as much a product of Macanese negotiation as it was of Portuguese planning. The CHCSJ therefore stood as a physical record of a colonial

79. Lucinio Cruz, São Januário Hospital [plans and signage] (1954). AHU, Macau, roll 19.
80. Miguel Bombarda Hospital / Maputo Central Hospital [Tiago Lourenço, 2011 (project FCT PTDC/AURAQI/104964/2008 "Colonial Urbanization Offices: Culture and Architectural Practice")].
81. Pinto, *Arquitecturas da Saúde*, "Hospital São Januário" (The Basto Region in the 19th Century).
82. Basto, *1956 Report*, 91.
83. *Implementation Plan*. A. Sousa Mendes, E. Pinto Lopes, Pavilion for Tuberculosis Patients at Macau Hospital, DGOPC (1961), AHU, OP07330.
84. Basto, *1956 Report*, 104.
85. Basto, *1956 Report*, 99-113.
86. António Francisco de Aguiar, João Tomás Siu, *Report of the Mission tasked with studying Macau Airport and related services*, Directorate-General of Aeronautics (1962), AHU, IPAD00705.

Figure 13. São Januário Hospital, after 1970. AHU.

Figure 14. São Januário Hospital seen from Penha Hill, after 1970. AHU.

project that sought to present a united front while relying entirely on the labour and resources of the people it governed.

4. Final considerations

The construction history of the Conde de São Januário Hospital in Macau provided a compelling lens through which to examine the friction between metropolitan directives and local praxis. Far more than a mere succession of aesthetic styles, the transition from late 19th-century eclecticism to the normative rigour of the *Estado Novo* reflected a profound transformation in imperial governance. In this context, architecture served as a key tool for both political assertion and cultural adaptation.

One of the most significant contributions of this analysis is the debunking of the myth of absolute colonial power on the construction site. The building process of the hospital revealed a "structural dependence on local labour," showing that Portuguese rule was consistently constrained by the technical expertise and social organisation of Chinese workers. Managing the construction site was never a purely technical endeavour; it was an exercise in sociopolitical diplomacy. Colonial authorities were compelled to negotiate with Chinese contractors and navigate the "goodwill" of influential guilds, such as the carpenters, whose capacity for mobilisation and wage resistance imposed real limits on administrative planning. Ultimately, the hospital was not merely built; it was negotiated into existence.

The evolution of the CHCSJ's two early major contract periods illustrated Macau's declining autonomy in the face of Lisbon's centralisation. In the 19th century, experts had a creative freedom to adopt the hospital design to European and other imperial models (such as the St. Raphael Hospital in Belgium) and adapt them to the local climate and technical realities through pavilion-style architecture. However, with the rise of the Portuguese *Estado Novo* dictatorship, architecture was appropriated as a key propaganda instrument for "Welfare Colonialism." The intervention of the Colonial Urbanisation Office in Lisbon imposed "standardised projects" and comb-like structures identical to those deployed in Luanda or in former Portuguese Guinea. This homogenisation sought to project an image of imperial unity and scientific modernity, effectively subordinating Macau's specificities to Lisbon's architectural values.

This study also highlights a remarkable capacity for technical adaptation amid a clash of cultures. The conversion of the decimal metric system into the Chinese cubit (*chi*) symbolised the necessary translation between Western design and local execution. Furthermore, archival records from the 1950s shed light on the crucial contribution of Chinese women to the heavy labour force. The explicit visibility of these female "water carriers" in official records humanises the history of Macau's development and highlights the multicultural foundations of its built environment.

Ultimately, the legacy of the CHCSJ former 19th and mid-20th century buildings demonstrates that architecture in Macau was the product of a permanent tension between metropolitan control and indispensable local expertise. The demolished hospital structures, in their various forms and changes, served as more than a landmark of public health; it was evidence of the hybridisation of knowledge. Even as buildings disappeared, the technical and social memory of their construction remains proof that Macau was built at the intersection of Portuguese imperial ambition and Chinese resilience.

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