

## INITIAL INVENTORY AND DOCUMENTATION OF STONE/BRICK-AND-LIME VATS (*BALDI*) IN SOME NORTHERN TOWNS OF THE PROVINCE OF ILOCOS SUR, PHILIPPINES

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### ABSTRACT

*This is an initial inventory and documentation of remaining, abandoned and non-functioning vats, locally referred to as baldi, in some northern towns of Ilocos Sur, many of which are in various states of human-mediated damage and natural deterioration. It was undertaken by faculty proponents and students of the College of Architecture of the University of Northern Philippines, Vigan City with a local anthropologist for the period 2017 to 2018. The research sought to establish the significance of the vats in the cultural life of the province. As a descriptive method of research of the qualitative type, the project basically aimed to identify the location of the vats, determine their construction methodology and materials of construction, inscribe their architectural character and features, evaluate their current physical condition and contexts, and ascertain their ownership. The information gathered is structured and presented in a summary of 1) Inventory, in tables, 2) Graphical presentation, 3) Photographs and 4) Description of vat attributes. There are 63 (7 of which could not be measured and could only be photographed) inventoried vats, excluding wells and other features in a few vat assemblages in 17 vat sites (12 of which with visible vat assemblages [sites that include two or more vats]), in 10 barangays of 8 towns (Sinait, Cabugao, San Juan, Magsingal, Santo Domingo, San Ildefonso, San Vicente, and Bantay).*

### INTRODUCTION

Stone and brick vats in the Ilocos region, locally referred to as *baldi*, played a significant role in the dye and woven textile industries that boomed during the Spanish period in the Philippines. The term *baldi* originated from the Spanish word *balde* (bucket) which evolved into *baldi* probably as a spelling mistake or due to local phonetics. According to Rotor (2008), *añil* or azul or indigo is the natural dye derived from the plant *Indigofera hirsuta* or *I. tinctoria*. Situated along the northwest of the island of Luzon facing the West Philippine Sea, the Ilocos produced *añil* in commercial quantities during the Spanish period and exported it to Mexico and Europe via the Galleon Trade. In synchrony with *añil* production was cotton weaving, sometimes including silk from overseas, to produce blankets, clothes, and canvas for ship sails. Cultivation of cotton was encouraged to support the industry, and cotton weaving emerged as a principal industry in the province of Ilocos Sur (Savellano 2009). However, our research also found out that not all of the vats initially documented were exclusively used as dye vats. See accompanying article by Ingel *et al.* (2023) in this issue of JIPA for details.

Ruins of stone and brick vats, clustered in groups, in pairs or standing singly are still found spread intermittently in the urban and rural, residential and agricultural terrains of the northern towns of Ilocos Sur. These built heritage structures which are almost uniform in size are

understood and recognized to have been built during the Spanish period in the Philippines. However, most of the local people in the communities where these structures are found hardly know their function in the past nor their significance in the history of the Ilocos region and of the nation. Such unawareness poses a threat to the existence of these built heritage structures, and their disappearance from the landscape of Ilocos Sur would be a loss in the dimension of our cultural heritage. Thus, conscious effort and deliberate steps must be immediately taken to keep these tangible expressions of our cultural heritage for the future.

The researchers, with two Architecture students' groups as fieldworkers, proposed to engage on a project to carry out an initial inventory and documentation of remaining but abandoned and non-functioning *baldi*, many of which are in various states of deterioration: human-made damage such as due to demolition to make way for residential structures or agriculture, improper use like garbage pit, and plain neglect; and natural deterioration such as vegetative growth and erosion of the lime plaster, stones and bricks. The project basically aimed to establish the location of the vats, determine their construction methodology and materials used, inscribe their architectural character and features, evaluate their current physical condition and contexts, and also to ascertain ownership. Here, the distribution of the vats, their present physical condition, materials and construction methodology, architectural characteristics and other notable features are presented.

However, the project was also pursued for a more important goal: to emphasize that these stone or brick-and-lime vats constitute a part of our tangible cultural heritage. Only by being able to establish the significance that the vats played in the cultural life of the province, that protection and conservation can be set about and educational interests can be created. Consequently, appreciation of their historico-cultural context can potentially lead to the improvement of the immediate environments and bring economic benefits to communities where these heritage structures belong (see Ingel *et al.* 2023).

## RESEARCH METHODOLOGY

The research utilized the descriptive method, following the qualitative type.

### *Data-gathering from the field*

Information on the location of some of the vats initially came from the faculty researchers who have observed them intermittently over the years. Other locations were supplied by students who have also seen them in some towns north of the World Heritage City of Vigan, in the Province of Ilocos Sur. As the faculty researchers and field documenters went to the field, more were discovered through the help of local people themselves, including some who would serve as key informants for this research.

An inventory of these stone and brick-and-lime vats was conducted by two faculty researchers of the College of Architecture and two Architecture students' groups as field documenters or CAD operators. This activity involved measuring and taking photos of the vats to record their diagnostic characteristics and present them as graphical and photo-documentations. Seven vats in four sites could only be photographed, and measurements in the two Sinait sites could not be done because of the largely damaged condition of the vats (see Table 1 for details). Photographs, measurements and other observations were taken of 56 vats in 13 sites, enabling the researchers later on to locate the sites on Google Earth map images, draw the architectural plans of the vats, as well as plot the layout of the vat assemblages where possible.

Apart from abovesaid inventory, review of related ethnohistorical literature and ethnographic research was also undertaken, particularly oral history documentation where endorsement or approval was given by concerned families and key informants. For the oral history and ethnohistorical notes pertinent to the Ilocos stone and brick-and-lime vats, see Ingel *et al.* (2023).

### *Timeframe*

Fieldwork was done by the faculty and researchers from the College of Architecture for the School Year 2017–2018. Additional oral history documentation and review of literature

was done from May to June 2018. Writing of the results was undertaken from June to first week of August 2018.

**PRESENTATION OF INFORMATION**

The information gathered is structured and presented in this paper in a summary as follows:

- Inventory, presented in tables
- Graphical presentation
- Photographs
- Diagnostic vat attributes (see Ingel *et al.* 2023).

Some details on the inventoried/documentated vats are presented below, identified under Site Number, Number of Vats Per Site, Location, Remarks re location, condition of the vats, and present use (Table 1); and further described under Vat Designation, Material and Construction Methodology, Inner Diameter in

meters, Thickness of Finish Masonry in meters, and Height in meters (Tables 2 and 3).

**INVENTORY OF THE VATS AND THEIR ATTRIBUTES**

*Distribution*

Excluding wells (water source) and other smaller features found within sites, the research team inventoried a total of 63 stone/brick-and-lime vats or *baldi* in 17 separate sites found in ten barangays, in eight towns north of the heritage city of Vigan (Table 1). From north to south, these towns include Sinait, Cabugao, San Juan, Magsingal, Santo Domingo, San Ildefonso, San Vicente and Bantay. Twelve sites have two or more vats, therefore referred to as sites with vat assemblages in this research. The wall-to-wall attachment between vats is common among the vat assemblages.

**Table 1. List of the Inventoried/Documentated Vats.**

<b>Site No.</b>	<b>Location</b>	<b>Remarks re location, condition of the vats, present use, etc.</b>	<b>No. of vats</b>	<b>Documentation</b>
1.1	Sinait (Barangay Magsaysay)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• Vat is largely ruined and partly demolished</li> </ul>	<b>1</b>	<i>Only photographed</i>
1.2	Sinait (Barangay Magsaysay)	<ul style="list-style-type: none"> <li>• Residential, with a small forested area (south of Site 1.1)</li> <li>• Vat is almost totally ruined by overgrowth (trees &amp; other plants)</li> </ul>	<b>1</b>	<i>Only photographed</i>
2.1	Cabugao (Barangay Daclapan)	<ul style="list-style-type: none"> <li>• Agricultural area near coast</li> </ul>	<b>2</b>	<i>Fully documented</i>
2.2	Cabugao (Barangay Daclapan)	<ul style="list-style-type: none"> <li>• Inside a wide-fenced residential area</li> </ul>	<b>1 (?)</b>	<i>Could only be observed and photographed from a distance due to refusal of owner/caretaker to the researchers' request for access</i>
3.1	San Juan (Barangay Saoang)	<ul style="list-style-type: none"> <li>• Agricultural area</li> </ul>	<b>2 (1 pair)</b>	<i>Fully documented</i>

**Table 1. List of the Inventoried/Documented Vats (cont.).**

<b>Site No.</b>	<b>Location</b>	<b>Remarks re location, condition of the vats, present use, etc.</b>	<b>No. of vats</b>	<b>Documentation</b>
3.2	San Juan (Barangay Saoang)	<ul style="list-style-type: none"> <li>• Agricultural area</li> </ul>	2 (1 pair)	<i>Fully documented</i>
3.3	San Juan (Barangay Saoang)	<ul style="list-style-type: none"> <li>• Agricultural area</li> <li>• Partly covered by wild vegetation</li> </ul>	Well + 2	<i>Fully documented</i>
3.4	San Juan (Barangay Saoang)	<ul style="list-style-type: none"> <li>• Residential area, with the vats between houses and fences</li> <li>• The vats are well-organized in two rows, beside a spring on the SW, S &amp; SE</li> </ul>	11	<i>Fully documented</i>
4.1	San Juan (Barangay San Isidro Norte)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• The vats are utilized as landscape features, one with overgrowth</li> </ul>	4	<i>Fully documented</i>
4.2	San Juan (Barangay San Isidro Norte)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• The vats are with overgrowth</li> </ul>	2	<i>Fully documented</i>
5.1	San Vicente (Barangay San Sebastian)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• The vats are covered with vegetation/overgrowth</li> </ul>	4 + 3 other features	<i>Fully documented</i>
6.1	Magsingal (Barangay San Basilio)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• Vat is presently utilized as landscape feature</li> </ul>	1	<i>Fully documented</i>
6.2	Magsingal (Barangay San Basilio)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• Vats presently serve as fence or lot boundary</li> </ul>	5	<i>Fully documented</i>
7.1	Santo Domingo (Barangay Pangpang-dan)	<ul style="list-style-type: none"> <li>• Residential</li> <li>• At least one vat is presently used as storage for irrigation water?</li> </ul>	4	<i>Only photographed</i>
8.1	San Ildefonso	<ul style="list-style-type: none"> <li>• Residential</li> <li>• On a garbage area, with overgrowth</li> </ul>	2 (1 pair)	<i>Fully documented</i>
9.1	Bantay (Barangay Balaleng)	<ul style="list-style-type: none"> <li>• Residential area</li> <li>• Vat is utilized as a landscape feature</li> </ul>	1	<i>Fully documented</i>
10.1	Bantay (Barangay An-annam)	<ul style="list-style-type: none"> <li>• Agricultural area</li> <li>• Most of the vats are covered by wild vegetation</li> <li>• Said land is known in the community as having been previously owned by the Quema and Crisologo families</li> <li>• Area covered by all the vats as laid out – approximately 26 m W &amp; 30 m L = 780 sqm (or about 800 sqm)</li> </ul>	Well + 18	<i>Fully documented</i>



**Table 1. List of the Inventoried/Documented Vats (cont.).**

<p><b>Sites:</b></p> <ul style="list-style-type: none"> <li>• Number of towns: <b>8</b></li> <li>• Number of barangays where the vats are located: <b>10</b></li> <li>• Number of vat sites: <b>17</b> (<b>12</b> of which with visible <b>vat assemblages</b> [sites that include two or more vats])</li> <li>• Number of inventoried vats, excluding wells and other features in a few vat assemblages: <b>63</b></li> </ul> <p><b>Number of vats per site:</b></p> <ul style="list-style-type: none"> <li>• 5 sites have 1 vat only</li> <li>• 6 sites have 2 vats (3 in pairs)</li> <li>• 3 sites have 4 vats</li> <li>• 1 site has 5 vats</li> <li>• 1 site has 11 vats</li> <li>• 1 site has 18 vats</li> </ul> <p><b>Condition of vats:</b></p> <ul style="list-style-type: none"> <li>• 1 vat totally ruined</li> <li>• 1 vat largely ruined and partly demolished</li> <li>• All other vats partly ruined and covered with overgrowth (trees and other vegetations)</li> </ul> <p><b>Location of vats:</b></p> <ul style="list-style-type: none"> <li>• 9 sites are in residential areas</li> <li>• 1 site between houses and fences beside a spring</li> <li>• 5 sites are in agricultural areas, with 1 site in an agricultural area near the coast</li> <li>• 1 site is in a forested area</li> <li>• 1 site is inside a wide-fenced property</li> </ul> <p><b>Present use of vats:</b></p> <ul style="list-style-type: none"> <li>• 3 assemblages (2 single and 1 assemblage of 4 vats) used as landscape elements</li> <li>• 1 assemblage of 2 vats used as garbage collection area</li> <li>• 1 vat in assemblage of 4 vats used as storage for irrigation water</li> <li>• 1 assemblage of 5 vats used as fence/lot boundary</li> <li>• All others are abandoned and unused</li> </ul>
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**Table 2. Information on the Vats observed in some Detail.**

<b>Site No./ Component</b>	<b>Material/s and Construction methodology</b>	<b>*Multiple Vat/Feature designation</b>	<b>Inner Diameter (m.)</b>	<b>Thickness of Finish Masonry (m.)</b>	<b>Height (m.)</b>
1.1	Corals, boulders and stones; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	N/A	<i>Not measured due to condition</i>		
2.1	As above	a	1.60	0.35	1.10
		b	2.20	0.40	2.00
3.1	Corals; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a & b (attached to each other)	2.20	0.40	1.80
3.2	As above	a & b (attached to each other)	2.20	0.40	1.80
3.3	Corals, boulders and stones; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	<i>Well</i>	2.20	0.30	N/A
		a	1.60	0.35	1.10
		b	2.20	0.40	2.00
3.4 Row 1 (6, all attached together)	Corals; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a	2.20	0.40	2.40
		b	2.20	0.40	2.40
		c	2.20	0.40	2.80
		d	2.20	0.40	2.80
		e	2.20	0.40	2.40
		f	2.20	0.40	2.40
3.4 Row 2 (5, 'a' & 'b' attached; 'c', 'd' & 'e' attached)		a	2.80	0.40	1.50
		b	1.80	0.35	1.50
		c	2.80	0.40	1.70
		d	1.80	0.35	1.70
		e	1.80	0.35	1.70
4.1; 'b', 'c' & 'd' connected through a gutter	Corals; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a	1.60	0.35	1.10
		b	2.80	0.40	0.80
		c	2.20	0.40	2.00
		d	2.20	0.40	2.00
4.2	Corals, boulders and stones; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a	1.60	0.35	1.10
		b	2.20	0.40	2.00

Table 2. Information on the Vats observed in some Detail (cont.).

Site No./ Component	Material/s and Construction methodology	Multiple Vat/ Feature designation*	Inner Diam- eter (m.)	Thickness of Finish Masonry (m.)	Height (m.)
5.1 <i>Round vats</i> ('a' is attached to the well below the wall; the well is attached to 'd' also by the well; 'b', 'c' & 'd' are attached next to each other by the wall)	Bricks and boulders; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a ( <i>for indigo plant fermentation</i> )	2.45	0.50	Total original height/depth, approx. 3.10
		b ' <i>Kalakkian</i> '	2.30	0.30	Existing depth 1.3
		c ( <i>small drip catchment vat</i> )	0.90	0.20	
		d ( <i>Kaba'yan</i> )	3.00	0.50	Existing depth 1.3
5.1 <i>Other features within the vat assemblage</i>	Same material as above	<i>Rectangular water storage vat (west of vat 'a' &amp; well)</i> <i>Well (perched between vats 'a' and 'd')</i> <i>Platform (at the middle, facilitating transfer of material from vat to vat)</i>			
6.1	Bricks laid on top of each other on inner and outer surfaces; held in place by lime mortar; filled with stones inside; surfaces protected by lime plaster	N/A	2.80	0.50	1.00
6.2	Corals; laid on top of each other and held in place by lime mortar; surfaces protected by lime plaster	a	2.80	0.40	1.10
		b	1.60	0.35	0.80
		c	2.80	0.40	1.80
		d & e ( <i>attached pair</i> )	2.20	0.40	1.50

**Table 2. Information on the Vats observed in some Detail (cont.).**

<b>Site No./ Component</b>	<b>Material/s and Construction methodology</b>	<b>*Multiple Vat/Feature designation</b>	<b>Inner Diameter (m.)</b>	<b>Thickness of Finish Masonry (m.)</b>	<b>Height (m.)</b>
7.1	Brick and stones laid alternately on top of each other; held in place by lime mortar; filled with stones inside; surfaces protected by lime plaster		<i>Not fully measured</i>		
8.1	Stones laid on top of each other and held in place by lime mortar	a & b (attached to each other)	1.60	0.30	1.50
9.1	As above	N/A	2.80	0.40	0.80
10.1 <i>Row 1</i> (3 pairs)	Bricks laid on top of each other on inner and outer surfaces; held in place by lime mortar; filled with stones inside; surfaces protected by lime plaster	a–b, c–d, e–f (with each pair attached to each other)	3.00 (approx.)	0.50 (approx.)	2.00
10.1 <i>Well</i>		<i>Well</i>	1.30 (approx.)		
10.1 <i>Row 2</i> (3 vats)		a–c (all attached to each other)	3.80 (approx.)	0.50 (approx.)	Depth 1.80
10.1 <i>Row 3</i> (3 vats)		a–c (all attached to each other)	3.80 (approx.)	0.50 (approx.)	Depth 1.80
10.1 <i>Row 4</i> (3 pairs)		a–b, c–d, e–f (with each pair attached to each other)	3.00 (approx.)	0.50 (approx.)	2.00

\* Designation is applied where a site has more than one vat. These designations are made only for the purpose of the table and are not used in the architecturally drawn plans.

**Table 3. Summary of Vat Attributes.**

<p><b>Materials and Construction Methodology:</b></p> <ul style="list-style-type: none"> <li>• 24 vats are constructed of corals held in place by lime mortar with lime plaster on surfaces</li> <li>• 19 vats are constructed of bricks held in place by lime mortar with lime plaster on surfaces</li> <li>• 8 vats are constructed of bricks, boulders and stones held in place by lime mortar with lime plaster on surfaces</li> <li>• 7 vats are constructed of corals, boulders and stones held in place by lime mortar with lime plaster on surfaces</li> <li>• 3 vats are constructed of stones held in place by lime mortar with lime plaster on surfaces</li> <li>• 2 vats have undetermined materials and construction methodology</li> </ul>
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**Table 3. Summary of Vat Attributes (cont.).****Inner Diameter (m.)**

Most vats (20) have a diameter of 3.00 m, while 1 vat has the smallest diameter at 0.90 m.

- 5 vats – 3.80 m.
- 20 vats – 3.00 m.
- 7 vats – 2.80 m.
- 16 vats – 2.20 m.
- 1 vat – 2.45 m.
- 1 vat – 2.30 m.
- 3 vats – 1.80 m.
- 7 vats – 1.60 m.
- 1 vat – 0.90 m.
- 3 vats undetermined

**Thickness of Finish Masonry (m.)**

Most vats (24) have a finish masonry thickness of 0.40 m, while the narrowest (1 vat) has 0.20 m.

- 17 vats – 0.50 m.
- 24 vats – 0.40 m.
- 8 vats – 0.35 m.
- 2 vats – 0.30 m.
- 1 vat – 0.20 m.
- 3 vats undetermined

**Height (m.)**

Most vats (25) have a height of 2.00 m, while 2 vats are tallest at 2.80 m and 2 vats are shortest at 0.80 m.

- 2 vats – 2.80 m.
- 5 vats – 2.40 m.
- 25 vats – 2.00 m.
- 6 vats – 1.80 m.
- 3 vats – 1.70 m.
- 4 vats – 1.50 m.
- 4 vats – 1.30 m.
- 5 vats – 1.10 m.
- 5 vats – 1.00 m.
- 2 vats – 0.80 m.
- 3 vats undetermined

An assemblage of 11 vats was found beside a spring (or creek) at one site in Barangay Saoang, San Juan; thus, only rivalled in number by the 18 vats found in a single assemblage and site in Barangay An-annam, Bantay. Five vats are in one site in Barangay San Basilio, Magsingal; three assemblages of four vats each are in separate sites in Barangay San Isidro Norte, San Juan, Barangay Pangpangdan, Santo Domingo, and Barangay San Sebastian, San Vicente; there are six pairs of vats in six separate sites in Cabugao (one site), San Juan (four sites) and San Idefonso (one site); while five sites have only one vat each.

#### *Present physical condition*

The inventoried vats are in various states of ruin or deterioration, given what is evidently many decades or even a century of neglect and the conversion of the sites and/or their environs into other functions, particularly as housing areas. Interestingly, while a sole *baldi* in one site in Sinait appears to have been intentionally, although partially, demolished, most vats in the rest of the sites had been kept, albeit untended, instead of totally done away with as could be expected where new constructions rise.

Houses and fences are interspersed in between or along the vats in some sites. For instance, the vats in the largest assemblage in San Juan had been left barely touched, sometimes serving as boundaries, even as human settlement has grown and despite the fact that these massive features obstruct passage and eat up space that could have been cleared for contemporary relevant purposes. In at least two sites, the *baldi* are utilized as garden or landscape elements where ornamental plants had been set, while at least one vat in the lone documented Santo Domingo site is used as storage for water that could later serve for irrigation. In another site, the area where the pair of vats is situated has been made into a garbage station. It is observable that the worst physical degradation of the vats is not much a result of deliberate destruction; rather, it is mostly a consequence of human disregard, including unchecked and wild vegetational growth over these cultural features and their immediate environs.

## VAT ATTRIBUTES

### *Material*

Most of the vats are made of coral and/or boulder stones, with lime mortar. Only the vats in one site in Barangay San Basilio, Magsingal, in the Barangay San Sebastian, San Vicente site, and in the lone but largest site in Barangay An-annam, Bantay had been recorded as having been built using both stones and bricks. Most are plastered with lime, although as observed, much of the plaster is gone.

### *Dimensions*

In the 13 sites where measurements could be made on a total of 56 *baldi*, those that are 2.2 meters wide (measured from inner diameter) dominate in eight sites in the contiguous towns of Cabugao, San Juan and Magsingal as they number 17 out of 30 vats. Markedly, said vats have masonry of the same thickness (0.40 m), although their heights vary from 1.8 to 2.8 meters, with five vats that are 2.0 meters high. On the other hand, vats that are 1.6 meters (5 units), 1.8 meters (3 units), and/or 2.8 meters wide (7 units), with heights ranging 0.80–1.8 meters are found in nine sites. The vats that are 2.2 meters wide and 2.0 meters high appear to be the bigger ones in the sites referred to. It should be noted, however, that measurements about height and/or depth are uncertain—for one, most documenters took height measurements from the ground level outside the vats up to the rim, while a few took depth measurements, that is, from the bottom of the vats up to the rim; second, the existing bottom of some vats appear to have been piled up with organic debris, mostly from plants and overgrowth.

Evidently, the second largest vat assemblage (Site 3.4, Barangay Saoang, San Juan) covered by this research also has the larger vats at 1.8, 2.2 and 2.8 meters wide, and generally tall at 1.5, 1.7, 2.4 and 2.8 meters high. The dimensions of vats in this assemblage appear to be common, thus standard, among the sites, except for two separate sites in Barangay San Sebastian, San Vicente and Barangay An-Annang, Bantay.

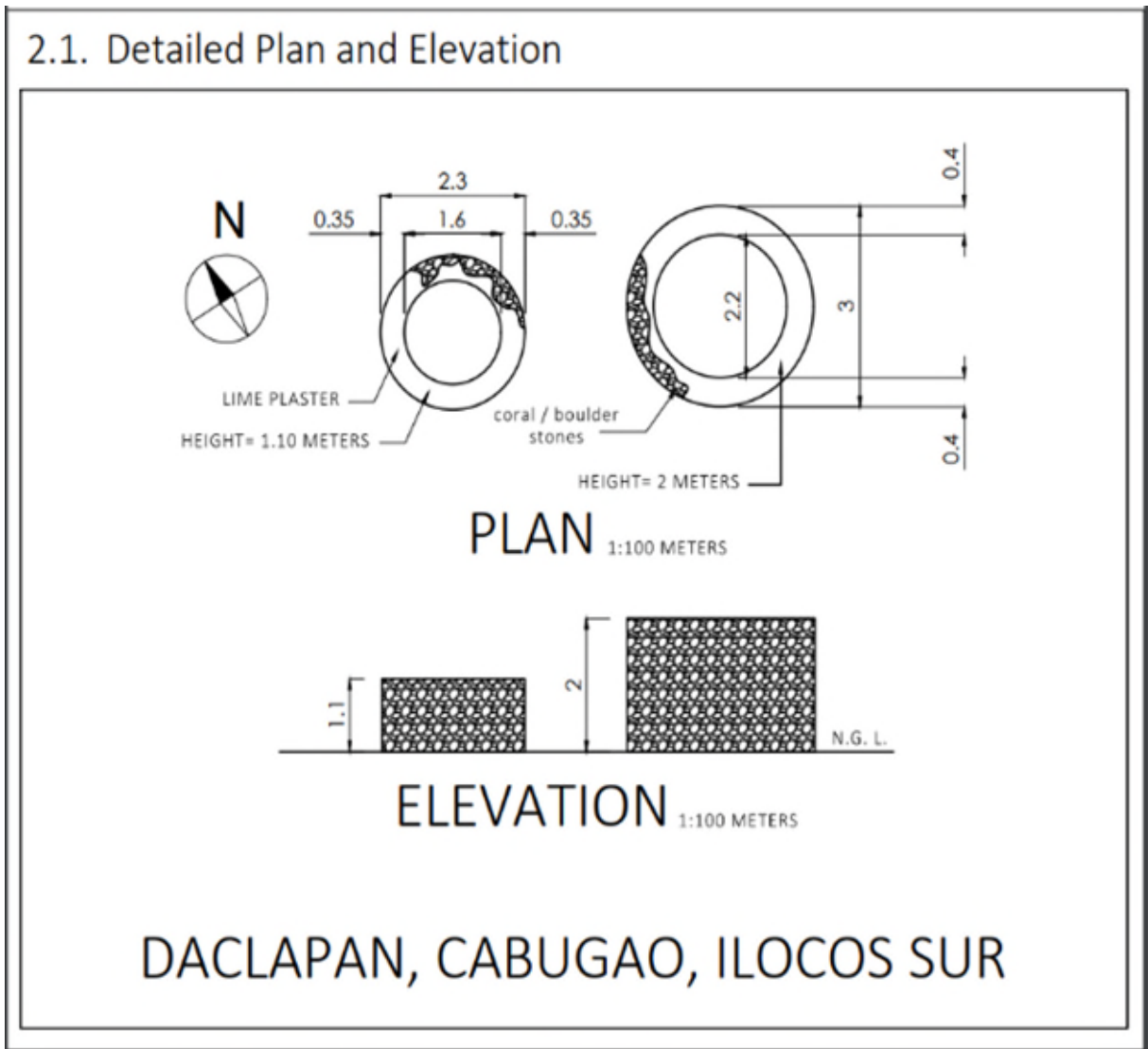
Noteworthy is the fact that the widest, most massive vats appear in these last two sites: out of

the only four vats in the Barangay San Sebastian site, three measure 2.3, 2.45 and 3.0 meters wide respectively, although only the 2.45-meter-wide vat is high and deeper at 3.1 meters. The biggest site, with the largest assemblage (18 vats), Barangay An-annam in Bantay, has four rows of vats: six vats measure approximately 3.8 meters wide (again at inner diameter) and 1.8 meters deep; and 12 vats measure approximately 3.0

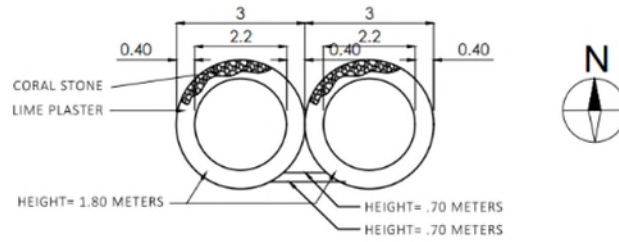
meters wide and 2.0 meters high. All these *baldi* in the An-annam site also have thicker masonry at approximately 0.50 meters.

GRAPHICAL PRESENTATION

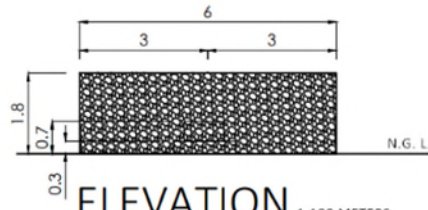
Plans and elevations on sites 2.1 to 10.1 are presented below, along with dimensions and description of materials.



### 3.1. Detailed Plan and Elevation



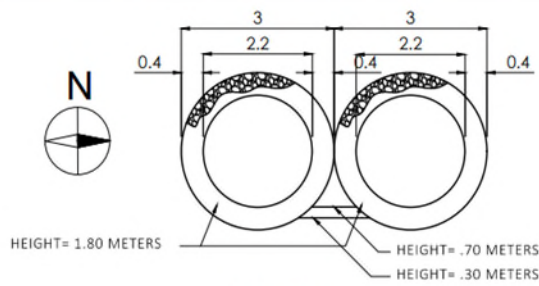
PLAN 1:100 METERS



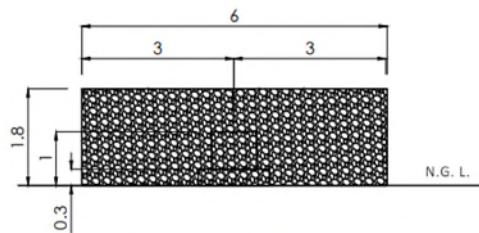
ELEVATION 1:100 METERS

SAOANG, SAN JUAN, ILOCOS SUR

### 3.2. Detailed Plan and Elevation



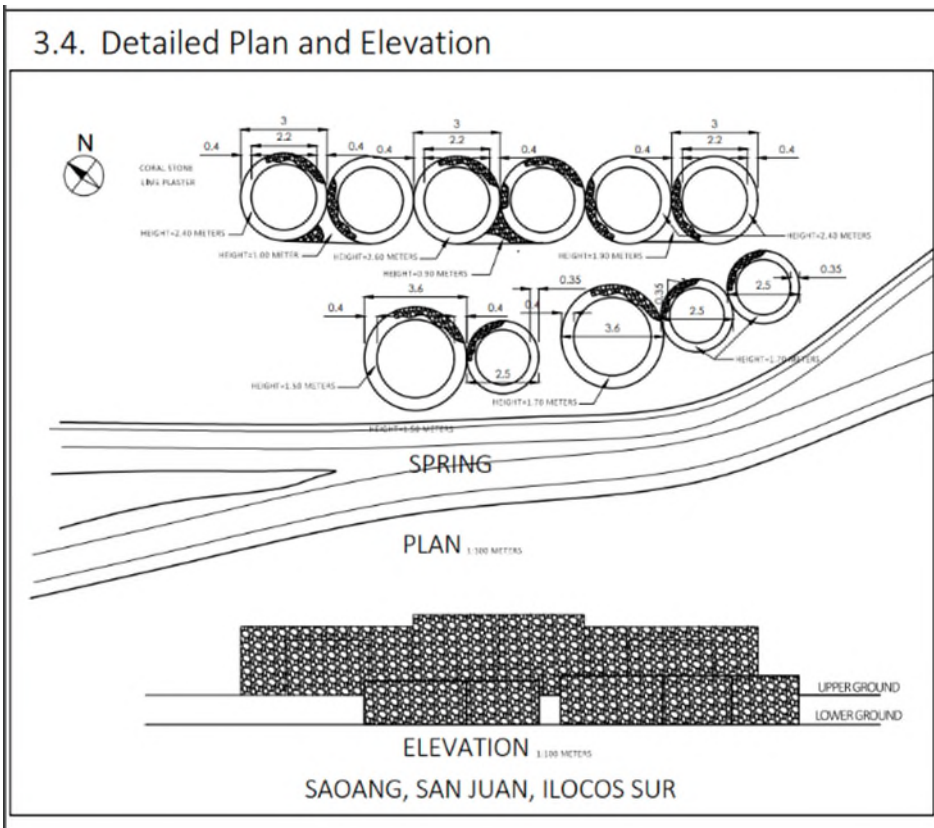
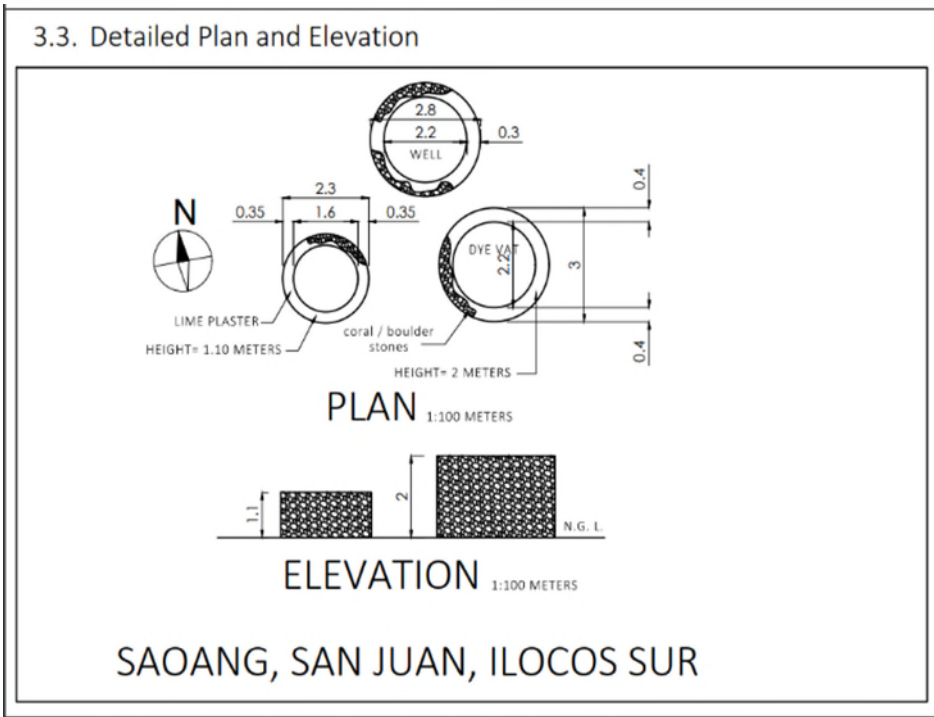
PLAN 1:100 METERS



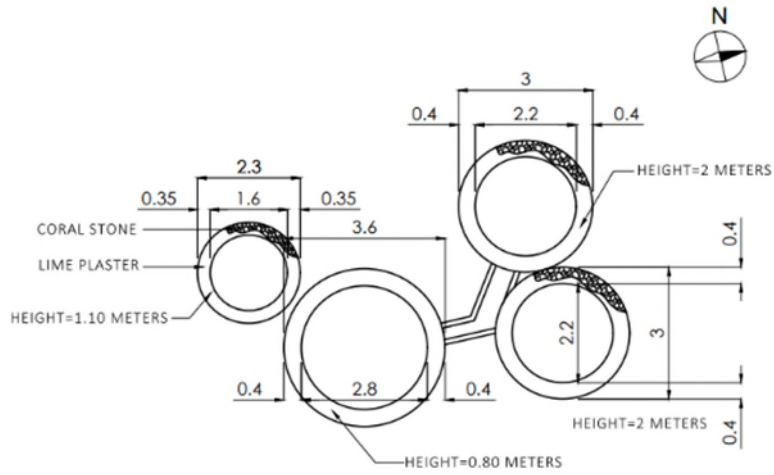
ELEVATION 1:100 METERS

SAOANG, SAN JUAN, ILOCOS SUR



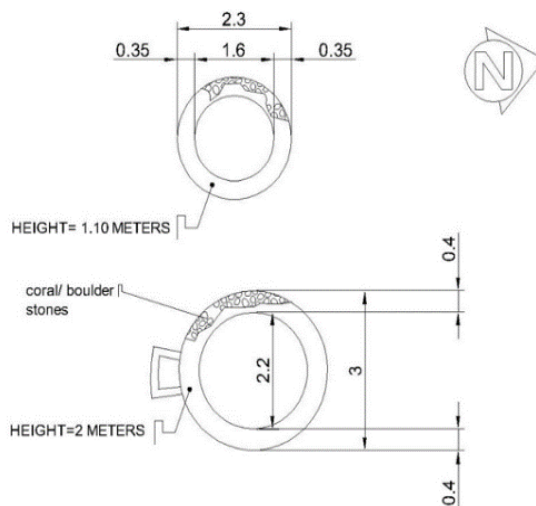


#### 4.1. Detailed Plan and Elevation



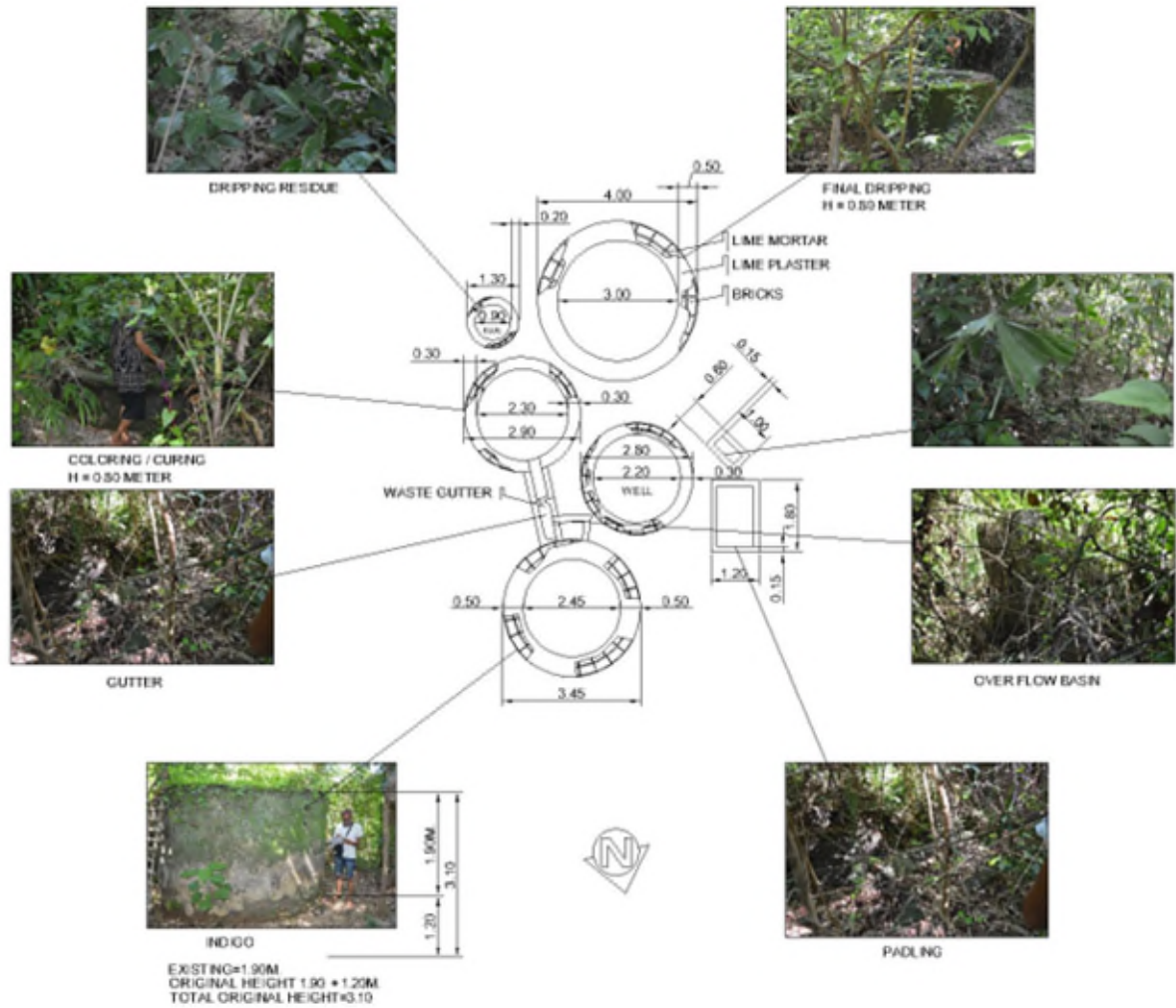
SAN ISIDRO NORTE, SAN JUAN, ILOCOS SUR

#### 4.2. Detailed Plan and Elevation



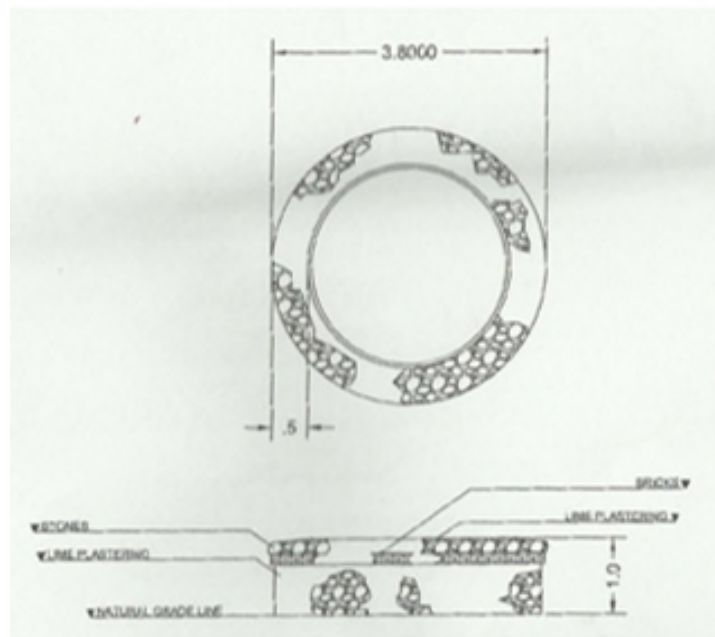
SAN ISIDRO NORTE, SAN JUAN, ILOCOS SUR

### 5.1. Detailed Plan and Functions



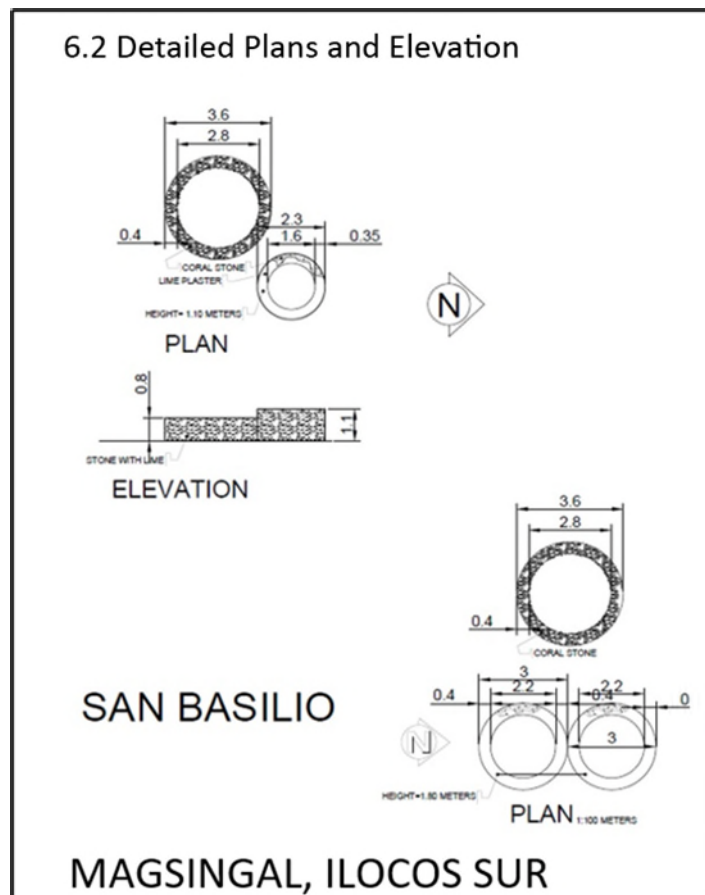
BRGY. SAN SEBASTIAN, SAN VICENTE, ILOCOS SUR

### 6.1 Detailed Plan and Elevation



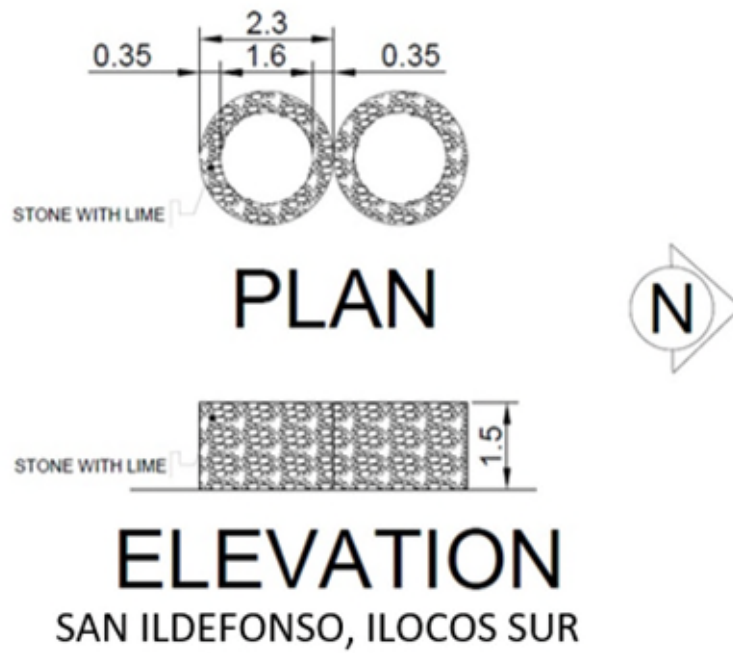
BRGY. SAN BASILIO, MAGSINGAL, ILOCOS SUR

### 6.2 Detailed Plans and Elevation

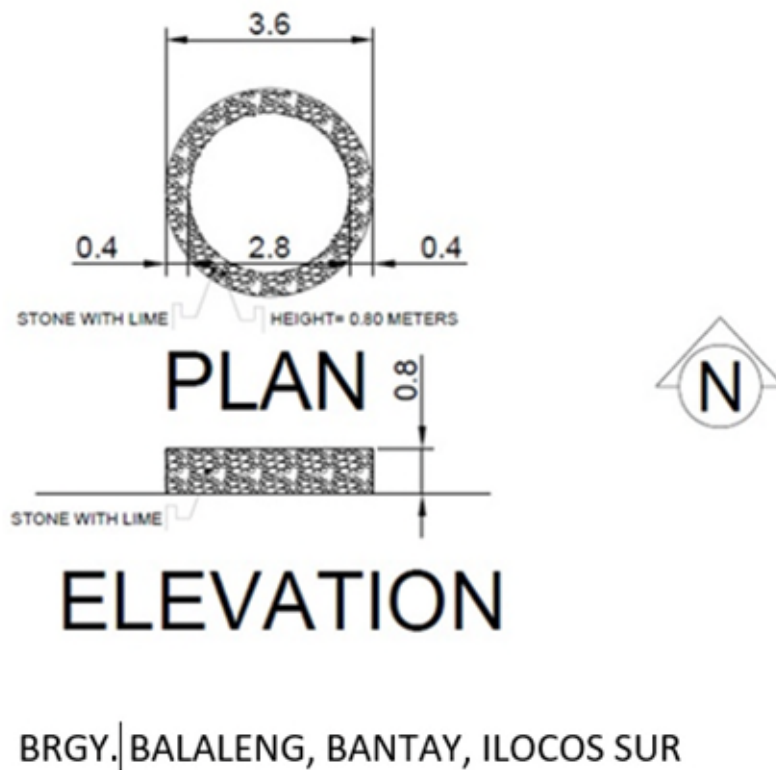


(7.1. sets of vats were not fully measured).

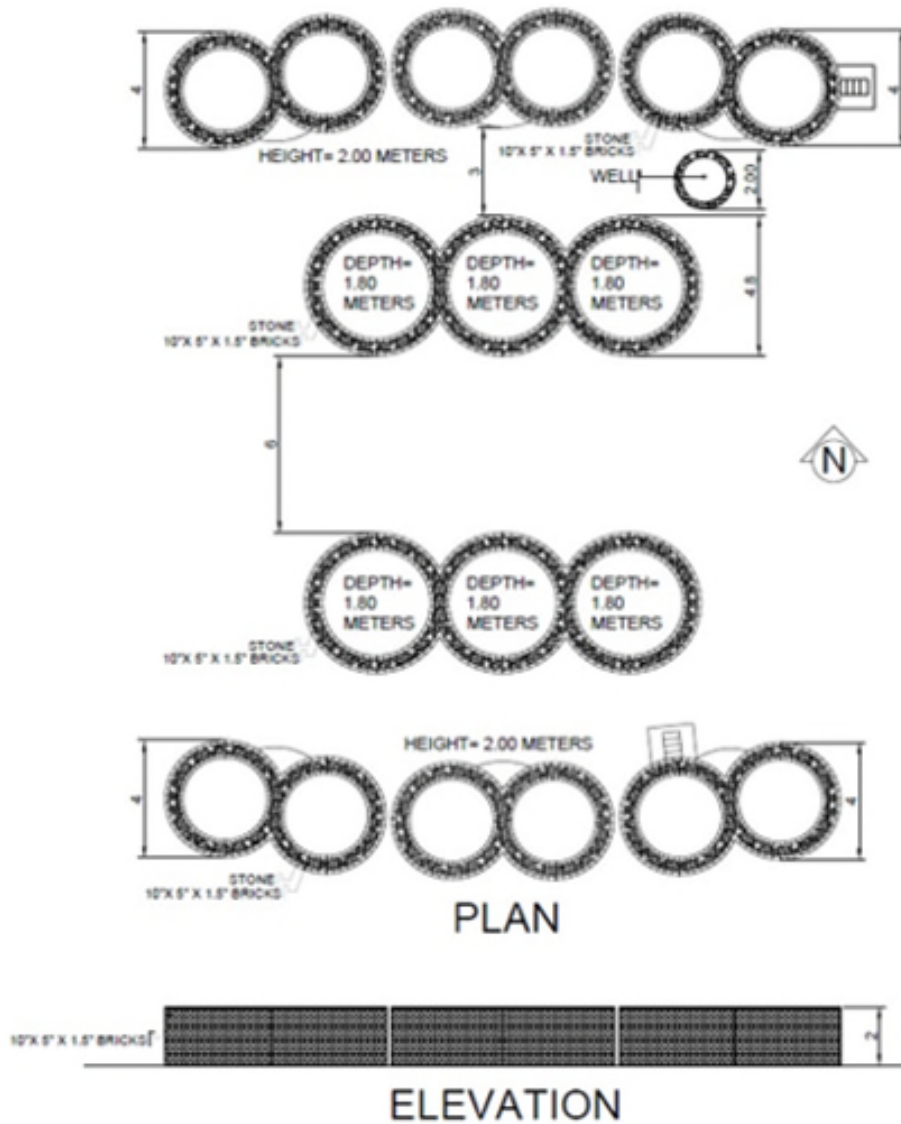
8.1. Detailed Plans and Elevations



9.1. Detailed Plan and Elevation



### 10.1. Detailed Plans and Elevations



### BRGY. AN-ANNAM, BANTAY, ILOCOS SUR

#### PHOTOGRAPHS

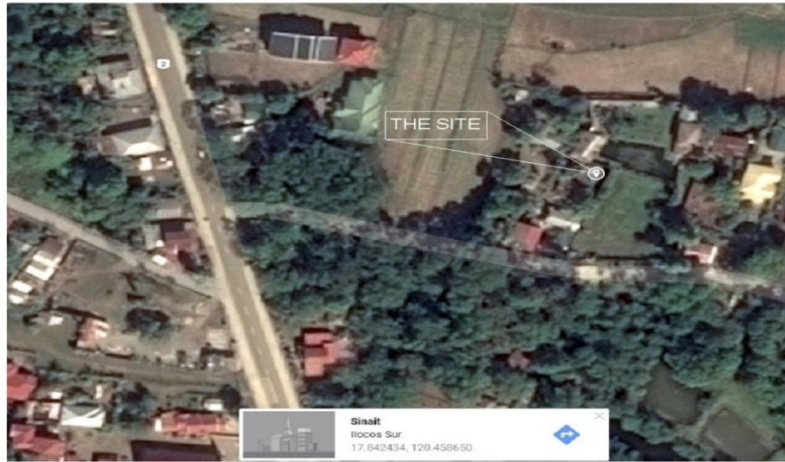
Photographs were taken to support the inventory.

A selection is presented below in the same sequence as in Table 1.



*Site 1.1 Barangay Magsaysay, Sinait, Ilocos Sur*

**1.1. Location Map 1- Northern part**



**1.1. Materials – Coral stones, boulders, stones, lime mortar**



**1.1. View of the vat ruins**





*Site 1.2 Barangay Magsaysay, Sinait, Ilocos Sur*

**1.2. Location Map 2 – Southern part**



**1.2. View from the South**





*Site 2.1 Barangay Daclapan, Cabugao, Ilocos Sur*

**2.1. Location Map 1 (Western part)**



**2.1. View from Northeast**



**2.1. Materials - Coral stones, boulders, stones, lime plaster**





*Site 2.2 Barangay Daclapan, Cabugao, Ilocos Sur*

**2.2 Brgy. Daclapan, Cabugao, Ilocos Sur**

**2.2. Location Map 2 (Eastern part)**



**2.2. View from West**



*Site 3.1 Barangay Saoang, San Juan, Ilocos Sur*

**3.1. Brgy. Saoang, San Juan, Ilocos Sur |**

**3.1. Location Map 1**



**3.1. View from Northeast**





*Site 3.2 Barangay Saoang, San Juan, Ilocos Sur*

**3.2. Location Map 2 Brgy. Saoang, San Juan, Ilocos Sur**



**3.2 View from East**



*Site 3.3 Barangay Saoang, San Juan, Ilocos Sur*

**3.3. Location Map 3 Brgy. Saoang, San Juan, Ilocos Sur**



**3.3. View from North**



**3.3. The Well**





*Site 3.4 Barangay Saoang, San Juan, Ilocos Sur*

**3.4. Location Map 4 Brgy. Saoang, San Juan, Ilocos Sur**



**3.4. View 2**



**3.4. View 4**



**3.4. View 3**





*Site 4.1 Barangay San Isidro Norte, San Juan, Ilocos Sur*

**4.1. Location Map 1 Brgy. San Isidro Norte, San Juan, Ilocos Sur**



**4.1. View from Southeast**



**4.1. View from East**





*Site 4.2 Barangay San Isidro Norte, San Juan, Ilocos Sur*

**4.2. Location Map 2 Brgy. San Isidro Norte, San Juan, Ilocos Sur**



**4.2. Closer view from Northwest**





*Site 5.1 Barangay San Sebastian, San Vicente, Ilocos Sur*

**Site 5.1. Brgy. San Sebastian, San Vicente, Ilocos Sur**

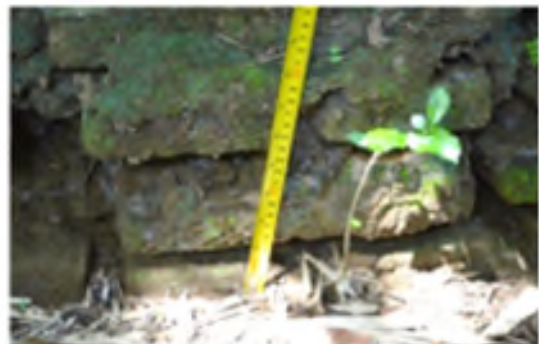
**Location map**



**5.1. Indigo dye vat**



**5.1. Brick thickness**



**5.1. The well and gutter**



*Site 6.1 Barangay San Basilio, Magsingal, Ilocos Sur*

Site 6.1. Brgy. San Basilio, Magsingal, Ilocos Sur  
Location map



Brick and lime vat used as flower pot stand



*Site 6.2 Barangay San Basilio, Magsingal, Ilocos Sur*

Site 6.2 Brgy. San Basilio, Magsingal, Ilocos Sur



6.2. Closer view of the vat wall



6.2. Vat covered with moss





*Site 7.1 Barangay Pangpang-dan, Santo Domingo, Ilocos Sur*

**(No location map of site taken).**

**7.1. View of the interior of the vat**



**7.1 Vat walls of stone and lime**



*Site 8.1 San Idefonso, Ilocos Sur*

**Site 8.1. San Idefonso, Ilocos Sur**

**Location map**



**Vat ruins**





*Site 9.1 Barangay Balaleng, Bantay, Ilocos Sur*

**Site 9.1. Brgy. Balaleng, Bantay, Ilocos Sur**

**Location map**



**9.1. Stone vat**



*Site 10.1 Barangay An-annam West, Bantay, Ilocos Sur*

**Site 10.1. Brgy. An-annam West, Bantay, Ilocos Sur**  
**Location map**



**10.1. Rows of stone vats**



**10.1. Interior of stone vat**



## DISCUSSION: CONSERVATION OF THE ILOCOS VATS

The initial research in this paper demonstrates the potential of the Ilocos vats as a significant component of the cultural heritage of the Ilocos built environment. The first step towards conservation of sites is to record them. Accordingly, a research activity earnestly proposed for the immediate future is completion of the inventory and documentation of the Ilocos vats, to cover both the sites that were not fully documented and those in other communities and towns that were not included in this initial project.

Recording should be followed by appreciation and protection of the vats and vat sites as potentially nationally-significant, local tangible cultural heritage. This endeavor could be promoted through concerned government units as the most appropriate agencies that could lobby with property owners, communities, and barangay and municipal government units under whose jurisdiction the vat sites belong and thus primarily responsible for their protection. The assemblages of stone vats in Barangays Saoang (3.4.) and San Isidro Norte (4.1.) in San Juan, Ilocos Sur; in Barangay San Sebastian, San Vicente, Ilocos Sur (5.1.), and in Barangay Annam, Bantay, Ilocos Sur (10.1.) have potential in the local governments' educational and cultural tourism. These could serve as showcases of the nineteenth to early twentieth century indigo industry and dyeing in the Ilocos.

The University of Northern Philippines, particularly the proponents from the College of Architecture, may initiate this effort so that the University, as an institution, would first reach out to local government units based on official institution-to-institution protocols.

The initial move for community-based protection could be to seek the commitment of concerned actors not to demolish, alter, or cause any form of damage to the vats and vat sites, and to clean the vats' surroundings only with care so as not in any way to damage the vats.

The next move, on the other hand, could be the conduct of assessment related to conservation, and finally the application of appropriate conservation and protection measures. It must be emphasized, however, that

the responsible local agencies must ensure that assessments and any action for conservation and protection shall only be undertaken with the guidance of institutions that specialize on the same, such as the National Museum of the Philippines.

Further research, and one that is multi-faceted (see Ingel *et al.* 2023), must be done on the surviving *baldi* of the province, given both the limitations of this initial inventory and documentation and the so many potentials that were uncovered by the same.

## CONCLUSION

This initial inventory and documentation of stone/brick-and-lime vats (generally referred to as *baldi*) in eight northern towns of the province of Ilocos Sur yielded a listing of a total of 63 vats in 17 sites located in 10 barangays. Twelve of said sites have assemblages of two or more vats. Fifty-six of these *baldi*, in 13 sites, were measured for this research. Maps were prepared of 14 vat sites, and photographs taken of all of them, of which a selection is presented here. The vat sites have significant potential in contributing to the appreciation of the built heritage environment, as well as of the economic and cultural history of the province of Ilocos Sur province and the Ilocos region.

## ACKNOWLEDGMENTS

### *Student Researchers*

University of Northern Philippines—College of Architecture Des 201, First Semester, SY 2017–2018; and Des 202, Second Semester, SY 2017–2018.

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- Ingel, M.L. I, F. Nicetas A. Rabang-Alonzo, U.A. Pacada, G.A. Retuta and R.B. Navarro. 2023. Preliminary notes from oral history and literature on the *baldi* of Ilocos Sur, Philippines. *Journal of Indo-Pacific Archaeology* 47:1–17.
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