



# ***APPENDIX I***

## ***Restoration activities for each area***

### **各エリアの修復内容レポート**

*Report on the Conservation and Restoration work of  
LION and NAGA Balustrades at the Causeway and Outer  
Gallery of BAYON  
Angkor, UNESCO World Heritage Site.*





Area : T71.1-1/NorthEast Operated Term : 5 month

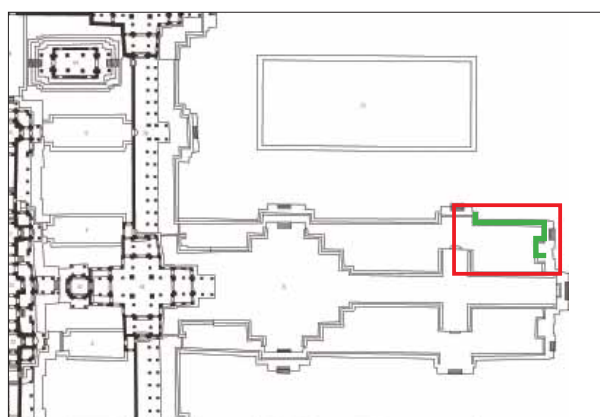


Before Restoration



After Restoration

## Area : T71.1-1/NorthEast Operated Term : 5 month



### Repaired number

■Lion Statues .....3

■Naga statue.....3

■Other Balustrade elements

Handrail.....10

Post.....6

Basement.....8

Total 30 elements

### ■ Restoration activity at T71.1-1/Northeast

In this area, platform was heavily distorted and some elements were fell down under the platform. After surveying and recording, we confirmed that some scattered elements of the balustrade around the platform could use and back as a handrail.

After dismantle the balustrade and started repairing of each elements, in parallel, maintenance platforms was started. It was obvious that one of the causes of inclination of balustrade was uneven subsidence of platform structure. The problems of such subsidence mainly be ascribed to the loss of the soil compacted inside the platform. However, in our project, we only reconstruct surface layer of the platform. Thus, it was difficult to make align the horizontal level and make stable condition to install balustrade. For such gap between platform and basement that could not keep stable condition, we insert new sandstone plate for support, and also filling gap with soil 4.

After finished maintenance of platforms, trail assembling work had started. We try to find the original location of each elements. If it was impossible to find the original location, we have to search the most appropriate order of the elements. After decide all the position of the elements and decide place to supply new sandstone, finally we move to reconstructing work.

For this Naga Head71.1.1.8.1.23, two different parts are connected as one Naga statue in the previous restoration. We decided not to connect this two part again, and made new Naga body part for Naga head so that Naga statue can install in stable condition. The length of the Naga body were referred to the trace of post on the basement.

### ■Position change of the element(See Drawing T71.1.1)

Although the basements was not repositioned, the base was heavily distorted on the north face and had to be levelled and stabilized by inserting sandstone plates between the floor and the basement. The handrails were mostly repositioned except for the Naga heads. As many members had collapsed onto the platform or were placed in other positions, these had to be identified their original positions and repositioned. A number of substitute posts were used, and the positions of these were also changed to appropriate positions for levelling and stabilization.

### ■Repairing of Lion Statue

In this area, 1 Lion statue was restored (L-2: 71.1.1.9.1.2, 71.1.1.9.1.3, L-3:71.1.1.9.1.4).For 71.1.1.9.1.4, the ankle portion was lost due to breakage, and although it had been mortared and joined in the previous restoration, there was a risk that it would break again due to deterioration of this material. Therefore, new sandstone material was processed according to the required size, filled in, and joined.



**Before Restoration**



## Area : T71.1-1/NorthEast Operated Term : 5 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.1.1.8.1.13	N.body	90	35	30	x	x
71.1.1.8.1.14	N.body	100	34	34	x	x
71.1.1.8.1.15	N.body	110	31	31	x	x
71.1.1.8.1.16(2)	N.body	141	32	29	3+5	Ø: 10 x 2 x 200
71.1.1.8.1.17(2)	N.body	157	33	52	3+4+5	Ø: 8 x 2 x 120/ 10 x 2 x 200
71.1.1.8.1.18	N.body	132	70	33	5	x
71.1.1.8.1.19	N.body	146	30	30	3+4+5	Ø: 8 x 2 x 100
71.1.1.8.1.20(2)	N.body	166	33	33	3+4+5	Ø: 8 x 2 x 100/ 10 x 2 x 200
71.1.1.8.1.21	N.body	173	33	30	5	x
71.1.1.8.1.22	N.body	164		34	x	x
71.1.1.8.1.23	N.head	104	70	145	3+4+5	Ø: 12 x 1 x 380/ 12 x 1 x 440/ 12 x 1 x 200
71.1.1.8.1.24(3)	N.head	234	71	144	3+4+5	x
71.1.1.8.1.25	N.body	74	33	28	3+4	x
71.1.1.8.1.26	N.body	106	31	28	x	x
71.1.1.8.1.27 + 29	N.body	143	36	33	3+5	Ø: 8 x 2 x 100
71.1.1.8.1.28	N.body	95	31	30	x	x
71.1.1.8.1.30(3)	N.head	211	84	155	1+3+5	Ø: 14 x 2 x 150/ 14 x 1 x 200
71.1.1.8.2.14	Sub-post	32	30	22	x	x
71.1.1.8.2.15	O-post	31	21	29	x	x
71.1.1.8.2.16	O-post	38	36	24	5	x
71.1.1.8.2.17	Sub-post	33	29	28	1+5	x
71.1.1.8.2.18	Sub-post	29	21	32	1	x
71.1.1.8.2.19	Sub-post	31	19	27	1	x
71.1.1.8.2.20	Sub-post	30	24	33	1	x
71.1.1.8.2.21	Sub-post	30	22	25	1	x
71.1.1.8.2.22	O-post	30	30	31	1	x
71.1.1.8.2.23	Sub-post	24	21	28	x	x
71.1.1.8.2.24	O-post	38	37	30	x	x
71.1.1.8.2.25	Sub-post	24	22	31	1	x
71.1.1.8.2.26	O-post	44	34	28	x	x
71.1.1.8.2.27	O-post	39	38	30	x	x
71.1.1.8.2.28	O-post	38	33	29	x	x
71.1.1.8.2.29	O-post	35	38	27	x	x
71.1.1.8.2.30	Sub-post	32	25	24	x	x
71.1.1.8.2.31	Sub-post	34	27	23	1	x
71.1.1.8.2.32	O-post	47	39	26	13+5	x
71.1.1.8.3.20 +24	Base	197	41	26	5	x
71.1.1.8.3.21	Base	83	43	24	x	x
71.1.1.8.3.22	Base	144	43	24	x	x
71.1.1.8.3.23	Base	169	43	24	3+4+5	Ø: 10 x 2 x 90
71.1.1.8.3.25	Base	38	27	30	x	x
71.1.1.8.3.26	Base	129	40	20	x	x
71.1.1.8.3.27	Base	150	44	26	x	x
71.1.1.8.3.28	Base	125	39	25	x	x
71.1.1.8.3.29	Base	183	40	24	x	x
71.1.1.8.3.30	Base	193	45	24	2+3+5	Ø: 10 x 2 x 200
71.1.1.8.3.31						
71.1.1.8.3.32	Base	103	44	25	3+4	Ø: 10 x 2 x 90
71.1.1.8.3.33	Base	143	42	20	2+3+5	Ø: 10 x 2 x 100
71.1.1.8.3.34						
71.1.1.8.3.35	Base	57	43	21	2+5	x
71.1.1.8.3.36	Base	128	48	26	3+5	x
71.1.1.8.3.37					x	x
71.1.1.8.3.38	Base	152	47	24	x	x
71.1.1.8.3.39	Base	177	48	24	x	x
71.1.1.8.3.40	Base	208	43	28	x	x
71.1.1.8.3.41	Base	193	53	27	x	x
71.1.1.8.3.42(2)	Base	141	44	25	2+3+4+5	Ø: 8 x 2 x 60

Area : T71.1-1/NorthEast Operated Term : 5 month

<Before and after restoration>





Area : T71.1-1/NorthEast Operated Term : 5 month

<After restoration>





Area : T71.1-1/NorthEast Operated Term : 5 month

<Photos during restoration>





Area : C71.2-1 / SouthEast part Operated Term : 5 month

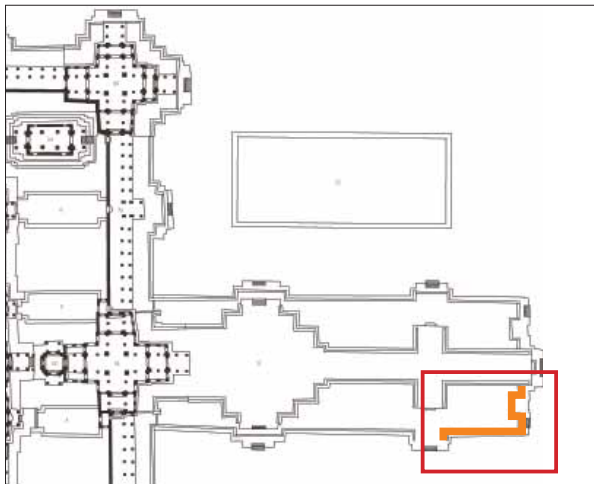


**Before Restoration**



**After Restoration**

## Area : C71.2-1 / SouthEast part Operated Term : 5 month



## Repaired number

■ Lion Statue ..... 1

■ Naga statue ..... 3

■ Other Balustrade elements

Handrail..... 14

Post..... 8

Basement..... 13

Total 39 elements



<Before restoration>

### Restoration activity at T71.2-1/Southeast

From previous survey at the southern balustrade, we found that most basements are original and situated in original position. Although, some of the posts and handrails were fell down on the platform caused from distortion of platform. Also, most posts were substitute elements replaced in previous restoration, we decided to reuse these elements by result of trial assembling.

In our work, we installed these fallen handrails and posts. Also, mortar which inserted in the previous restoration between posts and handrails were replaced by new sandstone. For this area, the range of uneven subsidence of platform structure was more wide than other area to inner of causeway, and difficult to implement maintenance of platform only directly under the balustrade. Thus maintenance were performed 2m inside the balustrade.

Uneven subsidence of platform structure was most remarkable at west edge of the balustrade, southeast stair of causeway, as we could see more than 60cm subsidence around here. This cause very unstable situation of balustrade including Naga statue and needed large scale adjustment in order to keep every balustrade at same level. In the maintaining work of the platform, we filled vertical and horizontal gap of platform with laterite blocks or soil 4 as necessary. Although, it was not enough to make Naga statue at same level as other handrails, we insert 4 sandstone blocks under basement.

### ■Position change of the element(See Drawing T71.1.2)

In this area, many handrails had fallen onto the base, and the original positions of these components were identified. 71.2.1.8.1.9 and 71.2.1.8.1.8, which had fallen near the balustrade on the south side, were confirmed to be part of the balustrade on the north side, so they were moved. In addition, the balustrade on the southern side was not in its original position even if it had not fallen, so the original position was identified based on the position of the bundles, etc., and the location was switched. Since there were not many original posts and many substitute posts were used, they were moved to appropriate positions for leveling and stabilisation in conjunction with the relocation of the wooden beams, and sandstone plates were inserted as necessary. There was no change in the location of the basemenets.



## Area : C71.2-1 / SouthEast part Operated Term : 5 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.2.1.8.1.1(2)	N.head	229	61	117	2+3+5	Ø: 10 x 2 x 150
71.2.1.8.1.2.1	N.body	117	33	29	5	x
71.2.1.8.1.2.2	N.body	110	31	27	5	x
71.2.1.8.1.3	N.body	31	30	34	x	x
71.2.1.8.1.4	N.body	75	31	27	5	x
71.2.1.8.1.5	N.body	62	33	27	5	x
71.2.1.8.1.6	N.body	24	19	28	x	x
71.2.1.8.1.7(6)	N.head	219	83	155	1+2+3+5	Ø: 14 x 3 x 150
71.2.1.8.1.8(2)	N.body	177	35	30	2+3+5	Ø: 10 x 2 x 100
71.2.1.8.1.9	N.body	139	37	41	5	x
71.2.1.8.1.10(2)	N.body	158	29	30	3+5	Ø: 10 x 2 x 100
71.2.1.8.1.11	N.body	160	30	33	5	x
71.2.1.8.1.12	N.body	169	33	32	5	x
71.2.1.8.1.13	N.body	136	34	32	3+4+5	Ø: 10 x 2 x 100
71.2.1.8.1.14(2)	N.body	169	33	32	1+3+4+5	Ø: 10 x 2 x 100
71.2.1.8.1.15.1	N.body	96	32	28	1+5	x
71.2.1.8.1.15.2	N.body	103	32	29	1+5	x
71.2.1.8.1.16(2)	N.body	170	32	33	1+2+3+5	Ø: 8 x 2 x 100
71.2.1.8.1.17	N.head	193	92	159	1+2+3+4+5	Ø: 8 x 2 x 100
71.2.1.8.1.18.1	N.body	51	31	32	x	x
71.2.1.8.2.1	O.post	39	31	26	5	x
71.2.1.8.2.2	O.post	33	30	28	x	x
71.2.1.8.2.3	O.post	39	30	23	x	x
71.2.1.8.2.4	O.post	47	37	32	2+5	x
71.2.1.8.2.5(2)	O.post	43	38	31	3+5	Ø: 6 x 2 x 100
71.2.1.8.2.6	O.post	40	39	26	1+5	x
71.2.1.8.2.7	S.post	35	34	26	x	x
71.2.1.8.2.8	S.post	38	34	22	x	x
71.2.1.8.2.9	S.post	32	30	24	5	x
71.2.1.8.2.10	S.post	33	26	18	1+5	x
71.2.1.8.2.11	S.post	36	31	24	5	x
71.2.1.8.2.12	S.post	32	30	24	5	x
71.2.1.8.2.13	O.post	40	16	30	1+5	x
71.2.1.8.2.14	O.post	41	34	26	1+3+5	x
71.2.1.8.2.15	O.post	36	34	29	1+5	x
71.2.1.8.2.16	O.post	40	42	38	1+5	x
71.2.1.8.3.1(2)	Base	203	40	28	2+3+5	Ø: 10 x 2 x 100
71.2.1.8.3.2+4	Base	235	51	34	2+3+4+5	Ø: 8 x 4 x 100/ 10 x 2 x 150
71.2.1.8.3.3	Base	95	46	24	5	x
71.2.1.8.3.5	Base	102	40	25	x	x
71.2.1.8.3.6(4)	Base	122	42	27	2+3+5	Ø: 8 x 4 x 100
71.2.1.8.3.7	Base	206	44	26	x	x
71.2.1.8.3.8	Base	143	41	24	5	x
71.2.1.8.3.9	Base	171	36	22	5	x
71.2.1.8.3.10(2)	Base	187	38	27	3+5	Ø: 10 x 2 x 100
71.2.1.8.3.11	Base	106	40	28	x	x
71.2.1.8.3.12(2)					3+5	Ø: 10 x 4 x 100
71.2.1.8.3.13(2)	Base	196	42	22	3+5	Ø: 10 x 2 x 100
71.2.1.8.3.14	Base	232	43	22	5	x
71.2.1.8.3.15					5	x
71.2.1.8.3.16	Base	122	43	22	1+5	x
71.2.1.8.3.17	Base	51	42	27	5	x

## Area : C71.2-1 / SouthEast part Operated Term : 5 month

&lt;Before and after restoration&gt;





Area : C71.2-1 / SouthEast part Operated Term : 5 month

<After restoration>





Area : C71.2-1 / SouthEast part Operated Term : 5 month

<Photos during restoration>





Area : T71.1-1/West Operated Term : 8 month

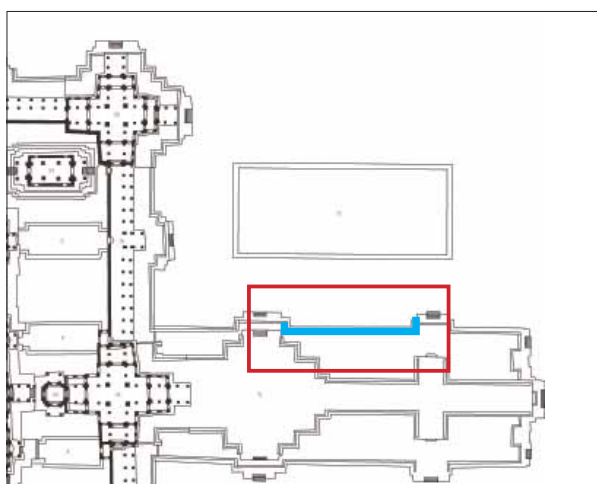


Before Restoration



After Restoration

## Area : T71.1-1/West part Operated Term : 8 month



### Repaired number

■ Naga statue.....1

■ Other Balustrade elements

Handrail.....8

Post.....4

Basement.....13

Total 26 elements



<Before restoration>

### ■ Restoration activity at T71.1-1/ West

In Area 71.1-1, many balustrade elements had collapsed onto the platform, and investigation confirmed that many balustrade elements installed in this area during restoration in the 1930s were not in situ, but had been replaced during previous restorations and moved from other locations. Close examination of these members revealed considerable deterioration, including cracks, peeling, damage, and breaks in many of them. In addition, there were many scattered stones piled up around this area and at the edge of the reservoir on the north side of the approach, and it was confirmed that some of these elements were related to the balustrade.

Platform: In addition to a large horizontal gap at the edge of the floor of the platform where the balustrade was to be installed, the floor of the platform was distorted due to the settlement of the slab construction fill inside the platform, and mud, plants, and other debris were entering the gap, making it unstable to reinstall the balustrade as is.

Several handrails and posts were found by arrangement of a scattering stone around north side of the area 71.1-1. These elements seem to have been installed in this place in the past restoration by inspection from an old picture taken just after past restoration by EFEO. When we considering the location of these scattering stone and elements fell the platform at reconstruction work, as far as it was possible, the original position was specified. And when the original position was unclear, the most stabilized location was considered. □Finally, we decide to put back 3 handrails and 2 posts from scatted elements found from north pond. Though these elements also need supplementation by new sandstone in order to set back on the platform.

### ■ Repairing of Lion Statue

In this area, 1 Lion statue was restored. This lion statue which lay down on the platform we decided to produce a new support pedestal for this statue and make a statue rise, for we judged that it would cause further degradation of a statue if we left the statue in the state.



## Area : T71.1-1/West part Operated Term : 8 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.1.1.8.1.1(3)	N.head	196	74	160	1+2+3+5	Ø: 10 x 2 x 150, 10 x 2 x 60
71.1.1.8.1.2	N.Body	153	31	33	3+5	Ø: 6 x 2 x 100
71.1.1.8.1.3	N.Body	132	32	32	3+4+5	Ø: 10 x 2 x 100
71.1.1.8.1.4(4)	N.Body	169	32	29	2+3+5	Ø: 8 x 2 x 80 / 8 x 4 x 100 / 10 x 2 x 150
71.1.1.8.1.5	N.Body	134	31	35	3+4+5	Ø: 12 x 2 x 200 / 8 x 2 x 100
71.1.1.8.1.6(2)	N.Body	99	32	36	3+5	Ø: 10 x 2 x 150
71.1.1.8.1.7	N.Body	96	29	30	x	x
71.1.1.8.1.8	N.Body	46	32	28	2+5	x
71.1.1.8.1.9	N.Body	131	32	33	4+5	x
71.1.1.8.1.10	N.Body	136	31	30	4+5	x
71.1.1.8.1.11(2)	N.Body	183	30	30	3+5	Ø: 10 x 2 x 150
71.1.1.8.1.12(2)	N.Body	167	33	20	3+5	Ø: 10 x 2 x 150
L7.2.5 (2)	N.Body	172	33	30	3+5	Ø: 10 x 2 x 100 / 8 x 2 x 80
L6.3.13 + L7.1.17(2)	N.Body	139	32	32	3+5	Ø: 6 x 2 x 80 / 10 x 2 x 150
L7.2.7 + L7.2.11(2)	N.Body	158	32	28	3+5	Ø: 10 x 2 x 150
71.1.1.8.2.1	Post	35	34	30	1	x
71.1.1.8.2.2	Post	34	29	26	1	x
71.1.1.8.2.3	Post	29	17	35	x	x
71.1.1.8.2.4	Sub.Post	32	14	23	1	x
71.1.1.8.2.5	Sub.Post	26	22	31	x	x
71.1.1.8.2.6(2)	Sub.Post	31	22	35	1+3	Ø: 6 x 2 x 80
71.1.1.8.2.7	Sub.Post	25	25	32	1	x
71.1.1.8.2.8	Sub.Post	32	24	28	1	x
71.1.1.8.2.9	Sub.Post	26	23	28	1	x
71.1.1.8.2.10	Sub.Post	30	19	29	1+2	x
71.1.1.8.2.11	Sub.Post	38	35	30	x	x
71.1.1.8.2.12	Sub.Post	31	29	19	2	x
71.1.1.8.2.13	Sub.Post	31	27	13	2	x
L7.2.29	Sub.Post	37	36	27	x	x
M7.1.4	Sub.Post	35	31	21	x	x
71.1.1.8.3.1	Base	159	35	28	x	x
71.1.1.8.3.2	Base	105	30	23	5	x
71.1.1.8.3.3	Base	111	37	26	x	x
71.1.1.8.3.4	Base	158	48	28	1+5	x
71.1.1.8.3.5	Base	41	13	27	1	x
71.1.1.8.3.6(5)	Base	140	41	27	2+3+5	Ø: 8 x 2 x 100 / 8 x 2 x 80 / 10 x 2 x 100 / 6 x 2 x 80
71.1.1.8.3.7	Base	146	44	30	x	x
71.1.1.8.3.8	Base	144	45	24	x	x
71.1.1.8.3.9	Base	125	49	28	x	x
71.1.1.8.3.10	Base	45	21	27	x	x
71.1.1.8.3.11	Base	156	44	27	x	x
71.1.1.8.3.12(3)	Base	135	47	35	2+3+5	Ø: 6 x 2 x 80
71.1.1.8.3.13	Base	123	40	26	x	x
71.1.1.8.3.14(3)	Base	122	40	26	2+3+4+5	Ø: 6 x 2 x 80
71.1.1.8.3.15	Base	120	42	28	x	x
71.1.1.8.3.16	Base	141	44	31	x	x
71.1.1.8.3.17(2)	Base	129	26	27	3+4	Ø: 10 x 2 x 150
71.1.1.8.3.18	Base	139	46	23	4	x
71.1.1.8.3.19	Base	295	46	21	4	x

Area : T71.1-1/West part Operated Term : 8 month

<Before and after restoration>





Area : T71.1-1/West part Operated Term : 8 month

<After restoration>





Area : T71.1-1/West part Operated Term : 8 month

<Photos during restoration>





Area : C71.2-1 / West part Operated Term : 3 month

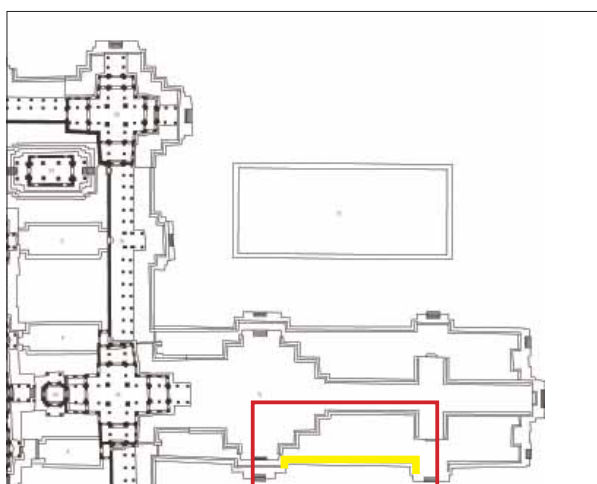


Before Restoration



After Restoration

## Area : C71.2-1 / West part Operated Term : 3 month



## Repaired number

■ Naga statue.....1

■ Other Balustrade elements

Handrail.....8

Post.....4

Basement.....13

Total 26 elements



<Before restoration>

### ■ Restoration activity at T71.2-1/Southeast

As for the state of Naga balustrade before restoration, many handrail and post elements were already missing at middle part, and also remaining basement elements were also scattering on the platform. For the western corner, some handrails were remaining and substitute elements of the post were inserted by past treatment but it could never be said that it was stable situation. Opposite eastern side, uneven subsidence of platform structure causing distortion of platform especially under the most eastern Naga head was inclined and in danger of falling.

After finished repairing all the elements, direction of the reconstructing was decided through trial assembling work. At west corner, we confirmed that to some of the substitute post would be difficult to reuse, we decided to make new substitute posts by new sandstone for supporting handrails. Also, new sandstone was supplied to some basements which were partially missing. At east corner, in order to stably install heavy Naga head, we judged the minimum platform improvement would be necessary to correct the distortion of the floor. Thus, in the range of 1.5 meter across the balustrade were dismantled. Also, some new sandstone support inserted under this Naga head for support.

With the above policy, the reconstructing work and the platform maintenance work were carried out, and finally the safety and the landscape of the balustrade could be improved.



## Area : C71.2-1 / West part Operated Term : 3 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.2.1.8.1.18.2	N.head	142	86	122	1+3+4+5	x
71.2.1.8.1.19	N.body	144	30	30	5	x
71.2.1.8.1.20	N.body	178	33	31	5	x
71.2.1.8.1.21+24	N.body	147	31	32	3+5	Ø: 8x2x100
71.2.1.8.1.22	N.body	160	35	31	5	Ø: 8x2x100
71.2.1.8.1.23	N.body	153	31	33	5	x
71.2.1.8.1.25	N.body	69	32	32	5	x
71.2.1.8.1.26	N.body	170	33	34	x	x
71.2.1.8.1.27(2)	N.body	147	31	31	3+5	Ø: 8 x 2 x 100
71.2.1.8.1.28	N.head	175	80	116	x	x
71.2.1.8.2.17	O.post	42	35	29	1	x
71.2.1.8.2.18	O.post	36	36	27	1+5	x
71.2.1.8.2.19	S.post	38	20	27	1+5	x
71.2.1.8.2.20	O.post	39	37	22	1+5	x
71.2.1.8.2.21	S.post	32	30	27	1+5	x
71.2.1.8.2.22	S.post	47	25	28	5	x
71.2.1.8.2.23	S.post	31	28	26	1	x
71.2.1.8.2.24	O.post	43	34	32	1+3+4+5	x
71.2.1.8.2.25	S.post	48	34	s	x	x
71.2.1.8.2.26	S.post	46	36	19	x	x
71.2.1.8.2.27	O.post	39	30	28	x	x
71.2.1.8.2.28	S.post	28	22	27	1+5	x
71.2.1.8.2.29	S.post	31	19	25	x	x
71.2.1.8.2.30	S.post	31	22 <sup>5</sup>	26	x	x
71.2.1.8.2.31	O.post	34	32	22	x	x
71.2.1.8.3.18(2)	Base	162	43	26	1+3+5	Ø: 10x2x150
71.2.1.8.3.19(2)	Base	111	40	25	3+5	Ø: 8x2x2100
71.2.1.8.3.20(2)	Base	185	43	28	1+3+4+5	Ø: 8x2x100
71.2.1.8.3.21(5)	Base	238	44	30	2+3+5	Ø: 8x2x100
71.2.1.8.3.22(2)	Base	215	40	17	3+5	Ø: 10x2x100
71.2.1.8.3.23	Base	55	29	23	x	x
71.2.1.8.3.24	Base	32	21	12	x	x
71.2.1.8.3.25	Base	42	27	18	x	x
71.2.1.8.3.26	Base	78	33	27	5	x
71.2.1.8.3.27(3)	Base	298	38	27	3+5	Ø: 8x2x100/ 10x2x150
71.2.1.8.3.28	Base	159	39	29	5	x
71.2.1.8.3.29	Base	94	41	24	5	x
71.2.1.8.3.30	Base	132	42	26	x	x
71.2.1.8.3.31	Base	103	42	24	x	x
71.2.1.8.3.32(2)	Base	214	39	20	3+5	Ø: 10x2x150
71.2.1.8.3.33	Base	136	37	21	x	x
71.2.1.8.3.34	Base	107	43	27	5	x
71.2.1.8.3.35	Base	82	35	25	3+5	Ø: 6x2x100
71.2.1.8.3.36	Base	123	45	29	5	x

Area : C71.2-1 / West part Operated Term : 3 month

<Before and after restoration>





Area : C71.2-1 / West part Operated Term : 3 month

<After restoration>





Area : C71.2-1 / West part Operated Term : 3 month

<Photos during restoration>





Area : C71.3 / Working Term : 5 month

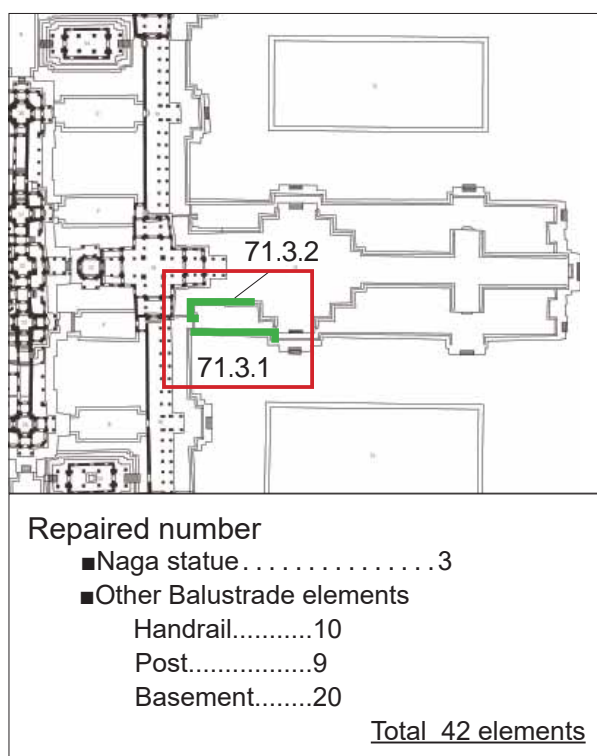


**Before Restoration**



**After Restoration**

## Area : C71.3 / Working Term : 5 month



&lt;Before restoration&gt;

### ■ Restoration activity at T71.3

Area 71.4.1 is the place where we could see vivid influence of damage by fallen tree in some decades ago. Many elements of balustrade and Naga statues were broken and fell down on the platform. Platform was distorted by the changes over years, in particular, the most outer line of the surface layer were moved to the outside and causing the big gap with inner line that balustrade should be set on. Also, certain inclination could be seen that was too unstable to reconstruct without any treatment.

There were many gaps between the bottom of basements and surface of platform that we need to apply soil 4 and lead plate with cement too.

After basements finished put back, we start to back handrails. 3 of the posts need replacement by new sandstones because it was too unstable to use former substitute elements. Also one post out of 7 original posts need to fill with new sandstone to the missing part. Some of Naga body we put back as same place before dismantling, but some we changed the place according to the situation of the area. Such as; stone from scatter stones that we just found and connect, need to find the places to back it all.

In the process of adjustment work for making handrail horizontal, we need to fill 2 big gaps between post and Naga. This adjustment was done by new sandstones plate. When putting handrail on the post which is not in the original position or substitute element, the new sandstone plate for adjustment were inserted for the safety reason, but these are temporary disposal.

In another part, the new sandstone processing work for supplement missing part by the new sandstone where went on to 3 elements (1 post and 2 handrails). These were found from scattered stone around this area.

71.4.2 is a section that collapsed again after restoration in the early 20th century due to the collapse of a large tree. Many collapsed balustrade elements were scattered in situ and the elements were also damaged into small pieces. Preliminary investigation confirmed that all the original bundles were in place. Careful identification of the small piece combinations allowed us to restore them to their original appearance.



## Area : C71.3 / Working Term : 5 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.3.1.8.3.1	Base	185	34	26	1+2+4+5	x
71.3.1.8.3.2 (3)	Base	100	40	24	3+4+5	Ø: 8 x 2 x 100/
71.3.1.8.1.3	Base	128	52	32	5	x
71.3.1.8.3.4 (2)	Base	116	44	30	3+5	Ø: 8 x 2 x 100
71.3.1.8.3.5 (2)	Base	48	37	14	3+5	Ø: 8 x 2 x 100
71.3.1.8.3.6 (4)	Base	174	38	25	2+3+5	Ø: 8 x 6 x 150
71.3.1.8.3.7	Base	40	39	16	5	x
71.3.1.8.3.8	Base	44	39	19	5	x
71.3.1.8.3.9	Base	103	39	12	5	x
71.3.1.8.3.10	Base	39	41	23	5	x
71.3.1.8.3.11	Base	49	39	30	5	x
71.3.1.8.3.12	Base	66	33	20	5	x
71.3.1.8.3.13	Base	140	40	24	5	x
71.3.1.8.3.14	Base	151	32	24	x	x
71.3.1.8.3.15 (6)	Base	299	32	25	2+3+5	Ø: 8 x 4 x 150/ 8 x 2 x 100
71.3.1.8.3.16 (2)	Base	202	42	33	2+3+5	Ø: 10 x 2 x 150
71.3.1.8.2.1	Ori-post	46	44	26	5	x
71.3.1.8.2.2	Sub-post	14	14	29	x	x
71.3.1.8.2.3	Sub-post	32	18	28	x	x
71.3.1.8.2.4	Ori-post	44	43	39	x	x
71.3.1.8.2.5	Ori-post	40	32	14	5	x
71.3.1.8.2.6	Sub-post	22	18	34	x	x
71.3.1.8.2.7	sub-post	18	38	29	5	x
71.3.1.8.2.8						
71.3.1.8.2.9						
71.3.1.8.1.1	N.head	101	42	100	5	x
71.3.1.8.1.2	N.body	94	28	28	x	x
71.3.1.8.1.3	N.body	184	34	36	2+5	x
71.3.1.8.1.4	N.body	77	30	31	5	x
71.3.1.8.1.5	N.body	70	32	29	5	x
71.3.1.8.1.6	N.body	74	34	31	x	x
71.3.1.8.1.7 (6)	N.head	145	81	110	1+2+3+5	Ø: 12 x 3 x 200/ 10 x 3 x 150/ 8 x 2 x 100
71.3.1.8.1.8(3)	N.body	72	40	20	3+5	Ø: 8 x 2 x 150, 8 x 2 x 100
71.3.2.8.3.1	N.body	82	40	32	5	x
71.3.2.8.3.2	N.body	51	36	30	2+5	x
71.3.2.8.3.3	N.body	84	36	32	x	x
71.3.2.8.3.4	N.body	176	39	40	2+3+4+5	Ø: 12 x 2 x 150/ 12 x 1 x 100/
71.3.2.8.3.5						8 x 4 x 100
71.3.2.8.3.6						
71.3.2.8.3.7	N.head	172	80	114	2+4+5	x
71.3.2.8.2.1	Ori.Post	44	41	34	3+4+5	Ø: 6 x 1 x 60
71.3.2.8.2.2	Ori.Post	42	42	34	3+4+5	Ø: 6 x 2 x 60
71.3.2.8.1.1	Base	113	32	29	x	x
71.3.2.8.1.2 + 4	Base	90	46	26	3+5	Ø: 12 x 2 150
71.3.2.8.1.3	Base	44	24	17	x	x
71.3.2.8.1.5	Base	122	42	23	x	x

Area : C71.3 / Working Term : 5 month

<Before and after restoration>





Area : C71.3 / Working Term : 5 month

<After restoration>





Area : C71.3 / Working Term : 5 month

<Photos during restoration>





Area : C71.4 / Operated Term : 6 month



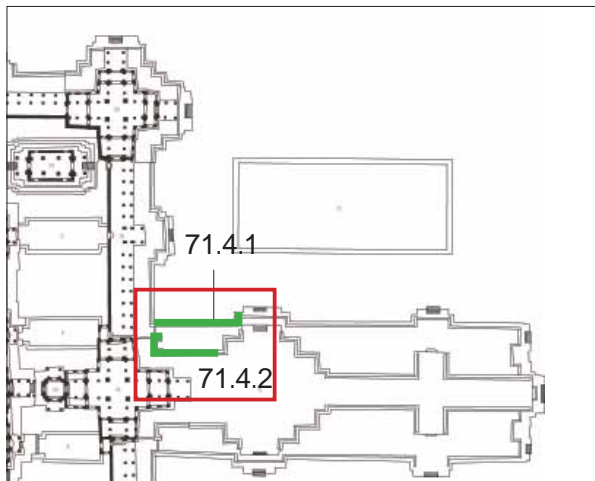
**Before Restoration**



**After Restoration**



## Area : C71.4 / Operated Term : 6 month



## Repaired number

- Naga statue.....2
- Other Balustrade elements
  - Handrail.....6
  - Post.....14
  - Basement.....22

Total 42 elements

## ■ Restoration activity at T71.4

Area 71.4.1 is the place where we could see vivid influence of damage by fallen tree in some decades ago. Many elements of balustrade and Naga statues were broken and fell down on the platform. Platform was distorted by the changes over years, in particular, the most outer line of the surface layer were moved to the outside and causing the big gap with inner line that balustrade should be set on. Also, certain inclination could be seen that was too unstable to reconstruct without any treatment.

There were many gaps between the bottom of basements and surface of platform that we need to apply soil 4 and lead plate with cement too.

After basements finished put back, we start to back handrails. 3 of the posts need replacement by new sandstones because it was too unstable to use former substitute elements. Also one post out of 7 original posts need to fill with new sandstone to the missing part. Some of Naga body we put back as same place before dismantling, but some we changed the place according to the situation of the area. Such as; stone from scatter stones that we just found and connect, need to find the places to back it all.

In the process of adjustment work for making handrail horizontal, we need to fill 2 big gaps between post and Naga. This adjustment was done by new sandstones plate. When putting handrail on the post which is not in the original position or substitute element, the new sandstone plate for adjustment were inserted for the safety reason, but these are temporary disposal.

In another part, the new sandstone processing work for supplement missing part by the new sandstone where went on to 3 elements (1 post and 2 handrails). These were found from scattered stone around this area .

71.4.2 is a section that collapsed again after restoration in the early 20th century due to the collapse of a large tree. Many collapsed balustrade elements were scattered in situ and the elements were also damaged into small pieces. Preliminary investigation confirmed that all the original bundles were in place. Careful identification of the small piece combinations allowed us to restore them to their original appearance.



&lt;Before restoration&gt;



## Area : C71.4 / Operated Term : 6 month

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
71.4.1.8.3.1	N.Body	170	40	32	x	x
71.4.1.8.3.2	N.Body	130	34	32	x	x
71.4.1.8.3.3	N.Body	171	35	33	x	Ø: 8 x 2 x 100
71.4.1.8.3.4	N.Body	168	36	29	x	0
71.4.1.8.3.5	N.Body	155	37	33	4+5	x
71.4.1.8.3.6	N.Body	92	33	33		x
71.4.1.8.3.7(3)	N.head	231	60	124	2+3+5	Ø: 6 x 3 x 100/ 12 x 2 x 200
71.4.1.8.2.1	Sub-post	20	19	34	x	x
71.4.1.8.2.2	Post	50	48	30	x	x
71.4.1.8.2.3	Post	45	44	32	x	x
71.4.1.8.2.4	Post	41	40	31	x	x
71.4.1.8.2.5	Post	38	22	13	3+4+5	Ø: 12 x 2 x 100
71.4.1.8.2.6	Post	43	42	30	1+3+5	Ø: 12 x 3 x 200
71.4.1.8.2.7	Sub-post	44	39	34	x	x
71.4.1.8.2.8	Sub-post	46	19	32	x	x
71.4.1.8.2.9	Sub-post	40	19	39	x	x
71.4.1.8.2.10	Sub-post	20	24	35	x	x
71.4.1.8.2.11	Post	37	37	29	x	x
71.4.1.8.2.12	Post	36	35	38	x	x
71.4.1.8.1.1	Base	90	40	25	x	x
71.4.1.8.1.2	Base	91	52	31	x	x
71.4.1.8.1.3	Base	163	50	33	x	x
71.4.1.8.1.4(2)	Base	276	54	33	3+5	Ø: 8 x 2 x 130
71.4.1.8.1.5(2)	Base	269	51	31	x	
71.4.1.8.1.6(2)	Base	167	48	27	x	x
71.4.1.8.1.7	Base	303	52	24	x	x
71.4.1.8.1.8(2)	Base	270	53	30	x	Ø: 10 x 2 x 100
71.4.1.8.1.9	Base	254	53	36	x	x
71.4.1.8.1.10	Base	74	51	28	x	
71.4.1.8.1.11	Base	169	53	36	x	x
71.4.1.8.1.12	Base	210	42	21	x	x
71.4.1.8.1.13(2)	Base	270	42	27	3	Ø: 8 x 2 x 100
71.4.2.8.6.1(2)	N.Head	193	81	125	1+2+3+5	Ø: 8 x 2 x 100
71.4.2.8.5.1	Post	47	42	33	x	x
71.4.2.8.5.2	Post	42	39	29	x	x
71.4.2.8.4.1	Base	128	53	33	x	x
71.4.2.8.4.2	Base	80	43	32	x	x
71.4.2.8.4.3	Base	90	40	31	4	x
71.4.2.8.4.4	Base	141	44	36	x	x
71.4.2.8.4.5	Base	198	51	32	x	x
71.4.2.8.4.6	Base	49	45	26	3+5	x
71.4.2.8.4.7(2)	Base	92	50	26	2+5	x
71.4.2.8.4.8(2)	Base	214	46	33	2+5	x
71.4.2.8.4.9	Base	113	52	30	x	x



Area : C71.4 / Operated Term : 6 month

<Before and after restoration>





Area : C71.4 / Operated Term : 6 month

<After restoration>





Area : C71.4 / Operated Term : 6 month

<Photos during restoration>





Area : T70.1 & T70.2      Operated Term : 3 month/ T70.2, 3month/T70.1



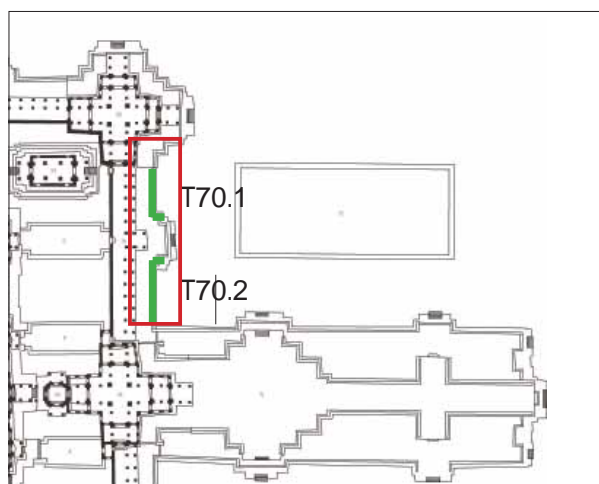
**Before Restoration at T70.1**



**After Restoration at T70.1**



## Area : T70.1 & T70.2      Operated Term : 3 month/ T70.2, 3month/T70.1



<Before restoration at T70.1>

### Repaired number

■ Naga statue.....	4
■ Other Balustrade elements	
Handrail.....	8
Post.....	14
Basement.....	25

Total 51 elements

### ■ Restoration activity at T70.2 and T70.1

2nd week of November 2014, dismantling, recording and repairing of each elements in area G70-2 was started. However after that, JASAdecided to start platform improvement at G70 for few months from December. Thus, after finish this work at the end of November, all the elements are moved and kept for drying at the storage hut until platform improvement will finish by JASAAfter the platform improvements by JASA were completed, the repaired balustrade was installed in October 2015.

As T70.1 was within the scope covered by JASA's restoration project, we carried out restoration activities with JASA staff from June to August 2020.

### ■ Position change of the element T70.2 (See Drawing Plate 6)

The Naga head J6.3.2, which had fallen to the ground, was installed at the northern end. As there were no suitable substitute posts available, a new support material was used. In addition, the original location of the balustrade was identified based on the position of the remaining of posts on the base, and the balustrade was moved to a new location within T70.2 area. It was confirmed that the railing component C71.4.1.8.3.1, which was located at 71.4, was next to T70.2.8.1.1, so it was moved to this area.

### ■ Position change of the element T70.1 (See Drawing Plate 6)

The Naga head J6.2.1, which had fallen to the ground, was confirmed to be a component that was adjacent to 70.1.8.1.1, and was installed at the southern end of T70.1. 70.1.8.1.2, 3, and 4, which had fallen onto the platform floor, and 70.1.8.1.8, which had been moved, are unlikely to be from this area, so they have been temporarily stored elsewhere and will be considered again when

The original locations of some of the pedestals were identified, so the locations were switched within T70.1.



# Area : T70.1 & T70.2      Operated Term : 3 month/ T70.2, 3month/T70.1

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
70.2.8.1.1	N.Body	235	36	32	5	x
70.2.8.1.2 + 3	N.Body	200	36	32	3+5	Ø: 10 x 2 x 200
70.2.8.1.4.1	N.Body	102	35	29	5	x
70.2.8.1.4.2	N.Body	121	35	31	5	x
70.2.8.1.5	N.Body	211	37	34	5	x
70.2.8.2.1	Sub-post	37	12	33	x	No treatment
70.2.8.2.2	Sub-post	28	24	30	x	No treatment
70.2.8.2.3	Sub-post	43	28	32	x	No treatment
70.2.8.2.4	Post	54	37	23	x	No treatment
70.2.8.2.5	Sub-post	33	26	21	x	No treatment
70.2.8.2.6	Sub-post	33	18	28	x	No treatment
70.2.8.2.7	Sub-post	33	20	30	x	No treatment
70.2.8.3.1(2)	Base	180	60	33	3+5	Ø: 10 x 2 x 200
70.2.8.3.2	Base	71	45	29	5	x
70.2.8.3.3	Base	65	44	29	5	x
70.2.8.3.4	Base	53	15	27	5	x
70.2.8.3.5	Base	52	51	27	5	x
70.2.8.3.6	Base	130	49	23	5	x
70.2.8.3.7	Base	111	51	27	5	x
70.2.8.3.8	Base	76	51	27	5	x
70.2.8.3.9(2)	Base	240	50	28	5	Ø: 12 x 2 x 200
70.2.8.3.10	Base	142	43	33	5	x
70.2.8.3.11.1	Base	96	44	22	5	x
70.2.8.3.11.2	Base	85	45	27	5	x
70.2.8.3.12	Base	77	47	27	5	x
70.2.8.3.13	Base	101	48	25	5	x
70.2.8.3.14	Base	104	43	33	5	x

<Before and after restoration at T70.2>





Area : T70.1 & T70.2    Operated Term : 3 month/ T70.2, 3month/T70.1

<Before and after restoration at T70.1>



<After Restoration at T70.2>





Area : T70.1 & T70.2      Operated Term : 3 month/ T70.2, 3month/T70.1

<During restoration at T70.2>



<After restoration at T70.1>





Area : T70.1 & T70.2      Operated Term : 3 month/ T70.2, 3month/T70.1

<Photos during restoration at T70.1>





Area : T68.1 work period : 8 weeks



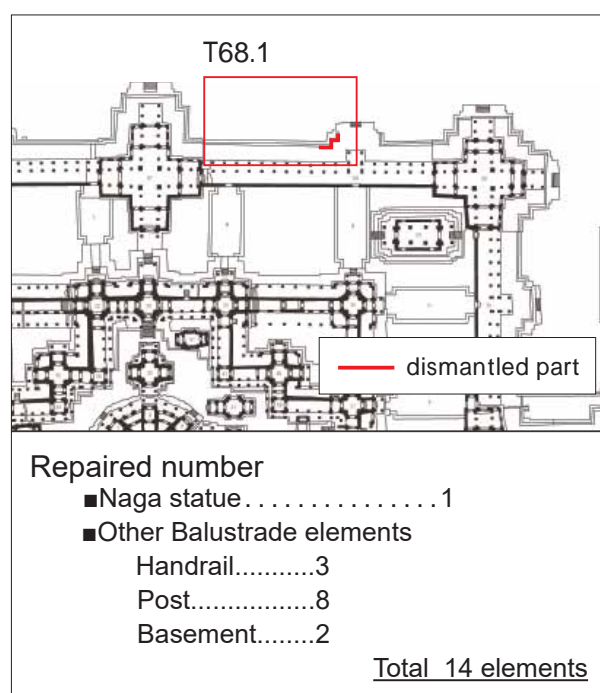
**Before Restoration**



**After Restoration**



## Area : T68.1 work period : 8 weeks



Stone Number	Type	Applied Case	notes (Ø x num. x L)
68.1.8.1.1	N.body	5	x
68.1.8.1.2	N.body	5	x
68.1.8.1.3	N.body	5	x
68.1.8.1.4(2)	Naga	1+3+5	Ø: 10x3x200
68.1.8.2.1	S.post	5	x
68.1.8.2.2	S.post	5	x
68.1.8.2.3	S.post	5	x
68.1.8.2.4	S.post	5	x
68.1.8.2.5	S.post	5	x
68.1.8.2.6	S.post	5	x
68.1.8.2.7	S.post	5	x
68.1.8.2.8	O.post	5	x
67.1.8.3.1	Basement	5	x
67.1.8.3.2(3)	Basement	3+5	Ø: 10x4x200

### 1. Result of previous survey

Except around porch, most handrails and posts were missing in this area. There are two Naga statues at this area. Whereas eastern Naga statue was in stable condition, western Naga (68.1.8.1.4) statue was broken in two pieces and in unstable situation. Thus we decided only dismantle western Naga statue. Previous treatment of this NAGA was already deteriorated and again broken. Also the basements under this statue were in unstable condition caused from horizontal direction gap between the floor of platform. One basement (67.1.8.3.2) were broken in 2 pieces, thus we decide to dismantle this basement and related posts and handrails.

### 2. Restoration activity at T68.1

In this area, we set mini crane at northwest of this area. Dismantled elements were moved to JASA restoration hat and had repairing. At reconstruction work after connection of Naga statue and basements, Some sandstone plates were inserted between basement and platform floor, as platform around porch caused serious uneven subsidence. Also, small piece of sandstone support was inserted under a handrail.

### 3. Position change of the element(See Drwaing 68.1)

Position change of the element(See Drwaing 59.2)

No movement in the Handrails or the Basements. The substitute Post that supported the joint in the previous restoration was removed by re-joining the naga head 68.1.8.1.1 and 68.1.8.1.2.



Area : T68.1 work period : 8 weeks

<Before and after restoration>





Area : T68.1 work period : 8 weeks

<After restoration>



<Photos during restoration>





Area : T68.1 work period : 8 weeks

<Photos during restoration>





Area : T67.4 work period : 16 weeks



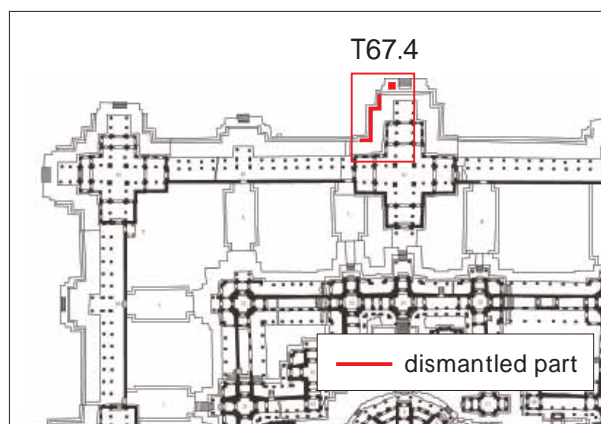
Before Restoration



After Restoration



## Area : T67.4 work period : 16 weeks



## Repaired number

■Lion Statue .....	1
■Naga statue .....	2
■Other Balustrade elements	
Handrail.....	3
Post.....	10
Basement.....	2
<u>Total 18 elements</u>	

Stone Number	Type	Applied Case	notes (Ø x num. x L)
67.4.8.1.1	Naga	5	x
67.4.8.1.2	N.body	5	x
67.4.8.1.3	N.body	5	x
67.4.8.1.4(2)	Naga	3+5	Ø: 10x2x200
67.4.8.1.5	N.body	5	x
67.4.8.2.1	O.post	2+5	x
67.4.8.2.2	S.post	5	x
67.4.8.2.3	S.post	5	x
67.4.8.2.4	S.post	5	x
67.4.8.2.5	S.post	5	x
67.4.8.2.6	S.post	5	x
67.4.8.2.7	O.post	5	x
67.4.8.2.8	S.post	5	x
67.4.8.2.9	S.post	5	x
67.4.8.2.10	S.post	5	x
67.4.8.3.1(2)	Base	1+3+5	Ø: 10x2x200
67.4.8.3.2	Base	5	x
67.4.8.3.3	Base	5	x
67.4.8.3.4(4)	Base	3+5	Ø:
67.4.8.3.5	Base	5	x
67.4.8.1.1(2)	Singha	1+2+3+5	Ø: 10x3x200

## 1. Result of previous survey

There are 2 Naga statues in this area. For the eastern Naga statue(67.4.8.1.1), two elements of the platform directly under the Naga statue's basement were missing and concrete support was inserted under the basement of Naga statue. However this concrete support was deteriorate and needed replacement with new sandstone supports. Also, the trunk of the other western Naga statue (67.4.8.1.4) was broken and had no previous repairing, just supported by substitute post. Thus we decided to connect this broken Naga statue and so that we could remove substitute support.

Also, one lion statue in this area was broken into two pieces(front legs and pedestal was separated ) and also very unstable situation caused from uneven subsidence around the statue.

## 2. Restoration activity at T67.4

There were scattering stones around this are, thus first of all, we had to secure the space for set mini crane. We took photo records before moving these scattering stones and move to other place. Also many tourist walk pass T67 for gate, we set temporary enclosure around restoration area in consideration of safety and noise. After that, we carefully dismantle lion statue and other balustrade. After repairing of each elements, we confirmed how much and where sandstone plates and lead plates should be inserted. From discussion with JASA experts, we decided to insert two new sandstone support under Naga statue 67.4.8.1.1. For this new supports, we mark rough texture for surface finishing. Naga statue 67.4.8.1.4 was connected and install without substitute post when reconstructing.

For lion statue, after having joining and other appropriate treatment, sandstone plate were inserted at four corners between platform and the bottom of the statue.

## 3.Position change of the element(See Drwaing T67.4)

No movement in the Handrails or the Basements.New sandstone was inserted into the platform to stabilize the base directly below the Naga head 67.4.8.1.1. As a result of joining 67.4.8.1.4.1, the substitute post that was supporting the joint became unnecessary, so it was moved to a different location to maintain the overall levelness.

## 4. In this area, 1 Lion statue was restored.



Area : T67.4 work period : 16 weeks

<Before and After restoration>





Area : T67.4 work period : 16 weeks

<After restoration>



<Photos during restoration>





Area : T67.4 work period : 16 weeks

<Photos during restoration>





Area : T66.2 work period : 8 weeks



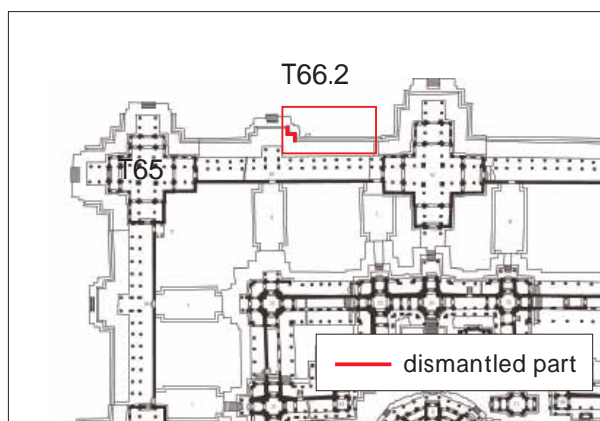
**Before Restoration**



**After Restoration**



## Area : T66.2 work period : 8 weeks



Stone Number	Type	Applied Case	notes (Ø x num. x L)
66.2.8.1.1(2)	N.Head	1+3+5	Ø: 10x2x200
66.2.8.2.1	O.post	5	x
66.2.8.2.2	S.post	5	x
66.2.8.2.3	S.post	5	x
66.2.8.2.4	O.post	5	x

### 1. Result of previous survey

Eastern Naga statue(66.2.8.1.1) was broken into 2 pieces and combined with post and basement by iron belt in past restoration in order to stand. Although, the iron belt was nearly fall out and in danger of fall. Thus we decided to dismantle this Naga statue and elements concerning to this statue.

### 2. Restoration activity at T66.2

We set mini crane at northeast space of this area and started work. In this area we didn't move dismantled elements to other area, repaired at the on-site platform, as dismantled elements were few. Remove previous iron belt of Naga statue, and combined using 3 stainless steel. We could remove one substitute post under this statue when reconstructing. Also, the outer edge of the platform was subsided and the Naga statue was inclined to outside, thus we inserted sandstone plate and lead plate under the basement in order to secure stable situation.

### 3. Position change of the element(See Drwaing T66.2

No movement in the Handrails or the Basements.By rejoining 66.2.8.1.1.1,2, which had been installed using an iron belt in a previous restoration, the substitute 66.2.8.2.2 was moved.



Area : T66.2 work period : 8 weeks

<Before and after restoration>





Area : T66.2 work period : 8 weeks

<After restoration>



<Photos during restoration>





Area : T66.2 work period : 8 weeks

<Photos during restoration>





Area : T66.1 work period : 11 weeks



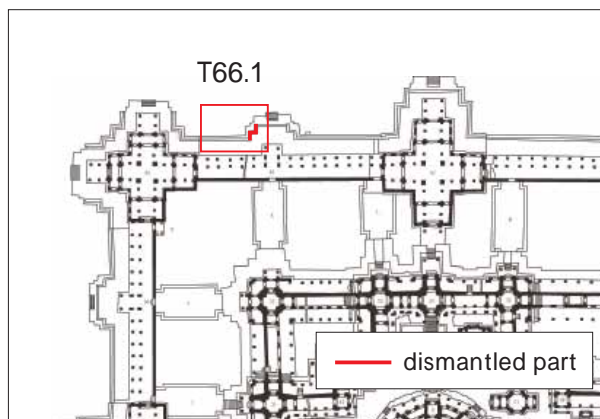
Before Restoration



After Restoration



## Area : T66.1 work period : 11 weeks



Stone Number	Type	Applied Case	notes (Ø x num. x L)
66.1.8.1(7)	Naga	1+3+5	
66.1.8.1.2	Naga	1+5	x
66.1.8.2.1	O.post	1+5	x
66.1.8.2.2	O.post	1+5	x
66.1.8.2.3	O.post	1+5	x
66.1.8.2.4	O.post	1+5	x
66.1.8.2.5	S.post	1+5	x

### 1. Result of previous survey

There were two Naga statues in this area. For the north statue (66.1.8.1.1), it was largely broken into four parts and also trunk part was broken into several fragments. By the previous restoration, this part was connected with iron pin, and fixed with iron belt around the trunk part. However, the mortar filled to this joint had deteriorated and became meaningless, already joint part was broken again into several fragments. Also, although there was no major deterioration in the Naga statue on the south side (66.1.8.1.2), in order to prevent the falling of the statue, the iron belt were inserted into the basement and fixed. However, the mortar fixed this belt also began to deteriorate, there was a danger of falling down due to this iron belt detaching. Therefore, in this area, we decided to dismantle this 2 Naga statues and concerning 5 posts under these Naga statue. It was relatively stable and had no distortion or inclination for bamsements, we decided not to dismantle.

### 2. Restoration activity at T66.1

For this area, as same as T66.2, it was difficult to set mini-crane around the site. Thus we set up scaffolding and trochlea. For this reason, dismantled elements were repaired on the platform. At first of dismantling work, we had to remove the mortar and iron belt of two Naga statues (66.1.8.1.1 and 66.1.8.1.2) which installed at previous restoration. Especially for 66.1.8.1.1, the broken part was again broken into fragments, thus we need to remove and dismantle this statue carefully. After remove all, we connected each statue by using stainless steel bolt. Thus, we could reconstruct Naga statue without substitute posts that were supporting Naga broken part.

### Position change of the element(See Drwaing T66.1)

No movement in the Handrails or the Basements. By re-joining Naga head 66.1.8.1, which had been joined with an iron belt and mortar in a previous restoration, the iron belt was removed and the post 66.1.8.2, which was underneath it, was moved.



Area : T66.1 work period : 11 weeks

<Before and after restoration>





Area : T66.1 work period : 11 weeks

<After restoration>



<Photos during restoration>





Area : T66.1 work period : 11 weeks

<Photos during restoration>





Area : T65.1 work period : 6 weeks



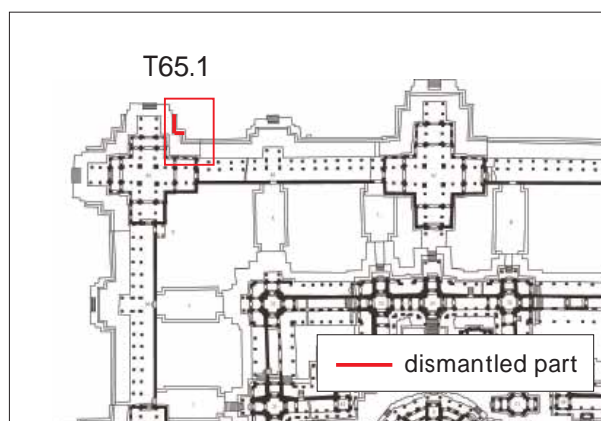
Before Restoration



After Restoration



## Area : T65.1 work period : 6 weeks



## Repaired number

- Naga statue..... 1
- Other Balustrade elements
  - Handrail.....1
  - Post.....3
  - Basement.....2

Total 7 elements

**1. Result of previous survey**

The Naga statue of this area (65.1.8.1.1) was inclining to the outside due to broken of the basement. For the other part, is seems comparatively stable.

**2. Restoration activity at T65.4**

In this area, we decided to dismantle only Naga statue and handrail beside this statue, and posts and basement under these handrails. As a result of dismantle, as there some were uneven settlement of the platform, there were no gaps at floor, thus we decided to re-install the elements without touching platform. For the Naga statue 65.1.8.1.1, part of Naga head was broken and connected in the previous restoration, though deterioration of the connection was concerned, we reconnect this part. Also, we also connected broken basement which caused inclination of Naga statue. When reconstructing, some leadplate were inserted between basement and post and Naga statue to eliminate the inclination of the Naga statue.

**3.Position change of the element(See Drwaing T65.1)**

No movement in all the elements.



Area : T65.1 work period : 6 weeks

<Before and after restoration>





Area : T65.1 work period : 6 weeks

<After restoration>



<Photos during restoration>





Area : T65.1 work period : 6 weeks

<Photos during restoration>





Area : T65.4 work period : 20 weeks



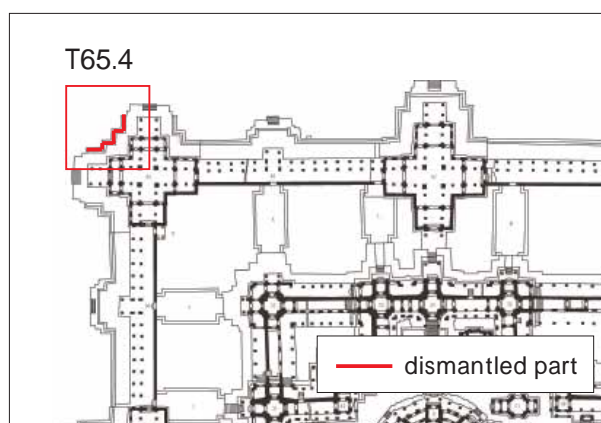
Before Restoration



After Restoration



## Area : T65.4 work period : 20 weeks



### Repaired number

■Naga statue..... 3

■Other Balustrade elements

Handrail.....8

Post.....10

Basement.....13

Total 34 elements

### 1. Result of previous survey

Uneven settlements of the platform forming big gaps and breakage of the basement, and caused many falling of handrails and posts. Also, it was clearly visible that rest unfallen NAGA statue was installed at unoriginal position by previous restoration. Furthermore, in the rain season, ground around this area was covered with rain water, these fallen elements was also submerged in water and causing further deterioration.

As for these situation, we decided to dismantle all the balustrade elements in this area.

### 2. Restoration activity at T65.4

First of all, we begun from setting site around this area after records of the scattering stone. Specific work was which find the combination of fragments that could be joined and identification work of the original position was carried out carefully. One of the largest progress in this work is we found that one Naga statues installed at T64.2 and piece of handrail could be joined and originally positioned at western edge of balustrade in this area. Finally all scattering stones on the ground and platform could installed in this area. Also simple platform improvement was done before reconstructing work.

### 3. Position change of the element(See Drwaing T65.4)

In this area, almost all of the wooden beams were either on the platform or on the ground below the platform, except for 65.4.8.1.1, so we identified their original positions and made significant changes to their positions.

- 64.1.8.1.2, which was installed in T64.1, was moved to this area because it was confirmed that it was joined with T65.4.8.1.2 and that it was in situ in T65.4.
- 65.4.8.1.1 was installed next to it, and the Naga heads C4.4.6.1 and C4.4.6.2, which had fallen to the ground below the platform, and C4.4.5.2+5.1, which was joined to these, were installed in the northeast corner of this area.

The location of the ground cover has not changed. The majority of the Posts were installed in their original positions, in association with the identification and installation of the original positions of the Handrails.



Area : T65.4 work period : 20 weeks

<Before and after restoration>





Area : T65.4 work period : 20 weeks

<After restoration>



<Photos during restoration>





Area : T65.4 work period : 20 weeks

<Photos during restoration>





Area : T65.4 work period : 20 weeks

<Photos during restoration>





Area : T65.3 work period : 10 weeks



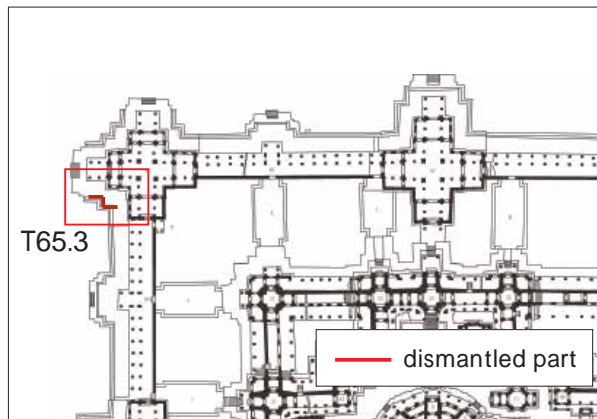
Before Restoration



After Restoration



## Area : T65.3 work period : 10 weeks



### Repaired number

■Lion Statue .....	1
■Naga statue .....	2
■Other Balustrade elements	
Handrail.....	4
Post.....	8
Basement.....	10

Total 18 elements

### 1. Result of previous survey

There are 2 Naga statues in this area. Western Naga statue (65.3.8.1.1) was missing whole trunk and fixed with iron clamps and pin to the substitute post and basement. The other Naga statue (65.3.8.1.5) was broken into two pieces. Also, some of the basements has delamination and broken into fragments.

For one lion statue stood in this area, some cracks and other deterioration are recognized. Thus we decided to dismantle this statue and implement filling of cracks exfoliation.

### 2. Restoration activity at T65.3

For the situation as above, we decided to dismantle most of the elements of balustrade except few basements and posts at western edge. Also, these deterioration of the elements caused from uneven settlement of the platform. Thus we dismantle first upper layer of the platform in order to remove the soils which enter into the gap and eliminate the gap between platform floor.

When we dismantle the Naga statue 65.3.8.1.1, we find 9 iron pins which inserted at previous restoration (2 pins between Naga statue and substitute-post, 4 pins between substitute-post and substitute-basement, 3 pins between substitute-basement and platform). Fortunately, we could find the trunk piece that can be connected to this statue, we were able to re-install this Naga statue without using any pins, only with height adjustment. For the other Naga statue 65.3.8.1.5 and other handrails and basements, we implement needed treatment such as connecting, and consolidation.

However, only by the improvement of floor of the platform, it could not solve fundamental inclination. Thus we insert some sandstone plate between basement and platform.

### 3. Position change of the element(See Drawing T65.3

No movement in all the elements. It was confirmed that C5.4.1, which had fallen onto the platform, was joined to 65.3.8.1.1, so it was joined. When installing, the concrete material used for the naga head, which was unstable before restoration, was removed, and by using the 65.3.8.2.6 and 65.3.8.2.1 substitute Post, it was possible to install it in a stable state.



Area : T65.3 work period : 10 weeks

<Before and after restoration>





Area : T65.3 work period : 10 weeks

<After restoration>



<Photos during restoration>





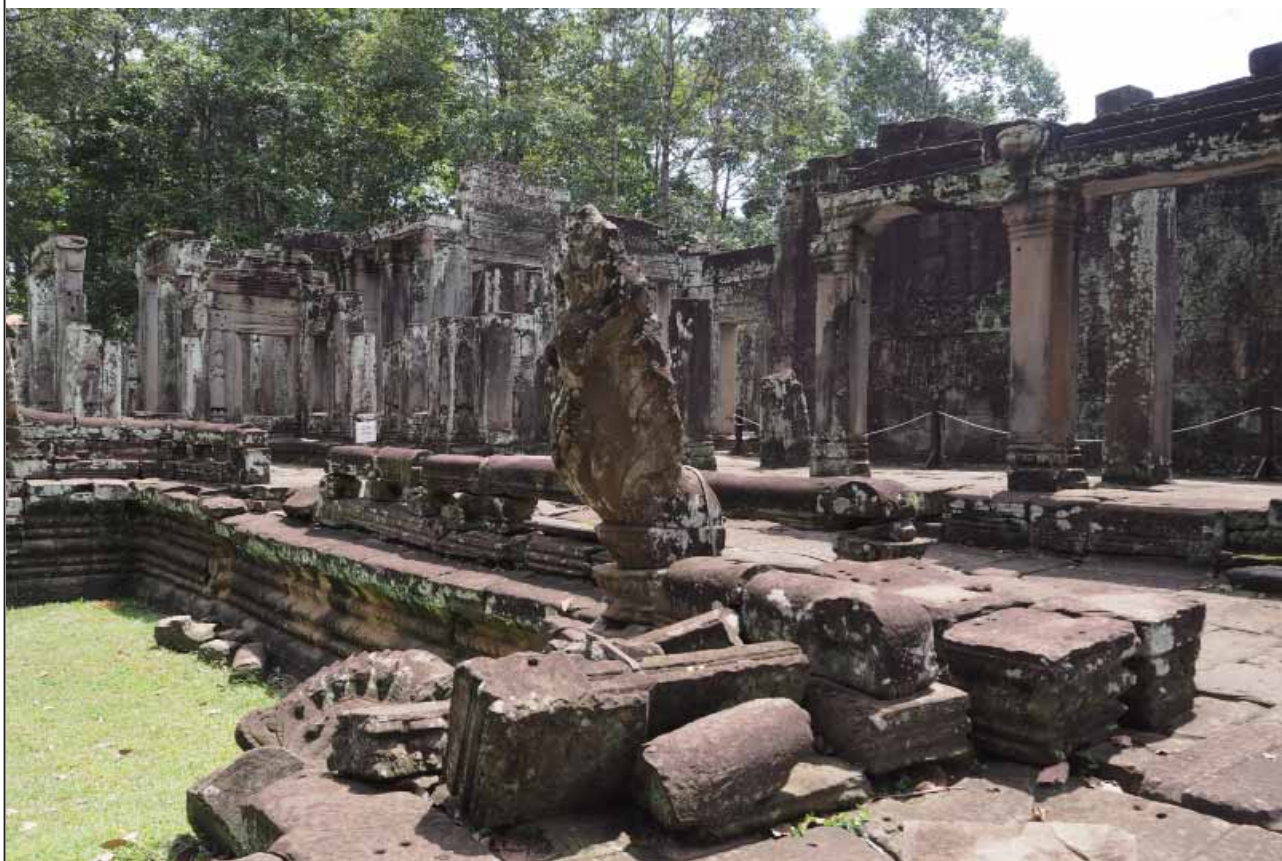
Area : T65.3 work period : 10 weeks

<Photos during restoration>





Area : T64.1 work period : 8 weeks



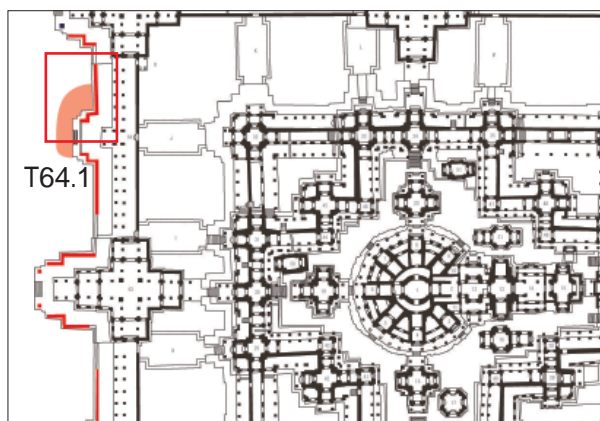
**Before Restoration**



**After Restoration**



## Area : T64.1 work period : 8 weeks



## Repaired number

■ Naga statue..... 1

■ Other Balustrade elements

Handrail.....6

Post.....10

Basement.....13

Total 30 elements

### ■ Restoration activity at T64.1

Restoration work in this area began in October 2019, after the completion of the earth clearance work around the platform of Area T64. As a result of the clearance work, many balustrade elements and fragments related to the Naga statues were found, so investigations were carried out in T64.1, T64.2 and the adjacent area T63.4 to determine which elements could be combined and to identify their original locations. Finally, it was found that many elements could be returned to the previously missing parts, in particular, all the elements of the T64.1 Handrails were found in perfect order. Also, many small fragments were found that could be joined to the Naga statues that had collapsed on the platform.

### ■ Position change of the element(See Drawing 64.1)

For area T64.1, we could find many lost elements and pieces of balustrade as below.

- One collapsed Naga statue □ C6.1.1, can connected not only with also collapsed body, but also with small head pieced found from mound by clearance work.
- It was confirmed that C6.1.19, C6.1.12-15 were joined with 64.1.8.
- C5.2.10 + C5.1.11.1 + C5.1.11.3, C5.2.8.1 + C5.2.9.1, were also confirmed to have formed a single handrail element, so they were joined and installed.
- In order to install the newly discovered handrail in places where had been lost, a new sandstone basement (N64.1.8.3.1) was inserted.



Area : T64.1 work period : 8 weeks

<Before and after restoration>





Area : T64.1 work period : 8 weeks

<After restoration>





Area : T64.1 work period : 8 weeks

<Photos during restoration>





Area : T64.2 work period : 12 weeks



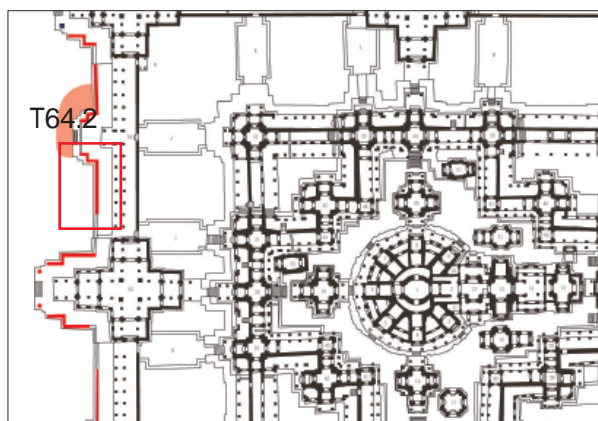
**Before Restoration**



**After Restoration**



## Area : T64.2 work period : 12 weeks



### Repaired number

■ Naga statue.....	2
■ Other Balustrade elements	
Handrail.....	10
Post.....	13
Basement.....	24
<u>Total 49 elements</u>	

### ■ Restoration activity at T64.2

During clearance at T64 in August-September 2019, several elements associated with T64.2 were also excavated.

Typically, the Naga head (No. C6.2.13) and body (64.2.8.1.7(2)), which had been identified prior to clearance and had fallen by the staircase, were found to be in situ at the balustrade corner directly above it, and were joined and reinstalled.

T64.2 was complicated by the fact that the restoration of the existing structure had originally connected two elements that did not match, and almost the entire structure was installed in an out-of-situ location. In the adjacent area T64.1, the missing elements were excavated from the mound immediately below, so it was relatively easy to determine the original location by lining them up, but T64.2 was more difficult because it was necessary to identify the elements over a wide area, including the surrounding area.

The results of the identification revealed that the elements in the surrounding area T64.2 were originally from T65.3, T65.4, and T63.4, and that some of the elements should be moved from these areas to T64.2.

### ■ Position change of the element(See Drawing 64.2)

Following is a description about moving elements

- -Initially, both C6.2.13 and C6.2.14, which had fallen just below the platform, were considered to belong to T64.2, but after identification research, it was found that 63.4.8.1.3, which was installed at T63.4, belonged to T64.2. Accordingly, C6.2.14 and its debris elements are now installed in T63.4.
- -Since C6.2.20 excavated from the ground was part of 64.2.8.1.7, it was possible to join these pieces and recover the complete form of the original Handrail. Similarly, 64.2.8.14 + 64.2.8.1.13 and T64.2.8.1.8 + 64.2.8.1.5 were also confirmed to be one piece of the elements found in the ground.
- -No. C6.2.20 was connected to 64.2.8.1.7(2) in the previous restoration, and it was confirmed that it originally formed a single piece with 64.2.8.1.13 and 64.2.8.1.14. Following this single timber, 64.1.8.1.8, C6.1.52, and 64.2.8.5(2) were found to be in their original positions.
- -Since the location of the balustrade handrails was identified and the size of the missing handrails could be accurately determined, new sandstone material was inserted here to compensate for the missing handrails in two places.



Area : T64.2 work period : 12 weeks

<Before and after restoration>





Area : T64.2 work period : 12 weeks

<After restoration>





Area : T64.2 work period : 12 weeks

<Photos during restoration>





Area : T63.4 work period : 4 weeks



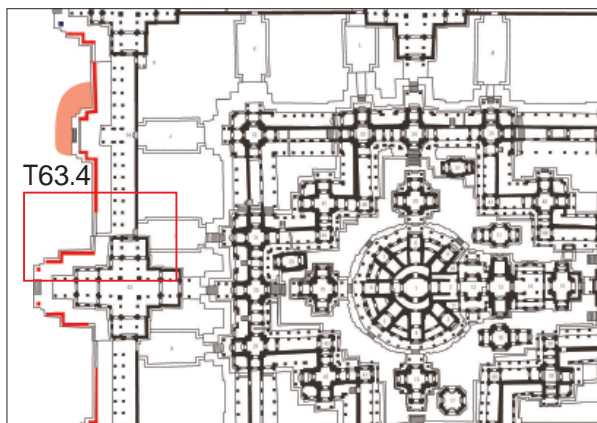
Before Restoration



After Restoration



Area : T63.4 work period : 4 weeks + 1 week



#### Repaired number

■ Naga statue..... 2

■ Other Balustrade elements

Handrail.....5

Post.....10

Basement.....8

Total 25 elements

#### ■ Restoration activity at T63.4

Restoration in this area began in March 2018. In this area, the balustrade seems to have been installed from the original in a special construction method, in which a part of the basement was directly installed as the floor stone of the platform. These platform and basement of balustrade were relatively in stable condition, firstly we decided to dismantle only one Naga and another 3 handrails and 1 Lion. This Naga statue was fixed with iron belt in the previous restoration, but this iron belt was about to come off. Also, a handrail next this Naga statue was easy to move, and recently some tourist changed the position, it was in danger of falling from platform. Furthermore when dismantle started, we found that one more Naga need some repairing, thus we also include this Naga statue for dismantling.



Dismantled part

#### ■ Position change of the element(See Drawing 63.4)

For T63.4, for which restoration was once completed in April 2018, there had been several elements that had not been found in their original location and had been re-installed in positions in accordance with the previous restoration, but as a result of the sediment clearance around T64 (see 5.3) and identification work, these were instead found in their original location. As a result, this area was also able to be fully aligned with the trestle following T64.1.

- Of the two Naga statues at T63.4, the southern Naga statue 63.4.8.1.3 was known not to be from T63.4, but as the Naga statue (C6.2.14 and associated elements) excavated during clearance was found to be from 63.4, it was decided to install this at T63.4. Accordingly, Naga 63.4.8.1.3.2, which had been installed at T63.4, was to be moved to T64.2.
- The handrail 65.4.8.1\* from T65.4 was joined with C6.2.13 excavated from near T64 and its original location was found to be the Naga head C6.2.14 matching element mentioned above, so this element was also moved from 65.4.
- It was observed that 6.2.8.1.4, installed at T64.2, joined 63.4.8.1.4 and 63.2.8.1.10 to form a single handrail element.
- It was confirmed that girders 62.8.1.9 and 62.8.1.11, also located at T64.2, were joined to elements at 63.4 to form a single handrail element.

#### ■ Repairing of Lion Statue

In this area, 1 Lion statue was restored (63.4.8.1.1, L-2). Injection work for reinforcement was implemented.



Area : T63.4 work period : 4 weeks

<Before and after restoration>





Area : T63.4 work period : 4 weeks

<After restoration>



<Photos during restoration>





Area : T63.4 work period : 4 weeks

<Photos during restoration>





Area : T63.3 work period : 4 weeks



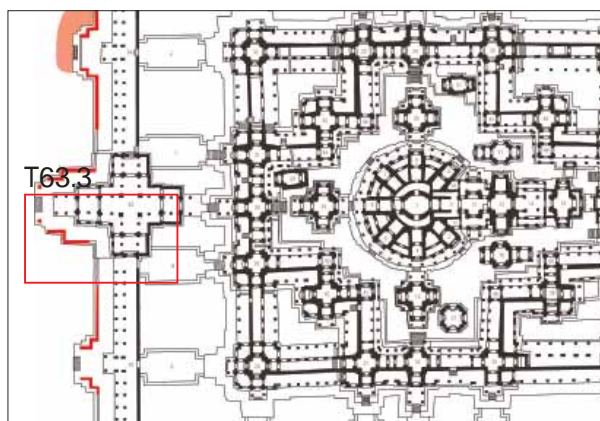
Before Restoration



After Restoration



## Area : T63.3 work period : 4 weeks

**Dismantled part****Repaired number**

■Lion Statue .....	1
■Naga statue .....	2
■Other Balustrade elements	
Handrail.....	2
Post.....	5
Basement.....	5

**Total 15 elements****Restoration activity at T63.3**

Work in this area started in April 2018.3 The elements that were dismantled at T63.3 are as follows.

Lion statue: 1

Naga statues: 2

Balustrade elements: 2 elements

Post: 2 elements

The Lion and Naga statues were not initially planned to be dismantled, but during the process of dismantling the balustrade elements, it was confirmed that these statues were also in a serious condition, so it was decided to carry out dismantling and repairs. The treatment of the statues is as follows.

Lion statue (No. 63.3.9.1.1): many cracks were found on all four legs, which were already nearly broken and threatened to collapse. Therefore, the statue was partially dismantled, the body and pedestal sections, which were on the verge of breaking, were separated, reinforced and then joined together.

Naga statue (No. 63.3.8.1.1): a fragment of this Naga statue could be found in the scattered stone material on the west side of T63.3, so it was joined to the Naga statue. In addition, the previous restoration work carried out on the base of the head of the statue was not in good condition, so it was removed and rejoined.

Naga statue (No. 63.3.8.1.5): the cracks were reinforced by injections.

**■Position change of the element(See Drawing 63.4)**

In this area, all elements were in place from before the restoration, so no elements were moved.

**■Repairing of Lion Statue**

In this area, 1 Lion statue was restored (63.3.8.1.1, L-2). Injection work for reinforcement was implemented.





Area : T63.3 work period : 4 weeks

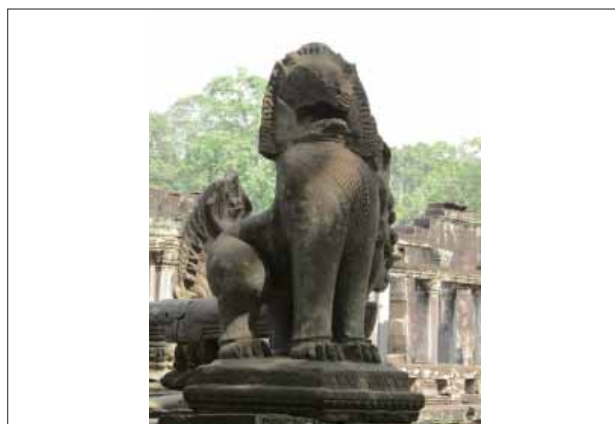
<Before and after restoration>





Area : T63.3 work period : 4 weeks

<After restoration>



<Photos during restoration>





Area : T63.3 work period : 4 weeks

<Photos during restoration>





Area : T62.1 work period : 14 weeks



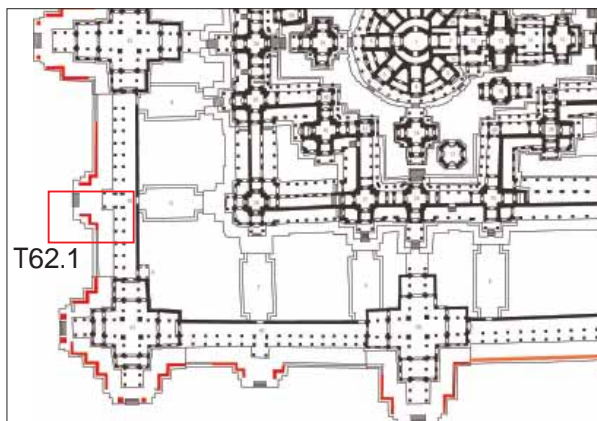
Before Restoration



After Restoration



## Area : T62.1 work period : 14 weeks



**Dismantled part**

### Repaired number

■Naga statue.....	2
■Other Balustrade elements	
Handrail.....	5
Post.....	9
Basement.....	11
<u>Total 27 elements</u>	

### Restoration activity at T62.1

-The body of the Naga balustrade on the south side(C.8.4.1 and 62.1.8.1.8.2) was broken into 2 pieces. There were no connecting treatment at previous restoration, and supported by only substitute post.

-The head of the Naga statue on the north side (62.1.8.1.6) was hung over, thus it was supported by concrete support by previous restoration. From our perspective, after dismantled basement and first layer of the platform, and reconstruct removing extra



soils and gaps between the floor of the platform, upper balustrade including this southern Naga statue can be moved backward. Thus it seems that Naga statue can be set without support after restoration.

For the northern Naga statue, due to the improvement work in order to reduce large gap between floor of the platform under the northern balustrade of this Naga statue, we could bring these balustrades near to wall of the outer gallery. Thus Naga statue no more needs concrete support inserted at previous restoration. Also for the southern Naga statue, before restoration, upper half was broken and already lost. Though after survey by workers, they could found that one scatter stone lying in front of T63.2 would be connected with this Naga statue. Some of the elements of platform around these 2 Naga statue were already lost and distortion could be seen at this area, new sandstone plate were needed when reconstruct Naga statues.

### Position change of the element(See Drwaing T62.1 )

No movement in the Handrails or the Basements. The joining of C8.4.1 and Naga head 62.1.8.1.8.2, which had fallen on the platform, was confirmed.



Area : T62.1 work period : 14 weeks

<Before and after restoration>





Area : T62.1 work period : 14 weeks

<After restoration>



<Photos during restoration>





Area : T62.1 work period : 14 weeks

<Photos during restoration>





Area : T62.2 work period : 10 weeks



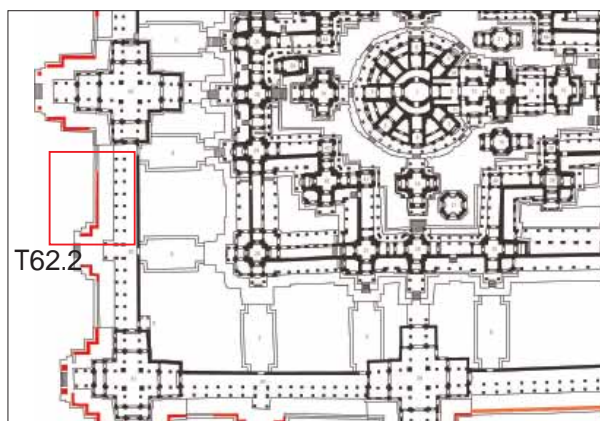
Before Restoration



After Restoration



## Area : T62.2 work period : 10 weeks



Dismantled part

## Repaired number

■ Naga statue..... 2

■ Other Balustrade elements

Handrail.....5

Post.....9

Basement.....8

Total 24 elements

## ■ Restoration activity at T62.2

There are 2 Naga statue at T62.2, though both of Naga head are not in original position. The body of northern Naga(62.2.8.1.3) was broken in 2 pieces which was not restored and only supported by substitute post. Also we confirmed heavy depression under the balustrade, thus we insert many sandstone plate under the basement for adjustment the height. Also, we changed position of basement, post and substitute post in order to make most stable situation.

## Position change of the element(See Drwaing T62.2 )

For the basements, some elements that had broken into several pieces were jointed and repaired. For the Handrails, it was observed that the positions of 62.2.8.1.1 and 62.2.8.1.3 on the Naga head were interchanged, so these locations were replaced. Due to the large distortion of the platform near the commandment, it was necessary to insert many sandstone plates during the installation of the basement.



Area : T62.2 work period : 10 weeks

<Before and after restoration>





Area : T62.2 work period : 10 weeks

<After restoration>



<Photos during restoration>





Area : T62.2 work period : 10 weeks

<Photos during restoration>





Area : T61.4 work period : 10 weeks



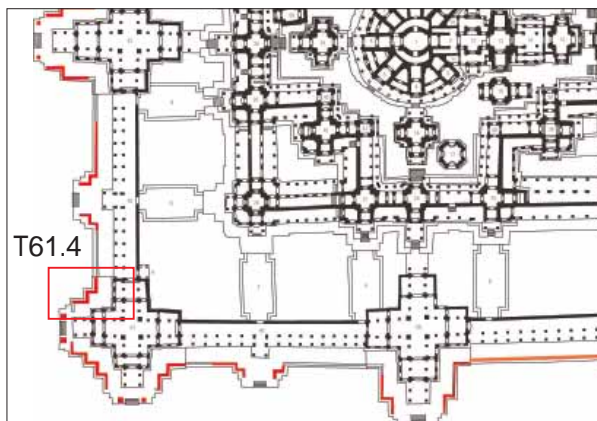
**Before Restoration**



**After Restoration**



## Area : T61.4 work period : 10 weeks



T61.4

## Repaired number

- Lion Statue ..... 1
- Naga statue ..... 2
- Other Balustrade elements
  - Handrail ..... 5
  - Post ..... 7
  - Basement ..... 6

Total 21 elements



Dismantled part

## ■ Restoration activity at T61.4

-Among two naga which existed in this area, the head of southwestern Naga statue(61.4.8.1.8) was broken into two parts, and broken half has fallen into the platform. In addition, the balustrade part was broken on some small pieces and tied up by restoration in the past, but this iron belts were about almost came out, and there was the risk that the whole Naga statue collapsed. After restoration, these pieces of the head and trunk was connected, and it was stable and came to be able to stand without any support.



Before restoration



Before restoration



## ■ Position change of the element(See Drwaing T61.4)

The position of the Handrails was not changed, however, 61.4.8.1.8.4, part of the Naga head 61.4.8.1.8, which had collapsed on the floor, was joined. In addition, since it was confirmed that 61.4.8.3.1 and 61.4.8.3.2 were originally one element, they were joined and, accordingly, substitute post that were no longer needed due to the joining were inserted in place of the basement cover where 61.4.8.3.2 was placed (61.4.8.2.8, 61.4.8.2.4, and 61.4.8.2.7).

## ■ Repairing of Lion Statue

In this area, 1 Lion statue was restored (61.4.9.1.1). The head of this Lion statue was broken and fell down on the ground near the platform. In the rain season, this head part was soaked in the water and caused further deterioration. By the restoration work, this head part could be connected to the body.



Area : T61.4 work period : 10 weeks

<Before and after restoration>





Area : T61.4 work period : 10 weeks

<After restoration>



<Photos during restoration>





Area : T61.3 work period : 13 weeks



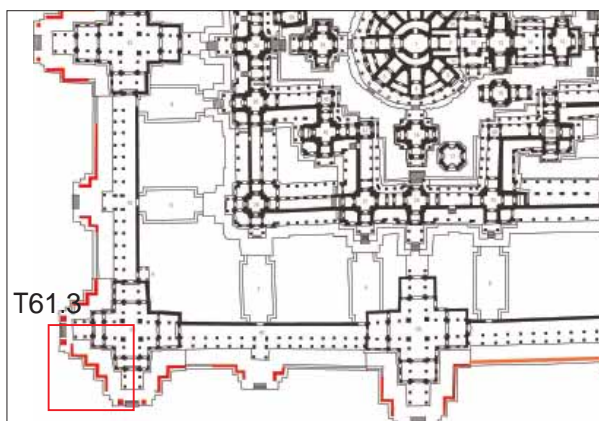
**Before Restoration**



**After Restoration**



## Area : T61.3 work period : 13 weeks



Dismantled part

**Restoration activity at T61.3**

Area 61.3 was large area that include many balustrade elements and statues. Though most of the elements are not sure that were in the original position.

-There were 4 Naga statues in this area, and 2 of them were supported by iron belt in previous restoration. Among these 2 Naga statues, for one Naga statue we confirmed that could be connected with another body, thus connected and set without support. For another Naga statue could not connected with any other body, though set without any support by adjusting horizontal level.

-One lion statue which all the 4 legs were broken and restored in the previous restoration by cement, but it was already deteriorated, thus we decided to remove previous treatment and connect by using stainless pin.

-Also, some platform maintenance were needed in this area.

- From our survey, we found that one handrail from T61.2 and one more another handrail from T60.1 could be originally set at T61.3. Thus we set these two handrails to original position at T61.3.

**■Position change of the element(See Drwaing T61.3)**

Although the position of the Handrails and Basements were not changed, many of the elements had been broken, so they were joined and re-installed. The substitute Posts, which was no longer needed due to the jointing of the handrail, was removed. 61.3.8.1.4.1 had an iron belt used in the previous restoration, but the iron belt was removed because it was confirmed that it could be installed stably by jointing it with 61.3.8.1.4.2.

The original location of 61.2.8.1.1(B) in the 61.2 (southeast) area was identified as being in contact with 61.2.8.1.7, so this element was moved from 61.2 and installed in 61.3.

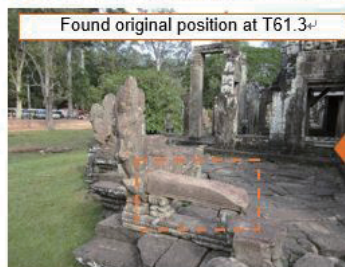
**■Repairing of Lion Statue**

In this area, 2 Lion statue was restored (61.3.9.1.1 & 61.3.9.1.2). 61.3.9.1.1, the statue part and the pedestal part were completely broken at the ankle of the statue and had been joined by previous restoration, but the mortar used here had deteriorated and was in danger of breaking again, so they were rejoined using stainless steel pins. The pedestal was also ruptured and was repaired. 61.3.9.1.2 was injected for reinforcement.

**Repaired number**

■Lion Statue .....	2
■Naga statue.....	4
■Other Balustrade elements	
Handrail.....	7
Post.....	10
Basement.....	12

Total 35 elements





Area : T61.3 work period : 13 weeks

<Before and after restoration>





Area : T61.3 work period : 13 weeks

<After restoration>



<Photos during restoration>





Area : T61.3 work period : 13 weeks

<Photos during restoration>





Area : T61.2 work period :9 weeks



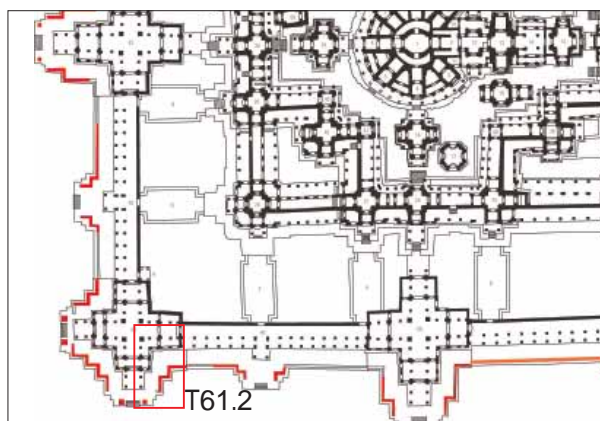
Before Restoration



After Restoration



## Area : T61.2 work period :9 weeks



## Dismantled part

## Repaired number

■Lion Statue .....	1
■Naga statue.....	2
■Other Balustrade elements	
Handrail.....	5
Post.....	8
Basement.....	9

Total 25 elements

## ■ Restoration activity at T61.2

In this area, platform situation was not so bad, though most of the balustrade elements were not in the original position, thus these could only be installed in an unstable form, and cement and iron pin were used to fix these part in the previous restoration which was already deteriorated. Thus we decide to dismantle all of the balustrade and reconstruct at same situation as before. Though when we reconstructing these balustradem we insert new sandstone plate and lead plate instead of previous cement.

Place where fragments that are not originally the same element were joined in the previous restoration, we removed and reconstruct seperately.

We found one of the balustrade piece was originally belongs to 61.3, thus move to the original place.

Also, Lion statue at this area had many small cracks and scaled part, thus we dismantled this statue and appropriate treatment was implemented. When put back this statue, we inserted sandstone plate in order to make stable and fill gaps between platform and statue. Maintenance of platform was needed around Lion statue and Naga statues.

## ■Position change of the element(See Drwaing T61.2)

The original location of 61.2.8.1.1(B) was confirmed to be at 61.3, so this element was moved, but otherwise there was no change in location of the Handrails and Basements. C8.4.1, which had collapsed into a platform, was confirmed to have been part of 62.1.8.1.8, so these were joined. As a result of the stabilization and joint repair of the handrail, substitute Posts that were no longer needed were removed, and some of the substitute Posts were repositioned and reinstalled.

## ■Repairing of Lion Statue

In this area, 1 Lion statue was restored(61.2.8.1.1).The base of the pedestal was completely cracked, which could lead to further collapse of the entire statue, so it was fixed by grazing.





Area : T61.2 work period :9 weeks

<Before and after restoration>





Area : T61.2 work period :9 weeks

<After restoration>



<Photos during restoration>





Area : T61.2 work period :9 weeks

<Photos during restoration>

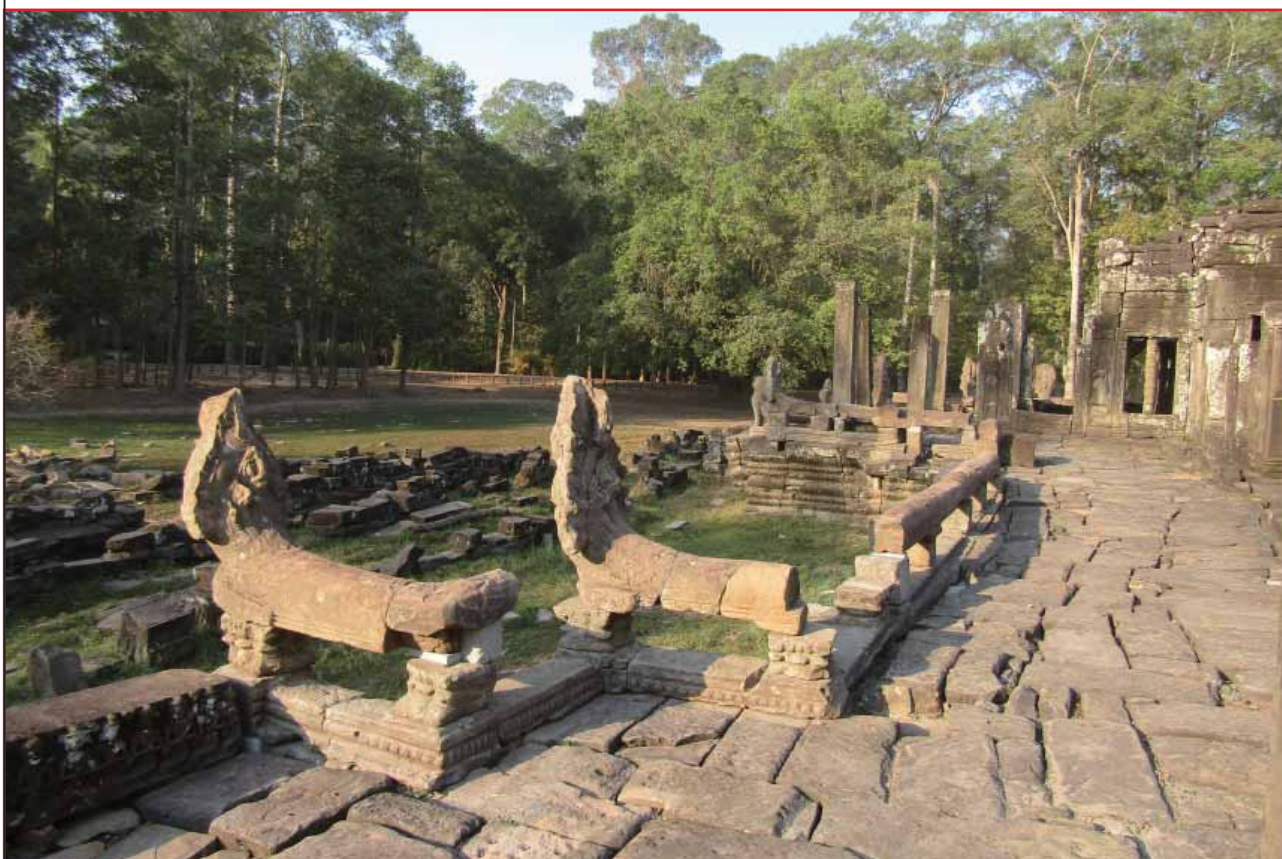




Area : T60.1 work period : 16weeks



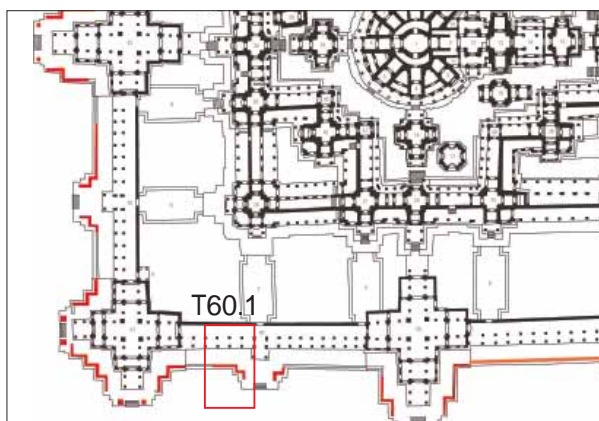
**Before Restoration**



**After Restoration**



## Area : T60.1 work period : 16weeks

**Restoration activity at T60.1**

For T60.1, the situation before restoration was very complicated, as most of the element of balustrade were moved wrong pieces were connected or lined in not original position by previous restoration. As a result of our survey, we found many pieces that can be connect as an original element, and could identify original position so that can be back to safely. Also, due to uneven subsidence, floor of the platform directly under the balustrade was subsided, thus we had to implement platform maintenance with supplying many new sandstone plate to these subsided line. The process of the work was done with supplying new sandstone plat and lead plate. One more problem at this area was some heavy rain instead of dry season. Due to rain, sometime it was difficult to set up Mini Crane.



■ **Position change of the element(See Drwaing 60.1)**

There was no change in the position of the naga head, but there was a significant change in the position of the other rafters. It was confirmed that 60.1.8.1.3, 60.1.8.4 and 60.1.8.1.1, which had been placed separately before restoration, were originally a single piece, so were joined together. It was also discovered that E11.1.2 and 60.1.8.1.6, which had fallen onto the platform, could be joined together. After carrying out these kinds of joins, the original positions of the handrails could be identified by the distance between the post, and the positions of the other joists were changed and installed accordingly.

The many substitute posts that had been used before the restoration became unnecessary due to the repair and joining of the handrails that had fallen to the base of the platform, so these were removed. Sandstone plates were inserted under the basements to stabilize them.

**Dismantled part****Repaired number**

■ Naga statue..... 2

■ Other Balustrade elements

Handrail.....6

Post.....14

Basement.....10

Total 22 elements



Area : T60.1 work period : 16weeks

<Before and after restoration>





Area : T60.1 work period : 16weeks

<After restoration>



<Photos during restoration>





Area : T60.1 work period : 16weeks

<Photos during restoration>





Area : T60.2 work period : 10 weeks



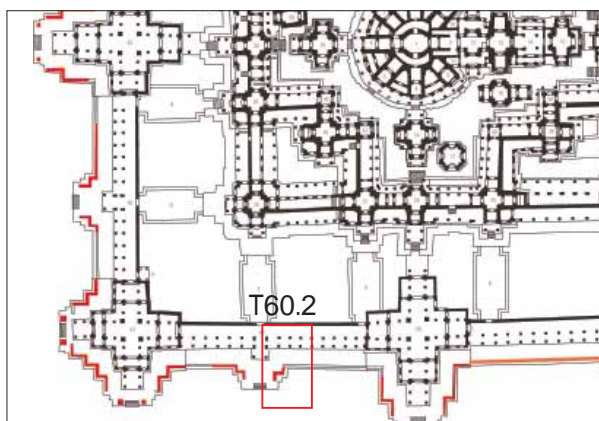
Before Restoration



After Restoration



## Area : T60.2 work period : 10 weeks



Dismantled part

## Repaired number

■Naga statue.....	1
■Other Balustrade elements	
Handrail.....	1
Post.....	3
Basement.....	3
<u>Total 8 elements</u>	

**Restoration activity at T60.2**

Naga statue at this area was broken into some pieces and this part was combined with iron belt installed in precious restoration. Though iron belt was deteriorated and almost fell out. We dismantled and repaired elements of the balustrade including this Naga statue.

**■Position change of the element(See Drawing 60.2)**

Although there was no change in the position of the handrails or the basements, sandstone plates were inserted to stabilize the basements. E11.2.3, a fragment of the naga head that had also fallen onto the platform, was repaired and installed after it was confirmed that it could be joined with 60.2.8.1.1.



Area : T60.2 work period : 10 weeks

<Before and after restoration>





Area : T60.2 work period : 10 weeks

<After restoration>



<Photos during restoration>





Area : T60.2 work period : 10 weeks

<Photos during restoration>





Area : T59.3 work period : 7 weeks



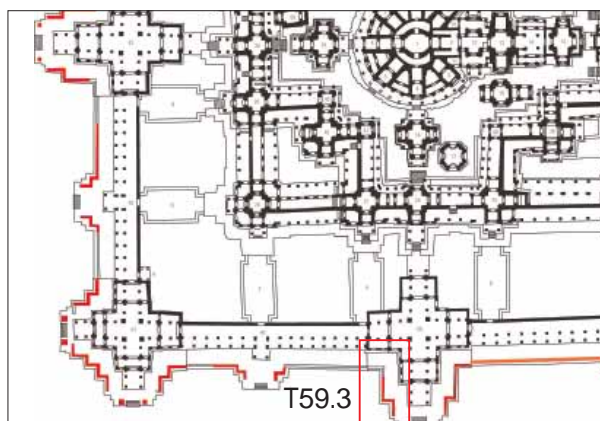
**Before Restoration**



**After Restoration**



## Area : T59.3 work period : 7 weeks



Dismantled part

## Repaired number

■Lion Statue .....	1
■Naga statue.....	2
■Other Balustrade elements	
Handrail.....	5
Post.....	8
Basement.....	9
<u>Total 25 elements</u>	

## ■ Situation before restoration at T59.3

**Balustrade:** For this area, some of the basements were missing and most elements were not situated in the original position and it changed place. Also, because of inclination of the platform to the outside, balustrade are also inclined to the outside and causing unsafety situation.

**Lion statue:** One lion statue stands on this area, though this statue had many scale and cracks, thus we decided to dismantle this statue and implement repairing.

## ■ Restoration activity at T59.3

After dismantling balustrade, One basement were broken and had scaled part. We found that this basement can be connected with other basement part in this area, also could found original position. Though before set back these repairing basement, this area need some improvement of platform.

There was only one original post in this area, and others were all substitute elements put at past restoration and is was put in unsafe balance which causing further danger of balustrade. Thus when reconstructing balustrade, we again reuse these substitute element, though carefully seek for safe and horizontal position.

## ■ Position change of the element(See Drwaing 59.3)

There were no changes to the position of Basements or Fandrails. The positions of the substitute posts (59.3.8.2.11, 59.3.8.3.5, and 59.3.8.2.6) were changed to stabilize the handrails.

## ■ Repairing of Lion Statue

In this area, 1 Lion statue was restored (59.3.8.1.1, L-2). Injection work for reinforcement was implemented.



Area : T59.3 work period : 7 weeks

<Before and after restoration>





Area : T59.3 work period : 7 weeks

<After restoration>



<Photos during restoration>





Area : T59.2 work period : 8 weeks



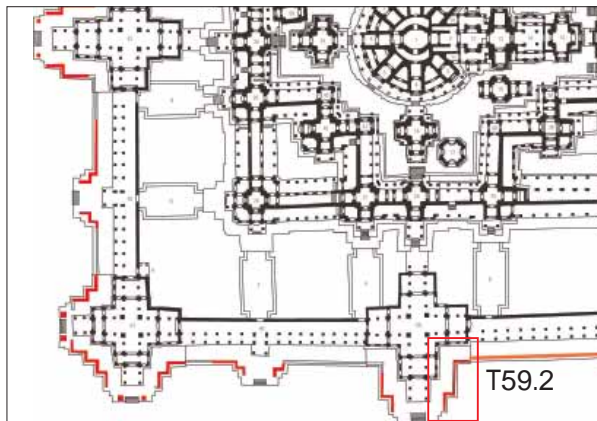
Before Restoration



After Restoration



## Area : T59.2 work period : 8 weeks



Dismantled part

## Repaired number

■Naga statue.....	3
■Other Balustrade elements	
Handrail.....	4
Post.....	8
Basement.....	12
	<u>Total 27 elements</u>

## Restoration activity at T59.2

Before the restoration, T59.2 had a very complicated situation because of the many changes of elements. Also, there were little different construction method for balustrade, that elements of platform were directly curved like basement, and used instead of basement. We tried to find the best position to make better platform in trial assembly work, and found some elements that can be back to original place and safe. There were two Naga statues in this area. For the southern Naga, half part of the head was broken and fall down to the ground, so we connected, also we found original connection with another element at the corner of this area, so we can make it safe situation and better landscape.

## ■Position change of the element(See Drwaing 59.2)

The H11.1VX fell onto the ground in the southeast of 59.2 and <P>Since it was confirmed that this element was originally connected to the handrail placed on the platform at the northern end of 59.2, and the original location of 59.2.8.1.6 was identified as the northern end, the positions of the two naga head balustrade elements were switched. As a result of these changes and repairs, some of the posts (59.2.8.2.7, 59.2.8.2.6) were moved.



## ■Repairing of Lion Statue

In this area, 1 Lion statue was restored (59.2.8.1.1, L-2). Injection work for reinforcement was implemented. During reinstallation, sandstone plates were inserted for stabilization.



Area : T59.2 work period : 8 weeks

<Before and after restoration>





Area : T59.2 work period : 8 weeks

<After restoration>



<Photos during restoration>





Area : T59.2 work period : 8 weeks

<Photos during restoration>

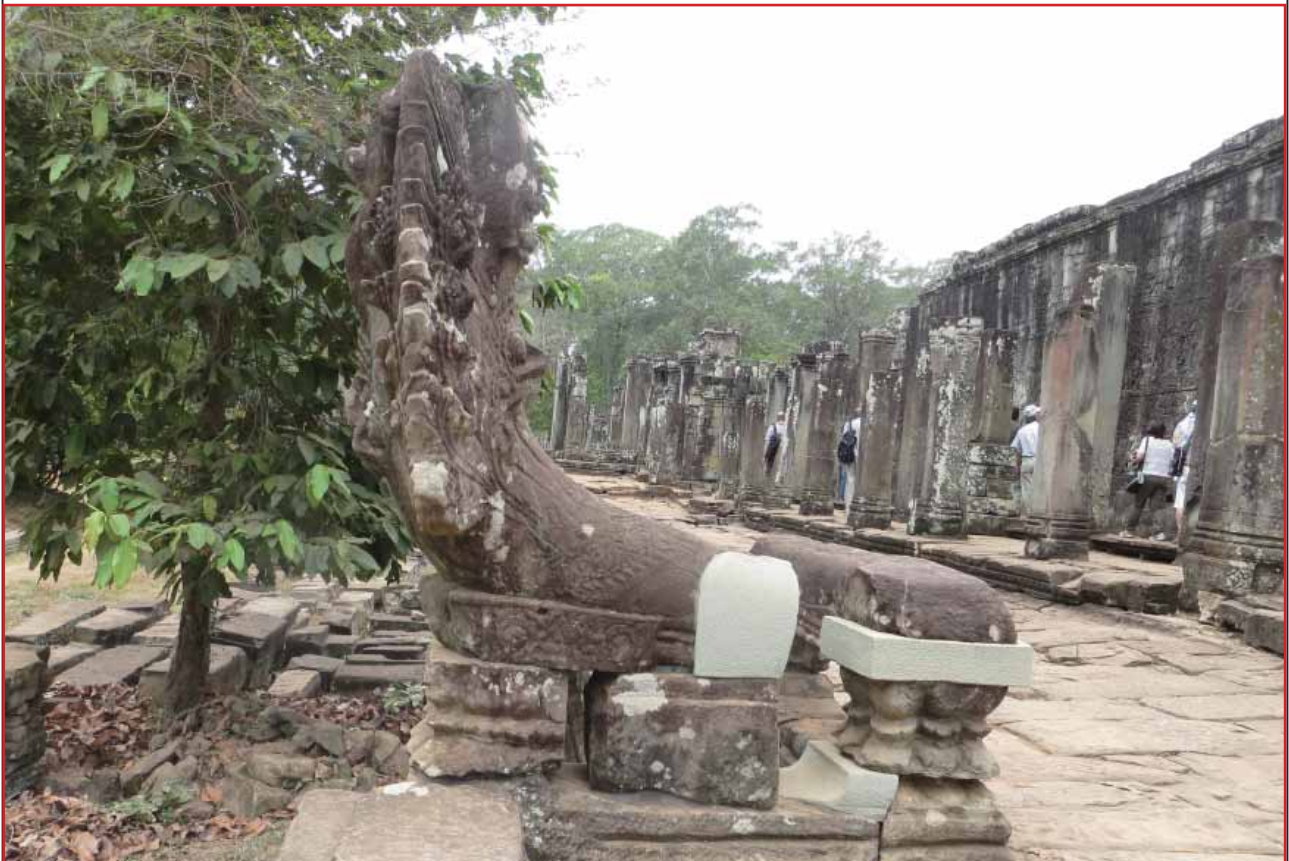




Area : T58.1 / West    Operated Term : 2 month



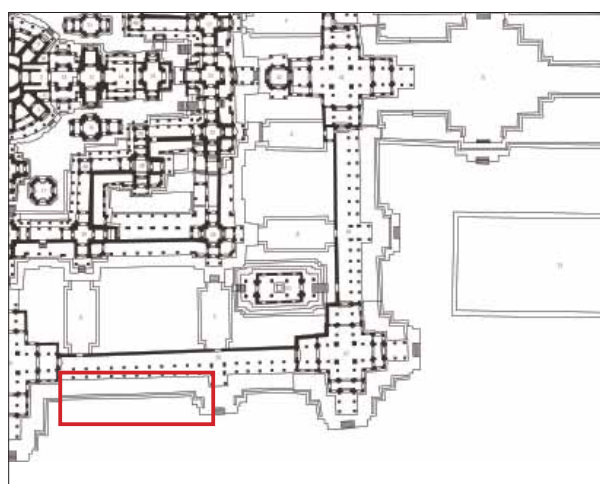
Before Restoration



After Restoration



## Area : T58.1 / West Operated Term : 2 month



&lt;Before restoration&gt;

## Repaired number

■ Naga statue..... 1

■ Other Balustrade elements

Handrail.....6

Post.....5

Basement.....19

Total 31 elements

## ■ Restoration activity at T58.1/ East

When the third phase of JASA started in 2006, a ramp for bringing in and installing heavy equipment was installed on the south side of the outer gallery of the Bayon (Fig. 1). In the second half of February, the stones of these T58.1 blocks were moved to the restoration site and the stones were repaired, which took about two weeks. The balustrades were then reinstalled at the site where the base had already been maintained.

## Position change of the element(See Drawing T58.)

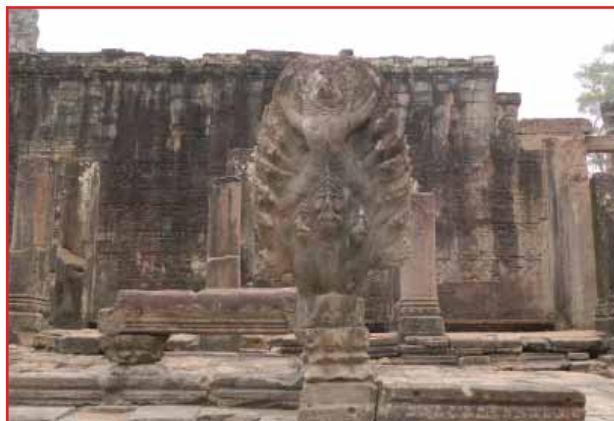
No movement in the Handrails or the Basements.

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
58.2.8.3.1	N.head	108	91	148	1+3+5	Ø: 6 x 3 x 150
58.2.8.3.2(2)	N.body	177	39	35	3+5	
58.2.8.3.3	N.body	63	35	21	5	x
58.2.8.3.4*	N.body	65	36	30	x	x
58.2.8.3.5*	N.body	30	27	12	x	x
58.2.8.3.6	N.body	64	32	22	5	x
58.2.8.3.7*	N.body	99	26	25	x	x
58.2.8.2.1*	Post	41	39	27	x	x
58.2.8.2.2	Post	45	37	32	1+5	x
58.2.8.2.3*	Post	40	36	25	x	x
58.2.8.2.4	Post	43	34	17	5	x
58.2.8.2.5*	Post	44	36	19	x	x
58.2.8.1.1*	Base	100	41	22	x	x
58.2.8.1.2	Base	120	39	24	1+5	x
58.2.8.1.3(3)	Base	122	48	32	3+5	Ø: 5 x 2 x 80/ 8 x 2 x 150
58.2.8.1.4(5)	Base	208	40	25	2+3+5	Ø: 5 x 2 x 80/ 8 x 4 x 100/ 8 x 2 x 150
58.2.8.1.5	Base	109	47	32	3	x
58.2.8.1.6*	Base (2)	104	36	27	3+5	Ø: 8 x 2 x 100
58.2.8.1.7*						
58.2.8.1.8	Base	42	34	30	5	x
58.2.8.1.9	Base	41	30	19	5	x
58.2.8.1.10	Base	99	41	22	5	x
58.2.8.1.11	Base	93	43	21	5	x
58.2.8.1.12	Base	39	38	21	5	x
58.2.8.1.13	Base	55	31	22	5	x
58.2.8.1.14*	Base (2)	163	40	28	3+5	Ø: 8 x 2 x 100
58.2.8.1.15*						
58.2.8.1.16*	Base (2)	152	42	19	3+5	Ø: 8 x 2 x 100
58.2.8.1.17*						
58.2.8.1.18*	Base	38	42	12	3+5	Ø: 6 x 2 x 100
58.2.8.1.19*		177	38	25		
58.2.8.1.20(2)	Base	222	42	26	3+5	Ø: 8 x 2 x 100
58.2.8.1.21(2)*	Base (3)	186	38	21	3+5	Ø: 8 x 2 x 100/ 8 x 2 x 200
58.2.8.1.22*						
58.2.8.1.23(2)	Base	108	40	20	3+5	Ø: 8 x 2 x 100
58.2.8.1.24*	Base (2)	97	48	26	3+5	Ø: 8 x 2 x 100
58.2.8.1.25*						



Area : T58.1 / West    Operated Term : 2 month

<Before and after restoration>





Area : T58.1 / West    Operated Term : 2 month

<After restoration>





Area : T58.1 / West    Operated Term : 2 month

<Photos during restoration>





Area : T58.2 / East part Operated Term : 1 Months



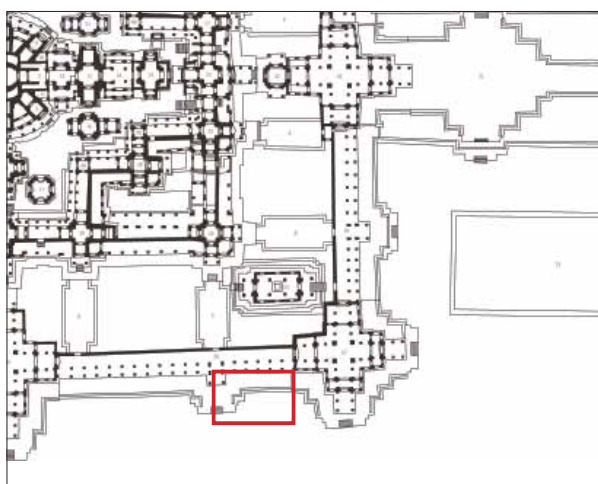
**Before Restoration**



**After Restoration**



## Area : T58.2 / East part Operated Term : 1 Months



&lt;Before restoration&gt;

## Repaired number

■Naga statue..... 1

■Other Balustrade elements

Handrail.....12

Post.....16

Basement.....15

Total 44 elements

## ■ Restoration activity at T58.1/ East

When the third phase of JASA started in 2006, a ramp for bringing in and installing heavy equipment was installed on the south side of the outer gallery of the Bayon (Fig. 1). In the second half of February, the stones of these T58.1 blocks were moved to the restoration site and the stones were repaired, which took about two weeks. The balustrades were then reinstalled at the site where the base had already been maintained.

## ■Position change of the element

In this area, work was done to identify the original position whenever possible, and when it could not be identified, most of the handrails were repositioned from the standpoint of leveling, etc. No positional changes were made for the basements. Many substitute posts were also repositioned and installed for leveling of the handrails.

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
NB1.1	N.head	190	68	93	5	x
NB1.2	N.body	118	35	40	5	x
NB1.3	N.body	66	30	30	5	x
NB1.4 + 13	N.body	117	67	66	5	x
NB1.5	N.body	111	35	32	5	x
NB1.6	N.body	100	32	29	x	x
NB1.7(2)	N.body	93	36	32	3+5	Ø: 6 x 2 x 100
NB1.8	N.body	90	35	32	5	x
NB1.9 + 10	N.body	174	34	38	5	x
NB1.11	N.body	81	36	30	5	x
NB1.12	N.body	27	18	27	5	x
NB1.14	N.body	86	31	29	x	x
NB1.15	N.body	90	42	29	5	x
NB2.1	Post	41	37	17	5	x
NB2.2	Post	45	43	25	5	x
NB2.3	Post	39	40	23	5	x
NB2.4	Sub-Post	25	21	31	x	x
NB2.5	Sub-Post	33	30	19	x	x
NB2.6	Sub-Post	23	19	28	x	x
NB2.7	Post	42	42	25	5	x
NB2.8	Post	20	30	24	x	x
NB2.9	Post	30	19	32	x	x
NB2.10	Post	25	20	18	x	x
NB2.11	Post	25	26	19	x	x
NB2.12(2)	Post	26	25	17	3+5	Ø: 5 x 2 x 80
NB2.13	Sub-Post	13	25	25	x	x
NB2.14	Sub-Post	23	23	25	x	x
NB2.15	Sub-Post	27	26	37	x	x
NB2.16	Post	38	33	23	x	x
NB3.1(2)	Base	50	41	24	3+5	Ø: 8 x 2 x 100
NB3.2	Base	90	36	26	5	x
NB3.3	Base	60	36	26	5	x
NB3.4(2)	Base	224	44	28	3+5	Ø: 10 x 2 x 180
NB3.5	Base	134	37	25	5	x
NB3.6(2)	Base	120	33	14	3+5	Ø: 6 x 2 x 100
NB3.7	Base	49	41	27	x	x
NB3.8	Base	37	50	27	x	x
NB3.9	Base	104	37	31	x	x
NB3.10(2)	Base	123	63	20	3+5	Ø: 10 x 2 x 120
NB3.11	Base	26	37	13	5	x
NB3.12	Base	98	39	26	3+5	Ø: 8 x 2 x 100
NB3.13	Base	65	36	25	x	x
NB3.14(3)	Base	82	32	28	3+5	Ø: 8 x 2 x 100/ 8 x 2 x 120
NB3.15	Base	90	37	30	x	x



Area : T58.2 / East part Operated Term : 1 Months

<Before and after restoration>





Area : T58.2 / East part Operated Term : 1 Months

<After restoration>





Area : T58.2 / East part Operated Term : 1 Months

<Photos during restoration>





Area : 57.3 / Southwest Operated Term : 4 month



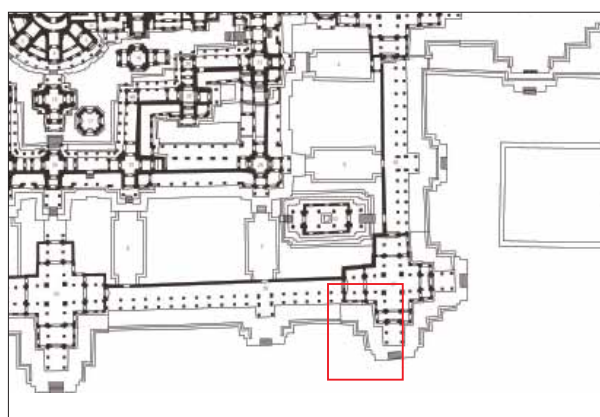
**Before Restoration**



**After Restoration**



## Area : 57.3 / Southwest Operated Term : 4 month

**Restoration activity at T57.3 /Southwest**

Since this area was the first area to be restored in this project, which started in September 2012, and also the first area to be restored by JASA, the repair of the parapet components was carried out under the guidance of JASA technicians, one by one, according to the specifications of each component.

The mortar on the lion statue had deteriorated due to the previous restoration, the mortar and iron pins were removed and replaced with new stainless steel pins and new sandstone material. The new wood processing was led by JASA technicians because the skills of the project staff were not yet sufficient.

**■Position change of the element**

Naga heads 57.3.8.3.5 and 57.3.8.5.1 were identified as being in the same position, so the east and west locations were switched. The size of the post under the original handrail was determined from the traces remaining in the basement and other original post, thus a new post was made from a new sandstone.

**■Repairing of Lion Statue**

In this area, 1 Lion statue was restored (57.3.9.1.1, L-3). The ankle portion was lost due to breakage, and although it had been mortared and joined in the previous restoration, there was a risk that it would break again due to deterioration of this material. Therefore, new sandstone material was processed according to the required size, filled in, and joined. The finishing process was based on other Lion statues, but was done in a way that would make it easy possible to distinguish it from the original.

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
57.3.8.3.1	N.head	125	44	153	1+3+5	Ø: 12 x 3 x 300
57.3.8.3.2	N.Body	75	30	29	1+5	x
57.3.8.3.3	N.Body	89	36	39	5	x
57.3.8.3.4	N.Body	144	37	36	4b+5	Ø: 6 x 1 x 100
57.3.8.3.5(3)	N.head	151	33	38	1+3+5	Ø: 12 x 2 x 100/ 18 x 3 x 200
57.3.8.2.1	Post(S)	40	26	23	x	x
57.3.8.2.2*	Post(S)	30	27	22	x	x
57.3.8.2.3*	Post(S)	34	27	29	x	x
57.3.8.2.4*	Post(S)	36	26	27	x	x
57.3.8.2.5*	Post(S)	39	27	25	x	x
57.3.8.2.6*	Post(S)	41	26	26	x	x
57.3.8.2.7	Post	48	41	26	5	x
57.3.8.2.8*	Post(S)	41	27	24	x	x
57.3.8.2.9*	Post(S)	50	37	26	x	x
57.3.8.1.1	Base	39	32	20	5	x
57.3.8.1.3(.1)	Base	274	44	20	3+4b+5	Ø: 5 x 4 x 100/ 6 x 2 x 100
57.3.8.1.3.1(2)	Base	52	37	20	5	x
57.3.8.1.3.2 + 3	Base	109	36	22	3+5	Ø: 5 x 2 x 100
57.3.8.1.4(2)	Base	215	53	55	3+5	Ø: 10 x 2 x 100

**Repaired number**

- Lion Statue ..... 1
- Naga statue..... 2
- Other Balustrade elements
  - Handrail.....3
  - Post.....9
  - Basement.....5

Total 20 elements



Area : 57.3 / Southwest Operated Term : 4 month

<Before and after restoration>





## Area : 57.3 / Southwest Operated Term : 4 month

## &lt;Photos during restoration&gt;





Area : 57.2 / SouthEast Operated Term : 3 month



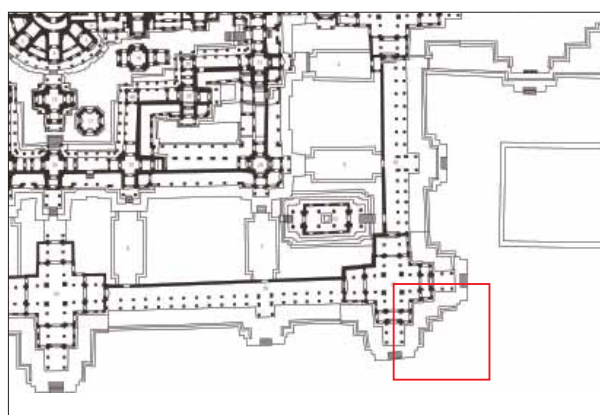
**Before Restoration**



**After Restoration**



## Area : 57.2 / SouthEast Operated Term : 3 month



## Repaired number

- Lion Statue ..... 2
- Naga statue ..... 3
- Other Balustrade elements
  - Handrail.....6
  - Post.....16
  - Basement.....15

Total 42 elements

## Restoration activity at T57.2 /Southeast

Since this area was subject to restoration by JASA, after repairing the parapet components and before reinstalling them, the base was prepared with guidance from JASA technicians on how to fill in the gaps and stabilize the stones.

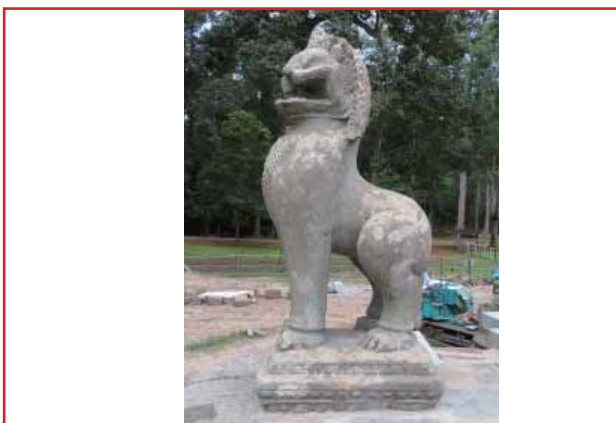
In the vicinity of T57, JASA had already sorted and numbered the scattered stones that had fallen and been buried around the platform. Among these scattered stones, 21 members related to the parapet were identified. Three of these members were identified as being in situ at T57.2, and were placed in the identified locations when they were reinstalled.

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
57.2.8.3.1	N.head	106	83	81	5	Ø: 10 x 2 x 100
57.2.8.3.7(2)	N.head	160	37	139	1+3+4+5	Ø: 14 x 2 x 300/ 14 x 1 x 230
57.2.8.3.10(2)	N.head	165	47	150	3+5	Ø: 18 x 3 x 175
57.2.8.3.2*	N.Body	67	30	27	x	x
57.2.8.3.3*	N.Body	85	32	33	x	x
57.2.8.3.4*	N.Body	92	36	32	x	x
57.2.8.3.5	N.Body	127	36	32	5	x
57.2.8.3.6*	N.Body	61	36	30	x	x
57.2.8.3.8*	N.Body	86	35	31	x	x
57.2.8.3.9*	Post	56	49	32	x	x
57.2.8.2.1*	Post	51	43	35		x
57.2.8.2.13	Post	63	46	28	5	x
57.2.8.2.14	Post	42	40	25	5	x
57.2.8.2.15	Post	64	39	28	1+5	x
57.2.8.2.16	Post(S)	45	45	31	5	x
57.2.8.2.2	Post(S)	28	27	34	x	x
57.2.8.2.3	Post(S)	37	29	19	x	x
57.2.8.2.4	Post(S)	39	29	26	x	x
57.2.8.2.5	Post(S)	42	27	24	x	x
57.2.8.2.6	Post(S)	40	27	26	x	x
57.2.8.2.7	Post(S)	30	28	24	x	x
57.2.8.2.8	Post(S)	39	25	26	x	x
57.2.8.2.9	Post(S)	39	27	25	x	x
57.2.8.2.10	Post(S)	30	27	21	x	x
57.2.8.2.11	Post(S)	37	29	25	x	x
57.2.8.2.12	Base	39	26	21	x	x
57.2.8.1.3(2)	Base	231	48	33	3+5	Ø: 8 x 4 x 100
57.2.8.1.4	Base	87	45	27	4+5	x
57.2.8.1.5	Base	70	39	26	3+5	Ø: 5 x 1 x 60
57.2.8.1.6	Base	129	44	28	4+5	Ø: 8 x 2 x 60
57.2.8.1.7	Base	30	40	27	1+4+5	Ø: 6 x 2 x 60
57.2.8.1.8(3)	Base	167	49	27	2+3+5	Ø: 8 x 4 x 100
57.2.8.1.9	Base	113	46	22	5	x
57.2.8.1.10	Base	104	48	27	5	x
57.2.8.1.11(2)	Base	194	49	26	3+5	Ø: 4 x 4 x 100/ 8 x 2 x 100
57.2.8.1.12(4)	Base	275	48	28	3+5	Ø: 5 x 1 x 100/ 8 x 1 x 120/ 10 x 4 x 100
57.2.8.1.13	Base	131	53	29	2+5	x
57.2.8.1.14	Base	89	45	22	5	x
57.2.8.1.15	Base	41	18	23	5	x
57.2.8.1.16(4)	Base	89	46	22	2+3+5	x



Area : 57.2 / SouthEast Operated Term : 3 month

<Before and after restoration>





Area : 57.2 / SouthEast Operated Term : 3 month

<Photos during restoration>





Area : T57.1 / NorthEast part Operated Term : 3 Weeks



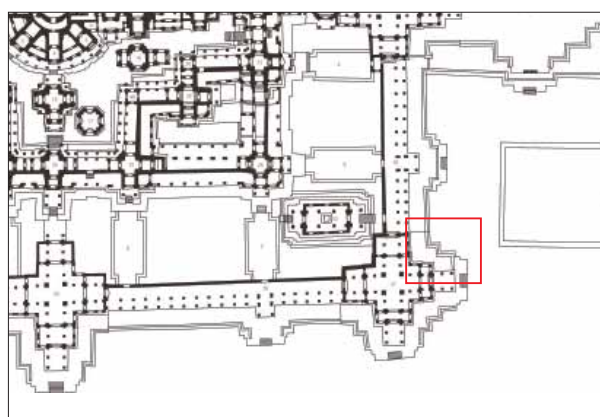
Before Restoration



After Restoration



## Area : T57.1 / NorthEast part Operated Term : 3 Weeks



## Repaired number

- Lion Statue ..... 1
- Naga statue ..... 2
- Other Balustrade elements
  - Handrail.....1
  - Post.....6
  - Basement.....18

Total 28 elements

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
57.1.8.3.1	N.Body	125	36	32	5	x
57.1.8.3.2	N.head	98	51	95	5	x
57.1.8.3.3	N.head	202	38	150	5	x
57.1.8.2.1*	Post	42	35	28	x	x
57.1.8.2.2	Post	38	38	16	5	x
57.1.8.2.3*	Post	41	37	27	x	x
57.1.8.2.4	Post	44	37	26	5	x
57.1.8.2.5	Post	40	32	26	5	x
57.1.8.2.6(2)	Post	52	45	30	3+5	Ø: 6 x 1 x 80
57.1.8.1.1	Base	70	48	19	5	x
57.1.8.1.2	Base	39	48	19	2+5	x
57.1.8.1.3	Base	77	41	29	2+5	x
57.1.8.1.4	Base	76	46	25	5	x
57.1.8.1.5	Base	83	43	25	5	x
57.1.8.1.6(2)	Base	95	45	29	3+5	Ø: 8 x 2 x 100
57.1.8.1.7*	Base(2)	42	10	29	3+5	Ø: 6 x 2 x 100
57.1.8.1.8*		64	20	34		
57.1.8.1.9	Base	59	40	17	5	x
57.1.8.1.10	Base	141	42	27	5	x
57.1.8.1.11	Base	113	54	37	5	x
57.1.8.1.12	Base	109	52	37	5	x
57.1.8.1.13(3)	Base	268	52	37	3+5	Ø: 8 x 2 x 100/ 10 x 2 x 100
57.1.8.1.14*	Base	131	50	36	x	x
57.1.8.1.15*	Base	54	42	25	x	x
57.1.8.1.16	Base	44	19	27	5	x
57.1.8.1.17(2)	Base	106	44	26	3+5	Ø: 8 x 2 x 100
57.1.2.1.16 *	Base	70	42	19	x	x
57.1.3.3.27	Base/part of floor	91	35	22.5	5	x

## Restoration activity at T57.3 /Southwest

Since this area was the first area to be restored in this project, which started in September 2012, and also the first area to be restored by JASA, the repair of the parapet components was carried out under the guidance of JASA technicians, one by one, according to the specifications of each component.

The mortar on the lion statue had deteriorated due to the previous restoration, the mortar and iron pins were removed and replaced with new stainless steel pins and new sandstone material. The new wood processing was led by JASA technicians because the skills of the project staff were not yet sufficient.

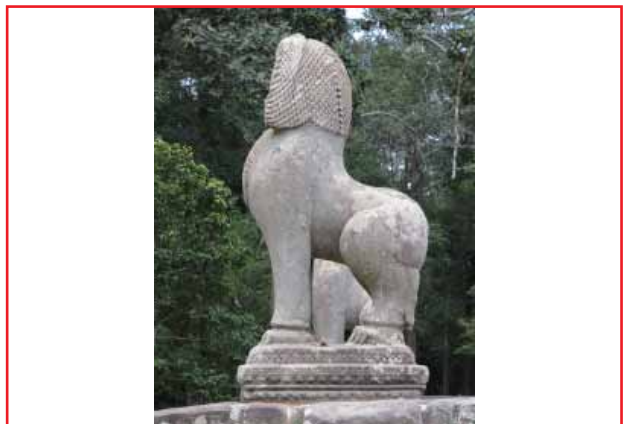
## ■Position change of the element(See Drwaing T57.1)

The position of the basement was not changed and was partially supplemented with new material. Fragments of Naga head 57.1.8.3.3 were identified among the scattered elements and were joined together. The body elements of the other Naga head, 57.1.8.3.2, and the original post beneath it were also found among the scattered stones, so they were joined and installed.



## Area : T57.1 / NorthEast part Operated Term : 3 Weeks

&lt;Before and after restoration&gt;





Area : T57.1 / NorthEast part Operated Term : 3 Weeks

<Photo during restoration>





## Area : T57.1 / NorthEast part Operated Term : 3 Weeks

## &lt;Photos during restoration&gt;





Area : T56.2 / Working Term : 3 month



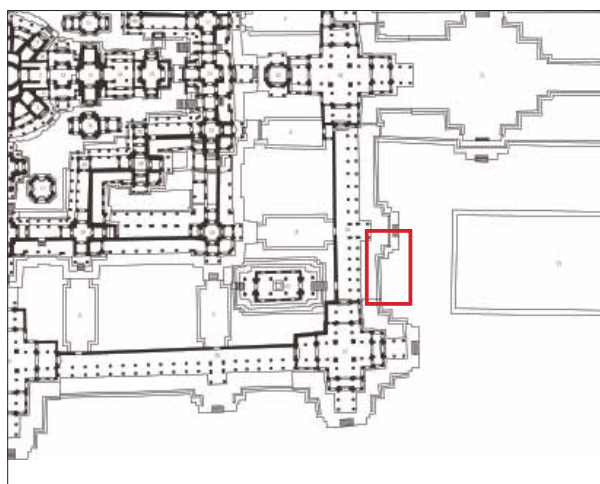
**Before Restoration**



**After Restoration**



## Area : T56.2 / Working Term : 3 month



&lt;Before restoration&gt;

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
56.2.8.1.1	Naga	177	80	148	1	x
56.2.8.1.2	N.body	266	36	30	3+5	Ø: 8 x 2 x 120 (1+2)
56.2.8.1.3	N.body	156	40	32	5	x
56.2.8.1.4	N.body	224	39	32	5	x
56.2.8.1.5*	N.body	218	36	32	x	x
56.2.8.2.1*	Post	44	36	31	x	x
56.2.8.2.2	Post	38	42	22	x	x
56.2.8.2.3*	Post(S)	28	13	31	x	x
56.2.8.2.4(2)	Post	51	41	23	1+3+5	Ø: 6 x 2 x 100
56.2.8.2.5	Post	45	43	22	x	x
56.2.8.2.6	Post	39	37	26	1	x
56.2.8.2.7	Post	44	36	24	x	x
56.2.8.3.1	Base	129	46	26	1	x
56.2.8.3.2(3)	Base	137	49	28	3+5	Ø: 8 x 4 x 100
56.2.8.3.3	Base	42	46	26	5	x
56.2.8.3.4(6)	Base	127	44	31	3+5	Ø: 6 x 2 x 80/ 8 x 2 x 80/ 8 x 2 x 95/ 8 x 4 x 100
56.2.8.3.5	Base	49	56	33	5	x
56.2.8.3.6	Base	193	43	30	5	x
56.2.8.3.7	Base	211	44	28	5	x

## ■Restoration activity in T56.2(south of T56)

Restoration work in this area began in April 2013. Although many original posts were used in this area, it was not possible to identify their original locations, so it is thought that all the posts were brought from different locations. Therefore, sandstone plates needed to be inserted to keep the horizontal level of the handrails, and plates were inserted between the posts and the handrails to stabilize the handrails in Nos. 56.2.8.2.5 and 56.2.8.2.7. For the newly made sandstones plate insert between post and handrail for adjusting, we don't use epoxy or some other materials to connect these support and elements in order to make it easy to remove when original post under these handrails will be found in the future. Although following our restoration policy, some new sandstone for filling missing part of handrails, we used stainless steel bonding. Also, we attached small lead plate with new numbering and JST 2013 to these new sandstone plate.

Later, due to a change in JASA's plan, the platform of T56 was also partially restored, so the balustrade was dismantled and reconstructed by JASA in 2016, but the position was not changed from when it was temporarily assembled in this project.

## ■Position change of the element(See Drawing 59.2)

There are no elements in this area that have been moved before or after restoration.

## Repaired number

■Naga statue..... 1

■Other Balustrade elements

Handrail.....4

Post.....7

Basement.....7

Total 19 elements



Area : T56.2 / Working Term : 3 month

<After restoration>





Area : T56.2 / Working Term : 3 month

<Photos during restoration>





Area : T56.1 / Working Term : 3 month



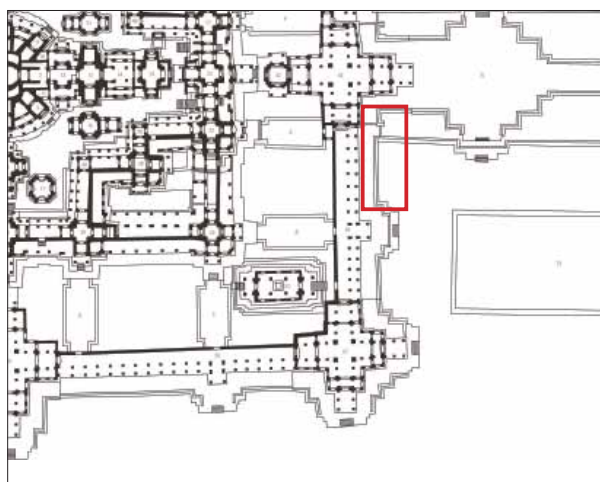
Before Restoration



After Restoration



## Area : T56.1 / Working Term : 3 month



## Repaired number

■Naga statue..... 1

■Other Balustrade elements

Handrail.....9

Post.....9

Basement.....15

Total 34 elements

## ■Restoration activity in T56.1

It was revealed that platform under Naga head has many crack, breakage and has big gaps between elements. Also, some elements of platform are not original that was brought from other place in the past restoration. This area was too unstable to reconstruct balustrade and need some maintenance. Thus discussed with JASA experts, we made decision to do minimum maintenance for platform to make stable enough to reset balustrade. Thus, firstly we dismantled some of outer surface elements of the platform, and gave appropriate treatment to the elements which has problem and then reconstructed. However this project target is to ensure the safety of balustrade, we continue to use the same situation as before and only change position, for example elements that have curve on it (it seems belong to outer gallery relief), we put it on the surface of the platform, so that it is easy to understand in the future. After that, place that has big gaps we filled by laterite and clay powder and also soil 4 on the gaps the top layer.

In addition, before the restoration, some of the handrails were scattered around the north side, but these were decided to be lined up neatly on the platform.

## ■Position change of the element(See Drwaing 56.1)

No movement in the Handrails or the Basements. For some of the posts, the position was changed to level and stabilize the handrail.

Stone Number	Type	L	W	H	Applied Case	notes(Ø x num. x L)
56.1.8.1.1(2)	N.body	55	26	26	3+5	Ø: 6 x 2 x 80
56.1.8.1.2	N.body	54	33	31	5	x
56.1.8.1.3	N.body	85	33	29	5	x
56.1.8.1.4	N.body	80	23	35	5	x
56.1.8.1.5	N.body(2)	106	32	29	3+4?+5	Ø: 8 x 2 x 140
56.1.8.1.6						
56.1.8.1.7(2)	N.body	251	36	29	3+5	Ø: 8 x 2 x 140
56.1.8.1.8(2)	N.body	151	32	31	3+5	Ø: 8 x 2 x 100
56.1.8.1.9	N.body	145	35	39	5	x
56.1.8.1.10	N.body	209	36	33	5	x
56.1.8.1.11(4)	N.head	246	67	112	1+2+3+5	Ø: 12 x 3 x 140/ 12 x 3 x 100/ 8 x 3 x 130
56.1.8.2.1*	Post(S)	22	26	17	x	x
56.1.8.2.2	Post(S)	24	29	28	1	x
56.1.8.2.3	Post(S)	28	29	24	1	x
56.1.8.2.4	Post(S)	27	27	27	1	x
56.1.8.2.5*	Post(S)	29	25	21	x	x
56.1.8.2.6	Post	40	34	23	5	x
56.1.8.2.7	Post	41	29	24	1+5	x
56.1.8.2.8	Post	47	35	24	1+5	x
56.1.8.2.9(2)	Post	52	37	33	1+3+5	Ø: 6 x 2 x 80
56.1.8.3.1(2)	Base	145	43	20	3+4	Ø: 6 x 1 x 100/ 8 x 2 x 110
56.1.8.3.2	Base	184	42	19	5	x
56.1.8.3.3(2)	Base	110	42	18	3+5	Ø: 8 x 2 x 100
56.1.8.3.4.1	Base	49	42	22	4?+5	x
56.1.8.3.4.2	Base	62	43	20	4?+5	x
56.1.8.3.5 (4)	Base	172	42	27	3+5	Ø: 8 x 6 x 100
56.1.8.3.6	Base	175	46	28	2+5	x
56.1.8.3.7	Base	46	36	27	5	x
56.1.8.3.8	Base	133	49	30	5	x
56.1.8.3.9	Base	44	47	29	5	x
56.1.8.3.10	Base	80	59	32	1+5	x
56.1.8.3.11(3)	Base	145	46	20	3+5	Ø: 8 x 2 x 100/ 8 x 2 x 80
56.1.8.3.12(2)	Base	137	59	23	3+5	Ø: 8 x 4 x 80/ 8 x 2 x 100
56.1.8.3.13						
56.1.8.3.14(3)	Base	129	29	11	3+5	Ø: 6 x 2 x 80/ 3 x 2 x 80
56.1.8.3.15*	Base	69	42	20	5	x
58.2.8.1.25*						



Area : T56.1 / Working Term : 3 month

<Before and after restoration>





Area : T56.1 / Working Term : 3 month

<After restoration>





Area : T56.1 / Working Term : 3 month

<Photos during restoration>





## ***APPENDIX II***

### ***Drawings of Before and After Restoration of Balustrade***

#### **外回廊および参道 欄干の修復前後記録図面**

*Report on the Conservation and Restoration work of  
LION and NAGA Balustrades at the Causeway and Outer  
Gallery of BAYON  
Angkor, UNESCO World Heritage Site.*

