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SPHINX NW a1: BREAK OF STONE VENEER (PHASE III)
ON SIDE OF N. HIND PAW

PLOTTED IN N. ELEVATION WORKING BLUEPRINT

BROKEN PATCH HEIGHT 1.80 - 1.96 m.

LENGTH 2.75 m.

BREAK OCCURRED: DEPTH TO PACKING (VENEER STONES THICKNESS
OCT. 19, 1981 PWS SPACE): 16 - 20 cm.
DEPTH TO BEDROCK (VENEER - SPACE - PACKING
- SPACE): 36 - 40 cm.

While the top 4 courses are mod Borace 1920 replacement at Phase III sized slabs of mod. grey cement, generally the rest of the area broken looks to be Phase III sized stones laid against a mortar-sand-limestone rubble packing which is against the core of bedrock (Member III). At the W. side of the break the packing material remains exposed on the face of the paw while the packing on the E side fell away at the stone collapse revealing the original Member III part of the bedrock paw. More bedrock was revealed on the E side of the break Nov. 25 when some packing material was removed to the bottom course of the veneer. The bottom course remained for the length of the break after it occurred. These ~~but~~ blocks could be Phase ~~III~~^{II} - were so coded in the color coded elevation. Yet, at the break they show a continuity of articulation and packing at what is above, coded Phase III (Graeco Roman?).

At the far W lower end of the break, the vertical join of (Phase I?) large blocks - bottom 2 - are laid here to depth of 14 - 15 cm. The N. large corson blocks of its E side abutts to these large blocks.

The Phase III blocks here range from 28 - 30 cm in length; about 10 cm. thick; and 10 - 12 cm in height. They are laid in fairly regular parallel horizontal beds of staggered vertical joins.

At the E side of the break the veneer bulges out from the bedrock jaw face (46 cm.) to make a contour or inflection of the jaw - the bulge here more than on the W side of the break. The packing under the E. side bulge is more loose and has spilt out as opposed to the packing under the veneer on the W. side. The lower 10-13 courses which broke showed a brown duricrust which, at its lowest courses, becomes thick and effloresced. Just above this zone of crust and/or brown patina is the zone of white powdering flaking stone which continues to the top of the hind jaw. The crusted and deteriorating stones ~~are~~ look to be of same phase and application and bonded by same mortar.

MORTAR of Veneer: Aside from top 3-4 courses of break, the stones are bonded w/ a rose-pink speckled mortar (M1) from the bottom course to the 11th course up on the E side section of break (on the W side of the break the lowest courses are missing, to the large Phase I blocks to which N. Carion abutts). The 12th-13th course are bonded w/ a different appearing mortar: softer, orange, speckled. The surviving courses of the later (post Phase I) veneer on the W. section of the break - 7 courses above Phase I blocks to mod. cement replacement - all are bonded w/ the soft orange mortar (M2).

QUESTION: Does this apparent change in mortar bonding, of ~~veneer~~ veneer stones seams indicate separate phases of reconstruction or application using ~~or~~ similarly sized blocks? On the E side the change from M1 to M2 bonding corresponds to change at outer surface from duricrust to deterioration, M1 bonding those stones w/ duricrust face. Yet on the W side of break the courses above the Phase I blocks are bonded w/ ^{soft orange} M2 and all show duricrust face.

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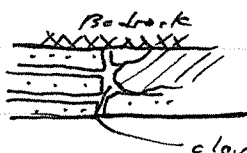
These stones on the W side - the first 6 courses above the Phase I blocks set into side of pier - also are of sizes more close to those of bottom course which have on their top hiding plane the ^{hard pink} M1 mortar

* consolidated packing layer

PACKING: is about 18 cm thick and, perhaps from drying or other conditions after application, ~~it~~ * shows a space of separation to stones of outer veneer of 5-10 cm.

On E side section, this space, toward bottom (E side upper part of packing, badly damaged - spilt - w/ fall of stone veneer) filled w/ loose sand and unconsolidated chunks of mortar.

The relation between packing and bedrock face is one of contact in places (in fact in W side at break) or a space between 5-10 cm. wide. At the W lower part this space also filled w/ loose sand.

At the bottom E side of break (revealed after further packing removal 25/xi/81), at level of lowest course, this course really triple stone slabs: w/ innermost right in contact w/ bedrock face of pier.  Between these lowest slabs the bonding is wet sand or pure tan clay (taff) that looks much like "tan clay" packing in masonry of chapel (Ea1, a2, a3). This tan clay bonding also between lowest course, inside face, and consolidated mortar stone packing layer. This "tan clay" also showed here and there on exposed "outer" face of packing layer at time stones fell indicating its use between veneer stones and packing layer in higher courses as well. But on E section of break, toward bottom, fill is loose ~~dry~~ sand. The tan clay comes up humid. moist.

Main Consolidated Packing Layer: Consists of large limestone chunks, many with squared off faces. Range from larger ~~per~~ rectangular pieces 36 x 11 x 11 cm.;

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to $37 \times 12 \times 12$ cm. and smaller frags. Rectangular pieces show various tool marks mostly faint not-so-regular vertical strokes. All packing frags look to be fine grained white homogeneous limestone. Bounding these is mottled slumped irregular mortar matrix. w/ intermixed type M1 - pink speckled harder mortar, and M2: soft orange mortar; from top to bottom of exposed packing, this intermixing of 2 mortar diff. in appearance occurs. Another type, more toward the bottom of the ^{consolidated} packing layer, on its outer exposed face looks like M1 - pink, harder, speckled, but has larger frags (4-8 mm thick) of what looks like crushed pottery and also what appears like corroded iron frags. - red to rust purple in color. This could be designated M1a. These 2-3 "types" of mortar and the limestone frags constitute the body of the "consolidated packing layer" which is 14-18 cm. thick. This layer preserved on the face of the break, concealing the bedrock face over ~~the~~ the W half of the broken area.

At the top of the ^{gap} hole in the veneer the bedrock face looks to curve inward (S-ward) about 1.75 m. below the actual top of the masonry-reconstructed part. Set into this recess is what appears a different sort of packing consisting of roughly rectangular limestone (hard, fine grained, homogeneous, white) (35×16 , 35×11 cm) w/ irregular vertical tooling. This is set w/ mortar that appears much harder than M1, M1a, or M2 w/ reddish surface ^{thinly} encrusted (salt effloresced). The red looks like reddish paint although at fracture the mortar shows some darkish pink (almost purplish) color but speckled. It is quite hard mortar. This type of packing appears ^{to be} sitting on the recess roll inward of the bedrock and shows at the E upper part of the gap. Looking into the space between the consolidated first-major packing layer and the bedrock face of the W.

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section of the gap the bedrock also looks to undulate inward but here the looser debris of unconsolidated mortar chunks, stone frags., loose sand fills the apparent ~~and~~ inward recess.

QUESTION: Could the harder mortar - more regular stone packing, filling the ^{bedrock} recess in the upper E side of the gap be an earlier packing, of earlier reconstruction of paw? The hard purplish mortar designated M3. Is this why we have only Phase III (?) over rough bedrock as finish-work or reconstruction veneer of paw? i.e. an earlier phase, of which packing of M3 is remnant. (one might have expected Phase I and/or II against bedrock under Phase III as looks to be case on N side of N parapet in certain Arch. Lucan photos.)

The mod. grey cement refill - replacement at top few courses of gap could be considered M4 of mortar types in this feature.

BEDROCK FACE OF PAW is exposed at E side of gap when the consolidated packing layer fall away w/ the stones and was removed 25/xi/81. It is Member I stone. The curve inward, sealed by the M3 packing, on E side of gap could be the beginning of contact w/ Member II. This seems reasonable on basis of dip of this contact interpolated from top of N ledge of Sphinx ditch (where geologic bedding surface of I preserved. The lower part of exposed bedrock is cut fairly vertical) but left pockmarked and rough - unsmoothed. An irregular nearly line, characteristic of Member I, shows passing horizontally 80 cm up from floor level. When the bedrock meets the M3 packing, at E side of gap the bedrock gets more irregular surface w/ a recess and then rolls ~~up~~ back inward under the M3 packing. This also looks to be a turning or inflection

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inward filled w/ loose debris. This looks like it could almost be a hole into the bedrock pav. It could be clarified by the removal of the consolidated packing layer now obscuring the bedrock face across W. half of the gap.

PACKING MATERIAL, in summary, includes:

- Limestone pieces
- Mortar of 3⁻⁴ different appearances
- Loose Sand and mortar frags.
- Tan Clay (fafl.)

SAMPLES from NWa1

- "M1 TYPE" MORTAR mNW 7
- "M1a TYPE" MORTAR mNW 8
- "M2 TYPE" MORTAR mNW 6
- "M3 TYPE" MORTAR mNW 9

TAN CLAY ~~io~~ ioNW 14

GREY-BLUE POWDER

SPOT IN CONSOLIDATED

PACKING LAYER: ioNW 15

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SPHINX, NW, a1 BREAK IN VENEER OF N. HIND PAW

2/xii/81

ALL packing from area of break removed by 2:00 today. Whole area of break now reveals rough unfinished, or only partially finished (that is - unsmoothed) bedrock of Member I. The bedrock face was cleaned these days by wire brushes and pounding surface lightly w/ hammer. A thin irregular marly line runs horizontally roughly along E half of exposed bedrock 90-70 cm^{up} from floor level. Just at floor level, showing 6-15 cm above bottom course of veneer blocks and packing slab is a thicker yellowish marly unit recessed slightly (8-9 cm) from face of bedrock side of paw above. A vertical thin fissure, 1-2 cm widest to hairline, within a wide recess (20 cm wide, 20-25 cm deep) runs down bedrock face at a point about 1.70 m. E of W. side of N. Large Caïson. It is this recess that appeared as though it could be an opening under the packing before it was taken out. 1.35 m. up from floor level the bedrock surface gets more irregular, pocketed, bulbous, rough - more unfinished than straighter cut face below to corner w/ floor.

Now, at the W. side of break, section exposed by removal of packing shows the consolidated packing layer to abutt almost directly to bedrock face. Packing still composed of some ^{roughly} squared, some irregular limestone pieces in mottled matrix of both orangish-pink soft mortar and tan clay filler.

Two rows of packing blocks, roughly cut, are laid between bottom course of veneer and bedrock face.

At lower W corner of veneer breakage, packing remains and observes articulation of the Phase III (?) veneer w/ larger inset blocks (Phase I) to which N. Large Caïson abutts. But the last Phase III veneer slab at bottom course, and the packing itself, abutt to the Phase I blocks. Observed is articulation of these Phase I blocks to bedrock core.