A. D. Tushingham
Royal Ontario Museum
100 Queen's Park
Toronto, Ontario
Canada M5S 2C6

Peter H. Pedrette
99 Brentwood Road, North
Toronto, Ontario
Canada M8X 2C5

A. D. Tushingham and Peter H. Pedrette

Mesha's Citadel Complex (Qarḥoh) at Dhībān

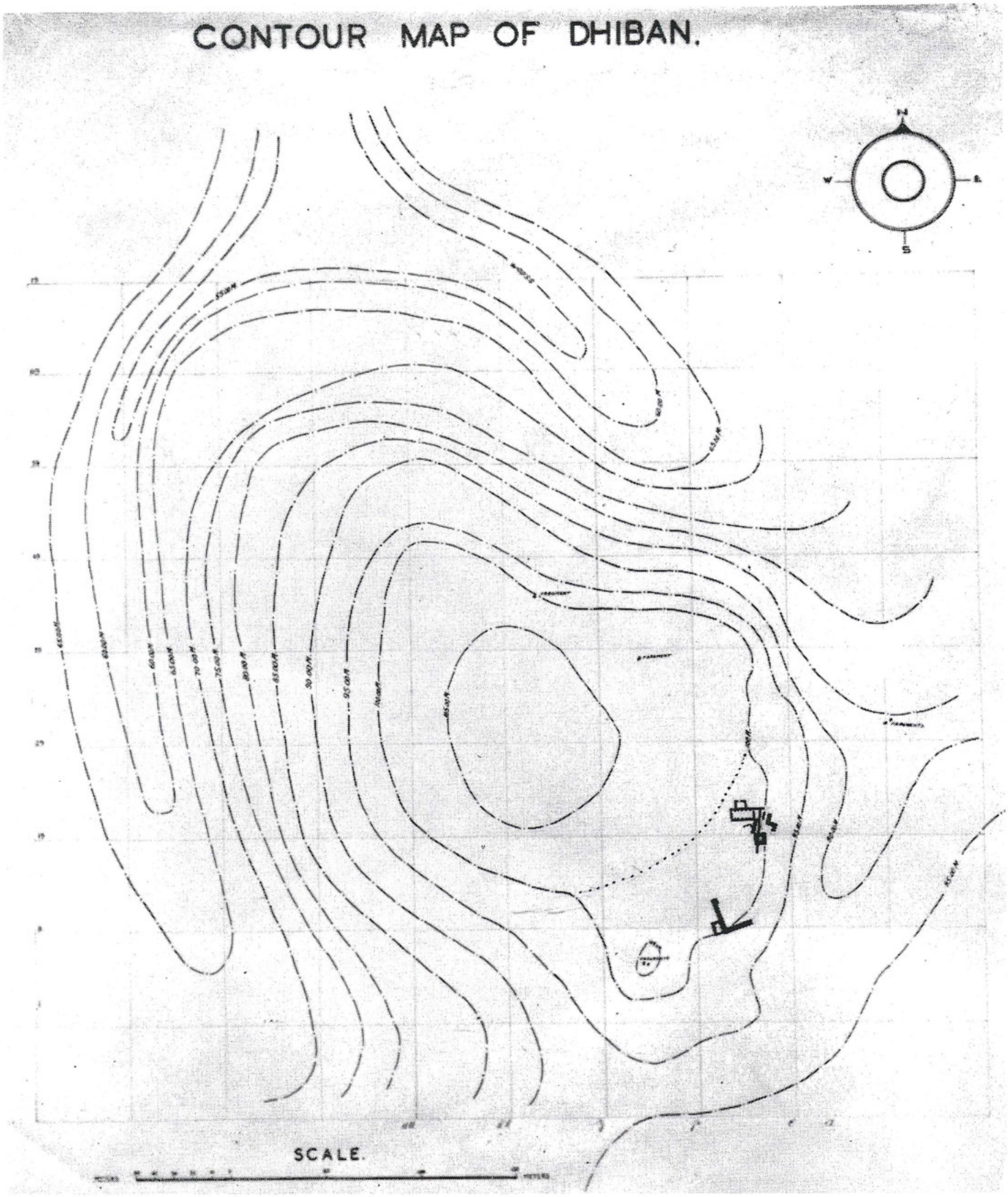
The article on Mesha's building programme at Dhībān (Tushingham 1990) was intended to reaffirm the location of Qarḥoh in the southeast quadrant of the *tall* (FIG. 1). This area, excavated in the years 1950-1953 by Winnett, Reed and Tushingham produced clear evidence that, while there was some building activity in this area before Mesha, the major construction to be ascribed to him consisted of a massive artificial fill retained (at least in part) by a great battered wall. It was, in fact, only the platform or podium, with a surface at about 99.00 m-100.00 m (based on a datum established in 1950) on which all construction rested. We found no buildings of the time of Mesha, such as were to be expected from his inscription (Dearman 1989: 93-98), with the possible exception of the square stone tower enclosed by the battered wall. It was this lack of evidence for buildings that led Morton (1989: 239) to shift excavation to the top of the mound in 1955, 1956, and 1965.

We believe that the lack of such evidence is not difficult to explain. If Mesha's building programme was on the scale and of the quality we can infer from the Inscription and from the evidence of the fill and its magnificent revetment, we should probably assume that there were vertical defence walls rising from the top of the battered wall, and that the palace, citadel, towers, gate, reservoirs, etc., were probably built of worked stone. In addition, Mesha's new quarter included private houses, for he gave instructions that each should be provided with its own cistern (*MI*: 25). These houses would not have been built on the same "royal" scale as Mesha's other constructions, but space for them must be assumed.

We know nothing about internal events at Dhībān after Mesha's death (changes of dynasty, local wars, etc.) which could have damaged the buildings, nor the extent of the destruction carried out by Nebuchadrezzar in 582 BC. Certainly the royal quarter would have been a prime target for such depreciations. The history of the city for the next 500 years is a blank: it appears to have been deserted. Erosion, no doubt, could wreak havoc, but the stonework would have been looted for all sorts of purposes. Finally, with the occupation of the *tall* by the Nabataeans, it would be normal for them to use whatever ruins remained as a quarry for their own buildings. In one specific case, the retaining walls of the Mesha podium including the battered wall, were apparently cut down to allow for the construction of a grand staircase leading up from the south to a paved court lying west of the Nabataean temple (*Dhībān I*: 44; *Dhībān II*: 36-45).

Why, however, should there not remain traces of the foundations of Mesha's buildings? If they were built after the fill was in place, there should be foundation trenches or robber trenches marking their presence, but none has been recorded. There is, however, the possibility that the foundations were built concurrently with the insertion of the fill of the podium. There is only one conceivable example of this: the so-called apsidal structure at the southwest corner of the Nabataean temple. Its foundations rest against the inner component of what we have reconstructed as a casemate wall retaining the fill on which, eventually, the Nabataean temple would rest, but which is, we believe, part of Mesha's retaining wall (*Dhībān II*: plan 3; Section G-G). There are, it is true, other walls included in the fill but all of these, we think, were built before of concurrently with the insertion of the fill.

In what follows, we present our calculations for the cubic mass of the artificial fill in the podium in the *excavated* areas in the southeast quadrant based, to be sure, on incompletely known bedrock configurations. Secondly, we note that there is clear evidence that Mesha's podium extended north and west of the excavated area and, by using evidence from Morton's city gate complex on top of the *tall* as a guide, make a conjecture of the original limits of Qarḥoh. We shall make certain assumptions about the depth of the fill in these unexplored areas (minimal, we trust) and estimate the cubic metres of fill within these limits. From these two figures — the more-or-less accurate estimate of the cubic content of the fill based on incomplete data and, secondly, on more conjectural ideas of the limits of the new royal quarter and assumed bedrock levels, we should be able to conceive



1. Contour map of Dhībān (*Dhībān I*: PL. 22).

of the magnitude of Mesha's basic building operation — that is, of the artificial podium — and work out the man-hours involved.[1] The result should give us some indication of the architectural and engineering skills and the manpower and financial resources at Mesha's disposal in Moab in the ninth century BC.

The person responsible for this aspect of the report is Peter Pedrette, who was the surveyor and architect for our excavations at Dhībān in 1952. Tushingham is responsible for the archaeological data; Pedrette is responsible for the estimates of quantity derived from them. We may, then, proceed to the data to be derived from the excavated areas.

I. The Southern ("Gateway") Area (FIG. 2)

The area measures 24 m from west to east (west side of Area C to Section G-G [*Dhībān II*: Sections]) and 20 m from north to south (Areas B and C to south end of Section G-G).

The surface of the artificial fill established by Mesha as the podium of his new royal quarter is fixed at 100.00 m or more in level by the sealed top of the bin (*Dhībān II*: Section H-H); further, the fill must have reached at least the preserved tops of Wall 12 (99.80 m) and Wall 20 (99.75 m). Bedrock levels average 97.77 m north of retaining walls 12 and 7 but fall to 91.58 m at the base of wall P (the battered wall) (TABLE 1). It is assumed that the slope from north to south was sufficiently gradual (a descent of 7 metres in 16 running metres), or traversed a more-or-less level "shelf" to make these walls somewhat stable (Wall 12 is 3.4 m thick but the width of wall 7 is unknown). They were built of unmortared rubble and could have supported the fill on only a temporary basis, even though the fill here was less deep (average north of walls 12 and 7 is only 2.25 m) than in Area IV. The builders obviously recognized the problem and established the battered revetting wall P here (the equivalent of wall III still upstanding further north). Pedrette estimates the volume of fill in this area at 2318 m³ (TABLE 1).

Table 1. Area I: The Southern ("Gateway") area. Volume of artificial fill.

Surface area: 20 x 24 m	=	480 m²
Average bedrock level north of walls 2 and 7: 97.60, 98.50 and 97.22 m	=	97.77 m
Level of bedrock at south	=	91.58 m
Average of highest and lowest levels of bedrock	=	91.57 m
Podium level=100.00 m; by deducting average rock level, depth of fill	=	4.83 m
Volume of fill: surface area x average depth	=	2318 m³

II. The Nabataean Temple Area (East and Northeast of the Preceding)

This area runs from the church wall north of wall B (N) to wall O (S) of the casemate, and from the line of Section G-G east to wall O (E) (east side of temple), c. 24 m x 24 m (FIG. 2 and *Dhībān II*: Sections).

The artificial fill surface reaches 100.00 m beneath the temple (*Dhībān II*: Sections A-A and C-C, which show the foundation trenches for the temple walls cut into this earlier fill). Unlike the "Gateway" area, the supporting structure is now a casemate wall with a total thickness of 5.5 m built on bedrock at level 97.12 m, which falls off abruptly to 92.78 m and, finally, to 91.58 m (*Dhībān II*: Section G-G). This casemate system still provides support for the basic podium on the south and southeast of the Nabataean temple. We assume that it was the presence of an almost sheer declivity in bedrock (unlike a more gradual descent in the "Gateway" area) which led Mesha's engineers to opt for a casemate wall, but we have also considered the possibility that the casemate wall may have been part of a gateway situated in our Area III north of the Temple area.

We have no evidence for the level of bedrock beneath the Nabataean temple, but excavation through the fill reached 96.00 m without reaching it. This level assumes a drop-off in bedrock level from that evidenced in the "Gateway" area. We have, however, assumed a bedrock level of 96.00 m for this whole area. On this basis, Pedrette has estimated the volume of fill in this area at 2304 m³ (TABLE 2).

Table 2. Area II: Nabataean Temple area. Volume of artificial fill.

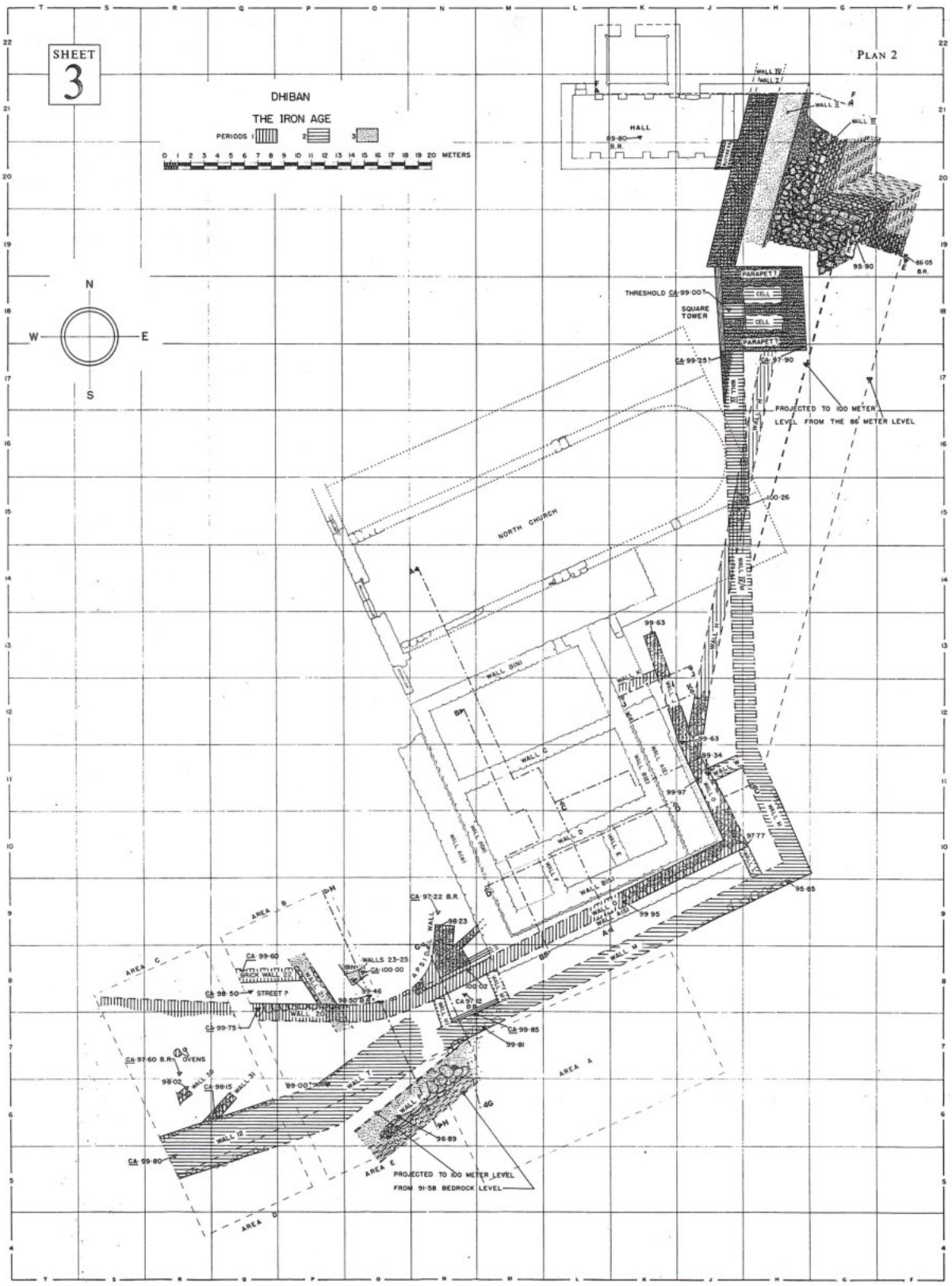
Surface area: 24 x 24 m	=	576 m²
Levels of bedrock unknown: conservative assumed level	=	96.00 m
Podium level=100.00 m; deducting 96.00 m depth of fill	=	4.00 m
Volume of fill: surface area x average depth	=	2304 m³

III. Area Immediately North of the Temple Area (FIG. 2)

This irregularly-shaped and little-known area measures 30 m from the south wall of the tower to wall W and extension (southeast of the temple) and about 10 m west from the east wall of the tower.

We have no direct evidence for the surface of the fill and only very indirect evidence for bedrock levels in this area. Visual evidence from observation of the present contours of the mound suggests that retaining walls of some kind were located here, and we can assume that the surface of the fill here would be similar to that beneath

[1] While the terms "man-hours" and "man-days" are used throughout this paper, they are to be interpreted as including the labour of women and children. All such citizen-labour would be available when crops or animals did not need tending. Also, there would be prisoners of war as, for instance, Israelite captives (*MI*: 25-26), and other foreigners.



2. Areas excavated at Dhībān in 1950-1953 (*Dhībān II*: plan 2).

the Nabataean temple to the south and in the levels met with in Area IV to the north — i.e. 99.00-100.00 m. In the absence of direct evidence for bedrock levels we assume an average base level of 96.00 m as in the Temple area to the south. The volume of this fill would be 1200 m^3 (TABLE 3).

Table 3. Area III: North of Temple area. Volume of artificial fill.

Surface area: 30 m x 10 m (average)	=	300 m^2
No direct evidence for level of bedrock; assumed as in Area II	=	66.00 m
Average depth of fill as in Area II	=	4.00 m
Volume of fill: surface area x average depth	=	1200 m^3

IV. Area to the North of III (FIG. 2)

This area includes the tower and the Hall, but excludes the hypocaust north of the Hall. The area measures 20 m north to south and 25 m west to east. The surface of the fill is c. 100.00 m and bedrock slopes from 89.75 m under the Hall to 86.05 m at the base of the battered wall (*Dhībān II*: Elevation and Section F-F).

We have, in the past (*Dhībān II*: 22), assumed that such measurements below and east of the Hall were evidence for a bay — a tributary valley running up into the mound from the main valley delimiting the mound on the east. Such a bay, perhaps, formed a natural (and fortified) south line for the older Moabite city excavated in part by Morton (1989). It would have been filled in when Mesha created his new quarter to the south. We must now reconsider the evidence from the tower. Winnett excavated the north chamber of the tower to a depth of 11 metres (i.e. to a level of 89.00 m) without reaching its bottom. That bedrock to the east, c. 86.00 m at the base of the battered wall, continued at this level further to the south is supported by the subsequent clearing of the wall by the Department of Antiquities. Bedrock beneath the tower appears, therefore, to be rising at a rate similar to its rise under the Hall. We can, therefore, agree with Winnett that the tower was at least 13 m high (*Dhībān I*: 15, fn. 5). With Winnett, too, we find it "difficult to conceive of any function for a free-standing tower" — particularly with its entrance at c. 98.00 m or some 10 m above its base.

We suggest (Tushingham 1990: 185) that the tower was built to serve as a sort of vertical buttress to support the "temporary" retaining, or stabilizing walls to north and south of it while fill was being inserted behind them and the battered wall was being built to brace or shore up the whole construction. If so, we can assume that the configuration of bedrock east and west of the tower was similar to that north of it, i.e. that bedrock was sloping upward from about 86.05 m to 89.75 m over an east-west distance of 25 m. This conclusion, too, leads to the assumption of a very broad valley leading up into the mound from the valley delimiting it. Pedrette estimates the volume of fill in this area at 6050 m^3 (TABLE 4). The *total estimated volume of the fill in the areas excavated* is, therefore, 2318 m^3 + 2304 m^3 + 1200 m^3 + 6050 m^3 = 11,872 m^3.

Table 4. Area IV: Tower and Hall area north of III. Volume of artificial fill.

Surface area: 20 m x 25 m	=	500 m^2
Average of bedrock levels, 89.75 m and 86.05 m	=	87.90 m
Podium level=100.00 m; deducting 87.90 m depth	=	12.10 m
Volume of fill; surface area x average depth	=	6050 m^3

Hypothetical Reconstruction of the Area of Qarḥoh

We have assumed that the depression under the Hall (our Area IV) continued southward under Area III. There is also evidence for an extension of the conditions under the Hall towards the north. Abutting the north wall of the Hall is a room measuring approximately 6.30 m east-west by 5.20 m north-south (*Dhībān I*: 17-18, PL. 24:2). Winnett identified it as a hypocaust and superimposed a caldarium of a bath north of the Hall that extended beyond the excavated area. The floor of the hypocaust, at 97.65 m coincides with the base of the north wall of the Hall, which suggests that we can extend evidence for the fill below the Hall towards the north to underlie the other elements of the bath. The fact, also, that the great battered wall, after a sharp re-entry to the west, continues northwards, strongly supports the continuation of a substantial fill behind it.

There is, however, new evidence for our hypothesis from Morton's excavations. We cannot be sure, from Morton's published work, where exactly his Nabataean and Moabite "Northern Entranceway" was located, but his section and description (Morton 1989: 242-243: FIG. 4: Section H) are of great importance. His section (elevation?) shows that the highest preserved structural feature (the Nabataean gate) reaches 101.63 m. We note that his Moabite wall XIX (which is part of his Moabite gate) rests on bedrock and the road *through* the Gateway was on the surface of bedrock which rises towards the south. At the extreme southern end of his section, this road-surface has already reached about 98.05 m and could reach at least 99.00 m as the occupation level of the city inside the walls.[2] This is very close to the levels of Me-

[2] On a visit to Dhībān after the Conference, Mr. Pedrette took sights which demonstrated that the easternmost face (Wall X) of Morton's (1989: Section H, FIG. 4) crosses the 95.00 m and 100.00 m contour lines in the contour plan of *Dhībān I*: PL. 85.

sha's Qarḥoh to the south. We can probably assume, therefore, that Mesha's intention was to make the occupation surface of his new royal quarter accord with that of the older city to the north.

We believe that we are in a position to extrapolate from these results and estimate the size of Mesha's royal quarter. For this we should now examine the contour map (FIG. 1). The areas we have treated above constitute a rather exiguous perimeter, on the east, southeast and south, of a "bulge" — a projection of the 100.00 m contour line. The extension north of the Hall to accommodate a bath complex almost coincides with the sharp deviation of the contour line from what we would expect. In the Gateway area, we know that Wall 12 continues to the west beyond our excavation and either meets or encompasses the small knoll marked by the 105.00 m contour line.[3] The contour line then turns sharply north to rejoin the assumed original 100.00 m line of the original city wall. We now hypothesize that the great bulge of the 100.00 m contour line to the south constitutes the area of Mesha's Qarḥoh, and we have drawn a broken line on the contour map (FIG. 1) to suggest the possible south wall of the earlier Moabite city to which Mesha's royal quarter was an annex.

If it is necessary to justify such a hypothesis, we need only note several supporting arguments:

1) The Mesha Inscription was composed after Mesha had consolidated his kingdom. His building programme assumes a period of prosperity and confidence in the future.
2) As a result of his conquests, there would be the manpower and resources to carry out such works.
3) Prosperity would have led to an increase in the population of Dhībān and required an expansion in living space for the population. Note the reference (*MI*: 24-25) to houses being built in the new quarter.
4) A new quarter would have been required to accommodate government officials and staff (the bureaucracy) for the administration of the kingdom, a resident defence force (for the citadel), and public buildings, which would reflect both the new status of the city as the capital of a prosperous state and the glory of its god, Chemosh, who — through the might of Mesha — had made all this possible.

If the area on the *tall* covered by the "bulge" represents the extent of Mesha's annex, we may accept Pedrette's calculations (TABLE 5) for the area covered, the average depth of the fill, and its volume. We may, also, assume that the great battered wall surrounded the new quarter, except at the north where it adjoined the original city and its wall, even if — as in the case of a gate entering the quarter — a similar defensive complex were involved. If the size of Mesha's quarter as we propose is accepted, we can hope that some trace of the buildings and amenities referred to in his inscription may still await discovery in the unexplored area of the southeast quadrant of the *tall*.

Table 5. Entire Citadel Area: Quantities.

Surface area of bulge in southeast quadrant, south of assumed original city wall as shown in FIG. 1	=	7434 m²
Total surface of Areas I-IV = 1856 m²; total volume = 11,872 m³. Dividing 11,872 m³ by 1856 m², we obtain an average depth of fill	=	6.40 m
By assuming an overall average depth of fill (6.40 m) and surface area (7434 m²) = 6.40 x 7434 m² we obtain volume of fill	=	47,578 m³
Assuming wall follows 100.00 m contour, length of wall, excluding original city wall to north	=	285 m
Assuming battered wall has same average height as fill, face area of wall (285 x 6.40 m)	=	1824 m²

Mesha's Royal Quarter: Its Artificial Fill and Retaining Wall (P. H. Pedrette)

General

Mathematical calculations aside, the intention of this paper is to provide hypothetical answers to the questions concerning labour and material resources involved in the construction of the podium on which Mesha's buildings rested.

The podium is assumed to be the bulge in the southeast quadrant of the *tall* projecting southward from the dotted line shown on the contour map (FIG. 1); it has a surface area of 7434 m². From the excavations carried out in 1950-1953, the fill appears to consist of local soil, retained over much, if not all, of its circumference, by a

[3] On our post-Conference visit to Dhībān, we noted that this knoll had been "excavated" and revealed a rectangular stone tower. The masonry was certainly not Moabite, nor Nabataean (no diagonal dressing). Could it be the Roman "t[ow]er" referred to in the inscription found at the site and dated to AD 245/246 (Tushingham 1955)? It appears to be based on a continuation of Wall 12 (FIG. 2)

battered stone wall (Wall III, FIG. 2) with an average thickness of 2.35 m.[4] Unfortunately, details of the construction of the battered Wall P in the "Gateway" area are unavailable.

The face of Wall III consists of stones measuring 40-60 cm high and 30-80 cm long, roughly dressed and coursed, without mortar but with numerous small stones apparently used to level the larger dressed stones. Behind the facing stones, the wall is built of smaller undressed stones, laid without coursing or bonding, resting, in turn, against another battered "wall" (Wall II, FIG. 2) composed of rough stones and *ḥuwwar* chunks.

The wall leans inward on the fill at an angle of approximately 15° from the vertical with corner stones, up to one metre in length laid at right angles to the line of the batter (FIG. 3).[5]

The amount of time taken to perform each particular task can be estimated with relative accuracy. It is assumed that soil for the fill was dug up, loaded into leather panniers, transported by camel, dumped where needed, and then compacted. Similar assumptions have been made for the stone used to construct the battered wall.

One factor, however, involves considerable speculation, namely the distance that the soil and stone were transported. In the construction of the podium, the man (and animal) hours taken to transport material becomes the major variant in arriving at the total manpower employed.

For the purposes of this exercise it is assumed that the soil for the fill was obtained from areas up to 1.25 km around the site, and that the stone may have been quarried from the face of a hill a short distance (1-1.5 km) north of Dhībān (FIG. 4).[6]

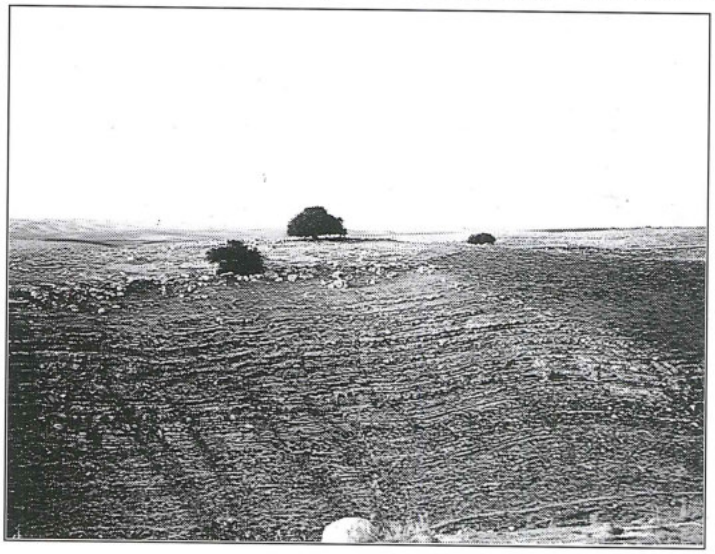
Another factor requiring some consideration is the scheduling of the work. For example, if 1000 man-days are needed to perform a task, does one assume ten men working one hundred days or one hundred men working ten days? The total man-days amounts to the same in both cases. I have assumed what I believe to be the most efficient combination considering the scope of the whole project.

The Fill

Taking the transport distance of 1.25 km into account and referring to TABLE 6, we find that it requires 0.71 man-days to obtain, transport, and deposit one cubic metre of fill at the site. As the quantity to be so moved is 47,578 m³ (TABLE 5), the total man-days required is 47,578 m³ multiplied by 0.71 man-days, giving a total of 33,780 man-days to place all the fill.

I believe that this large volume of fill and number of man-days would have required a fairly large work-force

3. View of battered wall from east, showing corner where wall turns sharply to west (*Dhībān I*: PL. 4:1).



4. View of south side of hill a short distance north of Dhībān showing stratigraphy.

[4] Winnett (*Dhībān I*: 14) gives a thickness of 2.25-3.25 m for this wall. Our Plan 2 of *Dhībān II* with the assumed upward extension of the sloping wall to a height of 100.00 m suggests a thickness of slightly over 2 m. We have predicted an average thickness of 2.35 m.

[5] Both the batter and treatment of bonding at the quoin is reminiscent of the structures illustrated in Kletter (1991: 37, FIGS. 7 and 8). Was this a traditional usage?

[6] The stratified layers of stone in such a deposit would have made quarrying relatively simple — only requiring rough shaping.

Table 6. Fill: man-day requirements per cubic metre.
Time in minutes for one man, to dig, load into panniers, transport specified distance, deposit, spread, level and compact and return for next load - per one cubic metre.

Distance (in metres)	500	750	1000	1250	1500	2000	2500
Excavate (in minutes)	110	110	110	110	110	110	110
Transport (in minutes)	140	160	180	200	220	280	340
Deposit (in minutes)	55	55	55	55	55	55	55
Supervise (in minutes)	13	15	17	19	22	27	31
Overhead (in minutes)	30	34	38	42	46	58	66
Total: In minutes	348	374	400	426	453	530	602
In hours	5.80	6.23	6.67	7.10	7.55	8.83	10.03
In days	0.58	0.62	0.67	0.71	0.76	0.88	1.00

Assumptions:

Man-day	A man-day consists of ten hours.
Excavate	The worker digs the surface soil with hand tools. Soil when excavated will increase in bulk by 15%.
Transport	Transportation is in camel-carried panniers, each camel carrying 1/4 of a cubic metre.
Deposit	Soil will be dumped from panniers, spread evenly, and compacted by trampling under foot.
Supervise	Average time taken by overseer to locate areas to dig and to supervise transportation and deposition of soil in correct location.
Overhead	Amount of time taken to make and repair tools and panniers and to settle disputes, feed workforce and

— I suggest 400 persons. Dividing the total number of man-days (33,780) by this number of men (400), gives 84 days; this is the length of time the fill project would take to complete. Allowing for work stoppages resulting from possible holy days, illness, and the need to attend to other work projects, we may estimate a round figure of three months to finish this part of the podium project.

The Battered Wall

Turning now to the battered wall, from an engineering point of view, the wall and the fill are mutually sustaining and must have been built concurrently. The vertical walls and buttresses apparently supporting the fill inside the battered wall in Area IV (*Dhībān I*: PL. 24:1; *Dhībān II*: Section F-F) are perhaps to be interpreted as stabilizing walls for, in no case, could they have retained the deep 10 m fill in this area. While there could be — and would probably have to be — a building up of the fill to some extent before the revetting wall could be built, I have treated the two operations as concurrent.

On this assumption, I have estimated the time that it would take to obtain the material and build the wall. Separate tables for breaking out, dressing, transporting and laying the stone work are included in TABLE 7.

The length of the wall is 285 m, on the assumption that it follows the 100.00 m contour line. I have assumed its average height to be 6.40 m which is the average height of the fill.

The length of 285 m multiplied by the height of 6.40 m gives the wall a face area of 1824 m^2. Referring to TABLE 7 under the column showing a transported distance of 1.5 km, we find that the number of man-days taken to build one square metre (face area) of wall, 2.35 m thick, is 4.14 man-days. The total face area of the wall, 1824 m^2, multiplied by 4.14 man-days gives a total of 7551 man-days to construct the wall.

This 7551 man-days needed to build the stone wall, divided by the 84-day construction period established for placing the fill, shows that 90 men would be needed over that period to build the wall.

The total work force required to place the fill (400) and, at the same time, build the battered wall (90 men), over the 84-day period is, therefore, 490 men.

Summary

From Pedrette's analysis of the project — in its architectural, management and human components — we can conclude that, in round figures, the podium took roughly 500 men, working continuously on a 10-hour day, three months to complete the construction of the podium.

The method determining the size of the work-force as described above is based on some known and some assumed facts, and on certain established estimating principles and data.

However, he recognizes that this information is not the whole story; the size, source and skill of the potential labour force, the acknowledged popular support for the project (*MI*: 28), the economic strength of the nation and,

time lost due to injuries.

Table 7. Wall: man-day requirements per square metre of wall face.

Time in minutes for one man, to break out rock, roughly dress surface of stones, load into panniers, transport by camel specified distance, unload, carry to proper location and lay in wall. Per square metre of wall face, 2.35 m thick.

Distance (in metres)	**750**	**1000**	**1250**	**1500**	**1750**	**2000**	**3000**
Break out (in minutes)	465	465	465	465	465	465	465
Dress stones (in minutes)	130	130	130	130	130	130	130
Load (in minutes)	145	145	145	145	145	145	145
Transport (in minutes)	282	338	388	440	542	595	802
Unload (in minutes)	94	94	94	94	94	94	94
Build wall (in minutes)	745	745	745	745	745	745	745
Supervise (in minutes)	110	124	138	155	169	183	282
Overhead (in minutes)	232	258	285	310	337	362	465
Total: In minutes	2203	2299	2390	2484	2627	2719	3128
In hours	36.72	38.32	39.84	41.40	43.78	45.32	52.14
In days	3.67	3.83	3.98	4.14	4.38	4.53	5.21

Assumptions

Break out	The worker will break out the surface rock with hand tools.
Dress surface	Stones will be roughly squared and the exposed face smoothed with a metal chisel.
Transport	Smaller stones will be carried by camels in panniers and larger stones pulled by camels on wooden sleds.
Build wall	The wall will be built battered with larger dressed stones on the outer face.
Supervise	The average time taken by the overseer to locate areas of rock and to supervise dressing of stone, transporting and laying of stones in approximately level courses.
Overhead	The amount of time taken to make and repair tools and panniers and to settle disputes, feed workforce and time lost due to injuries.

probably most important, the political enterprise and assurance of the ruler, were of prime importance to the accomplishment of King Mesha's project. From the evidences of the work still preserved to us and the language of the Mesha Inscription, we can conclude that the ambitious scheme was carried through to completion.

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