

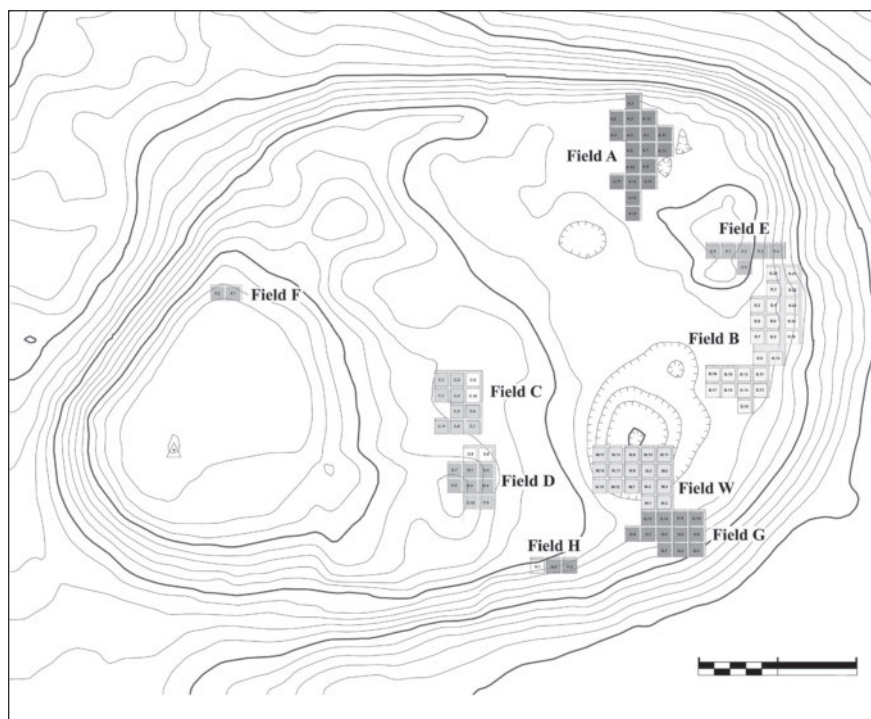
PRELIMINARY REPORT ON THE 2016 SEASON OF THE MADABA PLAINS PROJECT: TALL JALŪL EXCAVATIONS 2016

Paul Gregor, Robert Bates, Paul Ray, Constance Gane, and Randall Younker

Introduction

The 2016 season at Tall Jalūl, conducted by Andrews University, took place between May 1 and June 2, 2016. The excavations on the tell were directed by Paul Gregor, Constance Gane, and Paul Ray of the Institute of Archaeology,

Andrews University. Seventeen faculty members, students and volunteers were joined by about 15 local Jordanian workers during the excavations this season¹. Excavations at the site of Tall Jalūl (**Fig. 1**) began in 1992, with excavations in the Jalūl Islamic Village



1. Tall Jalūl Topographical Map Showing Excavated Fields To-Date.

1. We wish to thank Dr. Monther Jamhawi, Director General, and his staff, including Mr. Jehad Haroun at the Department of Antiquities of Jordan, for their support of the project this season. We would also like to thank Barbara Porter and Glenn Corbett of the American Center of Oriental research (ACOR) for their usual excellent assistance. Finally, we appreciate the help of Issa Siriana and Amal Khaled, of the Department of Antiquities of Jordan, who served as our department representatives. Staff for the 2016 season included senior director Randall W. Younker, and co-directors Paul Z. Gregor, Constance Gane, and Paul Ray. The Field Supervisors this season were Paul Gregor, Paul Ray, and Robert

Bates. Constance Gane served as Object registrar, Trisha Broy was the pottery registrar, and Jacob Moody and Robert Bates were photographers.

Square supervisors for Field B included Trisha Broy, Hala Ajilat and Stefanie Elkins, with volunteers Bruno Barros, and Michael Orellana. Square Supervisors in Field W included Daniel Ulvoczy, Ricardo Scarfullery, Soowoong Moon, David Clark, and Jacob Moody. Volunteers included Liping Zhang, and Milosy Rodriguez. Post-excavation lab work was facilitated by undergraduate research assistants, including Jessica Bates, Elizabeth Bates and Alma Cortez.

beginning in 2008. For background information on Tall Jalūl, the Jalūl Islamic Village, and the history of the excavations at the site, see Gane *et al.* 2010; Gregor 2009; Gregor *et al.* 2011; Gregor, Younker and Ray 2012; Gregor and Gregor 2009, 2010; Herr *et al.* 1994, 1996, 1997; Younker *et al.* 1993, 1996, 1997, 2007; and 2009; Younker, Gane and Shqour 2007; Younker and Merling 2000; and Younker and Shqour 2008.

Results of the 2016 Season at Tall Jalūl

Field B

Field B was originally opened in 1992, at which time Squares B2-8 were initiated. Two superimposed flagstone pavements (Upper and Lower) were found at that time, both dated to Iron Age II. The lower of the two pavements (**Fig. 2**) was found primarily in Squares B4, B6, and B8, and was initially dated to the early 9th century B.C (Younker *et al.*: 1993: 216). The upper pavement (**Fig. 2**) was uncovered in Squares B2-B5, B7, B9, and possibly in B8 and B10, and was provisionally dated to the 9th/8th century B.C (Younker *et al.*: 1993: 216-17). In the 1999 season, additional squares further to the southwest revealed that the upper pavement had some additional re-pavings, primarily in Square B15, the latest dating to Late Iron Age II.

In the preparation for the final publication of Field B, it was discovered that there was inadequate ceramic evidence to support the initial dating of the upper and lower roads. The purpose of the 2016 season was to clarify the stratigraphy between the upper and lower roads in order to provide a firm date for the construction of these pavements.

In 2016, two squares were re-opened in Field B (B2 and B6). A 3 x 3 m probe was opened in Square B2 along the north and east balks. The upper road was removed and the soil excavated until a lower road was found. Then a 1.5 x 1.5 m section of this lower road was removed, and a smaller probe was excavated to a depth of approximately 0.70 m. A 2 x 4 m probe was also opened in Square B6 along the north and east balks. The original lower road was removed, and the soil was excavated to a depth of 1.7 m, from the east balk to the revetment wall (Locus 13).

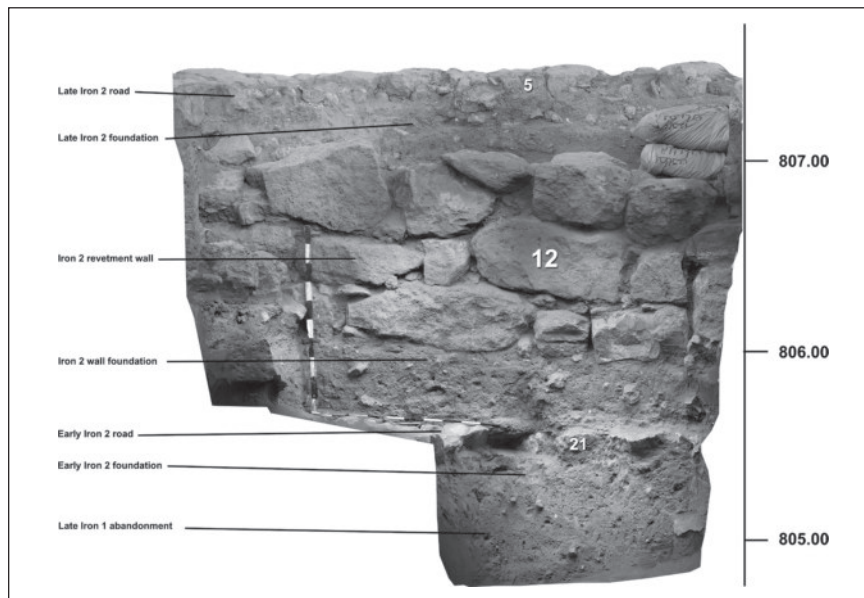
During the process of excavation, the probe



2. Upper and Lower Road (Gray) Overlay.

in Square B2 revealed that the revetment wall (B2:12), found earlier in Squares B4 (Locus 8), B6 (Locus 13), and B8 (Locus 13), continued below the upper pavement (B2:5). What was originally thought to be an even lower pavement (B2:21) was found below the revetment wall (**Fig. 3**). The probe in Square B6, underneath the original lower pavement (B6:15), yielded considerable amounts of ceramic data, but evidence for an additional pavement or pavements beyond the upper and lower pavement was not found.

A 1.80 x 2.71 m section of the lower pavement (B2:21) in Square B2 was exposed, consisting of medium sized (0.40 x 0.50) flagstones, irregularly shaped and made of hard limestone. This stone surface continued into the north and east balks, the south sub-balk, and under the soil supporting the revetment wall (B2:12). It appears that there were only two phases of the road on the northern end of Field B, as was originally thought. The earliest flagstone pavement (B2:21=B4:10= B6:15) was built in the Early Iron Age II and laid into

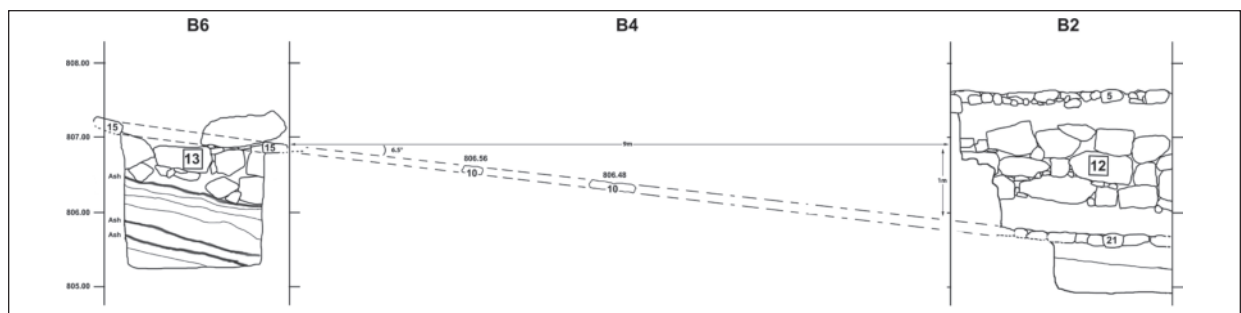


3. Photo of the Western Face of Wall 12 In Square B2, Showing the Foundation Layers of the Upper and Lower Roads and the Revetment Wall.

Late Iron Age I abandonment deposits, in order to create a level surface for the road.

Following the excavation in 2016, it was determined that the lower road in Square B2 (B2:21) slopes upward from north to south at

6.5 degrees, on a 11% grade, over a length of 1:9 m measurement of slope, continuing into Squares B4 (Locus 10) and B6 (Locus 15), before mostly leveling off in Square B8 (Locus 10; **Fig. 4**)². This degree of slope or incline is



4. Facing West, Showing the Relationship Between the Lower Road in Each Square as it Slopes Upward from Square B2 to Square B6. the Rise is 1:9 M At 6.5 Degrees With an 11% Grade.

2. The lower pavement extends for a length of 9.00 m between the probes in Squares B2 and B6. Between them two elevations are marked on two known stones of the revetment wall (Locus 8) in Square B4. The dashed lines connect the stones against the

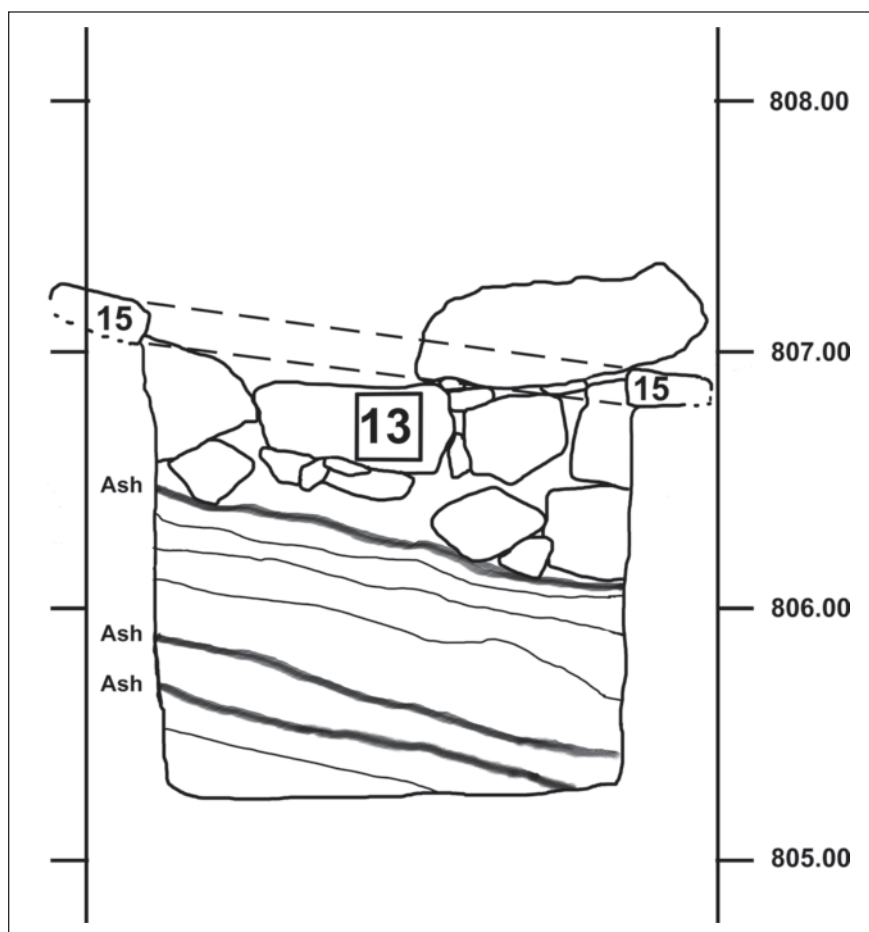
revetment wall in Squares B4 and B6, and project the course of the lower road as if it were completely exposed in the remaining parts of these squares.

similar to other Iron Age sites, including the road leading to the gate at Bethsaida (also 6.5 degrees or 11% grade) which according to Rami Arav (Rami Arav: 2009:12): “gives the road a moderate gradient... and indicates careful pre-planning of the approach to the city”. To put this into perspective, the slope of this road would not be difficult to walk up, but would be considered a “painful gradient, especially if maintained for any length of time” for those riding a bicycle.

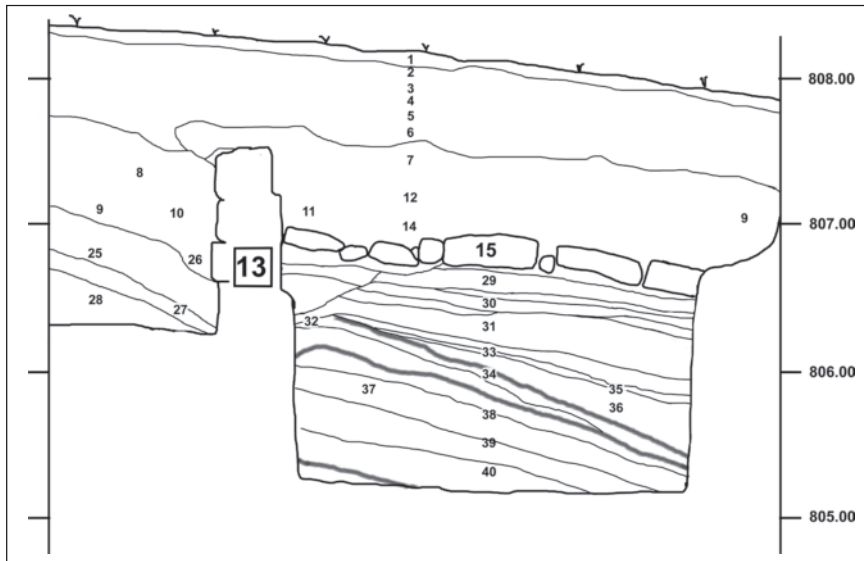
Sometime later, the lower pavement in Square B2 was abandoned, and the ground was leveled with approximately 0.40 m of earth, possibly in Squares B4 and B6 as well, creating the foundation for a battered wall (B2:12=B6:13). It would seem that this wall was built as a revetment against the rampart on the east side of the tell, extending at least from the gate complex in Square B8 to the probe in Square B2, and may have continued further north into Square B20. A sloping ash layer immediately below the revetment wall

in Square B6 (**Fig. 5**) may indicate that in this area the wall was built on destruction debris, with the remaining section, that continues into Square B8, accommodating the slope. The ash lens in Square B6 yielded a variety of Late Iron I bowls, cook pots and jars (See further discussion below).

Three courses of the revetment wall were exposed in Square B2, consisting of medium-large semi hewn boulders (approximately 0.40 x 0.90 m), dry laid with small cobbles as chink stones. The initial course of Locus B2:12 was founded at an elevation between 806.10-806.20 m, and is consistent with the elevation of the initial course found in the north balk of Square B6 (at 806.12 m) (cf. **Figs. 5 , 6**). However, while the lower pavement (B2:21) is located 0.40 m below the foundation of the revetment wall (B2:12) in Square B2, this same wall (B6:13=B2:12) was founded 0.85 m below the surface of the Lower Pavement (B6:15=B2:05) in Square B6, abutting it in places. This positioning would suggest that the lower



5. Facing West, Showing Square 6, Wall 13, Extending Below Locus 15 (Lower Road). Three Ash Lenses are also Shown Below Wall 13.

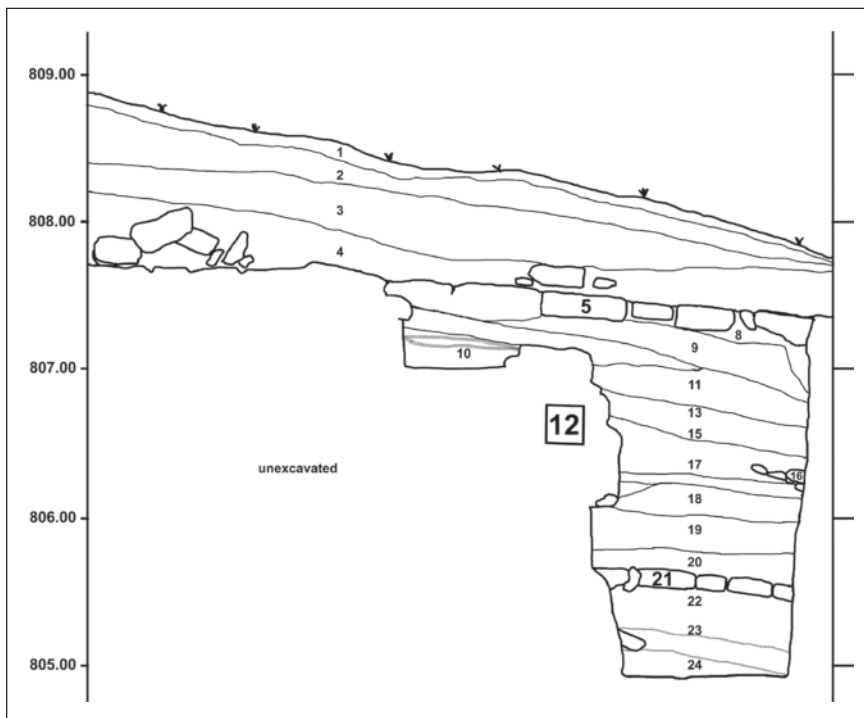


6. Facing North. Square B6 North Balk, Showing the Lower Road (Locus 15) and Three Ash Lenses. Note Pottery Below the Ash Lens Dated to the Late Iron I Period.

pavement, which was built before the revetment wall, as revealed in Square B2 (Figs. 3 - 6), was at least partially dismantled in Squares B6 and B4 when the revetment wall was built. Once the revetment wall was completed, the lower road in Squares B6 and B4 would have been repaired, sealing against the wall.

The lower pavement was in use for at least a century before it was abandoned in Iron Age II. Later, a fill of reddish colored (5YR 5/4, reddish brown) clay-like soil was brought in to level the slope of the road. At this time

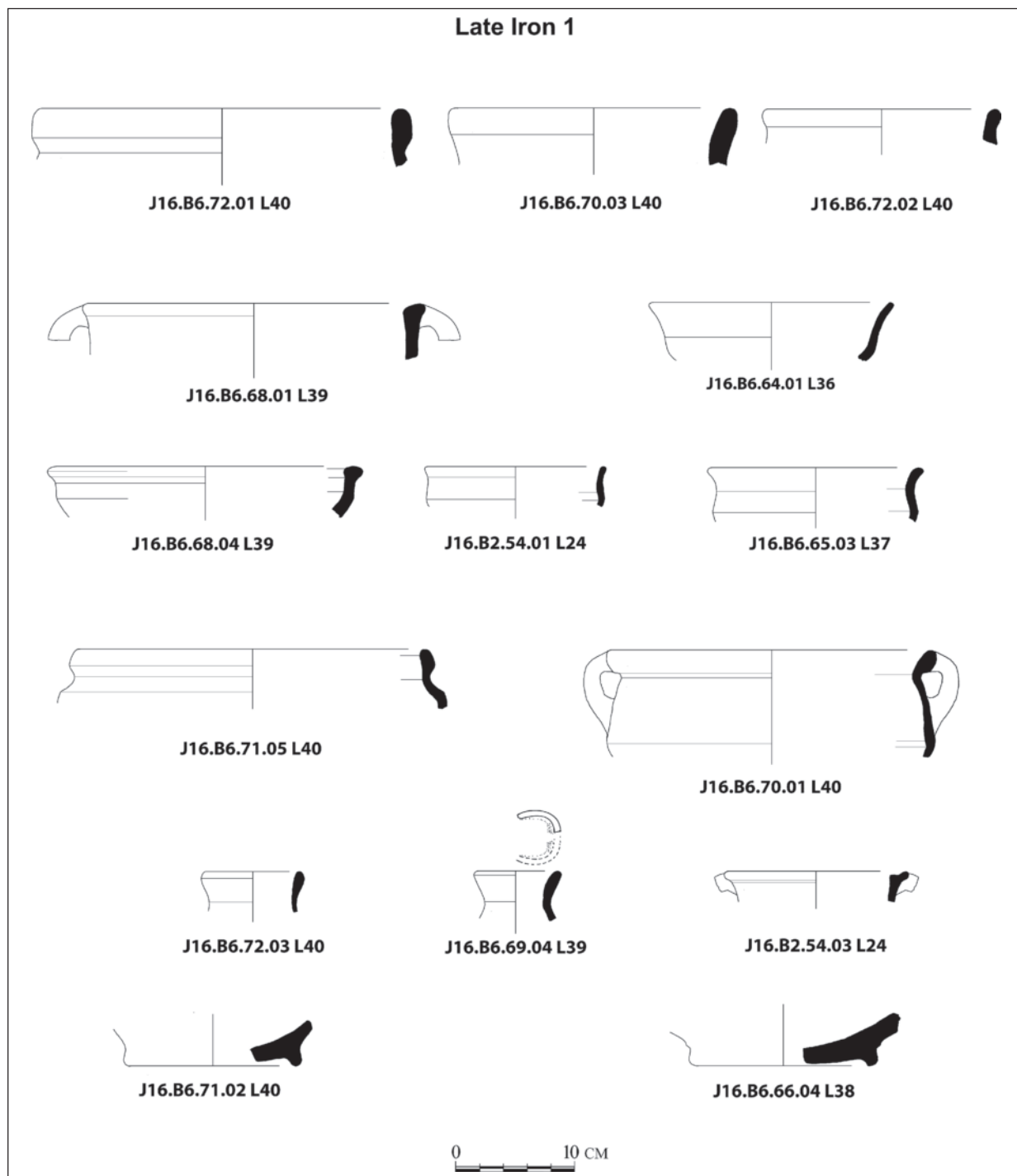
the builders removed the upper stone courses of the earlier revetment wall (B2:12=B6:13), and reusing them, along with stones from the lower pavement, laid them, likely with some new paving stones, above the wall, and in part, further to the west, creating the upper pavement (B2:05 = B6:15). Some Late Iron Age II (7th century B.C.) pottery was found in the uppermost earth layers below the new (upper) pavement, including many cook pots (cf. Figs. 3, 7). The pottery immediately above the lower road was dated to Early Iron Age II, while the



7. Facing North. Square B2 North Balk, Showing the Upper Road (Locus 5), The Revetment Wall (Locus 12) and The Lower Road (Locus 21).

soil layers that sealed against the revetment wall likely date to the Mid-Late Iron Age II. This would suggest either a refinement to the earlier dating, or possibly a later repair, perhaps equivalent to the latest repaving further to the southwest, in Square B15, which was found in the 1999 season.

A Late Iron I phase was also found below the ash lens mentioned above, in Square B6 (Loci 37-40; **Fig. 6**) and below the foundation layer of the lower road in Square B2 (Locus 24; **Fig. 7**). The pottery consisted of a mixture of bowls, cook pots and jars, including two jar handles with potter's marks (**Figs. 8, 9**), and an applique

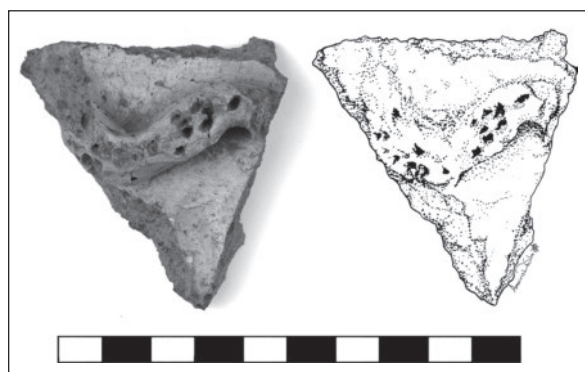


8. Late Iron I Pottery Found Below the Ash Lenses in Square B6, and Below the Lower Road Foundation in Square B2.

(**Fig. 10**) on a small sherd. This applique piece may have been attached to a large jar or model shrine, and resembles the snake design found on similar vessels, including a model shrine fragment from Tall al-‘Umayrī (B986678, Square 7K70, Locus 48, Pail 191). A crudely made Early-Middle Bronze Age sherd, which resembles a handmade cook pot with a rope design and semi-perforated holes (**Fig. 11**), was



9. Late Iron I Jar Handles, With Potter's Marks that Appear to Have Been Made With the Blunt End of a Stick. Objects J16.B6.68.03 L39 (L) and J16.B6.66.06 L38 (R).



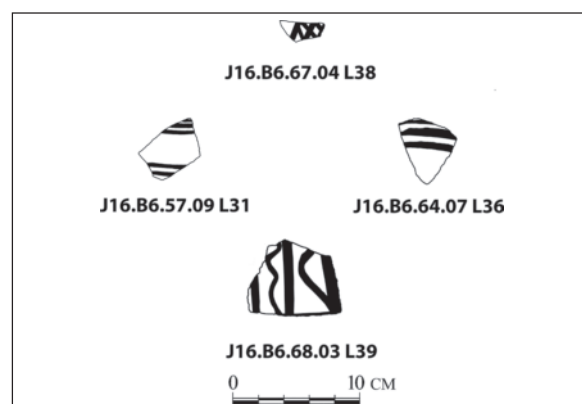
10. Pottery Sherd (J16.B6.63.11 L34) Found Near the Ash Lenses, Showing an Applied Ceramic Shape With Shallow Perforations, Possibly Representing a Snake.



11. Early to Middle Bronze Age Hand Made Cook Pot With Perforations.

also discovered. Similar square-shaped cook pots have been found at Shechem (Cole 1984: 64, 145; Fig. 16, Pl. 23) and Megiddo (Amiran 1969: 101-2; pl. 30). Several Iron Age I painted sherds with light colored slips and parallel or crossed hatched lines were also found. Sherd J16.B6.69.03 from Locus 39, which has a very light colored pale yellow (2.5YR 8/2) slip, and a vertical line pattern that resembles certain types of Iron Age I biconical vessels, including jars, jugs and bowls (Herr 2012: 50; Fig. 2.10:22; Herr *et al.* 2012: 114; Fig. 4.28.8). Its line pattern alternates between straight vertical 3 cm. stripes, and large wavy or shallow wavy vertical stripes (**Fig. 12**). According to Herr (2012: 50), “this general pattern of straight and wavy lines, usually vertical, is normally placed on the shoulder of closed vessels at this time.” This design pattern may also have begun in the Middle Bronze Age and continued to the Late Iron I period (Herr *et al.* 2000: 67; Fig. 4.13.10). In addition, sherds from jugs with parallel vertical lines and a basket weave pattern were also found in Late Age Iron I loci.

Two graves were found in Square B2. The first grave, which was almost entirely in the north balk, was approximately 0.25 x 1.45 m, and oriented east/west. The flagstones of the upper road had been removed, creating a large oval shape, and the remains were deposited at a depth of 0.20 m below the surface of the upper pavement. The skeleton was left *in situ* and unexcavated because of its location within the balk. Two small stones were found upright on the east side of the grave, which likely dates to the early 20th century. The second grave (in Locus B2:14) was found approximately 0.20 m



12. Selected Iron Age I Painted Sherds.

beneath the upper pavement, also oriented east/west. The majority of the remains were found in the east balk, and left *in situ*, except the skull, scapula, humerus and a few ribs, which were uncovered. The body appears to have been laid on its right side with the head facing south. Although a full forensic analysis was not possible, the skull measured 0.1746 m from the Menton (chin) to the top of the head, and 0.1805 m from the Glabella to the back of the head (**Fig. 13**). The sex could not be determined from the skeleton, but the skull measurements suggest that whether male or female, the deceased was probably a late adolescent between 15-19 years.

The position of the second grave in Square B2 below the upper pavement presented several questions as to when the body was buried. Was it a recent burial, like those excavated in earlier seasons in Loci 6 and 7, or an ancient burial dating to the Iron Age? In general, the grave resembled many found on the eastern slope of the tell that have been attributed to early 20th century slave burials, according to local custom. The body was interred in a relatively shallow grave only 20-40 cm below the surface with no burial goods. It was lying on its right side facing south, toward Mecca, according to local traditions, located near other similar burials within the same square (B2), and possibly from the same family. However, unlike the burials surrounding the remains which were buried on or above the upper pavement, this one was buried underneath the road. No other burials removed the flagstones and then replaced them after the body was interred. Indeed, those who dug the unexcavated grave in the north balk



13. Square B2, Facing North, Showing the Late Adolescent Remains of the Head and Upper Part of the Body.

removed but did not replace the upper road stones following the burial.

One suggestion was that the burial in Locus 14 may have been from the Iron Age because the large flagstones above the body do not appear to have been removed or disturbed when the body was interred; rather, the road remained intact above the burial. It was also suggested that when this body was buried it was covered with a hard packed surface (Locus 11), a foundation layer for the road (Locus 9), and then covered with large flagstones as part of the upper road construction. In addition, all of the pottery found in the burial pit (Locus 14) and the surrounding earth layers date to the Late Iron Age II; none was more recent. However, stratigraphically the burial pit appears have cut into Loci 9 and 11, under the road, and the one flagstone resting above the burial is not entirely flush or even with the road. Although the stone is rectangular in shape with a relatively flat bottom, it appears to have been placed at a slight (approximately 23 degrees) angle with the uneven surface, facing up, and the south end of the stone raised slightly (approximately 4.5 cm) above the surface of the road. If the body was interred first, then this stone should have been laid flat or flush with the others as the pavement was being laid, since the foundation for the road would have been evened out to accommodate the new stone surface. Following the interment, it is possible that the stone was replaced upside down, with the uneven surface up and the flat side down. The unusual angle of the stone may be the result of dropping the stone onto the uneven surface created by the soil that was used to fill the hole (**Fig. 14**). The remains recovered in the excavation were reinterred at the end of the season in the cemetery at the top of the acropolis.

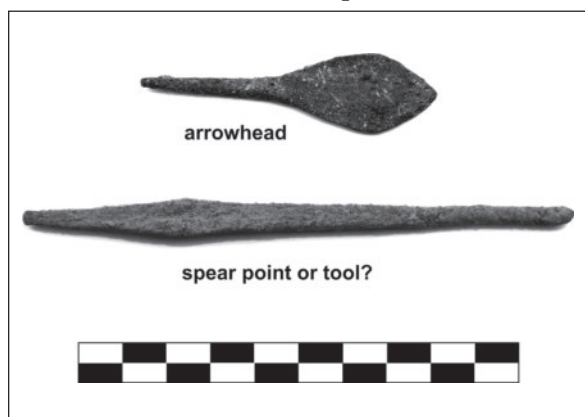
Two metal objects were found in the course of the excavation of Squares B2 and B6. A greenish-colored metal point (Object J0936), possibly a spear or tool, measuring 0.7 x 0.9 x 13 cm, and weighing 24.71 gm, was found in Square B6, Locus 30, next to Wall B6:13 (**Fig. 15**). The tip of the object is 3.7 cm long, with a blunted point that tapers 4.5 degrees to its maximum width. The tang is 9.3 cm long and tapers 1.4 degrees. The sides of the object are squared, and there is a groove on two sides,



14. Square B2, Facing East, Showing the Upper Road (Locus 5) and Its Relationship to the Late Adolescent Remains Below (Locus 14). Note the Angle of the Stone Above the Body.

extending 8.2 cm from the tip to the tang. A possible parallel is a small spear point which was found at Tall Jemmeh (Ben-Shlomo and Gardiner 2014: 882, Fig. 21.2k). However, although it is similar in shape, it lacks the squared body with the longitudinal groove; it has been suggested that it resembles a Middle Bronze Age butt-point spearhead.

In Square B2, a leaf-shaped arrowhead (Object J0938), made of bronze or copper, and overlaid with greenish-colored patina, was found in Locus 18, near the base of the revetment wall (B2:12). It measures 2.1 x 7.1 cm, and weighs 8.16 gm (Fig. 15). The tip of the blade is 1.48 cm and tapers 32.5 degrees to its the widest point. The body measures 2.0 cm and tapers 20 degrees from the widest point to the tang, which is 2.3 cm, then tapers 3.18 degrees to the blunt end. Several parallels have been



15. Object No. J0938, Bronze Arrowhead Found in Square B2 With Leaf-Shaped Head (Top), and Object No. J0936, Metal Point Found in Square B6, With Blunted Tip, Possibly A Spear Point or Bronze Tool.

found, including Objects J0392 from Square E3, in an adjacent field, J0682 from Square G1, and J0066 from Square B11. Examples of this type of blade made of iron have also been found in Mesopotamia. Nimrud Type 1 lozenge/ovoid shaped arrowheads are the most common arrowheads found in the Neo-Assyrian period, although their bronze forms appear much earlier. The examples from Nimrud were found at Fort Shalmaneser where they were being stored (Curtis and Ponting 2013: 39-40; Pl. X). The shape of these blades varies a little, ranging from leaf-shaped (such as Objects J0392 and J0066), to an almost diamond shape (such as Objects J0682 and J0938) from the current excavation. A Late Bronze Age example of this leaf or diamond shaped arrowhead was found at Tell Jemmeh, attesting to the longevity of the design (Ben-Shlomo and Gardiner 2014: 876-80).

The 2016 excavation season has yielded new insights into the relationship of the revetment wall and the lower road, as well as the stratigraphy between the upper and lower roads (Figs. 16 , 17) in Squares B2 and B6. Further excavations will revisit Square B4, between the two squares reinvestigated this season.

Field W

Field W was carefully laid out on the southeastern ridge of the large depression on the southeastern side of the tell (Fig. 1). Excavation began here during the 2010 season, at which time four squares were opened in order to locate the continuation of a water channel, found earlier



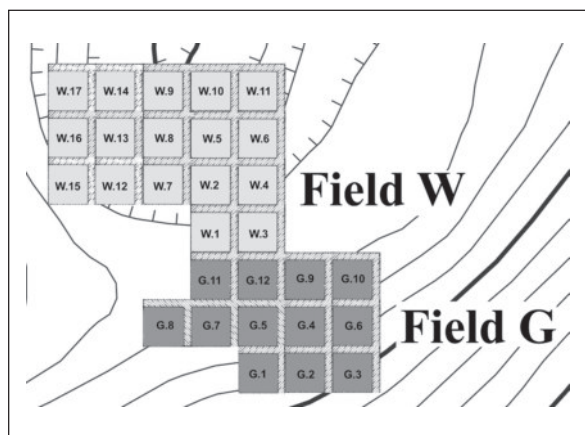
16. Square B2, Final Shot Facing North, Showing the Upper Road (Locus 5), Revetment Wall (Locus 12), the Lower Road (Locus 21) and the Iron Age I Soil Layer (Locus 24).



17. Square B6, Final Shot Facing North, Showing the Lower Road (Locus 15), The Revetment Wall (Locus 13) and the Iron Age I Locus (Locus 40).

in Field G. It was anticipated that the channel would run straight to the depression where the remains of a water system were expected to be found. Excavation in Squares 1-4 brought the desired results, with the continuation of the channel being uncovered. However, it turned out that the channel does not connect to the water system, but rather passes by the depression on its eastern ridge, continuing further north. By the end of the season, almost 30.00 + m of the water channel were unearthed, with some missing sections removed by later stone robbing activities.

By the end of 2016, six seasons of excavation in Field W had been completed, with 17 squares excavated (Fig. 18). With the exception of Squares W15, 16 and 17, which were opened in the middle of the current season, work in all other squares has been completed. The reservoir consists of a fill (in some places up to 4.00 m thick), containing mostly post-7th century B.C. material culture.



18. Field W Squares Excavated to Date.

Occupational Phase 1 (10th Century B.C.)

Phase 1 is represented by the reservoir walls and plastered floor. The date of construction for the reservoir, which was probably during the 10th century B.C., was established during the 2011 season, and confirmed during the 2012 season. The floor of the reservoir, which was re-plastered several times, sits upon bedrock.

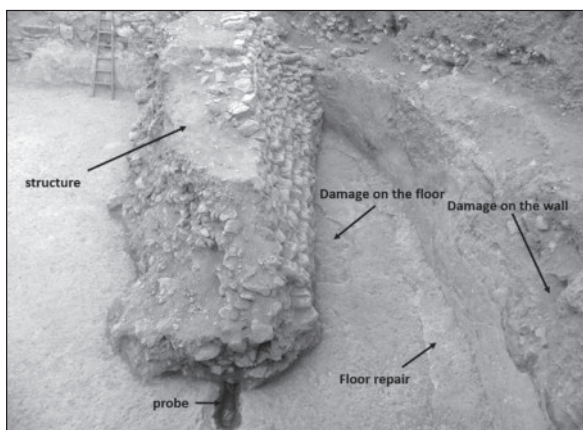
In 2016, another part of the southern reservoir wall was discovered, in Square W12, Locus 14. Here, the upper section of the wall appears to be missing, while the existing lower part, which is actually bedrock, was chiselled out, like the leveled floor throughout the reservoir. Both the wall (W12.14) and floor (W12.19) were plastered. The excavation in Squares W13 and W14 were completed this season, and the floor of the reservoir (Loci W13.16 and W14.10) was reached here. Surprisingly, relatively few objects have been found inside the reservoir. The ceramics found on the floor of the reservoir date to the 7th century B.C., indicating that the reservoir went out of use at that time.

Occupational Phase 2 (7th Century B.C.)

Phase 2 is represented by a structure built in the southern part of the reservoir, found in Squares W7 and W12. It consists of two parallel walls with a fill of earth and stones between. The function of this structure is not known, but it was most likely used to separate the southern section from the rest of the reservoir. The western part of the structure is not well preserved, while its eastern side is almost 3.0 m high. There are signs of attempts to repair the damaged southern section of the floor and wall, which may indicate that the inhabitants of the town tried to separate the unrepairable section from the rest of the reservoir. They also dug a probe in the reservoir floor, perhaps to see if it would sustain the weight of the structure (Fig. 19).

New Technology

This season we experimented with digital locus sheets in Field B. The locus sheets of the Madaba Plains Project Field Manual were converted to a completely digital format by Robert Bates, using FileMaker Pro software, and run on iPads in Squares B2 and B6. The data was uploaded from the iPad to a laptop



19. Reservoir; Looking East.

at the end of each day in the field. Daily progress shots and the pottery found in the squares each day were filmed with an iPad camera and incorporated into the database as a visual reference. Supervisor field notes were also entered on the device. In addition, photography was taken with a digital camera from a wonderpole (a telescoping device with a camera mount on top) integrated with an iPad as an optical piece; numerous images were combined together to create a final 3D image of each square, using PhotoScanPro software. These images have since been used to make top plans, section and architectural drawings back in the lab.

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