THE DEFENSIVE BRICK ARCHITECTURE IN MESOPOTAMIA FROM THE END OF EARLY BRONCE AGE TO THE END OF THE EARLY IRON AGE

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THE DEFENSIVE BRICK ARCHITECTURE IN MESOPOTAMIA FROM THE END OF EARLY BRONCE AGE TO THE END OF THE EARLY IRON AGE

LA ARQUITECTURA DEFENSIVA EN LADRILLO EN MESOPOTAMIA DESDE FINALES DE LA EDAD DEL BRONCE INICIAL A FINALES DE LA EDAD DEL HIERRO INICIAL

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ABSTRACT

In the 1st and 2nd millenniums B.C. there were numerous fortified centers in Mesopotamia. These were large, occupying several dozen acres in the forms of independent city-states, mid-sized urban centers, and smaller, specialized settlements. They were usually located on important transport routes, such as the two main rivers of the region, the Tigris and the Euphrates, and their numerous tributaries. The defensive walls were constructed to demonstrate the influence of a given center and its military strength, and to protect against floods or enemy invasions.

The defensive brick architecture in Mesopotamia dates back from the end of the Early Bronze Age to the end of the Early Iron Age. On the basis of the available information from archaeological research, we don't have enough evidence to make conclusive judgements. Studies arranged by archeologists who worked there, found the remains of fortifications. By chance, scientists found fortifications that date from the Middle Bronze period, which they did not study carefully. That's why we do not have enough information about the details of fortifications systems, especially those from the first millennium B.C, especially Assyrian and Babylonian fortifications. However, based on the available information, I have been able to put forward an outline about fortification. It is worthy of mentioning that no known summary currently exists within publications about Mesopotamian brick defensive architecture, so I have been inspired to follow and analyze the fortified systems in each of the cities in Mesopotamia during the aforementioned time period.

The principal aim of my doctoral thesis is to analyze the

fortifications systems, their functionality and usefulness during military conflicts in all the fortificated settlements in Mesopotamia from the end of the Early Bronze Age to the end of the Early Iron Age. With a dual focus upon the concept of defensive systems, and the practical matters of implementing these kinds of defensive projects. I intend to Calculate the amount (brick burnt, dried bricks, and stone), labor resources and time necessary to build this kind of construction. As a result, I have endeavoured to create one a thesis that contains both the information and accurate descriptions of all defensive systems in Mesopotamia in one document. There is no similar thesis about defense fortification systems of all Mesopotamians cities from the end of Early Bronze Age to the end of the Early Iron Age.

The analysis is based on a working hypothesis which pursues the idea that fortification architecture consists of a wide range of social and cultural elements, which have influenced those in society who created them and drawn from the historical context when they appeared. Straight-lined defenses are simple and useful functionally as an architectural genre. We should note that in architectural projects some elements were created as a psychological deterrent. However military architecture also has functional purposes. Meaning that not only are they the result of military needs, but also of local geographical, environmental factors and available technology. Factors such as the variability of fortifications can be explained by a more complex interaction of factors related to the character of fasteners within a man-made environment. As such, the environment can be fasteners have a wide range of functions and meanings, for example in the organization of space for defense purposes and in accordance with the principles, needs, values and desires of its builders, as well as in the organization of time and building materials.

My PhD thesis is based on nine analytical chapters, which

present the whole issue of brick architecture and defensive systems - from making brick materials to importing rare materials from other places and meanwhile descriptions of archeological side to make an analysis of the whole building process of defensive walls and elements strengthening the fortifications within the defensive system. In my study, I would like to convey a point raised which was not take from a long time. At the same time, I want to present a general outline of all fortified cities in Mesopotamia, basing on the available information and my own interpretation regarding each of the mentioned walls in this work.

Another issue is the dating of discovered fortifications, detailed analysis of the structure, also contains information on how to build systems of this type, what type of material was used, what brick dimensions can be found, whether additional elements were strengthening the construction; what system the foundation was erected. I would also like to present my interpretation based on an analysis of the entire defense system in a way that outlines the defensive architecture of each fortified city during the period under review. The next step will be to analyze the structure and the techniques of construction of the gate or gates located in the defensive walls, and the last point is the calculation of the amount of brick and stone, with the number of workers, to determine how much time is needed to build one spatial meter.

One more aspect should be noted which determined the way fortifications were built. They were, next to the military force, a symbol of the economic power of the state or city. The epicenter was not able to secure its territory with a massive wall. So construction was also dependent upon considerable economic resources. We derive our information from the transport records of 370 burnt bricks from the places where they were produced - this took place outside the city due

to the use of manure in the production process. The price of 370 piece is about 1 shigel which corresponds to 8.5 grams of silver.

I think that it is possible to roughly Calculation of the amount of material, the number of workers and the amount of time in which the size of one cubic meter of wall could be built. This estimation is because there is no complete archaeological information giving the exact dimensions of the fortification walls (height, width and length). At the same time, we know that within the fortification buildings there were also rooms about which we have no information. Considering such significant deficiencies in information, I adopted one cubic meter for conversion. We know that the fortification systems included various elements; along with the walls there were ramparts, moats and escarpments.

In addition, there were buttresses, retaining walls, shafts and reinforcing walls. As we know, defensive walls or moats often turned out to be insufficient. At that time, additional solutions were included in the system to raise security standards, effective defense, and to facilitate transport and communication. These took the form of towers and gates.

Techniques for building defense systems differed from each other depending on the time of creation and location, or rather the ground of a given geographical region. We note that the walls may have stone foundations, burnt brick, or not have them at all - erected only on level ground. For example, in the city of Assur, several types of bricks were used to construct one wall, or in Niniveh a space filled with clay and stones were preserved between its parallel walls. In the construction at Tell Rijim the technique of *pisé* was used, consisting of laying thin plates of compacted clay.

The appearance of fortifications in the Middle East, especially in Mesopotamia, did not only fulfill the military functions but they had

other functions, in order to protect the city from the flood because these towns were located in the lower part of Mari, and also had the function of protecting a given city from wild animals, and also to protect the city from thefts and control the cities and find out who was leaving the city and who was entering the city.

From the point of view of my dissertation, the main topic is the strategic nature of these defences. The goal is to clarify the functions of fortified cities, to analyze the strength of resistance and to what extent they were effective in protecting against the enemy.

We already know from archeological sources that various types of tools were placed on the defensive walls. They are characterized by their diversity, depending on the location on the walls but also upon the city being researched, and at what period. Based on the information from the descriptions, we can determine the types of tools, as well as the width of the walls - about 1.5 to 2 metres and a height of 3 to 4 m - based on the description of the reference point where the archers shot their arrows from. Common swords and spears were used in direct contact.

The subject of military equipment is quite an extensive area, so I have decided to deal strictly with the topic of tools used for defence. I will trace their types and usage throughout the different periods of Mesopotamian culture.

In the chronological part I did not deal with the analysis of the dates of creation of given archaeological sites. The organization requires designing a table for each defense system, separately for individual archaeological sites. Looking at the cross-section of the subject, we note the differences in dating north and south of the Mesopotamian areas. They are particularly noticeable between the ancient periods in Old-Babylon and Old-Assyrian, Middle-Babylon and Middle-Assyrian, and

the Neo-Babylonian period and Neo- Assyrian.

In my work, there are descriptions and analsys of all known archeological research, which were conducted on the area of ancient Mesopotamia, in places where fortifications systems were discovered. While creating descriptions of fortifications, I have tried to present the most comprehensive range of usefulness of these types of structures. I traced the process of creating fortifications, the processes of their improvement and the changes that have occurred in their structure, since the appearance of the first buildings with the character of fortifications in the 6th millennium B.C. At this time, we date fortifications in Tell Es Sawwan, located in the middle part of the Tigris river.

Fortified sites arose in the time of Samarra, around 5300 B.C. They took the form of a massive shaft surrounded by a rectangular settlement measuring 220x110 m. We estimate the appearance of fortified cities at between fifth millennium - and fourth millennium B.C. They were admittedly still single, but in third millennium B.C., the fortifications became the norm in centers of social life. We note the existence of more than 40 fortified cities in the areas of northern Mesopotamia. Southern Mesopotamia was developing in this direction at the beginning of third millennium B.C., as demonstrated by the example of the Khaburu Valley. The exception here is the wall surrounding the citadel of Tell Chuera, which dates from an earlier period - fourth millennium B.C.

If we look at analyse of individual technical solutions, the type material which was used in the Early Jazirah we can see that it is a period of defensive sollutions so called granary settlements (Tell Atij,) and fortification from the Kranzhugel tribute group.

In the era of around third millennium B.C. we have already

observed numerous cities with fortification systems created using the latest construction techniques and building materials of the era. The use of brick and stone testify to the economic power of individual centers, but also to the growth of defensive architecture.

Interpretations of the Mesopotamian inscriptions found on the walls of fortification systems are of key importance to us. Thanks to their understanding, we have obtained information about the dates of construction of those defensive walls, and thus bringing significant knowledge about entire systems and their structures. Attention should be paid to the comarchaeological site of these texts - they often start with the worship of the deity, then the introduction which always contains the royal name. We know that the introduction may have various elements, for example the royal genealogy, praiseworthy epithets, and sometimes the king's important deeds and achievements and his campaigns are mentioned. In the next part - which is crucial to our topic - we can find fragments detailing reports of the construction, usually referring to specific buildings. This type of record was intended primarily for subsequent rulers - so that they could rebuild the given building - while being an invaluable source for modern researchers.

Through analysis of the iconography of the Mesopotamian fortifications, images of fortifications are also found on seals. They usually capture the attack and defense scenes of a fortified city. The images are different - some present the walls only as an outline, others show details - which include even individual panels, from which the gates were made. The defensive walls are accompanied by images of people.

The people in question are usually defenders or invaders. We can also distinguish between them women and children - often as hostages. We are able to distinguish types of weapons, usually these are bows, missiles, chariots and siege engines.

Due to the general availability and thus low cost, mud was the basic building material. We find it in virtually every type of architecture in ancient Mesopotamia. Depending on the function and nature of the buildings, pure clay or clay mixtures with other materials such as straw were used. But it was also used as raw brick or as a material for creating finishing elements. The importance of this type of material cannot be understated due to its durability and the strength of constructions built from it, therefore, I will also address this topic in my work. I will analyze the brick itself and its variations according to appearance, shape and the production process. Treating this topic broadly, I intend to refer to the changes and evolution of this type of building material over various periods in the area of work.

In this dissertation, I also wish to address the issue of transport in ancient Mesopotamia. The main means of transportation here is by river due to the presence of large rivers - the Tigris and Euphrates. Their course covers three important countries in this part of the world - Turkey, Syria and the areas of current Iraq to the shores of the Persian Gulf - creating an ideal transport channel for goods and people.

It should be noted that river transport was a convenient, cheap and easy way of moving goods. It also became a means of communication. Probably its biggest role was in trade - for example - building materials transported from north to south Mesopotamia, where resources such as stones and wood didn't exist, or for the transportation of ready goods from the place of production to the destination. It is impossible to ignore the fact that various types of ship began to be built depending on their purpose, as discussed later in the dissertation.

After my considerations I would like to cover the problem holistically. Because the subject matter of my thesis is very large, it has forced me to produce detailed conclusions for each chapter through

interpretation and analysis, and at the end of my work I shall present a general conclusion about the whole thesis.

The difficulty of thoroughly analyzing the topic boils down to the problem of information scarcity. The fact that archeological strata is not available, that is why constructors did not undertake full reconstruction of fortification walls. They were found many times by accident and the research was carried out only on a small fragment of the uncovered wall, which currently makes it difficult to conduct a comprehensive analysis of the subject and address the issue from a fully informed perspective.

Keywords

Mesopotamia, Brick Fortifications, 2nd and 1st millennium B.C., Defensive wall, Shaft, Moat, escarpment, Iconography, brick, stone, archaeological sites, dating.

RESUMEN

En los milenios I y II a.C. existían numerosos centros fortificados en Mesopotamia. Éstos eran grandes, ocupando varias docenas de acres en forma de ciudades-estado independientes, centros urbanos de tamaño medio y asentamientos más pequeños y especializados. Normalmente estaban situados en importantes rutas de transporte, como los dos principales ríos de la región, el Tigris y el Éufrates, y sus numerosos afluentes. Las murallas defensivas se construyeron para demostrar la influencia de un determinado centro y su fuerza militar, y para protegerse contra las inundaciones o las invasiones enemigas.

La arquitectura defensiva de ladrillos en Mesopotamia se data desde finales de la Edad de Bronce hasta el final de la Primera Edad de Hierro no ha sido suficientemente estudiada en base a la información disponible de la investigación arqueológica. Los estudios realizados por los arqueólogos que trabajaron allí descubrieron los restos de fortificaciones y ocasionalmente, los científicos encontraron fortificaciones que datan del periodo del Bronce Medio, pero que no estudiaron cuidadosamente. Por eso no tenemos suficiente información sobre los deTelles de los sistemas de fortificaciones, especialmente los del primer milenio a.C., sobre todo las fortificaciones asirias y babilónicas. Sin embargo, en base a la información disponible he podido presentar una propuesta sobre el tema de las fortificaciones. Me gustaría mencionar, que no existe actualmente ninguna síntesis conocida dentro de las publicaciones sobre la arquitectura defensiva mesopotámica en ladrillo, por lo que me he basado en el seguimiento y análisis de los sistemas fortificados en cada una de las ciudades de Mesopotamia durante el período de tiempo mencionado.

El objetivo principal de mi tesis doctoral es analizar los sistemas de fortificaciones, su funcionalidad y utilidad durante los conflictos militares en todos los asentamientos fortificados de Mesopotamia desde el final de la temprana Edad del Bronce hasta el final de la temprana Edad del Hierro. Con un doble enfoque en el concepto de sistemas defensivos, y en los aspectos prácticos de la implementación de estos proyectos defensivos. Pretendo calcular la suma de materiales (ladrillos cocidos, ladrillos secos y piedra), los recursos de mano de obra y el tiempo necesario para construir este tipo de construcción. Como resultado, me he esforzado en crear una síntesis que contenga tanto la información como las descripciones precisas de todos los sistemas defensivos en Mesopotamia en un solo documento. No existe una publicación similar sobre los sistemas de defensa y fortificación de las ciudades de Mesopotamia desde el final de la temprana Edad del Bronce hasta el final de la temprana Edad del Hierro.

El análisis se basa en una hipótesis de trabajo que persigue la idea de que la arquitectura de fortificación está compuesta por un amplio abanico de elementos sociales y culturales, que han influido en aquellos que la han creado en la sociedad y que han sido extraídos del contexto histórico en el que aparecieron. Las defensas de línea recta son sencillas y útiles funcionalmente como género arquitectónico. Debemos notar que en los proyectos arquitectónicos algunos elementos fueron creados como un disuasivo psicológico. Sin embargo, la arquitectura militar también tiene propósitos funcionales. Esto significa que no sólo son el resultado de las necesidades militares, sino también de factores geográficos y ambientales locales y de la tecnología disponible. Factores como la variabilidad de las fortificaciones pueden explicarse por una interacción más compleja de factores relacionados con el carácter de los elementos de fijación dentro de un entorno creado por el hombre. Como tal, el entorno puede ser que los elementos de fijación tengan una amplia gama de funciones y significados, por ejemplo, en la

organización del espacio para fines de defensa y de acuerdo con los principios, necesidades, valores y deseos de sus constructores, así como en la organización del tiempo y los materiales de construcción.

Mi tesis doctoral se basa en nueve capítulos analíticos, que presentan toda la problemática de la arquitectura del ladrillo y los sistemas defensivos -desde la fabricación de materiales de construcción hasta la importación de materiales raros de otros lugares y al mismo tiempo, descripciones del aspecto arqueológico para hacer un análisis de todo el proceso de construcción de muros y elementos defensivos que refuerzan las fortificaciones dentro del sistema defensivo. En mi tratado quiero transmitir un punto planteado que no se ha tardado mucho tiempo. Al mismo tiempo, quiero presentar un esquema general de todas las ciudades fortificadas de Mesopotamia, basándome en la información disponible y en mi propia interpretación de cada una de las murallas mencionadas en este trabajo.

Otro tema es la datación de las fortificaciones descubiertas, el análisis deTellado de la estructura, que también contiene información sobre cómo construir sistemas de este tipo; qué tipo de material se utilizó, qué dimensiones de los ladrillos pueden encontrarse; si los elementos adicionales estaban reforzando la construcción; qué sistema de cimentación fue erigido. También me gustaría presentar mi interpretación basada en un análisis de todo el sistema de defensa, de manera que se esboce la arquitectura defensiva de cada ciudad fortificada durante el período en cuestión. El siguiente paso será analizar la estructura y las técnicas de construcción de la puerta o puertas situadas en las murallas defensivas, y el último punto es el cálculo de la cantidad de ladrillo y piedra, con el número de trabajadores empleados, para determinar cuánto tiempo se necesita para construir un metro de longitud.

Hay que señalar un aspecto más que determinó la forma en que se construyeron las fortificaciones. Eran, junto a la fuerza militar, un símbolo del poder económico del estado o la ciudad. El centro no podía asegurar su territorio con una masiva muralla. Por lo tanto, la construcción dependía también de considerables recursos económicos. La información la obtenemos de los registros de transporte de 370 ladrillos cocidos de los lugares donde se producían -esto se produjo fuera de la ciudad debido al uso de estiércol en el proceso de producción. El precio de 370 piezas es de aproximadamente 1 shigel, lo que corresponde a 8,5 gramos de plata.

Creo que es posible calcular aproximadamente la cantidad de material, el número de trabajadores y el tiempo en que se podría construir un fragmento del tamaño de un metro cúbico de muralla. Esta estimación se debe a que no existe una información arqueológica completa que proporcione las dimensiones exactas de los muros de fortificación (altura, anchura y longitud). Al mismo tiempo, sabemos que dentro de los edificios de la fortificación también había habitaciones sobre las que no tenemos información. Teniendo en cuenta estas importantes deficiencias en la información, adopté un metro cúbico para la conversión. Sabemos que los sistemas de fortificación incluían varios elementos; junto con las paredes había murallas, fosos y escarpas.

Además, había contrafuertes, muros de contención, fustes y muros de refuerzo. Como sabemos, los muros defensivos o fosos a menudo resultaron ser insuficientes. En ese momento, se incluyeron en el sistema soluciones adicionales para elevar los estándares de seguridad, la defensa efectiva y para facilitar el transporte y la comunicación. Éstas tomaron la forma de torres y puertas.

Las técnicas de construcción de los sistemas de defensa se diferenciaban entre sí en función del momento de su creación y del

lugar en que se encontraban o mejor dicho, del terreno de una región geográfica determinada. Observamos que los muros pueden tener cimientos de piedra, ladrillo cocido, o no tenerlos en absoluto -sólo se erigen en un terreno llano. Por ejemplo, en la ciudad de Assur, se utilizaron varios tipos de ladrillos para construir la muralla o en Nínive, un espacio lleno de arcilla y piedras se conservaron entre sus muros paralelos. En la construcción de Tell Rijim se utilizó la técnica del *pisé*, o tapial, que consiste en colocar finas placas de arcilla compactada.

La aparición de fortificaciones en el Medio Oriente, especialmente en Mesopotamia, no sólo cumplía las funciones militares sino que tenían otras funciones, a fin de proteger la ciudad de las inundaciones porque estos pueblos estaban ubicados en la parte baja de Mari, y también tenían la función de proteger una ciudad determinada de los animales salvajes, y también proteger la ciudad de los robos y controlar las ciudades y averiguar quién salía y quién entraba en la ciudad.

Desde el punto de vista de mi tesis, el tema principal es el carácter estratégico de estas defensas. El objetivo es aclarar las funciones de las ciudades fortificadas, analizar la fuerza de la resistencia y en qué medida fueron eficaces para protegerse del enemigo.

Ya sabemos por fuentes arqueológicas que se colocaron varios tipos de herramientas en las murallas defensivas. Se caracterizan por su diversidad, dependiendo de la ubicación en las murallas pero también de la ciudad que se investiga y en qué periodo de tiempo. A partir de la información de las descripciones, podemos determinar los tipos de herramientas, así como la anchura de las murallas -alrededor de 1,5 a 2 metros y una altura de 3 a 4 metros- a partir de la descripción del punto de referencia desde el que los arqueros disparaban sus flechas. Se utilizaron espadas y lanzas comunes en contacto directo.

El tema del equipamiento militar es bastante extenso, por lo que he decidido tratar estrictamente el tema de los instrumentos utilizados para la defensa. Trazaré sus tipos y usos a lo largo de los diferentes períodos de la cultura mesopotámica.

En la parte cronológica no me he ocupado del análisis de las fechas de creación de determinados yacimientos arqueológicos. La organización requiere el diseño de una tabla para cada sistema de defensa, por separado para cada posición. Al observar transversalmente el tema, observamos las diferencias en la datación del norte y el sur de las áreas mesopotámicas. Son particularmente notables entre los períodos antiguos en el Viejo Babilonia y el Viejo Asirio, el Medio Babilonia y el Medio Asirio, y el período Neo Babilónico y Neo Asirio.

En mi contribución, hay descripciones y análisis de toda la investigación arqueológica en el área de la antigua Mesopotamia. Al tiempo que hacía descripciones de las fortificaciones he intentado presentar la gama más completa de utilidad de este tipo de estructuras. He rastreado el proceso de creación de fortificaciones, los procesos de su mejora y los cambios que se han producido en su estructura, desde la aparición de los primeros edificios con carácter de fortificaciones en el VI milenio a.C. En esta época, fechamos las fortificaciones en Tell Es Sawwan, situada en la parte media del río Tigris.

Los sitios fortificados surgieron en la época de Samarra, alrededor del 5300 a.C. Tomaron la forma de un enorme eje rodeado por un asentamiento rectangular de 220x110 m. Estimamos la aparición de las ciudades fortificadas entre el V y el IV milenios a.C. Es cierto que todavía eran únicas, pero en el III milenio a.C. las fortificaciones se convirtieron en la norma en los centros de la vida social. Observamos la existencia de más de 40 ciudades fortificadas en las zonas del norte de Mesopotamia. El sur de Mesopotamia se estaba desarrollando en esta dirección a principios del tercer milenio a.C., como lo demuestra el

ejemplo del Valle de Khaburu. La excepción aquí es la muralla que rodea la ciudadela de Tell Chuera, que data de un período anterior, el IV milenio a. C.

Al profundizar en el análisis de las soluciones técnicas individuales, el material utilizado o incluso su producto, vemos que en el período de Jazirah temprano las soluciones defensivas denominados asentamientos granero (Tell Atij) y fortificaciones del grupo de Kranzhugel.

En la época de alrededor del tercer milenio a. C. ya se observan numerosas ciudades con sistemas de fortificación creados con las últimas técnicas de construcción y materiales de construcción de la época. El uso del ladrillo y de la piedra atestigua el poder económico de los centros individuales, pero también el crecimiento de la arquitectura defensiva.

Las interpretaciones de las inscripciones mesopotámicas que se encuentran en las murallas de los sistemas de fortificación son de gran importancia para nosotros. Gracias a su comprensión, hemos obtenido información sobre las fechas de construcción de esas murallas defensivas, aportando así un conocimiento significativo sobre sistemas completos y sus estructuras. Hay que prestar atención a la composición de estos textos, que a menudo comienzan con el culto a la deidad, luego la introducción que siempre contiene el nombre real. Sabemos que la Introducción puede tener varios elementos, por ejemplo, la genealogía real, epítetos elogiosos, y a veces se mencionan las hazañas y logros importantes del rey y sus campañas. En la siguiente parte -que es crucial para nuestro tema- podemos encontrar fragmentos que deTellan los informes de la construcción, generalmente referidos a edificios específicos. Este tipo de registro estaba destinado principalmente a los gobernantes posteriores -para que pudieran reconstruir el edificio en

cuestión-, a la vez que constituía una fuente inestimable para los investigadores modernos.

A través del análisis de la iconografía de las fortificaciones mesopotámicas, las imágenes de las fortificaciones también se encuentran en los sellos. Por lo general, captan las escenas de ataque y defensa de una ciudad fortificada. Las imágenes son diferentes -algunas presentan las murallas sólo como un bosquejo, otras muestran deTelles- que incluyen incluso paneles individuales, a partir de los cuales se hicieron las puertas. Las murallas defensivas van acompañadas de imágenes de personas.

Las personas en cuestión suelen ser defensores o invasores. También podemos distinguir entre ellos a mujeres y niños -a menudo como rehenes-. Podemos distinguir los tipos de armas, normalmente son arcos, proyectiles, carros y máquinas de asedio.

Debido a la disponibilidad general y por lo tanto a su bajo costo, el barro era el material de construcción básico. Lo encontramos en prácticamente todos los tipos de arquitectura de la antigua Mesopotamia. Según la función y la naturaleza de los edificios, se utilizaba arcilla pura o mezclas de arcilla con otros materiales como la paja. Pero también se utilizaba como ladrillo crudo o como material para crear elementos de acabado. La importancia de este tipo de material no puede ser subestimada debido a su durabilidad y a la resistencia de las construcciones realizadas con él, por lo tanto, también abordaré este tema en mi trabajo. Analizaré el propio ladrillo y sus variaciones según el aspecto, la forma y el proceso de producción. Tratando este tema de forma amplia, pretendo referirme a los cambios y evolución de este tipo de material de construcción en diversos períodos en el área de trabajo.

En esta tesis también deseo abordar el tema del transporte en la antigua Mesopotamia. El principal medio de transporte aquí es el fluvial

debido a la presencia de grandes ríos -el Tigris y el Éufrates-. Su curso cubre tres países importantes en esta parte del mundo -Turquía, Siria y las áreas del actual Irak hasta las costas del Golfo Pérsico- creando un canal de transporte ideal para bienes y personas.

Hay que señalar que el transporte fluvial era una forma cómoda, barata y fácil de transportar mercancías. También se convirtió en un medio de comunicación. Probablemente su papel más importante fue en el comercio -por ejemplo- de materiales de construcción transportados del norte al sur de Mesopotamia, donde no existían recursos como piedras y madera; o para el transporte de mercancías preparadas desde el lugar de producción hasta el destino. Es imposible ignorar el hecho de que se empezaron a construir varios tipos de barcos dependiendo de su propósito, como se discute más adelante en la tesis.

Después de mis consideraciones me gustaría abordar el problema de forma holística. Debido a que el tema de mi tesis es muy amplio, ello me ha obligado a proponer conclusiones deTelladas para cada capítulo a través de la interpretación y el análisis, y al final de mi trabajo presentaré unas conclusiones generales sobre toda la tesis.

La dificultad de analizar a fondo el tema se reduce al problema de la escasez de información. El hecho de que los estratos arqueológicos no estén accesibles y que pocos artesanos se dedicaron a la construcción de las murallas defensivas y de que las murallas fueran encontradas muchas veces por accidente hizo que la investigación se realizara sólo en un pequeño fragmento de la muralla descubierta, lo que actualmente dificulta el análisis exhaustivo del tema y la orientación de la cuestión desde una perspectiva plenamente documentada.

Palabras clave

Mesopotamia, fortificaciones en ladrillo, segundo y primer milenios a.C. Muralla defensiva, foso, escarpe, iconografía, ladrillo, piedra, sitios arqueológicos, datación

INTRODUCTION

INTRODUCTION

The earliest examples of military architecture from the area of Mesopotamia come from as early as the sixth millennium B.C. However, these are single cases. More numerous examples appear at the end of the 4th millennium B.C. and even larger quantities appear from the 3rd millennium B.C. until invasion of Alexander the Great, both in northern and southern Mesopotamia.

The formation of fortified centers and the evolution of their defenses were closely related to urban development of these areas and external threats. With the development of large cities and smaller, specialized settlements, people began to accumulate various goods and at the same time protect themselves against theft. Cities were getting rich in various ways, depending on their location.

Some centers were located in the fertile basins of large rivers, which provided plenty of agricultural produce. Others were located in mountainous or desert areas, where agricultural production was much more arduous, which generated the need to obtain products by other methods. This is probably why in the Chabur Basin developed strongly fortified small settlements specialized in storage and most probably the grain trade. The centers also grew in different ways. Those located on rivers, or trade routes, earned money by controlling the flow of various goods and trade.

The earliest fortifications not only defended themselves against enemy invasions. They were also designed to protect against the risk of floods that were frequent in river basins of large rivers. Massive

fortifications also had a purely psychological function. They marked the power of the people of the area as an imposing demonstration of their strength.

Large urban centers such as Mari, Uruk, Assur and Babylonia functioning as city-states very often competed with each other and waged numerous wars. The reasons were disputes over boundaries, access to agricultural areas and to canals and rivers, or trade routes, and the desire to get rich through the plunder and pillage of richer cities. Massive fortifications built on citadels could, in addition to ensuring security, separate buildings of a public or sacral character and the residence of the elite from the rest of the population settled in the lower town.

A further external threat existed in the form of invasions by nomads who repeatedly penetrated the area of Mesopotamia. At the end of the third millennium B.C., invasions of the Amorites, semi-nomads from northern Syria began to threaten the populations settled in the cities of southern Mesopotamia (Dalley 1994: 44). Moreover, in the second millennium B.C., the Elamites invaded southern Mesopotamia, as well as in the 1st millennium B.C. The Median people, with Babylon's support, destroyed all of Assyria. Many of the large-scale constructions of monumental fortifications originated from these periods, which were intended to strengthen the defense systems of cities and prevent them from looting.

The principal aim of my doctoral thesis is to analyze the fortifications systems, their functionality and their usefulness during military conflict in all the fortified settlements in Mesopotamia from the end of Early Bronze Age to the end of the Early Iron Age. With a focus on the concept of defensive systems as one part, and the practicality of implementing these kinds of defensive projects as the other part. I would like to try to Calculation of the amount (brick burnt, dried bricks,

and stone), the labor resources and the time necessary to build this kind of construction. From this approach, I would like to create one contribution containing descriptive information of all defensive systems in Mesopotamia in one elaboration. There is no similar publication about these defence fortification systems in all the Mesopotamians cities from the end of Early Bronze Age to the end of the Early Iron Age.

My work consists of nine analytical chapters that address the subject matter of defensive architecture systems. Starting with construction materials and progressing to the transportation of construction materials from further afield. Additionally, I will describe the various topographical archaeological sites, analyzing and tracing the entire construction process of defensive walls and the use of elements to strengthen fortifications connected to the defense architecture system. I will provide some contextual information that has not been taken into account, considered or analyzed for a long time. Meanwhile, I will outline a general overview of all fortified cities in Mesopotamia based on the available information and add my interpretation of the aforementioned walls in this PhD thesis.

In the first chapter, Methodology and Chronology, the methodology demonstrates how to Calculation of the building materials and the duration of the construction as well as the quantity of labor required. The chronology I did not occupy the archaeological list because I used this system in every fortified post at the point of dating. The chronology record dates the each defense system in the tee (I mean since exactly the fortification in each archaeological site). In the archaeological context there is a general description of the most important archaeological research in Mesopotamia (the description and the state of the excavations is in every post that covers my work).

In the second chapter, the historical context of brick fortifications, a division will be made between the history of southern and northern

Mesopotamia. This kind of contractual chapter of history is the result of a difference in the dating of historical periods between Old-Babylon and Old-Assyrian, Babylon on average, and Assyrian, and Babylon from Neo-Assyrian. Through my analytical description of the fortifications I intend to deal with the issue and answer the question of how the fortification system was used. From the oridemons of the fortifications, I will trace earlier constructions across the entirety of Mesopotamia, from their first appearance in the sixth millennium B.C., from what is known as the first fortification at Tell Es-Sawwan, located above the central Tigris. Fortification of the archaeological site arose during the Samarra culture around 5300 B.C. The massive shaft surrounded by a rectangular settlement with dimensions of 220 x 110 m. In the fifth and fourth millennium B.C. appear in Mesopotamia single elements of the basic system of fortified cities, however, in the third millennium numerous fortified cities appeared with fully constructed fortification systems. There are more than 40 cities - sites of the villages where, in northern Mesopotamia, the earliest fortifications appear at the beginning of the 3rd millennium B.C. in the Chabur valley. The only exception is the wall surrounding the Tell Chuera citadel, which was probably built earlier, at the end of the 4th millennium B.C.

For the period of Early Jazirah 1, fortifications of small defensive, "granary" settlements (Tell Atij) and fortifications of centers from the "Kranzhügel" group of stands (Assumptions on the plan of a circle with a double fortification line) as Mari, Tell Bderi, Terqa are dated.

In the third millennium B.C there are numerous fortified cities with what were the latest architectural techniques and their various sizes and shapes are built of brick and stone, which prove the economic strength of the state and the development of their military insTellations to protect their civilizations.

Analysis of Mesopotamian inscriptions on the building of

fortifications, has been one of the most important sources of information, where thanks to it we have obtained specific information with regards to the establishment of buildings and the construction of defensive walls. The inscriptions studied in nearly every case, clearly show the exact period and the components of the structures described. Elements contained in them usually do not appear together, but in different archaeological sites. Sometimes the written content is a message in praise of the gods, then a mandatory introduction, which always contains the royal name. Another distinguishable characteristic of these inscriptions is the king's genealogy, a series of epithets, and in some cases a concise formulation of the king's most important deeds and achievements. It discusses the historical events of the King's reign and his campaigns. The next construction report is in the queue, which is usually dedicated to the construction of a specific building. It is directed to future rulers to enable them to rebuild the building in the future, and to accompany it there are often inscriptions of the ritual method of blessing.

From analysis of the iconography of Mesopotamian fortifications, fortifications on seals usually appear in the context of scenes related to the attack and defense of a fortified city. The city walls are presented very differently, sometimes very schematically with only the outline marked, and at other times so precisely that even individual boards from which the gates were made can be seen. Different weapons are also shown. Soldiers usually have bows, but there are also missiles, chariots and siege machines.

In the third chapter 'The Appearance of Brick in Ancient Mesopotamia' I will outline how people progressed from living in caves to living in the desert and using many materials that were available in the natural environment. These materials, such as wood, stone and tree branches were used to build habitable dwellings, and because buildings

with these materials did not protect people from climatic agent s and attacks from wild animals, because people were not living within immediate access of one and other, which created spaces in the walls, which is why they used soft clay to strengthen their constructions. The ancient inhabitants of Mesopotamia needed about 3000 years until they arrived upon a form of living stabilized by building a village (Saeed 1988: 64-65). Brick is one of the oldest building materials. It was created by the inhabitants of ancient Mesopotamia and the brick was very well developed in Mesopotamia and parts of the region, and especially in regions where there was no stone available for the architecture of old cities.

In the fourth chapter, 'The River Transport of building materials', I will explore how transport has been a significant factor in the development of human civilizations across the ancient and modern world, and thanks to our study of transport and its development, we know that from the beginning, inhabitants of Mesopotamia were utilizing river transport as the cheapest and easiest method of transporting construction materials from northern to southern Mesopotamia as well as for transporting goods for trade.

Ships were used for different purposes, that's why we have evidence of every kind of trade travelling via these versatile ancient ships, built mainly from wood, and with their loading capacity variable according to their locality. The ancient population in Mesopotamia knew of three modes of river transport: the boat, Alklak Ship and Alqufa. Thanks to the course of the Tigris and Euphrates rivers which flow through the modern nations of Turkey, Syria and Iraq, until they reach the Persian Gulf, thus facilitating trade with other countries and bring construction materials to the south of Mesopotamia. In this chapter I will analyze and interpret many issues connected with the appearance, production and types of ships that were used in Mesopotamia.

Moreover, I will explain the importance of river transport to the lives of Inhabitants of Mesopotamia.

In the fifth chapter on 'Techniques of construction and types of fortifications', I will outline the different elements that combine to produce the fortification system. The most important of them being a defensive wall, a rampart, a moat and scarp. Furthermore, there were buttresses, retaining walls, bulwarks and reinforcing or protective walls.

The fortifications, walls, ramparts and moats were insufficient and inadequate on their own. That is why they were often combined with additional buildings that provided better security to the core, more effective defences and smooth communication through features such as gates and towers.

The techniques of building fortification systems that were used to build structures were very different. The walls had stone foundations, burnt bricks or none at all. Sometimes, as in the city of Assur, for example, several types of bricks were used in one wall construction, or as in Niniveh, the wall had two parallel faces, and the space between them was filled with clay and stones. The technique of *pise* was also used, in one archaeological site during the discussed period, which consisted of laying the construction of thin slabs of compacted clay, such as in Tell Rijim.

The appearance of fortifications in the Middle East, especially in Mesopotamia, did not only perform military functions but they had other functions, in order to protect the city from floods, because these cities were located in the bottom of river basins like Mari. The fortifications also had the function of protecting a given city from wild animals, from thefts and established a security system for the cities by determining who was leaving the city and who was entering it.

There were many types of military tool placed upon fortifications for protection. These tools varied depending on the place of application on the background of one defense system and differ from each other also fortified cities. Such factors have played an important role in determining the types of defensive tool, including the wall width which was commonly extended to between 1.5 and 2 metres, while the height of the wall was at least 3 to 4 metres. Tell enough to set up shooting points for the cities archers to fire at the enemy when under attack (Margueron 2011: 37). Swords and spears were placed in close contact between the enemy and the defender. The only trap to keep the enemy a nd at thesame time did not bring losses within the defenders. In addition to what I have stated there may well have been other military equipment that served in defence of these cities, but I have focussed solely on the most popular equipment used over many time periods in ancient Mesopotamia.

In the sixth, seventh and eighth chapters, I have completed all the presented fortified systems in eight important points presenting the whole fortification of the city, starting with the location and topography of the site, its dimensions and the history of archaeological excavations covering all archaeological excavations and at the same time mentioning exactly the research in which the fortifications were found and what method was used he was involved in the search for the walls and under whos management it was examined in the fortification system. The third point of my analysis applies to the remains of the discovered fortifications and where they were found. Another area I address is dating the remains of the discovered fortifications. Details of the structures derived from tracking and analyzing the fortifications includes information about the defense systems that were built. From what kind of material in was built?. What are the dimensions of the bricks? Are there separate elements that reinforce and insure the fortifications? What was the foundation? Additionally, I will offer my

interpretation, as a result of tracing, analyzing and interpreting the entire defense system, in a way that gives an outline to the defensive architecture of every fortified city in the period under consideration. Another point in the analysis are the gate or gates located in the defensive walls, and the last point is the calculation of the amount of brick and stone, the number of workers and how much time is needed to build one spatial meter.

In the last chapter on 'General information about the fortifications in Mesopotamia', there will be an explanation into how the strength of a military fortification system also represented economic forces, the richness of the city or state. As poorer cities struggled to build and protect their areas, I will compare them with the huge wall fortifications built by larger economic forces, as evidence of the prosperity needed to carry out such projects, and we have information from inscriptions written upon 370 burned bricks as to their transport from the places where they were produced (where the burnt brick was produced outside the city due to the use of feces for its firing) to the targeted sites, the construction cost was 1 shiegl which equated to 8.5 grams of silver in those times.

My hypothesis assumes that we can count the amount of bricks and stone - the number of workers - how much time is needed to build one meter of space is the result of the lack of much archaeological information about the accuracy of the dimensions of fortifications (height, width and length) and in many walls were built rooms about which we do not have any information about their dimensions, so if I count the amount of brick and stone - the number of workers - how much time is needed to build one wall, it would not be accurate and we will not get any reliable information, therefore I decided to Calculation of up to one spatial meter, of which we have definitely some information about the amount of materials needed, construction costs and

manpower and the time needed to build one meter of spatial wall.

At the end of my dissertation, I conclude with a final summary where I will address the entire subject matter. The large scope of my thesis has led me to make a detailed conclusion in each chapter, and at the end of my work I shall present a general conclusion that encapsulates the whole thesis.

I do not hide the difficulty of analyzing such a broad issue where we encounter many information deficiencies due to the fact that many archaeological layers have been inaccessible and archaeological researchers have not been interested in the search for defensive walls. Many fortified sites have been found by chance and research has been carried out from surveying small pieces of wall, thus making it impossible to present an in-depth analysis of this topic from a fully informed perspective.

At the end of my work, I would like to thank the Erasmus Mundus and the Marhaba European Union Program, who gave me funding to complete my doctoral thesis, and the most grateful thanks to the University of Almeria for the facilities I was granted access to during the 4 years that I spent there. Furthermore, I would like to thank Prof. José Luis López Castro for the patronage of my doctoral thesis.

CHAPTER 1

METHODOLOGY AND CHRONOLOGY

1. METHODOLOGY AND CHRONOLOGY

1. 1. METHODOLOGY

In this study, I present the defensive architecture system in Mesopotamia and follow its development through the second and first millennium B.C. No specific information is available about this region and it has limited opportunities for a thoroughly detailed analysis. Defensive architecture and military construction were not interesting subjects for researchers during archaeological research, most of the information was found by accident or by conducting surface and sondage research, but from these finds there is not much information.

The method that I have applied in my project is the accumulation of all available information about the fortifications in Mesopotamia; excavation reports resulting from conducting archaeological research in Mesopotamia, as well as books and articles by authors analyzing the general characteristics of architecture in the region. Classifying, describing and analyzing each archaeological site separately was necessary in order to be able to analyze the development of the defensive architecture at the first stage. A few archaeological sites failed to reach the architectural development issue due to the fact that there is not specific information about a given archaeological site or the destruction of cities by wars, for example Assyria destroyed Babylon in 689 B.C. and the city was not found until recently. In addition, the Babylonians with Medes destroyed the Assyrian States in 612 B.C, such as in Assur where they destroyed the whole defence system so that it

would not reemerge as a strong city, as well as the cities of Niniveh, Balawat, Trbis - we have a lot of these kinds of examples, unrecognized and undiscovered cities in Mesopotamia.

I created a chapter about fortifications as works of art. Obviously, this is a very wide topic where we have more than 100 artifacts from different periods of times as cylindrical seals or reliefs to represents one cities victory over anothers. Selected examples helped me to present a general outline of the defensive system's construction and the war tactics that were employed using the fortifications. This is a very important part of my work which I have grouped into the three most important ways of defending cities using the fortification of the city to protect cities and soldiers (Analysis of the Iconography of Mesopotamian fortifications).

From the sixth to the eighth chapters, I've included all the archaeological data from which I've drawn my descriptions. I analyzed materials and construction techniques and have presented my opinion of each archaeological site. Topography, location, dating, dimensions, and detailed descriptions of the fortification structure and location of the gate were important elements of discussion and inference of the result of each site.

There is inaccuracy regarding the dimensions and size of bricks; no available information on the dimensions of stone; no descriptions to which the level of the wall was built from stone and from where from bricks, no given height of walls, with inaccurate dimensions in length and width of fortifications. Thanks to the topography of archeological site we know that they were not built on flat areas. That's why I can conclude that the height, length and width of fortifications depend on the location of the excavation. The other point where we do not have the entirety of the information necessary for a thorough discussion of the defence system is the fact that we can find in historical sources

information about different kinds of rooms, which served in functional capacities as warehouses, administration rooms or prisons, but there is no information about the dimensions of these rooms, thus resulting in not being able to correctly count how many bricks were necessary to build the walls.

From the above information I can say that the calculation of the amount of brick, work force and duration of building the entire city fortifications will not be entirely accurate. However, I can Calculation of how much of each component would have been required to build one meter of spatial fortification, by using the dimensions of the brick in which the wall was built in each city. In some archaeological sites brick dimensions are not given, therefore I will Calculation of the dimensions of the brick from the period from which the archaeological site is dated, and thanks to information from written inscriptions, I can also Calculation of brick costs. In my opinion, we can Calculation of the amount of brick by using the dimensions of brick (length, width and height) for each wall and draw them and Calculation of according to the figure to one spatial meter: number of bricks to m^3 convert according to the dimensions of bricks in space m with two centim added to the height of each brick, which represents the clay connecting the bricks in the wall.

Thanks to the wedge inscription, we have found out that the time needed to dry a brick is one or two days depending on the season of the year (Rashid 1981: 45). The clay fermentation time is one day. Meanwhile, it is required that water is used to clean the burnt brick than that which used to prepare the dried brick (Rashid 1981: 45). Moreover, at the same time, we also know, thanks to the following inscription, that the pores of producing brick from the middle of March when the rainy season is now half way through. In October when the weather is changing, as well as the months in which the ancient

inhabitants of Mesopotamia begin to produce brick are called months of clay location in the templates (Rashid 1981: 36). The above shows that we can measure that the time needed for drying the brick is one day.

To Calculation of the strength of the work forces required to build one square meter I will assume the following:

Using three workers to build one meter spatial:

A+B+C

Where:

A = represents an employee who builds a wall.

B = represents the employee who brings the brick.

C = represents the employee who brings the clay to connect the brick.

And the time needed to build one brick is Calculation ofd according to the next assumption:

A + B + C

Where: According to my own experience, where I needed a lot of time to build one brick:

A = 2 minutes. Time needed to build one brick.

B = 1 minute. Time that needs a second employee to bring one brick to employee A.

C = 1 minute. Time that needs a third employee to bring clay to employee A to connect the brick.

The amount of brick in one cubic meter x time needed to build

one brick in minutes = the time needed to build one space meter.

Time needed to build one space meter ÷ 60 minutes = the number of hours that three workers need to build one space meter. To get real construction time of one cubic meter, we have to divide working time of tree people properly.

We also find out from the wedge inscriptions that the mudbrick was produced in the same place where they wanted to build, but the burnt brick was produced outside the town because they used the remains of animals to light the campfire to burn the brick, and the late brick was brought to the place where they wanted to build. And also, a wedge inscription was found that talked about the cost of burnt brick dated to 2 thousand B.C. where it was written that selling 370 burnt brick plus their transport from the place of production to the place that they want to build, also 1 Shigel of silver and 1 silver Shigel equals 8.4gram (Rashid 1981: 36).

1. 2. CHRONOLOGY

Names	Date	Location
Abu Hafur	2 Millennium	North Mesopotamia
Eshnunna, Tell Asmar	2 Millennium	North Mesopotamia
Larsa (Senkereh)	2 Millennium	South Mesopotamia
Mashkan Shapir (Abu Duwari)	2 Millennium	South Mesopotamia
Nagar Tell Brak	2 Millennium	North Mesopotamia
Dur-Kurigalzu	2 Millennium	North Mesopotamia
Harmal	2 Millennium	North Mesopotamia
Al-Rimah	MB-Old-Babylonian	North Mesopotamia
Al-Zawiyah	MB-Old-Babylonian	North Mesopotamia
Kish Tell Uhaimir	MB-Old-Babylonian	South Mesopotamia
Me-Turan (Al-Sib)	MB-Old-Babylonian	North Mesopotamia
Sippar (Abu Habba)	MB-Old-Babylonian	South Mesopotamia
Abu Fahd	MB- Old-Assyrian	North Mesopotamia
Assur (Qual'at Sarquat)	MB- Old-Assyrian	North Mesopotamia
Rijim	MB- Old-Assyrian period	North Mesopotamia
Sippar (Ed-Der)	LB- Middle-Babylonian	South Mesopotamia
Assur (Qual'at Sarquat)	LB- Middle-Assyrian	North Mesopotamia
Kar-Tukulti-Ninurta	LB- Middle-Assyrian	North Mesopotamia
SABI Abyad	LB- Middle-Assyrian	North Mesopotamia
Assur (Qual'at Sarquat)	IA- Neo-Assyrian	North Mesopotamia
Barsip/Kar-Salmanasar	IA- Neo-Assyrian	North Mesopotamia
Dur-Katlimmu	IA- Neo-Assyrian	North Mesopotamia
Dur-Sharrukin	IA- Neo-Assyrian	North Mesopotamia
Haradum	IA- Neo-Assyrian	North Mesopotamia
Hadatu	IA- Neo-Assyrian	North Mesopotamia
Jerah Wall	IA- Neo-Assyrian	North Mesopotamia
Kalhu	IA- Neo-Assyrian	North Mesopotamia
Kliah	IA- Neo-Assyrian	North Mesopotamia

Muhra Wall	IA- Neo-Assyrian	North Mesopotamia
Niniva	IA- Neo-Assyrian	North Mesopotamia
Nippur (Nuffar)	IA- Neo-Assyrian	South Mesopotamia
Telbis	IA- Neo-Assyrian	North Mesopotamia
Babilon	IA- Neo-Babylonian	South Mesopotamia
Ur (Tell al Muqayyar)	IA- Neo-Babylonian	South Mesopotamia

MB- Middle Bronze.

LB- Late Bronze.

IA- Iron Age.

We can use Mesopotamian chronology as a general definition which includes meanings, it represents the sequence of succession of important events and the years of rulers' reign and the formation of a historical dynasty. This table does not contain the chronology of archaeological sites — because many of them survived several historical periods, in the table I placed the time of the creation of defensive fortifications at given archaeological sites, according to dating archaeological researchers. The researchers of the discussed archaeological sites did not give a precise dating of these fortifications. According to their publication, those which did not have regular dating, others used more general dating. In this group there were archaeological sites that were dated to the second millennium B.C. like Abu Hafur, Eshnunna, Tell Asmar, Mashkan Shapir, Larsa (Senkereh) and Nagar Tell None, which will help us recognize that defensive fortifications for these archaeological sites do not have an exact date, and thus it is very possible that these general dates may not be accurate, and so they can really come from other - older or younger periods, but I suppose that most of them represent the Middle Bronze period, because we do not have information about many fortifications from this period, the reason is building new fortifications for remnants

of older assumptions as in the walls of the Neo-Assyrian build on foundations dated back to the Old-Assyrian period, what is the reason of the disappearance of many defence systems from the Middle Bronze period.

At the same time, in the table, I took into account the location of archaeological sites in the north or in the south of Mesopotamia, because there are two different dates depending on the location of the archaeological site and to which state they belong. These differences are observed in the following way:

Southern Mesopotamia – Babylonia

The Old-Babylonian period, 1894 - 1595 B.C.

The Middle-Babylonian period of 1500 - 1000 B.C.

The Neo-Babylonian period 1100/1000 - 539 B.C.

The legacy of kings III dynasty from Ur took over the ruler Isin - Ishbi-Erra (2017-1985 B.C.), starting the so-called the first dynasty from Isin (Mieroop 2004: 282). The rulers of this dynasty controlled, in addition to Ur, and among others Uruk and Eridu (Kowalski 2011: 274), which in that time were important religious centres. However, the reign of Isin rulers did not last too long and had a rather local character. The situation was similar with another centre in the south – Larsa (Śliwy 2005: 216), ruled by the Amorites and Elamites, and to the most importance this centre came under the rule of Rim-Sin I, a dangerous rival of the rising power of Babylon's rulers, to whom Larsa succumbed finally. In Babylon (until this moment was a relatively unimportant centre near Kish) in the 19th century B.C. - began the rule of Amoryth Sumu-Abum (Frayne 1990: 324), the founder of the so-called the first

dynasty of Babylon, which the most prominent representative was the famous Hammurabi. He brought the power of his country to the rank of a superpower in Mesopotamia. Initially, he extended his influence and conquests thanks to the support of Shamshi-Adad I of Assyria, and thanks to the alliance with the ruler Mari. After defeating Larsa and subordinating other centres to southern Mesopotamia, Hammurabi was able to build state by unifying small states from all of this area for the first time since the time of the rulers of Ur from the Third Dynasty. During his reign, Babylonia experienced a period of economic and cultural growth (Mieroop 2008: 107).

Art and literature developed from this period, the famous code of Hammurabi resulting from the codification output of previous centuries, especially the Third Dynasty of Ur, was also finally edited, in the form that reached us, the Gilgamesh epics. Hammurabi's successors were gradually losing his achievements. The revolts of the southern centres of Babylon began, and the Kassites, who ultimately contributed largely to the fall of the Babylonian dynasty, which had fallen directly under Impact of the Hittites in years 1600-1595 B.C. (Grayson 1980-83: 90). The last Babylonian ruler was Samsu-dita (Frayne 1990: 436). Similarly, as other nations in the previous and next centuries, the Kassite did not appear suddenly either. A few hundred years before their domination, they gradually came to southern Mesopotamia, including through settlement and service in mercenary troops. Taking advantage of the Hittites' invasion of Babylonia, the Kassites entered and established a dynasty that was ruled over the next several centuries, until about the first half of the 12th century B.C. The first Kassite ruler on the Babylonian throne was Agum II, and the list of rulers of this dynasty includes 36 kings. The casinos have completely adapted the Babylonian culture from previous centuries. An important innovation from the time of their reign is to refer in the royal title to the name of the land (Babylonia), and not like before to the city (Babylon).

Due to the fact that they had mastered only the southern part of Mesopotamia, without the northern part where Assyria prevailed, the differences between these regions were highlighted. The decline of the Kassite rule in Babylonia was already noted in the second half of the thirteenth century B.C., when the Assyrians invaded it and under the leadership of Tukulti-Ninurta I captured Babylon about 1230 B.C. (Grayson 1980-83: 86-135). Ultimately, however, the advantage in Babylonia lost in the twelfth century B.C. to the Elamites, who at this age invaded Babylon under the leadership of Shutruk-Nahhunta, who took and completely plundered Babylon (1174 B.C.), transporting many works of art to the capital of his country, Suzy, including the famous style with the Hammurabi codex, which archaeologists have discovered it after many centuries.

The advantage of the Elamites in Babylonia was transitory. After them, for about half a century (1156-1103 B.C), the Second Dynasty of Isin, with Nabuchodonosor I in the forefront dominated there, which in turn succumbed to the Assyrian ruler, Tiglath-Pileser I (1117-1077 B.C). Since then, in the southern Mesopotamia, persistent influence of Assyria has been marked, with periods of temporary weakening of their power, during which dominions are gained by local dynasties. This state lasted until the second half of the 7th century B.C., when the Neo-Babylonian state founded by the Semitic Chaldean's was established, existing for more than a century (652-539 B.C.) (Mieroop 2008: 279). The Chaldean state with the capital in Babylon founded by Nabopolasar, an Assyrian governor, is a power that goes beyond all of Mesopotamia and extends all the way to Egypt. The most eminent representatives of the rulers of this period were undoubtedly Nebuchadnosor II (605-562 B.C.), who led his empire to the heights of success, mainly through his expansionist power-making policy (Grayson 1980-83: 131). During his reign Babylon, who was rebuild by him, after Assyrian destruction from 689 B.C., reached the greatest

importance in its history and expanded on an unprecedented scale, and traces of monumental buildings from this period, we can admire today in Iraq, as well as in various museums of the world. The Chaldean state collapsed after invasion of the Medes and Persians, who, under Cyrus in October 539, B.C. they conquered Babylon (Kowalski 2011: 274), thereby beginning a new period in the history of Mesopotamia under the Persian dynasty of the Achaemenids.

Northern Mesopotamia – Assyria

The Old-Assyrian period: 1813- 1500 B.C.

The Middle-Assyrian period: 1400 - 1000 B.C.

The Neo-Assyrian period: 1000 - 612 B.C.

After the fall of the Third Dynasty of Ur, northern and central Mesopotamia was dominated mainly by rival Amorites, but there was also an Akkadian and Hurricane element. However, the Amorites controlled the most important settlement centres, such as Assur, Mari, Ekallatum or Terqa, and it was from these that the more prominent Mari rulers, Jahdun-Lim, Zimri-Lim and Assyria, Shamshi-Adad I emerged (Grayson 1980-83: 106). After the death of Jahdun-Lima, Mari got under the control of the Assyrian ruler, who placed there as the governor of his son, Jasmah-Adad (Mieroop 2008: 97-98). This state did not last long, because after the death of Shamshi-Adad, the relative of Jahdun-Lima - Zimri-Lim, again took power in Mari and led them to even greater importance and power than Jahdun-Lim. Mari owed its excellent development on the one hand to extensive agriculture with a well-functioning irrigation system, and on the other - on the trade route - the power of this centre was broken only by Hammurabi and in principle never reborn. The future of Assyria was different.

Assyria, after the fall of the Third Dynasty of Ur, marked its independent political existence under the rule of rulers established by Puzur-Assur I (Veenhof and Eidem 2008: 31), referring in a direct way to the Akkadian empire, which is visible, also in the names of rulers: Sargon (Sargon and Assyrian), Naram-Sin (Naram-Sin from Assyria) (Kowalski 2011: 274). From these times comes the first temple dedicated to Assur, and the city of Assur has been fortified. In sum, however, not much is known about this period of the history of northern Mesopotamia.

Much better, in terms of the source, is the situation when he began to rule in northern Mesopotamia, mentioned above in the context of the state of Mari, Amoryta Shamshi-Adad, from the line of Amorite rulers ruling Ekallatum. Several hundred cuneiform tablets found in Mari, which correspond to Shamshi-Adad and his sons, give us a very good insight into the political situation of this region. It is during this ruler's rule that northern Mesopotamia is the centre of the empire for the first time, which extended all the area to Babylon in the south. There are disputes or the reign of Shamshi-Adad and counted in the history of Assyria as so-called the Old-Assyrian period, being the first stage of Imperial size of Assyria, or treat it separately as the kingdom of Upper Mesopotamia. The controversy is due to from the fact that Shamshi-Adad was not an Assyrian but an Amorite, so he founded an Amorite state in northern Mesopotamia, including Assyria. After the death of Shamshi-Adad I, his kingdom lost its superpower archaeological site in Mesopotamia for the state of Hammurabi. When the power of the latter broke, in northern Mesopotamia, very strong influences of the Hurytas were noted, with the peak period of their dominance in the form of the Mitanic state in the sixteenth century B.C., which vaporized Assyria. The advantage of the Hurrians lasted until the fourteenth century B.C., then Assyria, under the rule of Assuruballit I (around 1313-1330 B.C.), became independent of foreign

influences and began in its history so-called (Grayson 1980-83: 127). The Middle-Assyrian period, which lasted until the middle of the 11th century B.C., ended with the invasion of the Arameans. This people began to flow into the territories of Mesopotamia at the end of the 12th century B.C., influencing essentially the history and culture of the entire Middle East, which was visible, among others, in the use of Aramaic as a spoken language in large areas.

For about two centuries, the Arameans dominated in northern Mesopotamia, but did not create any strong political organism. This factor inter *alia* contributed to the next renaissance of Assyria, which took place in the ninth century B.C., when such rulers as Assurasirpal II (884-858 B.C.), Salmanasar III (858-824 B.C.), reconstructed the Middleassian empire in northern Mesopotamia, and also reached for its southern parts, and they traveled all the way to the Mediterranean coast. After a short Urartian intermediary, Assyria was reborn and reorganized after the reign of such rulers as: Tiglath-Pileser III (about 745-727 B.C.), which hit Syria and Babylonia; Sargon II (around 721-705 B.C.), which subdued Urartu, Sennacherib (705-681 B.C.), Esarhaddon (681-669 B.C.) and Assurbanipal (669-631 B.C.) - the latter subordinated Palestine, Egypt and Elam. Assyria has become an empire with a huge territorial range conquering even Egypt. Cities in northern Mesopotamia developed excellently, especially those that were the capitals of Assyria: Dur-Sharrukin and Niniveh.

However, increasing internal difficulties finally led to the fall of the Assyrian state, and the final blow to the Babylonian Chaldean dynasty derived from the Assyrian governors. The war, as the end of the existence of the Assyrian Empire for its existence, almost forever destroyed the regions of northern Mesopotamia both economically and politically (Mieroop 2008: 277), which in principle have never become a state-building centre, nor have they played a major role in history this

region, remaining only a provincial part of this or that empire wielding huge areas extended from east to west.

1. 3. HISTORY OF THE RESEARCH

The oldest witness to cultures history, existed in the area of Mesopotamia is a Bible. The Book provides informations about power and cruelty of eastern neighbours - Israel and Judah. The works of the Hellenic authors provided several cultures and anecdotes about the cultures of Mesopotamia. For the Romans, Babylonia was the home of diviners and magicians, while the early descriptions of European travellers to Mesopotamia do not directly affect the nature of Mesopotamian art.

The oridemons of scientific research on Mesopotamia date back to the 18th century, when Niniveh was first described (Radner 2006-2008: 42-68). Late in modern times, Niniveh was uncovered by archaeological excavations. In 1820, the ancient city was seen by C. J. Rich, without carrying out excavations, but by making a "surface inspection". Niniveh became more widely known thanks to archaeological excavations conducted in the years 1847-1851 (Norwich 2009: 40) by Austen H. Layard. Rich architectural discoveries were found: 12 km of defensive walls, royal palaces of Sennacherib and Assurbanipal, numerous examples of Assyrian art and Assurbanipal library - a rich collection of cuneiform texts on clay tablets that allowed learning more about the history of all Mesopotamia (Mierzejewski 1981: 206). Inspired by G. Smith plates, he conducted excavations in the years 1873-1874, focusing on finding further parts of the texts he read, including the Gilgamesh epic. Further, missing fragments of the famous epic were found in the fragments of the epic.

In 1927-1932, he carried out excavations of R.C. Thompson, in Niniveh. who dug up the remains of the temples of Nabu and Ishtar. In 1954, the gate leading to Sennacherib's arsenal was dug up. In turn, in the years 1965-1984, Iraqis carried out extensive excavation and

reconstruction works, recreating, among others, part of the north-western wall and the gates there (at that time, there were also signs of intense fighting from 612 B.C). Currently, excavation and reconstruction works are still underway, but they are significantly hindered by the political situation in the region.

The first known monument of ancient Mesopotamia appeared in Europe in 1786. It was a *kudurru* (Jaczynowska 2006: 220), the destination of which no one was able to determine at the time (the so-called Michaux stone). From the 19th century, excavations began in Mesopotamia. Archaeologists began almost simultaneously the French and English. Subsequently, Dur-Sharrukin, Niniveh, and Kalhu were discovered, and the monuments of Assyrian and Babylonian art came to European museums. The first archaeological research in Mesopotamia was carried out at the beginning of the 19th century by a representative of the English East India Company in Baghdad. In the 1840, French consul Paul Emil Botta arrived in Mosul and began researching in Chorsabad, where he found the first cuneiform tablets. The Assyrian reliefs discovered by Botta were sent to France. Convinced that he had already excavated everything in this place as much as possible, he finished the work, not realizing that he had only uncovered a fragment of the giant royal palace. Almost immediately after the French, the work was undertaken by the British, making further discoveries, the effects of which fed the British museum. In the years 1852-1854, the works in Dur-Sharrukin were directed by Victor Place, who discovered the further part of the palace, established the course of the defence walls and located seven gates of the city. The monuments taken from the excavations were seized in 1855, as a result of which most of them were lost because they were sunk together with the documentation. The next major excavation works in the capital of Sargon were carried out in 1928-1935 by the Oriental Institute in Chicago. Several palaces and a large temple of the god Nabu were discovered, as well as a citadel-

arsenal in the south-western part of the city. The temple of the god Sibitti was discovered accidenTelly in 1957 during the construction of the road. Iraqi archaeologists proceeded to its excavation and reconstruction.

In 1845, the research in Nimrud (Kalhu) began with Austen Henry Layard, from where the finds go to London. In the 1850s, Victor Place ran research in Chorsabad. Archaeological works in Nimrud and Niniveh are continued by Layard's assistant, Hormuzd Rassam. In 1877, Rassam receives permission to unearth all posts from the Persian Gulf to the Anatolian Upland. The result of this research was the discovery of the palace in Niniveh and Gate of Balawat made on the orders of Salmanasar III. An important discovery was made by Henry Rawlinson, who in Behistun copied the trilingual, old- Persian, Babylonian and Elamic, inscriptions of Dariush I. Research by Georg Grotefend, Rowlinson, Jules Oppert and Edward Hincks enabled the reading of cuneiform writing. Archaeological research entered a new era and was based on more scientific methods. German expeditions were dug in Tell Halaf and Uruk, American in Nippur, British in Niniveh. For twenty years English archaeologist Leonard Woolley investigated the royal burial ground and Ur, the oldest city in the world. André Parrot discovered the city of Mari. In the years 1946 - 1949, it was studied by Iraqi scholars, including Faud Safara, Eridu and Hatra. The German expedition from 1954 led under H. J. Lanzen and then J. Schmidt, further excavations at Uruk. In the seventies, many sites were investigated, which were threatened by annihilation as a result of the construction there on the Euphrates and Tigris. From 1974 to the wars in Iraq, excavation in Nimrud was conducted by a Polish expedition under the direction of Janusz Meuszyński. The Gulf war in the bay interrupted the activity of archaeologists in Iraq.

Archaeological work, carried out on a large scale, coincided with the reading of the cuneiform script, which facilitated the identification of

the inhabited centres of ancient Mesopotamia. Excavations in the second half of the nineteenth century in southern Mesopotamia have resulted in the discovery of a previously unknown Sumerian-Akkadian culture. At the turn of the 19th and 20th centuries, German archaeologists introduced archaeological research into the method in describing finds, which largely limited the current plundering nature of excavations. They also disseminated the stratigraphic method, helpful when establishing the chronology. In the interwar period, European expeditions were joined by Americans who explored the area over the upper Tigris.

After the Second World War, the attitude towards research on the culture of Mesopotamia was changed. Before that, the search for the roots of biblical stories had a big influence on its, which led some scholars to believe that everything that was described in the Bible cames from Mesopotamia. The discovery and reading of the Gilgamesh Epic contributed to the consolidation of similar views. At present, the culture of Mesopotamia is examined for itself, and its influence on neighbouring cultures is not denied (Gawlikowska 1975: 10-19). In fact, most archaeological research in the eighteenth and first half of the nineteenth century was not conducted by archaeologists or experienced people, which caused the destruction of many layers of history and at the same time unlicensed monuments from Mesopotamia to Europe and other parts of the world.

In each of the considered archaeological sites in my work there is a point titled: “History of researches” and concerns the exact state of archaeological research and the history of excavations of a given archaeological site.

Examination of sites in southern Mesopotamia, where fortifications dating to the second and first millennium B.C. were discovered they started very early. On the wave of fascination with the

Orient, the first surface prospecting and excavation trials took place as early as in the 19th century. Pioneering researchers took the largest archaeological sites of the region: Nippur, Sippar, Uruk and Ur. Virtually all sites from this area were examined by foreign missions American, British, French and German. In most of the sites, Iraqi archaeologists carried out archaeological excavations as contouring work for foreign missions, as well as several sites where excavations were carried out by native Iraqi archaeologists, Tell Dur Kurigalzu and Tell es-Sawwan.

However, the most important institution that has carried out research projects in many places in this region in the 19th century is the Oriental Institute of the University of Chicago. It is also worth mentioning that all annual reports and most of the publications from the researched posts are currently available on the website of this institution.

Archaeologists were interested in the fortification remains in northern Mesopotamia a little later. However, there are many more archaeological sites here than in the south, which had fortifications from the second and first millennium B.C. moreover most of them have been archaeologically tested. A lot of them were discovered during several large-scale projects related to the construction of artificial water reservoirs. As a result, vast areas have been under water. However, before this happened, intensive research was carried out, in which excavation missions from around the world participated. These were the Eski Mosul Dam Salvage Project in Iraq and the Hassake Dam Salvage Project in Syria, where German, British, American, French, Italian, Polish, Russian, Austrian, Japanese and Canadian missions were working.

CHAPTER 2

THE HISTORICAL CONTEXT OF BRICK FORTIFICATIONS

2. THE HISTORICAL CONTEXT OF BRICK FORTIFICATIONS

2. 1. HISTORICAL CONTEXT IN SOUTH MESOPOTAMIA

In the discussed period, in the area of southern Mesopotamia after the Elamite invasion and the fall of Ur there was another period, called Isin-Lars period, which was founded by Ishbi-Erra around 2017 B.C. (Mieroop 2008: 87). This period was characterized by the emergence of large city-states, like these Hellenistic and Intensive expansion of their influence on ever-wider areas. The reason for such expansion was the enlargement of the population in Southern Mesopotamia, and thus the need for new land for cultivation.

Moreover, we can observe appearance a new dynasty in Larsa which is called the Kudur- Mabuka dynasty called like this from the leader of the nomadic Emutbal tribe who occupied the Tigris area and the Zagros Mountains, it was supposed to happen around 1834 B.C. The ruler placed two of his sons on the throne: Warad-Sina (1834-1822 B.C) and Rim-Sina I (1822-1763 B.C), they were during his lifetime Koregents (Stępień 2000: 22). Under the rule of both kings, the kingdom develops intensively, the echoes of changes perceptible over the next centuries can be found, *inter alia*, in the remains of the newly erected defensive wall in Ur, the dug communication channel from Lagash to the sea, others modernized and excavate others. A little while later we note apperance a dynasty from Babylon, which wielding power in 1894-1595 B.C. (Grayson 1980-83: 90) named in the chronology of the Old-Babylonian dynasty or the dynasty from the Country of the Seaside. The kings of this dynasty probably never ruled over Babylon, but only over a

small territory located in the south of Sumer, on the Persian Gulf. This procedure ultimately led to wars for land between individual city-states. As a result of wars, there was also the phenomenon of conquering by one centre of a larger territory as Rim-Sin from Lars, defeats the king Damiq-ilishu, conquering Isin in 1793 B.C, in final to unite the city-states of lower Mesopotamia and Hammurabi from Babylon conquers southern Mesopotamia in 1763. B.C. making Larsa dependent on his kingdom and two years later he conquered the Mari city (Mieroop 2008: 107). The process of centralizing power and creating alliances between several centres for the purpose of common defence. This period ended with a catastrophe where there was a great collapse and destruction of the city of Babylon by the king's process or processes of centralization of power and the creation of alliances between several centres for the purpose of common defence. This period ended with a catastrophe where there was a great collapse and destruction of the city of Babylon by the king of Hittites in 1595 B.C. (Smogorzewska 2009: 43). In the meantime, the city also succumbed to Elam and the Assyrians Hittites led by Mursilisa and set off down the Euphrates valley to reach Babylon and put an end to the ruling dynasty. The vacuum which originated in Babylonia after invaders withdrew, enabled the Kassites to master the country, which about 1595 B.C. they became the new rulers of Babylon (Mieroop 2008: 177-179). The long period of their reign in these areas bedemons with the reign of King Agum II They quickly assimilated the local population by adopting the language and Sumerian-Akkadian culture of the Babylonians, although they retained certain elements separate from the names of rulers and deities, and a dynasty that was a separate caste. The period of the Kassite dynasty, called the Middle-Babylonian period, lasted almost four hundred years 1530-1170 B.C. This time is a period of stabilization in this region. The division of Mesopotamia into the northern part, Assyria and the southern part - Babylonia (called then Karduniash) is also connected with the power of the Kassites. However, they failed to take over the rule of the northern

part of the area, where the Assyrian state began to grow and grow, which would be significant in the kingdom of the Kassites. The Kassites were weakened in battles with the Assyrians in 1225 B.C, and then finally defeated by Invasion of King Shutruk-Nahhunte from Elam on Babylon, and the end of the Kassite dynasty.

After the Elamite attack on Babylon, a new period was created called the Second Dynasty of Isin (Leick 2010: 153-154), one of the royal Mesopotamian dynasties, rulers of who ruled Babylon around 1157-1027 B.C. where the new dynasty was founded by Marduk-kabit-ahheshu in the city of Isin. 11 rulers belonged to this dynasty. The most distinguished representative of the dynasty was Nabuchodonosor I (about 1126-1105 B.C), who defeated Elam and recovered statues transported from Babylon by the Elamites. Another prominent king was Marduk-nadin-ahhe (around 1100-1083 B.C), contemporary to the Assyrian king Tiglath-Pileser I, although the end of his rule there were no rooms caused by invasions of the Amorite tribes. The latter remained the main reason for the state's instability until its fall in 1027 B.C. Around the twelfth century B.C. Babylonia became the target of the migration of two Semitic peoples, the Syrians and the Chaldean's. It should also be mentioned the times of the monarchy of Nabuchodonosor I from the Second Dynasty of Isin. His time has restored the cities former power, but after his death, the times of the so-called dark ages and the poor also come to written sources.

After the end of the Second Dynasty with Isin, the beginning of the Neo- Babilonian period began (1100 / 1000-539 B.C). In the 9th century B.C. Babylonia fell into dependence on Assyria, what rulers repeatedly looted this rich land. In 626 B.C. appointed by Sennacherib himself, after the recovery of Babylon, later son of Sennacherib - Assur-nadin-shumi the Babylonian official assumed power over Babylon and a Neo-Babylonian state was formed ruled by the Chaldean king Nabopolassar. Moreover before 616 B.C. united under his rule the

entire region, extending the Neo-Babylonian dynasty (Mieroop 2008: 280), played an important role along with the Medes in the destruction of the Assyrian kingdom in 614 and 612 B.C. The peak of Babylon's development falls on the time of King Nabuchodonosor II. This ruler defeats the Egyptian army that protected the fortress of Karkemish, located on the Euphrates in Syria, and thus gains power over Syria and Phoenicia. All territories belonging to Assyria were included in Babylonia, namely: Mesopotamia, Syria, Palestine and part of Anatolia. Nabuchodonosor also undertook numerous expeditions for the conquest of Egyptian territories, which, however, never succeeded because of the resistance of Phoenician cities and states in the Mediterranean basin and the state of Judah. After two uprisings in Judah, after 16 months of siege, the Babylonian king conquers Jerusalem, Babylon also developed very well during this period until the city attacked by the Persian king Cyrus II in 539 B.C. (Imhoff 2001: 149) and it became a province of Persia for 200 years until Alexander the Great attacked the Middle East. After the death of King Darius, the city of Babylon rebelled, but the successor of Darius Xerxes rebuffed the city from the hands of the rebels, robbed them and imposed the highest tribute in the entire empire; he also disconnected Syria from Babylonia and joined Assyria, which meant that Babylonia ceased to be independent, and changed its name.

(Pl. 1) Map of Mesopotamia in II and I millennium B.C. (Oriental Institute, University of Chicago)

2. 2. Historical context in North Mesopotamia

The history of northern Mesopotamia is very often discussed in the context of Influences from the south, because it was there that very rapidly developed urban centres that influenced the north. Once these influences were stronger, others weaker.

At the beginning of 2000 B.C. the Amorites, who took control of the majority of the city-states of the time, Mari, Assur, Ekallatum or Terqa, invaded Mesopotamia, setting up their dynasties in them. The representative of one of them, Shamshi-Adad I of Terqi, ruled in the years 1813-1781 B.C. (Glassner 2004: 138-39), he founded the first Assyrian state, which for a short time was the greatest power in Mesopotamia starting the new period is called the period of the Old Assyrian- being the first stage of Assyrian imperialism. Shamshi-Adad based economic success on trade. These are times when the state took on importance and power, extending to Babylon in the south. At that time Assyria even had its commercial colony in Kanesh (Mieroop 2008: 97-98). After the death of Shamshi-Adad, Zimri-Lim takes power again in Mari, which quickly and rapidly developed, and the power of this centre was broken his country was conquered by Hammurabi. In the 17th century B.C. the Assyrian lands were conquered by tribes of Hurrians from the north, who about 1500 B.C. they founded the Mitanni state in Upper Mesopotamia.

At the beginning of the Middle-Asyrian period, Mitanni was conquered by the Hittites from eastern Anatolia and the Assyrians in the 14th century B.C., who regained their independence at the time. Assyria was rebuilt by Assur-uballita I and has become independent of foreign influence, in 1363-1328 B.C., (Mieroop 2008: 156-157). Who took part of the territory of the Mitanni state, and in Babylon settled his ally Kurigali II. The Battle of Kadesh, which weakened both Egypt and

the Hittites, created for Assyria a convenient situation for territorial development. Adad-nirari I conquered Hanigalbat, won Nuzi and Arrapha. Conquests were also led by his son, Salmanasar I, who founded the city of Kalhu. Assyria reached the peak of power in 1243-1207 B.C. during the reign of Tukulti-Ninurta I, who completely subdued Babylon after defeating his ruler, Kashtilash IV, as well as the western Near-East (Mieroop 2008: 157-158). The death of Tukulti-Ninurta through invasion of the Peoples of the Sea led to the fall of the power of Assyria, which for some time had to acknowledge the supremacy of Babylonia. Assyria rebuild its power in 1116-1077 B.C. during the reign of Tiglath-Pileser I. This ruler in his war travels reached Phoenicia, forcing Byblos, Arwad and Sydon to pay for the tribute. He also fought with the Phrygian tribes of Mushka, as well as with the Arameans, who began pushing against the surrounding lands of the Syrian Desert. After two centuries of rule in these lands, they did not create a strong political organism, but they have been coming to this area since the 12th century and have had a significant influence on the culture of the Middle East In 1107 B.C. he fought a victorious war against Babylon, which despite the failures managed to oppose him. The Assyrians during the campaign robbed Babylon, Sippar, Dur-Kurigalzu, the Babylonians even temporarily managed to control the Ekallatum near Assur (Mieroop 2008: 187). The result of their invasions led to the weakening of Assyria militarily, but also blocked trade with Syria and cut off the state from strategic sources of raw materials, in the 11th B.C. there was fall of the Middle Saxon state (Tschirschnitz 1994: 63-66).

After the fall of the Middle Saxon states, a new period of the Neo-Assyrian period began at the beginning of the first thousand B.C. represented in the Neo-Assyrian state. Which quickly increased its power began in 883-year B.C. during the reign of Assuras-son II and his son Salmanasar III who became the king of Babylon. After a certain

period of stagnation, Tiglath-Pileser III joined the more energetic conquest of 744-727 B.C. The conquests of him and his successors led to the creation of the largest empire ever seen. The Assyrians have mastered all of Mesopotamia, Levant 745-720 B.C., Palestine, Cyprus, and Egypt around 671-year B.C. However, they lost after 15 years (Francis 2000: 24-27). In the conquered areas provinces managed by officials appointed by the king of Assyria were created and obliged to pay annual taxes. After a short Urartian inter period, Assyria was reborn and reorganized after the reign of such rulers as: Tiglath-Pileser III (about 745-727 B.C), which hit Syria and Babylonia; Sargon II (around 721-705 B.C), which subdued Urartu (Saggs 1989: 108), Sennacherib (705-681 B.C), Esarhaddon (681-669 B.C), and Assurbanipal (669-631 B.C) - the latter subordinated Palestine, Egypt and Elam (Saggs 1989: 119 and Roux 1992: 194). Assyria has become an empire with a huge territorial range (conquering even Egypt).

The peak of Assyria reached the reign of king Sargon II 721-705 B.C. and his dynastic successors called Sargonids. At that time, the network of irrigation channels was greatly expanded, and numerous gardens and orchards were organized. Their empire in the south of Mesopotamia, the Assyrians ruled very severely, deporting and murdering the rebels. Many cities were destroyed and what was happened among others, Babylon was destroyed in 689 B.C. King Sennacherib (Tschirschnitz 1994: 30 and Mieroop 2008: 273). The Assyrians were also able to build the hands of slaves and at the expense of the conquered peoples, wonderful cities, huge palaces with magnificent bas-reliefs and large libraries, which had a great influence on the knowledge of their times. A few dozen years after reaching the maximum size, major troubles began for Assyria, most probably caused by inability to control such a huge area and exhaustion of the state with continuous wars (Mieroop 2008: 271). In 652 B.C. the brother of the then king of Assyria, Assurbanipal, allied with the enemies of Assyria,

the state of Elam, and mastered Babylon, of which he was king, wanting to seize power in the whole empire. The revolt ended in failure, and Babylon was again destroyed. Still, around 646 B.C. Assyria destroyed the state of Elam, but when the king of Assurbanipal died in 627year B.C. ultimately, the Assyrian state is laid down by the Chaldean Babylonian dynasty over 200 years, the empire began to fall apart. Three years after the death of Assurbanipal, the Babylonians regained their freedom from Assyria and a Neo-Babylonian state was formed ruled by the Chaldean king Nabopolassar (Mieroop 2008: 272).

The Babylonians with the Medes won the final, when in 612 B.C. they occupied the Assyrian capital Niniveh (Mieroop 2008: 277). When the destruction of Niniveh became a symbol of the fall of Assyria. The Medes and Babylonians demolished all the larger Assyrian cities and murdered their population. The destruction was so big that for the next few centuries the lands were sparsely populated certainly, the devastating influence in the northern part of Mesopotamia had numerous Persian-Roman and Persian-Byzantine wars. On the other hand, in the cities of southern Mesopotamia (Uruk, Kish), archaeological excavations show numerous traces of the residence of the Sassanid rulers. Persian rule in Mesopotamia was finally liquidated by the Arabs in the mid-seventh century 651. Authorities in the Middle East were taken over by the Neo-Babylonian.

2.3. THE ORIDEMONS OF FORTIFICATIONS

The first fortifications appear simultaneously with the development of cities. When the population began to settle in urban centres, it also began to accumulate goods and at the same time there was a need to protect them. Some elements of the earliest fortifications, as in the case of Mari, also had another function, protection against floods.

In Mesopotamia, the earliest example of military architecture is Tell es-Sawwan among other things, Professor Behnam Abu Alsoof claims in his article, located above the central Tigris. Fortification the archaeological site arose during the Samarra culture around 5,300 B.C. The massive shaft surrounded a rectangular settlement with dimensions of 220 x 110 m. It wall was reinforcement from inside and outside by buttresses. The fortifications also had two gates, one of which was protected by an additional L-shaped shaft (Mazar 1995: 1523).

In the 4th millennium B.C. (Uruk period), in the northern Syria, the city of Habuba al-Kabira was founded and surrounded by fortifications on the upper Euphrates. The estate occupied 18 ha and was surrounded by a brick wall with a width of 3.40 m. The wall also had two identical gates flanked by square towers. To the outer wall of smaller adjoined almost 50 projecting square towers at equal intervals every 14 m. (Mazar 1995: 1523).

From among the stands, the earliest fortifications were possessed by the ancient Uruk (contemporary Warka). The first defensive wall of the city is dated to the period of Uruk second half of the 4th millennium B.C, but virtually nothing has been preserved (Boehmer 1997: 294–298). The most significant fortifications are the so-called 'Wall of

Gilgamesh' from the period of Early Dynastic Period I. It was a monumental wall made of mudbrick, which had very many half-round bastions and was almost 10 km long.

In northern Mesopotamia, the earliest fortifications appear at the beginning of 3rd millennium B.C. (Early Jazirah 1= Early Dynastic Period I / II) in the Chaburu valley, many sites were discovered during the rescue work associated with the construction of the dam on Khabra, south of Al-Hasak. The only exception is the wall surrounding the Tell Chuera citadel, probably build earlier, as already in the Early Jazirah 0-1 period, *ie* at the end of the 4th millennium B.C. (Meyer 2012: 123).

In the Early Modern period, there are numerous (more than 33) fortified cities to the north as well as to the south of Mesopotamia large and small city stands.

For the period of Early Jazirah 1, are dated fortifications of small defensive, "Granary" (Tell Atij) fortifications and fortifications of centres from the group of "Kranzhügel": assumoptions on the wheel plan with a double line of fortifications sites like Mari (Tell Hariri), Tell Bderi, Urkesh Tell Mozan, Chuera, Terqa (Tell Ashara), Tell Beydar). Most of these sites have found pottery with painted decoration (Tell Atij) or rite (Tell Knedij) characteristic of Niniveh culture 5. In the Chaburu valley there are also, fortified small archaeological sites, which probably fulfilled specialized functions, but unfortunately there is no confirmation. One of them is Tell Khazna. A single wall surrounded a complex of buildings probably of a religious and administrative nature. The earliest phase of the wall (wall 13) was built on the barren soil.

It is impossible to determine its dimensions, because it was destroyed by the next phase (wall 17). This phase is more like a shaft, because it was built in the technique of *pisé*, or thin layers of clay. "Wall 17" has been preserved up to a height of 3.25 m, was 4.3 m wide and

was plastered on both sides (Munchaev 1993: 163). This phase is dated by researchers for the early-dynasty period (first half of the 3rd millennium B.C). A number of rectangular rooms adjoin it on the north side.

In the north of Mesopotamia, parts of today's north-east Syria are located directly under the Euphrates archaeological site of Tell Ashar city of Terqa. The area of the preserved part is 10 ha, where the half of the site has been blurred by the Euphrates rivers. The fortifications functioned in the years 3000 - 1600 B.C (Buccellati 1997: 188). Area B - the southern part of the site, discovered remains of the fortifications and the area of MP 11 and 13+, D, SG 17 - the western part of the site, discovered remains of the fortifications.

At 15 km south of Al-Hasaka on the eastern bank of the lower reaches of Chaburu, there is Tell Bderi from the group of "Kranzhügel" stands. The actual Tell Bderi settlement was established in the period of Early Dynastic Period I / II (Early Jazirah 1) and functioned until the Akkadian period, around 2200 B.C., when a settlement hiatus took place. The stand was re-settled in the late Bronze period and operated up to 1200-1100 B.C. The defensive wall was created simultaneously with the foundation of the settlement in the Early Jazirah 2 or Early Jazirah 1 - level 27. In older publications the wall and gate are dated on layer 25 (Early Jazirah 2), but in the latest study Pfälzner moves them to layer 27 (Early Jazirah 1?) (Pfälzner 2012: 133)) and functioned continuously to Early Jazirah 3a. With dimensions of 310 x 245 m and rises to 12 m above ground level. The stand occupied 6.8 ha. Southern excavation - on the section with a length of 17 m, the remains of the defensive wall with the escarpment and the gate with orthostats were discovered.

At 19 km south of Al-Hassaka, the central Chaburu basin, we have so-called "Granary" stands, Tell Atij, the stand consists of two

tells: The main tell is oval, 150 x 40 m, with a narrow peak of 6-8 x 40 m. It rises 10 m above ground level and has steep slopes. The second tell, located 30 m east of the first, rises to a height of 2 m and has dimensions of 200 x 40 m. The stand was partially blurred by the Chabur river. Trench E5, located at the north end of the main tells a stratigraphic survey; discovered the remains of a 5 m high mudbrick wall. This wall was also discovered in a trench on the eastern and southern slopes. Establishment of fortifications dates from 3000-2850 / 2750 B.C (Early Jazirah 1). By researchers, it was dated on the Early Jazirah 2 period, but recent analyses shift the date to Early Jazirah 1 (Pfälnzer 2012, 132).

At 35 km north of Al-Hassaka, the Chaburu Valley is the archaeological site of Tell Beydar of the ancient city of Nabada. The stand occupied 25 ha. The 'Kranzhügel' stand consisted of the upper town (7 ha) and the lower town. In the upper town there was a small citadel, with a diameter of 60 m and height 7.5 m above the upper city and 27.5 m above the plain. The post is dated to the 3rd millennium B.C. The main settlement period is in the early dynasty period or Early Jazirah I-III (2800-2350 B.C), again settled in the Hellenistic period. The use of the fortifications is about 2850/2750, about 2,500 B.C. (Meyer 2012: 125 and Pfälzner 2012: 133-138). The research was located in several places, but the remains of the fortifications were found: In excavations H and K - located in the northern part of the external fortifications. In excavations G and I - stratigraphic surveys located on the northern slope of the upper city, where he discovered his fortifications and the north-east gate.

On the eastern shore of the Tigris the city of Mosul Kuyunjik, Tell (Ninivah). The city of Niniveh was surrounded by an almost rectangular wall with dimensions 2 x 5 km, covering the area of 750 ha (Neo-Assyrian period). The stand had two hills, of which Kuyunjik (40 ha)

was bigger and more important. KG Region - a stratigraphic excavation on the eastern side of the hill; the remains of the city wall and the terrace wall were discovered. Kuyunjik was settled almost continuously from the 7th millennium B.C. to the early Islamic period. The defence system we know from the excavations was created only in the Akkadian period (level VII) (Mcmahon 1998: 1).

In the Dijala valleys we have Tell Agrab 600x500 m and rises 12-13m above the ground level, fortifications found in (P13) and (Q13) - the southern part of the site, remains of the city wall with buttresses (Loyd 1942: 220-221) The city wall is dated to the early- dynasty period (Loyd 1942: 220-267).

From the Dijala valley we know the archaeological site of Tell Asmar, the city of Eshnunna (Lloyd 1967a: 199-202), covers an area of about 150 x 170 m. The earliest city wall is dated to the Early-Dynastic period, fortifications consists of (K10), (K15), (B15) - north-east corner, the face of the city wall from the 3rd millennium (B 15) - The remains of the city gate. (H-J 12) - Complete tower, and (K 12) - a fragment of the tower.

In the valley of the Dijala river, 15 km. to the east from Baghdad there is Khafajah, Tell (Tutub). The stand consists of three unconnected, low hills. Hill (A) rises to a maximum of 3.75 m above ground level, hill (B) to a height of 5.60 m. The earliest city wall is dated to the period of the Early Dynastic period. The remaining fortifications were found in Excavations: K 53, F 36, D 35, C 34, A 32, Y 31, x 30, W 29, W 22, x 22, x 21, A 20, B 20, D 19 - buttresses from the outside of the wall. Excavations: L 56, K 54, K 52, A 21 - smaller buttresses on the inside of the wall. Excavations: F 36, D 34 - half-round buttresses. H-J 43, O 59 and possibly Y-X 21 - remains of gates.

From southern Mesopotamia, Tell Abu Salabikh is located

between Tigris and Euphrates in the south of Mesopotamia, about 2 km, a defensive wall dating from the period of Early Dynastic II (Postgate 1984: 104-108), protected by the wall B and the wall A to the east side of the hill.

Another dated for the 3rd millennium B.C. is the city of Adab archaeological site Bismaya located in the desert at a distance of 40 km east of the city of Diwaniya, approximately rectangular in dimensions (1695 x 840 m), at the highest point does not reach more than 10.7 m in height, The walls were identified in two places: in the north-east and south-west part, of which the tests were carried out only in the second one, the north-west from the hill III, also the north gate was examined (Wilson 2012: 31-37).

On the southern today's Iraq, about 100 km to the west from Baghdad there is Tell Aswad. The stand has a rectangular shape with dimensions of 200 x 400 m, which surrounded the city walls from the north, east and south. From the north-west side, the city walls were cut by the Euphrates - single mudbricks visible on the surface. The stand and city walls are dated to the 3rd millennium B.C. (Müller-Karpe 1998: 267).

The city of Ur Tell Al-Muqayyar is located 24 km south-west of the city of Nasirijja. The stand had the shape of an irregular oval, with a longer axis of 1200 m and a shorter 800 m and an area of 50 ha. The city development peak falls on the orders of the Ur III dynasty (2100-2000 B.C) - a period of intense construction program (previous constructions were obscured). The city was surrounded by the wall of Ur-Nammu. The fortifications were destroyed by the Elamites and rebuild in the district of Isin Lars (Pollock 1997: 298-291 and Woolley 1974: 61).

All the earliest fortifications were built in calms, which is proof

that they were created simultaneously with the establishment of the centre itself, and not as it was in southern Mesopotamia, already during its operation. The most common form of fortifications, except for Mari, where the embankment was constructed, was a massive mudbrick wall. However, on each stand, the bricks had different dimensions, and the width of the walls was different, it was about 2 to 5 m. These walls also had additional elements, like buttresses and embankment of dug-out earth, a tower and a stone coat or bastion.

In the second and the first millennium B.C, there are numerous fortified cities with the latest techniques' architecture and their various sizes and shapes are build of brick and stone, I will redeem them in further chapters of the work, which prove the economic strength of the state and the development of their military insTellations to protect their countries.

The formation and development of defensive architecture in Mesopotamia in the discussed period was associated with the urbanization process and the development of the technique of military attacks. Some centres were fortified simultaneously with establishing the city itself, others at the moment of development or increase of the threat. It was influenced by various factors: the political and geographical situation and the function of the centre. Various construction technologies and materials were also used, which were dependent on the availability of raw materials.

Fortified centres in the 2nd and the 1st millennium B.C. occurred in clusters associated with different regions. Typically, these were areas located near large watercourses, such as Euphrat, Tigris and their tributaries, and in a place where the topography of the region played an important role in the shape of the city.

The terrain topography had a great role in the meaning of the

shape of the archaeological site where in many centres were located close to the river or its part of the city as we see in Babylon, Assur, Mishkan Shapir, etc., and other cities located in the valley as Dur-Kurigalzu, or in the mountains as Niniveh, which caused the creation of irregular city shapes. Morover it can be by building a fortification after establishing the city as in Tell Habba and Tell Ed-Dur in Sippar. A tablet found in the temple area described how Hammurabi commanded that this monumental wall to be Built (Al-A'dami1999: 49-50), Niniveh (McMachon 1998: 8), and the place where the gates or tower are located, where we see regular intervals towers in Dur-Sharrukin (Place 1867: 166) and in the others not regular, in my opinion everything that concerns archaeological site, regularity of the construction of fortifications is caused by the topography of the cities location.

2. 4. Analysis of Mesopotamian inscriptions on the building of fortifications

Inscriptions which we are researching, shows us very clearly the structures and way of building characteristic for the studied period. The elements contained in them do not appear together usually but in different configurations, the most of them were created in different way but their order is constant. They start their content by invocation approving the Gods, next we have mandatory introduction which always contain name of the king. The others possible ingredients are genealogy of the king, epithet series and in some circumstances- concise wording the most important success and actions of the king. The following section discusses historical events of reign of the king and his campaigns. The next follow the building report which is usually dedicated for specific building. We can understand it as a message for

the future reign, how to reconstruct the building. They contained also some kind of bless. In final, we can find the dates, not always unfortunately. We can meet in other accessories and contain in some courses, but general form applies all of officials as a kings inscriptions (Schramm 1973), to the aid of Neo-Assyrian period. Similar stereotypes like structures are inscriptions: they are also the wording of construction reports about fortifications. They also show a homogeneous structure and generally consistent wording in a predetermined order, but as separate elements appear in different comarchaeological sites. The structure and individual formulations are shown below.

The tradition of dating in Old-Babylon was called "patterns of the year", it means that the names of the year were given according to an important event this year. The Babylonians drew up systematic lists of the so-called "formula of the year" for the reign of each king. We can also find out it from the annual formulas of King Hammurabi 1728-1686 B.C., that the name was given, once to the army, once to social, and once to the religious event, in Inscription Hammurabi lists the most important of his construction and victories where we clearly see in No.42 that the royal inscriptions it explicitly mentioned that the king had build a defensive wall on the banks of the Tigris and build a wall around the city of Rapiqum on the shores of the Euphrates:

42. The year in which he builds a wall on the bank of the Tigris as high as the mountains,

called this. The wall of the wharf of the God Shamash", and build a wall around

the city of Rapiqum on the banks of the Euphrates (Laessoe 1963: 23-24).

At the same time, apparently, the dating system in Babylon lasted

quite a long time, where each year is named after important events. Which took place in the previous year, this tradition lasted from the 21st century to the 17th century, an example of this below inscription from the Larsa dynasty in which the names of the four rulers of this period are mentioned and at the same time we see in the 2nd line that is the year in which the wall was built in the city of Larsa:

The year in which the great wall in Larsa was built

(Mieroop1999: 21 and Sigrist 1985: 163).

In fact, we have many inscriptions speaking about building, rebuilding and building walls and holidays in the periods of Old-Assyrians, Middle-Assyrian and Neo-Assyrian have the same descriptive style and speaking about the same charter of activity (Luckenbill 1926: 1927), Analyzing these three periods we get the same result.

In some cases, construction reports in the modern times are inscriptions with the words "*for his [this is the king] life and good of his city,"* (Luckenbill 1926, 1927) was a reminder of the older form of inscriptions of buildings, but inscriptions on fortifications rarely mention dedications (Renger 1932: 72-73). The usual introduction of a construction report is made by the subordinate of the joint time - "how", rarely also by the phrase "These days", followed by the main clause name after the structure, after which appears the relative clause entered with, setting linnes, at the same continuity The royal building was emphasized (In A.102.40 i *Assur-bani-apli prism klasa D*). The relative clause always ends with the predicate "(er) build". Relative confirmation is sometimes a building as a subject of the main law, accompanied by the appropriate anaphoric pronoun in the accusative, resumed, and then there is a statement about the break up, and thus the need to renew the building: "was destroyed" (Meissner and Soden 1965-1981: 48-49 *sub anaḫu(m)* I, G 4) there are sporadic additions to

this wording. Then there is a description of the construction works. The shortest form appearing here is the entire construction process includes, it is - "rebuild".

A stereotypical description of the building measures in individual texts individual phrases are sometimes added. This is how A.0.98.3, Z. 12-14 describes the wall decoration of the Tabir's gate crown with objects sound, A.0.102.10 are still in Z. 50-55 and Z. 1-2 information on the height and thickness of the erected wall *((...)* <...> *tibki mulâsu / 13 linati ina nalbanija rabę / ukabbersu* - "<...> look Meissner and Soden: I, str. 551 *sub libittu (m)*; II, p. 671 *submulû (m)*, 1; II, p. 724 sub nalbanu (m); III, p. 1354 *sub tibku (m)*, 4), and on the foundations' depots and A.0.102.40, Z. 10 informs about the construction of the statue on which an inscription is placed. In many descriptions, there is a description of construction work on the attachment or deposit of Inscription, and then the last comarchaeological site, as mentioned above. Only in A.0.102.25 exists note about create and insTellation good “Kidudu guard of city wall” (Z. 32-34), which is a bearer of inscription Reade 1986: 299-300, Taf. 45, and the detailed wording of the curse patterns can be found only in the D-class Prism Assurbanipal (Col. VIII, verses 95-100). At the end, some subtitles have further notes that are outside the usual form. You can find in A.0.102.10 and A.0.102.11 comments on the recruitment of armed forces and in A.0.102.11 additionally the name of the wall and details of its dimensions (Secured on the left margin only ascertainment). In A.0.102.25, A.0.102.27 and A .0.102.40 are still names of walls or walls, and in A.0.102.25 also names of gates.

Two types of subtitles give way to the usual form of construction reports. On the one hand, these are summaries of construction reports that can be found on bricks, and on the other hand there are construction reports that concern not only the construction of a

building but also the construction or reconstruction of the city. The inscriptions of Kalḫu Assurnairapal belong for the last group (Schramm, W. 1973: 67).

Brick inscriptions about the fortifications come from Salmanuasar III, Sennacherib and Esarhaddon. Subtitles from Salmanasar III (These are textsA.0.102.99-10). Starting with an introduction that includes the name, title and genealogy of the king. Followed by "constructor (..)", or "they are + Bauwerk", it means "from / belong to (...)". Sennacherib and Esarhaddon found more detailed wording. These also usually start with the royal name and – title: Genealogy is only in the inscriptions from the time of Esarhaddon, during the reign of Sennacherib did not occur (Walker 1981: Nr. 178, Text T 76). Then we see a marked building, followed by a description of the structure with the words "I have rebuild", (Walker 1981: Nr. 180) in some texts reads as follows: "I created like a mountain". Ass text. G, Z. 8-9 Esarhaddon we see as a variant to another final sound: "I laid his foundation with white limestone" (Borger 1956: 9).

Among inscriptions that concern the construction or reconstruction of the city, and do not deal with only one building, the subtitles Assurnaṣirapal II in Kalḫu and Imgur-Enlil, inscriptions Sharruukin II to Dur-Sharruukin, subtitles Sennacherib to Nineveh and inscriptions Esarhaddon to Babylon. These are only part of report from building. Therefore, only the relevant section regarding the city fortifications under consideration in the following. Kalḫu fortifications are mentioned in Inscription Assurnairapal in two inscriptions. In the text A.0.101.1, Z. 136, we refer to the description of lifting the foundation ditch: *"his [that is, I put the aforementioned wall from its foundation to its defensive walls build (i) completed (she)".* In the text A.0.101.17, Z. 10-12, the following applications appear: '' I have rebuild the wall; from their foundations to the defensive walls and erected I

graduated (she)'. Construction report to Imgur-Enlil, A.0.101.51, Z. 29 states that the city wall: *"I build a wall around (or: completely)* (Meissner, Soden: 456-457 *sub kaṣaru(m)*, 5 b; CAD 11/I: 199 *sub nalbân)*. One observes with these inscriptions a clear orientation of the standard wording of building inscriptions.

In turn, during the reign of King Sharruukin II it changes in his inscriptions dated to build the report Dur-Sharruukin speaks of the city walls:

"16280 elbows, my name is, I made the measure of the circumference of

their walls, (i) I gave her a solid foundation on a massive rock".(Fuchs 1994: 294-295).

This fragment is tracked, except for inscription on the bronze plate of the fragment, which lists the gates with their names according to the main points, lists them in order and gives the names of the walls. Inscriptions Sharruukin II. show a completely different view of city walls and gates. In the foreground here is the perimeter of the city, which seems to have a symbolic value (Fuchs 1994: 294-295) as well as the names of the goals. Next to it is a reference to solid ground only a brief comment about this construction.

In Sennacherib, inscriptions to the Niniveh building include long passages associated with fortifications. In the oldest of these texts, the T 8 is missing compared to the later texts T 10, T 11, T 12 and T 13, the section to the city gates. Because this inscription is poorly preserved and can only be reconstructed based on later texts. The construction reports of texts T 10 and T 11 are correct to a large extent consistent and are presented here first, followed by deviations in the texts T 12 and T 13 induced. The section on the construction of a city wall

bedemons with the description of the town's expansion in question, the fact that Niniveh had no city walls before (Z. 150-157). The following relevant fragments are:

"(157-161) I created the foundation of their large inner wall (…)
Limestone (blocks). I made them 40 thick and picked up their tips
on 180 layers of bricks. (...) (198-200) I have opened the external foundation
walls (...), (200-201) dug a deep 3/4 (?) of Nindan and let him reach
to groundwater. (201-204) Among the water I put down a solid rock (i)
he finished it (scil the wall) up - on its blanks - with a large limestone (blocks).
(...) (207-208) I build Inner and outer walls
and he made them high as mountains" (Frahm 1997: 82).

In T 12 (VII Z. 71-74 and VIII Z. 14-19) there is no substantive derogation (Heidel 1953: 119) 1 T 13 (VII Z. 1'-9 '), deviate from the name of the main wall with T 10/11 in several ways:

"... 40 bricks (lay) - (measured) according to my great nalban - I build
(wall) thick. Both; up (this is in the north?), and down (on the south?)
I brought (width) its huB.C.ap on 39 layers of bricks. At 200
I increased the layers of bricks whose thickness (each) was one third
their directions to their battlements and let them (like a wall) be like a mountain top". (Frahm 1997: 94-95).

The transition to the outer wall also has variants compared to T 10/11, here due to the very fragmentary state of the text. The short text breaks up completely. Compared to other texts, we find in T 13 an additional indication of the brick form used (Z. 4 ') and then a misunderstood emptiness Z. 5'-6), Precise selection this sentence,

especially interpretation ‘above’ and „below” as a „north” and „south” is unclear (Frahm 1997: 98), and another indication of the height of the wall (Z. 7'), which is around to the dimensions of bricks and text (Z. 7'-8 ') (For details T 10/11, Z. 203). Finally, there is a phrase that in T 10 / 11 appears only at the very end of the section about the city walls.

In addition to the detailed construction descriptions in Niniveh, there are still shorter subtitles on two steals (T 65) (Luckenbill 1924: 152-153 (I 30)), which were placed on the main street Niniveh. The fortifications of the city are also mentioned (Z. 16-18), even if only in a short phrase: *"the wall and I build the outer wall and made it high as a mountain".*

As in Dur-Sharruukin, in Sennacherib the total size of the city and the name of the goals is a great role. In Inscriptions from the days of Sennacherib, but also in the construction measures described in detail, but mainly with the vocabulary, which in the older building inscriptions are not common (Frahm 1997: 258) Longer subtitles similarly used the final preparation, is also used in the Sennacherib brick inscription used.

Esarhaddon reports in several inscriptions about the reconstruction of Babylon. Inscription Bab. D has a summary of the construction report (Col. IV, Z. 16-24), abbreviated from Esagila, Babylon, the main and outer wall is called: "(21) I left the foundations to (22) rebuilding the peaks (23) and increasing them (24) above and more gloriously (than before)" (Borger 1956: 21) The text is represented by Bab. A, C and F have a more detailed version of the construction report, its transition to fortifications (after C, col. VI, Z. 34 - col. VII, item 4) is as follows:

"(38) Perimeter (34) Imgur-Enlil, his great wall, I have (37) with a great one
elbow (39) measured (35) - it was 1800 m long and 1800 m wide -,
(40) (i) I am to increase it as before (41) and raise it; (42) Nêmet-Enlil,
(43) his outer wall, I made (also) (VII, 1) and I finished,
(2) and amazed (3) equipped for all people with splendor (4)" (Borger 1956: 25).

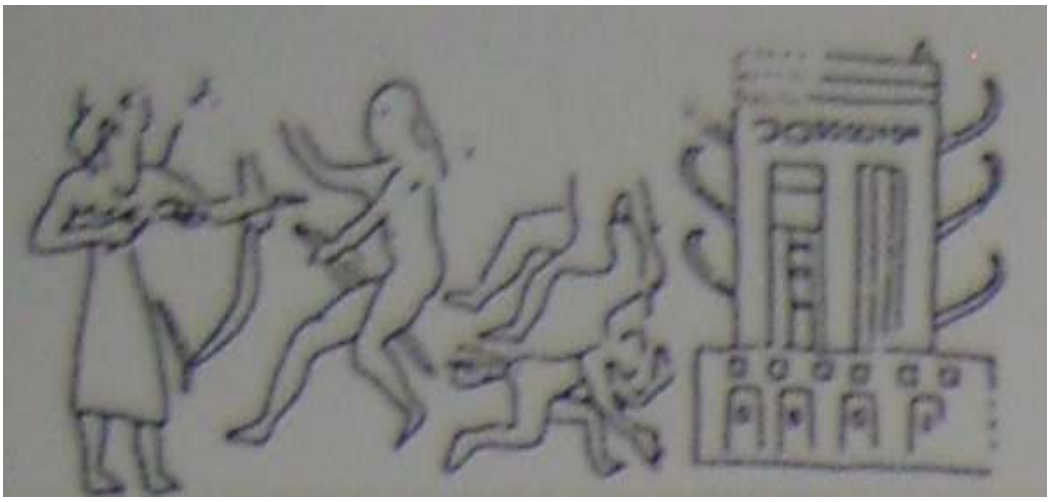
Mention was also made of the construction of city walls in Babylon - with Esagila summarized - in the text of AsBbE., Z. 8-10, in which the construction measure by name from three structures (Esagila, internal and external wall) in Z. 10 described in words become: "*(I have ...) from rebuild the foundation to the top and make it much bigger than before"* (Borger 1956: 88).

Reports from the construction of Esarhaddon to Babylon and its fortifications will explain the name of the city gate, their entry in Sharrukin and Sennacherib inscriptions take up most of the construction report. This will be in the short form however the construction measures are described in the terminology of Sennacherib closer than the old protocol.

2. 5. Analysis of iconography of Mesopotamian fortifications

The fortifications appear on the stamps usually in the context related to the attack and defence of a fortified city. City walls are very differently presented, sometimes very schematic with outline only, other times so precisely that you can see Individual boards even, from with the gate was made. Fortifications are always accompanied by people's performances. These are usually soldiers defending or attacking the city. But there are also women and children that have been taken hostage or are asking for mercy. Various weapons are also presented there. Soldiers usually have a bow but also missiles, chariots and siege machines.

The exhibits of the fortifications on various monuments are many. In Mesopotamian art they are more than 120 monuments. If you add very rich material, not only from Mesopotamia, but also from the Middle East we have a huge amount of present of the fortification. There are obelisks, stele, *kudurru*, metal fittings, cylindrical seals, terracotta tiles, ivory tiles, orthostatic, wall paintings, helmets, bronze belts or 3 D metal fortification models scattered throughout the enormous land of Mesopotamia and the Middle East.

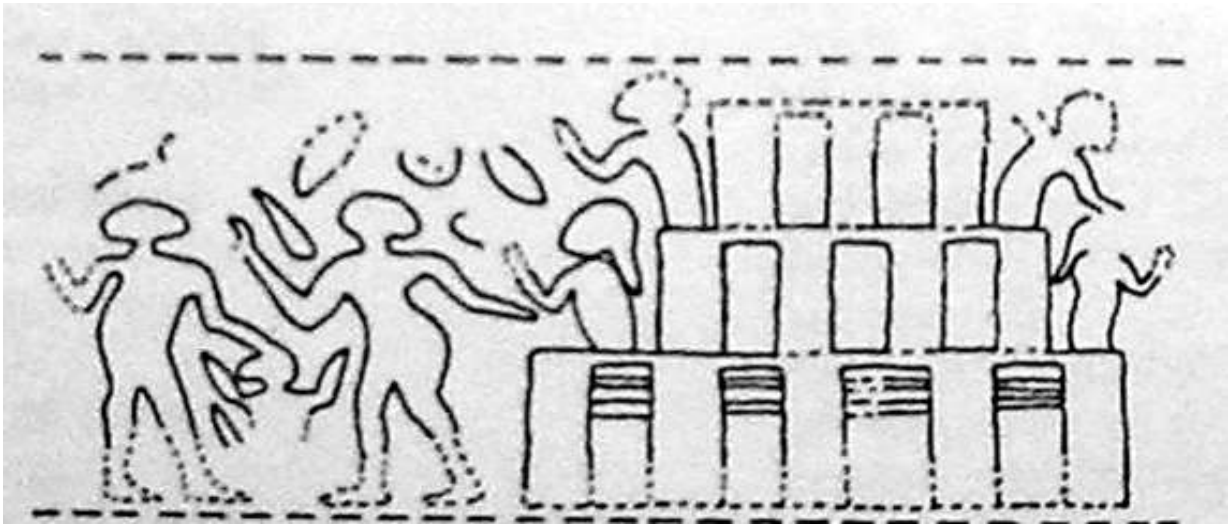


(Fig.1) Seal of Susa (Collon 1987: 163)

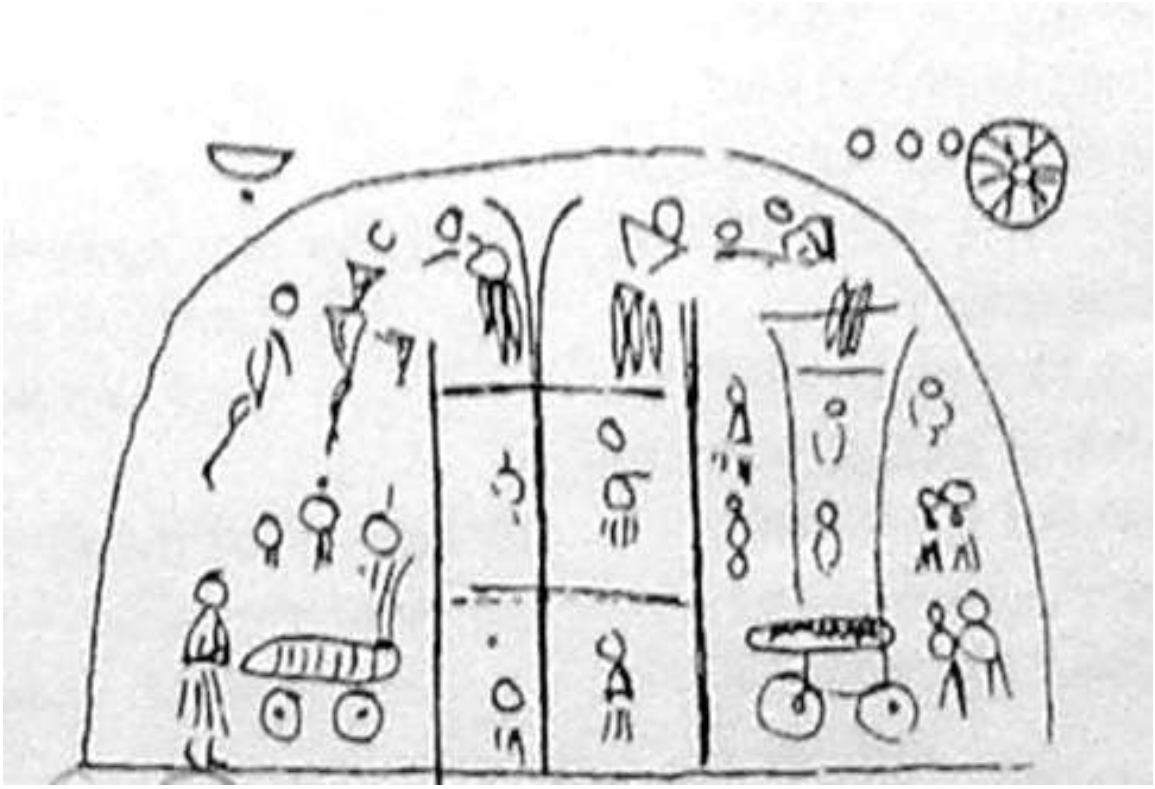
Because, due to the enormity of the number of monuments, it is not possible to exhaustively discuss all the performances, for each region, I decided to give the most characteristic examples and then try to interpret them.

The oldest representation of the fortification comes from the seal of Susa (fig. 1) dated 3300 B.C. There is probably a fortress, from which the flames blow, as a result of fought battles. A similar form of flames occurs in the Neo Sasanian relief from the reign of Sargon II. It depicts the capture of the heavily fortified city of Pazashi, and the flames of the burning city are spotted in antimony-like frigate (Collon 1987: 162).

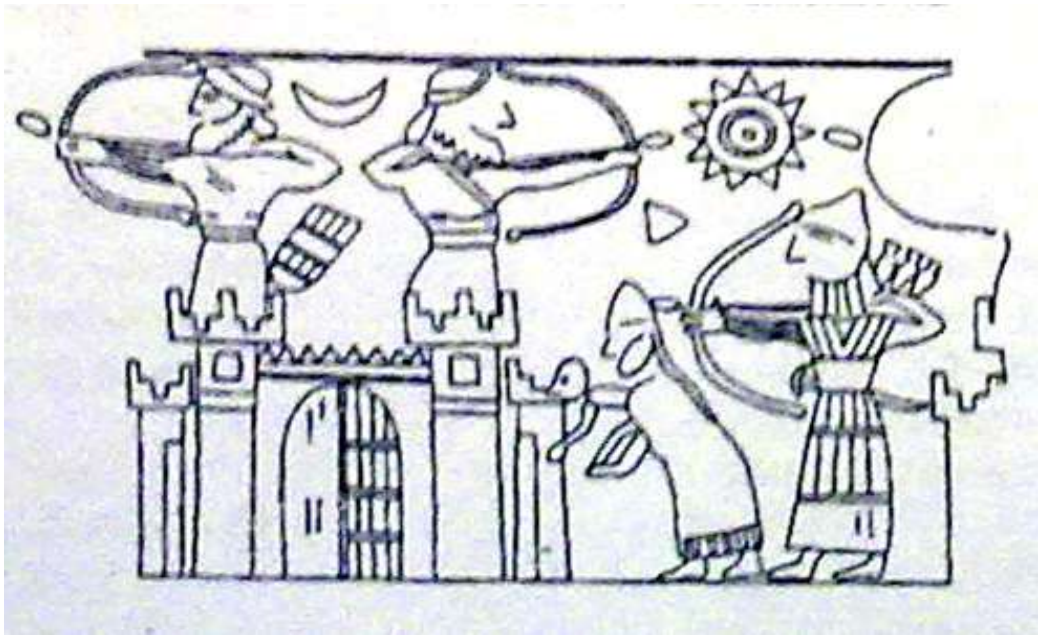
Modern Iran from Choga Mish stands a seal of a seal that probably represents an attempt to conquer a fortified city Collon suggestesThe author suggests that the seal design may be a temple erected on the platform (Collon 1994: 162) (fig. 2). In the air can be seen flying missiles, and on the walls stood women begging for mercy. Another way to capture the walled city is another print. There is a large siege machine on the wheels and a chariot that attacks the city (fig. 3) (Collon 1994: 162).



(Fig. 2) Performance Fortification on the seal of Choga Mish
(Collon 1994: 162, nr 748)



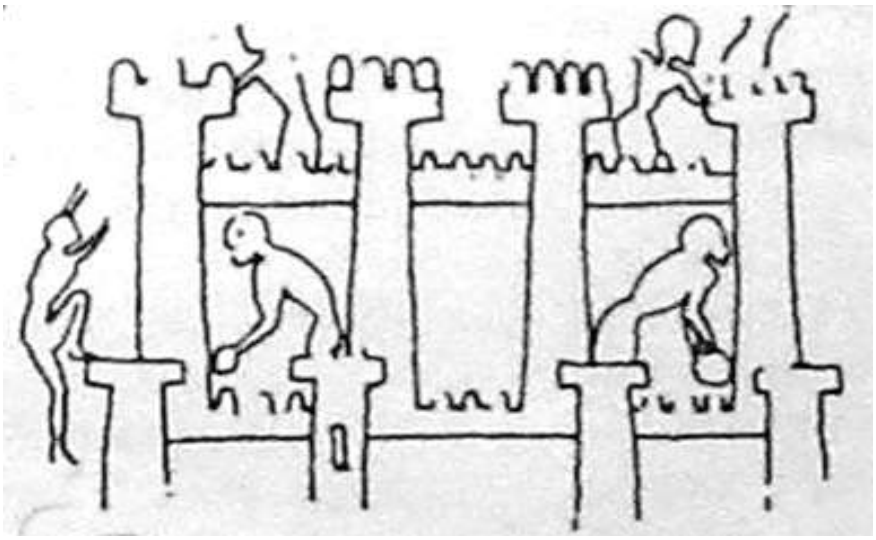
(Fig. 3) Performance Fortification on the seal during the attack (Collon 1994: 162, nr 749)



(Fig. 4) Performance Fortification on the seal with a visible Gate (Collon 1994: 162, nr 750)

(Fig. 5) Performance Fortification on the seal with a visible Gate
(Collon 1994: 162, nr 752)

Three more prints depict massive fortifications during the attack, which have numerous towers and battlements. Two of them are also visible gates of the city gate (fig. 4, fig. 5) (Collon 1994: 162, Nr 750, 752, 753). Uruk comes with a different seal, showing a fortified tower building and double battlements crowning the fortifications (fig. 6) (Finkbeiner 1991: 13). From the end of the prehistoric period, from Mari comes a small stone plate (fig. 7). The fragment of which was preserved is part of a larger image of the siege of cities (Yadin 1972: 91-93). At the top of the plate is visible enemy that is likely to fall from the wall, while one of the fighters has an upward arch, while the remaining plates have not survived but it must have been some kind of fortification.



(Fig. 6) Performance Fortification on the seal from Uruk
(Collon 1994: 162, nr 753)

(Fig. 7) Performance Fortification on a plate with Marii
(Yadin 1972: 90)

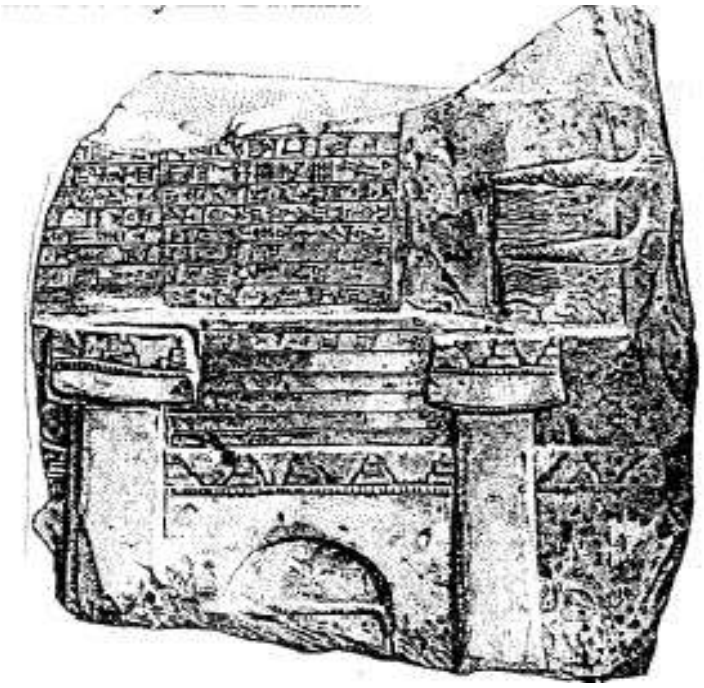
An interesting element that is common to most of these shows are the high walls blown up by the city walls. This is part of the fortification. On one of the shows you can see the gates of the city gate, which is even marked with boards and fittings.

There are also numerous shows related to warfare. From the Tell stand there is no seal in the basin of Chaburu from the door of the palace (fig. 8). Characters appear in chariots, including one harnessed

in an equine animal in front of which a human figure and human shields are depicted. Leads are also prisoners, so it is possible that this is the return of the battle (Teissier 2009: 159). On other seals with this subject you can see very often archers and soldiers equipped with spears and shields, ie elements needed for direct combat and distance, for example, to acquire cities.

From the Old-Babylonian period comes a description of the monument, the Naramsina sTells. This is Naramsin's inscription commemorating the conquest of Ebla and Armanum. It is about a three-walled structure: the walled wall, the mighty wall, and the wall of the citadel: their dimensions are also given (Foster 1982: 32).

(Fig. 8) Performance Fortification on the seal from Tell Brak
(Teissier 2009: 159)

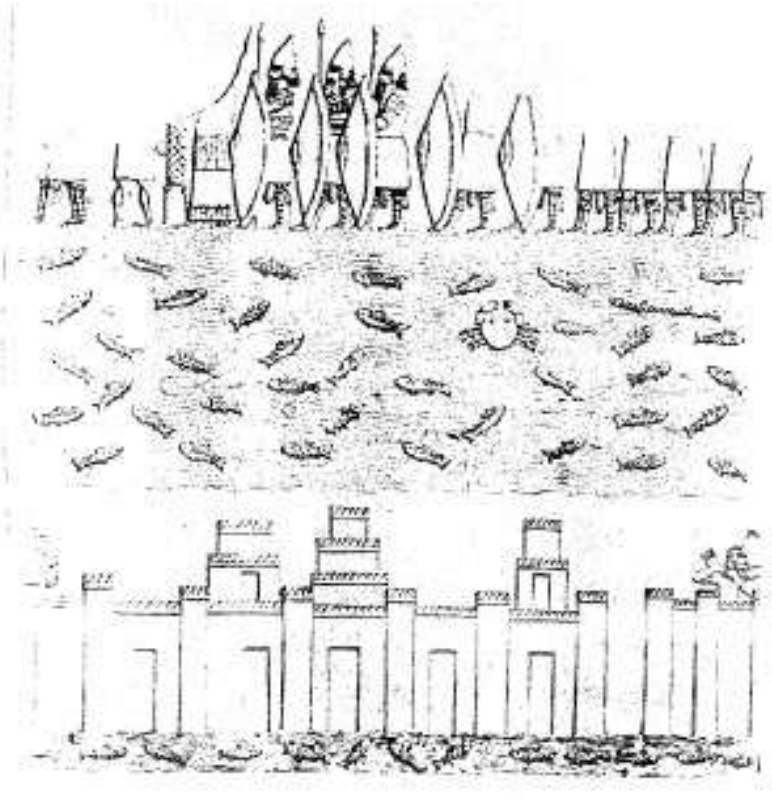


(Fig. 9) Kudurru Melissipus (Borker-Klahn 1982: 307)

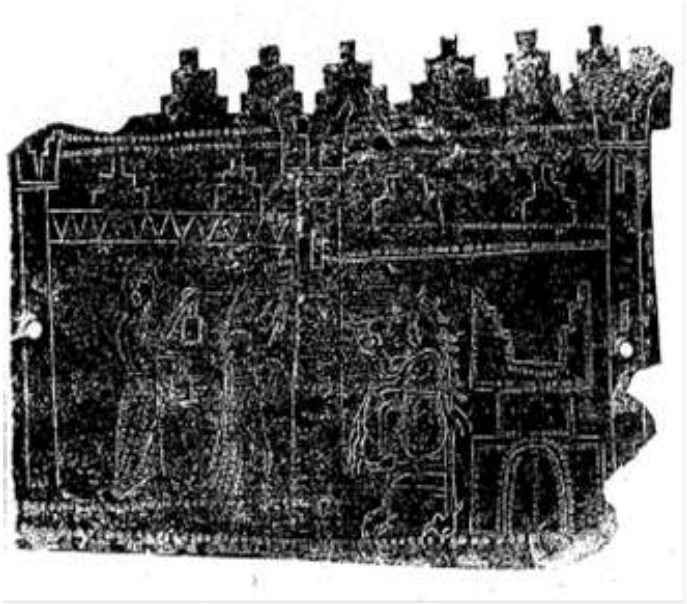
There are several people standing on the walls of the captured city of Qabar. on the stela of the ruler Eshnunny, Dadushy (dating back to around 1800 AD) (Ismail 1986: 105-107).

Kudurru of the period from the Melissipus period (c. 1888-1174). Shows the gate of the city of Babylon. Identification was made by inscription (Fig. 9) (Borker-Klahn 1982: 307). Only a gate flanked by two towers is shown here and this is one of the two adventures of this holy city. The second is another image of the wall and gate of the city, coming from a gold pendant (fig. 10). Found in the midst of the objects that make up the burial of one of the Babylonian tombs (Koldewey 1913: 34). From the reign of Sennacherib there is a well-known relief, showing a Ziggurat (fig. 11), just outside the city walls, but it may well be Borsippa (Unger 1970: 197).

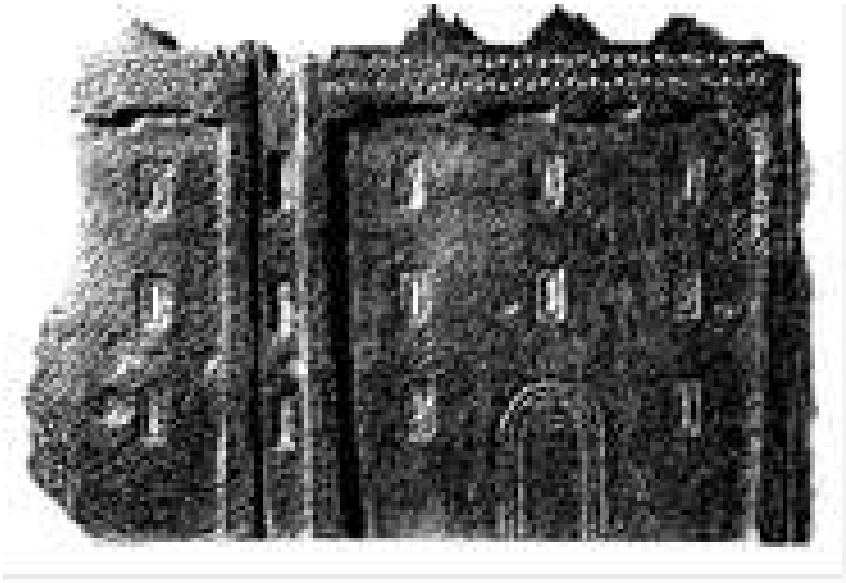
(Fig. 10) Gold pendant from Babylon (Koldwey 1913: 34)



(Fig. 11) Town with Ziggurat (Unge 1970: 197)



(Fig. 12) Urartu votive plaque (Merhav 1991: 306)



(Fig. 13) Model city of Torak-kale (Merhav 1991: 306)

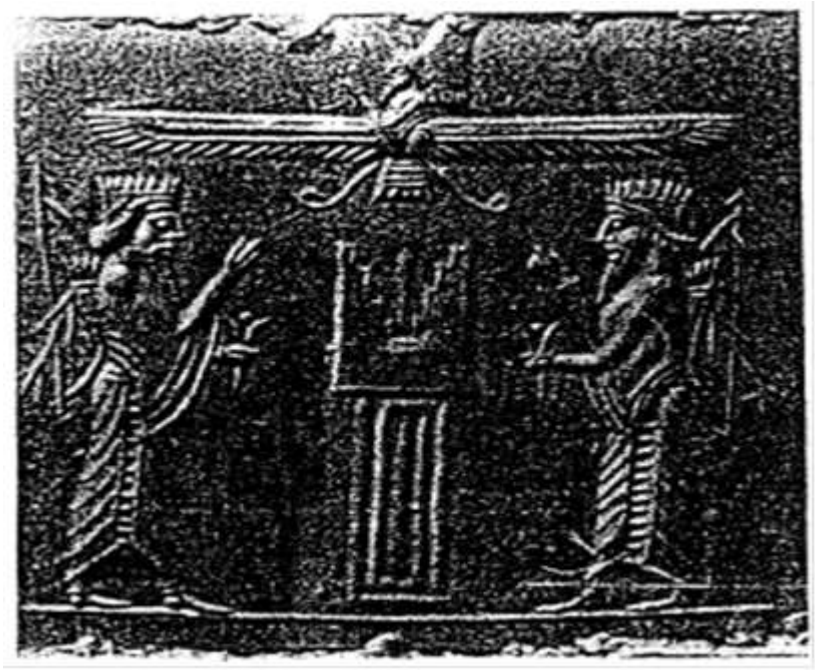
From Urartu you will find a variety of monuments with images of

fortresses or fortified towns. These include votive badges (fig. 12), which depict religious scenes that took place in front of the walls of the citadel (Calmeyer 1991: 312). In the Topak-Kale found 2 bronze models (fig. 13) tower and facade of fortified cities, dated in the 7th century B.C.

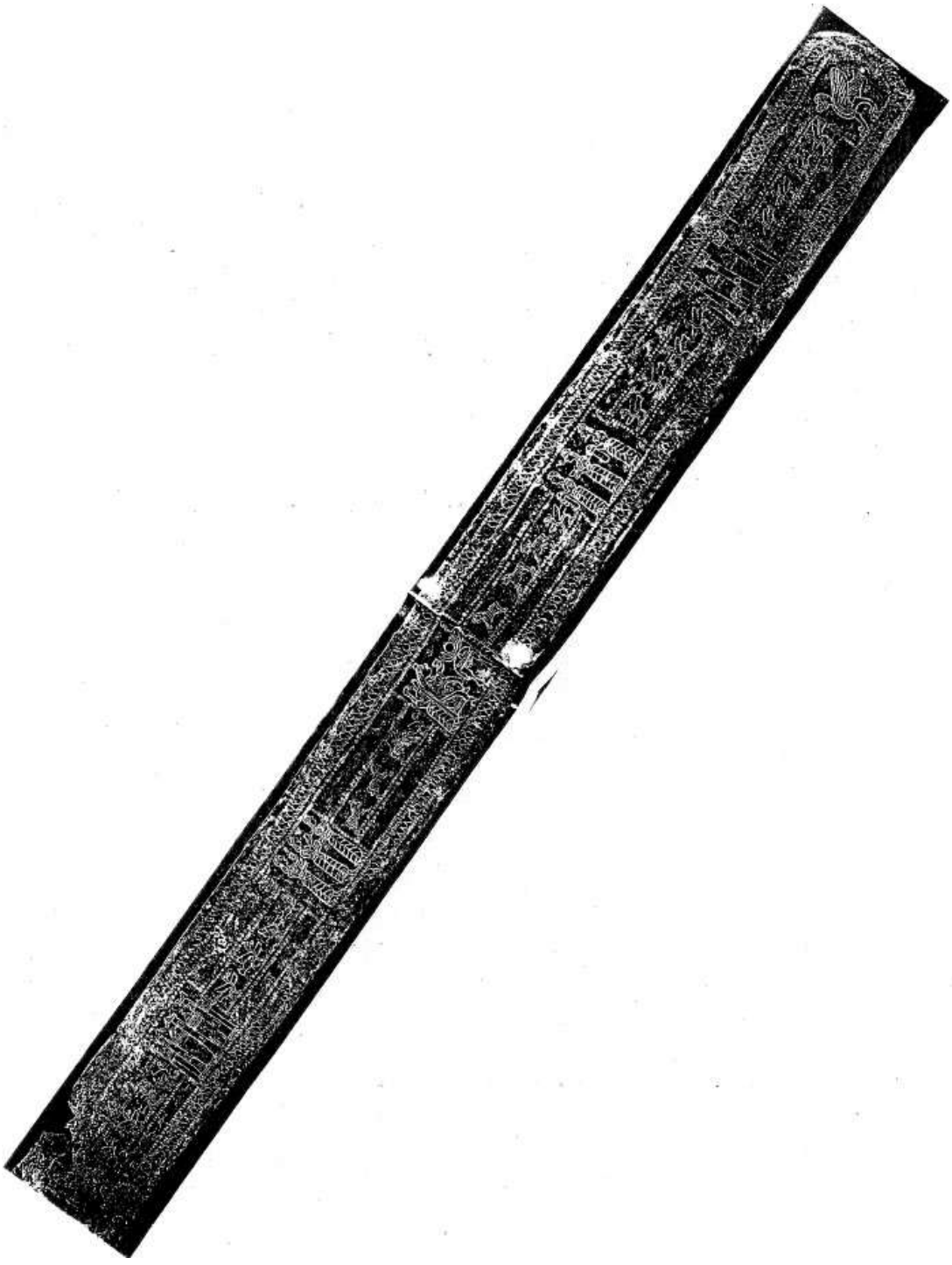
Often on narrow brown Urartian strips there are single fortresses or towns (fig. 14) (Kellner: 160-161). One wing of the city gate is always open here.

All the Urartian shows show some kind of unified architectural elements. Some of these features are unique and unique to the Urart architecture. Elements common to all images are double-winged arched door, rectangular windows, lintel of so-called. "Zigzag pattern", graduated battlements, Tell narrow towers. Interestingly, many of these features are repeated in Assyria when showing cities or landscapes of the northern neighbour (Calmeyer 1991: 314).

We also know few cylindrical seals on which there was a ritual scene, where an altar in the form of a defensive tower (fig. 15) was placed between the two figures.



(Fig. 15) Altar shaped tower. (Collon 1987: 163)

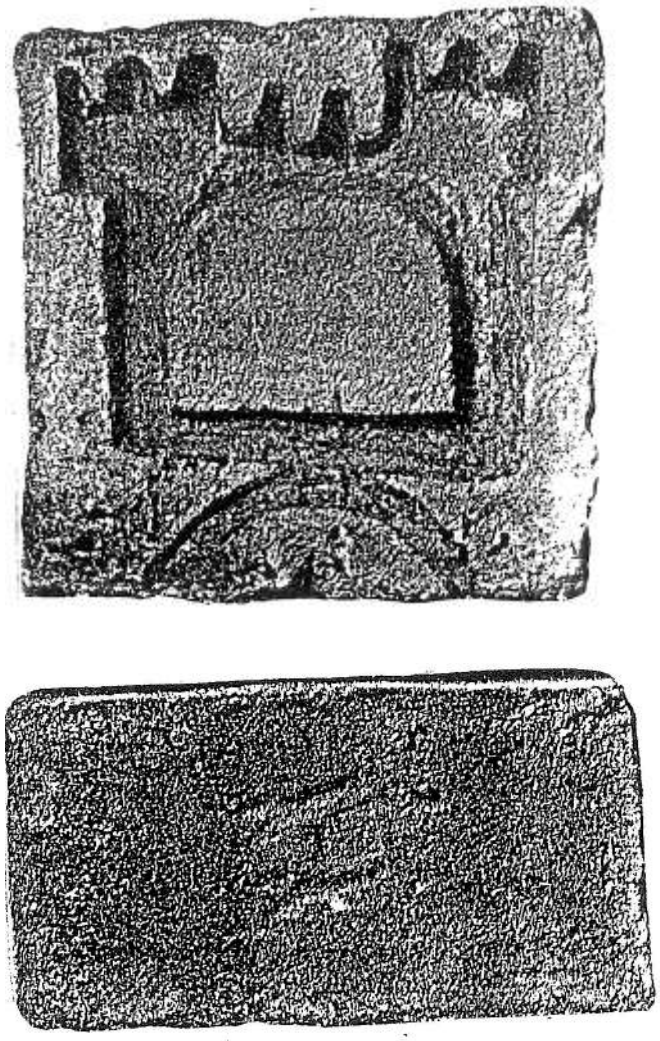


(Fig. 14) Brown belt from the metal gate Urartu (Kellner 1991: 161)

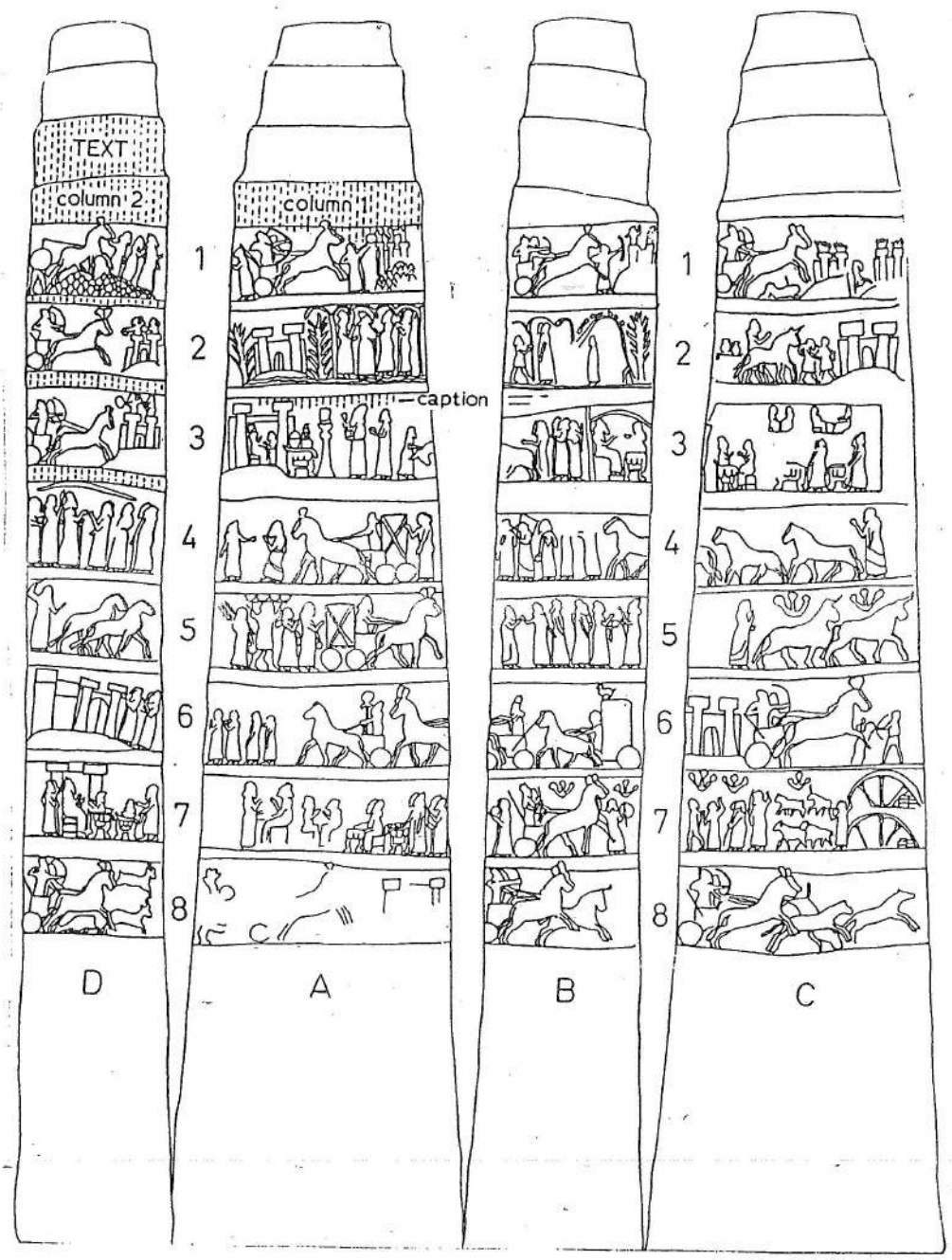
Bricks from Assur dates back to Tiglath-Pilesar I, 1115-1077 B.C. They were found in the temple of Anu and Adad and at its gate in Assur, inscriptions preserved on some bricks say that they were in Adad temple, (Andrae 1974: 49). These seals imprint came from the temple wall (fig. 16). Performances on the brick number ASS. 9305, 9312 and 9352 are not too complicated, there is an arched arcade gate that is flanked by two towers with blanks. Most likely, they symbolize the city gate. There is a curved arch under the gate symbolizing the entrance ramp. This monument represents the beginnings of fortifications in Assyrian art.

Performances on the White Obelisk found in Niniveh (fig. 17). The fortifications are visible in Belt D2 and D3 (Danun City), A1, B1, C1, Hari and Halhalaus, and C6. Each belt has a height of 16-20 cm. All of them are similar, they consist of two towers connected by a curtain. The city gate is closed, there are defenders on the wall. In battle scenes, when capturing towns, the king is always shown in a violent action, attacking the city by speeding on a chariot. War scenes are conventional, and with fortifications, there are no details of the surroundings, towns are on hills, and towers are blanked. Difficult to distinguish the presentation of the fortifications from the palaces and temples, it is characteristic for Assyria and neighbouring countries. This is so in the case of the White Obelisk, where some examples could be seen as Assyrian fortresses, if not for an environment that sometimes indicates that it may be a scene and building associated with worship. For instance, the Belt A3, where the statue of the goddess ut in her the temple, the nathi bit in Niniveh (fig. 17), is the most characteristic example of the so-called Stela Sina of Tell Ahmar (fig. 18a). This is a monument consisting of two parts: its lower part found earlier clearly depicted the fortification. The preserved fragment resembled an urban one, with two towers, a rectangular entrance and triangular battlements. It was considered a fortification or castle (Borker-Klahn

1982: 222). Finding the second upper part of the monument definitely changed his interpretation. It turned out that there is a facade of the Sina Tower in Charran. This God stands on the wall, and its flags are near (Green and Hausleiter 2001: 161).



(Fig. 16) Dry bricks from Assur (Andrae 1913: Tafel LXXXIII)



(Fig. 17) White Obelisk (Reade 1975: 131)

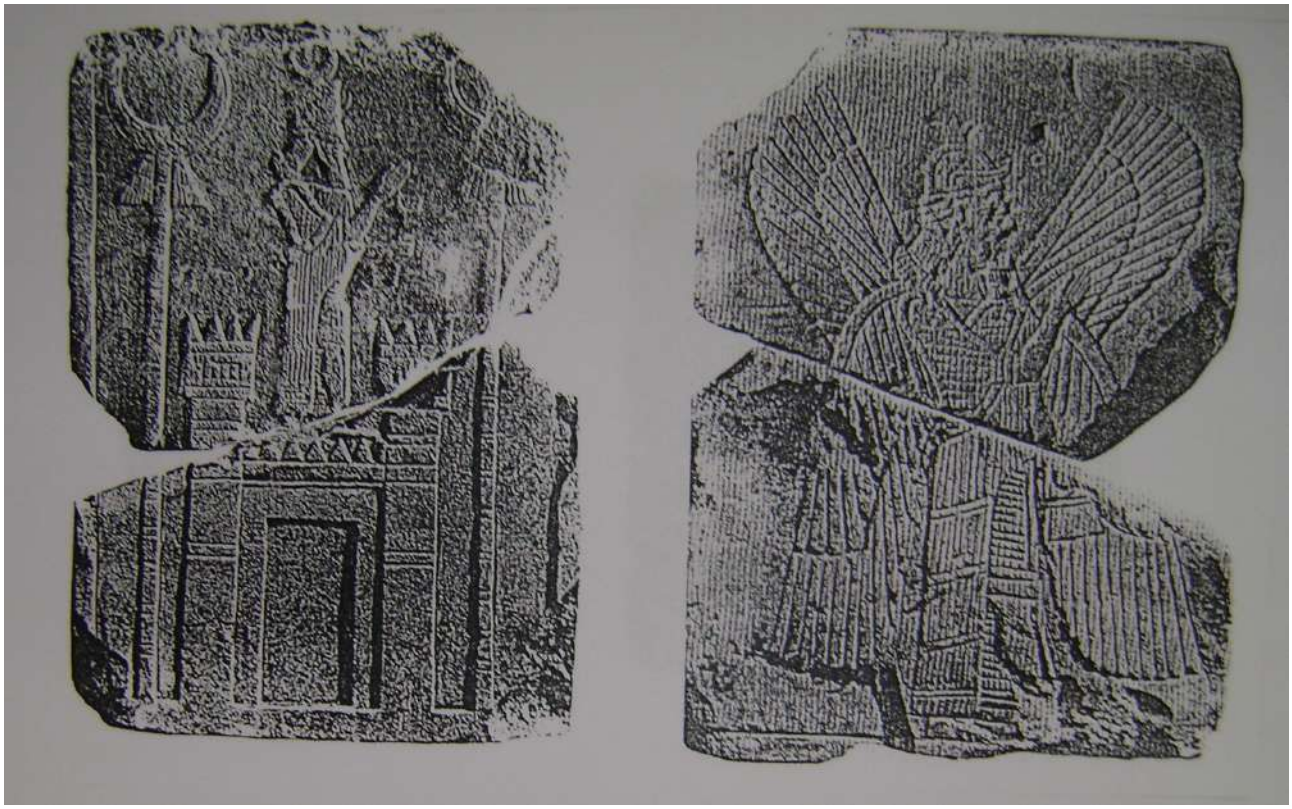
At first glance it seems that the representations of fortresses and fortified cities were schematic and contractual signs, having little in common with reality. In my opinion we learn much more from the

reliefs. Several times, they have succeeded faithfully and almost completely so that the sculptors presenting Image of the fortress approached their work precisely by showing the specific features of the fortifications such as the type of blanking, the appearance and number of towers or walls or the surroundings. This, however, does not change the overall impression that most of them were rather schematic, although sometimes such conventional representations were enriched with details, undoubtedly related to the appearance of concrete defences.

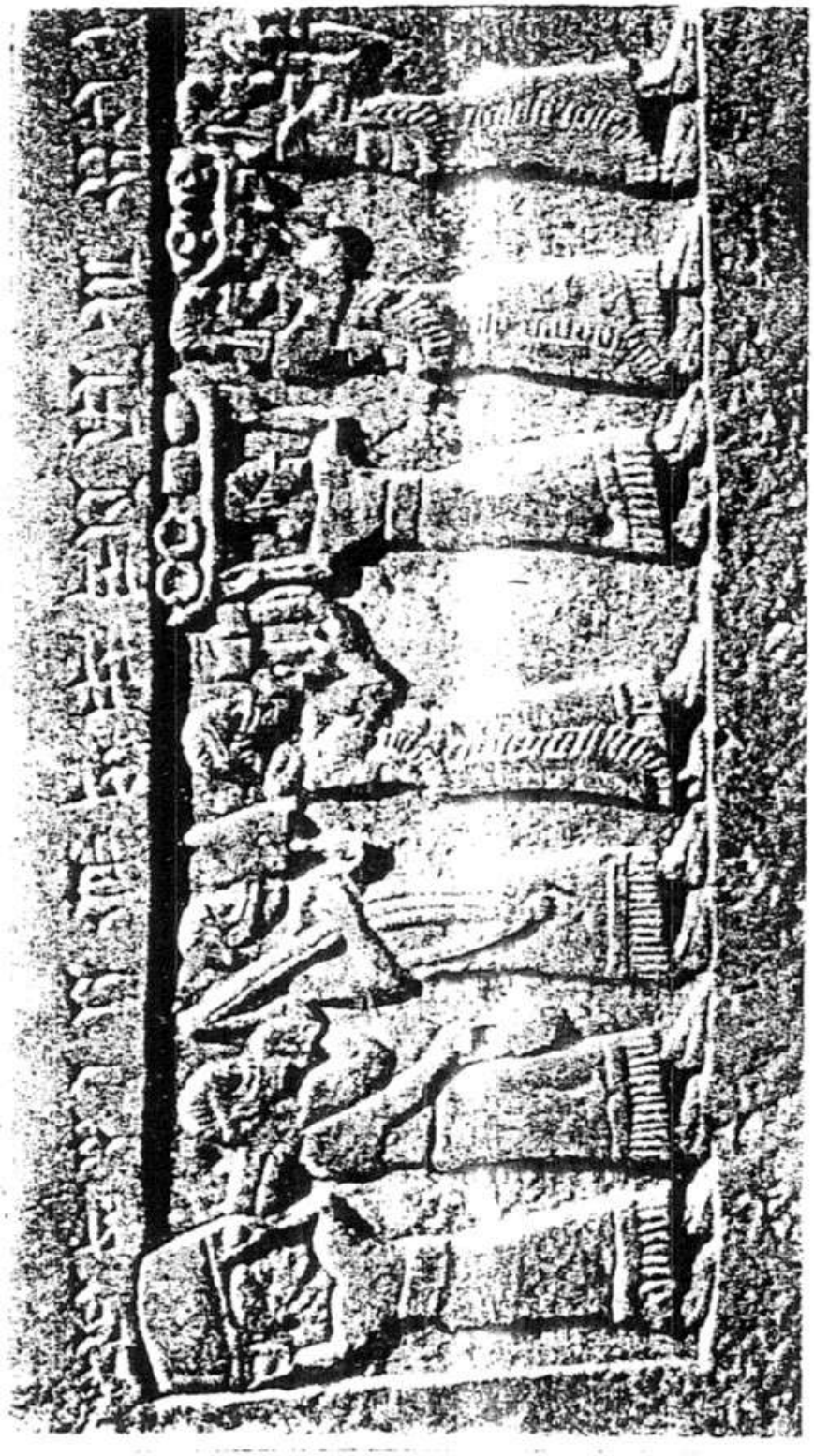
Another example is the very schmatic display of fortifications may be models of cities. The oldest such show comes from the throne of Salmanasar III, found in Kalhu. In the main scene is a meeting with the ruler of Babylon, Mardukzakirshumim. There are also tributary groups such as the Chadetsky, and one of the tributaries carries the king's model of the city, symbolically surrendering its city to the ruler of Assyria (fig. 18b). It is an extremely simple representation of 3 towers connected by a curtain placed on a small platform.

The other models come from the orthostatic of the throne room of Sargon II palace in Dur Sharrukin (fig. 19) (Albenda 1987: 24-33). There are fifteen of them and all are very similar to each other. They differ only in the number of towers (from four to six), towers and walls have blanks. It is interesting that in these cities it is impossible to distinguish gates. Otherwise, people wearing objects in the direction of the king are also presented. Covering Head, haircut, beard or outfit, help identify the people. City images aside from the number of towers are identical and late to find any peculiar features.

We can also count on the more schematic representations of the Neo-Assyrian cylindrical seals dated 9th and 8th cent. N. E, on which very simple fortifications are shown (fig. 20). Simplicity of presentation can be explained by a small amount of space.



(Fig. 18a) Stela Sina from Tell Barsip (Parrot 1969: 344)



(Fig. 18b) Model of the city of the throne of Salmanasara III

(Parrot 1969: 345)

(Fig. 19) Model of the city Sargon II (Albenda 1987: 24)

There are also small ivory badges, showing a rectangular gate

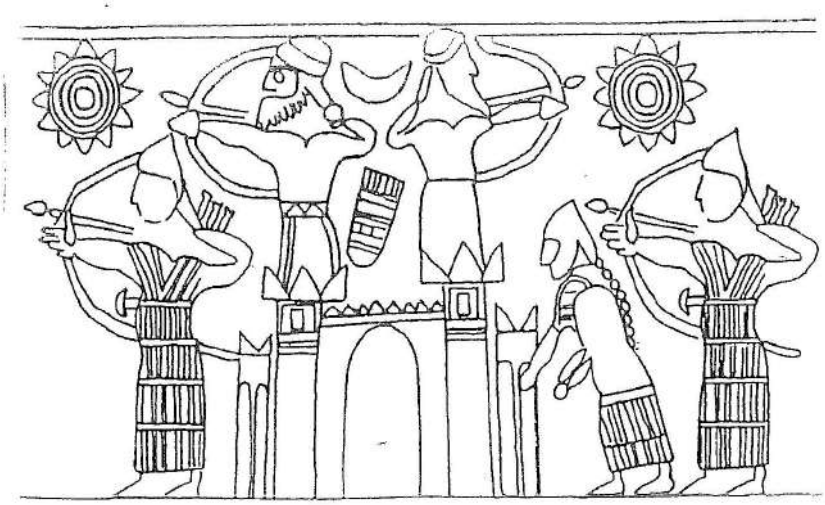
with two towers and triangular battlements (fig. 21) (Mallowan 1966: 43-44).

Symbolic representation of Bit Bagaya from the South Palace in Dur-Sharif in Ortostat (fig. 22). The burning city is shown in a symbolic way with the burning towers (Yadin 1961: 420), and the author of relief did not give a presentation of architectural details. We know another Bit Bagaya shot, where the town is located on a high rocky hill, with two rows of walls and one arcade entrance. In schematic representation nothing is shown, the most important are the torches symbolizing the destruction of the fortress. Such a double display of the city during the siege and after the capture we know from the beautiful reliefs of Assurbanipal, showing the element city of Haman.

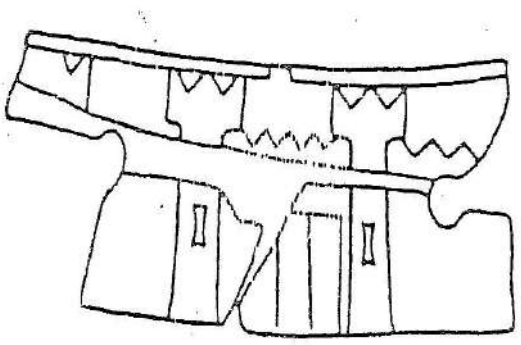
We can distinguish ourselves with certain individualistic traits for the city and region. The first performances that we can distinguish are the fortresses and fortified cities, placed on the brown marvels of Assur Raspali II and his son Salmanasar III. There are 33 images of fortresses and cities: most of them are characteristic of the region, for example: gable roof, two lines of walls, two gates. The more famous of them is the gate set by Salmanasar III, found in the Balawat Palace.

Uburi in Urart (fig. 23), the city appears at the gate twice; shown before and after the conquest; upper register and head, haircut, beard or costume, help identify the people. The cities images apart from the towers are identical and late to find any peculiar features. Both performances are somewhat similar, but if they were not signed, they could be considered as two different cities. Divergences are visible in the number of towers, gates and topographical surroundings. On the basis of Uburi and some other Urartian cities, you can identify some specific chal- ches for the region. Fortresses are placed on a hill, conventional in the form of scales, marked for mountainous terrain, the series of towers and steers are set at regular intervals; Towers are overlapping with half-

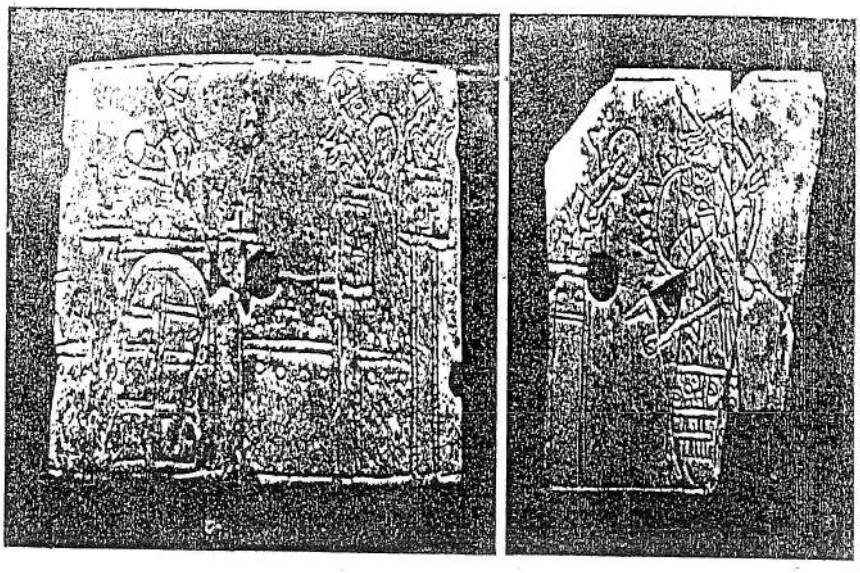
mounds, wall curtain with triangular battlements, often have two arched ends, the doors are more open (Gunter 1982: 105-108).



(Fig. 20) Cylinder seals of the Neo-Assyrian period (Herbordt 1992: Tafel) 1



(Fig. 21A) Ivory badges from Nimrud (Mallowan 1969: Pl. 63)



(Fig. 21B) Ivory badges from Nimrud (Mallowan 1969: Pl. 95)

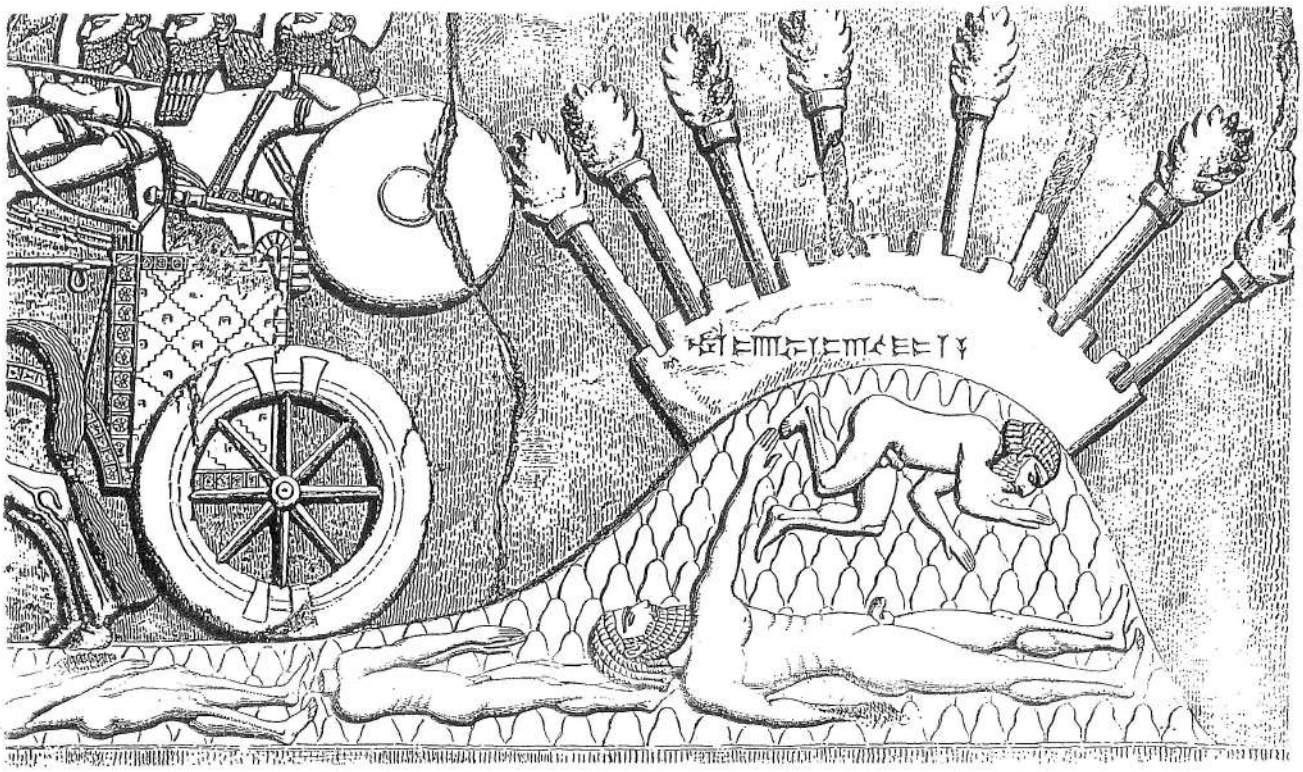
By the ninth century, during the reigns of Assurnasirpal II or Salmanasar III, a bronze helmet (fig. 24), the coronation scene is shown; beneath it is Image of the fortification (Born and Seidl 1995: 46-47). There are people out of town and a tribute to the king. Fortification consists of four towers, towers and walls have triangular battlements. Three of the towers stand on a flat hill, while the fourth is at its base, but reaches the same height as the other three. Between the third and the second tower there is a low brick wall. Between the first and second towers there is a very large gate, the top of which is above the blanking; one of the wings of the door is open. At the foot of the hill, you will find stepped steps - this is probably a symbolic representation of the lower town. As for the location it looks like it is a Phoenician city, it seems to be the palm of the city and the tribute dress.

One of Tiglath-Pilesar III's orthostomes from his palace in Kalhu shows another city, U- [pa?] (Fig. 25) situated on a hill and attacked by

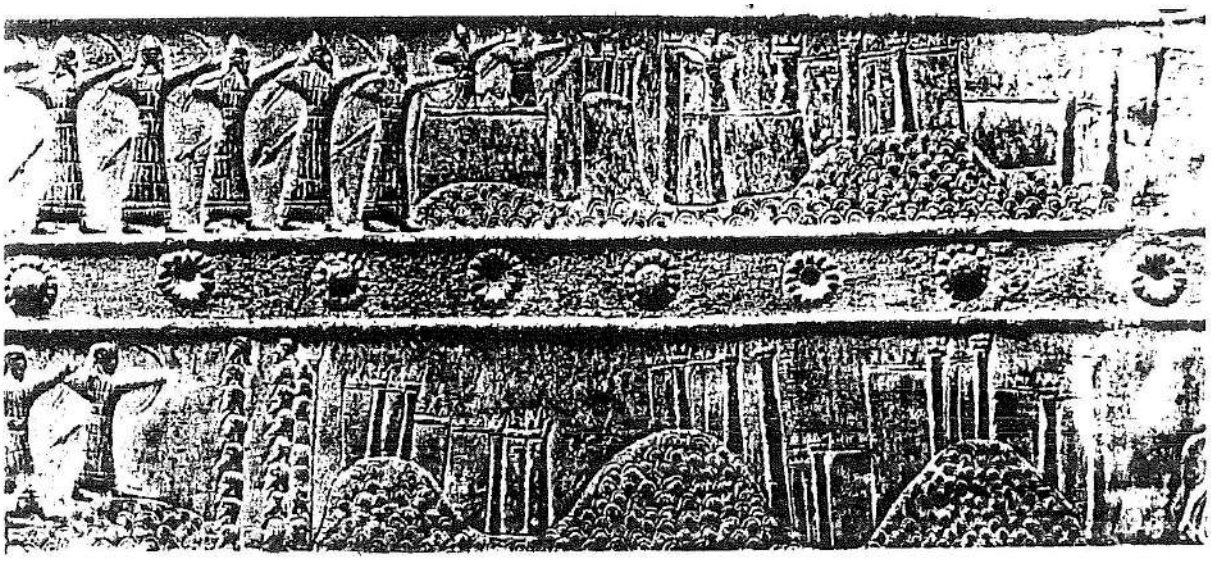
the Assyrians on both sides. The city is build on a platform in a mountainous terrain and has 4 towers with battlements, a deep moat on the left, a low outer wall, and a main battle wall with bastions. Barnett suggests that the city was in the Media (Barnett and Falkner 1962: 19).

Another town known from the reliefs of Tiglath-Pilesar is Ashtoth (fig. 26) (Barnett and Falkner 1962: 24). The name of the city Ashtoth we know thanks to Inscription placed above the stage. It stands on a platform and is fortified with battle towers and has a square gate. In the left part of the city is shown tower, perhaps it is part of the citadel.

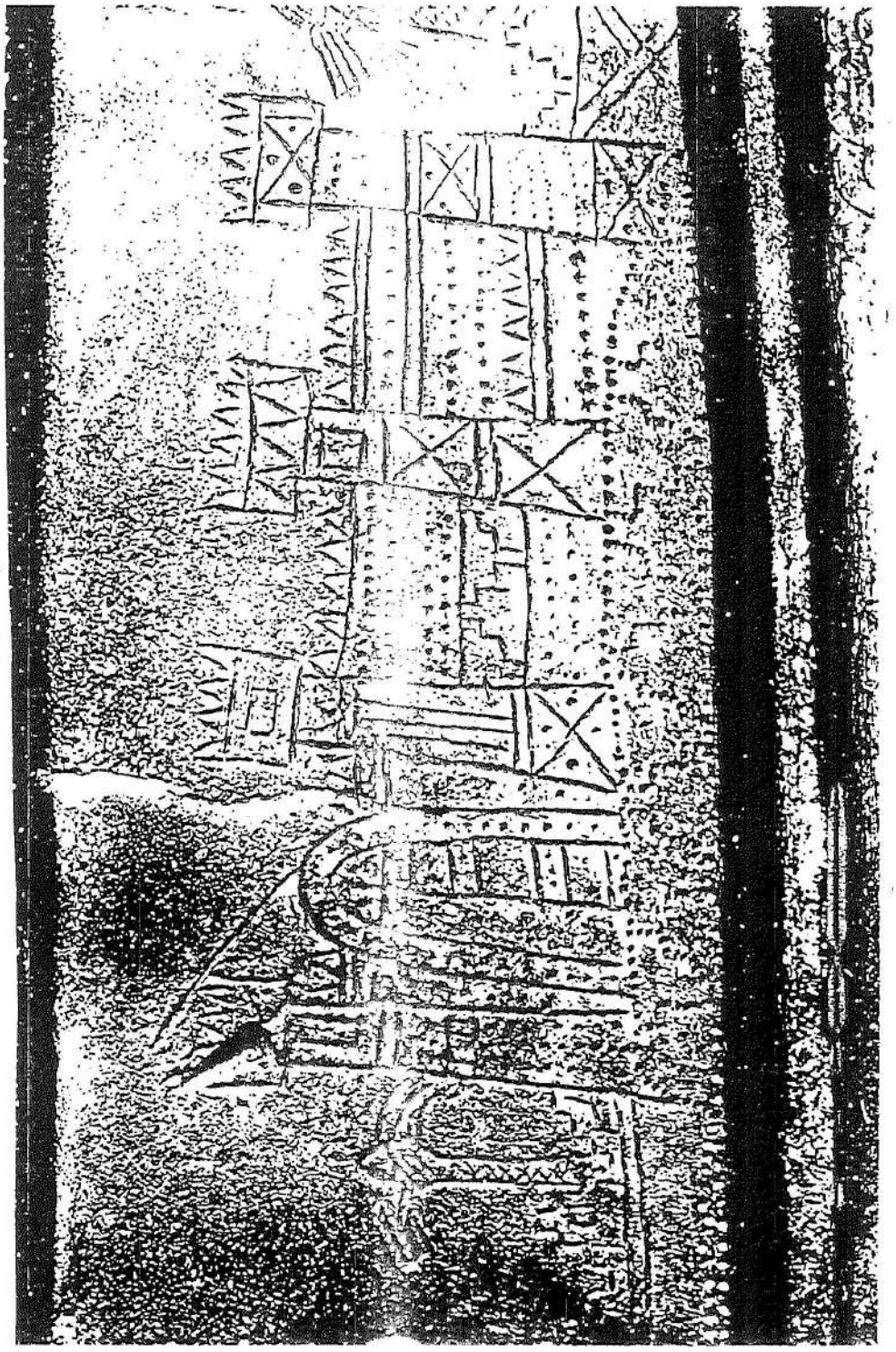
Imgur-Enlil from Balawat Gate (fig. 27) is depicted in a way not as detailed as Niniveh, but it is characterized by its regularity and beautiful chalking. The gate was at the right end of the wall; It is flanked by a pair of towers. The Asymmetric gate closure distinguishes Imgur-Enlil from most of the portal finetrication, having a gate usually in the middle of the facade. The elevation of the city does not show the lower city wall, whose remains were found during excavation (Tucker 1994: 111-114).



(Fig. 22) Bit Bagaya – relief of Sargon II in Chorsabad (Yadin 1963: 421)



(Fig. 23) Uburi (Salmanasara's III Gate) (Jacoby 1991: 119)



(Fig. 24) Performance City on the Assyrian helme (Born 1995: 17)

(Fig. 25) U-[pa?] Tiglath-Pilesara III relief from Kalhu
(Barnett. Falkner 1962: 89)

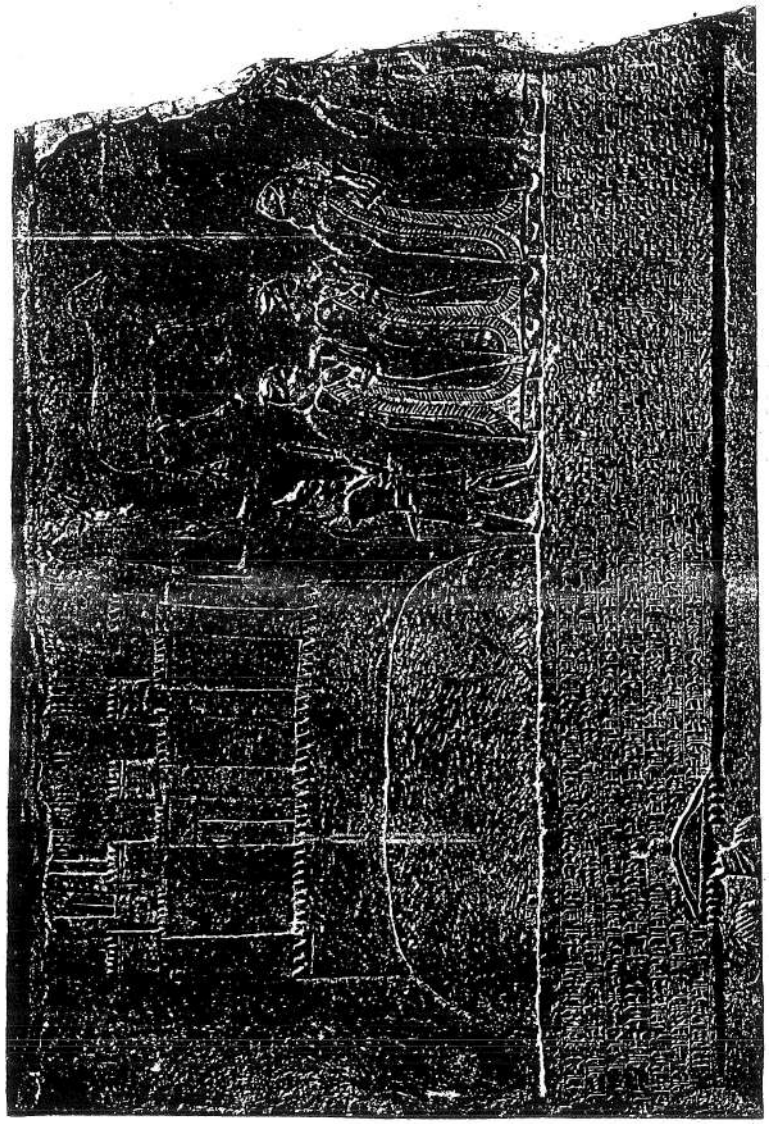
Kalhu carved on the Rassam Obelisk found in Nimrud and dated

to Assur-nasirpala II (fig. 28). Next to Kalhu there is a river the most likely Tigris, with a stone wall. The walls and towers are crowned with merlons. Next is another wall with two gates; above it is seen another row of fortifications. So, we have to deal with two walls, lower and upper and the palace (Reade 1980: 11). There are towers and turrets on the wall. To the left of the city is a palm grove.

During the reign of Assurbanipal there are two reliefs depicting the capture of the Elam of Haman (fig. 29A and B) (Jacob 1991: 116-117). We know the name of the city through inscriptions, but once again, there are differences in topographic and architectural differences in the appearance of the same place. In the first case (fig. 28A) the attacked city is located on a low hill. It consists of two lines of walls with towers placed at regular intervals; Gradual crenelas are visible above. In the central part of the first wall there is a rectangular entrance with stepped lintel. The third row of walls does not contain any towers, defence from the balconies and towers of the second line. The second Haman (Fig. 29 B) stands on a high tree-covered hill, while the Assyrians destroy the walls and towers. This shows the victory of Assyrian forces and the destruction of the city.

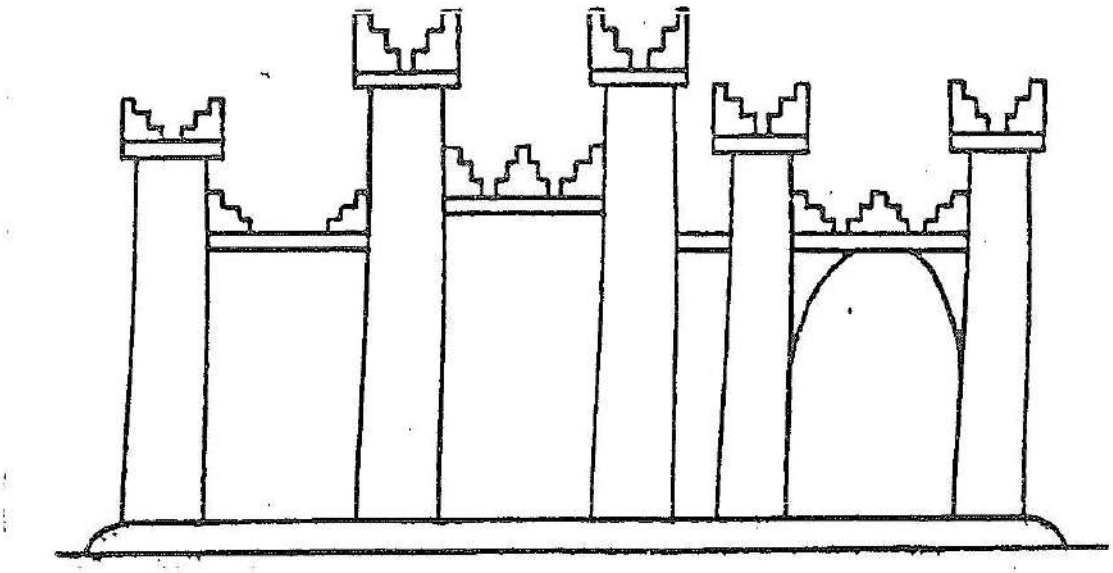
The town of Tikrakka (fig. 30) is on the relief of Sargon II, coming from his palace in Chorsabad. The show itself is in no way unique from the standpoint of the appearance of forging. It is located on a rocky hill, with one line of walls and five towers set at regular intervals. The most interesting thing is that on the right side of the city walls are placed royal stele, which was identified on the basis of the vintages as previously exhibited by Tiglath-Pilesar III (Borker Klahn 1982: 200).

A presentation of the capture of Lachish (fig. 31 and 32) was found in the central and fully conquered city of Sennacherib in Niniveh. Lachish's fortune was attributed to the relief inscribed on the town of Lakis. The city only appears on reliefs once in the XXXVI hall.

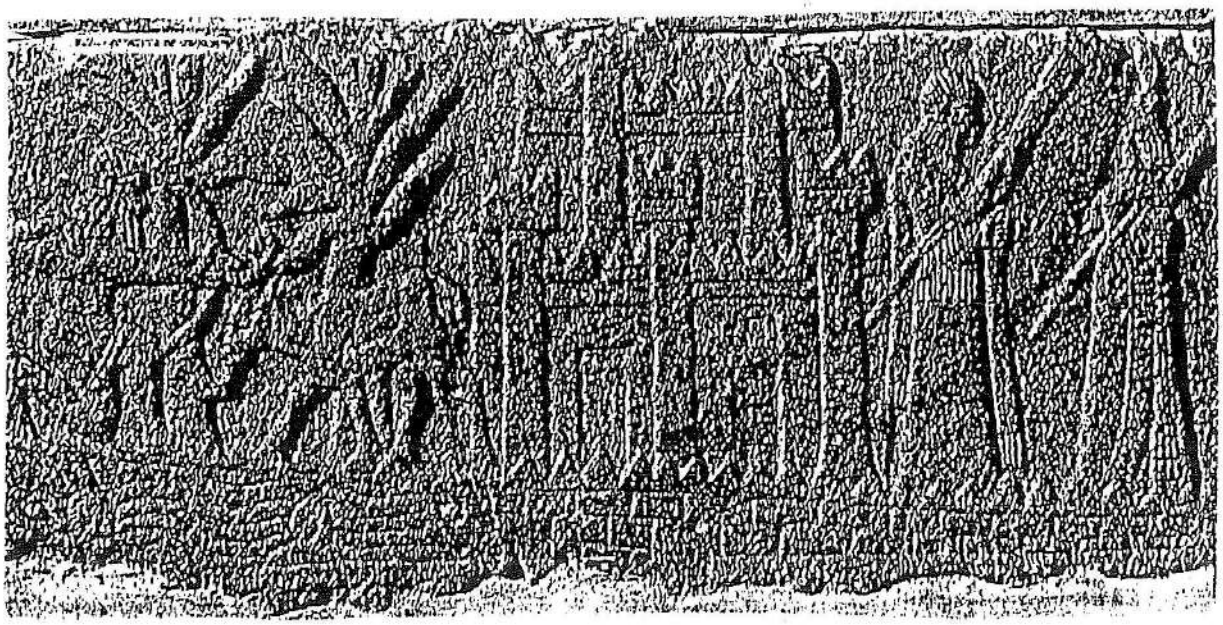


(Fig. 26) Asharoth- Relief Tiglath-Pilesar III from Kalhu

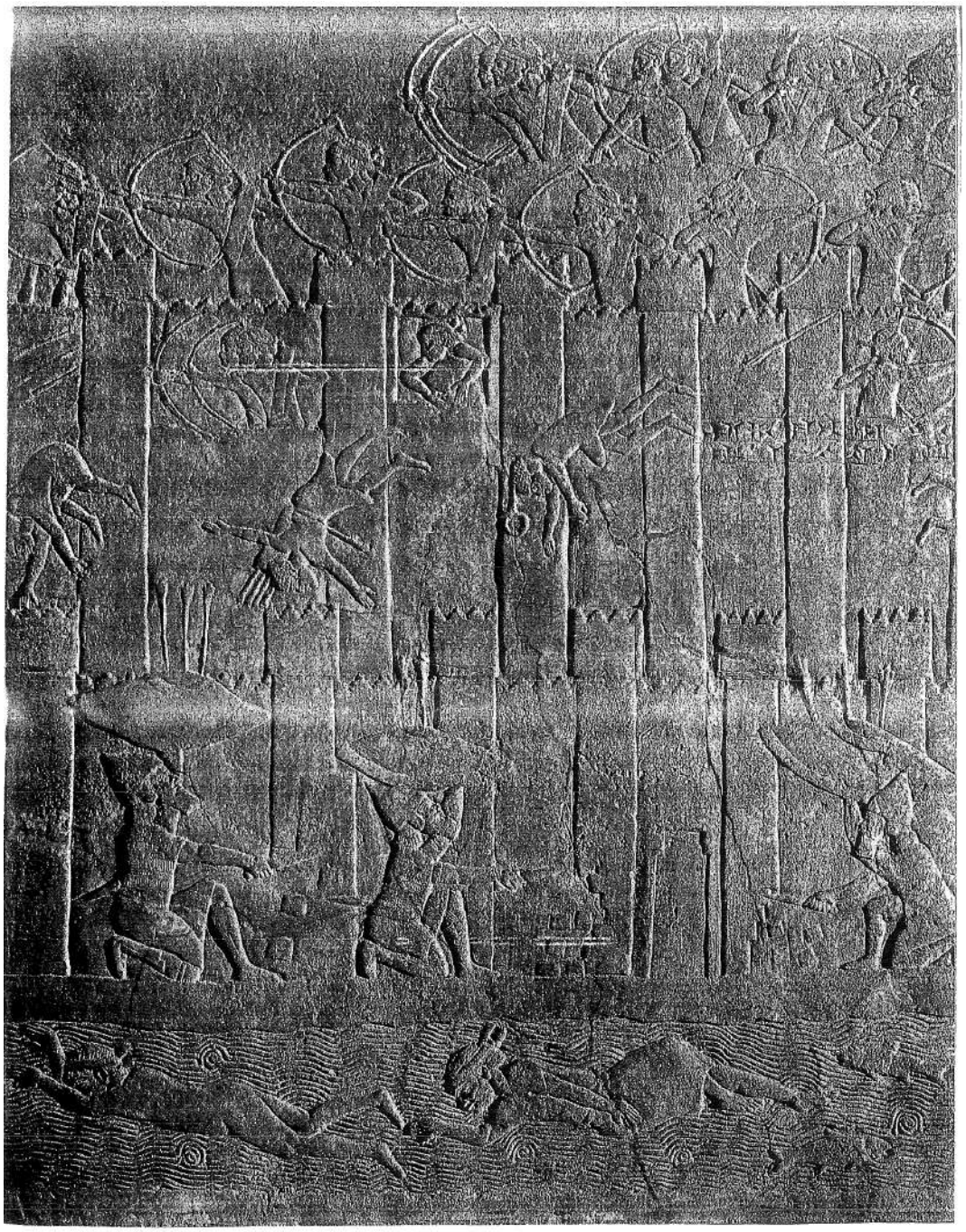
(Barnett and Falkner 1962: 120)



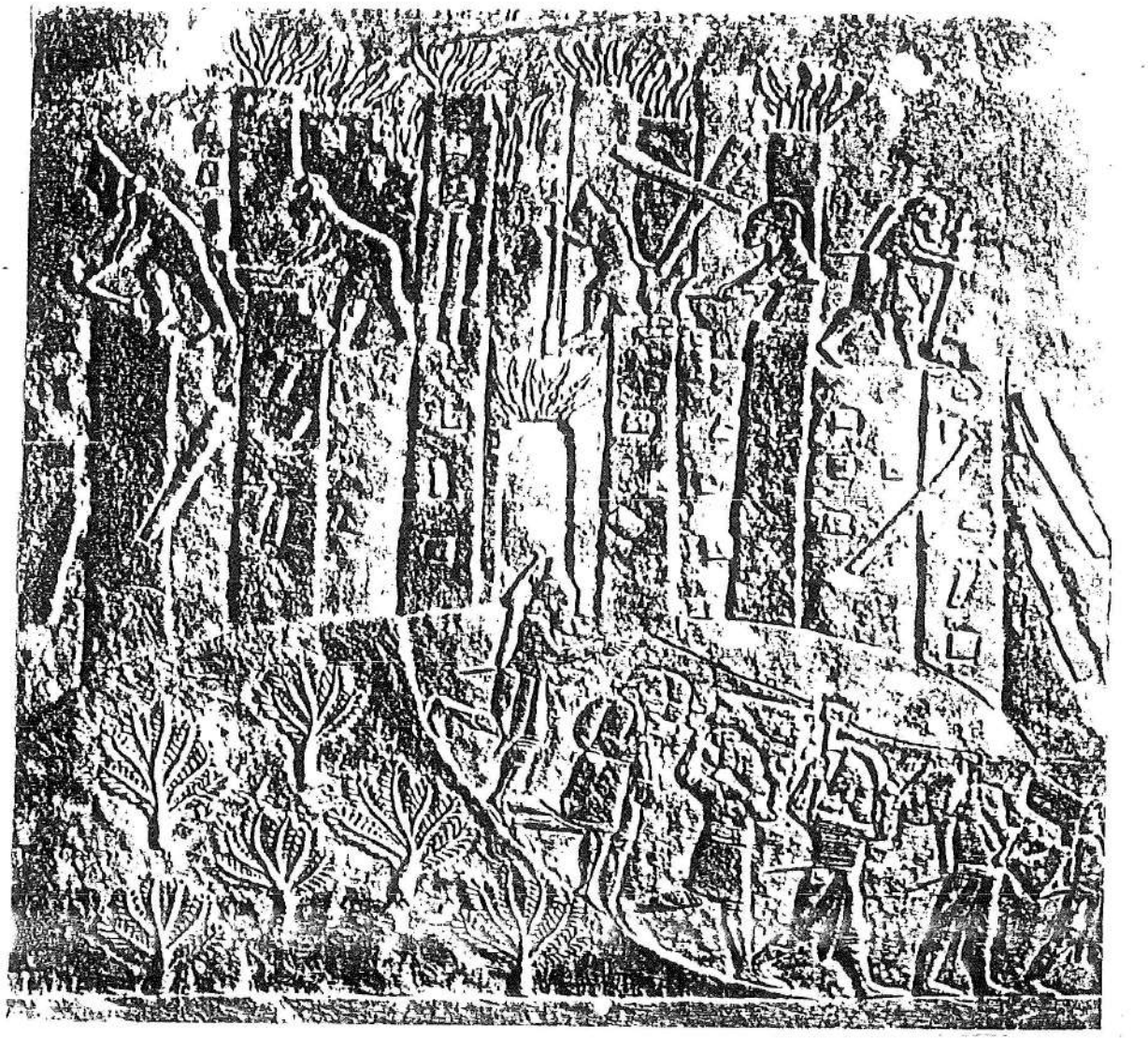
(Fig. 27) Imgur-Enlil (Assurnasirpal Gate) (Tucker 1994: 111)



(Fig. 28) Kalhu (Obelisk Rassam) (Reade 1980: IV)

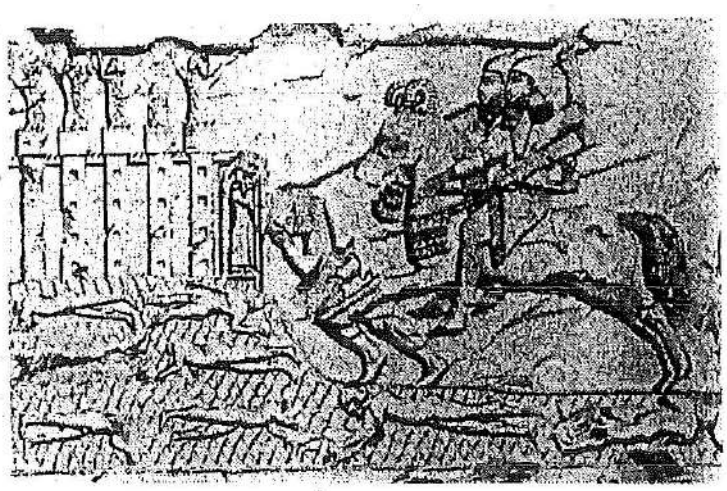


(Fig. 29A) Hamanu – Relief Assurbanipal from Niniveh (Reade 1980: 85)



(Fig. 29 B) Hamanu – Relief Assurbanipal from Niniveh

(Jacoby 1991: 118)



(Fig. 30) Tikrakka- Relief Sargon II from Chorsabad (Gunder 1982: IIId)

Surprisingly, Lachish's conquest was not mentioned in any of the Assyrian written sources and is mentioned only in the Bible in the description of the withdrawal of Sennacheribs from the walls of Jerusalem, which, despite a long siege, was not successful (Jacob 1991: 122). Various parts of the city are presented in great detail, which is not found in any other fortifications. They are shown in perspective, maintaining the proportion and relationship between the various elements as they were seen standing at the same point. Ussishkin believes that the artist saw Lachish harvest and then carved the city as he saw it, but according to the Assyrian art convention (Ussishkin 1982: 120-123). Relief shows the most likely picture of a city from a particular point, located south west of the city, on the slope of a neighbouring hill where the Assyrian camp was to be located. Relief shows one free standing gate, but excavations have shown that it was an integral part of the outer wall. There is only one gate, which simply overshadows the other. The architectural details of the palace are just as made adjacent city walls. However, on the relief, this structure is clearly expressed outside the battle scene. The city consisted of two lines of fortifications, which were reinforced with towers, arranged at

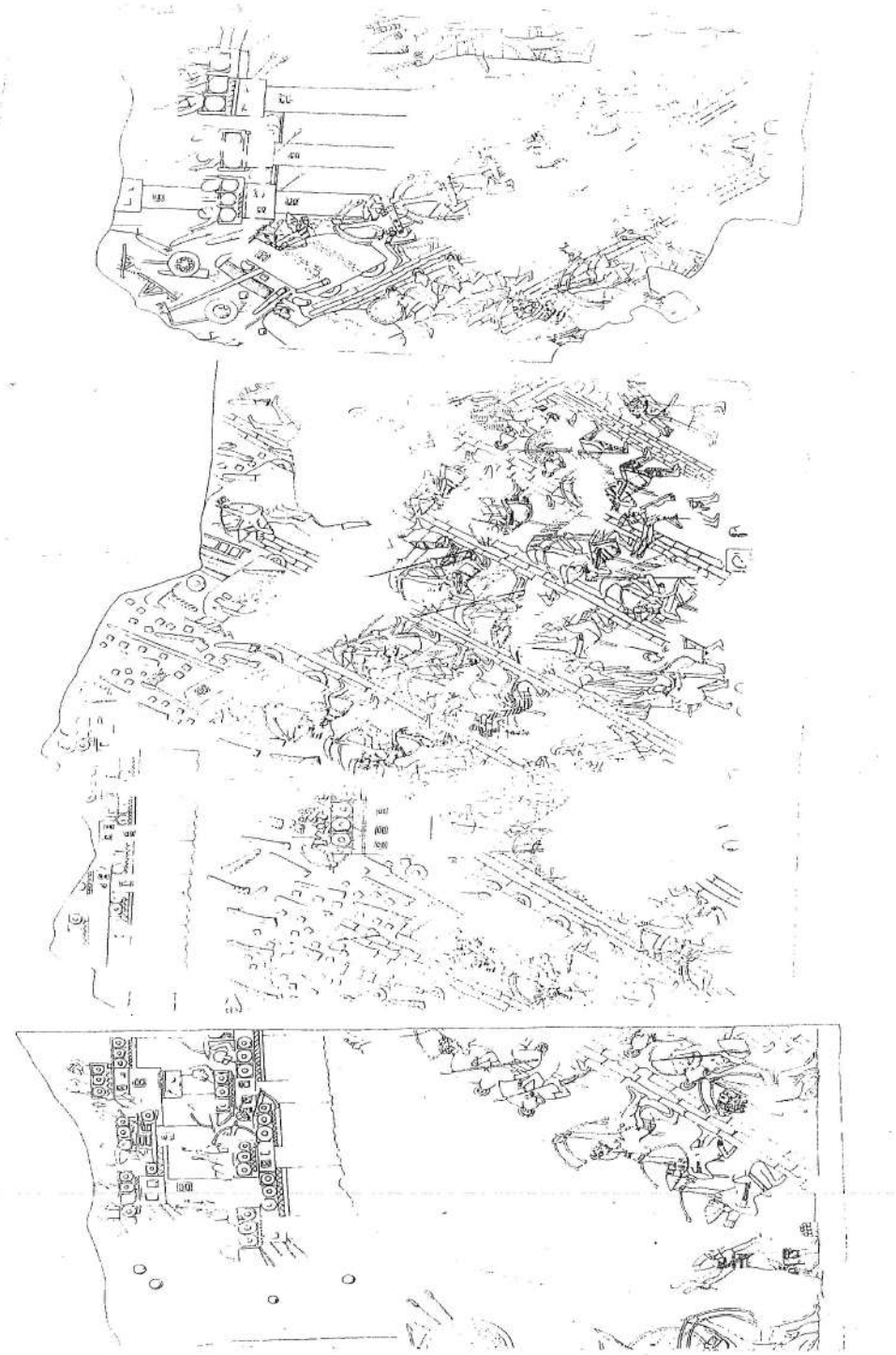
regular intervals. At the top of each tower was a rectangular room with windows, topped with battlements and merlons. The extra currencies were additional balconies, most likely wooden and erected temporarily for the duration of the siege and protected by a row of shields. The relief is missing the most important middle part of the fortress. The main attack on the city was made to the right of the gate. Above the gate is a Tell and massive structure with seven towers, three of which are higher than the others. There is no sign of the battle, apparently not an attacking object. On the right side the walls and towers are higher, but this is due to the observation place from which they were simply better visible than the opposite end. A single tower rises above the left part of this segment of the wall, most likely belonging to a structure located inside the city.

During the reign of Assurbanipal the two images found in Niniveh are very similar to each other from the Assyrian cities, Niniveh (fig. 33) and Arbel (fig. 34), the bas-relief with the Niniveh representation comes from the Northern Palace dating to about 645 B.C. Its uppermost part of the most probable it is a view of the south-western palace facade, build several decades earlier, under the reign of the predecessor Assurbanipal - Sennacherib. I have writen that he build a portico with bronze columns, resting on bronze lions and bulls full of bronze bases which can be seen on the relief (Roaf 1998: 186). The walls of Niniveh consisted of three lines of powerful defences, a stone forepost and Tell, brick structures of towers and battlements.

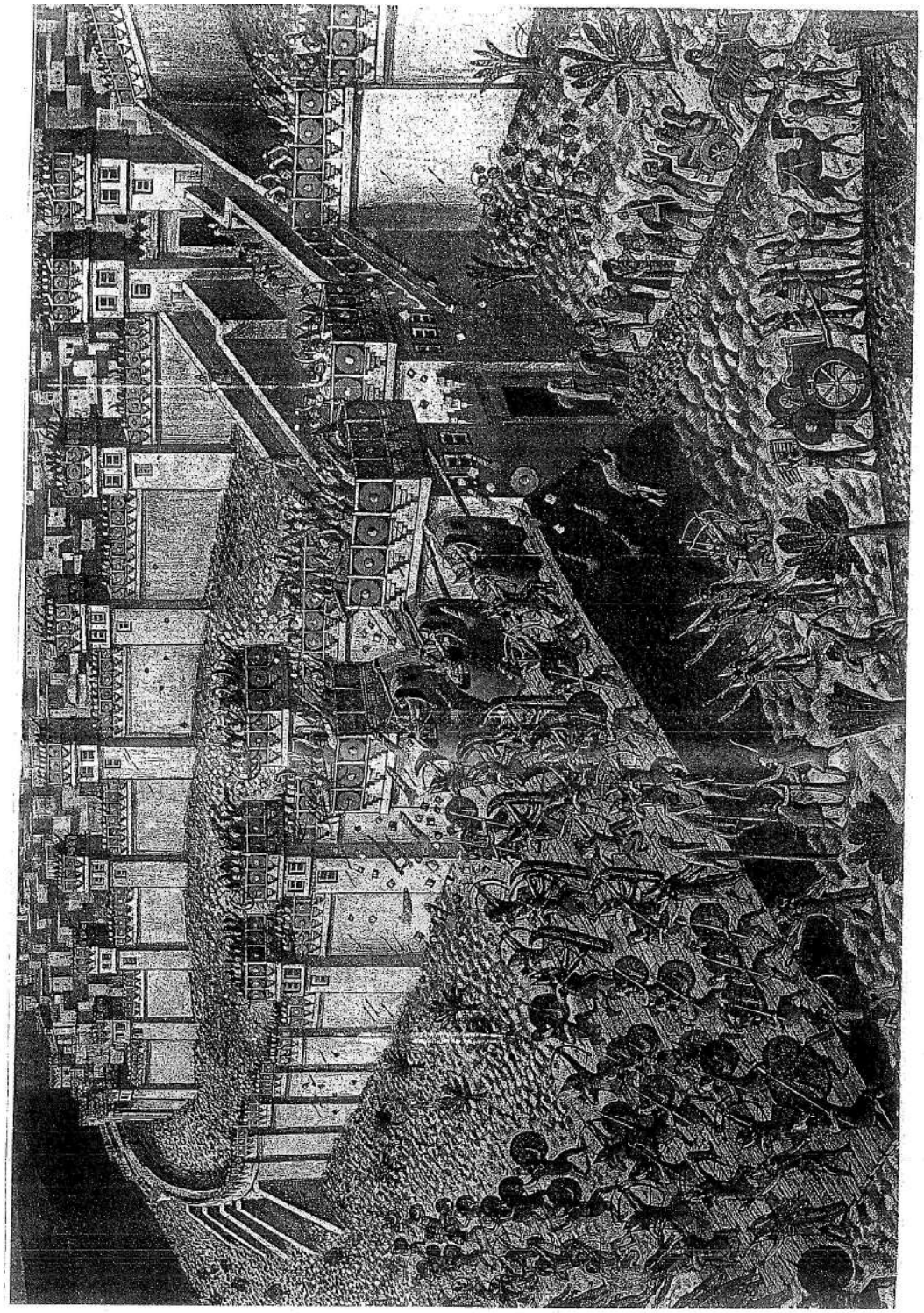
Madaktu (fig. 35), dating back to the reign of Assurbanipal, is drawn almost exactly. Like the military Assyrian camps. The city name is known for its signature. It is depicted with river / moat, citadel (left), single houses and city wall. It seems that there are suburbs between the city wall and the river (Reade 1998: 83-84).

Another representation is the relief of Assurbanipal, devoid of

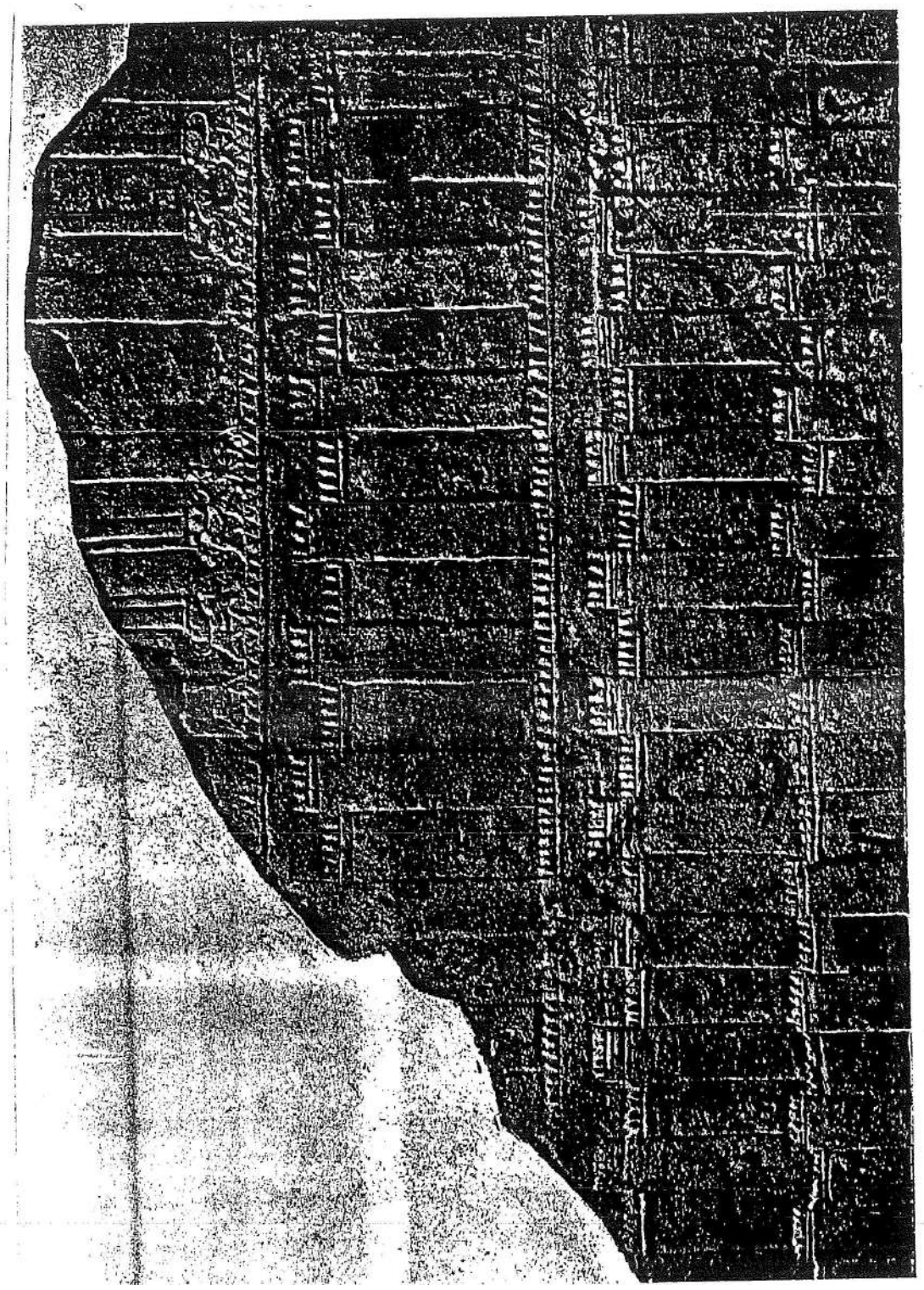
inscription identifying him, depicting an attack on an Egyptian city (fig. 36), found in the Half-Pillar Palace. The city is located on the river (Al-Nile). It is located on a flat ground, characteristic of the lower river. It is interesting to note that there are architectural peculiarities, tapering upwards (conical) pylons that flank the main gate. There are no siege machines here - their sappers are in their place. Researchers such as Y. Yadin, think that this is a Nubian city, based on the negroided look of the face, the costumes and the characteristic plumes of the captives of the city (Reade 1998: 86). However, it seems that these are rather Thebes, the capital of Egypt, the city of 100 gates, where the Assyrian ruler certainly arrived in 663 B.C.



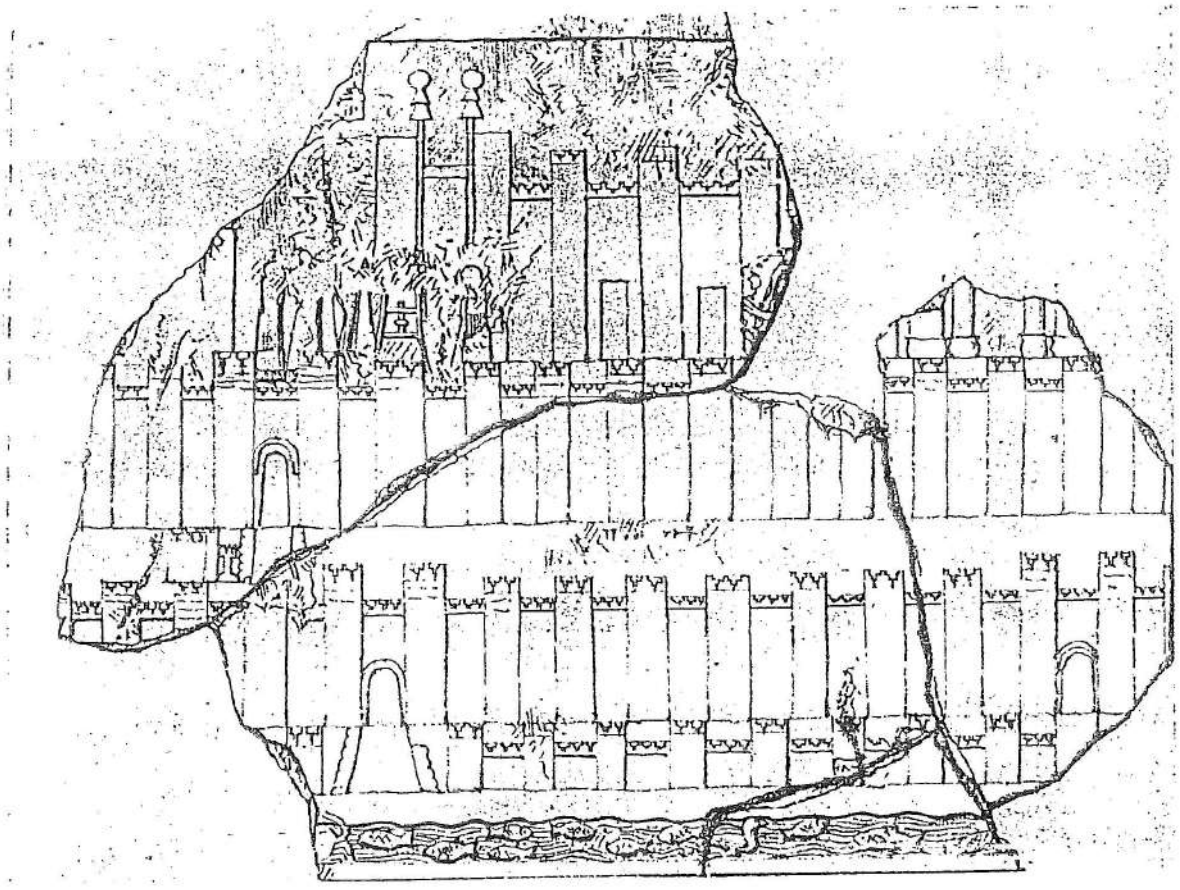
(Fig. 31) Get Lachish. Sennacherib Relief from Niniveh
(Ussishkin 1982: 121)



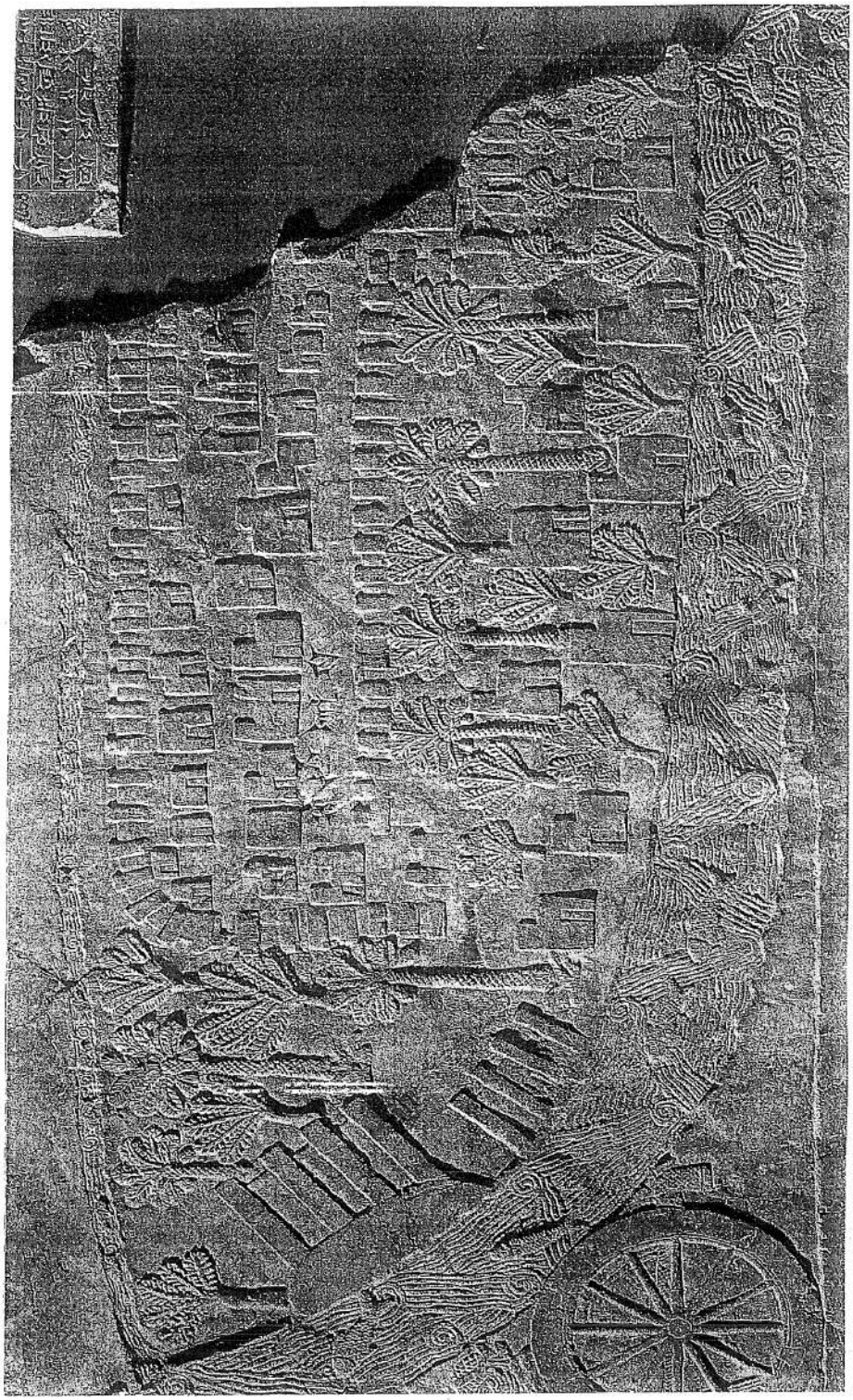
(Fig. 32) Lachish – Reconstruction A. Sorell'a (Reade 1998: 65)



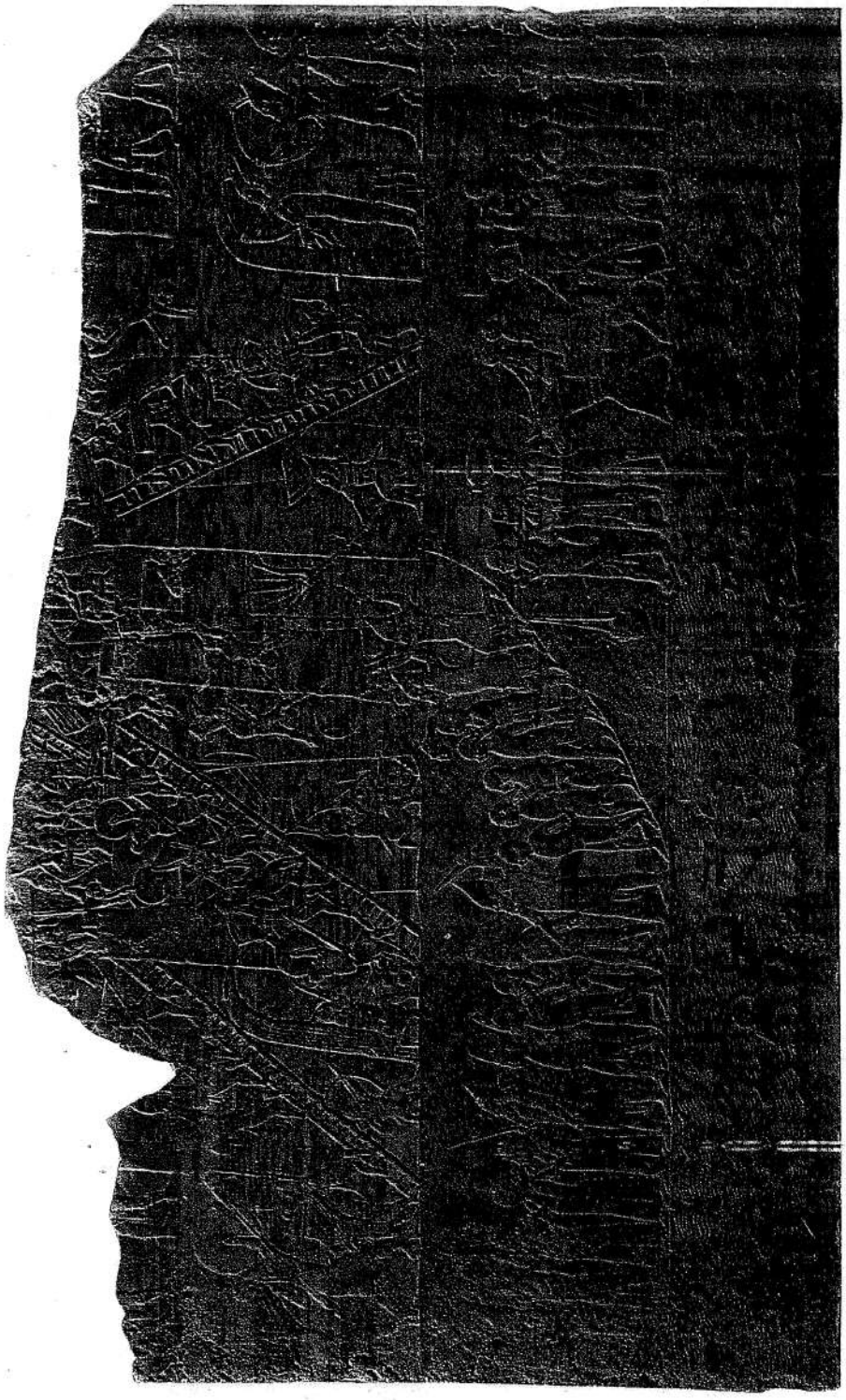
(Fig. 33) Niniveh – Relief Assurbanipal (Orthmann 1985: tafel 241)



(Fig. 34) Arbela, Relief Assurbanipal from Niniveh (Andrae 1974: 13)



(Fig. 35) Madaktu – Relief Assurbanipal from Niniveh
(Reade 1998: 83)



(Fig. 36) Egyptian City, Assurbanipal Relief from Niniveh
(Reade 1998: 83)

CONCLUSION

Inscriptions on urban fortifications had, by and large, one standardized protocol statement about the importance of fortifications. They identified factors that are undoubtedly worth mentioning, and which are important as a means of describing the structure. In some of the inscriptions, there is talk about the latitude, or wall thickness, while others communicate information about the depth of the foundations of the wall, which ultimately provide the strength of the foundations or 'dug depths', and in some cases the foundations of the trenches are underlined. Often, the height of the wall is defined using measurements, where they are frequently referred to as "*mountain*" (Battini 1997: 46). All these factors contribute to the strength and resilience of the fortifications on the street. But what in the poetically formulated comparison, as already with mountains, is clearly stated in some texts, is namely that fortifications should also have a character representative, including their height, but also contribute to their beautification (Battini 1997: 47). Apparently formulated Esarhaddon this intention, writing from the outer wall of Babylon: *"[I have it] Surprised for all people with splendor*" (Borger 1956: 25).

The Assyrians, like the representatives of neighboring countries, but to a lesser degree, left behind a huge number of fortifications on various monuments or objects. This legacy, in comparison with other areas, has impacted the quantity and form of representation. Interpretations from neighboring countries, as well as images of Assyrian camps, were not used in the interpretation because they are not cities. However, it seems obvious that some of them could serve as inspiration or as a model for Assyrian performances.

Defensive architecture here is always shown fronTelly except for

the camps seen from the bird's eye view. Characteristic elements that are always present are gates, towers and battlements. It seems that the blanks, which often occur in iconography on towers and walls in triangular form, are merely simplification of stepped walls, occurring much less frequently. A careful analysis of city sieges shows a very interesting rule. It is that when a city is besieged, the blanks are visible very clearly. They defended the city and the pledge of the soldiers; and in the situation when the city is already conquered, the battlements never appear.

These images were not separate images, but elements for narrating a given story. Cities were not. They were the central and most important show on the relays. They did the background function for another, more meaningful content. Landscape and architecture were of secondary importance. A certain idea, an event, most often a war trip involving the king, was taken to the forefront, undertaken to the glory of the god Assura. Even Lachish's splendid painting, with its exceptional detail, was just one of the episodes of the great royal expedition.

At first glance it seems that the reliefs are very schematic, but after careful analysis, it is possible to determine the region's characteristic architectural features or landscape. It seems that these features were meant to make it easier to distinguish where the action took place. They were observed during war expeditions, paying attention to such elements as gable roofs or architectural peculiarities such as pylons. Gunter analyzed the representations of the medical, Urgent and Elamite fortifications, and on this basis, distinguished the architectural features of each of these three regions (Gunter 1982: 103-112).

For example, the cities of Medina were built on terraces and had several rows of walls. The number of towers displayed in each wall was usually between seven and nine. What's interesting about a part of the tower projecting over the wall is that its wider than the lower part. The

towers have two rectangular exits, the walls and towers are crowned with triangular battlements, the symbolic designation of the merlons, although the classic stepped walls never appear in the fortress's mediocre performances. The medical gates have at least one arched gate (open trees), usually located in the lower part of the walls, although sometimes the gate is only shown in the second row of walls (Gunter 1982: 109).

It is puzzling to have so little evidence of Assyrian native fortifications. The ones we know are shown in detail, but no one knows why they are so small. He makes his own fortifications to the Assyrians on telephones that they did not need to watch them again. Maybe they seemed obvious.

What is intriguing is that the strategic or military importance of the city does not affect the quality and detail of the show. The historical importance of the place is not reflected in the iconography. There are cities that appear in a very simple way, for example Carcamish. Despite the fact that we are dealing with a specific place, it was shown in a very general way. At the entrance of the Balawat shows are little important fortifications provincially. The form of the fortifications had to be very different from typical to be shown in Assyrian art. Assyrian expeditions set off on new and previously unknown terrains, and the peculiarity of these areas was sometimes depicted on orthostates or other monuments.

On the other hand, it is interesting how little is enough to show how the city is. The simplest type was to place the gate flanked by two towers and despite the lack of any architectural details, this symbol clearly suggested that the visitor was dealing with the city.

At the same time, the fortifications on the reliefs were erected in different places of each city and this is to indicate that the ruler wanted

to show their military and economic forces where the construction of such a huge defense system was needed. Besides, the labor forces of the economic forces which covers the costs of building materials on the one hand and the cost of workers, that is why we can think that the huge defense systems of a given city were represented by military forces as economic forces, and I think that it was the goal of city rulers to put defensive architecture on reliefs in various places of their cities.

CHAPTER 3

THE APPEARANCE OF THE BRICK IN ANCIENT MESOPOTAMIA

3. THE APPEARANCE OF THE BRICK IN ANCIENT MESOPOTAMIA

After man progressed from cave dwellings to living in the desert and using many materials that were available in his surroundings such as wood, stone, and branches of trees, to build his home, and because building with these materials did not protect him from climactic factors and attacks from wild animals, because it was not possible connected regularly, which created spaces in the walls, so they used soft clay to strengthen their construction. They learned about the characteristics of the clay and began mixing it with other materials to make it harder. The ancient inhabitants of Mesopotamia existed for about 3000 years until stabilization came through the construction of villages (Saeed 1988: 64-65). Brick is one of the oldest building materials. It was created by Inhabitants of ancient Mesopotamia, and was well disseminated throughout Mesopotamia and neighbouring regions, especially regions where there were no accessible stones for building and with the development of old town architecture. Recognizing agriculture on a larger scale and the desire to stabilize life, farming opened up the construction industry of permanent residences and access to ancient ways of living where they inhabited ancient caves such as Zozi, Hzar mird, Shanider, etc. (Alrwishdi 1969: 261). During this period, there were not building materials available throughout Mesopotamia, where in the north of present-day Iraq there was stones and wood available, and in the south, there was no material except the reeds from which they build their living quarters, as well as the availability of marshes and the soil that led to the appearance of brick.

3. 1. HISTORY OF BRICKS

Nemrik, a pre-pottery Neolithic village 55 km. north-west of Mosul, now provides the earliest architectural sequence for northern Mesopotamia. In the oldest, ninth-millennium settlement, taut-walls were built of variously sized 'blocks', 20 cm. thick on average. In the eighth-millennium B.C. phase 'the walls ... consisted of a single thickness of cigar-shaped sun-dried mudbricks, measuring 51 x 12 X 6 cm. on average, and closely resembling bricks known from much later Mesopotamian sites such as Choga Mami and Oueili' (Kozlowski and Kempisty 1990: 353, Pl. I). In the seventh millennium B.C., be walls were built either entirely of sundried mudbricks or of a combination of bricks and pack clay. Hand-shaped sun-dried mudbricks, appeared in settlements on the line of the Euphrates, at places like Bouqras and Ramad, by at least the second half of the seventh millennium B.C. Primitive bricks may be observed in the next thousand years at sites like Matarrah, Shemshara, Umm Dabaghiyah, and Yarim Tepe I in northern Mesopotamia. Moulded sun-dried mudbricks, whatever the precise stage their earliest development, begin to be widely evident in the Hassuna/Halaf/Samarra/Ubaid I cultural horizons in the second half of the millennium B.C., in north and south.

The mudbricks of Ubaid I and the early levels at Tell el-Oueili in the south are of the cigar- and loaf-shape well known in Khuzistan, where they were already employed at Choga Bonut. 'Archaic 1', and at Tell es-Sawwan and Choga Mami (Oates 1987: 164). At Oueili there appears to be continuity in their use through to Ubaid 4. This use of loaf-shaped bricks is best taken as an evolutionary stage in the development of building in mudbrick rather than as a necessary sign of cultural unity. The basic limitations of architecture of terre *pise* had a

profound long-term effect on the builders of ancient Mesopotamia. The laws of gravity and the quality of the workmanship in foundationsetting and in ramming technique determine the relationship between height and width in packed earth walls. Terre pist tends to be unstable. Certain fundamental inhibitions survived Introduction of pre-dried and standardized bricks, which made walls lighter and thus capable of being taken higher so long as points and lines of stress were appropriately treated. The real key lay in the proper use of mortar and of kiln-fired bricks. In general, as with terre pist, the methods of making sun-dried moulded mudbricks (*libn*) evolved in remote antiquity have endured in Iraq substantially unchanged, as examination of surviving bricks and the witness of texts relating directly to the manufacture of bricks makes clear. Aurenche (1981: 64) has given a detailed review of techniques, whilst (Salonen 1972: pls. XXXVIII-LII) provided a useful series of pictures of brickmaking in modern communities in comparable regions.

Mudbricks were commonly produced in rectangular wooden moulds, open at the top and bottom, usually singly, but sometimes in double or triple moulds. Almost any soil may be used as the medium, though one with greater clay content is more satisfactory. Some form of tempering was always necessary to avoid warping and cracking. Chopped straw or dung was most commonly used. It has been Calculation ofd (Oates 1990: 390) that 100 bricks require about 60 kg. of straw (i.e. Y. hectare of barley). The resistance of sun-dried mudbricks to fracture decreases with the decay of the straw bonding. Pulverized sherds and other mineral matter were sometimes employed. The lime content of many types of clay in Iraq makes them particularly suitable for the manufacture of durable mudbricks. There is no evidence that bitumen was incorporated in the clay mix in antiquity, though it has been in recent experiments. When kings were involved in formal ceremonies at the start of a building project, tools of ivory and equipment of precious woods. The making and laying of bricks for

public buildings, especially temples, is known from textual sources to have been accompanied by ceremonies and ritual to propitiate the gods, including a specific brick god, and to create the most favorable circumstances, especially for the crucial process of making the first brick (Moorey 1994: 311). For each new project unbaked mudbricks had to be freshly made, as they cannot be salvaged from old buildings. Written evidence indicates that such rituals attended work on simple houses as well.

Bricks are unique among Mesopotamian artefacts 'because they are the only surviving artifact for which textual evidence attests that they incorporate norms of length, area, volume, capacity and weight-a rather remarkable combination in the history of pre-modern metrology' (Powell 1982: 117). However, there already exists an extensive literature on the mathematical aspects of quantity assessment and related brick problems based on the surviving documentary evidence (Powell 1982: 124). Bricks were used in enormous quantities, especially for the platforms or rafts of mudbrick which replaced trench foundations in the Neo-Assyrian period, and always for ziggurats. Virtually nothing is known archaeologically of brick kilns in ancient Mesopotamia; even in Egypt pictorial evidence is rare (Verhoeven 1987: 261). Below the 'Stone Cone Temple' at Uruk a concentration of what may be late prehistoric brick kilns was excavated, many apparently used only once, to produce bricks measuring 32 x I8 x 9 cm. (Moorey 1994: 311). Others have been claimed at Khafajah (Frankfort el al. 1932: 76) and Nuzi. It is commonly assumed that they differed little from their more primitive modern counterparts everywhere evident Iraqi countryside (cf. Salonen 1972: 119 ff.).

By the Ubaid period they may be observed in use from Gawra level XIII in the north southwards to Eridu (Aurenche 1981: 67, table 6 with dimensions, map 6). The figures for brick sizes reveal both an

increasing standardization and a reduction in size. For the first time bricks no more than 50 cm long are more common than larger ones. On ethnographical analogies Aurenche (1981: 67) interprets this as indicative of molding. In discussing the bricks used in temples of the Ubaid period at Uruk, observed that, even if the technique of brick manufacture was still primitive, regular form and size (45-42 x 24-22 x 87cm) indicated organized mass-production. Moorey (1994: 312) implied a very similar conclusion in his discussion of brickwork in the shrines of Gawra XIII. The emergence of the widely distributed 'tripartite' plan for houses and temples in the Ubaid period reinforces the argument that new levels of social organization now affected the builder's craft across the whole of Mesopotamia.

No baked bricks have yet been reported before the Uruk period, save for an anomalous instance in Gawra XIII. A find in the Eastern Shrine 'consisted of a total of ninety-nine model bricks made of well-baked terracotta ... Examples of full bricks, square half bricks, long half bricks, and quarter bricks were represented ... Apparently these model bricks were used to determine the most satisfactory method of bonding and building the complicated recessed piers and pilasters found in Stratum XIII structures' no baked bricks have yet been reported before the Uruk period, save for an anomalous instance in Gawra XIII. A find in the Eastern Shrine 'consisted of a total of ninety-nine model bricks made of well-baked terracotta ... Examples of full bricks, square half bricks, long half bricks, and quarter bricks were represented ... Apparently these model bricks were used to determine the most satisfactory method of bonding and building the complicated recessed piers and pilasters found in Stratum XIII structures' (Moorey 1994: 314) Up to the middle of the fourth millennium B.C. moulded mudbricks had tended to be large and flat. In the Uruk period smaller proportions emerged so that two bricks could be handled together. Now, also for the first time, bricks were baked in kilns for special purposes and shapes

were varied to suit functions in a building. (Finkbeiner 1986: 47 ft., appendix II lists brick sizes) has provided a full review of the brick-shapes used at Uruk through the later prehistoric levels (VII-VI-I).

The preferred brick manufacturing month was the 'third', may-june, immediately after the spring rains, when water would be plentiful and the whole summer lay ahead, if necessary, for drying. Chaff or straw was easily available at this time. The July-August period was characterized as a time of building, ness of the ground would have facilitated foundation laying. The association of the fire-god with building may arise from this conjunction of intense heat and construction (Ellis 1968: 20). Broadly speaking, as with terre pist, the methods of making sun-dried moulded mudbricks (*libn*) evolved in remote antiquity have endured in Iraq substantially unchanged, as examination of surviving bricks and the witness of texts relating directly to the manufacture of bricks makes clear.

3. 2. The Productions of Bricks in 4th and 3rd millennium B.C.

It is a curiosity that brick is still produced with an ancient technology. General production phrases I show following: Raw material preparation, forming, drying, fringing and packing and dispatch. Next step of brick's production was using clay where it was made in regular sun-dried sticks, in contrast to the previous clay used in construction as long as it was soft. After using the clay as the basic material from which were made structures and buildings, and in final dried brick as a new material. There were problems in the south of Mesopotamia where dry bricks did not meet the building requirements, because it was irresistible moisture, in addition to the high groundwater levels in the area, the lack of stone and the difficulty of carrying it out of northern

Mesopotamia. At the same time, people already knew ceramics and its properties that were resistant to moisture, so the builders began to burnt bricks before being build, and thereby appeared burnt bricks with new properties such as being resistant to humidity. Moreover, for the first time saw the brick was fired during the Uruk period, and exactly in the buildings of Eridu city (Syton 1955: 460). According to Mr. Hussin, excavations in Ur discovered burnt bricks of inscribed information about inhabited people in Ur in the Uruk period and building a palace in dry brick chisel used clay to merge brick and its road was built of brick fired in 3500 B.C. (Hussain 1984: 258).

The ancient inhabitants of Mesopotamia were interested in the production of bricks; they mastered the quality and method of interest in the mud fermentation process, and the method of firing bricks to get a uniform brick fired by using closed furnaces to maintain the correct temperature. It aversities the ability to oppose environmental factors.

The contribution of kings to the construction of temples, ziggurats and palaces was also influenced by the contribution of kings to the construction of temples, ziggurats and palaces. For example, we can see King Ur-Nansha (fig. 37) the founder of the first Dynasty of Lagash, where a basket of clay is produced to produce dried or burned bricks (Louvre-ext: 1888). We really have a lot of monuments where the kings' contributions are made in building or making bricks, where they wore them on their heads in clay-filled baskets, just like Ur-Nammu (fig. 38) (Canby 2001: 33). At the same time, we have a letter in the wedge that tells us about the kings' participation in brick production and in building, where it shows us the steps of producing clay, shows how Gudea (2144-2124 B.C) took the clay from his stirring place, late in the basket, and brought to the brick template (Rashid 1981: 37). At the same time this tradition where the king took part in the construction I have to this day where at every important construction will come an

important person from office to make the cornerstone of the building.

> *"XVIII: Gudea put the blessed water in the frame of the brick mould. (....) He set up the appropriate brick stamp so that (the inscribed side) was upwards (?): he brushed on honey, butter and cream (?), he mixed ambergris and essences from all kind of trees into a paste. He raised the impeccable carrying-basket and set it before the mould. Gudea put the clay in the mould, he acted precisely as prescribed, and behold he succeeded in making a most beautiful brick for the house.*
>
> *(....) XIX: He struck the brick mould: the brick emerged into the daylight. He looked with complete satisfaction at the stamp (impression) on the clay (...) (Gudea) raised the brick out of the frame of the mould: he caried the brick- a lovely tiara (?) which reached up to heaven- and went among his people"* (Sauvage 1998: 22).

Analytical research showed that the best clay to produce brick, this clay which amount of silt is equal to the amount of sand. But such clay was not available in all parts of Mesopotamia, so they used river mud to produce bricks, but one problem was that the amount of river mulch was more than the amount of sand and therefore added to the bricks during processing hay and animal waste and one brick could keep with another brick (Rashid 1981: 44). Moreover changing the amount of mud in the clay from one place to another resulted in a change in the dried and burnt mud depending on the mud.

The basic way used to produce the brick is a manual method. This method is considered to be the oldest brick production method that is contained in cultivated land, added to it water, stirred and folded with hands and feet until it becomes identical sticky material can be manually cut, late drying under the sun. After drying the bricks in the

sun, they were moved to the furnace, and burned (Hussain 1984: 259). It can be said that the availability of raw materials to produce bricks in different places in Mesopotamia was the element which helped in the emergence of such types of production, as well as the susceptibility of the raw material to keep up with the evolution of production processes that do not need a high level of technical skills and competencies. Dry brick manufacturing sites were usually at the place they wanted to build- it was called in Sumerian as (E.IM.DU.8 /.A) means exactly (house), and we have evidence written on it from building called Akitu house:

'agurti sa libnati ina lab -bit a- biti ilabbinu''

Employee produces brick house at the gates Akitu (Rashid 1981: 36).

As we know, places of bricks production were situated near by construction site because otherwise it could be more of a possibility to lose those bricks while transporting them. To light the stove for burned brick that was produced at of the city walls, the animal waste kiln was used.

The production time of dried bricks and fired in mid-May until mid-October, because in this period the temperature is higher and there is no rain, so clay does not absorb moisture. In Sumerian language the month from which the brick cut starts is called the month of brick placement in Templates (Rashid 1981: 36).

From the plaques written by cuneiform we can find out that the time that needs to dry the brick is one day or two days (Rashid 1981: 45) in the period marked for brickwork. Moreover, the time of fermentation of clay is one day. At the same time, it is required that water which is used to make the bricks must be cleaned than that used

to prepare the dried brick (Rashid 1981: 40).

Their templates are of two types which were used in the manufacture of dried and fired bricks: the first is rectangular frames hollow its heights as wide as the bricks. Moreover, the second type is the unmodeled templates of its size as well as the size of the dried or burnt brick that they want to produce (Rashid 1981: 45). Producing brick that signed letter in cuneiform was difficult to remove from the templates, so I have proof written where they put some water in the templates before pressing the brick to not glue in the templates (Rashid 1981: 40). Indeed, the above described manner in the production of bricks with symbols is very slow and not economical, so they replaced them by using stamped stamps on the bricks to cover the desired script, the stamp used for inscription of dried bricks- from the times of the Akkadian king Naramsin, (fig. 39)

It is translating:

" *Naramsin builder, the temple of Gad Inana*" (Translated Rashid 1981: 41), but in this way there was lost a lot of brick by the pressure of the seal, therefore They started to write by hand on the bricks as long as they were soft, (fig. 40) The burned brick with hand-made inscription.

Translation:

"*For God Ninkesh Zaida, build Gudea, the king of Legash*". (Temple of God Ningirsu, in Kosu city) (Translated Rashid 1981: 41).

This technique was reduced to some amount of brick, for description the history of building and for give honor of its builders.

One of the most important aspects of the product obtained – in means discussed bricks- are their properties resulting from the essence

of the stage of production process.

Masonry is a heterogeneous material, and therefore its compressive strength depends on the strength of the components: brick, mortar and brick-mortar interface. Compressive strength is strongly influenced by the characteristics of the raw material and by the production process. It is known that the raw clay of old bricks was often of low quality and the manufacturing process was relatively primitive and inefficient. Other characteristics of existing old bricks can provide an indication about compressive strength, such as mineral comarchaeological site, texture, crack pattern and porosity level, by revealing the conditions of drying and firing.

On the other hand, the evaluation of the mechanical strength of bricks belonging to old buildings is often difficult due to the high variability in production and additional variability caused by deterioration from the weather or chemical agents such as soluble salts, freeze–thawing cycles or load–unload cycles. A wide range of compressive strengths was reported by Fernandes (2006) on clay bricks from six monasteries in Portugal that were built during the 12th–18th century's period. Therefore, environmental actions and deterioration might have influenced the results obtained. The values range from 6.7 to 21.8 MPa and exhibit a very high coefficient of variation (up to 60%). Most studies indicate low values for compressive strength and a large dispersion of the values, with coefficients of variation ranging between 25 and 55%; but unusual strengths, higher than 50 MPa, were reported by Pauri et al. (1994).

Modulus of Elasticity, significant differences have even been found between values proceeding from distinct studies of the same monument, which confirm the difficulty in defining this parameter. Moreover, it is not always clear how authors measured the values presented, even if most standards refer the use of the linear part of the

stress–strain curve in a range of 30–50% of the maximum stress value. The values found range from 1 to 18 GPa, which represents a range between 125 and 1,400 f c, where f c is the compressive strength. Most common values are in the range of 200 f c, with an average value of 350 f c.

Tensile Strength, in the presence of tensile stresses, clay bricks behave similarly to other quasi-brittle materials such as concrete or stone. Tensile strength depends mostly on the strength of mineral grains and of the matrix that binds them. Additionally, there is some dependence on the chemical comarchaeological site, inclusions and the amount and dimension of pores. Because the strength depends heavily on the weaker zones, homogeneous raw clay with little impurities provides higher tensile strength.

Raw clay can be characterized by means of chemical and mineralogical studies (Moropoulou et al. 1993: 76, Cultrone et al. 2004: 98, Pauri et al. 1994: 21). These are frequent Fernandes et al. The determination of the chemical comarchaeological site of old bricks allows Identification of possible deficiencies that occurred during their production, like the presence of organic matter, lime nodules, harmful soluble salts and other impurities that might influence the durability of the brick (Robinson and Borchelt 1994: 67).

Chemical oxides commonly found in clay bricks (fig. 41) are the following: silica (SiO2), alumina (Al2 O3), iron (Fe2O3) or ferrous oxide (Fe3O4), potassium oxide (K2O), titanium dioxide (TiO2) as well as sodium (Na2O), calcium (CaO) and magnesium (MgO) oxides. Silica and alumina constitute the base elements of clay and are usually found in the following proportions: about 50% for SiO2 and 15–20% for Al2O3. Other components might be considered like barium (Ba), zirconium (Zr), strontium (Sr), rubidium (Rb) and manganese (Mn). However, these elements are always present in very small quantities and expressed in

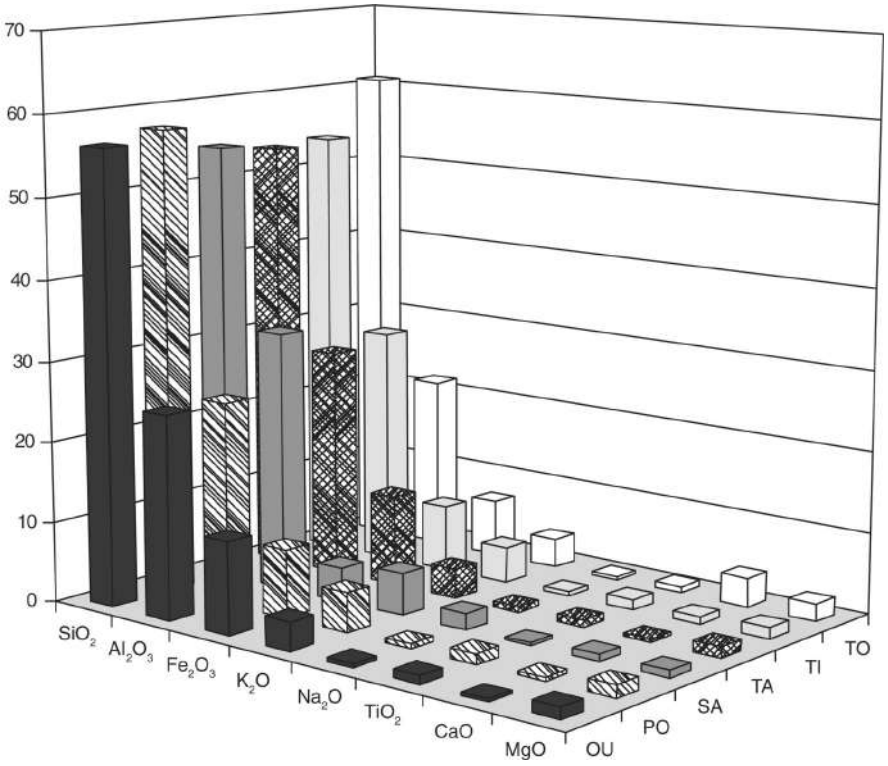
parts per million (ppm), while the proportion of the main components is expressed in percentage of the material volume. Chemical comarchaeological site can differ substantially in old bricks, with reports of clay bricks from the 12th to 13th centuries showing 38% of silica, 21.5% of alumina and 32.5% of ferrous oxide (López-Arce et al. 2003). Also, Moropoulou et al. (1993) reported the chemical comarchaeological site of clay bricks from the Basilica of Hagia Sophia, which exhibits a much higher proportion of silica (30–70%) and a lower proportion of alumina (8–16%) than normal clay bricks.

(Fig. 37) Ur-Nanshe brings clay in a basket
(Lloyd 1981: (fig. 68) 134)

(Fig. 38) Ur-Nammu brings clay in a basket
(Al-Taie et al. 2012: (fig. 3. 6) 228).

(Fig. 39) The stamp used for inscription of dried bricks- from the times of the Akkadian king Naramsin (Rashid 1981: 41)

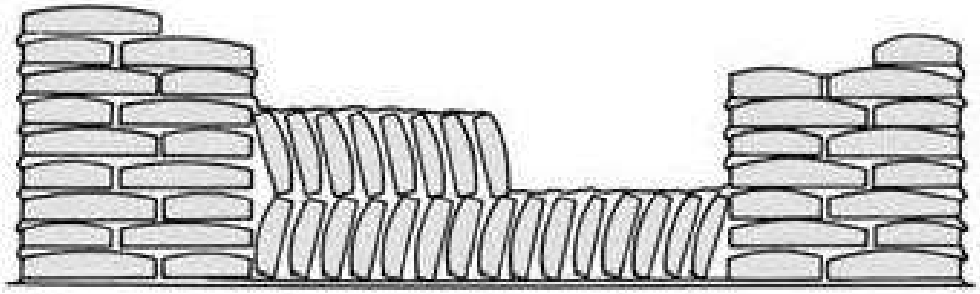
(Fig. 40) The burned brick with hand-made inscription (Rashid 1981: 41)



(Fig. 41) Average proportion of the principal chemical components of old clay bricks (López-Arce et al. 2003: 11)

3. 3. TYPES OF BRICKS

The main types of bricks in Mesopotamia are the first (*Riemchen*) from which we can define it as a dried or burnt brick which has its thickness as wide as its width, and its length is twice its width. Moreover another kind is Plano-convex (fig. 42) and spun from the previous brick that is flat-convex in advance, the way it is made by adding more clay than the template size at the same time the brick production does the brick bend from above. Simultaneously Plano-convex brick (Delougaz 1933: 2), was divided into two types, the difference between them was only in brick thickness - where the oldest type was thicker than the newest, the first called Cushion type and the road is called Biscuit type. The Plano-convex appearance of the brick is dating about 3rd millennium B.C. This technique was using for nearly 1000 years and later disappeared. A period in which it disappeared this kind brick falls likely at the time declined to the Sumerians as a force reigning over the south of Mesopotamia, of which we can say that the brick plano-convex had a great significance in the world of Sumerian, where it was used in all the buildings that was built at the time of their reign. At the same time, it can be proved that this is somehow related to the brick tradition is that the Sumerian Akkadian period who ruled in mid-expensive 3rd millennium B.C. did not use Plano-convex brick in any building from their reign, although it was very popular in 3rd millennium B.C.



(Fig. 42) Brick Plano-Convex (Delougaz 1933: (Fig. 23, 24)

From the plaques written we know various types of clay, dried bricks, and burned

	Ancient Names	Translations
1	IM. NITA	Soil / (clay) Man
2	IM. MUNUS	Soil/(clay) Women
3	IM. SAL. SAL	Soil / (clay) Thin
4	IM. HI. HI	Good Clay Fermentation
5	IM. RA. RA	Good clay
6	IM. A. SUD	Clay covered with Water
7	IM. KAL	The best types of burnt brick clay
8	IM. MU. DU. A.	Brick fired with name
9	IM. MU. MU. DU. A	Brick fired with name

(Table 1) Names of clay that come from the ancient writing

According to the Mr. (Rashid 1981: 45) if it comes to the name clay Men and Women it is to mean its hardness and its ease, and clay thin name appeared from its name where it is translate *SAL* as a female and in every place where we can see this stamp, it means female so we can translate it as a female clay or thin clay. Good clay fermentation was used to build dried brick, good clay for making burnt bricks was clay water spray and it was used in building the bathroom and toilet and used as asphalt later.

(Fig: 43) Dried brick shape and fired (Al-Temim 1982: Fig. 1, 278)

3. 4. CHRONOLOGICAL EVOLUTION OF BRICK SHAPES AND DIMENSIONS

Throughout all periods in Mesopotamia the brick had no single form or identical or similar size, so it is not easy to determine the shape and dimensions of the brick throughout all periods in Mesopotamia, sometimes in one of period of times there are difference shapes and dimensions of the bricks discover in excavation side. One of examples can be bricks from the Eridu city (fig. 43) (Sefar 1949: 163).

Thanks to the dimension's characteristic for Eridu we see the difference in the

Layer	Lenght	Whide	Thickness
10	30	12	8
7	28	23	6
	28	22	6
	27	21	6
6	23	12	6
	23	17	6
	23	20	6
6 Foundation	43	19	7
	42	18	6
	25	21	6

(Table 2) Dimensions of dried and burned bricks (in cm) in Eridu City.

dimensions of bricks in individual time of periods, as well as the difference even in one layer but in all layers, it follows that they had rectangular brick which was most popular in Eridu. At the same time, according to the researchers flat-convex brick, that each brick had its dimensions and between 23 bricks we found only two bricks of equal size and their dimensions are generally in between (31x22, 8x16 cm) (Delougaz 1933: 2).

The shape of the rectangular brick was the same in later periods, but the dimensions change as in the Ubaidian period where the brick was measured (44x22x8 cm), and in the city of Eridu during the Uruk period when the brick dimension decreased to (22x11x8 cm). The shape of the brick as a rectangle did not last long, by the appearance of a square brick in the Akkadian period that lasted quite a long time in Mesopotamia (Rashid 1981: 35).

The most suitable brick shape that can improve the way of joining the structure to make it stronger, as well as the ease of transport from

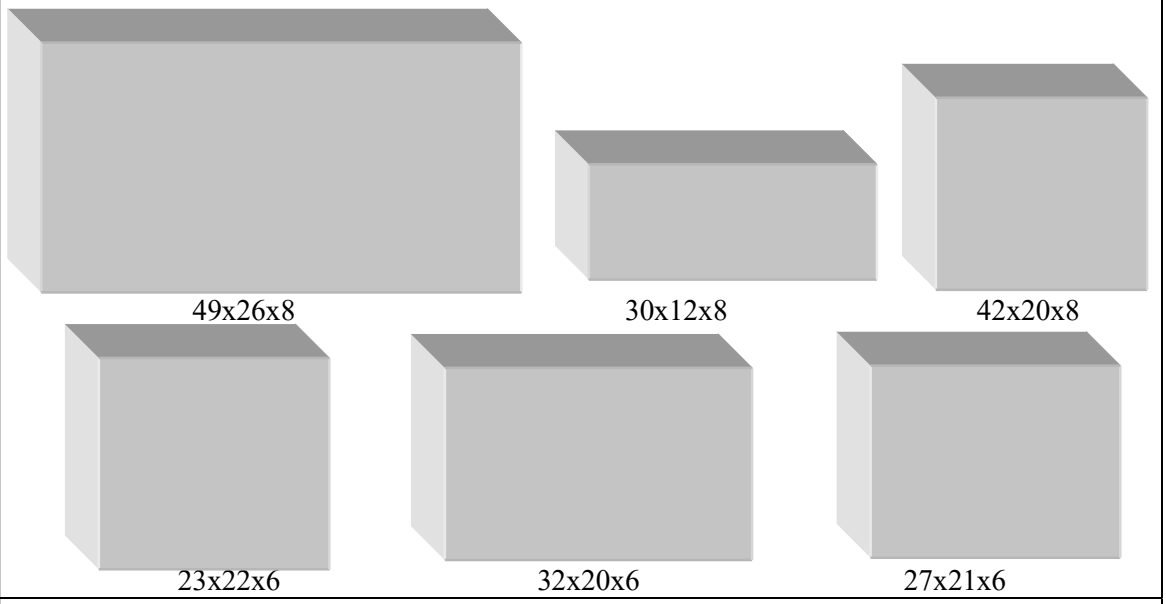
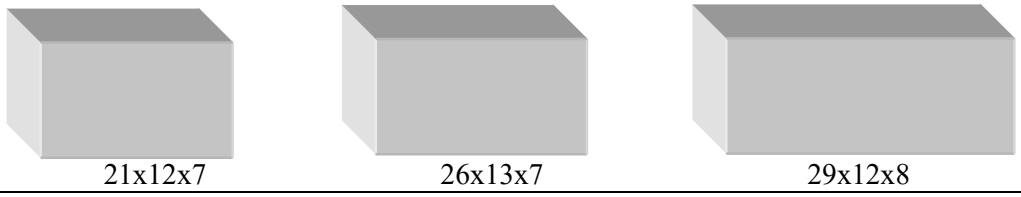
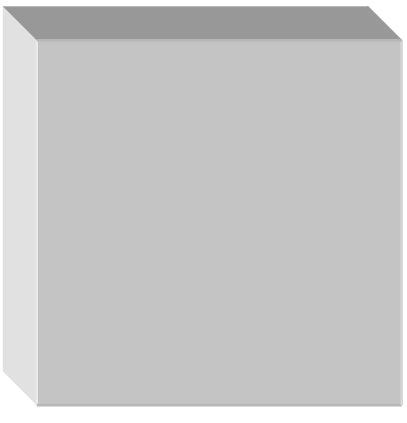
the production site to the construction site, the choice the size of the brick which is used for the speed and hardness of the construction process, from the expensive side of the easy-to-carry brick to high buildings, and the purpose in which the fired bricks were used, the building of the basic structure of the buildings, the floor of the houses and the street pavilions, these elements were important elements that played a main role in determining the dimensions, size, and shape of the brick. At the same time these elements answer a lot of questions related to the nature of construction and production. They also emphasize prominence in many dimensions and sizes. Depending on the need and type of buildings and in accordance with the wealth and power of power in some authorities, led to a regular tendency and smaller brick.

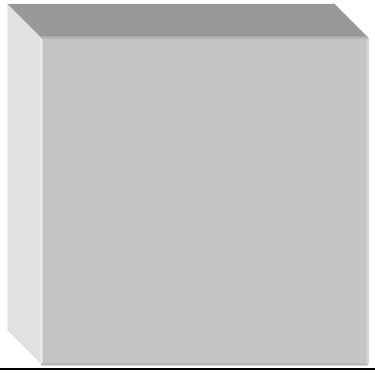
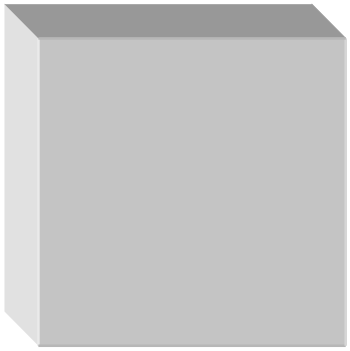
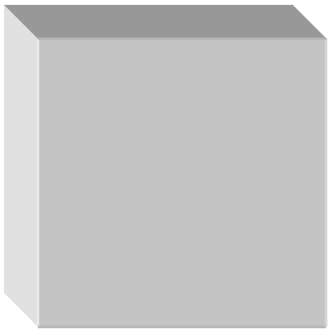
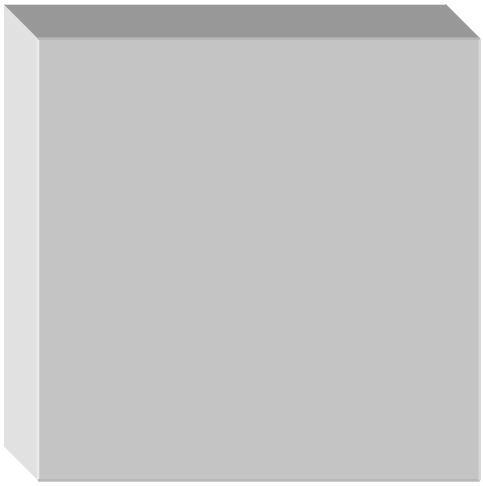
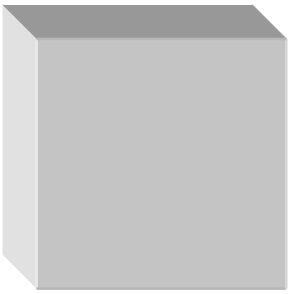
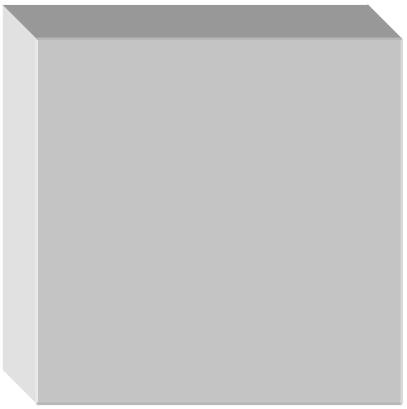
PERIOD	DATE	SITE	DIMENSIONS OF BRICKS-CM	AMOUNT OF THE BRICKS IN EVERY M³.
Jarmo		Village jarmo	Not found	
Hassuna	6800-5900	-	Not found	
Halaf	5900-5300	Beginning of appearance of the bricks	-	
Ubaid	5900-4200	Eridu	49x26x8[1] 47x22x7 44x22x8 30x12x8 46x21x5[2] 42x20x8 41x22x8 23x22x6 23x17x6 32x20x6 28x23x6 28x22x6 27x21x6 in foundation 23x19x7 42x18x6 25x21x6	80 99 101 264 126 112,5 112 216 288 162 168 189 210 220 135 240
Uruk	4200-3100	Eridu	21x12x7[3] 22x11x8	352 405

[1](Al-Taie et al. 2012: 224).
[2](Sefar 1947: 25).
[3](Al-Taie et al. 2012: 223).

			26x13x7 26x14x9 29x12x8	330 252 280
Jemdet Naser	3100-2900	Not found by me		
Early Dynastic Period	2900-2340	Lagash–Tello	36x26x6	144
Akkadian period	2340- 2159	Nuffer	38x38x7	68,75
Old-Babylonian period	2000-1600	Babylon	35x35x9	81
Kish	1595-910	Dur-kurigalzu	32x32x10 30x30x8	72 84,5
Neo-Assyrian	100-610	Assur	47x47x6	48
Neo-Babylonian	1100/1000-539	Babylon	27x27x7 36x36x7	142,5 99

(Table 3) The dimensions of the bricks in Ancient Period

Period	The Brick Shape Scale 1:20
Ubaid	
Uruk Eridu	
Early Dynasty Tello	
Akkadian Nippur	

Old Babylonian Babylon	 35x35x9
The Kassite Period. Dur-Kurigalzu.	 32x32x10  30x30x8
The Neo-Assyrian Period. Assur.	 47x47x6
The Neo-Babylonian Period. Babylon	 27x27x7  36x36x7

The sizes of dried or burned bricks vary depending on the time and the place but as a rule of thumb regarding brick size in Mesopotamia, in most cases the width of the dried or burned brick is twice its thickness and its length is twice its width (Hnaihen 2019: 91). Moreover, in some cases the width of the brick is the same as its thickness, but its length remains twice its width. Thanks to the differences in brick size we see in the plan, the following facts appear:

At the beginning of different eras of ancient Mesopotamia, various dimensions of brick prevailed, generally characterized by many sizes. In the middle ages of the kingdom, it had brick dimensions of almost a meter long and a quarter meter wide (49x26x8 cm), in irregular shapes. Some of the bricks were likely to form flatly convex with dimensions (23x22x6 cm) and (28x23x6 cm). At the same time, rectangular bricks appeared in building foundations (42x18x6 cm). The size of brick used differs as techniques evolved to improve the standard of joining and durability of the walls, but the building was not fast enough.

In the period of Uruk the brick tended to be a rectangular regular brick of smaller dimensions where it was almost half width, exemplified by the city Eridu where the brick measured (21x12x7 cm), (22x11x8 cm) and (26x13x7 cm), construction from this kind of bricks is faster and more regular than during the Ubaid period.

In the Early-Dynastic period, we see that the width of the brick increases and avoiding the rule of brick width is also twice its length example in this archaeological site Tello.

During the Akkadian period the size of the brick measured increased (38x38x7 cm), and also in the Neo-Assyrian period where the largest brick in ancient Mesopotamia appeared (47 x 47 x 6 cm), the brick increase can result from various reasons, among others, the strength and wealth of the authorities of those periods who used the

brick in the casing of official buildings, and also in the city of Assyria, where it was used for centuries not regular stone to build, so the brick was enlarged.

Since the Akkadian period, quaternary bricks have appeared in various dimensions in which was easier to build and stronger, lasting until the end of the Ottoman Empire in Iraq. The beginning of diminishing bricks in Neo Babylon was 27x27x7 cm, and we can say that this change in brick size has occurred because it was tailored to the speed of construction, facilitating its transport from the production site to the construction site, and reducing the damage and cost of the brick.

In the entire history of Mesopotamia, there was no cubic shaped brick, which indicates that the ancient inhabitants of Iraq found that the brick which was less than the width of the thickest was the best to build with in Mesopotamia.

CONCLUSION

The history of the brick is almost as long as the history of human civilization. The brick is an invaluable building material used in centuries old traditions, going back to the beginning of sedentary lifestyle of ancient people. By observing the creative process and evolution of the brick, the ways of using of it, the choice of finishing methods and the types of grain used in its production, we learn more about these these ancient peoples, their needs, the ways they responded to meet their needs and the environmental conditions of their lives. Besides the population that settled there permanently, we learn of the development of agriculture that appeared, the demand for durable housing: kind could protect people from the weather, climate

and wild animal attacks. The environmental conditions of Mesopotamia and changing the way of people's life were main enabler ouch evolutions machine -in the sphere of construction and in this way to improving life. In the sometime with bricks appears also durable writing medium - clay tablets with cuneiform- today invaluable source of knowledge for us. Over time they started to use enamel and decorate the buildings with coloured elements, whilst mosaics also appeared during this epoch. The most precious source of information for us turns out to be the shape and size of bricks. They are characteristic for every period in the history of the civilization of the Sumerian King. Moreover, follow this way -as it turns out- using the specific size of bricks, their shape, fiber comarchaeological site for build, were some kind of habit or tradition in Mesopotamians reality. The param scientifically so that they were reflection of the power of the ruling, as well as the fit to construction speed, the manner of transport and destiny of building. Throughout history, methods of brick production have improved, the experience of various civilizations disseminate to gradually, however the firsts-the original methods of production were using still.

CHAPTER 4

THE RIVER TRANSPORT OF BUILDING MATERIALS

4. THE RIVER TRANSPORT OF BUILDING MATERIALS

Transport is a major and important factor for the development of human civilization in every region of the ancient and modern world. Thanks to the survival descriptions of way of transport and its development, we are able to reconstruct that from the beginning of civilizations, Inhabitants of Mesopotamia were interested in navigating the river as an easy way to travel, communicate, exchange goods.

In the middle of the 5th century B.C. Herodotus who visited Babylon, moreover he decided to describe the journey of passengers from the north returned to their homes in his book:

"There is one donkey on each raft or there are some on bigger ones. When the passengers arrive in Babylon, they sell the wooden skeleton of the raft; they throw the furs on the donkeys' back and strike out to Armenia" (Casson 2002: 19).

They used large timber ships, which come from private shipyards. We should note that those kinds of ships were used for long sea journey to countries such as Melunha or Dilmun (Altun 2015: 60). The ships were used for various purposes, and every kind of trade had its special ship, build mainly of wood and with varying capacities, depending on their shuffling. The ancient people of Mesopotamia employed four modes of river transport: the boat, *alklak,* ship and *alqufa* which will be explained later in this part.

The oldest methods used by men to transport cargos through rivers, were made using tree trunks, because tree trunks are buoyant and glide over water, even with the addition of human weight. Cylindrical shapes flow through water more efficiently than other

floating materials (Rashid 1981: 100). During these early times, its unlikely that men in Mesopotamia knew of floating materials other than wooden logs, and additionally the wooden logs also represent the first natural model from which emerged the traditional shipbuilding industry. After some time using tree trunks to transport goods along rivers, people refined them to make them more suitable for their needs. The first of these improvements was to create a hole in the centre of the trunks to create a place to protect the navigator of the vessel, and to protect his property. They were able to avoid contact with the water, which in turn meant that they could navigate the rivers during the cold seasons of the year. The second improvement happened to the front part of the vessel, where ancient man carved it into a narrowed point (Curtis and Tellis 2008: 26-29) as a means of steering the vessel more easily than the previous construction (Rashid 1981: 100). The shape that appeared after Implementation of these improvements represents the oridemons of ancient shipbuilding, because all the ancient shipbuilding shapes that were found in Mesopotamia were built from the same design and it was not possible that the designs could have been based on other models.

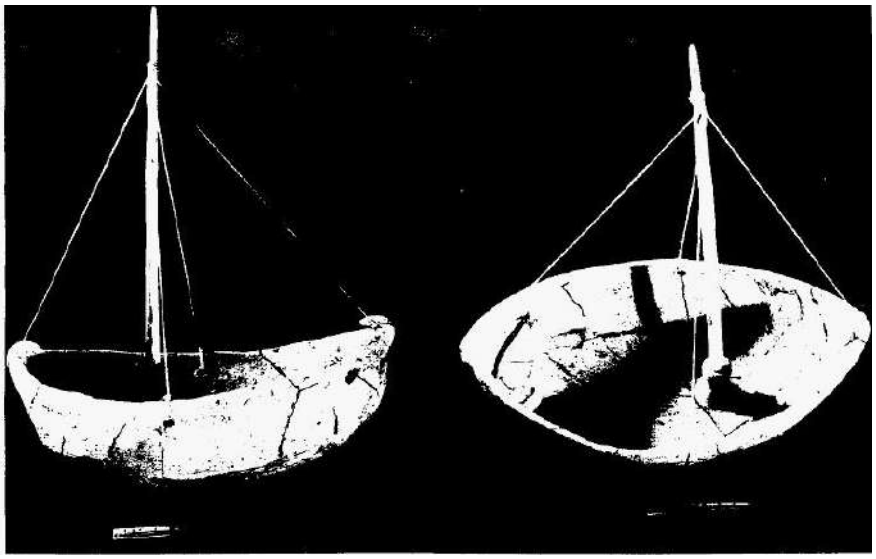
The appearance of land transport was the result of the appearance of river transport which could transport building and commercial materials only and exclusively by rivers which caused the need for another important type of land transport represented by chariots, which was used to carry building materials from ships to the place they want to build and at the same time semen brick which was burnt outside the city to the place of its construction.

4. 1. ARCHAEOLOGICAL TRACES

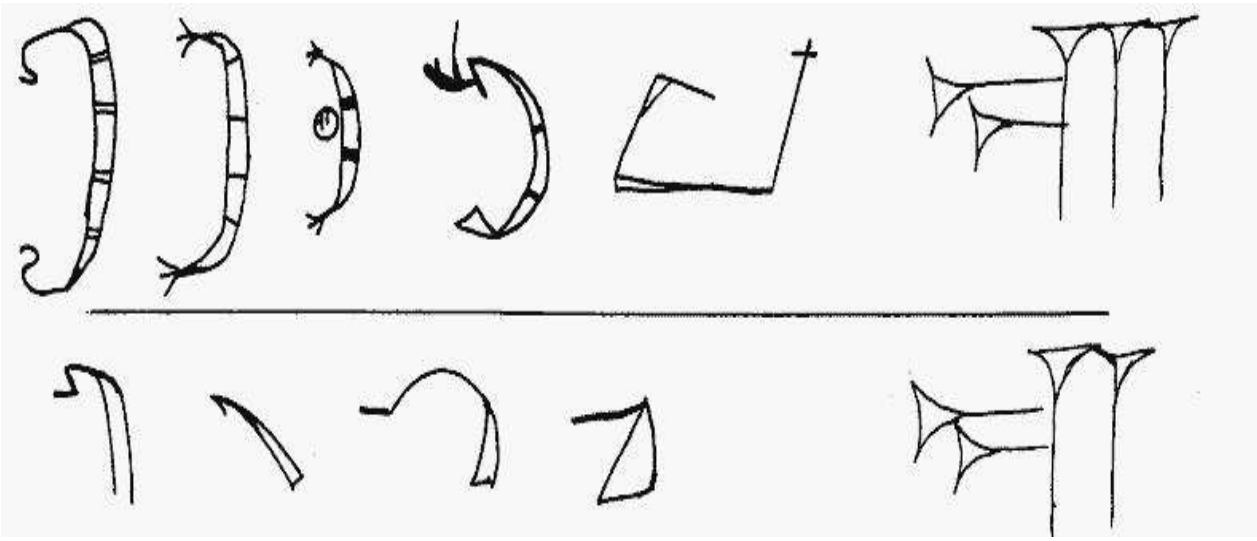
The archaeological survey in the south of Iraq has shown that shipbuilding began earlier than the Ubaid period, where we see that shipbuilding was advanced at that time, and that Inhabitants already knew about the sailing ship, as evidenced by the ceramic monument found in Eridu (fig. 44) (Rashid 1987: 258) where a small ceramic sailboat was found, in the shape of a deep crescent with its front similar to its end, and the centre of the boat an empty ceramic column that represents the sail area, and at both ends of the boat are permeable holes that are places sail extension for boats. Likewise, its length is also its width where I know from the cue text that the boat that we will build must be accurate, the length is equal to the width (Oppenheim 1956: 93). Inhabitants of ancient Mesopotamia used sailing as a transport to trade goods, (Figulla 1961: 160-161) thereby creating a great trade shift in Mesopotamia and neighbouring countries, because it generate lower costs than the earlier modes of transport, where they traded by using animals for transport, and sailing ships are huge, it held more goods, fast and is useful in long distance transport. At the same time, the diversity of commercial goods and production and construction exchanges increased, and it was the reason of finding various ceramic vessels with various Ubaidian period sculptures off the coast of the Persian Gulf. I can also pass that by increasing the trade between Mesopotamia and the rest of the Persian Gulf countries, and at the same time the emergence of the need to note the overlap of these goods, the first signs of the wedge letter appeared in 4th millennium B.C. and along with the sailing ship appeared the factors that helped to create a new type of land transport mode, where the need to carry goods from the sailing ship into the city.

However, I have to mention that the rivers Tigris and Euphrates were the best routes to transport in ancient Mesopotamia, where *Shat*

Al-arab did not exist at that time, and the Tigris and Euphrates flow separately into the Persian Gulf, in addition to information that ensures that until the times of Alexander the Great Tigris and Euphrates flowing individually along their river mouth about 120 km north of today's city of *Alfau* (Al-Sakini 1993: 20-21 and Baqir 1973: 49-50).



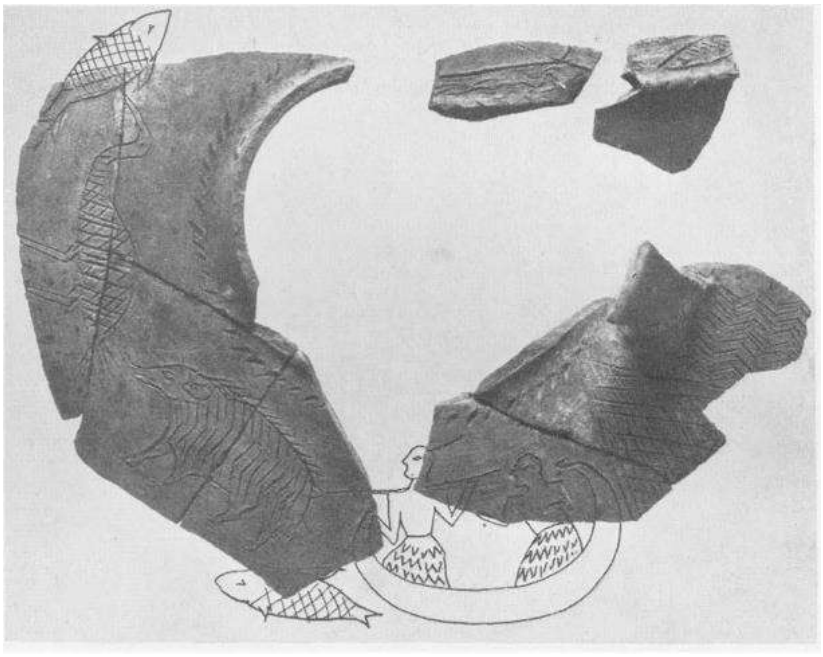
(Fig. 44) The oldest ceramic sailing ship of Eridu (Rashid 1990: 72)



(Fig. 3) The oldest boat name comes from Uruk (Al-Hashemi 1981: (Fig. 2) 39)

The oldest names of the boat from the Uruk period (fig. 45) were known thanks to the cymbals found in Uruk about 3400 B.C. which explained to us the shape of the boat and the material from which it was constructed, by bonding the sugar cane (Salonen 1939: 196).

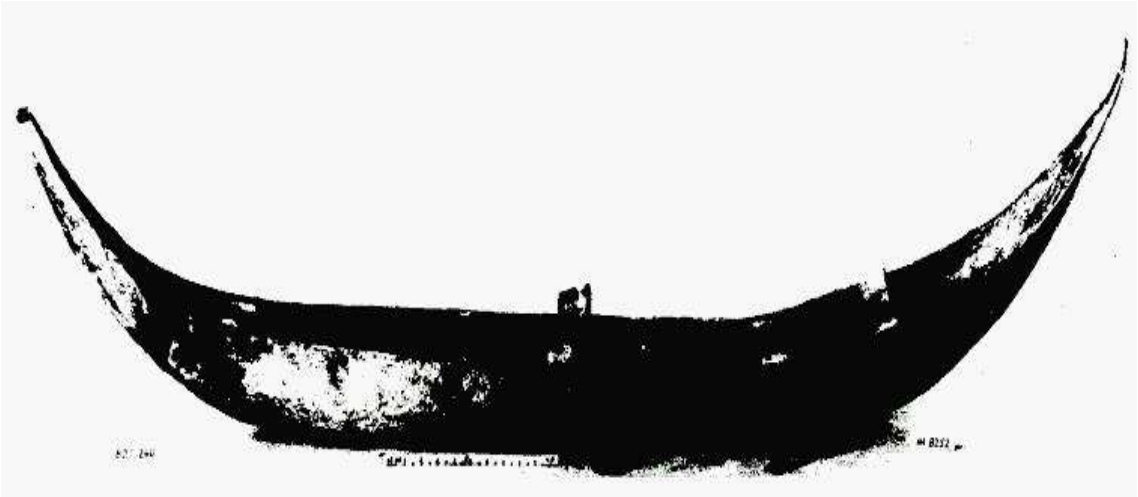
At the same time from the wedge texts that were written on the transport in antiquity we canl find out that the general name of the ship or boat in Sumerian language is *GIS MA*, and in Akkadian *eleppu*, and the type of wedge that was the symbol of words ship or boat is similar to today's boat but with twisted ends, very similar to the shape of a crescent. The reason for this is the placement of the crescent in the southern regions, it is different from the north, because the twisted crescent in the south is below and the northern region is upward, also at the same time we can suppose that the crescent placement has an influence on the ancient appearance. Boats, proof of this is the word crescent in Akkadian language *Uzqarum* and means a boat which is like the crescent moon (fig. 46).



(Fig. 46) The boat has a crescent shape appeared on the ceramics of the Khafajah around 2800 B.C. (Frankfort 1934: (fig. 59) 68)

Moreover, the shape of the boat on the cylindrical seal (fig. 47) shows the use of the paddle to move the boat. Where we see two people sitting on the boat- one in front and the other on the back of the boat - they hold the paddles used to direct the boat (Garrison 1989: 9-10). From the shape of the boat on the cylindrical seal we find that they were not long, flat floor and relatively deep. From the Royal Cemetery in Ur (fig. 48) we have a silver brown boat which is quite longer than the previous example: no sailboat, its motion depends directly on the paddle. Medium sized boats were used for long transport, along with fishing and small goods.

(Fig. 47) The cylindrical seal Uruk period (Foster 2009: (Fig. 1.8). 28)



(Fig. 48) Silver brown boat from Ur (Al-Hashemi 1981: (Fig. 4) 43)

4. 2. THE TYPES OF FORM OF RIVER'S TRANSPORT

We know two types of tribute: the first is a sailing ship which flows in the opposite direction of the river flow and the road is unspoiled which flows in the side of the river. The river mode of ancient transport, all ships that sail with the river flow sailing or no sailing ship, have their own special names in Sumerian GIS., *DIRIG.GA.BA.TIL*, the Akkadian *eleppu Muqqe'lpetu* and the other ships that sail in the opposite direction of the river are called Sumerian as *GIA.MA 'GAB, RU, GU*, in Akkadian as *Maepu eleppu* (Driver and Miles 1968: 428).

In addition, Hammurabi in his law referred to increase in river traffic in the Tigris and Euphrates rivers where sailboats had caused obstacles and the destruction of sailing ships, so Hammurabi wrote in paragraph 240 of his law that if the ship did not sail under the sailing vessel, the sailor, the owner of the drowned ship, must indicate to good the things he has lost and the thing he had on board, then the owner of the sailing ship must compensate the owner of the sailing ship and the things on board his ship at the time of the accident (Rashid 1979: 160). There is no doubt that the most important for ancient sea and river transport were regulation related about (1760 B.C) known as Hammurabi laws. But we cannot skip the fact that there were collected laws from earlier period also. About (2112 B.C) by king Ur-Nammu, about 1930 B.C. by Eshnunna and the laws lipidistar from Isin (1870 B.C) **(**Chambon 2016: 141).

The reason why the owner of the ship not sailing to carry out the punishment has been that sailors have the opportunity to change their terrains, but sailing ships do not have that capability, although both are used to carry goods. In point 276, from the law of Hammurabi, we find out the daily cost of a sailing ship where he writes, when a man hires a sailing ship, he must pay 2.5 silver coins per day as rent the ship, as we know one silver coin as well as today's weight of 46.75 milligrams

(Rashid 1979: 165). If we would account the costs of rent of siling ship using silver then we could find out that river transport was the chipest way of transport in that time, where:

so

1 coin of silver = 46.75 milligrams, so 4.675 grams of silver.

2.5 x 4.675= 11.68 grams of silver- the costs of renting sailing ship for one day.

So, in this way we are able to account the costs of renting sailing ship in old currency – Shigel, where:

1 Shigel = 8.4 grams of silver.

11.68: 8.4= 1.39 Shigel- the cost of renting sailing ship for one day.

4. 3. TYPE OF SHIPS

The ancient mode of transport across the seas was composed of four types of flying, ships, boats, the Alquffa (basket-boat), the most used of these types, is a boat, among other a sailing ship (Al-Hashemi 1981: 36-37). Because the movements of ancient transport depend on the first place on water modes, the wedge texts have given us a lot of information on the subject and their various names, where each name of these names was given on the type of boat operation. The normal ship was called after the Sumerian *GIS MA 'GUR* and in Indian *Maburru*. At the same time wedge texts mentioned two types of ships, the first has a long appearance and the road is low, so we can say that there were two places for shipbuilding for this type of ship, most of the ships of this kind was made of cedar wood.

As for the ships that were used to transport passengers from

place to place, it is called in Sumerian as *GIS.MA'. U5* and in Akkadian it is *elep rakabu*. Thanks to its structure, which helps to flow in rivers and canals, so we learned from the wedge text that the structure of this ship was unique in its length, and it was written in the text that the length of one ship of this type was 25 foot (Where one foot is 50 cm in today's dimensions).

The boats were made from leather and timber skeleton, what gave them strong construction. It was possible travel in the seas, to the lake and rivers as well. We suppose that the canvas was mounted into the boats. These kinds of boat were called *Quffa*, and they were used and well known in Mesopotamia in 7th century B.C. We know that internal skeleton was built from wooden ribs and the external parts were sewn from stretched leather. When travel was finished in the lower section of the river, the boat used to be divided- the wood was sold, and the leather collected for the re-use for construction of new boat (Özdaş 2000: 129). In my opinion the possibility of disassembly of the boat gave one more option. It is likely that this way was used for the wood transport in the form-shape of a boat. Boat became wood for sail itself.

Ships official ceremonies and especially the new annual feast Akito feast were used the same ships as passenger transport ship but with special decorations concern the occasion.

However, the largest ancient ship to carry commercial goods is about 125 *akuar* (Rashid 1981, 103) we know it thanks to the wedge text, and one *kur* (qur) is in today's size of 252.6 liters (Driver and Miles 1968: 427). But most of the ships used were those which diam are 60 *kur*, equal to 25 tons (Al –Hashemi 1981: 42), and most of the ships used in the present time of those which diameter is 60 *kur* we also see them in the south of present day Iraq and at all Persian Gulf countries, from which we will learn that the ancient tradition of carrying goods through the sea is adopted to this day, therefore, by meeting the natural

conditions of ship traffic in southern Iraq. At the same time Hammurabi mentioned in his law almost exclusively about a ship that carries 60 *kur* and we know that this type of ship was the most popular for using in antiquity and the most flowable, where he writes in article 234: if the master of a vessel fills spaces, Spaces that are the result of building a ship structure, of a vessel of diameter 60 *kur* for another person, then the other person must pay him 2 *shigel*: One *shigel* is also 8.4 grams in today's weight for silver for repair (Rashid 1979: 159).

Difference in loading of cargo ship created by the difference in building structure of the ship and its strength (Leemans 1960: 10), when the wedge texts that concern shipbuilding we know that there are many types of ships in addition each ship is specialized to carry one kind of cargo (Al-Metwally 1994: 312). Moreover Mr. Rashid who said that we already have 40 types of ships (Rashid 1981: 104), I have found the examples below:

	Ancient Names	Translations
1	Malallu =gls MA-lal	Ship transport
2	Rukabu / rakubu / rakabu	Passenger transport ship
3	Eleppu muttabritu	Ship Conveyor
4	Elep igri/ Leppu Sa agurri	Dry brick ship
5	GIS MA2.SUM SAR (=eleppu sa sumi)	Ship transport Garlic
6	GIS MA2.IN.NU (= eleppu sa tibni)	Ship transport Hay
7	GIS MA2.GI (= eleppu sa qane)	Ship transported by the thorn
8	Elep Qarabi	War ship
9	Elep Tillate	Ship transporting soldiers
10	GIS MA2.SE (= eleppu sa se)	Barley Ship
11	GIS MA2.SE.GIS.I3 (=eleppu sa samassammu)	Sesame ship
12	GIS MA2.ZI3 (D) (=eleppu sa qemi)	Flour ship
13	GIS MA2.ZU3.LUM (= eleppu sa sulupi)	Ship of the date
14	GIS MA2.SAR (= eleppu sa sizabi)	Milk ship
15	GIS MA2.U2 (= eleppu sa sammi)	Herbal ship
16	GIS MA2.KU6 (= eleppu sa nuni)	Fishing vessel
17	GIS MA2.I3.GIS (= eleppu sa samni)	Ship Margarine
18	GIS MA2. NINDA (= eleppu sa akali)	Bread ship
19	GIS MA2.SIR (= eleppu sa seri)	Meat ship
20	GIS MA2.SIG (= eleppu sa sapati)	Wool vessel

(Table. 4) The types of the ships and translations of their names

Among other things, the ship to grain, flour, animals, alcohol, etc., and other materials that are needed for everyday use by

Inhabitants of Mesopotamia (Rashid 1981: 104), which caused that Internal structure of each type was different between ships (The text from Old-Babylonian indicates the need to make changes to the ship that was used to carry the dried bricks so that it was useful to bring the tree trunk (Al-Hashemi 1981: 40 and Oppenheim 1956: 93). In my opinion the reason that the ancient transport mainly depends on river transport, because by building the majority of the ancient city in Mesopotamia to the shores of the Tigris and Euphrates and their canals, most of the agricultural areas. Moreover, the difficulty of opening the road to the farmland and even the way it is not open all the time. In the winter when it is flooded by the river and less expensive, Inhabitants of Mesopotamia have focused on river transport with evidence of this Babylonian inscription around the 6th century B.C. that when the road was good they walked and when they are not good they sailed by the boat (Oppenheim 1956: 94), in addition, the length of the Euphrates flow and the power of river transport along its path, which will connect Mesopotamia to its neighbouring regions, made it easy to bring wood from Lebanon and its proximity to the Mediterranean sea, creating a new trade line through the Mediterranean Sea, and in the south of Mesopotamia Euphrates and Tigris they join the Persian Gulf countries, all the conditions that have made it possible for river transport to be very beneficial and popular for carrying goods and trading with neighbouring areas. Boat transportation was very convenient and economic; these watercrafts had a capacity of around one hundred Shigels (Aruz and Wallenfels 2003: 481).

Information available on the war ships indicates that the Sumerians and Babylonians did not know the military ships, and their ships were only used to carry soldiers, where their names in Babylon are *elep qarabi*, but the Assyrians already knew the strength and operation of the ships the military is produced specifically for military affairs, but their ships were influenced by Phoenician war ships. I can

say that in the days of the Assyrian state, shipbuilding was scattered in size and shape, and after that the Assyrians were very powerful in the whole of the Near East. They dominated the Phoenicians who worked on the think that sties ships, and that is why the Assyrian war ship no sailboat like the Phoenician ship (Al-Hashemi 1981: 44 and Rashid 1981: 104).

Of course, Intensity of the river transport movement required the creation of a new type of ship called the rescue ship, which saved people and their cargo during a ship accident event in the Tigris and Euphrates rivers. At the same time, the movement of people between the banks of the Tigris and the Euphrates river and their tributaries needed a special type of ship that allowed them to be transported by the Cretan textiles *GIS MA TIL LA* and in the Akkadian *Eleppu Muballittu*, and bring them a things from coast to coast, it is called Sumerian *GIS, MA 'DIRIG, GA* and in Akkadian *Ne biru* or Conveyor (Rashid 1981: 104). Thanks to wedge we already know three types of conveyor ships.

Another type of ship is *Alqufa* (basket-boat) which appeared in the Akkadian period, called the *Quppu* meaning sugarcane basket in Babylon. *Quppatu* (Oppenheim 1956: 71) *Alqufa* (Fig. 49) is round, deep and flat floor, made as knitting basket of reed or palm leaf, covered bitumen on inside and outside, moving by using a long shovel. And the oldest information we get about this kind of history from the description of the birth of King Sargon (2240-2284 B.C) the legend has it that he was a son of priestess who born a child in secret. For saving life of her child she put him to base and she let go with current of Euphrates river (Biziuk 2005: 6).

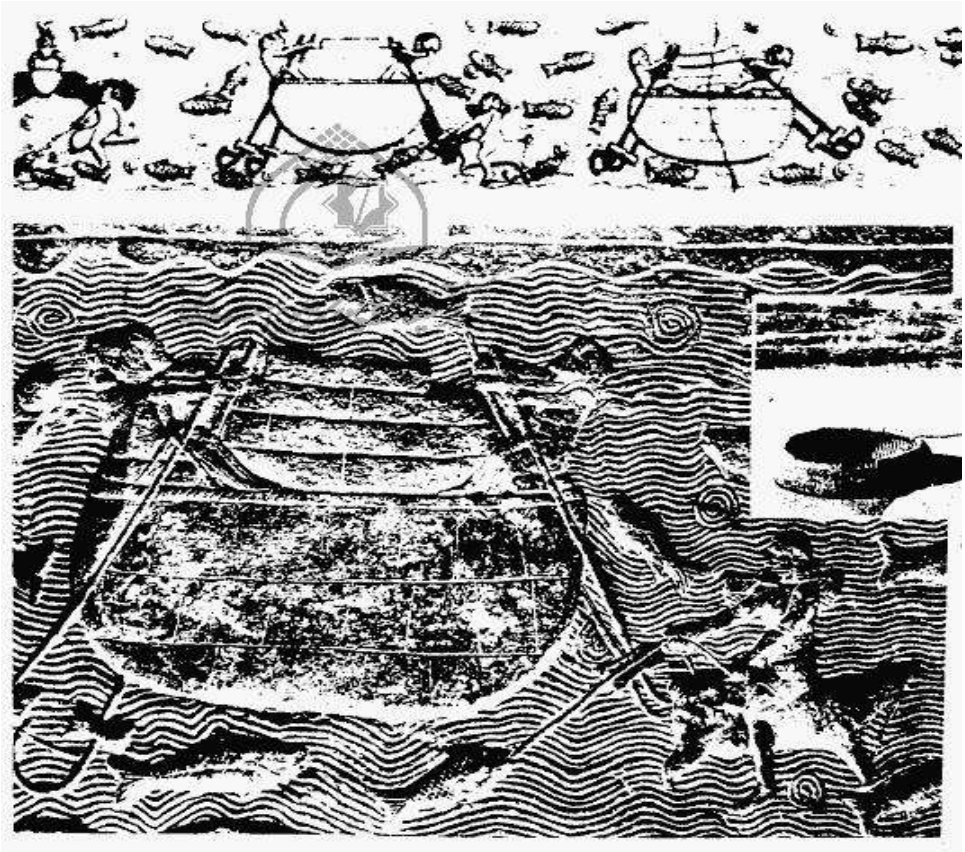
Alqufa it was type of a round basket, which reminded a basket for moving soil and bricks. What is interesting- the basked was similar like this which the king Ur -Nanshe carry on his head, and this which king Ur-Nammu has for the bricks production. In fact, it was basked made

from pointed branches, flat bottom, not too deep. *Alqufa* was covered by leather, wrapped in canvas and pieces of wool and bitumen which make it water resistance (Yahya 2014).

It was run by one or two men with short shovels, and hutch was full of different cargos. People caring a basket moved very easily thought the fast-flowing rivers like Tigris river and routinely used them for transporting of cargos upstream and down the river. In my opinion some type of ascet was produced and used for transporting clay from the river, the best type clay for bricks production. The reason if my assumptions are the fact that their construction is like basked used by kings for the brock's production (Ur-Nanshe and Ur-Nammu). In the sometime we see that it was difficult to drown them or break even during transport of heavy cargos like clay for example.

The last type of river transport that was used only in northern Mesopotamia is *ALklak* (Raft boat), the oldest of if is from the Middle-Assyrian period (1300-900) B.C. In Assyrian language, it is called *kalakku* its name comes from the name of the city *Aiski kalak* which produced it and was situated on the river Zab top. We say by the written texts how the ship flows to its place of flow will be separated its wood and sold at the place of its flow (Rashid 1981: 106). Personally, I think that this kind of boat was constructed for transportation wood for sail but no taxes.

Alklak is divided into three types, *Alaklak* leather (ELEP duse) (Oppenheim, 1956: 94), *Aklak* of cane and *Aklak wooned* (Oppenheim 1956: 94), which is made of leather combined with a blast of one another and is situated on the timber (fig. 50), flows generally in the upstream the river, where two people sit at the beginning of the boat, hold one long shoulder in their hand, they use to skirt the boat and to push the boat off the shore, the Assyrians use to bring the stone.



(Fig. 49) The Assyrians Alquffa (basket-boat), from the first millennium B.C. (Al-Hashemi 1981: (Fig. 7) 46)

The ancient inhabitants of Iraq used different types of wood to produce ships, and at the same time we know that in the south of Mesopotamia the wood was not available which is the reason they brought timber from the mountains of Lebanon, Dilmun, and Umiluha (Fadil 1989: 175-176), also used cedar wood, cypress, mulberry, and laurel. A wooden nail was produced from bay laurel, and mulberry wood was used to produce a plate that is usually placed on the floor of a ship, and used bitumen mixed with oil vegetables to fill the spaces on the ship, where the cost (Rashid 1981: 107) of one ton this admixure with bitumen was about 18-20 shigel.

As for the size of the ships, the people of Mesopotamia were precise in their dimensions, in particular the length, breadth and

depths that determine the size of the ship, but unfortunately only the size of the two ships, the first is a passenger ship *Rukubu*, which only knows its length of about 12.5 m. and the second *Malallu* transport ship which we know all its dimensions of 6 m in length, 4 m wide, 3 m deep. That is, its total size is 72 m3. Also, according to Salonen, the largest Babylonian vessel is 15 m long (Salonen 1939: 155-156). In addition, one of the wedge texts mentioned that building a single vessel of this kind may require the use of a 7200 of a wooden nail (Rashid 1981: 108).

The stages of the construction of the ship were as follows: definition of the exterior appearance of the ship, determining its external shape and dimensions of internal divisions. To determine the materials, you need and the cost of construction. It also determines the size of the ship and the mode of transport. Preparation of materials needed to build a ship eg wood, reed. Construction of the ship's body bedemons after the preparation and cut of the timber in the dimensions needed to build the whole ship, we begin to insTell the base of the board which is called in Babylon as *esenser / esemse eleppi* (Oppenheim 1956: 343). This wood has to be constant in order to be able to lift the entire structure of the ship, and two large planks on both sides of the ship help the ship to be tougher to be called *Kiskitti eleppi* (Oppenheim 1956: 422), and their archaeological site at the same level when the ship is flat, and a little higher when the ship has an inclined bottom. The wooden frame surrounds the entire ship. Late insTellation of the general structure of the ship and fill the ship's space by using pieces of wood, or reed or leather (Driver and Miles 1968: 427). The ceiling of the ship is then laid, and one room is build to the captain of the ship above the ceiling. Moreover the last stage of building a ship is asphalting and lubrication, using asphalt, fish oil and wood oil to fill all the space that is the result of the building and not allow the water to enter the ship.

4. 4. TRANSPORT OF BUILDING MATERIAL

Sumerians have in their cultural achievements a few breakthrough inventions. Among others about 3000 B.C. they invented potter's wheel and wheel to cart. In this way they obtained agile, oxcart as a mode of transportation. Thanks, of them we have boat ship and cart. In Mesopotamia there were as a mode of transport boats made from cane and wood, carts with donkeys and kind of the sledge pulled on the muddy ground -in Uruk period.

It seems that people mostly used them in this period of time for elite- lords and priest, carts and sledge, they exhibited their status. These modes of transport were used for religious ceremony also. As draught animals they used oxen in agriculture and donkeys based by merchants for transportation of caravan s cargos.

Water communication was chipper, more comfortable, faster and more safety. The rivers despite many congestions, shoals and rocky thresholds were ready for using transport route. The natural water movement caused that travel with along the river was not much physical effort. But we cannot forget about disadvantages this kind of transport system. Primarily, for a long time it was possible to use the river routes only seasonally. But people did not resign from this way of transport, they improve it. Properly to change necessities of live they introduced into natural routes systems new solutions and improvements. One of them was using short fragments of land between big river basin of enormous water arteries. Thanks, of them it was possible to enrichment of the river network in new directions. In the sometime a new cooperation between mass land transport and water transport started because in thin land between revers cargos, sometimes whole ships were brought by sledge, later wheel transport. Increasing of haulage was reasons to look for a new improve technical

solutions. One of the m were navigable channels. It was costly and needed a lot of physical effort, but it provided unlimited opportunities of transportation.

In ancient Babylonia, during rule the Hammurabi dynasty branching network servers and irrigation channels. One of them was special, called Channel of Freight was laid brick on whole length and divided the city on two parts- western and eastern.

The oldest and the most primitive modes of water transport were wooden blocks and reed bundles. After hundreds of year's observations of them was created something more perfect- raft. But the raft was slow and difficult to control especially the cargos were bigger and heavy. The raft was not sufficient for longer distances due to fact.

From historical sources we know that about 5000 B.C. there were built par-models of boats. The earliest were boats dugouts. For making them people needed complicated technological- in that time- process. From imagines on the walls of tombs we know that in Babylon existed specialized river fleet with special ships for transport of grain, buildings material, funeral, representative for kings and walking.

For states situated in the Tigris and Euphrates walley similar in Egypt. The river crossing was very important economic aspect of life. Inhabitants of these areas in Hammurabi s period (1728-1686 B.C) already transported olive, wool, leather, buildings material and handicrafts. The Hammurabi Code shows us a lot of details about Babylonian shipping. From its texts we know that it was practiced renting of ships and sailors for specified time or cruise. "If somebody hired 60 *gur*- we can read in this document - this person give for one day as a mercenary payment one sixth shigel of silver" (Rashid 1979: 165). The document defines strictly work of sailors – we read "If somebody hire a sailor, this person gives him 6th gur of grain" – the code

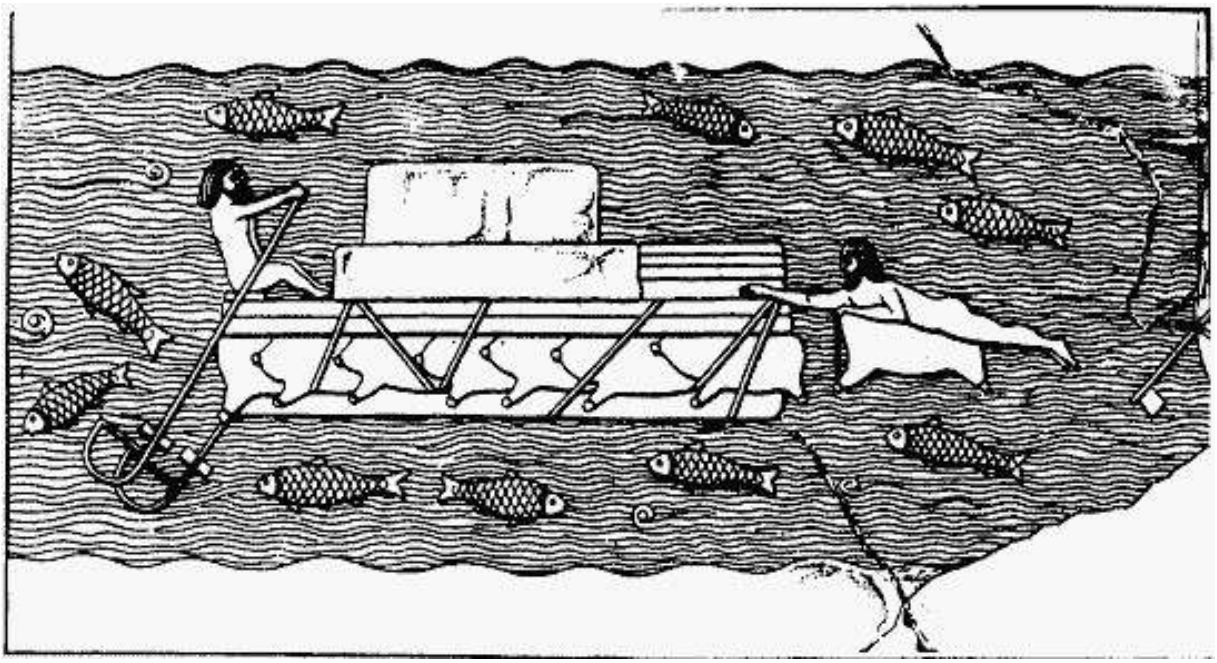
ordered.

If we find this kind of ship in the Codex we can think that this model of ships was the most popular with capacity- 60 gur of grain. The codex had regulations in the field of navigations also – it assured priority sailing boats. The owner of rowing boats which caused an accident was obliged to pay for all damage and loss.

Similarly, after 10 centuries, during Herodot's time, The Euphrates and Tigris rivers were important arteries of communications and transport. The ships which were sailing on them had a rot about 130 tons (500 talents). After reach to Babylon, ships wood and leather – materials building of the ship were sold during auctions. Tracking of economic development of societies and states, let us see that one of base condition the progress is a good communication and efficient transport.

Building materials were not available all over the area. We know that stone and wood were popular and easy to get in the north of the region and we had their lack in the south. That s why we can see that Assyrians people used a special kind of transport for bringing materials from different areas, what was very popular in the north Mesopotamia. For the first time it appeared in the Middle-Assyrian period, it is about 1300-900 B.C, it was called (*Alklak*) and in Assyrian language its name is *kalakku*. Its name come from the name of the city (*Aiski kalak*), where it was produced, and which was situated by the top of river Zab used for river transport.

Thanks, of written texts we find out that transported wood was divided and sold in a destination port (Rashid 1981: 106). From this information we can conclude that wood for construction in Assur was transported in this way and it is the first manner of building materials transport.



(Fig. 50) The Assyrian *Alklak* (river Boat) of the first millennium B. C.
(Al-Hashemi 1981: Fig. 8. 46)

Alklak were divided into three types: *Alklak*, from leather (*elep duse*) (Oppenheim et al. 1956: 94), *alklak* from cane and *alklak* made from wood (Oppenheim et al. 1956: 200), which were made from inflated leather, combined one by one and wood placed on it (fig. 50). It used to follow the current of the river, at the bow of the boat sad two persons and kept paddle or sticks used for control boat or push away from the shore. Assyrians people transported mostly stone and wood from the north areas, burn bricks and dried brick (The name of special ship used for transport of burn brick, ti was called (*elep, igri/leppu sa agurri*) its translation means the ship of burn brick. About it look: (Oppenheim et al. 1956: 94) from the south Mesopotamia and they used a wood from mode of transport.

The ancient inhabitants of Iraq used different kind of wood for ships production and for construction roofs of their houses, that s why they used to transport of wood from mountains of Lebanon, Dlmun and also Umiluha on the south-eastern, (Fadil 1989: 175-176) and they used cedar wood, cypress, mulberry and lauler wood.

According to Rashid (1981: 36) the transport by the ship of burn or dried brick was a duty of manufacturer, from the place of production to the gate of the city and this kind of costs were included in the price of brick. From the gates of the city to the place of building it was issue of the buyer- transport by chariot or donkey.

The environment was an important element in the emergence of river transport and the development of this type of machinery. We need to notice that the rivers Tigris and Euphrates and their tributaries, which reached almost all the ancient cities, and at the same time of this type of transport was a very useful element for trading and carrying a great deal of commodity and bringing a lot of goods securely. It was not damaged or destroyed like in land transport it was cheap and easy to produce.

Inhabitants of ancient Mesopotamia developed this type of transport from the early times history of their civilization where the tree trunk represented the first type of boat that would appear in 5th B.C. and later began to produce sailing ships of various sizes for improved transport conditions to the boat.

From written inscriptions we have found that there are over 40 types of ships (Rashid 1981: 104), that were manufactured according to their functions, where they were divided between passenger transport, military and rescue transport.

This type of transport has made contact between northern and

southern Mesopotamia and other regions as Indus Valley easy and more secure and fast Exchange.

At the same time the length of the trip and the need for the ship's staff to rest and the power of vessel traffic in the river created the harbor. The most important port in Mesopotamia is in the city of Ur (Otto 1986, 80). Where the city of Ur is in the middle of the second commercial that connects to the Persian Gulf, it played an important part in exporting goods to the Persian Gulf and importing goods from other southern cities.

Mesopotamia is a flat region between the rivers Euphrates, which starts from the South-eastern Anatolia and stretches to the Gulf of Basra, and Tigris with the other branches of the rivers (Great river, Little river, Diyala river, and Khabur river).

The geography of Mesopotamia and the length of the Tigris and Euphrates flow was of great importance in the revitalization and development of river traffic, whilst additionally it had a significant impact on the lives of the ancient inhabitants, and the rise of civilization and its development on the ground was connected with the development of transport and tributaries.

Inhabitants invested in the locations of Mesopotamia in order to communicate with each other and to familiarize themselves with the types of goods that were available in them. This type of transport, to get acquainted with type of goods, the movement of people and commercial transport, but also contacts between different countries.

From this we see that river transport represents the main movement in ancient Mesopotamia, where they created it easy and less expensive, and at the same time represent the economic life and axis of civilizational communication, business or military.

We must aware that the biggest rivers of ancient times Euphrates and Tigris had have strong influence for the culture and the art even of people of Mesopotamian civilization, they were a natural source for the communities living (Kramer 1963, 138). We found out it on the reliefs, wall painting, the cylinder seals- they are kind of symbol of Mesopotamia.

CONCLUSION

In general we can say that develop of transport was the answer to need of inhabitants of these areas of Mesopotamia, used for moving building materials, especially burnt bricks, which was produced out of the city. The river transport was create for moving building materials from North Mesopotamia, where was no materials in South Mesopotamia, and later this way of transport was used for moving other goods for trading.

Popularization for a larger scale was depending on big rivers Tigris and Euphrates and their basin because of localization big cities nearby riverbanks. It is imposable to ignore the economic factor of this way transport appearance. We can say that it was main of reason river transport development. We have to rambler about time of transport, safety of goods and chip material for building boats also. These factories were important in ancient Mesopotamia and they are important actually.

CHAPTER 5

TECHNICS OF CONSTRUCTION AND TYPES OF FORTIFICATIONS

5. TECHNICS OF CONSTRUCTION AND TYPES OF FORTIFICATIONS

5. 1. HOW THE WALLS WERE BUILT

5. 1. 1. Materials

Mudbrick

Sun-dried mudbrick was the most popular building material in the 2nd and the 1st millennium B.C. in Mesopotamia. Its use for the construction of fortifications is certified in each of the discussed sites. Bricks differed in size and color, same times several types were used in one construction. There were rectangular bricks, square bricks and halves; same were 20 cm long and the other 45 cm long. No regularity can be observed in terms of size. In a few occasional descriptions of bricks appear yellow, greenish and red.

The brown or red color of the bricks could indicate that clean ground was used from outside the settlement or that the material for their production was taken on the site, but at an early stage of settlement, when the soil was not yet contaminated, eg by ashes (Burke 2008: 73). Such bricks were of inferior quality because they had less admixture (impurities) that were available in the cultural layers of the site. Bricks produced from soil contaminated with settling layers usually have a gray or black color, due to the presence of ash. Thanks to ash, bricks also became less permeable to water, which influenced their durability.

The brick is fired

In many cases, burnt brick was used in the stands, most of the walls one site were built of mudbrick and burnt together. In ancient Ur, special burnt bricks were used to construct the monumental walls of

Ur-Nammu with the stamped name of a great builder, size 37 x 37 cm x 10 cm (Woolley 1974: 67). The second case of building fortifications made of burnt brick is confirmed in the city of Babylon. Wall internal in phase one was built of fired bricks bonded with asphalt (Mohamed 1979: 138). Two hinge stones also come from this phase. In Nippur made of burnt brick, a foundation was built for a superstructure made of mudbrick.

Stone

The use of stone in fortifications from the 2nd and the 1st millennium B.C. it is confirmed on several sites. The stone was not a very popular material, because in southern Mesopotamia it was simply inaccessible, as can be seen from the fact that there are virtually no evidence in this region. Most examples are from the northern Mesopotamia, where the mountainous areas were easier to get into the raw material. Stone blocks, usually only pre-machined or simply natural boulders were used as foundations of fortifications, Tell Haradum, Dur Sharrukin, Dur-Katlimmu, Ḫadatu (Arslan Tas), as cladding (rock cladding), for the construction of entire walls (Ninva, Assur) or as part of embankments or fills. In most cases and not where it was, it is confirmed to use limestone eg (Kar-Salmanasar / Tell Barsip).

Mortar

The constructions made of dried and baked and stone bricks were combined with various mortars. However, very little data is available on this topic. In a few cases, information about calcium mortar (Kar-Salmanasar / Tell Barsip) or clay (Ninua) appears and brown and gray (Sippar). Gray color may indicate the presence of ash, which does not let water.

5. 1. 2. Techniques of construction

The techniques used to build the fortifications were very different. The walls had stone foundations, burnt bricks or none at all. Same times, as in the city of Assur, for example, several types of bricks were used in one wall construction, or as in Niniveh, the wall had two parallel faces, and the space between them was filled with clay and stones. The technique of pisé was also used (Koliński 2000: 12), which consisted in laying structures made of thin slabs of compacted clay, such as in Tell Rijim.

Technique in ancient Assur was also the earth was excavated until the appearance of a stone layer, where the foundations of the city wall are built, which are build in most cases of stone. During the Neo-Assyrian period the construction of the fortification foundations was without any excavation, the earth was covered with thicker layers where the foundations of the walls were built, at the same time we see the construction of king Salmanasar. The king Salmanasar was very thrifty. He used a stone from an old construction to build a new wall and at the same time during his reign there was a cutting off a new stone. There we have noted a doze of a new stones used in the temples of Ishtar (Andrae 1987: 47). For wall reiforcement stone was removed from space inside and this empty space was filled by other gravel. The builders used to burn brick, ceramic and fine stone. The wall built this in this way in final was applied layer of clay to make foundations stronger, and then the walls were built of mudbrick.

5. 2. Standards and systems of fortifications in the second and first millennium B.C.

5. 2. 1. Forms and ways of fortifying cities

The fortification system consisted of several different elements. The most important of them were: defensive wall, shaft, moat and escarpment. There were also buttresses, retaining walls, bulwark and reinforcing or protective walls.

Solid city wall

This is the earliest type of fortification that has been used since the early Bronze Age. In addition to typical defensive features, such walls were a clear selection of boundaries. They were built of mudbrick, same times on a stone foundation (Herzog 1997: 220).

The best examples from the 2nd millennium B.C, such construction are the walls of Tell Al-Uhajmur in Kish, Tell Abu Dawari in Mishkkan Shapir, and Telbis site. They were mudbrick walls build on a calcane, which did not have any additional elements.

The casemate walls

It was built of two parallel walls with a free space between them. Small rooms were created that could be used as warehouses, and in case of danger, this space could be quickly filled to reinforce the wall (Herzog 1997: 220).

It can be said that in 3rd millennium B.C. pseudo-casemate walls were erected, as the spaces between buttresses that adjoined one wall were usually built, as was the case at Tell Bderi (Burke 2004: 240-241; Pfälzner 2012: 133-134; 1989/90:16–218; 1986/87: 277) or they just added small cells on one side of the wall, as in Tell Tay (Reade 1973:

156). A real casemate construction was discovered at Tell Munbaq.

From the 2nd and the 1st millennium B.C, we have the walls of the casemate that we see at Assur (Qual'at Sarquat) (Wall form Old-Assyrian period), Tell Hafur, Tell Haradum and Kliah sites in the north of Mesopotamia and also in the south of Mesopotamia in the Nippur site.

Free standing shaft (earth roller)

This is the simplest form of the fortification, which had an internal and external slope. Easy to recognize in flat terrain, because it looks like a volcano crater. The plan of such a ramp usually depended on the topography of the area on which it was built. In most cases, it was not built on hills or tells, because such a shaft occupied a lot of space (Burke 2008: 49).

An example of a free-standing soil embankment comes from the Sippar and Mur Jerah sites, where it was built as the first and easiest defence or protection system, because it was possible to protect the centre against floods, similar to the city of Mari in the 3rd millennium B.C. In subsequent phases, it was expanded and expanded to monumental proportions. Similarly, in the case of the Muhra wall, where later fortifications were built on the earthwork. In both cases, the embankments had an elliptical plan. Burke states that free-standing elliptical embankments developed in Mesopotamia in the late 3rd millennium B.C. (Burke 2008: 49), which is definitely denied by the examples from Mari and Terqi, where free-standing embankments were the earliest constructions from the beginning of the millennium.

Additional shaft

It was built where the free-standing shaft was not suitable, i.e. on natural hills or tells. Such a shaft was to support the main fortifications, often build on the outskirts of tellu, using its natural slope (Burke 2008: 49–50).

Great example could be the Ninua (Niniveh) embankment, where on the high tell a massive 8 m wide wall was built, which was accompanied by a moat and a shaft. In Ur, in addition to the main fortifications of the city, an additional mud-brick shaft was built, which served as a retaining wall for the platform on which the city was built.

Moat

It is the easiest and the most primitive form of a defensive structure. Moats were usually created naturally during the construction of the embankment.

A deep and wide moat surrounded the fortifications of the upper city of Ninua (Niniveh) (Reade 2000: 390). In Nippur (Nuffar) (Gibson 1998: 27), Babylon (Welzel 1969: 7), and in Kalhu (Nimrud) (Oates and Oates 2001: 145), broad and deep moats supported the outer line of fortifications, being usually the first element, the invader was on.

Slope

It is an embankment consisting of various layers of earth, bricks, clay or stones, which protected the hillsides, embankments and foundations of walls against erosion. Often at the base he had a small wall that blocked him (Herzog 1997: 320).

Slope in site began to appear from the 3rd millennium B.C. They were used very often and with various defence constructions, as for

instance Tell Knedij, Tell Beydar, Tell Bi'a, Tell Rad Shaqrah, Dur Sharrukin and Dur Kurigalzu. From depictions of fortifications on seals it is also known that the escarpments protected the walls from destruction due to the use of various war machines (Collon 1994: 162).

5. 2. 2. Evolution and modernization of older assumptions

Most of the large sites from the area of Mesopotamia with fortifications dating from the 3rd millennium B.C. show the continuity of functioning for a long time. This also applies to their fortifications. Older assumptions were replaced by younger ones who very often destroyed or absorbed earlier constructions. Such a situation took place in southern Mesopotamia, where the chronology of archaeological sites is even several thousand years old and the centres experienced several periods of increased development. In sites such as Uruk, Ur, or Nippur, Early-Dynastic, Akkadian or Ur III Dynasty constructions replaced each other and were then absorbed by the walls of the 2nd and the 1st millennium B.C. For instance, in the post of Ur and Nippur fortifications from the 3rd millennium B.C. were built with walls from the Lars period, and in Nippur, the walls of Kassite.

The fortifications were also destroyed during invasions and fires. In the Hammamet et-Turkman stand, this situation has happened several times. At the end of 3rd millennium B.C., the defensive walls were destroyed twice. Each time a new mudbrick construction was created in their place.

Within the fortifications from the fracture of 3rd to 2nd millenium evolutions and their development can be traced in several sites: Mari, Tell Leilan, Terqa, Nippur (Nuffar) and Ninua (Niniveh). The best development of fortifications is described for Tell Hariri (Mari).

Margueron (Burke 2004: fig. 15 and Margueron 2000: fig. 2) has created a scheme for the development of fortifications for the entire period of their operation from around 2900 B.C. up to 1760 B.C. (phase Ville I - Ville III). The earliest stage of fortification was the soil embankment. A wide masonry brick wall was built on the shaft, which was systematically extended. The next layers of embankment were also added from both sides of the embankment. The last stage of development was to create a several-layer internal slope of fortifications in order to prevent weakening of the wall. As a result of the modernization of the older structure, the mudbrick wall tripled its thickness reaching in the final stage of development of 9 m. The evolution of Mari fortification is an example where on older constructions that have fallen into disrepair and have been demolished have created new, earlier developed assumptions in a complex form.

In the development of fortifications in the period from 3rd to 1st millennium B.C. the earliest phase of fortifications at the beginning was usually a single wall or embankment / embankment. These constructions could have massive dimensions at once, but they did not have extensive other elements as escarpments, buttresses. It was not until time that additional walls were added that functioned as separate structures, eg a bulwark or a second line of walls, or added to the previous wall, increasing as a width. Additional elements were also escarpments, buttresses, bastions and towers. The material used for the construction of fortifications throughout the entire 2nd and 1st millennium was usually mudbrick. In sites in northern Mesopotamia, it was a brick dried in the sun, in southern Mesopotamia same times there is a burnt brick. Stone as a building material was used very differently. Same times it was added in the next expansion phase as a reinforcing element, and same times it was already used in the first phase of the wall construction.

5. 2. 3. Buildings connected with fortifications

The fortifications, walls, ramparts or moats in the defence of the city alone were inadequate. That is why they were often combined with additional buildings that provided greater security to the centre itself, more effective defence and ease of communication.

Gates

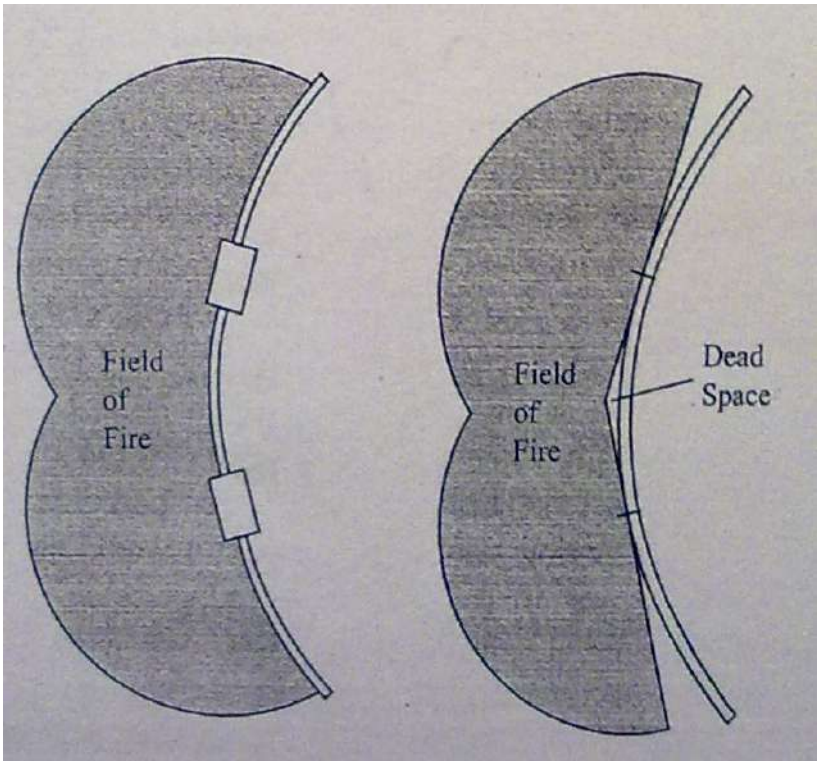
Every city or settlement surrounded by fortifications had to have a gate or gates. The location of the gates was very often dependent on the route of roads and trails. On the one hand, such a gate should facilitate access to the city, be wide open and located at an easily accessible point. For reasons of defence, it should be the opposite: the gate should be narrow, heavily fortified, with difficult access (Herzog 1997: 321). The ancient builders had to reach a compromise, which resulted in different types of gates.

Among the sites included in this study, there are gates with protruding towers in Assur (Qal'at Sarqat), Babylon, Ninua, Ḫadat, with gates from the inner and outer side, like the Western gate from Fort Salmanassara in Nimrud, Kar-Tukulti-Ninurta (Tulul al-Aqr) and Tell Sabi Abyad, as well as having several rooms Nimrud, Kar-Salmanasar / Tell Barsip, Ur). There are also simple gates without additional reinforcements as in Tell Harmal and Lars, and a very early example of a gate with orthostat in Dur Sharrukin.

Gates with protruding towers made it very easy to defend and control the entrance to the city. The city walls running above the gate and the tops of the towers made it possible to control the gate from three sides. This form also minimized the extent of the dead area at the foot of the walls (Herzog 1997: 321). Gates that had gates from the inner and outer sides, so-called double-entry gates were one of the most

popular forms in the Bronze Age (Burke 2008: 70). It was easier to control both sides of the city and, if necessary, function as independent fortifications (Herzog 1997: 321). Wickets were narrow passages (about 1 m wide) in the walls used for pedestrian traffic. They were not fortified.

The gates were built of mudbrick, same times on a stone foundation. They also had special pedestrian crossings. The only example of a gate with orthostatic coming from Dur Sharrukin (Horsabad) presents a simple form covered on both sides by large, non-orthostatized with stone.



(Pl. 2) A dead area near the walls. (Burke 2008: 65)

Towers and bastions

Bastions and towers are constructions whose names are often interchangeably used. Both forms can be regular, square or rectangular as well as round or half-round. The general distinction is their size. Bastions are generally bigger, they can be used as barracks for soldiers,

warehouses or administrative buildings. Burke for Middle Bronze gives a limit dimension of 20m in length, below which the structure is a tower, and above which it is a bastion (Burke 2008: 65).

Rectangular or square towers are the most popular structures connected with defensive walls. Towers usually adhered to the walls at regular intervals minimizing the range of the dead area. They were usually built outside the city walls (Burke 2008: 65).

Among the discussed sites, many of them were found towers among others Assur, Dur Sharrukin, Dur-Katlimmu, Niniveh, Kalhu (Nimrud)) or bastions / towers, as Tell Rijim.

The most detailed are the remains of the tower discovered in Niniveh. It was built of mudbrick on a stone foundation measuring 3 x 4 m. The space inside the tower to the height of 1.5 m was filled with mudbrick. From other sites I do not have such detailed descriptions. We only know that the towers were adjacent to the walls, same times at regular intervals and had various forms and dimensions.

5. 3. PROTECTIVE FUNCTIONS OF THE FORTIFIED WALLS

The appearance of fortifications in the Near East and especially in Mesopotamia were not only military functions but also had other functions, among others to protect the city from floods because these cities were located in the valley like Mari, for example, and also had the function of protecting the inhabitants of the city from the wild animals, and also to protect the city from thefts and control the city and find out who was leaving the city and who was entering the city.

The military functions of fortifications are my issue which I deal with in my doctoral thesis are primarily strategic in nature. Understanding the function of fortified cities in the fortification system. At the same time, one should assess the strength of the fortifications themselves, on the basis of which they actually provide effective protection against enemies.

Fortifications are used in the Neo-Assyrian Empire near cities and as small raised fortresses. The group of cities can be divided into residential cities due to their location and function, in the political and administrative centre of the empire and in the provinces, the city is divided according to the type of power. All they belong to the same category because they can be actively defended. Besides, you have to ask if they are also part of a strategic defensive site. Relates to fortresses that were built in 2nd and 1st millennium B.C. on the central bank of the Euphrates or Assyrian fortresses. They provide sites for observing and defending the restriction. In a similar way, you can also visit fortified cities in eastern Syria. Both Hadatu and Kar-Salmanasar were on the side of Harran Sarri, the way of the kingdom that united the Assyrian heart with the western provinces. Their distance from each other is about one day of travel. Therefore, they are not only important

points of control on this route but can also serve as stations to rest the Assyrian army. Moreover, they probably played the following functions serve as administrative centres for the surrounding areas. With such places fortified Assyrian governors managed to destroy suppressed provinces control. Is such a system in the kingdom until the end of that? No need to make decisions based on the information's presented here. Important is also question if fortification of residence was the part of defensive strategy. In final Assyrians people for protection of their territory based on strong filed army, however they carried fortifications in same areas. For a long time, they did not have an enemy strong enough for threaten of Assyrians empire inside. In a report to Neo-Babylonian Empire, based on presented information's here about strategic conditions, till this time wall reinforcements was applied for imperial capital Babili, similar like in a few other cities, Neo-Babylonian fortification.

Assyrian defensive of cities was easier in view of advantageous line of wall and topographical conditions. There are fortifications and fortifications of the citadel in the cities which include accordingly the centre of power, it is also very special as a strong military and defensive. The second citadel was used as an arsenal also as Assur (Qal'at Sarqat). In the province cities walls are often obdurate by thickness and projection of towers, same times to short to ensuring effective protection. They are, therefore, rather supportive, support walls and do not have a military function, it applice to especially Dur-Katlimmu. From a military point of view - wide, axial doorways and axially arranged access paths that are used all the time. These make it difficult to defend city gates, which therefore mainly affect the gates that surround the gates.

Babili Nabû-kudurri-uṣurs does not contain any references to inclusion. Topographical conditions in the course of fortifications. But it

is certainly also to the fact that the natural mountain ranges and the like in the southern Mesopotamian plains. City fortifications consist of a complex system of multi-layered walls and ditches, which has a clearly defensive character. It is doubtful, however, whether to protect a large outer city wall with sufficient defence capability to hide men. The cities palaces cannot be Assyrian. Citadels have had a comparable military function since their implementation of wall projections are completely unsuitable for the side border of the wall line. In the case of city gates and their access roads, like the Assyrian gates, they are axial and wide. The passage from the gates unfavourable from the military point of view as in Babylon.

The use of urban gates by residents, although it is essentially a defensive military gate but in the case of city gates usually fulfilled the function of crossing the city wall, or as a route of movement, through daily traffic between the city and the surrounding area (Herzog 1986: 157). To guarantee smooth, trouble-free traffic, doors must have a certain width, almost as much as the width of one chariot. From the military point of view, however, there are narrow gates are better because they can be better defended. So, with daily movement, at least one of the reasons why in Assyria, as well as in Babylon, wide and axial cross-gates were preferred. Because the gates are the only access to the city, they also offered control over incoming and outgoing traffic. These are only gantry chambers with a wide spacing appropriate in which room the guard of the city gate is present. So, with daily movement, at least one of the reasons why in Assyria, as well as in Babylon, wide and axial cross-gates were preferred. Because the gates are the only access to the city, they also offered control over incoming and outgoing traffic. An even bigger role than at the gates of the city, control of passers-by for sure in the case of gates of the citadel, from one of them one can assume that access to the city seat has been severely restricted.

The special role of city gates in the city traffic network may also have more information about the same. City gates often open on the most important main streets of the city, so same times the part of the city can be reconstructed (Bergamini 1988: 5-17). The names of the gates are revealed from time to time and their proximity to same buildings or objects, such as "Adada gate to the Amass garden and gate to the wharf or gate of the Arsenal and palace in Niniveh. At other gates, such as the Assur gate in Assur, you can approach the Temple of Assur and thus the reference to the local environment. Further conclusions can be drawn from the location and gateway names also on the cities involvement in the region's transport network. From them it goes down the streets from which the city communicates with other places. These are the best relationships with Niniveh are also confirmed by several torn names assigned to relate to the further geographical environment. Also, given information about the importance of each street, so maybe in Niniveh on the Nergal gate, from which comes the important connection from Tarbisu, or in the case of the Lions gate Kar-Salmanasar, which are the entrance for arriving from Assyria to Harran Sarri formed in the city.

In its great importance in the transport network, but also in the symbolism of importance as the threshold of contact between inside and outside, are probably the causes of other activities or near the gate. Places like those at the Tabira gate or at the west gate of Assur can be places for the public or business. For the Old-Babylonian period well documented at the city gate in legal proceedings (Dombradi 1996: 321). Evidence for the neo-Assyrian period is still in progress. Buildings found near the Tabira Gate in Assur can probably be interpreted as a warehouse (Röllig 1975/76: 288). These are indications that also the gates at the gates may have found a place.

5. 4. Defensive tools used on the fortifications

We know a lot of military tools which was used for fortifications protection. These military tools differ, depends on defence system, which was using, it was different in other cities. Factors of choice of the type of these tools resulted from: whide of wall- where we need from 1.5 m to 2 m; hight – at least 3 to 4 m, for using archers with bowes for shooting to enemy during attack (Margueron 2011: 37). Sword and spear was using during full contact defenders with enemy. The only one trap known in ancient Mesopotamia which did not caused victims from defender's side was grippin grips. I suppose that we can find more defensive tools used on this area in discussed time, but I decided to present the most popular, useful and well known. These which were used for long time in history of Mesopotamia.

The bow is an oldest defensive tool used in Mesopotamia. We can find bows in war iconography, where they accompanied soldiers during attack, in same time they were situated on defensive walls, to shoot to enemy, when they impend to the wall of city. Thanks, of Assyrians reliefs we can see two types of bows; the first is curved. Curved bow was the oldest tool used in Mesopotamia and the oldest proof of its using in Mesopotamia there is on ceramic elements from Halaf and Ubaid times about it look: (Yadin 1963: 46), the second – trigonal- which appeared in XII century B.C. (Madhloom 1970: 58) as next version more refined of this first.

Bow consists of elastic rod, bar or wood called bow, and line connecting both ends of the rod- called chord, which is attached to the bow in points called gryphons. Bulled is arrow – thin, long rod, finished by searched, and this construction was shooted with a bow.

Sword presents the most important military equipment, used both for defence and for attack. Sword is developed verosion of dagger in Mesopotamia and it was well known from early times. We know two types of swords; straight and curved; sharp from one or both sides. Its haft was usually made from wood covered leather or metal (Salonen 1966: 58-60), decorate different designs- from the top, and head of lion- from the bottom (Madhloom 1968: 44).

The spear it's the one of the oldest tool used for killing by stabbing, it was popular in the end of 4th millennium B.C and became one of the most important tool in 3rd millennium B.C. (Yadin 1963: 45) during full contact with enemy. Its function was like function of short and it was using for protection of city from defensive walls. The spear was constructed from a few elements: a spar-made from light wood or cane (Richard 1939: 474) equpped in end sharp arrowhead, same times with decoration from gold or silver (Salonen 1966: 84), he have good example from Assurnasirpal II regions times. The second type of spear had two arrowheads, one used as a handle for bind in half its length – ex times of Assurnasirpal. The third type of spear present's two sharp hollow arrowheads. The last of type of spear was with three arrowheads, hollow triangular, attached to the par by circular locks made of metal (Madhloom 1968: 54), both of these two types are from Assurnasirpal II and at the same time they are examples of production and technical development and tools used for it.

The men trap was used as a military equipment in ancient Mesopotamia for protection stronghold of the cities. They were installed in front of the walls or main gates and used when the enemy was close to the walls or gates. The men trap caught soldiers and, in this way, the defenders holded back attack. At the same time, it was used too for protection of access to cities situated on topographically areas above. It was used also during partisan war, when men traps were constructed

on main roads.

We know about two types of traps from ancient times. One of them is small and the second one big mesh and it is called snares, from inscription we know it names in Sumerian language, it is "*sus kallu* (m)" the most popular in Neo-Assyrian period. In same time, this name was used as a "snares of gods" Inscription of (Gad Ninurta is a warrior of his clothing called syscall) (Salonen 1966: 99). The snares were more popular in antiquity than later. These kind of trap were also used by dropping on people from enemy side to restrain their move.

The second type of trap is trap lines, used during wars more often than the first type, it was smaller, and it was easier to hide it in the ground, besides it injured people who were hold in it. These kinds of traps were made of metal or bronze (Wisman 1958: 79-80).

CONCLUSION

Fortifications in the second and first millennium B.C. in Mesopotamia were made of various materials. The most common component was mudbrick, while burnt brick, stone and rocks were used in the north of the region. Using it for the construction of fortifications is certified in each of the discussed sites. Building materials differed in size and color, same times several types were used in one construction. They used clay to connect construction materials, which gave the building strength and stability.

Differences in materials build in one wall are most likely caused by the kind of lands in which fortifications were built and raw materials were available in a given region. Where Mesopotamia was known in the south for its high groundwater, and where the mudbrick did not have a resistant plant, the foundations were built on a level with burnt brick

soil that they would be resistant to moisture, stone if it was available in the region.

In northern Mesopotamia the situation was reversed. Where stone was available, it was used for the construction of foundations and in later times burned and dried bricks were used to build the walls. These were more effective than stone which did not have a regular shape, and which caused the wall to be easily damaged by the enemy.

The construction methods used to build the fortifications were very different. The walls had foundations of stone, of burnt bricks or none at all. As in the city of Assur, in one wall construction several types of bricks were used, or as in Niniveh where the wall had two parallel faces, and the space between them was filled with clay and stones. A technique called pisé was also employed, which consisted of laying structures made of thin slabs of compacted clay, such as occurred in Tell Rijim.

The fortification of cities shows us all possible fortifications in the area of Mesopotamia, designed to strengthen and protect the walls from attack by enemies, as was as to defend against erosion and climate change. The fortification system is considered to be well fortified if it consists of the next most important elements: a defensive wall, shaft, moat and escarpment. Moreover it was considered to be further fortified if additional elements appeared, such as buttresses, retaining walls, ramparts and walls strengthening or protecting fortifications.

The gate and towers in every fortified city had to be located in important points in the fortification system, because they gave residents and authorities added security by controlling the incoming and outgoing of people within the city as well as observing potential attackers through the localized towers, with security guards to observe the safety of cities from advantageous viewpoints. A cities security guards had to

serve and protect the city, first and foremost, as a force to resist attack from external threats. The bow and arrow has historically played a vital role in protecting the city at a distance from an approaching enemy. That explains why it became a popular and essential weapon for the cities bodyguards.

CHAPTER 6

ASSYRIAN FORTIFICATIONS IN MESOPOTAMIA

6. ASSYRIAN FORTIFICATIONS IN MESOPOTAMIA

There are same problems when we start considering the issues mentioned. Firstly, the amount of extracted and researchable material is limited because the issue of fortification in the Archaeology of Mesopotamia has been largely ignored. Nevertheless, the available information has often come from excavations done in the nineteenth century or early twentieth century, which do not always meet today's requirements - especially those that were subject to stratigraphic analysis. Questions are also raised about the accuracy of these documents. (Wirth 1997: 39-40). Meanwhile, other newer excavations that have been done have not yet been fully published. Many of these take the form of preliminary reports or even just the briefest of notes, which are also insufficient for analysis. When it comes to the selection of photos, the following material is used here which is considered to be reasonably credible. Even in the few cases in which detailed surveys of buildings have been published for reasons of transparency, for example, for Assur and Babylon, they are shown here. This data is often presented in the format of bar charts, which also include reconstruction proposals. The illustration of only a fragmentarily preserved architecture of small importance shows that he is completely relieved from this place. However, such residues are included in the description in order to collate as completely as possible, all the available material. Another problem of a completely different nature is the use of radiocarbon dating as a method of establishing the age of fortifications. This is extremely difficult because it can only be used in the rarest cases due to the material for data storage. Unless - as is often the case

in Assyrian - there are available building inscriptions that are confirmed regarding the subject under investigation. The building's stratigraphic results and possibly the building material must contain information. Often, you can only determine a rough chronological estimate that cannot be exact, absolute data can be explained. Therefore, the following data are the most important dimensions of fortresses in tabular form, city walls and gates.

I will analyze and trace in this chapter the construction of all fortification systems dated to the Assyrian period, and I will try to discuss the issues related to the quality and the construction method, as well as the protection that fortified the city fortifications during enemy attacks. On the other hand, I will touch upon the control of the population through the use of entry gates to the city, and I will put emphasis on the importance of the economic power of a given city and the resources of the workforce as well as the time needed to build such huge fortifications.

6. 1. ABU FAHD TELL

Location of the site

The station is located about 6 km south of the Gorge of Hanukkah, in the northern part of the Syrian province of Deir Al-Zor, on the left bank of the central Euphrates.

Dimensions of the site

A study with visible remnants of the fortification of the post using a magnetometric survey was undertaken by the architects of the project and allowed for reconstruction in more detail. They showed that the site was oval with an area of about 6 ha (fig. 51).

History of research

Archaeological research began from 2005 to 2007 as part of the Middle Syria Euphrates Archaeology (PAMES) project, coordinated by the Directorate General of Antiquities and Museums, Damascus (Syria) and the University of Coruña (Spian). The site is still occupied by locals from the village of Abu Fahd.

Fortifications

The site is surrounded by four city walls. Fortifications are still visible at the site.

Dating of the site

The post was dated by found Middle Bronze II ceramics, which is the same ceramics found in Mari (c. 1850/1761 B.C) (Montero 2008: 83-97).

Construction details

Determining the fortifications of the site was not difficult because same of these fortifications are still visible. The main architectural element of these fortifications are several fortification prints with a width of 3 m. The city walls are build of mudbricks on a basalt foundation.

On the south-west side of the site found footprints of city walls of 4.70 m long, retaining up to 1.60 m, (5 courses). And it was built by using smaller size stone (25 x 20 cm) to fill the space between two parallel walls made of large stone (45 x 50 cm and 35 x 60 cm). Blocks are connected by brick mortar with clay, and often small stones and basalt fragments fill the void (fig. 52).

On the north-east side of the post was found a rectangular tower

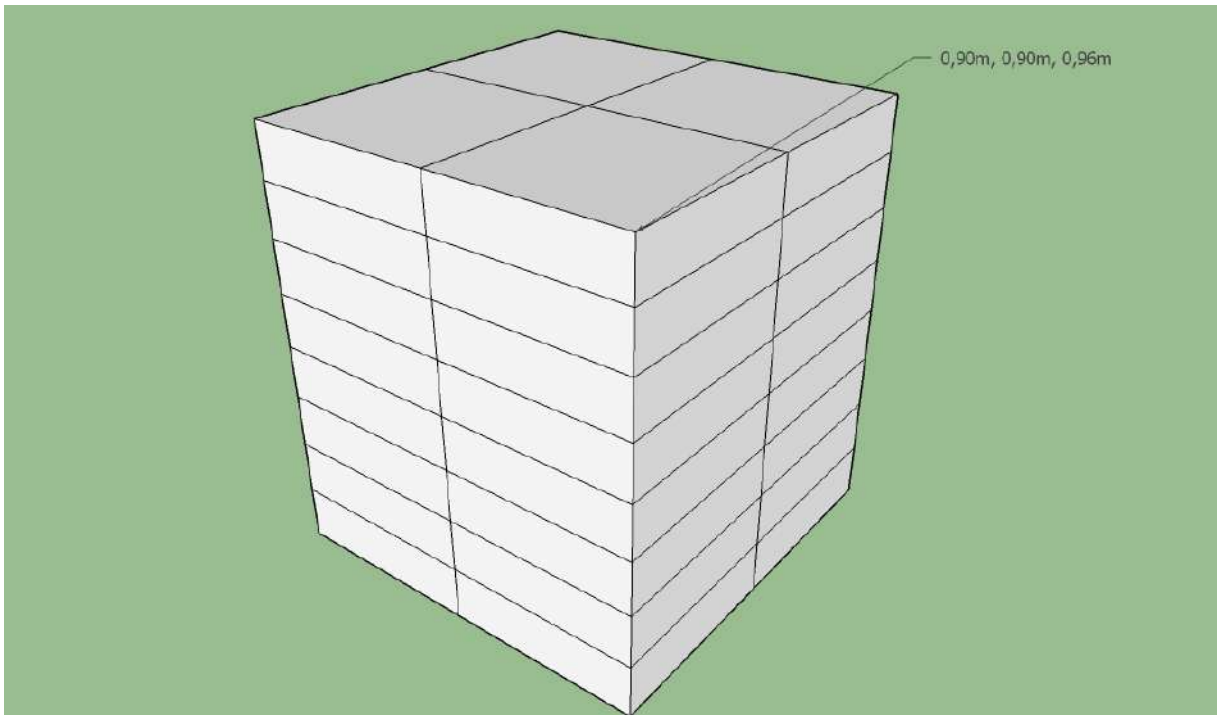
of dimensions (18 x 10 m), build of large basalt blocks of dimensions (50 x 70 to 50 x 30 cm). It currently has five courses (five courses), totaling 2.50 m (3). This tower, probably preserved by glacis, may have functions that were built to control the movement of water conveyed by rivers and canals (Vidal and Fenollos 2009: 207). In my opinion this interpretation is more useful because proof that the tower was isolated from the field of military activity was not at the same time Updated in a weak spot to protect the city walls, and also considering the location of the tower, we learn that the tower's purpose was to control the coming of the Euphrates river from the Gorge of Hanuqa. And it should also be noted that remnants the mudbrick measuring 45 x 45 x 10 cm, includes three sides of the tower. Mudbricks are clearly associated with the tower and may be remnants of a slope or platform made in such a way as to secure the tower.

On the south and west side outside the city walls, supposed to be a moat; according to Herzog, moats “can be considered to be a by-product of removing much needed soil and stone for earthen fills and construction” (Herzog 1997: 320), but unfortunately, they have not been marked by destruction by agricultural work.

Gates

According to topographic studies of this site the gate may be located in the western part of the wall. This gate could have been protected by two towers standing on both sides of the gate (Pl. 3).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- Mudbrick

45 x 45 x 10 cm= 40 brick quantity to build one square meter.

- When using 3 workers to build

-4 minutes time is needed to make one brick.

40x 4= 160

160÷ 60 minut= 02:33

02:33÷ 3= 00:51 hours of work need three workers to build m3.

(Pl. 3) Site plan. (Vidal and Fenollos 2009: 216)

(Fig. 51) South-west wall. (Vidal and Fenollos 2009: 213)

(Fig. 52) Remains of the tower. (Vidal and Fenollos 2009: 213)

6. 2. ASSUR (QUAL'AT SARQUAT)

Location of the site

Site is situated on the north Mesopotamia, in today's Iraq, on a little plateau, on the right of the Tigris river bank, to the mountain rage of Hanuk to the mountain range in the north area of Assyria in the steppe Jazirah to the Tigris river (Andrae 1913: 1-2).

Dimensions of the site

The site had aera about 80 ha (Stępniowski 2003: 50–53). It was divined for two parts- old town, which had about 50 ha and new town- which had about 30 ha, from the south side.

History of research

After small works of Wiliam F. Ainsworth in 1840, Austen Henry Layard and Hormuzd Rassam in years 1847-1853 by Robert Koldewey – in 1903- which conducted German Oriental Society under Walther Andrae- who continued them to 1014. The most of knowledge about Assyrian fortifications, which were researched completely during these excavations. Later excavations of Iraqi monuments were conducted by Reinchard Dittman (1988-1989), Barthel Hrounda (1989- 1900) and Peter A. Miglus (2000-2001), but they not concerned fortifications of the city (Lamprichs 1997: 225).

Fortifications

The Assur city was defended be two lines of fortifications: the outside wall protected the Old Town and New Town and inside wall- protected New Town. In front of the outside wall existed powerful moat

with width about 20 m, and depth 15 m, there were over a dozen gates for entry to the city, from which the most important was Tabira gate, and it represente main gate leading on the west.

Assyrian fortification was destroyed that is why we found only remains of fortifications from the Old-Assyrian period on the eastern, northern and northern -western side (Andrae 1987: 33).

The remains of fortification from the Middle-Assyrian period are relatively rare and most of them are not dated, but we found a form of the city, which we try defining enough. The archeological sources say us about south city Assur-Uballit II (Puzur-AssurIII) (Ebeling et al. 1926: 41-42), that nothing has been preserved.

The only one what we found were tables linage and stele the place of stele never was outside of the city walls (Andrae 1977: 146). The oldest one dates from the time of Erib- Adad the First (Andrae 1913: 137).

The Assyrian fortifications from Neo-Assyrian period are well-known in the whole world. We analyze the results of development of the previous existing Middle-Assyrian assumptions (Pl. 3), regarding look up the situation of towns and fortifications Middle-Assyrian.

The structural diversity in a lot of places we can date on IX century B.C., during the reign of king Salmanasar III, the “young Assyrian phase” according to Andrae (1913: 2). The rest of them is dating for a period of Sargonids dynasty, the Neo Assyrian phase of Andrae.

Dating of the site

The times of settlement are unknown, but the most important finds, discovered in H layer thanks of probe excavation in the Ishtar

temple come from early dynastic period III from II millennium B.C., the Old-Assyrian period, Assur was important city in religious and administration terms till the Partian period, when the city was destroyed in 3rd century AD by Shapur I.

The site is dating from Old- Assyrian period, the second millennium B.C. to the second millennium AD. Fortifications come from the Old Assyrian, Middle-Assyrian and Neo-Assyrian period (Andrae 1987: 34).

Construction details

Old-Assyrian period

From II millennium B.C. in east part of the city Assyrians used all known for them manners to protect the city against flooding from the Tigris river. Nearby Assur temple were found the remains of fortifications in western part of the city, represented by small tower A situated on the southern west on stone egde of upper slope, with the width 4,5 m, its foundations build from the stone and comes from earlier period than kingdom of Erishum I ok. 1906-1867 B.C. (Grayson 1972: 8-15). The next layer of foundations was built from small burned bricks with dimensions 29x29x4,5 cm, and the towers foundations build upper is made from a mudbrick with dimensions 34x34x9 cm. (Andrae 1987: 169). The lower tower B with width 11 m, and its foundations built from the stone and the wall of the tower build from mudbrick with dimensions 33 x 33 x 10 cm, In the same time the dimensions of brick grows upwards of building, till dimensions 34 x 34 x 11 cm, located slope of vertical rock, divine facade from the reminds of Old-Assyrian period part about 2.5 m, and enlarges the optical difference in it till it has 5 m. According Andrea this tower was built later in two different times (Andrae 1987: 166). The Northern west tower

was built in earlier time than times of Shamshi-Adad the 1st about 12 m width line build from mudbrick with dimensions 34 x 34 x 11 cm.

In the north of the city were built on the upper edge of slope, made like this that difficult to cross them. The fortification was surrounded the towers, although high area. In lower places there were built walls of double lines, or casemate walls.

On north-western direction we found normal system of defends. The wall divined the battlefield between wall and ditch on a several sections within range from three sides. Probably it was possible defence of fortification from hidden in inter wall doors-like we found in Old-Assyrian walls.

The fortifications from the Old-Assyrian period give us a little information about defence of city, system of defence was destroyed. According to Andrae the south wall is like defence system in its western part. But nothing survived from fortification on the south of the city (Andrae 1987: 33).

Middle-Assyrian period

Adad-Nirari the first build on bank of the Tigris river made of limestone blocks witch lining of bricks baked with dimensions of 38 x 38 x 10 cm. (Andrae 1987: 221). Both of parts are blocked and paved with asphalt mortar. The wall system runs on natural line of bang it had a few turns in the north part of city- as a consistent fragment about 400m (Andrae 1987: 149-150). The rest washed away by the Tigris river. In two places were a stair led to the coast, probably. Thanks to the city had access to water and possibility of mooring boats (Andrae 1977: 170). The band edge was known in Middle-Assyrian period, we found a few also from Neo-Assyrian period (Andrae 1913: 146-147). The

north end had-probably a fort in the wall, but we do not have any remains (Andrae 1913: 93). The Temples have been preserved remains of walls. It is not possible dating of Middle Assyrian walls, if there are no inscriptions. The walls were divided into 3 sections (H1 H2 H3) on limestone foundations from ancient Assyria. Because of mounted of strip, it was deeper placed than the earlier one (Andrae 1913: 97-98). Situated on a steep slope, *Mušlāl* is located as such by the Assyrian inscriptions. Its function is not entirely clear, but it seems to be the gateway to the city. In addition, case law on *Mušlāl* supported by textual evidence. Sub *Mušlāl* and discussion Andrae (1913: 63). In Middle-Assyrian period there are no inscriptions on the walls, to precise dating is not possible. But the fact is that the fortifications step by step were extended and stonework. On the upper edge or in the half of patches height on slope with a few improvements. They are characteristic of yellow bricks, and they are from Middle-Assyrian period, probably (Andrae 1913: 65-67 and Andrae 1977: 97). Then was added bastion at the bottom, before were created seals from stone facings. Described images on back wall are carved in rock, but other walls are from bricks. Later function of it unclean, especially it was closed from outside; not from inside (Andrae 1913: 69-73) Considering later interpretation of Andrea, we opt to stairs (Andrae 1977: 173). However, it is the location of the door lock It should be regarded as very problematic. It contradicts this interpretation, as one of the most adopted an internal lock to the door, should lead to the city from the stairs of peace. The wall is situated next to the upper edge of plateau from the eastern massif (Andrae 1913: 77). From the walls which are situated on the from west massif, we do not have remains, but we can find the old-Assyrian wall on the west still. For melioration of the bastion were made a lot of shafts from the western side. In the north-western part of the city the wicked on the side and were discovered from back. Jaume Llop point out that they are not part of mounting, but they are souvenir royal (Llop 2005: 41-55). However, it remains open issue of fortification of the city out of

terrace of palace, we can suppose that main store was out of fortifications. Further on the south, on western front was located a bastion, from the Old-Assyrian period, renovated probably (Andrae 1913: 126). In the Neo-Assyrian period and Old-Assyrian period was kept complex system with massive, protruding wide bastions. We can analyze of these systems and make descriptions thanks of writings of Tikulti-Ninurta. From one side it is his palace on terrace in the north – western corner of the city. It was built on outskirts like this that it increases the plateau. And it could be using as a dry ditch. On its north front increase slump of the area, like this, that their vertical walls reaching at least 22 m under level. So they create an almost unassailable bastion in this weak point of the city. Unfortunately, we do not know what kind of relation there is with other fortifications of western front. The second project of building of Tukulti-Ninurta with reference to cities fortifications and moat of the city, which should be built according to the plan. The moat runs along the whole western wall, along the old town, and it is opened on its north end in the old channel of the river, and o the south-in plunging in front of the city. In the places where we have a dig, it is situated o 13-15 m below the escarpment and about 20 m below level of cities area (Andrae 1913: 69-73). It is out of a technical standards, because wide of wall was about 20 m. It is broken by two ramps, which were kept for providing access to the Tabir gate and Western gate (Andrae 1977: 170-73). The first one width about 18 m and steep edges. From the city side it is increasing to 12 m of length and about 3 m, in the north side-from clay and plaster-stone foundation could be using for flanking the ramp. Build of same material was platform in Assyrian Tabir gate from Middle-Assyrian period, which leads in same direction (Andrae 1913: 30-32).

Neo- Assyrian period

It is possible to rank to the period before Salamanasar III wall reinforcements, waterfront building, built during his father's times in *Mušlāl*. On a base of inscription, we can define that the first builder of wharf was Assurnasirpal II, who initiated to create similar objects on the eastern bank of the Tigris. The foundation was made from plaster and wall thickness from 2-2,2m was built from backed bricks, bonded mix of gravel and asphalt. The wharf was secured with an oblique abutment of thickness about 1,5 m. (Andrae 1913: 85, Regarding the system in *Mušlāl* see ibid. Tafel X). It is well kept on length 12 m, but the whole size of constructions assumption is still not mark. Similar examples of masonry production were discovered nearby "outside hook" in Assur. It indicates that in this period, the river supplied water into surroundings of the city. Eventual chronological relations between each building of *Mušlāl* are not known because of lack of inscriptions. Their parallel arrangement to bulwark is surprised. It is possible to distinguish a few building phases. On the west from western massive runs wall width 4,5m made from mudbricks, put on stone foundation with tower- width 4 m. This construction is agreeable with primal, "archaic" plan. The massif was preserved before slide. Build on a multilayered foundationstone, at present does not have frontal edge, but wide of the walls in the eastern and western parts properly 6.2 and 4.6 m of thickness. On the eastern side the so called "break wall" close western massif, which construction needed move front to the bottom of trees. The stone foundations thickness is about 4 m but distinguishing inside edge from outside edge is not easy. From the outer shell of western massif to the point, where "break wall" covered room full of pieces of dishes, appears swelling thickness 1.9 m. The foundations presence may indicate a previous presence of tower. Similar construction appears in the eastern direction, where "break wall"

getting bigger about 1.5 m, and on the western end of this construction long 12.5 m, appear the next increase from 4.8 m to 7,8m of wide. In final break wall has a few narrows, presence in foundations from the inner side of fortification to the foot of slope. On its eastern end, the wall intersects stairs lead to water. Function of one-meter passage, nearby room full of shells is unknown still. In a lot of places outer side has wide projection, similar like Middle Assyrian, western massif (Andrae 1913: 81-84). All these buildings were finished before bulwark, as described before, because they extend on both sides of western massif, in front of the wall. In these places, narrow and weak foundations are located exactly between the towers and projections of ancient walls, what makes straight front, from which appears western massif. In same time appeared a new type of wall, on the east. Weak foundations and decrease of efficiency indicate on presence of lower wall, which was made a stronger construction in ancient technique. In this situation bulwark we can correlate with creating of short wall on the western side witch renovation of fortification was a purpose of Salamanasar III.

Thanks to discovered inscriptions, we can include double walls and sevens gates to the city, although they were broken mostly (Pl. 4). The outside outline extends from Middle Assyrians terrace palace of Tikulti-Ninurta I. There was created on the bank of the ditch, which runs along western cut city, included from the south a new city before it reaches to the Tigris river. Fragments of the walls in the north-eastern part of city and described upper remains in *Mušlāl* indicate that the fortifications extend to the protected riverbank. The inner wall, which beginning we can mark as same surroundings of temple of Anu-Adad surrounding washboard of the palace and it runs in western direction parallel to the outer walls and turns in the south-western direction, on the stele place from which it turns in the north direction, to the Tigris river. The new city-on the south- is also protected by the wall.

On the north east from the outer wall, on the lowest layer of the terrace, there is space in the wall –from 2.5 m, 5.5 m thickness, where the foundation edge is visible. We consider theories that there was a tower in this place. Up to this day the remains of one tower only are kept, they width 7 m. (Andrae 1913: 110, Tafel XXVIII). From upper gate which is situated in bent terrace of palace there does kept fundament with shape that resembles the square with rounded edges. Its surface is about 24 m2 and 13 m distance from outer foundations to the edge of the wall. The widening of foundation dimensions of 4 x 9 m, on inner side it is situated in the south corner of the gate, probably it was used as a stair. Eventual reconstruction is possible only on a base of other gates discovered in Assur. From the front of main gate and terrace palace is located a space, developed by wall with a surface about 74 x 122 m, so called "outside hook". On the base on inscriptions founded on the bricks and *sikkati* it is possible dating of the wall at times of Salamanasar III. The construction is put on a 6,4 m foundation and it wall was reinforcement by two towers of 2 m. They were build on a rocky ground and the corner towers had added trusses made from mudbrick 38 x 38 x 14 cm. We were not able to define their width (Andrae 1913: 112). The bottom gate located in the north-eastern branch of outer arch, is situated only 16 m from its close on terrace of palace, its distance from the corner tower is 28 m; the foundation has extensive on 2.4 m, and wide 18.5 m, projecting the towers, it is located on the inner side of the wall, where they extend at wide 26 m. and it reach deeper 6m additionally. From building, we found remains of stairs and jambs on north-western side of gates, where we found basaltic hinge stones in the undisturbed state and corner rooms as well. On the base of these everything remains we are able to make reconstruction following arrangement of the rooms: two towers, each wide 6 m, spaced from each other 6 m, protected passage to gate. The passage had inner diameter of 4 m and led deep 4.7 m to room width 12.5 m, where doors were located. It did not fit inside of this room exactly. Exit was width for

1.2 m, and led to staircase with dimension 6.2 x 5.8 m. The stairs curled up in a spiral, made narrow space with two branches wide 80 cm, which was possible to closed. For draining water from outer arch, the channel was created in a distance 3.2 m, from near door and rump, which made possibilities drive through the door. The close of outer arch with outside wall was protected by tower (Andrae 1913: 122).

From this point the outer wall runs along edge of ditch, through about 100 m in the south direction, to the corner tower located in obtuse angle of wall. From here it turns and creates alley next to the Tabir gate. Indicated gate (Pl. 9), which front is not kept, it is bent relative to the wall, like this, that it is barely placed according to the ramp lead through moat. We are able to reconstruct the destructions thanks two towers. The gates had two, wide rooms and staircase set up in the north –eastern part. It was possible to close it from three sides. There were discovered three stones hinged which are the proofs that the couple front doors were kept. They are a very important find because of thanx of them it is possible to the reconstruction of the mechanism of the door. These hinged stones were discovered one meter below floor level, put on 90 kilograms lead plates with Salamanasar's III inscription. They were putting in cavity full of broken stones. They were distant from each other about 5.18 m, so we can think that passage had wide 5 m. Their situation suggests that the front doors were closed regularly and room with the doors had depth 2.5 m. Probably it had wide similar like a room situated further, with depth 4.25 m and width 15.7 m. Two, the most situated to outside double doors, had similar span like the front doors, but reconstruction of it is tentative, because of displacement hinged stones and situated later doors by the parts what destroy original layout door (Andrae 1913: 26). However, the site of the rear doors is confirmed by the discovery of the original jam. In the previous room there was one-meter access to staircase with the inner dimensions 12 x 15.5 m, which made space under the stairs. The walls

of gates building have different thickness from 3.1 m by outer wall of staircase to barely 1.5 m, thickness of wall between staircase and the room with gate. From the city side, part of south edge of the doors require the destruction of one of the private hause (Andrae 1913: 29-30).

Ditch is visible along of run of walls, but external wall reinforcements is destroyed in a lot of places. In the places where were discovered invisible before elements of fortifications, they were even 10 m below earlier level. The wall runs on the south, close in this way reach the new city. It was built for the first in lower south plateau of the city and directed towards south, exactly in direction of natural stony ridge. Preserved foundations of the wall –thickness 10,8m and on them were built the wall and towers. Mostly they were consisting of single foundation, made from gypsum blocks and boulders, which placed in scale home or leveled structure from mudbrick. In foot of the wall was created a slope. Towers could be from 8.6 m, of wide, and outreach 3.35 m. During exploration wall, there was not found any gates. Because of communications issues we should think that the gate existed in this point. Preserved the foundation of the wall and lack similar for the gate, may indicate that the gate was located nearby Tigris riverbank, where could be washed away by the current of the river (Andrae 1913: 58-59). Next to the fortifications from *Mušlāl* discovered also fragments of outer walls on eastern side of Assur temple, already. It consisted of remains of wall, thickness 7m which was bunt in the south, stony slope direction and earlier layers and its construction was fixed o lot of times, using limestone foundation. Wide 4 m break in fortification made possible to bypass wall to the north edge of Assur.

The joining the centre embankment of Salamanasar III with outer walls in the north-western part of the city were destroyed. Only nearby Anu Adads temple preserved fragments of centre point of embankment.

Already in that time the largely destroyed terrace palace of Tukulti-Ninurta I, created so called arch of mid shaft. They protruded in whole city. Their depends on buildings; the Western Arch has stony foundation, the Southern- was based on stony remains; the Western is put on terrace exactly, which had significant impact on the inner walls course. The wall kept its remains thickness: 7 m or 7.1 x 3.7 m or 4.6 m (Andrae 1913: 101-107). Similar irregularity shows length of fortifications, which are result of much curled course of the wall. Both corners of the eastern branch are protected by strong towers. From the terrace palace runs the wall in the south western direction. This branch of the wall is connected 20.4 m, from the corner tower, and 15.5 m, from the bastion of the gate, it is clearly characterizing by 7 m of outreach and 10 m, of width from normal defensive towers. Before Western gate disconnects from the inner wall, its distance to the outer wall increases to 18 m.

The central shaft did not survive the whole time of using Assur. After period of neglect transformed it for flats building purpose, which took ruins (Andrae 1913: 100). Perhaps it was a result of many changes, which accomplished under outer defensive ring. It is not possible dating these events. On the external archh, where the moat had probably not big depth, the base of the wall was reinfocement in section 3 m, and defensive wall was reduced about 2.5 m, to make more space for towers. On a base of remains, found presence of diagonal slits situated in the corner towers of external arch. The passage of lower gates was narrowed to 2.8 m, and towers withdrawn for shorter wall cleared. From the western front was built a short wall, which preceded external wall. There was a small gallery in it, from which we have perceived two fragments in annex from mudbrick. They stick out on 2.4 m in front of the front of towers and they are wider -12.8 and 4.8 m, than towers, like this that it was necessary to create a passage wide on 2.4 m, from which they create a buffer for a balustrade about 85 cm. In

a distance 1.6 m, is situated bottom wall, with embrasures. Similar remains were discovered next to Tabirs gate. The Western gate (Pl. 9), which front is not preserved, also was remodelled. The inner wall of chamber had thickness 3.5 m, and the passage was located on same axis with diameter 2.8 m, which led into surface paved with gravel. Enriched it about columns of thickness 1.24 m, and 30 cm; wider changes took place in front of the doors. In front of the entry the bottom wall is leading. For built it, builders had to destroy part of old wall and towers, what we can see about 6 m under level of place on the plan of the square enriched by embrasures. It is located between corner and remains of foundations of towers and balustrade of bottom wall. It consists of two-meter width promenade which was enriched about 85 cm width cornice and 18 cm of width embrasures, from which 6 were put separately. They have 1.2 m of length and slope on the height 30 cm. Until now, we are not able to answer for the question of how was finished the passage to the gate. Undoubtedly same ramp had to exist or staircase, which led parallel to the wall, but any remains of this type of construction, was not found. We have a lot of doubts if there existed same access by exterior, which let to reach the terrace located on the ancient, stony ramp. The promenade could destroy the structure like this (Andrae 1913: 49-50). The changes on the outer wall on the west were planed. We do not know if the building of boulevard in *Mušlāl* was carried out in accordance with spatial plans.

The next program of modify the original fortifications, falling for Sargonids times and it was realized thanx of reminds of previous building. The biggest changes took place on the western side. In the frames of the outside bow of the street next to the bottom wall, the north-western branch was prolonged, where we did not find any towers. The fortifications were reinforced. The bottom wall did not exist in this time already but was replaced by the station about wide 1.2 m which made possible reach to reinforcement of the bottom wall. They are

extending to the terrace of the palace, where it preserved in a small fraction of the whole, only. There is a passage width 2 m with parapet – width 85 cm We can find their embrasures also build in 1.4 m, space from each other, which the slit's height is between 1.05 to 1.35 cm. Dangerously they have end 80 cm above ground, what suggest eventual risk connected with using them. The street next to the bottom wall had instelled a sewer system of terracotta gutters cut by parapets. The garbled bricks protected the foundations of the walls. North –western arm of the Bottom wall was removed by destroying the passage of towers. Their width 4 m, outreach 2 m, and spaces between them 26 m (Andrae 1913: 113). In the place of the bottom wall, at the foot of it is situated standing residual preserved bulwark. The remains of foundation, made from limestone discovered in the building hole on depth from 40 to 50 cm, they have thickness 2 m and they are located 24 m from the towers about the surface 1.3 m and width 4.5 m. Their course is recognized partly only, but it took the part of flattening external arch because it was built-up by houses. The Tabir gate had preserved remains of the bottom wall next to corner tower and the western front of older bottom wall. Semi-elliptical transition of gate was reinforcement by machined blocks of limestone with rounded edges what stabilized the construction. The further fragment is probably connected with building of the bulwark in the north-western part of Assur. The bulwark presided earlier bottom wall-located on the foot of slope. It was built in contemporary hole with dimensions; from 3-4 m of thickness, located in distance 16-28 m above the towers, which from 1.4 m do 1.5 m, if surface and from 5.2 – 6 m, of width. They did not finish this bulwark it seems, or removed it partly, because its end it is destroyed by wind horizontal edge (Andrae 1913: 127-128). Also, Western gate (Pl. 6) was subjected to alterations. They build there semi-elliptic, square bastion, about similar dimensions. For this purpose, they removed almost whole foundations. The ramp, which ensured to access to the gate earlier was perpendicularly cut and, in this place,

they created the stairs with length 12.5 m and safety width 2.2 m with balustrade height from 0.8 to 4 m, which extend to the edge of scarp through the reinforcement of the bottom wall. The square bastion was covered with limestone blocks with hipped edges and base although they belonged to the foundations (Andrae 1913: 50-52). The eastern edge of the city was modified, but its difficult to find their unequivocal picture. There was built from limestone blocks with small 40 cm projections and width minimum 5 m (Andrae 1913: 147). In my opinion we should not look at them as at the towers. These dimensions are too small, even for retrenchments. They could be buttresses, doubtless. The only one place where modifications are dated partly is *Mušlāl*. In the eastern part of this fragment, 5 phases of build were discovered. The first one could be repair of break wall from which were made lime foundations. Before this, was discovered the foundation, partly preserved, about which are Sennacherib inscriptions, founded in *Mušlāl*. Again, we can understand it as an improvement or reinforcement fortifications existed already. Important construction work was carried out in Esarhaddon, scarcely. Belonging to it *Mušlāl*, which safety preserved on a length of 44 m, is located deeper about one meter than bulwark and has thickness 12 m. On a base made from rock rubble was put stone foundation made from limestone blocks. Only frontal edge of the wall is on the earlier, coastal wall of Assurnasirpal II. The front of the wall had 60 cm of eject. The next building of Esarhaddon it is so-called “massive block” which has about 12 m diameter with cornice and 11 m from *Mušlāl*. Build on a scarp-heap has perceived north eastern wall, paved limestone blocks. Their upper layers were decorated on edges and they were rusticated. Based on notes it was used as a terrace of the royal palace. Until the remains of the upper structure were not found, it seems impossible that in this place was standing a private palace. The last construction in *Mušlāl*, which is dating later from the moment of build “massive block” is creating of facing wall, like this created in the Eastern Port. Its thickness is

between 2.9 m, to 3.3 m. It was made from broken stones and facing made from hewn limestone which stick out about 0.5 m and had wide 6m cornices. It bedemons from the “massive block” in *Mušlāl* of Esarhaddon and the break wall and it runs on the west independently. The question is if it was using as a wall protected by water or in same time the branch of the river was dried and overwhelmed. We need point at the lack of the proofs about destructions made by the water and lack of grout in the wall. In this situation the wall panel could be used as a reinforcement of defence, similar as the bottom wall. In rubble, the battlements were found, which could be the proof of existence passage on its peak.

Gates

There are two gates from Middle-Assyrian period: the Tabir gate and the Western gate. But unfortunately, from their structure nothing was preserved (Andrae 1913: 119).

The Neo- Assyrian period

The Tabir gate (Pl. 5), opposite to the external wall situated on a foundation from the mudbrick, is built on foundation of plaster, covered on the edges by hewn stones, and inner side fragments of bricks and stones. The walls of the room with doors were sliced but the floor was not found. The charred remains of beams made from cedarwood and marks of burning on the walls suggest that the gate could be destroyed suddenly (Andrae 1913: 25). The exit from the gate ensured the ramp, but it was not completely the same like original stony ramp. It ran through a partly overwhelmed ditch, what was a result of used sandstone blocks, situated crosswise terms of the ditch, and because of their length made less steep slope, the length had to be about 6.2 m, which was measured in layer of sandstone, preserved below. The wall

with thickness from 4 to 3.5 m, on the north from ramp, and 2.4 m of small wall mudbricks 37 x 37 x 12 cm, which had begun on the course of gate, can show architectonical limit of surface. In the gate or also perhaps on 11.5 x 25 m on big place, lined by river stones, which was situated behind the gate, here was bust of Salamanasar III (Andrae 1913: 37-38 Regarding the site of the image Kidudu: Reade 1986: 299-300). Moreover, statue presents Kidudu god, the guard of the city. The connection south end of the doors with external wall was reinforcement by trusse 2.4 m.

Further foundations achieving thickness about 6m and external wall, put on the natural sand cover, runs along scarps edge. Its towers- as we were able to define- have outreached about 3m and width from 7 to 8 m. The length of wall defence oscillates in about 26-27 m. About 400 m on the south-eastern from the Tabir gate the wall is break by the next gate.

The Western gate (Pl. 6) is located on the place where had to be Middle-Assyrian gate, because in this point the Tukulti - Ninurta ditch was found, where stony ramp was discovered, oriented transversally to the ditch. It was oriented like this to make possible entry to the gate. The remains of the wall can be proof of the side wall existance, which wall was reinforcement ramp. On a base of same gate, we can observe a few building phases, from which part fall for Salamanasar III 37 x 37 x 14 (Andrae 1913: 92). In the older of these phases besides of this place wide on 7 m outline wall, belonged to rectangular chamber with depth 4.36 m and 16.5m of width. The axial passage had inner diameter 4.05 m. in a distance 0.8 m. From both corners space with gates were situated the door wide at 1.66 m, leads to stairs. The whole gate, which front with towers is not preserved, is located on the massive foundation, which has wide 23 m behind the wall, and depth 7 m., in front stick out about 8.1 - 9.2 m and has width 18.3 m. The height of building 2 m, is

result of stop build on this height or removed elements to this level. Later the gate was fill of moat bricks and like this was created eaves, which stick out on half of meter above wall. On this at this altitude 2.5 m above original level was built younger gate, which preserved very residually. Wide at 12.85 surfaces with gate is moved in relation to the previous- about 1.4 m, like this that it is possible to use bigger slope of ramp. The main change is visible in case of set of the stairs; they are not embedded in a wall, but they are situated on both side of chamber with gate. None of them had hanged stones inside. Bad condition of preserved construction is not surprising for us. Probably the old gate was never finished because the floor was in the intact state and we did not find anywhere a point of rear gate.

The north-Western gate is strongly destroyed with added later house, that's why it is difficult to make details description. The base, partly situated on a plaster foundation, has dimensions 24 x 21 m. It was important rule in transport network of the city, because its outskirts were connected with the street lead to the Tabir gate, runs according to the outer bow. From the north-Western gate blade of the wall runs towards of the place behind of the Tabir gate, where turns in the south direction and in a distance about 15 or 20 m it starts along exterior wall and western front. The strength of the wall, a result of build regular towers 7 m, of thickness and width 7.7 – 8 m and outreach, bedemons from 3.9 m, the one extent is tower 14 m; which in a short time before finished of build was transformed to bastion, with outreach 11.4 m and 9.2 m of width (Andrae 1913: 126).

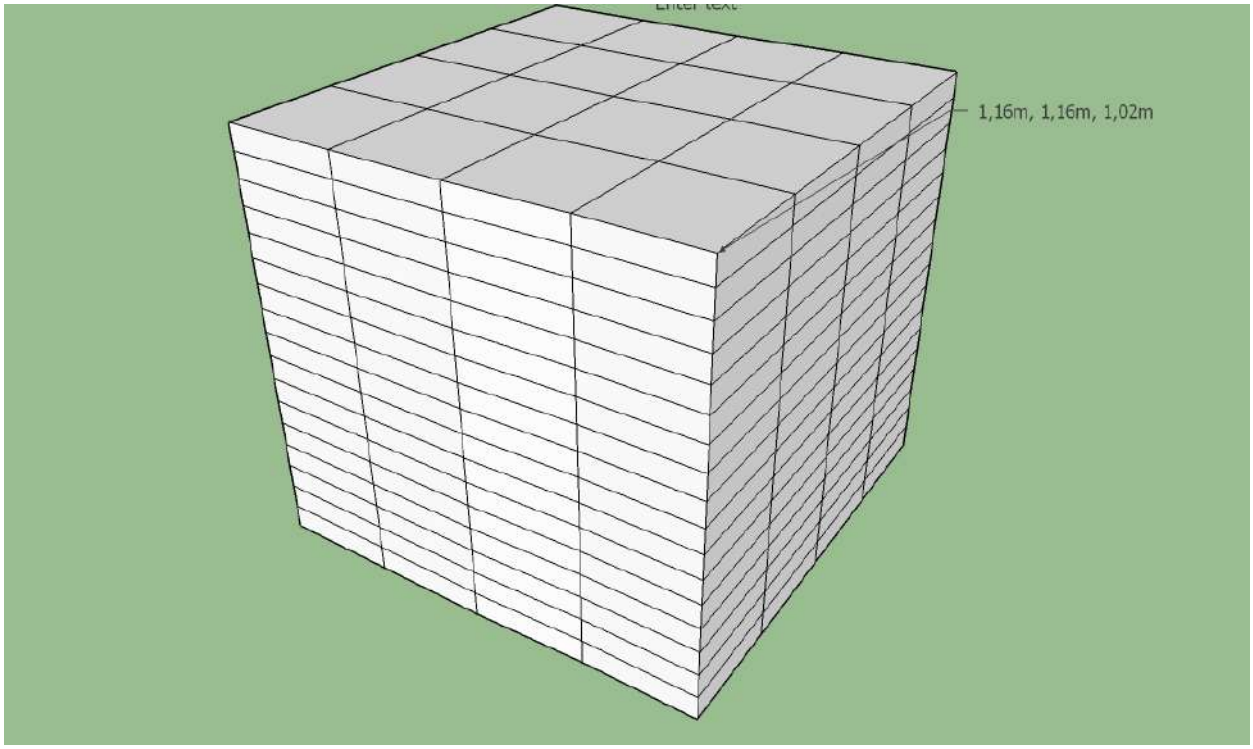
The Western gate of the central shaft portion (Pl. 6). The axis well-kept gate is discovered about 11 m from extended wall of gate. On a deeply put hood made from mudbrick is situated the base of the gate, consist of width 17 m and deep 4.58 m surface, with wide on 4 m, doors; the towers next to the gate, protect entry and are situated in a

distance 5.5m from each other. Every of them width 6.05 m and stick out at 2.65 m from the wall. The staircases leading to occupied zone are not separate constructions but embed in the walls where two wide and massive brick steps are available through wide at 1.9 m doors. The walls of room with gate had inner thickness from 2.8 m. We know that in this moment hinged stones were not discovered, and any hole, which could testify of their presence. In the south western fragment of the central shaft the length of defence wall is between 27.4 m to 34.6 m. Mostly it was rebuilt (Andrae 1913: 131). Nearby stele pleace the extend wall and central shaft split in this point from the central part of shaft is not much preserved, and the construction turns on north eastern, where it reaches Tigris river. In the gap of its course was found a foundation made from the limestone and pebbles. The foundation ensured of stability preserved the ruins. Until now any towers had not been found, but fortifications had from 33 to 36 m of length.

The South gate of the central shaft (Pl. 7) located in bending the wall was surrounded by towers, which were put also on stony foundations. Excluding towers front, which range we can estimate 3,8m, and they are well kept. There were found sliced gates, for which there were used coarse stones here also we have surface with the gate situated behind the wall, with dimensions 16.4 m x 4.37 m. Its inner wall thickness is from 2.5 m to 3.22 m. The towers have a gates width 6.7 m and surround external passage width 3.75 m. The passage was not created in the centre, what can show that south western part of room was using as a staircase. Till now, we do not have any proofs that there was the same wall, so possibly a water system. Internal passage widens from 4,8m to 5,4m. Any marks of hinged stones were not found. Both sides of the gates posses' drainage system gates made from fired mudbrick and combined by gravelly asphalt mass.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.

Old-Assyrian period



-Burnt brick

1) 29 x 29 x 4.5 cm = 272 the amount of brick.

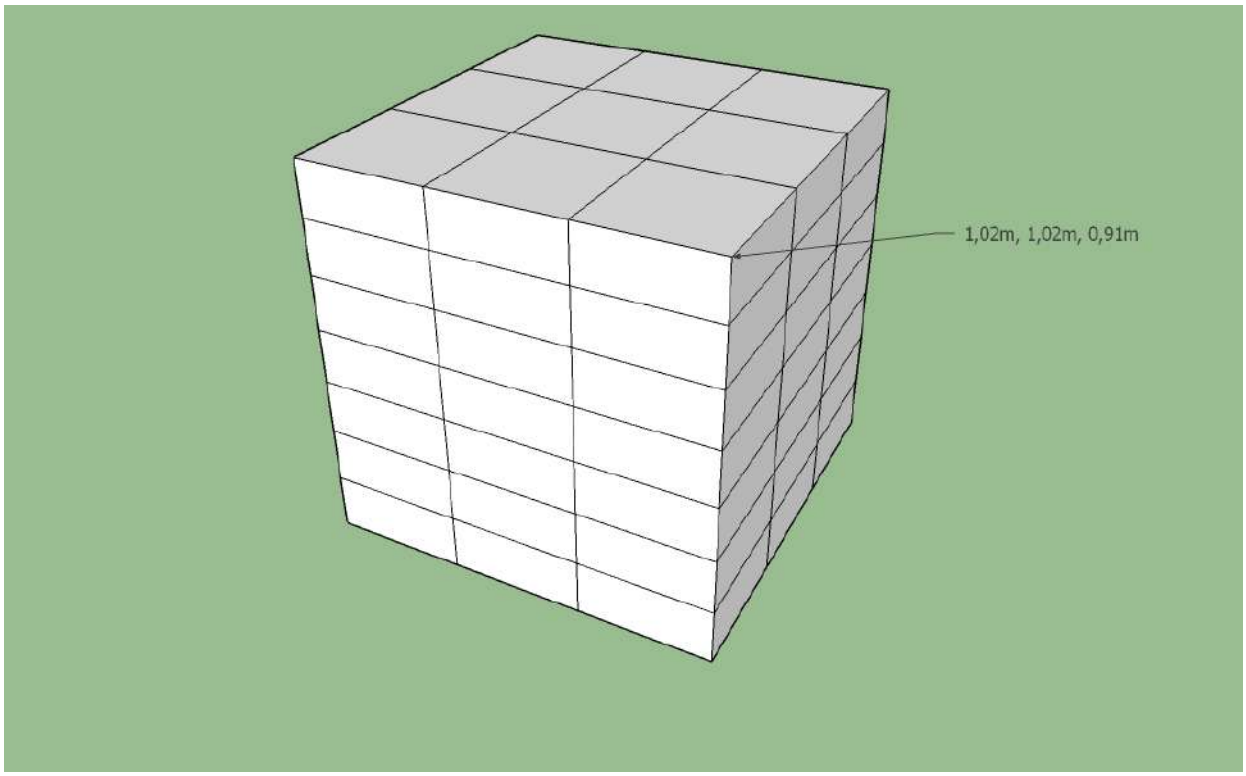
-When using 3 workers to build

-4 minutes time is needed to build one brick.

272x4 = 1088

1088 ÷ 60 minutes = 18:10

18:10 ÷ 3= 06:03 hours of work needed to build m3.

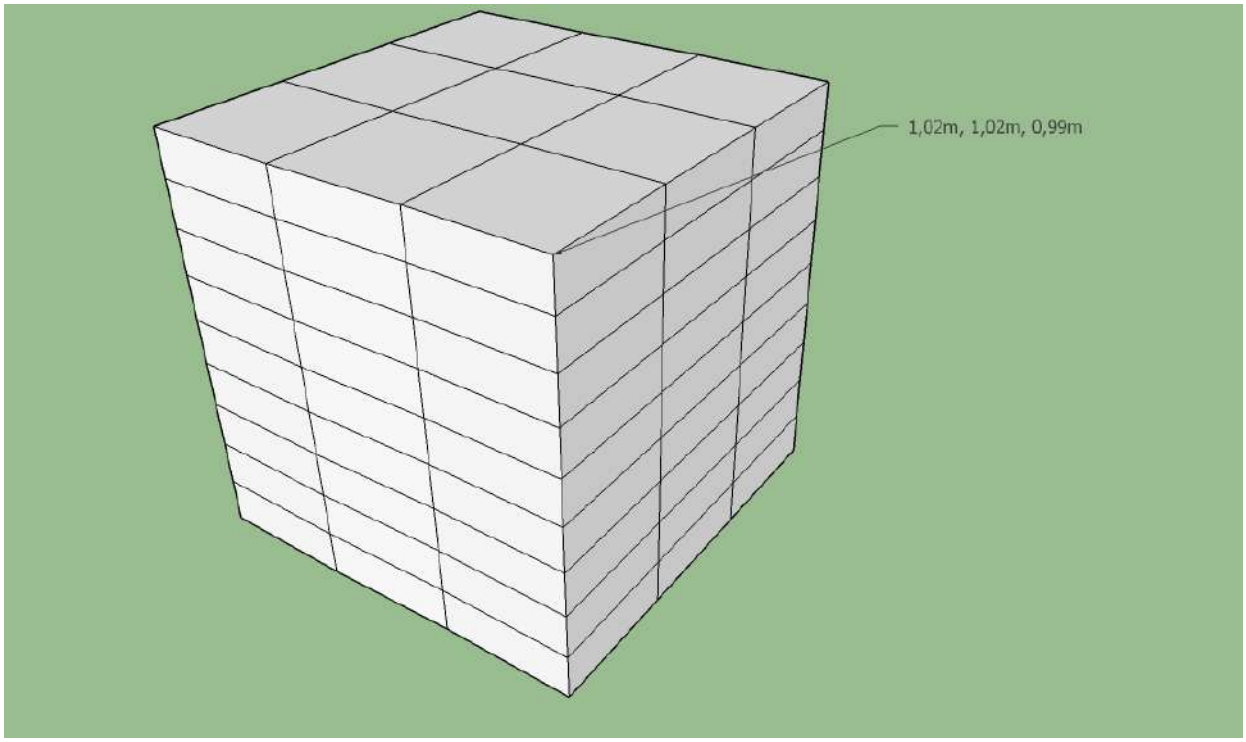


2) 34x34x11 cm = 63 the amount of brick.

63x4 = 252

252 ÷ 60 minutes =04:20

04:20 ÷ 3= 01:27 hours of work needed to build m3.



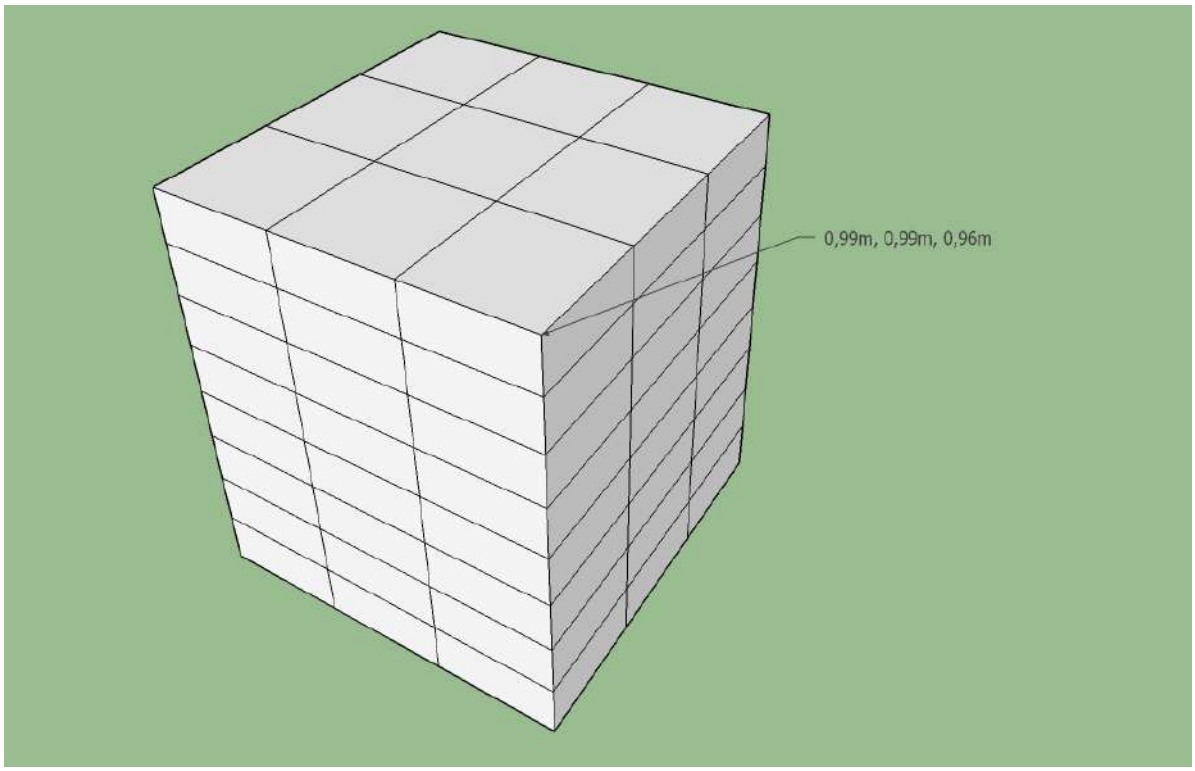
- Mudbrick

1) 34x34x9 cm = 81 the amount of brick

81x4=324

324 ÷ 60 minutes = 05:30

05:30 ÷ 3= 01:51 hours of work needed to build m3.

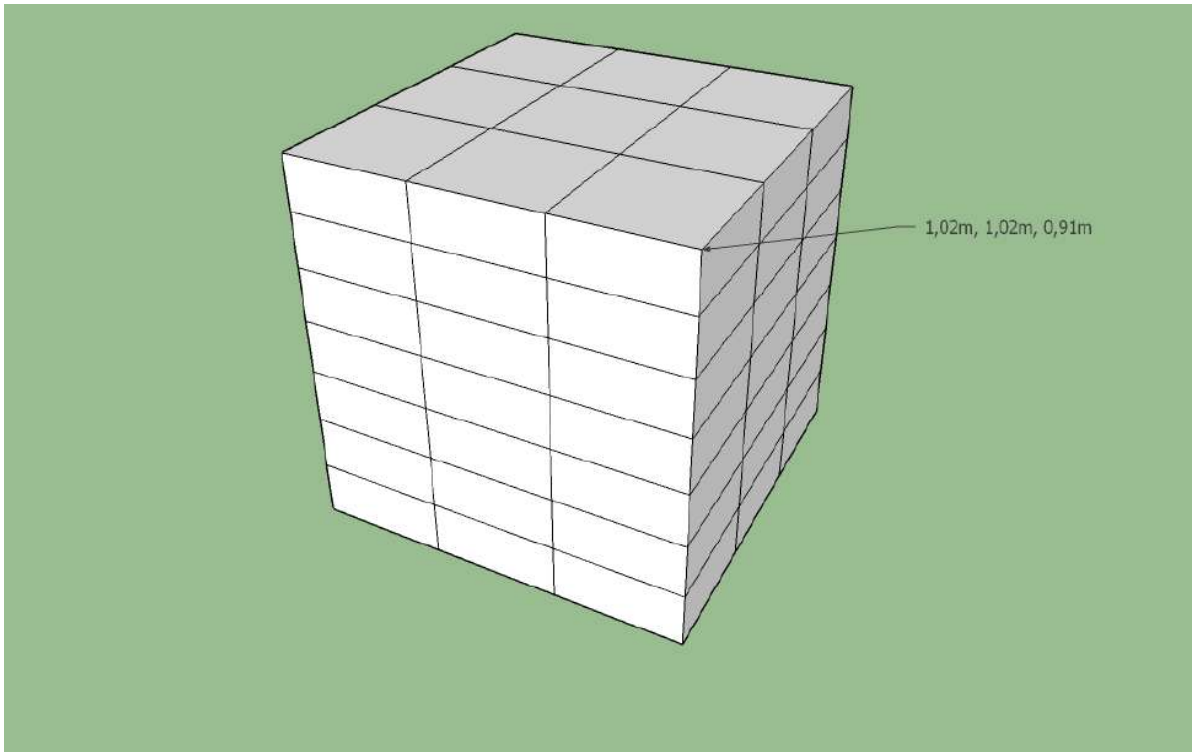


2) 33x33x10 cm = 72 the amount of brick

72x4=288

288 ÷ 60 minutes = 04:40

04:40÷ 3= 01:34 hours of work needed to build m3.



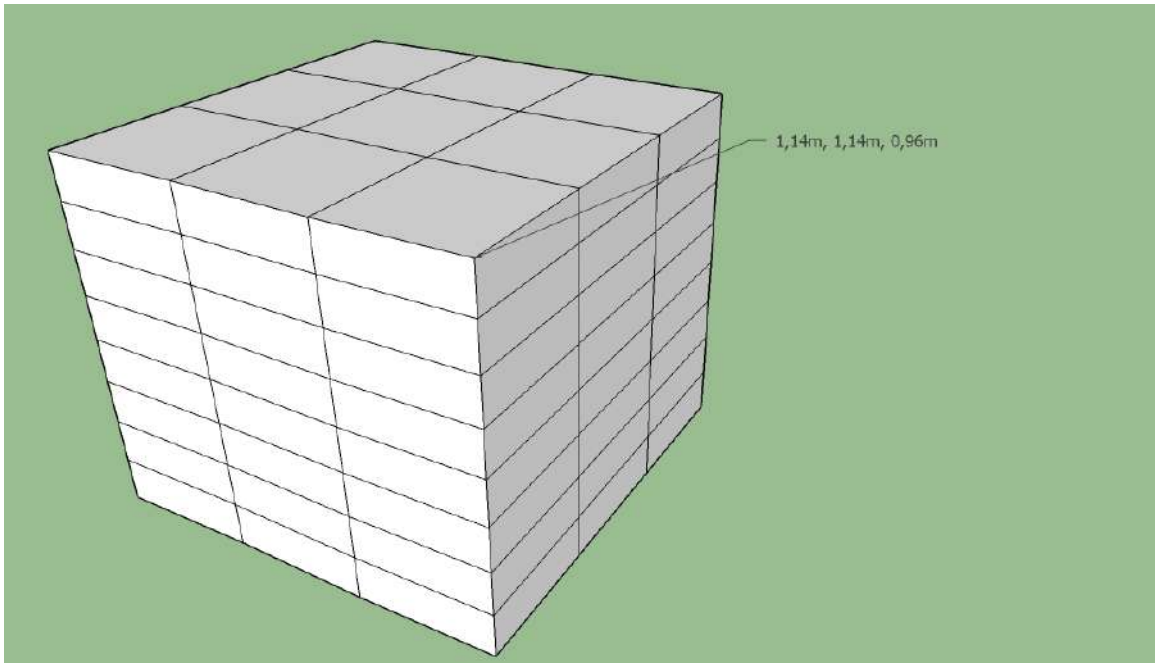
3) 34x34x11 cm = 63 the amount of brick

63x4 = 252

252 ÷ 60 minutes =04:20

04:20 ÷ 3= 01:27 hours of work needed to build m3.

Middle-Assyrian period



-38x38x10 cm=72 the amount of brick.

-When using 3 workers to build

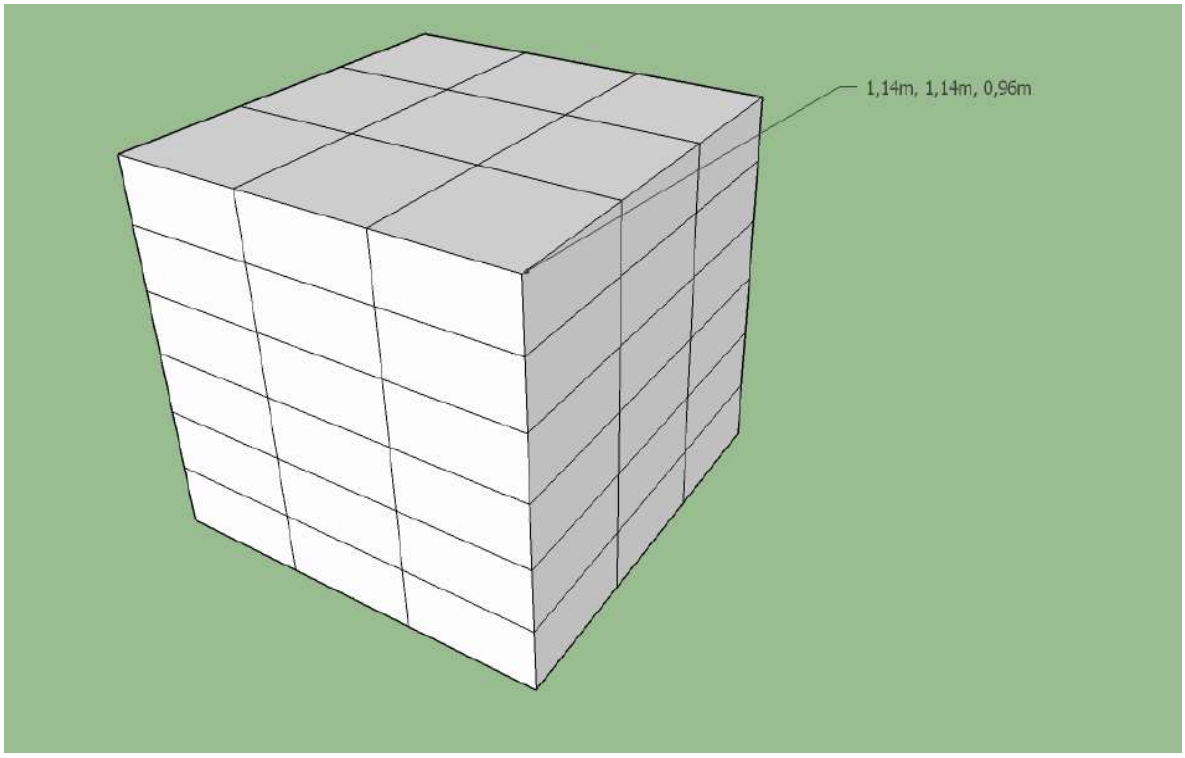
-4 minutes time is needed to build one brick.

72x4 = 288

288 ÷ 60 minutes = 04:44

04:44 ÷ 3= 01:35 hours of work needed to build m3.

Neo-Assyrian period



-Mudbrick

1) 38x38x14 cm=54 the amount of brick.

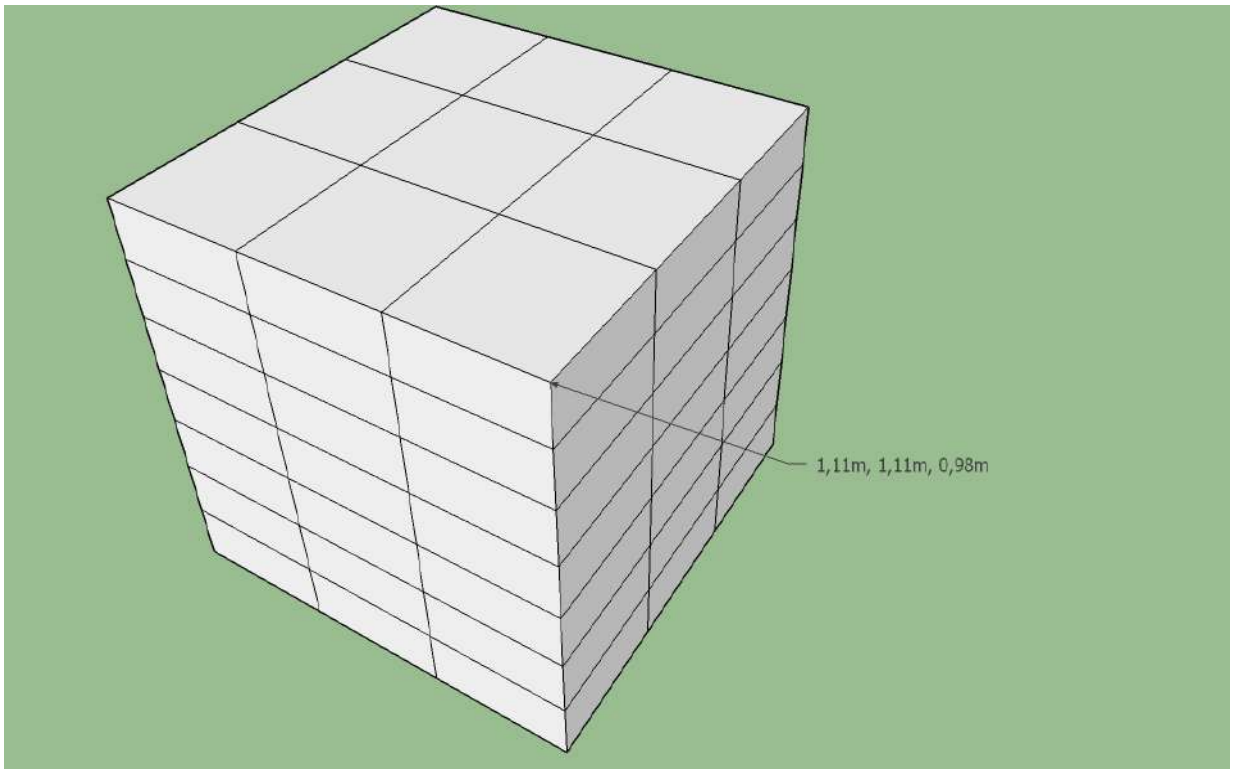
-when using 3 workers to build

-4 minutes time is needed to build one brick.

54x4 = 216

216 ÷ 60 minutes = 03:35

03:35÷ 3= 01:12 hours of work needed to build m3.



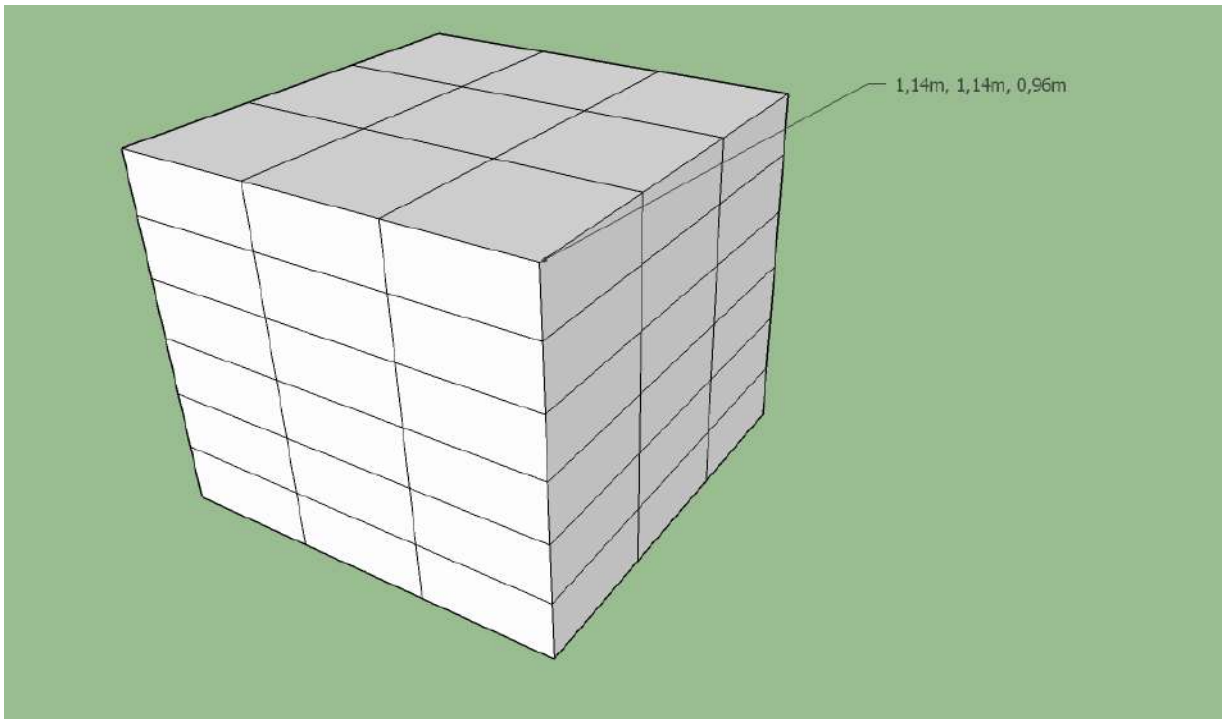
The Tabir gate

37x37x12 cm=63 the amount of brick.

63x4 = 252

252 ÷ 60 minutes = 04:12

04:12 ÷3= 01:24 hours of work needed to build m3.



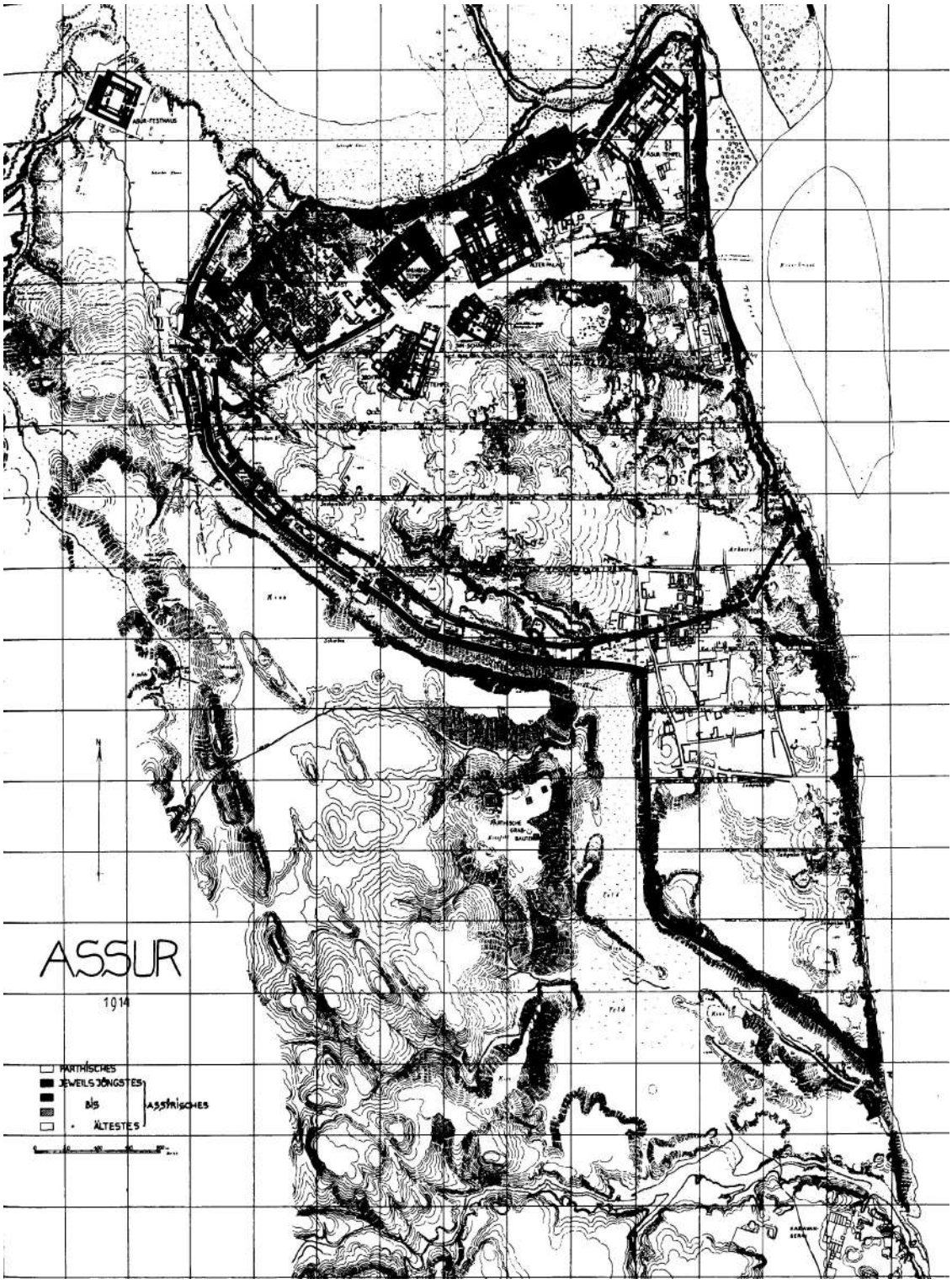
The Western gate

37x37x14 cm=54 the amount of brick.

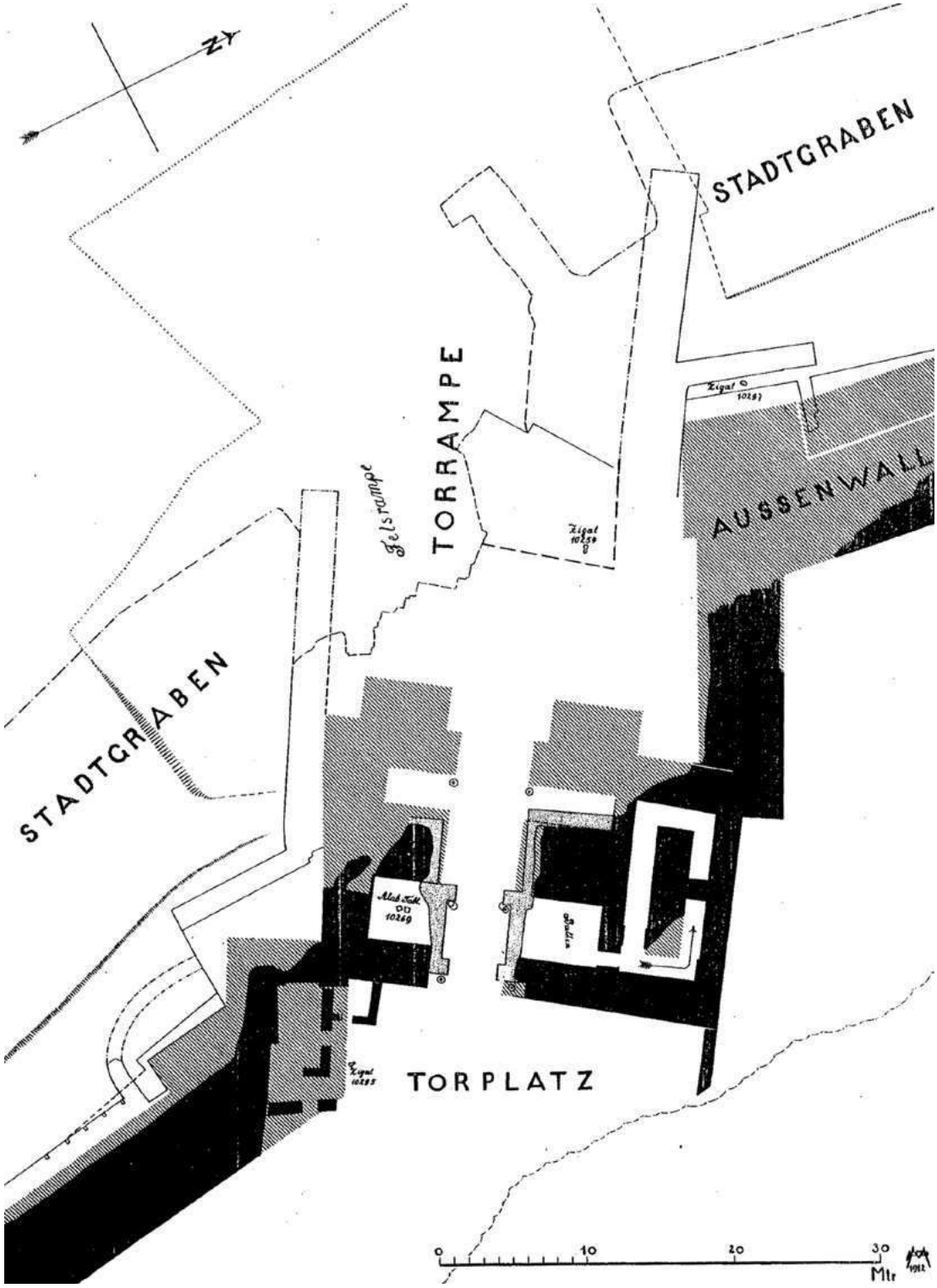
54x4 = 252

54 ÷ 60 minutes = 03:35

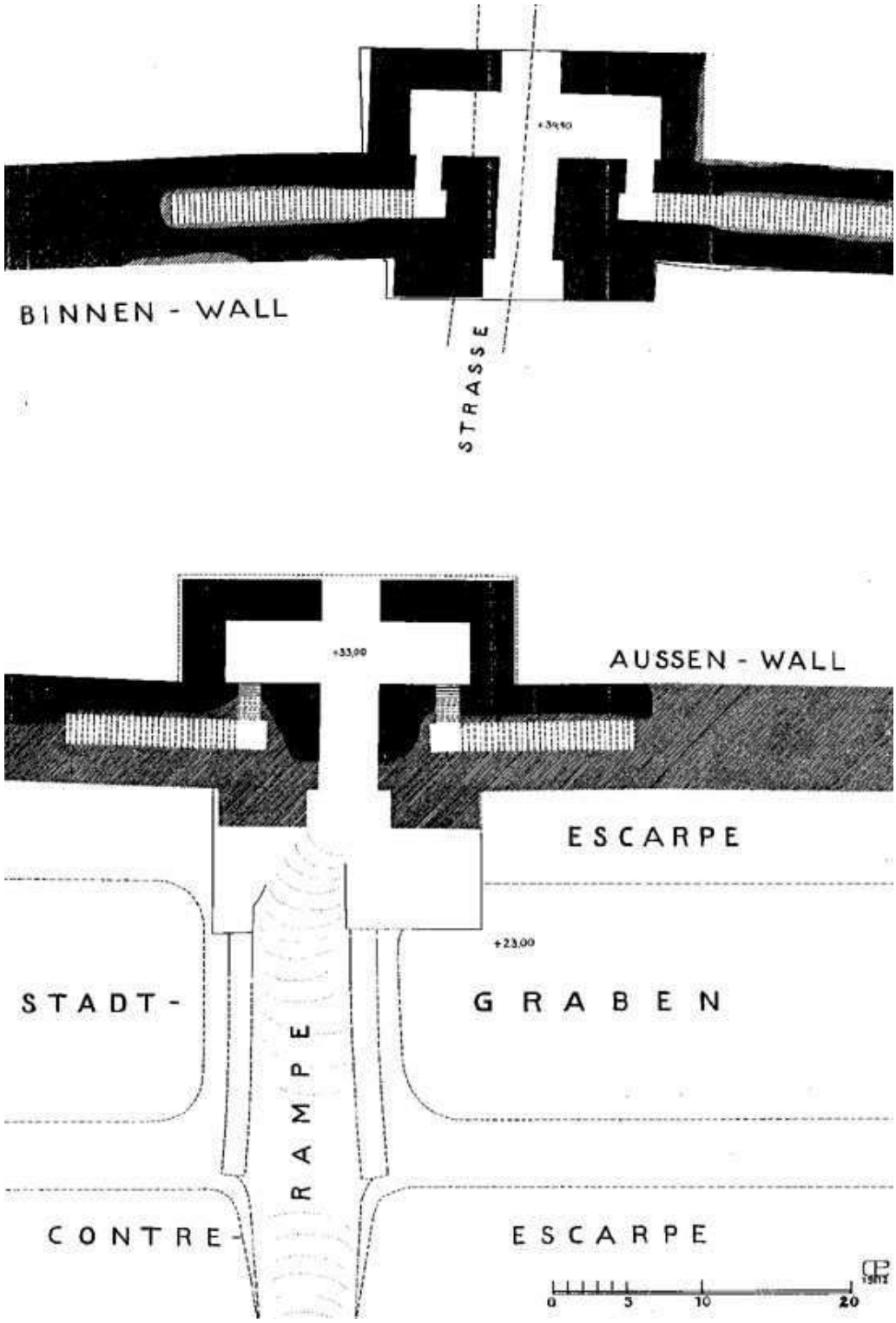
03:35 ÷ 3= 01:12 hours of work needed to build m3.



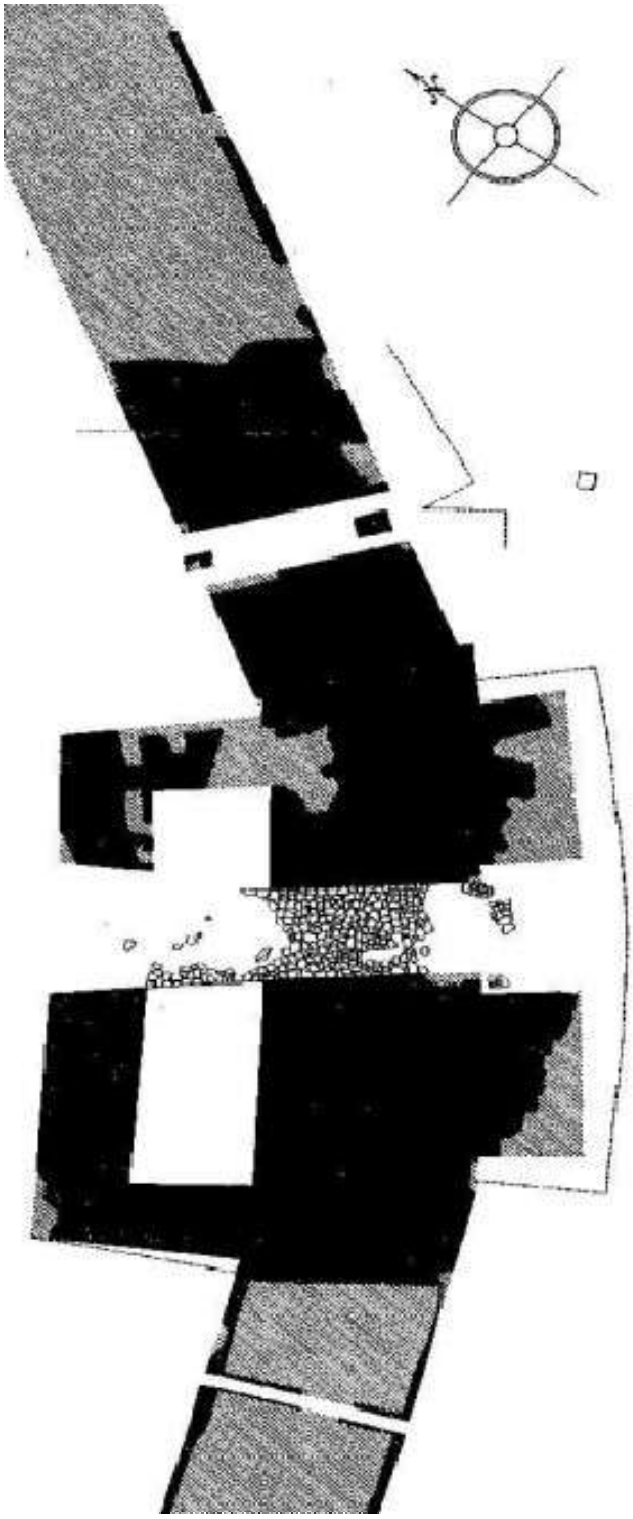
(Pl. 4) Assur Map (Andrae 1977: 293)



(Pl. 5) Tabīra gate (Andrae 1913: Taf. XXXII)



(Pl. 6) West gate (Andrae 1913: Taf. XLI-1)



(Pl. 7) The South gate of the central shaft (Andrae 1913: Taf. LIV)

6. 3. RIJIM, TELL

Location of the site

The site of ancient northern Mesopotamia encompasses the countryside and is located in a remote valley along the west bank of the Tigris river, 25 km north-west of Eski Mosul in northern Iraq. The site was repeatedly flooded by the lakes.

Dimensions of the site

The site covers a small area measured 2.5 hectares, about 250 m long and 100 m wide (Pl. 8) and was aligned along the river's edge.

History of research

Excavation work is part of the rescue research project of the Saddam Dam Basin Salvage. It was undertaken by the Centre of Archaeology of the University of Warsaw Expedition completed three seasons of fieldwork from May 15 to June 17, 1984 and the second excavation September to November 1985. All seasons were under the direction of Professors Piotr Bieliński.

Fortifications

Remnants of the defensive wall were found on the north and south sides at A and C, (Pl. 9).

Dating of the site

It was discovered on this site as the lowest layer on the virgin soil. The fragments of several buildings included the late Uruk period, in the third millennium B.C. The settlement was not found, but during the Niniveh V burial ground was found. In the second millennium B.C., four

archaeological layers have been found, and the remnants of brick structures build on the stone foundation, Middle Bronze, Mitanni, Middle Assyrian, have been revealed (Layers 7-8). By the end of the second millennium B.C., the place was abandoned again. In subsequent layers (9-10) dates are given to the Neo-Assyrian period, and late cemeteries are found, which may be dated to Achaemenid or Sassanid periods (Koliński 2000: 3).

Construction details

On the eastern side, a section of the very wide wall of the tell-tale (excavation A - A l) was discovered (Pl. 10). Existing fortification structures were found in the north, but unfortunately the north wall was destroyed by erosion and rivers, and the south, however, disappeared in the A1 pit. The course of the wall in this area is not clear.

The remaining part of the fortification at the post is about 2.20 m wide, on the foundations was built only of stones: two walls parallel to each other were made of large and medium stones (The largest of the size of 0.6x0.5 m) and the core between the walls was filled with smaller stones, although same times the large block also has a length of 0.5 m. The wall was made of bricks measuring 44-46 x 12-14cm. The space between the bricks filled the ground there (Koliński 2000: 12). And also, was found on this low foundation the brick superstructure (numbers 3 and 4) called *pisé* (Fig. 53). What proves to me that this wall was built in a technical way, so I suppose that the width of the fortification is certainly greater than the width of foundations.

The stone foundations of the structures belonging to the younger middle layer of the Bronze Age were found only on the west. According to Koliński, this wall was part of fortifications. The construction technique and the width (about 2.5 m) exactly correspond to Tell Rijim

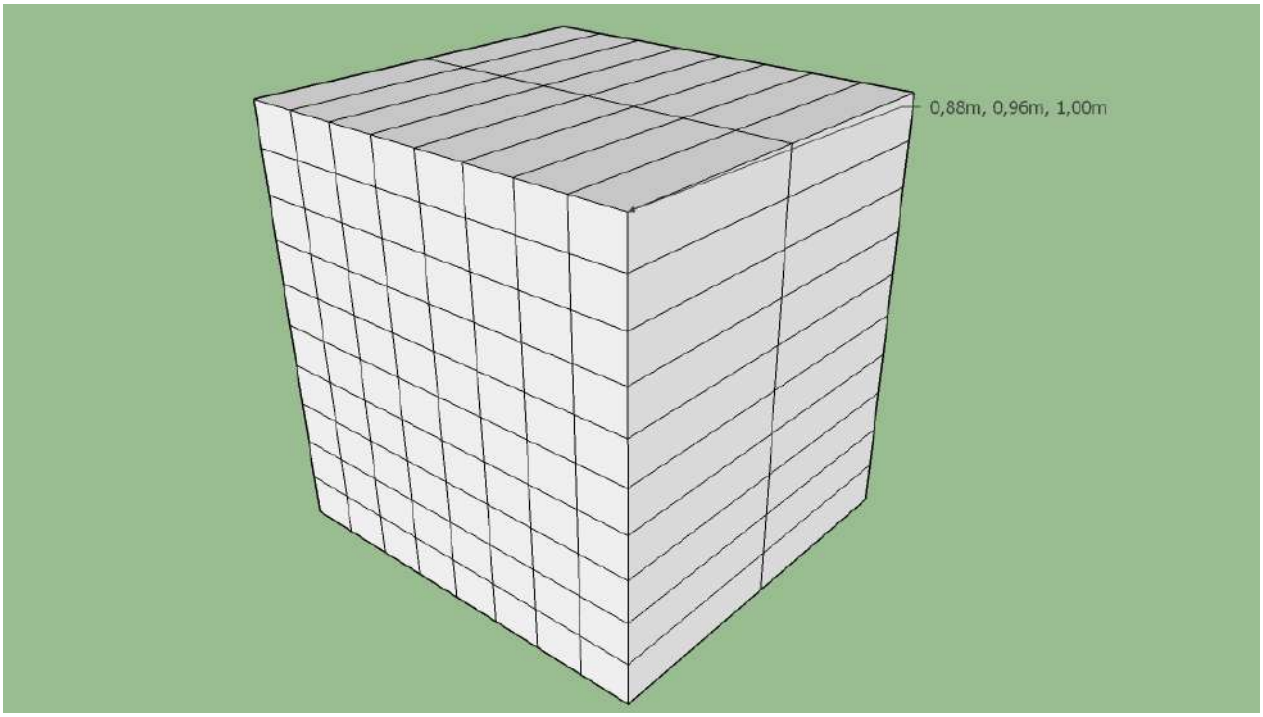
wall.

But it was not possible to trace the course of the fortifications, but one could suppose that to the south was a part of the fortification that led westward, closing the area of the settlement. There was no evidence of this wall in place C, it should be assumed that in the north and probably also on the western access to the settlement, was protected by the high slopes of the river (Koliński 2000: 22).

Gates

A fragment in the trench Schnitt II of 4.5 m of wide. In this part of fortification gate was discovered, the thickness probably means the bastion flanking the gate (Spanos 1988: 65).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1) 44x12x8cm=160 the amount of brick.

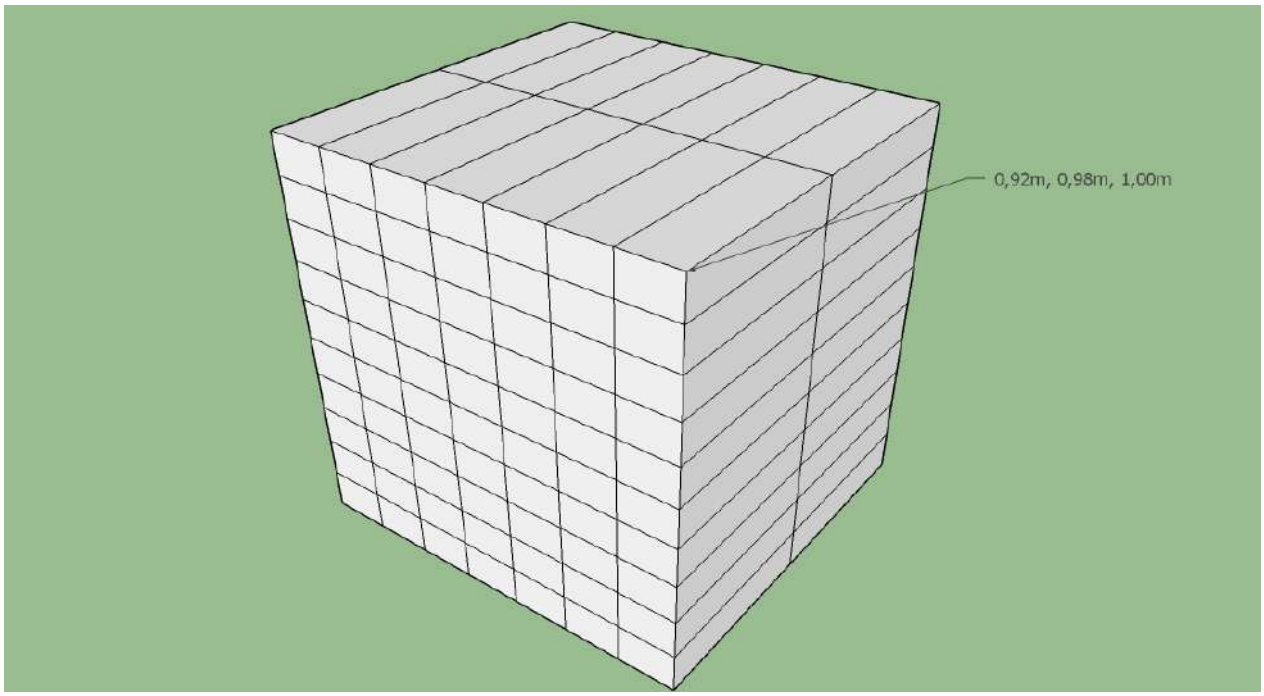
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

160x 4= 640

640÷ 60 minut= 10:35

10:35 ÷3= 03:32 hours of work needed to build m3.

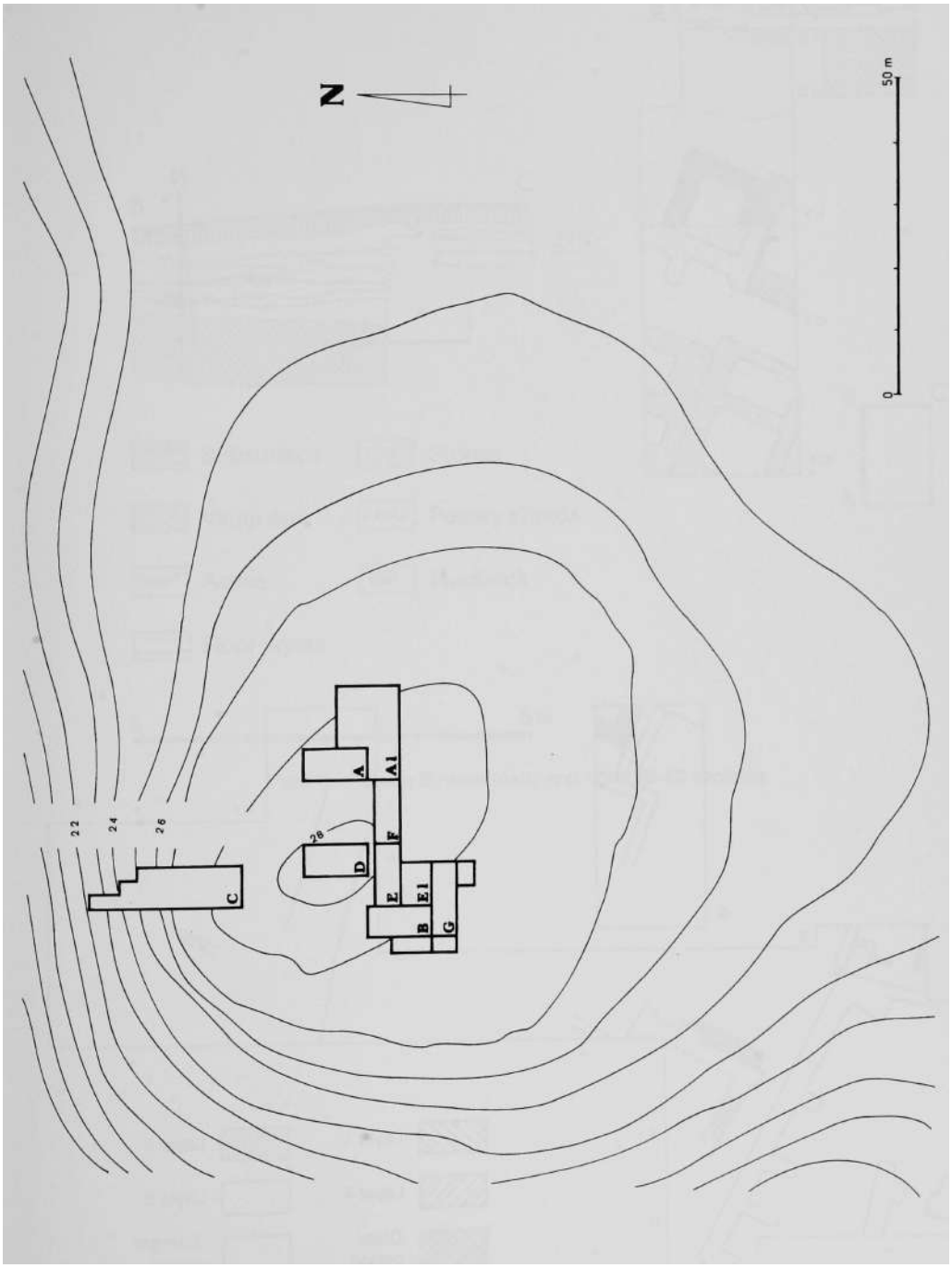


2)46x14x8cm=140 the amount of brick.

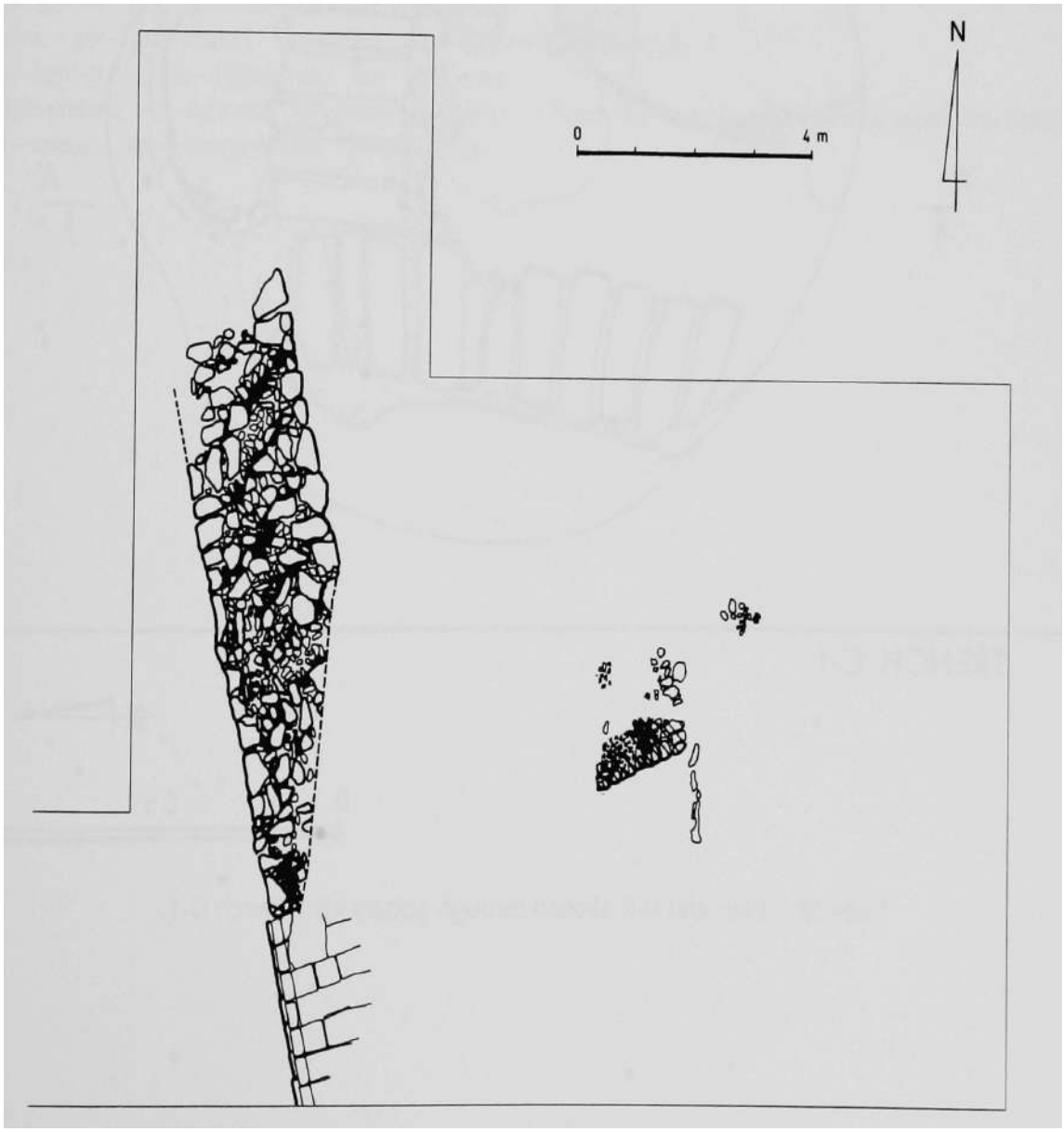
140x 4= 560

560÷ 60 minut= 09:15

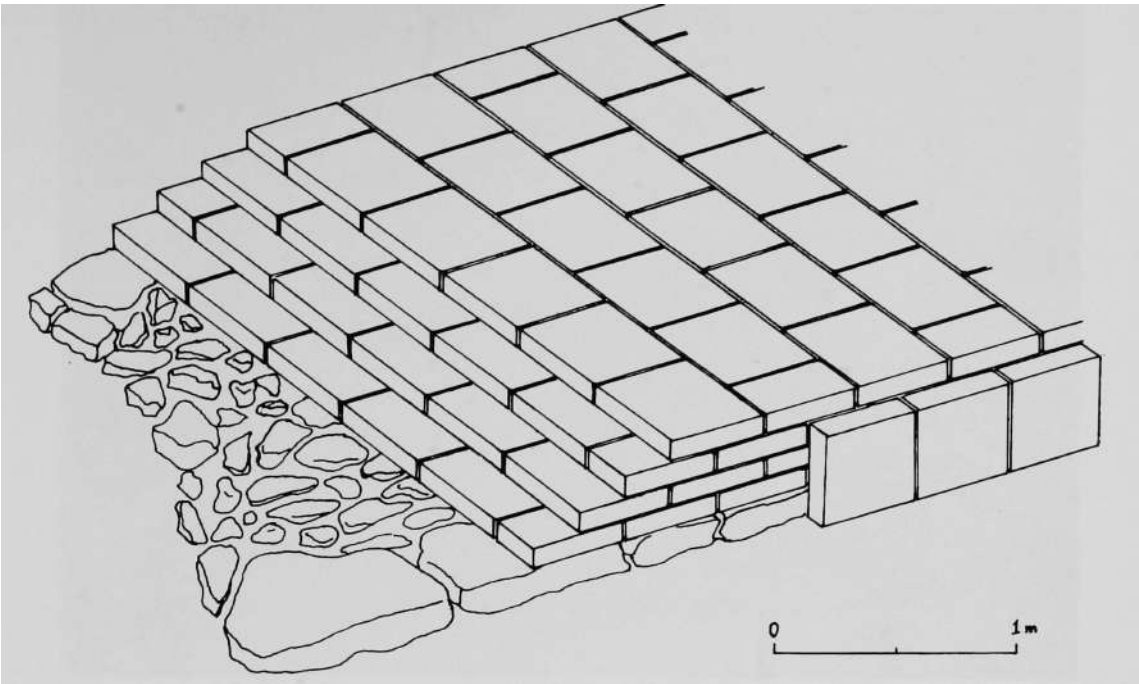
09:15 ÷3= 03:05 hours of work needed to build m3.



(Pl. 8) Plan General Tell Rijm (Koliński 2000: Pl. 4)



(Pl. 9) Plan of the excavated M B A remains in Trenches A-A1 (Koliński 2000: Pl. 11)



(Pl. 10). Tell Rijim. Mudbrick bond of the defence wall in Trench A-A1 (Koliński 2000: fig. 18)

(Fig. 53) Tell Rijim, Trench A1. Fragment of a defence wall visible under the foundations of structures from the Neo-Assyrian period. Surviving on the right, a mudbrick structure with brick "orthostatic" (Koliński 2000: fig. 19)

6. 4. KAR-TUKULTI- NINURTA

Location of the site

It is situated directly on the left shore of the Tigris river, it is about 3 km to the north from the Assyrian capital the city of Assur.

Excavated side is located (Pl. 11) on the alluvial plain of Tigris river and surrounded be Gabal Makhul-from the east, on the south –by Gabal Hamrin, on the north-by Kar-Tukulti-Ninurta- climb in ridge Qayyara direction (Eickhoff 1985: 15).

Dimensions of the site

Site dimensions have not been definited so far, however research of Dittman showed that it is bigger that it was established during the first excavations, in the beginning of the 20th century. Before they searched 250 ha of area, but Dittman is not ruling out that in the reality it could have even twice bigger area (Dittmann 1992: 269).

History of research

In winter 1913/14 the first excavation was started in Kar-Tukulti Ninurta and continued by Walter Bachmann, member of Assur-team of Walter Anders. They confirmed identification of the centre according to inscriptions of Assyrian king Tukulti- Ninurta II. During these researches were discovered partly or completely the most important buildings (Eickhoff 1985: 11-12). The field works in Kar-Tukulti-Ninurta was resumed in 1986 only, by Richard Dittmann. His survey and excavation work in years 1986 and 1989 should give an answer for still open questions (Dittmann 1990: 157).

Fortifications

So far, the municipals border was defined on the west from Tigris river, for account of discover of the walls in 1989 on the south direction. On the east of city could streatch out to Middle-Assyrian canal whereas its reach to the north have not been define yet (Dittmann 1992: 269).

The zone is defined as a "official district" nowadays (Pl. 12). It is separated by Tigis river and the wall –in south-eastern direction. The zone separates the district from the rest areas, but the north limit border is not found still. Specified primarily by Bachmann as part of the fortifications, a fragment of the wall was part of the Northern Palace. Its exact range to the north has not been set yet look. there are a Zikkurat and an Assyrian temple discovered by Bachmann. The zone limit appoints by canal and "internal wall" which divide the district on eastern and western parts (Dittmann 1992: 269).

Dating of the site

The site is dating for the Middle-Assyrian period.

Construction details

The site includes two concentric points of fortification:

The outside wall of official district was researched outside of the gate D also. For this construction were used dried, sludge bricks, put directly on gravel. Thickness of the wall is about 7 m, did not require additional elements to reinforcement of walls in a base of them.

Towers located in regular intervals – in 24.5 m, were designed as

a retrenchment for widths from 5m –outside to 1.5 m inside. On base of widths of the wall we are able to make a reconstruction the height of putting the wall -11m. (Eickhoff 1985: 22-23). We still do not have any information about measuring point, especially in relation to its location because there are no any visible hills (Eickhoff 1985: 16).

The internal wall, researched in a few points coresponds structurally with outside wall, but it is much weaker than this outside. This attribute is a consequence of the widths 3.5 m and it sticks out with regard to the line of stipulations about 2,5m. Fortification add to the wall in this point is a result of building canal, situated about 2 m from the wall, along of it. The gate D finish the canal. The next breakthrough of canal –RS- is situated further on the north, where the main canal takes direction to west part of the district (Eickhoff 1985: 23-24). Course of the wall on north east direction is relatively unclear. Connections with outside wall are not discovered until now (Dittmann et al. 1988: 120).

Internal wall turns in west direction. Appropriate walls were discovered in 1989 only on the south edge of the city, but until now they have not been researched good enough.

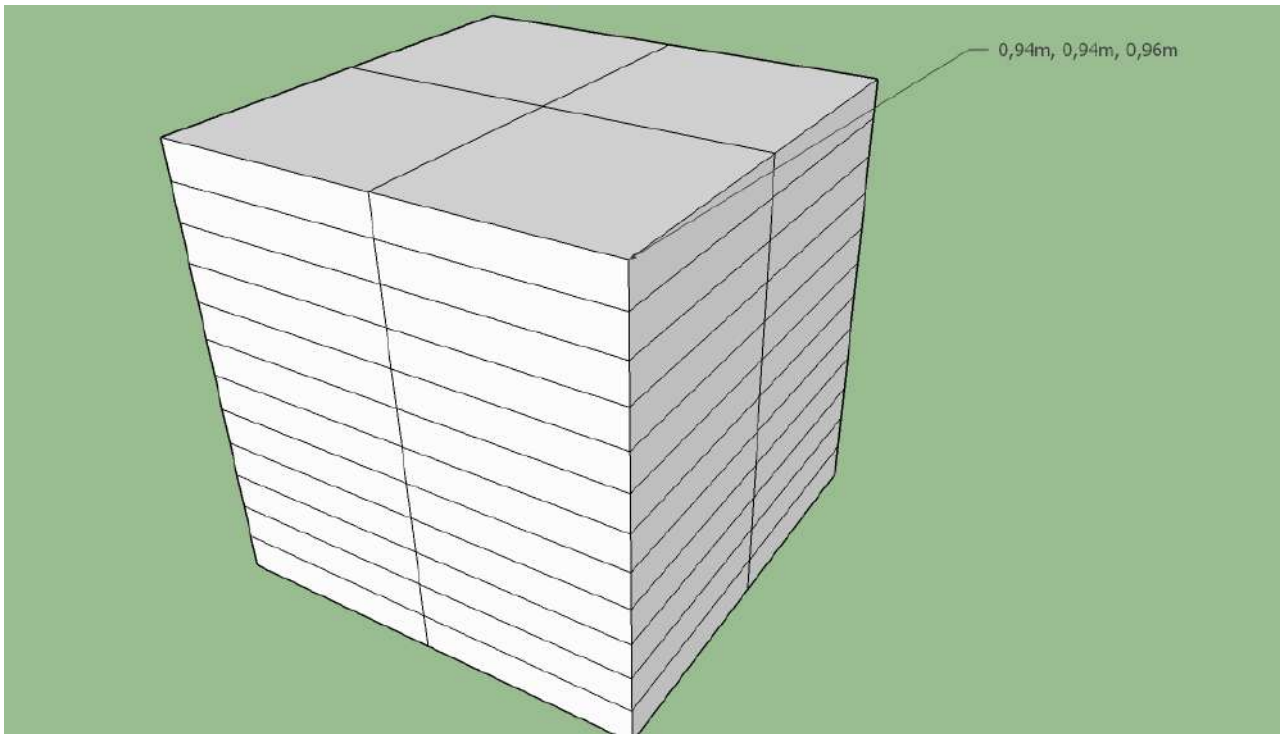
Gates

On a basic of a flats plan, we can suppose that the gates signed as N, D, G led to the official district. The door D and gate connecting two parts were discovered, but it was not possible to find exact location of the gate (Eickhoff 1985: 16-17).

The gate D (Pl. 13) is the only one, which was researched completely. It is situated in the south part of outer wall of official district which provided to access to eastern part. The gate the wall structure is similar. The passage only is made of fired bricks. The gate

is situated in right corner of the wall and is surrounded by two massive towers. The width is about 11m. They protrude from the wall and include vestibule wide 8 m. Through the two wide 8.5 m trick passage narrows to 4 m and it change itself in room- length 15 m and wild 8 m- and it is situated within the walls. Output is crowned by the second couple of the ticks, which narrows the passage from 5.5 m to 4 m. (Eickhoff 1985: 20). The output is surrounded two pillars protruded from the wall about 2 m. The term of and tricks as internal towers is exaggeration. On the west there is next to the gate bent arm of a band internal ad external wall. There are stairs- size 23 m x 15 m, added to the gate, they could be a reason of the wall erosion. The output was not situated inside of the gate but outside of it. Angular stones of the gate were not found. On a base of output system Erickhoff provided two possible reconstructions. One of them corresponding in function of tape a fortification door by Herzoga (1986: 62-66), whereby it is possible to close the door to outward and inward also; according to second interpretation the door was situated behind the tricks and it made possible to close the door outward (Eickhoff 1985: 21). Now it indicates that the second option has a better-founded base. This is due to strategic reason but also the situation of the stairs was important in this context. The door situated inside of fortification made possibilities to climb the walls and towers. In the situation when the door would be opened supposing climbing would not be possible. Used specification follow Eickoff as “internal towers” posts would be of paramount importance as protection of pillars.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.

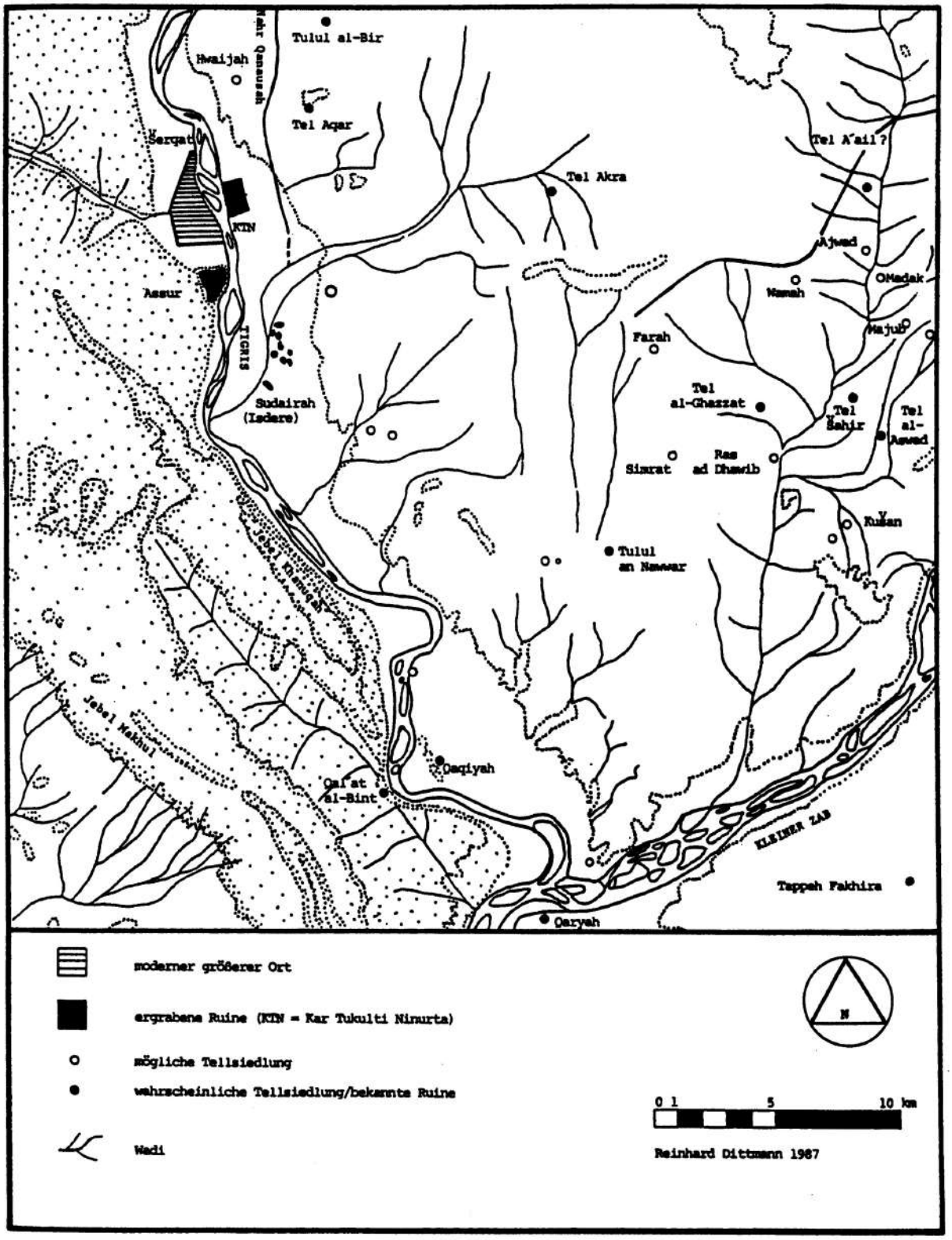
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

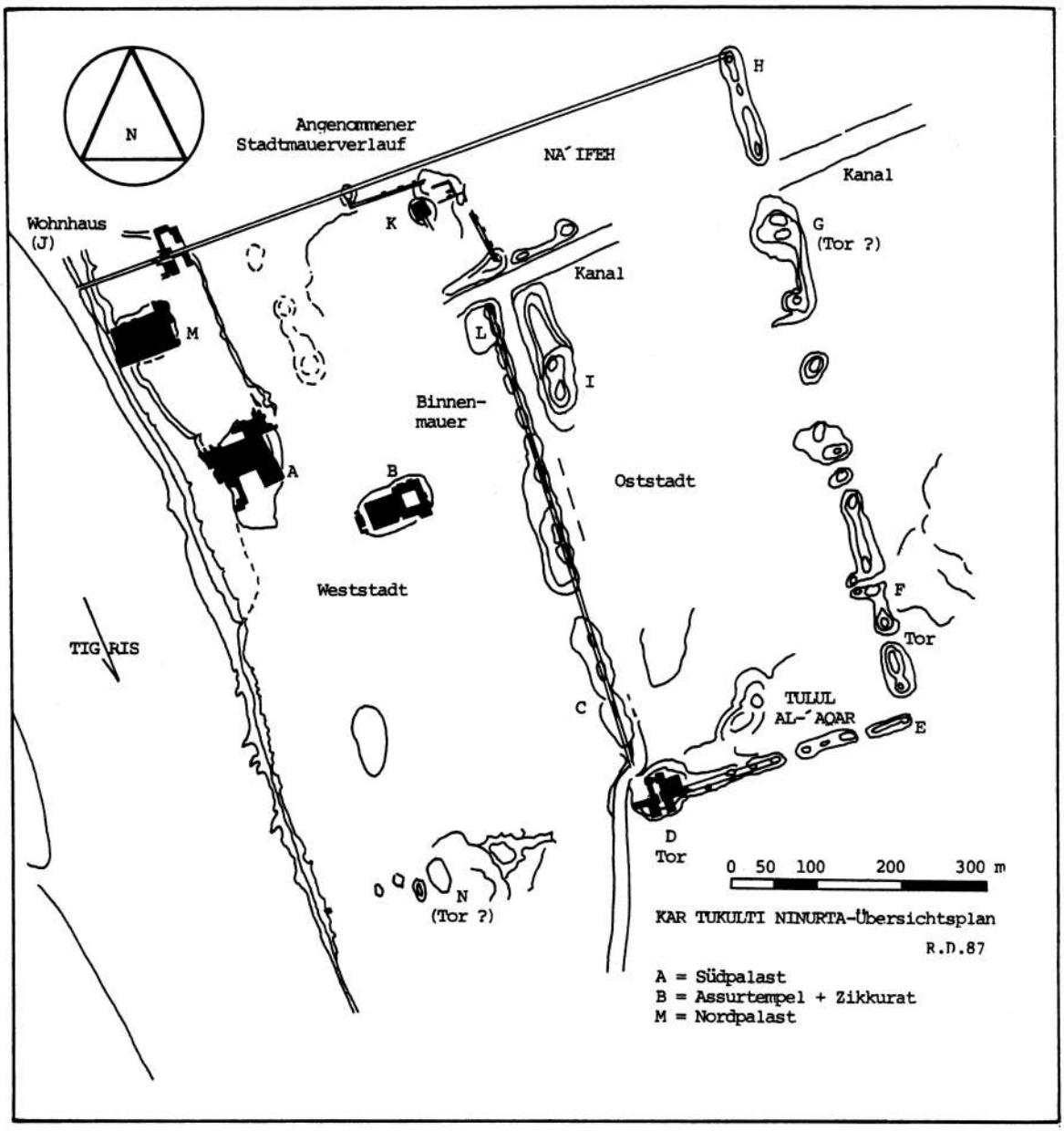
48x 4= 192

192÷ 60 minut= 03:20

03:20 ÷ 3= 01:07 hours of work needed to build m3.



(Pl. 11) Locations Assyrian and Kar-Tukulti-Ninurta (Dittmann et al. 1988: 99. Abb.1)



(Pl. 12) Plan Kar-Tukulti-Ninurta (Dittmann et al. 1988: 100. Abb. 2)

(Pl. 13) Gate D (Eickhoff 1985: 20. fig. 1).

6. 5. SABI ABYAD, TELL

Location of the site

Tell is situated in upper part of Balih in north Syria.

Dimensions of the site

The area of the archeological side takes about one hectare of land.

History of research

From 1986 excavations are continue there, under the direction of P. Akkermann in Tell Sabi Abyad.

Fortifications

It consists of small fortress on the top of the hill (Pl. 14) (Akkermans 1998/1: 11-12). It was created during the rule of Tukulti-Ninurta I, probably and it existed for several decades until the rules of Adad-Nirari III (Akkermans 1998/1: 209). Based on the texts discovered in Sabi Abyad we know this small fort was not only a military outpost on the west of the kingdom but also it was used to as an administration centre and outpost duty route between Karkemis, Assur and property Lli-Padas, Assyrian the seat of the land vizier and viceroy Hanigalbat organized agricultural land around the Balih valley (Akkermans 1998/1: 201).

Dating of the site

Settlement dates to the Middle-Assyrian period.

Construction details

The fortress is located on top Tell and about 8 m above area that surrounds it. It is in the second phase of use the first Assyrian and the subsequent phase from Mitanni language-from tower of thick – 1.6 m – 2 m surround walls, which closed area in 60 x 60 m2 dimentions. This space is adjacent directly to the wall and it consists primarily of a several buildings developped with time.

Behind the walls there is a few spaces in dimentions 5-6 m and they was located in the broad wall, 4 m size with fundaments 3.5 m deep down, which edges were reinforced brick. Space between the walls and down area was protected by three turrets and-from south side. Additionally, this area was filled with buildings and between there is a road, it could have about 1.5 to 2m of width. In North-west corner is situated an entrance to the complex, where we can see slig towering ridge. On the bottom there is destroyed soil of belt wide about 5 m with diagonally the room line, probably.

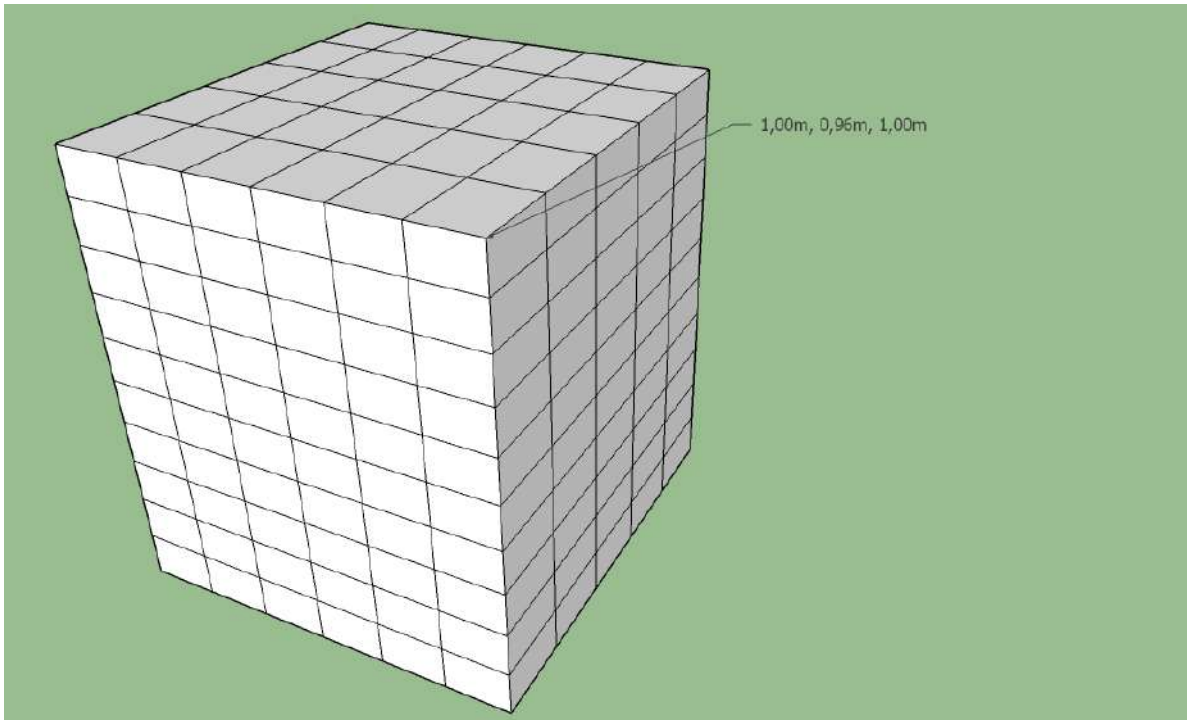
A significant amount of ceramic and burned grain show, that ground floor was using as a ware house, mostly (Akkermans 1998/1: 205). There is situated a building string identified as an administration buildings, houses, and workshops. On both sides if the bottom we can recognize much more houses and craft workshops. We are not able to find solution until now (Akkermans 1998/1: 209).

Gates

The remains of mudbricks were discovered in discussed place, what can suggest there could be situated a gate in this place. From the ramp over the moat a path leads towards thee northern side of the fortifications finishing at the gate of the for. Primary it had to have 3 entrances.

The central entrance was surrounded by strong buttress; it had 1.25 m wide and narrow gates from both sides. When the fort wall was reinfocement with annex in its north part then it blocked the central entrance and kept lateral parts as internal passage. In that time passage built in the north eastern part of complex wall was reinfocement by butters and it consists of in a protected corridor with dimensions15 x 4 m. The passage led to a courtyard. This opened passage was secured by other buildings with closed gates (Akkermans 1998/1: 201-205). The tower in the central part of the complex with dimension 23m x 12m stood on the foundations of thickness from 2.5 m to 3.5 m made of raw brick. From the north is entrance, 1.5 m wide, in the north east corner, the stairs were situated, to led the top of the tower. All the interior doors were narrow and low. The arches of the gates were built from the same stones corner used for building the gates.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1) 20x16x8 cm= 300 the amount of brick.

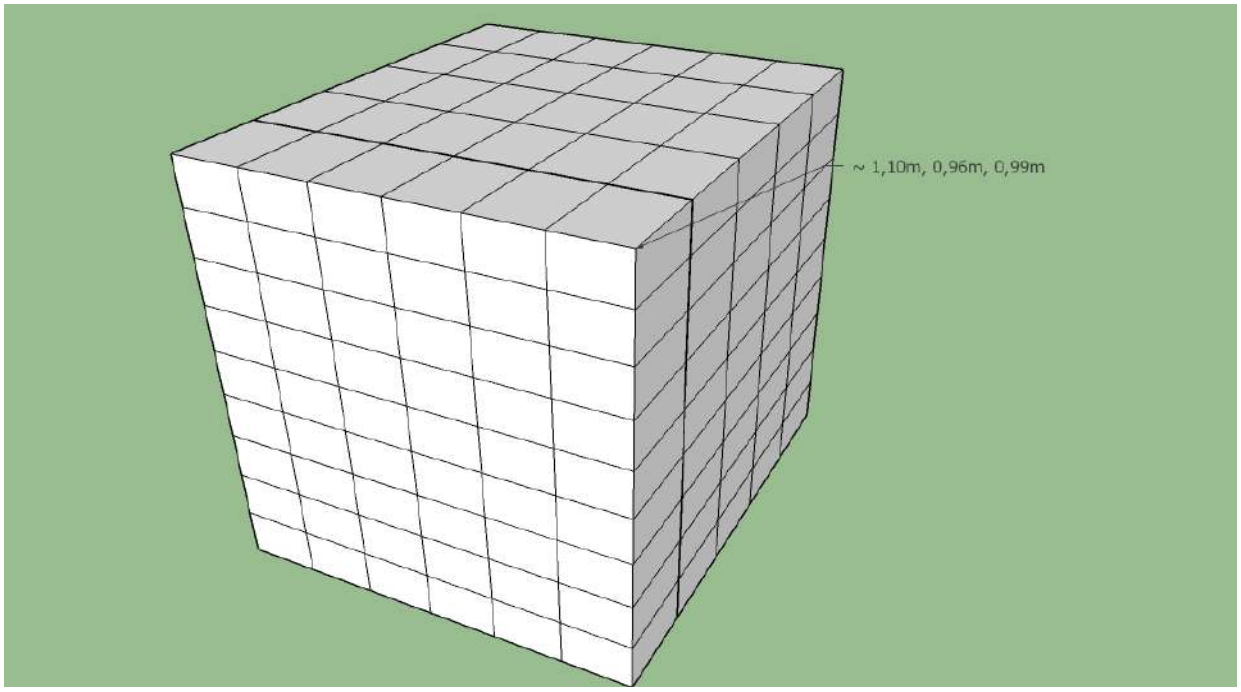
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

300x 4= 1200

1200÷ 60 minut= 20:00

20:00 ÷ 3= 06:40 hours of work needed to build m3.

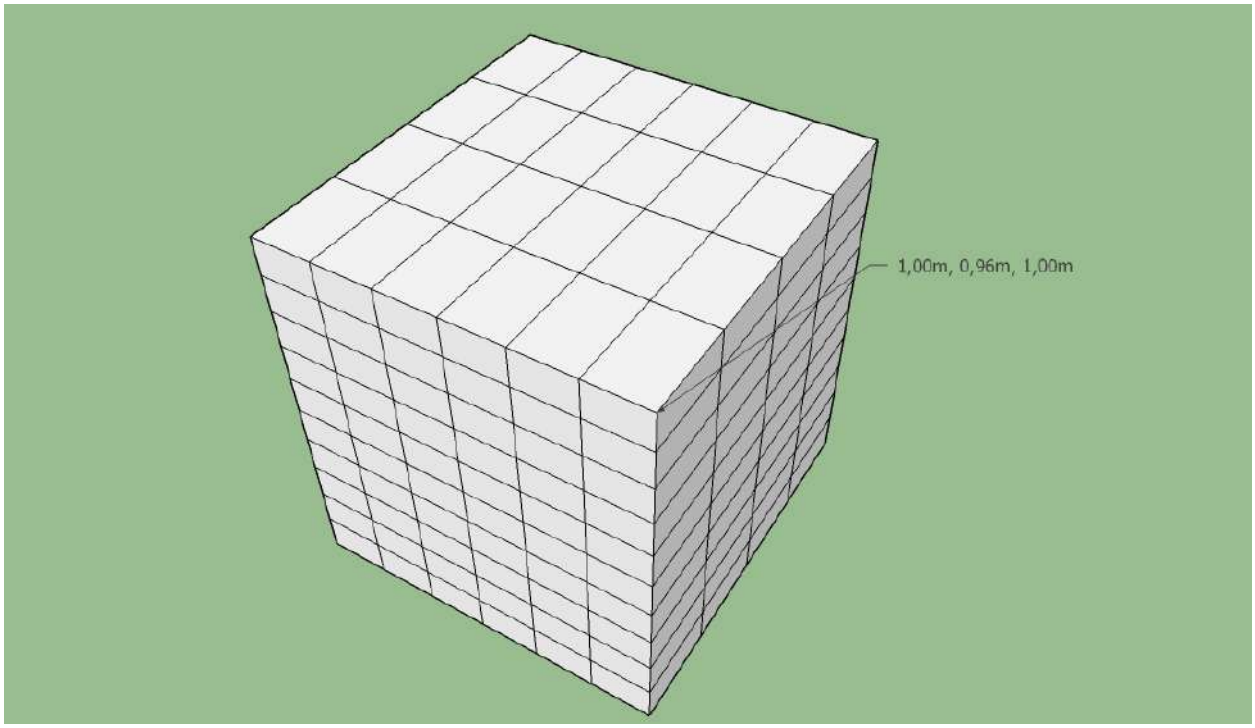


2) 22x16x9 cm=270 the amount of brick.

270x 4= 1080

1080÷ 60 minut= 18:00

18:00 ÷ 3= 06:00 hours of work needed to build m3.

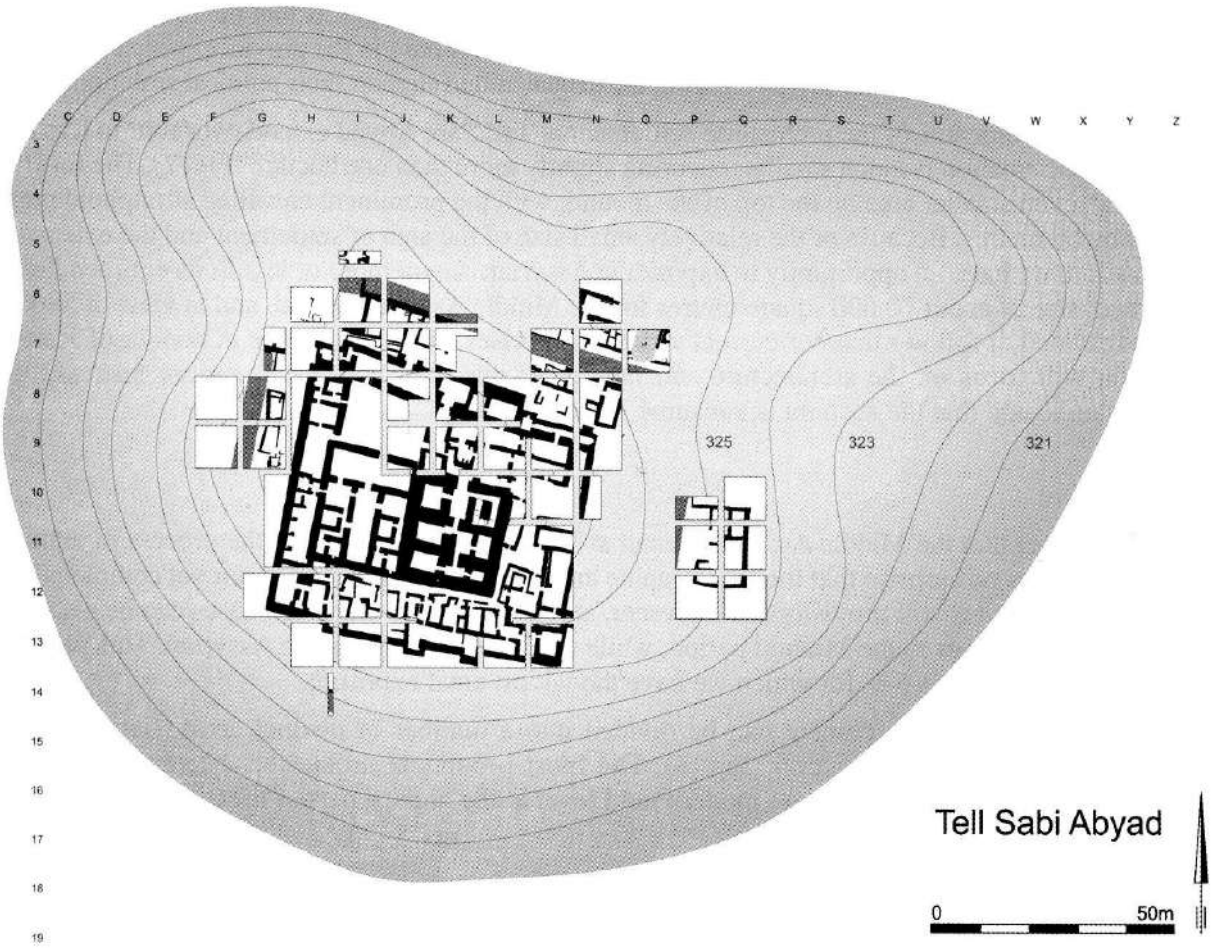


3) 25x16x8 cm=240 the amount of brick.

240x4=960

960÷ 60 minut= 16:00

16:00 ÷ 3= 05:20 hours of work needed to build m3.



(Pl. 14) Plan of Tell Sabi Abyad (Akkermans 2006: 204. Abb. 2)

6. 6. BARSIP TELL / KAR –SALMANASAR (TELL AL-AHMAR)

Location of the site

Kar-Salmanasar takes area length about 30 km and 10 km width on west bank of Euphrat. The eastern part of this area comes to the Jazirah plain. On the west crossing the river in points with cliffs and hills is much more difficult. The meaning of the city can be resulted of the control of crossing in river sink called Sagur, river situated one km upstream (Bunnens 1990: 2).

Dimensions of the site

On the east bank semicircular city measures an axis of 1200 m and take a surface about 50 ha (Pl. 15). It is situated on a feel which is above Euphrates valley and consists of three parts. The natural hill on the west from previous time, so called, medium size city and semicircular shape under city (Roobaert and Bunnens 1999: 163).

History of research

The first excavation in Tell Barsip was carried out in 1928 and 1929-1931 under the direction François Thuerau-Dangin. Works resumed in 1988, because of implementation of the project of dam in Tell Barsip, then the director of excavation was Guy Bunnens (Roobaert and Bunnens 1999: 163).

Fortifications

The course of the wall dated in 20's of the past century, is still visible in the field. In distance 230m in south-eastern direction and 70 m and on the North-west were uncover stone foundation city walls. In

south western part of this archeological side erer found proofs that it was fixed a several times, what destroyed clarity of this discovery.

Dating of the site

Renamed after Salmanasar III conquest, the city reached to an important site in Harran sar (Kessler 1980: 195). Because of that the city walls were built under the Assyrians, at the latest on the beginning VIII century B.C. Tell now in lowed town we have not found any monuments from before the Assyrian (Roobaert and Bunnens 1999: 167-170).

Construction details

The foundation consisted of base width 6 m, limited from both sides, irregular- made limestone slabs thick 1.05 m. In result the wall had 8 m. 12.5 m away were situated towers about 3.5 m outreach and width 8.5m. In the south-eastern part of the wall was discovered only an internal section not too much bigger than 1.2 m. There were found higher elements of construction walls or doors discovered in horizontal a layer of gravel 90 cm which was integrated in stones construction (Roobaert and Bunnens 1999: 126-127).

The regular research showed that city walls were situated a few m further on the west than we thought before (Bunnens 2001/3: 67). There is no map that would point this example). We found out that high fortification was connected with citadel. In same place on its east side was uncovered a massive wall (Bunnens 2003/2: 40), which at the foot of it had stone, artificial shaft. It rises to the Assyrian palace direction length 16 m, and it is located on axis north-south; the artificial shaft kept thick 6 m and length 5m (Bunnens 1998/2: 30). It is made of mudbrick put on a layer of wrought stones, and fragment 90 cm layer of

stones (Roobaert and Bunnens 1999: 170).

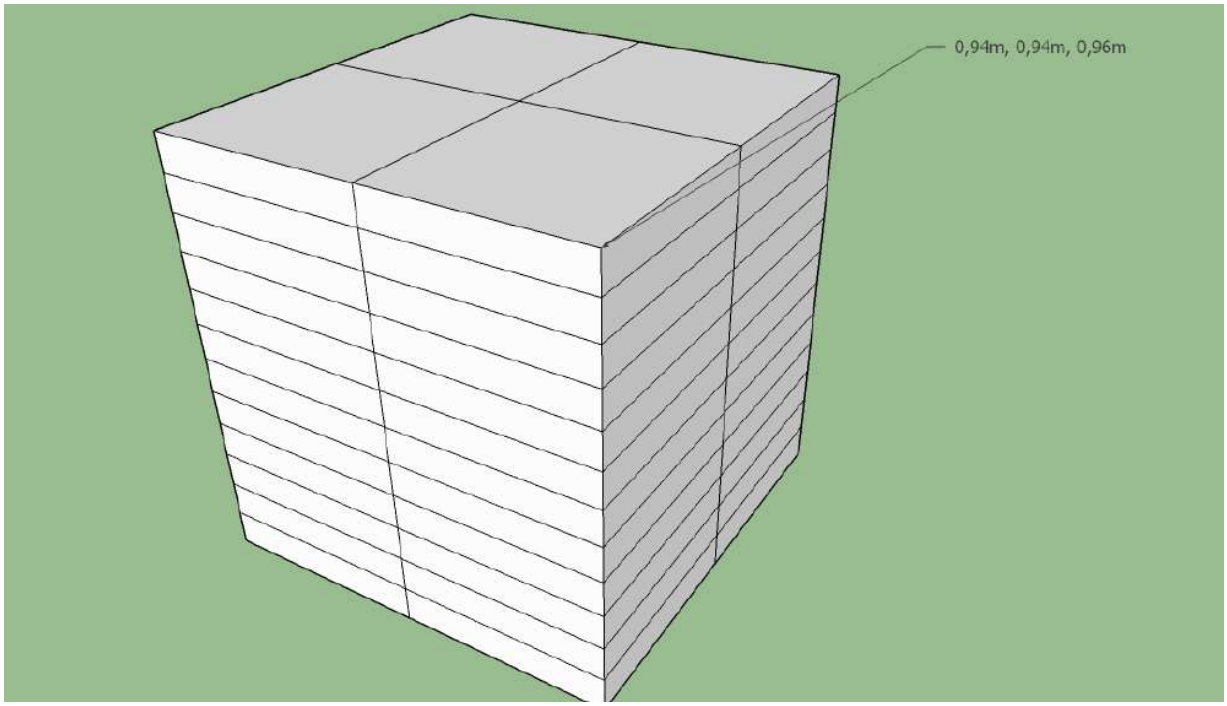
Gates

Access to the city was possible because of three gates north-eastern, north, and maybe north-western (Dossin 1936: 125). Tell now only north was researched.

A north-eastern gate (Pl. 16) probably there was partly kept in the city direction. The passage is wide 4 m and had tow basalt lions, put on a limestone pedestal (Roobaert 1988:126-135).

Behind the passage the were two chambers they had together 18 m2 surface. Flooring in front of the gate and in the rooms, there were made of boulders and partly stone slabs. In south-western part of the gate there are two chambers, from them we have not disturbed 4.5 m2 of surface, their still kept white walls. When the A chamber is available there is wall in the gate, the B chamber was opened to the outside. The door wide 1m is very narrow, and it is the reason that we do not know exactly, what for they were using. In B gate it was discovered a stone hinge and a mechanism for drainage (Dossin 1936: 128-131).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.

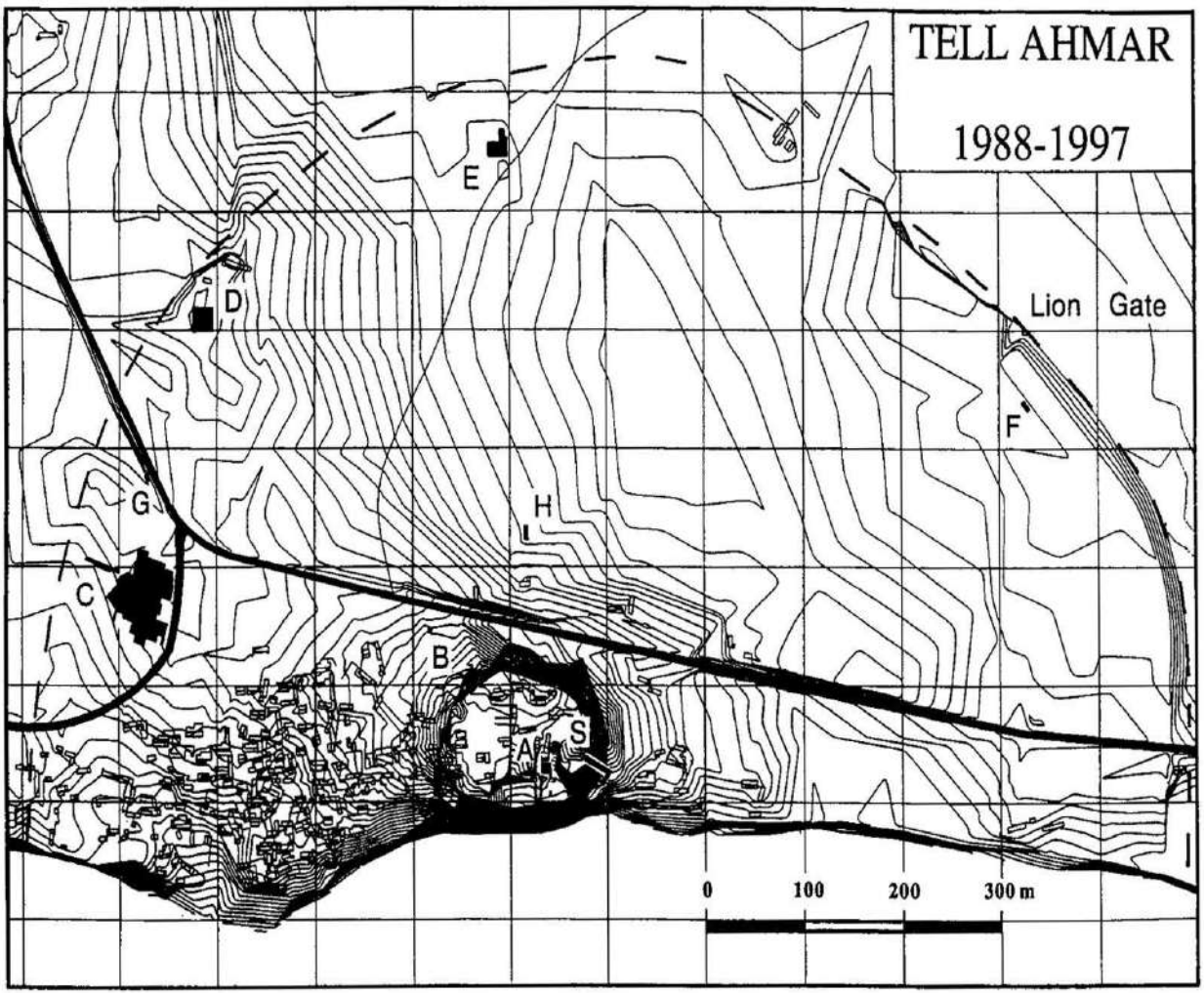
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

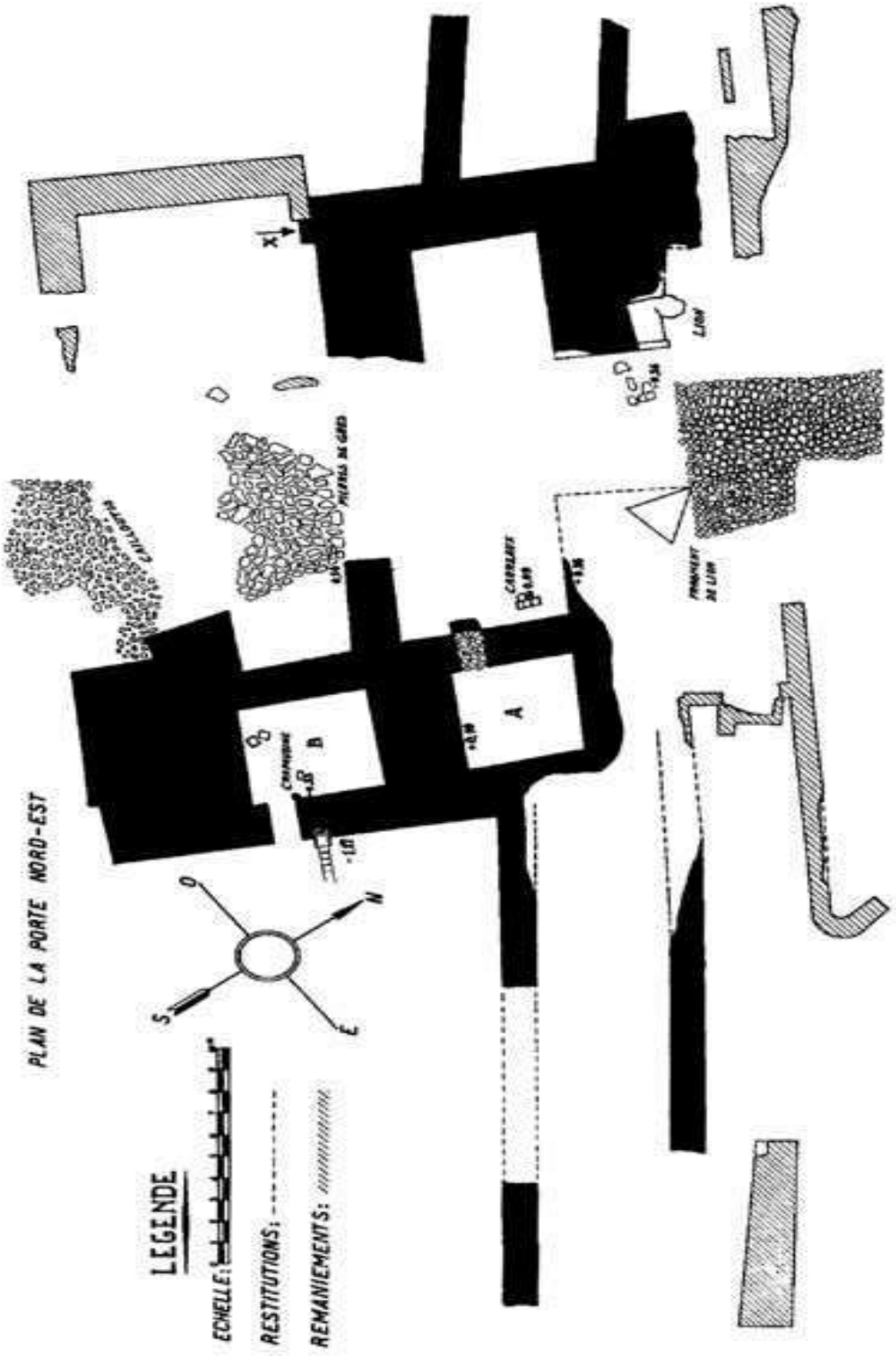
48x 4= 192

192÷ 60 minut= 03:20

03:20 ÷ 3= 01:07 hours of work needed to build m3.



(Pl. 15) Kar-Salmanasar/Tell Barsip (Roobaert and Bunnens 1999: 200. Fig. 2)



(Pl. 16) The East gate of Kar-Salmanasar (Thureau-Dangin and Dunand 1936: plan E)

6. 7. DUR-KATLIMMU (TELL SHAJCH HAMAD)

Location of the site

Dur-Katlimmu is located about 70 km on north east from Dayr az-Zawr on eastern bad Habur; out of the zone it is possible the use of agricultural rainforest. The city is situated on a feel in direct vicinity of the river and it has flood protection by increase of wall.

Dimensions of the site

In the middle of Bronze Age, the city was expanded to Lower Town, so the total size was about 15 ha, during Middle-Assyrian period under Salmansar I the city became the seat of governorship. We do not to know too much about politic situation in this region between XII and XI century B.C., but Dur-Katlimmu in IX century B.C. was controlled by Assyria, and from VIII century B.C. it was colonized from steppe region of Jazirah, where provincial centre developed. The suburbs on the north and east made possible to live on 110 ha of area (Kühne 1998: 279).

History of research

In 1879 Hormuzd Rassam discovered on Tellu Shajch Hamad fragment of stele of Assyrian kings Adad-Nirari III. Then in the 1975 and 1978 the researches were conducted by Wolfgang Rollig and Harmut Kuhne, which they were finished in 1978 by excavations where work lasting until today (Kühne 1997: 25).

Fortifications

Through the new lower town, which consisted of officer residences and administration buildings proceeded the wall, long of 4 km and closing an area of 55 ha (Kühne 1998: 279-287).

Date of the site

The site is dated from Neo-Assyrian period.

Construction details

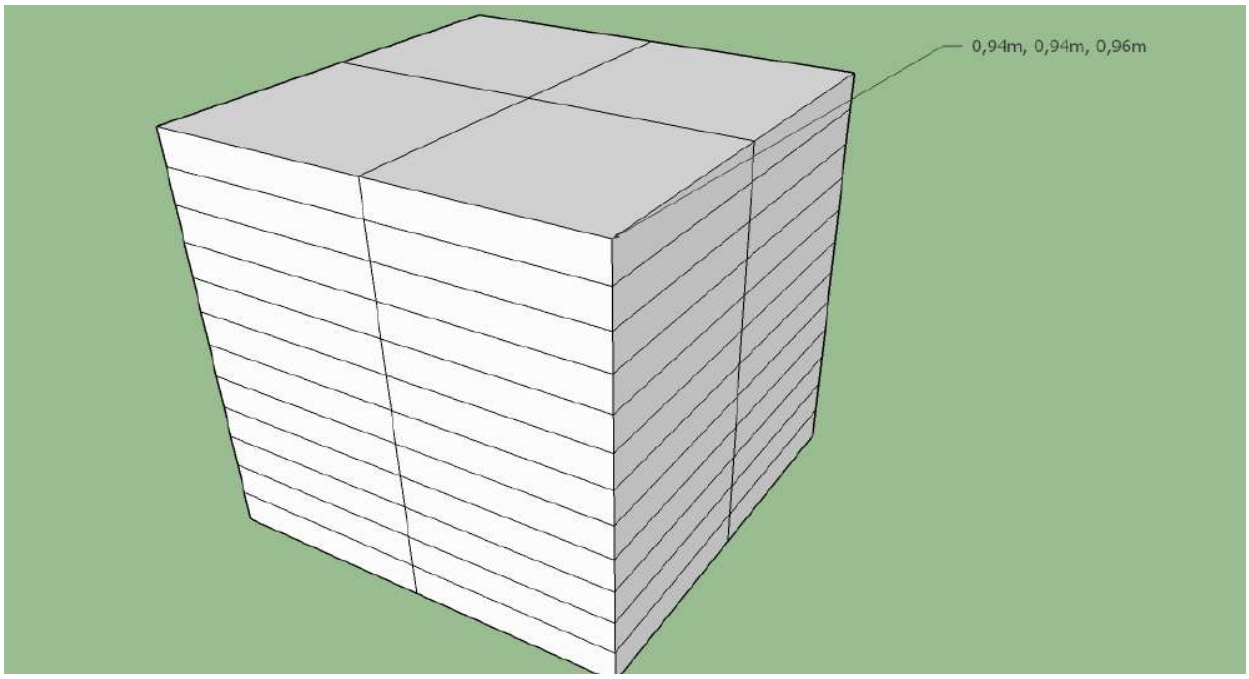
The Dur-Katlimmu developed after expansion of the city in VIII century B.C. On the east the wall is slightly concave and create slightly corner with north wall. In south part were discovered destroyed fragments of fortifications but well-kept fragments. In this moment it is difficult to present correctly the history of western wall. All the fortification could have a shape of quadrangle. Bulwark is not defined, but their moat was discovered on the north ad east, what could be result of the flow of the river Habur on the west. In north eastern corner (Pl. 17) there are fragments of the walls, stretched over a distance 270 m (Kühne 1990: 161-162). Small fragment of the wall was researched with a thick of 3 m. (Kühne 1984: 169), 9 towers were discovered there, - of reaching 2.5 m They were built at a distance 18m from each other. Narrow underground passage was founded there, also (Kühne 1990: 161).

The surface was about 4 ha and located about 10 m above the rest part of the city. The space between towers 5 and 6 was not defended in same special way, excluding economic and administration buildings (Kühne 1990: 163). The entrance to it had to appear in II millennium B.C. on the south (Kühne 1990: 157). From the point of view of fortification, it could not be defined as a citadel.

Gates

The gates could be located on north and east, but they have no found tell now.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

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-When using 3 workers to build.

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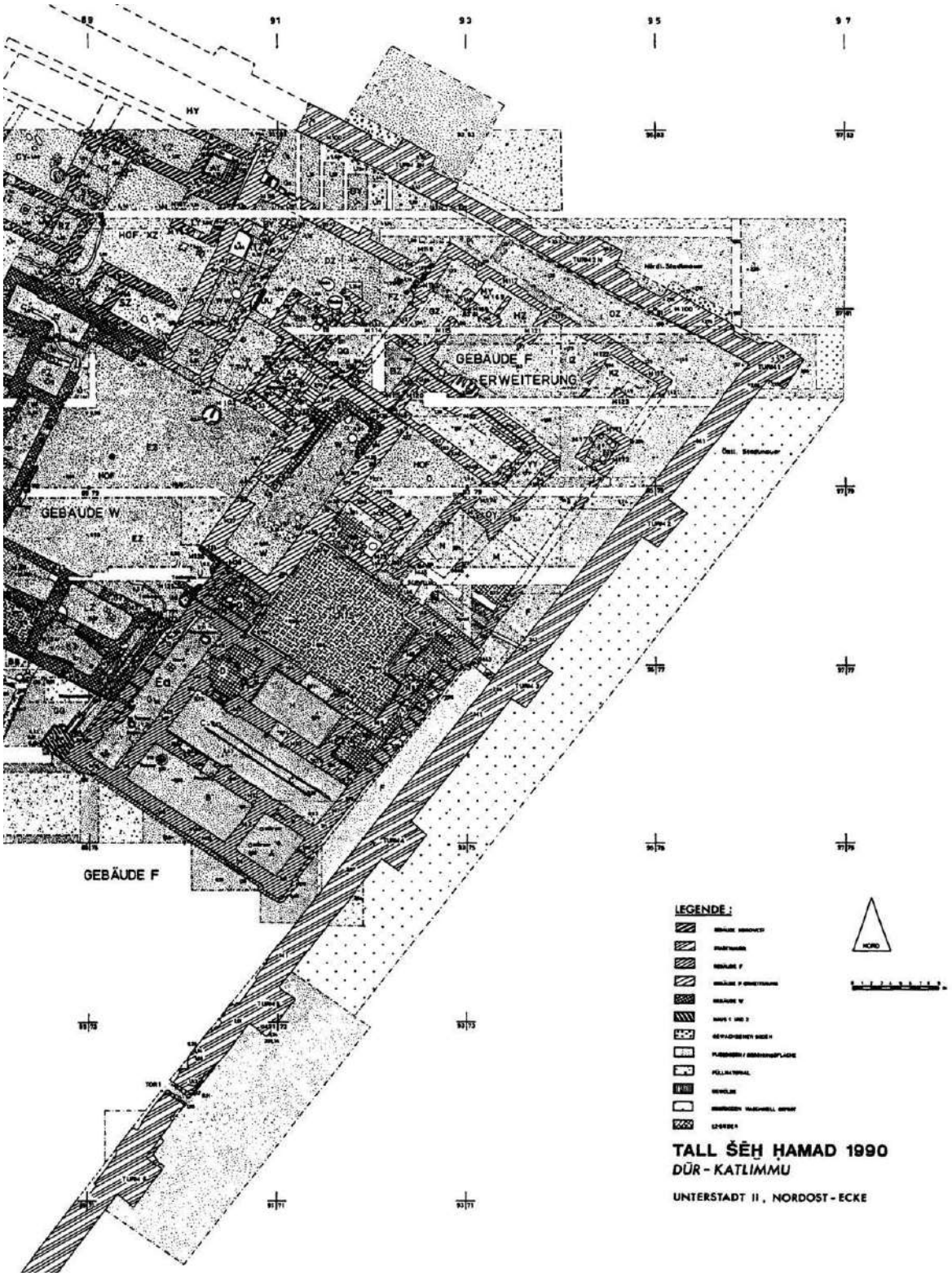


(Pl. 17) Dur-Katlimmu, North –West part (Kühne 1984: 268 Abb. 90)

6. 8. DUR-SHARRUKIN (HORSABED)

Location of the site

Dur – Sharrukin it is newly founded town of Saragon II which probably lowered after his death. It is located about 20 km North-East from Nineveh (Loud and Altman 1938: 9).

Dimensions of the site

The shape of the city is like quadrangle, the size is 1600 x 1750 m, and the city is situated in a way that every corner shows the geographic directions.

History of research

The first excavations in Dur- Sharrukin carried out by the french consul Paul Emile Botta in 1843 and 1844. Victor Place was his heir who researched the most part of citadel and the city wall but his early studies do not include any reliable date that could be proved Research of the Oriental Institute of Chicago was conducted by Edward Chier, Henry Frankfort and Gordon Loud from 1929 to 1935. The last excavations when they discovered the sanctuaries of Sebetti took place in 1957 and its director was Bengham Abul Al- Soof (Frame 2003: 295).

Fortifications

Two citadels are integrated into the wall (Pl. 18) palace terrace into north-western and the palace into south western arm of the complex (Frame 2003: 295).

Dating of the site

The site is dated into the Neo-Assyrian period.

Construction details

Information given by Victor place about the walls are not completely correct, it seems. From the time of american expedition nobody did not take of through check these issues, that is why is difficult to find completely correct details. However, the comparison with the one built from a wall surrounded by a citadel can be compared mainly due to the compliance with the construction of the walls (Frame 2003: 18). Both build on a stone foundation, which edges consist of gently connection stones, meanwhile the core is made of debris but to present the base of city gates (Place 1867: 165, 178). The thickness of the city walls is about 24 m next to palace. But it seems that this value is too high (Place 1867: 162). In Botta opinion the thickness of the walls can have to 14 m, and this version is more possible (Botta and Flandin 1849-1850: 31). Distance between towers in Places opinion is about 27 m they appear about 4 m in front of the wall and their thickness is about 13.5 m. (Place 1867: 166). When we compare these data with citadels walls, they seem correct, although they can be estimate because of their strong standardizing. The estimation on the amount of the wall was exaggerated: 12m is more real than 23m. (Loud and Altman 1938: 146). The citadel is separated from the city by the wall. In precinct citadel are located: temple, houses of important bureaucrats and king's palace of course (Loud and Altman 1938: 53). The last of them is separated from the rest by a special platform. A natural formation was used for undoubtedly, which was lined by mudbricks and levelled the ground. The site of the hill and its shape is similar like a irregular feel. Moreover, it had influence for the site and shape of the rest of the city (Loud and Altman 1938: 54). In my opinion Louds opinion is less accurate than Frankfort, who sees deflexion from

the orthogonality of the project of the city not in the shape of the ground, but in the degree of recognition of excavations side about this look (Frankfort 1954: 75). The terrace which extends in front of the walls is an integral part of the fortification. Its surface falls from northern east to southern west for drainage undoubtedly. The access to the terrace provides the ramp in the central part or narrow ramp in the south corner. At the top of the ramp could be situated the gravel (Loud and Altman 1938: 54-55). The ramparts that surrounded of the citadel had irregular course. On a stone foundationset wall made of mudbricks with cohesion provides a mortar and mats made of rushes, at 4 layers of bricks. The bottom fragment of the wall to 3 m high, is inclined and its interior rises vertically. So, we can see in 50 cm of ramp. The thickness of the base patches from both side wall is about 6 or 7.5 m. It had the towers width from 11.5 - 13 m and 5.5 m of length cornice at 14 - 19 m (Loud and Altman 1938: 18). In fragment tocated in between the gate A and connection with the city wall.

The palace F is the second citadel of Sargon for significance, perhaps was *ekal masarti* is situated on a field also the boundaries of the city. It deepends on a landform.

Gates

The city had 7 gates, two on each side and one on the north-western side. The gates of the city, according to Place are separated in two groups; simple, not decorated, and decorated by figures on the vaults, relieves and glaze bricks. The last group is consisting of gates of thickness 1.3 m, and 6 m (Loud and Altman 1938: 75). In view of dishonesty of Place descriptions, I make a description of the gate 7 (Pl. 19) in south western wall, which was researching by the Oriental Institute. We can see there that the differences in this description depends on pleace. The road passing through the gate is paved by flagstones and nearby the centre of the city. The place of flagstone fake

boulders. Two passages in the gates have no decorated, quadrilateral stone plates set on the stone hinge. The last of the walls, similar like parts adjacent to the city walls have white clay. External archhes are well-kept still. The external transition did not have stones hinged, cover plates and mechanisms used for closing the two-door gate. One chamber is wide but was not in regular shape of the construction. The side room contained stairs. External passage leading to the room with stairs was blocked tell the collapse of the structure. They were not using for sure, because the doors were not correctly fixed. The protection which the gate ensured saved glaze bricks and the rest of the roof. In view of discovered small subjects like a small stone hinged or a clay pot the room had to have at least one floor (Frankfort 1936: 1-10). Excavations included interior of the gate only, that is why it is impossible to define the relation between the city walls and the front of the gate, there could be two towers also. The plan of the transition's floor is wide from 4m-5m and the chamber in the gate could have more than 20m wide and about 6m of depth.

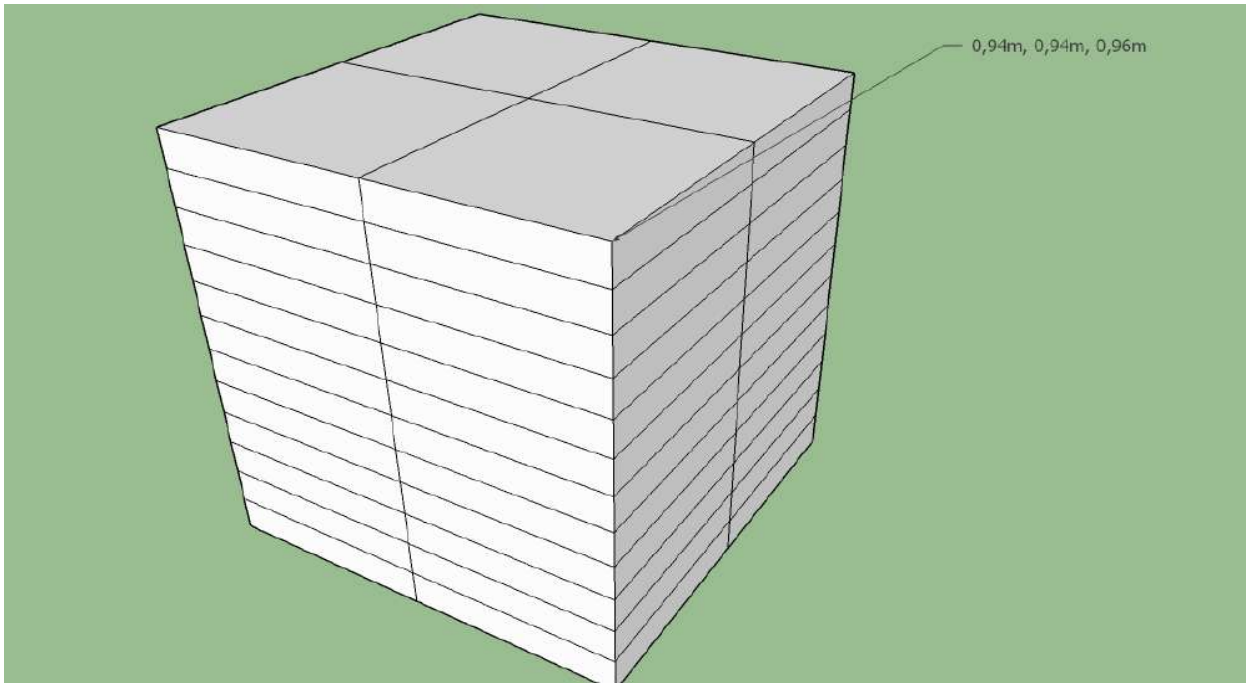
The citadel had two gates, which come out of the palace. Both corners were rounded.

The gate A (Pl. 20) is angled relative to the bottom wall, the passage is wagered by two irregular towers. External passage-one from three- is decorated by winged bulls and relieves of demons – are outwardly situated. The arc of external passage reached after above 7 m under threshold of the floor with the increasing level about 6.4 m (Frankfort 1936: 25). Interior of the gates consists of two similar size, strong wall reinforcements chambers- each of them had side-chambers, which were behind the walls almost the whole. External side –chambers was using as a staircase (Frankfort 1936: 54). In contrast to central passage, the gates to adjacent rooms had horizontal door lintel and 1.25 m rather 1.50 m width, and 2.45 m height (Frankfort 1936: 25). The

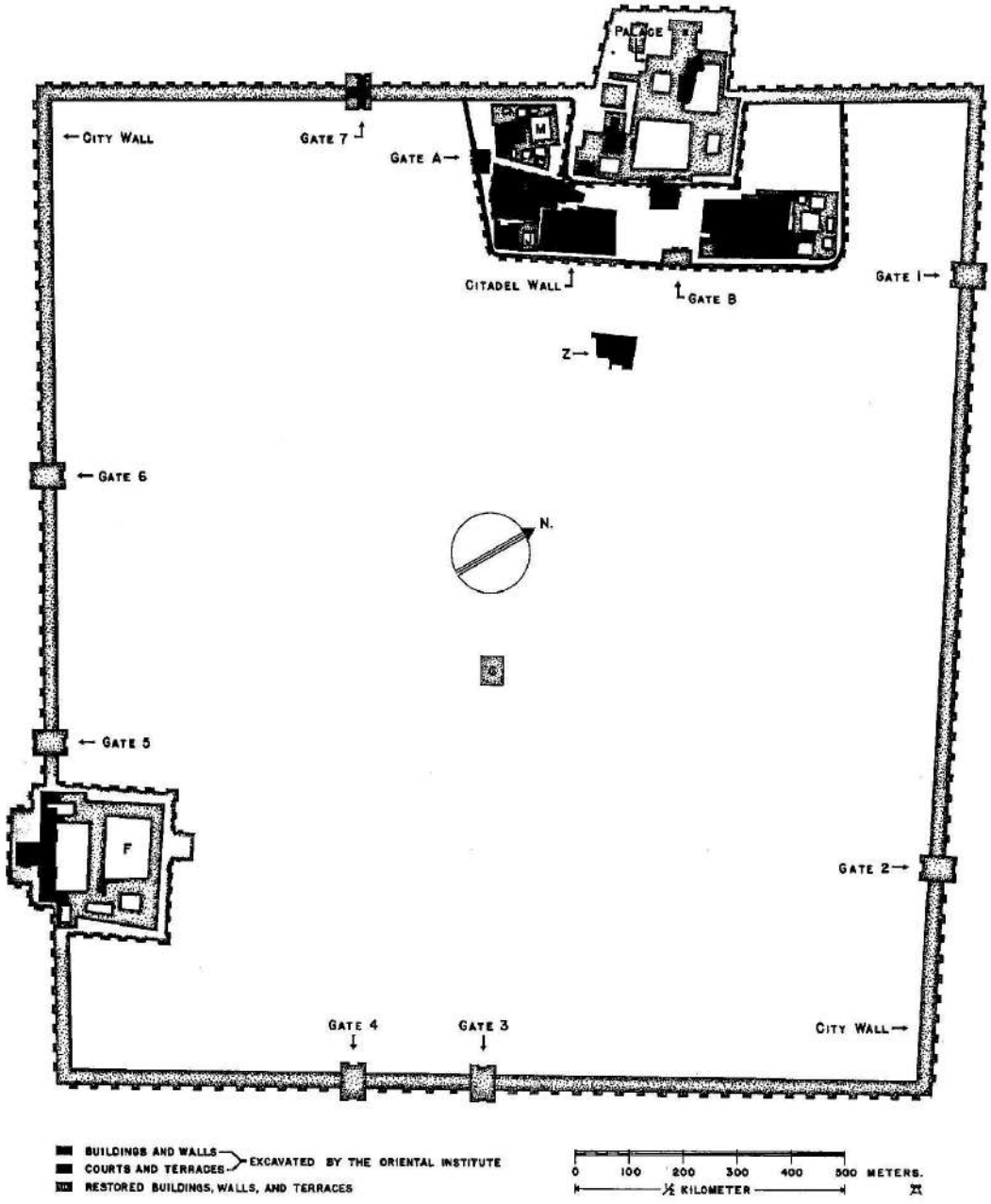
central chamber and passages were paved with stone slabs and the walls of the passage provided with irregular limestone quadrilateral plates and curbs. The passages had width from 4m and chambers about 18 m width and 5 m - 6 m of depth (Frankfort 1936: 75).

The gate B was destroyed during previous excavations, according the researches of Chicago expedition - contained winged sculptures of animals and demons, which Layard provided to Museum of London.

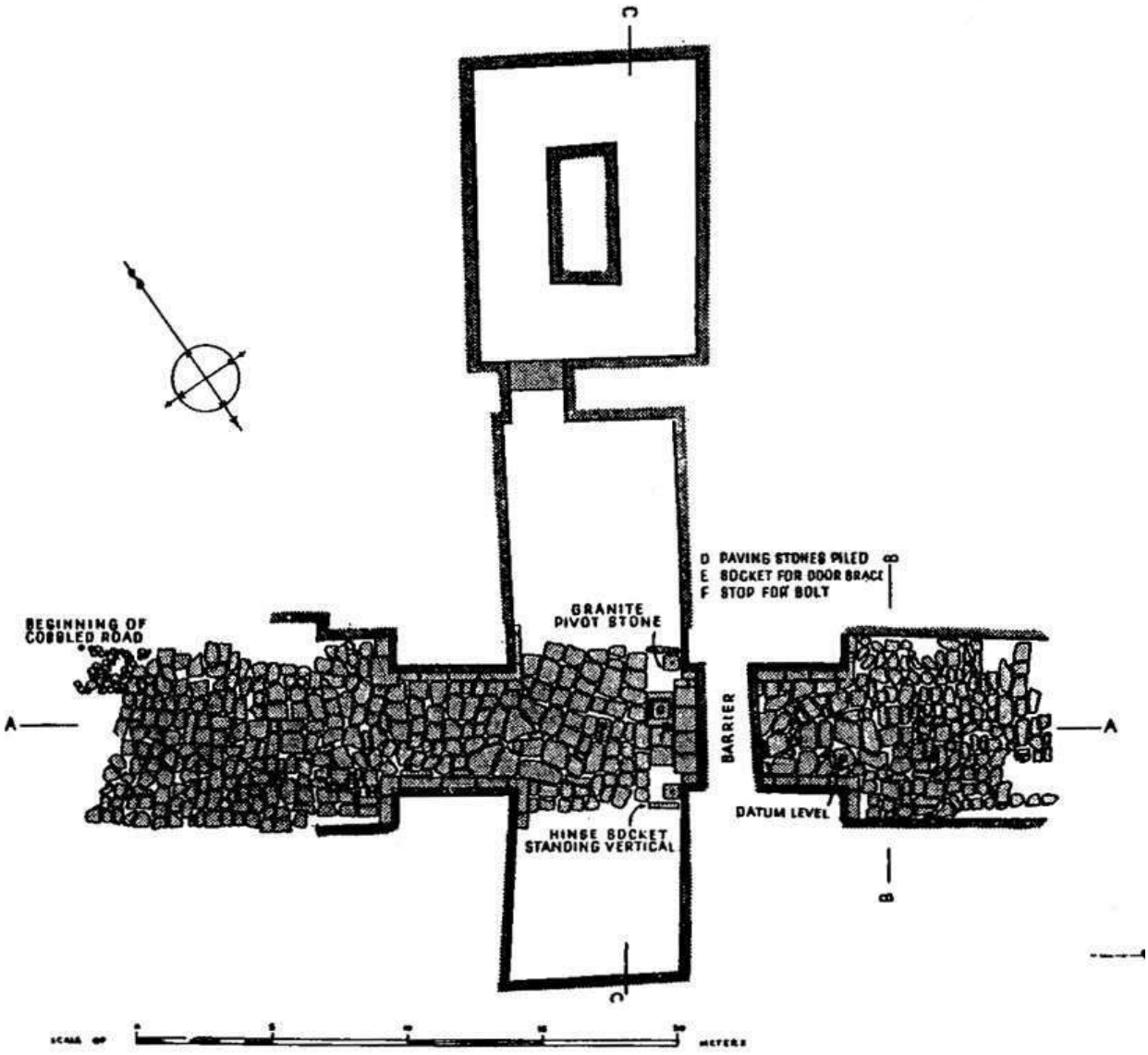
Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



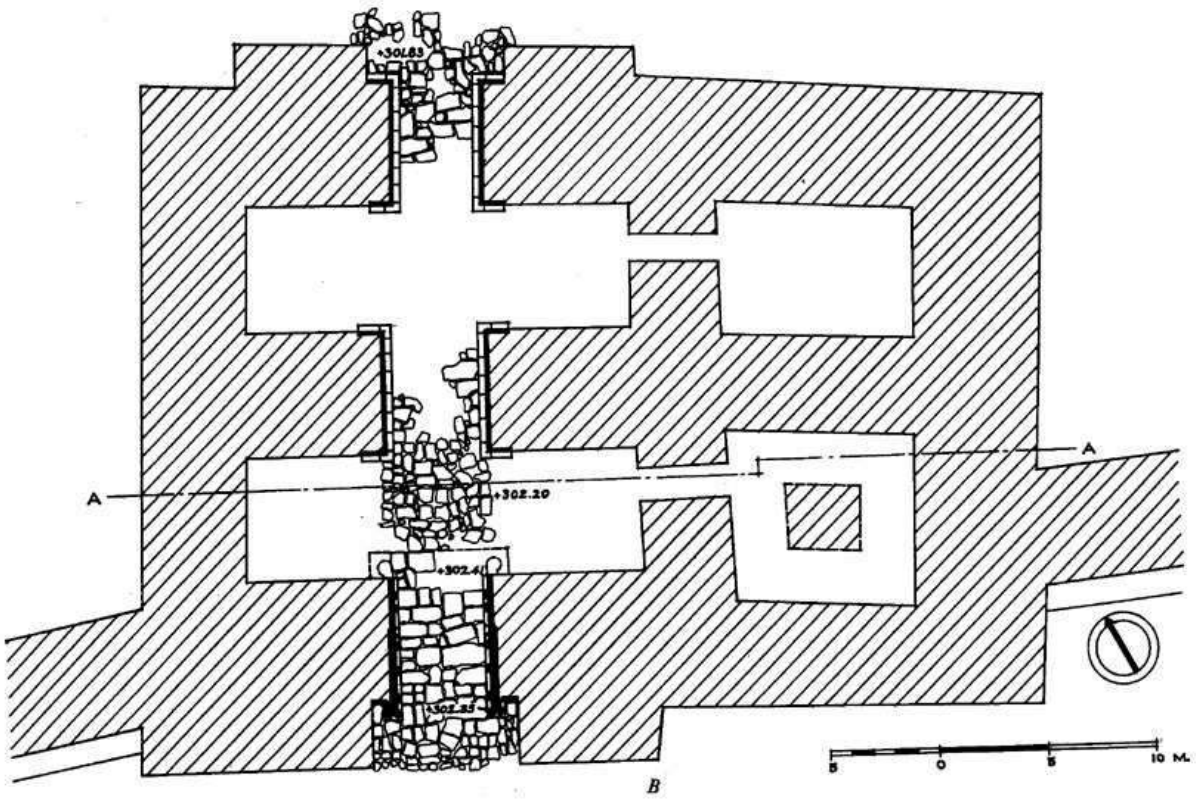
-Mudbrick.
47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.
-When using 3 workers to build.
- 4 minutes time is needed to build one brick.
48x 4= 192
192÷ 60 minut= 03:20
03:20 ÷ 3= 01:07 hours of work needed to build m3.



(Pl. 18) Dur-Sharrukin (Loud 1938: Pl. 69)



(Pl. 19) Gate 7 (Loud 1936: 4. Fig. 4)



(Pl. 20) Citadel Gate A (Loud and Altman 1938: Pl. 72)

6. 9. HARADUM, TELL

Khirbet ed-Diniye/ Harrâdum/ Haradu

Location of the site

Haradum is located in an area known as Suhum in the middle of the Euphrates Valley, 90 km south-east of the city of Maria and 36 km north-west of the town of An'a (Kepinski-Lecomte 1992: 15). It is primarily the area that forms the south-eastern borders of the Assyrian conquest (Kepinski-Lecomte 2011-2012: 29). Since the time of Tiglath-Pileser I, when the first mention of Aramaic in written sources

appeared.

Dimensions of the site

Haradum is a small area of probable square footage of one hectare, in one of its 100 m. sides (Kepinski-Lecomte 2011-2012: 298).

History of research

Archaeological work on this site began as a rescue excavation by french archaeological missions partly funded by the General Directorate of Iraqi antiquities in Baghdad. Six season's of archaeological research at the site of the Khirbet ed-Diniye conducted by the French lasted from 1981 to 1988, as part of the archaeological program of the Haditha Valley Rescue Mission (Kepinski-Lecomte 1992: 9).

Fortifications

Haradum fortifications consist of a casemate wall, double wall and between one wall and the second there is empty space, whose corners are facing the four corners of the world (Pl. 21) (Kepinski-Lecomte 2009: 150). The structure closes almost a quadrant in the centre of the station. It is 2.5 m high on the ground level (Rey 2012: 70). It was an eminently military installation (Charpin 2010), for defence purposes, with a limited number of inhabitants who occupied the area at the curtain walls, and if needed there were internal camps for soldiers. According to (Kepinski, C) the city fulfils various functions; it presents hierarchical social indexes, writing plays a role in political autonomy, independent administrative structures, and maintains long-distance trade (Kepinski- Lecomte 2011-2012: 298).

Dating of the site

Under the archaeological excavation, two periods of settlement

have been identified: the small town known as Harradum was the first stage dating from 18 to 17 centuries B.C, while the second was from 11 to 8 century B.C. and reveals the structure of the fortress that is the subject of this work.

Based on the texts on the plates found in Haradum, it can be assumed that the fortress was built during the reign of Tiglath-Pileser I. Therefore, the oldest level, the 2D level dates to the 11th century B.C. Objects that have the latest analogies were found in the ruins of abandoned fortresses, places that can be cremation burials. The latest level, level 2A dating back to the 8th century B.C. when the only function of Haradum at that time was purely military. In the 9th century B.C. or late 8 century B.C. there was no longer any reason to maintain this fortress, and therefore it was probably abandoned at the latest in the 8th B.C. Therefore, level 2 B should be referred to the contemporary building of the third period, dated to 9 century B.C., when the fortress was recovered by Assurbanipal II. Level 2C with a monumental grave and a second row of casemate walls, dating in the same manner, will belong to the period corresponding to the takeover of the fort by the Aramaeans in 10 - 9 centuries B.C. (Kepinski- Lecomte 2009: 150). The second row of casemate walls was erected at the same time as the monumental tomb, probably because the head of the fortress had fallen under the pressure of the Aramaeans.

Construction details

Haradum is surrounded by a powerful bastion in square bricks heard from 36-37 cm and 11 cm thick on a stone base, the foundations of older assumptions served as an attitude for the fortifications of the city, better protected near the river. At the same time protected the city from floods, the function of defence was the most important and confirmed presence of glaze (Kepinski-Lecomte 2009). There are three major construction phases in the Hardum fortification. The first is a

huge casemate enclosure surrounded by crumpled walls built on the ruins of the wall of the earlier city of Haradum. The inner wall, for example, was completely built in the remains of the defensive wall of the 18th and 17th centuries B.C. One of the exterior walls was built on the top of the hill, and the next design suggests both the reconstruction and the use of the structure of several connected parallel walls, as can be seen in the Assyrian reliefs depicting besieged fortresses. In the second phase this structure from the south-east wall was reinfocement by the second series of casemate walls of irregular size, and a monumental tomb was placed between them (Pl. 22). The last phase is represented by scattered walls. The shielding wall contains a lot of heavily eroded remnants of home architecture, coming from walls, floors and stoves. On the foundations of the various phases and in the casing wall a cemetery was found, which was partially exposed at the foot of the south-western enclosure, in the southern corner, at the front door.

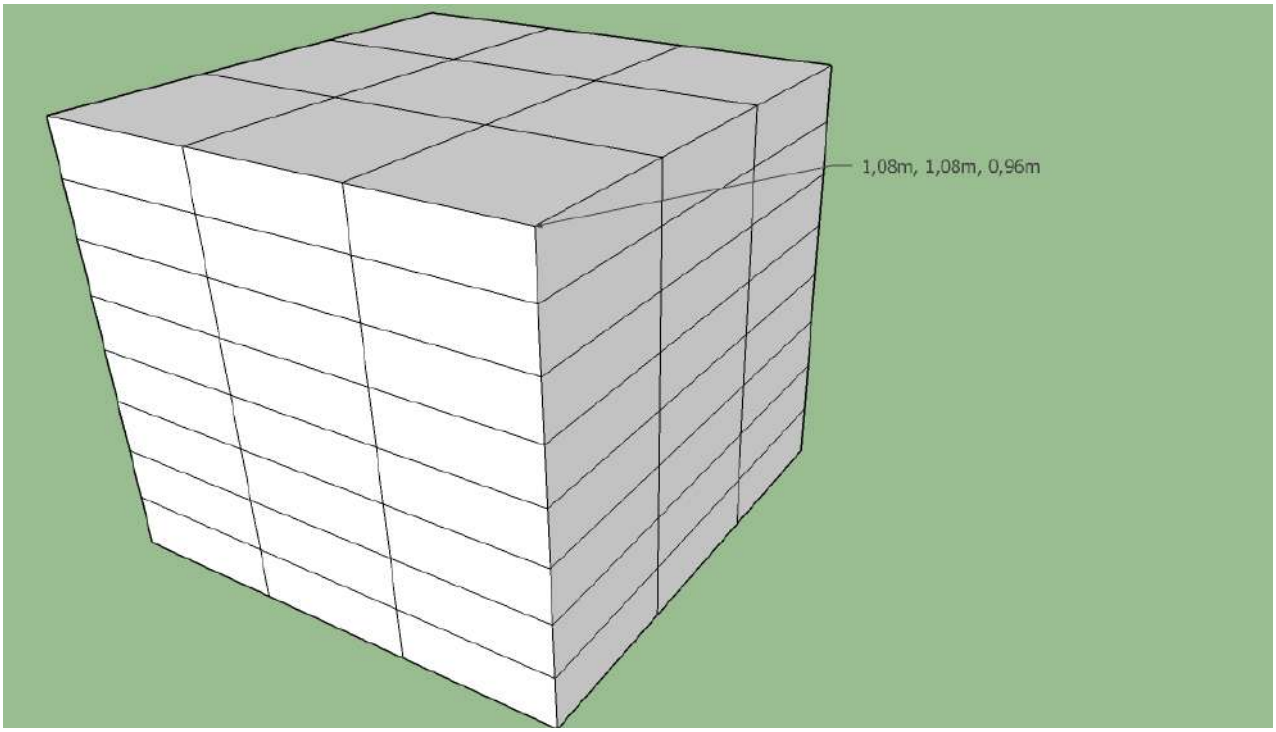
The original fortress was built by the Assyrians and completed in successive stages of reconstruction, although the installations were of a military character. The Haradum was never the main settlement. In addition, the 2C cascade wall (from the 10th century B.C) was probably built during the Aramean occupation of the fortress, which confirms same disturbance in the original installation, although still reflect the original plan. The method of building casemate walls allowed fortification the walls while economically using bricks. The casemate walls of the second phase were irregular as opposed to primitive, which means improvisation during construction work. The staircase over the staircase that leads to the historic tomb was made in a very harsh manner, with straight, flat bricks, most probably made in mold and joined by masonry mud. One might have been tempted to notice that, at least in the Suhu country, the Aramaeans did not have a solid construction tradition.

The presence of embankments in front of the housing is noticeable in several projects, but their dating, mainly, remains uncertain. In place C, however, the section led by a lighted barrier to the building, near the wall surrounding the Middle East Bronze Age (M 28), oblique fill consisting of a mixture of ground and gravel solidly packed (Pl. 23) only top but can be restored with lower height of the casing, height about three m. The inner wall of the fortress built in the 12th century B.C, (M 23) rests on the top of the glaze and ruins of the ancient city. The presence of this enamel seems to be the question of building a protective wall on all four sides of the fort, which was conjectured by Regis Vallet, due to the partial release of the casing on both sides of the door (Vallet 1992: 15-29).

Gates

One rectangular Assyrian gate built of fine brick on a stone foundation was updated; in the middle of the western wall the gate was built during the second settlement of the city (Pl. 24).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick

1) 36x36 x11= 72 the amount of brick.

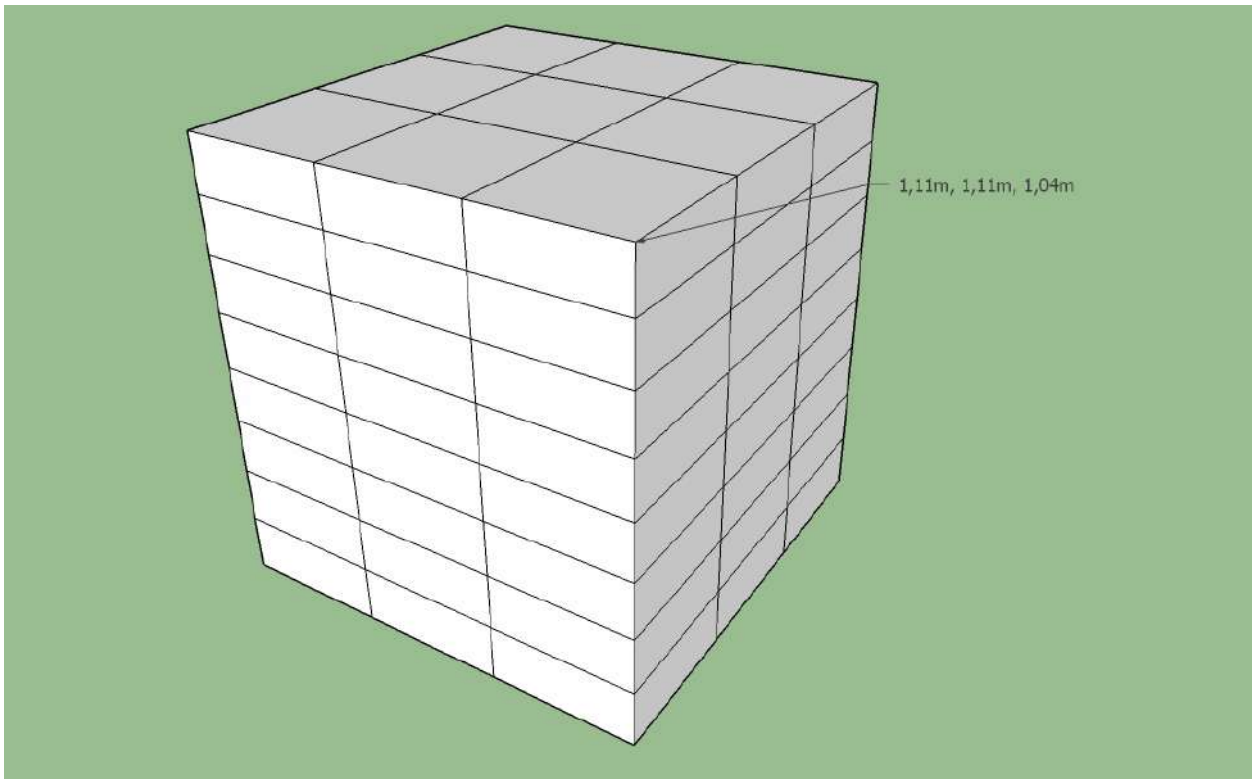
-When using 3 workers to build

-4 minutes time is needed to build one brick.

72x 4= 288 minut

288÷ 60 minut= 04:40

04:40 ÷ 3= 01:34 hours of work needed to build m3.

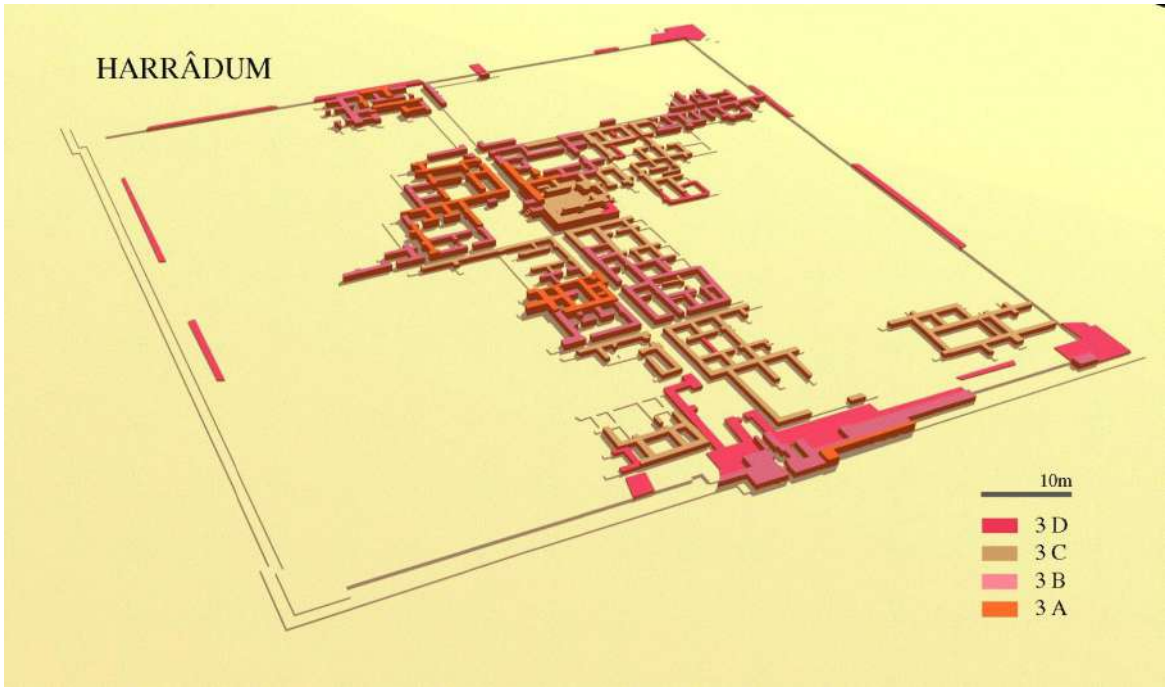


2) 37x37 x11= 72 the amount of brick.

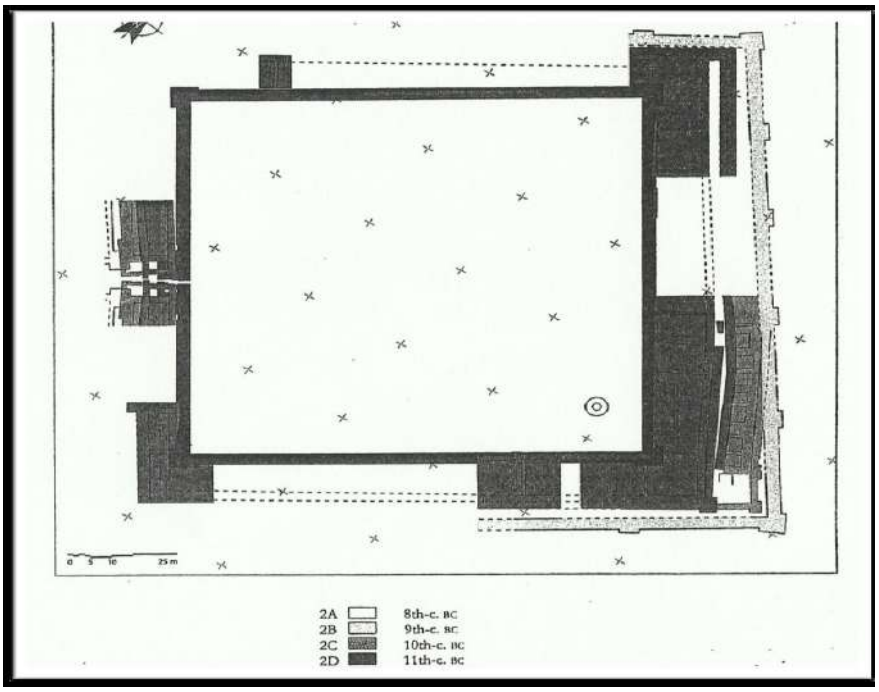
72x 4= 288 minut

288÷ 60 minut= 04:40

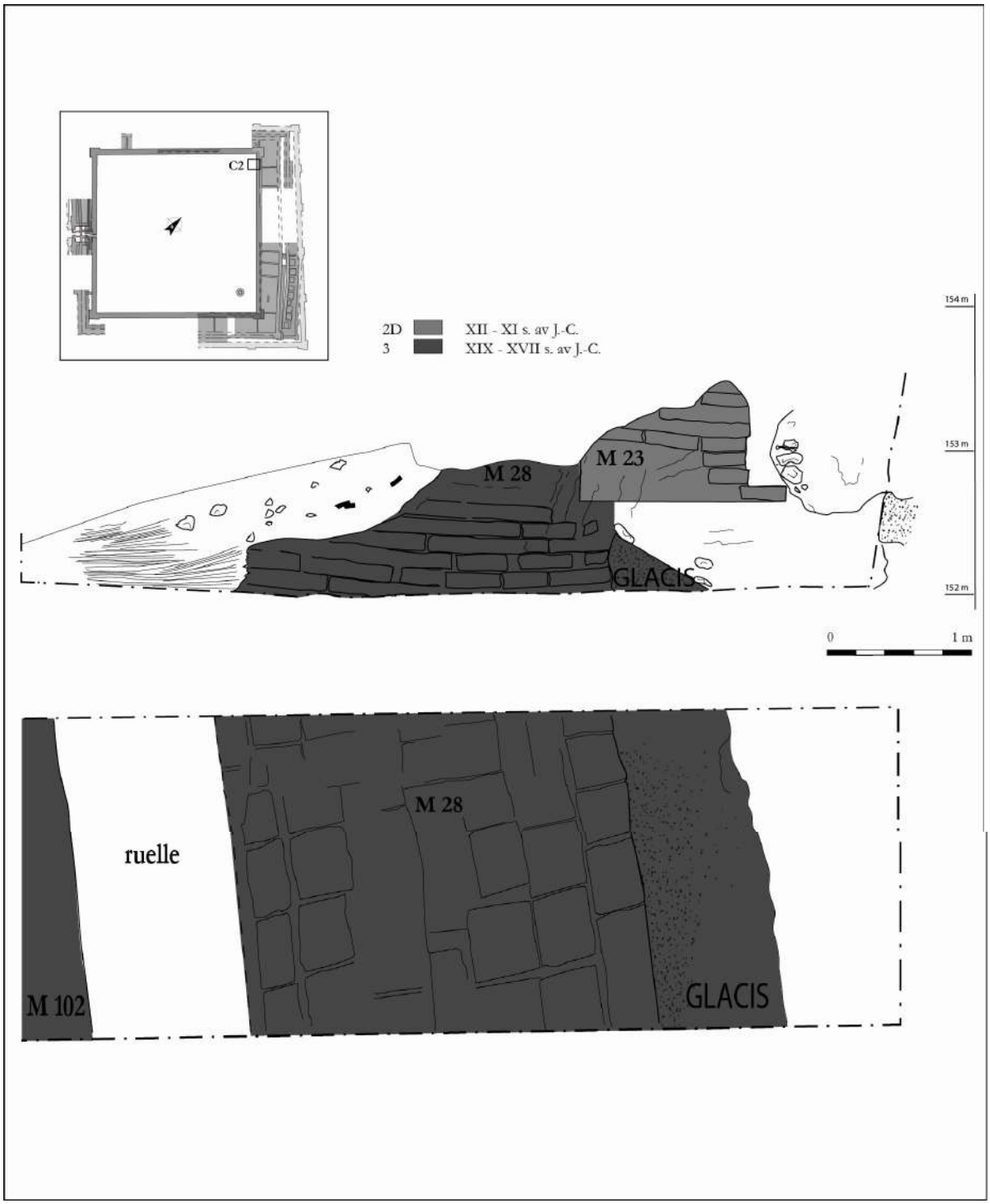
04:40 ÷ 3= 01:34 hours of work needed to build m3.



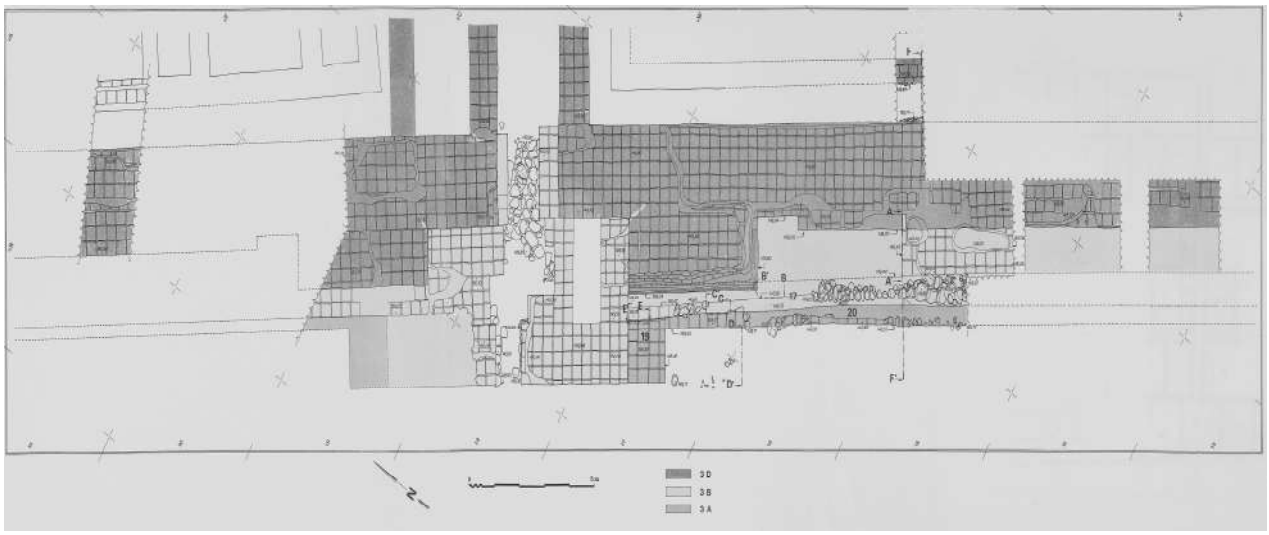
(Pl. 21) General plan of the city (Kepinski 2011-2012: 297)



(Pl. 22) The structure of the south-eastern Cascade wall was irregular and there is placed a monumental tomb between them (Kepinski 2009: 151)



(Pl. 23) C2, cut the inner casing (Kepinski 2011-2012: 45)



(Pl. 24) City gate (Kepinski 1992: 462)

6. 10. HADATU (ARSLAN TAS)

Location of the site

Hadatu is in the south western part of Sirag plain, about 30 km from the Euphrat (Thureau-Dangin et al. 1931: 5).

Dimensions of the site

It has a shape nearly an irregular ellipse circuit about 2011 m, whose axis have a length 728 or 560 m and the surface has 30 ha and 55 a.

History of research

The excavations carried out in 1922 under François Thureau-Dangin were the only one in Hadatu. From the times of Salamanasar III, Hadatu was using as a stop on the way *harran sari*, Assyrian royal

road (Novák 1999: 173 and Kessler 1980: 195).

Fortifications

It was possible to localize the city wall, except of several places, where it was rebuild, inaccessible due the cemetery or erosion.

Dating of the site

The location is dated into Neo-Assyrian period.

Construction details

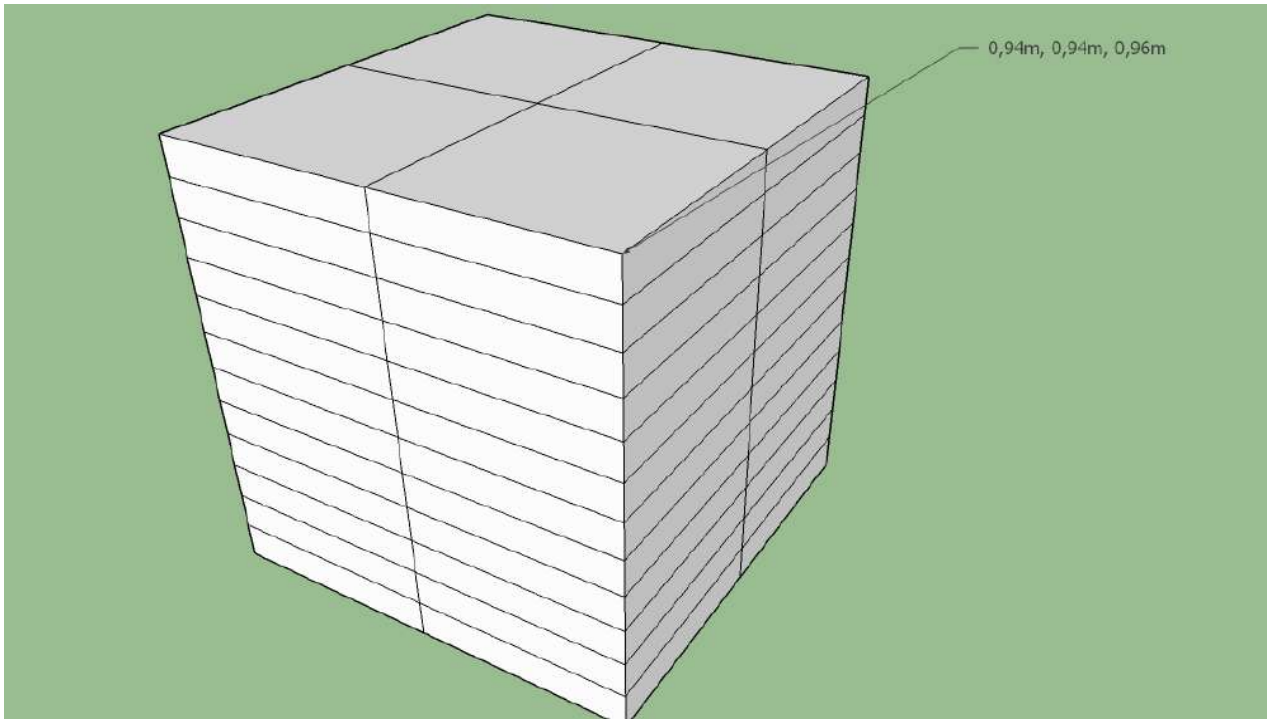
The wall rested on 30 cm, height stone foundation, and it has thick 4.1 m. Rectangular towers, spaced at 16 m, protrude 3.5 m from the wall and their width is 6 m. The wall is made of mudbricks joined with mud mortar. The wall collapses in 3 places, where the gates were located: on the west, east and north (Kessler 1980: 68-70).

Gates

The north gate has 6 m wide passage. The wall extends on the west direction from the passage. In the foundation were discovered a gutter, for drainage, undoubtedly. The eastern gate is in bad condition. But in this point were discovered two basalt lions and bricks hinged in their original settings. Distance between them is about 5 m. On a base of lions sites, the reconstruction of the distance between them was possible, 4.18 m. The construction was probably a single-chamber gate. West gate (Pl. 25) was located on a base of fragments of lions. From the remains were reconstructed a single-chamber door. Entrance to the building, wide 4-5 m, was surrounded by two towers and decorated with two lions. Wide chamber was surrounded by brackets. The water canal

was discovered again, connected with drainage systems (Kessler 1980: 70-76).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.

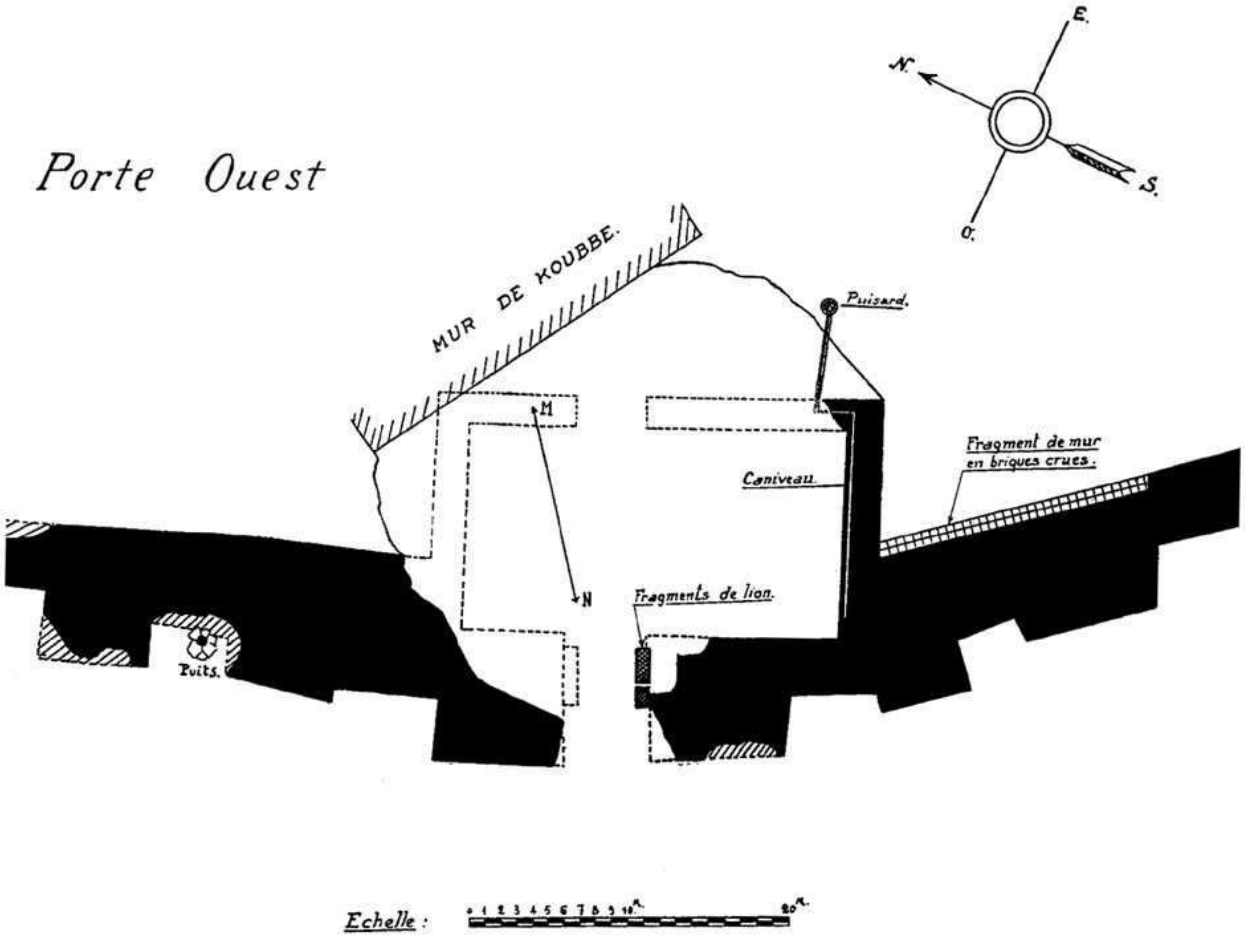
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

48x 4= 192

192÷ 60 minut= 03:20

03:20 ÷ 3= 01:07 hours of work needed to build m3.



(Pl. 25) The West gate of Ḫadatu (Thureau-Dangin et al. 1931: Fig. 27)

6. 11. JERAH WALL, LOCATION

Location of the site

Located on the eastern side of the Euphrates river at 45km from city A'na.

Dimensions of the site

Square site with dimensions of 300 m in each side – in the some time it is the site of 90000 m dimentions.

History of research

Archaeological survey was organized by the National Museum in Baghdad but unfortunately, they could not find when were these excavations and under whose manager.

Fortifications

The site is surrounded by two lines of fortifications, external and internal.

Dating of the site

The fortifications are dated into Neo-Assyrian period.

Construction details

Fortifications running along the outer site (Pl. 26) and were built on the irregular ruins.

It consists of an embankment and limestone blocks in various sizes with a height of 2.80m and a width of 13m surrounded by a moat

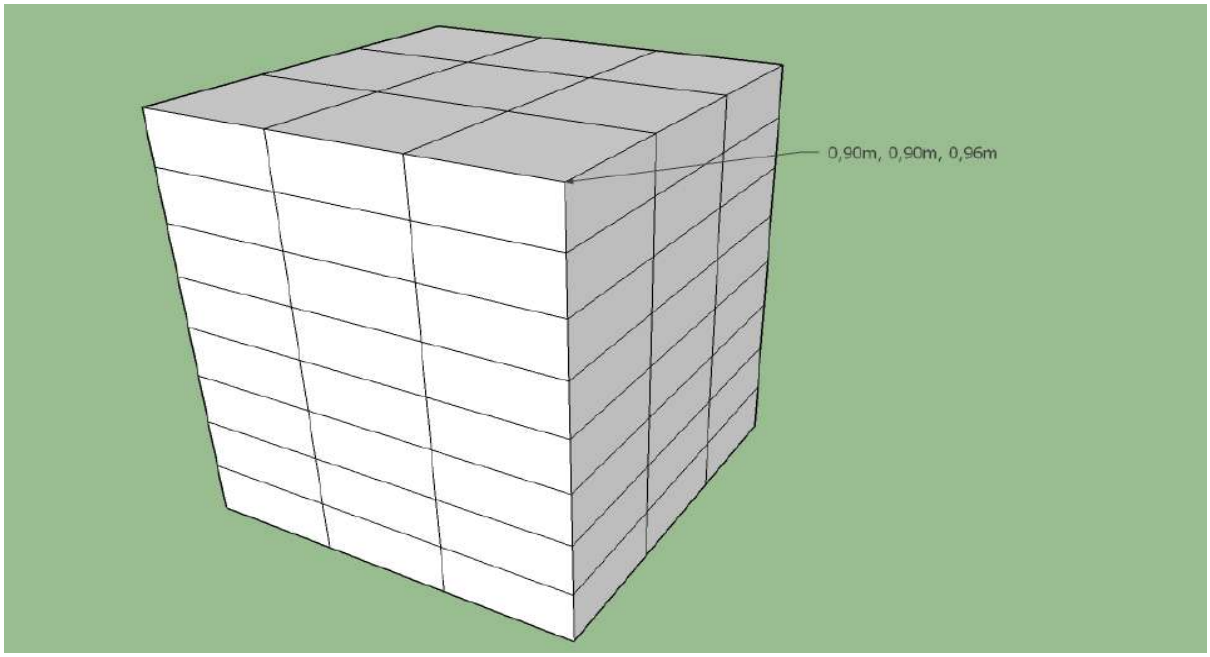
around the outer side of the wall. Internal fortifications are built with mudbricks measuring 30 x 30 x 10 cm (Jasem 1983: 17), reinforced by buttresses and the remnants of the tower.

The fortification is much tried, we have reminded only because the bricks which they used was soft.

Gates

We did not have any information about gates.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.
30x30x10cm= 72 the amount of brick.
-When using 3 workers to build.
- 4 minutes time is needed to build one brick.

72x 4= 288 minut

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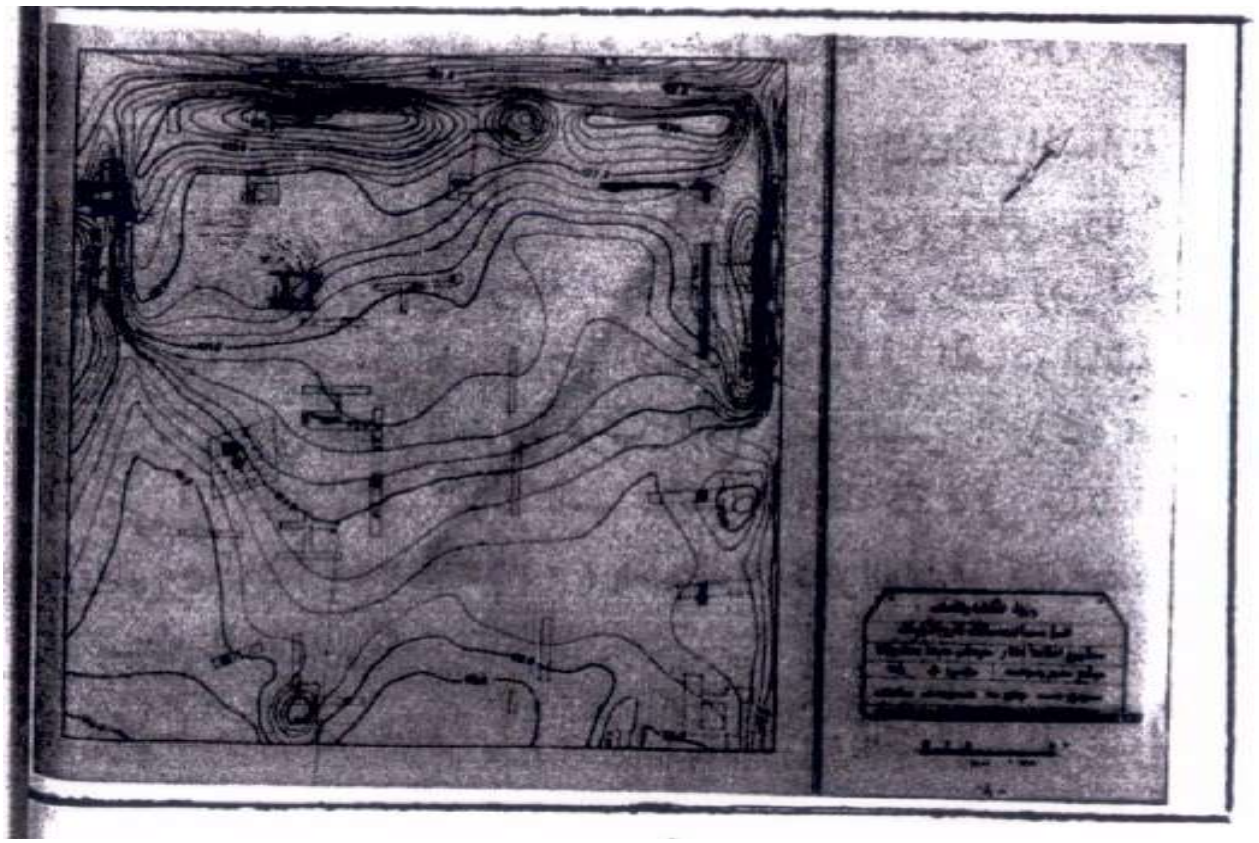


(Pl. 26) plan of location (Jasem 1983: 17)

6. 12. KALHU (NIMRUD)

Location of the site

It is located about 35 km south from Mosul, situated on the eastern bank of the Tigris river on a fertile plan. The river passed Kalhu nearby its western wall. The shape of the city is like quadrangle.

The fort complex of Salmanasar III is located in the south corner of Kalhu city.

Dimensions of the site

The location (Pl. 27) takes about 360 hectares of areas. The Salmanasar Fort has size about 350 x 250 m and surface 7.5 ha (Mallowan 1966: 371. Bd. II).

History of research

The numerous excavations began from G.P. Budger in 1844 and A.H Layard between 1845 and 1851 - it had occurred in Kalhu. The most of the finds come from long-lasting researches of British Museum under direction of Max Mailowan (1949-1958), Daniel Oates (1959-1962) and Jeffrey Orchad (1963) who discovered citadel and significant part of so called Salmanasar III fort (Curtis 1997: 141-142 about history of excavation: Oates and Oates 2001: 1-11; Postgate and Reade 1976-1980: 304-307).

Fortifications

Total length of the walls it is about 7.5. On the west and south side, it extends along of irregular outline of a several terraces. The city was relocated on them and it adjoins directly with the Tigris riverbed and led into the *wadi*. Behind east wall is Wadi as Saw, where we discovered deposit of bitumen. The citadel is situated in south western corner and has dimensions 600 x 600 m, located on old Tell and in its south-east corner *ekal masarti* was discovered the Salmanasar Fort the second citadel (Curtis 1997:141-142. About history of excavation, Oates and Oates 2001: 27; Postgate and Reade 1976-1980: 304-307).

The walls course needs researches of outline relief. Usually they

are made of ridges with single hills, where were the towers before. On a north wall, Layard accounted. The location of the gates has not specified till now. One of them could be located in a distance about 500 m from the North-west corner, the next one perhaps in the north direction from the Salmanasar Fort in east part of town. There are no inscriptions on the Kalhu walls. We can assume that they were built during the reigne of Assurnasirpal the second who did his residence in it, but they were completed by his son Salamansar III. The part of the wall, the only one which was researched, is situated I south-east corner and it is strongly connected with Salmanasar Fort, but this issue will be continued.

Inside building of the Salmanasar Fort floor level is situated about 40 m above plain area. The appropriate complex is surrounded by the walls from east, south and it posses its own fortifications –from north and west (Oates and Oates 2001: 148-149). The free space extends about 400m and about 200 m, north from the complex, what show distant hills. It is possible that it could be omni ring walls (Oates and Oates 2001: 148). On the north from complex could be located the gate of town walls (Mallowan, 1966: 372. Bd. II). The wall was built during the reign of Salamanasar III. Further works were carried out during the reign of Adad-Nirari III, and they were finished by Asarhadolon (Oates and Oates 2001: 148).

Dating of the site

The site is dated into the Neo-Assyrian period.

Construction details

Citadel city (Pl. 28) was equipped its own fortification. On the base fragment we know about fortifications in it is east part, with

unfortunately kept gates and about fortification, on west - which led to the river. They were researched on longer distance. The fragment of east citadels wall, where were massive strengthens, was 37 m thick and at least 13 m height. The whole fragment of the wall was made of mudbricks. The upper part only protrudes above the ground, lower part the third formed a small slope on the upper edge there was a platform where could be situated a tower. In my opinion it is the real base of the wall. Discovered blocks would allow determining solid structure but about strength we do know anything. At the foot of the citadel was road lined stones. While homes adjacent to the inner side of walls (Mallowan 1966: 76. Bd. I; Oates and Oates 2001: 31). There is natural slope leads to the river bad, wall reinfocements by stones shore length about 220m.

The construction of this slope is not homogeneous, and we are able to distinguish two forms: Understand stone of the edge of the river is rises layer of carefully machined blocks of limestone length from 11-13 m. The blocks make the line of the waterfront width 6.5 m. Its core consists of rough bituminous rocks. Behind the wharf is located the wall kept to the height about 6.5 m made of mudbricks, which thickness should have about 14.6 m. Late phase, the wharf wall was reinforcement by a new covering, crossing of carefully machined block.

There are no inscriptions, which enable dating of the wharf. On a base of excavations only we are able to assign it to times Assurnasirpal II. The improvement could be in Adad-Nirari III or Tiglath-Pileser III (Mallowan, Bd. I, 1966: 78-81). Perhaps was existed passage from the wharf to citadel, but we do not have any proof still (Oates and Oates 2001: 42-43).

The west wall of the Salmanasar Fort was made of mudbrickss. The wall extends over a length about 290 m and it has a thickness from 3.7 m to 4.2 m spaced at regular intervals, about 18.7 m, flat towers have hight 2 m, and thickness about 7.5 m. The rest of walls are

situated in similar manner, but they characterized by greater irregularity. The east wall has a thickness 14 m. (Mallowan 1966: 373-374. Bd. II).

The Salmanasar Fort called by Assyrians as *ekal masarti* had different functions. According to inscriptions it was used as a arsenal of combat equipment and booty magazine also, so as a treasury and palace. For the first Asrhadodon used the name *ekal masarti,* but probably the complex was using in many ways from the beginning; as a palace, residence, magazine and as a court staff accommodation also (Mallowan 1966: 376-386 Bd. II).

Gates

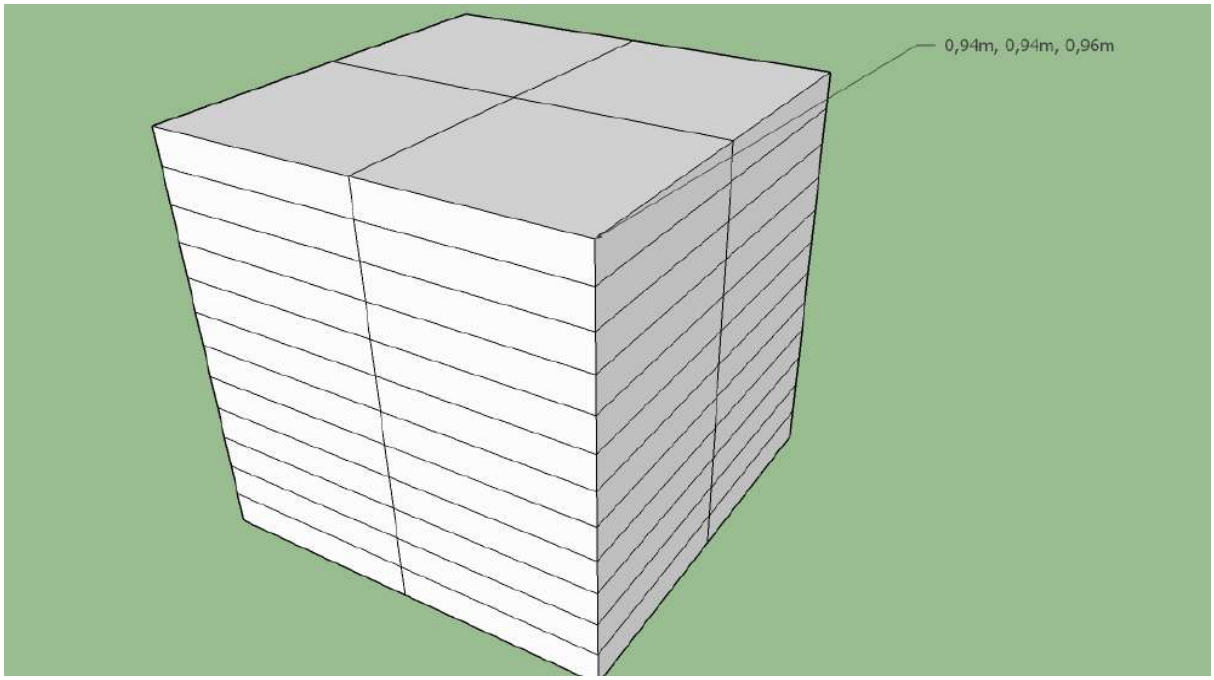
The gate leads to citadel is situated on the eastern side of it nearby so called 'Governors Palace". The street runs through the gate. The street is wide to 6.1 m. The gate pretty much destroyed consists of one room in front of where a situated alabastrine lion with Salamanasar III inscriptions was (Mallowan 1966: 83. Bd. I). The passage has wide about 4.3 m. (Oates and Oates 2001: 31). More distant sites had to be founded on south. Rassam mentions the gate in the south-eastern corner of the citadel. Postgate and Reade (1976-1980: 307), suspect was located in the central part of the southern side and assume that he could be a special secure underground passageway leading to the south-west tip of the Palace (Reade 1976-1980: 307, fig. 1) and on west.

Meanwhile, the west gate is well-preserved, not too much remained of the north gate (Oates 1962: 4). The west gate (Pl. 29) which entrance overlooks the bend it leads to the paved streets it extends to citadel and leads in north-west edge of a complex. Behind the gates towers about a thickness 7.5 m and 3.6 m of surface the street come across a hole in the gate about a thickness height 4 m. used to close two pieces door. A hole in the gate leading to the chamber which has

thick 16.85 m and depth 5.1 m, equipped with screed only without paving on the street. Inside south tower- which was discovered entire, there is a narrow chamber. In the chamber we found enough of the proofs to make reconstruction of the stairs which were before. Base on the elements founded in a buried trench and the proofs from chamber we can make conclusion that the chamber probably was not too much higher that the wall, it could have 7 m. (Oates 1962: 6-8). The north gate was not drug to with in view of bad condition than this on the west, it seems. The biggest difference we can see in much smaller surface of the gate and two adjacent spaces which provided to access to the towers (Oates 1962: 12). The spaces did not provide to access from the gate directly, perhaps they led to the yard (Mallowan 1966: 464. Bd. I). On the north side of north gate, where was the passage was also rowing of rooms. In this situation build of the second room was necessary. The condition of it is so unfortunate, that why we are not able to pinpoint the exact location of the walls (Oates 1961: 12). During the reign of the Esarhaddon the city walls was reinforcement and created additional input from the south. The bricks arch gates with a width 1.7 m, build by Salamansar III interests the wall which existed before, maybe in a point where was transition before (Mallowan 1966: 464. Bd. II). Esarhaddon wall reinforcement the front to 60 m, in east direction and about 250 m to south from fort. The brick structure is located on 76-7 layers situated on a good machined block on limastone, which corresponds to the arrangement the base (Mallowan 1966: 464-466. Bd. II). It should also go through the gently sloping ramp of external shaft fortress (Oates and Oates 2001: 153). Esarhaddons walls thickness is about 5m but the wall turns on the west and gradually expands and it has 11m of thickness in result (Oates and Oates 2001: 30). Between two west cornices is the arch with higher about 4 m, its located on a stone wall 8 - 9 m of higher and leads to small room about dimensions 2.5 m, 2.4 m. The second doors lead to narrow corridor which turns on the right. It takes space about 50 m along the walls and the corridor

turns once again, on the left. On the external doors were discovered complex system which was called the name of the builder Esarhaddon. The corridor rises to the top till the last turn and it comes to covered with murals room of number R7 from this place it is possible to go to the yard directly or on the right in south west part of complex (Mallowan 1966: 466-467. Bd. II).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



Mudbrick.47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.
-When using 3 workers to build.
- 4 minutes time is needed to build one brick.
48x 4= 192
192÷ 60 minut= 03:20
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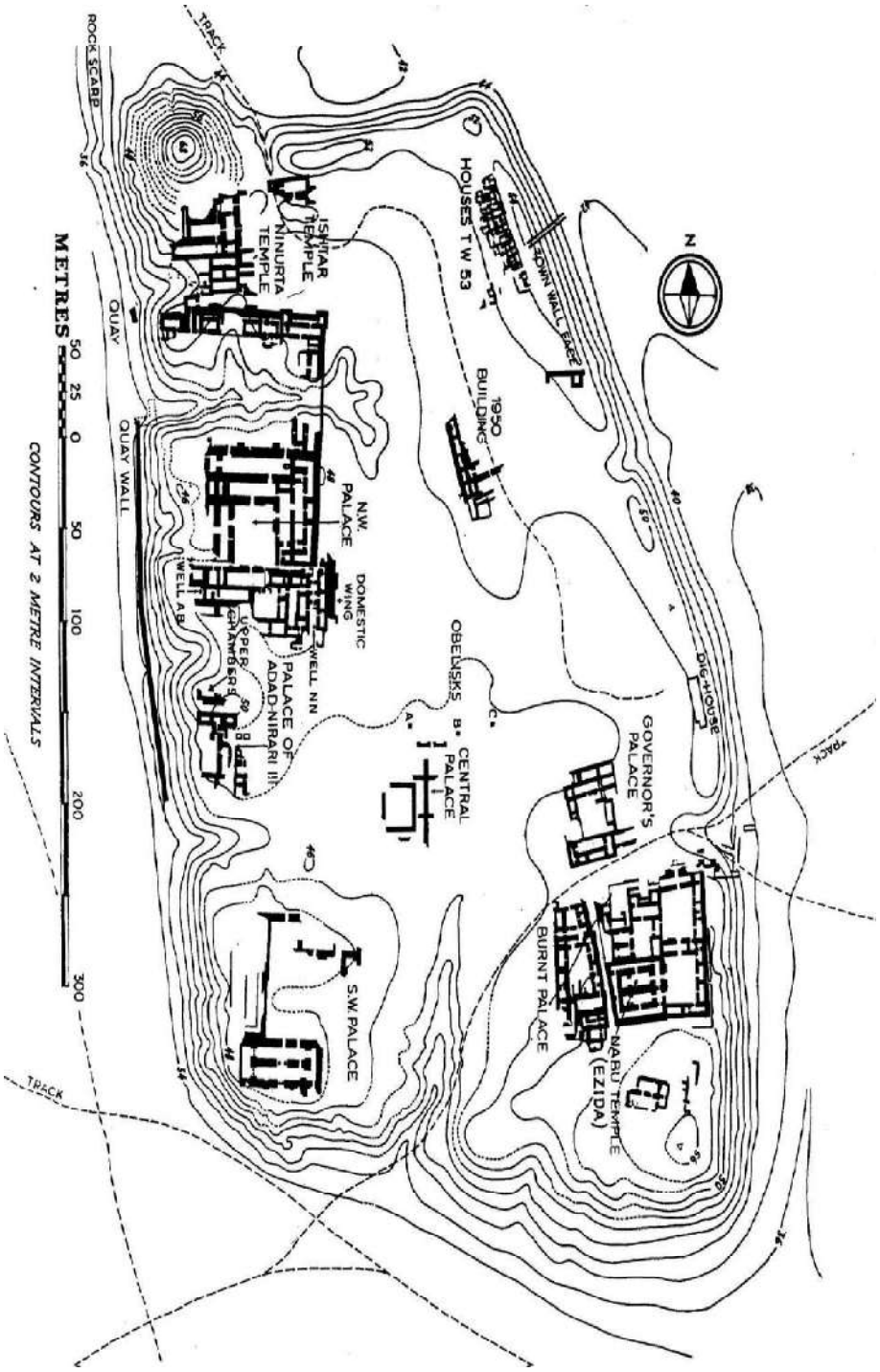
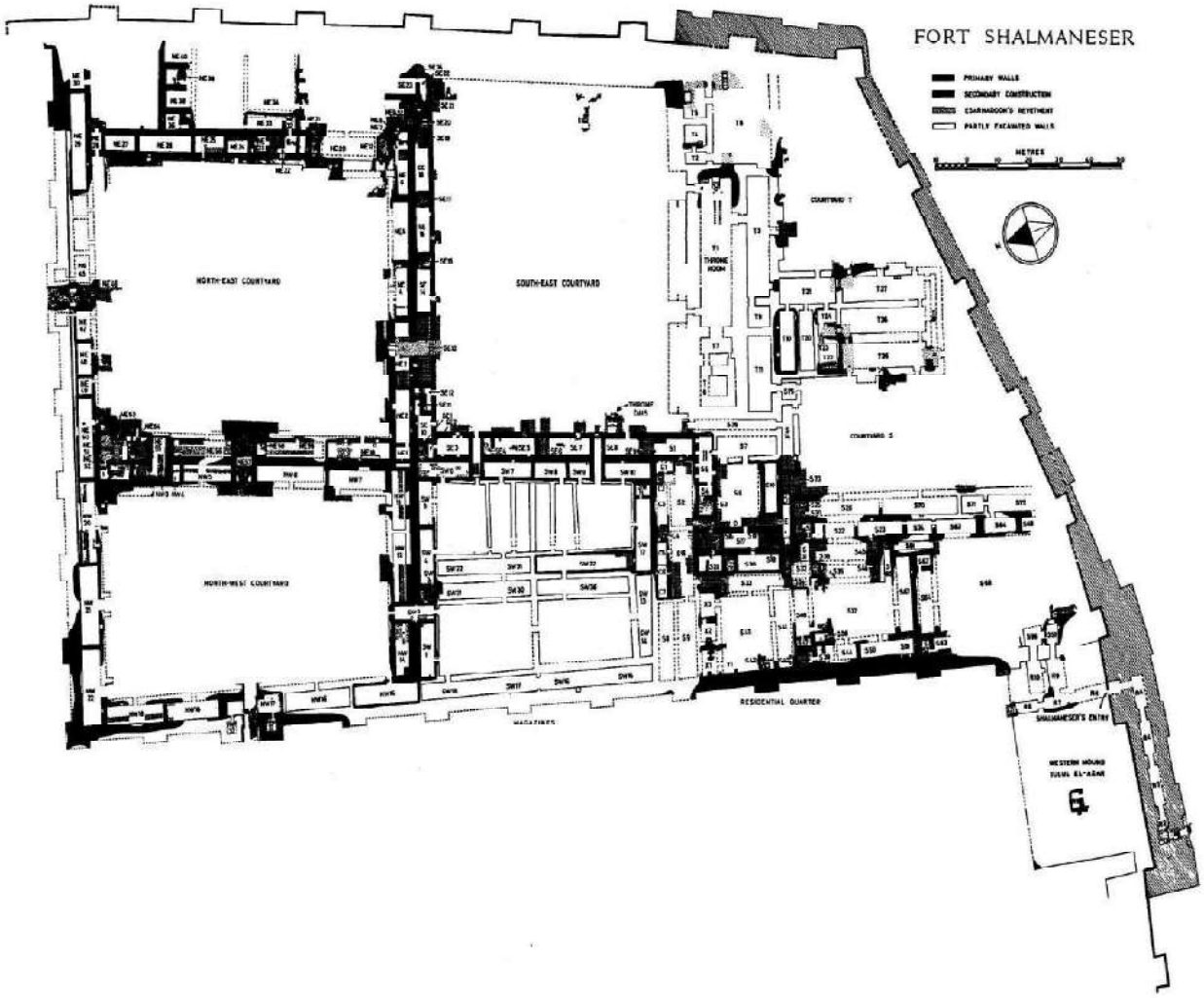
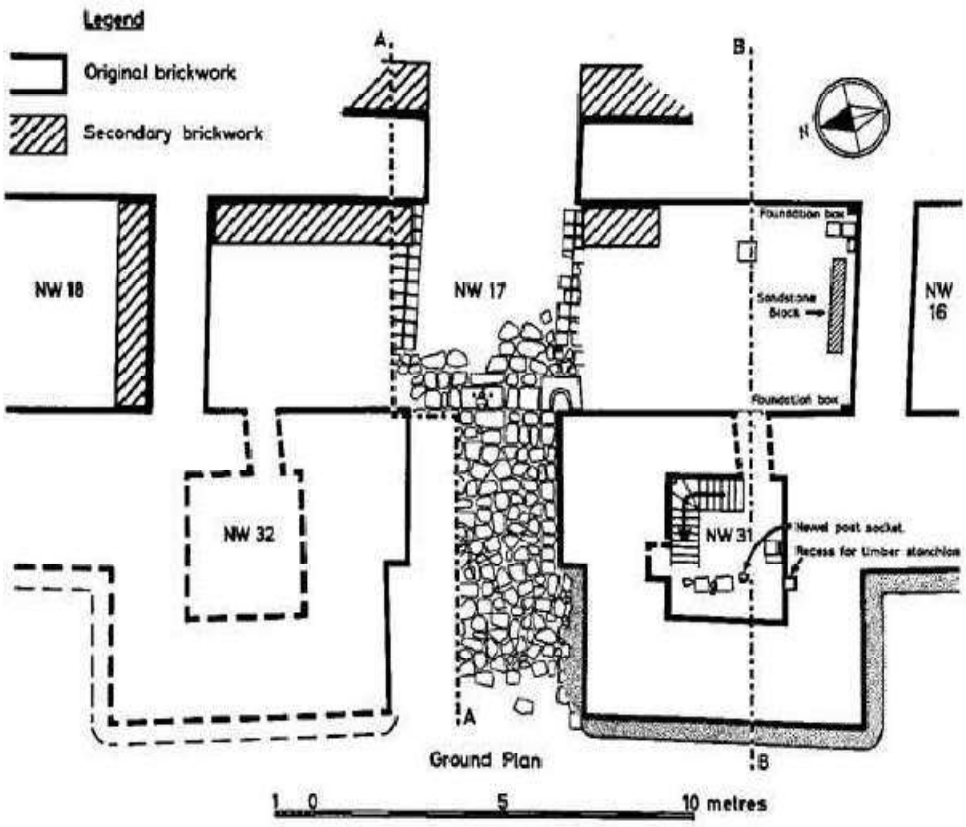


(Pl. 27) Plan of the citadel Nimrud (Mallowan1966: Plan I)



(Pl. 28) Fort Salmanasar (Mallowan 1966: Plan VIII)



(Pl. 29) West gate Fort Salmanasar (Mallowan 1966: 458. fig. 375)

6. 13. KLIAH

Location of the site

Located on the western side of the Euphrates river 27 km from the town Haditha surrounded by a series of plateau.

Dimensions of the site

The site is with a length of 200 m, and a width of 172.5 m.

History of research

Archeological survey was organized by the National Museum in Baghdad but unfortunately, they could not find when were these excavations and under whose manager.

Fortifications

The site surrounded by two lines of fortifications (external and internal) include the entire site.

Dating of the site

The fortifications are dated to the Neo-Assyrian period.

Construction details

Fortifications run along the external site (Pl. 30) were built in the ruins of an irregular. It consists of the embankment and gypsum blocks of different sizes. The wall has a thickness 8m, the north-east side and 14 m, in south western side. The moat surrounds the fortifications from the south-eastern side. Outer fortifications move away from the inner fortifications about 15 m.

Inside fortifications were constructed of some material as the outer fortification (Jasem 1983: 16). They have a length of 136.5 m, width of 126 m, and a thickness of between 9.5 and 10.5 m, and surrounded big residential house with 140 rooms.

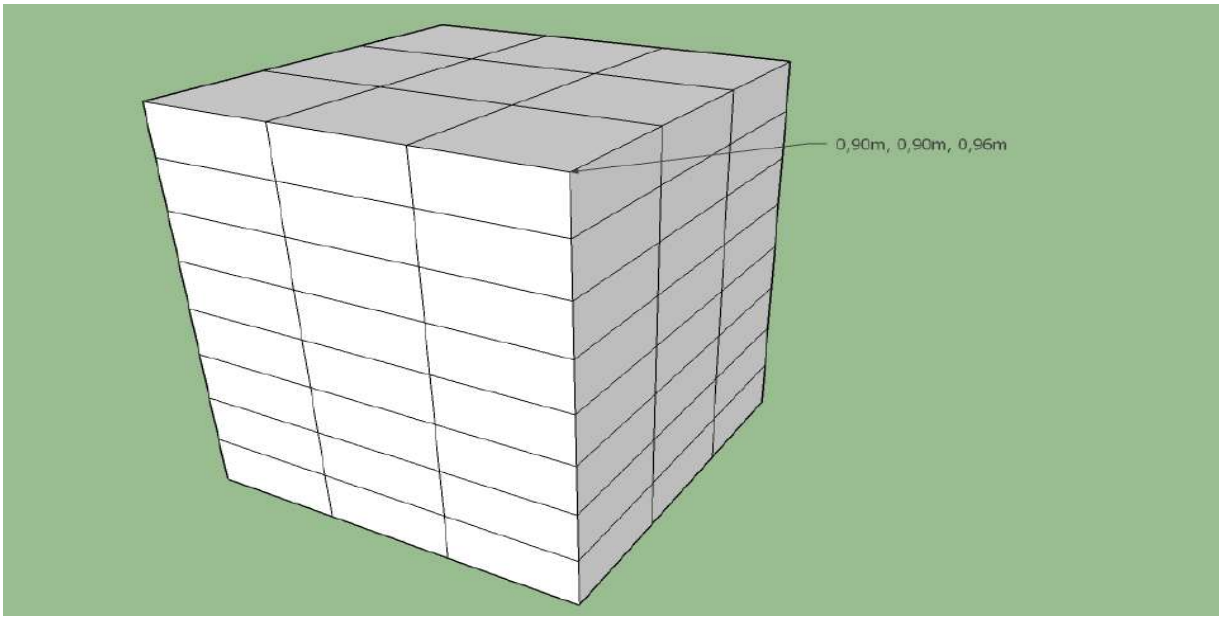
Gates

About this site there is a little information and we do not know if the gates were excavated. Following information stems from my observations of plan site, and the plan of location.

The sites plan shows that there are three gates located on the outer fortification of which a large gate is on the north-western and two sides' gates of the north-eastern side.

There are two gates in outer fortifications, what we can see on the plan of location, located one in the north-western site and the other in the north-eastern side.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

30x30x10cm. Due to the lack of dimensions of the brick, I used the dimensions of the brick from the site of Jerah Wall, Location = 72 the amount of brick.

-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

72x 4= 288 minut

288÷ 60 minut= 04:40

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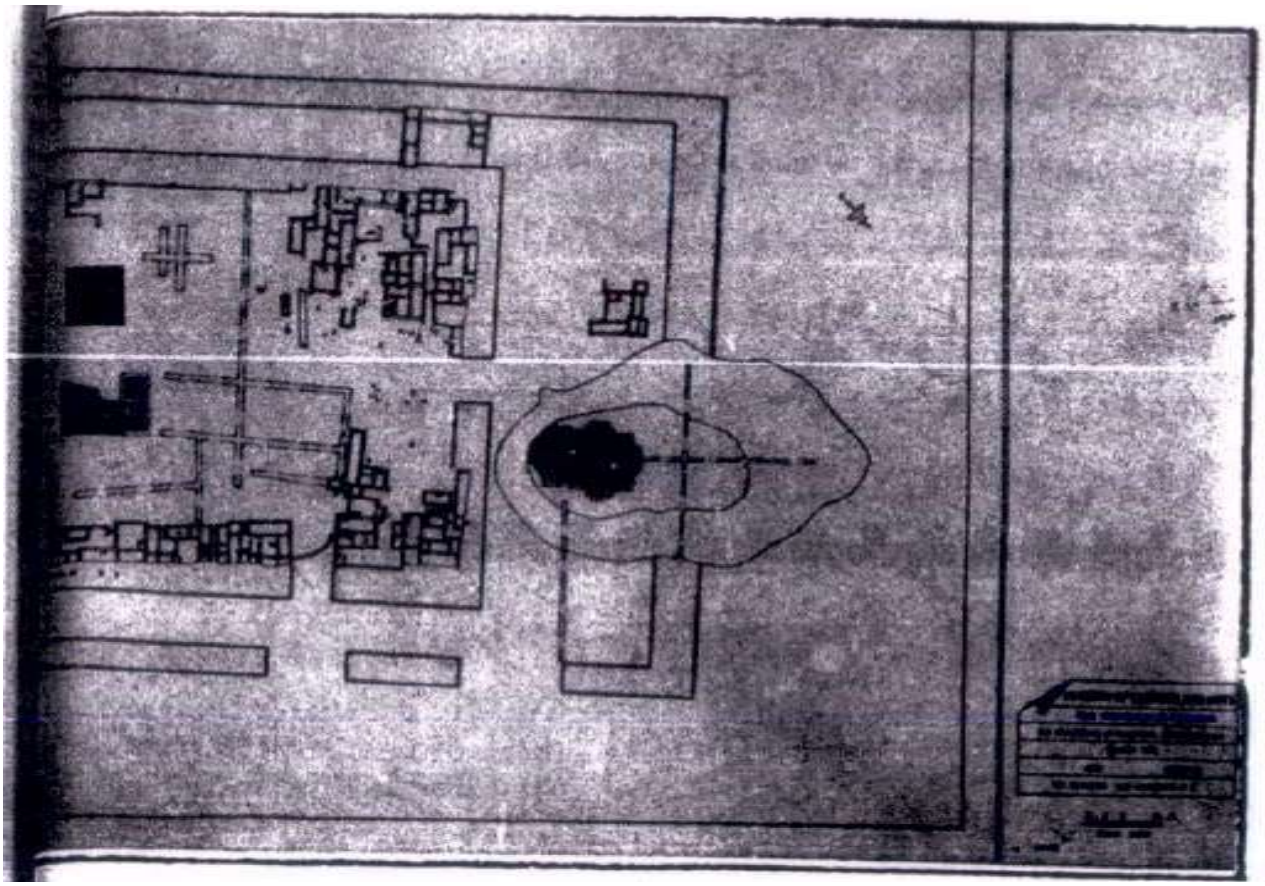


(Pl. 30) plan of location (Jasem 1983: 16)

6. 14. MUHRA WALL, LOCATION

Location of the site

The site is located on the east coast of the Euphrates river in present day province Al-Anbar. The site represents the earlier camps using for protection a country by the Assyrians.

Dimensions of the site

The site is a square with dimensions of 20x20 m, and the whole site measuring 400m.

History of research

Archeological survey was organized by the National Museum in Baghdad but unfortunately, they could not find when were these excavations and under whose manager.

Fortifications

Free standing embankment surrounds the site in the north-east and west and from the south protected by the river Euphrates (Jasem 1982: 16).

Dating of the site

The fortifications are dated to the Neo-Assyrian period.

Construction details

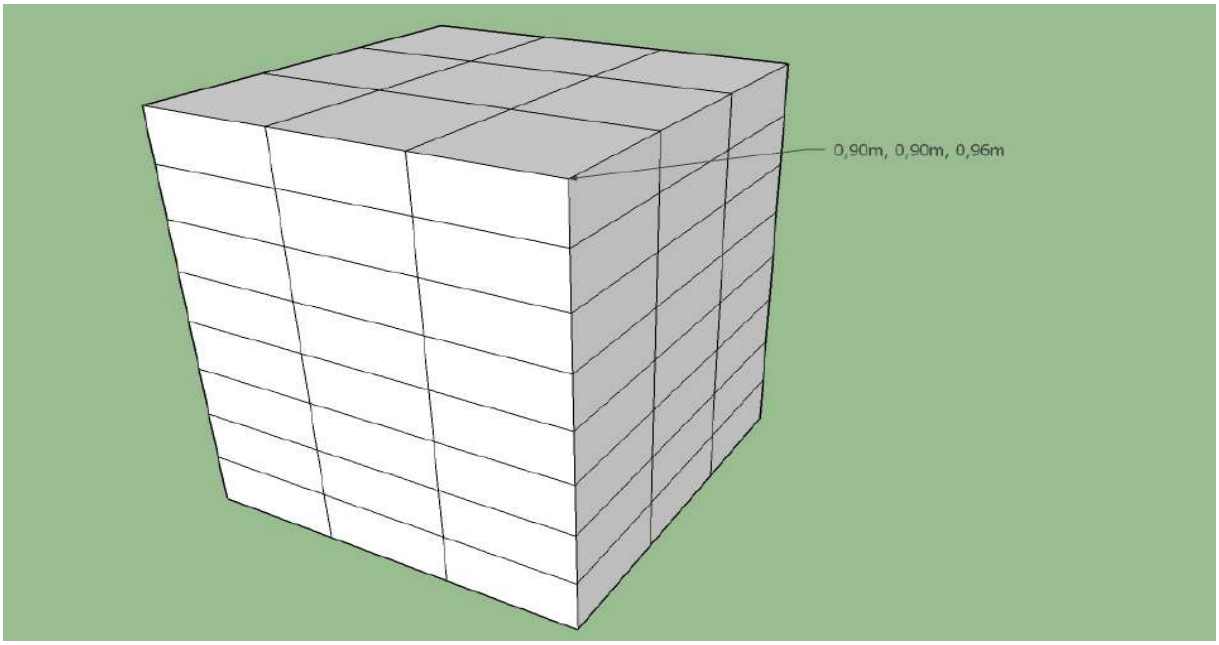
Fortification consists of embankment made from admixture with limestone grit site surrounds from three sides (Pl. 31) as a protection of

living places, we had foundations only.

Gates

From the sites plan I disperse one gate located on the east and on the north of living places. In the report there is no information about the gates and if it was discovered.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

30x30x10cm. Due to the lack of dimensions of the brick, I used the dimensions of the brick from the site of Jerah Wall, Location = 72 the amount of brick.

-When using 3 workers to build.

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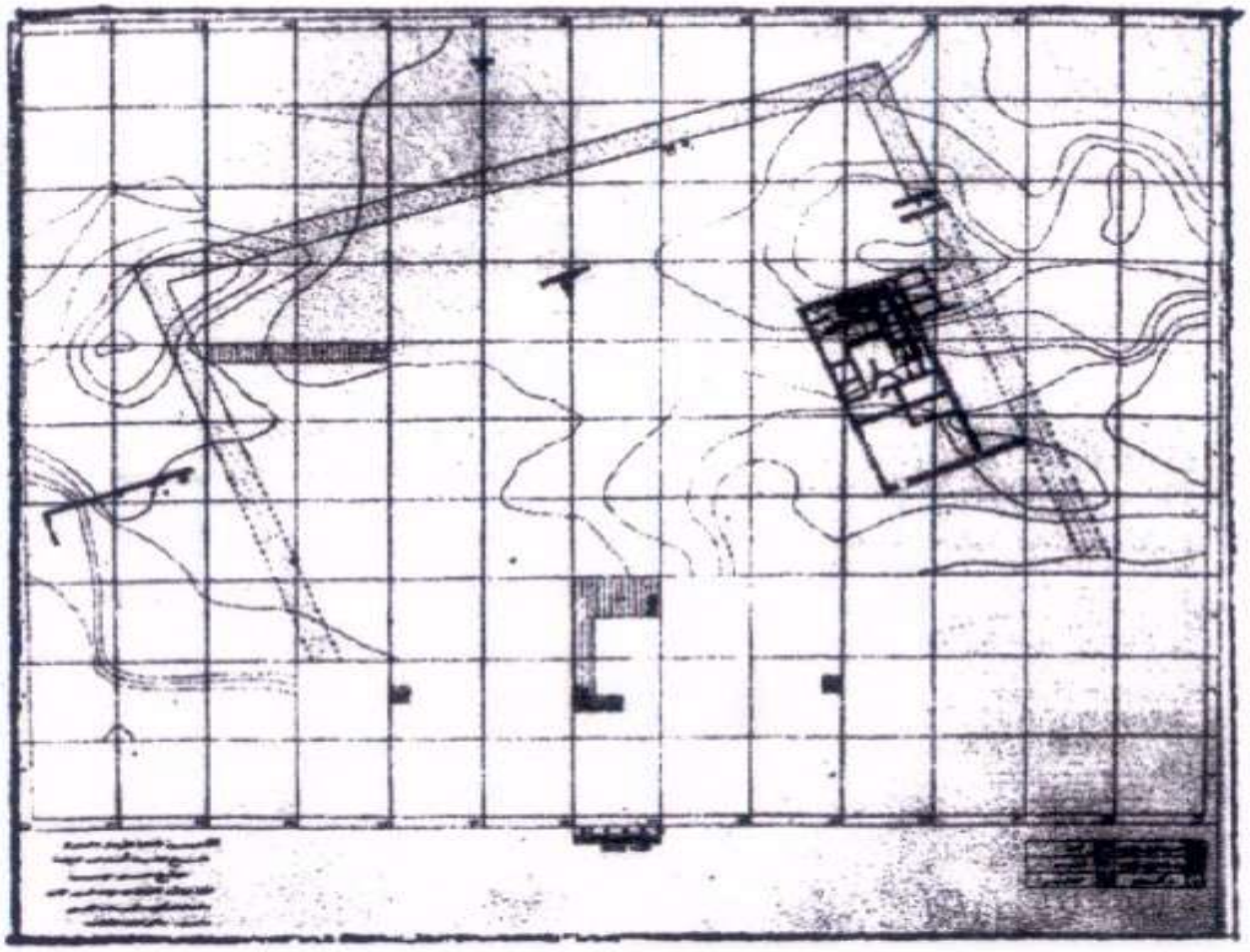


(Pl. 31) Plan of location (Jasem 1982: 17)

6. 15. NINUA (NINIVEH)

Location of the site

Ancient city located on the eastern edge of the Tigris river, on the eastern edge of the river opposite the Mosul city, which from the beginning of XX century developed between ruins of Niniveh. Nearby the city is located important point of crossing s point of the Tigris river. On the west this point was within the ambit of reach the city. On the north-

east and south-eastern from the city vast acreage with hills. It is possible to practice agriculture rainy. The Husr river crosses the city. Two hills significantly distinguish in surface of the city; Tell Quyunjik between 25 m – 30 m above area surrounded and Tell Nab Yunus dominate over the area about 15 m. (Reade 2000: 389-390).

Dimensions of the site

When Sennacherib made of Niniveh his residence and the capital of his empire, the city much more expanded than previously it was. From the north to south it has length about 5 km and from east to west max 2 km. In final, we have 750 ha of surface (Pl. 32). To build a new wall of the city were using form of area around of it which have length about 12 km, (Stronach 1994: 100). Tell Quyunjik takes surface about 45 ha. Tell Yunus takes about 15 ha of surface (Reade 2000: 389-390).

History of research

A lot of excavations mostly not enough published, have been making from the first researches by Riche in 1820 in Niniveh cannot be completely summarized in this paper (Reade 2000: 392-394). Niniveh has a long history and it was important also for Assyrian kings, especially Ishtar temple, because Sennacherib made in the city the capital of empire. For the detailed history of Niniveh from the archaeological point of view (Stronach 1994: 85-114).

Fortifications

Tell Quyunjik was used as a citadel. Inside it there are traditional temple and palace. The western wall of the city additionally protected by

the Tigris river was constructed like this that Tell Quyunjik and Tell Nabi Yunus located above *ekal masarti*. Slightly protrude from the wall lines. On the west is almost parallel to the Tigris river line stone ridge, extending from the place of using conglomerates stone to the walls line. Along with the course of the Tigris river maybe it let us to define length of axis in north-south direction. North wall runs in almost straight line and its site was result of-one side- a desired site of western wall and necessity of build the ditch in upriver from the second side. This kind of project needed assurance of sufficient space. The similar issues so southern arm of Husr river had influence on located south wall (Stronach 1995: 162). Tigris river was situated in some distance from the city analogously to now a day's situation, what we can find on inscriptions (Stronach 1995: 99). The Tebitu river was more dangerous for the city. The river does not exist now, but it could be tributary of river Tigris especially for citadel. The course of the river was changed on Sennacherib's command (Stronach 1995: 98), but there are different interpretations (Reade 2000: 394). His decision was important for Husr also because of building stone wall (Stronach 1995: 10) further remnants of the wall are not certain today (Scott and MacGinnis 1990: 68-69).

Dating of the site

We can date the site into Neo-Assyrian period.

Construction details

The city walls consist of the wall high about 25 m originally made, calculations consistent with the information contained in Sennacherib inscriptions and excavation materials in the particular from of bricks (Reade 2000: 400). Regarding inscriptions: (Frahm 1997: 94 and party 7) of mudbricks 37 x 37 x 12 cm and lower wall the bottom wall made of

stone; the bottom wall directly preceded the main fortifications. The bottom wall has a core and it covered with carefully chipped limestone plates (Madhloom 1969: 45). The wall had also passage bear in parapet and the towers situated in regular intervals (Madhloom 1967: 77-78). Next to the Šamaš Gate towers have 3.5 m width and after reconstruction we were able to define it high which was about 9.99 m, what means that the bottom wall had about 8.5 m, from this 1.45 m of high had parapet. In the Carpathian were discovered insTellations for water drainage (Madhloom 1967, 1968, 1969: 78. 48. 45). On the Masqu gate in the towers were performances about length from 1.15 to 1.25 and wide 3.5 m (Madhloom 1969: 46). Different distances were between the towers from 12.5 m (Masqi gate) by 13.8 m (Madhloom 1968: 49), to 25 m (El-Wailly 1966: p. c). Next to this gate thickness of the wall could reach to 15.8 m (Madhloom 1968: 48), and in other places 45 m even (Madhloom 1967: 77). At the floor of the Quyunjik discovered fragment of clipping the wall situated on a stone foundation without towers. Perhaps in this place were wharf or terrace wall (Roaf and Postgate 1981: 185).

It is difficult to indicate clearly indicate how much defensive system of Niniveh used system of ditches omni directional, and we do not to know if it were island or ditches dry. Presently we have a lot of divergent opinions on this subject. The ditches existed in far eastern city and runs nearly Šamaš gate and Halzi gate. In a distance about 80 m from the walls. It had 70 m thickness and depth about 10 m. Due to the erosion, one of these was narrower, but it shows a greater depth due to the original shape of the excavation. The course of the wall is well known in the north and eastern part of city. We can suppose the islands could be situated nearly of Masqui gate (Reade 2000: 400). Along of north part of east wall was discovered interruption of ditch, which may indicate that if wan not finished (Stronach 1997: 313; other suggestions: Reade 2000: 400). The north ditch should be full of water

(Stronach 1994: 101, Anm. 106). We cannot be sure of situation and west and south, there could be a ditch also (Stronach 1994: 101, Anm. 101). We do not know to much about location on the east city outer shaft. This is due to locate it behind deep ditch, what is debatable point about defensive qualities of construction (Stronach 1995:163-164).

The main citadel Tell Quyunjik is big probably was fortified but this knowledge we have from written sources (Reade 2000: 397-398, it shows different inscriptions on the remnants of the wall, which can be seen at L. W. King, but whose chronology is not known). The entrance to citadel made possible on the east. Western building of Sennacherib. Interior passage was discovered during excavation. Encountered there lined with stone floor and a few winged bulls with inscriptions of Sennacherib with surrounded the entrance (Reade 2000: 399; Russell 1991: 86. Fig. 46). In a view of their location in external direction Russel indicates that discovered portal led to the outside. Its correspondences to a different external portal to it reached the royal road from Nergals gate (Stronach 1991: 101). The rest of the gates we know from inscriptions only (Reade 2000: 398-399). Citadel was protected from south side and south-eastern from Husr river. From north, north-western and west low ground was discovered what correspondence long moat or creek which could be wall was reinforcement for Tell in result (Stronach 1994: 102: Lumsden 1991: 2. Fig. 2).

About the second citadel, Tell Nabi Yunus, we do not know too much from the archeological site. Even at the time of Sennacherib it was created there *Ekal māšarti*, which replaced the earlier building, extended the time of Esarhaddon, and restored for Assurbanipal (Turner 1970: 68-85). Turner sums up both archaeological and philological evidence. During the rescue research in 1954. Tell discovered on *Ekal māšarti.* Paved with stone slabs road led east to the top of the hill directly to the monumental gates. The first wall were two

stones hinged in situ and holes in the pavement, which were used for locking the gate. Inside there are two, if not three chambers, but the excavation is not expanded enough to verify these assumptions (Scott and MacGinnis 1990: 64-65, look: Al-Asil 1954: 110-11; Ders1955: 3-4).

Gates

The gates of Niniveh are known from a few inscriptions. At the begining of the build of the city we had 14 or 15 gates, later 18 (Reade 2000: 401). Most of them were found and identify and 7 were researched by excavation. Assur gate is situated in south wall and the ramp leads to it built from bricks and bitumen. It has two surfaces paved with stones. External has a stairs and internal furnace (Roaf and Postgate 1979-1980: 185).

The most extreme set was Halzi Gate (Pl. 33) one of the biggest in the city. It is complex about width 70 m, in front of the wall and its wall was reinforced by 8 towers of the bottom wall. Six from forward and one from both sides. Entrance to the gate made on the bridge over the ditch but not completely like a passage. It has about 7 m of width and narrows to 4.7 m, inside bastion is protected by yard 19 m x 45 m. We do not know still how to lead exit from this yard. On a base of a bottom walls construction we are able to define that there is a place s where the bricks have broader axis. It could be a result of fixed. The passage goes through the wall about which we were saying previously. The wall was narrowed two meter layer of bricks. Probably due to attac what was the reason of fall city. In passage of gate we found suddenly died people (Stronach and Lumsden 1997: 316-317; Pickworth 2005: 308-310). In two corners of yard in the foundation discovered intact deposits where were dissuasive clay figures (Stronach and Lumsden 1997:231; Stronach 1997: 315-316; Pickworth 2005: 305-307).

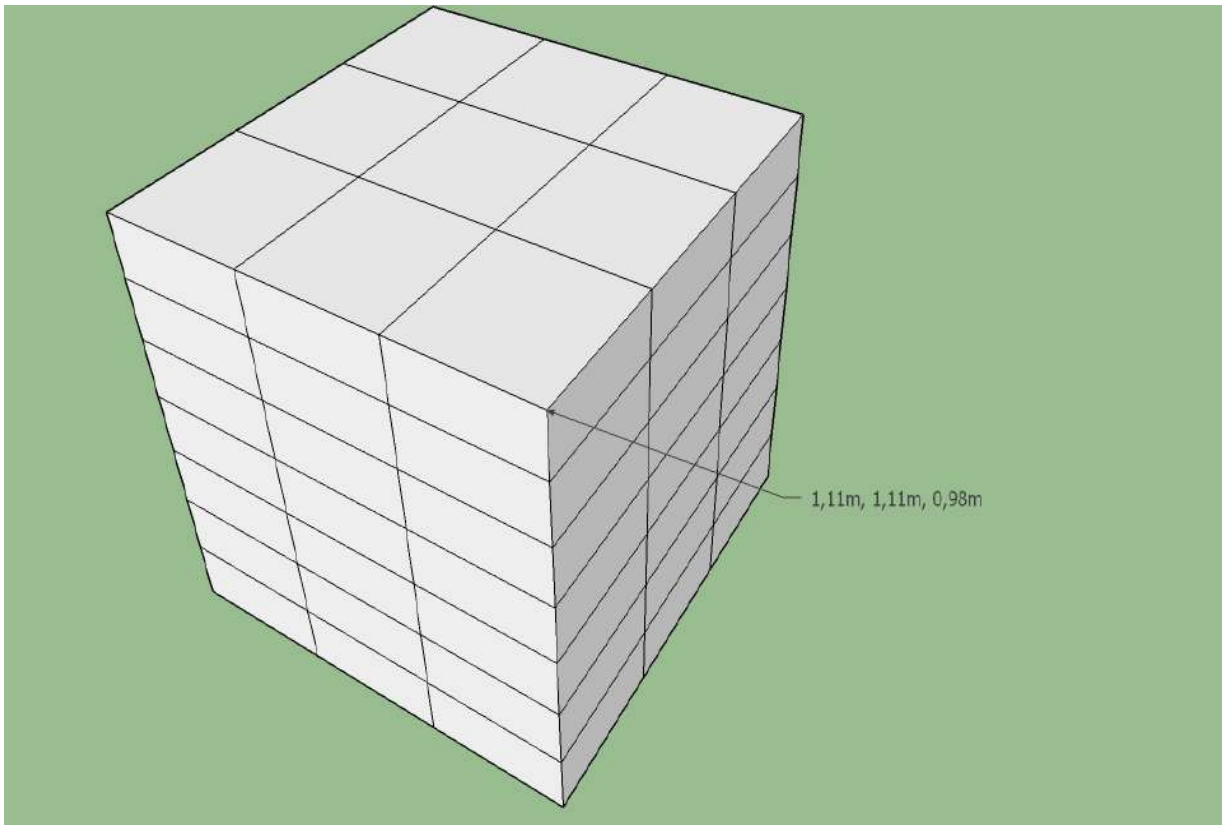
The Šamaš Gate (Pl. 34) located to the north from Halzi gate is nearer of big city. Building has 66 m of width, protrudes in front of the front wall on 22.5 m, and it has 8 gates situated on the bottom wall what made bastion of it. On eastern wall we have 6 towers width 3.5 m each. Higher wall made of mudbricks has towers also. Entrance has 4.55 m of width and its walls passes slabs with incised motifs. Passage has 61 m of length and divine big yard on two rooms. The passage was narrowed to 1.2 m. (Madhloum 1967: 77-78).

Adad gate is the most extreme located to the east. The gate is surrounded by two massive towers 11 m, width, inside we have to width rooms, and entrance on the crown of the wall. Entrance has an arc which later wall reinforcements by the next passage was narrowed in later time and discovered death people inside it. The plan of it is not well known (Reade 2000: 402). Access to gates was possible by paved ramp input defendant winged bulls with human heads. It is possible that two or three rooms existed in front of them were situated winged animals. But not in front of the main gate, where Layard discovered them (Reade 2000: 402), Reade's reconstruction can only be appreciated after re-digging the gate, but for the moment it offers a likely explanation for the confusion associated with this gate (Finch 1948: 9-18). Where it is indicated that the winged creatures discovered by Layard could not be discovered at the Nergal Gate, as they significantly differed from the 1941, winged creatures without geniuses. In the meantime, the gateway examines the Iraqi anti-monument service (McDonald and Simpson 1999: 201). Which was finally reconstructed, but to my knowledge, has not been published? Through Nergals gate royal road led to Tabis, place of Nergals (Wiggerman 1999: 222), cult and residence of heir to the throne (Borger 1956: 71-73). This is likely to continue towards the eastern end of the citadel (Stronach 1994: 101). Sins gate, which earlier was called Garden gate extremely located on the East gate of north wall were discovered one room only lead to topped

with a bow stair about width of wall or south western gate (Reade 2000: 402). Which was discovered only one room leading to the staircase topped arch width of the wall or part of the south-west gate (Madhloum 1967: 77).

North passage to eastern wall was possible thought Masqi (Pl. 35) it is situated on the line behind walls, but it is surrounded by two towers into the walls. The distance between them is 12.5 m. Stepped foundation outside the wall is special and pavement discovered in two layers, made of plate limestone and bituminous (Madhloum 1968: 44 and Ders 1969: 46). Both of them could be protection from scour the Tigris river. The name says about proximity of water (Reade 2000: 394. 400. 402; Stronach 1994: 98, Anm. 96). Inside gate is situated room about measured transverse dementions 24.6 x 6.4 m. Passage has width 5.5 m and further south wall of room discovered next one with width 2.1 m, topped with a bow. The wall covered with marble slabs, was not decorated and has high 1.3 m (Salman 1970: d).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

37x37x12 cm=63 the amount of brick.

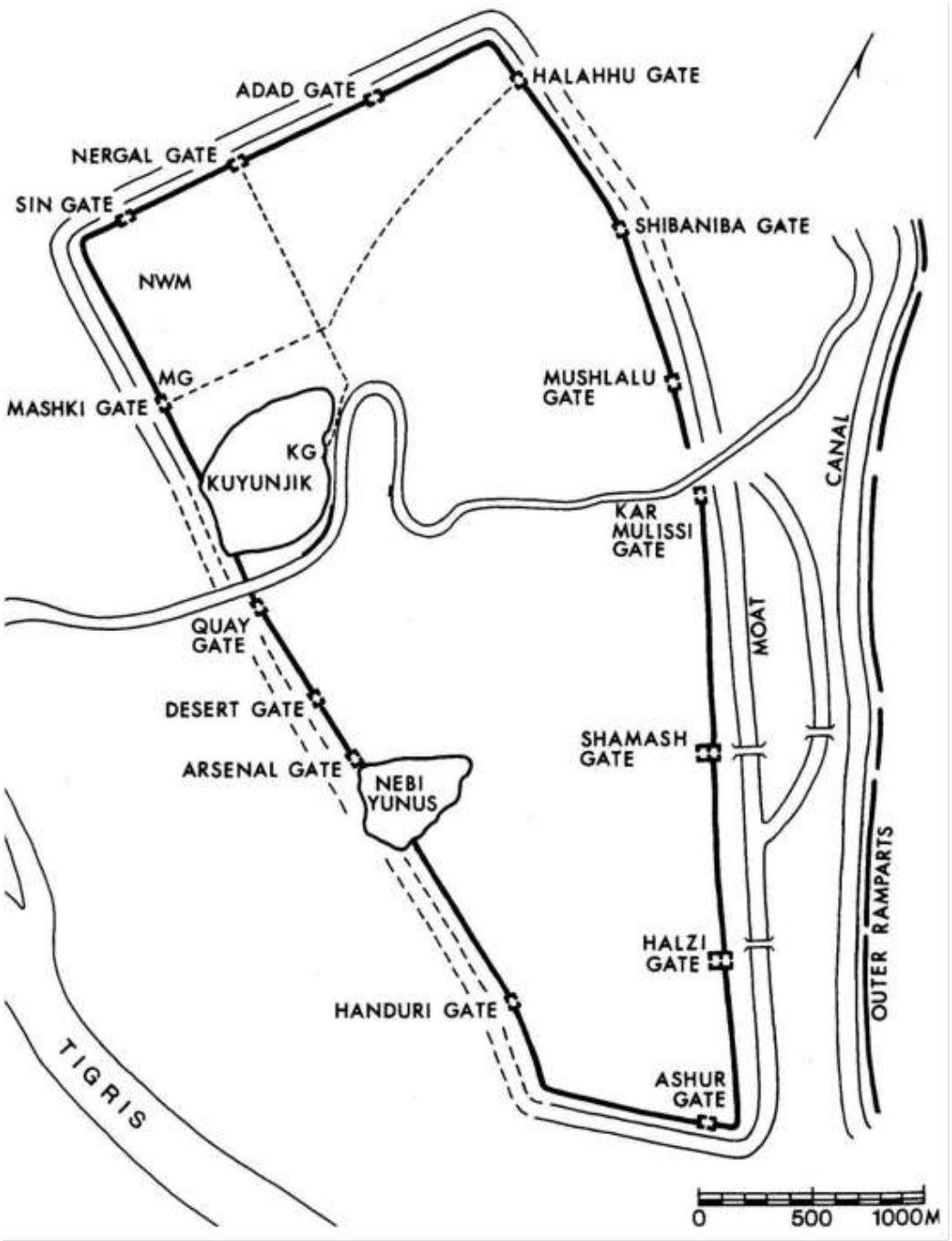
-when using 3 workers to build

-4 minutes time is needed to build one brick.

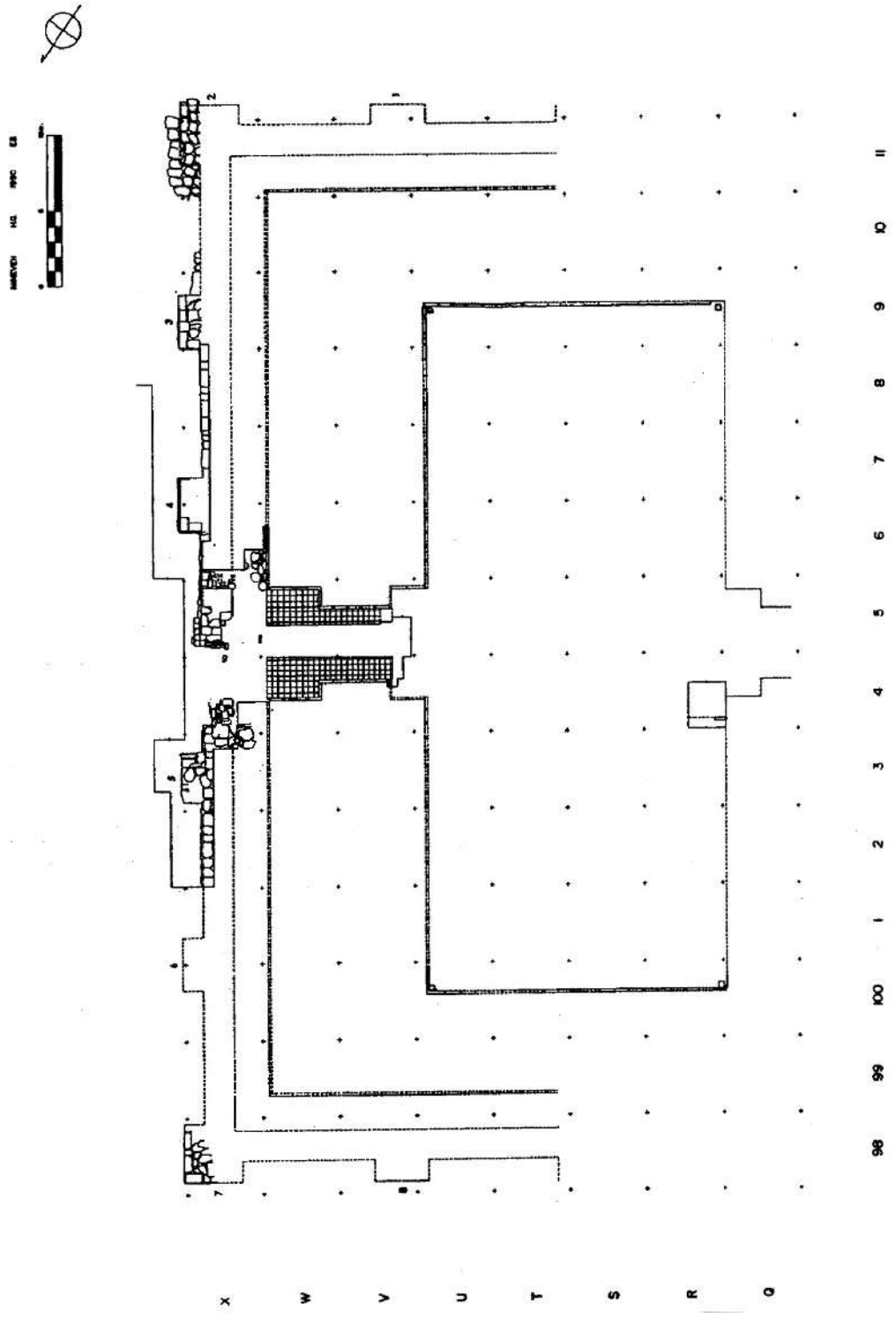
63x4 = 252

252 ÷ 60 minutes = 04:12

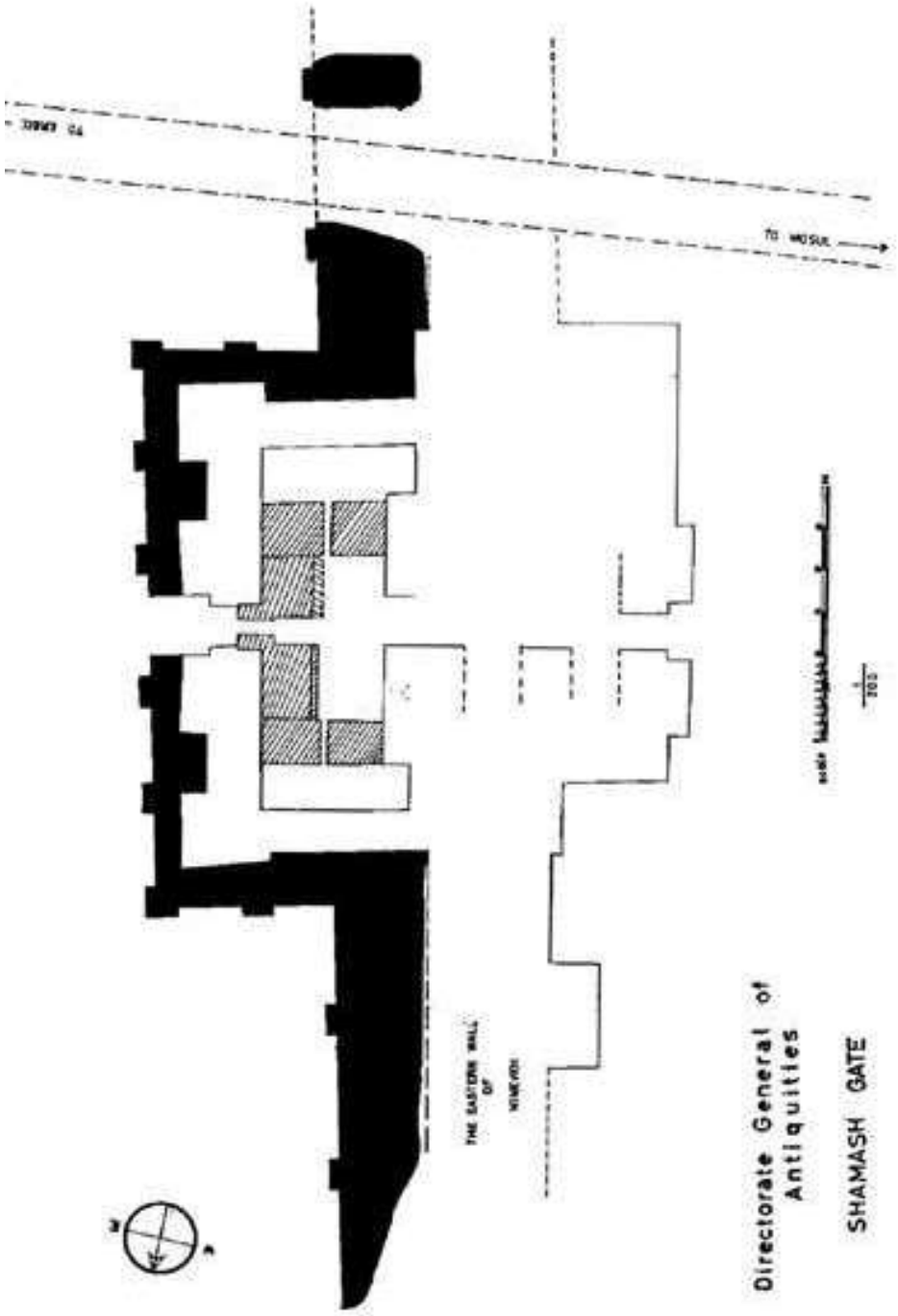
04:12 ÷3= 01:24 hours of work needed to build m3.



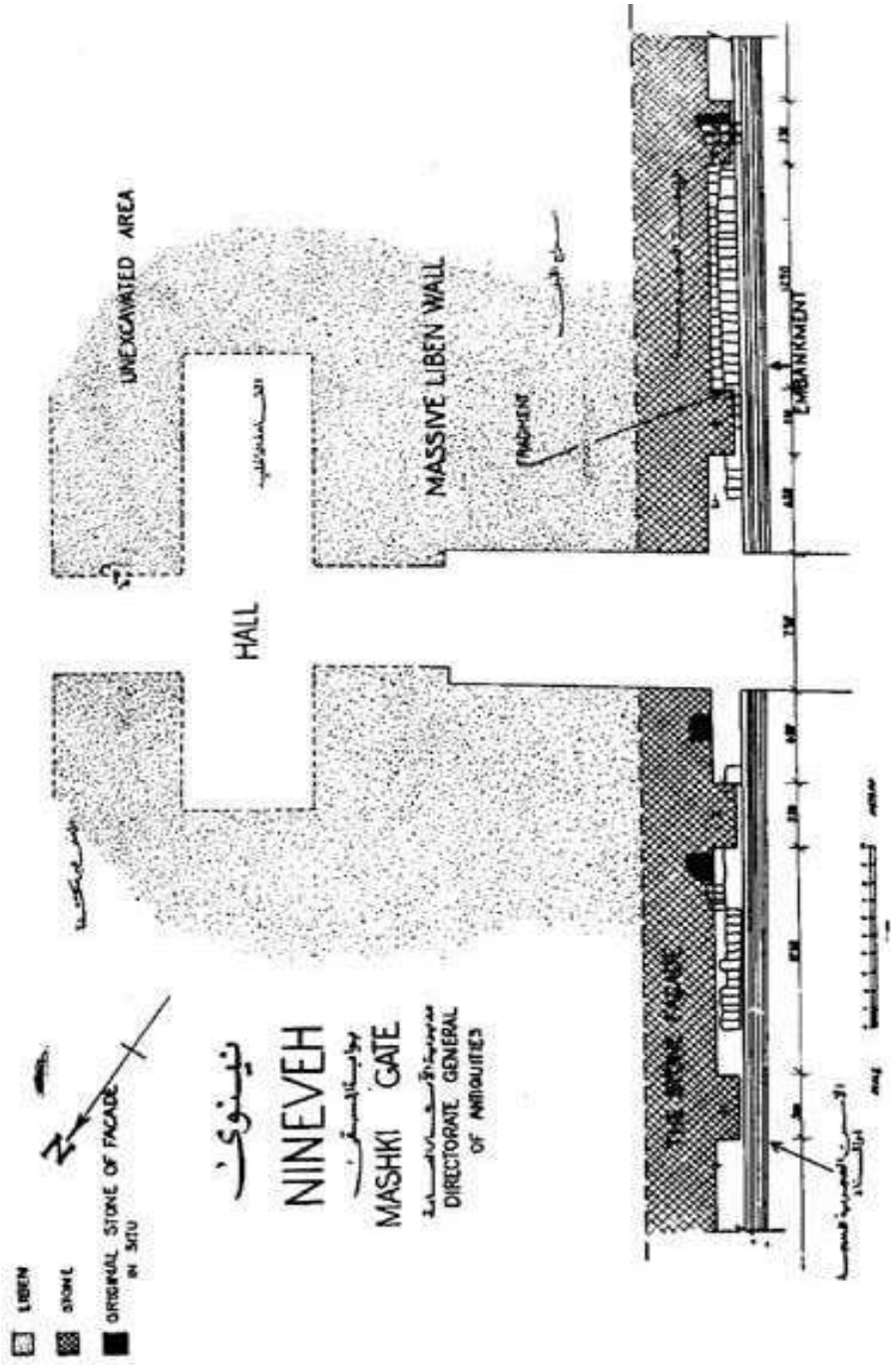
(Pl. 32) Maps Ninva (Stronach 1997: 312. Fig. 2)



(Pl. 33) Gate Ḫalzi (Stronach 1997: 312. Fig. 2)



(Pl. 34) Gate Šamaš (Madhloum1967: Pl. VII)



(Pl. 35) Gate Masqî (Madhloom 1969: 51. Pl. 1)

6. 16. NIPPUR (NUFFAR)

Location of the site

Nippur is in the center of central Mesopotamian plain, about 180 km on the south direction from Baghdad.

Dimensions of the site

The city which is peak torque, covered on area 150 ha and it was cut through the center by a watercourse, dried at present, was called Sat tan-Nil (Gibson et al. 2001: 547-548).

History of research

The first excavations in Nippur were conducted by Henry Rawlison Creswicke in 40's of XIX, Austen Henry Layard (1851) and Wiliam Kennet Loftus (1851 also). Between 1888 and 1900 conducted John P. Peters and Herman V Hilprecht to expedition of University of Pensylwania. From 1948 to 1952 the excavations were renewed by Donald E McCown and Richard C Haines from University Museum of Pensylwania University and Oriental Institute of Chicago. Under Richard C Heines the Oriental Institute worked there from 1952 to 1963 with collaborates with American Schools of Oriental Research. In 194-1967 the project was realized by J. E Kundstad and from 1972 to 1990 by McGuire'a Gibson (Gibson et al. 2001: 546).

Fortifications

During Shamash-shum-ukin and Assurbanipal were built new walls of the city, which were discovered during excavations on south of the city. During Neo-Babylonian this area was deserted, and settlement was in higher parts of the city (Gibson 1992: 48-49).

Dating of the site

After the period when Nippur decrease to small center, it survived under the authority of Assyrian to VIII century B.C. as a cultural center and later growth phase city limits in VII century B.C. under Shamash-shum-ukin and Assurbanipal.

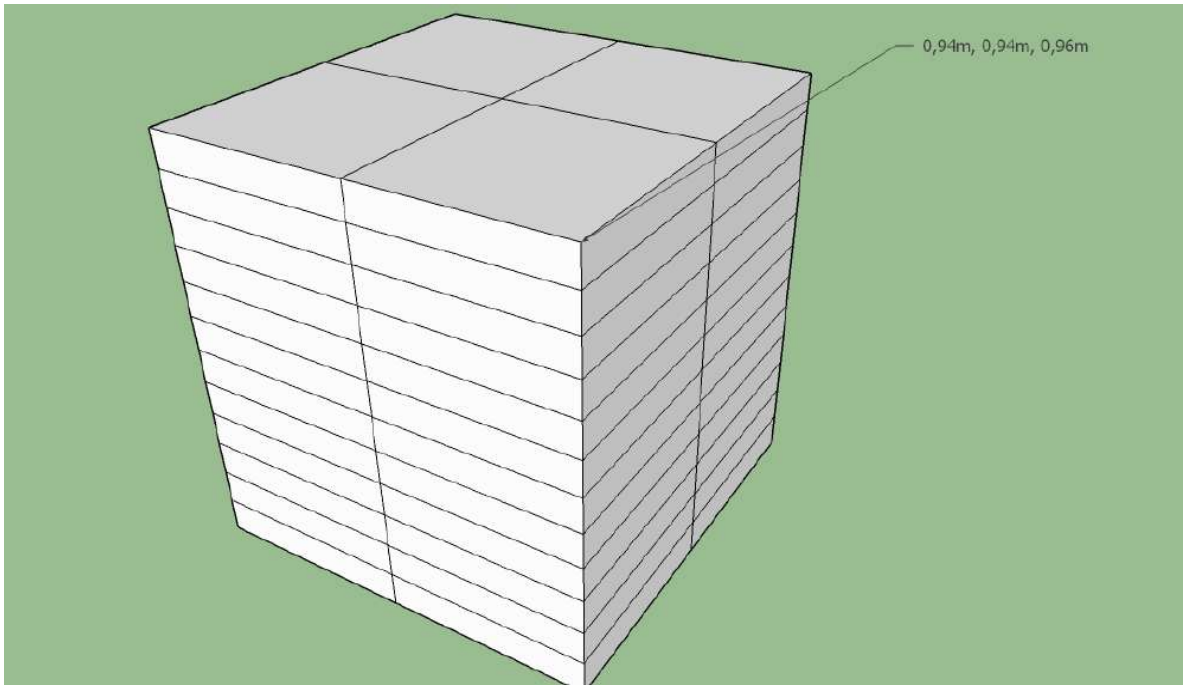
Construction details

The city wall (Pl. 36) made of mudbrick had 5m of thick and its wall was reinforcement two rampart and dried moat. Only fragment was researched so it is difficult to give more information about it (Gibson et al. 1998: 26-27; Gibson et al. 2001: 561).

Gates

We do not have information about gates.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

47x47x6 cm (Al-Temimi 1982: 281) = 48 the amount of brick.

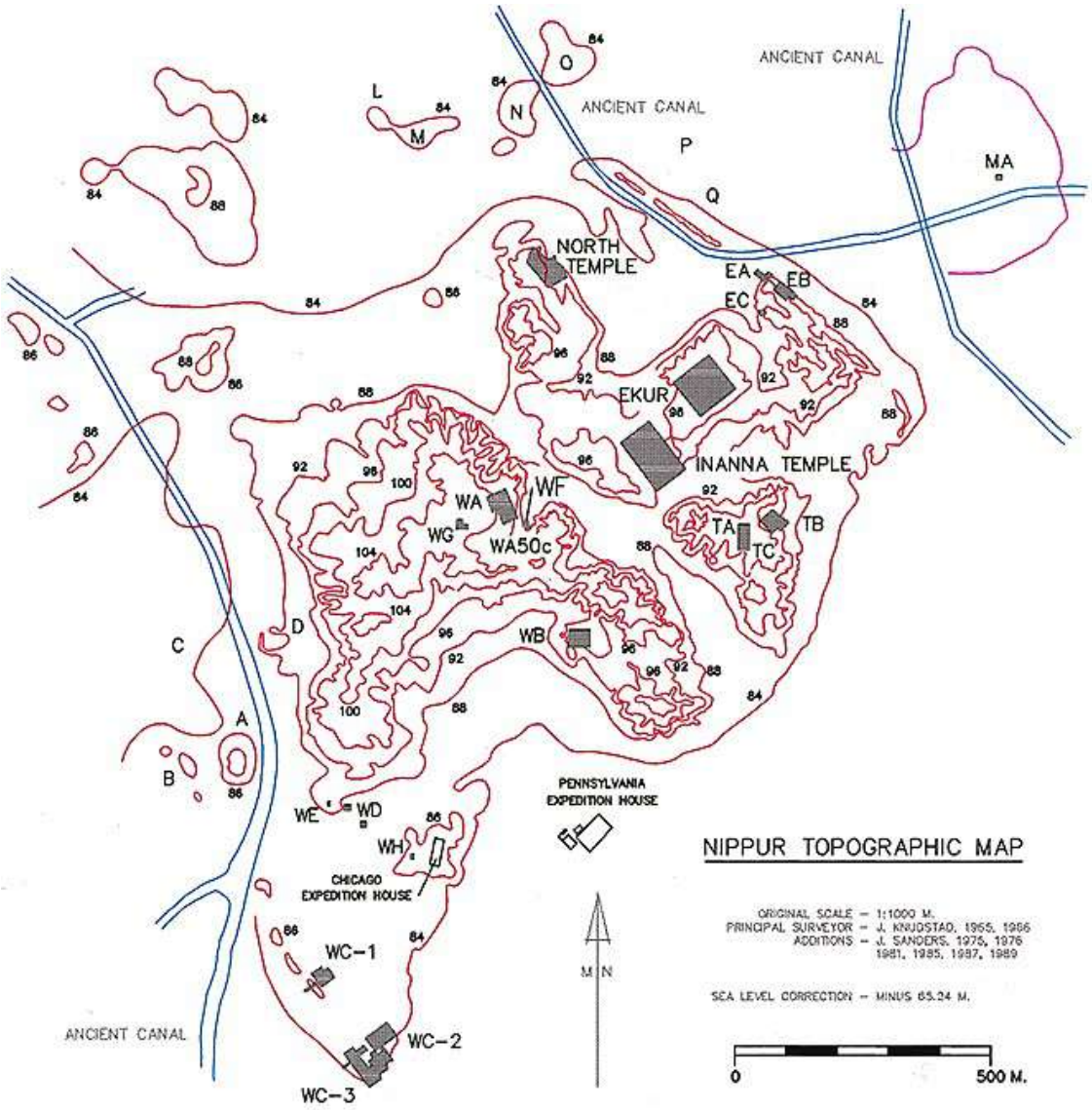
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

48x 4= 192

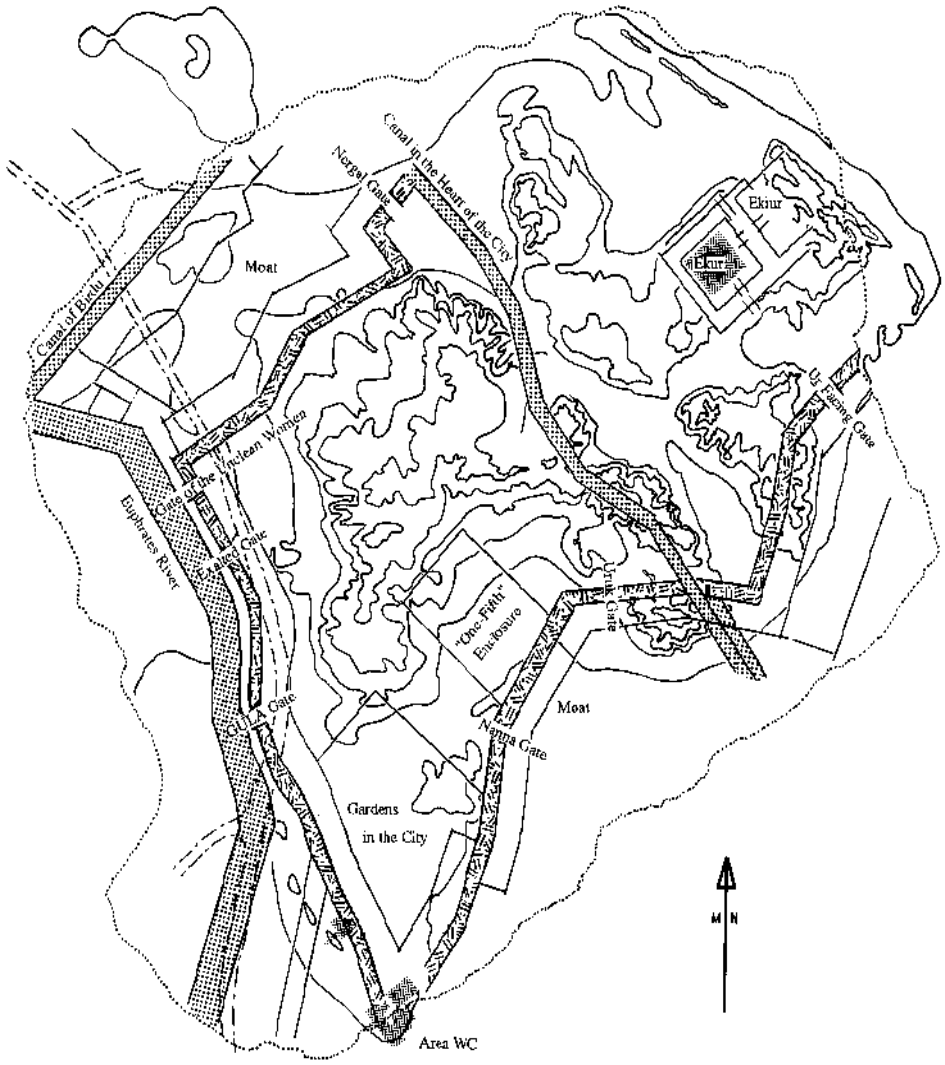
192÷ 60 minut= 03:20

03:20 ÷3= 01:07 hours of work needed to build m3.



(Pl. 36) Plan of Nippur, site plan with marked areas of research

(Gibson 1993: Pl. 2)



(Pl. 36a) Ancient of Nippur map on modern topographic plan

(Drawing by Augusta McMahon) (Gibson 1993: Pl. 8)

(Pl. 36b) Ancient map of Nippur, Kassite period (Gibson 1993: Pl. 7)

6. 17. TELBIS

Location of the site

Located on the east of the Euphrates (fig. 54). At the distance of 14 km from the town from the southern east from the city opposite the island Telbis, situated in the middle of the river Euphrates.

Dimensions of the site

Post extends in a narrow strip of a coast has a length 4 km and width 360 m surrounded by the river Euphrates to the south side and the hills, from the north.

History of research

Archaeological survey was organized by the National Museum in Baghdad but unfortunately, they could not find when were these excavations and under whose manager.

Fortifications

On the eastern more often than the sites were found fortifications build with stones, mudbricks and bricks (Pl. 37).

Dating of the site

The site was occupied for many centuries. The oldest of them is the ancient Babylon period to time of the Islamic. The fortification is dated to the Neo-Assyrian period. The site used different names depending on periods of residence among others (Talbos) during the

reign of King Hammurabi (Telbish, Telma) to the time of the reign of King Tukulti-Ninurta II (Talbis, Thlutha and Sur) in the Islamic times (Jasem and Almajyd 1983:170).

Construction details

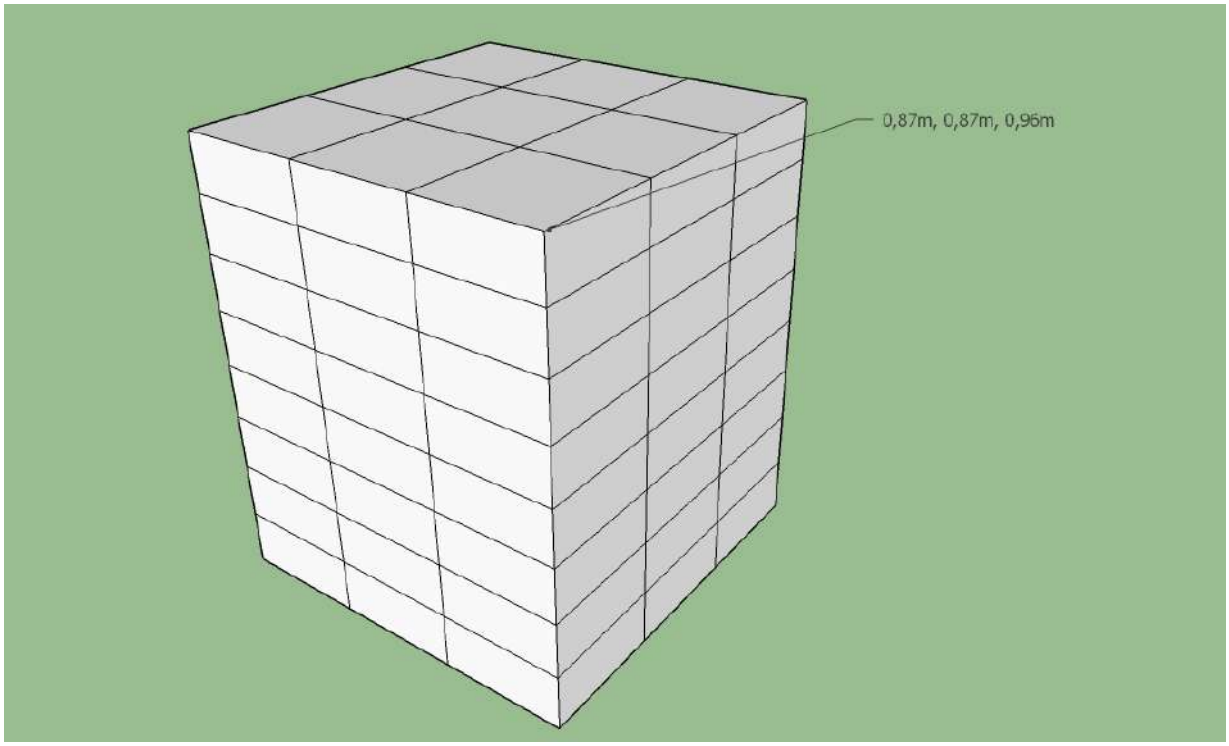
A piece of the foundation wall was founded with a depth of between 2.8 and 3 m build of stone I various shapes and clay which was used as the material for connection to the stones. Wall combined with the square of the palace from the west (fig. 55) and attracts a zigzag along the eastern side of the palace (fig. 56).

Fortifications length of 71 m width of 2 m and a depth of 3 m reinforced by four buttresses build of stone with dimensions of 3.5 x 2m. After observing the fortifications on the length of 71 m materials fortifications buildings are changing with stones on a regular mudbrick (not hard) on a stone foundation with dimensions 29 x 29 x 10 cm, this change reaches a length of 170 has a width of 2 m, height of 2,3m. Before the wall is a moat connected with the Euphrates river from the south and surrounds the entire site, ad also it has been built free-standing shaft (embankment) of the excavated soil. It seems to me that the embankment and natural hills on the northern station served as the escarpment, about this site I found one article with overall description.

Gates

The fortifications which was discovered on the eastern side, have not found any gates. But if we were looking at a plan site, we would have observed traces of the gates 4.2 m of them located on the eastern side of the station and another 2 gates on the west side of the site.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

29x29x10cm = 72 the amount of brick.

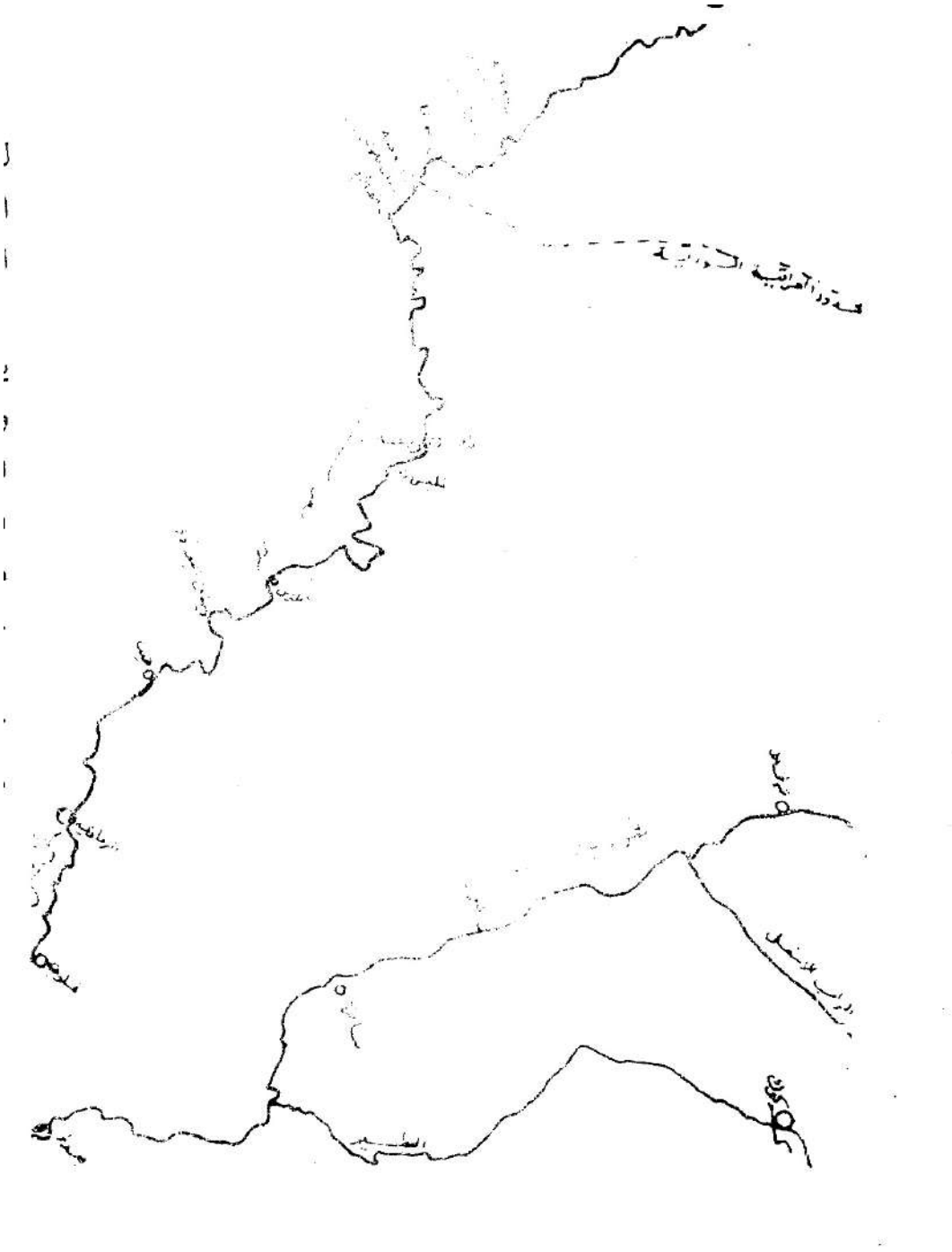
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

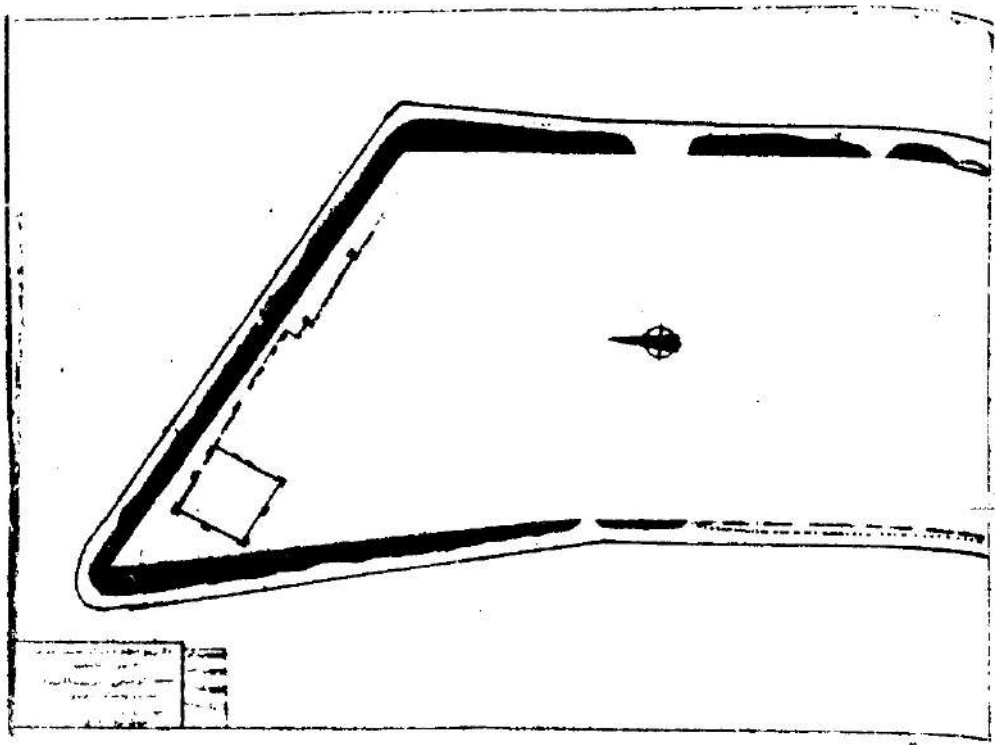
72x 4= 288 minut

288÷ 60 minut= 04:40

04:40 ÷ 3= 01:34 hours of work needed to build m3.

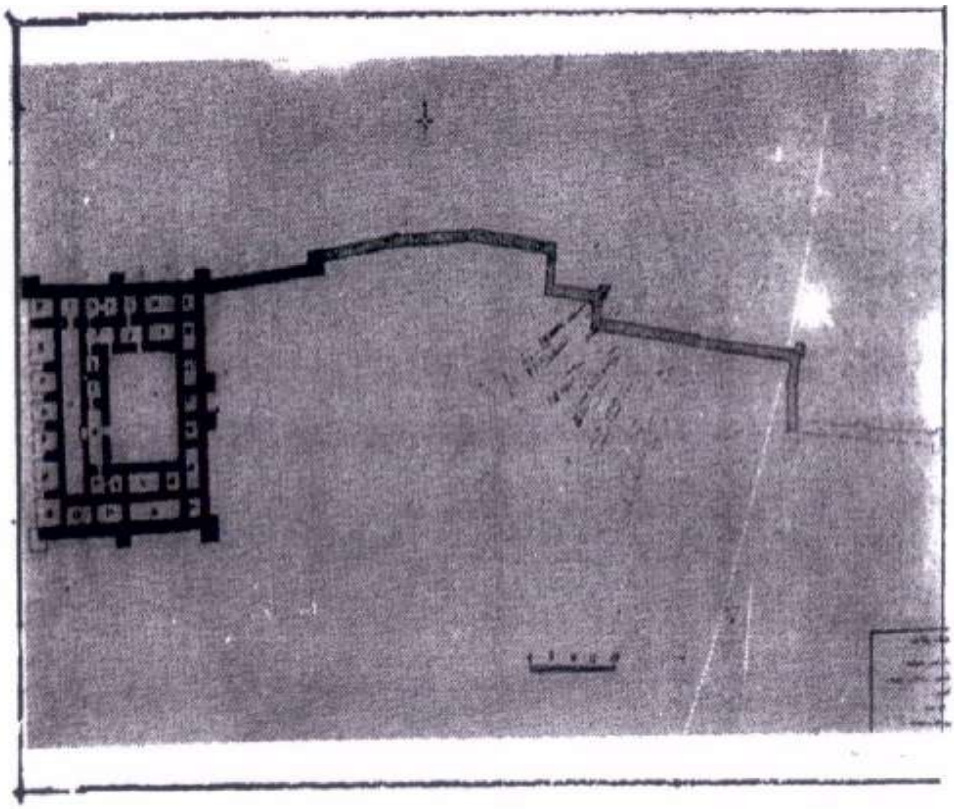


(Fig. 54) Site's location map (Jasem and Almajyd 1983: 170)



(Pl. 37) Plan of site (Jasem and Almajyd 1983: 170)

(Fig. 55) Along the zigzag wall (Jasem and Abd Almajyd 1983: 170)



(Fig. 56) Fortifications combined with the building
(Jasem and Abd Almajyd 1983: 170)

CONCLUSION

When we reach a conclusion of two middle Assyrian cities Assur (Qal'at Sarqat) and Kar-Tukulti-Ninurta (Tulul al-Aqr), the differences are apparent, especially in terms of spatial planning. In the case of Assur, the cities layout came as a result of the topographical conditions.

Furthermore, the city had almost a thousand year history, and therefore its appearance can be considered successful and planned. In the case of Kar-Tukulti-Ninurta, located on flat terrain, the city has a quadrangular plan. Unfortunately, now, we do not know too much, for example, the dynamics of the city, structural changes and possible safeguards, and therefore it is difficult to say how strongly the shape of

the terrain has affected its layout. The relationship with the Tigris river clearly emerges, whose banks in Kar-Tukulti-Ninurta were developed for the needs of the official district. In this case, you can see the convergence of Assur, where the temples and palaces were built in the eastern and northern parts of the city, near the water. Currently, there is no information about the former existence of a wharf in Kar-Tukulti-Ninurta, and which was found in Assur. In this case, there is nothing to confirm that this area was separated from the rest of the city (Andrae 1913: 102). As for the citadel, it is remarkable to note that it does not have its own fortifications that would have separated it from the rest of the city. In the case of Kar-Tukulti-Ninurta, it could be defined as a "pseudo-citadel", because despite the extra fortifications, the citadel is not much higher than the rest of the buildings.

In Assur no remains of fortifications have been found so far that would allow a direct comparison with Kar-Tukulti-Ninurta. It is worth noting that in the second of them a regular defense system consisting of towers was observed. The construction of a gate with an elongated room with secured passages indicates a planned and controlled passage. We can speculate that it was most probably entrusted to the guards who kept guard on the walls and the bulwark. The absence of documented external fortifications at Assur at present, in contrast to Kar-Tukulti-Ninurta, adds weight to the strong impression of the defensive foundations discovered there.

When we are analyzing the Assyrian headquarters in the Neo-Assyrian period (Assur (Qala'at Sarqat), Kalhu, (Nimrud), Dur-Sharrukin (Horsabad), Nineveh), the common characteristic is clearly visualized, and thus their relation to the spatial planning of the place. Excluding ancient Assur, which has developed under certain topographical conditions, all headquarters tend to have a quadrangular arrangement. This would indicates the existence of tension between the

architectural ideal of a quadrangular city and the limitations caused by specific local conditions. The nearest to the ideal is Dur-Sharrukin with its almost square base. Niniveh reflects the greatest difference from the ideal form with its long, twisted wall in the east. However, even in this case you can see the preferred motive in the simplicity of the northern and southern faces of wall, as well as the almost straight eastern wall and the appropriate corner between the north and west walls. The other elements have been revealed as time passes, namely, two citadels. Kalhu originally had only a single citadel, placed on the former Tell before the construction of *ekal māšarti* in the south-east corner of the city by Salmanasar III. In Dur-Sharrukin, two contrasting citadels originated from the cities origin and it is in this example that, for the first time, the city walls were built around these (Stronach: 310). During the construction of Niniveh, this concept, as well as the idea of two citadels, was recognized by Sennacherib, so that the course of the western wall was made dependent on both hills. Another common feature is the proximity of the Tigris river, a phenomenon considered to be beneficial, as evidenced already in Assur. Only Dur-Sharrukin deviates from this pattern. In this case, no other water source was found that would replace the Tigris. The city is located on an open plain. The others, however, have at least one side of the city bordered by running water, which was not only established for defensive reasons, but also for the purpose of communication by water routes. This is indicated by the presence of water walls, as in Assur or in Kalḫu, which were located near the citadel. In Niniveh, the presence of such a wall is not certain, but there is a convergence with Kalḫu, because the citadels are on the side of the city bordered by water. The same applies to Assur, though not entirely, because the temples and palaces found there, in the riverside districts of the city, have remained since the Middle Assyrian period, and probably much earlier. Of course, apart from the project, other factors would have been crucial here. Ultimately, most of the settlements established in proximity to water supply are close to the

river's path, which ultimately is responsible for the formation of the embankment. Since they already existed at the time of the construction of the Neo-Assyrian cities, it was natural to use them because of their defensive and representative value, both being crucial from the point of view of the citadel's populace. In addition, in both cases, the remains of temples and palaces can be identified. However, one should not forget about the middle Assyrian Kar-Tukulti-Ninurta, whose official district near the water was neither the oldest nor the Tellest one.

Considering the fortifications themselves, it is possible to observe some similarities and assumptions. The main common feature is the presence of a strong wall made from mudbrick, provided with regular and extended quadrangular towers located at regular intervals. Such walls were discovered in Assur, Nimrud and Dur-Sharrukin. Also, in Niniveh such a wall is at the core of the fortifications. An exceptional feature of Assyrian architecture is the introduction of a second internal wall Suring reign of Salmanasar III.

Of course, this second wall did not play a great role, because it was quickly demolished due to the narrowness inside the fortifications, and its location was subject to rapid development. Perhaps in Assur it developed as an alternative to the second, independent wall, which was discovered in the top of the bulwark not only here, but also a bit later in Niniveh. On the one hand, such a construction provided the opportunity to site two groups of archers, located on two gelding close to each other, which ultimately enabled continuous fire. On the other hand, such fortifications provided less of a defensive line as the previous Inner Wall in Assur. Despite the similarities between these systems, there are some differences between them. The shooting holes in the Lower Wall in some parts of the fortifications in Assur appear to be compensating for other possible defensive deficiencies. In contrast, in Niniveh, the Lower Wall, completely made of stones, was equipped with

defensive towers. However, passageways located on the west side and most of the exposed sections of the gates show the possibility of firing weapons. However, it should be noted that from the tower with a 1.15-1.25 m cornice, equipped with a half-meter balustrade firing could be carried out by one shooter, which puts into question the defensive value of such assumptions.

The gates, despite their diverse designs resulting from many local factors, are characterized by a certain similarity. There was always at least one room in them, a passer-by and two gates. Usually there were one or two staircases in neighboring rooms, accessible from the gate's chamber. Variable features include the stairs at the walls, as at the West gate of Assur or the stairs inside the Fort Salmanasar. Other common features included two towers about the gates as means of fortification. Deviations from this standard were noted only at the gates Šamaš and Ḫalzi in Nineveh. Alternatively, you can assign the Nergal Gate to this type. Both gates were perfect bastions that went far beyond the wall line, had a central entrance and a large courtyard located at the first entrance. The gate of Ḫalzi, unfortunately, has not been completely examined, and despite the lack of information about the gate of Šamaš, there was a large courtyard with two chambers. It would be a fair assumption to assume that the first of them, also had a similar layout. The gates also usually had a second gate in the second room, as well as branches from the courtyard that went in different directions. Such a system can be seen as fortification of the gate. Without this construction, they would be weaker than conventional buildings, due to the poor cover of the passage, and the larger space would provide more places for the attackers. The narrowness of gates should therefore be taken as an important security feature. Perhaps for this purpose the gates were also used to achieve a visual effect like that of the advanced terraces of the citadel.

If we were to observe some of the Assyrian cities located in Syria, Tell Barsip/Kar-Salmanasar (Tell Al-Ahmar), Hadatu (Arslan Tas), Dur-Katlimmu (Tell Shajch Hamad), they are based on different concepts. While the extremely important Dur-Katlimmu Tell, located near the river and consisting of a quadrangular lower city, corresponds structurally with other royal residences, the other cities do not correspond to this model. Geometric tendencies have been discovered in both, but they take the form of a circle in Hadatu, and in Kar-Salmanasar, a semicircle. The first palace is in the city center, and not, as in the case of other Assyrian cities, on the outskirts.

In Kar-Salmanasar the citadel is located both in the center and on the edge, due to the semi-circular shape of the center, which resulted from the course of the river. In this case, the semicircular shape of the city with the citadel may have resulted from the fact that the second fawn was washed away by the Euphrates, which is indicated by the reservoir *Tišrīn*. It seems highly unlikely. Although topographical issues affected the shape of the walls, spatial planning was carefully employed to ensure that the city was well connected and accessible. Their site in the Assyrian concept, as shown by studies on the layout of the Imperial cities residential cities, allows their listing only in conjunction with other cities in Syria. It remains unknown why this state differed in the provinces, despite most probably having employed the same lineage of builders.

Some differences are clearly visible. One example is the extremely narrow width of the walls in Dur-Katlimmu, which reached only 3 m. The walls of Hadatu are not very strong, despite being 4.1 m thick. Both walls would probably not have withstood attacks. They could not have been particularly high. In my opinion, it is highly doubtful that they reached 10 m in height. The fortified city of Kar-Salmanasar with a wall thickness of 8 m exceeded the thickness of other Assyrian fortifications.

Unfortunately, to this day, its gates have not been sufficiently exposed. In Hadatu and Kar-Salmanasar, the Assyrian gates have passively constructed chambers, usually one, although in Kar-Salamanasar two, which were surrounded by towers. However, some irregularities are visible in the gate of northern Hadatu, especially in the distinctive thickening of the wall, followed by a gate and a unique passage of 6 m. The condition is unfortunately very degraded, but nevertheless allows us to identify the gate and towers. Despite the general similarities, they do not have the characteristics of the Assyrian gates. Neither in Hadatu nor in Kar-Salmanasar were stairs found leading to the walls, which is a permanent element of other Assyrian gates.

CHAPTER 7

BABYLONIAN FORTIFICATIONS IN MESOPOTAMIA

7. BABYLONIAN FORTIFICATIONS IN MESOPOTAMIA

Located in the Babylonian state of southern Mesopotamia we encounter the same problems that we have in northern Mesopotamia, where the amount of material extracted and available is limited, and that in the process of archaeological research of the Mesopotamia areas the fortifications were largely ignored. Nevertheless, those available often come from excavations of the late nineteenth century and early twentieth century, which do not always meet today's requirements especially those analyzed stratigraphically, but also in terms of the accuracy of the archived documents. Some newer excavations have not yet been fully published. Only preliminary reports exist, or even just the briefest of notes, which are also insufficient for analysis.

In the archeological literature from research in Mesopotamia we can find short notes and reports only, which are not enough scientific sources to make a thorough analysis. A set of documented photographs were commonly considered to be credible. What is interesting is that in the analysis we do not research any documentation that comes from excavations. Seldom do we find the publication of accurate results from the research of buildings, for example Assur and Babylon. Illustrations exist of fragmentarily preserved structures. These are insignificant as sources for analysis but can be used as a basis for reconstruction. Illustrations of a fragmentarily preserved structure of small importance for analysis but can be the basis for reconstruction.

In this part of my PhD thesis I'd like to track the systems of fortifications dated within the Assyrian period. I'd like to discuss the

quality and construction methods of fortifications, which are the most important factors regarding their utility in the context of protecting and controlling the people who travelled into and out of the city. It should be noted that the size of the fortifications and architecture of the cities were reflecting perceptions of the economic strength of the civil populace inhabiting the space.

7. 1. AL-RIMAH, TELL

Location of the site

An archaeological site in northern Iraq updated in the Sinjar region of Niniveh Province about 80 km west of Mosul (Oates 1965: 63). Its ancient name could be either Karana or Qattara.

Dimensions of the site

The settlement with a diameter of 600 m (Oates 1967: 70) is more than 100 ha.

History of research

In 1850 the diplomat and archaeeologist Hery Layard visited the site for the first time. In 1938, it was briefly examined by Seton Lloyd. From 1964 to 1971 the excavations were systematically led by David Oates who was the chief excavator on the post and split the post into several directorate-led excavations the head of Dr. David Oates. Juliana Reade, who was deputy director and worked in Area A between 1964, 1967 and 1971, and Dr. John Curtis, who took over Case C in 1971(Postgate et al. 1997: 13-15).

The archaeological excavations led by David Oates in this site were sponsored by the British School of Archeology in Iraq in the 1964-66 seasons, jointly with the University Museum of Philadelphia when T.H. Carter acted on their behalf as deputy director of the excavation.

Fortifications were investigated only in Sector D, in 1965. Archaeological excavations introduced by David Oates could not examine the defensive fortifications to the end by lack of funds, (Dalley et al. 1976: xvi) and indeed I can add that most of the researchers in Mesopotamia in the 19 and 20 centuries did not Site but interested in finding the most archaeological treasures.

Fortifications

The site surrounded by two irregular lines of fortification walls, upper Sagaratum wall and lower wall "(*sulhum elenum*) (Dalley et al. 1976: xvi).

Dating of the site

The date of settlement is according to the central chronology of Mesopotamia, since the reign of Hammurabi the king of Babylon in 1792-1750. The exact dating date is probably 30 years older than the Old-Babylonian (Bronze Age). The Middle Assyrian period dates to approximately the same calendar date. Babylonians date a year, normally with reference to important events of the previous year. Many of these years names contain invaluable historical information. The Assyrians date their chronology in convenience to the numbers used by the known Babylonian kings for clarity and coherence of comparative dating (Postgate, Oates and Oates 1997: 17). For example, in the years between 1775-1760 B.C. Mari and the ties with Rimah are often dated under the rule of Zimri-Lim, the last king of Mari. So according to Charpin and Durand Askur-Addu was certainly the king of Karan for

10-12 years and Hammurabi the king by 29-3. 1 Central Chronology 1764-62 B.C. (Charpin and Durand 1985: 306). Fortifications were created simultaneously with the settlement of the site and dr. Dalley mentioned in his translations to the inscription that the fortifications were built in the 14th or 13th centuries B.C.

The ancient Tell Al-Rimah was also called *Ekallatum*, Isme-Dagana Capital on the Tigris nearby Assur, (AEMV2, letter 432) (Postgate, Oates and Oates 1997: 18).

Construction details

The fortifications consist of irregular polygonal walls surrounding the area of the bench (Pl. 38). The outer wall was examined only at one point on the north side of the city, and the remnants of the fortifications consisted mainly of a dirt-walled, partly covered building in the middle of the second millennium, when the defensive circuit was clearly not maintained. The fortifications are represented by broken debris, but at one time it must be overcome by a brick wall and towers; To this day, surviving cores are standing at a height of more than 6 m. Traces of the outer ditch look like a modern sign of cultivation. Moreover, in the walls are low hills mark irregular buildings arranged around the central teller about 29 feet high and more symmetrical aspect (Postgate et al. 1997: 18).

At the wall in the north and east (Fig. 57), there is a low in the ground filled with rainwater in winter and spring, and in my opinion this place and its location right next to the earthen dam represent the moat.

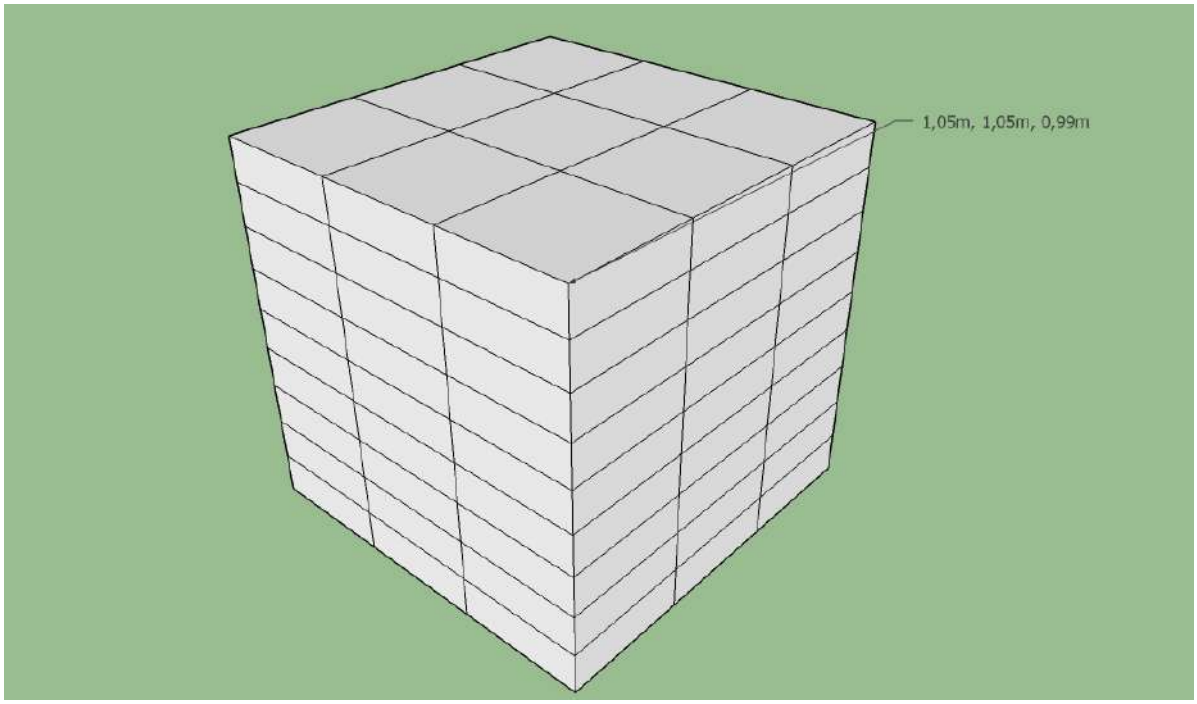
Unfortunately, I could not find more information about the fortifications in this site beause the fortifications of the have not been completely explored. So, we can not elaborate on the description, which

is mentioned by Dr. Dalley (ARM VI 29), except for the confirmation of the existence of the main durum (*durum*), as well as the evidence of the dignity of the outer ditch. Surface excavation did not reveal the exterior of the fortification outside the ditch, and one may wonder whether the sulhum of this text is rather a brick superstructure rather than an outer enclosure. In ARM II 101 a Fragment of the Sagaratum wall, which has fallen, is further referred to as the "upper wall" (*sulhum elenum*) and is said to require a specialized constructor to repair it, suggesting that it is of brick construction (Dalley et al. 1976: 8).

Gates

The probable site of one gate is marked by a slight double bump in the eastern wall, and another can be identified for re-entry to the northern wall (Postgate et al. 1997: 18).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- Mudbrick 35x35x9 cm (Al-Temimi 1982: 281) = 81the amount of brick

-When using 3 workers to build

- 4 minutes time is needed to build one brick.

81x 4= 324

324÷ 60 minut= 05:30

05:30÷ 3= 01:50 hours of work needed to build m3.

(Pl. 38) Plan of Tell Al Rimah, with contours at 1.0 m intervals

(Postgate et al. 1997: 17)

(Fig. 57) The Rimah wadi in spate, outside the north-east town wall, April 1971. (Postgate et al. 1997: 87)

7. 2. AL-ZAWIYAH, TELL

Location of the site

Located in Al-Zawiyah village in the Al-Saydia municipality, the Khanaqin province on the corner of which was created by the Diyali river movement, the site surrounded from the north and east by the rivers and from the west by the village of Al-Zawiyah and in the south is the agricultural land. The bench was destroyed by the riverbank and sunk by a flood.

The Al-Zawiyah site was so called because of its close location from the village of Al-Zawiyah and called by locals as Thell Khuder Alyas.

Dimensions of the site

We can not determine the exact dimensions and appearance of the site because the area is destroyed from all sides by agricultural work and floods that took place.

The remnants of the site that was successfully measured are 9000 m², 5.5 m above sea level (Alrawy 1979: 444).

History of research

The archaeological study was from June 1977 to April 1978 organized by the National Museum of Baghdad under the direction of Alrawa.

Fortifications

It is presumed that the post was surrounded by a huge wall and the remains of the fortifications on the east side were found.

Dating of the site

The site is dated from the Babylonian period to the Muslim period, and the area has been abandoned many times because of the flood.

Fortifications which are my subject of doctoral work are dated to the Old-Babylonian period.

Construction details

Fortifications (Pl. 39) in the east side consists of three connected

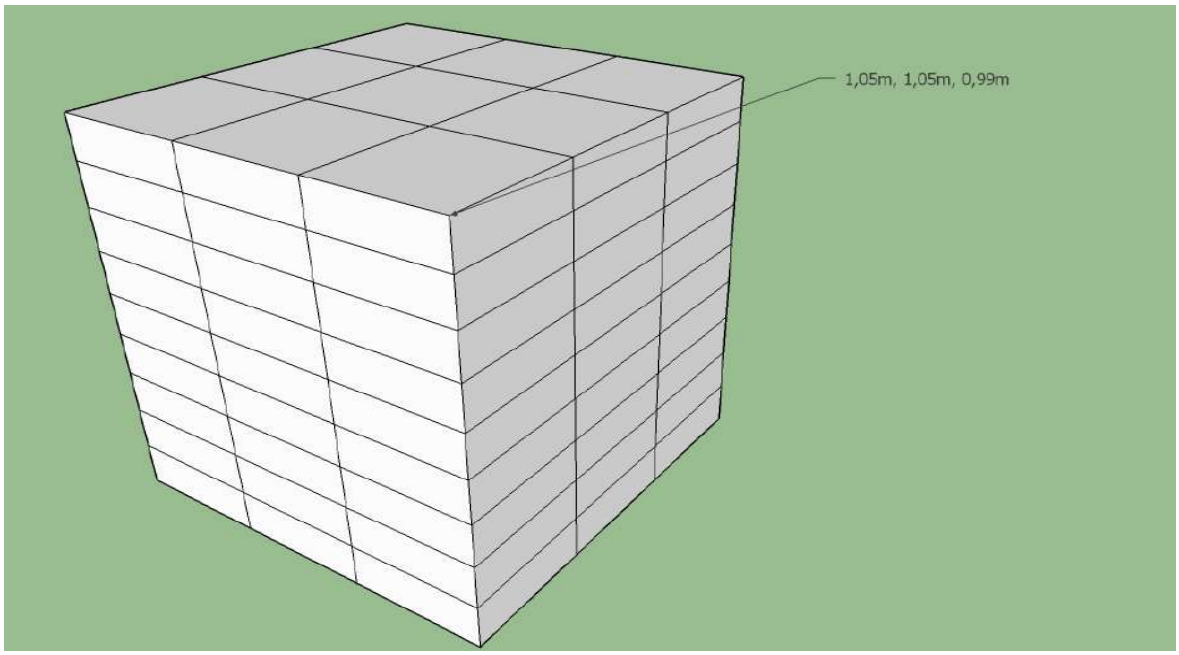
walls made of brick 35 x 35 x 9 cm, walls 4.5 m wide, the first of them is 2.20 m, wide and the road is very damaged and failed to measure and the third wall (outer) It is reinforced with small buttocks measuring 90 x 30 cm.

The external fortifications are older than the rest of the walls, and this fortification was added at various times to protect the site from floods.

Gates

During the excavation, the gate was not found through the damage that had taken place but passed that the gate could be located on the west side.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

35x35x9 cm = 81 brick quantity

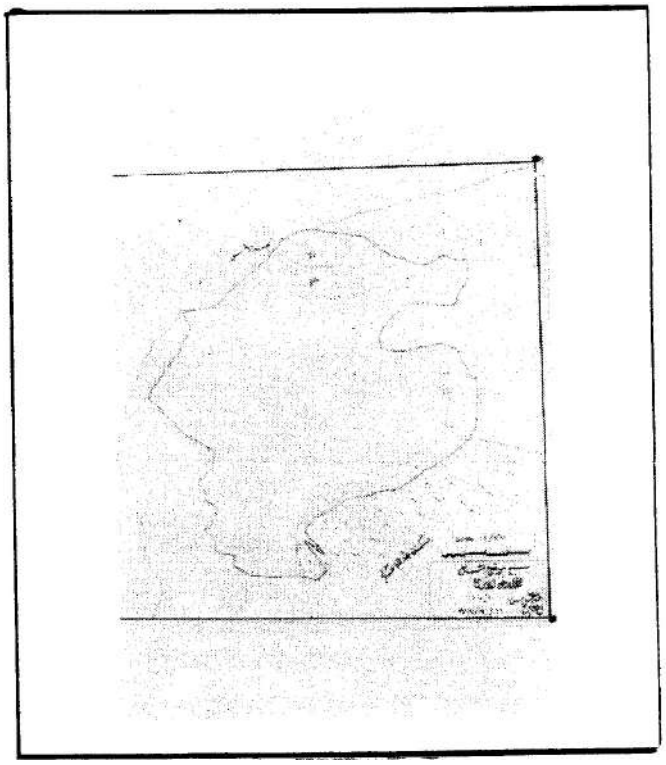
- using 3 workers to build

-4 minutes time is needed to build one brick.

81x 4= 324

324÷ 60 minutes = 05:30

05:30÷ 3= 01:50 hours of work needed to build m3.



(Pl. 39) General plan Tell Al-Zawiyah (Alrawy 1979: 444)

7. 3. KISH TELL UHAIMIR

Location of the site

An extensive ruin in the city of Kish called today's Tell Uhaimir, the called Uhaimir because of the color of his brick which was used in

the construction of the post was red colour. At Ur III was called Hursagkalama (Gibson 1972: 4). It is located between the Tigris and Euphrates rivers, about 100 km south of Baghdad and about 17 km east of Babylon and 10 km from the city Al-Hillah in Iraq. Inscriptions in the ruins say that it was "the first city created after the flood". As the first capital of the Sumers, Kish was the early center of civilization (Langdon 1923-1924: 31).

Dimensions of the site

Kish is an oval area of about 8 x 3 km, cut through the dry former bank of the Euphrates river, covering about 40 cemeteries, the largest being Al-Uhaimir and Ingharra (Pl. 40). The most important posts from Kish are Tell Uhaimir, Tell Ingharra, Tell Khazneh, Tell El-Bender (Moorey 1978: 19-31).

History of research

The first archaeological research at the site of Al-Uhaimir was in 1912 and 1914 brought by the French archaeological team under the direction of Henri de Genouillac (Genouillac 1924-25: v. 1). Another archaeological excavation brought by the Field Museum Oxford University in Kish between 1923-33. In the seasons 1923-26 excavations carried out under director Ernest Mackay. Later research was conducted by L. C. Watelin, director of excavations in 1926-33 (Gibson 1972: 11, No. 2). In 1933 another archaeological excavation of the American Institute conducted excavations of Persian art and archeology under the direction of Arthur Upham Pope, New York. The explored Sassanian levels were cleared with excellent architectural results. In 1966, Kish's surface excavations were part of a larger Iraqi project run by the Directorate General for Antiquities and the Oriental Institute, which was attended by Ghanim Wahid and McGuire Gibson. Between November 1966 and March 1967, another surface excavation

led by M. Gibson, funded by the Oriental Institute of Chicago (Gibson 1972: xi). Japon excavations at Kish began in November 1988 to February 1989, under the supervision of the President of the Kokushikan University. Hideo Fujii (Matsumoto 1991: 261). Another excavation season was held in November 2000, run by the University of Kokushikan under Ken Matsumoto (2002: 1). The third season of the excavation of the University of Kokushikan was held in September 2001 under Ken Matsumoto (2004: 1).

Fortifications

The city is surrounded by powerful defensive walls, and fortifications surround Temenos in Tell Uhaimir.

Dating of the site

The town of Kish was settled from the 3100 millennium B.C. of the period of Jemdet Nasr period to the Hellenistic period. Temenos fortifications are dated to the Babylonian period (Moorey 1978: 27).

Construction details

As a result of the plot (Pl. 41), the walls of the fort are surrounded by the whole of Kish, but none of the area investigators mentioned the discovery of the fortifications of the city, nor did they provide information about them, while Moorey and Gibson provided information on the Temenos fortification.

Temenos

The south-east wall found more than 9 m long build of mudbrick. Assembled on the inner side of the clamps. Mackay's revised plan, corrected by Langdon (Ill. 3), shows no clues on the inner wall of Temenos, but in my opinion the photographs show the buttresses

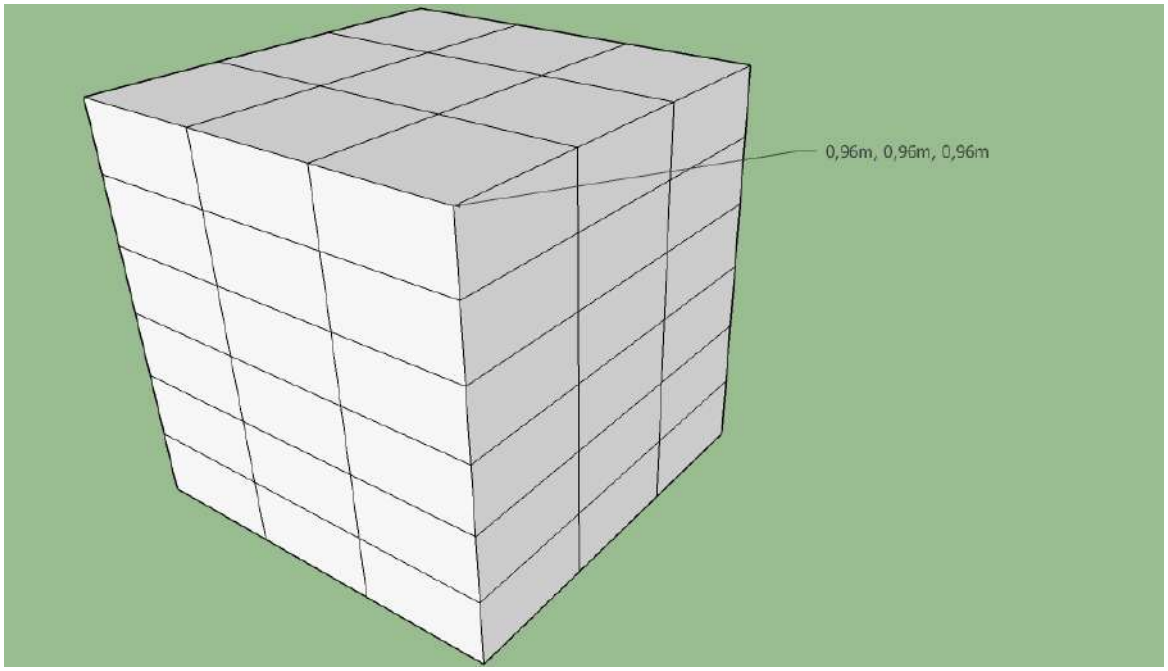
clearly (Pl. 42) constructed of mudbrick 32 x 32 x 13-14 cm. Buttress recesses are 35 cm. Shown at regular intervals dated Nabuchodonosor. Two bricks has been found since Nabuchodonosor (Gibson 1972: 73). The corridor between the ziggurat and the Temenos wall measures approximately 3.50 m.

In the north-eastern part of the ziggurat, the walls of Temenos were constructed of flat-convex bricks measuring 24-25 x 16-18 x 7-8 cm. Registered in Samsuiluna and covered by Neo-Babylonian mudbrick (Gibson 1972: 74).

Gates

From the plan of the Temenos fortification, I assume that the exterior door is updated on the plan in place of VIII, but at the same time I can say that there is a very possible way of the gate and must appear on the opposite side of Temenos.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

32 x 32 x 14 cm= 54 the amount of brick.

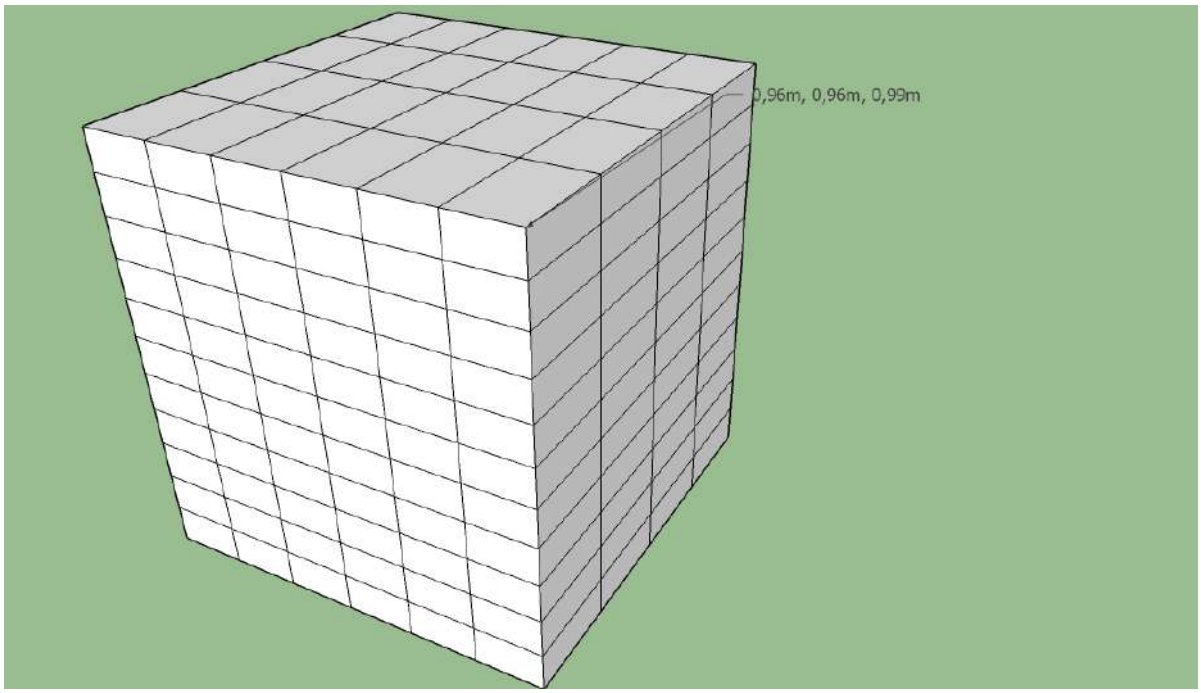
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

54x 4= 216

216 ÷ 60 minut= 03:35

03:35 ÷ 3= 01:12 hours of work needed to build m3.



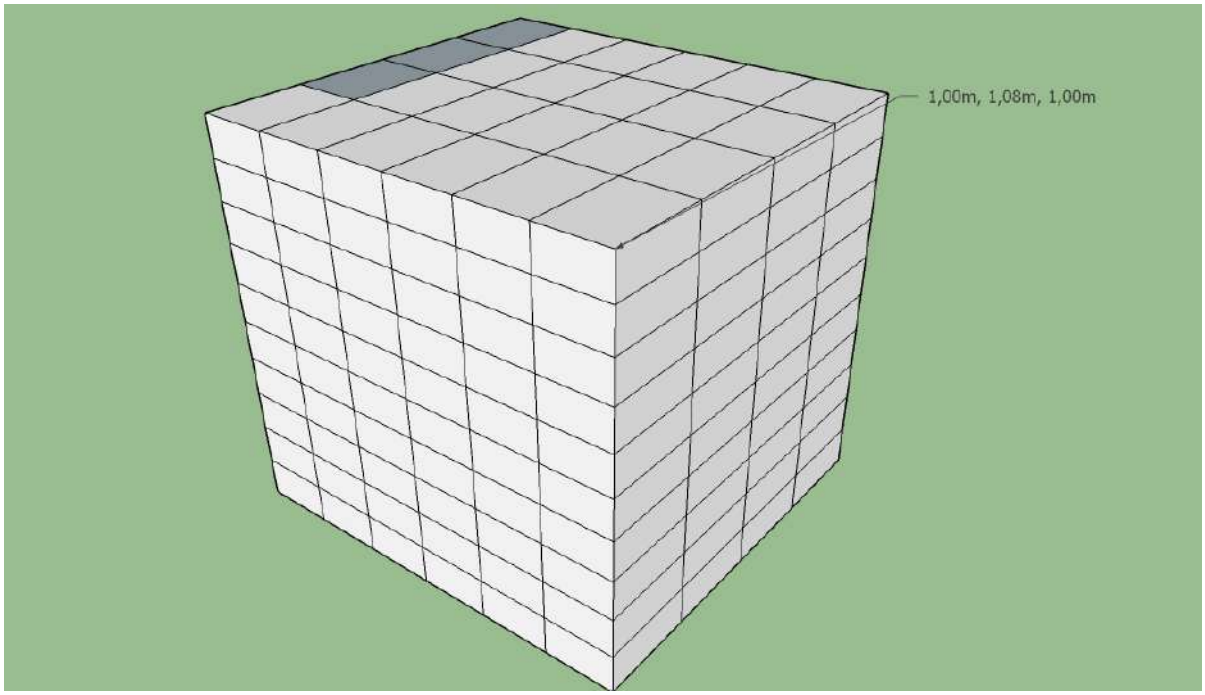
- Aflat-convex brick.

1) 24 x 16 x 7 cm= 264 the amount of brick.

264x 4= 1056

1056÷ 60 minut= 17:38

17:38 ÷ 3= 05:52 hours of work needed to build m3.

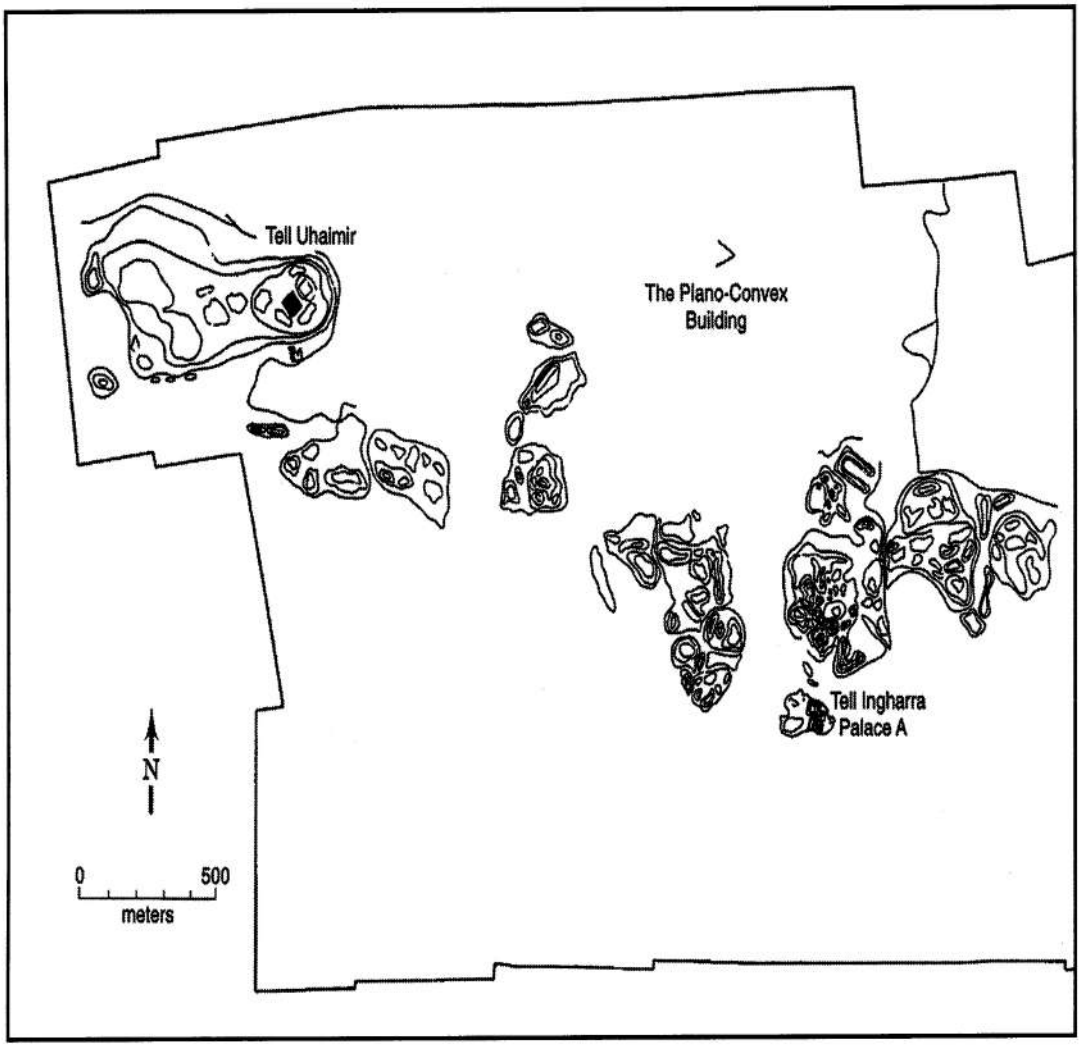


2) 25 x 18 x 8 cm=240 the amount of brick.

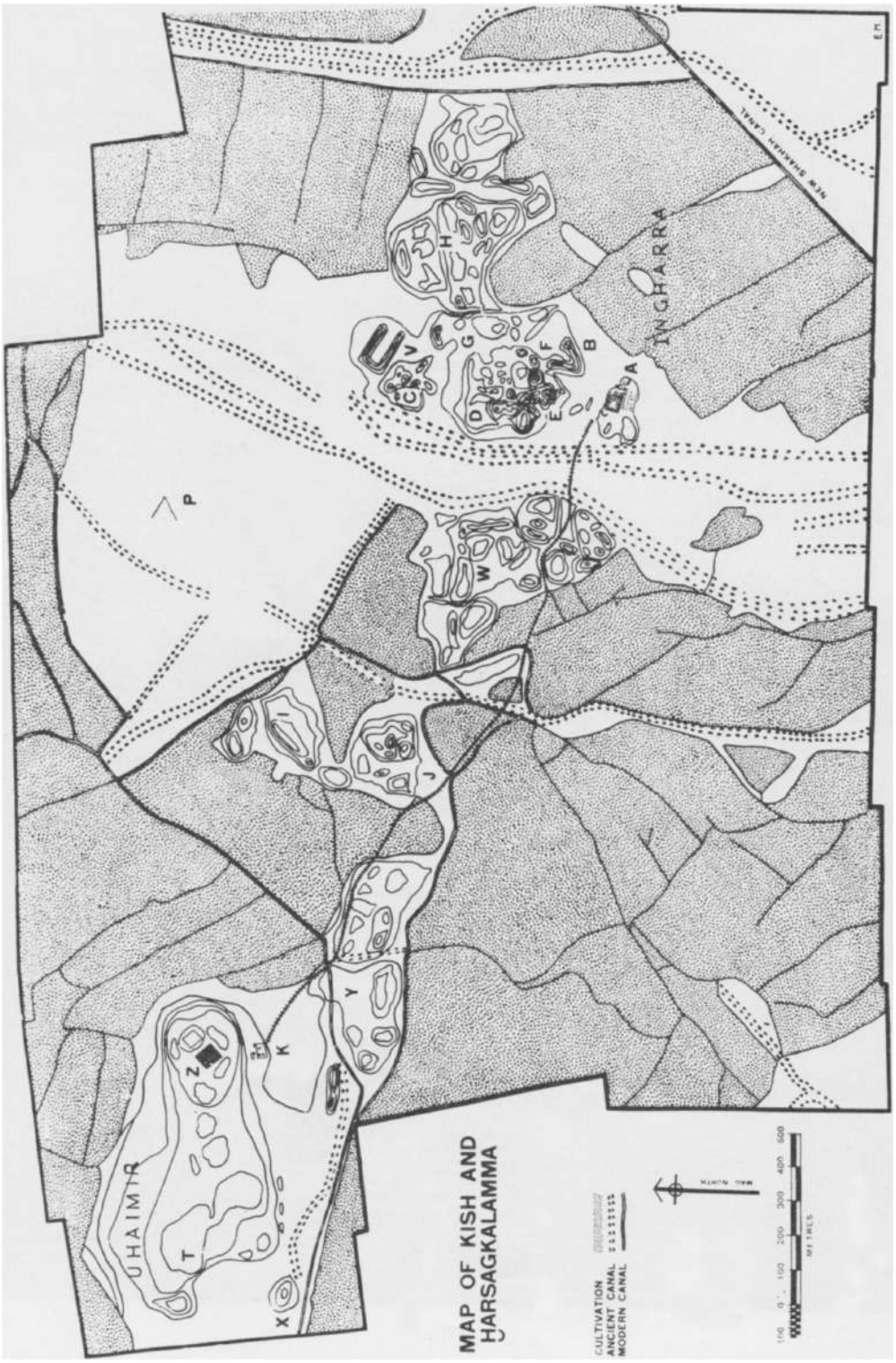
240x4=960

960÷ 60 minut= 16:00

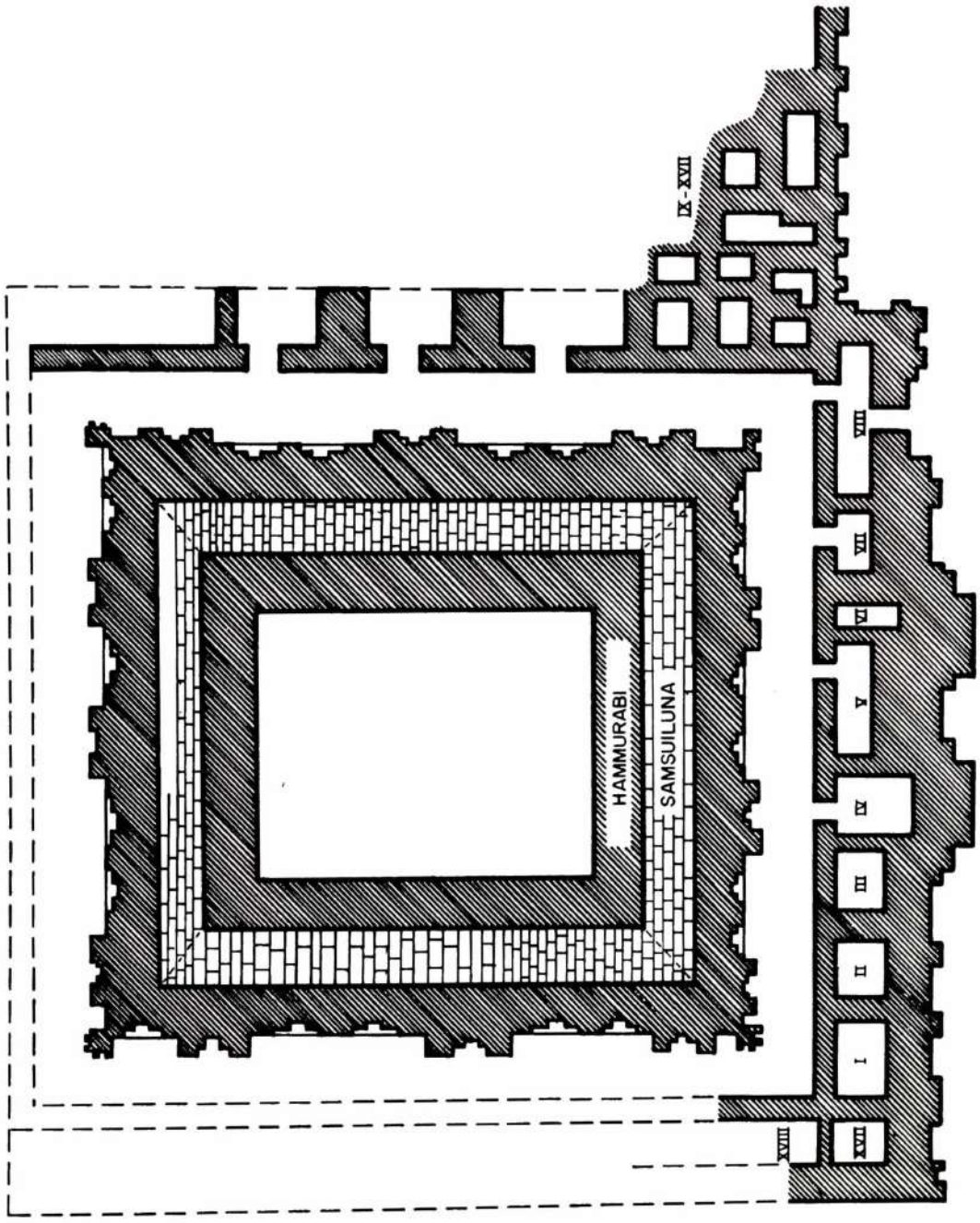
16:00 ÷ 3= 05:20 hours of work needed to build m3.



(Pl. 40) The plan shows the cradle in the town of Kish (Moorey 1978: 14)



(Pl. 41) General plan for the city of Kish (Matsumoto 2002: 2)



(Pl. 42) Temenos (Moorey 1978: 14)

7. 4. ME-TURAN CITIES (TELL AL-SIB)

Location of the site

The location is one of the most famous archaeological sites located in Himrin Dam at 15 km west of Jelaula province to the west of the Diyala river. It is located on a flat plain where most of the residential architecture has been built for the site (Al-Najafi 1989: 64) (Fig. 58).

Dimensions of the site

The site is severely damaged from the three sides north, south and west, because of agricultural work and the addition of residents their homes to the post and the remnants of the land after the destruction of 58 x 62 m. moreover, the height has 1-3 m. (Hnoun 1979: 433).

History of research

Three excavation seasons were conducted by the Iraqi archaeological mission first under the leadership of Al-Najfi Hazim from November 1977 to August 1978, three archaeological layers were separated and the third most important layer dating back to the Old-Babylonian period from which the fortifications are exited. The second season was under the control of Hanoun Nael in February 1979 where a fourth archaeological layer and a cemetery called Tell Al-Sib2 was discovered. The last season was under the direction of Shaker Bourhan.

Fortifications

The wall is in the north-eastern side and runs south to the next

post which is called locally as the Al-Sib cemetery, but unfortunately, we could not continue to observe it because of destroying the location.

Dating of the site

The site and fortifications are dated to the Old-Babylonian period (Al-Najafi 1989: 67), and also on the clay tablets that date back to the Babylonian period since Eshnunna, we can say that the city was used as an administrative center for counting the amount of wheat coming from other towns. The city of Eshnunna and late in the reign of king Dadusha used as a place of study (school). It was found in the first season of 389 and in the high season 350 the clay tablet from the days of Old Babylon, written in economic, administrative and humanistic terms, and so the school texts (Hnoun 1979: 435).

Al-Sib's new name was named after a popular man by locals living in the area, but the Assyrian name of the post is Me-Turan. The documentation that is available to me will confirm that the cities of Me-Turan were a fortified city, and there are no remains in the Tell Al-Sib archaeological excavations that the fort was fortified during the Neo-Assyrian period, so it seems to me that Tell Al-Sib it is not a city. Me-Turan and possible that the town of Me-Turan is under Tell Bardan which is very close to Tell Al-Sib, thanks to the placard of the Royal text that was found in the post Hadad (Rashid 1981: 72).

Construction details

Site surrounded by the fortification system, but because of the destruction of the city walls were discovered only on the north-east side of the post and runs south to the next hill called Al-Sib cemetery and the late footprints of the fortifications disappear by agricultural work on the area (Al-Najafi 1989: 67).

The fort is build of brick and clay with a thickness of 3.5 m. The

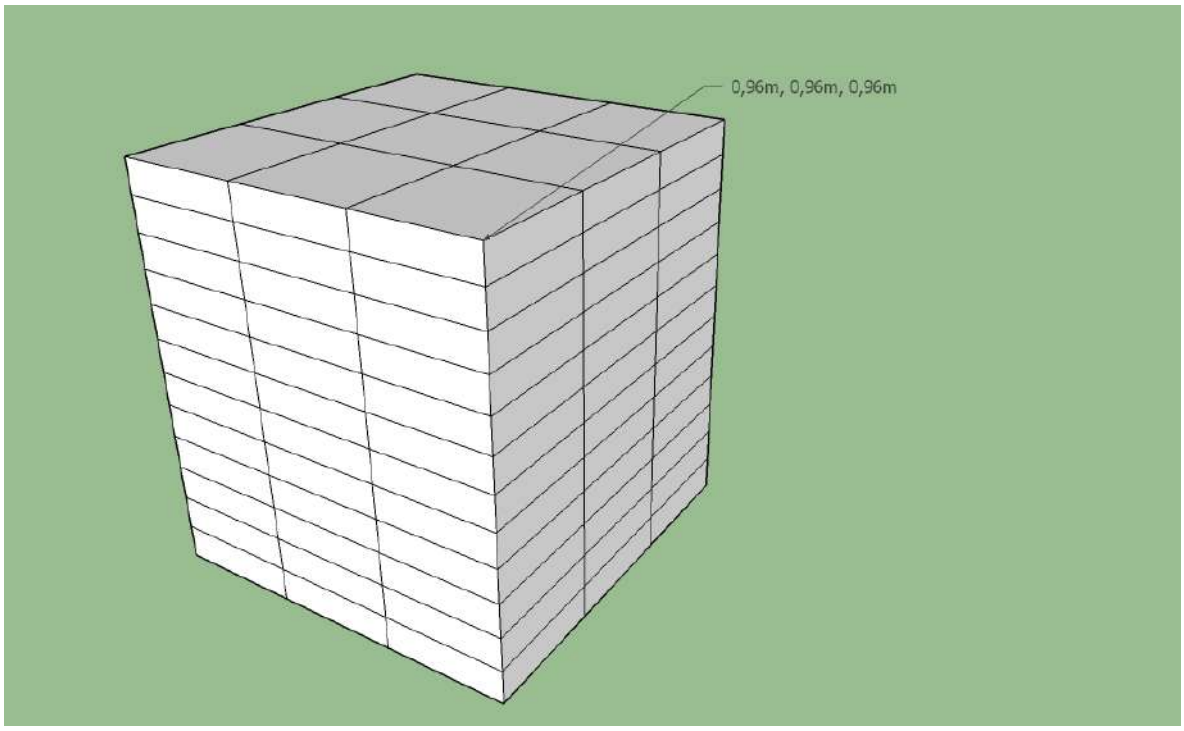
wall runs on the east side, reinforced from the outside with one larger clamp having a length of 8 m and exits from the outer wall by 70 cm forward (Pl. 43) as well as the slopes surrounded by fortifications. It consisted of a covered layer of gravel from the north-eastern side, to protect the fortification from the humidity of water running in the moat right next to the station.

The permeable moat was connected to a river near Tell Al-Sib had two functions to protect the city and the other was to provide water to the city (fig. 59), and the moat was built of different size stones (32 x 32 x 6 cm, 34 x 34 x 5, 38 x 38 x 8 cm and 40 x 40 x 8 cm). We are able to find out the differences in the size of the stone that the moat was built many times or was staggered to the beginning of its laying as a moat to protect the city and later to build and connect with the river to provide water to its inhabitants, has a width varying from 1.5 m in the northern side to 1.16 m in the north-east side was observed at 7.3 m long, and we was not able to watch it later, because of the damage of the location.

Gates

Because of the destruction that took place on the location, no gate was assigned.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1)32x32x6 cm=90 the amount of brick.

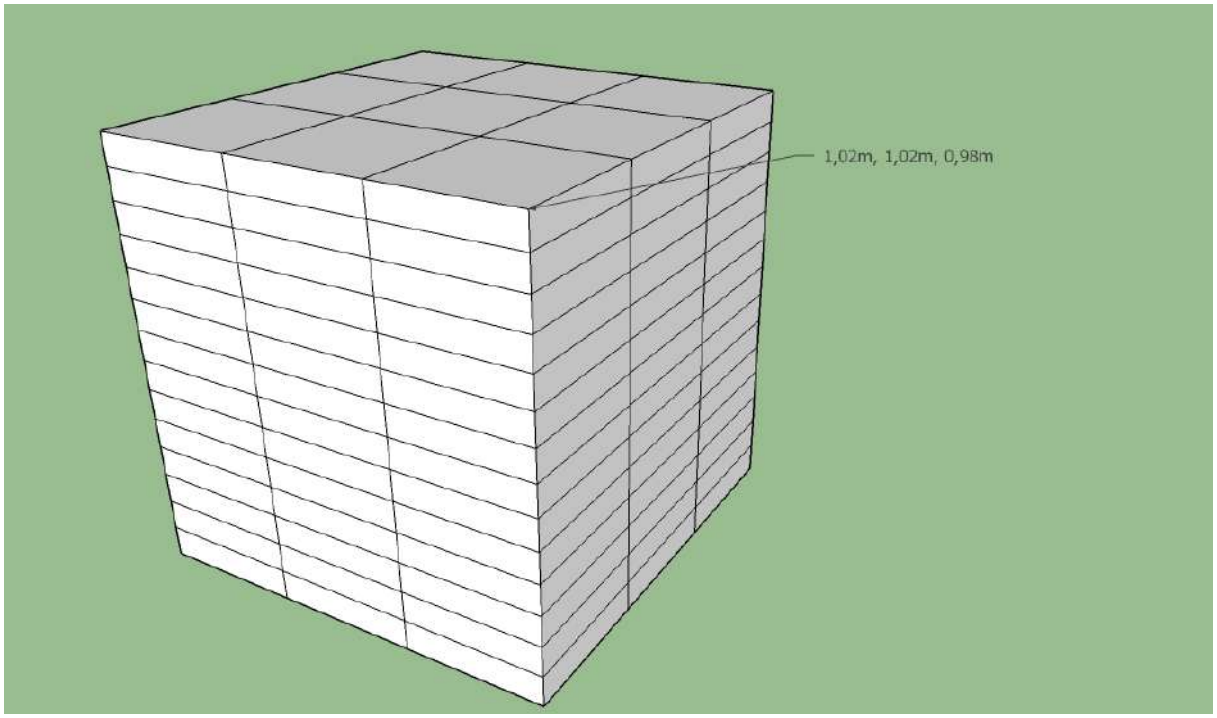
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.

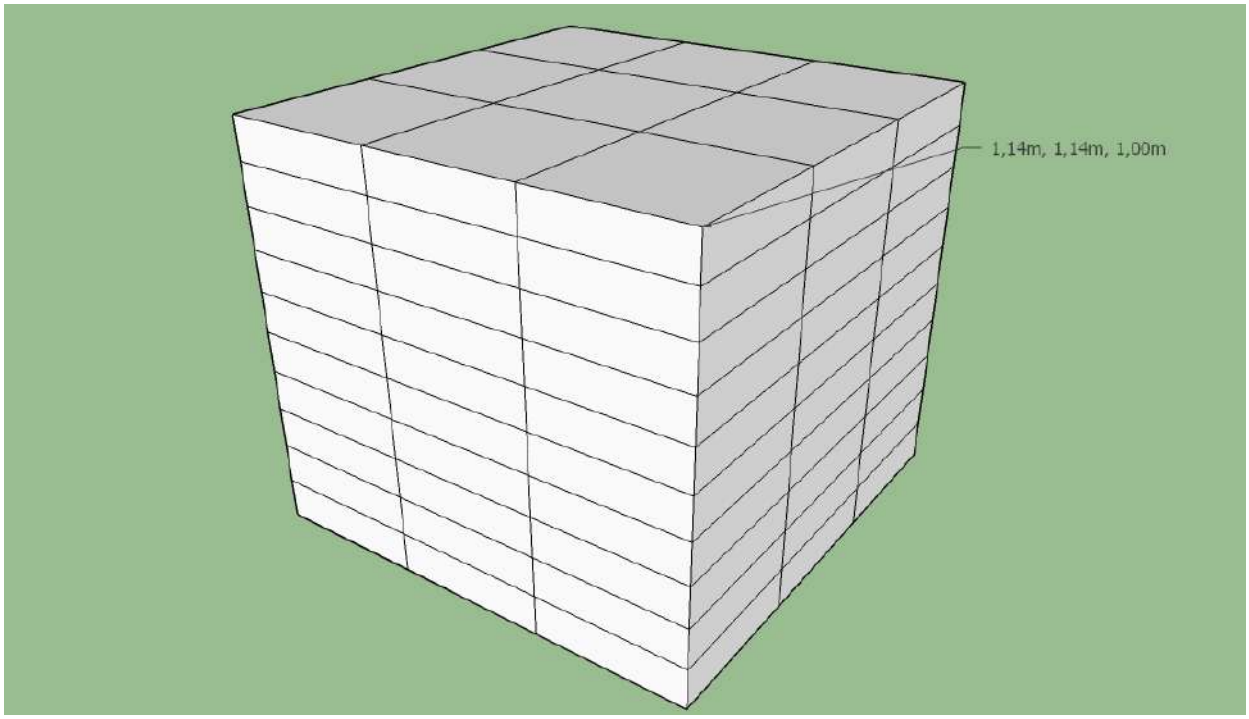


2) 34x34x5cm=126 the amount of brick.

126x 4= 504

504÷ 60 minut= 08:25

08:25 ÷3= 02:48 hours of work needed to build m3.

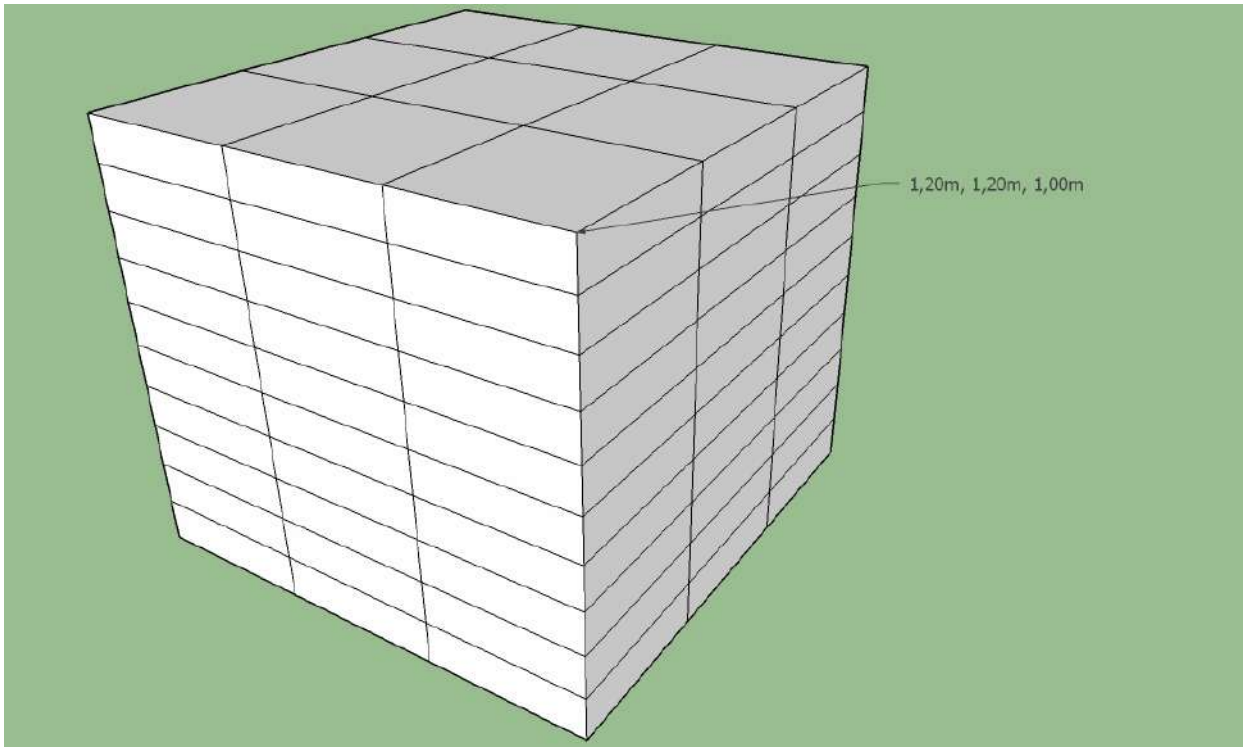


3) 38x38x8 cm =90 the amount of brick.

90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.



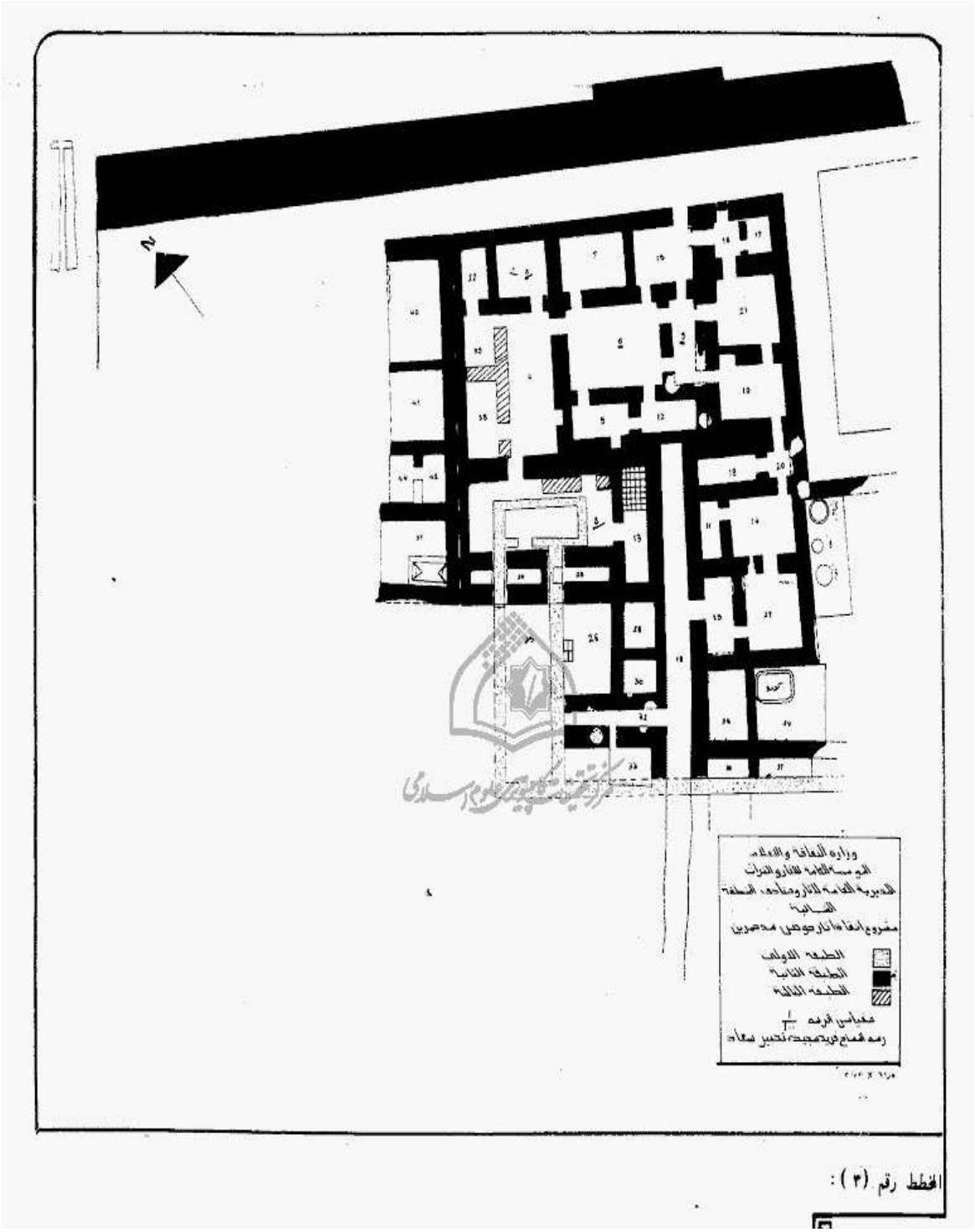
4) 40x40x8 cm= 90 the amount of brick.

90x 4= 360

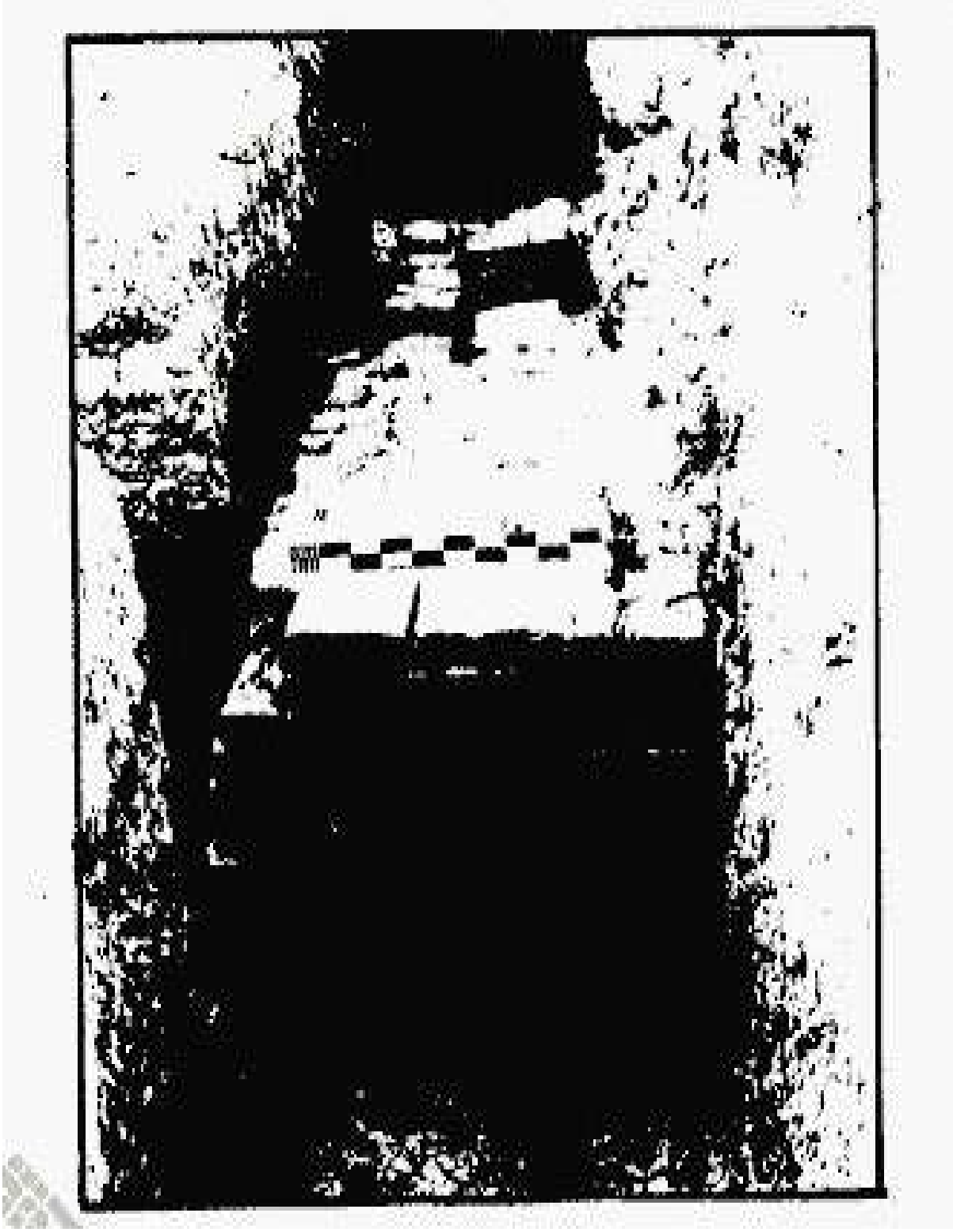
360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.

(Fig. 58) The photo shows the site (Al-Najfi 1989: 67)



(Pl. 59) Site plan of assessment for the North (Al-Najfi 1989: 68)



(Fig. 59) Moat (Al-Najfi 1989: 69)

7. 5. SIPPAR, TELL ABU HABBA

Location of the site

An ancient city in northern Babylonia, located on the eastern bank of the Euphrates, about 60 km north of Babylon (Mieroop 1999: 166). Currently, archaeological site Abu Habba in Babil province, Iraq, about 32 km south-west from Baghdad.

Dimensions of the site

Abu Habba occupies an area of about 96 hectares. The shape of the city is almost rectangular (Pl. 44). It consists of two adjacent tells, surrounded by still visible causeway. At the south-western telluride, a religious district was discovered with its Ziggurat and temples, while the north-eastern tellur was occupied by a residential quarter.

History of research

It seems that the first plan and brief description of the site were made by W.B. Selby and J.B Bewsher about 1860. Twenty years later, the British Museum's Hormuzd Rassam (1897: 398) centered his research on the temple district around the Ziggurat, where he discovered over 150 rooms and many large courtyards. North-east of the Ziggurat, Rassam discovered part of Šamaš's temple and some of his neighboring buildings and found over 70,000 written tablets (Salih 1987: 153). In eighteen excavations that were led by Rassam surrounding him with many ambiguities and non-scientific improvisations. Rassam has worked in seven archaeological sites in Iraq. The Rassam excavation at Sippar (Tell Abou Habbah) was run by residents who lived on the post and was also financed by the British Museum I had to be allowed by the Ottoman Empire to find as many

archaeological sites as possible and carry them from Iraq. Rassam did not keep any records of those jobs he worked on except for some general remarks that were not helpful in any way. Moreover, also drew six archaeological maps, recovered the British museum only one map for Abou Habbah posts and very little of the clay tablets mentioned Walker in his book. That he saw 3584 clay tablets inscribed in the British museum as found from Sippar. Moreover, Hilprecht's tapes declare in his book the findings in Sippar and his eyelid of about 150,000 clay tablets and more than 30000 archaeological remains (statues, roast) (Walker and Collon 1980: 97. Hilprecht 1903: 226-227, Rassam 1897: 399, Al-Jadir and Abdullah. 1983: 98, Barnett 1950: 3, and notes). For that I think we should not take what Rassam wrote because he did not examine the site of archaeological research and his work was only to find as many archaeological monuments and show them to a special or well-known place, and also from the 7000 clay tablets did not describe. Later on by Walter Andrae and Julius Jordan considered a temple of Ajja, the wife of Šamaš. Other researchers who visited this post were W.H. Ward, the first to distinguish Sippar from Sippar-Amnanum, but wrongly identified the latter with Agade, and Budge, who came here looking for new wedge plates (Hermann and Janssen 1997: 47-48).

Between January and April 1894, Vincent Scheil. French priest got permission from Bay Hamdi director of the excavations and museums of the Ottoman to discover all the archaeological sites under condition to split Hamdiem with all the monuments found by Scheil (Al-Jadir and Abdullah 1983: 99). In collaboration with Bedry Bey of the Constantinople Museum, led the work. To the north of the Ziggurat, Scheil discovered a number of houses, and in one of them a text mentioning a priestess (*nadītum*) of the Shamas god named Aruba. It was in this area almost a century later that the Iraqi archaeologists discovered a building that was, probably, a "monastery". Scheil, after

judging the results of his work in the temple district for being modest, moved his excavations to a residential area where he discovered several houses, mainly from the Old-Babylonian period. About 30 years later, Andrae and Jordan visited the site and completed Rassama's plans for an area around the Ziggurat. The site was severely damaged by the hands of nineteenth-century explorers who dug it up in search of monuments without practicing any excavation techniques (Hermann and Janssen 1997: 47).

In 1972-73, the Belgian Archaeological Expedition in Iraq conducted a survey in the surrounding embankment. Earlier excavations at the neighboring Tell ed-Der site showed that the earth embankment there was formed by the ground covering a brick wall build there earlier. Sippar's exploratory drilling rigs have discovered the existence of a very similar earth structure. Due to the high level of groundwater, the level of the brick wall could not be reached, but Scheil, who could dig deeper than he could now, described the discovery under the earth's wall structure from masonry brick wall. The coming into existence of the structure is most likely attributed to Hammurabi, who in 42 years of his reign established a powerful earthquake around Sippar: "As for Sippar, the eternal city of the god Šamaš, he build his walls of great quantities of soil" (43 Hammurabi yearly). The same event describes his inscription on the clay "foundation": "I, Hammurabi, ... I really raised the summit of Sippar (using) the soil in the image of a great mountain." It seems that both in Sippar and in Tell ed-Der, the remnants of the old brick wall were covered with a powerful earthwork that protected them not only from the enemy but from the Euphrates (Hermann and Janssen 1997: 48).

From 1978 to 1983, Iraqi archaeologists carried out regular excavation work at the University of Baghdad, led by Walid Al-Jadir. At the beginning of the excavations they focused on the north-east tell. The

residues of the houses found in the four upper layers of the house can be found based on the texts and ceramics found in them in the period between the nineteenth and the sixteenth century. The deeper excavations made it possible to discover the remnants of the Akkadian and early archaic periods (Al-Jadir and Abdullah 1983: 98). In 1985 excavations were transferred to the temple district to a building previously discovered by Rassam. This building, which Andrae and Jordan recognized as Aja's temple, was gradually rediscovered. It was in this building that al-Jadir discovered a library in which hundreds of plaques were still stuck on clay shells, just as they had been left two and a half thousand years earlier. The library consisted mostly of placards from the Babylonian period. Copies of many literary works (eg, the Book of Atra-hasis), prayers, historical inscriptions. Including a copy of the Manistus inscription, a copy of the prologue of the famous collection of Hammurabi's laws, copies of the Hammurabi inscriptions on the Sippar walls. Many of the published texts were copies of texts from such cities as Babylon, Nippur, Agade or Sippar himself. The oldest tablet, with a list of Nippur temple property, comes from the 7th year of the reign of Adad-apla-iddiny (1061 B.C). The latest plaque in the collection is dated to the first year of the reign of the Persian king Kambyzes (529 B.C). Shortly thereafter, all activities in the temples of Sippar cease (Hermann and Janssen 1997: 49).

Fortifications

The site is surrounded by the south-west and north-eastern fortifications, but unfortunately due to erosion. It is difficult to maintain control over irrigation systems on the river plain because of some canal systems were located adjoining the walled city. Thus, for that reason, huge mudbrick walls were erected around Abu Habbah (Butzer 1995: 144). Thus, the continued flowing of the canal’s water was the reason for some archaeological features’ damages, did not retain defensive

defenses in the south-east and south-west walls are not well-preserved due to the river Sheshbar (Al-Jadir and Abdullah 1983: 103).

Dating of the site

The site is dated to 3rd century B.C. But the fortifications supposed was built during Hammurabi's rule during the Old-Babylon Period (1894-1595 B.C) a tablet found in the temple area described how Hammurabi commanded that this monumental wall to be build (Al-Adami 1999: 1-6).

Construction details

The site is oriented south, north-east of the earth shaft (Pl. 45) are about 1200 m long and 800 m wide (Al-Jadir and Abdullah 1983: 102-103). Fortifications on this post are preserved 7 m high above the level plain, 2 with a width of 4-7 m on the top and between 10-15 m from the bottom (Al-Jadir 1988: 71), which is about 43 m above sea level. According to Scheil (Bell 1924: 26), the fortifications were built of stone and brick, but this does not match the Babylonian inscriptions of Hammurabi's time and is inscribed in five contexts in the British museum, as well as the sixth inscription according to Scheil written in Sumerian and preserved in the Istanbul museum which says: Already build a city wall in Sippar with a sand made of it mountain, Around the wall buried ground and made a moat and buried Sippar canal and connected to the town of Sippar and build mooring to protect Hammurabi founder of the city of which work appeal Shemash and Mardukh. I have already made a place of rest, from Sippar and Babil) (Al-Jadir and Abdullah 1983: 120). Scheil also mentions that King Zabu reigned in 1844-1831 B.C. that he build the temple wall and buried the city channel and was named for his name (Scheil 1894: 65). Also, the fortification of the city was built during the reign of King Daku bin Dazi 1749-1712 B.C. (LIH. 104:6) the powers under the command of ...will

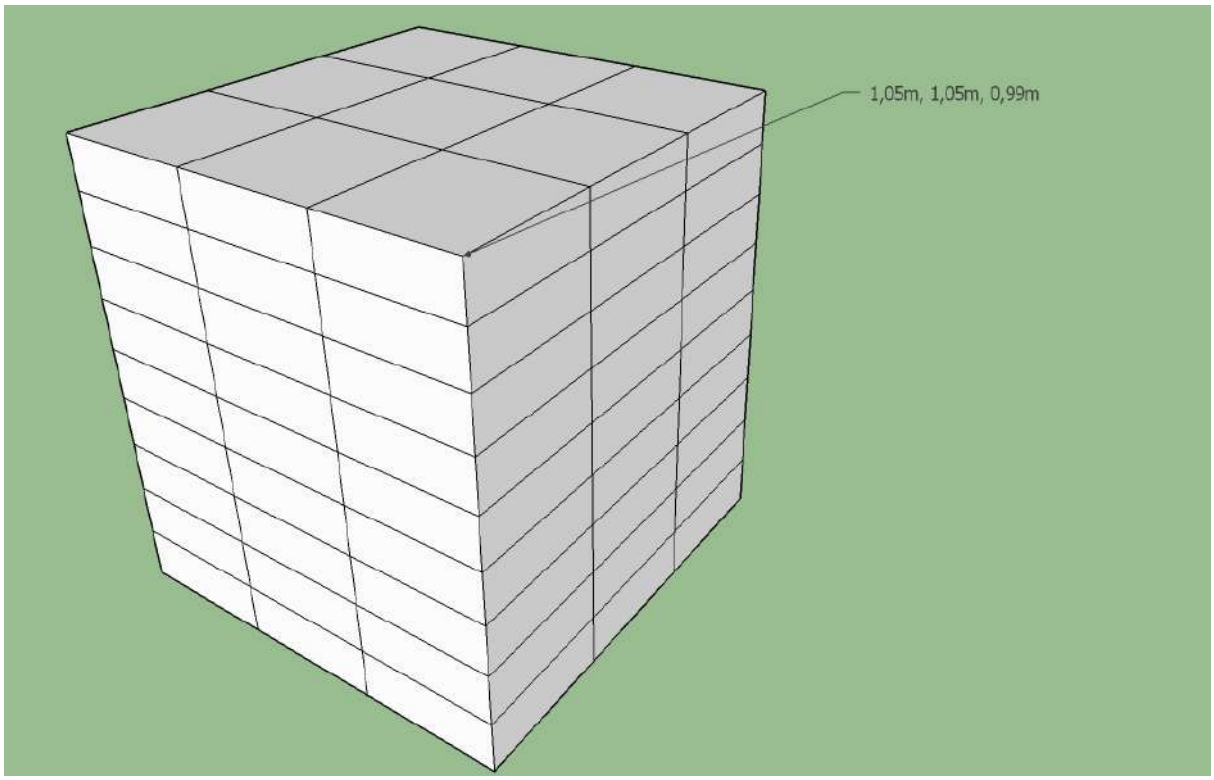
come to Sippar in order to repair the wall (Oppenheim et al. D. 193, 195).

Belgian archeological excavations and Iraqi excavations that were led by the University of Baghdad have proven by examining the fortifications that it is the soil embankment was built of sand accumulation mixed with pieces of ceramics brought from the middle of the city, and southwards from the north-eastern fortifications where the fortifications were 5 m high. The highest point found that was built with a horizontal accumulation of red clay will separate layers of them with thin sand (Al-Jadir and Abdullah 1983: 121).

Gates

Virtually no gates were found in this post, and no excavation did mention the gates of the city. But there are many breaks in the city walls that had to represent the ancient gates. According to Al-Jadir, W. there was no evidence in the intervals of the walls showing that they represented the gates (Al-Jadir and Abdullah 1983: 121). On the other side, Harris mentioned in his translations several texts that there were several gates to the city on this site and mentioned the gate with a ladder in the west side (Harris 1975: 141).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick

35x35x9 cm = 81 the amount of brick.

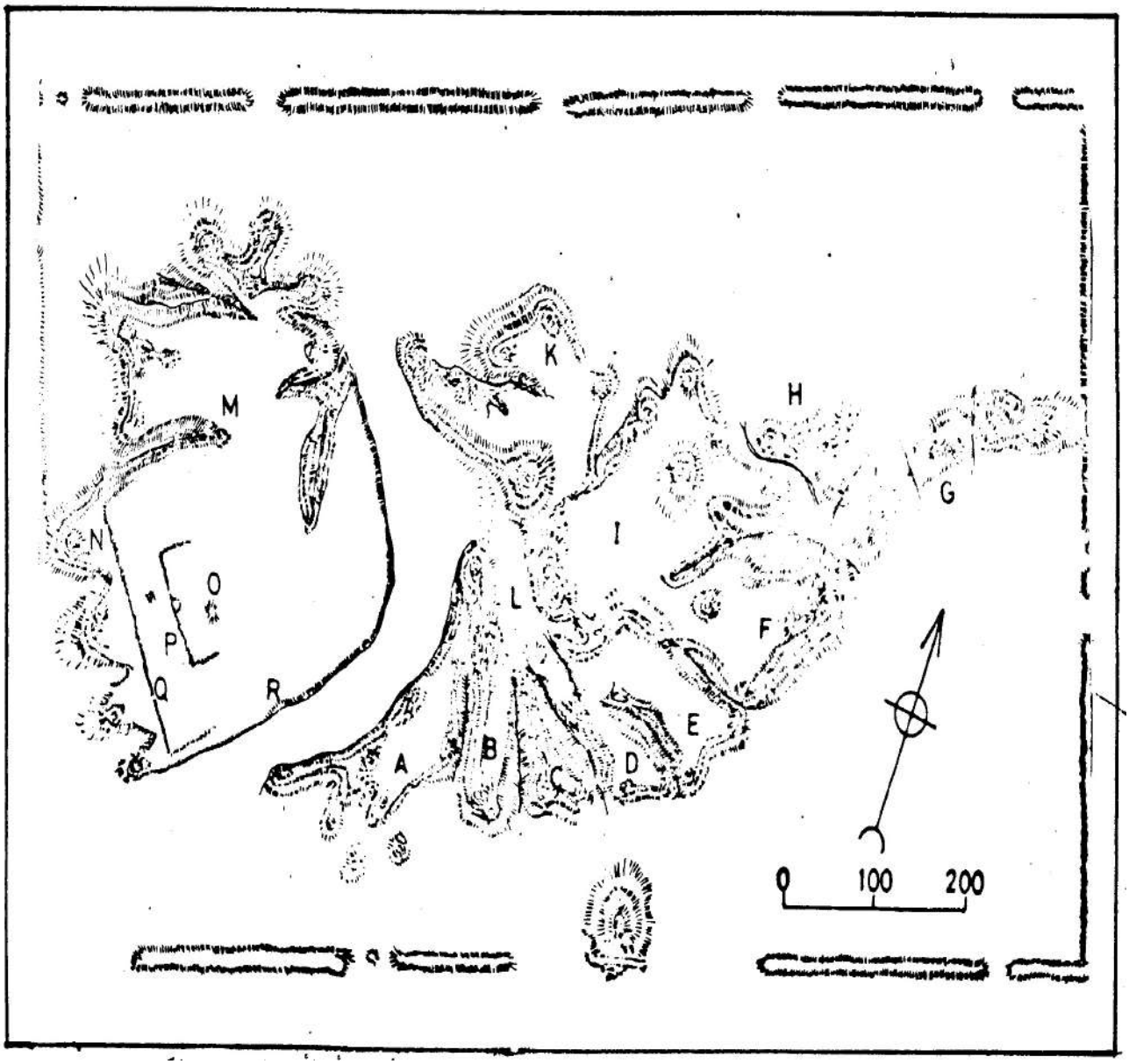
- using 3 workers to build

-4 minutes time is needed to build one brick.

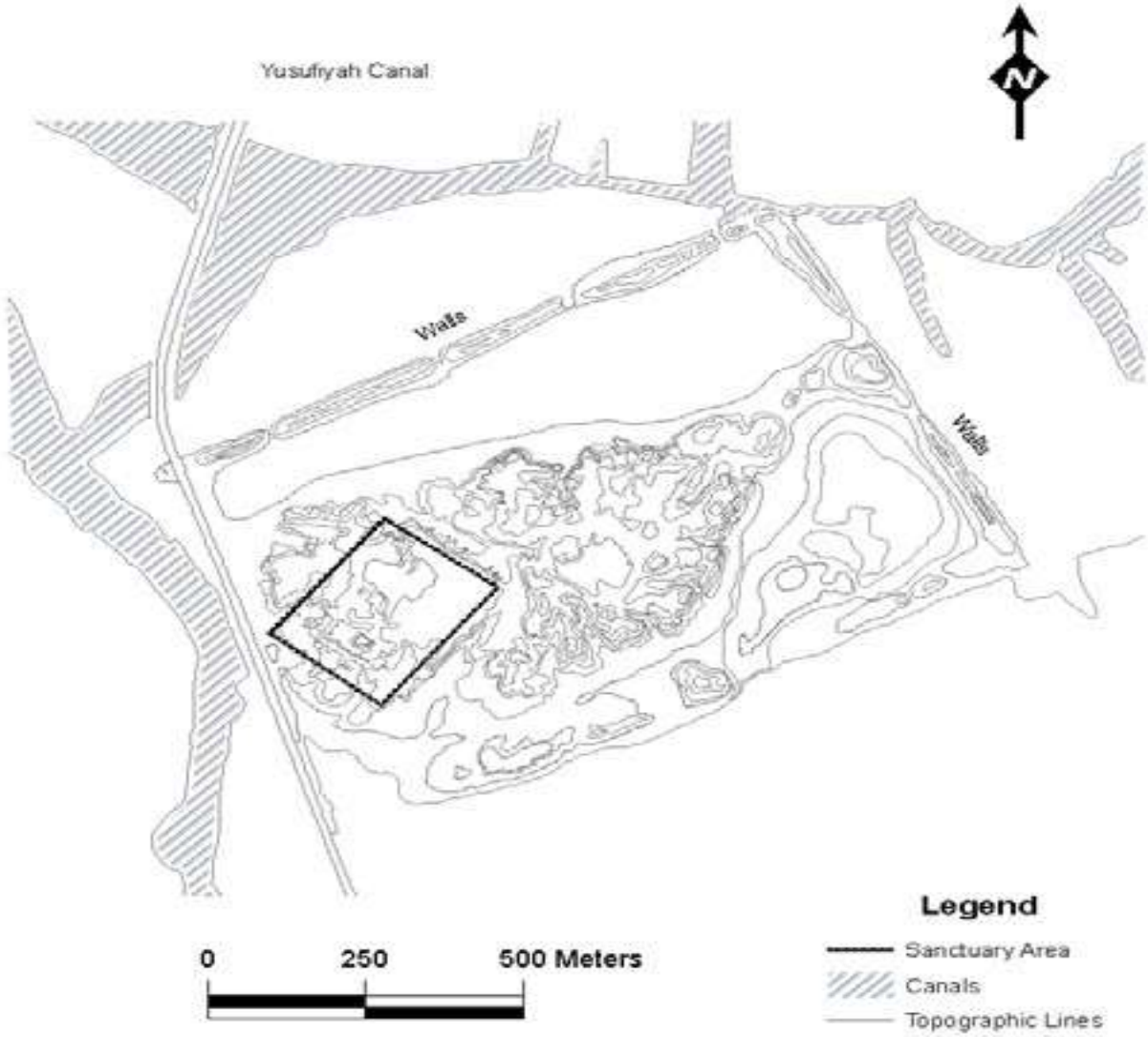
81x 4= 324

324÷ 60 minutes = 05:15

05:15 ÷ 3= 01:45 hours of work needed to build m3.



(Pl. 44) Plan Ganeral Sippar Abu Habba (Al-Jadir and Abdullah 1983: 100)



(Pl. 45) A topographic map of Tell Abu-Habba, with an indication of the temple area, walled city, and canals. The total size of the site is about 96 hectares. Grid Coordinates UTM 38N WGS 1984. (Al-Jadir and Abdullah 1983: 102)

7. 6. SIPPAR, TELL ED-DER

(Ancient Sippar-Amnanum and Sippar-Anunitu)

Location of the site

An archaeological site in central Iraq, about 25 km south-west of Baghdad, roughly half-way between the Tigris and the Euphrates. On the northern bank of the modern Yusufiyah Channel and about 6 kilom north-east of Abu Habbah. Currently, a post in the province of Babil.

Dimensions of the site

The stand, occupying an area of about 51 ha, is almost triangular.

History of research

The first excavation work on the post was conducted by Budge, who in 1891 discovered 9500 clay tablets written by cymbals (Salih 1987: 159). Several plaques also found here three years later Victor Scheil (French priest got permission from Bay Hamdi director of the excavations and museums of the Ottoman to discover all the archaeological sites under condition to split Hamdi with all the monuments found by Scheil (Al-Jadir and Abdullah 1983: 99). Attacks Scheil admitted that the clay tablet was destroyed by transport from Iraq to Istanbul and became like sand (Scheil 1894: 6, Baqir and Mustafa 1945: 37) who first assumed that this post may cover the ruins of the city of Sippar-Amnanum. German archaeologists Walter Andrae and Julius Jordan visited this post in 1927 and compiled his first accurate plans. Iraqi archaeologists have brought archaeological research to Sippar in 1941, organized by the Director General of

Antiquities under the leadership of Professor Taha Baqir and Mohammed Ali Mustafa conducted several polls on the post. These speakers have been around sites in zones 1, 3 and 5 are located in western Tell, and Areas 2 and 4 in eastern Tell (Pl. 46).

City fortifications were found in further research led by a team of Belgian archaeologists led by Léon De Meyer and Hermann Gasche since 1970 (De Meyer 1997: 145).

Fortifications

Excavations at the Tell ed-Der site have shown that the earth embankment there formed because of the soil covering the previously existing masonry wall made of mudbricks (Hermann and Janssen 1997: 47).

Dating of the site

The stand is dated from the end of 3rd millennium B.C. till the Persian period (VI-IV century B.C) (De Meyer 2013: 192-193). Archives discovered at the excavation site have made it possible to establish that in the Babylonian period, the city of the city was called Sippar-Amnanum (Sippar-Amnanum); In turn Dominique Charpin's research has shown that the city was also known under the names Sippar-Annunitum (Sippar-Annunitum), *Sippar-rabum* "Great Sippar" and *Sippar-durum* (Sippar-durum) (De Meyer 1997: 145-146). At times its name was simply written by Sippar, which in many cases makes it difficult for researchers to determine whether this is a city or a second, more familiar Sippar, which lies a few kilom south-west of Sippar – Amnanum (De Meyer 2013: 192-193).

After the period of fall and abandonment, the town was again inhabited in the second half of the 2nd millennium B.C. (about 1400 B.C). Its name in the form of Sippar-Anunit (Sippar-Anunit) appears

among the achievements of Assyrian king Tiglath-Pileser I (1114-1076 B.C) (De Meyer 1997: 145), also in the sources of the Babylonian and Persian period (De Meyer 2013: 192-193).

Construction details

One of the most important discoveries in the post was that the town of Sippar-Amnanum was surrounded by a massive soil ramp, at least 45 m wide which protected it from floods. This shaft replaced the earlier, traditional city wall, its existence is confirmed by the mention in one of the letters of the Babylonian king Samsu-iluna, which was destroyed by the flood probably (De Meyer 1997: 146).

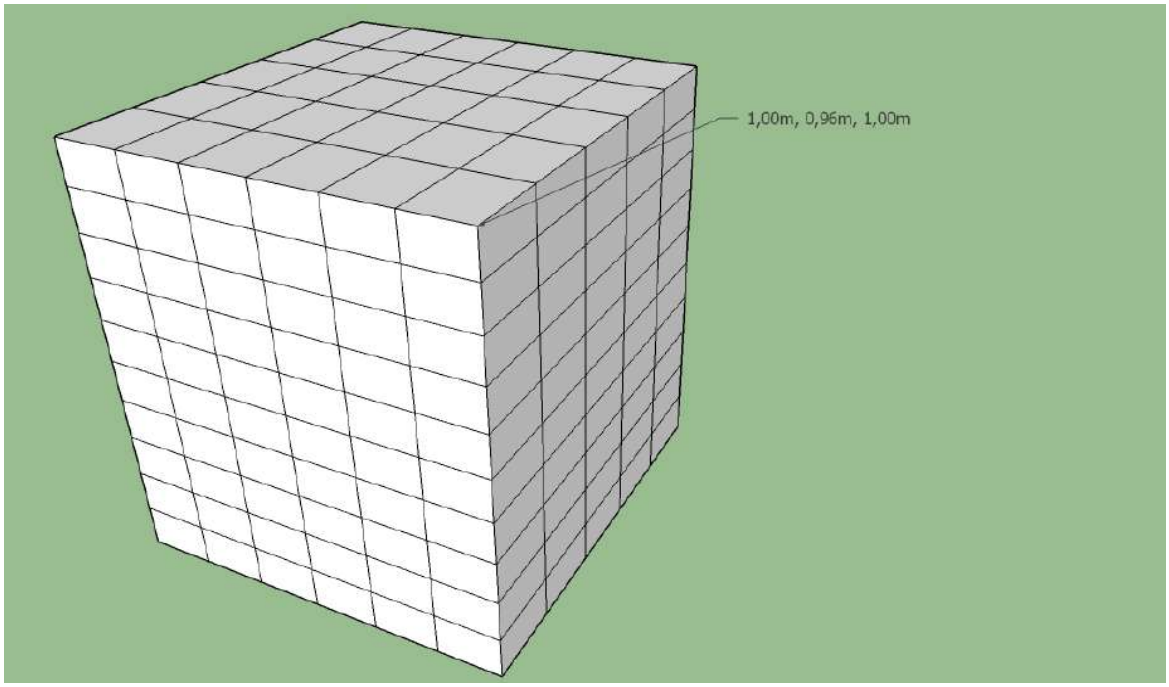
The post was surrounded by three walls (Pl. 47). Two huge walls on its southern and western sides and have a length of 680 and 1050 m. (Baqir and Mustafa 1945: 38), and the ruins of the northern side have been destroyed by the river and are also currently limited by the area of modern cultivation. In places, this defensive wall was preserved up to 20 m high and had some base 50-60 m wide (Andrae and Jordan 1934: 58).

The city is like other Mesopotamian cities, divided into two main parts through the ancient canal, the western part being larger than the eastern one. North-South Channel was responsible for gaps in the south and north of the fortification (Paepe and Baeteman 1978: 48).

Gates

The characteristic feature of the embankment was the lack of gates access to the city was probably ensured by a system of embankments leading to the top of the embankment (De Meyer 2013: 192-193). Andrae and Jordan suggested that this was only one gate in the entire fortification of the city (Andrae and Jordan 1934: 54).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1) 20x16x8 cm= 300 the amount of brick.

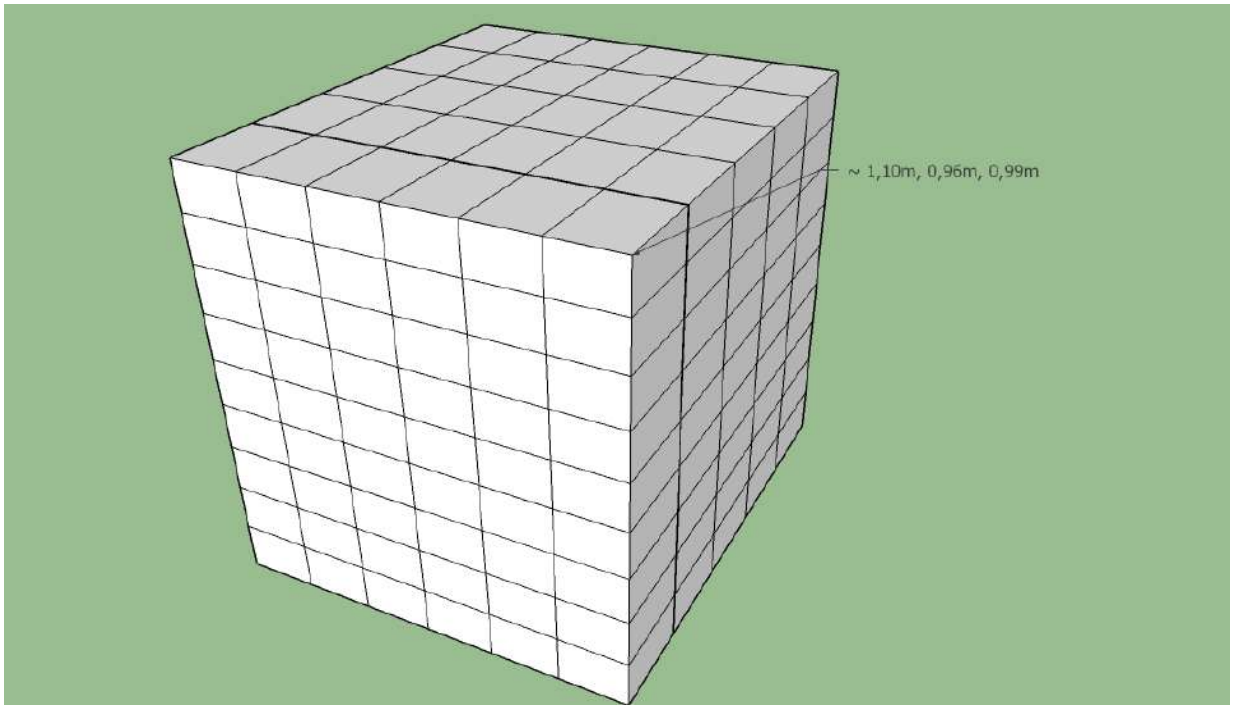
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

300x 4= 1200

1200÷ 60 minut= 20:00

20:00 ÷ 3= 06:40 hours of work needed to build m3.

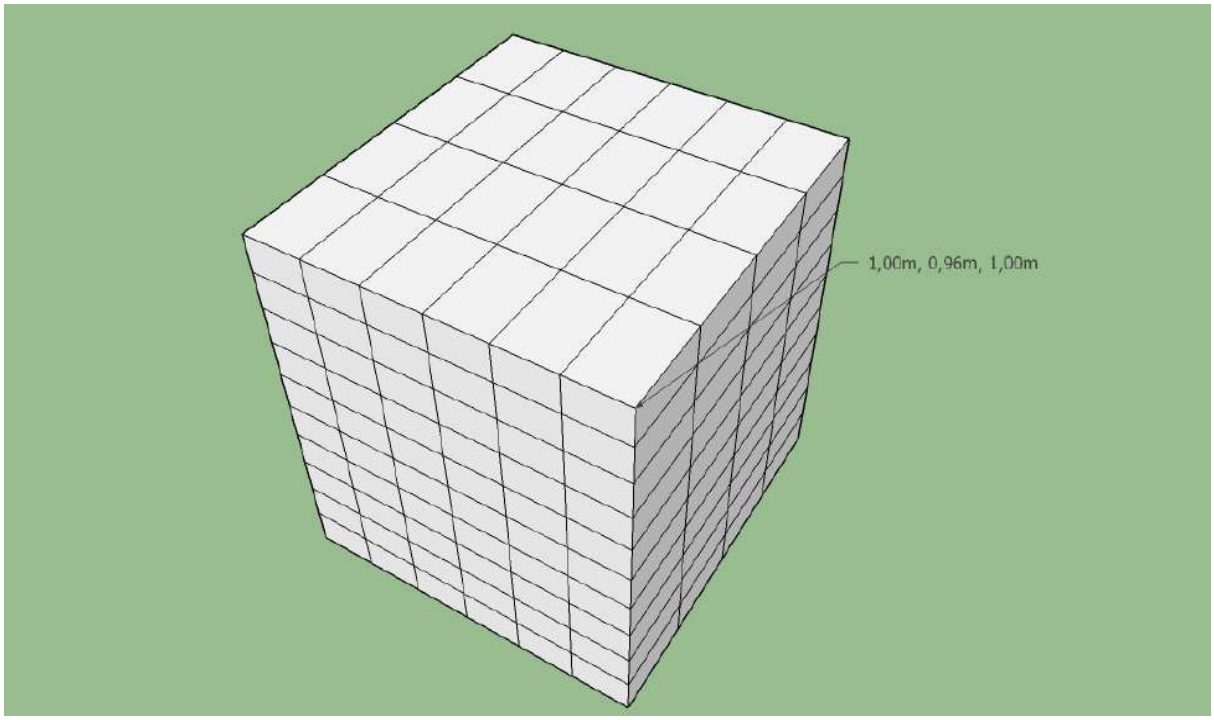


2) 22x16x9 cm=270 the amount of brick.

270x 4= 1080

1080÷ 60 minut= 18:00

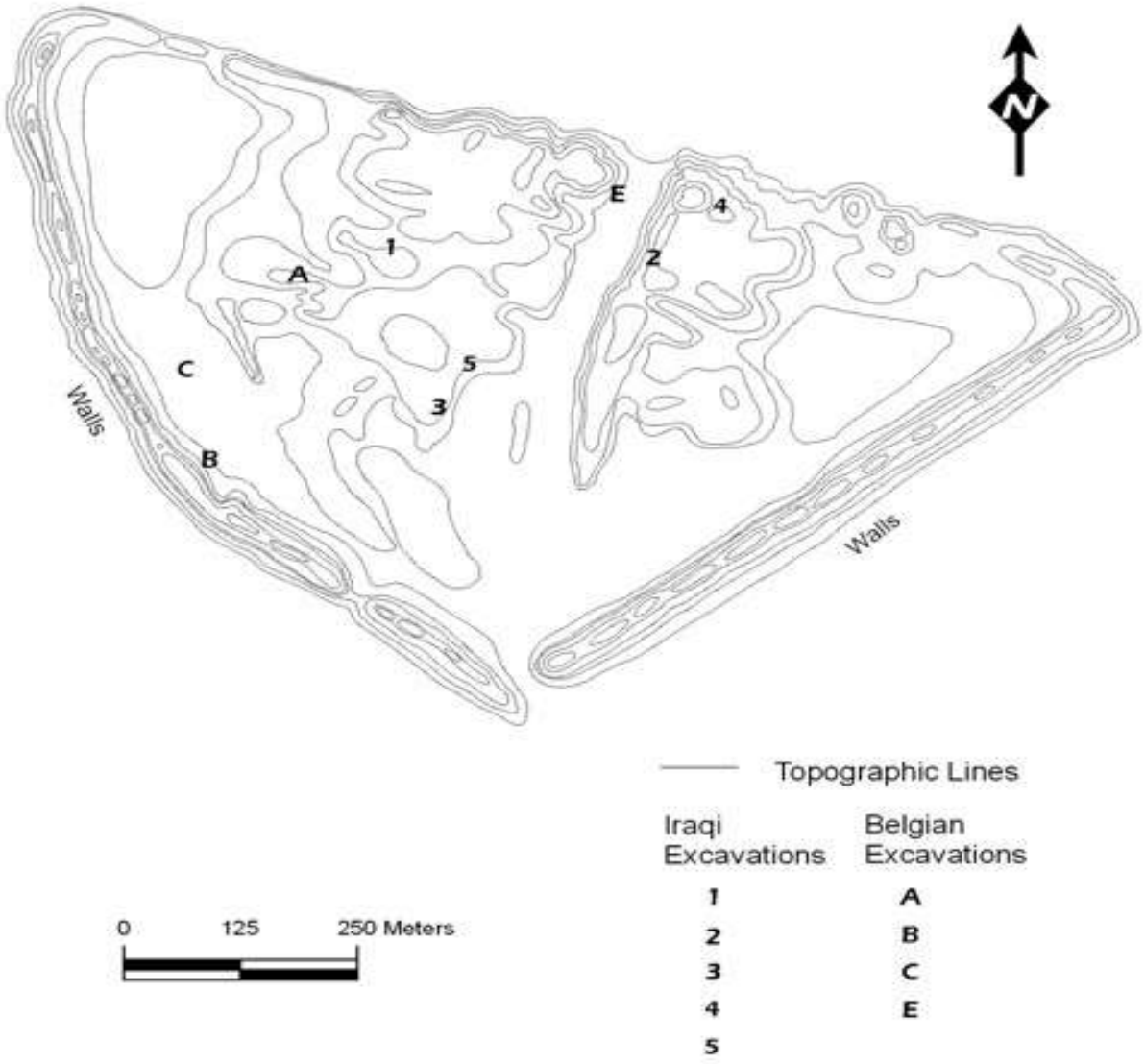
18:00 ÷3= 06:00 hours of work needed to build m3.



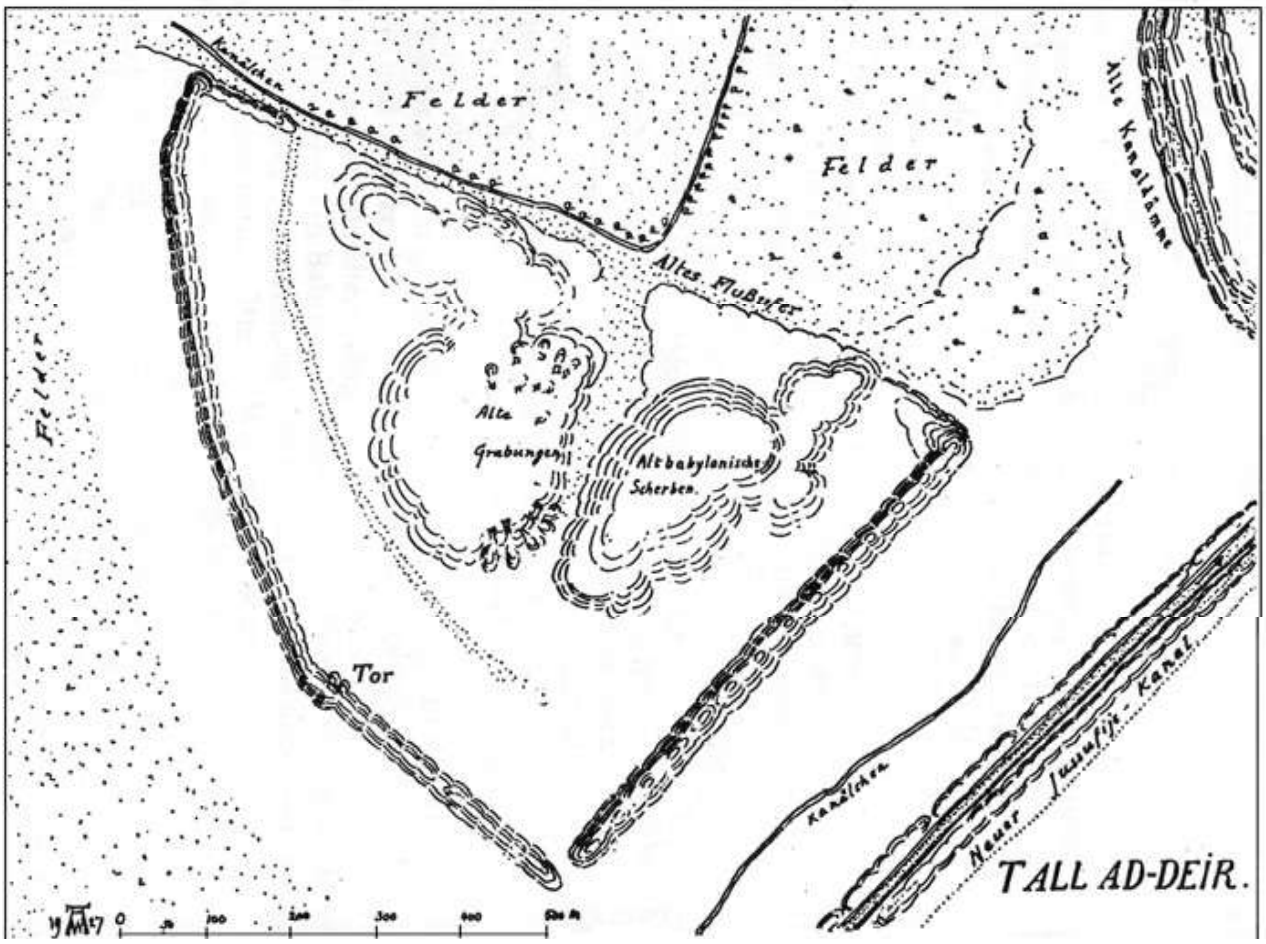
3) 25x16x8 cm=240 the amount of brick.

240x4=960

960÷ 60 minut= 16:00
16:00 ÷3= 05:20 hours of work needed to build m3.



(Pl. 46) Topographic map of Tell ed-Der. It shows the excavated works of both the Iraqi and Belgian teams (Baqir and Mustafa 1945: 37)



(Pl. 47) Tell ed-Der site. A map presenting the gate of the city according to Andrae's hypothesis (Andrae and Jordan 1934:57)

7. 7. BABYLON

Location of the site

Babylon (Pl. 48) is situated on south, Mesopotamian alluvial plain, where is not possible to practicing agriculture rainy yet. The plain runs branch of Euphrat, which is called Arahtu and from II millennium B.C. was the main river (Adams 1981: 155-158).

Dimensions of the site

Estimates for the maximum extent of its area range to 900 hectares (2.200 acres) (Boiy 2004: 23).

History of research

In XIX century, there were many but modest excavations in Babylon, conducted by Wiliama K. Loftusa 1849 Austen Henry Layar 1850 Fulgence Fresnel, Julius Oppert 1852 Henry Creswick Rowlison and George Smith 1854 and Hormuzd Rassam 1876. Through Robert Koldway in 1899 had beginning important works of Deutschen Orient Gesellschaft and lasted until 1917. They gave us a significant amount of information about Neo-Babylonian, and about wall reinforcements of the city I millennium of B.C. (Klengel-Brandt, Bd. 1: 252). From 1962 the excavations conducted by DAI under Hansjorg Schmidt and J Schmidt. From 70'of the last century Iraqi protections of monumental through a program of research and reconstruction it gave a lot of attention for this place, and between 1987 and 1989 Italian expedition in Babylon did Uras gate (Hrouda 1990: 303; Novák 1999: 96).

Fortifications

The city has two parts: eastern- bigger and smaller western both are surrounded by wall. The city walls contain also 2.25 km^2 of area on east from the river and probably 1.5 m^2 on west (Wetzel 1930: 7). The next external wall probably existed on east sides only, where the urban area expands to 12 to 13 km^2. The outside city was never full built probably and outside, there were fields and gardens (Wetzel 1930: 74).

Dating of the site

The city is the only one of reminds of fortifications dating from the

beginning of State Babylonian.

Construction details

The oldest proof of construction works on Babylon's fortifications is stamped brick of Adad-apla-iddin from II dynasty Isin, which came from main wall, probably. However, the wall, just like other documents and inscriptions of Saragon II or Esarhaddon, discovered not in situ but in rubble (Wetzel 1930: 64-67). The only remains of fortifications dating on a period from the beginning of Neo-Babylonian state, so connected with Assyrian domination of Babylon, are graves walls of Saragon II (Pl. 49, wall S) It is fortification urban cemetery, situated on a escarpment, which had the river at the food of it. Its construction is similar like the others in Babylon. It was made from brick roasted, reinforced asphalt (Wetzel 1930: 4). It was discovered on the north from south citadel. It consists of a big, round bastion from which they depart two branches: on the south and on the west. The first one thickness 6.7 m and the second one 8 m. The crown wall was covered with asphalt, and inside it were two layers of bricks. There were using bricks with inscriptions recount about constructions of Saragon, between Euphrat river and Ishtar gate. There is the only one fragment of the wall which runs on the north from build in ditch of Saragon, but we are not able to date it precisely (Wetzel 1930: 64-65).

During the reign Nabopolassar, the first king of Neo-Babylon Empire comes other wall, built in ditch directed towards the inner city and it is built from described bricks. Small stone wall is situated in asphalt next to slope above a moat thickness should be 80 m. Its facade is smooth and without alcoves and rounded ends. The thickness of the wall is 2.25 to 2.6 m (Wetzel 1930: 30-31). The distance that divides the wall from duplicated ring of wall, surrounded is about 20 m. The gate and is extended on the outside (Wetzel 1930: 59). In the north-western

corner of the city or the south citadel (Pl. 49) there is build, in ditch of Nabopolassar is connected with build by him plague coastal of Euphrat. In this place there are three fortification- one by one (Pl. 49) walls A1 A2 A3, which build by Nabopolassar walls progressively eliminated the slope next to moat and especially they shifted course of Euphrat on west. The first so called "Arahtu wall" runs on north in relation to the south citadel, parallel to walls, where it is connected two rounded ends and create short south turns in the Sargon moat, on which overlaps. It is responsible for shift embankment about 17 m on the north. The second Arahtu wall consists of small fragment of the wall, which continues the edge of the first one, and turns on the south in the next. The third Arahtu wall connects the first two by eject before the first wall and moves about 16 m on the west relative to the bank of the river. Its crown was higher a little bit than these before and its course was pointing on the north wall of south citadel (Wetzel 1930: 32).

The further wall on coastal wall of Nabopolassar were researched next to Euphrat and its south western corner. It has opposite to cemetery wall, wide from 1.1 to 1.5 m platform above the level of water which could be used as a wharf. The openwork waterfront on the south from South citadel is situated in the point where the *Libil egalla* is connected witch Euphrat in the north from E-temenaki district where were another canal. Also, in 6 places was discovered stairs, which instelled perpendicularly to the walls in the upper part of the wall boundary and on the road transient and a little bit further in water direction (Wetzel 1930: 31, 34-36). It is worth noting, that the bricks with inscriptions integrated in the wall in its upper arm and it made of its visible detail. Other, noteworthy element is discovered gap in the wall, situated 16 cm further, which could be used as a mounting for devices for anchoring boats and rafts (Wetzel 1930: 34-35). As Bergamii noted, both wall coastal and moat of Nabopolassar, they are not military constructions (Bergamini 1977: 116). In this case a moat could be used

as a water source. It does not seem possible that build in ditch, despite lining edge clay tiles, was using for defence, as Wetzel would like to (Wetzel 1930: 31).

Next to the South citadel the old fragment of eastern wall is wellkept. It is connected with so called the gateway arch, which we can date on Nabopplassar times (Koldewey 1931: 7). Preserved fragment includes three towers and three curtains, and the gate is situated between two south towers. Thickness of the wall is 3.95 m and because on not big slope in the food of wall it can have 4.04 m. Earthwork appears on both sides on a not big length, goes about 32 cm after the line of the wall and its thickness 4.78 m. The length of curtains is about 5.28 to 5.38 m. (Koldewey 1931: 3-4). According to Koldewey it proves "equality of the towers and curtains, which we can register in the temples, also". The circumstances indicate that towers act as representative and feature decorative fa Oppenheim et al. es. Their small size does not protect of wall, so it is not possible that external wall of palace district, for which belongs the wall had defence function. The gateway arch had entrance wide 1.66 m, and fitted with bars, which overlooked the guide troughs, so it was possible to close them. The top of the gate was topped with a bow, and the gate was built by mudbricks, finally (Koldewey 1931: 4-6). Further on the north on the eastern front there is remnant of the old wall surround with 7 towers and curtains. The retrenchments have a front width 5.2 m (Koldewey 1931: 11).

The degree of Nabopolassars involvement in the construction of exterior and interior walls of the city is not defined until now. The inner walls are older. The research excavations indicate times of Nabuchodonosor II.

The exterior wall, which course we can see on a base of visible ridge in the area. (Pl. 48). The wall is situated on the north from

sprinkle of Babylon It contains Nabuchodonosor s palace in the uncal stretch and from here it runs for a distance of 4 km in the south western direction. It was researched on its south-eastern branch in two points, and its course we could see on a length 800 m. The interior wall makes up from two columns. The first of them its 7 m height and it is made from mudbricks 33 x 33 cm. (Koldewey 1913: 3). The second bulwark was built from baked brick, which make the wall for thicknesses 7.8 m and build in 12 m distance from the main wall. It is in the immediate vicinity 3.3 of height of wall next to moat, which canal was not discovered until now. The main wall is build on sloping embankment and it has retrenchments of reach about 6.4 and 1.5 m and fronts width 8.1 and 8.74 m. One tower has a significant width of 10.17 m. The length of retrenchments can be up to 40.58 or 45.64 m. but we can see smaller also (One of them was 20.42 m, the other bit more - 33.64 m). There are not towers in bulwark, what make impossible flanking (Wetzel 1930: 70-72). The main question is about reconstruction of fortifications system. During excavations, we discovered earth embankment between the walls, which on a base of Herodots and Kwintus Kurcjush Rufus descriptions, we were able to interpretation and put it in the category of filling of the space between the walls. In this way it made one massive wall with very wide passage (Koldewey 1913: 15-16). Between the walls could be situated separated spaces, what towers would point at in the main wall.

The lack of ability of flanking of bulwark needs reconstruction of embrasures and defended proceedings, even if on the beginning it was defended by a wide defensive ditch. The Resuming excavations could help to settle this matter, especially geomorphological studies could define of embankments character. In the wall were discovered stamped bricks with Nabuchodonosor s the second inscriptions, we could date the rest of the walls because we do not have this kind of founds. The bricks of the main wall are different than the rest of Nabuchodonosor s.

They had smaller form, so we can suppose that build was started during of reign his predecessor or in the beginning of his time (Wetzel 1930: 72). On a base of written sources, constructions of the external walls started Nabuchodonosor s father, but works were stopped if final (Wetzel 1930: 73).

Between external and internal wall were discovered reminds of the wall in a distance between Babylon ad Qasr, situated nearby Euphrat river. There was researched a corner bastion on Euphrat and two towers width 7.4 and curtain 16.75 m long. The wall had width 5.8 m. Its later history is not known because hills showing the wall, disappear after 220 m. (Wetzel 1930: 69).

The interior wall (Pl. 50) makes up like as exterior walls two walls. Both are build from mudbricks 32 x 32 x 12 cm and 34 x 34 x 14 cm, (Mohamed 1979: 138) and 33 x 33 cm, (Koldewey 1913: 150) and between them wide 7.2 separated space. The main wall thickness is 6.5 m and it is turns supplied in retrenchments spaced 18-19 m from each other with bigger or smaller outreach. The bulwark has thickness about 3.7 m but it has retrenchments build in a uniform spaces each other. In front of it there is opened strip of land, wide 20 m. Behind it there is dig of wall reinforcements escarpment (Koldewey 1913: 7). The internal walls surround eastern part of the city from three sides of land. It has beginning on the north-eastern by two big towers, in the north from south citadel, nearby Euphrat. On a section of up to the Ishtar gate, both of walls developed like this that; the main wall, which thickness is between 5.5 and 6.25 m, change retrenchments about bigger outreach, 3.26-4.5 m with span of the tower from 8.4- 10.5 m, in smaller 0.65 m with thickness tower from 8.75 - 9.4 m. The tower, which closes the wall on the west, its thickness 11.25 m with capacity 4.2 m. The length of curtains between big and short- tower has between 14.2 and 16.8 m. The wall is sloping a bit like this that it is growing wider towards the

base, and its surface is covered with clay. I the wall nearby western end there is a gate with a few building phases. In the first phase it had distinct width of 2 m and was make up baked bricks bonded together with asphalt. From this phase we have also two hinge stones. Later the surface of gate was increased about 65 cm in finally we had bigger internal width to 2.85 m and jambs were made of back parts of bricks with stamps of Nabuchodonosor. In the next two phases the floor was upper about 2.65 m and in final phase the floor was laid out by backed bricks with Nabuchodonosor's stamps. The gate has resistance part of jamb to which the door was fixed to close it from inside on the north. The bulwark is situated on western pace, except for one big tower with front width about 6.45 m, and outreach 1.8 m, exceeding traditional dimensions, which close its course. In the eastern part the towers change similar as on the main wall. The big towers have outreach between 1.4 and 1.8 m with wide 4.7 and 5.3 m and the smaller towers have measuring appropriately 0.35 x 0.37 m of outreach and front width 4.15 x 2.3 m. The curtains have a length 10.85 x 22.27 m, bigger are situated in the western part, but these on the eastern are smaller and more regular. The walls thickness is 3.15 x 3.3 m. On axis accordance with the location of the gate, on main wall are the doors of bulwark, a little bit narrower than the firsts. Their jambs are laid by the bricks. I the later phase they are different a little bit, with exception to the floor level. We discovered the 5 doors, which were paved. Across the channel carrying water run threshold.

Later corrections were made on the west ending of the main wall, meanwhile in the other part was built strong wall on the south side. The changes touch bulwarks. On the west was destroyed the part of the wall and rebuild it, with using baked bricks and the whole wall reinfocements from both sides with the help of the shoring from brick debris wall was reinfocement by asphalt, like this that the whole had thickness of mine wall. The last build project was realized during

Nabuchodonosor s time, which they left down in sometime when gates Ishtar construction like this that it could make connection with mine wall. Between the main wall and south castle was the road which climbed on the higher level connected with reconstruction of the south citadel. Before the city walls there are two band edges build in Nabuchodonosor s times. As an older the city walls were narrowed in the western towards. There like with the construction of a new wall nearby the moat in the west in direction on a free space they build residential building between towers ending and the wall next to the ditch. The last were remains of wall next to residence building, situated next to walls which was filled with the creation of the hill area, which discovered as a parallel inter walls. It was creating in the moment of building of younger wall, next to the Nobuchodonosor's ditch it was located 7.4 m from bulwarks. On the beginning it had about 4 m of thickness and it was made up broken bricks. Later they were expanded about the next 2 m. Only its western end was unveiled and the connection with the Ishtar gate, where it has 3.77 m of thickness only (Koldewey 1913: 20).

The internal system of defence of Babylon is wall reinforcements by moat with protected slope. Retaining wall of ditch and river wall were using in Nabuchodonosor s times. On a base of the wall inscription next to the ditch we know that building of the wall was started during Nabuchodonosor's father but was not finished in that time. The wall was reinforcement by new wall, which facade had slits and bastions. They were spaced 50-60 m and they have outreach about 5 m and thickness about 7-8 m (Wetzel 1930: 39). From the Nabuchodonosor times we have preserved two ditch and river wall. Older walls next to omni ditch (Pl. 40, AG wall) is located on the north-west, in the corner of younger wall of Nabopolassar, width 9,8 m and 6 m bastion. On the west it has a distance about 38.7 m like similar distance of the pavement in the lower castle. Besides, it seeks directly in direction of

Nabuchodonosor s brick ditch only next to the Ishtar gates were conducted more researches in the east direction, it is a bit different than this what we note o the north, because the bastions located on the bulwark, were the reason that the place of the gate is moved in the north direction. The remains of the north wall next to the ditch, shows us that the wall had from 3.2 to 3.52 m thickness, wide of bastions was from 7.13 to 8.13 m and the curtains had from 44.92 to 57.27 m length. The northern east bastion corner had 4.92 m outreach in the north and width front 11.94 m and on the east 13.74 m. On the east arm of the old wall, next to the omni ditch thickness of the wall was between 3.3 and 3.7 m. The bastions of the wall have width front from 6.65 - 8.04 m, and they are spaced from 51.87 - 61.08 m. Next to the gates the curtains are shorter 12.17 m and 13.35 m. (Wetzel 1930: 42). Next to the south-eastern gate is located a passage between bastion and the walls ditch with width 4.85 m, which is surrounded by towers, width 5.77 m. Also, bastions surrounding the passage between two eastern gates had performances, to which stairs led (Wetzel 1930: 59). On the south from the southern gate there was screwing staircase. The south-eastern corner bastion has eastern width 13.18 m, southern 13.2 m with diameter 4.65 m. Between the gate and Euphrat, on the south, were discovered a peace of the curtains with length 12.9 and 14.15 m. Usually their length was between 38.88 and 35.05 m. south western corner bastion had a front width 18.4 m and radius 5.57 m. (Wetzel 1930: 42-42). Crossing the ditch situated next to the gates had a shape of tame, build between thin retaining walls running along in rivers harbors direction, with width 5.5 m and length 17 m. Between this and counterscarp was situated hole width 4.5 m, which probably was pawned by wood construction. For make wall reinforcements this construction the columns were using from land side (Wetzel 1930: 69). Although at original the ditch fortress could be defeated by using wood constructions or floating bridges-about what can say us wood residues in the ditch, discovered opposite South gate. But the tames were, for

sure, younger instellations because they narrowed origin space from width 75-80 m, to 5 m. (Bergamini 1977: 135-136).

Along the riverbank of Euphrat Nabuchodonosor build a new wharf, which south fragment from south western side of bastion corner to the north end of district *E-temenanki* and correlate the Nabopolassar s wharf. It consists of not big platforms on the wharf which were using as a mooring and higher situated platform. In this fragment quay is extended in north direction from 1.6 - 1.85 m, and total thickness from 3 m in the south increases to 6.4 m from north-western corner of temple, the wall running on the west like this that it connects on the north-west a corner of bastion (size 16 x 16 m) next to fortress wall. There is situated a passage width 1.65 m, with total thickness wall 3.6 m. In two places, similar as preceding building, it is divide by canal, and exactly has south from southern castle, and on the north from temple district (Bergamini 1977: 44-45), where under the last canal probably were lock or tame (Bergamini 1977: 121, Wetzel 1930: 45).

The younger Nabuchodonosor's wall is situated directly next to the defensive ditch (Pl. 49, wall GI), it is known only from north-western part of the city. It is situated against the old wall, from it we know only corner bastion, situated on the west, and has 7.4 m of thickness. Besides, there is also buried in both sides of the Ishtar gate, and its running more in the north direction than the bastions of the old wall, which close vestibule of the gates. On the east from the gate we have three bastions of younger wall. The first and the third have width 8.2 and 8.5 m with outreach 5.95 m and middle width 7.65 m and outreach 0.67 m. Between them there are curtains with a length 11.95 m or 20.18 m. Longer have a door, and situated one meter further passage, lead to the stairs located on the north. The end of the younger wall is not known exactly. We can suppose that its end in the point of contact with old wall (Wetzel 1930: 45-46).

The younger wharf of Nabuchodonosor (Pl. 49, wall GI), is only on the north-west, presently, where it starts by corner bastion of wall next to the ditch and it runs on the south. It is poorly maintained, the most of its bricks were stolen, that s why it is difficult to define eventual route. The case of connect between old wall and new wall waterfront is still open. It should be located between of South citadel, perhaps outlet canal of *Libilhegall*. On the south from corner bastion was made double fountain, which access to water secured by limestone structure (Bergamini 1977: 121, Wetzel 1930: 46-47).

In Babylon the palaces could be used as a citadel. This function could have double complex, localized on the south and main castle, situated o the north-west of inner city, and so-called summer palace, on the north edge of the outside the city. The last of them take space 180 m2, and it is built from roasted bricks, and it is not so big for sure, as could indicate the range of external shafts. Although on a base of omni wall does not show much, they researched 3.8 m of thickness of the wall with gate, and their eventual connect with the omni wall was not define exactly. We have also the proofs that there was wharf on the bank of Euphrat (Koldewey 1932: 41-48).

The lower castle (Pl. 51) it is the oldest palace, which was not expanded during Nabuchodonosor s times, it was reconstructed only. On the beginning they conducted only correct of the perimeter, which was lengthened to the closed of younger wall, next to ditch on the west, later the new road was paved on higher level in eastern area. After the finish of it, they rebuild old place in the western part of complex, like this that it was situated higher and extended in the west direction. It was made up roast bricks, and part of them has Nabuchodonosor s inscriptions the owner of the building (Koldewey 1932: 1-2). The perimeter of palace complex in the south castle was running along the processional street and it has thicknessed 11 m and a half of brick of

width 3.9 m. In the most part of it we can see retrenchments outreach with width a half of the brick, it means about 16 - 17 cm, (Koldewey 1932: 2). Above the old gateway arch, which gate, similar a little bit to its predecessor had passage width 1.36 m. On the south from this gate they liquidated the old wall and build the new one thickness 6.75 m which extended to south corner. There where was the old wall, they wall was reinforcement its from inside, by new one, height 2.7 m, like this that it coincides with the new completely. On the north from new wall with gateway arch was discovered fragment of main passage to the palace. The wall had in this point 4.41 thickness; and width 4.02 m of gate was protected by two width 5.25 towers with 1.3 - 1.4 m of outreach. Behind the passage was space and to it from both sides adjoined rooms side. From all of them we can see eastern yard. The rear wall of the gate space has 3.6 m of thickness and the walls are covered with lime mortar. The floor is paved by stone tile put on a few layers of bricks from the processual way to the gate led paved track, situated along the edge of brick wall on the edge of the hill. In the north of this fragment of the wall wide sliding 1.62 m was discovered up to the straight running wall. Behind the old one, was built new one with thickness 4.3 m, consist of two fragments made up mashed brick. For widening of the western part of the southern citadel, used small, width 1.02 m gate, which was wall up. By a short fragment of the wall 1.56 m of width they led connection with Ishtar gate. The surrounding wall turns like an arch in west direction, and it creates wide corridor 1.4 m between each other and connecting wall. Part of the high wall is situated on axis north south and has thickness about 4.25 m, like twelve and half ob brick and has three towers (Koldewey 1932: 7-14). The gate was walled up in final. The north front of south citadel was less uniform. The eastern fragment of walls system had a little bit advanced retrenchment about thickness of brick, it means 33 cm. Their fronts have a width 5.2 and 5.5 m, and between them there are curtains with length from 5.3 to 6 m, so not too much bigger. Some of the towers

had a well. Moreover, there are three gates, two of them are in ties and one in curtain. Chronological situated the wall inside building and a moment of widening of complex are not clear exactly: two passages good correspond with the corridor comes from phase next after widening part of the palace, during which was opened one of smaller rooms. On a base of it we can point this phase as antecedent extension of the complex. In the point of contact Nabopolassar palace and a new, western Nabuchodonosor s palace we can suppose there was a gate in the wall which corridor extends between the palaces, but we were not able to discover it. We can be sure that from north-eastern corner of Nabuchodonosor s palace led wide 5.3 m foundationsituated along its north facade, which created during widening complex by the omni wall. The western annex needed cut-off wall with its foundation. The outer wall replaced other, of weakness. Dependence contains foundation width 6.75 m from mashed bricks located between two masonry branches, connecting the old wall next to ditch probably reaching younger wall, like this that the perimeter was closed (Koldewey 1932: 14-19). In the south-west part of the south citadel wall thickness 5.6 m, from brakeing brick between the branch south-western corner of western building with younger wall next to the ditch. Further, on the south its also connect with the walls next to the ditch the wall. There were discovered the remains of this phase, because wall of the south citadel was reinforced and renewed. Subsequent expansion of the area required two branches of the wall, which created 7 m of foundation used for widening wall. At distance about half meter from the omni wall runs the wall next to the *Libilhegall*. The western gate of this fragment of the wall, which was created during building previous wall as a retrenchment and it preserved during moving the walls the hole of the gate was enlarged about 1.45 m of width terms of the original and build gate and raise about 2.25 m. The space between the palace and perimeter was filled with mashed bricks. The retrenchments of wall have 5.3 m of width and radius of half board and the curtains have a

length corresponding to the width of towers. A few of towers had passages width 1m, which did not have resistance to the door, and were using as a canal, probably. In a few places the remains are kept younger omni wall. It shows that it had towers build also above earlier wall. In one point was discovered hanging of tower width brick it was exposed next to the younger wall. From palace avenue between old-western and eastern part of palace was discovered canal width 2.2 m, conduit through the tower, situated on the head of the fenced area. Before it was perpendicular course from the east, from build in surface between east parts of the palace and surrounded it wall. Further on the east there are no remains of older, separating wall. Only the new 6.58 m, strong foundation for the widening wall, connected with the palaces wall. In one point on the south was reinforcement (Koldewey 1932: 19-25).

On the west from the South citadel, along with the distant riverside estate the area of promenade on Euphrats bank was widen once again. The building is barely preserved because of the construction based on the bricks bonded with asphalt, which was using as a building material, secondarily. On the east it is separated from the south citadel narrow canal. On the north and south cut it strong wall width 11.6 or 7.58 m permeable triangular mouth. Also, the wall next to the ditch, nearby *Libilhegall* canal cut it, but its transitions were located next to walking the canal. It is continued also in south direction of front of western bulwark. Its outer walls thickness 18 m, on the east 20.5 m on the west, 21.3 m. From the south wall, in front of river building was wharf width 14 m. We found enough remains of the wall to see towers performances about width of the bricks on the west. Later was built the next coastal wall high 9.6 m. It entwined from the south coastal wall and building. In view of forging parts of the coastal wall because of widen, upper parts of the both wall were put in composite, what forcing consideration of modifications original plans in later constructions. We

do not know how much building expands in the north direction. Unknown is also function of building because of bad state of preserved of it (Wetzel 1932: 27-29).

So, called main castle was created by Nabuchodonosor on the north from the south citadel out of internal shafts. Its limits marked younger wall on the south build next to the reinforce ditch, on the north, north wall of main castle and on the west Euphrat probably with reinforce bank, maybe wharf even. The first free space, which was surrounded by wall and filled by mashed bricks and lime mortar for create of terrace where build the palace. On the north of area created the first, 3 m, opened canal, which led to Euphrat. Next it was narrowed it and covered. On the south from it build other canals, which provided water in palaces well (Koldewey 1932: 1-2). The first phase of build of the main palace it is construction wall thickness 17.1 m, which from east to the south turns in bastion direction, closed younger wall, next to ditch connect with Ishtar gate. Its located on the west is not known. Its external front has performances of towers width one half of brick about 16-17 cm. Under the terrace of the main palace is tower with front width 7.28 m, and there is build-in gate width 2.1 m. On the west of the palace there is wide wall 40 m, which runs to the end of terrace. On the east of palace, it turns on the south direction, where its thickness 13 m. Its external front has performance width of brick about 33 cm (Wetzel 1932: 25-27).

The younger north wall runs exactly along the axis east-west. Its east corner turns a little bit south direction. From one side it marked eastern limit of the main palace, and from the other surround processional route lead to the Ishtar gate. The north wall of mine castle has performances from both sides width plate, but they are spaced apart and not shows retrenchment. On its south rim is passage width 3.06 m which was a quay of the canal. Its cover and width were reduced

to 1.8 m, kept 9.5 m of the track between terrace of palace and the north wall of mine citadel. Nearby north-eastern corner bastion of the north wall there is high gate 1.5 m Inside the gate is groove leads to located lower canal. The most current extension of they are marked the wall runs parallel in north direction of north wall of main citadel 45 m. It has a width 17.5 m and from outside it was decorating in lower part by limestone slabs, and from the north it has alternately arranged half or one-meter performances. Inside it was sterightenn by wall made up mashed bricks thickness 4 m and from outside by arm create smooth facade. Nearby north-eastern corner bastion, from which runs the wall in south direction, in the north wall there is a gate with canal with outflow closed by lime perforated plate. The north fragment could be built as separated space, but its function is not defined exactly (Wetzel 1932: 29-33).

Also, on the east from street processional was made extension being opposite of main citadel. Both, the north wall of citadel and decorate by lime walls have continued along processional street. Earlier wall, which we can describe as a typical northern wall, it was marked on the ground in a length 260 m. The last one is finish after 230 m, by corner with runs from it not big eastern wall, include younger wall next to ditch, and in final they are connecting. Completely discover 11.2 – 11.35 m, of thickness central fragment of the north wall is characterized by performances divergent dimensions (35 cm – 2.1 m) and plenty of gates. During the corner bastion on the western edge of the wall width 12.78 other performances have wide fronts from 10.2- 10.58 m. Between them there are located a curtains with the gates have lengths 15.25 and 16.46. There are performance width 35 cm inside them, which because of the shortest wall of curtains do not correspond with exterior wall. Ten gates in the wall we can divide into smaller, width two m and without elements of decoration on inside: and bigger from 4 - 4.25 m of wide with divided passage. The wall situated more in the

north direction was excavation on its ends and it thickness from 10 to 10.9 m, and it has one performance, located at distance about 1.1 m, from the north corner. In front of it, like next to the north wall of citadel from Euphrat runs inverted ditch water, which should replace the moat in the north direction from the south citadel. The eastern wall of this building had in its northern fragment between two shell thicknesses 6.65 m smooth facade. The south fragment between center of the north wall and the younger wall, next to ditch has 5.9 m of thickness and located at distance from 6 - 6.53 m performances 35m width from 6.27 m to 6.6 m. It is pierced by three gates. Two of them with empty passage width 2.6 m and the third situated in center, have from 1 to 5 m. (Wetzel 1932: 33-36). The flooring on this so called eastern, unsuccessful bulwark is situated lower that main or the south citadel. In view of unsuccessful character, it was not benefit, even before build the north wall, about which we do not know anything about eventual wholes. We know only narrow fragment of the area lead to the moat of city, prepared for warfare, perhaps. Due to information about water level in Euphrat in Neo-Babylonian time and low level of flooring on the east from processional street Bergamini conclude that the complex was more like water structures connected with the city. The floor was not discovered there, and the two thresholds in the doors are below the expected maximum of Euphrat, below the middle of water level even. Perhaps the building was using as a reservoir to regulate the level of water in the moats, which supplied north on the main citadel using fork of Euphrat. This regulation made easier constructions next to the city gates. In Herodots descriptions appear mechanisms with this function (Bergamini 1977: 136-138, about the description mentioned in Herodotus: Herodot siehe Koldewey 1913: 394-396). In the north-western corner of the building were stairs, which took a gap in difference in height with level of the street (Wetzel 1932: 29).

The wall of the mine citadel with northern widen and eastern

equivalent is surrounded by procession street the foreland of the Ishtar gate. The first phase ob building we can see in walls high 17 m, surrounding prepaid of the gate from the both sides, they were apart from each other about 20 m and closed from the south by bastion of the younger wall, situated next to ditch. Both walls had performances on their Oppenheim et al. es with width of the one brick. In the western wall there is the gate width 3.95 m with thick 1.38 m ousted curtain. In the eastern wall there is a gate also with width 4 m Widen made that the walls were expanded from the both sides about 7.5 m and finished them by corner bastions. Both walls cover is depending on gates, the western was encased in bricks. Western gates kept width 4.2 m. By the last one we can see increase the level of the road, which they got by paving it a few layers of brick and limestone slabs in the middle and red slabs from breccia sides. Facade of walls surrounds street were decorated simultaneously with the last phase of building of The Ishtar gates-by colorful enameled bricks with relieves looking outside lions. It is not clean if it was connected with the last process of widen it on the north. The processing street on the north from the main Citadel crosses the moat by tame. Transition to tame was surround by narrow, parapet walls.

The last corrections fortification on west bank of Euphrat is connected with extension of the fortress wall on the bank of Euphrat, during Nabonida, and for the first time –protecting the riverbank. It correspondence to the wall situated on a new quay and its structure is connected with further moving Euphrat on the western direction about 40 m. The city wall thickness from 7.6 to 7.7 m ad it has alternately extended about 0.7 and 1.7 m, towers. Before, its front width was mostly 6.3 m, later from 5.8 to 8.25 m. The length of curtain has mostly from 16.45 to 19.2 m, shorter curtain was measured 13.2 m and longer 24.1 m. In front of the wall is situated wide 3.5 quay which extends outwardly on 1 m- respect to the bigger towers. At present, we know the

only one stair lead from dock to the water, but we can suppose that there were others also. On the north width 9.6 m tower, through which *Libilhegals* canal, width 2.65 m and it close on the south western corner western bulwark. In this northern fragment the wall turns in western direction. The flow channel is protected by broken limestone slabs. There is plenty of towers with gates. In two cases further rooms are closed like this that it is possible to climb to the crown of the wall. Moreover, there exist a few waters flows under the towers. On the south the wall is finished by tower width 10.66 m. (Wetzel 1930: 48-53). Likewise, furthermore small gates there are a gate, which has a bridge crossing Euphrat.

The cobbled bridge westernmost from wall, was erected under columns of bridge, preexisting before and its first river pillars It is surrounded by two build in 9 m spaces towers with gates, which width 8.55 or 8.1, ad 2.15 m of length of protrude. Between deep on 3.15 m jamb and a width 4.6 m hole of gates is situated room width 9 m and deep 3.6 m. (Wetzel 1930: 60-61). It is also possible that quay and strengthen wall build by Nabonid were located on the north from the main citadel to sumer palace of Nabuchodonosor (Wetzel 1930: 69-70, Bergamini 1977: 129).

Gates

The Ishtar gate (Pl. 52) is known in the form from Nabuchodonosor's the second times (In the lowest parts of the building also discovered stamps Nabuchodonosor. Look: Koldwey 1913: 52). According to course of two walls the Ishtar gate is disoriented gate, consists of two buildings. In opposite to walls of the city, it is whole build from brick roasted and connection gate with walls was performed using short walls, and they connect by expansion joints in the city walls. In the gate building we can find four different phases and it

means continue of widen the passage (Koldewey 1918: 7-8). The short description of the expansion processes we can summarize as follows: The first its destruction of the old gate and build the new one on the brick foundation decorated by relief done from enamelled tiles. The second phase the construction rose above on a par with the transition gateway, the gate was connected with adjacent portions of the walls. The third phase the road vehicular was raised and paved on a fragment of 4 m. The gate extended like this to have a few doors, with four walls connected with the wall next to the ditch of Nabuchodonosor and the pedestals of statues were discovered in this point. The last phase-expansion of the main castle, raised floor of 5 m, gate has stone road and the fortification wall was elongated. Only at this level facade frame and adjacent with-it walls were covered with relief and enameled bricks the last stage was levelling transition and its renovating (Koldewey 1918: 8-9, 49-52). The new researches of the gate showed that the walls of gate goes down much more, and then already they were decorated by shallows what shows that develop of the gate was not result of existence other buildings in one place. The lower layer should not be visible and discovered levels of the streets were temporary (Bergamini 1977: 151-152). Because of these reasons I think that it is reasonable perception the gate as the last stage. The front of the wall thickness 4.12 m and because of this it is stronger than its sides and back which thickness is 3.1 m. The Gate is surrounded by two towers with wide about 6.2 m and they stick out 2.05 m., behind the doors hole width 4.5 m there is located passage to discovered surface with wide 21.9 m and depth 3.69 m. In front of the eastern tower is located small square pedestal and in front of western part of the chamber gate is located the next, bigger (Koldewey 1918: 16). The third is on the prepaid of the gate (Koldewey 1918: 10). The walls of the gate were designed with bricks with relief with colorful enamel which presets bulls and dragons with heads turn on the north (Koldewey 1918: 19-20). The gate relates to bulwark by two branches of wall. The west one is connected with small wide of the gate

by expansion joints with two teeth and it possess retrenchment. In rubble of it were discovered the remains of relief with dragon, probably created before build the gate. Except the gate, the fragment of the wall with bulwark is closed. The ground joins could be situated in higher part and it was not found in the preserved part of wall (Koldewey 1918: 44). The width of the branch correlates width of bulwark with lard walls. Thanks, of it, we can treat this construction as a simultaneously (Wetzel 1930: 13). The eastern branch connects similarly as western- using joins located in sliding gate, but it does not have angle of gate because towards of the gate is a little bit different, bent about a few degrees from previous setting. Similarity as the western branch, here is also retrenchment and gate- preceding a little bit narrower bulwark, connect with building made from brick roasted, which from front side covered with decorated bricks (Koldewey 1918: 32-33). Preservation of walls branch shows that gate was created on the beginning because its height is differed than the level of the floor (Koldewey 1918: 34. Koldewey proposed as an alternative explanation of the setting, namely that corresponding to the main bulwark of the Wall could be immediately closed the gate). For the first, relatively late, on the dike street processional created wall which limited vestibule of the gate and connected to the wall next to ditch. The eastern from two walls with thickness 5.5 m, and it wall was reinforcement about 3.7 m. It is connecting with eastern corner of gates front and with retrenchment of the eastern branch, it has three narrow space gates –they could be closed from the street side. Two small rooms were added to the outside gates, like this that from the street was visible middle passage. The western wall connects in the corner-between building of the gate and the omni wall and it has wide gate -4.65 m –closed from street side, which lead on the west- in the direction of bulwark where were stairs. Moreover, there was narrow passage between prepaid of gate and next gate in the massive, nearby littered well (Koldewey 1918: 11-15).

The inner gate width 4.59 m, (Wetzel 1930: 57), surrounded by two massive towers- each width 9.05 m and eject about 4.05m. The wall thickness 7 m, and in its inside, there is a passage width 8.05 m and deep 14.9 m lead to the ordered space. A like the interior walls of gate and as a wall connect it –they are decorating by relief of bulls and dragons. On the so-created court and in the gate were covered marks of patches floor (Koldewey 1918: 37-38). The inner building of the gate was connected by omni wall with main wall. The western branch of the wall consisted of bricks and mortar with extension of the gate, which widen has bold with similar shape as a tower, after this it has well-built fragment of the wall with gate provided with a groove. On the western edge any groove was not discovered perhaps it was situated higher. In the place, where mine wall was undercut there is a break width 1.5 m, which was stopper by irregular stones (Koldewey 1918: 42). External wall on east side was designed analogical way as western and consist, like eastern omni wall of bulwark with connection with brick gate, was discovered a fragment of strong wall, in which is contained fugue-connecting fragment of wall with a gate finishing on the east by smooth edge. The main wall is finished by strong retrenchment (Koldewey 1918: 36). In both case between branches of the wall was situated the next wall, which rose under boundaries of the gates, where was situated the stains led on the wall crown. Although, because of small number of residues is difficult to define original layout of this area. The south corner of South gate is connected connect by thick, curved wall with south castle. Transition set here make possible access to the street between the mine wall and south castle (Koldewey 1918: 39).

Due to construction of the internal gate we can suppose that it rose up under outside gate about a few m. For reconstruction of pavement let us teeth on the battlements and placed slits. In rubble, we found bricks suitable form (Koldewey 1918: 31). Roofing of space is likely, I guess. Possible appearance of arcs is not sure regarding the

reconstruction (Koldewey 1918: 45-47). Doubtful is also closed of the gates. Probably they had only one door, located behind the first arms of gate, rear space could be opened, regarding this (Koldewey 1913: 44) that accepts two gates.

On the east from Ishtar gate both of interior walls of the city runs in north-western direction. They were destroyed because of moving of Euphrat, leave in not big distance from the gate stump wall, next to tower of the main wall, which goes out of their curse about 3.5 m their width 9.4 m. (Wetzel 1930: 21). From the north branch wall was not discovered anything else. We were not able to say if their one more gate was existing. In the north-eastern corer of the city were discovered part of the walls of eastern branch. In the main wall there is alternating-ness of the towers the width bigger of them is included between 8 and 10.4 m, and smaller between 9 – 9.68 m. The length of curtain is from 17.3 m to 19 m. Precise dimensions were not given by Wetzel. For big towers we point width similar like is for 4 bricks, for small- one brick (Wetzel 1930: 22-23). The excavations of Irish conservation confirmed that the first dimension is 1.36 m for inner face of the retrenchment in relation to overhang bigger tower in outside direction, the excavations shows 3.6 m. The smalls had 0.7 m, what in general is similar of dimension of two bricks. The thickness is 6.4 m (Mohamed 1985: 20). The both of the notes treat about remains of earlier building, probably preceding Babylon Empire; the channel was carrying water to the moat, and about the wall propping up thickness 5.5 m, which were built for necessity of mine walls (Mohamed 1985: 21, Wetzel 1930: 22-23).

Bulwarks thickness 3.6 m (Mohamed 1985: 20). Its towers width from 3.09 to 5.11 m, but we do not have any information about their reach. The length of curtain is different than walls, it has from 8.42 to 12.95 m, reach to the curtains wall 30 m of length. Moreover, there were discovered few water passages. One of them is going through the

wall and bulwark, I the character of the wide 4.2 m channel made from burnt brick (Wetzel 1930: 24-25).

In the eastern gate of the city walls were discovered two gates. In the north one of them (Pl. 53) were excavation only the insTellation of the gate, but not outside porch. The internal diameter of the gate is 5.7 m, and it is surrounded by two towers- their width 10.5 m or 10.7 m. Both of them are sticking out on 3.48 m ahead of the line of walls. The chamber of the gate is situated along passage and the whole buildings are sticking out 21 m ahead of the line of walls. The only one surface measured in the north corner between building of the gate and city wall, it has dimensions 1.98 x 4.2 m. It enabled enter and go out to the city from the chamber of the gate at simultaneous passing on a stairwell and ramp lead on the walls crown. The space neighbouring it where we can suppose of rebuilding the area, was not excavation (Wetzel 1930: 57-58).

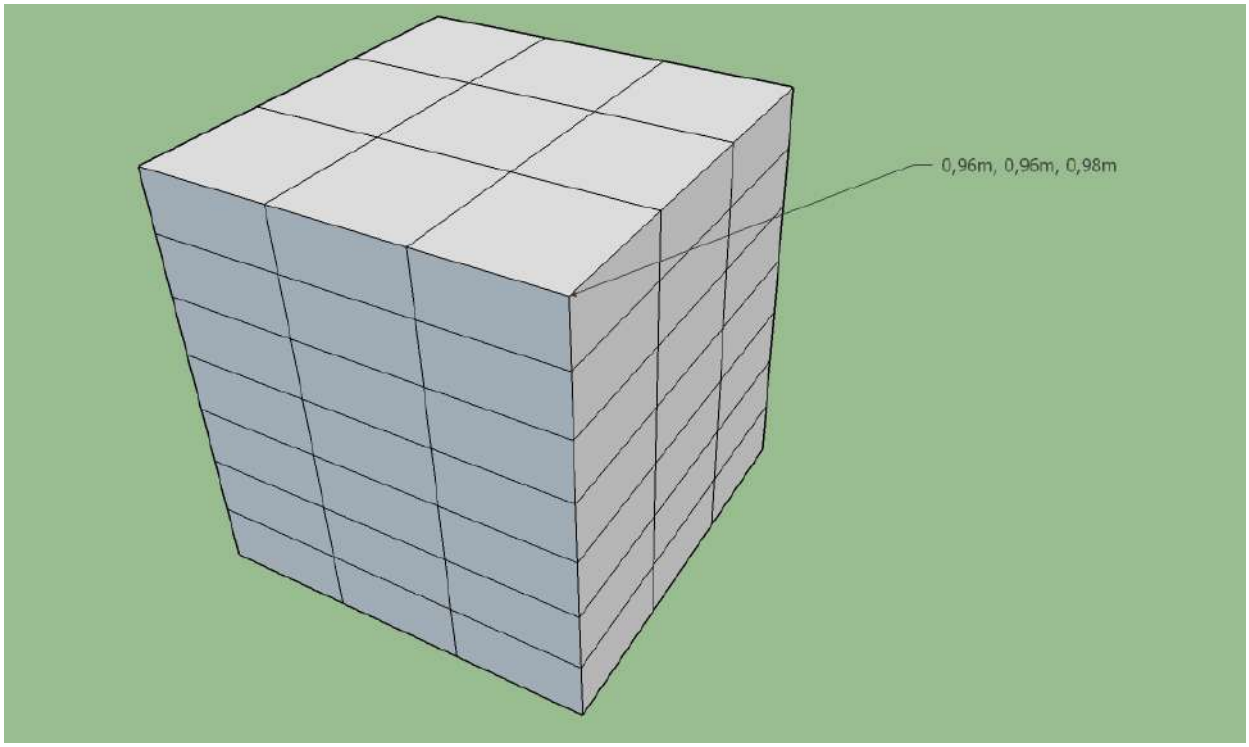
The South gate in eastern wall is not well kept or not enough researched. The tower in front of the main gate was sticking out on 4.9 m, and a few m further on the north was channel width 2.6 m, coming to the moat and made from brick stone (Wetzel 1930: 58).

At the south branch of inner wall was discovered small fragment of upper wall in south corner- short piece a middle branch, in some time bigger fragment discovered on the west. The corner tower on the east width 10.45 m and stick out on 3.25 m. The thickness of the main wall is 7.5 m and the distance divine it from bulwark from the inside its 7 m. The retrenchments of the main of wall are situated a little bit different; between two big towers about outreach 3.26 m and fronts width 9.05 m was situated the tower with outreach 0.72 m and width 8.8 m. The curtains had from 18.26 m to 18.4 m. We know that bulwark in this point width of single tower 5.7 m. On a section about 120 m was discovered middle fragment of main wall, situated between

curtains with length 13.42 to 19.56 m and which had four width 9.27 to 11 m. Discovered was only inner part of the wall, that's why we are not able to define outreach individual towers, with one exception width 0.7 m. the walls thickness 7.2 m. The western fragment of the wall, containing south city gate correlate the main wall because alternative big and small towers. The outreach the big one included between 3.35 a 3.5 m. the wall is finish on the west from the gate by tower width 11.7 m. the curtain sometimes about strange length measuring from 8.12 to 17.62 m. The eastern corners of bulwark were researched, what lets up define of outreach of towers, small 0.7 m and big 1.35 m. With exception of one with width of front 6.2 m, remaining towers had by turns 4.4 and 4.55 m. Thickness of the wall 3.25 m and length of curtains is between 3.95 m and 8.25 m, that's why they are interesting small architectural assumptions. Wetzel thinks that bulwark was "more late and superficial investment (Wetzel 1930: 26-29).

In a case of South gate (Pl. 54) discovered all outside edges where we have dimensions: width of mine wall 4.7 m, towers surround it width 9.4 m and outreach 3.82 m. The front gate width 4.83 m, other towers have 5.33 m and outreach 2.1 m. Similar like Ishtar gate building of gate is situated at the head of line of walls and its length is 8.33 m. we do not know why its space has asymmetrical arrangement (Wetzel 1930: 58). The main wall and bulwark are finished by towers on the east with space about 10 m from river wall of Nabopolassar, later river wall of Nabonid space is about 54 m. The last researches show that not every detail about localization of buildings is matching. There was discovered wall connected with the building (Wetzel 1930: 29).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- Mudbrick

1) 32x32x 12 cm = 63 the amount of brick.

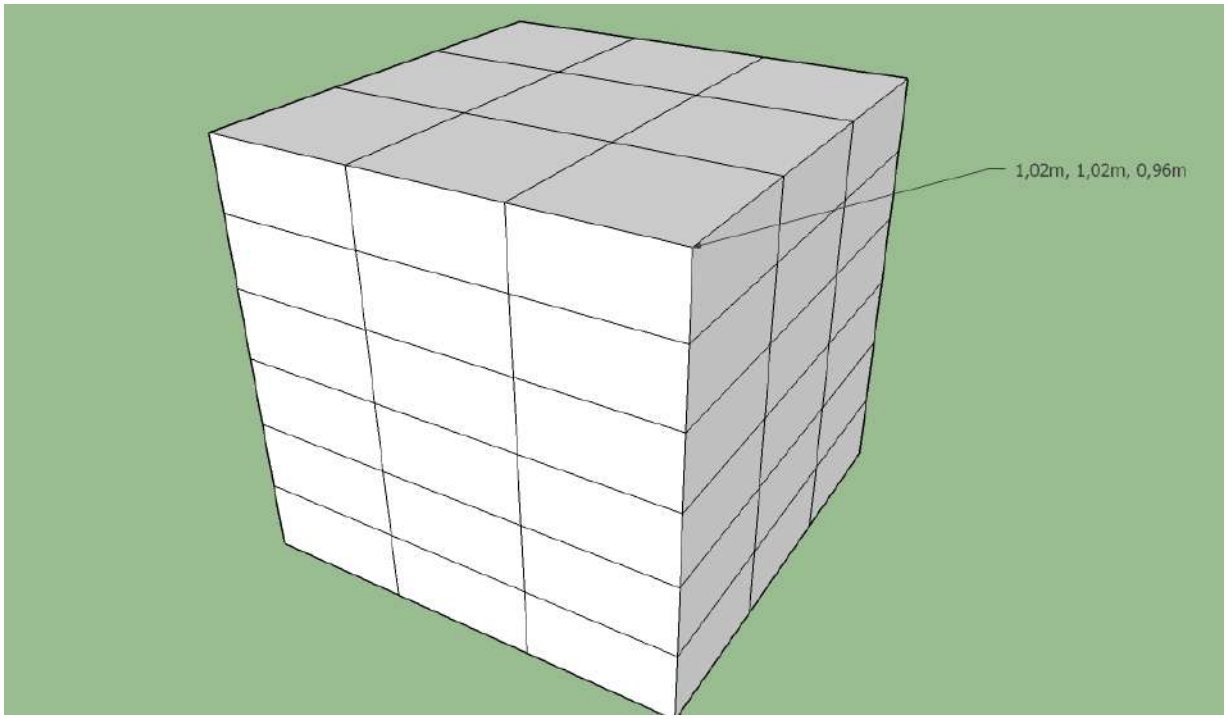
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

63x 4= 252 minut

252 ÷ 60 minut= 04:20

04:20 ÷ 3= 01:27 hours of work needed to build m3.

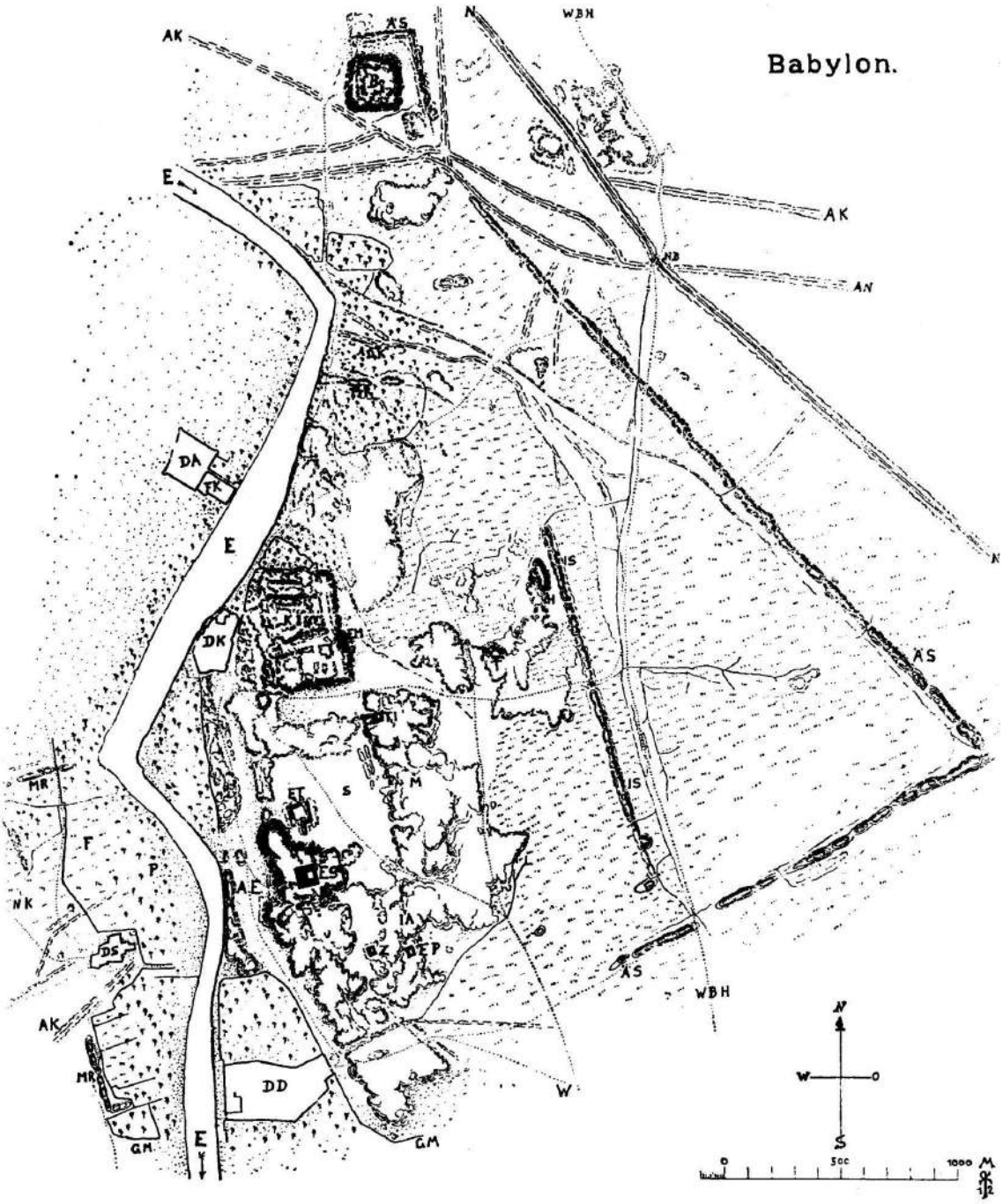


2) 34x34x14 cm = 54 the amount of brick

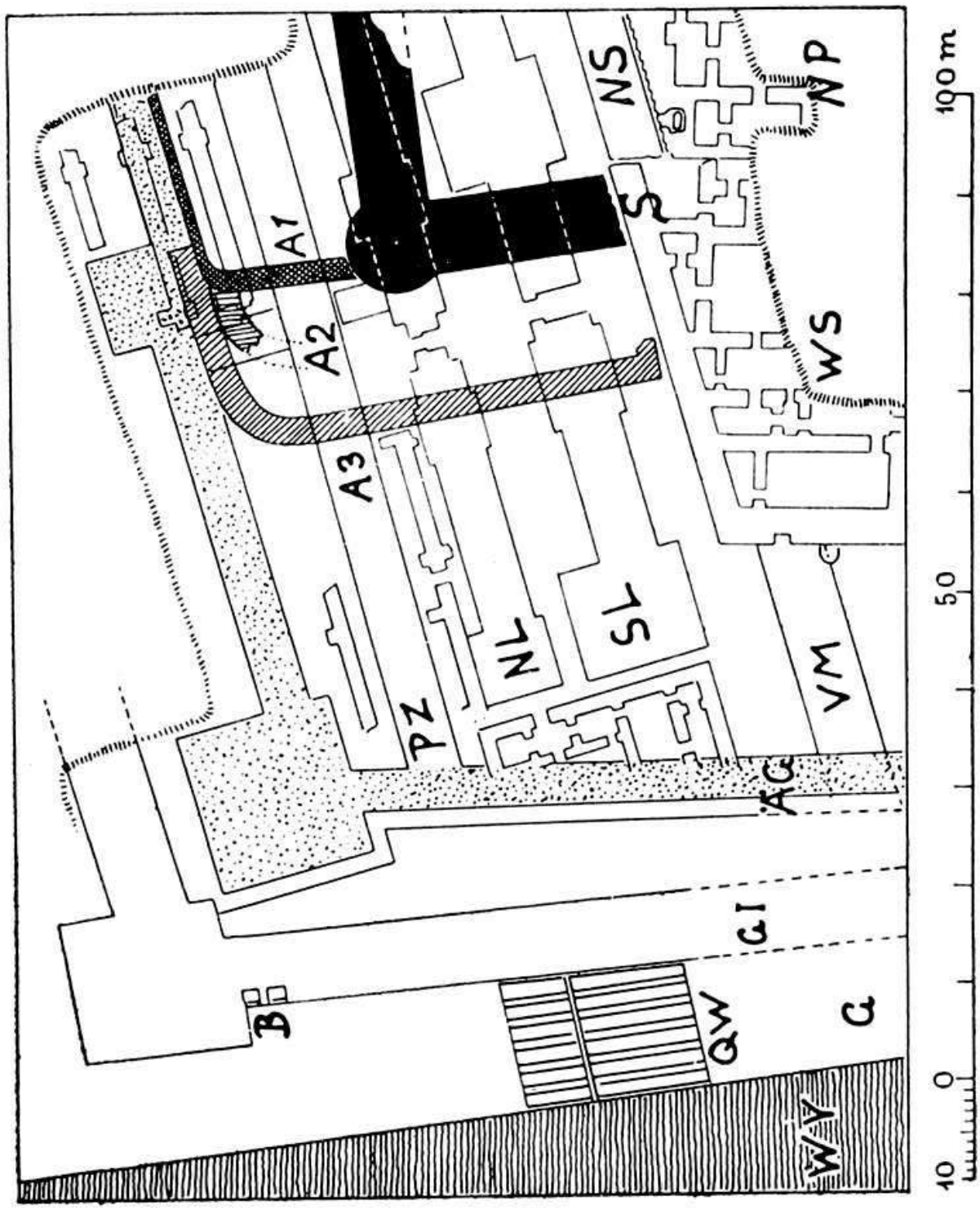
54x 4= 216

216 ÷ 60 minut= 03:35

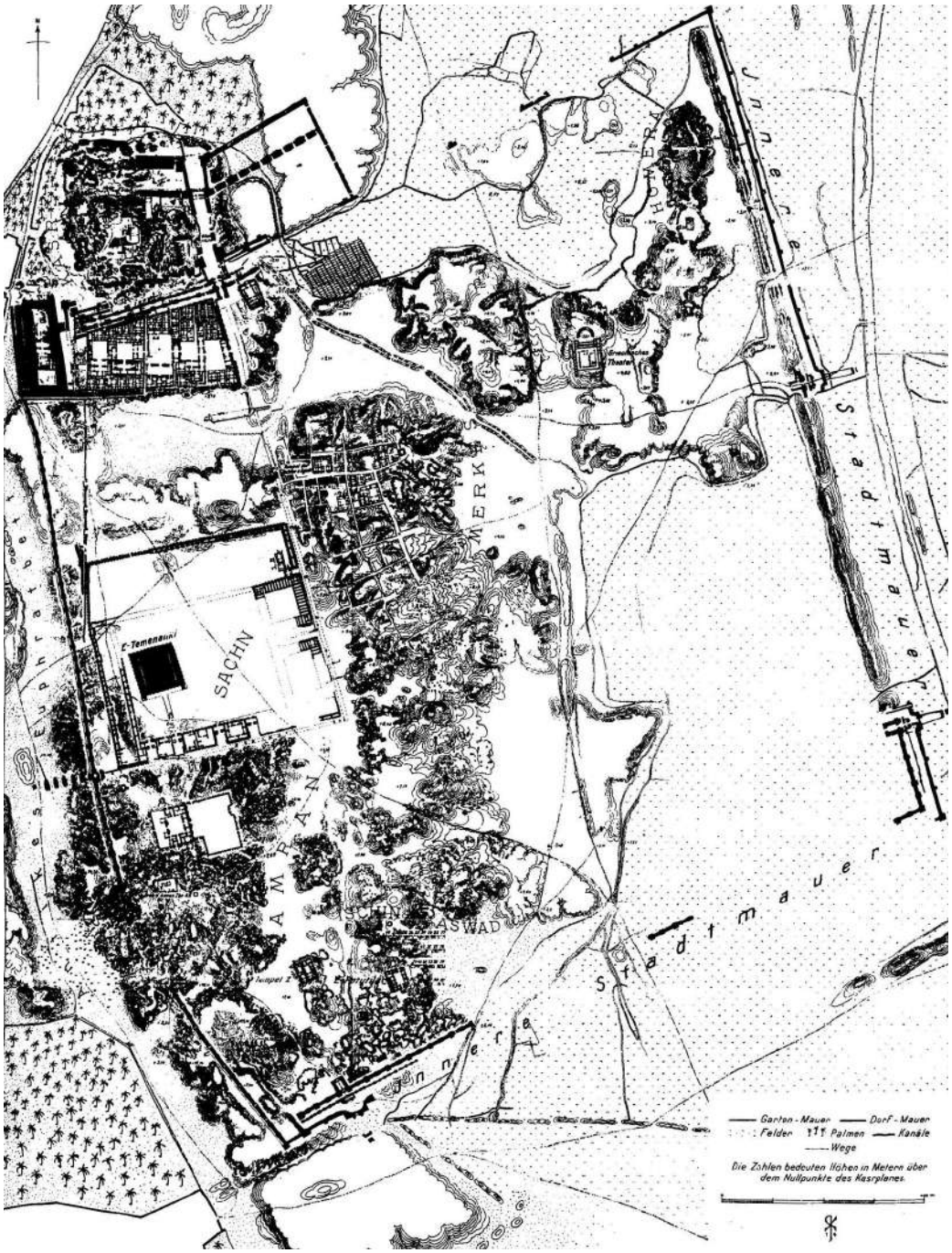
03:35 ÷ 3= 01:12 hours of work needed to build m3.



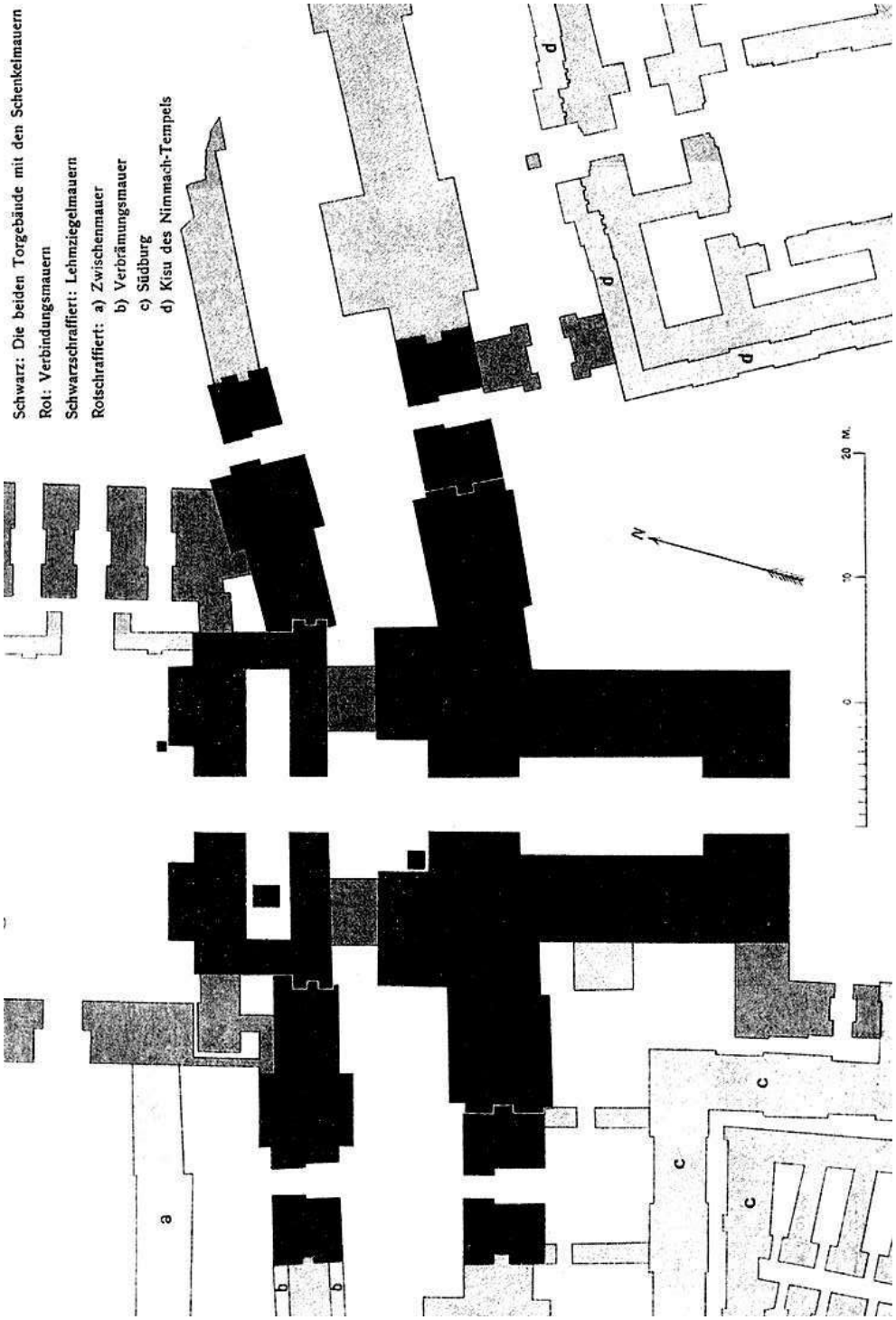
(Pl. 48) Urban area Babylon before excavation (Koldewey 1990: 13, Abb. 1)



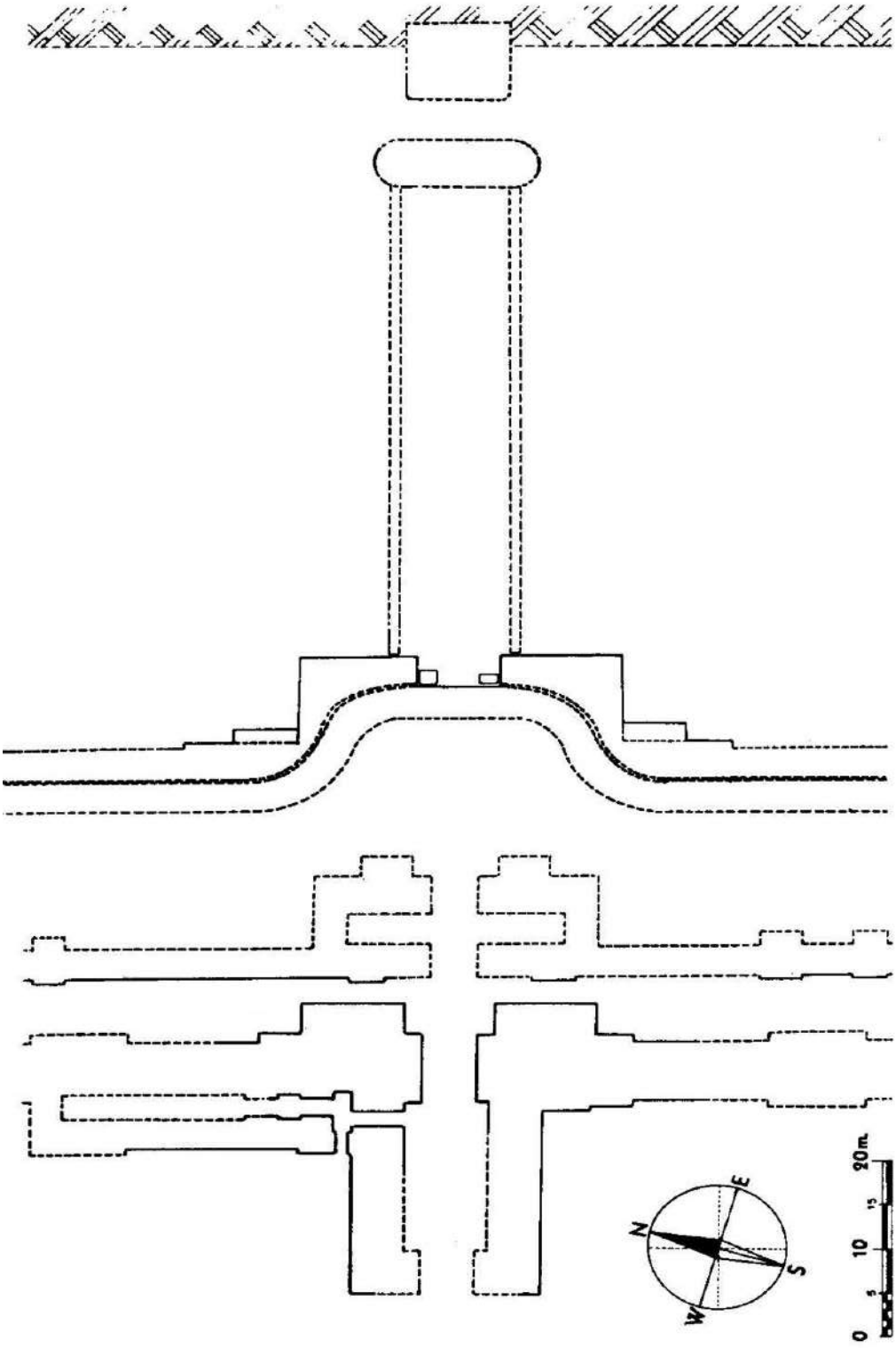
(Pl. 49) North-west corner of the Citadel and South History of excavation and seawalls (Koldewey 1990: 138, Abb. 81)



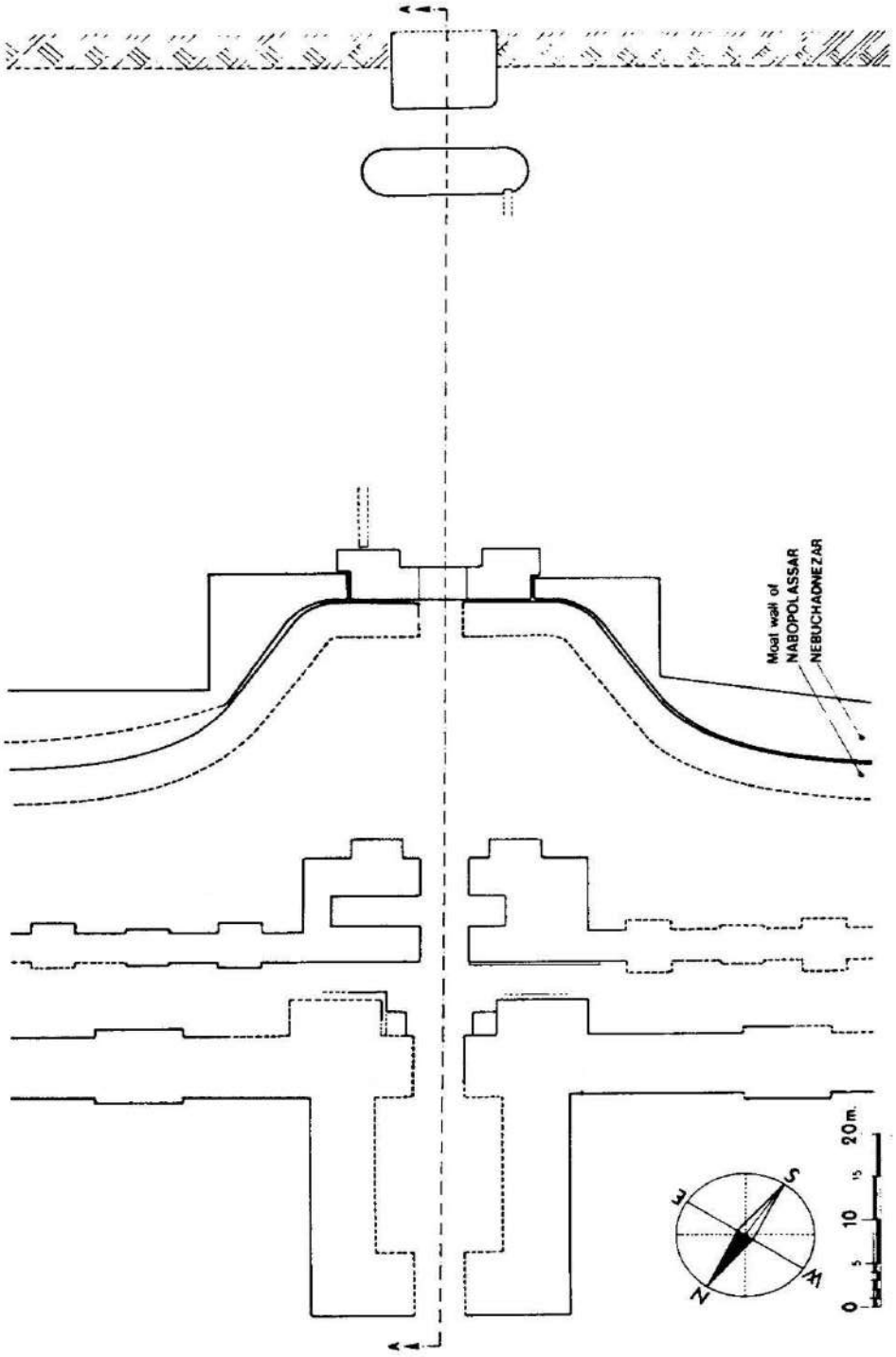
(Pl. 50) The Eastern part of downtown Babylon (Koldewey 1990: Anlage)



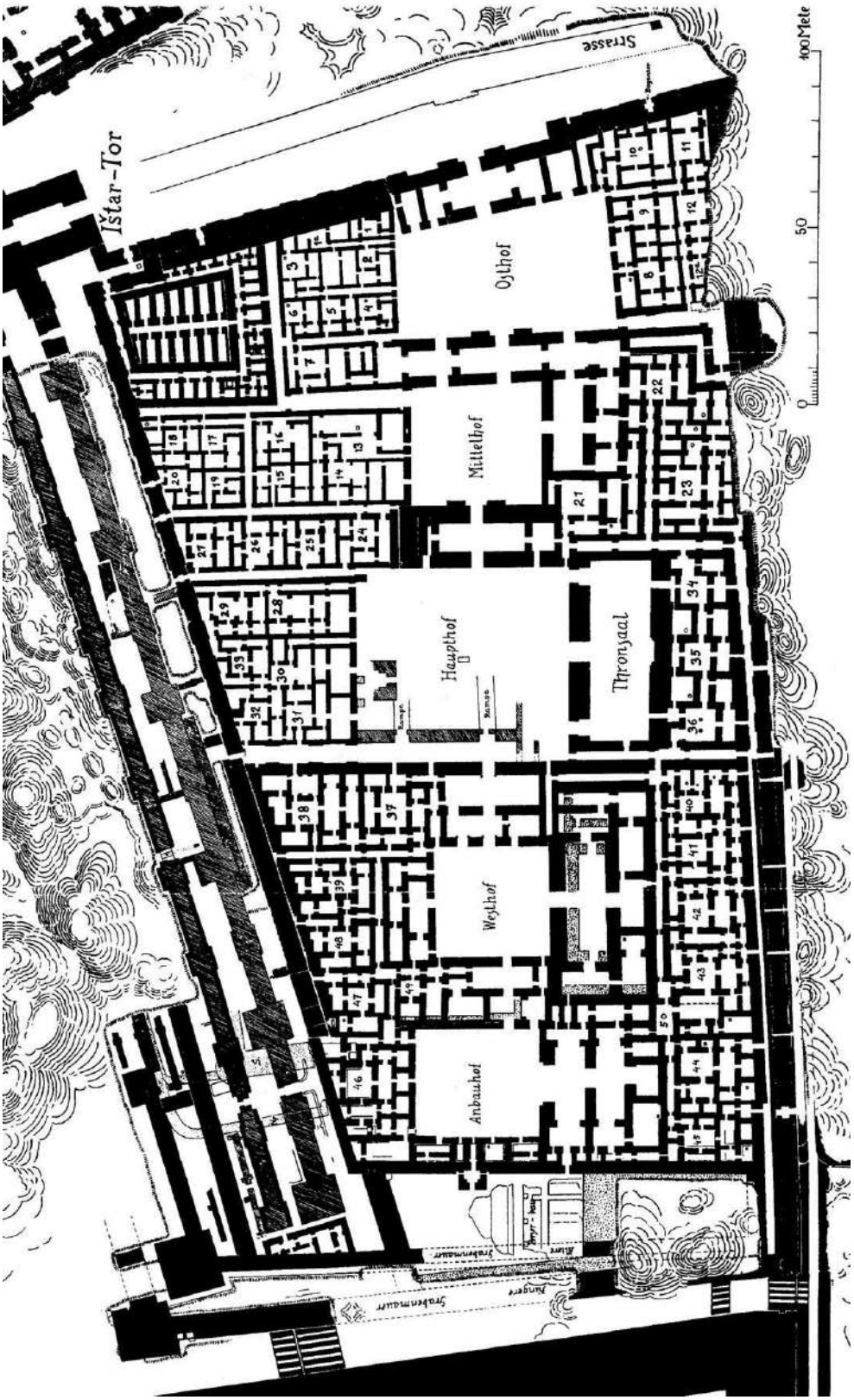
(Pl. 52) Ishtar gate (Koldewey 1918: Taf. 3)



(Pl. 53) East gate of Babylon (Bergamini 1977: Fig. 74)



(Pl. 54) South gate of Babylon (Bergamini 1977: Fig. 73)



(Pl. 51) Southern citadel in Babylon (Koldewey 1930: Taf. 2)

7. 8. UR (TELL AL MUQAYYAR)

Location of the site

Ur is located by the Euphrat, what has influence on its south-western side. On north-west it was surrounded by canal.

Dimensions of the site

The stand was shaped like an irregular oval with a longer axis of 1200 m and shorter 800 m and an area of 50 ha.

The area Temenos enclosed by the wall measures approximately 400 m, by 220 m, the actual wall lengths are, north-east wall, 380.00 m., south-east wall, 197.00 m., south-west wall, 400.00 m., north-west wall 248.00 m. (Woolley 1962: 4).

History of research

Excavations in Ur the first time conducted J.E Taylor in 50's of XIX century. After them the expedition was created by Pensylvania Universitet in the end of XIX and conducted researchers by R. Campbell Thompson and H.R Hall after the first war world. The key works conducted by Leonard Wooley, who was present in Ur from 1922 to1934 in behalf university museum of Pensylvania Universitet and British Museum (Pollock 1982: 11-14).

Fortifications

Fortifications of the city fall to the rule of the Ur III dynasty (2100-2000 B.C) and Temenos fortifications surround the Ziggurat dating back to the Neo-Babylonian period (Woolley 1974: 61-63; Woolley 1962: 255).

Dating of the site

Site settled since 5 millennium B.C. (Ubaid period) to mid 1st millennium B.C. (Neo-Babylonian period).

Construction details

The wall was an imposing structure (Fig. 60), built throughout of mudbricks 0.32 m. square (with half bricks 0.32m. x 0.16m.) and 0.13 m. 0.14 m. thick, it consisted of two parallel walls connected by cross walls forming intramural chambers. Each wall was 3.25 m. thick, with on its external face shallow buttresses with a projection of 0.35 m. Which, together with the wall spaces between them, were decorated with vertical T-shaped grooves; the total width was 11.70 m., the height cannot be known, but it must have been great enough to be in relation to the wall's thickness. The grooved wall rests upon a foundation of mudbrick which is plain and runs flush with the front of the buttresses; this is part of the same construction' but it was actually built first, as a guide, and occasionally the wall itself is not accurately aligned with it, while in the south gateway the foundation was laid straight across the gate recess and the return walls of the entry have no proper foundation; its depth differs very much in different places and in the north corner, where the wall runs over loose made soil, it has more than fifteen courses while in parts of the north-east stretch it has but two (Woolley 1962: 6).

Gates

There are six gates (Pl. 55), three on the north-east side, one on the south-east and two on the south-west sides; on the north-west there seems to have been no gateway. The first section of the wall, between the 'Bur-Sin' and the 'Cyrus' gates, was discovered and identified by Dr. H.R. Hall in 1918. In the spring of 1923, the Joint

Expedition by means of shallow trenches traced its outline sufficiently to establish the topography of the site but failed to find the great gateway in front of the Nannar court and the gateway in the south-west wall. The season of 1925-6 gave us the south-west gate and the interior features along the wall to the south-east of it, in 1926-1927 the north corner was fully excavated and the great gateway there was found; the little fort in the west corner was first discovered in 1924-1925 and was further examined in 1931-1932.

Although the wall was massive, it suffered a lot from time and exposure. Halfway between the `` Cyrus '' gate and the east corner, it was found at a height of 1.90 m, in other places, such as the south-east gate, it completely disappeared.

The Nannar Gate (Woolley 1962: 6)

The gate lay on high ground and all the walls were ruined down to or below floor level and the southern part of the gate tower had disappeared altogether; the plan however was complete. At the back of a wide recess stood a pylon containing a central door-passage with two gates and on either side of it a guard-chamber with a small room opening off it behind. The floor of the recess, which sloped down slightly to the north-east, was paved with three courses of mudbrick and apparently with one course of burnt brick above those, though of the latter only one small patch remained. The doorway was flanked with wide buttresses ornamented with the usual T-shaped grooves; the passage and the guard-chambers were paved with four or five courses of mudbrick; the whole approach and the tower itself rested on a heavy packing of brick clay which had evidently been put here expressly to raise the site and to bring the passage to the level of the great courtyard within.

Against the inner face of each of the four door-jambs the socket-stones were found in situ; one was a re-used stone of Bur-Sin with the Gig-par-ku inscription, one had an inscription defaced by the new impost-hole cut into it and two were plain. In the entrance recess there was parallel with the north-west wall a row of burnt bricks 0.32 m. square, set on edge, probably the frame of a low platform of mudbrick.

The "Bur-Sin" Gate (Woolley 1962: 7).

The gate recess was much smaller than in the Nannar gate (Pl. 56b), the tower was smaller but more solid; there was the same constructional weakness in that the tower was united to the Temenos wall by an angle of single wall only, though in the present instance this was so short that the weakness was less serious. The wall was built on a slope running down to the north-east and in the gate recess this was reverted with brick clay making almost a glacis. Inside the gateway the mound was retained by a third wall parallel with the Temenos wall, making a platform or terrace against the wall's inner face. The site of the gate lay considerably lower than that of the Nannar gate and rather lower than the 'Cyrus' gate; a hollow in the Neo-Babylonian ground surface had been made good by throwing across it, on the line chosen for the wall, an embankment which was sloped in front and held up by a retaining wall behind, and the wall was built on it. At some later time, a torrent had swept down from the higher ground inside the Temenos and had cut a deep channel for itself against the retaining wall of the embankment; we dug into its bed for a depth of 3.50 m. and found nothing but water-borne debris.

The outer door there was against the inner face of the jamb a hinge-box; that on the north-west contained a re-used diorite impost-stone of Bur-Sin, hence the name given to the gate on its first discovery, with the Gig-par-ku inscription and amongst the bricks of which it was

built were a broken brick of Nabonidus and a complete brick of Cyrus; the south-east hinge-box was built of stamped bricks of Nabonidus and was empty. The floor of the pylon passage was of mudbrick; it had been raised during the period for which the gate was in use, and the walls went down well below it, the total height of the construction being about 1.80 m. at the highest point.

The whole gateway had been rebuild, as was shewn by the alterations in its south-east jamb. The original jamb had three reveals; after the third course above floor level there was a change in construction, there were only two reveals and the upper brickwork either overhung or was set back from the old; the same distinction could be traced along the buttress front to the corner of the gate recess, where there was the same patchwork, but the groove decoration was copied more exactly. As the bricks were the same in both sections of the wall the reconstruction is more likely to have been the work of Nabonidus than of Cyrus. The Nabuchodonosor drain from the Ziggurat passes under the threshold of the gate but is broken away on the glacis slope. The next section of wall, with four intramural chambers, is well preserved and stands to a height of a metre and a half.

The Cyrus Gate (Woolley 1962: 7).

The gate recess was of the same dimensions as in the 'Bur-Sin' gate, the brickwork however was in such a condition that the inner part of the building could be traced only with great difficulty and some uncertainty. This gate also had been remodeled; there was no such definite break between two constructions as could be seen in the 'Bur-Sin' gateway.

The back of them was ruined away below foundation level and the details of their design could not be recovered. Behind the gate, at a

distance of 18.00 m. behind the wall line, there was found a length of mudbrick wall (bricks 0.32 m. square) with buttresses along its north-east face; it was 2.50 m. Wide and must have formed part of an important building, but of that there was no more to be found; the wall broke away at either end, and the remaining stretch, 43.00 m. Long had no branch walls on its south-west side. Whatever the building was, it seems to have been an original feature of Nabuchodonosor's Temenos.

The South-East Gate (Woolley 1962: 9).

The south-east gate, lying originally on fairly high ground, had been much denuded by a watercourse which ran down from the higher mound on the west and came straight through the gateway. The plain foundation of two-four courses of mudbrick ran straight across the gateway recess. Uninscribed, lay 4.00 m. away out of site. The gate chamber was unusually wide, assuming the symmetrical form given to it in our reconstruction, and as its south-west wall was unbroken by any door it would seem that there was only one guard chamber, that on the north-east side where the back north-east wall was further away and allowed ample room for a room opening off the passage chamber. In the south comer of the gate chamber, partly underneath the wall, was a larnax burial B.46; it was necessarily older than the Temenos wall, but it was itself Neo-Babylonian.

The Nabuchodonosor Gate (Woolley 1962: 10).

The wall here is much damaged and the plan of the gateway was difficult to establish (Pl. 56a). There was no gateway recess, but on the contrary the piers of the outer doorway projected beyond the line of the wall; the back of the gate tower was flush with the inner face of the Temenos wall, so that the gate was really but a breach in the wall line and not a special feature as in the cases described above. In the second

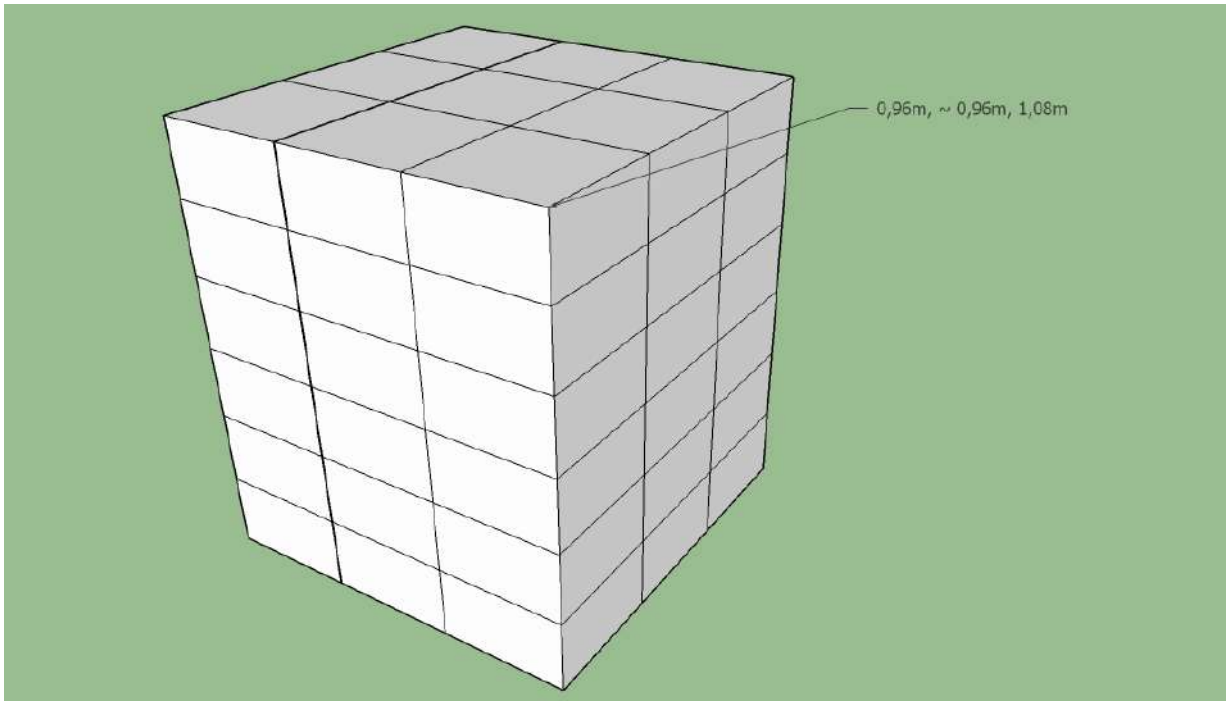
doorway there is on the mudbrick foundation of the north-west jamb a patch of burnt brick 2.30 m. long (incomplete) going back 1.00 m. into the wall; apparently the door-jamb was carried up in burnt brick; the face of the south-east jamb, by the staircase, is ruined down to below the level at which the burnt brick.

The "Nabonidus" Gate (Woolley 1962: 11).

This was very similar to the 'Nabuchodonosor' gate; there was no gateway recess and except for the slight projection of the pylon beyond the front line of the Temenos wall the depth of the gateway was the wall's thickness; the inner and the outer walls prolonged made the jambs of the inner and the outer doors.

Part of the iron shoe of the door pole was still resting in the socket. On the brick pavement lay a fragment of strip iron 0.30 m. Long 0.60 m, wide, with two nail-holes through it; it might have been part of the binding of the door.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

32x32 x 16cm=54 the amount of brick.

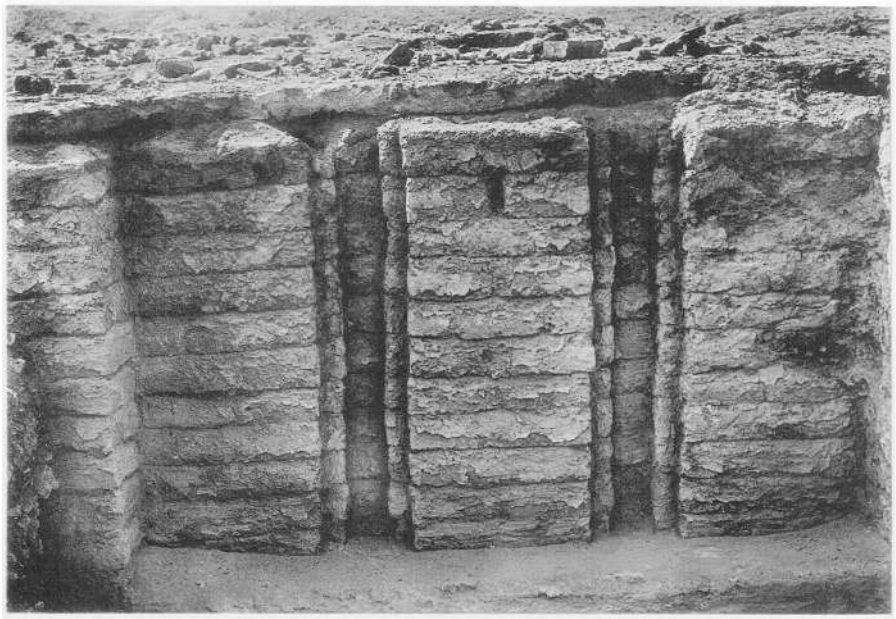
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

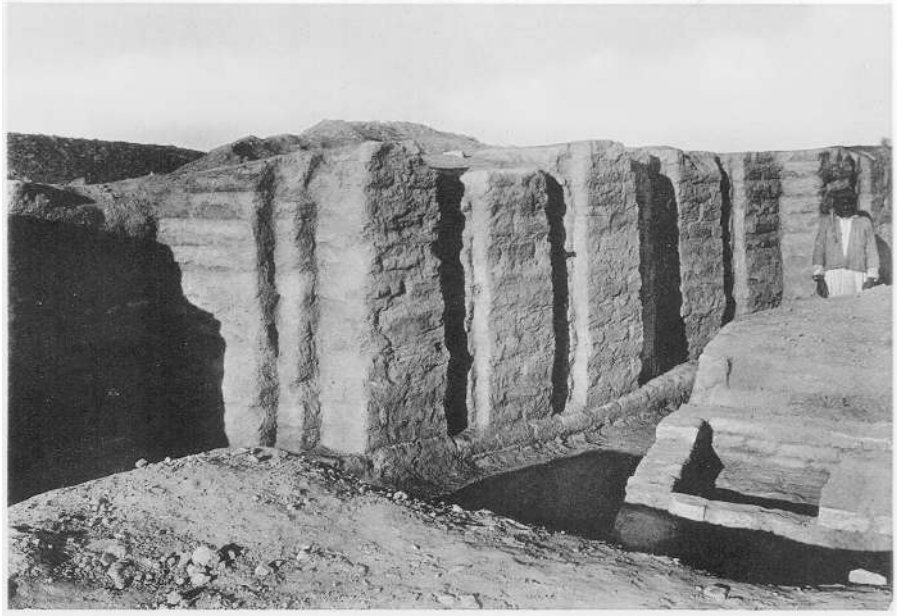
54x 4= 216

216 ÷ 60 minut= 03:35

03:35 ÷ 3= 01:12 hours of work needed to build m3.

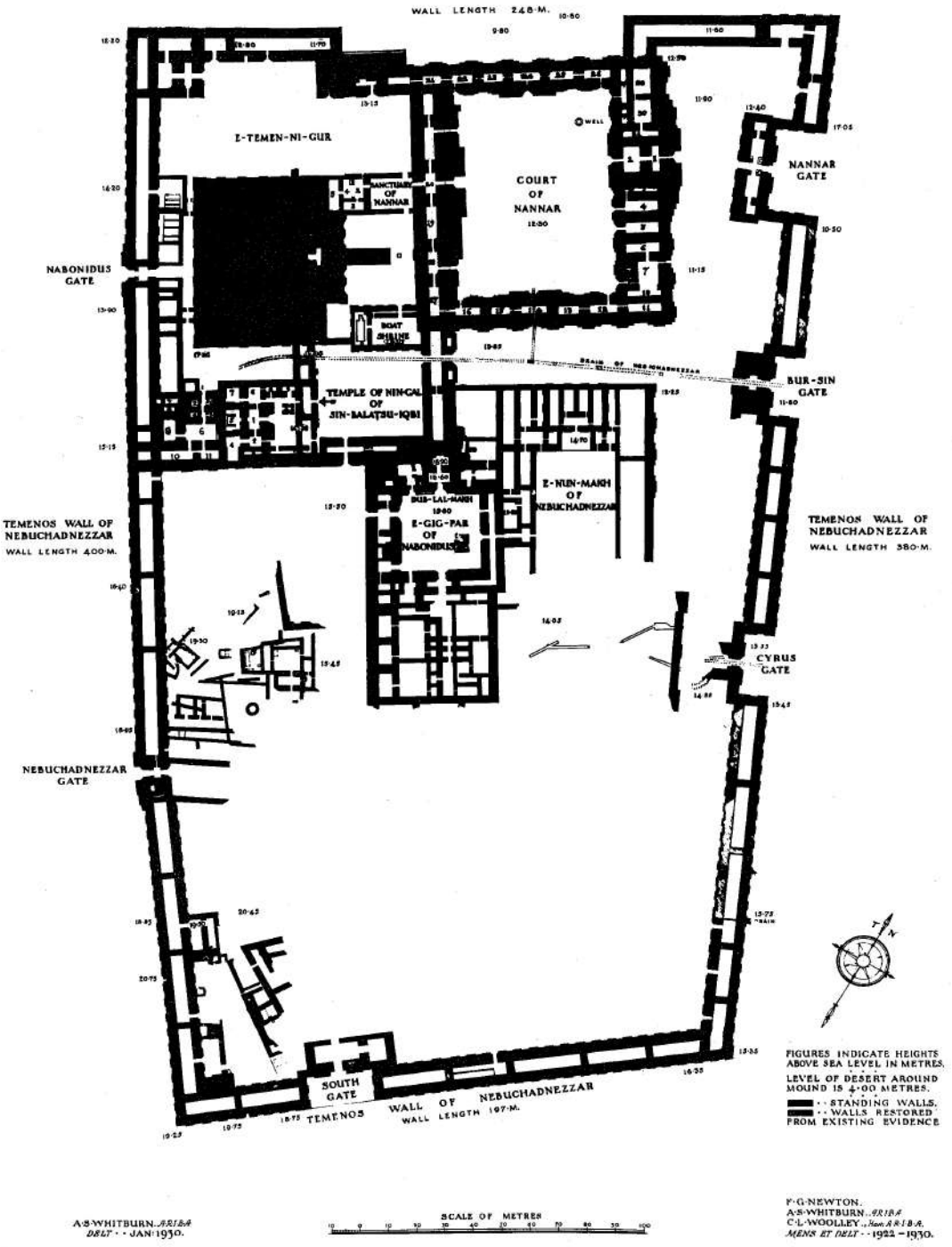


(a) The Inner Face



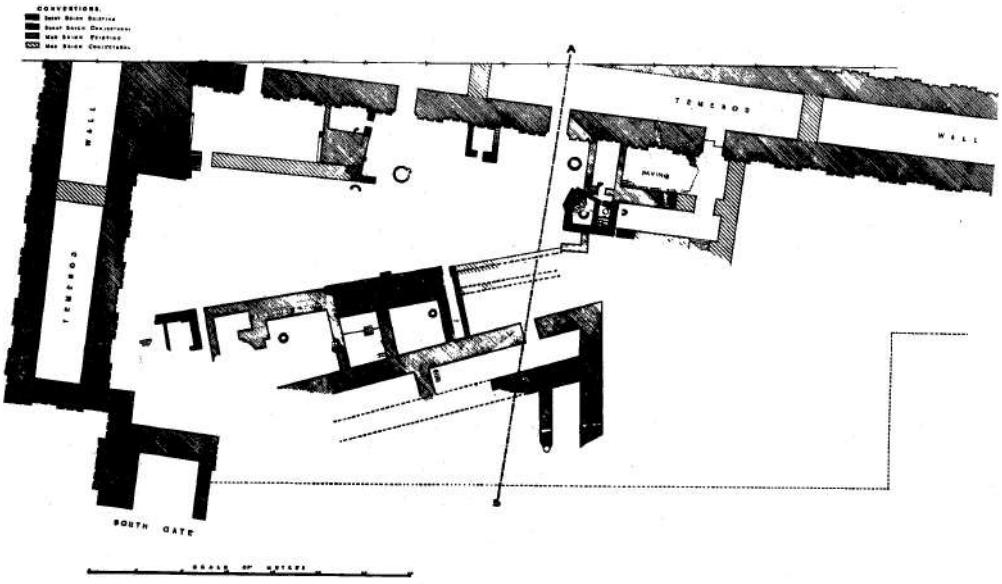
(b) The Outer Face

(Fig. 60) The Temenos Wall of Nabuchodonosor (Woolley 1962: Pl. 1)

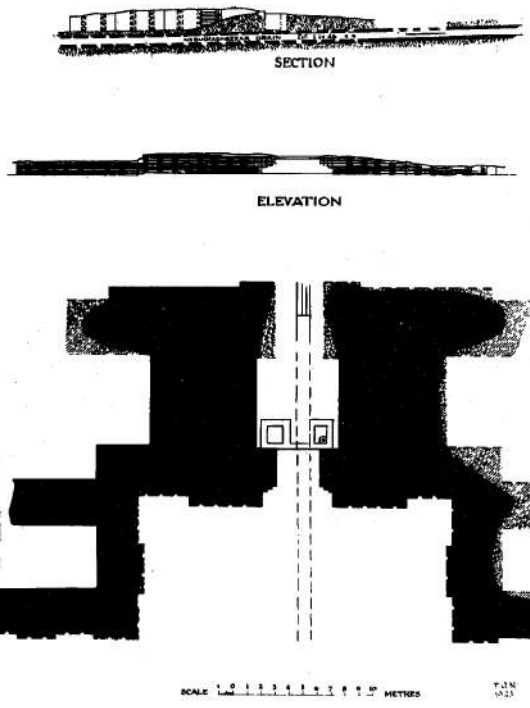


THE TEMENOS OF UR IN THE NEO-BABYLONIAN PERIOD

(Pl. 55) The Temenos (Woolley 1962: Pl. 60)



(a) The Nebuchadnezzar Gate



(b) The 'Bur-Sin' Gateway of the Temenos;
Plan, Section and Elevation

(Pl. 56) Gate (Woolley 1962: Pl. 62)

CONCLUSION

Analyzing the usefulness of defensive walls in the 2nd millennium B.C., we see that they played an important role in everyday life as well as in influencing the outcome of historical events. We observe this in the construction technique as well as the method of protection of the city which included the most important elements of the fortifications, providing fortifications that are better protected.

Most of the defensive constructions in the 2nd millennium B.C. had irregular shapes resulting from the unique topography of the area, which in many cases determined the appearance of cities such as Tell Al-Rimah, Kish and Tell ed-Der in Sippar. It should be mentioned that there is a lack of information regarding sites that existed during this period of time due to the lack of interest on behalf of researchers who were exploring the fortifications, or due to the cities being found in greatly dilapidated states.

To summarise the fortifications of the 2nd millennium B.C., it can be said that two linear walls surrounding the city is the counterpart of fortifications that were constructed in the early-early period where, appearing for the first time in sites called kranzhugel (round posts with two lines of the wall) which were characteristic for this period, it can be assumed that these sites are from the 3rd millennium B.C., but the topography of the area and the erosion caused by the rivers played a role in changing the shape of the stands.

The building material was brick, dried and burnt in all the locations referenced in this chapter, only in the wall of Temeos in Kish appeared brick flat-tapped on the north side of the eastern part of Ziggurat.

Analyzing Babylon in the 1st millennium B.C. the fortifications of the Babylonian capital of the Babylonian empire, Babylon, play a key role, providing the majority of information due to the poor state of recognition of other Babylonian cities. From the point of view of spatial planning, Nippur and Ur can be said to largely correspond with earlier fortifications. In the case of Ur, it is possible to identify an oval, an irregular shape, probably corresponding to the previous one, which would mean that the city had an organized layout. However, Babylon has a shape based on the bright, geometric principles conferred upon it by Nabuchodonosor. The inner city has a quadrangular shape, and the district located on the west of the river corresponds with the east. The outer walls mark a wide triangle around the eastern city. Recalling citadels and elevated royal palaces are located on the river and probably have built-in berths. The Summer Palace was erected inside the outermost wall of the outer walls, while the double complex of the southern and main palaces is located inside the inner walls. In this way, the main fortress protects the weaker fragment of the inner-city walls, creating multiple defensive lines against the southern citadel. Equally important is the proximity of the processionary street leading to and beyond the main palace, enabling passage to the city sanctuary.

The first type of fortification consists of a system of two walls supported by a ditch with a reinforced escarpment, both inside and outside the city fortifications, as well as an impressive, continuous use of superpowers. Changes between high standard and small are a phenomenon for which I do not find analogies. Weztel believes that they enabled support for the gates' fronts (Wetzel 1930: 6), but this is not a thoroughly convincing hypothesis, because it would prevent the need for further towers to arise. In addition, the arrangement of small towers is so small that they are not suitable for support and serve only as a cover for the curtains that are intersected between large towers. Despite the small size of the curtain, the parts of which are located between

large towers, enable firing from both sides. The sense of a system of variable size is not clear from a military point of view. Nevertheless, the city walls are very well made and have a solid character.

The wall surrounding the palace buildings seems weak due to the noticeably small reach of its "towers". The strikingly low reach and small differences between the width of the towers and the curtains lead, as indicated earlier, to the assumption that their function was rather more decorative than military. Overhangs of up to 1 metre are not favorable from the viewpoint of the wall section cover, and considering the width of the window sill, there is no room for the shooter. In comparison with the facade of the Koldewey temple (Koldewey 1931: 4), the conclusion is reached that these defences had no military significance.

In the case of gates, it is possible to indicate two types: one with an interim room on a cruciform plan, as in the bulwark of the inner city wall; or a the gate with a bridge and a long passage room, analogous to the gates discovered in the main walls. In both types, there was most likely only one gate to be opened and closed at the first pass, and these did not differ from each other, excluding the transition system. It has not been possible to determine the structure of the stairs of fortifications with absolute certainty. In addition, large gates with wide passages have outside narrow passages, by excluding the sides discovered on the other side, the Ishtar gates were also found in the palaces and in the Nabonid wall, where they were probably necessary for logistical reasons with the function of reducing traffic.

CHAPTER 8

FORTIFICATION OF MESOPOTAMIA FROM II MILLENNIUM B.C.

8. FORTIFICATION OF MESOPOTAMIA FROM II MILLENNIUM B.C.

In this chapter I would like to highlight the issue of excavation in different regions of ancient Mesopotamia. It should be noted that there are a lot of inaccuracies in scientific studies with regard to prescribing dates to excavation sites. There is a lot of information provided for the dating of excavated fortifications to the second millennium B.C., but we do not get any details about these sides. I want to analyze the architectural characteristics to produce a summary of the Babylonian and Assyrian periods.

There are seven cities and archeological sites in the north Mesopotamia, currently located within the boundaries of today's northern Iraq and modern Syria, and also in the south of Mesopotamia southern Iraq in this zone we are facing bigger problems than in other areas of the Mesopotamic region. We have general information from the 2nd millennium B.C only. Scientific researchers were not interested in these points, therefore, there is not a great deal of documentation on this subject. The best materials we can find are scientific preliminary reports or short notes from excavations.

I will analyze and trace in this chapter the construction of all fortification systems dated to the Assyrian period, and I will try to discuss the issues related to the quality and construction method, as well as the protection that fortified the city fortifications during enemy attacks, and, on the other hand, I will touch upon the control of the population through the use of entry gates into or out of the city, and I will emphasise the importance of the economic power of a given city, the

resources of the workforce, as well as the time needed to build such huge fortifications.

8. 1. ABU HAFUR TELL

Location of the site

The site is located 15 km north-east of Hasake at 500 m east of the road from Hasaka to Derbasiye near the southern end of the east island of Hasake Dam, only 50 m from its western side (Kolinski and Lawecka 1992: 178). In northern Syria today. It consists of two telle, between them a smaller wadi emerged, although the water could have been a factor which separated the Tell into two parts, Koliński and Lawecka in their report from 1992 are confident it was not so (1992: 179). The smaller tell was called by the researchers as Tell Abu Hafur 'East'.

Tell Abu Hafur 'East' was located on the left bank of Wadi al-A'ay ca. 80 m east of the huge Abu Hafur tell, which took place in the fourth and 3rd millennium B.C. (Reiche 2014: 44).

Dimensions of the site

The site has a diameter of about 150 m at the base. The south slope is unstoppable, and the outline is blurred, but the northern slope has been significantly weakened by erosion. The maximum height of the stand is 15-17 m above the horizontal plateau. On foot on the southern slope, some ruins are preserved at altitude 1.5 m. They belong to a modern rectangular structure made of basalt blocks. About 100-120 m in the east, there is another bar shape with a diameter of about 110 m,

and height only about 2-3 m. Narrow, modern wadi separates it from the main (Daszewski and Stępniowski 2008: 48).

The stand consists of two parts: a huge, half moon tells about 200 x 150 m and 16 m heights, and the second - 'East' oval road with a length of 130 x 80 m and about 5 m high situated east of the station (Kolinski and Lawecka 1992: 179).

History of research

Since 1986 the team of the Polish Center for Mediterranean Archaeology has been participating in the international area recovery program. This program is Organized and supervised by the Syrian Directorate General for Antiquities and Museums of the officials. Regular excavations at this site began in the spring of 1988. The second season took place a year later 1989, the third season in 1990. The stand was excavated by a Polish team from the University of Warsaw under the direction of Prof. Piotr Bieliński.

Fortifications were examined in the third season of excavations in 1990 to examine further stratigraphic sequences.

Fortifications

Double fortifications of irregular bricks: from again (Sanchez 2011: 50), topography of the bench is the hill, abundant reinforcement. Buttocks and sufficiently solid walls L13, L14 and L19.

Dating of the site

The bench is dated for many periods beginning with the late Obeid, Uruk Warka, Dynastic Archaic periods of Parthian, Byzantine, Islamic (Sanchez 2011: 23).

Tell fortifications that surround the B stell come from 3rd millennium B.C. but on the cradle C which is called Tell Abu Hafur 'East' found fortification defense from the second millennium (Bieliński 2008: 101).

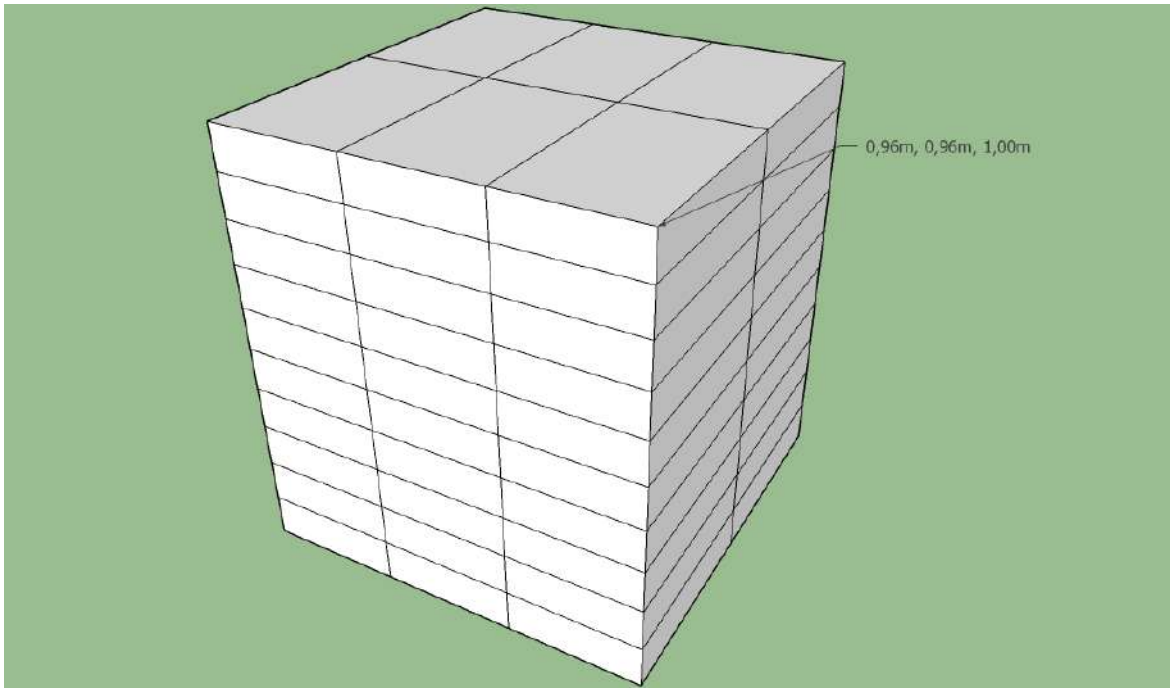
Construction details

Tell Abu Hafur East (area C) (Pl. 57), to investigate the site was opened three small posts on the west slope Tell Abu Hafur East. Some fragments of the defense wall were erected on a stone foundation. His wall was built from brick mud in dimensions: 48 x 32 x 8 cm, 48 x 32 x 1 cm, 4 x 25 x 8 cm and 45 x 3 x 8 cm. Unfortunately, I could not find the dimentions of bricks from which walls were built. Researchers did not give any information to reports about them. They gave only dimentions of bricks, which were found in archeological side look: Sanchez 2011: 29). These fortifications come from 2nd millennium B.C. and Professor Bieliński said that it can be attributed to Middle Assyrian period. On this layer, some structural remains were found Neo-Assyrian, probably defensive character (Bieliński 2008: 101).

Gates

There is no information about the gateway in the publication.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Four different sizes of mudbrick.

1) 48 x 32 x 8 cm = 60 the amount of brick

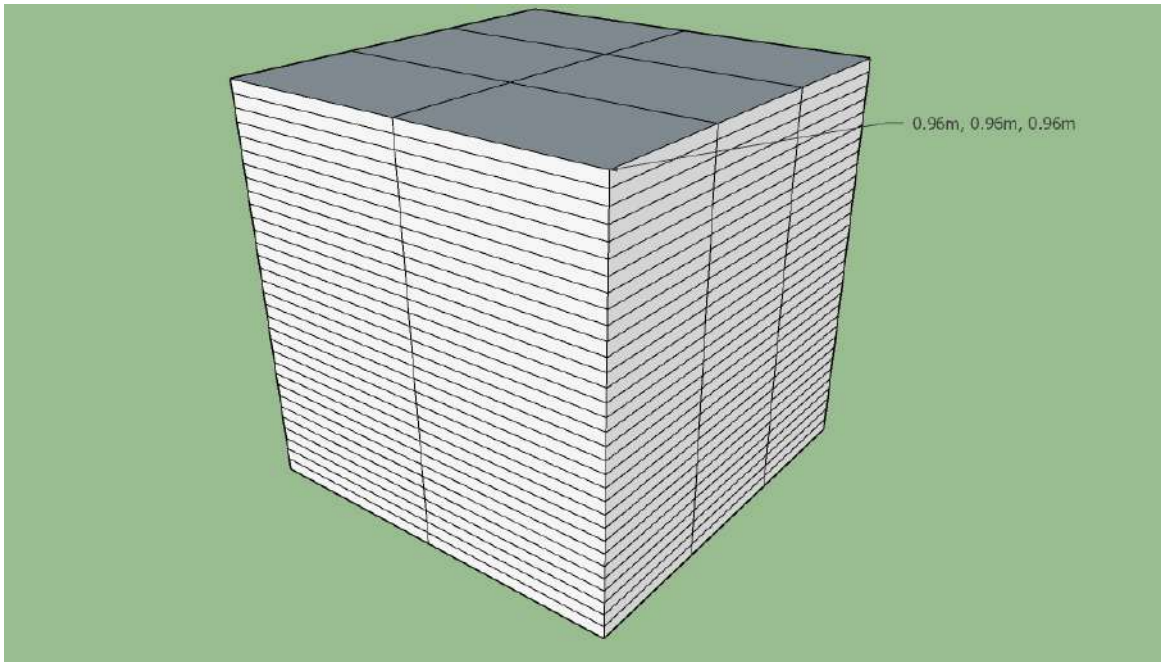
-When using 3 workers to build

- 4 minutes time is needed to build one brick.

60x 4= 240

240÷ 60 minut= 4:00

04:00÷ 3= 01:20 hours of work needed to build m3.

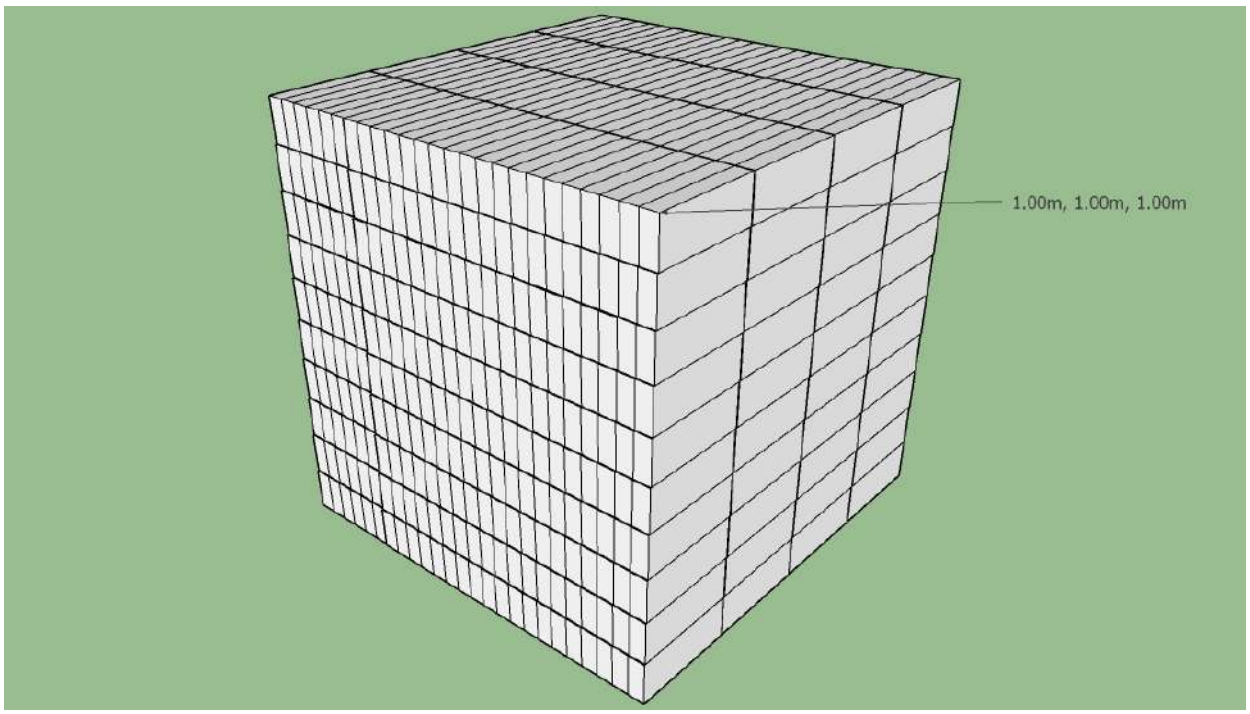


2) 48 x 32 x 1 cm = 198 number of bricks

198x4= 792

792÷ 60 minut= 13:10

13:10÷ 3=04:38 hours of work needed to build m3.



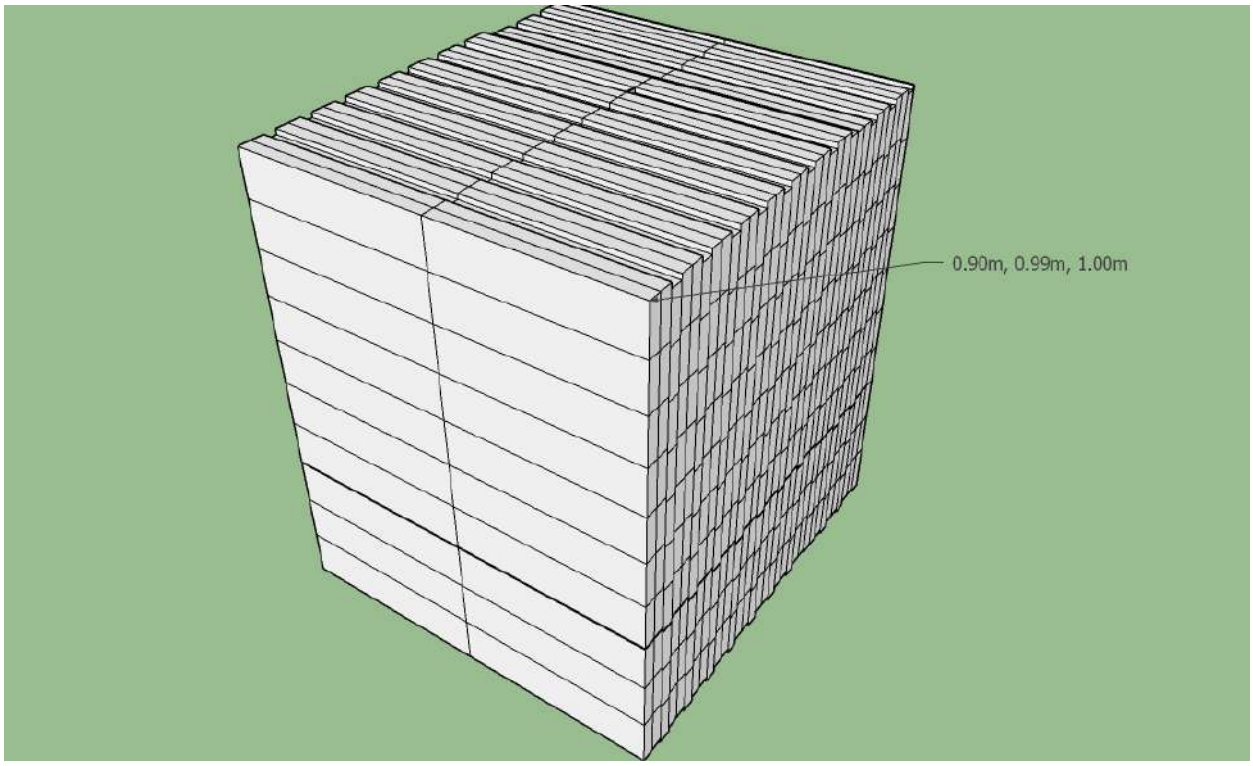
3) 4 x 25 x 8 cm = 1000 amount of brick

458

1000x4= 4000

4000÷ 60 minut= 66:33

66:33÷ 3= 22:18 hours of work needed to build m3.

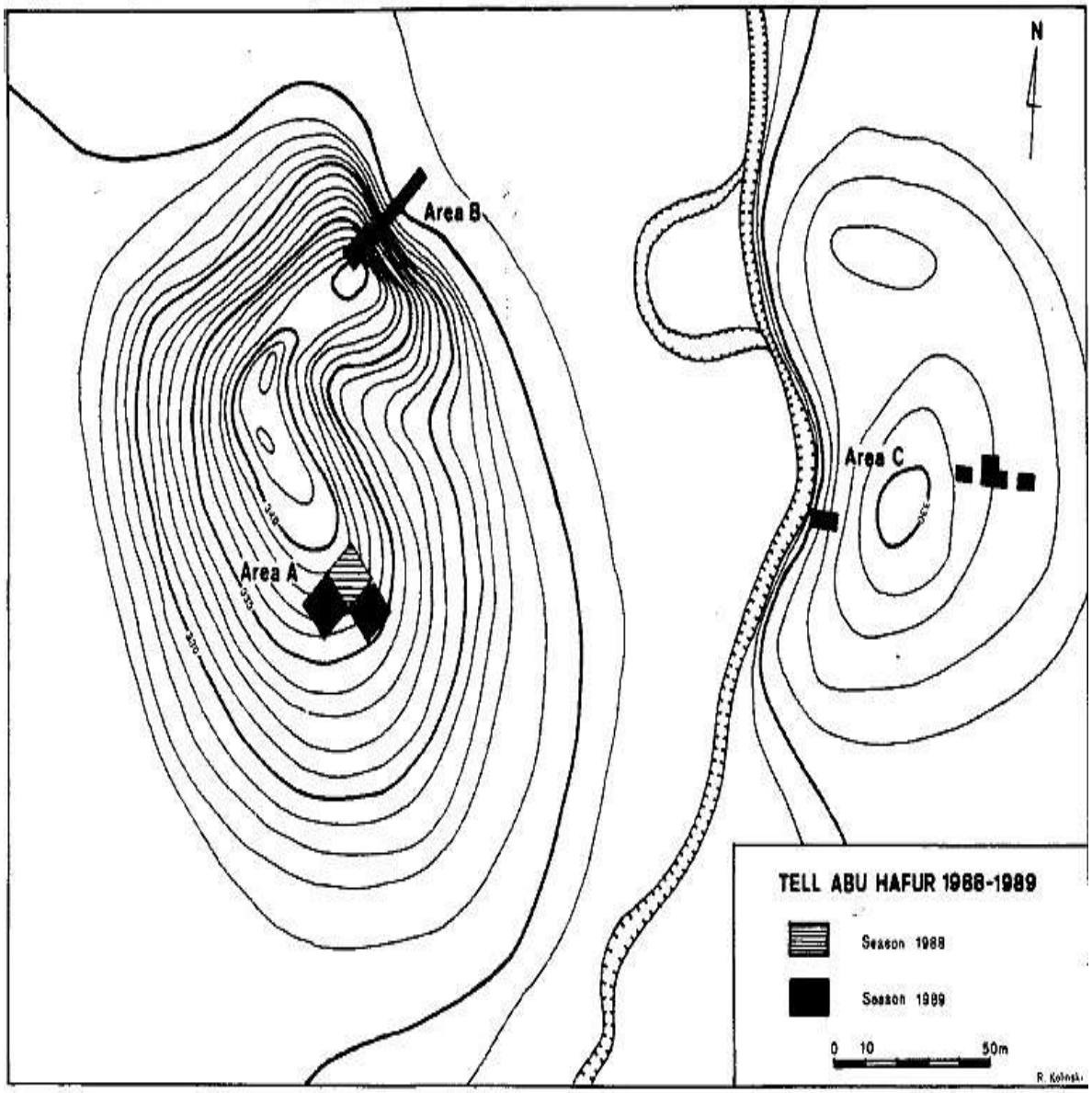


4) 45 x 3 x 8 cm = 660 the amount of brick

660 x4=2640

2640÷ 60 minut= 44:00

44:00 ÷ 3=14:40 hours of work needed to build m3.



(Pl. 57) General Plan Tell Abu Hafur (Kolinski and Lawecka 1992: 179)

8. 2. ESHNUNNA, TELL ASMAR

Location of the site

The site is located in central Mesopotamia in the Diyali valley in present-day Iraq, about 81 km north-east of Baghdad.

Dimensions of the site

The excavations side covers an area of approximately 150 x 170 m.

History of research

The first archaeological research began in 1930-1936 and was organized by the Iraq Expedition of the Oriental Institute of the University of Chicago under the direction of Henri Frankfort. In 1957-1958 was led by Thyroid Basin Archaeological Project under the leadership of Thorkild Jacobson. And another study was conducted in 1994 by Diyala Basin Archaeological Project under the leadership of McGuire Gibson. In the late 1990s archaeological research by Iraqi archaeologists was carried out.

Fortifications

Fortifications were found in the excavation (K10), (K15), (B15) on the north-east side corner, the face of the city wall from the 3rd millennium. In the excavation, the remains of the city gate were discovered (B 15), and in the place (H-J 12) a complete tower and in (K 12) - a fragment of the tower.

At points (A14) and (J12), fortifications from the Isin-Larsa period were found.

Dating of the site

The settlement layers are dated from the late 4th to 2nd millennium B.C. and the earliest city wall is dated to the early dynastic period, and the fortifications from Larsa period were rebuilt for the remains of foundations from earlier constructions (Lloyd 1967a: 199). The walls were destroyed along with the city during the attack by Hammurabi in 1762 B.C. (Mieroop 2008: 52).

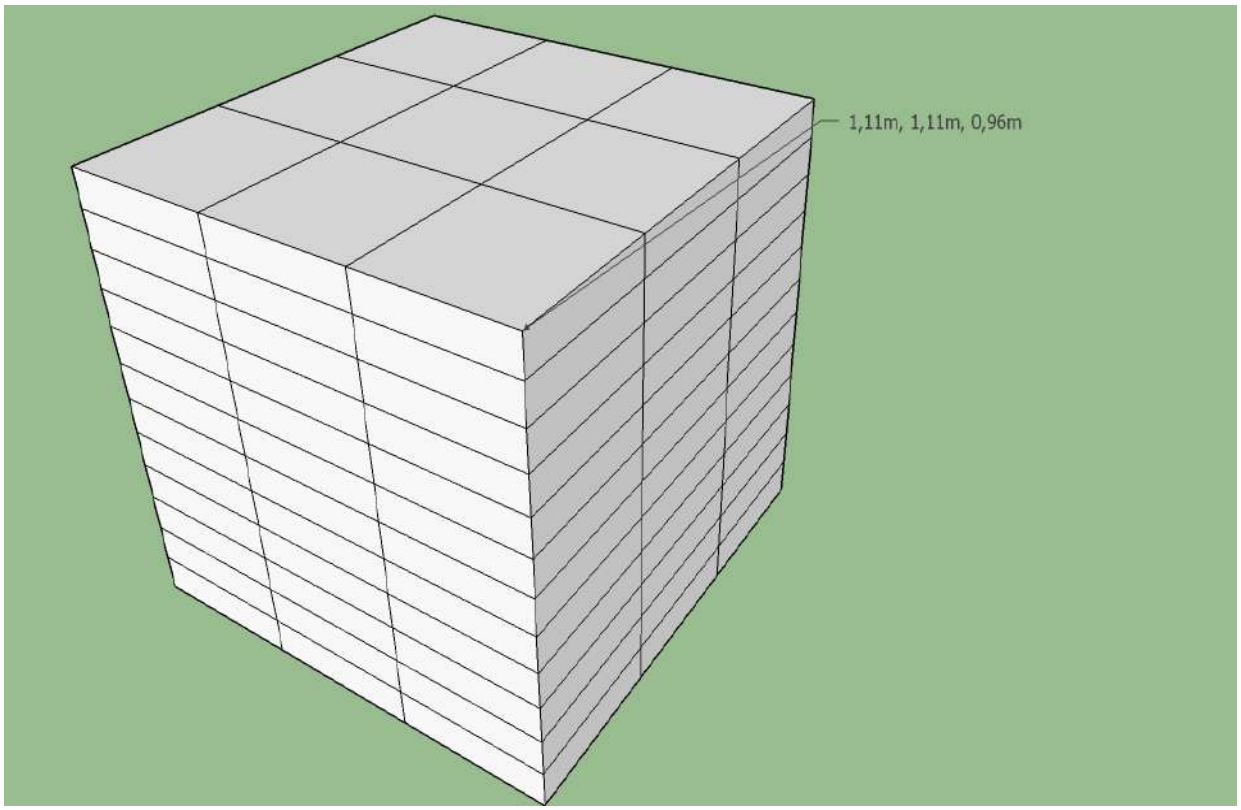
Construction details

City walls (Pl. 58) were found in the square J 12 fragment wall from the Larsa period (Lloyd 1967: 201- 202). The wall was made of a flat-convex brick with dimensions 37 x 37 x 6 cm. (Harold 1967: 152), brick can be seen on the inside wall of Lars, strongly curved to the south, the wall It had a thickness of 11 m. The west turns twice at a slight angle, and each of these angles was marked about 30 cm, the walls ran in a straight line to point A 14, where there were remains of a thick wall parallel to each other with empty spatial among others (casemates). On the east, the inner wall was well-preserved runs to the point where there is square L 14. The face of the wall was destroyed, and it was set to about 1.50 m. In excavation A was found a bastion of the city wall running diagonally.

Gates

Near the eastern wall of the north palace, remains of the gate were discovered (Lloyd 1967: 200). Very badly preserved, it was probably adjacent to it from two sides of irregular towers. Opposite the inner face of the gate, a small building of three rooms was built, probably a guardhouse.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- A flat-convex brick

37x37x6cm = 108 the amount of brick.

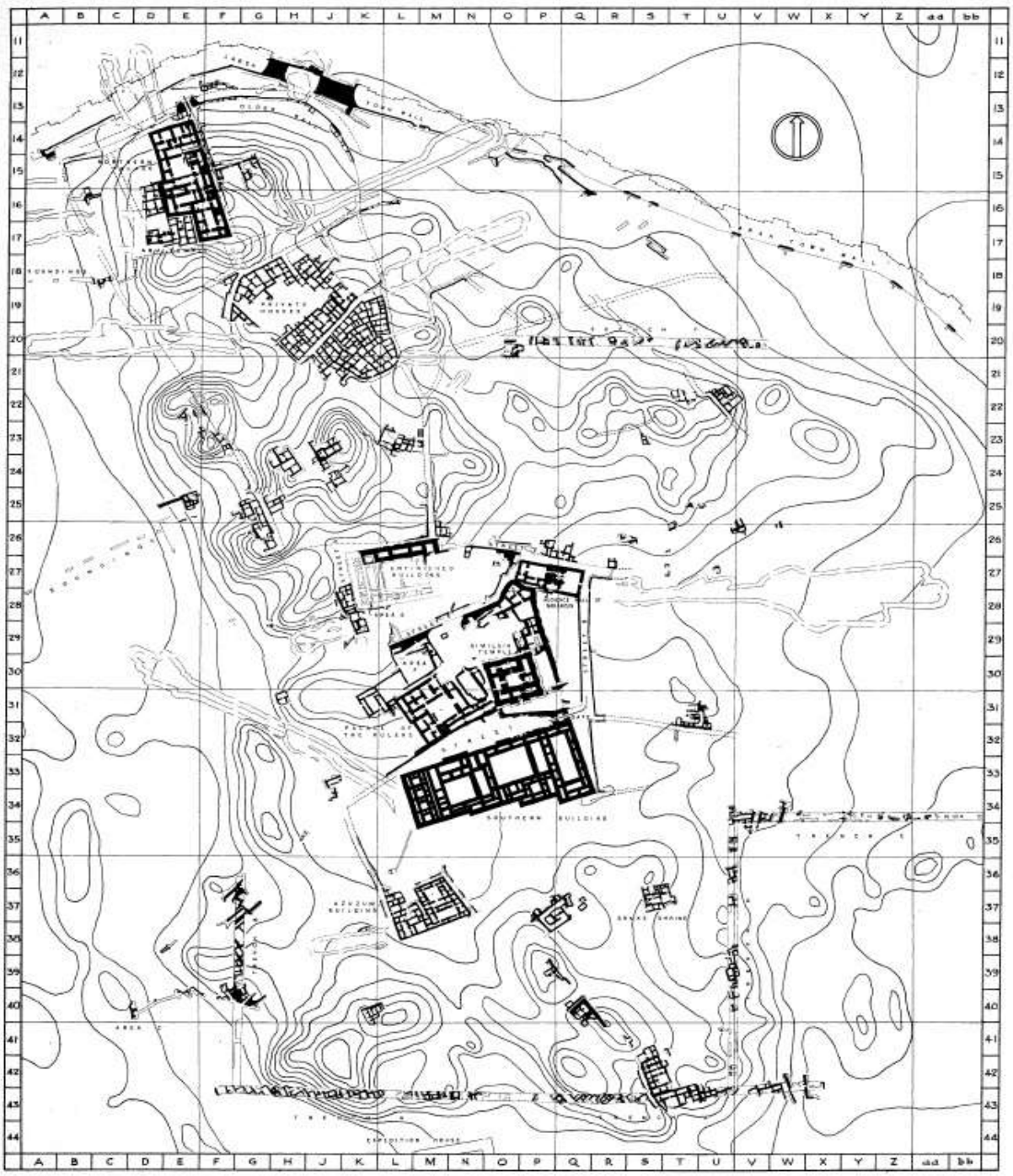
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

108x 4= 432

432÷ 60 minut= 07:12

07:12 ÷ 3= 02:24 hours of work needed to build m3.



(Pl. 58) Tell Asmar, General plan of the site with marked areas

(Lloyd 1967: Pl. 23)

8. 3. LARSA (SENKEREH)

Location of the site

The ancient city of southern Mesopotamia in today's Thi-Qar city in Iraq, located in the lower desert lands has always been drowned by the Euphrates river, about 20 km south-west of Uruk. Currently, archaeological site Tell Senkereh.

Dimensions of the site

The site has an oval shape in the publication given the various dimensions of the site according to Hout (Pl. 59) the city from north to south is 1750 m, while from east to east measure 1600 m, and the total area of the bench is 190 hectares, the height Tell Above the sea level is 7 m. (Hout 1989: 38). According to Parrot measurements the site results in distilling distances: from the north to south is 2000 m, while from the west to the east measure 1800 m. (Andre 1968: 42).

History of research

Archaeological research in this site is conducted by the French, the first excavation season was conducted in 1933, and 1935, and the following two seasons in January and November 1967 under the direction of Andre Parrot (1968: 39). The next excavation season is in winter 1969 and the fifth season archaeological study was in Autumn 1970 under the direction of Prof. J. C Margueron (1971: 33). The sixth archaeological survey in 1974 (Calvet et al.1987: 140), and the seventh in 1976 (Hout et al. 1980: 99), from September to December the 1978 seasons of the excavation (Hout 1982: 72) and the 1981 ninth season of research (Hout 1982: 89), the next season was in September until December 1983 (Hout et al. 1985-86: 25), the next season of research

was in 1985 (Hout 1989: 13), all were run by the University of Paris I under the direction of Huot, financed by the Ministry of Foreign Affairs in France.

Fortifications

We know from the royal inscriptions that the city was surrounded by a defensive wall and from aerial photographs that were made to the site that there are traces of remnants of the wall in the whole posture in addition to the west side there is no trace of the fortification (Hout et al.1989: 40).

Dating of the site

The station is dated from the period of Jemdat Naser to the Partitions (Andre 1968: 41). Fortifications are not fixed from what period they came, but the gates were discovered from 2nd millennium B.C. and Larsa had its military power in 2nd millennium B.C. and I can suppose that the fortifications are dated. For 2nd millennium B.C., my assumptions argue that impossible in Lars was the construction of the gates without a wall, and the building of a wall without a gate of meaninglessness, and at the same time they fought the Isin over the rule of the Sumer and the Akkadian in Mesopotamia and also in the first half of 2nd millennium B.C. Larsa It was over Mesopotamia after the destruction of Ur III.

Construction details

Defensive wall (Pl. 60) surrounds the city build of mudbrick fragments was determined with pictures taken from the air in place (Z10 - 12 - 27 - 29) (Pl. 44).

Gates (Hout et al.1989: 40-42)

Five gates were assigned to the site in the north, north-east, east and south-west, but they did not retain any gates on the western side (Pl. 61). They were divided into two groups:

1. massive doors.

   Consisting of one or two pairs of solid lumps, made of burnt brick:

   -North gate (B25): A pair of massive solids (Pl. 61) which is difficult to determine its boundary. It measures about 10 x 7 m and a maximum width of 8 m. The transitions will lead to a great north street called R1, and in the south of this pair of solids are another pair of solids at 10 m on the same street.

   - Eramar (B1): It was discovered by Parrot in 1933. It relates to the remains of the reverse wall as in the north gate which was found a little further from the line of the walls. Two pairs of solid body (Pl. 62) identical and symmetrical measure 18 x 12 m, border the arrival of 4 m, leads to a street called R7. Build from large square fired bricks measuring 34.5 to 36 cm.

   -Southeast gate (B17) (Pl. 62) consists of two pairs of solid bodies, it is difficult to determine the boundary at Israel Exploration Journal measure 16 x 16 m. Surrounded advent of a width of 10 m, leading to street R6 called south side of the E-Babbar build fired bricks of a square measuring 31 to 33 cm. This gate found a little retracted from the line of walls.

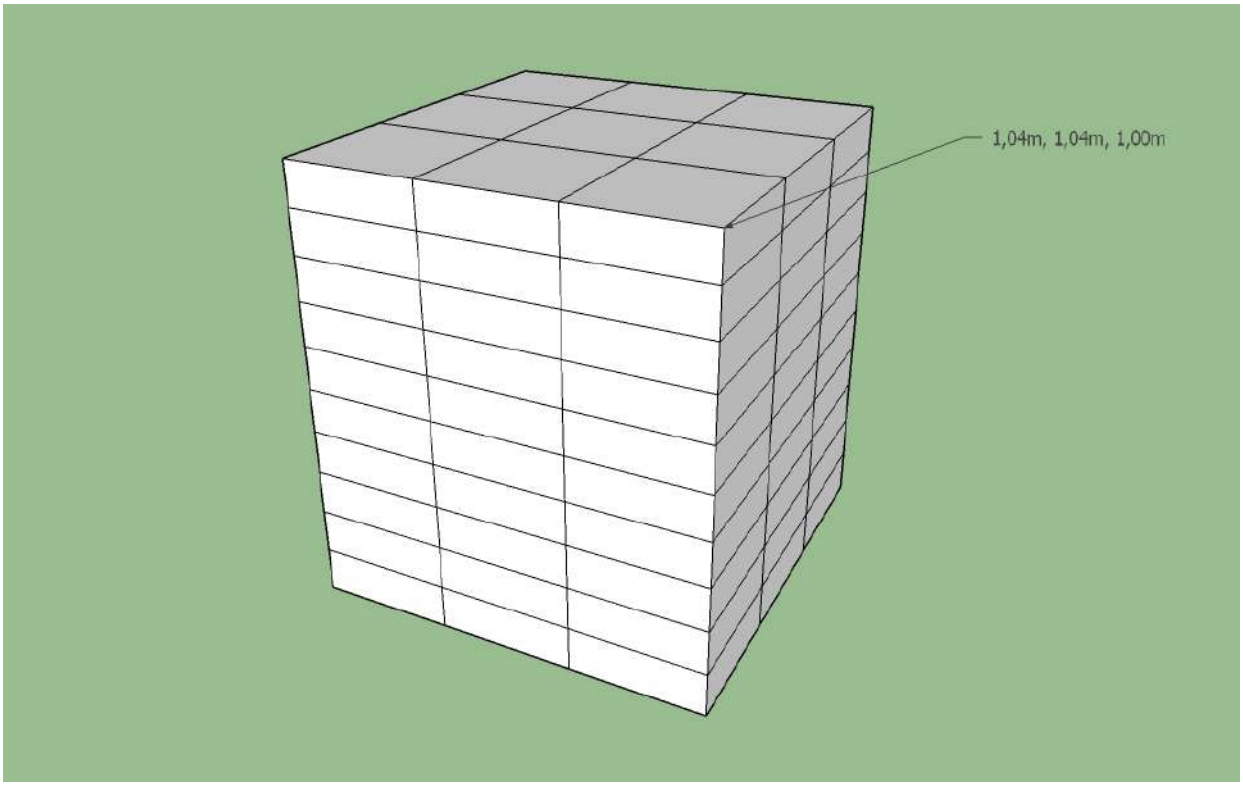
2. Pliers gate (Portes en tenailles).

This type of gates is known in the 2nd millennium B.C, consisting of a transition between two parallel walls are interrupted by two guard rooms are often symmetrical.

-South-east gate (B36) (Pl. 62) is located a few m from the north-east of B 17, the narrow street of a width of 2 m and a length of 15 m, is monitored by two rooms with similar dimensions 5 x 5.5 m.

-North-west gate (B56) (Pl. 61). Like south east gate. The dimension of the passage is 3.6 m. and widths of about 19 m length, monitored by two rooms are not symmetrical in about 5.3 m wide and 4.4 and 6.3 m deep. This structure is located on a clear hill with respect to the flat surface and represents the last remnants of the walls of which are build of brick mud and have been destroyed by erosion.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- Burnt brick.

The Eramar gate (B1):

1) 34.5x34.5x8cm=90 the amount of brick.

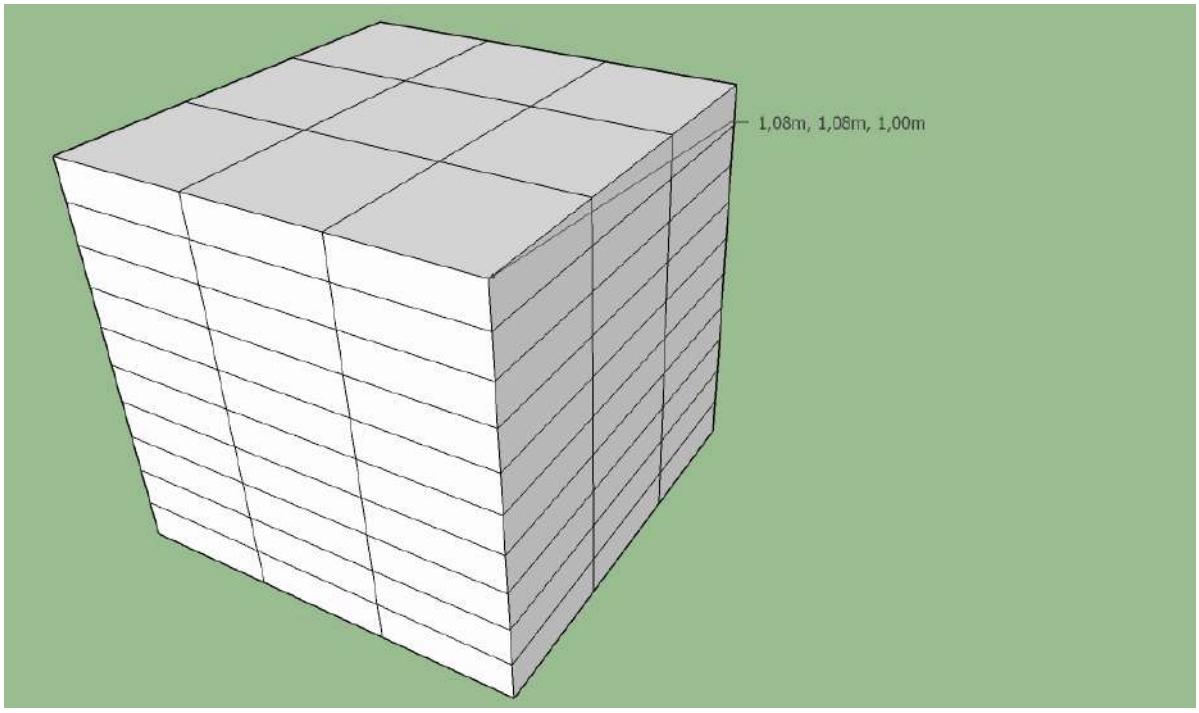
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.

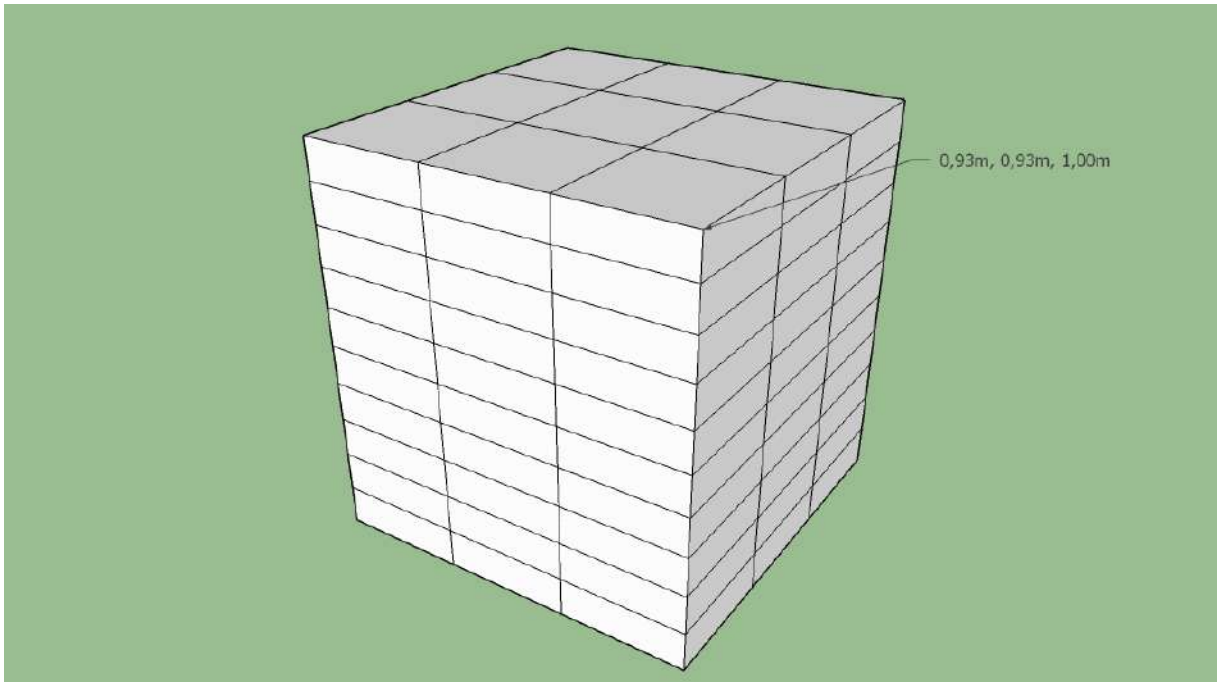


2)36x36x8 cm=90 the amount of brick.

90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.



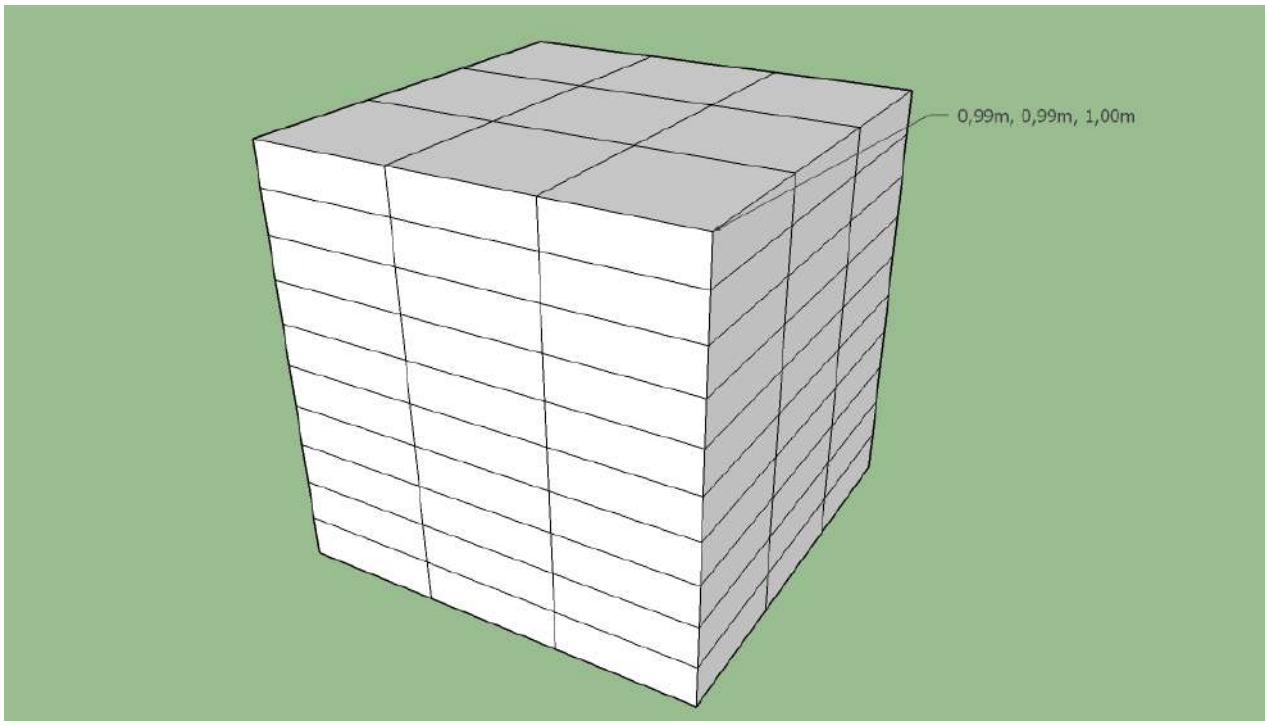
Southeas gate (B17):

1)31x31x8cm=90 the amount of brick.

90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.

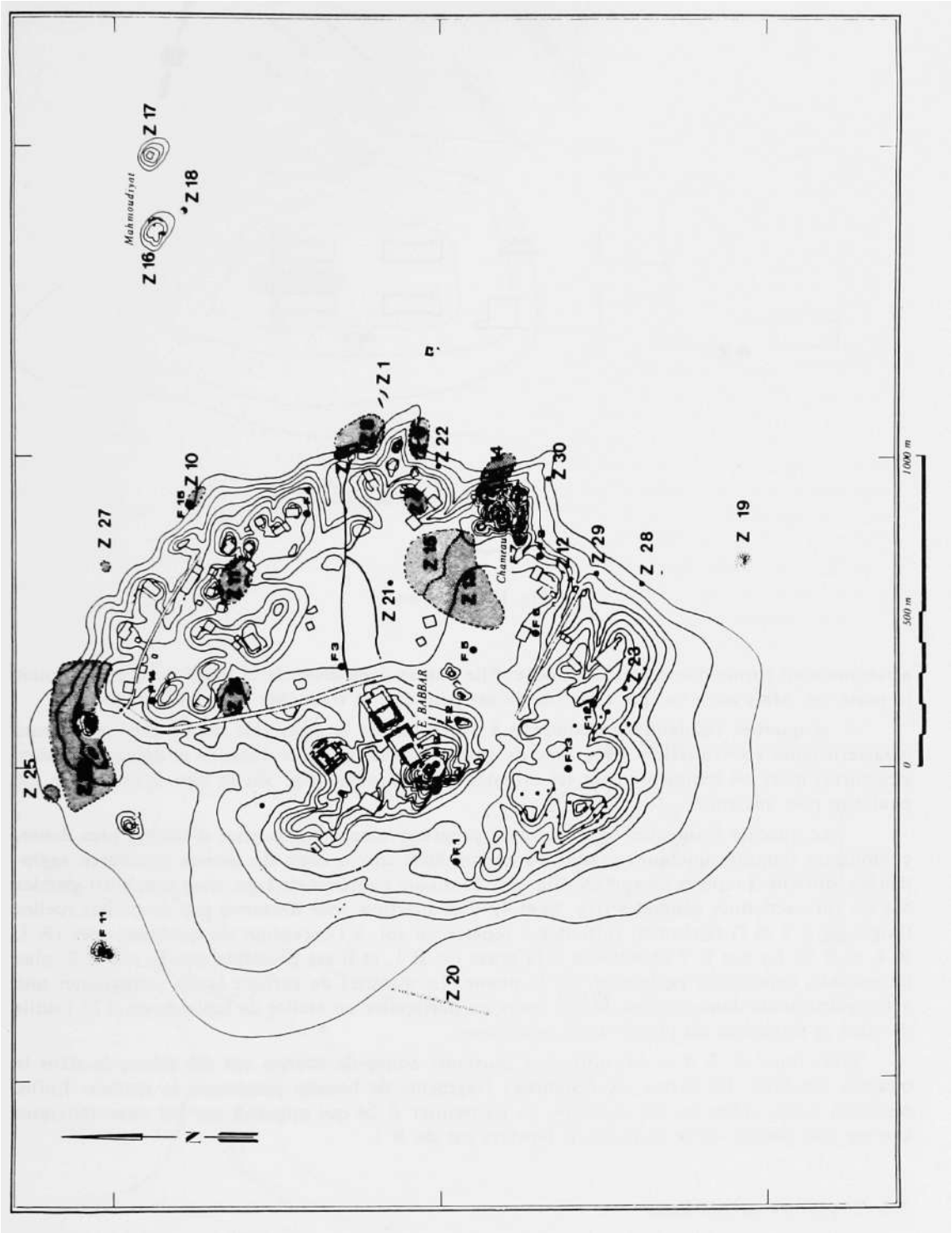


2)33x33x8cm=90 the amount of brick.

90x 4= 360

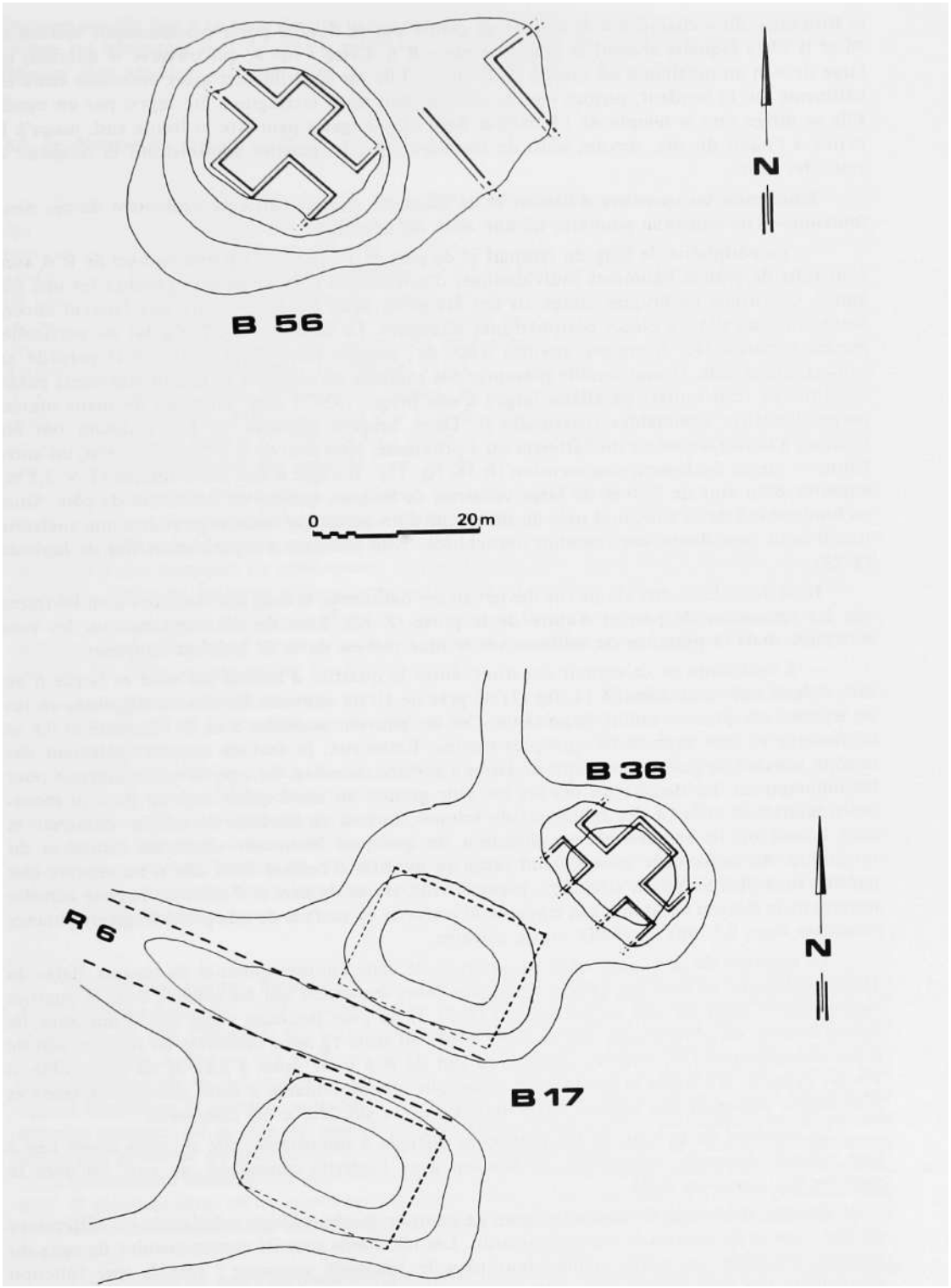
360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.

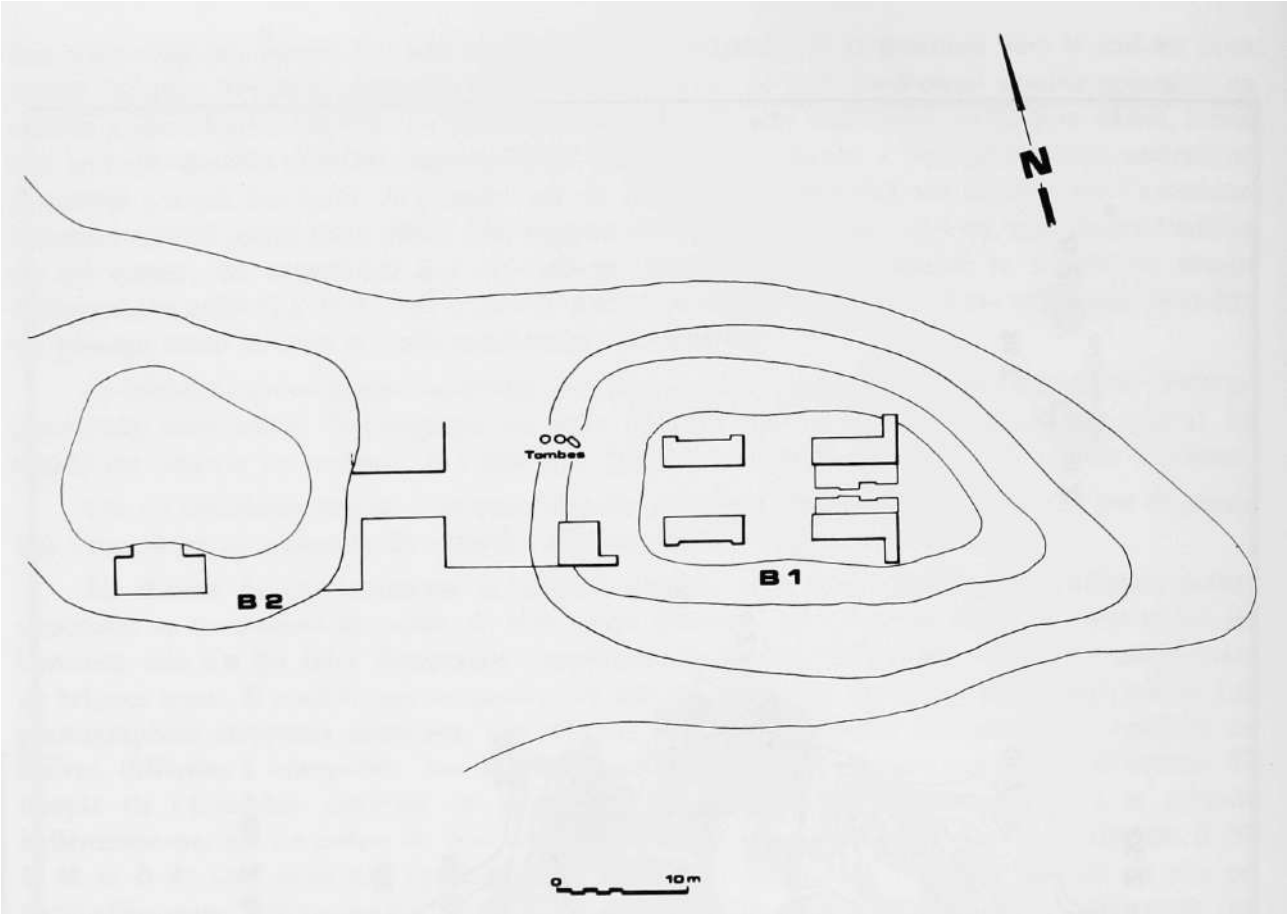


(Pl. 59) General plan (Hout et al.1989: 47)

(Pl. 60) Aerial photo shows traces of fortifications (Hout et al. 1989: 20)



(Pl. 61) Gateway, South East gate (B17), South East gate (B36), North-west gate (B56) (Hout et al. 1989: 49)



(Pl. 62) East gate (B1) (Hout et al. 1989: 48)

8. 4. MASHKAN SHAPIR. TELL ABU DUWARI

Location of the site

Tell Abu Duwari is in the south of Mesopotamia, about 30 km north from Nippur and about 140 km south-east from Baghdad. Today Al Qadisyah city, in Iraq. It was an important commercial place combining the trade of the south and north of Mesopotamia as well as the second capital of the Lars kingdom, as well as the capital of Yamutbalum (Charpin et al.1988).

Dimensions of the site

The large bench on the low hill that is connected to the surrounding desert, its exact size determination is difficult to establish. Identified its minimum size is 40 hectares. Given various dimensions of the surface of the bench according to Adams (1981: 138). The size of the post is 40 hectares. But (Stone 1990: 141). She wrote that the size of the post is 56h. Average height of the terrain is a little more than 2 m. above sea level, although in some places rises to over five (Stone and Zimansky 2004: 9). Wall with a length of 80 hectares surrounds the city (Stone 1990: 142).

History of research

The first archaeological excavations began on May 18th to June 7th, 1987 this season was funded by the Fulbright Program and a grant from the American School of Oriental Studies. The road season was from December 20, 1988 to January 19, 1989. The work was supported by grants from the National Geographic Society and the American School of Oriental Studies. The next season of archaeological research was from the second of February to 15th of May 1990. This season was funded by the National Science Foundation, the National Endowment for the Humanities, the National Geographic Society, and private donations. All seasons were conducted under the direction of Elizabeth C. Stone of the State University of New York.

Fortifications

At the beginning of 2nd millennium B.C., the city was protected by a city wall and the found moat was built during the reign of King Sin-Iddinam Larsa around 1844 (Stone and Zimansky1994: 442). Walls found in the north and east and from the south (Pl. 63), but unfortunately no fortification marks found on the west side of the city

(Stone and Zimansky1992: 217-218).

Dating of the site

The site was settled from time to time, dating for the 4th millennium B.C., the period of Uruk, Isin-Lars, Parthian and early Islamic period (Stone and Zimansky 2004: 9).

Construction details

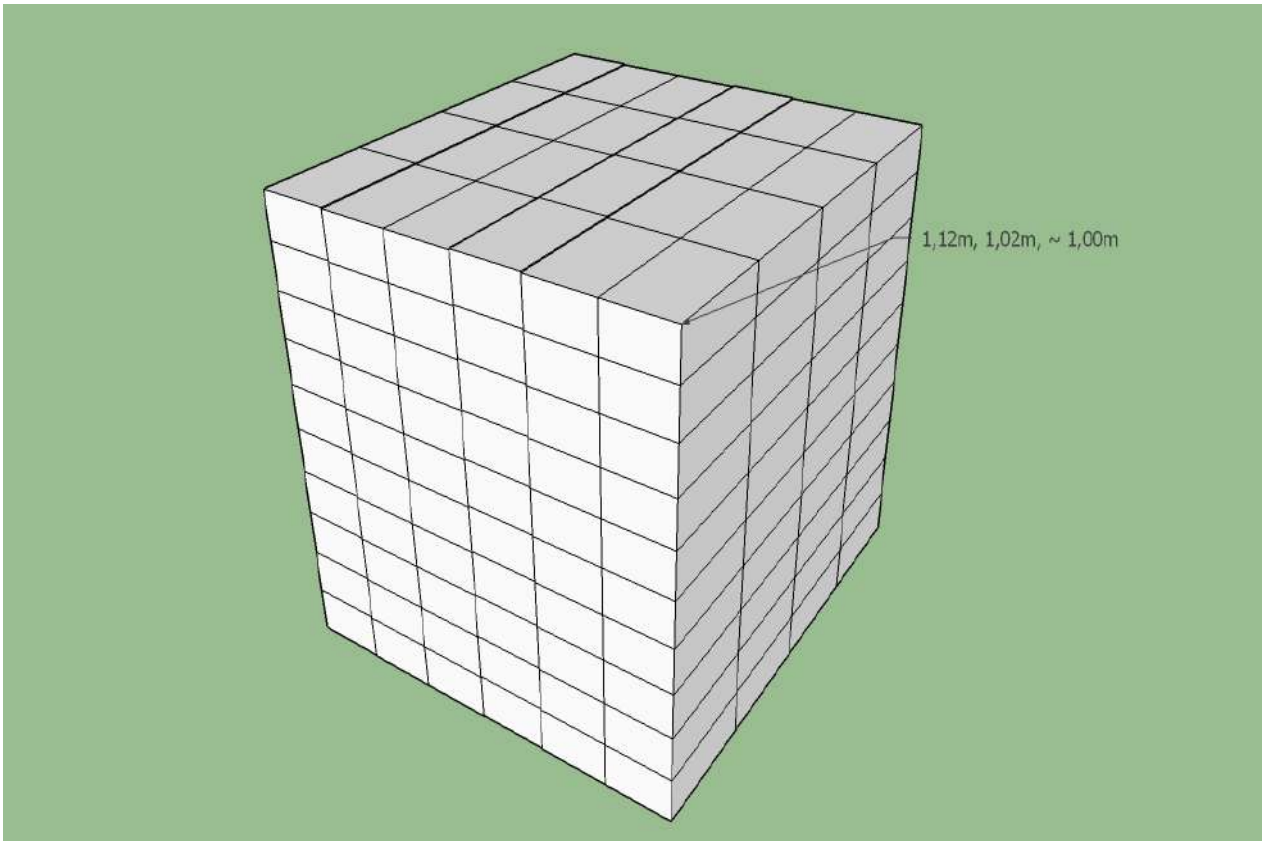
Survey excavations was conducted on the site and fortifications have been identified by surface excavations, but unfortunately have not yet been discovered (Stone 1990: 147). The traces were identified of the walls parallel to these channels, and did not change the ground level starting from the early 2nd millennium B.C. in the south-east of the post and in the foundations of the city walls and found numerous buildings on modern surfaces (Stone and Zimansky 1994: 442), of which I can say that the fortifications. They were built at one time, but the post was not fully build during the reconstruction of the city.

The fortifications on the north side were more clearly build of mudbrick and burnt bricks measuring 28 x 17 x 8 cm. (Stone 1990: 147).

Gates

Three cities have so far been identified. The best preserved is located in the eastern part of the city and consists of two rectangular bastions, which is in the middle of the wall. The second is apparently the water gate, because it locates to the north the canal flows directly to the canal. The third gate is poorly preserved and appears to have been stolen in antiquity (Stone and Zimansky 1994: 443).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



- Burnt brick.

28x17x8 cm=240 the amount of brick.

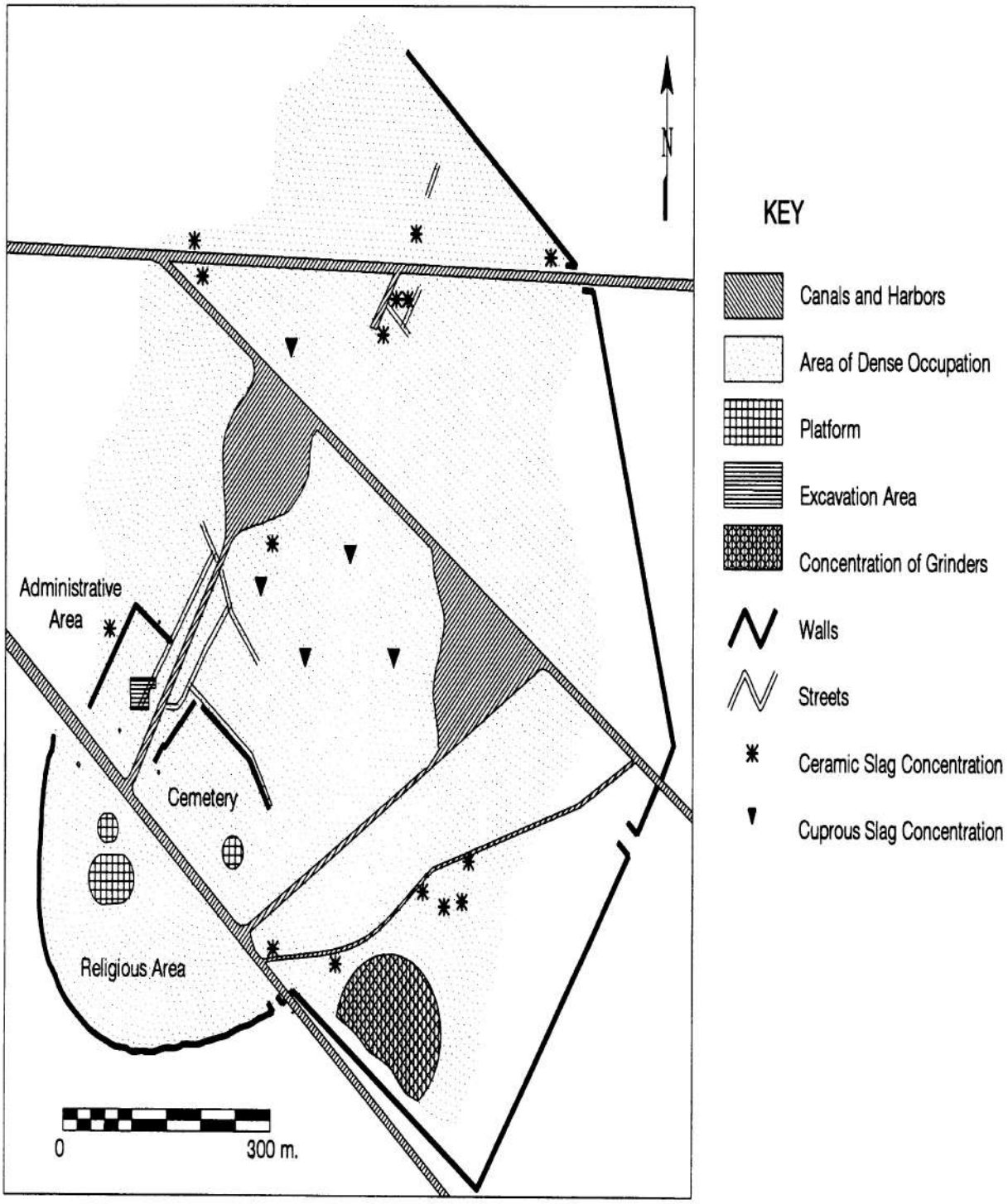
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

240x4=960

960÷ 60 minut= 16:00

16:00 ÷ 3= 05:20 hours of work needed to build m3.



(Pl. 63) The general map shows the fortified city
(Stone and Zimansky 1992: 212).

8. 5. NAGAR TELL BRAK

Location of the site

It is located in the Khabur triangle in north-eastern Syria near the borders of Iraq and Turkey at 45 km south-east of Beydar, it is the meeting point of two ancient important routes running from southern Mesopotamia and Assyria to the west to the Mediterranean and mineral resources from Anatolia. The site was recognized as the capital of Nagar kingdom in 3rd and 2nd millennium B.C. (Oates et al. 1997: xvii).

Dimensions of the site

The area covers from 40 to 65 ha (Oates et al. 2001: 380) is one of the largest site in northern Mesopotamia and Syria, Tell Brak consists of the southern area is up to a height of over 20 m, and a much higher north ridge (ridge). The Tell north shaft is about 43 m above Modern plain, dominant at the lower level of the site (Oates et al. 1997: xix).

History of research

The first excavation work was conducted by Father Antoine Poidebard in 1930. In 1937-38 the site was taken over by the British archaeologist M.E.L. Mallowan. Between 1976 and 1993, he worked for 14 seasons by a team from the Institute of Archeology at the University of London, led by David Oates. After 1993 excavation work was led by many directors under the general leadership of David Oates and Joan Oates. From 2004 to 2006 he accepted the excavations of J. Oates after the death of D. Oates. In 2006 the University of Cambridge began to study sites under the direction of A. McMahon. Recent excavations took place in spring 2011, archaeological work is currently suspended due to the situation in Syria (Vallee 2011: 86).

Fortifications

Fortifications at the beginning of 2nd millennium B.C. are encountered in the TW area and can be seen in the vicinity of the Trench D and FS area (Pl. 64) (Oates et al. 1997: 142). However, little can be added to the fortifications due to the unfinished archaeological survey in the site.

Dating of the site

The site is dated to 4th, 3rd and 2nd millennium B.C. Was one of the largest cities in northern Mesopotamia (Oates et al. 1997: xix).

Construction details

The fortification was visible in the area of TW excavation surface in 1981 (Fig. 61) massive solid foundations of trenches filled with red bricks (Emberling et al. 1999: 3). The upper wall was constructed of red and gray bricks (30 x 30 x 10 cm) and (10 x 30 x 10 cm) (Emberling et al. 1999: 5) preserved here at least twelve courses.

In the north-east corner was dug a few mudbricks intersecting the canals, therefore suggested Oates, D. that date of these fortifications is at the beginning of 2nd millennium B.C. (Oates 1982a: 142). Due to its monumental character and location, Oates suggested that this structure could be part of the city gate; he interpreted during excavation in 1998.

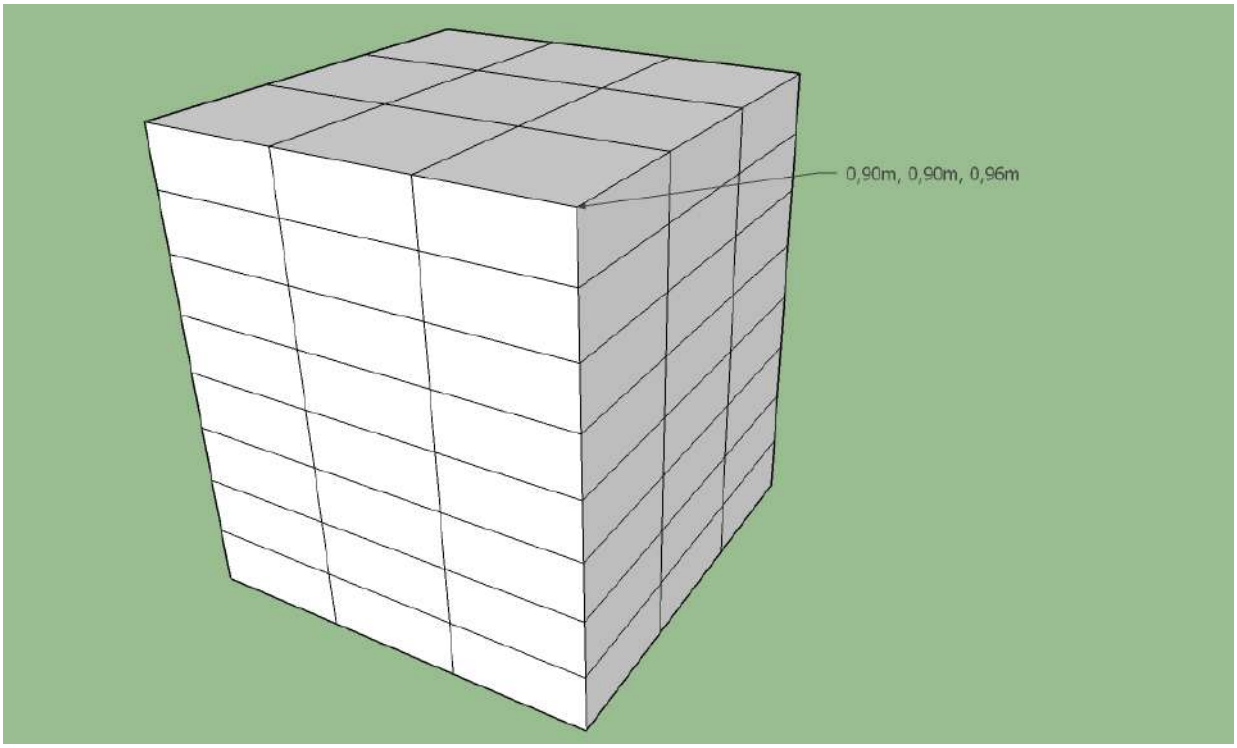
A moat with a width of 3-2 m and a depth of 2-5 m was found beneath the wall (Fig. 62). The moat was filled with a layer of red clay 10 cm thick and other thicker red clays 15-20 cm thick. These alternate layers were placed very carefully; They were equal and horizontal. The moats in TW are dated to later dates than the occupation of the area, unfortunately Oates did not describe when exactly. The moat was cut

into several hollows by a small wall which, between the slope of the mound and extensive disruption from the foundation, did not form a coherent architecture (Oates 1991: 138).

Gates

According to Oates. D. gates from 2nd millennium are dated in the TW area.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1) 30x30x10cm, due to the lack of dimensions of the brick, I used the dimensions of the brick from the site of Jerah Wall, Location = 72 the

amount of brick.

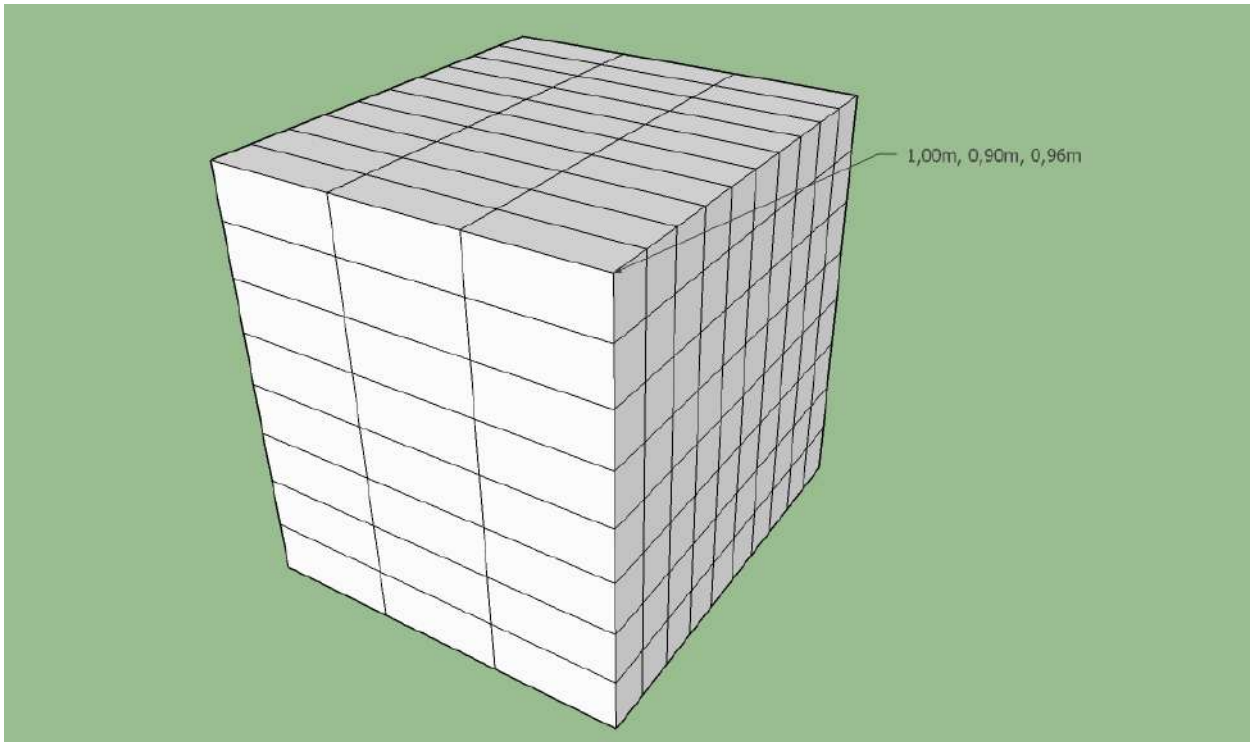
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

72x 4= 288 minut

288÷ 60 minut= 04:40

04:40 ÷ 3= 01:34 hours of work needed to build m3.

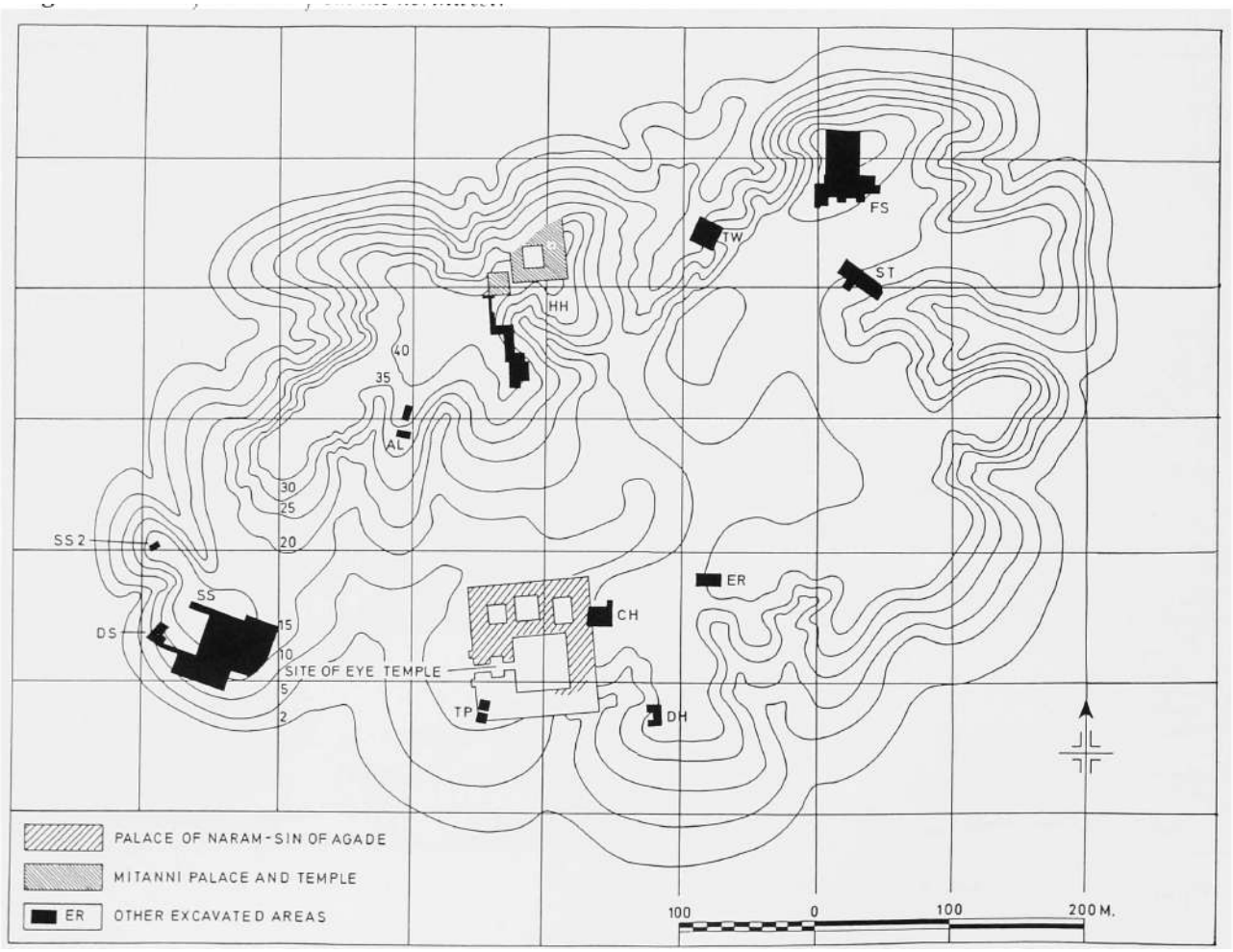


1) 10 x 30 x 10 cm=240 the amount of brick.

240x4=960

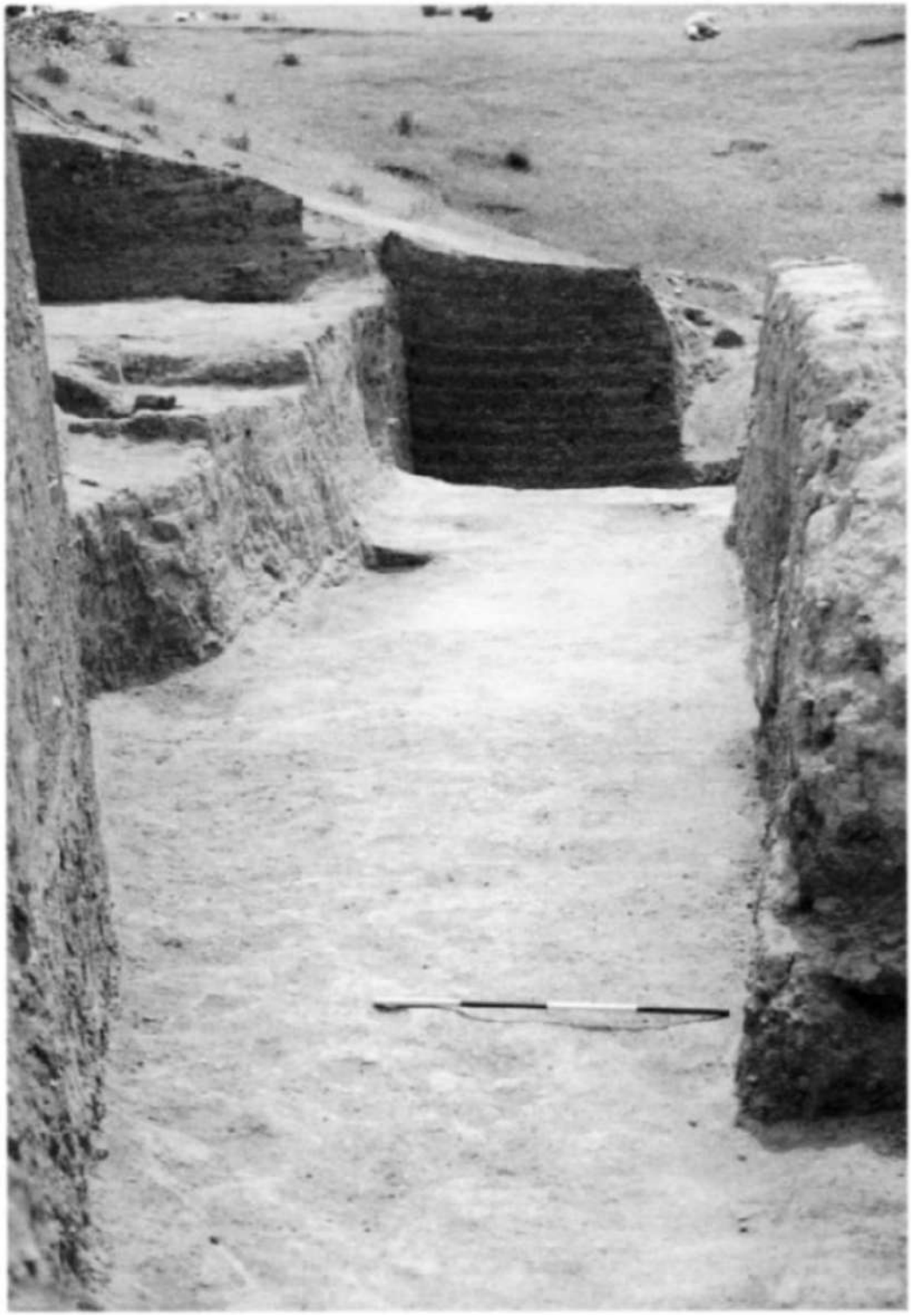
960÷ 60 minut= 16:00

16:00 ÷3= 05:20 hours of work needed to build m3.



(Pl. 64) General plan of the site (Oates et al.1997: Fig. 3)

(Fig. 61) Old-Babylonian wall and surface in TW D, from the north-east (Oates 1987: 142)



(Fig. 62) Old-Babylonian foundation trench in TW, from the north-east (Oates 1987: 146)

8. 6. DUR KURIGALZU

Location of the site

The site is in a valley called Marsha Al-Falujjah (Marshes), 30 km north-west from Baghdad and 7 km north-east of Al-Falujjah Province east for the Euphrates River. In antiquity the location was called Agar guf, the guava name Aramaic name comes with two words (Agar means distracted) and (Guf means standing). In Arabic literature the site is labeled Agar guf, but since the time the area was inhabited by Kassites was called Dur kurigalzu (Dur Kurigalzu is the home of King Kurigalzu), the name of the first king of the kurigalzu I, and also during the Muslims was called Alwerda (Al-Tikriti 1970: 73).

Dimensions of the site

The length of the post is 2620 m in the north-east side, but the width of the station is different from the second one, also in the south-east it is 300 m and in the center of the place where the temple is 600 m and, in the north-west, there is 640 m. (Baqir 1945: 41).

History of research

The first archaeological excavation season was in May 1942 under the direction of Llyod, S. was intended to explore and discover the ziggurat. The next three archeological excavations were conducted by the Baghdad Antiquities Administration under the direction of the Iraqi archaeologist Taha Baqir in February-March 1943, in February 1944, and in November 1944 also continued until January 1945 for the discovery of the city and temples. The fifth archaeological study season was in December 1945 to February 1946, conducted by Mustafa, M. The next excavations were in October 1960 and lasted until January

1961, under the direction of Al-Tikriti to repair the Ziggurat. The next four seasons of excavation work were under the direction of Azmi, H. from June to December 1961, from February to August 1962, from December 1966 to March 1967 and from November 1968 to March 1969. Season 11, 12, and 13 were run under the direction of Mr. Al-Jumaili, A. A. in May-June 1969, from October 1969 to March 1970 and September 1971, and to repair the ziggurat and excavate fortifications in the ziggurat and other rooms.

Fortifications were examined in the first excavation in 1942 through Lluod in the twelfth season, the wall of Temanos was excavated in the north-west from the Ziggurat under the direction of Al-Jumaili.

Fortifications

The remnants of the outer fortifications have an irregular appearance surrounding the ancient city, then the length and width of many places are not matched (Pl. 65), according to my plan of site we see that the irregularity of the fortification construction follows the nature of the land on which the post is located. And we also know that the site located on the southern edge of the Albatkar district of the city of Al-Fallujah and this place is often drowned by the Euphrates river.

Dating of the site

Dur kurigalzu is dated according to many authors of books at the age of 15 exactly in 1480 B.C. for the period of the Kassite, however, according to Mr. Al-Tikriti the post is dated for 16 centuries lasted until the 11th century and was called this period as the 3rd dynasty from Babylon (Al-Tikriti 1970: 74). Fortifications were built just before the founding of the city.

Construction details

Dur Kurigalzu looks like a rectangular shape, the city is surrounded by an outer wall, it bedemons on the south-east side of the river Issa, river Issa name popular in today's Iraq literatures called Kabir river Mendrs clues about this can be found in cuneiform texts from the time kasyckich and was referred to as (Genal Enlil) or (BTA Enlil) literally Babylonian, river połancza city Dur-Kurigalzu with the city of Sippar (Hilprecht 1909: 28), over the river Tigris.

The fortifications join the river coast and then diverge in the north-east and continue in the same direction as it disappears on the north-west and south-west and mix with agricultural land, reducing the wall to one meter at ground level and then surrounding the palaces in the city from side the north-west. The defense system of the city is 20 m wide and the remains of the fortifications are between 1 – 3 m. I have not found more information about the city fortifications in all the publications of the site researchers.

Temenos

The Temenos fortress which surrounds the remnants of 10 rooms on the north-west side is likely to be part of the temple because the foundations of the temple have the same dimensions as the foundations of the walls, which are 4.4 m wide and 3.75 m west of the north. 164.5 m. Moreover, was discovered to one meter deep. Build in the way of horizontal and vertical layers (Al-Jumaili 1971: 84), made of masonry bricks of various sizes: 20 x 16 x 8.22 x 16 x 9 and 25 x 16 x 8 cm (fig. 63).

On the outskirts of Temanos is covered by a wall, this wall called Kisso according to Al-Jumaili its foundations are constructed of 30 x 30 x 8 cm square barred brick on the north side, its function is to maintain

the foundations of the wall. Also, it is usually one meter or two m high from the height of Temanos and tapered from the top, rebuild this wall several times proving that Kisso was broken in several places, between the face of Temanos and Kisso about 18 cm from the bottom and 17 cm from the top was filled with clay, Kisso was after observed at 49 m, build of brick 33 x 33 x 11 cm and 33 x 33 x 12 cm, 1 m high, 0.96 m thick, is inclined to the center by 19 cm (fig. 64), the fortifications were built of two walls with the gap between, a brick with a mixed debris brick is typical of the Kassites building (Woolley 1965: 73). Surrounded by 30 cm projections, calculation ofd only from the northern side.

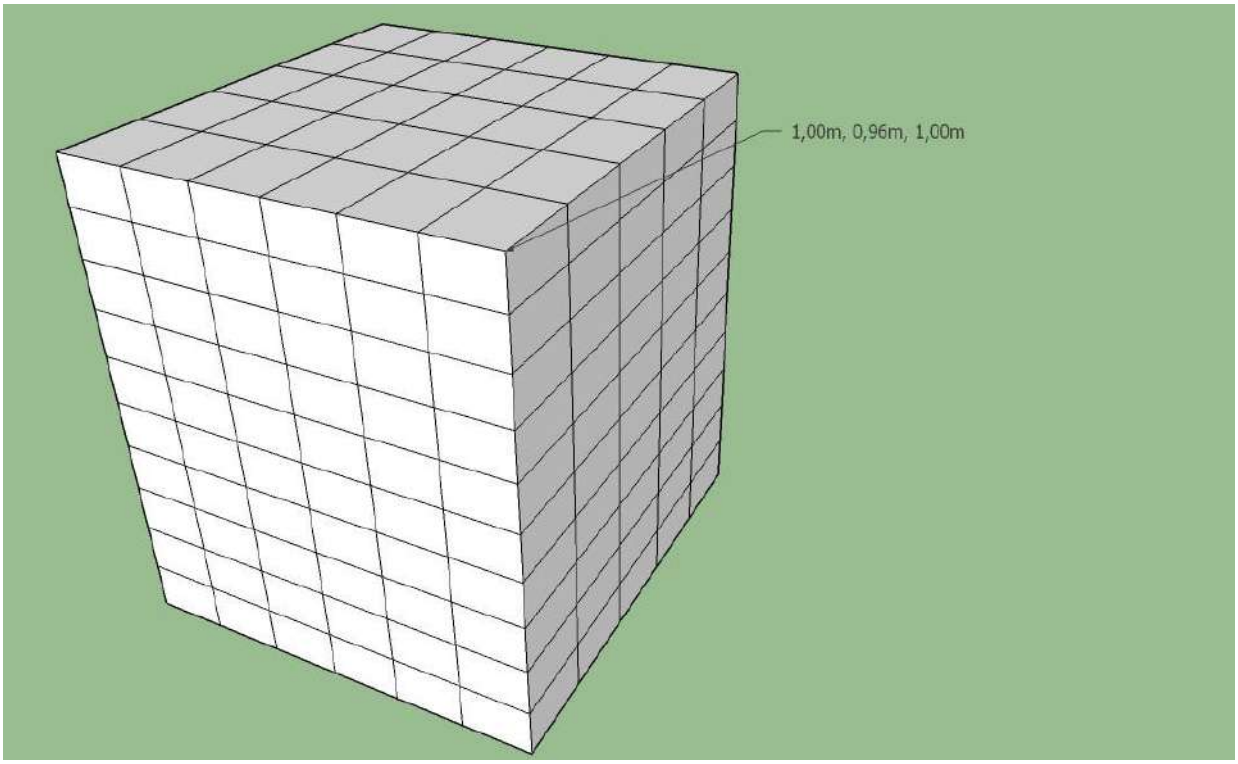
In the inner side of the Tamanos fortifications are connected by 8 square rooms from the western corner to the northern corner, their north-west walls are Temenos and the south-eastern wall is the wall.

The sturdy erected structure that emerges from the cities defensive walls, certainly had a non-religious character, could only be military, and we had no doubt called it the Fortress of Kings (Pl. 66). On the foundations there was no mud mass, the bricks occupying the whole width of the rampart. Moreover it was deep in foundation, but at the end of the NW, aligned differently from the rest, were not what appeared to be the transition leading to the shaft (Woolley 1965: 73).

Gates

Temenos gate according to Woolley was a military gate located on the SE side, a double door made of Kuri-galzu (According to Al-Jumaili the brick called as (Kisso), according to Woolley called this brick (Kurigalzu brick)).bricks and then all the masonry tracks were lost yet one could legitimately assume another goal giving the canal. The fort is a military planning component that protects the surrounding fire from the enemy attacking the city gates.

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick.

1) 20x16x8 cm= 300 the amount of brick.

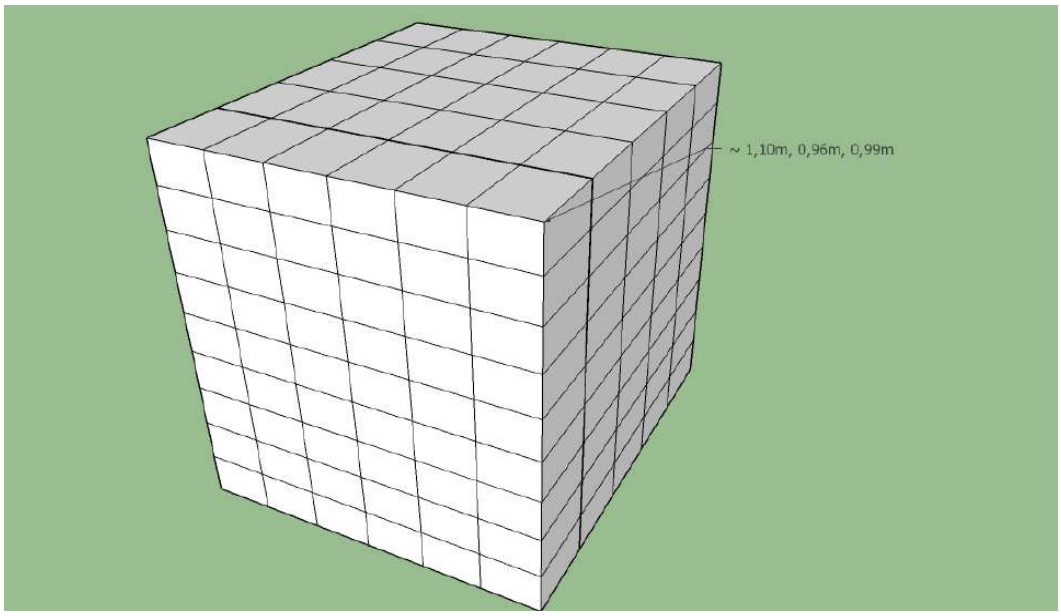
-When using 3 workers to build.

- 4 minutes time is needed to build one brick.

300x 4= 1200

1200÷ 60 minut= 20:00

20:00 ÷ 3= 06:40 hours of work needed to build m3.

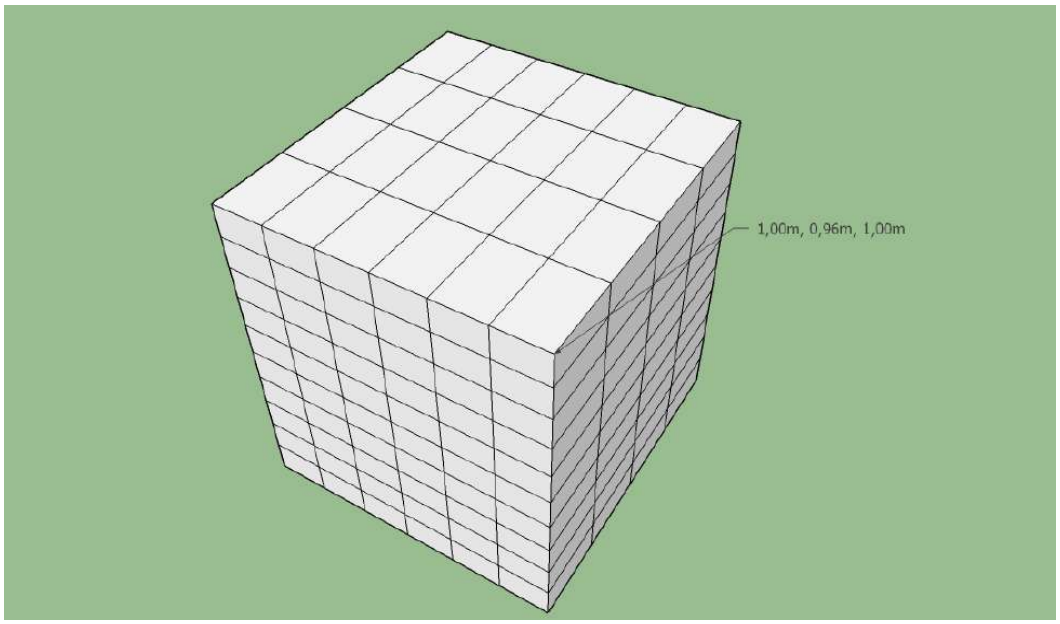


2) 22x16x9 cm=270 the amount of brick.

270x 4= 1080

1080÷ 60 minut= 18:00

18:00 ÷ 3= 06:00 hours of work needed to build m3.

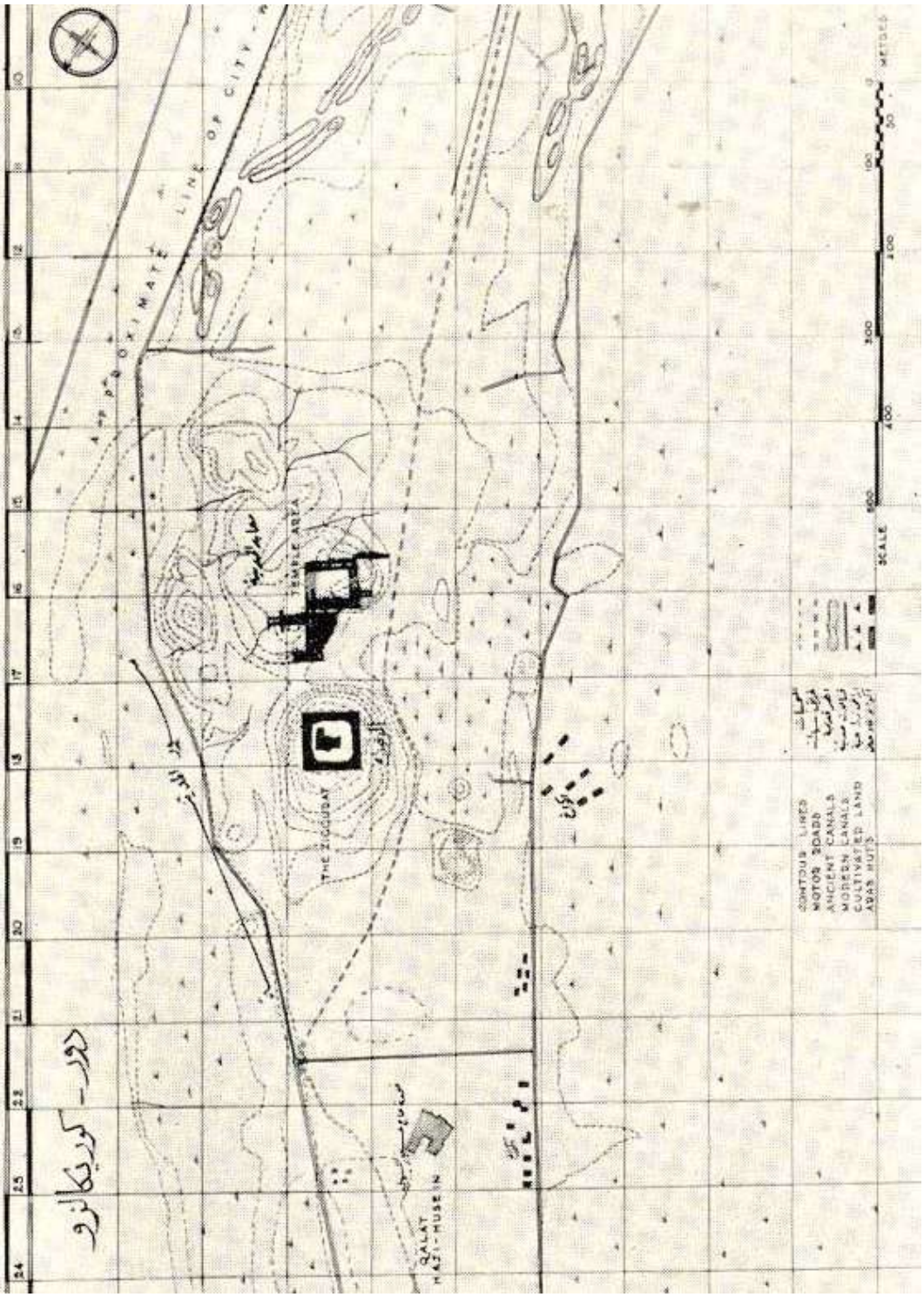


3) 25x16x8 cm=240the amount of brick.

240x4=960

960÷ 60 minut= 16:00

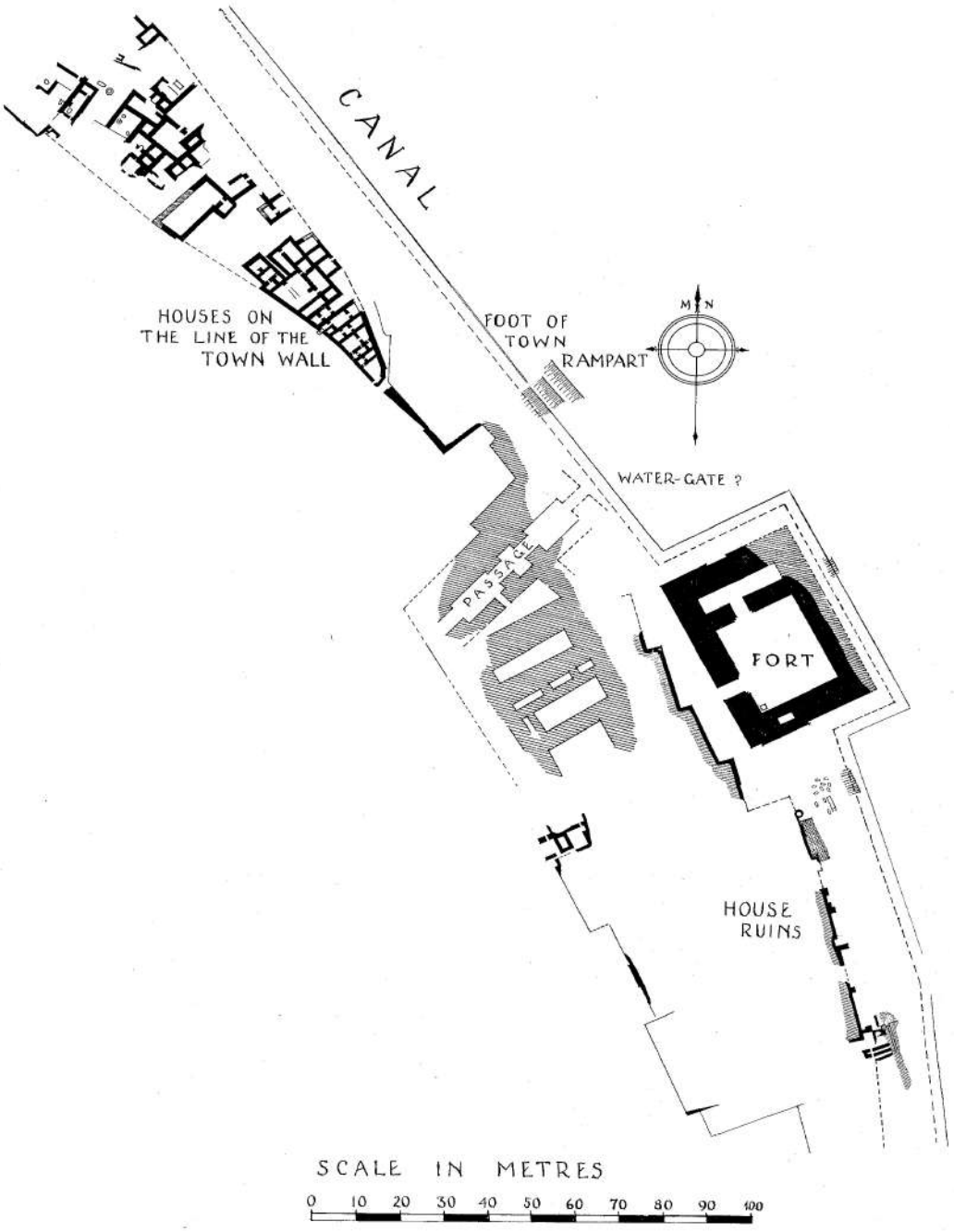
16:00 ÷ 3= 05:20 hours of work needed to build m3.



(Pl. 65) Dur Kurigalzu City plan (Baqir 1945: 42)

(Fig. 63) The Temenos wall shows how to strengthen, horizonTelly and vertically the layers (Al-Jumaili 1971: 84)

(Fig. 64) External sites Temenos (Al-Jumaili 1971: 86)



(Pl. 66) Kassite fort (Woolley 1965: Pl. 62)

8. 7. HARMAL, TELL

Location of the site

Tell Harmal i san ancien Sumerian city, located within the boundaries of present Iraq, administratively subordinate Gubern of Baghdad. In ancient times the city was part of the state Eshnunna Tell Asmar, located in the area of the river Dijali. The ancient name of today's Tell Harmal, Shaddupum means ‘’treasure” or ‘’house of money” Goetze interpreted name Shaduppum as a Babylonian term “house of money” which was probably associated with the fact the city was the administrative center, where the taxes were collected from cities dependent from the Eshunna (1958: 3).

Dimensions of the site

Site is at a height of 4 m above sea level, diameter site is 150 m. (Naji 1961: 202) wall was reinfocement generally is less than 2 km.

History of research

The first excavations at Tell Harmal conducted an Iraqi archeologist Taha Baqir along with Muhammed Ali Mustafa a representative of the Iraqi Department of Antiquities. The excavations at the Tell Harmal lasted a total of nine seasons: in the years 1945-1963 led them Iraqi archeologist (Naji 1961: 202), the last two seasons in 1997 and 1998 conducted jointly by the University of Baghdad and the German Institute of Archeology. In final, they discovered seven layers of the building dating from the third millennium after the Kassites time.

The eighth season of excavations at Tell Harmal began in spring 1997. Archeological work under the guidance of Prof Peter Miglus supported Laith M. Hussein and Zuher Rajab Abdallah and a representative of the Iraq Department of Antiquities was Ismail Ibrahim Sherif. In purpose to examine the wall of the city had to carry out stratigraphic studies. In addition, the researchers desire to obtain informations about the area located at the outskirts of the city, due to the fact that Tell Harmal has not been wall reinfocement fortification before the period Isin-Larsa.

Fortifications

Site walled rectangular with different dimensions: 98 x 134 x 147 x 147 m because the fortifications were built after founding of the city.

Dating of the site

Shadupum administrative center (Kramer 1947: 48) was founded during the reign of Akkadian Dynasty. According Adams during the Akkadian it was a village here, which in times of Isin- Larsa grew to the size of the city and was surrounded by a strong fortified irregular wall, probably build after the construction of residential houses and temples. The Elamites invasion led to destruction of the city which was settled as a village in time of Kassitian and shortly afterwards abandoned (Adams 1965: 44-53).

Construction details

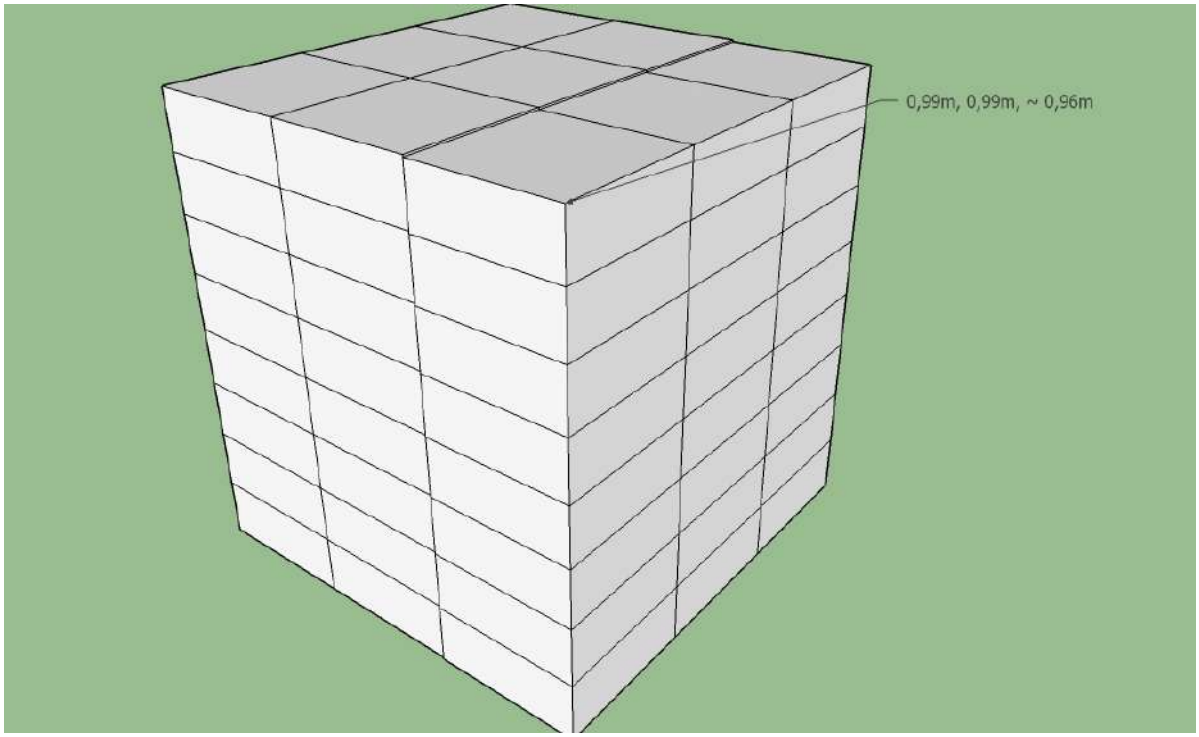
Fortifications are build on a flat land of mud- bricks dimension 33-35 cm 2 x 8-10 cm. The residue of the upper edge of the wall is 9.5 m., and at some height is the entrance wall thickness of 5.60 m. The wall surrounding the city has dimensions: 134 x 98 x 147 x 147 m. and 6 m of thick and was found in the wall of the room was used as administrative rooms.

The foundations of the wall partially destroyed neighboring older building (Hussein 1998: 41). Fortification was built in the last stage or level IV in the first stage level III (Baqir 1946: 25). The foundations of the wall were initially placed in a relatively shallow recess. The base is located at a depth of approx 2 m from the surface at some height as a current level of water groundwater. The wall has a width of 5.60 meter at the top and about 0.3 m more at the base (Pl. 67) the dimensions of the tower are 6.4 m 6.8 m. The fortifications were built on the outer edges of the wall (Pl. 68) and at the end of the third level or at the beginning of the second (Hussein and Miglus 1998: 41).

Gates

On the north-eastern have found a great gateway to the both sides faces enormous towers (Baqir 1948: 154).

Calculation of the amount of bricks - numbers of workers – time to build the one wall cubic meter.



-Mudbrick

1) 33x33x10 cm = 72 the amount of brick.

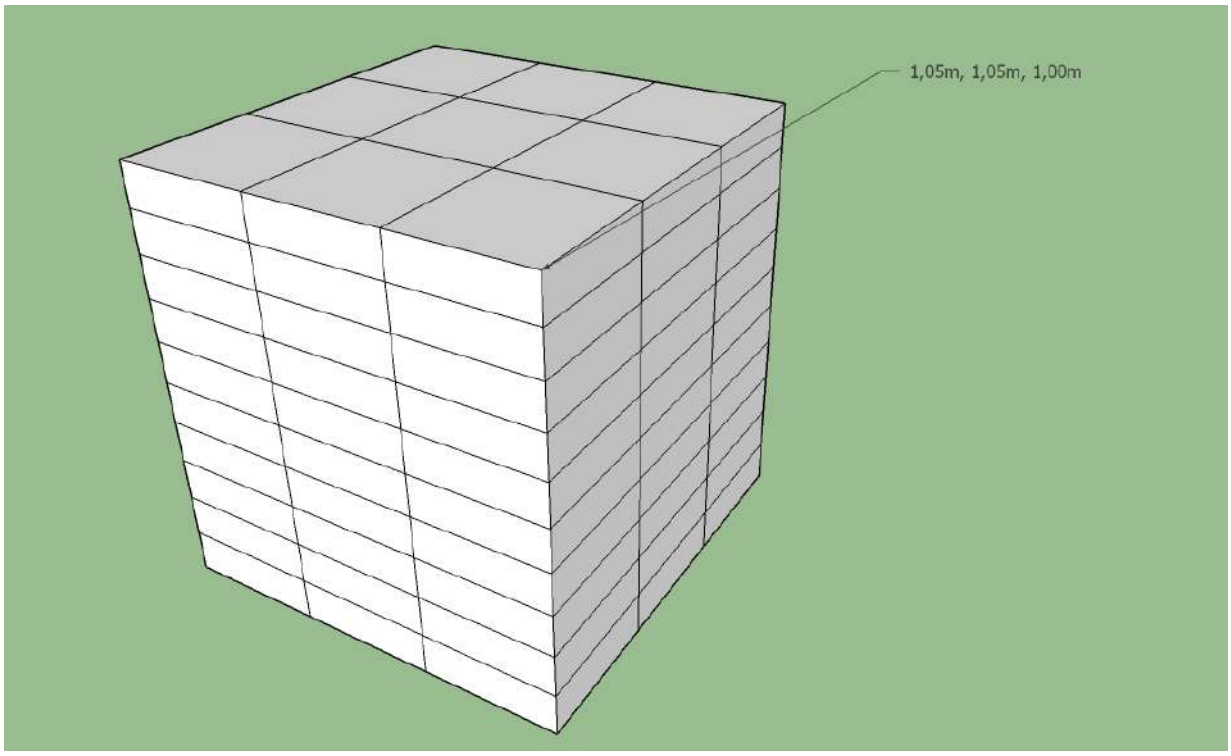
-When using 3 workers to build

-4 minutes time is needed to build one brick.

72x 4= 288 minut

288÷ 60 minut= 04:44

04:44 ÷ 3= 01:34 hours of work needed to build m3.

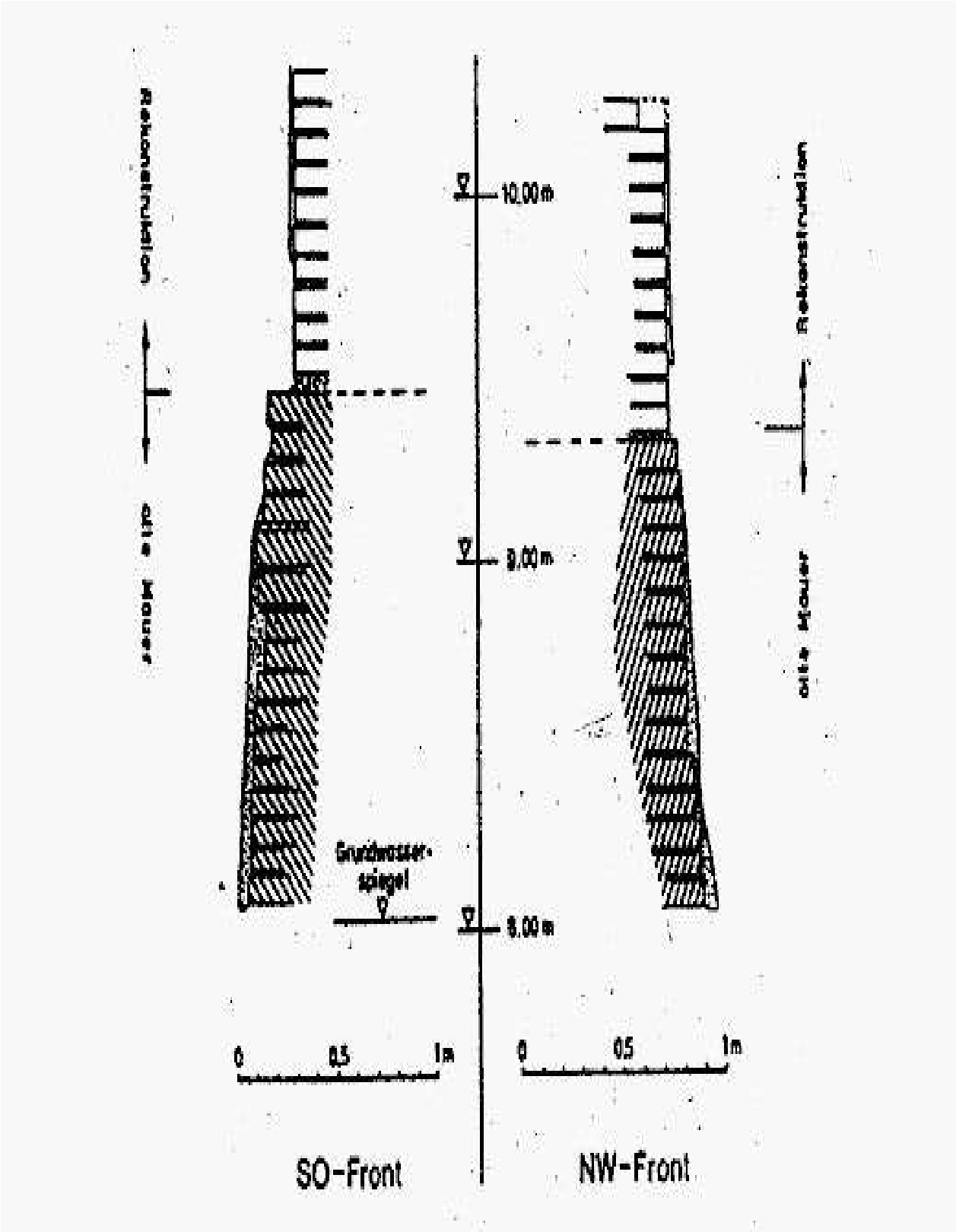


2) 35x35x8 cm = 90 the amount of brick.

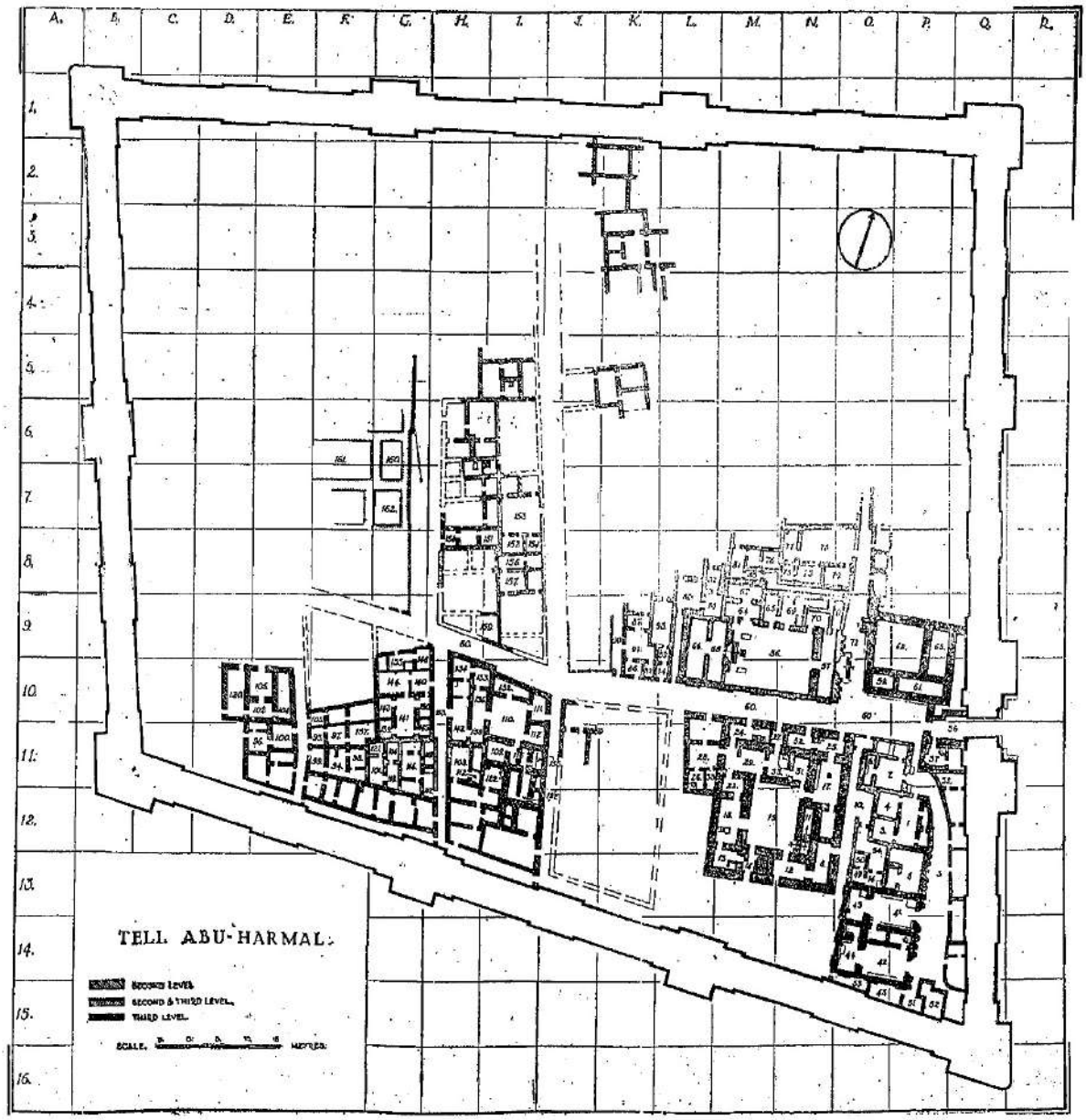
90x 4= 360

360÷ 60 minut= 06:00

06:00 ÷ 3= 02:00 hours of work needed to build m3.



(Pl. 67) The width of the wall (Baqir 1946: 25)



(Pl. 68) Plan of site (Baqir 1946: fig. 1)

CONCLUSION

Most of the problems we encounter - regarding accessing materials related to the second millennium B.C. is that there is no full, partial information or archaeological evidence. The reason for this is the lack of interest of archaeologists in the study of fortifications, or that the fortifications were examined through the form of surveys as in the site of Mishkan Shapir. Many of these sites were discovered accidentelly during excavations resulting from the destruction of archaeological layers due to the formation of younger assumptions. For this reason we have generally no information about all the sites of this chapter, and in particular, the ancient fortifications.

The bricks and burnt brick were building materials in the above sites. They were formed in rectangular shapes, however, there were also square shapes as in the fortifications of Dur Kurigalzu and Larsa, and a flat-convex brick in Tell Asmar. It can be concluded that these sites were a continuation of earlier fortifications, to be more precise, the fortifications of the Early Dynastic period, This assumption of mine, is based on the fact that the flat-convex brick was a characteristic stalactite until this period, but also square brick was very popular in the third millennium B.C.

The only Casemate wall is in Tell Asmar, and there are many sites in this chapter behind this unpredictability as Tell Asmar, Tell Abu Hafur, Dur Kurigalzu and Mishkan Shapir, caused by the land typography or by other environmental factors. Summing up the issue of fortifications in the second millennium B.C., we can say that the two linear walls surrounding cities such as in Abu Hafur Tell (other fortifications of this kind lack information) is the contravention of the fortifications from the early-early period.

CHAPTER 9

GENERAL INFORMATION ABOUT THE FORTIFICATIONS IN MESOPOTAMIA

9. GENERAL INFORMATION ABOUT THE FORTIFICATIONS IN MESOPOTAMIA

9. 1. DIFFERENCE DIMENSIONS OF BRICKS IN ONE FORTIFICATION WALL

Different size of the brick on one excavation side or in the one wall can be result of expanding the wall or rebinding or perhaps it is a result of different sources in production building materials.

In Mesopotamia we can meet a lot of excavation side of the cities where we see differences between materials and constructions, among others Assur (Qual'at Sarqat), Dur-Kurigalzu, Kish Tell Uhaimir, Sabi Abyad and Rijm, on which we can see clearly differences in sizes and materials, because these sides were inhabited for a lot of period, so we can conclude that this difference appeared in result of reconstruction of this wall a several times. In the sometimes we can confirm that there exists deference in size of the brick in one historical period. Thanks of written inscription we find out that they were rebuilt and expanded by kings of this tine and that they had material building from different areas of production of these bricks.

When we observe the shape of the bricks from the moment of its appearance we see that shape remind the same for all ancient of periods in Mesopotamia, but detentions had changed. From the Akkadians time appeared brick in squer shape which was used for long time in Mesooptamia and in final rectangular shape disappeared.

9. 2. DIFFERENCE IN BUILDINGS MATERIALS IN ONE WALL

In the most of the cities walls we meet a different building material of which consists the wall in this point we can divide into three main groups of material for construction of the wall, it means: stone, burned brick and dried brick. For giving the answer for question about differences in material in one wall we need to go back to characteristic chemical feature of each material.

If we concentrate our attention on the South of Mesopotamia, we see that there is higher level of ground water and that a lot of the cities were situated in a volley. In the sometime lack of the brick and in this place dried brick appeared which consisted of clay mixed with hay-dried in the sun; it was developed material compared to clay used to build houses, and inhabitants could observe reaction this kind of bricks for environmental factors. Turned out after some time that it was not resistant to moisture. In connection with the above, they applied new methods as in the production of ceramics where they started to burn the brick before using in construction, and it appeared to us burned brick with new proper features and, among other things, it is resistant to humidity. For the first time, we know that the appearance of burnt brick was in the period of Uruk and in the buildings of the city of Eridu (Syton 1955: 460). According to Mr. Hussin, excavations in Ur discovered burnt brick inscribed on her information about inhabited people in Ur during the Uruk period and building a palace in Kish z dried brick used clay to connect the brick and its road was made of brick burnt in 3500 B.C. (Hussain 1984: 258).

The brick developed in Mesopotamia in the continually still in the way of quality control, the brewing process, admixture of clay and accurate temperature distribution. The population used dried brick and brick burnt together in construction, because the dried brick is not very

expensive, it is easy to make it at the construction site insulates heat and maintain the appropriate temperature of the internal buildings. And burned brick used in the foundations of buildings to a certain height and then dried brick, because burnt bricks resistant to humidity, and the dried brick that used to build on the foundation of external covered mortar with clay, water and hay, thus maintained wall from rain and weather changes.

In the North of Mesopotamia, stone was available because the inhabitants of this region used it only in building foundations, the non-cornered shape and heavy habits may have been the reason for their not being laid in the walls beyond the foundations. And on the foundations, they used brick. Dried for building walls and to a certain level, and mudbrick was used at the very top. The only city that used stone inbuilding the entire wall on today's Iraq is today Niniveh but only in the inner wall. From this I can suggest that they used these three materials because that stone readily available to them and also hard and has features of resistance to groundwater and brick burned also has the property of resistance, but expensive and mudbrick was cheap they used only on the very top of the building because it does not hold resistance.

9. 3. ANALYZE BRICKS CALCULATIONS AND CONSTRUCTION TIME FOR ONE M OF EVERY EXCAVATION SIDE

If we talk about the dimensions of bricks, we can conclude about a few points thanks of the tables situated below. We observe big changes in dimensions. I think that this kind of changes in the

dimensions of the bricks are caused by the development of manner of building and also adjustment the shape of the bricks more regular in its shape to be harder as a building element, and also more comfortable for bringing for the workers during erection of building. The bigger dimensions of the brick, less time needed to build the wall, but disadvantage was the fact that whole construction was weak. In sometime the smaller dimensions of individual bricks, more time they needed for construction, but then the wall was regular and stronger.

In the sometimes we can say that the changes in dimensions of brick are result of reconstructions and renovations some excavation side by a subsequent rule. We can observe this phenomenon for example in Assur city (Qual at Sarquat), Dur-Kurigalzu, Kish Tell Uhaimir, Tell Rijim, Me-Turan (Al-Sib) and Tell Sabi Abyad. Other reason of changes bricks dimensions is the fact that they were produced in different places, were the material was available- in lot of different sides on the Northern areas and South of Mesopotamia dated 2nd millennium B.C. These are among others: Tell Abu Fahad, Tell Brak, Mishan Shapir and Larsa. It is still to be mentioned that the newer time of dated bricks origin, the dimensions are smaller. We conclude that the brick met the demand of ancient people.

At the same time, thanks to known the dimensions and types of brick we can analyze the dating of the site for what period of fall where, in many standings were not dated, they were dated by their researchers for general dating like in chapter 8 where researchers of these sites dated them to 2nd millennium B.C. without specifying on what historical period dated, an example on this we can see that the dimensions of the brick from the period of Neo-Assyrian in the sites of Jerah Wall, Kliah, Muhra Wall is identical to that in the lack of dating from the researchers 2nd millennium B.C. thanks to the dimensions of the brick I can say that the exact dating of this site was attributed to the period of

Neo-Assyrian in view of the dimensions of the building material.

Another example is the size of the brick in the Tell Sabi Abyad and Dur-Kurigalzu stands, where Dur-Kurigalzu researchers were dated to 2nd millennium B.C. and Tell Sabi Abyad during the Middle-Assyrian period, we can confirm that the exact dating of Dur-Kurigalzu falls on the average period Assyrian. From the size of the brick and dating, one can still imagine the cost of the construction structure which is an important element of the city's strength as well as the economic development.

Names	Dimensions of bricks- cm	The dimensions M3, which i Calculation ofd	Amount of the bricks in every m3	Hours of work needed to build m3
Abu Fahd	45x45x10	0,90x0,90x0,96	40	00:51
Abu Hafur	48x32x8	0,96x0,96x100	60	01:20
	48x32x1	0,96x0,96x0,99	198	04:38
	4x25x8	100x100x100	1000	22:18
	45x3x8	0,90x0,96x0,96	660	14:40
Al-Rimah	35x35x9	1,05x1,05x0,99	81	01:50
Al-Zawiyah	35x35x9	1,05x1,05x0,99	81	01:50
Assur (Qual' at Sarquat)	-Old-Assyrian period -Burnt brick			
	29x29x4,5	1,16x1,16x1,02	272	06:03
	34x34x11	1,02x1,02x0,91	63	01:27
	-Mudbrick			
	34x34x9	1,02x1,02x0,99	81	01:51
	33x33x10	0,99x0,99x0,96	72	01:34
	34x34x11	1,02x1,02x0,91	63	01:27
	-Middle-Assyrian 38x38x10	1,14x1,14x0,96	72	01:34

	-Neo-Assyrian 38x38x14	1,14x1,14x0,96	54	01:12
	-The Tabir gate 37x37x12	1,11x1,11x0,98	63	01:27
	-The Western gate 37x37x14	1,14x1,14x0,96	54	01:12
Babilon	32x32x12	0,96x0,96x0,98	63	01:27
	34x34x14	1,02x1,02x0,96	54	01:12
Barsip/Kar-Salmanasar	47x47x6	0,94x0,94x0,96	48	01:07
Dur-Katlimmu	47x47x6	0,94x0,94x0,96	48	01:07
Dur-Kurigalzu	20x16x8	1,00x0,96x1,00	300	06:40
	22x16x9	1,10x0,96x0,99	270	06:00
	25x16x8	1,00x0,96x1,00	240	05:20
Dur-Sharrukin	48x48x6	0,94x0,94x0,96	48	01:07
Eshnunna, Tell Asmar	37x37x6	1,11x1,11x0,96	108	02:24
Harmal	33x33x10	0,99x0,99x0,96	72	01:34
	35x35x8	1,05x1,05x1,00	90	02:00
Haradum	36x36x11	1,08x1,08x0,96	72	01:34
	37x3711	1,11x1,11x1,04	72	01:34
Hadatu	47x47x6	0,94x0,94x0,96	48	01:07
Jerah Wall	30x30x10	0,90x0,90x0,96	72	01:34
Kar-Tukulti-Ninurta	47x47x6	0,94x0,94x0,96	48	01:07
Kalhu	47x47x6	0,94x0,94x0,96	48	01:07
Kish Tell Uhaimir	32x32x14	0,96x0,96x0,96	54	01:12
	24x16x7	0,96x0,96x0,99	264	05:52
	25x18x8	1,00x1,08x1,00	240	05:20
Kliah	30x30x10	0,90x0,90x0,96	72	01:34
Larsa (Senkereh)	Burnt brick -The Eramar gate	1,04x1,04x1,00	90	02:00

	34.5x34.5x8 36x36x8 -The Southeas gate 31x31x8 33x33x8	1,08x1,08x1,00 0,93x0,93x1,00 0,99x0,99x1,00	90 90 90	02:00 02:00 02:00
Mashkan Shapir (Abu Duwari)	28x17x8	1,12x1,02x1,00	240	05:20
Me-Turan (Al-Sib)	32x32x6 34x34x5 38x38x8 40x440x8	0,96x0,96x0,96 1,02x1,02x0,98 1,14x1,14x1,00 1,20x1,20x1,00	90 126 90 90	02:00 02:48 02:00 02:00
Muhra Wall	30x30x10	0,90x0,90x0,96	72	01:34
Nagar Tell Brak	30x30x10 10x30x10	0,90x0,90x0,96 1,00x0,90x0,96	72 240	01:34 05:20
Niniva	37x37x12	1,11x1,11x0,98	63	01:27
Nippur (Nuffar)	47x47x6	0,94x0,94x0,96	48	01:07
Rijim	44x12x8 46x14x8	0,88x0,96x1,00 0,92x0,98x1,00	160 140	03:32 03:05
Sabi Abyad	20x16x8 22x16x9 25x16x8	1,00x0,96x1,00 1,10x0,96x0,99 1,00x0,96x1,00	300 270 240	06:40 06:00 05:20
Sippar (Abu Habba)	35x35x9	1,05x1,05x0,99	81	01:45
Sippar (Ed-Der)	20x16x8 22x16x9 25x16x8	1,00x0,96x1,00 1,10x0,96x0,99 1,00x0,96x1,00	300 270 240	06:40 06:00 05:20
Telbis	29x29x10	0,87x0,87x0,96	72	01:34
Ur (Tell al Muqayyar)	32x32x16	0,96x0,96x1,08	54	01:12

Table. 5. Bricks calculations and construction time for one m of every excavation side

9. 4. Bricks calculations and construction time for 100 m of every excavation side.

Fortifications in ancient Mesopotamia did not only have the meaning of insurance and geographical marking of a given city but also they had many other meanings such as protecting the city against the enemy as well as natural environmental factors, besides having economic significance which is the most important element of constructing such a huge object. Fortification systems played an important role in presenting the economic power of a given city through the appearance (height, length and thickness of the walls) and the strength of city fortification. However, it must be remembered that building materials (brick, stone and wood) had their costs and the only one known to us is the cost of brick.

Thanks to earlier information in the chapter The Appearance of the Brick in Mesopotamia we found out that the cost of 370 bricks burned with transport from the place of production to the construction site was 1 Shegiel, from what we can Calculation of the cost of bricks that are needed to build 100 maters without labor costs, which is not known to us using the above table from various historical periods so that we can build an outline of the economic power invested in constructing a defensive wall in the fortifications discussed in this work.

Starting with Tell Abu Hafur, in this site we have different brick dimensions in the costs of 16.21, 53.51, 270.27, 178.37 Shegiel. The walls in Dur-Kurigalzu were built of small bricks which needed more economic power to construct 81.08, 72.97 and 64.86 Shegiel. In Tell Asmar 29.18 Shegiel, in Harmal there were two dimensions of brick so the first cost 19.45 and the second 24.32 Shegiel. In Larsa there are four different dimensional bricks, but the costs probably come out the

same 24.32 Shegiel, in Mashkan Shapir there were 64.86 Shegiel and Tell None 19.45 and 64.86 Shegiel. All previous sites are dated to 2nd millennium B.C. where the author does not give a conclusive period.

From the Assyrian fortifications we start with Tell Abu Fahad, the brick cost is 10.81 shegiel. Matters look different in the site of Tell Qual at Sarquat where we have many dimensions of brick is certainly caused by the settlers settled by the ancient population of this site for many historical periods, in the Old-Assyrian period the cost of brick burned out were 73.51, 17.02, 21.89 shegiel, and the cost of the fourth type dried brick was 19.45 shegiel, and the last type of dried brick was similar to the second type of brick burnt from that period, ie 17.02 shegiel, therefore it can be concluded that the building which build in the same dimensions of brick come from the same year of construction and production of these brick as a brick dried or burnt outcome from this same brick production.

In the Middle Assyrian site of Tell Qual at Sarquat, the brick cost was 19.45 shegiel, the fourth type of brick in the Old-Assyrian period in this site. In the Neo-Assyrian wall and in the Western gate there were similar quantities of bricks as well as a similar cost of 14.59 shegiel, while in the Tabir gate is 17.02 shegiel. In Barsip Kar-Salmanasar, Dur-Sharrukin, Haratu, Kar-Tukulti-Ninurta, Kalhu and Dur-Katlimmu the costs and dimensions of the bricks were like 12.97 Shegiels. Haradum was 19.45 Shegiel, in Jerah Wall, Kliah, Muhra Wall and the first type of Tell brick. They have the same brick size, and costs 19.45 Shegiel, so they are all similar in size and cost, so you can say that walls are constructed from this dimension of bricks, they are dated to the period of Neo-Assyrian and not to 2nd millennium B.C. as stated by the researchers of this site. In Niniveh 17.02, Rijim 37.83 and 43.24 shegiel. What's even more interesting is that the dimensions of bricks in Sabi Abyad's site are the same dimensions and costs in Dur-Kurigalzu.

From this information we can confirm that the exact dating of Dur-Kurigalzu's site falls on the Middle Assyrian period. Telbis was 19.45 shegiel and 12.90 shegiel in Nippur.

In Babylon, the costs of building walls were higher than the Tell Qual at Sarquat, this is due to the small size of the brick used during construction, the Babylonian brick costs are 17.02 and 14.59 shegiel. In Tell Al-Rimah and Tell Al-Zawiyah come from the same period and apparently have the same construction structure as well as the same brick dimensions and costs 21.89 shegiel. At Kish Tell Uhaimir the costs were 14.59, 71.35, 64.86 shegiel. In Me-Turan it was in four different sizes of bricks and costs between 24.32 and 34.05 shegiel, in Sippar Tell abu Habba the cost was 21.89 shegiel. Ur 14.59 shegiel.

It can be clearly observed that the lower cost, are when the dimensions of the bricks are larger – was used to construct the fortifications, and the higher the costs, the smaller the dimensions of the bricks. From the dimensions and construction costs, we can determine that the construction comes from a given period, and that probably the bricks were produced in one place and from the only production.

For the information that 1 shegiel also 8.4 grams silver (Rashid 1981: 36), using the price of silver we can achieve how it is a brick cost today but it is not the subject of my work.

Names	Dimentions of bricks- cm	The dimensions M3, which i Calculation ofd	Amount of the bricks in every m3	Hours of work needed to build m3
Abu Fahd	45x45x10	9000x0,90x0,96	4000	51:00
Abu Hafur	48x32x8	9600x0,96x100	6000	120:00
	48x32x1	9600x0,96x0,99	19800	434:00
	4x25x8	10000x100x100	100000	2218:00
	45x3x8	9000x0,96x0,96	66000	1440:00
Al-Rimah	35x35x9	10500x1,05x0,99	8100	150:00
Al-Zawiyah	35x35x9	10500x1,05x0,99	8100	150:00
Assur (Qual' at Sarquat)	-Old-Assyrian period			
	-Burnt brick 29x29x4,5			
	34x34x11	11600x1,16x1,02	27200	603:00
	-Mudbrick 34x34x9	10200x1,02x0,91	6300	127:00
	33x33x10	10200x1,02x0,99	8100	151:00
	34x34x11	9900x0,99x0,96	7200	134:00
	-Middle-Assyrian	10200x1,02x0,91	6300	127:00
	38x38x10	11400x1,14x0,96	7200	134:00
	-Neo-Assyrian			
	38x38x14	11400x1,14x0,96	5400	112:00
	-The Tabir gate			
	37x37x12	11100x1,11x0,98	6300	127:00
	-The Western gate			
	37x37x14	11400x1,14x0,96	5400	112:00
Babilon	32x32x12	9600x0,96x0,98	6300	127:00
	34x34x14	10200x1,02x0,96	5400	112:00
Barsip/Kar-Salmanasar	47x47x6	9400x0,94x0,96	4800	107:00

Dur-Katlimmu	47x47x6	9400x0,94x0,96	4800	107:00
Dur-Kurigalzu	20x16x8 22x16x9 25x16x8	10000x0,96x1,00 11000x0,96x0,99 10000x0,96x1,00	30000 27000 24000	640:00 600:00 520:00
Dur-Sharrukin	48x48x6	9400x0,94x0,96	4800	107:00
Eshnunna, Tell Asmar	37x37x6	11100x1,11x0,96	10800	224:00
Harmal	33x33x10 35x35x8	9900x0,99x0,96 10500x1,05x1,00	7200 9000	134:00 200:00
Haradum	36x36x11 37x3711	10800x1,08x0,96 11100x1,11x1,04	7200 7200	134:00 134:00
Hadatu	47x47x6	9400x0,94x0,96	4800	107:00
Jerah Wall	30x30x10	9000x0,90x0,96	7200	134:00
Kar-Tukulti-Ninurta	47x47x6	9400x0,94x0,96	4800	107:00
Kalhu	47x47x6	9400x0,94x0,96	4800	107:00
Kish Tell Uhaimir	32x32x14 24x16x7 25x18x8	9600x0,96x0,96 9600x0,96x0,99 10000x1,08x1,00	5400 26400 24000	112:00 552:00 520:00
Kliah	30x30x10	9000x0,90x0,96	7200	134:00
Larsa (Senkereh)	Burnt brick -The Eramar gate 34.5x34.5x8 36x36x8 -The Southeas gate 31x31x8 33x33x8	10400x1,04x1,00 10800x1,08x1,00 9300x0,93x1,00 9900x0,99x1,00	9000 9000 9000 9000	200:00 200:00 200:00 200:00
Mashkan Shapir (Abu Duwari)	28x17x8	11200x1,02x1,00	24000	520:00
Me-Turan (Al-Sib)	32x32x6 34x34x5 38x38x8	9600x0,96x0,96 10200x1,02x0,98 11400x1,14x1,00	9000 12600 9000	200:00 248:00 200:00

	40x440x8	12000x1,20x1,00	9000	200:00
Muhra Wall	30x30x10	9000x0,90x0,96	7200	134:00
Nagar Tell Brak	30x30x10	9000x0,90x0,96	7200	134:00
	10x30x10	10000x0,90x0,96	24000	520:00
Niniva	37x37x12	11100x1,11x0,98	6300	127:00
Nippur (Nuffar)	47x47x6	9400x0,94x0,96	4800	107:00
Rijim	44x12x8	8800x0,96x1,00	16000	332:00
	46x14x8	9200x0,98x1,00	14000	305:00
Sabi Abyad	20x16x8	10000x0,96x1,00	30000	640:00
	22x16x9	11000x0,96x0,99	27000	600:00
	25x16x8	10000x0,96x1,00	24000	520:00
Sippar (Abu Habba)	35x35x9	10500x1,05x0,99	8100	145:00
Sippar (Ed-Der)	20x16x8	10000x0,96x1,00	30000	640:00
	22x16x9	11000x0,96x0,99	27000	600:00
	25x16x8	10000x0,96x1,00	24000	520:00
Telbis	29x29x10	8700x0,87x0,96	7200	134:00
Ur (Tell al Muqayyar)	32x32x16	9600x0,96x1,08	5400	112:00

Table. 6. Bricks calculations and construction time for 100 m of every excavation side.

9. 5. Comparison of fortifications

Among the fortified posts dated second and first millennium B.C. there are some clusters that have similar characteristics.

In northern Mesopotamia, in all fortified urban centers, fortifications from this region were usually built at the same time as the establishment of the center itself, the upper city / citadel was fortified, and together with the expansion of the lower city, an outer line of fortifications was being build. At the same time, additionally, Fortification all the sites of this region resulted in their typography and their location on the Tigris and Euphrates rivers as well as the Chabur river.

All the posts used mudbrick, it did not have the same dimensions, which was the basic building material for defensive walls. Only in Tell Rijim where the city wall was created in the technique of pisé. Stone (limestone) was used as a reinforcement or foundation, Ninaua the lower wall has a stone core and is covered with carefully hewn limestone slabs. The most common element that accompanied the defensive walls was the escarpment. It was built of mudbrick or compacted earth. There were also buttresses next to the walls, ramparts, on which walls and moats were erected. All stands had a tower, of course, differ from each other in dimensions, however, the tower, at regular intervals, were created for sites including Dur-Sharrukin, Dur-Katlimmu and Niniveh. Practically, the remains of the gates were found everywhere almost.

Other sites with fortifications, especially those that are dated to the 1st millennium B.C. present the use of similar materials and techniques. They differ greatly between themselves. They are both large and small sites that have a single or double line of fortifications. They

were large (Assur) and small (Tell Sabi Abyad). In modern northern Iraq, a number of quite fortified sites have been discovered. These were large, about 250 hectares of land, as Kar-Tukulti-Ninurta, which is build of brick mud located directly on the gravel. Others were very large which eventually takes up an area of 750 ha. He was surrounded by two lines of defensive walls.

The lower wall was built of stone. Usually, a massive foundation was built from irregularly worked limestone blocks, on which a superstructure made of mudbrick like Niniveh was built. However, the only post in Mesopotamia that appears his construction made of mudbrick on a basaltic foundation is Tell Abu Fahd in the north-east of today's Syria. The site is also distinguished by having a wide and deep moat, casemates and sometimes buttresses were added to the fortifications.

North Mesopotamia, however, have much in common. In addition to occurring in virtually the same area, most of them were founded and wall reinfocement at the beginning of the 2nd millennium B.C. and extended to the 1st millennium B.C. The same materials and construction techniques were also used to build the fortifications.

All defensive walls were built of mudbrick. Sometimes a stone foundation appears, a stone coat or a basalt foundation. The vast majority of walls are accompanied by escarpments. In the largest, most developed sites there are virtually all elements of the fortifications: embankments, moats, towers, escarpments and buttresses. In smaller sites, in addition to the already mentioned slopes, they appear more sporadically. From 2nd millennium B.C. in northern Mesopotamia, "Kranzhügel" sites disappear, which were created in the Chaburu basin and the Euphrates region at the beginning of 3rd millennium B.C. which all sites in this group had two lines of defensive walls that surrounded the upper and lower city. At the same time, the sites known as

"granary" disappear, which also occur in the basin of Chabur and Balich significantly differ from those of the "Kranzhügel" type.

These were small settlements specializing in grain storage, which had fortifications contrasting with a small surrounding surface. It was always one line of fortifications built of mudbrick, which arose simultaneously with the establishment of a settlement. The lines of fortifications were broadly varied (oval, rectangular), but very simple. They did not have buttresses, dikes and moats, and the only reinforcement was the slate brick wall attached to the wall.

In southern Mesopotamia there are also smaller regions, which present numerous similarities in the fortifications of the second and the first millennium B.C. The sites located in the fertile valley between Tigris and Euphrat: Nippur, Sippar, Kish, Isin, Larsa, Mishkan Shapir) were huge urban centers established very early (the earliest settlement layers of Nippur date back to the 6th millennium B.C. Preserved massive fortifications, sometimes still visible in the area, were built relatively late, although in Sippar Tell Habba they come from the Old-Babylonian Empire. In most cases, the walls from the 2nd millennium B.C. they were destroyed by later constructions. The walls from this region were built of a characteristic mudbrick, sometimes burnt, and the only one found was a flat brick raised on Tell Uhaimir in Kish. Mudbrick was also used and in the case of Tell Habba a stone foundation was used. The walls were built with different techniques. These were structures with two faces filled with rubble (Babylon), two parallel lines of walls and structures with casemate rooms (Nippur) or bastions (Babylon). A very similar history of development is presented by ancient Ur, located in the immediate vicinity of this region. The stand was also created very early, but its massive walls come from the period of intensive development of the city in the Neo-Babylonian period. Mudbrick was used for the construction of a massive wall and burnt brick for the

construction of other fortifications.

In southern Mesopotamia, there are practically no popular sites with a double line of walls, upper and lower cities in the only site where was present its Babylon. The characteristic mudbrick is used to build the walls, but there is also a burnt brick. A stone is rarely used in fortifications. Most often the walls are accompanied by numerous buttresses or bastions of various shapes (rectangular) and sometimes buttresses, moats or dikes. Numerous gates flanked by towers were also discovered at the stands.

CONCLUSIONS

CONCLUSIONS

My doctoral dissertation presents the topic of fortifications from various centers in the 2nd and 1st millennium B.C in ancient Mesopotamia. It is a huge area, which consisted of fertile valleys along the great Tigris and Euphrates rivers and their tributaries, deserts and mountain areas. Fortifications were discovered in various sites. These were often large, several hundred hectares of city-state, containing medium-sized, small and sometimes specialized settlements.

The similarities between fortifications occur within two large regions, northern and southern Mesopotamia.

In northern Mesopotamia, the most numerous examples of fortified sites come from the region of Jebel Sinjar in northern Iraq. The other sites also come from the Chabur Rivers valley, and from the Euphrates and Balich rivers. These sites have a lot in common. Most of them were founded and wall was reinfocement at the beginning of 2nd millennium B.C. and the same materials were used for the construction of the fortifications while the same construction techniques were also used. All the defensive walls were made of mudbrick or burnt brick. Stone appeared infrequently and sporadically (eg as a foundation or a stone coat). Usually, the escarp (the slope that appeared as a defensive development to make harder work for siege machines that were used for destroying of fortifications), were added to the walls, and on the most developed stands there were embankments, moats, scarp towers and buttresses. Many sites had a double line of fortifications that surrounded the upper city / citadel and lower city. From the 2nd

millennium, the groups of the granary type and the group "Kranzhügel" had been disappearing, which was characterized by a double line of fortifications, a circular plan which was common in northern Mesopotamia in the 3rd millennium B.C. However, there appeared to emerge a more specialized fortification system that included all the defensive elements required for a city's defence (see Chapter No. 5. 2).

The main problem in 2nd millennium B.C. is that there is a lack of information resulting from archaeological research showing the construction of fortification systems due to undisclosed sites, or by new assumptions on the foundations of older fortification assumptions, or destruction from enemy attack, or through erosion, all of which hinder our analysis and ability to obtain new information.

We can see from the available information that in 2nd millennium B.C. that fortification systems illustrated the development of defensive architecture from earlier eras (Early-Dynastic period) such as the appearance of square brick in the Dur-Kurigalzu fortification or the appearance of a flat-convex brick in Tell Asmar, which were chamerctive of the early dynastic period. Observing the systems of fortifications in the second millennium B.C., we can summarize that two linear walls surrounding the city like in Abu Hafur Tell, in the remaining sites of this chapter, no information is similar to the Kranzhegle model from which there were popular defense systems in the Early-Dynastic period.

Throughout the area, differences can be observed, especially in terms of spatial planning of the city. Where the topography of the terrain played an important role in shaping cities, especially those that are located near the river or in mountainous terrain, such differences can be noticed in locations like Assur (Qal'at Sarqat), Babylon, etc., however, the sites laid on flat terrains did not have this problem like Harmal, Haradum, Sippar Tell Abu Habba, etc.

The main building material in Mesopotamia in the second and the first millennium B.C. was a brick, which is found in all fortifications, sites of this area, representing the most popular building material. The burnt brick represents the most important building material used in the south of Mesopotamia. It gained popularity thanks to its chimerical features, which are resistant to moisture, as well as a high level of ground water in southern areas and lack of access to stone, all of which allowed the burnt brick to be the second most important material in Mesopotamia. Stone was used as a building material only in the mid-coastal region.

The techniques used to build the fortifications were very different. The walls had stone foundations, burnt bricks or none at all. Sometimes, as in the city of Larsa, in one wall construction, several types of bricks were used, or as in Niniveh where the wall had two parallel faces, and the space between them was filled with clay and stones. An example of the technique of laying flat-convex bricks, which was characteristic of the Early-Dynastic period, comes from Tell Asmar. The technique of pisé was also used, which consisted in laying the construction of thin slabs of compacted clay in the only station, such as in Tell Rijim.

The main purpose of elements connected to defence systems was to offer protection and resistance in times of enemy attack. They significantly impeded the use of siege machines intended to smash walls. For better control of movement, the gate and towers were situated in well-considered locations, in points enabling good all-round views of the city. A moat was a significant obstacle in getting the enemy closer to the city walls. The moat was usually the result of digging around the city. However, sometimes, there were already rivers flowing along the city walls. A classic example of one such kind of solution is: Assur and Kalhu- which border along at least one side of the Tigris River. The

topography of the area also had an influence on the shape of the cities. We can observe its influence in the design of archeological sites, especially in the mountainous terrain of northern Mesopotamia – where most of the cities have irregular shapes. Typography of the area could have been used to strengthen fortified systems, in particular in mountainous cities, where it was treated as a natural escarpment hindering the operation of war machines as in many Assyrian cities, or there could be a weakening point of defense systems as in Babylon where the city was divided into two parts by a river, which helped the enemy use as an entrance road to the city center without any architectural or typographic difficulties, as in northern Mesopotamia. On flat terrain, the city plan was more regular but required a lot of construction work to insure their defense systems, which reflected the magnitude of each city's protection.

The foundations of Old Assyrian walls were dug until the constructors arrived at a rock layer, well cleaned, and later foundations of ordinary walls made of stone in northern Mesopotamia, it followed that the fortification structures became very strong. In Neo Assyrian times, the fortified foundations disappeared. There were no excavations and instead, only the ground was leveled, and the defensive walls were built, which leads us to understand that the ancient defense systems were stronger than in the Neo-Assyrian period. An example of this is the Assur site (Qal 'at Sarqat). In southern Mesopotamia, all fortified cities had foundations that were built on the fundaments of older buildings and were built of burnt brick.

In southern Mesopotamia, there are practically no fortifications with a double line of walls. Most of the fortifications were also built relatively late, after the foundation of the cities, most of these centers were dated to the second half of the second millennium B.C. Only in a few cases does the rise of defensive walls date back to the beginning of

the second millennium B.C. Mudbrick, characteristic of this area, was also used to build the walls. Burnt brick also features, despite not being popular in northern Mesopotamia. In the fortifications, stone was rarely used, and there is scant evidence of it in southern Mesopotamia. Often numerous buttresses or bastions of various shapes (rectangular, half-round) were used.

The development of fortifications in all the discussed examples was similar. The fortifications developed from simpler forms to more complex ones, which coincided with the development of the centers that surrounded them. Additional walls were built, providing reinforcement to existing ones, or as additional lines of fortifications. These walls were reinforced with additional slopes and buttresses. However, in accordance with the motif of fortifications in Mesopotamia, we have learnt that the development of fortifications arises at the turn of historical periods. In contrast, a lack of development is notable if we only study one time period. It is also remarkable to note that the development of defensive architecture always appears concurrently with the development of a brick in the style of a builder.

Brick and ceramics were helpful elements and thanks to them it was possible for archeologists to determine historical periods, while at the same time it can be concluded that the development of ceramics and brick determined the development of defensive architecture in Mesopotamia as well as the general development of everyday life. However, it should be noted that at approximately 2nd millennium B.C., during the Middle Assyrian period, unfortunately, to date, there is no information about the structure of fortifications, making it difficult to track the development of defensive architecture. However, it is worth knowing that in Mesopotamia generally, there is not too much information about the characteristics of the fortifications of older structures. There are more differences than similarities between the

fortifications found in northern and southern Mesopotamia, which is why one cannot talk about their joint development. There is some evidence of interaction between these areas, but only in a later period. In the case of the earliest fortifications, it is necessary to consider the development of each region as happening independently of the influence of the other.

The defensive walls did not only function defensively against enemy invasions. They were also to mark the area of influence and show the strength of a given ruler. They also served in the earliest stage of development to protect against dangerous floods in this area.

The importance of the city walls can be proven by the fact that they often appear in the written inscriptions that tell us about the strength and power of fortified cities. The inscriptions were inscribed upon city walls and within constructions belonging to palace authorities. Their contents were similar, describing who built the fortification and when it was built or rebuilt, or if a new fortification had been constructed. On the insignias these illustrations usually show a section of the city walls, along with the gate, and fights being fought to attack or defend them. They are always monumental forms, bristling with battlements and with a strongly fortified gate.

The Assyrians left many artifacts which contained images of defensive architecture in the center of the work, drawn on caliphs, cylindrical seals, etc., which indicated the importance of such buildings to their daily lives. Fortification was an important defensive element of the city, from which it determined the duration and arrival point of an enemy attack. We can say that the more strongly fortified the city, the greater the loss among the attacking enemies and the lesser the chance of sacking the city.

Another observations presented in my work is that most of the

structural elements of the defense systems are present on the reliefs, enabling us to understand the defensive architecture that was necessary to protect cities from everything launched by an attacking enemy and to conduct control of inhabitants through the use of gates, by the city rulers. Gates also fulfilled the function of protecting the city from floods and thieves.

From the fortifications appearing in art, most notably Assyrian, they really clearly demonstrate the development of defensive architecture in Mesopotamia, from the appearance of this type of protection, circa 4th millennium B.C. to the end of the Neo-Assyrian period. Of course, the development of defensive architecture was a logical and vital consequence for the development of war techniques, in particular, when new larger siege machines appeared. however, an in-depth analysis of this topic is not permissible due to the lack of available information in archeological research or literary studies.

From what I have gathered from the relief images on the reliefs, questions arise about whether the fortifications presented truly reflected reality, or if they were over-simplified and generalized for symbolic and artistic purposes. To answer such a question, we would need to know more about the methods of work of artists, namely, how they acquired their information. We can speculate that descriptions and sketches were made through dialogue with contemporary war correspondents of the day. There was even a preposterous theory that when sketching two sketches, one was sketching the terrain or building (Jacob 1991: 113). Perhaps the lack of detail was caused not by a lack of information or by the inconvenient fulfillment of the sentence, but simply because the way from the observer to the artist was too long.

It seems that since the earliest periods of Middle Eastern history there has been a need for such images. The presentation of fortifications on various monuments and media lasted for the entire second and first

millennia B.C. and did not end with the advent of Hellenistic culture.

Fortifications from the 2nd millennium B.C. were often expanded and developed in subsequent centuries. Therefore, it can be concluded that later forms were created based on their predecessors and many elements that were applied in developed forms in the 1st millennium B.C. had their roots in the millennium before. And because of the lack of information it will not be easy to show the fortification development in detail, because we do not know anything about the construction of older walls.

Brick is one of the important building materials in Mesopotamia, as well as changing its shape and dimensions, it gives us a lot of information about the techniques of its production, while at the same time answering our questions about whether walls were constructed from the time of the original settlement of a city or over later periods? Had the defense system been rebuilt or enhanced since its construction? The answers to these questions can be found in (chapter 9. 1 - 9. 2).

In fact, the change in the dimensions and shapes of brick was certainly dependent on the needs of the population. In addition, it can be said that the differences in the brick dimensions will help us to make estimates that determine the development of construction technology used for defensive architecture in Mesopotamia. For example, the walls became more regular and stable in Tell Abu Hafur, Assur (Qual at Sarquat) and Sippar (Ed-Der). We can draw rules from this, such as that the smaller dimensions of brick produced stronger and harder structures, while the larger the dimensions of the brick, produced weaker, irregular structures.

However, Brick was more important than just for building walls or houses, because to use this material in construction, it was necessary

to buy it. Therefore, brick was of economic importance. So, thanks to the construction of defense systems, it has been possible to determine the economic strength of a city.

At the same time, thanks to the brick dimensions given in my work, we can analyze the dating of some of the fortifications, especially the sites in Chapter 8 where the researchers of these sites did not provide chronological dating for us to understand what historical period of time these groups of fortifications disappeared. An example of which we see that the dimensions of the brick from the Neo-Assyrian period are similar to the site of Jerah Wall, Kliah, Muhra Wall is identical as in Tell, the lack of expenditure by researchers in the second thousand B.C., which we can assume that the exact dating of these sites falls on the Neo-Assyrian period due to the dimensions of the building material.

Another example where the dimensions of the brick are the same is in Tell Sabi Abyad and Dur-Kurigalzu, where Dur-Kurigalzu researchers dated it to the second millennium B.C., they provided very general dates, without offering a historical period. However, from the study of Tell Sabi Abyad in the Middle-Assyrian period, we can confirm that the exact dating of Dur-Kurigalzu falls on the Middle-Assyrian period.

The emergence of transport modes and their improvement was generally the result of the needs of the ancient inhabitants of Mesopotamia to contact other cities and to transport various commercial materials. Foremost among these materials was burnt brick, which was produced outside of city walls. River transport was steadily created as a cheap transport tributary to deliver construction materials from northern Mesopotamia to the south where the rivers Tigris and Euphrates flowed through this region. From the inscriptions written, we can catalogue more than forty different types of ships that were produced according to the function of their fulfillment. Among

them we observe a special brick transport ship (Elep igri1 / Leppu Sa agurri), and a war ship (Elep Qarabi) as well as a special ship for transporting soldiers (Elep Tillate).

The reason for the popularity of river transport in Mesopotamia is primarily due to the location of the Tigris and Euphrates rivers and their tributaries. The lengths of the rivers and their ditches were the reasons for the revitalization and development of river transport traffic, which clearly influenced the daily lives of the ancient inhabitants of Mesopotamia. This is why we see that river transport represents the main traffic in antiquity in this area, where they provide an easy mode at a low cost, whilst at the same time representing economic life and the axis of communication between civilization, business or military activities.

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