

Theoretical Ancient Transportation Techniques of Large Quarry Stone Blocks To Build Ancient Civilizations' Buildings, Fortifications and Monuments

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ABSTRACT

There have been many attempts by tradesmen and engineers to find a method of moving great stones as the ancients did in the Ancient Egyptian Pyramids, many Temples built in southwest Asia and northeast Africa. However, despite the many hypotheses and theories, none have sufficiently arrived at a common-sense rational logical solution. If it were not for the evidence of what we see for example when we observe the great block quarry stones used to build some of the phenomenally large pyramids which may reach four-hundred feet in height, it literally staggers the imagination how the ancient movers of these stones were able to perform such feats. That cannot even be performed today with mankind's most sophisticated technologies and cranes available today.

Aims/Goals and Results - Therefore when contemplating such an astronomical moving task, we are able to provide the same sound reasoning that when for instance King Solomon built the First Temple that the task of building such a beautiful structure certainly rivaled if not surpassed building of some of the pyramids. Whereas the aims, goals, and results are explained and described in new theories how the moving of these great stones may have possibly been accomplished.

1.0 Introduction and Background

1.1 Historical Theoretical Background Moving Quarry Stones In The Egyptian Pyramids

This paper is not to give an in depth explanation as to exactly "how" the pyramids were either built or not built. For that would take an entire new paper to provide new data and evidence as to how this may have been accomplished. Although this is so, this paper will consider some of the more prominent theories as to how the Egyptian pyramids were built. Why? In order to help provide and lay down fundamental foundational groundwork. Not to entirely explain as to "how" the Egyptian pyramids were built, but to propose "alternative methods" in how some of the great stones were moved to be used in the building of the Egyptian pyramids

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There are many theories as to "how" the pyramids were built. Despite the world's most brilliant minds, technology, and theories as to how the great pyramid stones were moved and how the Egyptian pyramids were built still remains a mystery. However, is there any evidence to support as to how the Egyptian laborers moved these great stones and how the pyramids were built?

Yes there is. This is expressed in the first two primary and most prominent accepted theories that do have some evidence as to how the great stones were moved. That were used to build the great pyramids, such as the ones at Giza. The first theory is known by the abbreviation as (RT)-(Ramp-Theory). The second one is again known by the abbreviation (WST)-(Water Shaft Theory). Both of these theories are the most prominent ones. However, the first (RT) Theory may have the most evidence versus the (WST). What is the difference? This is discussed more as follows:

1.12 The (RT)-Ramp Theory



Figure 1 - (Source)-(Courtesy) of - <http://www.contiki.com/six-two/how-were-the-egyptian-pyramids-built/> . Figure 1 (above) provides a wonderful example in "how" according to: "*The Ramp Theory*", not only how these large stones were moved, but how they were also moved to build the pyramids as well. The first (RT) is one of the ways that the Egyptian pyramid stones are theorized to have been moved in order to build many of the great Egyptian pyramids still in existence today. The (RT) is probably the most generally accepted one, and has the greatest amount of evidence to back it up. [1] When considering the logical aspects of the (RT) to move the great and very heavy quarry stones that the Egyptians used to build almost all of the pyramids there has to be some considerations. For instance; the primary force that would have been used to accomplish this was "manpower, ingenuity, and leverage". Which may have included tens if not

maybe hundreds of thousands of workers at a time. Supposedly, stones were pulled across the desert with ropes and sleds as seen in figure 1 (above). Some proponents of the (RT) believe that by also wetting the sand that it reduced friction, allowing the stones to be moved more easily. However, is there any ancient historical and archaeological evidence to support the (RT) theory?

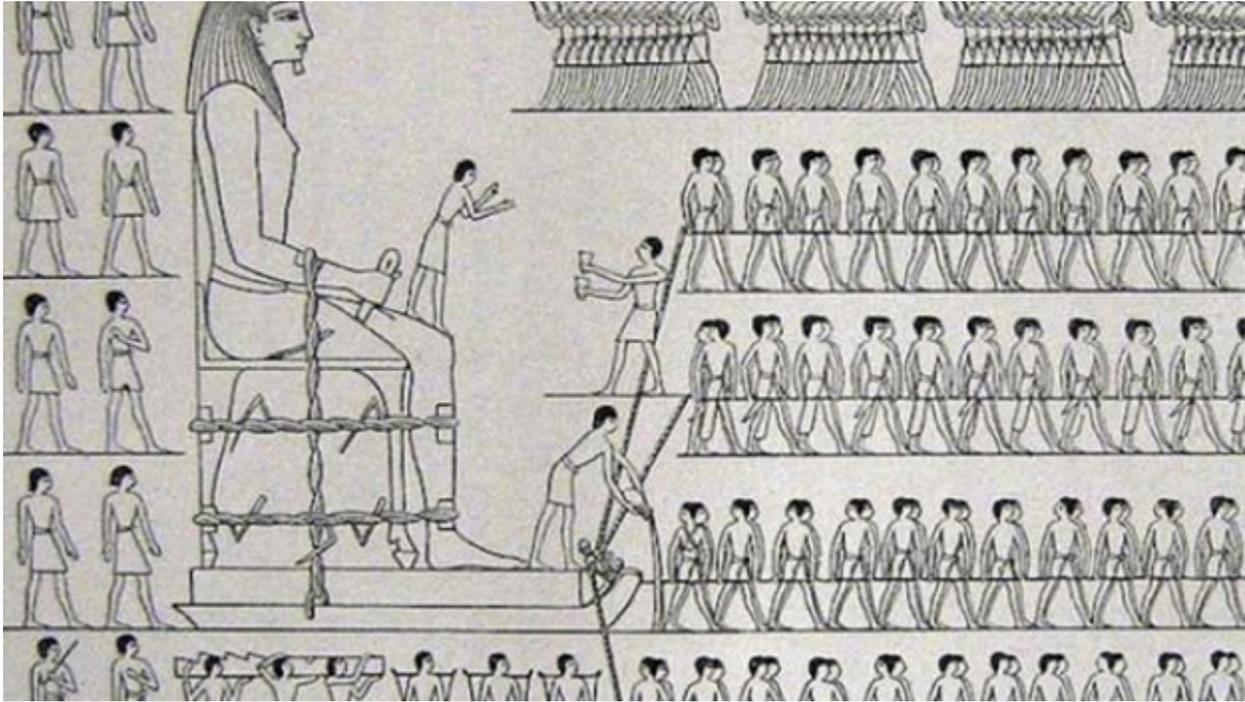


Figure 2 - (Source)-(Wikimedia)-There are several ancient Egyptian historical hieroglyphic, and archaeological depictions that provide some evidence into the (RT). This ancient depiction above shows Egyptian workers pulling a sled. The above depicts pulling a colossal statue on a sledge from the stone quarries of Hatnub. The image above is taken from a wall painting in the tomb of Djehutiotep (Djehuti-Hetep or Djehuty-hotep) at Deir El Bersheh (El Bersha).The tomb is estimated to have been built sometime about 1900 BCE.

This is a large illustration of the wall painting involving hieroglyphic text. [2] The actual peer-reviewed article where the theory of moving these large stones and other large Egyptian quarry stones and other monuments on sand, and where the (RT) was scientifically tested used miniature models with heavy objects on them. To test out the theory to determine that if the sand was wet when the Egyptian workers pulled these heavy objects to their intended destinations, did it help make it easier to move these stones or not. [3]

Apparently the scientific testing out of the (RT) also supports the archaeological hieroglyphic depiction as seen in figure 2 above as well. That only a certain volume amount of water was used at a time to help insure that the sled moved over the sand with the greatest ease possible. [4] [5] [6]

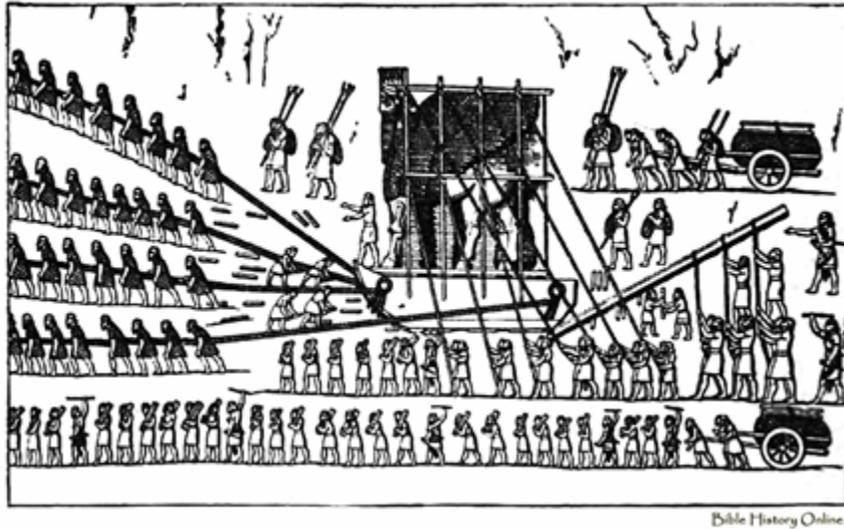


Figure 3 - (Source) (Bible History Online. At - <http://www.bible-history.com/ibh/Assyrian+Stone+Reliefs/Other+Stone+Relief/Transport+Of+A+Cherubim> . This is another illustration of a stone relief showing the Transport of a Cherubim by ancient Assyrians. Who like the Egyptians used sleds and water to transport many of their monuments as well. Therefore providing additional evidence that the Egyptians were not the only ancient culture/civilization to transport large heavy objects in this manner. And that the (RT) concept and theory of transporting large quarry stone blocks in building the pyramids at least has some evidence from both a historical, archaeological, and scientific tested model perspective. Giving evidence that this manner of moving stones did work and was used by ancient cultures. [7]

Some scholars have spent up to or more than one-half of their lives not only studying how the great stones were moved and used to build most of the Egyptian pyramids, but how this helps to support the (RT) theory as well. [8] However, much more data and evidence is available from both archaeological and scientific perspectives. [9]

1.13 The (WST)-(Water Shaft Theory)

The (WST)-(Water Shaft Theory) is a proposed secondary answer to what some believe may have been a much simpler, proficient, and efficient way to transport the very large stone blocks needed to build the ancient pyramids. [10]

2.0 Using common Sense and Rational Logical Deductive Investigative Reasoning; "How" There May Have Been Other Alternative Methods of Moving These Great Stones

Let us imagine how hard it was for the first person to suggest that they move a giant finished stone. He would have been thought a fool. I feel foolish just trying to imagine how they did it. However is there another explanation a how these great stones were moved?

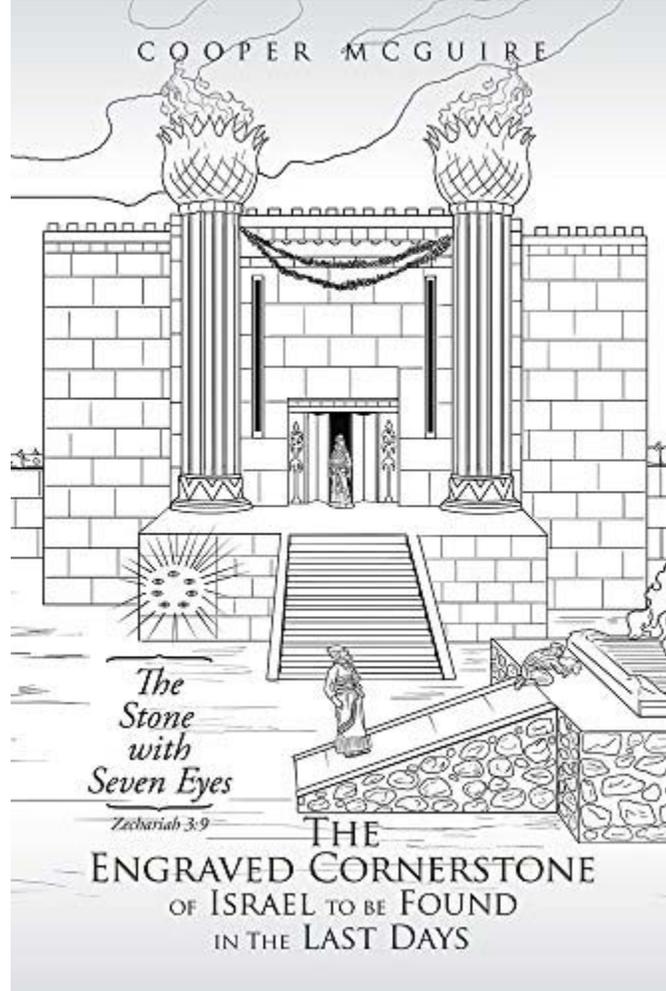


Figure 4 - (Source)-(Author/Cooper McGuire). The book by author Cooper McGuire entitled: *"The Engraved Cornerstone, of Israel To Be found In The Last Days"*. The author makes his first attempt at resolving the question of how they were moved. His argument and persuasion is strong when he suggests that the stone be changed from a position of being a load to being a part of a moving mechanism. In other words, converting it from dead weight to an axle, by building wheels on each end. This conversion overcame three physical forces against moving an object of great mass/size, specific gravity/weight and friction/resistance of moving against adjoining masses. The problem was the building of the wheels and their durability. Possible but, I now think, not probable. I feel the wheels could not be built to sustain all the forces against them. They would fall apart. It would require a lot of skilled labor and still not good enough. [11] The author of this paper and this book, not only explains but also describes in a detailed, in depth, concise, and comprehensive manner in what potential theoretical manner that the undertaking of the building of King Solomon's First Temple was a very massive project. Whereas although the Old Testament does speak of King Solomon delegating the building of the first temple to anyone else but King Solomon himself. And he may have of had as many as many as seventy-thousand men

laborers in the stone quarries at one time. Whereas it is possible that the task no doubt rivaled and/or maybe even exceeded the building of some of the ancient Egyptian pyramids as well.

2.1 One Accepted Concept

These poles would not work unless on perfectly smooth, hard and durable surface to resist crushing. The poles would have to be tough wood or iron to last any time at all. The weight would bury the poles in the dirt and not roll. Abrasion of the sand, dirt, road surface and the limestone piece would eat up the wood poles, also. Turning direction is a different matter. To make the stone turn, it is said, the poles would set under the stones at an angle. This would only cause the piece go askew but not to turn. The stone would not turn in a different direction as a car would turn a corner. It would be a futile effort and still face pretty much in the direction it had been going. The roller pole theory, I believe, will not work. Possible, maybe, but highly improbable.

3.0 Accumulation of Facts In Moving The Stones In The First Temple

3.1 The Route

The road from Tel Aviv to Jerusalem seems to follow valleys, not going up and down much on hills. I feel though; this road is the same route as was taken from Joppa (now Tel Aviv) to Jerusalem in Solomon's day. Mountains and valleys are the same. Following the course of least resistance in valleys was natural. The distance is about 44 miles.

3.2 The Order

Getting the stones from King Hiram (from the Sidon quarry) was ordered by Solomon in I Kings 5:17 "Bring great and costly stones for the foundation." As agreed, it was Solomon's responsibility to get them from Joppa to Jerusalem. The large hewed stones for the foundation would be first to come.

4.0 Decisions

It would have been needed to find answers to the following questions of how to accomplish the task. What kind of road would last to the completion of all transportation of stones? What could be done to overcome the three physical forces of weight, size and friction? What power was there to use to defeat these forces? Men, animals, machines or a combination of all? These are all of the choices of power they had. Except for windlasses and winches used in severe situations, a very strong but a deliberate use of power.

4.1 Known Possibility

Physically speaking, one man could move a 100 ton stone by himself with no friction involved on a level surface. If we can minimize the amount of friction, we can lower our need of power. A

1000 ton stone laying on a sand or dirt surface would need five bulldozers to pull it and then they would plow up earth or sand in front of the stone and bog them down.

5.0 The Work Force

In I Kings 5, KJV we are given a list of kinds of work and number of men conscripted from Israel to do the work in building the Temple. There was a combined workforce of 183,300 men conscripted to work. Thirty thousand were loggers from Israel to work with the Sidonians in the forest of Lebanon. Ten thousand loggers in the woods at a time for the thirty-day course of work and sixty days at home. There were seventy thousand common laborers. These workers were scattered within all crews of stone, wood, transportation, and erection.

Eighty thousand men were workers in the stone mining, transporting, facing/squaring and construction. Of this eighty thousand, five thousand would be too many in the erection crew, not enough room for more. The Temple was about ninety feet long, thirty feet wide and forty-five feet in height. In the mine, however big it was, would be a large crew. It takes time to chisel a perimeter around a piece. In consideration of time, several pieces would need to be cutting at a time. It would take many to prepare the ways of moving the stones and many in the act of moving these stones. The author has also searched for one of Solomon's Mines at Sidon that may have been used for the building of Solomon's Temple, and at this point in time has as of yet not found one.

6.0 Discussion

6.1 The Author's Hypothesis

The author states quote: "I am pushing the limit on what is recorded in I Kings 5:17 about " the king commanded, and they brought great and costly stones." But, why is this mentioned in verse 17 and before that in verse 12, we are told of Solomon's league with King Hiram. Are these stones apart of the agreement? In verse 18, the workers of both kings are working together. The word hew in verse 18 of the KJV means also "to cut out." That could be a term used in quarrying. The inference is on the words 'great and costly'. What makes them great? Size and/or beauty? What makes them costly? Engraving or Moving great distances. These are the questions I also pondered as I sought to figure out how moving the stones could be done. Why would the scriptures record this statement if they were to come from the local quarry?

The author's two method hypothesis. One sliding the stones on rails and the other sliding the stones on a hard wet clay roadbed. These two methods each would have a team of either four elephants or four pairs of oxen and thirty men or more.

On the way to Jerusalem, it would require five station houses along the road to exchange teams for fresher ones. The thirty men would be separated into three groups of ten with each group doing different chores. It would take a day to go eight miles. Ten men with the driving of oxen or elephants, doing rigging, setting windlasses or winches. Ten men going ahead greasing rails or

patching clay, and ten men handling water or grease. Each team of three groups would rest while waiting for the next team to arrive and take that stone the next 8 miles, finally to arrive at the Temple site after five days of travel. They would then return to Joppa for the next trip.

Not all the stones were the same size. The foundation stones were the larger and the wall stones the smaller. The wall stones would be set on log pallets to allow more than one to be transported in a batch. These pallets were mounted on the log barges before coming to the piers. The loading was accomplished by moving in at the lowest tide mark. The unloading in Joppa would be highest tide mark. The long logs were slid under the bottom of the load, where space was made when building the pallet. These logs were lashed to and became a part of the pallet and rested on the piers when the tide went receded. The logs under the pallets had flat sides for setting on the rails or skid plate. There were two sets piers for unloading, one for the pallets and one for the stones without pallets. The piers for the pallets would be placed closer together.

6.2 Baseline Assumption

There were no giants, aliens or civilizations before Adam that moved these stones. At a temple site in Baalbek, Lebanon one of the stones weighed 1242 tons. It is called "Pregnant Woman, " and some other large ones were moved not too far from it and were raised onto a wall. This stone can be found on the road to Damascus from Jerusalem. Maybe the same road Paul was struck blind.

This attempt to explain how giant stones were moved is knowing there were intelligent men then using what was available found ways to get the job done. My hypothesize will go into some detail of how they were moved. We will not get into formulas of physics, just common sense based on things seen today as written in ancient history and information given in KJV Bible. There is no need calculate these movements at this time. The hypothesize I put forth are simple. Illustrations of how things are moved in what we do today can be compared to how moving these stones was accomplished then. Example, a man in Florida made a door out of coral that weighed 3 tons. He could open and close it with his little finger. Friction overcame by balance and a pivot point.

6.3 The Stones Plausible Journey from the Sidon Quarry

We will start with the foundation stones lying in the quarry at Sidon. There are two reasons to think why they came from the Sidon quarry.

One reason and the most important is this quarry lies close to the forest trees of Lebanon from which, we are told in the Bible, they would come and floated to Joppa. The two products that Solomon agreed to receive from Hiram were timbers of the cedars of Lebanon and the stones (from Sidon?). The cedars could be used to barge the stones and complete the order for trees and stones in one combined load. The other reason could be the texture and color of the stones. The quarry in Israel was a lesser desired stone due to its appearance. Some evidence of the Israel stones can be seen in pictures of the stones in the 'Wailing Wall'. Then look at a picture of the

Washington Monument and see the difference in those stones. Dull color of the Israel stones and the bright gold color and solid texture of the Washington Monument stones. Just an illustration of why Solomon wanted to bring in these stones. The Wailing Wall stones are exposed to the forces of weather centuries longer than the Washington Monument but, the colors are still as they were.

6.4 Cutting The Stones Out of The Quarry

There is/was a stratum of stone the thickness of the foundation stones in the Sidon quarry. Under that strata would be a bed of sand, silt or flaked shale. This bed could be 1" to 4" thick or more. There are always separations of strata.

We will leave off the clearing of the overburden, the dirt and trees above, and go down to the strata layer at the level of the foundation stone. Before cutting, a size has been sent by the master mason, at the building site, to the quarry.

The Bible records, a man with another name of Hiram, was given complete responsibility for all phases of construction, weaving, carving stones and wood, pouring metal vessels of gold and silver and all artisan works. He gave the master mason the dimensions needed and plans.

The miners are to cut allowing extra dimension for trimming and finishing the size and face in the facing area in Jerusalem. They had straight saws. Also, circle saws, which surrounded the piece, used to cut off the ends. The straight saws can be used to cut at an angle from on top of the stone down making two cuts 2 or 3 feet apart.

The men with hammers and chisels can cut out the middle. Then the saws cut again. Green limestone is not that hard to cut. You can take a knife and carve a name in it. When the stone is exposed to air the water hydrates out of the stone, the crystals of the stone matrix become more brittle making it harder to cut. Similar a little as to cement, which is a calcified limestone and other products.

Saws have been found which were made from bronze. They made hammers and chisels of iron. Their iron was too brittle to pour out thin for use as a saw. They would break. Some of the iron King David's leaders set aside for the building of the Temple was, I believe, for these tools of chisels and hammers. That would be a lot of iron used for just those purposes.

It is mentioned in I Chronicles 29:7 that the chief leaders donated 100,000 talents of iron. The amount of iron David set aside is not given, only that it was without measure. The only thing mentioned in the Bible, as of how the iron was used, was for nails for the gates. We can be sure there were not that many nails made. The mention of the nails only was because they were the only iron materials in the Temple. That was sixty million pounds of iron not counting David's; maybe some could be used for the skid rails?

6.5 Moving the Stones

Once the perimeter was cut around the stone, there were pivot blocks made of iron (my assumption) in a rectangular shape. Four was needed, at least and placed under the stone piece. They set in at an angle where v grooves had been cut. These blocks would be about a hand width by a span high and a cubit long. That would be about 4" wide by 8" high and 18" long. There would be holes cut into the sides of the stone to receive timbers to lash ropes from the windlasses and winches. These would pull the stone and the pivot locks would turn raising the stone 8" off the piece below.

The loose debris would be cleaned out from under the raised stone piece. Next, some round iron billets 6" diameter by 3' long would be placed under the stone, about 9" back from the edge to prevent spalling of the edge and allow skid rails to come under the stone when rolled up to them. The billets would be lined up in the direction to move the piece to the 'skid rails' to get the skid rails beneath the end of the stone. Then a pull again would lower the piece on the billets. We will call these tools pivot blocks and roller billets. These tools would be cast out of iron in clay molds. Stone mandrels would be cut and finished to the dimensions of the iron pieces to be poured and used as templates in the clay molds for casting the tools.

6.6 Another Theoretical Proposal of Moving The Stones On - 'Skid Rails'

Would be a system of rails lubricated to slide pieces with less resistance (skid rails are used in steel furnaces today where pieces of steel slide on top of water-cooled steel pipes through the furnace). These skid rails were used to take the stone out of the quarry pit up to the 'slide way' on top. The skid rails are portable to accommodate setting them up to the next piece to be moved.

The forty-four-mile trip would need about 7700 logs at an average of sixty feet long. It is not uncommon to get logs that long today. The cedars of Lebanon were much taller. The task of getting the logs would not be too great.

The skid rails would be made with a slightly tapered slot cut in the hewed flat top side of the log. This slot would be about 4" wide at the top and tapered to the center to about 3 3/4" at the bottom of an 4" deep slot. Iron bars would be cast the same dimensions by a cut into a clay mold. These bars would be about 3' long and tightly fitted into the log slots flush with the flat top of the log. The skid rail logs would be placed end to end with lapped notches, pegged together in the ends. Each rail would be leveled to the rail beside it by the leveling of the sleeper logs. The rail logs would be placed on top of sleeper logs (like cross ties under a railroad).

The sleeper log would be morticed to receive the morticed skid rail log to set on top. A coupling of the two with a pin making the connection. A crushed bed of stone, sand or dirt under the sleeper log to level them. Crushed stone (from the chiseling) or dirt would be placed and filled to the near top of the skid rail logs to hold tight from movement. The tops of the skid rails both logs and iron would be greased. The stone piece would roll off the roller billets onto the skid rails. Windlasses and winches would be used for safety. Slow and sure. The first skid rails

would begin under the piece in the 6" high space on the outside the roller billets. The skid rails would be tapered to enter under the piece and go to the full thickness of the log farther out. The rest of the log skid rails would take it to the top.

6.7 The second method of moving stones- 'Slideway'

Once on the top of the quarry, there could be a change in the moving process. We will go to a "slideway". The slideway is constructed by grading the roadway level side to side. Side to side level is needed for keeping the piece on top of the slideway.

After the grading is done then a topping of clay is spread 2 or 3 or 4" thick. It is compacted, dampened and compacted again until it is a hard clay surface type of road.

We need now something to smooth out the bottom of the stone. We do not want it plowing up our clay. We get metalsmiths to make us hammered bronze slide plates at different widths of 4' to 6' wide: and make as many and as long as needed.

The slide plates are turned up at the front like the front of a sled. It is turned up on a small log attached to the stone, which is flattened on one side. The flat side of the log is placed against the front of the stone and the log is pegged to the stone in holes that have been cut. The bronze plate is nailed around the log. This sled type front of the slide plate keeps the stone and plate sliding on top of the clay. Small veins have been hammered into the front of the slide plate to catch water that is thrown in front while pulling to help get the water under the slide plate. Hard wet clay will get rid of a lot of friction. Think of sliding downhill in the snow. You have a sled and your friend has the hood of a car. Who do you think will be the faster? Remember more pounds per square inch more friction. His weight in the hood is spread out over a larger area- fewer pounds per square inch. The hood is slick and will not cut into the snow. Our skid plate works under the same principle.

6.8 Loading and Unloading The Stones On Barges

The stone is slid to the seaport at Sidon. Either method could be used depending on which material is the best choice at this location. No clay- use skid rails.

How is it loaded onto the log barges made up of the cedar trees of Lebanon bound together with ropes?

There would have been stone piers built out into the sea and the sand dug out between the piers to allow the log barges access between the piers at low tides. They were built to the height measured against the incoming and outgoing tides. Incoming tides raise the loads and the outgoing tides deposit the loads. Probably more than one set of piers with different widths between piers for the various length stones or pallets. There would be iron skid rails on top to slide in and out of the piers. The unloading would be reverse at the Joppa seaport.

6.9 Moving The Large Stones from The Joppa Seaport To Jerusalem

The stone piece would be unloaded onto the piers with the iron skid rails on top of them to slide onto the 'skid rail' or 'slideway'. As stated in the intro, it would take about five days to make the trip, stopping at night if the transport method was complete from Joppa to Jerusalem, with the skid rail, slideway or a combination of both.

Rain or any damage to the 'slideway' would be fast and easy fix. Skid rails would make it simpler to traverse ditches.

I am curious if anything has been found looking somewhat like these fabricated objects I have described. Probably not, the logs would be used for construction and the iron pieces would be remelted again for tools, nails, etc.. Remelting is easier than starting from ore.

7.0 Preparing Faces On The Stones

First stop for the stones in Jerusalem was in the facing area. The Bible tells us no hammer was allowed in the temple area. The stones had to be prepared before arriving at the Temple. There was a 'facing area' where the sides, corners, and dimensions could be trued up. The perimeter was trued with saws, chisels, hammer and rubbing stones. The stones had to be right- no 'ut ohs'.

The bottom of the stone had to be smoothed out. The smoothing was done with long roller billets in a special place. The area had been made special by the use of the first stones being rolled back and forth. This area surface was smooth. A certain depth of dust was allowed for the protection of that surface. Too much dust would cause problems. The stones would be rolled back and forth on the roller billets until the bulges and bumps were smooth out. When all this was done and accepted by the master mason, who checked the dimensions. Then it was released to go to setting.

There was too much time and effort put into making these pieces not to have them correct. Someone had to be responsible from the quarry to site. It fell on the master mason. His name is not given in the Bible. There are names and the responsibilities of others written in the Bible. The master mason was chosen by and answered to Hiram Abif (the Abif part of the name has been used for centuries. I use it now to keep confusion down. It may not be a part of his name.), the general superintendent. Hiram Abif was half Jewish and half Philistine. His mother was Jewish. Hiram Abif was selected by and answered to King Hiram of Tyre and Sidon, sister cities, and he was accepted by and also answered to King Solomon. Hiram Abif worked with Adoniram for the procurement of men and materials. Adoniram was Solomon's project manager, also responsible for the collection of taxes to build the Temple. Each man chose his leaders wisely.

7.1 Setting The Stones In Place

After the stone bottom has been smoothed and the other dimensions to the size and shape as desired by the master mason, it would be rolled onto a slideway and slid up to the Temple site.

The log skid rails would be placed where needed on the lower elevations and of setting smaller stones. Dirt ramps would be built to get to the higher positions and placing the larger stones. (I saw a dirt ramp hundreds of feet long and hundreds of feet high, enough to get to the top of the mountain at Masada. The Romans built it to take a battering ram up to beat in the stone wall.) Windlasses and winches can pull these pieces up a ramp with the correct angle of incline figured as needed. My estimation would be the angle of repose, a little less than 45 degrees using dirt or small chips. The ramp could be built using stone waste from chiseling. A slideway of compacted clay would be placed on top of the ramps to raise the large stones onto the walls. The clay would be a kind of pavement to keep the chips or dirt in place as well as a slideway.

A slime would be used to move the stones into the final position. Slime would allow less effort to be used for exact alignment and hit the mark the first time.

7.2 Other Great Stoneworks

Each giant stone in the many places in the world has its distinct list of different characteristics of size, shape, and chemical compositions. All are under the same force of gravity, natural obstacles, and weather. Pieces of evidence left behind all over the world by prior generations have proven that it was not given that talent to any one particular race of people. The Egyptians, Maya Indians, and the Phoenicians were originators of their talents and exhibited more works like this than most. The Greeks learned from the Phoenicians (and I call them are Phillistines) and improved the art. The Romans learned from the Greeks and added concrete.

The stones in Ballbek would be a place where a clay slideway would be used to move those megaton stones.

The long track of moving stones to Jerusalem would be best served with the skid rails. I feel there would be a lack of clay locally. Clay would be used where it worked better under certain conditions.

7.3 Additional Alternatives Stones Could Have been Moved in Egypt

The stones in southern Egypt could have been moved in two additional ways as follows:

- 1). On cane barges on the Nile river. The loading of these stones on barges would be done by cutting a channel from the Nile around and back to the Nile river. This channel would have three locks. The first lock would be at the upper end of the flow in the south. The next lock would be somewhere in the curve to allow water to escape into the fields for irrigation to drop the water level for unloading on the piers. The last lock would be to empty back into the Nile. Piers would be built on the outside of the curve on a channel and dug out between the piers. Here again, water is used to raise the load and move it out or let out and deposit the load.

2). Moving across sand is something that needs more studying. The first thought is one of what I call sand barges. This kind of barge is not that different than from a boat or even the nose bottom of an airplane. One is water dynamic and one is aerodynamic. This one I will call sand dynamic. The particles of sand are loose and will roll back and out to the side under the face of the surface of the bottom of the barge. Less friction than trying to move across a dirt field. The shape of the bottom of the barge needs to do as a boat in the water, break away the sand in the exact center of the moving barge and push to the sides. The shape of the bottom of the barge causes a short trip of the sand to have under the boat. The sand, in this way, does not receive much of the dead weight. Pulling would be a harder than on water or wet compacted clay.

The front of this barge needs to be turned up as the airplane nose bottom. Somewhat rounded and not pointed as much as a boat with the sides expanded and raised higher towards the back. The sides are turned up as a boat. The best picture of what it would look like is that of the bottom of an airplane but, not rounded that pronounced. It would be more flattened out. The curves would be gentle. It would not be a needed to make them very high. There would be only a minimum draft in the sand. The barge would be built of hardwood. The pieces could be bent by making pliable in boiling water. Soaking the wood in hot grease would help to resist wear from the sand. This would work with a little more horsepower than the other methods of skid rails and slideways.

Conclusion

We tend to think of the ancients being isolated and having to figure things out for themselves. Not always so. They had their traders that traveled to other lands. They carried with them information in drawings and conversation; they shared what they had seen to those they were with as a mode of entertainment and selling. The tools they had acquired from trading they would now sell for profit to this group. Information has always been a commodity used for trading. Learning has always been worth a price.

Acknowledgements

The author would like to thank any and all scientists, researchers, Egyptologists, Ancient Historians, and Archaeologists for their contributions that have made this article in part possible.

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[2]- From a wall painting in the tomb of Djehutiotep (Djehuti-Hetep or Djehuty-hotep) at Deir El Bersheh (El Bersha). This is a large illustration of the wall painting involving hieroglyphic text.

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[7]-Figure 3 - (Source) (Bible History Online. At - <http://www.bible-history.com/ibh/Assyrian+Stone+Reliefs/Other+Stone+Relief/Transport+Of+A+Cherubim> . An illustration of a stone relief showing the Transport of a Cherubim by ancient Assyrians, who like the Egyptians used sleds and water to transport many of their monuments as well.

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Figure 1 - "Just how the hell were the Egyptian Pyramids actually built"? At - <http://www.contiki.com/six-two/how-were-the-egyptian-pyramids-built/> .

