

St. Ignace II

By
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A report of Archeological investigations carried on from August 1 to November 1, 1946 within the stakes outlining a palisaded wall discovered by the late Mr. W. J. Wintemberg, National Museum of Canada, in 1937 and 1938 on the site concerning which in his preliminary report, he has stated, "I am convinced that this is the site of St. Ignace."

St. Ignace II was built in 1648 by the Huron Indians and destroyed by the Iroquois on March 16, 1649. It was the scene of the martyrdom of the Jesuit fathers, Saint Jean de Brebeuf and Saint Gabriel Lalement.

The writer wishes to express his thanks to the Reverend T. J. Lally, of the Martyr's Shrine, Midland and his staff for their very generous cooperation throughout. He is indebted to Mr. G. H. Reavely, Professor of Geology at the University of Western Ontario, who made a topographical study of the site, and to Dr. Helen Battle of the Biology Department of the University, who made the map tracings. This report has been edited by Miss Elste McLeod Murray.

THE SITE

The site we call St. Ignace II was a palisaded Huron Indian village on a fifteen acre plot of land now owned by the Martyrs' Shrine at Midland. It is on the west half of lot 5, concession 9, Tay township, Simcoe County, Ontario. It shows evidence of short occupancy. Only one shallow refuse dump was found, in which were the scattered remains of pottery but no other artifacts. The village was surrounded with palisades, a double row being located on the section to the south-east where there was natural protection by the steep banks of the Sturgeon River or its tributaries.

HURONIA

The site is in Huronia which was the name given by the early French to the district that lies between Lake Simcoe and Georgian Bay. It is bounded on the west by Nottawasaga Bay and on the east by Matchedash Bay.

Huronia was the tribal land occupied by the Wandeia Indians who were called Hurons by the French, which name, as related by Father Lalement; came from their head dress, a ridge of bristles worn on the middle of the head.

The Hurons built their villages on the top of a series of seven ridges of loose

superficial materials, each ridge rising higher than the last, the highest ridge being some eight hundred and fifty feet above the level of Georgian Bay. The hills were made up of formations of sand, clay, gravel, and boulder stones, and ran in a northeast direction. It is important to note the direction of these hills as they determine the direction of the overland trails which connected the villages and town lands. In the valleys that lay between these hills there was a dense growth of underbrush that made travel almost impossible.

There are various estimations of the Huron population at the time of the arrival of the European. Champlain and Father Le Caron who visited the Hurons in 1615 put them down at 10,000 persons, and estimated that they lived in seventeen or eighteen towns. In 1635, Father Brebeuf found them divided into twenty villages with a population of 30,000 while Father Lalement set the figure at thirty villages.

SEARCH FOR THE SITE, 1844.1846

For one hundred years the search for St. Ignace has gone on. Two hundred years after it was burned the first systematic investigation was made by Father Chazell in 1844 but no conclusions could be drawn from his observations. In 1855 Father Felix Martin continued the search, and from 1880 to 1865 Dr. J. C. Tache carried on an extensive study of the area but still with no success.

Father Arthur Edward Jones in 1898 seemed at the time to have good reason for believing that he had located the elusive village but in 1908 he was forced to admit his error. In the meantime, in 1900 M. A. V. Hunter of Barrie established a site on a neighbouring farm which he thought must be St. Ignace, but it was later discredited on the grounds that it did not correspond to the descriptions of the situation of the village as given by Father Ragueneau in the "Relations".

We now come to the real discoverer of the site which is today called St. Ignace.

Alphonse Arpin was one of the early French Canadian pioneers of the Midland district. He watched the growth of Midland and was deeply interested in the development of the area. He was without the advantages of schooling but had all the instincts of a research historian. He was fascinated by the early stories of Huronia and as a devout Catholic his interest centred on the missionary efforts of his beloved church. To find the spot where the Jesuit priests Brebeuf and Lalement had met their death became an obsession with him. He learned by heart the passages of the "Relations" that concerned the story, and with his knowledge of the countryside he set about a systematic search for the site of St. Ignace.

In 1932 he met Mr. T. G. Connor of Goderich, a fellow searcher, and together they visited the site chosen by Arpin as the most probable one. Connor was convinced that no site of St. Ignace had been found but recognized the fact that it could be found only by a scientific archaeological investigation. Connor referred the matter to Dr. William of Goderich who is interested in historical

matters and who in turn told the story to Dr. Cameron Wilson of London.

The matter eventually came to the attention of the University of Western Ontario who considered that the suggested site was worthy of investigation and obtained the service of the late W. J. Wintemberg of the National Museum of Canada. In the summer of 1937 and 1938 Mr. Wintemberg conducted excavations of the site and became convinced of its authenticity. He discovered the postmoulds that marked the location of a palisade that completely surrounded a ten-acre plot of land, and two long houses measuring 100 feet by 30 feet. Mr. Wintemberg's death in the following year, however, and the outbreak of the war caused the work to be postponed until the summer of 1946 when at the request of the Roman Catholic Church I was sent by the U. of W. O. to excavate the area enclosed by the stakes that marked the palisade's post holes as found by Wintemberg.

EXCAVATIONS – 1946

On a sultry August afternoon I made my way with tools, implements and full camping regalia, up a steep winding trail to a plateau of brown parched grass stretching to the heavily wooded hills in the east where seared yellow poplars, maples, pines and cedars blended into the deep green of the hillside. A fringe of silver birch, cedar, poplar and maple, growing in the ravines that almost surrounded it enclosed the site and gave one an impression of complete seclusion from the outside world.

Towards the centre of the field a large cobblestone cross had been erected by the Society of Jesus commemorating the martyrdom of the Fathers Brebeuf and Lalement. Wintemberg's stakes had been replaced by square pegs.

It was impossible not to feel the challenge of this apparently peaceful scene. A story of the past lay beneath the flat brown surface and the task ahead was to decipher its meaning.

I immediately set up my tent. Water was close at hand in the Sturgeon River and in the natural spring which was bound to be close by, since we now knew that Wintemberg had discovered an Indian palisaded village. It followed too that both stream and spring abounded in tasty brook trout.

The first days were spent in studying the district, especially the banks of the river for a mile in each direction. The soil in this area is of light sand with a stratum of hard pan about nine inches under the surface. The land in adjacent fields show evidence of forest fires. In many places it is wind driven to the hard pan that resembles shale. In spots where intense fires have heated the ground the sand is congealed and breaks into particles that resemble sandstone. Decayed vegetation and debris form a dark soil in the depressions. It is not a productive soil. Even the grass does not grow rank as in clay loam or in good sand ground.

The land under examination had been cultivated and recultivated for many years, and at one time a small building had been erected on the south side of the plateau. The settlers' road had long grown over and could hardly be

distinguished. Before the excavation was completed however, this road became a much used thoroughfare. An average of seventy-five persons a day visited the site and on Sundays there were several hundred.

POST MOULD AND ASHES

The story of the excavation of the St. Ignace site is one of post moulds. Trenches were run below the plowed surface in which, when carefully scraped, we could detect the light grey imprints left by the decayed posts. When followed to their extremity, they extended into the ground some 18 inches to 2½ feet. Their points were cone shaped and charred.

The post moulds of palisades and longhouses measured from 4 to 8 inches in diameter. Site 26 alone varied from this rule. When four lines of these post moulds were discovered the trenches were extended well beyond the corners in order to be certain of the correct outline of the building.

Another important factor in tracing the sites of this village was the even layer of ash, mixed with the sandy soil, that lay almost in straight lines where walls had fallen after being consumed by fire. Series of test holes and trenches revealed these lines.

The work was done with shovels rather than the usual trowel. Time and the relatively large area under examination did not permit us to use the slower method, nor did we consider it desirable to do so as we found that by shaving the trench with a sharp shovel until the floor of the trench was smooth, we could detect the post holes more readily than by scraping with the edge of a trowel.

The work was carried on with the assistance of eight or ten workmen, and some volunteer aid.

FORTIFICATIONS

It was apparent that the site was a highly strategic one for defence purposes. At no place within a radius of several miles had nature provided a stronger defence. Flanked on three sides by the banks of the Sturgeon River and two of its tributaries, a small space only, to the east remained unprotected by nature. Our attention was first directed to this weak point in the fortifications and exploratory trenches were run in that region. We were rewarded by the discovery of an inner row of palisade post holes at a distance of 25 feet from the outer palisade.

At the south-east corner, as indicated on the map, a complicated maze of post lines came to light. No immediate explanation can be offered concerning their meaning but it is reasonable to surmise that they were a part of the scheme for defence, possibly the remnants of posts that upheld a platform near one of the main entrances of the village.

All post moulds of the palisades were in a staggered position about one foot apart. Thus we know that the walls consisted of brush and bark woven into

upright posts. But in the eastern section, and only in this section, gaps of 4 to 8 feet were found in both outer and inner palisades. The apparent carelessness of the builders in leaving this side thus exposed, in spite of their obvious plans to doubly fortify it, can be explained only if at the time of its destruction the village were still under construction and material for building was being carried through these gaps from the level lands to the east rather than up the high banks that surrounded the other three sides. Substantiating this belief were several large ash pits located some 6 to 8 feet within the eastern walls. We believe that these are the remains of fire's used for burning the poles to a length suitable for building purposes. Had the village been completed the remains of such fires would have disappeared.

The Indians, it is well known, followed the practice of burning poles to a cone-shaped point and the charred remains of such burnt points were clearly discernible throughout the foundations of all the buildings and palisades on the site.

As we extended our exploratory trenches in the vicinity of the palisades, a line of posts became evident, a distance of 8 feet apart, and 4 feet within the palisade wall, which proved to encircle that whole site. These imprints were undoubtedly the remains of posts that had upheld a platform or a cat-walk for defence in case of attack. It was from such platforms that the Indians threw rocks and poured boiling water upon attacking bands. They were built by placing posts, usually 4 or 5 feet within the village walls and attaching cross pieces from the posts to the walls, upon which rested a flooring of poles.

At the north-west corner of the site, where the Sturgeon River bends, the bank is 50 feet deep. There is a ledge, consisting approximately of an acre of land, about 8 feet below the level of the village. At the brink of the bank, a line of Wintemberg's stakes followed for 12 feet beyond the walls of the village. Another line of Wintemberg's stakes left the village walls 140 feet to the east. No explanation can be given for Wintemberg's not having completed these lines. Post moulds came to light readily and surrounded this ledge except for a short distance in the western section where water erosion had destroyed the evidence.

This area then had been surrounded by a palisade similar to the palisade that surrounded the village. It is probable that this compound served as an additional fortification for the village at a point which was vulnerable to attack by water, providing also a place to store canoes and to house visiting tribes. It was the custom for Indian villages to have accommodation for visitors outside the walls. The gates of the village could be closed and the visitors, friendly or otherwise, would be relatively safe within the outer compound. A thorough investigation of this tract of land yielded no evidence of buildings or of storage pits.

We cannot leave the compound without mention of its natural beauty. Great outspreading branches of giant pines and a profuse growth of smaller trees, ferns and mosses lend it a primitive atmosphere. Here one could feel oneself to be in surroundings similar to those of three hundred years ago when the village was in process of building. Small birds of almost every variety found sanctuary

in this spot and at the base of the bank the clear fresh stream bends, and winds its way through the meadowland that lies below.

GATEWAYS

The village site had two well-protected gateways. In the northwest corner a 10 foot laneway 80 feet long ran through the compound just described into the village proper. A gateway led from the village to the compound and a second one probably from the compound to the river but this second gateway must only be conjectured as it is at this point that erosion of the river banks has destroyed all evidence. The path, however, can be traced to the river's edge, and at this point only is the slope to the river gradual.

The second gateway was in the opposite or south-east corner. Here a similar laneway extended throughout both palisades to the flat land beyond. It was around this opening that the maze of post moulds mentioned above and still unexplainable were found.

Both laneways were barred by gates, as indicated by a series of post moulds, at intervals of 20 feet through which there were openings as shown on the map. Thus the builders provided against an attack by assault. As with the palisades, evidence of a cat-walk or platform ran on both sides of the laneways. This method of protecting the gateways was an innovation in Indian warfare and is not found in pre-European fortifications.

HOUSES

Site 1

58' x 15'

In the south-east corner of the site a row of stakes running north and south had been placed by Wintenberg although not charted on his map. Following the possibility that these might mark a part of a building foundation, numerous test holes were sunk in the vicinity and soon a second line of post holes 15 feet to the east of Wintenberg's line, and running parallel to it were discovered. This new line extended 58 feet. We then completed Wintenberg's line which proved to be the same length and the corners of a building became evident. The two end walls were traced, the north wall having an opening of 4 feet. This site was marked No. 1. An individual chart of this site was made recording each post hole and it was entered on the master map of the site. This practice of recording our finds was followed throughout the excavation.

Site 2

32' x 104'

Often, in archaeological pursuit, unexpected and important evidence comes to light when least expected. Our temporary camp was set up at the south-west

corner of the site and it was while digging a garbage hole that we found a bed of ashes partly under a stump, and in these ashes were a number of fire stones. It immediately suggested the kitchen midden of a longhouse. An examination of the soil of the vicinity of the ash pit revealed a line of post moulds some 8 feet distant, running north and south for 35 feet. At the south end of this line was a post imprint, 6 inches by 8 inches which proved to be a corner. Rounding the corner, post holes were again followed for 104 feet to the east, where another corner was reached. The four sides when completed had three doorways all 4 feet wide: one in the west wall, a second at the east end of the south wall, and a third in the centre of the north wall.

The enclosed area of the house site was examined revealing a line of post moulds $4\frac{1}{2}$ feet within the walls. These were the remains of posts that upheld the rows of sleeping bunks that ran the length of the interior of the longhouse. Another row of post holes 12 feet apart were discovered in the centre of the building. Apparently the roof was supported by centre poles. These as well as the unusual width of the building pointed to European influence in the construction of the longhouse.

Also, in a prehistoric Indian longhouse, the fire pits were placed in the centre of the building but in this building the fire pits were located between the bunks and the centre poles. There were five on each side, ten fire pits in all. Around two of the fire pits near the west end a number of burnt fire stones were located and at the edge of one fire pit a cell and two gaming stones were found. On this house site, too, we found six wampum shell beads of a type commonly worn by the Iroquois.

A thin stratum of ashes was evident, sometimes within and sometimes outside the post moulds marking the sides of the building, from which it was deduced that the building had been consumed by fire. Mixed through these ashes, small particles of carbonized bark was found, no doubt the remains of elm bark, the covering of an Indian longhouse. It was over this site that we later reconstructed the pole frame-work of a longhouse one foot within the original post moulds.

Site 3

It was now noted that the two house sites found, as well as the Wintemberg house site, radiated from the centre of the village enclosure to the palisade. We returned to Site 1 and an experimental trench from its walls was dug with the result that a third longhouse was discovered. It was built according to the same plan with 4 foot doorways in the centre of each end. As in Site 2 post holes were found for the poles that upheld the roof and the bunks, and particles of carbonized bark were evident in sufficient quantities to prove that this building had been bark covered and had been destroyed by fire.

Sites 4, 5, 7, 18, 22, 25, 27.

After the establishing of sites 2 and 3 the finding of post moulds continued in a similar manner until sites were discovered for nineteen longhouses of more or less the same size and build according to the same plan. They were approximately 100 feet long and 35 feet wide, all with indications of bunks and centre supporting poles. All were not covered with bark however, nor were the doorways always 4 feet in width. These nineteen house sites, as did the first three, radiated from the centre of the village to the palisade and in each case there was proof of destruction by fire.

Site 6
94' x 31'

This site varied from the others in that it did not radiate from the centre but ran east and west, paralleling the palisades. The house site was discovered and traced by Bean Cotter of Kingston, Jamaica, an amateur archaeologist who donated a month of his vacation to aid in the work at the St. Ignace site. He came to us well-equipped in experience gained in the excavation of the Arowak Indians in his home island. His aid and that of his son, John Cotter, a student of the University of Toronto, was greatly appreciated.

Sites 19, 20, 21.

These sites were apparently of uncompleted buildings, parts of the walls being missing. This, added to the fact that some of the nineteen sites described formerly had shown no evidence of bark covering leads us to the conclusion that building in the village was still underway at the time of its destruction by fire.

Site 26
99' x 60'

On October 31 a line of post holes was uncovered in the centre of the village which lead to the tracing of a building 99 feet by 60 feet, that is, twice the width of any building yet discovered. The longer walls ran north and south and there was a precision in measurement and construction not generally found. Openings appeared on the east, west and south sides measuring four feet, and one in the north wall measured eight feet.

The area within this site was examined carefully, with the result that several lines of post moulds came to light obviously marking the position of partitions. One line crossed the building from east to west at a distance of 20 feet from the south end. Within this southern area were three lines running north and south with an opening in the first line within the west wall. Between the other two lines there was a maze of small post moulds. Large deposits of ashes were found along

these lines and the lines of the outside walls indicating walls and partitions had burned and fallen.

In the north-west corner of the building indications of a small partitioned area were discovered. It measured 4 feet by 6 feet and had an opening, or doorway.

Through the centre of the site were three rows of post holes measuring from 8 to 12 inches in diameter, spaced 6 to 8 feet apart. They mark the position of the supporting posts of a heavy roof.

Nothing similar to these characteristics was found in any house site at the St. Ignace site nor was it an Indian custom to divide houses into rooms.

Four feet outside the post holes that marked the outside walls of the building, a second line of post holes, not over 4½ inches in diameter was discovered, apparently the remnants of a fence with openings opposite those in the building.

Site 26 varied from the other sites in many ways. The post moulds by which the wells were traced were much larger than those of any other building in the village. Obviously the posts along the walls of this building could not be bent to form the arched roof of an Indian habitation. In several of the post holes, charred remains of split timber were found, and one contained specimens of a cedar post. An exceptionally deep stratum of ashes existed throughout the site, especially in the south end. We may conclude that considerably more timber had been used in its construction than in any of the other buildings. We have already pointed out an exactness in detail not evident in Indian built houses.

A unique situation existed around five of the post moulds of the supporting posts (see map) where ash pits ranging from 7 to 12 inches in depth were discovered below the ploughed surface. In them the ashes were exceptionally hard, as a result of unusually long burning. Perhaps pine or turpentine had caused these to bake. It is difficult to give a precise explanation of this condition.

Site 27

47 x 14'

This small site was the last to be located. It had no line of supporting posts running up the centre, nor did we find remains of any bunk posts. From the numerous particles of carbonized bark, it is evident that it had been covered with a bark.

DRYING SCAFFOLDS

Three hundred and fifty feet south of Site 2 we found the remains of a drying scaffold, 12 feet by 4 feet. In Indian camps long occupied a number of drying scaffolds are usually located.

STORAGE PITS

There were no indications that the Indians had dug storage pits or cellars, further proof that the site had been occupied for a short time only.

WELL

Water was located between the inner and outer palisades at a depth of seven feet. Later it was discovered in the centre of the village, 20 feet from the north-east corner of Site 26. Here while digging a post hole, we happened on disturbed earth which after a careful investigation proved to be a well dug many years ago. The finding of clam shells near the water suggests that it may have been partly excavated by shells. Water was found at a depth of four feet.

SUMMARY

The excavation revealed an Indian village site surrounded by a strongly constructed palisade. To the east a double palisade existed and in the north-west corner, a double palisade enclosure, a rather large compound which bore no evidence of buildings. The two main entrances to the village were squared, with lengthly lane-ways of a construction obviously planned for strong defence as were the palisade walls with their catwalk or platform.

The houses in the village numbered twenty-seven and were placed orderly, running from the centre of the site to the palisade with only two exceptions. They were almost uniform in size apart from Site 26 and Site 1. In the centre of the village was an exceptionally large site (26). The drying scaffold was to the south and the well, twenty feet to the northwest of Site 26.

Obviously the village was built under European influence. Pre-historic Indian village sites show no such orderliness in the planning of the longhouses. Prehistoric longhouses, too, were of half the width of those found here and therefore, were constructed without centre poles. The cooking fires were in the centre rather than to the side as in these houses. The number of doorways in the longhouses on this site and their method of construction is European. Definite European influence is found in the fact that split timber was used, especially in Site 26, where the walls were split timber throughout. The division of rooms, the fence, the split timber walls, the door ways, all point to the fact that Site 26 was a purely European building. In the palisades, too, the square corners and straight lane-ways indicate that the builders were under European direction. We can say with certainty that the village was not long inhabited and, in fact, was apparently not completed. In some cases the walls had not been erected and in others no bark covering had apparently been applied. Only a small refuge dump was located; nor were any storage pits for food found.

Few relics were discovered throughout, although time did not permit an intensive examination within the walls of each building. The relics that were found are those of a late Huron and Iroquois period. The steel knife blade is

European. The area has long been under cultivation and only below the plough level is it possible to detect evidence of occupation. From reliable sources, however, we learned that some fifteen iron axes had been picked up on the site in the past as well as a large number of stone arrowheads and skinning stones. The fire pits were shallow on the whole. More evidence of activity was found towards the south end of the site than in the north. We can conclude too that the young village was completely destroyed by fire, carbonized remains being in evidence in all its parts. Particularly large deposits of charred remains indicating unusual heat were found on Site 26.

Before leaving the site all the sod that had been removed was replaced and each post hole was marked with a stake. A master map of the village site was made as well as individual maps for each building. The relics were marked and catalogued and are in the possession of the Martyrs' Shrine at Midland. A daily journal records the excavation, and a photographic record, as complete as was possible to make it, is in the possession of the Museum of Indian Archaeology at the University of Western Ontario. We were, fortunate too in acquiring through the kind interest of J. R. Robinson, of Ottawa, a series of aerial photographs of the district showing the reconstructed longhouses, scaffold and position of palisade.

LIST OF RELICS FOUND AT ST. IGNACE

1. Wampum beads found at Site 26.
2. Maul found on Site 26.
3. Maul or hammer stone found on Site 26.
4. Maul or hammer stone found on Site 26.
5. Steel knife blade found in west doorway of Site 26.
6. Flint knife found in centre of Site 26.
7. Small hammer stone or war club head found in Site 22.
8. A rubbing stone found in Site 2.
9. Celt, commonly called skinning stone, found on Site 2.
10. Small hammer stone found on Site 10.
11. Hammer stone found on Site 13. 12. Gaming stone found on Site 2. 13. Broken gaming stone found on Site 2.
17. Gaming stone found on Site 18.
23. Partly carbonized wood found in post hole found in Site 26.
24. Eight fragments of pottery found in dump on bank of Sturgeon River.

DESCRIPTION OF RELICS FOUND ON SITE

1. Wampum beads found on Site 26 are typical of those worn by the Iroquois and are found in Indian graves. They are all fashioned from clam shells.
2. Maul or hammer stone, found on Site 26, was undoubtedly used as a war club handle. They resemble the stone hammers found through out

- the Iroquois country.
5. A steel knife blade found in the doorway on the south side of Site 26. The blade is five inches in length and it is similar to knives found on many Huron sites.
 8. The rubbing stone found in Site 2 is of a sandy stone composition, with evidence of much use. The abrasive nature of the material made this stone an ideal cutting stone for sharpening or grinding tools.
 9. Celt, found on Site 2, is commonly called a skinning stone. It has a slight groove running around the upper end with a battered sharpened edge. This type of stone could be used as a chisel or axe. Some times when mounted with a wooden handle, it is termed a tomahawk.
 10. The hammer atone found on Site 26 was used by men. No doubt it served also as a nutcracker. A slight depression in the side is probably the result of continued use. These stones were used to break animal bones.
 11. The chipping stone found in Site 13 would be used as a smaller hammer. It weighs half a pound and resembles an egg, showing evidence of use at the small end.
 - 12, 13. Gaming stones found on Site 18. They are about the size of a croquet ball, very smooth, and bearing evidence of much wear.
 24. The pottery fragments were found in a dump on the bank of the Sturgeon River, west of Site 10. They are ornamented with reclecalute design and they have narrow rims. Some of the pieces have been made of cord and wrapped with twigs. The colour of the ware is reddish and buff. The plain parts of the pots are smooth. The pottery is typical of that found in Huron sites of a late period.

SIZE OF BUILDINGS FOUND ON SITE

Site 1	58' x 15'
Site 2	104' x 35'
Site 3	100' x 28'
Site 4	94' x 31'
Site 5	72' x 31' 3"
Site 6	94' x 31'
Site 7	59' x 27'
Site 8	95' x 32'
Site 9	93' x 28'
Site 10	72' x 25'
Site 11	72' x 30"
Site 12	80' x 26'
Site 13	94' x 24'
Site 14	96' x 33'
Site 15	109' x 33'

Site 16	.....	92' x 36'
Site 17	.....	93' x 29'
Site 18	.....	79' x 30'
Site 19	.....	one side wall
Site 20	.....	two side walls
Site 21	.....	two side walls and end
Site 22	.....	100' x 32'
Site 23	.....	6' x 27'
Site 24	.....	109' x 29'
Site 25	.....	90' x 25'
Site 26	.....	99' x 60'
Site 27	.....	47 x 14'

It will be noted that all buildings are approximately 100' and average about 30' in width.