



FSMS Pioneers

A series that honors the legends of surveying in the state of Florida



“Bill” William C. Hart
(1926 - 2004)

Early Life

Mr. William C. Hart was born on January 8th, 1926 in Orlando, Florida. He grew up in West Orange County on Lake Johns with his family. His father, Mr. A.C. Hart, managed the old West Orange County Country Club.

As a teenager, he and his brother Gus lived in downtown Orlando and would help their father with survey projects. Together, they would take the bus as far as they could, and then walked the rest of the way carrying their survey equipment to the job site.

Mr. William originally got into surveying through his grandfather, Mr. Conrad E. Hart, and his father, Mr. A.C. Hart, both of whom were civil engineers and land surveyors. Mr. Conrad came to Orlando after the Great Freeze of 1895, and it was during the land boom of the 1920s that Mr. A.C. Hart surveyed throughout central Florida.

Military Service

Mr. William Hart graduated from Orlando High School and joined the Navy during

World War II as an aviator, navigator, and tail gunner in the Pacific Theater. After the war, Mr. William attended Indiana Technical College and graduated with a degree in Civil Engineering.

Third Generation Surveyor

After graduation, William returned to the central Florida area and began working for Hank Heath before starting his own surveying business that he named Wm. C. Hart, Surveyor in 1951.

On May 4, 1952, Mr. William married Judith Ann Davis. Together, they had two children, William Hart and Beverly Hart Jones, both of whom became fourth-generation land surveyors, as well as FSMS members. His son Bill Jr. was licensed in 1981 and continued working with his father until starting his own surveying company, Hart Surveys of Osceola in 1989. Beverly also worked with her father



"Bill" in WWII serving in the U.S. Navy as an Aviator, Navigator, and Tail Gunner.

Hart Family Home Located on South Street in Orlando, Florida.



until she became licensed and started BHJ Survey Consultants in Orlando, Florida around 1993. In addition, his brother Gus worked with him as a crew chief from the 1950s until the closing of Hart Surveys, Inc.

In 1955, Mr. Hart was elected as Orange County Surveyor and served four terms until 1969, whenever the position was disbanded. After this, Mr. Hart became the Southeast Regional Vice-President for VTN, Inc. in Orlando, Florida until 1975.

In 1975, Mr. William became the President of Hart Surveys, Inc. located in Windmere, Florida. Although he was most remembered for surveying the Walt Disney Project, he was also monumental in establishing control for the VAB building in Cape Canaveral, the Crystal River Power Plant,

"Bill" working the phone in his Orlando office.



Bill's brother and fellow surveyor, "Gus."

AT&T transmission line alignment from the Florida-Georgia border to central Florida, the centerline alignment of the East-West Expressway (SR 408), and he developed the control grid for Florida Technical University, now known as University of Central Florida.

As mentioned earlier, Mr. Hart was best known for his surveying work done in the 1960s for Walt Disney. In 2007, Patty Winter wrote an article for *The American Surveyor* entitled, ["Mapping the World: How 47 Square Miles of Florida Swamp Became a World-Famous Destination."](#) In the article, Winter tells the story of the difficulties and challenges brought on by surveying and clearing this Florida swampland. She gives an account of the integral roles Bill and his brother Gus played in such a monumental undertaking.

According to his daughter Beverly, Mr. William's favorite component of surveying was to do retracements, as well as digging up tree stains at witness ties to prove section



Walt Disney World Early Construction

corners. Unfortunately, he did not label his many pictures for the particular corners he was attempting to prove, so many of his remaining pictures are of holes in the ground without any documentation because no one knows where they were taken.

His least favorite aspect of surveying a project was vertical construction control. This made him very nervous and he was constantly pointing out buildings or structures that were not plumb. So much so, that he refused to ride the Observation Needle at Sea World for this very reason.

The Consummate Surveyor

Mr. Hart was well known for being a mentor to many local surveyors who were just getting

started in the field. After the workday, he would conduct impromptu classes discussing trigonometry formulas, how to add angles across quadrants, stadia calculations, and more.

“One of the things he loved most about surveying was the combination of science and art,” his daughter Beverly recalls. “He was a bit of a philosopher at heart and enjoyed seeing mathematics physically take shape in the real world.”

When it comes to how Mr. William influenced his children in surveying, Beverly remembers him constantly preaching, “Take your time and do it right. Understand the tools and principles that you are using; that’s the only way to know that your answer is the



Bill Jr. (Left) and Beverly with their father, William Hart, Sr.

calculations for a large borrow pit off SR 417. The crew was my father and my husband on the rod(s) and myself on the gun. I would call them on the radio 'Good on you, Steve,' 'Good on you, Dad.' My husband objected to my radio language and familiarity. The next calls were 'Good on you, Dad' and 'Good on you, Honey.' Dad chuckled. As a child, it was a great treat to ride in the spare tire on the front of the Land Rover through the orange groves. I didn't understand surveying at the time, but it was fun to ride with him."

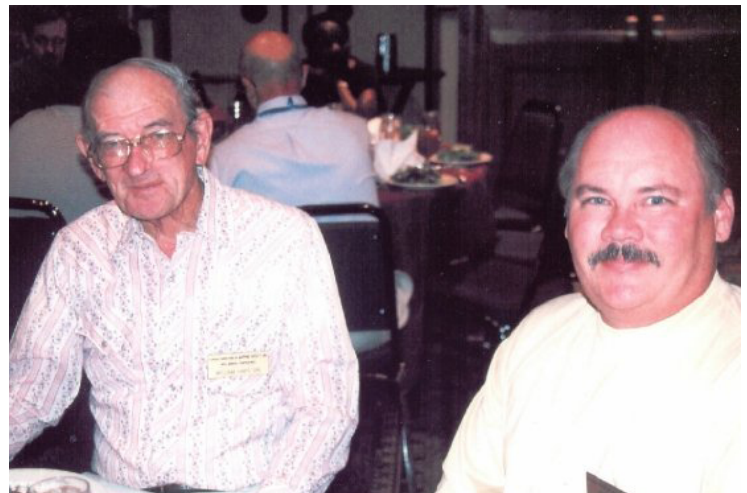
"Some of my fondest memories are of us

correct solution." And, "Check your work. He always wanted to have enough backup to defend his decisions and he was not too proud to admit if he had made a mistake, although he did not like that at all. He also fostered my interest in reviewing title work, as well as abstracting, and history."

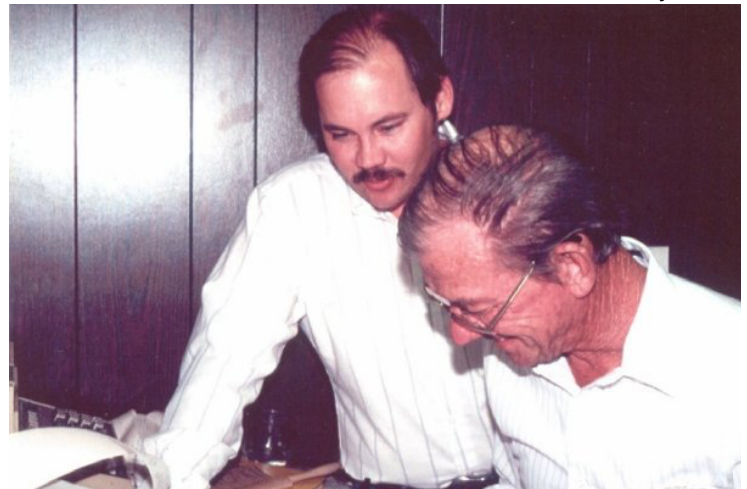
Mr. William saw a lot of changes during his career. He embraced the advancing technology and enjoyed seeing new equipment from vendors at the annual conference. His daughter Beverly remembers that he may not have always trusted the newest technology, but he was always interested in how it worked. "We were using total stations and data collectors very early on, and the geodimeter he had was the first sold in the Southeast. He would be amazed at the research tools that are so readily available now. He was fascinated when LABINS first became available and would spend hours looking through the records."

Beverly reminisces about the time she and her husband were in the field with her father. "We did a topo and volume

Bill Hart (left) with his son Bill Jr. at FSMS' Past President's Dinner.



Bill Jr. (Left) with his father William at Hart Surveys, Inc.



going to VTN as a child. There was a huge area in the center of a large room that housed a climate-controlled computer. It looked like something you would see in a science fiction movie. At the time they were using punch cards for their calculations. I was always fascinated to watch it work. I also had great Girl Scout cookie sales at that office. Another time I remember driving with my mother way out in the orange groves on a wide clay road. I was convinced we were lost. Finally, my mother found a place and said she would ask for directions. She knocked on the door of a trailer and out came my father. It was the main construction trailer at Disney off Reams Road.”

Mr. Dann Mckee tells of the time Bill's wife, Mrs. Judith Hart, remembers when Bill was the residing president of FSMS, formerly the Florida Society of Professional Land Surveyors. She recalls that the society was so broke at the time, that after the annual conference was over they had to write a personal business check to the hotel to cover all of the expenses.

FSMS Accomplishments

Mr. Hart was part of the original group that helped to create a professional association in Central Florida that grew into FSPLS(Florida Society of Professional



Land Surveyors) and is now known as FSMS. He served as President in 1968–1969, as well as Conference Chairman for the ACSM Conference that was held at the Contemporary Hotel, Walt Disney World in 1973. In addition, he was part of the NSPS committee that developed the NCEES licensing examinations and served as Central Florida Chapter President in 1973–1974. Surveyors that knew and worked with Bill described him as a gentle man who loved the camaraderie of his fellow surveyors. FSMS would like to Thank & Honor Mr. Hart for his commitment to the profession and for being a great example of what it means to be a Professional Surveyor.

(This article could not have been written without the help and assistance of Mr. Hart's daughter, Mrs. Beverly Jones. FSMS would like to personally thank her for sharing their stories and photos. He truly was an accomplished Pioneer in Surveying.)

12,450 Acres in 6 Weeks

Beverly Hart Jones

NSPS Fellows Breakfast

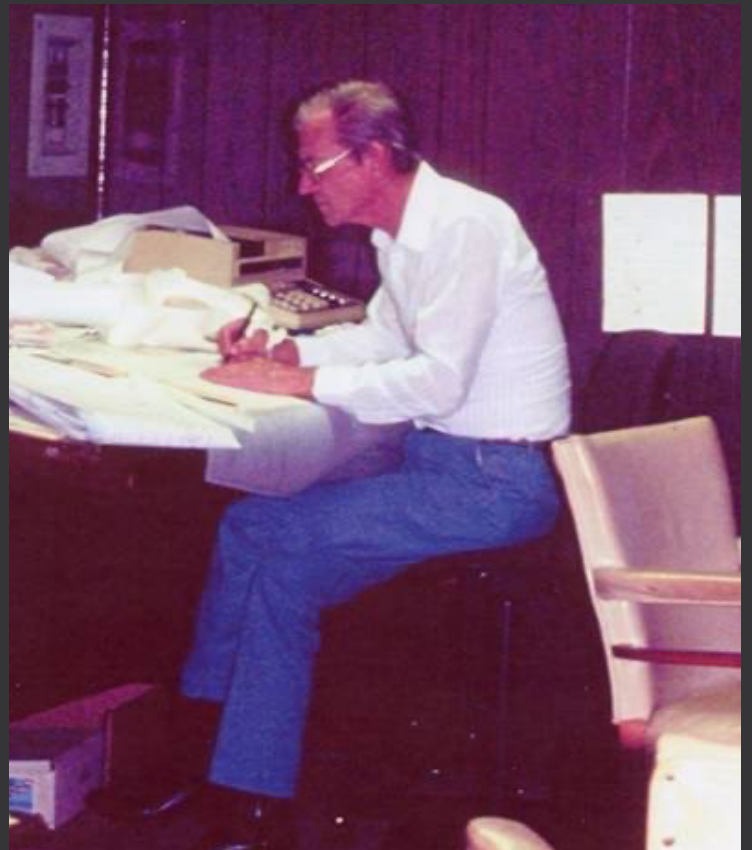
September 27, 2019



“Good morning. Thank you for having me here this morning. I’m Beverly Hart Jones, a licensed surveyor here in Florida. John Hohol asked me to join you and talk about the survey that my father performed for the acquisition of property here at Walt Disney World. I am going to focus on the first parcel acquired, known as the Demetree Tract.”



“Just a little background on me and my family; My grandfather, A.C. Hart, surveyed in Orange County after he returned from serving in Cuba and the Philippines during the Spanish American war as a member of the Shrine Guard out of Orlando. This picture was taken in the early 1920s at the Osceola/Orange County line. For those of you from this area, you might recognize the name from plats like Sphaler’s Addition to Prosper Colony in Taft; Lakeview Heights in West Orange County and Orange Center right near this area.”



“My father, William C. “Bill” Hart surveyed in the area from the early 1950s until the late 1990s. He was a Charter member of the Florida Society of Professional Surveyors (now FSMS) and served as President from 1968 to 1969.”



1973 ASP/ACSM



FALL CONVENTION

OCTOBER 2-5

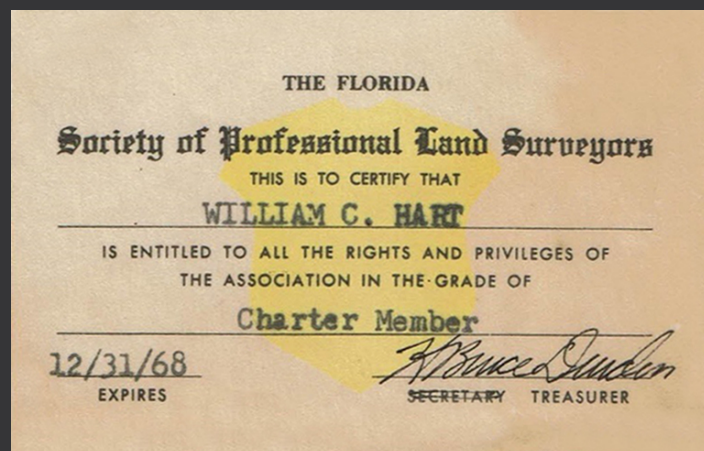


Walt Disney World

LAKE BUENA VISTA, FLORIDA

NSPE SUPPORTS BILL ON METRIC SYSTEM

"In October of 1973 he served as the conference chairman for the joint ACSM/ASPRS conference held here at Walt Disney World. I believe this was the first convention held on property, it was at the Contemporary Resort near the Magic Kingdom. I think the conference theme was interesting, "Technology, Today and Tomorrow". It seems that technology has been a driving concern for us all for many, many years. He also served as the Elected Orange County Surveyor, yes they were elected at that time and he was the last elected county surveyor before the office was abolished. Currently, the county surveyor is an employee of the County. As an elected official, my father was in private business as Wm. C. Hart, Surveyor."



Form 162

CERTIFICATE OF NOMINATION

STATE OF FLORIDA, }
County of ORANGE

Office of
SUPERVISOR OF REGISTRATION

Orlando, Fla., May 20, 1954

This is to certify that Honorable Wm. C. Hart
was nominated as the Democratic candidate for the office of County Surveyor
in and for Orange County,
at the Primary Election held on the 4th day of May 20, 1954, having received the highest number of
votes for said office at said election, as shown by the Election Returns on file in my office.

Dixie P. Barber
Supervisor of Registration.

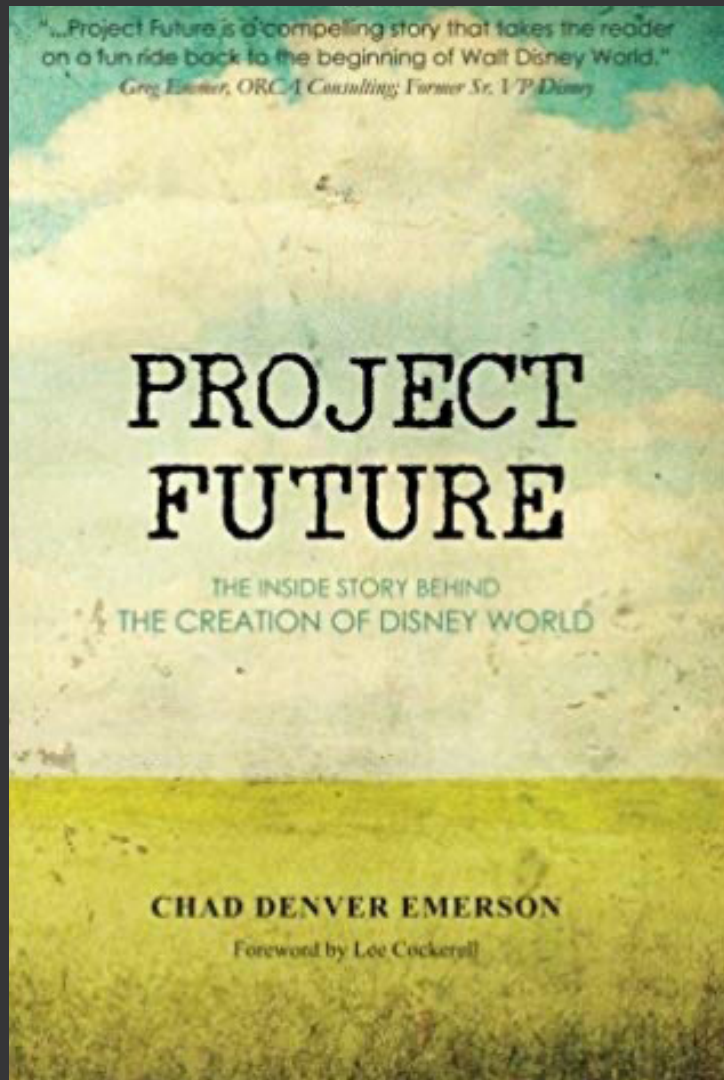
“In 1964, a man by the name of Bob Foster, using the name of Bob Price, walked into my father’s office and requested a survey of 12,450 acres in Southwest Orange and Northwest Osceola Counties. The requirement was that it must be completed in no more than 6 weeks.

In the early 1960s, there were many real estate speculators with big ideas, but not much money to make it happen. My father prepared a proposal for the project and asked for a \$10,000 retainer. That was pretty unheard of at the time and he figured it would let him know if this was really a serious project. He also required that they would be paid weekly or walk off the job. Amazingly, a check for the retainer showed up the following week with instructions to be on property the following Monday to begin work. The weekly billings were to go to a law firm in Miami by the name of Helliwell, Melrose and DeWolf and were to be billed to “Project X”.

The property being surveyed was owned by Bill and Jack Demetree and was used primarily as a hunting camp. This was the first property that was involved in a series of purchases that would become the 27,000 acres of Walt Disney World that we know today.”

Thus began a project so secretive, even within the company, that it would be referred to as “Project X” by the “select seven” official insiders who knew of it at the time: Disney leaders Card Walker, Donn Tatum, Jack Sayers, Larry Tyron, Mel Melton, Joe Fowler, and Bob Foster. (D23.com)





The Walt Disney World Resort near Orlando, Florida is one of the world's most famous vacation destinations.

This iconic resort is now located in what once was thousands of acres of swamp and marshland. Through spylike moves and innovative strategies, Walt Disney and his cadre of creative leaders turned this massive swampland into today's Disney World.

This book shares the amazing behind-the-scenes story of how Disney's Florida resort, code-named Project Future, rose from the marshes of Central Florida to become one of the world's most popular theme park resorts.

Project Future

“There has been much written about the lengths that Walt Disney went to in order to keep his involvement in the Florida purchase a secret.

In a book titled “Project Future” the comings and goings of the project team and the need for secrecy is discussed at length. I highly recommend this book if you want to learn more about how the whole thing came about. Walt first saw the property by air in November of 1963, the same day that John F. Kennedy was assassinated. He desired a significant amount of land where he could control the areas surrounding his development.

At Disneyland in California, the properties immediately adjoining the park had become a distraction from the magic that he wanted his guests to experience.”



courtesy of tfppodcast.com

“The Demetree tract was the first piece in a large puzzle that would help him fulfill his dream. It covers more than 25 sections across 2 Townships and 2 separate Ranges.

Even with all of the tools that we have available to us now, I spent a lot of time just sketching out the contents of the legal description. For any of you here that still remember those days, think about the tools and research options available at the time.

In an article from the *Orlando Sentinel* dated July 4th, 1965, my Dad recalled the challenges and methods that were used to complete this very large task.”



“The general character of the land was pine forests, palmetto scrub and swamp. Other than a few hunting trails and camp sites there was not much out there. It’s probably safe to say that not many had seen most of the section corners since J.O. Fries had re-monumented them.

The original government corners were lighter wood posts. In the late 1800s, John Otto Fries was contracted to retrace the sections and more permanently monument the corners with 6" x 6" concrete monuments. (As an aside, for any locals here, or if you have a little more time to spend in the area, the Orange County Regional History Center has just opened a new exhibit that includes the work and field notes of J.O. Fries)

So, the challenges that faced my dad were not only the overall size of the project, but also the terrain and of course the time factor. Remember, the job had to be delivered in 6 weeks or less.”



Beverly Hart Jones with her brother, Bill Jr., showing off their dad's Geodimeter from 1964. This was the first geodimeter purchased in all of the Southeastern United States.

“To accomplish this, my father purchased the first Geodimeter sold in the Southeastern United States; it was a model 4B. Interestingly, the cost of the instrument was the same amount that they had received as a retainer for the job, \$10,000.

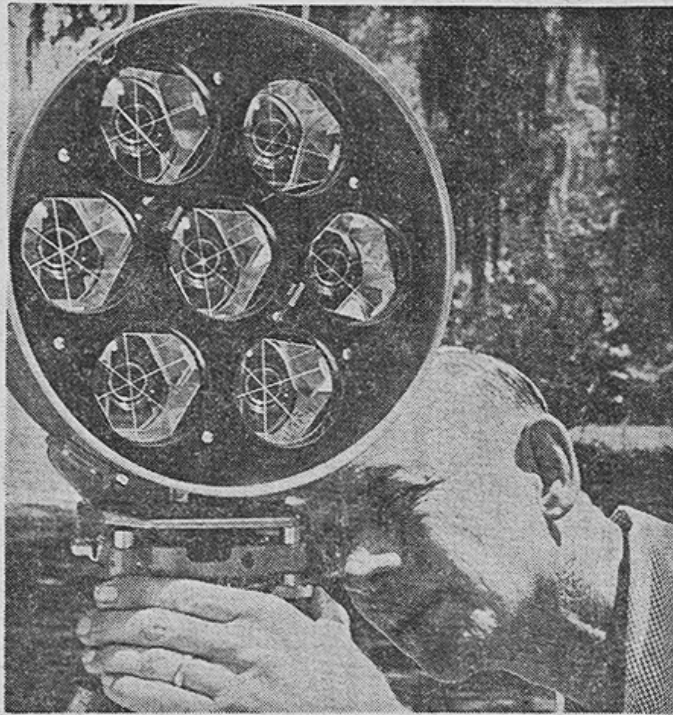
At that time, the Geodimeter was considered the latest in technology. *The Sentinel* even called it “Space Age.” It was an early Electronic Distance Measurement device (EDM). It had a tungsten light source (mercury lights were an option later) that was aimed at a large array of reflectors. There are seven in the picture from the *Sentinel*. Not only did it calculate the distance, but it also corrected for temperature and atmospheric pressure. The unit alone is 35 pounds, without the case or tripod and it was powered by the truck battery. Observations were taken in sets of three to twelve. Six observations per sight seemed to be the norm from the field notes that I have witnessed. Each observation was for 10 minutes. Unfortunately, the field books were ruined, and I don’t believe that I have any of them left.

Dad also purchased a Theodolite to measure the angles as it was more precise than the transits they had. Because of the tricky terrain, dad used Land Rovers to be able to get through the dirt and some of the mucky areas. I have very fond memories as a child of getting to ride on the hood of the truck in the middle of the spare tire.”

however, the error of closure was found to be only .13 foot in one direction and .20 foot in the other — a total error of approximately two inches! This is ten times more precise than the finest work resulting from the best methods utilizing conventional equipment — transit and tape.

Finding it hard to believe such precise figures, Hart carefully rechecked all readings and computations, employing an IBM electronic computer in Ann Arbor, Michigan. Data was telegraphed to the computer center and acreage figures were returned the following day. Everything checked out correctly and the results were proven to be true.

“WHILE the geodimeter would be of little value in measuring a house lot,” explains Hart, “its use in acreage surveys, over difficult terrain and across lakes, opens up a new era of accuracy never before obtainable.” It seems a far cry from the original Government survey of Florida when a group of two or three hardy woodsmen, living off the land and using a magnetic compass with hand-wrought “chain,” staked out the original section corners in this area.



BILL HART AND GEODIMETER PART
... unit receives reflected light to measure

“So I took a deep breath and ordered a Geodimeter,” said Hart, “and then realized that to use it correctly, I would also have to have a Theodolite instead of a transit.”

“BASICALLY, a Geodimeter is an extremely accurate distance-measuring instrument which uses a beam of light shot from the instrument to a distant reflector which bounces it back to a receiver in the instrument which automatically registers the distance.

Corrections for temperature and pressure make its readings even more precise. No plodding crew, dragging a measuring “chain” is necessary, although lines of sight must sometimes be cut through wooded areas.

So precise is this instrument that the ordinary surveyor's transit is not considered accurate enough to measure the angles involved. Hart's purchase of a much more costly Theodolite was thus necessary. Theodolites are used extensively in lining up and launching missiles at nearby Cape Kennedy.”

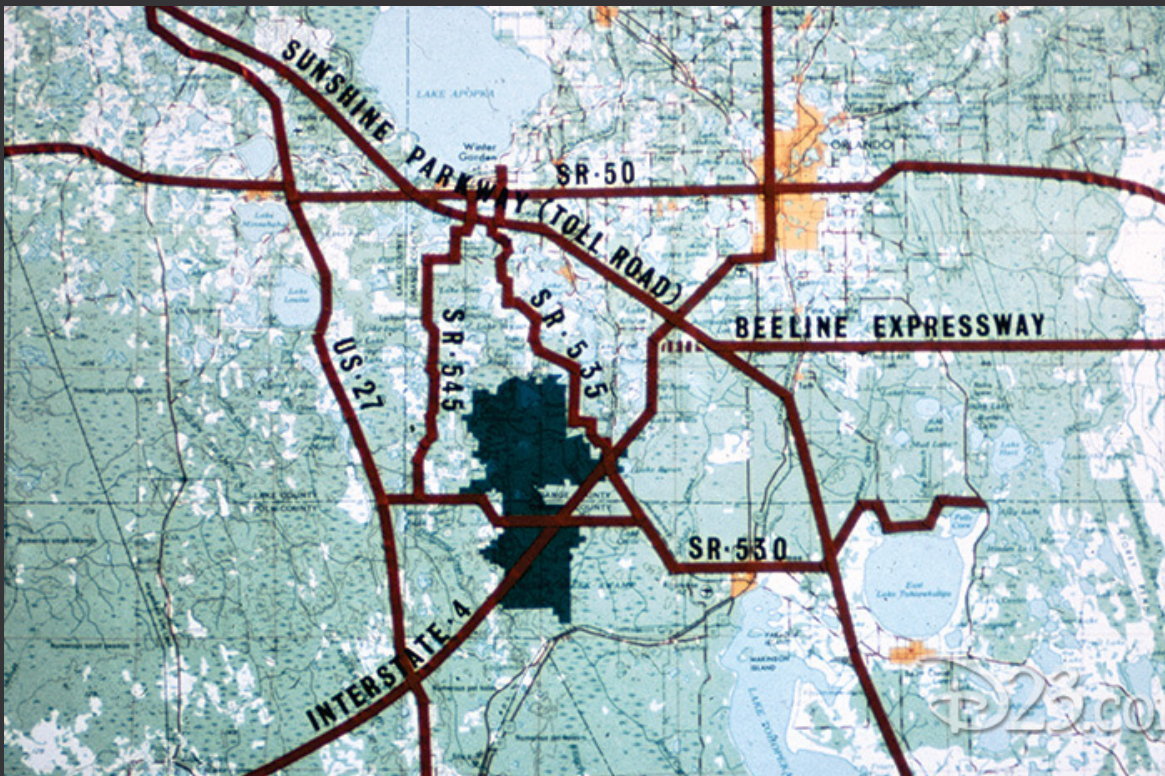
— *The Orlando Sentinel* (July 4, 1965)



Gus Hart (Bill's brother) surveying in waist-deep Florida swamp.

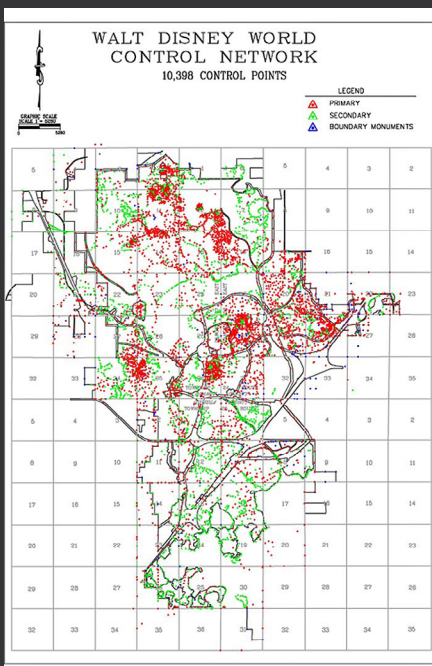
“There’re a few family stories about the original traverses that were run. The crew would carry onions with them instead of canteens with water. The onions were lighter than the canteen and had a high water content to keep them hydrated. Also, after eating a raw onion the mosquitos wouldn’t have anything to do with you.

Another one involves timing. The crews learned very early on how far and how long they could be down the cut lines before heading back out. If they stayed too late as they walked out they would be surrounded by the sound of “plop, plop, plop.” That was the water moccasins/cottonmouths dropping out of the trees to head back into the swamp for the evening. It was always better to hear that sound far behind you, rather than in front of you along your exit route out. The rattlesnakes were also very thick in the palmetto scrub, so most everyone carried guns. I heard that during construction phase, Pinkerton Security was hired to issue guns to the party chiefs every morning, but that’s another part of the story.”



“Back to the original 12,450 acre tract. In order to orient the traverses and ultimately create a boundary, a solar observation was performed on Christmas Eve, December 24, 1964. I had celebrated my 2nd birthday just two weeks before that.

The results of all the observations were carefully calculated and checked by my father. He was astounded with the accuracy of the results. The perimeter of the boundary was about 28 ½ miles and a closure in many feet would not be unexpected given what they were used to working with in the day. To his amazement, the closure was 0.13' by 0.20' or better than 1:630,000, ten times more precise than the finest work resulting from the best methods utilizing conventional equipment - transit and tape (according to the Sentinel article). Since he was still not completely confident in such wild results, he telegraphed his data to Ann Arbor, Michigan to run through an IBM computer and the next day his results were confirmed.”



“Dad developed a cartesian coordinate system to assemble all his control points, section and boundary corners.

This coordinate system was expanded as other adjoining properties were added to the survey and was used during construction. The system was perpetuated until fairly recently when all the existing control was adjusted to state plane coordinates.”

“The resulting boundary survey of the Demetree property was delivered on time and soon thereafter the scope of the project grew to include 9,000 acres of cattle ranch in Osceola County owned by State Senator Irlo Bronson, the Bay Lake parcel of about 640 acres – Section 1-24-27, the Heimrich tract, and numerous 5 acre parcels in the Munger Subdivision ending in a total of 27,000 acres.”



Bill Hart (left) accompanies Walt Disney and other executives strategically planning for excavation and construction.



Courtesy of bestofwdw.com

“Secrecy remained about the 'mystery project' until Walt Disney himself announced it in November, 1965 with Florida's Governor Haydon Burns at Orlando's Cherry Plaza Hotel. By the way, that announcement was the first time that my mother knew who the client was that they had been billing for 'Project X.'

The next phase was construction of the largest private development project in the country, but that again is a subject for another day.”