Radio Shack Model 1 Conquers the Recession of 1983

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An interview with Don Suverkrop

by Gilbert P. Gia

President of Creative Engineering, Inc., Don Suverkrop, owns 35 US patents in the fields of construction, agricultural, and mining. He authored WINBELT for conveyer belt design, HAULPLAN for mining economics, and WINBUILDIT, an architectural-structural-design engineering program that is interactive with business plans. Two are online http://www.beltconveyor.com/con-service.html and http://www.winbuildit.com/index.html

Gilbert Gia: You have a long history of inventing and solving problems. Any special accounting for that?

Don Suverkrop: (smiling) Do you mind going back a few years?

G: Please do.

S: [Pause] I experienced the whiplash of the Great Depression, and it was formative for me. Those times were an adversity for most, but they worked to advance my education, particularly by way of my dad's business. In the late 1920s and up until about 1931 his Oilfields Engineering Service was a money maker. During the boom years he acquired stripper oil-producing properties near Taft, and although we lived in Bakersfield I grew up around those wells. I remember a week in 1934 when heavy rains inundated the foundation of one of our pumping engines on the Trojan property, and the resulting misalignment caused the power transmission belt to stretch unevenly. To me it looked ruined, but not to

my father -- a mining engineer. I watched him cut the belt into 10-foot-long lengths, rotate every other piece, and re-splice it. The reinstalled belt worked perfectly, and I as a 10-year-old kid gained priceless experience.

Don Suverkrop with his father's truck

G: What was the stripper well?

S: An old well that had potential. But about 1931 my father's plans to increase production were hampered by falling oil prices and a drop in the consulting side of his Oilfields Engineering Service. I need to tell you about the high school kid from Maricopa who my dad hired to bleed water off an oil storage tank. The kid fell asleep that night and our whole month's oil production drained out toward Buena Vista Lake. My dad usually sold that oil to the Lakeview #2 Oil Company across the road, but for the next couple of weeks we ate beans. About 1936 Lakeview #2 went into bankruptcy, and that was when I learned my dad's dirty word for "receivers" -- the people that the court appointed to manage Lakeview #2.

G: Imagine losing money in oil!

S: But in those days people were scrambling. Most of the rigs were powered by single-cylinder steam or gas engines, but they couldn't last forever, and in the mid-Thirties one of ours gave out. My dad bought a Holt WWI tank engine and bolted it to a Dodge power-transmission assembly from Hopper Machine Works to reduce the pumping speed.

G: Did your father keep his wells?

S: He held onto them, but as I told you he compensated for the downturn by reducing costs in anyway he could. One was to put me to work. I held the survey rod, drove the lease truck, and salvaged pipe fittings, just to name a few of the jobs I did. Today's child labor laws deny kids work experience I got at an early age, but if that was child abuse, then I was certainly the beneficiary.

G: Were you about 12?

S: Ten or twelve. It was a real-world education. I remember when my father used the Lakeview #2 machine shop to make a ball-bearing support for tubing at our Well #3. After he installed the thing he'd rotate it a few degrees every day to keep the sucker rods from wearing through. One novel piece of equipment my dad did not invent was the battery-powered hearing aid worn by the Lakeview machine-shop foreman. Ed revealed its advantages to me when he whispered that he turned it off when his wife was talking.

G: Another incidental learning experience.

S: It's the story of my introduction to the world of work, but it actually goes back farther. My father's father owned a machine shop in Camden, New Jersey, and that was where my dad learned to operate lathes. He taught me, and by the time I was 13 I was running lathes pretty well. At the beginning of the war, when I was 17, my mother accepted an order to manufacture aircraft hydraulic parts for the ADEL Corporation of Burbank. After their agent Max Trickey left, my mother phoned my dad, who was then back in Washington trying to get a government war contract. I heard her tell him, "We're already in the war-production business. You better get home." We expanded the shop, hired neighborhood help, and my part was to set up our lathes for production. I attended Bakersfield College until the government no longer needed us. In 1944 I went into the Army.

G: You told me you took math classes by correspondence when you were in the Army and built hot-water showers for the barracks in Japan.

S: Yes, that was another hands-on thing. When I got out of the service in 1946 I went back to Bakersfield College, Joan and I got married, and we later moved to Berkeley where she worked and I went to UC on the GI Bill. After graduation we came back, and I went back

to work for my dad, but it didn't last long. One morning I made a mistake on a batch of parts, and he fired me. Fifteen minutes later I pulled up in front of my newly-mortgaged home, and my lovely, pregnant wife was waiting for me in the doorway. I told her what happened, and she ordered me out and told me to find another job.

G: Where'd you go?

S. I applied at Hopper Machine Works. It was between L and M and 23rd and 24th where it had started out in the former maintenance shops of Tidewater Associated Oil Company. They'd set up there to keep from sending repair work to Los Angeles, but by 1920 when drilling and production technology changed from cable tool to rotary drilling, the Tidewater shop became obsolete. Frank Hopper, Sr. bought the entire foundry, pattern-making shop, forge, welding and machine shop and renamed it Hopper Machine Works, Inc., which was the name of his first shop on China Grade Loop.[1]

G: When did your dad find out about Hopper?

S: Later that afternoon. He called me and said I could come back to work for him. I told him it was too late.

As a recent engineering graduate of Berkeley the new job challenged me, and I loved it. Our machine shop foreman Waldo Mason called me out of the office one day to show me a trunk-size metal box with doors on opposite ends. The box was to be installed in an exterior wall of a bowling alley at Taft, and money would be put into it for pick up. Waldo needed a latch mechanism that among other things would allow only one door at time to be opened. Within the hour I delivered a sketch to him, and about 5 pm the box was fitted and shipped.

That first year I supervised a crew installing a grain elevator on the Washburn Ranch out on the Carrizo Plains, and I designed a special milling machine for slotting oil-well casings. I made sketches for a lot of other jobs. The Bakersfield Californian did a story about my design of the World's Largest Copy Camera. It was for Hoven & Company here in town.

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[1] The firm took the name Hopper, Inc. after it became involved in marketing pre-manufactured industrial products like steel and nuts-and-bolts. Don Suverkrop: "I remember the supply department salesmen pressuring to change the Hopper name because other machine shops resisted the idea of buying supplies from another 'machine shop.' Changing the name to Hopper, Inc. took care of that problem."

Solving problems with mechanical solutions was my forte. It seemed that I was building a better mouse trap every day, and it helped that I already had dirt under my nails. When I called on the trade I could talk their language. Eric Hamreus who preceded me as sales engineer was nearing retirement, and I was being groomed for his job. I asked him how to drum up more business. "Don," he said, "it's real easy. When you get off the overnight Pullman just stand on the steps a moment and look out over the town. Wherever you see a smoke stack belching smoke you'll find a customer underneath just eager to buy your magic belt-dressing compound."

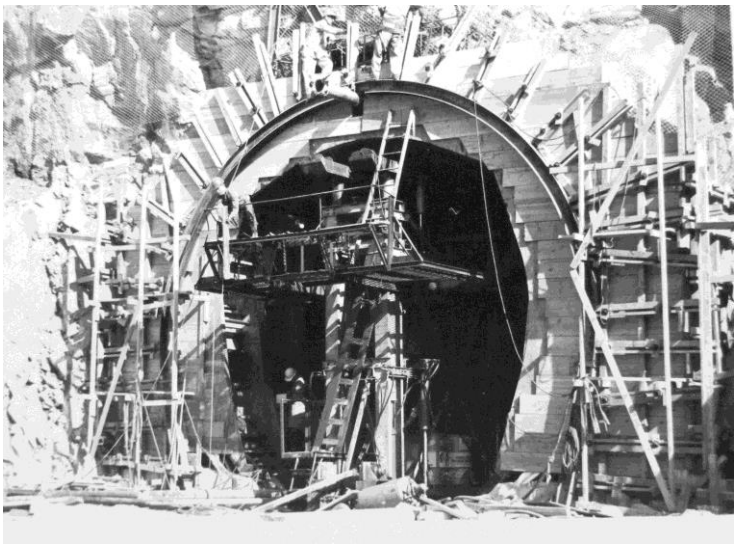
Suverkrop, right, with Chevron engineers, Gulf of Mexico, 1972

G: Did you work with belt-conveyors at that time?

S: Not in a major way until after 1980 when I retired from Hopper for the second time. You see in 1958 I'd quit to work for American Fertilizer on Edison Highway. They were in the midst of a sizable expansion project that included fabricating on-site machinery for manufacturing pelletized chemical fertilizers, and that involved conveyer belts. By 1960 the job was mostly completed, and I was hankering for more intense engineering challenges. I decided to start an engineering consulting business, and I started handing-out personal business cards. Frank Hopper caught wind of it and quickly made me an offer I couldn't refuse. I went back to work for Hopper with the title Sales Engineer and some very loose instructions. Frank said, " Don, some days you'll have to do one thing, and on other days you'll have to do something else. I'm sure you'll figure it out." I was largely on my own. This came just in time for me to welcome construction of the California Water Project -- a projected system of dams, tunnels, canals, and power plants to sweep water down the state from North to South. As it turned out, CWP was largely a dirt-moving operation with a little placing of concrete, but either way, CWP called for bulk-material handling. Belt conveyors were that in a big way.

The need for equipment was huge, a seller's market. Because Hopper was located about in the middle of CWP's 600-mile length, it was a bonanza for us, and as a new sales engineer with fresh ideas I found customers right and left. It didn't take me long to realize that some contractors were bidding CWP jobs without a clear plan of how they were going to drive a tunnel or dig or line a canal, and they expected us to provide them with machines to do it. The situation was Waldo Mason's double-ended box all over again, but a thousand times more profitable, but Hopper always came through for the customer. We built a history of providing solutions and value.

I remember standing knee-deep in water -- at the very working face of a tunnel-- taking an order from Kirk Fox, who was a joint-venture partner of the Granite, Gates, Fox, and Ball consortium. The San Andreas fault was right nearby, and my thoughts at the time were "If Fox can stand the risk of this mountain caving in, then so can I." That was how I took most of my orders for CWP -- I received them with "my nose rubbed in the underlying problem."



CWP tunnel mouth, 1963

Hopper's history as a major supplier helped me to sell. In those days we manufactured metal products, [2] provided power transmission belts for the oil field and marine industries, and were a supplier to small-aggregate and grain-storage plants. Our business relationship

[2] Hoppers was among the first manufacturers of preassembled, offshore drilling rigs.

with Hewitt Robins meant we had access to their belt manuals as well as engineering back up on technical questions. My experience with belt conveyors was growing.

About 1974 l called on Monolith Cement Plant at Tehachapi to bid an 8,000-ft, over-land conveyor belt needed at the quarry. I relied on design principles set forth in the Hewitt Robins manual, but when bids were opened, Robins Engineering, the parent company of Hewitt Robins, won the contest. I asked myself How could this be? If we were both using the same engineering data, why did I lose the bid?

The pain of that loss lingered until I discovered the answer while visiting the plant. Robins Engineering had spaced the Monolith belt idlers at 7.5 feet instead of 4 feet as specified in their manual. Also, Robbins supported the idlers on wire ropes rather than on structural-steel members. I'd used the closer spacing of 4 feet for my bid, and of course that alone made the huge difference in price. If Hopper had won that contract it would have been worth a million.

G: Did Hopper have computers?

S: Their National Mainframe for accounting and management functions was housed in a glass-sided room to best impress visitors, but it was not for engineering. Hopper and Universal Studios shared the distinction of being the only owners of that make of computer in California, and perhaps that was why there was some business interchange between us. I was involved in supplying them a big lift for one of their sound stages. One day when I was walking past Alfred Hitchcock's dressing trailer I overheard him talking in a very ordinary voice with his stock broker. It absolutely destroyed the aura of mystique I'd associated with him.

G: When did you leave Hopper?

S: Frank Hopper died unexpectedly, in 1976. About that time the demand for Hopper's Oil Well Hoists cut into my ability to sell the 45-Ton Hopper Crane, at least in a timely way. When the economy tightened, many of our best technical employees left for jobs with the CWP. By 1979 I'd negotiated a retirement package from Hopper that included license rights to all the patents for which I was named inventor.

I was working at Hopper when I started Creative Engineering, Inc. Joan went to work typing letters to manufactures announcing the availability of my license rights to the Hopper

crane, and as I recall, that letter went out to about 85 key, crane-builders. Responses were encouraging, particularly those from Europe where "level luffing"[3] was better understood, but that meant that if I wanted to sell to them I had to visit over there. I took vacation time from Hopper and went to Europe. My experience with computers started then.

Creative Engineering came of age in the late 1970s in roughly the same time-frame as the appearance of the Apple I, Commodore, and Radio Shack Model One computers. I suspected then that I might have an engineering use for a personal computer, so for reading material on the flight I tucked a Radio Shack Model 1 instruction manual in my briefcase. One page showed a BASIC program that looked like this

```
A = 10
B = 2
C = A * B
Print;" C = "; C
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It reminded me that my friends said I'd never learn Fortran, Pascal, Cobol, or C+, but on that flight I saw how Bill Gate's BASIC ingeniously and automatically converted language-like statements into higher level programming language. Somewhere over Greenland I realized I could make Radio Shack's computer behave as a computational engine. With that, I was off to the races.

When I got back I decided, almost as a matter of curiosity, to try to make a computer calculate belt-conveyer idler spacing based on the mathematics of belt tension, weight, and sag? Belt conveyors used principles that compared closely to those of suspension bridges, such as the Golden Gate and Bay Bridges, and in both cases, tension, weight, sag and span are in delicate balance. I re-read the instruction manual and decided Why not? I wrote a simple routine using formulae from the manual of the Conveyor Equipment Manufacturers Association. It looked like it would work.

The Radio Shack store across from Valley Plaza was selling Model 1 for $1,000, and the day I entered the sales floor it swarmed with customers. That computer had 4K of RAM and saved Level I BASIC to an 8-mm cassette tape at 31 bytes per second. Just imagine -- today's personal computers save terabytes of data in seconds, and an 8 GB computer goes for $1,000.

[3] The term level luffing describes the three-dimensional motion of an object being moved up or down and parallel to the earth.

I experimented with programming as I recovered at home from a glaucoma operation, and when I returned to work Harold Clifton, who was Controller at Hopper and a member of the board, chided me for taking so long to come back to work. I replied that the liquid nitrogen used in my operation came from Hopper, and it must have contained a certain amount of sediment. I was kidding him, but as I left his office he seemed to be crawling under the desk. I scolded myself for being such a loose cannon.

G: When did you use a personal computer on a job?

S: I think it was for computations on the Ben Bender and Frank Hoover job. They were well-known local drilling contractors who prided themselves on their mechanical talent. Frank was a graduate in Mechanical Engineering who'd uniquely conquered the problems of drilling steam geysers in Northern California for producing electric power. Ben Bender had sold an entire oilfield for millions, but years before that happened he impressed me by offering to redrill one of my dad's wells using a hoist powered by multiple 1936 Ford V8 engines. When Ben was in his nineties he still enjoyed equipment building. He suggested we go into business together saying, "I'll build the equipment and you can write the brochures."
Ben and Frank argued about which had the better way to build a hydraulic mud pump.[4] To resolve the dispute they agreed that each would build their own and conduct a contest. Frank's concept relied on septuplet[5] hydraulic cylinders rather than big gears to develop the necessary forces to pump drilling mud at high pressure. He hired us to design and build it. Concurrent with that job I was also involved in designing hydraulic cylinders for what later became the SUVERKRANE.[6] I used my Radio Shack computer in both designs, and they turned out to be my final jobs at Hopper. Oh, Frank's mud pump was a success and quickly found a customer up in Canada.

G: What happened after Hopper?

S: I rented an office on Haley Street and set up my engineering consulting business --

[4] Reciprocating piston/plunger engine used to circulate drilling fluid under high pressure

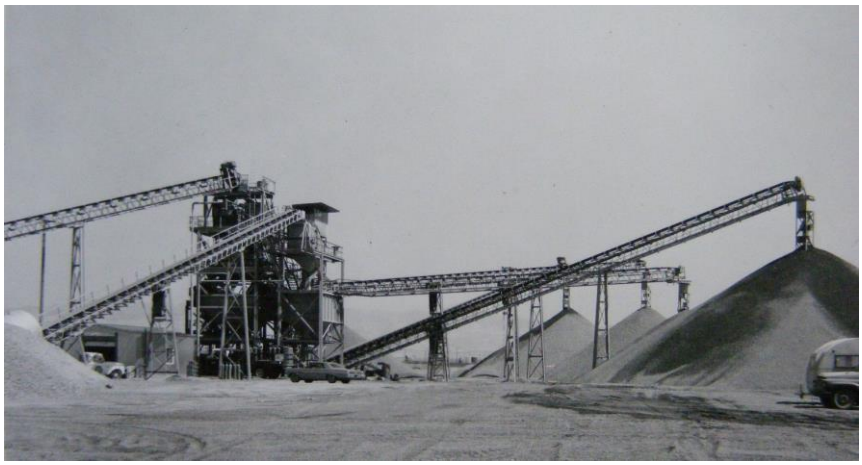
[5] 6-cylinder

[6] At the time Suverkrop retired from Hopper he received patent rights to the crane.

Creative Engineering, Inc., but because I no longer had access to the Hopper engineering staff, I was forced to hire. Wayne Stephens, who already had left Hopper and formed a company called Dimensional Drafting, moved into my Haley Street office, and we cooperated on a number of industrial projects. Jack Herndon, another engineer at Hopper, came to work for me. His specialty was pressure vessels. Durwood Jewett attended to the design of drilling-rig bases, Joan was my secretary, and Orel Prewett worked for me part time out of his home.

I renamed the Hopper Crane *Suverkrane*, and my first licensee to build it was Hall Machine Works. I got other contracts, and whenever I won a bid I handed-off the detail engineering to my associates. My primary interest was in the structural design of cranes, but we were plenty busy with other things. In fact, business was so good I suffered from overload.

I hired Tim Dunford, a young engineer just out of UC Santa Barbara, to bring us up to speed in advanced math. I paid him $3,000 a month, which was the offer Boeing made him. You see, in order to get Dunford I had to match Boeing, but the expanding payroll meant I had to drum-up more consulting work to keep everybody busy.



Hopper belt operation, about 1964

I'd been impressed by a memory typewriter that IBM recently announced. The local store had one, and that morning I was probably the first customer. The young salesman commenced his packaged pitch, but after a few sentences I stopped him and announced, "I'll buy it." In a panicked tone he gasped, "But I don't know how to stop!" and he went on with his spiel. Only at the end did he let me consummate the purchase. That new typewriter allowed me to type and edit my own letters, but Joan increasingly saw it as an

encroachment on her territory.

G: A negative of the digital age.

S: That's for sure. About this same time I bought a Radio Shack II computer with full word-processing capabilities much like today's personal computers, although it had three, 8-inch, floppy-disk drives. Somehow my marriage survived even that innovation.

Then I wrote my first computational program. I'd learned BASIC years earlier but switched to QUICK BASIC, which managed memory much better. I later moved into VISUAL BASIC, and that seems to have no memory limitation at all, at least none I've ever reached.

Manual computations famously introduce human error, but once a computer program is written and validated, computational errors disappear. My program effectively replaced many manual calculations and did the work in seconds that otherwise might have taken days.

Another tremendous advantage I was soon to appreciate was the freedom to change variables and recompute as often as desired. Iteration is the essence of real-time optimization. It enables the user to rapidly focus on the "best" result of whatever he or she is trying to achieve. Those thousands of trials are practically impossible to obtain manually.

After a wealthy client asked me to improve an oilfield pumping-unit my program produced an outcome I never imagined. I'd used the computer to calculate a change in the geometry of the crank mechanism to improve on the way the counterweight assisted the pumping cycle. The modified design showed tremendous potential for savings, but the client -- whose schooling ended at 4th Grade – didn't like the way the drawing looked and wouldn't accept it.

G: How about WINBELT? How'd it come about?

S: That conveyer-belt riddle kept reappearing in my mind and with it the lingering sting of failing to land the Monolith job. Meanwhile I was calling on companies that were losing millions owing to belt failure and metal fatigue in pulleys and shafts, and for those reasons I returned to my belt-conveyor programming, wrote it in BASIC, and it did the job fine for me for several years.

But programming languages and computers changed, and in 1999 when Joan passed away I had little desire or incentive to update WINBELT to VISUAL BASIC. I was 74 and thought I

should be thinking more about retiring than re-educating myself, but my son Ron argued that he "needed to protect his inheritance" so we undertook the conversion to VISUAL BASIC. During that effort I discovered that VISUAL BASIC enabled much more complex programming. What it's become since then is a suite of programs that address much more complex building and business needs. I wish I had it at the beginning of my career.

G: You mentioned fatigue failure.

S: It a failure mode that's like flexing a paper clip until it breaks, and when pulleys fail, everything shuts down. WINBELT and WINBUILDIT, that's my other program, have grown in step with advances in metallurgy and component design, but because commercial plants are always asking more of their equipment, correct belt design is crucial. It cost Newmont Gold Company of Carlin, Nevada, plenty. Then they ordered WINBELT, identified defective-prone shafts and pulleys, and that ended their loses. Their problems were in the mechanical design, but supporting steel is the major cost in belt-conveyer constructions. Usually on the order of 85%. Estimating steel costs traditionally means hiring a structural engineer, but WINBELT calculates the supporting trusses, bents, and towers, optimizes them, and outputs cost. It doesn't do away with the need for a structural engineer, but it does enable mechanically-oriented people to rapidly and reliably estimate how much a belt conveyer will cost.

G: Why is 1983 important?

S: I was then running my business when Hopper called on me to testify as their sole witness in a lawsuit brought against them in Los Angeles.

G: You were the only witness?

S: The court allowed the plaintiff to limit the number of witnesses, and for six-straight weeks I was it. When the trial was over I went back to Bakersfield and found my business in tatters. There were no orders at all. When I started Creative Engineering in 1980 the oil business was booming, but in 1983 Kern County was slipping into recession. Unemployment hit almost 11%, and when the Bank of America called its loan on Hall Machine, they went belly up. I moved out of my office to my home, became a company of one, and got back to the basics of being a consulting engineer.

Port of Redwood City scrap-yard belt-conveyer, 1975

I'd originally conceived WINBELT to satisfy my own curiosity and was using it as a consulting tool, but when I took it on the road it unexpectedly became a commercial product. Granite Rock at Watsonville hired me to analyze a main-pit-belt problem, and I showed up at their office with WINBELT in my laptop. The plant engineer and supervisor closely watched me enter their data into the program, and they were astonished when WINBUILDIT said they could save $180,000 by re-spacing their troughing idlers.[7] The engineer asked how much it would cost for a copy of WINBELT. I casually asked, "How much would you pay me for it?" He answered, "How about $10,000?" Was that an eye-opener! Selling WINBELT suddenly seemed a lot more lucrative than the $80 an hour I was getting as a consulting engineer.

[7] Trough rhymes with broth. Troughing idlers are two or more rollers arranged to turn up the edges of a belt so as to form a trough.

G: Did he buy?

S: No. [Laughing] He left the company soon after that. He'd inherited a good bit of money from his uncle and retired to manage it.

The Granite Rock episode lead me to visit companies with belt conveyors, and I soon found it easy to sell WINBELT. An early letter from a Canadian materials-handling equipment firm was especially positive. They'd hired a consulting structural engineer to calculate the fabricated weight-cost of trusses, and he came up with a cost that was 10% higher than what they'd got from WINBELT. My program was faster by weeks and brought my Canadian licensee's customers closer to making informed decisions. I was especially pleased when Robins Engineering, the company that defeated me on the Monolith job, bought WINBELT to replace their main-frame program. Since then I've sold hundreds of copies worldwide.

G: Any other surprises?

S: Well, yes, an important one. Insidious erosion of profits is always a concern to companies. WINBELT shows how to find the right belt tension for driving friction, and that equates to minimal spillage and minimal electricity use. Actual amperage readings taken on belt-conveyor motors prove that value, but the industry's concern for safety and fear over litigation was somewhat of a surprise in WINBELT's success.

Belt conveyers are called upon to do more work than designed for, but avoiding break-downs has to be a priority. Engineers recommend soft-start drives to reduce starting-tension forces, but insufficient "breakaway" force can make conveyors fail under heavy load, and lack of belt tension also can cause spillage. In both cases, removing the material by hand is costly, and clean-up work exposes workers to the possibility of being caught in moving belts. Most injuries are settled "on the court house steps" so we never hear what the dollar cost is. Collectively it is certainly in the billions.

I discovered another unexpected outcome when Odebrecht Contractors was building the $200M Seven Oaks Dam near San Bernardino. Late in the project Odebrecht faced a default on their performance guarantee.

G: Performance guarantee?

S: They were very close to the deadline they'd promised for finishing the project. If they went past it they'd forfeit serious money. WINBELT showed them where to correct belt alignments at loading points, and once they got that straightened out they stepped-up production and finished the dam on time. In a different case at Carlin, Nevada, fatigue failure was shutting down a gold-mining operation almost daily. They evaluated their operation using WINBELT, established a review-and-replacement program for targeted pulleys, end-plates, and shafts, and saved millions. They've had few shutdowns since.

G: How do you safeguard against software pirating?

S: In the beginning I sold LOADPLAN and WINBELT with dongles, which customers plugged into USB ports to start the program. I don't use dongles anymore. My licensees now get an activation code.

G: You have another program.

S: In 1990 I conceived a mining machine called SuverHoist that had the potential of radically improving the economics of open-pit mining. The selling challenge was not the machine's design but was the question that always troubled prospects -- Was the price worth it? Answering that based on price alone was impossible, so to address the problem I wrote HAULPLAN.

Mining operations can be seen as a pile of dirt and the equipment to move it, but unlike the individual pieces of machinery -- like the trucks and belt conveyors – mines can be evaluated as business units, profit centers. HAULPLAN accepts input data about the equipment and mine layout and outputs Internal Rate of Return, Net Present Value, and Modified Internal Rate of Return. Each assist in intelligent choices of business opportunities, whether of mines or mansions. HAULPLAN's real-time optimization, by which I mean modeling multiple, what-if scenarios, shows investors how their financial decisions impact the return on investment.

I made a one-week sales foray to 12 gold mines in Northern Nevada, showed them the program, and without a single exception the managers reveled in how HAULPLAN optimized

SuverHoist, about 1962

their mining operations. In some of those cases HAULPLAN eliminated SuverHoist's price stigma and replaced it with shareholder value, but it also showed that SuverHoist was not financially right in all cases. The program allowed managers to work hand in hand with their boards of directors and virtually manipulate the returns on investment. They intuitively took to real-time optimization like ducks to water.

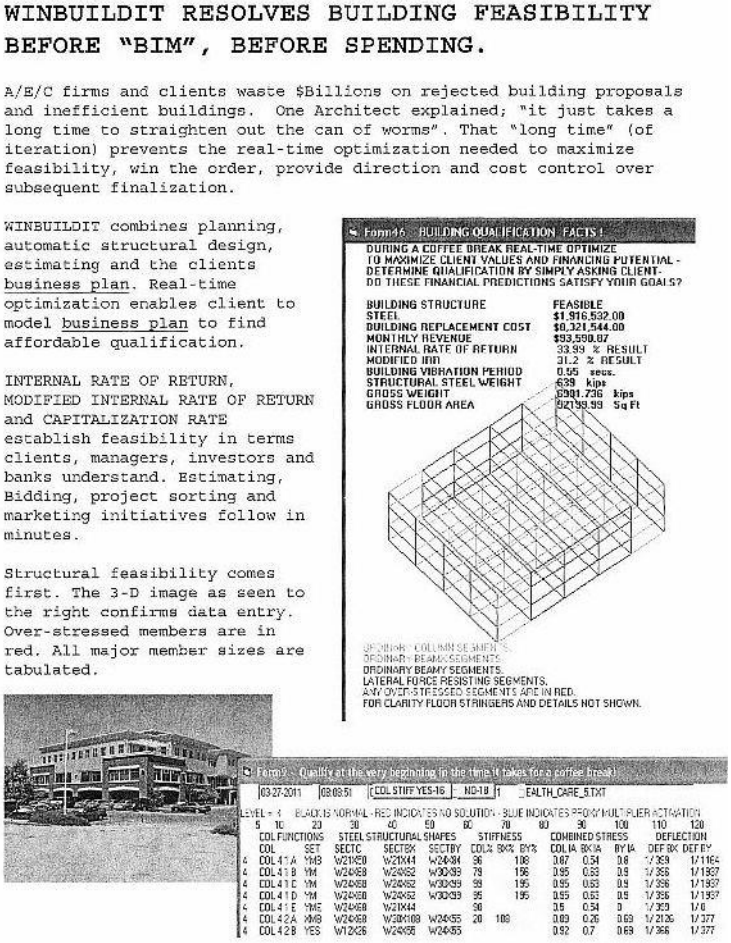
G: How did WINBUILDIT come in to this?

S: My son who was by then an architect suggested I write a similar IRR program to further reduce financial indecision and selling hocus-pocus and show how a building's design, engineering, and construction costs fit with a business plan. From the beginning WINBUILDIT was entirely feasible. One of my West Virginia licensees told me it shriveled the time to write proposals and improved his sales because customers could see how his bid fit in a larger, business context.

G: Can you give me a thumbnail sketch?

S: [Pause ...] In a single code WINBUILDIT optimizes the architectural plan with code requirements, determines steel-structural feasibility, building costs, revenue flow, Internal

Rate of Return and Modified Internal Rate of Return,[8] RSMean Square-Foot-Costs™ and compares all of those to the business plan in the time it takes for a coffee break. If the profit margin is acceptable to investors, the project gets underway.



G: I'm impressed.

S: I'm proud of the program. It allows architects and clients to look at financial feasibility

[8] Suverkrop: "To automate the structural design process for feasibility purposes I developed a digitized steel-specifications schedule automatically accessed by programming code for multi-story buildings, bridges, bents, trusses, towers, and other steel forms. Iteration seeks the least building weight. Under development is a program that works entirely from X, Y, Z coordinates of nodes, or points of connection."

from many angles. What's hard to believe is the fact that developers and their potential customers waste millions talking about a project for months, and in the end it doesn't pencil out.

G: The program's for buildings only?

S: No, although the economic dilemma of commercial buildings was my primary interest in writing it. The subroutines are universally applicable, so I wrote sub-calculators for application to other projects where the common denominator is always Internal Rate of Return and Modified Internal Rate of Return. Some are time-based estimates of cash flows, but other calculators are very industry specific, including purchase or construction of single- or multi-use rental properties, oil plays, mining, and other investments. It's encompassing. Recently a company on the East Coast was enthusiastic about manufacturing a product that I built and patented 30 years ago. After a number of faxes back and forth, I opened WINBUILDIT and entered my best estimate of their cash flows. In about five minutes it projected a 24% return. I faxed them a copy.

G: What happened?

S: Nothing, but the program worked for us exactly as it should have. Because the company never answered back I presume the 24% return was unsatisfactory relative to other factors they were considering. Now we both are moving forward in other directions without further distraction.

I think it's a good example of the program's value. The speed promotes collaboration among designer, architect and investors and resolves design and business choices in the time it takes for a coffee. Simplistically put, WINBUILDIT automatically "thumbs" the pages of the AISC Steel Manual and implements real-time optimization with the financial plan. WINBUILDIT sometimes shows that even the best-designed, strongest steel building can't save a poorly-conceived business plan.

G: What do professional structural engineers have to say?

S: It depends. One said, "What are you trying to do, put me out of business?" and another said, "I see this as a way to develop business."

G: Thank you for sharing your story. My computer friends will love it.

S: I hope so. Thank you.

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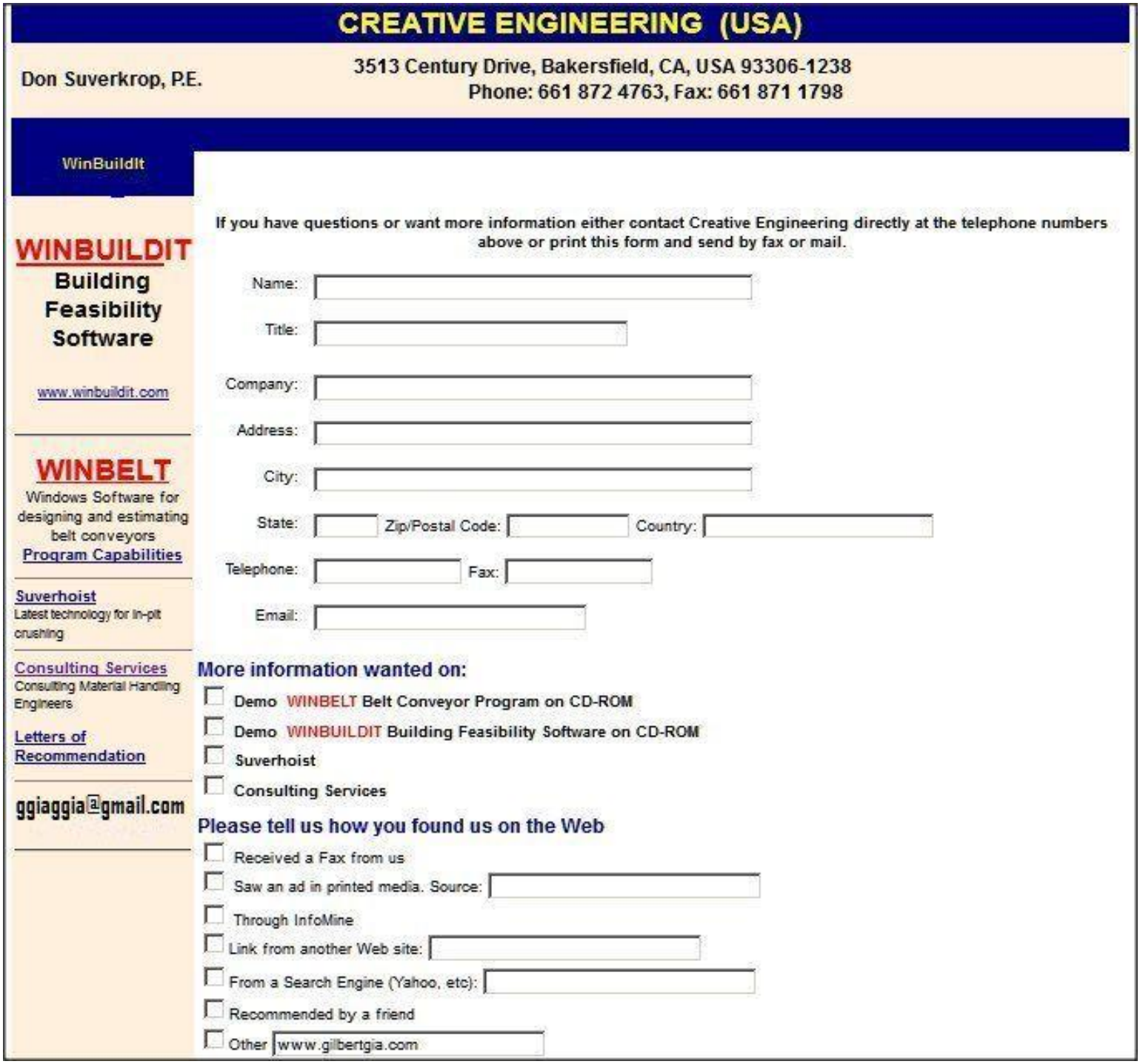

CREATIVE ENGINEERING (USA)

Don Suverkrop, P.E.

3513 Century Drive, Bakersfield, CA, USA 93306-1238
Phone: 661 872 4763, Fax: 661 871 1798

WinBuildIt

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Suverhoist
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Letters of Recommendation

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