Modern Marvels
Great Towers in the Sky

The History Channel
Writer/Producer/Director: Terry FitzPatrick

Opening Tease:

space needle fireworks KOMO-TV	Narrator They can inspire jubilation...and terror.
Univ. Texas Sniper file (Hearst NY reel t-1184/4:48)	Newsreel: "The killer, hidden on the 27th floor of the university tower, began firing at the students below."
stunt jumper CN Birthday reel	Narrator They've been the object of crazy stunts.
balls drop off Pisa (Archive films APF-93c/5:35:81)	And the site of important scientific discoveries.
slides of towers in various countries (world fed of towers)	They come in dozens of shapes and sizes and are found the world over.
Pisa--Hot Shots	
big Ben/Eiffel--Hot shots	Some have even become beloved symbols of national pride.

needle construction--steel in space	This is the story behind the dreamers who dared to break the boundaries of architecture...
	...to build the tallest...
CN from below	...most innovative...
Needle top house	...and most thrilling structures
Stratosphere big-shot ride reel	on earth.
Space Needle from below	Including three modern marvels.
aerial CN pod--20th anniv reel	Each as unique as the community that built them.
Stratosphere top/sun layered--bankers trust	
C-N waterfront 20th anniv	Toronto's C-N Tower.
Space-Needle with sailboat	Seattle's Space Needle.
Aerial of stratosphere top pulls out--publicity reel	And the Las Vegas "Stratosphere."
Super title: "Great Towers in the Sky"	Great Towers in The Sky.
Modern Marvels Series Open (:20)	

ACT ONE

Segment Chyron: (:05)

Reaching Toward the Sky

Sunrise NASA t-2437/00:23

Clouds t-2391/1:00:16 to the top

Narrator Since the dawn of time, humans have dreamed of breaking the shackles of our land-locked existence.

geese flying close-up tracking shot and lake--destination Toronto

To soar through the sky and see the world from above...

aerial of pristine lake shore t-2084/1:00:39 destination Toronto

...It can free the spirit from the burdens of life.

high aerial shots Niagara Falls Tower with falls in background--destination Toronto

Throughout history, people have built towers to seek the euphoric sensation of height.

interview Guy Leduc t-6005/16:34

Leduc: "When you're happy, when you're satisfied, whey you're in a good mood, you say: 'Well I'm on top of the world.' So when you're in a tower, at the top of a tower, you cannot but be happy."

Super: Guy Leduc/World Federation of Great Towers

pagoda still---clip art book--hecks pictorial archive	Narrator The earliest towers were built to bring man closer to God.
tower of babel illustration still--Archive Photos ID # HP 8078 File (57) 222.11	"Let us build ourselves a city and a tower with its top reaching heaven." That's how the bible describes the world's first known tower...built thousands of years before Christ. The Tower of Babel (babble).
Egyptians fighting in a tower--northwind archives	Towers touch more than mankind's fascination with the heavens. They fulfill a human need for power.
leduc interview t-6005/13:59	Leduc: "Well, it's in human nature. This demand that he has for power, for domination and being served.

So when you go up a tower and you're in the observatory and looking down, you dominate the area. You dominate the people that are there. You satisfy consciously or unconsciously a need to dominate. A need to be powerful."

tower of Pisa footage

Hot shots HS596A+HS921H

Narrator One tower illustrates mankind's struggle for power over nature.

The Italians fought the forces of gravity to build the Leaning Tower of Pisa.

Pisa plaza slide wide pull and tight tilt

Archive Photos C498/23

The project began in the year 1173, with plans for a bell tower in Pisa's cathedral plaza.

Architects quickly discovered it was a mistake to build a tall, heavy structure on unstable ground.

As soon as construction started, the tower began to sink and lean.

Animated graphic.	Still, the architects pressed ahead, making structural adjustments as they built.
Lines and font on the graphic identify angle of lean	These changes have kept the tower's lean to five-and-a-half degrees, though the building continues to sink and is on the verge of falling over.
.	
Lines and font on graphic illustrate distance out of plumb.	Right now, an object dropped from the top would land 14-feet away from the base.
wide of tower--library of congress	Ironically, the Tower of Pisa is reputed to be the site of one of history's greatest discoveries about gravity.
Galileo portrait shot--library of congress--from book: the importance of Galileo	The Italian scientist Galileo theorized all objects fall to earth at an equal speed.

b/w footage of tower, then hands drop balls off and we pan down with them.

archive films AFP-93c/5:35:81

And in the year 1564, it is said, he used the tower to prove it.

Galileo dropped cannonballs of different weights. They fell at exactly the same rate.

repeat the experiment footage

Some historians question if this experiment actually did take place. But the story endures,

archive films tilt-up of tower

enhancing Pisa's reputation as a leaning legend.

big ben aerial

Hot Shots HS109H

Other towers have won a place in history because of their deep symbolic importance.

Such is the case for London's revered clock tower: Big Ben.

W.W.II bombing. Hearst t-1100/1:42:25

During trying times, Big Ben has been a beacon of strength.

Throughout the Nazi bombing blitz of World War Two, Big Ben survived with barely a scratch. Though much of London was reduced to rubble by relentless German raids, Big Ben towered above the debris of war...

dissolve from big ben to shot of Churchill touring bombed buildings. Hearst t-1104/1:15:05

...as proud a statement of British resolve as the indomitable Winston Churchill himself.

Churchill soundbite v.o. only

Hearst t-1104/1:15:03

Churchill: "If the British empire and its commonwealth last for a thousand years, men will still say this was their finest hour."

clock face of Big Ben/internal mechanism

Hearst New York t-1184/ 1:07:31

Narrator Big Ben kept nearly perfect time throughout the war.

	During one bombing raid, its face was damaged. Yet, the clock ticked steadily, losing just one-half.....of one second.
chimes go off.	
Eiffel color footage---Hot shots 639A tilt of base and wide shot	Perhaps no building symbolizes the dreams and aspirations of a nation better than the world's most famous tower, the Eiffel Tower in Paris.
Eiffel b/w footage--Hearst LA Library	Built in 1889 to commemorate the 100th anniversary of the French Revolution, the Eiffel is a masterpiece of geometry. Its 12-thousand parts rise to a height of nearly one thousand feet. It was the tallest building on earth for 40 years. The Eiffel embodies the human drive to reach ever upward.

With the dawn of the industrial age, the limits to man's reach knew no bounds.

soundbite Leduc

t-6005/18:59

Leduc: "From one tower to the other, the techniques developed, the engineering developed, the building materials developed, and you could build better and bigger towers."

Eiffel footage--Hearst LA Library

Narrator The Eiffel's graceful curves and airy lattice of iron, are an inspired blend of art and engineering.

It showed architects throughout the world that when it comes to building towers, anything is possible.

dip to black

Segment Chyron: Towering into the Space Age (:05)

rocket lifts off NASA	Narrator The 1960's marked a new era in mankind's reach for the heavens.
dissolve to low shot looking up at needle t-5990/4:16	And with the era of space exploration, came the world's first space-age tower. The Seattle "Space Needle" was the crowning achievement of America's 1962 World's Fair.
wide of needle	It was a building from outer space. A flying saucer--frozen in flight.
pan to building	The Space Needle story is a tale of American ingenuity and optimism--as well as a race against time.
Vanguard rocket explosion--NASA	When the needle was built, the United States was losing a bitter competition for supremacy in space.

Sputnik lift off

NASA

The Soviet Union had successfully launched the world's first satellite.

Earth from space--NASA

men listen to Sputnik signals

Hearst t-1179/1:04:19

"Sputnik" was circling the globe every 90 minutes, beaming radio signals to Russia.

soviet moon animation

t-1064/1:23:55

probe, moon pictures, moon map with Russian names popping on.

The Soviets were first to the moon, with a probe that took fuzzy pictures of ridges and craters so they could receive Russian names.

Nixon visits Kruschev

t-1117/2:16:55

The space race touched a deep nerve during Vice President Richard Nixon's historic "Mission to Moscow" in 1959.

The Soviet premier told Nixon that communism would triumph in every sphere of life.

Newsreel announcer:

(Kruschev taunts Nixon on camera, laughing, waving to him. We hear Kruschev speaking in Russian under the newsreel announcer)

Newsreel: "Kruschev--shrewd, aggressive, self-assured, taunted the Vice President by saying Russia would pass America in seven years and wave to us going by."

still of planners looking at "Century 21" fair poster

(museum of History & Industry 65.3598.22.3)

Narrator The Cold War dominated American life as planners in Seattle prepared for the World's Fair.

The theme for the exhibition would be life in the 21st century.

Still of planners with model of proposed fairgrounds

(Museum of History & Industry 65.3598.9.110)

What better way to project America's optimism about the future, than a showcase for U.S. technology.

still of planners pointing to model of Space Needle.

(Museum of History & Industry 65.3598.9.141)

And what better way to declare America's desire to win the space race, than to "capture" a U-F-O and balance it on a slender tripod 60 stories up.

1960's Seattle footage aerial Space Needle Story1:00:55	The choice of Seattle for the Fair raised some eyebrows.
dissolve to gold rush shots Hearst t-1084/1:23:56	For much of its history, Seattle was a place for people just passing through, on their way to the gold fields of Alaska.
Boeing footage	By the 1960's, Seattle was among the world's biggest manufacturers of high-tech jets.
Seattle shots--Space Needle Story students at university1:01:35 traffic shots 1:01:17 + 1:01:31	But many people felt the city hadn't truly grown-up.
Edwards soundbite (covered) t-5988/4::00:00 edit to 4:01:11 (on camera) Super: Jack Edwards/Space Needle Construction Worker	Edwards "At the time we built the Space Needle, Seattle was a quiet residential city. Nothing much going on. No major league sports. No cultural things like opera, or rock music, anything like that. And it was just a very quiet place. Anybody from New York or Los Angeles or San Francisco would say this was a dull place."

city aerial shots 1:01:06--space needle story	Narrator The World's Fair was a golden opportunity for international recognition.
downtown shot 1:01:20--space needle story	A chance for Seattle to join the top tier of American cities.
60's studio portrait of Wright--Howard Wright collection	To construct the Space Needle, the fair commission turned to one of the city's best-known builders: Howard S. Wright.
dissolve to Wright soundbite t-5985/6:40	Wright "They kept saying, you know, we need a magnet for this World's Fair. They were talking about a space-age 21st Century theme, and this tower, just became the--suddenly the focal point."
60's studio portrait of John Graham--graham collection	Narrator To design the tower, the commission had picked one of Seattle's foremost architects: John Graham Junior.
graham still of Northgate Mall aerial	Graham had a reputation for first-of-its-kind designs.

Graham still of people in Northgate Mall	America's first shopping mall...opened in 1950.
Graham slides inside restaurant and exterior of building.	The world's first rooftop revolving restaurant, atop an office complex in Hawaii.
still of Steinbreuck (from his son)	With a team of architects including professor Victor Steinbreuck (STINE-brook) from the University of Washington,
Graham Needle Slide #2	Graham shaped a vision for the world's first "Space Needle."
Graham Needle Slide #3, 4	The early designs looked nothing like the finished product.
PACCAR model photos from Bob Petersen	But the team finally captured the essence of an alien spaceship.
Wright soundbite t-5986/7:34	Wright "This saucer thing was so hot at that time, and so exciting that--that the saucer, you know, this elevated UFO, just became the unanimous and enthusiastic choice of everybody involved."

Graham artist's renderings of the restaurant and views from Graham firm

Narrator The Space Needle would be as futuristic as any structure in history. People would dine to unparalleled views. As an attraction for the fair, it would be irresistible.

Wright soundbite

t-5985/7:51

Wright "That blew people away, seeing this 500-foot tower just sitting there. I mean it was something that was thrilling and a lot of people said: "I don't think they're going to pull it off.' And we didn't know if we were going to pull it off (laughs)."

Shot of the World's Fair poster from PACCAR/ Bob Petersen

Narrator The problem was this: the World's Fair was set to open in April of 1962, just 18-months away. And the Space Needle was just a pretty picture. No blueprints. No financing. It would be an unprecedented architectural statement.

	If it could be built in time.
dip to black	
Commercial Bump (:05)	Modern Marvels will continue in a moment.

ACT TWO

Commercial bump (:05)

We now continue with Modern Marvels.

Segment Chyron: (:05)

The Seattle Space Race

KIRO-TV building/monorail construction

t-2489/5:03

Narrator With 18-months to go, construction was well underway for Seattle's space-age Fair.

b/w space needle model shot--graham collection

But the Space Needle was still just an architect's dream.

fair commission footage/KIRO @ 5:03

The fair commission could not secure government financing... and private investors were holding back.

Howard Wright t-5985/19:48 Super: Howard S. Wright/Space Needle General Contractor	Wright "We didn't know if the property would make money and we were spending four-and-a-half-million dollars. And in those days four-and-a-half million dollars is a lot of money. And we didn't know if people would pay a dollar a ride to come up there and look out and see those beautiful views."
Graham artists rendering of building #5	Narrator Meantime, structural engineers were confronting a different problem. To achieve the floating effect for the top-house, the needle's legs had to be toothpick thin.
Animated graphic/ step one is a line drawing of the Space Needle side-elevation.	With a restaurant, observation deck and kitchen 60-stories in the air, the design was top-heavy...weighing nearly six-thousand tons.
Arrows indicate wind, and the needle sways.	A stiff gust of wind could cause the building to sway dangerously back and forth.

add huge base to the drawing below ground, with font and arrows indicating center of gravity just above ground level.

To solve this problem, engineers designed a massive foundation, weighing as much as the legs and top combined. This brought the center-of-gravity to just a few feet above ground.

Steel in Space construction footage 1:01:37

Building the foundation began in April, 1961 when financing was finally secured. It was exactly one year and four days before the World's Fair was scheduled to open.

wide of foundation 1:00:30

The foundation was 30-feet deep, filled with 250-tons of reinforcing steel.

anchor bolts go in 1:01:20

anchor bolt wide 2:13

Huge anchor bolts were installed so the Needle could literally be bolted to the giant concrete base.

five shots on concrete pour begin at 1:54

Then came cement. 467 truckloads, poured non-stop for 12 straight hours. The largest continuous pour ever attempted in the Western U.S.

welding in PACCAR factory--steel in space

As the foundation took shape, work was underway on the girders that would form the Space Needle's legs.

The genius of building with steel, was the entire structure could be pre-fabricated at the Pacific Car and Foundry Company in suburban Seattle.

Three shifts worked round-the-clock, bending and welding, to create easy-to-assemble components.

truck hauls section 3:11	Part-by-part, the building was trucked to the fairgrounds for erection.
first parts go up 3:20 more welding in factory	As the first components went up, workers at the plant stayed one-step ahead. There was so little time to build the Needle, that nothing was left to chance.
coupling test 13:50	Every steel coupling was tested in the factory to be sure they'd fit perfectly in the field.
footage of needle going up	The precision craftsmanship paid off. The Needle rose with incredible speed. 120 feet per month.
men high up in building	It was one of the fastest construction jobs in history. And one of the most dangerous.

Jack Edwards soundbite t-5987/16:59 (covered) edit to 17:26 (on camera) Super: Jack Edwards/Space Needle Construction Worker	Edwards "It was a lot more dangerous because frequently we were working with nothing under us but air. The people that were working at one particular point for a long period of time, like the people putting in bolts, or the people welding, had safety belts and would tie off. But connectors had to constantly be moving, climbing around and dodging things. So it was a good idea not to be tied off to something because you might have to run like hell in a minute."
men joining sections	Narrator Connecting the huge leg sections was by far the riskiest assignment.
	Each piece was 90-feet long and weighed 47-tons.
welding	Workers crawled inside the framework to bolt and weld these pieces together.
man with survey scope 10:41	Lifting began early each morning, when winds were calmest.

wind storm footage: 25:07	On some days, though, nature did not cooperate.
Edwards soundbite t-5987/21:03	Edwards "We had a bad windstorm one day the top was going like this so severely that we had a piece of iron hanging on the hook that we could not control because of all this motion. So we had to just lower it down into the triangle that was formed by some of the members and it just banged around in there like a big dinner bell for several hours."
high shots of men way, way up...	Narrator Nothing like the Space Needle had ever been built. Its precarious footholds challenged even the most seasoned construction workers.
Howard Wright soundbite t-5986/8:20	Wright "Oh God, it scared the whits out of you. I'm used to going up in tall buildings and being in construction elevators, but, yeah, it scared the wits out of me."

TV reporter atop Space Needle with guys in hard hats	Newscaster: "Hello, test one, two, three, four. Testing. Oh! We're on!..."
Seattle center reel t-2409/ 00:26:35	
	Narrator As the Needle rose higher and higher, so did public enthusiasm.
	There were nightly updates on the TV news.
Graham company slide-- catered meal	There were publicity stunts, too. Like the catered meal to show how the restaurant floor would revolve on specially-designed tracks.
still of woman with Space Needle hairdo posing in front of the building.	And the woman who wove a Space Needle into her hair.
KIRO reel @ 8:50	
iron workers group shot--- PACCAR	Even the steely-nerved iron workers took a break to pose for photographers.

Edwards soundbite

t-5987/24:23

edit to 24:42 (cover with still of Edwards high up on the building posing with a small cluster of ironworkers.) PACCAR photo

Howard Wright soundbite

t-5986/2:13

Edwards: "I think that most us had a sense that this was going to be a symbol of the city, or an important symbol of some sort.
Probably most of us would say if asked then: 'Oh, it's just a job." But I don't think it was. I think that this was a special job for most of us."

Wright "I want to tell you it was spectacular. We didn't have a 60-story building in Seattle and no one knew how high in the air that was. Everyone in the city was looking and saying my God, I wonder where it's gonna all end up."

Helicopter aerial of partially completed building 22:04--steel in space

top house work

Narrator Folks found out in just six months. The legs were complete and men were already working on the top.

Work here went just as quickly. Everything was pre-fabricated for speedy assembly.

men putting U.S. flag on the beacon at ground level and it starts to rise on crane. 23:44	Just nine months after groundbreaking, the Space needle was nearing completion. The final piece would be the beacon to warn airplanes, 605 feet up.
worker congratulation ceremony 25:46	Remarkably, despite the danger, there were no serious injuries or deaths.
shot of completed building	The building was on-time, on-budget, and out-of-this-world.
Howard Wright soundbite t-5986/3:31 night elevator footage--steel in space	Wright "As we stepped out there and looked around. I want to tell you, you gotta feeling of exuberance and of achievement and to actually stand up there and look out upon this beautiful city with all this twinkling lights below was just something that I'd never experienced in my life."
Newsreel music/announcer and title: "Camera on the World. Seattle: Come to the Fair." Hearst New York t-1184/8:45	

monorail shots...	Newsreel: "For hundreds of thousands of visitors, this is how it will begin. An elevated ride on a one-track train. A Monorail, it is called. And the passengers who ride it are headed out of this world, to a distant time and a future century."
monorail passes space needle Steel in Space 1:00:13	Narrator The Seattle exposition was America's first World's Fair in 22 years.
futuristic car footage 9:40-- Hearst newsreel	And it was a fantastic glimpse at the "world of tomorrow."
televisions footage 10:37-- Hearst newsreel	Here were the newest television sets...
rockets footage 10:33 -- Hearst newsreel	...satellites and rockets...
Mercury capsule still (NASA # 62-Exhibits-4)	...and a replica of America's first spacecraft.
dollar bill changer Seattle Center Reel @ 34:41	People were even thrilled by a new machine that made change for a dollar bill.
wide of needle/flags 11:13 sailors look at it 11:42	The biggest attraction by far was the Needle.

long line 12:20	20-thousand people lined-up at the base every day to pay the one-dollar entry fee.
people enter elevator elevators go up 11:28	The 43-second ride in the "space-capsule" elevator was an adventure nobody wanted to miss.
Space Needle Story tracking shot 9:17	Once on top, the panorama was simply thrilling.
Elevator doors open, kitchy 60's music and romantic couple get seated at the restaurant Space Needle Story 11:35	The most novel part of the Space Needle experience was the revolving restaurant, offering a romantic atmosphere high above the city.
waitress serves dinner--space needle story	
pov shot of vista--space needle story	The floor revolves 360-degrees in an hour.
people seated at table--Seattle center reel t-2409	And the 90-ton turntable is so finely balanced, it takes only a one-horsepower motor to make the world go round.

man balances cigarette Seattle Center reel 38:38	The ride is so smooth, you can balance a cigarette on its end.
inside the kitchen--Seattle center reel	Reporters <u>were</u> quick to spot one potential problem.
TV Reporter interview Seattle Center Reel @ 36:01	<u>News Interview</u> "Q: I've been wondering. With a stationary kitchen and several hundred rotating guests, how in the world does a waitress find her customers? A: Well it does present some problems. But we've worked in a clock-like device at each door leading from the kitchen which indicates just exactly where what portion of the rotating platform is at that time."
edit to 36:13 cover with shot of the device--Seattle center reel @ 33:15	
	<u>Narrator</u> The Seattle Space Needle was an instant hit.
post office/stamp Hearst NY t-1184/11:00	It became the most-recognizable symbol of the fair. The post office even issued a special-edition stamp.
needle/monorail Steel in Space 1:00:08	The Needle is a triumph that reflects the civic spirit of a proud community.

saucer 0:59:58	It's colorful saucer was a bold addition to the Seattle skyline.
tilt up	The Needle brought another distinction to Seattle: it was the tallest building in the American West.
Toronto--spin to reveal CN tower our b-roll	However, the enthusiasm it sparked would soon prompt other cities to build even taller...
dissolve to lakefront with CN tower--20th anniv. reel	...including one tower that would become the tallest building on earth.
fade to black	
commercial Bump (:05)	Modern Marvels will continue in a moment.

ACT THREE

Commercial Bump (:05)

We now continue with Modern Marvels.

Segment Chyron (:05)

Tall, taller, tallest...

Aerials of Empire State Building t-1001

Narrator May 1st, 1931. Opening day for the newest addition to the newest addition to the New York skyline.

Newsreel announcer--- opening of building

Archive Films AFP-73ap

edit in newsreel

Newsreel: "The tallest building in the world is open for the first time. The Empire State building, constructed at a cost of 700-dollars after 14 months of work.

It is the children who have been selected to cut the ribbons that will mark the official opening of the 102-story office building.

topping off with U.S. flag t-2011/29:14	Narrator In the 1930's, as the "skyscraper" became a symbol of power and might, New York City
tilt-up of building t-2011/2:09:28	proudly became home to the world's tallest building.
Costume party t-4133/1:04:10	It created quite a sensation.
stills of: John Hancock/Archive photos World Trade/Archive Photos Sears Tower/Archive Photos	The scyscraper craze intensified in the 1970's when several American buildings laid claim to the title: "World's Tallest."
C-N aerial reveals tower--to the top	However, Canada captured the top prize.
CN aerial	The C-N Tower in Toronto, built in 1976 by the C-N--the Canadian National Railroad--is still the tallest building on earth.
tilt-up of tower from side b-roll	At 1,815 feet, the CN Tower is 181 stories high.

old sepia Toronto footage houseboats, people canoeing, children and a ferry, water slide ride 15:55--to the top	The C-N Tower was part of an effort to restore Toronto's lakefront to the people.
	For generations, the shores of Lake Ontario had been a place to escape the dog-days of summer.
industrial waterfront 3:07+3:19	By the 1960's, though, the coastline was a working waterfront of harbors and industry.
high shot of rail yards 5:24	And the sprawling switch yards
trains 3:54 + 4:02	of the C-N railroad were a barrier that separated downtown from the lake.
shots of metro center models from master plan proposal book...there are several models for great motion control	In 1968, C-N unveiled a plan to transform the rail yards into a showcase of urban renewal.
model of old triple-mast design	The project included a towering television antenna.

high pan of lakefront @ 6:09--to the top

The huge development was intended to revitalize the city's lakefront.

shots of t-v control rooms @19:00--to the top

And the antenna would improve TV reception. By 1968, the city's high-rise office buildings were blocking reception for thousands of homes.

Tevlin soundbite t-6003/00:54

Tevlin "Gee, back when I was a kid here in Toronto, watching a hockey game on Saturday nights, you couldn't tell how many players were on the ice sometimes because of the ghosts and those kinds of images. So I think everybody here was very grateful when TV reception took a big jump."

super: John Tevlin/CN Tower President

70's shot of Ned Baldwin

(Baldwin collection)

Narrator Amazingly, the architect picked for the job had never designed a tower in his life.

slide of ship terminal--Baldwin collection

slide of Harvard--Rosenbloom collection

Ned Baldwin had built a ship terminal in Miami...and Harvard University's School of Design. But nothing of notable height.

Baldwin soundbite t-6003/27:24

Super: Ned Baldwin/CN Tower Architect

Baldwin "We were all naive. I mean, I was a 36-year-old kid and I never built anything more than six stories high and when I sketched the original concepts of what we were going to do, I just couldn't believe it. The amount to learn, was astronomical."

triple-masted model--metro center book

Narrator Baldwin's first decision was to scrap the three-masted concept which early planners envisioned. It would cost too much.

shot of Baldwin in an office, 1976, with the completed CN tower visible in the window.

motion control goes past Baldwin to the finished tower.

Baldwin collection

Instead, he proposed a sweeping spire, with a seven-story ring--for broadcast equipment, a restaurant, and observation decks.

Baldwin soundbite t-6005/2:46

Baldwin "My preoccupation from day one, from a design standpoint, was that the tower be a graceful addition to the skyline. That it looked good in silhouette. It had to look good in silhouette--that's where most people experience it. And that's where it was going to be a symbol of Toronto. I knew it was going to be a symbol of Toronto. How could it not be?"

McMillan head shot--CP wire photocollection

Narrator The decision to build came from C-N President Norman McMillan. To jump-start construction, he essentially wrote a blank check for 25-million dollars.

excavation--to the top

Much of the building wasn't even designed when excavation began in 1973.

Baldwin soundbite

t-6003/28:15

Photos of McMillan--visualarity collection

Baldwin "It is a totally reckless and outrageous thing. It shows the strength of McMillan that he was able to persuade the board to adopt the decision. It's an amazing decision because once you have kicked this thing off, and got the ball rolling and shoveling the ground, there's no stopping. It would be a total embarrassment to stop. You can't stop."

shot of the model--metro Centre book

Narrator What McMillan may have foreseen was the coming demise of C-N's master plan for the rail yards.

shots of Toronto street traffic--b-roll

City officials complained it would create too much traffic.

construction footage--to the top

But by then, the Tower was well on its way.

The 15-hundred foot concrete portion was built like a hollow chimney, by an ingenious device called a "slip-form."

	This wooden mold was constantly on the move, inching upward at the rate of 22 feet per day.
cement shots	Workmen continuously fed cement in to the form, bucket by bucket, day and night, for months.
time-lapse	As the slip-form pushed up day-by-day, the C-N Tower raced toward the sky.
Tevlin Soundbite t-6003/2:58 people looking up 12:57 edit to 3:40 (on camera)	Tevlin "The whole city here was electrified by it, and people watched in great interest daily. It gave us a real sense, perhaps for the first time, that Toronto would and could become a world-class city and that we should be proud of ourselves and just on that basis."
aerial of the building	Narrator The C-N Tower did not set out to become the world's tallest building.

designers talking	But designers continued to work while construction was underway and discovered the record was within reach.
Baldwin t-6004/19:11	Baldwin "The tourist attraction function became more set in people's minds, you know. We are building a tourist attraction first, and a broadcast antenna second. And everybody sort of woke up to the fact that by adding a few feet, we would be the tallest in the world."
concrete work	Narrator Workers added 40 feet of cement, and on February 22, 1974, the concrete crew "toppedout."
men in hard hats pop open Champaign @ 13:58	Work was far from finished, however.

workers on top in the wind.	Because of it's great height, the CN Tower was bombarded by Canada's notorious winter winds--causing the building to wobble and bend.
Animated Graphic, side shot of the C-N tower, arrows indicate wind, building bends and cracks form on the concrete.	This could be disastrous for a concrete structure, because flexing causes concrete to crack.
graphic continues, lose the flex and crack and add reinforcing cables.	Engineers anticipated this problem, and designed a sophisticated network of steel reinforcing cables. When the cables were tightened, it would stiffen the building. A wind blast of 200-miles-per-hour would move the concrete top just an inch-and-a-half.
threading wires @ 8:33	The cables were carefully threaded throughout the tower. 80-miles of cable in all.

time lapse of brackets going up @16:40	Meantime, the 400-ton support for the "Sky Pod" was slowly lifted by hydraulic jacks.
pod construction	The pod became the most expensive part of the job, because everything had to come up by crane. As the pod took shape, more and more features were added--shooting the 25-million dollar price-tag up to 63-million.
men way up high @ 22:37	By far, the most acrobatic work was yet to come. Installation of the 300 foot antenna. A giant Sikorski helicopter, nicknamed Olga, lifted the steel sections one by one. Daredevil workers then joined the parts together as the helicopter hovered overhead.

chopper and CN logos 24:37	The final section was ready on April 2, 1975.
school kids graffiti the last piece. 24:09	This piece of Toronto history was given a special sendoff.
attaching top piece	The tip was the most difficult section to attach. Pilots were aiming for a target just a few feet wide.
incredible hit as the final piece locks into place 25:26	After several attempts: success.
man celebrates 25:54	
man climbs up and waves 26:02	The CN Tower set a record that has lasted more than 20 years. The tallest free-standing structure ever built.
huge Canadian flag flying from top of tower 26:17	Like a flag atop Mt. Everest, the Canadian Maple Leaf flew proudly this day above the streets of Toronto.

slow dissolve to 1996 crowd outside tower t-6006/10:21	The C-N Tower has become one of Toronto's top tourist attractions.
elevator shot going up t-6002/14:26	Elevators whisk to the top at the rate of 20-feet per second, the same speed a jet aircraft gains altitude after take-off.
look out and pan to people looking out. t-6006/21:34	The view from the sky pod is spellbinding.
Tevlin t-6003/1:33	Tevlin "People just love to look out the window--from as young as 18-months old, little babies press their faces against the window and just stare in awe at being able to get as high in the sky as they can."
glass floor wide shot t-6006/15:13	Narrator The Tower also offers a different kind of view--from a unique glass floor.
camera zooms down to ground t-6006/18:18	It's 114 stories from here to the ground.

crane twist shot of people on floor from above--CN 20th anniv. tape @ t-3:17	The experience on the glass floor is like walking on air.
tilt up exterior from one level to the next t-6001/18:18	The Tower offers an even loftier perch at a second level another 33 floors up.
tracking shot inside space deck looking out t-6006/24:56	The "Space Deck" is the world's highest public observation gallery.
pan of people in restaurant 20th anniv. reel	Every year, one-point-seven million visitors come to the CN Tower.
space deck portal shot t-6006/26:40	People love to peer at the world from on high.
virtual reality ride. CN 20th anniv. reel at 3:37	Officials have been adding attractions to the tower, including elaborate virtual-reality rides, to draw people back again-and-again.

Tevlin t-6003/9:43

people look at eco-deck globe

t-6006/22:37

globe and people

Tevlin "We have set about in the last four years to make investments to deliver more things over the base of the tower and the top of the tower to make a visit worthwhile rather than just 'been there, done that' kind of thing with a tourist attraction."

more virtual entertainment--
CN 20th anniv. reel

aerials of Stratosphere--
publicity reel

Narrator High-flying entertainment has become a driving force behind many of the world's tall towers.

And one facility in particular has taken the concept to new heights.

The world's newest tower offers unbelievable thrills.

Las Vegas has launched tall towers into the Stratosphere.

dip to black

Commercial Bump (:05)

Modern Marvels will continue in a moment

ACT FOUR

Commercial Bump (:05)

We now continue with Modern Marvels.

Segment Chyron: (:05)

A Spectacle in the Sky

King's Island roller coasters

Narrator America's insatiable appetite for entertainment has fueled an explosion of amusement centers and theme parks.

And with every passing year, there's a new attraction striving to create the ultimate in family fun.

dissolve to high of strip at night Hearst reel 7000 series

This focus on the family has even transformed America's gambling capital: Las Vegas.

dissolve to old part of the strip

t-7018/7019

Years ago, this was a town known for its neon glitz.

But things began to change around 1990.

strip video t-7019

Excaliber 6:17:40

Treasure Isl. 6:11:49

Mirage erupts 6:15:04

Now, the famed Las Vegas strip is a place of magic castles...pirate ships...and a waterfall that erupts into a fiery volcano.

Stupak head shot--Jim Decker collection

Casino owner Bob Stupak knew that he too, would have to build an attraction to keep his customers coming.

Stupack was a high-stakes Las Vegas legend, famous for winning a million-dollar bet on the Superbowl.

slide of artists rendering for Stratosphere--
stratosphere slide

But his idea for a roadside attraction would become his biggest gamble.

A tower like nothing that had ever been built before.

Gary Nelson soundbite

t-5004/12:40

Super: Gary Nelson/
Stratosphere Tower
Architect

Nelson "Because it's Las Vegas, it's either gonna be brighter, it's gonna be louder, it's gonna be higher, it's gonna be more dramatic, it's gonna be practically any adjective that you can apply in the sense of an attraction and how it's gonna react to people. It has to be a draw."

slide of pod--stratosphere slide

architect's multi-colored cross-section--Nelson collection

Narrator The "Stratosphere" would not become the world's tallest tower, but its upper pod would become the world's biggest.

12-stories of banquet rooms, a cocktail bar and observation platforms. 100-thousand square feet of floor-space, in a shell shaped like a precious gem.

Scott Dawes soundbite

t-5995/24:28

Super: Scott Dawes/

Stratosphere Construction Director

aerials of finished tower with sun glinting on top--banker's trust.

wide aerials of tower at night--publicity reel

Dawes "I think the tower really represents a diamond in the desert. The way the legs come apart at the 720-foot level and kind of transform into a jeweler's setting, and then with all the glass and the sparkling lights that we have on it sitting in that jeweler's setting, kind of form the diamond in my eyes."

exterior of tower from below with palms t-5991/25:46

hand held walking in empty wedding chapel filled with chairs

t-5992/15:54

people entering at escalators

t-5992/18:25

Narrator Bob Stupack tried to squeeze as many attractions into the tower as possible. An entire floor is dedicated to wedding chapels, where couples can literally create a match made in heaven. To shorten the waiting time for visitors, special double-decker elevators were built.

artist's drawing of elevators--nelson collection

The elevator is actually two compartments stacked inside the same shaft.

TV monitor t-5952/23:40

Monitors inside the lower car help the operator know what's happening in the compartment above.

Elevator floor indicator

stratosphere artist's rendering of the new design

(nelson collection)

At one point during construction, Bob Stupack proposed an 800-foot addition--so the Stratosphere would surpass Toronto's C-N Tower by 10 feet.

The plan was scrapped when airport officials complained it would be a hazard for planes. But the setback didn't stop Stupack's flood of ideas.

Nelson soundbite

t-5004/16:40

Nelson "He was always one step--or maybe even ten steps, God knows how many, you can't count them--but he was always ahead of you in the idea department. And for my position, as an architectural designer was to try to graphically relate to what his ideas were. And so it just meant that you had to work extra hard and keep it going because there was always so many ideas kicking out there."

1990's still portrait of Baldwin

(Baldwin collection)

blueprints for the ride

(Gary nelson collection)

Narrator The Stratosphere's biggest innovation came from Toronto's Ned Baldwin, who flew to Las Vegas as a consultant. He envisioned a dramatic carnival ride. Swirling chairs that would swing outward as they spun.

Baldwin soundbite

t-6005/9:16

Super: Ned Baldwin/
Stratosphere Consultant

Baldwin "Well I thought a ride would be neat on top of the thing. You have to have some function for this spike on the top, and so I just looked at it and I thought there are theme park rides that look very much like that spike we want, and so why not put one up there?"

blueprints or ride--nelson collection

Narrator Baldwin's spinning-chair concept turned out to be impractical, but his idea for a high-flying ride took off.

big shot blasts off-b-roll

lots of big shot footage

The Stratosphere is home to the "Big Shot," which uses compressed air to shoot 16 passengers into space as quick as a rocket.

pov shot--camera mounted on ride looking down

It takes two-and-a-half seconds to travel 160 feet straight up.

t-2412/2:51 "rough cuts of rides" reel

For a moment, as the Big Shot slows near its summit, riders are actually weightless.

Then, they're shot back toward earth for a bungee-style bounce.

another blastoff	Riders experience 4-g's--four times the force of gravity--as they're propelled toward the stars.
pov of coaster on tracks t-2412/3:24--stratosphere "rough cut of rides" reel	The Stratosphere's second source for thrills is the "High Roller." The world's highest roller coaster whips around the tower on 865-feet of track.
shots aboard the coaster @4:17 + 5:21	It's not as fast as coasters on the ground, but the view leaves people breathless.
street level, tilt up to tower. t-5991/13:32	The Stratosphere is by far the tallest building in Las Vegas...reaching upward 1,149 feet.

Bob Stupack was unable to finish the building alone. Grand Casinos took over to complete the tower and renovate the hotel at its base.

Stupak statue--holding dice

t-5992/19:32

But Stupack's statue stands at the entrance--in a characteristic Las Vegas pose.

aerials--stratosphere publicity reel

Although this did not become the world's tallest building, it will be difficult for others to top rides like these.

The Stratosphere underscores how each of the world's great towers has a distinct personality.

They're reflections of the people who built them, and the eras that gave them birth.

space needle with boat--b-roll reels	And as each tower ages, it can grow to become an integral part of its community.
fireworks--KOMO-TV Seattle	Throughout the world, they've become the sites of great
CN hang glider--20th anniv reel	celebration, and death-defying stunts.
	A lot has happened at the Space Needle, C-N Tower and Stratosphere since they were
dip to black.	completed.
commercial bump (:05)	Modern Marvels will continue in a moment.

ACT FIVE

commercial bump (:05)

We now return to Modern Marvels

Segment chyron (:05)

Towering Triumphs

beauty shot of C-N-Tower, tilt up from it's reflection in lake Ontario

Narrator There's an old saying that architecture is like "frozen music"...a symphony of vision, perseverance, and technological achievement

pull to Space needle from snow-capped Mt. Rainier

t-5990/11:57 or 13:33

The world's tall towers are certainly that, but their history has been anything but frozen in time.

1962 Space Needle shot with monorail--Steel in Space 1:00:13

The Space Needle marked a turning point for Seattle.

view of city from needle platform, 1962. Steel in Space @ 26:37	This quiet, low-rise city of 1962 has blossomed into a bustling, modern metropolis.
same view of city today from platform t-5989/15:09	
needle from below--b-roll	The Needle's original colors have given way to a more-modern hue.
queen-anne hill shot of needle and downtown t-5990/12:19	But the building still stands-out amid the city's profile of glass and steel.
fireworks go off KOMO-TV	And on special occasions, the needle is impossible to miss.
Elvis in basement still (Seattle Hist/Ind. museum)	Perhaps the biggest sensation at the Needle came in its very first year, when Elvis Presley came to shoot a movie.
Elvis Sings--Turner entertainment	Elvis falls in love during his visit to Seattle in the film: "It Happened at the World's Fair."

C-N tower tight, tilts down to reveal construction steam shovels working t-6002/13:52	In Toronto, the urban renewal that the C-N tower was intended to create has slowly taken root. The lakefront rail yards are giving-way to convention facilities and public parks.
Skydome construction Skydome time-lapse of roof closing.	A fellow modern marvel has been built at the foot of the C-N Tower. A massive retractable-roof stadium, called the "Sky Dome."
CN tower from base--b-roll	Because of it's great height, the C-N tower has been a magnet for dare-devils.
climber 1:44 20th anniv. reel pogo-jumper 2:07 20th anniv. reel	People have climbed the outside.. ...and pogo-jumped its 2,570 steps.
stunt jump 1:43	To get down, a television stunt-man tried the free-fall approach.

Stratosphere tilt up b-roll	At the Stratosphere, officials are constantly looking for novel ways to increase the towers excitement.
king Kong illustration on side of tower. grand opening reel 1:25:40	And in characteristic Las Vegas fashion, the ideas are larger-than life.
Wirshing news-style soundbite at tower entrance David Wirshing/Stratosphere President grand-opening reel	Wirshing "King Kong will be about a 70-foot gorilla that will actually be a ride that about 40-people can get into and King Kong will then ascend the tower and as he climbs up growling and snarling to his friends on the ground."
cavalcade of tower stills from world federation	Narrator The excitement that tall towers create, continues to drive architects and builders throughout the world. Barcelona, Moscow, Montreal. Sydney, Seoul, Beijing, Berlin.

Towers grace the skyline in many of the world's largest cities.

slow pan of line-art drawing of proposed towers

Baldwin collection

Architects are planning new ones every day.

Leduc soundbite t-6005/23:44

Super: Guy Leduc/World Federation of Great Towers

Leduc "Human Nature will be in a hundred years what it is today and what it was centuries ago. So people will want to reach new heights."

aerial of CN tower--to the top

aerial of stratosphere--publicity reel

Narrator The construction of towers will always require courageous visionaries who are willing to build in the face of uncertainty.

But the finished product can stir such deep emotions there will always be people willing to take the chance.

sunset slide--world fed of towers.	As the poet Robert Browning wrote a century ago: "man's reach <u>should</u> exceed his grasp, or what's a heaven for?"
(dip to black)	
closing credits (:35)	