

The Sustainability of the Controlled Demolition Hypothesis for the Destruction of the Twin Towers

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April 24, 2007

Abstract: In the past year there has been an exponential growth in the number of people questioning the explanations we have been given, by official U.S. government bodies, concerning the collapses of the three WTC buildings in NYC on 9/11/2001. It is probably safe to say that much of this growth can be attributed to the Internet publishing of a paper by Physics Professor Steven Jones in November 2005, which put forth the hypothesis that the Twin Towers and WTC7 were actually demolished with pre-positioned cutter charges.³ This hypothesis is in tension with the present government explanation of aircraft impact damage and/or fires being the causes for the complete collapses of the buildings. My intent here is to show that any honest and objective look at all of the theories, for the destruction of the twin towers, including the present government explanation, will cause one to realize that only the controlled demolition hypothesis is sustainable. I believe an honest look at the evidence will convince anyone that the controlled demolition hypothesis provides the best explanation for the complete collapses of the towers, as well as the damage to the buildings and objects surrounding them. The remarkable collapse of WTC7 seems to have had a separate cause in its own controlled demolition. Video of the collapse of WTC7 can be viewed quickly at <http://www.journalof911studies.com/beginners.html> before continuing, as it plays a part in understanding what probably occurred in NYC on Sept. 11, 2001.

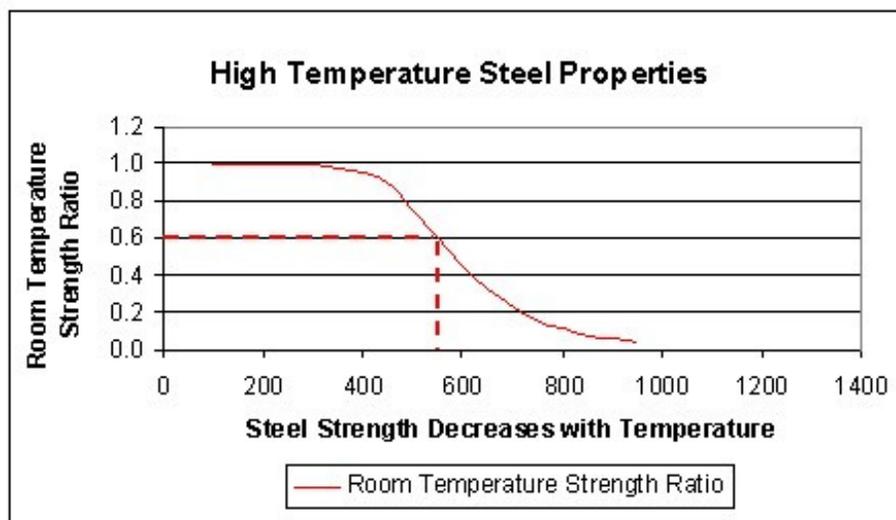
It can be shown that due to the design and volume of the towers, the aircraft impacts and fires could not have been enough to cause them to collapse. The link below will provide an idea of how the towers were constructed, with photos seen in articles from the Engineering News Record at the time they were built.

<http://911research.wtc7.net/mirrors/guardian2/wtc/eng-news-record.htm>

The following points then need to be understood to follow this line of reasoning:

- The twin towers were designed to handle multiple loads: their own weight (dead loads), live loads (due to people, furnishings, and equipment), wind loads, ice loads, and seismic loads. The dead and live loads are normal gravity loads. The central core was designed to handle 60% of the normal gravity loads of the building and the perimeter beams to take the remaining 40% of the normal gravity loads, and all of the wind, ice, and seismic loads.¹ While wind loads are usually quite low, tall structures need to be designed to handle extremes. The towers were designed to handle the overturning moment and shear stresses generated by 100 mph winds acting on their considerable surface area and height.² Although heavy icing would be rare, the towers would still need to withstand the extra weight, which glaze ice would bring at 56 lbs./ft³, not insignificant on a structure with approximately 1.3 million square feet of outside surface area. Seismic loads can generate horizontal accelerations, which would cause high overturn moments, similar to those caused by high wind loads. Due to the need to withstand rare high wind, ice, and seismic loads, the tower's perimeter beams had a minimum factor of safety of 5.00, when considering normal gravity loads only. The central cores were designed with the more standard factor of safety of 1.67, since they took normal gravity loads only. Prior to the attacks, on a low wind, warm sunny day, with no earthquakes, such as Sept. 11, 2001, the beams in each tower would have had no more than 33% of their total load sustaining capacity used.

- Upon impact with the buildings, the wings, tail, and engine fan assemblies of the aircraft would have certainly been shredded prior to completely entering the buildings. This would leave only the fuselage, center portions of the engines, and the landing gear, with greatly diminished energies, to cause damage to the central core columns.^{10,11} The central cores were comprised of 47 large steel columns interconnected at every floor in a three-dimensional matrix, encompassing a plan area of 137 feet x 87 feet. The fuselages of both Boeing 767-200ER aircraft, which hit the towers, were 16.5 feet in diameter.⁴ The spacing of the central core columns ranged from approximately 11 to 21 feet apart,¹¹ so by volume alone there would be a limited number of columns which the remains of the fuselage, could contact. The aircraft engines were approximately 9 feet in diameter, much of which was the fragile fan assemblies, which would have been decimated going through the outer wall. Only the much smaller diameter turbojet portions of the engines and their rigid shafts would have had much ability to cause additional damage to the central core columns. The damage to the perimeter columns is visible in photographs. It is known that no more than 20% of the perimeter columns were affected in either tower. It is the damage to the core columns, which was not visible, that needs to be scrutinized. Analyses can be done to show what the remaining energies and volumetric probabilities would be for impact damage to occur to the core columns. NIST did analyses of this type and in their base cases, for both towers, less than 20% of the central core columns were severed or heavily damaged.
- The towers were designed as virtual structural pyramids, with the wall thickness of the beams thicker at the bottom and thinning with greater vertical height location. The bottom beams were thicker due to heavier loading, and the top beams thinner due to lighter loading. Since the tower beams varied in wall thickness, depending on their vertical location, it could be ascertained which beams were in the aircraft impact and fire affected areas. With it being important to know the actual temperatures that the beams experienced, in the fire affected areas, NIST used the known microstructure characteristic of spheroidization to determine those temperatures.⁸ Temperature will change the spheroidization of the steel microstructure in a linear, predictable, and permanent way. In their testing of the beams it was found that only a few percent of them ever experienced temperatures above 250° C (482° F) and none above 600° C (1,112° F). None of the central core columns tested showed they experienced temperatures above 250° C (482° F). The chart below, which shows the proportional loss of strength in steel, as it's temperature is increased, is from Corus Construction, with temperatures in degrees C.



As the chart shows, steel does not lose any of its strength until its temperature rises above 350° C (662° F), and only loses half of it at 600° C (1,112° F). So the evidence shows that no more than a few percent of the beams lost any of their strength due to the fires. While NIST includes this data in their report it is

essentially ignored and an argument attempted that higher steel temperatures existed, even though there is no physical evidence for it. The amount of jet fuel, which actually entered the towers, could not have been any more than half of the 10,000 gallons on board each aircraft. Spreading the remaining 5,000 gallons, in each case, over an acre (one floor of one tower) results in a jet fuel film thickness of .015 inch. This film would have burned up quickly, leaving nothing more than office materials to fuel the fires. The fact that high temperature effects were not found in the microstructure of the steel should not be surprising.

To summarize, it can only be shown that approximately 20% of the beams, in the cases of both towers, had their strength significantly affected by the aircraft impacts and fire. That leaves approximately 80% of the beams, in both cases, with their full strength intact. Grid like structures, such as the twin towers, redistribute loads when individual beams are damaged. This occurs in a bridge like fashion, since the vertical beams are interconnected horizontally at every floor. In the reference section of this article, I show that if 20% of the central core and perimeter columns were totally incapacitated, 9 or 10 central core and 48 perimeter, the perimeter would have maintained a factor of safety of 4.00, and the central core a factor of safety of 1.34. The remaining factor of safety of 1.34 for the central core is not insignificant. What it means is that for the yield point of the steel to even be reached, and collapse to be incipient, an additional 20% of the core strength needed to be lost due to fire. In terms of the number of beams needing to be affected, an additional 19 out of the remaining 38 core columns would need to reach 600° C (1112° F) to lose half of their strength. This is not a likely scenario and there is no physical evidence for it, as shown above in the discussion of the beam temperature testing data gathered by NIST. It would appear that the initiation of vertical collapse, due to fire weakening and gravity, was improbable.

So how then did the towers collapse?

The answer is obviously that another mechanism must have caused the collapses.

The fact that the twin towers both collapsed due to a cause, which must obey the laws of physics, cannot be disputed. It is that cause which some claim is in dispute at the moment. The alternative collapse causation theories, which have been proposed to counter the insufficient U.S. government theory, are

1. A directed energy weapon was used to destroy the towers.
2. Mini-nukes were used to destroy the towers.
3. The towers were destroyed via controlled demolition with the use of incendiaries and explosives.

The first and second proposed causes have been shown not to be serious hypotheses, by scientifically based papers. These papers show that these two theories have no basis. These papers also explain away any perceived anomalies, and provide reasons for the observations, which are more natural and consistent with the controlled demolition hypothesis for the destruction of the towers. To date these papers have not been challenged in writing, or shown to be incorrect in any way, by those who have supported these first two theories. These papers can be found at <http://www.Journalof911Studies.com>

The physical evidence for the third theory, controlled demolition, is due to the characteristics of the twin tower collapses. In one of his many writings on the subject of Sept. 11, 2001, Dr. David Ray Griffin lists the eleven characteristics of controlled demolition, which both of the towers exhibited in their respective collapses.

Sudden Onset
Straight Down
Almost Free-Fall Speed
Total Collapse

Dust Clouds
Horizontal Ejections
Sounds Produced by Explosions
Pulverization of Concrete and Other Materials

Molten Steel
Sliced Steel
Demolition Rings

Dr. Griffin's full article 'The Destruction of the World Trade Center: Why the Official Account Cannot Be True' can be found at <http://911review.com/articles/griffin/nyc1.html>

Any close viewing of video, of the collapses of the towers, will physically show most of the characteristics of controlled demolition listed above. Witnesses, photos, and taped audio from that day, have attested to, molten metal, demolition rings, sliced steel, and sounds produced by explosions.

It was the revelation of the presence of molten metal, in the rubble of all three buildings which collapsed in NYC on Sept. 11, 2001, which caused Dr. Jones in 2005 to begin to question whether the present U.S. government explanation for the collapses was sufficient. It is provable that the molten metal in the rubble was not aluminum and that diffuse flame fires cannot achieve temperatures sufficient to melt steel. Steel can only be melted in the controlled environment of a blast furnace or with the use of incendiaries.

There is very credible witness testimony of seeing, hearing, and feeling explosions, in many areas of the towers, both before and during the collapses. This testimony can be found in the Oral Histories of the 503 NYC firefighters and emergency personnel, who were on the scene that day and survived. Their testimony was taken and transcribed in late 2001 and early 2002 by order of the NYC fire commissioner. However, afterward the mayor of NYC repeatedly refused to release these testimonies to the public. They were only released by a court order from the New York State Court of Appeals in August of 2005, after earlier court challenges had failed to gain their release. There was no testing done for explosive residue on the beams during either the NIST or FEMA investigations of the building collapses. An article by Dr. David Ray Griffin discussing and quoting these Oral Histories can be found at

<http://www.911truth.org/article.php?story=20060118104223192>

It is also worth mentioning the fact that the buildings were designed to take an impact by a fully loaded Boeing 707 at 334,000 lbs. and moving at it's cruise speed of 607 mph. While the NIST report mentions this, it claims that documentation supporting this contention could not be found. However, the late John Skilling, who was the head structural engineer on the tower design project, is quoted in 1993 as saying that a white paper was done on this design feature. The towers were actually hit with Boeing 767-200ER aircraft, which had only 10,000 gallons of fuel on board for their trips to the West Coast of the U.S. from Boston. While the 767-200ER is rated at a 395,000 lb. max takeoff weight, this is for a full fuel load of 23,980 gallons, which would be used for a longer flight as the aircraft had a 7,700 mile range⁴. Subtracting the weight of 14,000 gallons (at 6.825 lbs./gallon) from the max takeoff weight gives an aircraft weighing approximately 300,000 lbs. The 767-200ER had a cruise speed of 530 mph (there are various estimates by radar, and other timing methods, which put the actual speeds of the aircraft at impact at lower values). However, even using the higher 530 mph value and the equation

$$K = \frac{1}{2}mv^2$$

where K = kinetic energy

m = mass

v = velocity

it is found that the designed for 707 impact would have contained at least 1.4 times or 40% more kinetic energy than what the 767-200ER aircraft could have provided. The buildings obviously survived the impacts and thus the present theory we are given is that fire caused the collapses. The fact that fires have never in history caused the complete vertical collapse of a steel framed structure, let alone any built as

robustly as the twin towers, has been amply documented. Serious doubt of the present government explanation has been emanating from qualified credible people for the last several years.

Editor Bill Manning wrote in *Fire Engineering* magazine in 2002 that:

“Fire Engineering has good reason to believe that the ‘official Investigation’ blessed by FEMA... is a half-baked farce that may already have been commandeered by political forces whose primary interests, to put it mildly, lie far afield of full disclosure... Respected members of the fire protection engineering community are beginning to raise red flags, and a resonating [result] has emerged: The structural damage from the planes and the explosive ignition of jet fuel in themselves were not enough to bring down the towers....”

A letter was sent by a C. Thurston to Tucker Carlson of MSNBC, after he hosted Dr. Steven Jones on one of his nightly shows in November of 2005. In it he lists ten withering reasons for not believing the gravity driven collapse theory. It can be found at <http://www.911research.com/letters/msnbc/index.html>

The NIST report wants to tell us that it was the perimeter columns that buckled and caused the collapses. The report says this was due to their deflection and bowing, caused by fire affected sagging floor trusses pulling on them, and the central core itself sagging due to plasticity and creep.⁶ The probable collapse sequences, as hypothesized by the NIST report, were issued at a press conference in NYC in April 2005. That press release is available here.

http://www.nist.gov:80/public_affairs/releases/wtc_briefing_april0505.htm

It appears the press release and report want to say that the entire interior structure was sagging. It is interesting that the NIST press release and report don't seem to concern themselves much with the fire testing of the floor deck and supporting truss assembly models, done under contract for them by Underwriters Laboratories. Full scale models of the floor deck and supporting truss assemblies were fire tested, under load for two hours, per ASTM E119. These tests did not produce a collapse and the 35 foot long trusses only sagged 3 inches at midspan, not likely enough to buckle the perimeter wall columns. In fact, NIST needed a non-evidence supported 42 inch floor truss deflection in their computer model to cause buckling of the perimeter columns. Their large heat capacity and ability to transfer heat to other areas of the building would have certainly made the core columns even less susceptible to weakening than the trusses. The lack of high temperature evidence on the core columns is a testament to this point.

Curiously, the press release does not mention either the floor assembly fire testing or the low percentage of beams found to have experienced high temperatures in the microstructure testing. Both the press release and the report attempt to point towards a theory of dislodged fireproofing materials as the reason for the alleged interior steel weakening. Although they don't say it out loud, it is a virtual certainty that NIST did floor assembly fire testing without fireproofing.⁹ If the trusses, in this case, had much more significant sagging or collapsed it would have proven their hypothesis. However, there is no mention of failure, so apparently the tests didn't produce the results which would back up their theory. It is important to note that NIST has not been able to cause physical models to fail with their fire induced collapse theory.

It is instructive that the first visible signs of failure on the North Tower are when the antenna mast moves downward by ten to twelve feet before the perimeter roof line moves. This is indicative of the central core suddenly and completely failing first. If you haven't seen this watch it frame by frame at the link below.

http://911research.wtc7.net/wtc/evidence/videos/wtc1_close_frames.html

These frames don't show slow creep, they show sudden failure of the central core itself. They certainly don't show the perimeter walls failing first. If the central core failed first it would cause the trusses not to sag, but to follow them downward, applying a tremendous bending moment on the perimeter beams, which would certainly cause them to bow inwardly. Even with their high factor of safety against vertical loads, the perimeter beams would be dragged down with bending moments much more severe than the wind load induced moments they were designed to withstand. By demolishing the core, the destruction of the building could also be done with the added advantage of the demolition being mostly hidden from view. It appears that the central core failed first and that is what caused the floor trusses to move downward and pull on the perimeter beams, causing them in turn to fail. The central core needed to have a minimum loss of 40% of its total strength before collapse could begin to occur. Since the evidence for column damage, due to aircraft impact and fire, can only account for a maximum 20% loss of strength in the central core, it does not appear collapse initiation can be accounted for without controlled demolition being involved.

It would seem that any honest and objective look at; the design of the buildings, the true damage potential of the aircraft impacts, the physical evidence of the low beam temperatures, the physics of the collapses, the evidence of molten metal in the rubble, and the witness testimony, should cause one to conclude that the towers must have been destroyed via controlled demolitions. In addition to the evidence mentioned so far, there is also evidence of the presence of incendiaries, in the chemical analysis of the dust from an apartment near the towers, and slag from a monument using salvaged twin tower steel, which have both been analyzed by Dr. Jones and others.

The present U.S. government explanation, for the collapses of the buildings in New York City on Sept. 11, 2001, is simply not sustainable. The evidence, which has surfaced in support of the controlled demolition hypothesis, in the last two years, is overwhelming. The obvious controlled demolition of WTC7, at 5:20 PM on Sept. 11, 2001, proves that charges were pre-positioned, as there would not have been time to rig the building that day, especially with fires in it. With this in mind, the demolition of WTC7 lends considerable weight to the notion that charges could also have been pre-positioned in the twin towers. The spectacular collapses of the twin towers, which were in reality caused by controlled demolitions, shocked us all, and caused us to demand action against the entities who we were told supported the hijackers. It is very plausible that the aircraft impacts were used as causal ruses, to allow the collapses to be blamed on outsiders, as the placing of the charges, which actually caused the spectacular collapses of the twin towers, would have required access that outsiders simply would not have.

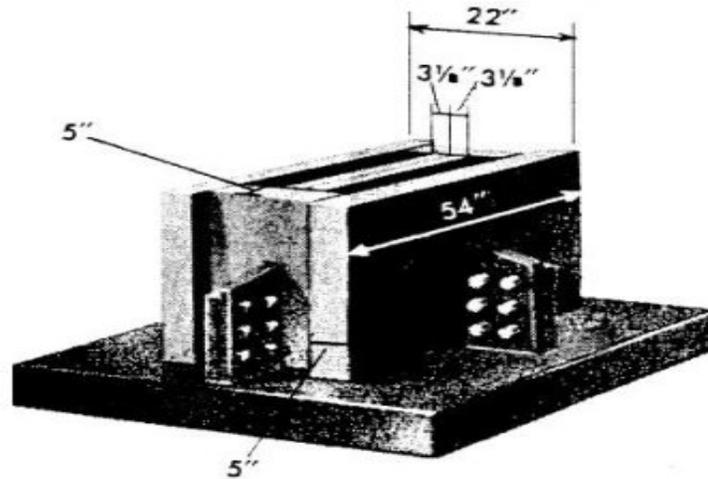
One may wonder who would want people in Afghanistan and Iraq to be blamed if they didn't do it. A good hard look at the soon to be built U.S. oil company controlled gas pipeline in Afghanistan, and the virtual takeover of Iraq's oilfields by U.S. oil companies, would be a start at solving that puzzle for oneself. Neither of these situations would have been possible, without the support of the American people, for the use of the U.S. military, to overthrow the previous governments of these countries.

Endnotes and References:

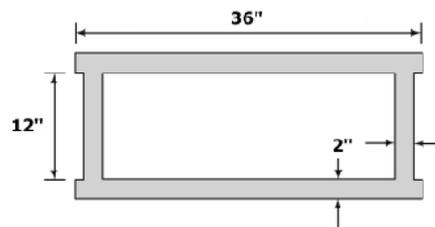
1. Determination of the minimum factor of safety against gravity caused vertical collapse of the Twin Towers after sustaining aircraft impact and fire damage.

While the actual detail drawings of the twin tower design have been withheld from the public (the recent release of blueprints was for architectural floor plan views only), the size of the central core's largest beams are known, from magazine articles published in the Engineering News Record during the time the towers were being built. A link to these articles is provided at the beginning of this paper.

Below is a depiction, from one of those articles, of the base of the largest of the core columns. What the architectural plan views do tell us is that there were a total of sixteen of these size columns, with eight along each outside edge of the long span of the 137 foot x 87 foot central core.



The remaining thirty-one columns were most probably 36" x 16" columns. Below is a sketch of the cross section of a 36" x 16" column, also from the Engineering New Record, which was located approximately half way up the tower.



It can be inferred that the bases of the 36" x 16" columns would have been built proportionally to the 54" x 22" columns, with 4" plates in lieu of 5" plates and a 5" plate in the center in lieu of the 6.25" plate on the larger beam. This would be done to increase the cross section to gain the needed resistance to the vertical compressive load.

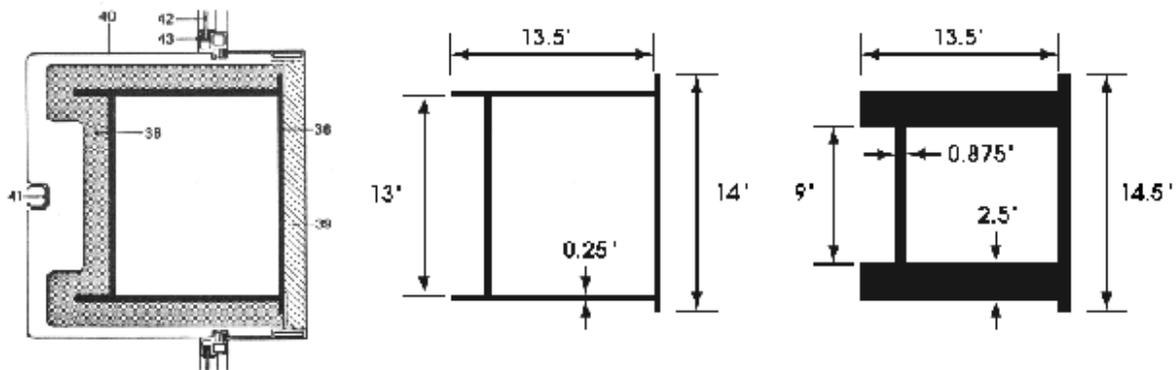
Using the dimensioned pictorial view above, the total cross sectional area of the 54" x 22" columns is approximately 898 in.². The total cross sectional area of a proportional 36" x 16" column, built with 4" plates, would be approximately 467 in.². With sixteen columns at 898 in.² and thirty-one columns at 467 in.² the total cross sectional area of the base of the central core, to resist compressive loading and vertical collapse, would be 28,845 in.².

The AISC manual,⁷ used for the design of steel framed structures in this country for the last eighty-five years, has specified, since long before the erection of the twin towers, that the allowable compressive stresses on vertical columns not exceed $0.60F_y$, and thus have a factor of safety of 1.67. This means the actual stress cannot exceed 60% of the compressive yield strength of the material used for the column. The central core columns at the base were made from ASTM A36 steel which has a compressive yield strength of 36,000 psi. 60% of this strength gives an allowable stress of 21,600 psi. Coupling this allowable stress with the total cross sectional area of the forty-seven core columns shows that, as a group, they could support a vertical load of 311,526 tons. This is approximately 60%

of the reported 500,000 ton gravity load of each of the twin towers. The remaining 200,000 tons of gravity load would need to be supported by the perimeter columns.

On the far right of the pictorial below, is a dimensioned sketch of the cross section of the lowest 60 per side perimeter columns, which were actually located at five floors above the ground level on the buildings. These columns transitioned three into one near the fifth floor level and thus there were 20 larger perimeter columns per side, which would have actually went down to the base. Since no cross section sketches of the 20 per side perimeter columns exist in the public domain, of which I am aware, this sketch can serve as the cross sectional reference, to find a minimum total cross section of the perimeter columns at the base. The actual total cross sectional area of the perimeter columns, at the base, twelve stories down, would only be larger, so the analysis here can be considered conservative. The center view is of the cross sectional dimensions further up on the towers and the view on the left is of fireproofing on the steel with aluminum cladding over the fireproofing.

Horizontal section through an external column with window frame connection



Judging from the sketch on the right, the cross sectional area of one of the 60 per side columns at its base was approximately 88 in.². There were 240 perimeter columns of this size in each tower so the total cross sectional area of the perimeter columns at their base would have been no less than 21,120 in.². The compressive stress induced by 200,000 tons of gravity load on this area provides an actual stress of 18,939 psi. These perimeter columns were made from steels ranging in yield strength up to 100,000 psi. The lowest of the 60 per side columns would have had the highest strength, as that is where the maximum overturning moment and shear stress, from wind and seismic loads, would have existed. When considering gravity loads only, the perimeter columns would have provided a minimum factor of safety of approximately 5.00 against vertical collapse since

$$\text{Factor of safety} = \text{yield strength}/\text{actual stress}$$

Although only the base loads and their stresses are considered here, it can be inferred that this would be true for all of the beams, over the full height of the towers, as they would be designed to maintain the same factor of safety throughout. The core columns would have had a factor of safety of 1.67 and the perimeter columns a factor of safety of 5.00, against vertical collapse, throughout the full height of the building, when considering gravity loads only.

The vertical load capacity of the beams, at their base, due to compressive loads only, was

| | |
|--------------|--------------------------------------|
| Central core | 300,000 tons x 1.67 = 500,000 tons |
| Perimeter | 200,000 tons x 5.00 = 1,000,000 tons |

Using the base as a reference, the actual load vs. the beam capacity, during a low wind day like Sept. 11, 2001, would have been

$$\text{Actual Load/Beam Capacity} = 500,000/1,500,000 = 33\%$$

If 80% of the base central core columns had their strength unaffected by damage and/or fire they would have provided a remaining factor of safety and load capacity of

$$0.80 \times 1.67 = 1.34 \text{ for a } 300,000 \text{ ton load} = 402,000 \text{ ton remaining capacity}$$

If 80% of the base perimeter columns had their strength unaffected by damage and/or fire they would have provided a remaining factor of safety and load capacity of

$$0.80 \times 5.00 = 4.00 \text{ for a } 200,000 \text{ ton load} = 800,000 \text{ ton remaining capacity}$$

The remaining unaffected 80% of the tower structure would still have been capable of supporting 1,202,000 tons or 2.4 times the actual 500,000 ton load.

Standard design practice dictates that the beams in the upper part of the building would have had the same factor of safety as the beams at the base of the towers. So knowing the design of the columns at their base, the total gravity load of the buildings, and the percentage of damaged beams, we have deduced what the remaining factor of safety was for the beams at the aircraft impact and fire sites.

The remaining factor of safety against vertical collapse in the aircraft impact and fire affected areas would have been at least

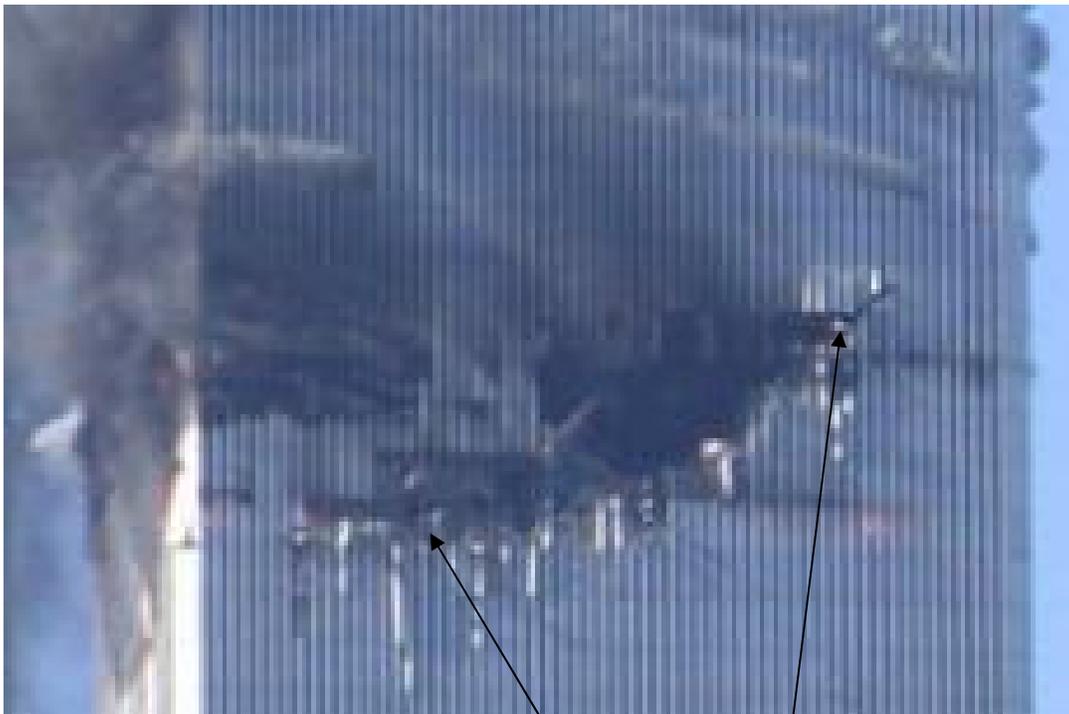
$$\begin{aligned} &1.34 \text{ for the central core columns} \\ &4.00 \text{ for the perimeter columns} \end{aligned}$$

This is with the assumption that 20% of the central core columns were lost, which is improbable.

Buckling can occur at stresses below the compressive yield strength of a material. The critical buckling stress is dependent on the slenderness ratio of a column and whether its ends are fixed or free. The slenderness ratio is related to the stiffness of the cross section of the column and the unsupported length between the column's connections to supports. The end condition for the best buckling resistance is fixed at both ends, which the columns were in the aircraft impact and fire affected areas. The design of the tower columns would have precluded buckling as an earlier mode of failure, due to the short vertical length of the columns between horizontal supports and the stiffness of the cross section of the beam. The design would have followed AISC guidelines, which would have required that the critical buckling stress not be less than the compressive yield strength.⁷

2. **NIST NCSTAR 1-1A, WTC Investigation**, Chapter 2, page 34, paragraph 2.3.2.
<http://wtc.nist.gov/NISTNCSTAR1-1A.pdf>
3. **“Why Indeed Did the WTC Buildings Completely Collapse”** by Physics Professor Steven Jones
<http://www.journalof911studies.com/volume/200609/WhyIndeedDidtheWorldTradeCenterBuildingsCompletelyCollapse.pdf>.
4. **Boeing Technical characteristics for the 767 family of aircraft**. See tables for the 767-200ER.
<http://en.boeing-me.com/ViewContent.do?id=2404>

5. **Executive Summary of the Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers**, extracted from NIST NCSTAR 1. <http://wtc.nist.gov/pubs/NCSTAR1ExecutiveSummary.pdf>
6. **Final Reports of the Federal Building and Fire Investigation of the World Trade Center Disaster** http://wtc.nist.gov/reports_october05.htm
7. **Manual of Steel Construction**, 8th edition, 1980 printed by the American Institute of Steel Construction Inc.
8. **Examples of microstructure of steel which has been heated and cooled**. At bottom of page. <http://wtc.nist.gov/media/gallery.htm#sim>
9. **NIST photos of fire experiment setups**. See uninsulated truss setup in next to last picture at bottom. <http://wtc.nist.gov/media/gallery2.htm>
10. **Photo of the aircraft impact damage to the exterior of the North Tower**



As the aircraft was at an angle, the wings would have had to go through the perimeter beams plus 60 feet of floor decking of multiple floors edge on. The tail would have also had this situation due to its height.

11. Graphic of central core column spacing vs. fuselage and central engine diameters

Wings, engine fan assemblies, and the tail would have been shredded after going through perimeter beams and multiple floors edge on, leaving only parts of the fuselage, landing gear, and 4 foot diameter center portions of engines, with greatly diminished energies, having any chance of causing damage to the Central Core

