

explosives in the demolition process. Preliminary cutting of structural members could have been performed.

- Those in which the demolition was to be performed in the shortest possible time. The objective would have been to set up for demolition during approximately a 6 h time frame, i.e., between the time WTC 7 had been evacuated and the time at which collapse occurred.

For each of the scenarios, the type and quantity of explosive material (e.g., shaped charges, C4 or other non-directional explosive materials) required to fail each of the selected column sections was identified. In addition, any special equipment or supplies, and the time required to prepare the column, were identified. For each scenario, expected secondary effects – fireballs, noise level, extent of window breakage, and dust expulsion – were estimated. Two approaches were considered, in which the column was or was not prepared with preliminary cutting.

Column sections selected for developing hypothetical blast scenarios were:

Column 79 at Floor 14 – W14x730 with two 26-in. x 2-in. side cover plates

Column 79 at Floor 5 – W14x730 with two 26-in. x 3-in. side cover plates

Column 80 or Column 76 at Floor 14 – W14x730 with two 12.5-in. x 4-in. web plates

Truss 2 diagonal – W14x730 with two 8-in. x 3-in. web plates

Column 81 at Floor 14 – W14x730 with two 12.5-in. x 1-in. web plates

Column 77 at Floor 14 or Column 78a at Floor 5 or Truss 1 diagonal – W14x665

For reference, Table D-1 defines section properties for the two considered column types.

Table D-1. Basic wide flange column parameters. (Dimensions in in.)

Section	Web Height	Flange Width	Flange Thickness	Web Thickness
W14X730	22.4	17.9	4.91	3.07
W14X665	21.6	17.7	4.52	2.83

Side cover plate details are shown in Figure D-1, which illustrates the side plate attachment for the considered columns (Structural drawing S-17, Cantor 1985).

From all these combinations, a single hypothetical blast scenario was identified for all of the selected column or truss sections. This hypothetical blast scenario included preliminary cutting of the column or truss section, which required a smaller mass of explosive than an uncut section. The scenarios considered for the second category (place larger explosive charges in the minimum time possible and with minimal preparation) were estimated to have required an order of magnitude more explosive material and would have been less covert.

The lowest mass of explosive needed to sever any of the six column or truss sections was found to be 4 kg (9 lb) of RDX explosives in linear shaped charges. Charges would be placed on either side of the two cover plates and the web and sections would be cut out of the flanges. These would have to be initiated