There have been several inquiries as to how the newest version of the UFC 4-010-01 guide specification affects our blast product qualification for specific projects. Unfortunately there is not a quick answer to this.

The UFC 4-010-01 2012 revision was released this year in January. It is currently appearing in some blast specifications or is being requested for compliance even though the specifications are referring to the 2007 revision. When this occurs, determining if we comply may not be as simple of a task as it was in the past.

The 2012 revision of the UFC has a substantially different approach in regards to setting the stand off distance. There are several factors that are involved that would require information on the project that may not always be listed in the specifications.

- The first item needed would be the Level of Protection that they are classifying the structure under. This comes from Table 2-1 that describes each level from “Below AT Standards” to “High” Level of Protection (LOP).
- Once this is designated, then the project needs to be identified as a “Controlled Perimeter” or “Uncontrolled Perimeter”.
- Once the perimeter is identified, then the building has to be classified as a “Billeted/Housing”, “Inhabited”, or a “Primary Gathering”.
- When the building designation is identified then, in combination with the LOP, Table B-1 can be used to identify the charge weight for the project and the stand off distance category depending on if the walls are load bearing or non-load bearing.
- Table B-2 is then used to find the stand off distance using the alphabetical letter under the wall loading column just identified in Table B-1. Table B-2 requires the wall construction of the building to be identified and the using the letter designation from the wall loading columns of Table B-1 corresponding to the lettered Columns in Table B-2, the standoff distance can be attained.

This is process is more complex than the previous revision (2007) where the choices for standoff distance were very limited. If you encounter a project like this, you should consult Tom Haines or me for help in this matter. We will need this additional information described above in order to identify what is needed on the project so please locate the information in the specs, architectural drawings, and/or from the architect/Engineer/GC.

The referenced tables are attached.

Table 2-1 Levels of Protection – New and Existing Buildings

Level of Protection	Potential Building Damage/Performance [2]	Potential Door and Glazing Hazards[3,4]	Potential Injury
Below AT standards[1]	Severe damage. Progressive collapse likely. Space in and around damaged area will be unusable.	Doors and windows will fail catastrophically and result in lethal hazards. *(High hazard rating)*	Majority of personnel in collapse region suffer fatalities. Potential fatalities in areas outside of collapsed area likely.
Very Low	Heavy damage - Onset of structural collapse, but progressive collapse is unlikely. Space in and around damaged area will be unusable.	* Glazing will fracture, come out of the frame, and is likely to be propelled into the building, with potential to cause serious injuries. *(Low hazard rating)* * Doors will be severely deformed but will not become a flying debris hazard. *(Category IV)*	Majority of personnel in damaged area suffer serious injuries with a potential for fatalities. Personnel in areas outside damaged area will experience minor to moderate injuries.
Low	Moderate damage – Building damage will not be economically repairable. Progressive collapse will not occur. Space in and around damaged area will be unusable.	* Glazing will fracture, potentially come out of the frame, but at reduced velocity, does not present a significant injury hazard. *(Very low hazard rating)* * Doors will experience non-catastrophic failure, but will have permanent deformation and will be inoperable. *(Category III)*	Majority of personnel in damaged area suffer minor to moderate injuries with the potential for a few serious injuries, but fatalities are unlikely. Personnel in areas outside damaged areas will potentially experience minor to moderate injuries.
Medium[5]	Minor damage – Building damage will be economically repairable. Space in and around damaged area can be used and will be fully functional after cleanup and repairs.	* Glazing will fracture, remain in the frame and results in a minimal hazard consisting of glass dust and slivers. *(Minimal hazard rating)* * Doors will be operable but will have permanent deformation. *(Category II)*	Personnel in damaged area potentially suffer minor to moderate injuries, but fatalities are unlikely. Personnel in areas outside damaged areas will potentially experience superficial injuries.

High[5]	Minimal damage. No permanent deformations. The facility will be immediately operable.	* Glazing will not break.(No hazard rating) * Doors will remain intact and show no permanent deformation. *(Category I)*	Only superficial injuries are likely.

1. This is not a level of protection and should never be a design goal. It only defines a realm of more severe structural response, and may provide useful information in some cases.

2. For damage / performance descriptions for primary, secondary, and non-structural members, refer to PDC Technical Report 06-08.

3. Glazing hazard levels are from ASTM F 1642.

4. Door hazard levels are from ASTM F 2247.

5. Beyond minimum standards.

Table 2-2 Levels of Protection – Expeditionary Structures

Level of Protection	Potential Structural Damage	Potential Injury
Below AT Standards[1]	Severe damage. Frame collapse/massive destruction. Little left standing.	Majority of personnel in collapse region suffer fatalities. Potential fatalities in areas outside of collapsed area likely.
Very Low	Heavy damage. Major portions of the structure will collapse. A significant percentage of secondary structural members will collapse.	Majority of personnel in damaged area suffer serious injuries with a potential for fatalities. Personnel in areas outside damaged area will experience minor to moderate injuries.
Low	Moderate damage. Damage will be unrepairable. Some sections of the structure may collapse or lose	Majority of personnel in damaged area suffer minor to moderate injuries with the potential for a few serious injuries, but fatalities are unlikely. Personnel in areas outside damaged areas will

Table B-1 Standoff Distances for New and Existing Buildings

Distance to:	Building Category	Standoff Distances				
		Applicable Level of Protection	Conventional Construction Standoff Distance		Minimum Standoff Distance [2]	Applicable Explosive Weight [3]
			Load Bearing Walls [1]	Non-Load Bearing Walls [1]		
Controlled Perimeter or Parking and Roadways without a Controlled Perimeter	Billeting and High Occupancy Family Housing	Low	A	C	18 ft (5.5 m)	I
	Primary Gathering Building	Low	A	C	18 ft (5.5 m)	I
	Inhabited Building	Very Low	B	D	18 ft (5.5 m)	I
Parking and Roadways within a Controlled Perimeter	Billeting and High Occupancy Family Housing	Low	E	G	12 ft (3.6 m)	II
	Primary Gathering Building	Low	E	G	12 ft (3.6 m)	II
	Inhabited Building	Very Low	F	H	12 ft (3.6 m)	II
Trash Containers	Billeting and High Occupancy Family Housing	Low	E	G	12 ft (3.6 m)	II
	Primary Gathering Building	Low	E	G	12 ft (3.6 m)	II
	Inhabited Building	Very Low	F	H	12 ft (3.6 m)	II

1. See Table B-2 for standoff distances.
2. For new construction, standoff distances less than those in this column are not allowed for new buildings regardless of analysis or hardening. For existing buildings that are constructed / retrofitted to provide the required level of protection, standoffs less than those in this column are allowed, but discouraged.
3. See UFC 4-010-02, for the specific explosive weights (pounds / kg of TNT) associated with designations I and II. UFC 4-010-02 is For Official Use Only (FOUO).

Table B-2 Conventional Construction Standoff Distances

Wall Type	Column Letter							
	A	B	C	D	E	F	G	H
Wood Studs – Brick Veneer	105 ft (32 m)	105 ft (32 m)	79 ft (24 m)	66 ft (20 m)	36 ft (11 m)	36 ft (11 m)	23 ft (7 m)	16 ft (5 m)
Wood Studs – EIFS	207 ft (63 m)	207 ft (63 m)	164 ft (50 m)	141 ft (43 m)	85 ft (26 m)	85 ft (26 m)	66 ft (20 m)	56 ft (17 m)
Metal Studs – Brick Veneer	187 ft (57 m)	108 ft (33 m)	207 ft [2] (63 m)	186 ft [2] (57 m)	75 ft (23 m)	43 ft (13 m)	82 ft [2] (25 m)	75 ft [2] (23 m)
Metal Studs – EIFS	361 ft (110 m)	207 ft (63 m)	420 ft[2] (128 m)	361 ft[2] (110 m)	151 ft (46 m)	85 ft (26 m)	167 ft[2] (51 m)	151 ft[2] (46 m)
Metal Panels	n/a[1]	n/a[1]	151 ft (46 m)	108 ft (33 m)	n/a[1]	n/a[1]	56 ft (17 m)	39 ft (12 m)
Girts	n/a[1]	n/a[1]	115 ft (35 m)	59 ft (18 m)	n/a[1]	n/a[1]	23 ft (7 m)	16 ft (5 m)
Reinforced Concrete	66 ft (20 m)	66 ft (20 m)	26 ft (8 m)	20 ft (6 m)	16 ft (5 m)	16 ft (5 m)	13 ft (4 m)	13 ft (4 m)
Unreinforced Masonry[3]	262 ft (80 m)	262 ft (80 m)	125 ft (38)	33 ft (10 m)	80 ft (24 m)	80 ft (24 m)	26 ft (8 m)	16 ft (5 m)
Reinforced Masonry	86 ft (26 m)	86 ft (26 m)	30 ft (9 m)	20 ft (6 m)	30 ft (9 m)	30 ft (9 m)	13 ft (4 m)	13 ft (4 m)
European Block	164 ft (50 m)	164 ft (50 m)	59 ft (18 m)	30 ft (9 m)	39 ft (12 m)	39 ft (12 m)	23 ft (7 m)	16 ft (5 m)

1. Metal panels and girts are not considered primary structural members.
2. Non-load bearing steel studs are assumed to have slip-track connections. Closer distances may be obtained through non-standard detailing and analysis.
3. Only used for analysis of existing structures. Not allowed for new construction.