#	Municipality	County	Year of Const.	Date of Failure	Sq. Footage	Building Height	# of Stories	Measured ground snow load and/or depth	Measured roof snow load and/or depth	Type of Building	Building vacant?
1	Albany	Albany	1900	2010			3			Wood Framed	No
2	Brutus	Cayuga	1898	Spring of 2011	2400	28'	2	50 psi	50 psi	Wood Framed	No
3	Brutus	Cayuga	1998	Spring 2011	6468	18'	One	50 psi	12"	Wood Framed	No
4	Brutus	Cayuga	1952	Spring of 2011	2400	32'	2	50 psi	50 psi	Wood Framed	No
5	Weedsport	Cayuga	1955	Spring of 2011	1200	24'	2	50 psi	50 psi	Wood Framed	No
6	Weedsport	Cayuga	1976	Spring of 2011	680	12'	One	35 psi	35 psi	Wood Framed	No
7	Weedsport	Cayuga	2003	Spring of 2011	120	8'	One	20 psi	20 psi	Aluminum Shed.	No
8	Ellington	Chautauqua	2004	01/01/2011			3			Wood Framed	No
9	Kenmore	Erie	1960	03/11/2011	1000	12 feet	1			block wall and wood framed flat roof	Yes
10	Tonawanda	Erie	1947	01/01/2005			2 stories			Wood Framed	No
11	Penfield	Monroe	1971	02/07/2011	800	20'	one	7-10"	7-12"	Block walls and truss	Yes
12	Boonville	Oneida	2008	2011	3200	30	1	30"	30"	Wood Framed	No
13	Boonville	Oneida	2008	2011	1500	20	1	30"	30"	Steel Framed	No
14	Boonville	Oneida	2008	2011	1500	20	1	30"	30"	Steel Framed	No
15	Florida	Orange	2009	03/07/2011	550,000 Sq	mult-levels	1	40"	wind blown 9 ft est	Steel Framed	No
16	Philipstown	Putnam		Feb (??), 2011	unknown	?	2	?	?		
17	Islip	Suffolk	1965	01/28/2011	Approx. 79,000		1	approx. 18"		Steel Framed	No
18	Ardsley	Westchester	1960	approx date 3/1/2010	approx 2,500	15 feet to ridge	1	unknown	unknown	Wood Framed	Yes
19	Greenburgh	Westchester		Feb. (??), 2011		?	2	?	?	Wood Framed	

#	Thermal Condition	Roof Type	specify pitch	Roof Surface	Roof Material	Type of Occupancy	Snow Load Distribution	Apparent failure mechanism
1	Unheated	Pitched-Hip		Slippery		Residential: multifamily	Drift at parapet wall	Partial collapse of portion of roof due to large localized drift load
2	Unheated	Pitched-Gabled		Non-slippery		Business:	Nominally uniform	Whole roof collapse due to nominally uniform load
3	Unheated	Pitched-Sawtooth		Slippery		Residential: 1 family	Nominally uniform	Whole roof collapse due to nominally uniform load
4	Unheated	Pitched-Gabled		Non-slippery	Asphalt shingle	Residential: 1 family	Nominally uniform	Whole roof collapse due to nominally uniform load
5	Unheated	Pitched-Gabled		Non-slippery		Residential: 1 family	Nominally uniform	Whole roof collapse due to nominally uniform load
6	Unheated	Pitched-Gabled		Non-slippery		Residential: 1 family	Gable or across-the-ridge drift	Whole roof collapse due to nominally uniform load
7	Unheated	Pitched-Shed		Slippery		Residential: 1 family	Nominally uniform	Whole roof collapse due to nominally uniform load
8	Heated with vented "cold roof"	Pitched-Gabled	8:15	Non-slippery		Residential: multifamily	Nominally uniform	Partial collapse due to man-made reduction in structural capacity ("inconvenient" column or brace removed)
9	Heated	Flat with Parapets		Slippery		Business:		
10	Heated	Flat/Nominally flat (1/4 on 12 or less)		Non-slippery		Residential: 1 family	Nominally uniform	Partial collapse due to natural deterioration of structural capacity over time
11	Unheated	Pitched-Gabled	4:12	Non-slippery	asphalt shingle	Gun Range	Nominally uniform	Whole roof collapse due to nominally uniform load
12	Unheated	Pitched-Gabled	4:12	Slippery		Agricultural:	Nominally uniform	
13	Unheated	Pitched-Gabled	4:12	Slippery	metal	garage	Nominally uniform	
14	Unheated	Pitched-Gabled	4:12	Slippery	metal	garage	Nominally uniform	
15	Heated	Flat/Nominally flat (1/4 on 12 or less)		Non-slippery		Industrial:	Drift at roof step	Partial collapse of portion of roof due to large localized drift load
16								
17	Heated	Flat with Parapets			EPDM	Industrial:	Drift at parapet wall	Partial collapse of portion of roof due to large localized drift load
18	Unheated	Pitched-Shed	approx 6 on 12	Non-slippery	Ashphalt shingle	Commercial:	Nominally uniform	Partial collapse due to natural deterioration of structural capacity over time
19			flat		floor deck	Residential: 1 family		

#	Other (please specify)	Additional Comments/Information
1	Owner failed to provide proper roof slope and is 100% at fault.	Owner was recently fined and code voilations including but not limited to 1. Over-occupied. 2. NOT zoned as a multi-apartment unit. 3. Roof is old and leaks. 4. Owner allows ex-felons as residents even though children are in close area.
2	This structure was formally a farmers barn and the property was approved for commercial use.	
3	Building has been removed from the property.	
4		
5		
6		
7		
8	Lack of bracing	
9	Roof drain was plugged, and no parapet outlets.	All the snow had melted on the roof and had pooled with no relief, also a upper had drained onto the lower roof. The roof structure which was 2x12's collapsed and the water blew out a 16' overhead door and a side concrete block wall.
10		
11		metal gussets on portion of truss sheared- can be confirmed by TorchiaStructural Engineering & Design PC 585-385-7630
12	Whole collapse as snow slid off 1 side and building tipped to that side	
13	whole building collapse as they were removing snow	
14	whole building collapse as they were removing snow	
15		
16	whole roof uniform load	Failure was caused by contractor not adequately securing porch roof to main wall of house. Checking options above does not work single family residence wood framed occupied
17	As per an engineers report completed after the partial collapse, it was determined that the bar joists were also stressed because of a fire sprinkler main being strapped to them.	A building inspector was called to the scene by the local fire dept. after a cracking sound was heard in the building. Upon inspection the inspector saw several twisted and bowed bar joists. At this time the building was evacuated.A crane was called in to scope the snow from the roof. While setting up the crane, the roof partially collapsed. Zero injuries.
18	Partial collapse due to lack of mantenance (failure to fix roof leaks). Also, the lack of heat in the vacant structure appeared to contribute tot he increase in snow load because there was no melt off from the structure's heat production.	The structure was demolished immediately following the partial roof collapse.
19	Collapse of entire deck. Failure was due to completed rotted girder over centaer post below deck. Colapse coincided with a heavy snowfall the prior day.	

A.4 – Simpson Gumpertz & Heger Database

#	Municipality	Year of Const.	Date of Failure	Sq. Footage	# of Stories	Measured ground snow load and/or depth	Measured roof snow load and/or depth	Type of Building
1	Avon, MA							butler building (series of buildings)
2	Wallingford, CT							wood trusses
3	Canton, MA	1960's					16 in away from drifts on roof, large snow drifts observed	canopy over entrance
4	Ipswich, MA		02/01/11	61400	1			steel framed
5	Riverside, RI	1961	02/02/11	58,440 (~10% failed)		Approximated 29.8spf from weather data		steel framed, masonry walls
6	Enfield, CT	1980's	02/01/11			?	?	steel framed, cantilever construction
7	Charlton, MA	1998	02/03/11					wood trusses/ masonry bearing walls
8	Wilbraham, MA	older	02/02/11	84x190	1			Pole-frame
9	Plainville, CT	1850,1881, 1969	02/01/11		1			wood trusses
10	Peabody, MA	1968, 1993,2006						butler building/ steel frame
11	Hanover, MA		02/01/11	50x382	2			concrete and steel framing
12	Newton, CT							steel framed
13	Revere, MA		01/29/11					butler/metal building
14	Taunton, MA		02/09/11					steel framed, masonry walls
15	Holyoke, MA		02/01/11					wood rafters, masonry walls
16	Hyde Park, MA		02/02/11		1			

#	Building's Roof Type	if pitched, please specify	Type of Building Occupancy	Snow Load Distribution	Apparent failure mechanism	Additional Comments/ Information
1	flat roofs (added on buildings formed steps)			drifting at roof step	drifting at step formed by other attached building	
2					loss of capacity due to bracing being removed and interior walls interfering with truss behavior	
3	roof step		office building entrance			34ft wide, extended 21 ft east from building, hc = 3ft
4						
5	flat				partial collapse (freezing of rain water near eave)	
6	pitched/roof step from newer addition	low	commercial/ warehouse	drift at roof step	partial collapse due to drift, improper bracing on center girder (rolled)	
7	pitched (E-W ridgeline)	moderate		uniform load	suspected design deficiency trusses improperly braced	
8	pitched	moderate			possibly insufficient/compromised bracing	
9			Church			
10	part gable, part flat		commercial/ retail			
11			commercial/ storage facility			
12						
13	pitched		retail/ warehouse		loss of capacity due to deterioration of structure(rust)	
14	flat		warehouse	drifting unlikely		
15	flat		warehouse/ loading dock	drifting at roof step	older building not designed for drifts	
16	pitched	Porch: 1.5 in12	residential		failure of attachment of the roof ledger to the house	

A.5 – Wiss Janney Elstner Database

Municipality	Bethany CT	Portland CT	Meriden CT	Hauppauge NY
Year of Const.	1980's addition	1982	50+ years old	40-50 yo
Failure Date	02/02/11	01/28/11	no collapse	01/28/11
Sq. Footage	10500	12994	-	138 ft upwind fetch
Building Height	21	26	-	16
# Stories	1	1	1	1
Measured ground snow load	-	16 inch (25 psf)	-	-
Measured roof snow load	16 in (dense w/ ice)	15-20psf	estimated 40psf (2-3 ft)	80psf (drift) 25psf (uniform)
Type of Building	metal	metal	wood framed/masonry walls	open web metal truss (metal building)
Vacant?	-	-	-	-
Thermal Condition	-	unheated	-	-
Roof Type	low pitch	-	gable	roof step with newer building (4ft)
Pitch	1	-	~14 degrees	-
Roof Surface	slippery	slippery	-	-
Roof Material	-	corrugated metal panels	-	-
Type of Occupancy	warehouse	boat storage	-	warehouse
Snow Load Distribution	uniform	uniform	-	4ft drift depth at step (full)
Apparent Failure Mechanism	partial due to snow	Man-made reduction in capacity	inadequate design capacity	partial collapse due to drift
Additional Comments/ Information	2 structures in L-shape. Original building (1960's) did not collapse, only addition	wind girts had been removed	building to be retrofitted	building was not designed for this load due to fact that step was formed by addition.

Municipality	Centerport NY	Brooklyn NY	Clifton NJ	Glen Rock NJ
Year of Const.	2000	1940's	1952	1964
Failure Date	02/03/11	-	no collapse	mid january
Sq. Footage	40x60	75x90 (upwind fetch 50ft)	100x88	40x102
Building Height	13.5 (eaves) 19.5(center)	28	25	32
# Stories	1	-	1	1
Measured ground snow load	-	-	25 psf	-
Measured roof snow load	estimated 18psf	-	20 psf	-
Type of Building	metal	wood bowstring truss, masonry walls	timber bowstring truss	wood framed trusses, masonry walls
Vacant?	vacant	-	-	-
Thermal Condition	unheated	-	-	-
Roof Type	gable	barrel roof	barrel roof	gable
Pitch	-	-	-	7 ½
Roof Surface	-	-	-	-
Roof Material	-	-	-	-
Type of Occupancy	museum exhibit	-	offices and car garage	church
Snow Load Distribution	uniform	-	-	-
Apparent Failure Mechanism	design deficiency, undersized	-	overstressed by 30% and deterioration over time	under designed roof trusses
Additional Comments/ Information	designed for 10 psf instead of 21 psf required.	adjacent to taller newer building(2008)	damage is believed to have occurred dec. 2010 although owners did not notice until sept. 2011	dead load alone was enough to overstress the roof trusses significantly. Deflection of walls, cracks in plaster

Municipality	Southbury Ct	North Haven CT	Bethany CT
Year of Const.	1983 (roof replaced 2006)	-	1991
Failure Date	01/19/11	-	-
Sq. Footage	-	160x320	80x125
Building Height	-	-	14
# Stories	-	-	1
Measured ground snow load	-	-	-
Measured roof snow load	21 psf(uniform) 47psf(drift)	-	-
Type of Building	steel framed?	-	metal building
Vacant?	-	-	-
Thermal Condition	-	-	-
Roof Type	-	flat w/ drains at edges	low pitch
Pitch	-	-	1
Roof Surface	-	-	-
Roof Material	-	-	-
Type of Occupancy	-	-	-
Snow Load Distribution	drift from roof step?	uniform	uniform
Apparent Failure Mechanism	roof leaking. Ice dams (3-6 in thick) and clogged drains.	ponding instability	uniform snow load
Additional Comments/ Information	some decay caused to trusses due to prolonged leaking over time.	strength of joist were sufficient. However, only 15.2 psf of snow before ponding instability occurs.	designed of for 21 psf, load was much greater than this. Built by American Buildings