2001 Company

Wind Vented Roof Systems Since 1974

April 25, 2012

2001 CO. Licensed Applicators Competitive Advantage

1) 2001 Co. Wind Vented Roofs are the **Exception** to the IBC Building Code

IBC International Building Code 2009 Requires

1) When two or more roofs are on a building the code requires a complete tear off of all existing roofs down to the roof deck
2) Reinsulating to state code R19 minimum
3) Positive water drainage slope 1/4 per foot

How Wind Vented Roofs are the Exception to the IBC Building Code

2001 Co. Wind Vented roofs can be installed directly over two or more existing roofs even when wet without tear off because they meet the **Exception** criteria of the IBC Building Code

First the 2001 Co. Patented **Wind Vented Roof System transfer building loads* to the building's structure** and does not depend on the existing roof systems for support.

See attached copy of IBC. International Building Code read section 1503-2. 2001 Co. is the exception to the removal of existing wet or multiple roof systems.

Second **the 2001 Co. Patented Wind Vented and Air Sealed Roofing technology** automatically dries out an existing wet roof assembly(s) through

a) low pressure vaporization of entrapped water
b) controlled air exchange in the roof assembly to remove water vapor out of an existing wet roof assembly.

IBC Building Code Re-roofing Section 1510 states:

"Exceptions: 1. Complete and separate roofing systems, such as but not limited to standing-seam metal roof Systems, **That Are Designed To Transmit The Roof Loads Directly To The Building's Structural System** and that do not rely on existing roofs and roof covering for support Shall not require the removal of existing roof coverings"

Therefore, 2001 Co. Wind Vented Roofs systems meets the 'Exception' criteria of the IBC building code and can reroof over (2) Two or more wet existing roof systems without tear off of the existing.

***loads, wind up lift, snow and water loads**

2001 Co. Wind Vented roofs are an Exception to the 2009 IBC International Building Code not requiring the complete removal of two or more existing roof assemblies to the roof deck and re-insulting with ¼" slope insulating for positive water drainage.

Copy of IBC Building Code Roofing Chapter 15 (see Re-roofing Section 1510) Additional requirements of the IBC Building Code

Studying and comprehending the 2009 IBC International Building Code

1) **Wind Up Lift resistance ASCE 7 2004**
   Pounds Per Square Foot PSF Pressure rating Corner, Perimeter and Interior Field of the roof

2) **Fire resistance from above** [on top of the roof surface]
   UL Class A, B, C Fire Test # UL 790
   FM Factory Mutual Class I ASTM E 108
   3 ' Wide gas Burner Produced Flame in a 12 mph wind
   On a 4' wide roof Assembly Sample up to 13' Feet Long

3) **Fire resistance from below** the roof internal building fire
   Underwriters Laboratory UL P Series ½ hour to 3 hour resistance
   FM Global Research FM calorimeter furnace ½ hour.

4) **Hail resistance**
   UL steel ball drop & ice ball air cannon
   FM steel ball drop & ice ball air sling shot Hague Engineering
   Koontz Engineering ice ball air cannon

5) **Wind Blown Debris** FEMA 320
   Texas Tech 10' 2x 4 air cannon test at roof assembly

6) **On weathering tests Waterproofing membrane**
   1) UL Kesterneck QUV wet cycling
   2) FM Kesterneck QUV wet cycling
   3) southwest laboratories Arizona south face sunshine at 45 degree angle

2. VOC Compliant Water Based Adhesives for Roofing

DO NOT WORK

How to install 2001 Co. Wind Vented Roof not dependent on water based adhesives.

1. **Hurricane Back Wrap Compression Board**: details on Fastenable decks for metal, wood and composite plank decks **for 80 to 150 MPH Wind Riders**

2. **Shear Skirt, Upside down Cover Tape + 'C' Channel Narlor Replacements on Fastneable decks for 80 to 120 MPH Wind Riders, (rush strip), Spring Flange**: details on non fastenable decks **For up to 80 MPH Wind Riders**

3. **Direct membrane termination to the monolith deck:** details for monolithic poured in place concrete decks, pre cast concrete with 2001 Co. reinforced membrane adhered over deck joints and through roof penetrations
   For 150 to 200 MPH Wind Riders

4. **2001 Co. Patented Wind Vented Vertical Wall Flashing: parapets and structural concrete masonry walls for 150 to 200 MPH Wind Riders**

2001 Co. 50-year Sustainable Forever Roof System

2001 Co. has developed Three 50-year sustainable Roof Systems

1. 100 mil C-EPDM combination deck waterproofing and finish
   Roof membrane assembly on metal and wood air permeable roof decks

2. 100 mil C- EPDM on cement board finish waterproofing membrane on structural Concrete precast and put in place

3. 100 mil C- EPDM over 2001 Co Slow Rise Adhesive Foam air sealed roof deck and Adhered insulation on wood metal and concrete roof deck

3. Physics of Wind Up Lift Forces on a Building

1. Understanding Wind Flow = To Water Flow
2. Wind Flow Around Various Size And Shapes of buildings and adjoining Structures
3. Wind Flow Up And Over Various Size And Shapes Of Buildings
4. Where To Anticipate Low Pressure Vortexes On A Roof Surface
5. Internal Building Pressurization (From Side Wall Openings) in a direct wind Force
6. Stresses on the Structural Roof Deck Underside From Internal Building Pressurization
7. Stresses on the structural roof deck top side from air flow over the roof surface
8. Air Infiltration From Inside Building up into the roof assembly vertical air infiltration
9. Air Infiltration From Outside the Building into the roof assembly horizontal air infiltration

4. Physics of Drying a Wet Roof with Kelly Patent

1. **Low Pressure Vaporization** Of Water Enlarged Expanded Air Molecule
2. **Heat vaporization of water** exterior sun light, interior building
3. **Water Vapor Migration** to the Cold Side
4. **Water Vapor Releases** Through Roof Top Permeation of wet roofs
5. **Water Vapor Take Up** Condensation In Mat separator Under 2001 Co. Roof Membrane
6. **Controlled Air Exchange** To Remove Water Vapor with 2001 Co. Wind Vented Application technique Equalizer valves sucking in wind wards edge, and allowing controlled air exchange on low ward edge.
7. **Accelerated Drying With Forced Air Exchange exhaust** blowers in the center of the roof.
8. **Calculating the time To Dry Various wet Roof Assemblies**
   US Department of Energy web site wet roof drying calculator WOFI.

5. Understanding Structural Roof Construction Enhancements USING 2001 CO. PATENTED WIND VENTED AND AIR SEALING ROOFING APPLICATION TECHNIQUES

A. structural shear resistance

B. structural diaphragm resistance

C. structural component attachment resistance

D. structural weight load resistance

E. structural expansion and contraction building thermo dynamic movement enhancement

F. structural protection from wind blow debris with 2001 debris adsorbing roof assembly design technology

6. Understanding Air Barrier Technology for wind resistance and energy Affiance

1. Stopping air infiltration Into the roof assembly

2. Stopping convection air currents within the roof assembly itself

How air barriers it improve energy efficiency 50% percent or higher

1) Air barriers in walls
   a. Tyvek™
   b. Icynene spray foam

2) ABAA Air Barrier Association of America

3) 2001 Co. Slow Rise Adhesive Foam Systems

7. Understanding Solar Roof Industry

How to calculate Return on Investment amount of kilo watts hour of electricity
It produces a year x your local electricity cost per kilo watts
Kilo watts = 1000 watts of electricity flowing trough a wire for one hour
10 x 100 watts of light bulbs glowing for one hour

8. Where and How to Make Money in Roofing

1. Niche Market

2. Propose 7 alternatives
   1. Bad 3.Good 5. Best 7. Enhancement alternative
   2. Ok 4. Better 6. Excellent

3. Strictly code compliant roof complete tear off R 30 insulation Value ½" positive slope Mechanically fastened ASCE-7 wind code design

9. How to Sell a 2001 Co. Wind Vented Self Drying Roofs

1. Techniques in selling

2. Require person who signs the check be the one you give reroof the proposal to

3. How to write a comprehensive proposal that the owner will be forced to have a face to face meeting with you

10. How to defend yourself legally from the legal intimidation attorney fraternity

1. Give a written **negotiable warranty** for every job

2. Arbitration clause

3. Use 2001 roofer warrantee out line

4. Use uniform commercial code legal language sub sequential & consequential Damages

5. Terms of payment during job in progress

11. How to Market Your Company

1) As being better than your competition

Experience

Education

Track record of past customers

Comprehensive proposal

Certificates of insurance

State license where required

Picture book of completed jobs

Testimonials from previous customers

2) Take the customer to completed roof jobs in their area especially the oldest still functioning.

3) New ideas and concepts

12. Understanding Green Roof Debacle

Green Vegetative Roofs on Commercial Flat Roofs
A Negative Viewpoint by Professor Tom Kelly

Tom Kelly's opinion on green vegetative roofs: The reasons given for putting dirt and growing plants on top of commercial low sloped roofs are some of the **dumbest, non scientific and illogical** reasons, for **fiscally irresponsible expenditures** of public monies that a construction professional could propose for an inner city building's roof.
Financed with tax payer dollars the average cost for green vegetative roofs on government buildings is $35.00 to $45.00 per square foot. At this cost a new membrane roof with solar panels or an inflatable green house or a Denver Airport cable suspended tent structure could be installed making the roof space into a usable enclosed human friendly environment.
Green vegetative roofs offer no relief for our inner city summer heat island environment and give minute if any CO_2 air pollution conversion to oxygen.
What are advocates of green roofs growing up there and are they smoking it?

Green plants on a roof must be a plot by construction litigation lawyers to drum up future business. The future litigation costs from green vegetative roof failures are going to be horrendous. Any roofing contractor with half a brain does not need to be involved in this disaster litigation. The conventional roof low sloped flat roof without dirt and vegetation is hard enough to maintain in a watertight condition for 20 years.
How do you find a leak in a garden roof? By training a gopher?
For the following reasons green vegetative roofs do not make any scientific, economic or environmental sense to me.

1) Absorption of global warming CO_2 and other greenhouse gasses and increase of Oxygen by photosynthesis of green plants

The amount **of CO_2** absorbed and oxygen released by grass, flowers and shrubs on a green roof is minimal: a 100' x 200' area of roof plants will not produce enough oxygen to support one child's oxygen needs for a year. Go plant trees, in open spaces or irrigate arid regions to produce significant oxygen producing trees around a city. The CO_2 absorption and oxygen release is 100% greater per sq. ft. with a forest of trees than a garden roof at a fraction of the cost. Building owners take your green roof dollars and buy trees for your employees to plant in their yards and near by parks. You will have happy employees and 200 times more CO_2 sequestion to oxygenate for the planet. One leaf bearing tree 20 feet in height produces more oxygen than 20,000 sq. ft. of a green roof covered in grass, shrubs and flowers

In Addition Plants Photosynthesis Will Raise Urban Humidity
If all the roofs in Los Angeles California 4,079 square miles were green vegetative roofs irrigated daily the humidity would be increased 10 to 20% causing an ambient temperature increase of 6 to 8 degrees on average and also trap more CO_2 pollution gasses in the polluted Los Angeles air than is presently. The peak electric energy demand to cool interior building spaces would be increased 25 percent. **See ASHRAE manual for heat and humidity calculations.

Green roofs provide evaporative cooling to lower urban heat island effect:
The concept of reducing the inner city summer urban heat island effect with water evaporation from green roofs,

Is Totally Ludicrous.

The basics of the urban heat island is a rise in humidity that traps CO_2 and other pollution gasses in the air stagnated by the radiator fins like construction of tall buildings in the down town city cluster of high rise buildings. Evaporation from garden roofs will raise the humidity of the urban air that traps CO_2 and other gasses, soot, and dust particles that provide molecular radiation friction of the air mass itself causing a rise in the air temperature.
The basis of air conditioning is lowering the humidity (water vapor content) of the internal building air. The easiest way to raise the temperature of the urban heat island is to increase humidity in the city air mass which the green roof evaporation does.
Who came up with this evaporative green plant roof inner city cooling junk science?
Phoenix, Arizona's recent heat and humidity increase from surrounding cotton field irrigation is a significant local battle. Why repeat this artificial raise in humidity in urban cities across the United States? If water evaporation would cause the inner city to cool down why not give building owners an automatic sprinkler that goes on one minute every ½ hour, to wet the roof top surface. In the summer heat we could also have building owners emit a water spray mist over their parapets to cool the sides of their tall buildings.

Please do not sprinkler the roofs, and sides of tall buildings this would significantly raise the inner city humidity and trap more CO_2 pollutants, raising the urban heat island an unbearable 10 degrees or more Fahrenheit with increased humidity.

3) Air conditioning reduction for the building itself from green vegetative roof evaporation:

There is no green roof cooling benefit to the building itself because the garden roof will be sitting on R19 or higher insulation which will nullify any cooling for the building's interior. If the green roof was installed directly on the roof deck without rigid roof insulation and argument for cooling could be made for a vegetative green roof over black tar surface during the sun light hours. When building code compliant insulation R values of R19 or higher are used vegetative plants and dirt provide "O" zero air conditioning reduction.

Rigid Roof Insulation is the only buffer against exterior heat gain for building interior:

1) Most high rise buildings house the mechanical equipment for the building, heating, air conditioning and ventilation on the top floor under the roof. This top floor is freely ventilated with exhaust fans normally. So insulation, white, black or, green roofs don't do anything for the building energy consumption.

2) Green plants emissivity will lower the urban heat island temperature. How?
Green plants and dirt have no less emissivity than a black roof membrane on today's R19 insulation or higher. Heat radiation waves from the sun are absorbed in the same capacity in green plants and dirt as into a black roof membrane, and the total emissivity (heat release) back into the atmosphere of green plants and dirt are the same BTU's of heat as a black roof, membrane. The difference being the heat is given up over a longer time period with green plants and dirt. Where as the heat is immediately released with a black roof membrane.

Emissivity is the ability of roof surface to heat up from the suns rays and the heated surface ability to heat the surrounding air.

The Emissivity is more with a green vegetative roof than a black roof membrane on R19 or greater insulation because the black roof membrane gives off heat between 10 AM to 2 PM with elevated temperatures. The green plant and dirt roof absorbs solar radiation and stores Solar heat in its plant and dirt mass and releases the solar energy as heat and humidity over the longer time period even after sundown increasing the urban heat island effect way into the night.

The green plant and dirt roof absorbs heat like a road, it has a greater mass to heat up and a greater mass to cool down, plus it increases the humidity. Same solar radiation, same heat calories, same BTU's of heat energy to be released, just different time releases.

This green plant and dirt roof heat time release benefit would be good in the northern states during the winter, but the green roof frozen wet earth mass in winter never heats up. A black roof in winter helps to melt snow loads slowly between 10 to 2 o'clock to eliminate snow loads. Where the green roof will increase snow loads and ice build up. Thus creating increase snow loads on the building.

What value to convert CO_2 to oxygen do winter dormant grass and shrubs have, from late September to May? Seven "7" or more months of the year green roofs do nothing.
What is the fire rating of a green roof turned into winter brown and burnable fire mass?
The Canadian National Research Council (the equivalent of the US Bureau of Standards) did a multi year green roof analysis on energy savings and environmental benefits.

The CNRC conclusion was: Zero, Zilch, and Nada, Nothing, To Save Energy

Why do we allow feel good, see good, want to help the environment with junk science bureaucrats waste our tax money? We have more important things to do to fix our environmental mess than install green roofs. For example install automatic shut off switches on electric lights, build hydro dams, tidal boars, wind generators and nuclear power plants to produce electricity, to limit coal fired electric power plants emissions of CO_2 and sulfur dioxides pollutants.

"Simple Free Inner City Air Conditioning"

If we install intake air fans in all subway tunnels into a city to exchange stagnant inner city polluted air we could alleviate 25% or more of the urban heat island. We have the inner city air conditioning ducts. Why don't we turn them on?

5) Increased insulation and higher R Value with green vegetative roofs:

What are you growing on your green roof? Are you smoking it? Or eating it?
Dirt grass and shrubs have no insulation R value. Two (2) feet of frozen dirt has an insulation R value of 1, the same as a single pane window. A skylight has a greater insulation value than a green vegetative grass and shrub roof. Frozen dirt and an ice cube have the same insulation value. That is R value of 1, if it can stop air movement. Whoopee Doo!!!
Mankind has learned that we do not make a home out of ice cubes. (Unless they are Eskimos but the house melts above 32 degrees). Properly insulating a building's roof makes financial sense, for the top floor under the roof only.
For example, properly insulating a low sloped flat roof return on investment "ROI"
can be 3 to 5 year easily justified at R19 to R50 in northern climates for heating energy savings alone. Insulation is more important in southern climates because air conditioning costs more than heating costs for internal building temperature change. Today's energy costs justify roof insulation R30 to R50 for flat roofs on air conditioned buildings.

6) Green vegetative roofs help city storm water runoff with roof top rainwater retention:

For Storm Water Retention, saturated earth holds one inch (1") of water for every 3" of dry dirt. Eighteen inches (18") of dry soil can hold 6" of rain water. When a green roof is irrigated daily to grow plants and grass, water retention is minimal.

For a practical water retention method for the flat roof, simply install a two foot high plastic pipe extension into the existing roof drain pipe and drill small ¼ inch holes in the side of the pipe extension to drain rain water slowly off the roof. **Is this method too simple?**

This extension pipe in a roof drain would be cut off at the maximum ponding water height allowable by the building's structural tolerance. **Is this too practical?**

Is this simple roof drain pipe extension water retention engineering something a building owner would pay someone money for? It could save the $30.00 to $40.00 per square foot for the vegetable roof design. Most roofers would love to get $10.00 per sq. ft. for an R50 highly insulated roof. The water retention pipe method saves 75% of the cost of a green vegetative roof. The roof cost $10.00 per sq. ft. not $40.00 per sq. ft. $ 30.00 x 20,000 sq. ft. = $600,000.00 savings.

In northern climates where the ground freezes at night from November to April, what water absorption can any dirt and plant medium have? Green vegetative roofs can't absorb melting snow much less the winter rain storm water for six or more months.

Green roofs require daily watering or the plants will die. Automatically irrigated green roofs irrigate even in a rain storm. I have yet to see any green roof irrigation system that irrigates individual sections on soil moisture sensors. It's all or nothing irrigation.

Green roof water retention is a mental delusion of reality.

The dead vegetation of a green roof constantly flows to roof drains and clogs the drain strainer making the green roof a swamp causing root rot of vegetation.

Have you ever walked across a green roof turned into a swamp to clean a drain strainer? You need big boots to get to the drain but who is going to fix where your foot prints walked through the swamp?

Green roof water retention and proper soil medium drainage is an oxymoron.

7) Cost of Green Vegetative Roof is a great investment for society to save the planet earth.

The cost to install a garden roof is $30.00 to $40.00 dollars per square foot and its yearly maintenance, gardener, fertilizer, and summer watering irrigation can be over $1.00 per square foot per year. A single ply EPDM or TPO membrane reroof is $3.00 to $5.00 per square foot fully installed and warranted for 20 years on large building roofs. On a 100 x 200 building, 20,000sq. ft., a re-roof cost would be 100,000.00. A green roof cost a whopping $ 600, 000, and 00 to $ 800,000.00.

Green Vegetative Roof Have No ROI Return On Investment For Our Inner City Societies and Planet Earth Environment

Owners concerned about global warming should do something cost effective for a ROI **Return on Investment** to help the environment. Take the garden roof money and hire people to plant trees in empty spaces, within and around the inner city. If you take the green roof money and finance planting trees in the urban community you can take 100 times as much CO_2 out of the air, and provide oxygen for our world; Another idea for world oxygen is to buy and maintain a rain forest in third world countries to be kept as "**World Oxygen Parks."** Make sure you own the land; there are fraudulent schemes for 3rd world rain forest preserves. For the cost of a green roof most building owners could buy every person in the building a plant every year to make oxygen for all the inhabitants inside the building for 100 years.

8) Aesthetic beauty of Green Vegetative Roofs are for birds, flying insects, and architects

Who sees and uses a green roof? Airplanes flying over head, skydivers, people in higher floors of adjoining buildings, flying insects and of course the birds need a place to poop on. Green vegetative roof are installed on governmental buildings at tax payers expense.
I have yet to see any tax payer or rental property manager put a green roof on their own building paid for out of their own pocket. Private property owners have better things to do with their hard earned green dollars than to buy green vegetative roofs and maintain them.
God made plants and grass to grow on the ground and not on roof tops.
For anyone to walk out on a green roof today you need an OSHA approved full body safety harness with a tether line so you will not walk off the edge of the roof.

Being Green Practically with a ROI*

9) The easiest way to be Green energy conscious and slow CO2 global warming from coal fired electric power plant emissions is to use electricity only when you need it.

If we turn off light switches and electric machines when not in use, we can cut our electric power demand by 1/3. By install motion detector switches that turn off lights when we exit a room. In addition, we can use energy efficient lights and electric appliances. Change our living habits do cooking, washing, bathing and other electrical needs at night during off peak electric hours.

CO2 Emissions Reduction for Planet Earth

10) Nuclear power is the only way to lower CO^2 emissions from coal fired electric power plants in our world today dependent on electricity in a global economy.

If we promote safe nuclear energy power plants we can electrify the world without CO_2 emissions. Coal- fired electric power plants are the main cause 90% of the rise of CO_2 gasses and other sulfur compounds in the atmosphere. But more important than global warming associated with burning coal are pollutants of heavy metal, sulfur, dioxides, acid rain, and biological contaminants. These pollutions are killing micro organisms and the small creatures at the bottom of the food chain. We humans are at the top of the food chain and when the bottom dies we fall as well.

Let's Understand the Big Picture for Planet Earth CO2 Emissions from Coal Burning Power Plant to Make Electricity for Today's Global Economy

No one can stop China, India, and other developing countries from trying to provide a better life for their citizens by supplying electricity. These countries only have coal to burn to make electricity. They are and will be building one coal fired power plant a week for the next ten years. They do not have oil and natural gas they only have coal to burn as a natural resource to provide electricity. We Americans can help developing countries develop clean nuclear electric power plants. We have the technology and the know how, for safe nuclear energy.
Nuclear is the only way to stop coal burning power plant emissions and sulfur dioxide, acid rain and heavy metal biological pollution of our planet earth period. We need oil and natural gas to run our mechanical devices in our global industrial society.

In Conclusion

Where did this green vegetative roof idea to solve global warming and CO^2 sequestering come from? Probably some government researcher scientists in a think tank without any practical roofing knowledge or plant photosynthesis equation experience. Looking for political feel good research funding. Let us tax payers demand financial responsibility in global warming CO^2 pollution mitigation efforts.

Attachments
December 18, 2009 Newspaper article Copenhagen Climate Change Conference
China wind article Science Magazine September 2009
1. Insulation outlook January 2010
   Agri-Roofs

1. for fun and / or profit
2. Lets create an income from green roof
3. Use light weight soil maybe like potting soil
5. Able to grow shallow rooted plant
   A. turf grasses
   B. tree seedlings
   C. much type of veggies
6. Employment opportunities
7. Roofscaper- not landscaper
8. Sell what you grow
9. Roof leasing

Green Roof Benefits:

1. Reducing "heat island" effect
2. Reducing temps by several degrees in downtown area
3. Reducing energy costs
4. Increase life span of roofing material
5. Civic projects for gardening and recreation
6. Photosynthesis putting more O^2 back in the atmosphere
7. Improving employee morale

Green Roof Flaws:

1. Cost
2. Building and roof design for additional weight. Older buildings do not have the strength to handle extra weight. Is retro-fitting cost effective?
3. Waterproof barrier
4. Additional foot traffic on roof
5. Effective in Snow Belt areas?
6. Is there a better alternative – solar?
7. Impact 7 hurricanes and tornados, hail
8. During the 1990's forest land was disappearing about the size of Venezuela.

Paper writing on Energy Green Bullshit

A) Facts we need to know

Need to know:

How do America and the world make electricity?

	World	US	Dept. of Energy
1. Coal	(41%)	49%	600 +
2. Nuclear	(15%)	20%	100 +
3. Gas	(20%)	21%	?
4. Hydro	(16%)	6%	2000 +
5. Other	(2%)	3%	?
6. Oil		1%	?

B) How many people in the world

1) United States 308 Million?
2) How many people in china 1.3 billion
3) How many people in India 1.2 billion
4) How many people in Africa 3.4 billion?
5) How many people in South America?
6) How many people in Mexico 108 Million

C) What can green vegetative roofs do for us?

For additional information, call 2001 Co. at 1-800-537-7663 or info@2001Company.com

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