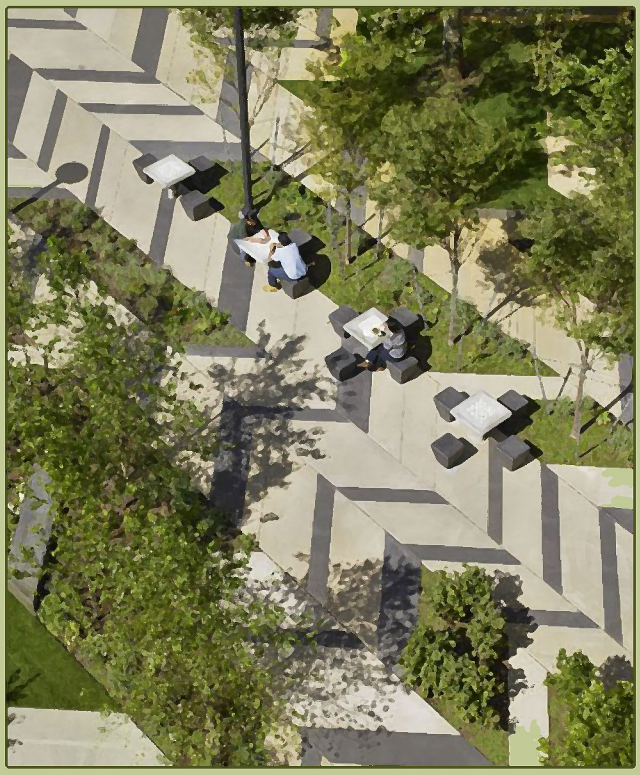
NOTE: PLEASE ADD PAGES AS YOU SEE NECESSARY



PICTURE REFERENCE PINTEREST

SUSTAINABLE SYSTEMS

WINNIE WONG

PARSONS THE NEW SCHOOL FOR DESIGN , FALL 17
INSTRUCTOR: CAROLIN MEES

GLUE STRIP

THIS IS A IDEAL NEW NYC MAP ABOUT THE COMMUNITY GARDENS BETWEEN 14TH STREET AND HOUSTON AND THE EAST RIVER AND THE HUDSON RIVER.

AS SHOWN ABOVE, THERE WILL BE MORE ENLARGEMENTS OF PUBLIC PARKS AND POOLS, AS WELL AS TREES. IN ORDER TO IMPROVE AIR IN THE CITY AND TO MAKE THE CITY SUSTAINABLE, WE DEFINETELY NEED MORE GREEN! GREEN ALSO RELIEVE THE DENSITY OF THE CITY.

SOCIAL & SYSTEMS

GLUE STRIP

GLUE STRIP


HUDSON RIVER
W 14 ST
HIGH LINE PARK
WHITNEY MUSEUM
HUDSON ST
HUDSON RIVER PARK
GREENWICH VILLAGE
Babbo
Blue Note
by CHLOE
W 8th St
5th Ave
WASHINGTON SQUARE PARK
W HOUSTON ST
Lafayette St
Bowery
3RD AVE
2ND AVE
1ST AVE
E 14 ST
Momofuku Noodle Bar
EAST VILLAGE
EAST RIVER PARK
Avenue C
Avenue D
E HOUSTON ST
HOUSTON PARK
FDR Drive
John Lindsay
EAST RIVER
PUBLIC PLAYGROUND
PUBLIC RIVER
PUBLIC PARK
METRO LINES
RIVER BANK
HIGHWAY LINE

PICTURE REFERENCE PINTEREST

Q: WHY COULD COMMUNITY GARDENS BE CONSIDERED AS FLEXIBLY USED PUBLIC OPEN SPACES THAT ALLOW A NOMADIC LIFESTYLE?

FRIST, THE TRUTH OF LIVING IN A CITY LIKE NEW YORK IS THAT IT FORCES PEOPLE TO BECOME ANXCIOUS AND IMPATIENT. PEOPLE'S WORKS AND EDUCATION MAKE THEIR LIVES TOO INTENSE. COMMUNITY GARDENS NOT ONLY BENEFIT THE REDUCTION IN ENERGY CONSUMPTION BUT ALSO RELIEVE THE HIGH-DENSITY OF THE CTY--RATHER THAN ALL HIGH-RISE BUILDINGS, IT CREATES A MORE RELAX VISUAL SKYLINE IN THE CITY.

COMMUNITY GARDENS ARE CONSIDERED FLEXIBLE BECAUSE THEY CAN HAVE MULTIPLE USES, AND ALSO THE GREAT ENVIRONMENTAL AND SOCIAL HEALTH BENEFITS THEY PROVIDE. THEY CAN ALSO CONTRIBUTE TO SUSTAINBLE FOOD SYSTEMS.COMMUNITY GARDENS FULFILL MANY OF THE SUSTAINABLES GOALS IN THE FUTURE.

GLUE STRIP

Q: DESCRIBE HOW ONE COMMUNITY GARDENS IN YOUR HOMETOWN OR A CITY THAT YOU VISIT OR THAT YOU SAW IN THE MOVIE FUNCTIONS IN REGARD TO SOCIAL AND SYSTEMS ASPECTS?

DESPITE THERE ARE HUGE AMOUNTS OF RURAL FARMS IN CHINA, I STILL HAVEN'T SEEN A COMMUNITY GARDEN INSIDE THE CITY (OR I DIDN'T NOTICED). HOWEVER, I HEARD THAT CHINA IS REINVENTING THE CONCEPT OF "GARDEN CITY", WHICH IS TO CREATE SPACE FOR BOTH URBAN AND RURAL CITIZENS. BECAUSE EVERY YEAR, THERE ARE MILLLIONS OF PEOPLE MOVE FROM THE COUNTRYSIDE TO CITIES. THUS CHINESE URBAN PLANNERS ARE ANALYZING ABOUT THE SPACES THAT CAN BE USED AS FARMLANDS. UNLIKE SOME STATES IN UNITED STATES, SUCH AS CALIFORRNIA (WHERE I USED TO LIVE), MOST OF THE PEOPLE IN THE AREA I LIVED HAVE INDEPENDENT HOUSES RATHER THAN LIVE IN APARTMENTS. SO THEY HAVE SMALL GARDENS TO PLANT WHATEVER THEY WANT. PEOPLE IN CHINA ARE MOSTLY LIVE IN THE BUILDING. THEY MAY HAVE SMALL GARDENSIF IN THEIR HOUSE ONLY IF THEY ARE LIVE IN THE AREA FAR AWAY FROM THE CENTER OF THE CITY. JUST LIKE THE SITUATIONS IN NEW YORK, PEOPLE HAVE TO RESEARCH AND REALLY USE THE SPACE APPROPRIATELY.

GLUE STRIP

Q: HOW IS A COMMUNITY GARDEN AS AN OPEN SPACE ACCESSIBLE TO ALL SPATIAL EXPRESSION OF SOCIAL AND SYSTEMATIC ASPECTS?

THE SIZE OF COMMUNITY GARDEN IS ADJUSTABLE, THEREFORE, IT IS OPEN AND ACCESSIBLE TO MANY SPACES. TO BUILD AND CONSTRUCT A COMMUNITY GARDEN IS ALSO NOT AS SOPHISTICATED AS OTHER CONSTRUCTIONS. THE ROOFS ARE GREAT SPOTS FOR SETTING COMMUNITY GARDENS BECAUSE NORMALLY, THERE ARE NO EFFICIENT USES WITH OUR ROOFS. THUS WE CAN UTILIZE THE SPACE AND PRODUCE GREAT BENEFITS.

Q: HOW COULD COMMUNITY GARDENS DEVELOP IN THE FUTURE OF A "GROWING CITY"?

TO ACHIEVE A SUSTAINBLE CITY IS ATTAINABLE IF WE CAN UTILIZE THE SPACE AS MUCH AS POSSIBLE. FOR INSTANCE, TO MAKE ALL SPACES, INCLUDING INFRASTRUCTURAL SPACES, SERVE MULTIPLE USES AND USERS.

BIG CITIES SUCH AS NEW YORK AND SAN FRANCISCO HAVE MANY CONSTRAINTS ON LAND AND RESOURCES, THEREFORE WE ALSO HAVE TO LOOK AT NON-TRADITIONAL SOLUTIONS TO GET AROUND THE CHALLENGES AND ALSO NOT REDUCE THE QUALITY OF LIFE FOR CITIZENS.

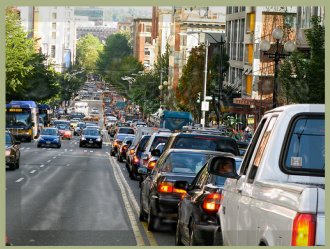
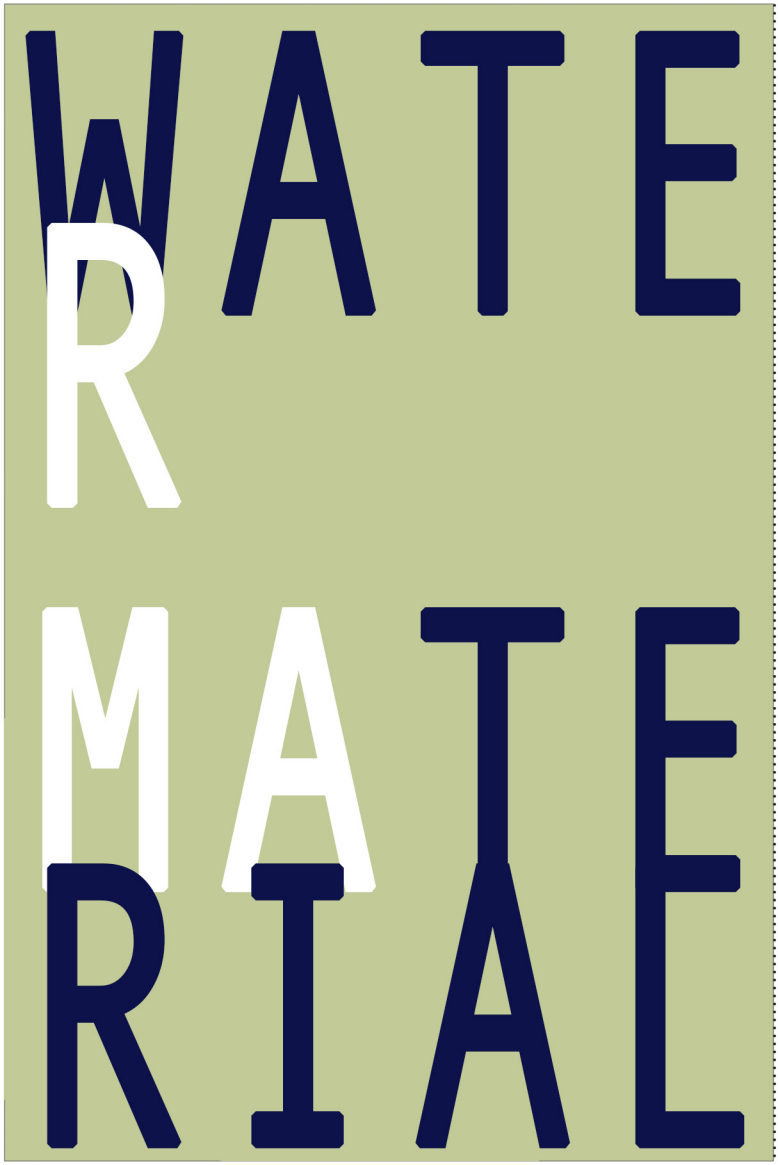


PHOTO INFERENCE PINTEREST

GLUE STRIP



GLUE STRIP

IDEAL MAP OF NYC

OFFSHORE WIND

WIND +16.57%
SOLAR +33.93%
BIOMASS -2.67%
HYDRO -13.415
GEOMTHERMAL +6.75

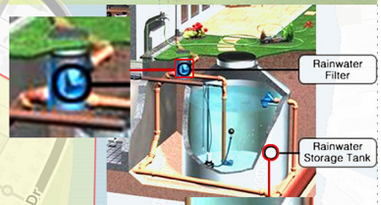
SOLAR WINDOWS

ROOF GARDEN

COLLECT RUN-OFF RAIN IN A BARREL FOR USE IN WATERING PLANTS & YARD

ENLARGE GARDENS & ADD MORE TREES

GLUE STRIP



GLUE STRIP

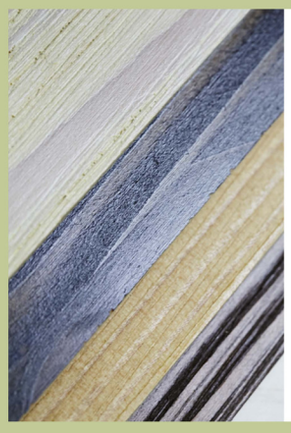
PERSONAL VISION OF NEW YORK CITY AS A GROWING CITY WITH URBAN AGRICULTURE THAT IS RESILIENT TO FLOODING.

CLIMATE CHANGE IS IMPACTING URBAN LIVING AREAS IN MANY WAYS, FROM ELEVATING FLOOD RISK TO DROUGHT PROBLEM IN PLACES. THE ANNUAL DAMAGES FROM FLOODING IN THE U.S. ALREADY INCREASED BY 30%. IT IMPORTANT TO RETHINK ABOUT HOW TO ENHANCE OUR LIVING AREA AND TO TAKE ACTIONS IMMEDIATELY. WE NEED TO BUILD GREEN INFRASTRUCTURE LIKE RAIN GARDENS AND PERMEABLE PAVEMENT TO MANAGE FLOODING. BY LETTING WATER SOAK INTO THE GROUND TO RECHARGE GROUNDWATER SUPPLIES, IT REDUCED THE COST OF IMPORTING WATER, MITIGATE CARBON POLLUTION, AND REDUCE THE IMPACT OF STORM SURGES. PLACES SUCH AS SOUTHERN CALIFORNIA AND THE SAN FRANCISCO BAY AREA COULD BOOST WATER SUPPLIES BY BILLION GALLONS PER YEAR. BUILDING COASTAL RESILIENCY IS NEEDED BECAUSE RESEARCH STATES THAT WAVE HEIGHT CAN BE REDUCED BY 50% WITHIN THE FIRST 16 FEET OF MARSH AND 95% AFTER CROSSING 100 FEET OF MARSH. THE IDEAL STRUCTURE OF FUTURE HOUSES IS TO HAVE A WATER STORAGE OR A WATER TANK UNDER. THUS IF THE FLOOD HAPPENS, WATER COULD GOES DOWN INTO THE STORAGE, THEN FILTERED AND RECYCLED FOR WATERING PLANTS AND LIVING USING.

GLUE STRIP

GLUE STRIP

A- structural = straight, rigid material (represented in model by bamboo sticks)

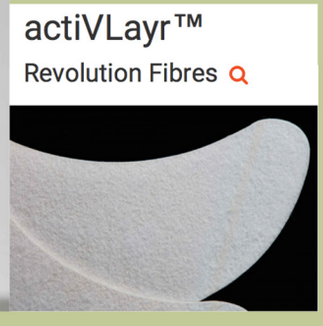


1. This engineered Panels I chose is made of waste material that came from deconstructed industrial, agricultural, and residential buildings such as Douglas Fir and hemlock. It is natural because it does not have any additive manufacturing, casting, and printing,etc. It is stiff and opaque.

GLUE STRIP

2.This is a handcrafted, semi-rigid and textured from consisting of used coffee grounds that collected from restaurants and cafes. The grounds are mixed with a plant-based binder, which joins and forms the particles into a solid part. These natural components allow the material to b 100% biodegradable and compostable. This material is also sound absorbing and light absorbing. It does not have additive manufacturing and die cutting.

B - food production = skin material to be flexible or semi-rigid (represented by in model by paper panels/facets)



3. This material is a clinically proven delivery platform for natural nutrients and treatments using nanofibers made from marine collagen, providing optimal skin care benefits. Contents included blend of fruits extracts and marine collagen that has been immobilized in a dry, stable format with no additives. The content is completely from waste material and can be renewable in the future. It is sound absorbing and light absorbing. It is also flexible, translucent, and have a matte texture.

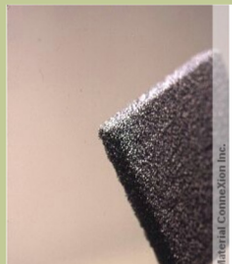
GLUE STRIP

Brrr° Natural

Brrr°

This material is a air-activated fabric that provides continuous cooling. It was made of a proprietary combination of minerals(one that has high thermal diffusivity but a high refractive index) that are integrated in the natural staple fibers during their carding and combining process and are air--activated, offering a cooling touch and sustained cooling of the skin. It is non-toxic and no additive manufacturing.

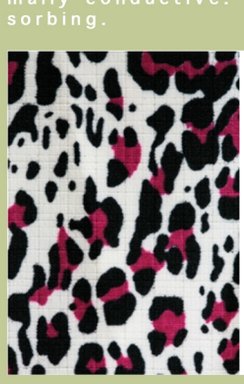
C - solar energy collection or solar energy reflection = skin material to be flexible or semi-rigid (represented by in model by panels/ facets)



DUOCEL® Silicon Carbide Foam

GLUE STRIP

1. This silicon carbide foam is a strong, lightweight, porous ceramic foam with an open-celled structure made of a three dimensional latticework of interconnected ligaments in a repeatable pattern throughout the foam, which is a fracture and thermal shock resistant, and electrically and thermally conductive. It is also sound and light absorbing.



M.C.S. ® Blocker

Burlington

MC 7038-03

Textile finish that wicks moisture away from the skin to keep the wearer cool and dry, whilst also providing excellent UV protection of SPF 50. This fabric is flexible, soft, and opaque. This finish can be applied to many different fabric constructions and fiber compositions.

D - water proofing and water collection or water drainage = skin material to be flexible or semi-rigid

Waterproof/Breathable Mesh

NBC Meshtec Inc.

MC 7326-02

GLUE STRIP

1. This flexible, opaque waterproof breathable membrane mesh is for use in filtration and for speaker meshes in smartphones.Dual polytetrafluoroethylene films are used to provide a membrane that blocks liquid water transport but allows water vapor and air to pass through. It is a flexible and soft material which also contains sound and light absorbing.

Recyc Leather

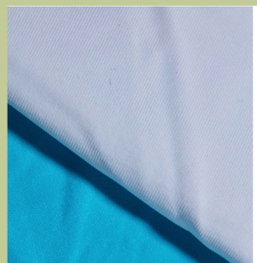
Sustain Inc

MC 7794-01

NATURALS

2. This is a durable, waterproof, recycled cow split-leather that can be in environmental use. It consists of 80% leather fiber, 10% latex, 10% synthetic additives such as binder, softening grease, and pigments. It is manufactured using sustainable practices, reduce the cost by 80%, production time by 50%, and CO2 emissions by 60%. It is flexible and soft with a sound and light absorbance.

E - thermic insulation and cooling = skin material to be flexible or semi-rigid (represented by in model by panels/ facets)
Note: access Material ConneXion library at library.materialconnexion.com or New School library webpage database (on campus only)



NILIT® Breeze

NILIT Ltd.

MC 7806-03

GLUE STRIP

1. This yarn is composed of a nylon 6,6 embedded with inorganic microparticles that create channels, promoting ventilation and cooling. The yarn itself has a large surface area, which enables the quick transfer of body heat; furthermore, the yarn undergoes a special texturizing process that creates a low-bulk yarn, maximizing the breathability. This fabric provides cooling with a difference in temperature of 1.1 °C. It is flexible and soft with a glossy and matte texture.

SUNBURNER

Teijin Fibers Ltd.

MC 5399-08

2. This polyacrylate fiber that absorbs moisture and uses it to generate heat through an exothermic reaction. Unlike insulation systems, which just retain body heat, this fiber actually generates heat. The combination of properties of the polyacrylate fiber creates a “microclimate” against the skin. The high level of moisture absorption keeps the skin dry, but the fiber also discharges moisture quickly, keeping the garment from becoming sodden.

GLUE STRIP

Steel

Steel is an alloy of iron and other elements, primarily carbon. Because of its high tensile strength and low cost, it is a major component in buildings, infrastructure, tools, ships, automobiles, machines, appliances, and weapons. Construction industry is the largest consumer, accounting for approximately 50% of total world steel consumption. Transport (cars, trucks, shipbuilding, and rail) is the second. The machinery industry and metal products industry each consume around 14% of the world's steel. Steel, which has a high tensile strength, is used with concrete in order to counteract the concrete's low tensile strength and ductility. The main purpose of steel is to resist tensile stress in particular regions that may cause structural failure or cracking. It also has a recycling rate over 60% globally. Steel products mainly used for civil engineering and construction purposes are general-purpose steel, in other words, so called commodity items. They include: Rebars, H beams and other shapes, pipes (structural pipes and others), sheet piles, galvanized steel sheets and other coated sheets (e.g. roofing) – Heavy and medium plates, steel sheets, and other secondary and tertiary wire rod products. Steel products used in automobile included vehicle manufacturing, such as hot dipped galvanized, electro galvanized, and galvannealed steel sheets. Steel sheets are used in the basic vehicle frame and for making hoods, doors, bumpers, mufflers and fuel tanks. Specialty steel excelling in tenacity, mechanical strength and wear resistance is used in engine-related parts, transmissions and suspensions.

GLUE STRIP

GLUE STRIP

Iphone 6s

Alternative material for steel

Fiber reinforced plastic is an option of alternative material for steel, especially for harsh environment exposure, e.g. marine structures, bridge decks where salt is used during winter time and so on. The cost of Fiber reinforced plastic generally depend on the type of fiber used. For glass and/or non-carbon fiber the cost is rather low and comparable to steel. The qualification for the alternative material is that it should not expand and contract under moisture changes. It must remain strong in tension. It need to maintain modest adhesion to the cement paste. It needs to resist chemical attack. It is best if it is impervious to numerous liquids that can migrate Through concrete, and it should be stronger in tension than concrete is in compression. FRP laminates are high strength, high stiffness, lightweight, flexibility to form in any shapes, easy to handle during construction, and excellent resistance to corrosion and environmental degradation. Glass-FRP or Carbon-FRP can be used for strengthening steel members. Carbon fibers can be used for the reinforcement purpose. This material is light in wt. and have comparable strength as that of steel. FRP material can be used to increase initial and secant stiffness, and also strength of system. In such case ductility of system usually will be decreased. The steel fiber can be used for tunnel project, burst against construction, gutter of Mining Mountain, industrial ground, underground construction, municipal construction project. Advantage: anti-crack, pressure-resistance, anti-abrasion, bending toughness.

GLUE STRIP

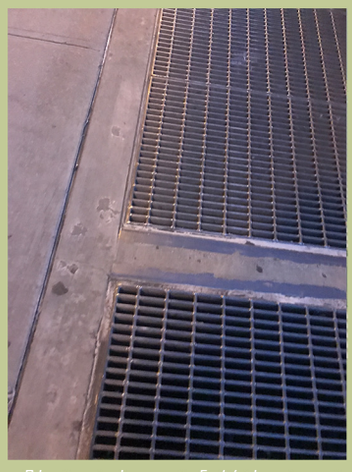


Photo taken at E 14th street

Photo taken at E 14th street

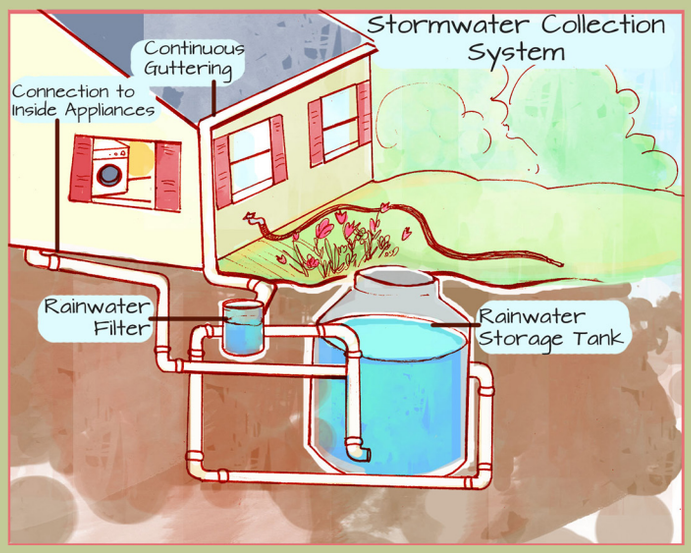
GLUE STRIP

Rainwater Harvesting

Simple rainwater collection systems have three main elements: the roof or other catchment area, the storage tanks, and the gutter and other piping that directs the water from the catchment area to the tank. Advanced systems may also use a pump to pull water from the tank to where it is used, and may purify the water with additional devices such as filters and ultraviolet disinfection.

The simplest rainwater collection system is a "rain barrel". A barrel that is positioned under the downspout from a building that collects water to be dispensed as needed for watering the garden. A single barrel may be used, or several may be connected together.

GLUE STRIP



If the rainwater will be use for drinking or watering gardens, A tank that does not leach toxins or foster pathogens is needed . For example, galvanized steel tanks are lined with polyethylene or other food-grade liner.

If the rainwater is collected from a roof, the roofing material has to be not leaching toxins. For instance, asphalt shingles leach toxins into water, while metal roofs or slate shingles do not.

GLUE STRIP

Climate Change

GLUE STRIP

In Northeast area of America, there are heat waves, heavy downpours and sea level rise pose growing challenges to many aspects of life. Due to these problems, infrastructure, agriculture, fisheries and ecosystems will be increasingly compromised. In Northwest and Southeast area of America, changes in the timing of streamflow reduce water supplies for competing demands. Sea level rise, erosion, inundation, risks to infrastructure and increasing ocean acidity pose major threats to the region's economy and environment. Increasing wildfire, insect outbreaks and tree diseases are causing widespread tree die-off. Extreme heat will affect health, energy, agriculture and more. Decreased water availability will have economic and environmental impacts. In Midwest and Southwest area, they also have extreme heat that causes drought and insect outbreaks, all linked to climate change, have increased wildfires. Declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in

GLUE STRIP

coastal areas. Infra-
structure, health, agri-
culture, forestry, trans-
portation, air and water
quality, are all caused
by climate change.

Hurricane

GLUE STRIP

Drought

Wild fire

GLUE STRIP

We are pushing up against and exceeding several critical boundaries of global sustainability. We are also taking actions that cannot be supported by the earth's systems in the long term. We're already exceeding the earth's adaptive capacity with respect to greenhouse gas emissions, biodiversity loss and the nitrogen cycle and we're approaching critical limits in both the phosphorous cycle and ocean acidification. Our use of fresh water is also approaching or exceeding sustainable limits in many parts of the world and we're systematically destroying our arable land. These are critical life sustaining global processes that cannot be ignored without severe consequences.

Once we have good access to food, shelter, healthcare and other basic material things, the nature of the community in which you live and the quality of your relationships is the best predictor of wellbeing.

GLUE STRIP

2002 Flood in Texas

Flood in New Orleans on Aug. 5, 2017

GLUE STRIP

Windenergy

From old Holland to farms in the United States, windmills have been used for pumping water or grinding grain. Offshore Wind increases the wind by 16.57%, solar by +33.93%, Biomass - 2.67%, Hydro -13.415%, and geothermal + 6.75%. Wind turbines convert around 45% of the wind passing through the blades into electricity. Wind farm capacity factors are lower than coal and baseload gas plants, but they use their energy source more efficiently and can be large-scale suppliers of electricity. Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity. Click on the image to see an animation of wind at work.

Wind energy doesn't pollute the air like power plants that rely on combustion of fossil fuels, such as coal or natural gas. Wind turbines don't produce atmospheric emissions that increase health problems like asthma or create acid rain or greenhouse gases. They also kill thousands of bats. Wind turbines produce noise pollution that affects people living near them. Wind turbines and gas turbines, or coal-fired power all produce environmental issues, but which one is better or worse is debatable. Other sources of electricity produce harmful particulate emissions which contribute to global climate change and acid rain. Negligible Greenhouse Gases: The sources of most of our power, coal and natural gas, produce large quantities of greenhouse gases.

Wind turbines produce noise pollution that affects people living near them. They also kill thousands of bats. Wind is one of the sustainability ideas for business that can be incorporated to cut business electricity costs. Commercial grade wind-powered generating systems are available to meet the renewable energy needs of many organizations:

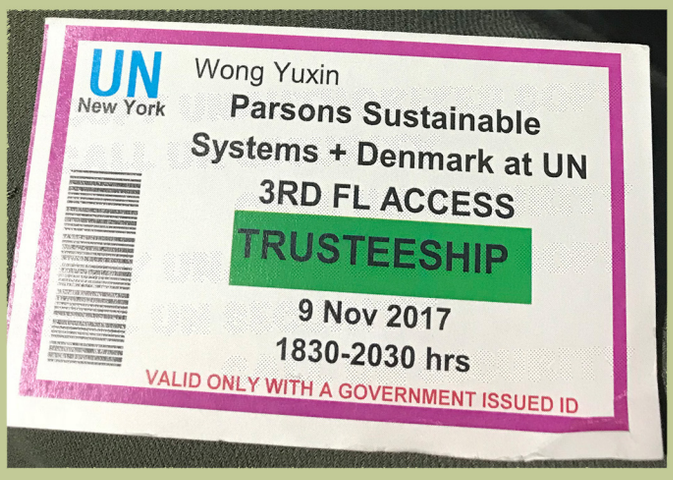
Modern wind turbines fall into two basic groups; the horizontal-axis variety, like the traditional farm windmills used for pumping water, and the vertical-axis design, like the eggbeater-style Darrieus model, named after its French inventor. Most large modern wind turbines are horizontal-axis turbines.
Turbine Components
Horizontal turbine components include:

GLUE STRIP

GLUE STRIP

UN Visit

During the presentation there's one part that talked about car pollution problems that happening around the world. In Copenhagen, Denmark, people who ride bicycle usually disdain at people who drive cars. And because there are a sizable population of people who ride bicycle in Denmark, they have more traffic laws on bicycle comparing to other countries. I think cities like New York and Los Angeles really should encourage people to ride bicycle than drive cars.



China just had a "share bike" system around last two years which people can just borrow bike for only few cents and return it wherever that does not interfere vehicle and people.

GLUE STRIP

I think we can install more share bike areas, because the citi bike is too rare that whenever I want to borrow it I will have to think about where I can park it.

GLUE STRIP

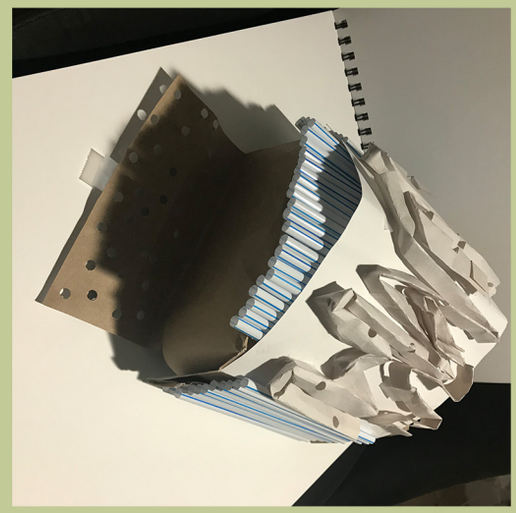
blade or rotor, which converts the energy in the wind to rotational shaft energy;
a drive train, usually including a gearbox and a generator;
a tower that supports the rotor and drive train; and
other equipment, including controls, electrical cables, ground support equipment, and interconnection equipment.

google.com

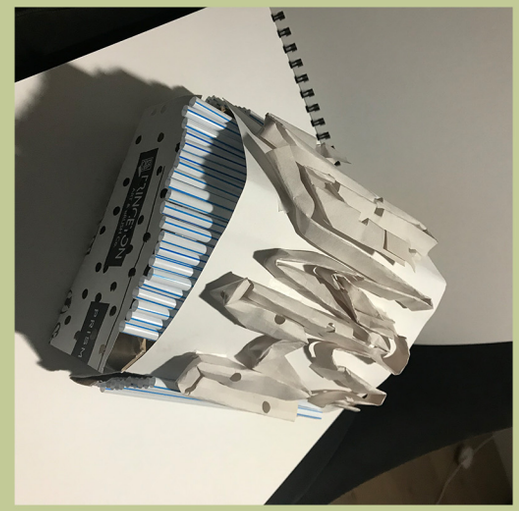
GLUE STRIP

google.com

GLUE STRIP



GLUE STRIP



GLUE STRIP

a- How does the specific energy production, energy storage, energy transmission, energy mitigation aspect works?

Electrical Energy Storage(EES) is an underpinning technology which energy is stored in a certain state, according to the technology used, and is converted to electrical energy when needed.

b- What are the benefits and/or complications? What is positive about this energy aspect and what needs to be improvement in context with it?

The wide variety of complex characteristics matrices make it difficult to appraise a specific EES technology for a particular application. Therefore we need to address the suitable one for integration into a power generation and distribution system.

c- Who is involved with this or affected by it? Mention specific organization involved or, if applicable, impacts on humans, plants and animals.

Manufacturers, distributors, users and suppliers of stationery are all involved. Solar Promotion International is a group who promote conference focus on EES for industry people. The conferences are dedicated to renewable energy storage solutions, from residential and commercial applications to large-scale storage systems for stabilizing the grid, and other focal points are products and solutions for smart renewable energy, energy management, e-mobility and uninterruptible power supply

GLUE STRIP

d- How could you set up a Micro Grid? What is crucial for its design or in a design context? Explain and find one innovative, fun design examples for each aspect that could inform parts/ features of your own structure or structural settlement.

When an outage shuts down the main utility lines, a microgrid is capable of supporting the loads seamlessly. This would not be possible without an energy storage system. Many large campuses, such as a military base, hospital, or university, have generators to help keep their buildings operational if the main grid goes down. It will take ample time to come back online because they are rarely running in tandem with the grid, which is not ideal for critical applications. With battery energy storage in place, the microgrid can use stored power to

GLUE STRIP

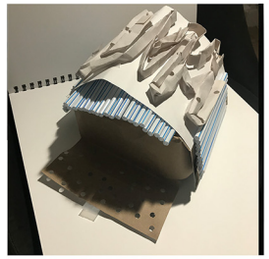
carry the campus from the time the grid goes down to when any additional generation can go online. This design is also applicable into my own structure.

GLUE STRIP

GLUE STRIP

Northeast area In U.S. [Image credit to Relief Web

For this project, I will be creating a water storage installation for houses.
It is an emergency use for people who can not go out houses immediately.
At home they can just use the maximum and current resources they have.
This installation can be set on and around the houses.
The object area for this installation will be in Northeast area in U.S., where flood happens constantly.

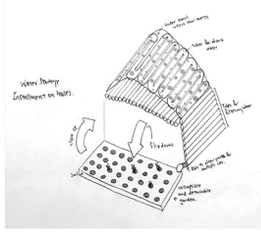


The installation/ structure is made from collapsable panels, therefore they can be folded together into a tube. And can be wearble as a tent bag with amount of weight.

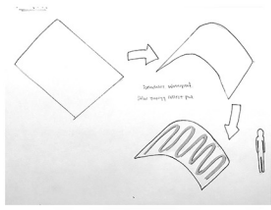
Waterproof/Breathable Mesh

Flexible,
Opaque waterproof
Breathable membrane
for uses in filtration
blocks liqueid water but

GLUE STRIP



This the final view of the structure.
It will be install on top and around the house.
Tubes will be the uses of transfering and filteraing rainwater and amount of flood.
The panel on the side is a collapsable and detachble garden for dry weather.
Alternative tubes for uses of multiple path/uses.



This is the image of the solar panel that will be installed on the roof. It will be made or a waterproof and light absorbing material.
Detacheable tubes can also be installed on top of it.

sound and light absorbing

Recyc Leather

Durable, Waterproof,
recycled cow split-leather
flexible and soft
sound and light absorbance

NILIT® Breeze
NILIT Ltd.
MC 7806-03

Composed of nylon with microparticles that creates channels.
promote ventilation and cooling
quick transfer of body heat
Max breathability

SUNBURNER
Teijin Fibers Ltd.
MC 5399-08

Absorbs moisture and uses it to generate heat through an exothermic reation
Microclimate against the skin

DUOCEL® Silicon Carbide Foam

Strong, light-weight, porus ceramic foam
with an open-celled structure made of a 3D latticework
thermal shock resistant
eletrically and thermally conductive
sound and light absorbing

Engineered Panels
Windfall Lumber

Engineered Panel
Can be used as connections of the structure
Stiff
used of waste material

Flood's Counterplan Winnie Wong

SUSTAINABLE SYSTEMS, PARSONS THE NEW SCHOOL FOR DESIGN, FALL 2017, INSTRUCTOR: CAROLIN MEES

GLUE STRIP