**LAGI 2020 FLY RANCH COMPETITION DESIGN**

**OVERVIEW DESCRIPTION:**

**OUR PLANET IS DYING. THE REACH FOR TRUE MINIMUM IMPACT IS HIDDEN BEHIND A VEIL OF EUPHEMISM AND DECEIT. 45% OF THE WORLD’S POLLUTION COMES FROM ARCHITECTURE. WE HAVE NOT DONE ANYTHING TO STEM THE TIDE OF DESTRUCTION FROM OUR BUILT ENVIRONMENT INCLUDING ADDRESSING NATURAL DISASTERS AND THE GLOBAL DISEASE OF OBESITY AND SEDENTARY LIVING.**

**THOUSANDS OF ENVIRONMENTAL SCIENTISTS AROUND THE WORLD HAVE JOINTLY ACKNOWLEDGED THAT THE EARTH IS DYING AND WE CANNOT SIT IDLE WHILE THE BEHEMOTH MACHINERY OF RESOURCE EXPLOITATION AND ENVIRONMENTAL DESTRUCTION CONTINUES TO DECIMATE A WORLD ODIOUSLY MOTIVATED BY ECONOMIC GAIN AND CONTINUATION OF THE STATUS QUO.**

**WE MUST FIND A WAY TO CONSTRUCT THAT DOES NOT POLLUTE, AND MAINTAIN FUNCTIONING BUILDINGS, THAT DO NOT POLLUTE. IT IS ALSO CRUCIAL THAT THE DESIGN BEING DEVELOPED ON THE FLY RANCH CAN BE USEFULLY ADAPTED TO ANY TERRAIN, CLIMATE, AND ENVIRONMENTAL CONDITION AND THE MATERIALS ARE AVAILABLE LOCALLY AND HAVE THE LEAST EMBEDDED ENERGY IN THEIR FABRICATION, USE THE SIMPLEST MEANS OF CONSTRUCTION, ARE VERY LIGHT AND VERY STRONG, AND CONTAINS THE MAXIMUM AMOUNT OF FLOOR SPACE WITH THE MINIMUM AMOUNT OF STRUCTURAL AND ENCLOSING MATERIALS. THE DESIGN MUST BE AERODYNAMIC, TO WITHSTAND HIGH WINDS, AND MUST BE WATERPROOF, FIREPROOF, AND NOT MOLD AND MILDEW, AND ITS ELECTRICTY MUST BE HUMAN GENERATED**

**USING THE HOT SPRINGS OF FLY RANCH AND OTHER GEOTHERMAL FEATURES OF THE AREA IS APPROACHABLE BUT, IT IS THE DIRECTIVE OF THIS DESIGN PROJECT, TO BE SELF-SUFFICIENT ON TO ITSELF SO THAT IT CAN BEST ADAPT TO ANY CIRCUMSTANCES GIVEN ITS LOCATION.**

**TECHNOLOGY USED FOR THE DESIGN:**

**NOTE: ALTHOUGH THERE IS PLENTY OF WIND AT FLY RANCH, AND THE USE OF WINDMILLS IS ADVISABLE, THIS DESIGN DOES NOT UTILIZE WINDMILLS BECAUSE THE STORAGE OF ELECTRICITY REQUIRES BATTERIES AND PRESENT-DAY BATTERIES ARE EXTREMEMLY TOXIC, THUS, TO PROTECT THE LIVING EARTH, LARGE BATTERIES ARE NOT UTILIZED HERE.**

**SILICON-BASED SOLAR PANELS ARE ALSO NOT IMPLEMENTED HERE BECAUSE OF THE INORDINANT AMOUNTS OF HYDROCHLORIC ACID PRODUCED BY THE MAKING OF SOLAR PANELS. THIS IS AN EXTREMELY TOXIC MANUFACTURING PROCEDURE WITH HIGH AMOUNTS OF TOXICITY PRODUCED AS ACIDIC GAS AND LIQUID.**

**THE DESIGN IS FUNDAMENTALLY A GEODESIC SPHERE, SURROUNDED BY A STRUCTURALLY REINFORCING RIGID DECK AT ITS EQUATOR, AND RIGIDLY STANDING ON 10 LOWER, ANCHORED, FOOTINGS, MADE OF WOOD AND CONCRETE DECK BLOCKS. ON THE GROUND AND SURROUNDING THIS CENTRALIZED SPHERE IS A RING OF SOILCRETE NATIVE SOIL AND CONCRETE MIX) WITH EMBEDDED STEEL BRACKETS THAT ACT AS HINGES TO BRACE OPEN/CLOSING ALUMINUM WALL PANELS WITH 2 LAYERS OF TENSILE, TRANSPARENT, UV TREATED SAIL CLOTH LAYERS TO FORM A TRANSPARENT AND HOLLOW WALL CAVITY FOR INSULATION AND PRIVACY PURPOSES.**

**AT THE TOP OF THIS SPHERE IS A 1000-FOOT-LONG COIL OF BLACK RUBBER THROUGH WHICH WATER FROM An ON-SITE WATER WELL, IS HEATED BY THE SUN AND CREATES WARM WATER TO SHOWER WITH AND TO USE FOR COOKING. AN INCLINED WALKWAY, AT THE MAIN ENTRANCE, ALLOWS AN OUTDOOR SOLAR OVEN TO ROLL DOWN THE RAMP FOR MAXIMUM SOLAR EXPOSURE FOR COOKING, AND THEN ROLLED BACK INTO THE BUILDING FOR SERVING.**

**LIST OF CONSTRUCTION MATERIALS:**

1. **LUMBER YARD WOOD, 2 X 4”, 4 X 4”, AND 6 X 6” POSTS**
2. **SOILCRETE (NATIVE SOIL AND CONCRETE MIXED)**
3. **ALUMINUM TUBING**
4. **WATER-PROOF, TRANSPARENT, NYLON SAIL-CLOTH, 50 FEET BY 20 FEET, 20 PIECES**
5. **GALVANIZED METAL BRACKETS, BOLTS, NUTS, AND WASHERS (TO ASSEMBLE THE GEODESIC SPHERE)**

**6) FABRICATED GALVANIZED METAL BRACKETS**

**7) GIGACRETE FINISHED SHEATHING MATERIAL**

**8) RECYCLED COTTON BLUE-JEAN MATERIAL**

**9) ¾” THICK PLYWOOD 4’ BY 8’ SHEETS**

**10) CONTEGO PAINT RATED AT 2 HOURS FIRE RESISTANCE**

**11) ¾” HOLE GALVANIZED METAL GROMMETS**

**12) CROSS-WEAVE COTTON/NYLON ROPE**

**13) 500 X 11/4” GALVANIZED METAL WOOD SCREWS**

**14) DRAINS AND PLUMBING TUBING**

**15) METAL WOOD STOVE AND SMOKE FLUE**

**16) MOSQUITO SCREENING- 1000 FEET BY 4 FOOT ROLL**

**17) GLAVANIZED METAL, HEAVY DUTY, DOOR HINGES, ESCUTCHEONS, AND LOCK MECHANISMS**

**18) NATIVE, HEAD-SIZED, STONES**

**19) AGT BRAND, LUMINESCENT, RIVER ROCK—1000 PIECES**

**20) ¼” THICK, STAINLESS STEEL ROPE OF 1000 FOOT LENGTH, AND 20 METAL CLIPS AND THIMBLES**

**21) CONCRETE DECK BLOCKS FOR FOOTINGS**

**22) “LIFESTRAW” PASSIVE WATER CLEANING AND DRINKING TECHNOLOGY DISPENSER. ALL CAPTURED WATER IS DRINKABLE WITH THIS SYSTEM**

**23) MODIFIED SIMPSON GALVANIZED CONSTRUCTION BRACKETS**

**24) SAWDUST TOILETS: USING SAWDUST AS HIGHLY ABSORBANT AND COMPOSTABLE ORGANIC MATERIAL, SAWDUST TOILETS ARE HYGENIC AND SIMPLE. NO PLUMBING. NO WATER, ENERGY, MACHINERY NEEDED.**

**25) GRAVITY ELECTRIC GENERATOR AND LIGHT SYSTEM: USING GRAVITY AS THE MOTION GENERATOR, THESE LIGHT FIXTURES SUPPLY CONTINUOUS LIGHTING IN EMERGENCY SITUATIONS.**

**26) STATIONARY BICYCLE-POWERED LAP-TOPS, BLENDERS, WASHING MACHINES (WINTER MONTHS), AND RECHARGEABLE LIGHT FIXTURES.**

**27): NINE, AUTO-LOCKING, HANK-CRANK WINCHES ARE USED TO OPEN AND CLOSE THE NINE, ALUMINUM-FRAME, WALL STRUCTURES. THESE WINCHES ARE ANCHORED ON THE EQUATOR TERRACE OF THE STRUCTURE.**

**LIST OF ACTIVITIES WITHIN THE CONSTRUCTED DESIGN**

1. **INHABITANTS OF THIS BUILDING MUST COORDINATE THEIR WAKING HOURS WITH THE HOURS OF SUNRISE TO SUNSET. THE BUILDING IS MEANT TO HAVE NO ELECTRICAL LIGHTING OR MACHINERY USED DURING THE DARK HOURS OF THE EVENING. HUMAN LIFE IS THUS STRUCTURED BY THE LIGHT OF THE SUN AND NOT BY MECHANICAL MEANS.**
2. **ALL WORK REQUIRING ELECTRONIC DEVICES ARE DONE ON A STATIONARY BICYCLE OR RUNNING TREADMILL TO CREATE ELECTRICITY TO POWER THE COMPUTER. OTHER DEVICES SUCH AS WASHING MACHINES AND BLENDERS ARE ALSO POWERED BY THESE TECHNOLOGIES.**
3. **DESIGN/ILLUSTRATION/PUBLICATION WORK: THE SECOND LEVEL HAS A BUILT-IN LIGHTED TABLE, 4 FEET WIDE AND 8 FEET LONG, OF CLEAR GLASS WITH A LIGHTED UNDERSIDE USING REFLECTED MIRRORS OF DAYLIGHT WHEN REQUIRED.**
4. **IN THE BUILDING’S “OPEN” POSITION, WHEN NINE WALL SECTIONS ARE IN FULLY OPEN POSITION, SUNLIGHT FALLS DIRECTLY ON PLANTED GARDENS OF VEGETABLES AND FRUITS. THERE IS A SUNKEN CELLAR USED TO STORE EDIBLE ITEMS.**
5. **THE INTERIOR SPACES CAN SLEEP 8 PERSONS ON HEMP AND COTTON CLOTH BEDDING. WAX CANDLES ARE OFTEN USED FOR NIGHT LIGHTING WHEN NEEDED.**
6. **A SINGLE SHOWER IS LOCATED AT THE CENTER OF THE GROUND LEVEL LIVING AREA. WATER COES FROM THE 1000-FOOT-LONG BLACK RUBBER HOSE TUBE THAT WRAPS THE UPPER PORTION OF THE BUILDING’S SPHERE.**
7. **COOKING TAKES PLACE EITHER ON A WOOD STOVE (DURING COLD WINTER MONTHS) OR A SOLAR STOVE THAT IS WHEELED OUT ONTO THE ENTRANCE RAMP AND DIRECTED INTO THE SOUTH-FACING SUN.**
8. **RESEARCH AND DEVELOPMENT LABORATORY: THIS BUILDING IS A PROTOTYPE FOR NO-ELECTRICITY LIVING/ADAPTABLE CLIMATE LIVING. THE BUILDING IS IMMEDIATELY ADAPTABLE TO CHANGING WIND VELOCITIES, CLIMATIC CHANGES FROM SUN, TO RAIN, TO SNOW, AND HOT, DRY TEMPERATURE EXTREMES.**
9. **VEGAN WAY OF LIFE: THE MOST HARMFUL HUMAN ACTIVITY ON OUR PLANET IS THE FARMING AND CONSUMPTION OF ANIMALS AND MARINE LIFE. THIS BUILDING NURTURES A VEGETABLE AND FRUIT ENVIRONMENT AND EMPHASIZES A “DO NO HARM” OUTLOOK OF LIVING LIGHTLY ON THE PLANET. IT REQUIRES STEWARDSHIP AND RESEARCH PARTNERSHIPS WITH THE ORGANISMS, FLORA, AND FAUNA OF THE AREA AND ITS CLIMATIC CHARACTERISTICS.**

**WHAT IS REQUIRED TO OPERATE THE BUILDING ON AN ANNUAL BASIS?**

**THE GREATEST PORTION OF THE BUILDING IS MADE OF WOOD SHEATHED IN GIGACRETE AND THIS PORTION REQUIRES NO MAINTENANCE AT ALL. IT IS FIREPROOF, WATERPROOF, MOLD-AND-MILDEW PROOF, AND WOULD REQUIRE A DIAMOND SAW TO BREAK IT APART. THIS PORTION REQUIRES NO MAINTENANCE.**

**THE SHEATHING OF THE OPENING/CLOSING PORTION OF THE BUILDING IS THE ONLY PORTION THAT REQUIRES MAINTENANCE. THERE ARE TRANSPARENT COATINGS THAT CAN BE USED TO SEAL TRANSPARENT FABRIC FOR MANY YEARS, AND THIS WOULD REQUIRE FURTHER RESEARCH. AT PRESENT, THE TRANSPARENT SAIL CLOTH WOULD HAVE TO BE REPLACED EVERY FIVE TO TEN YEARS SIMILAR TO A SAILBOAT.**

**ALL OTHER ASPECTS OF THE BUILDING REQUIRE MINIMAL MAINTENANCE SUCH AS OILING, CLEANING, AND PARTS CHANGING. ONLY HUMAN DILIGENCE IS REQUIRED TO OPERATE THIS BUILDING.**

**SYSTEMS OUTPUTS**

**THIS BUILDING USES NO ELECTRICAL/MECHANICAL POWER.**

**HUMAN FECAL AND URINE WASTE IS WEEKLY COMPOSTED IN THE BUILDING’S GARDEN. THE BUILDING ITSELF GENERATES NO WASTE. SHOWER AND DRINKING WATER IS USED TO WATER THE VEGETABLE AND FRUIT GARDEN OF THE BUILDING. EXCESS WATER IS RETAINED IN A HOLDING TANK WHICH IS ACCESSIBLE BY LIFESTRAW CLEAN DRINKING WATER TECHNOLOGY.**

**IN CLOSED POSITION, THE MOBILE WALL PANELS ACT AS WATER RUN-OFF FEATURES THAT DIRECT RAINWATER TO A CATCH GUTTER TO A WATER CATCH BASIN.**

**DIMENSIONS OF THE DESIGN**

**SPHERICAL HABITAT STRUCTURE: 700 SQUARE FEET AT THE EQUATOR LEVEL AND 200 SQUARE FEET AT THE LOWER LEVEL.**

**SPHERE IS 30 FEET IN DIAMETER STANDING 30 FEET IN HEIGHT. AN OUTSIDE TERRACE, AT THE EQUATOR OF THE SPHERE, IS UNIFORMLY 6 FEET IN WIDTH CIRCUMSCRIBING THE SPHERE. THE OPENING/CLOSING ALUMINUM TUBE WALL STRUCTURES ARE 10 FEET IN WIDTH AND 30 FEET IN LENGTH.**

**ORDER OF MAGNITUDE CONCEPTUAL COST ESTIMATE**

**THE FIRST PROTOTYPE TO BE CONSTRUCTED IS ESTIMATED TO COST $250,000 TO $350,000 AND THIS DEPENDS ON THE BID AND HOURLY WAGE OF THE BUILDERS. SUBSEQUENT REPRODUCTION OF THIS DESIGN WOULD REDUCE THE CONSTRUCTION COST BY 30 TO 50%.**

**IT SHOULD BE MENTIONED HERE THAT THIS DESIGN IS NOT MEANT TO BE REPLICATED AD INFINITUM. IT IS MEANT TO BE A STUDIED PROTOTYPE BY WHICH OTHER VARIATIONS CAN BE CONSTRUCTED. THE IMPORTANCE OF THE DESIGN IS TO SHOW THE WAYS AND MEANS TO CREEATE TRUE ZERO ENERGY HABITATS THAT CAN ADAPT TO A VARIETY OF SITE AND CLIMATE ENVIRONMENTS.**

**ON-SITE PROTOTYPE DEVELOPMENT**

**THE MATERIALS USED FOR THIS STRUCTURE, ARE EASY TO BE FOUND IN THE AREA, AND CONSTRUCTION PROFESSIONALS SUCH AS WELDERS, SOILCRETE WORKERS (CONCRETE WORKERS), WOOD FRAMERS, STONE MASONS AND HANDY PERSONS, WILL FIND THIS STRUCTURE A SIMPLE PROJECT. I BUILT A PROTOTYPE AND THE GEODESIC SPHERE TOOK ME ONLY THREE DAYS TO ERECT.**

**ALL MATERIALS NEEDED CAN BE CATEGORIZED AND GROUPED ON-SITE. THE CONSTRUCTION PROCESS IS A PREFABRICATED SYSTEM WHICH LENDS ITSELF TO QUICK ORGANIZATION AND CONSTRUCTION.**

**SEQUENCE OF CONSTRUCTION:**

1. **ESTABLISH MEASURED PLAN, PLACEMENT OF FOUNDATION DECK BLOCKS**
2. **ERECT 30 FOOT DIAMETER WOOD GEODESIC SPHERE FRAME USING STANDARD 2 BY 4’S**
3. **ERECT 6 FOOT WIDTH CONTINUOUS TERRACE AT THE EQUATOR OF THE STRUCTURE**
4. **INSTALL NINE RATCHET WINCHES ALIGNED WITH THE PLACEMENT OF WHERE THE NINE OPENING/CLOSING WALL SECTIONS WILL BE PLACED**
5. **CONSTRUCT INTERIOR SOILCRETE FLOORING SLAB.**
6. **CONSTRUCT BUILT-IN SEATING AT THE GROUND LEVEL AND THE ANGLED WALL BACKING PANELS**
7. **CONSTRUCT HINGED ENTRANCE DOOR AND LADDER STAIRWAY TO THE SECOND LEVEL**
8. **CONSTRUCT SECOND LEVEL INTERIOR FLOOR WITH SOUTH END OPEN LIGHT WELL**
9. **SHEATH ALL WOOD ELEMENTS WITH GIGACRETE TO MAKE THE ENTIRE STRUCTURE FIREPROOF, WATERPROOF, AND MOLD-AND-MILDEW-PROOF**
10. **PAINT ALL SURFACES WITH CONTEGO 2-HOUR FIRE PAINT TO MAKE ALL SURFACES 4-HOUR RATED FOR FIRE**
11. **INSTALL MOSQUITO SCREENS THROUGHOUT ENTIRE STRUCTURE**
12. **INSTALL INTERIOR WATER SINK WITH DRAIN TO GARDEN AREA**
13. **INSTALL 1000 FOOT LENGTH BLACK RUBBER HOSE TO INDOOR SHOWER AND TEST SHOWER DRAIN FOR RUN-OFF EFFICIENCY**
14. **CREATE CIRCULAR FORMWORK FOR REINFORCED SOILCRETE HINGING SYSTEM TO STABLIZE THE NINE OPENING/CLOSING MOBILE WALL FRAMES**
15. **PLACE REINFORCING BARS AND HINGING BRACKETS FOR SOILCRETE POUR WEIGHTED STABILIZING RING**
16. **POUR SOILCRETE STABILIZING RING STRUCTURE AND WATER CATCHMENT TROUGH AND DRAIN**
17. **FABRICATE 10 ALUMINUM FRAMES FOR THE CLOSING/OPENING MOBILE WALL SYSTEM OF THE BUILDING**
18. **FABRICATE THE TRANSPARENT, WATERPROOF, NYLON SAIL CLOTH WALL MEMBRANE FOR EACH OF THE 10 MOBILE WALL FRAMES**
19. **CONNECT MOBILE WALL FRAMES WITH ITS ALIGNED AND POSITIONED WINCH AND TEST FOR OPERABLE EFFICIENCY.**
20. **INSTALL ALL 6” THICK STYROFAM INSULATION MATERIALS IN ALL ENCLOSED WOOD WALL SURFACES**
21. **ESTABLISH VEGETABLE FRUIT GARDEN PARAMETERS AND LINK TO INTERIOR SINK AND SHOWER DRAIN SYSTEM. CONNECT ALL INTERDEPENDENT SYSTEMS.**

**MAXIMUM IMPACT SUMMARY**

**THE IMPACT OF THIS BUILDING IS NEGLIGIBLE. THE FABRICATION FOOTPRINT IS VERY SMALL DUE MAINLY TO THE USE OF ALUMINUM, GALVANIZED METAL, AND NYLON.**

**WOOD HAS NO FABRICATION FOOTPRINT AS IT IS A LIVING ORGANISM. GIGACRETE NEEDS NO ENERGY TO CREATE IT AND THE SAME WITH STONE.**

**THIS ARCHITECTURE IS:**

1. **ARCHITECTURE THAT IS MUCH MORE THAN A SHELTER**
2. **ARCHITECTURE THAT IS A MOTIVATING EXPERIENCE TO MAKE YOU MORE THAN YOU THINK YOU CAN BE**
3. **ARCHITECTURE THAT ADAPTS TO THE CHANGING WEATHER AND CLIMATE**
4. **ARCHITECTURE THAT MAKES YOU AWARE OF THE VARIOUS CLIMATIC FORCES AT WORK AROUND YOU AND FROM MOMENT TO MOMENT**
5. **ARCHITECTURE THAT CAN ADAPT TO AND WITHSTAND THE DISASTER FORCES OF NATURE**
6. **ARCHITECTURE WHERE YOU CAN SEE AND EXPERIENCE THE CHANGING DYNAMICS OF LIGHT AND SHADOW, THE CHANGING HUES OF COLOR AND TEXTURE, THE DYNAMICS OF TEMPERATURE AND WEATHER, AND THE SIGHTS AND SOUNDS OF NATURE**
7. **ARCHITECTURE WHERE YOU ARE MANUALLY AND PHYSICALLY INVOLVED IN THE HUMAN-MADE ENVIRONMENT SURROUNDING YOU THAT CHALLENGES YOU TO ADJUST TO NATURE’S DAILY CHANGES**
8. **NO LONGER IS ARCHITECTURE A HEAVY, STATIC, OVERBEARING ROOF THAT BLOCKS ALL SENTIENT EXPERIENCE OF THE CHANGING SKY, THE CLOUDS, LIGHT, AND SHADOW, AND THE SIGHTS AND SOUNDS OF THE LIVING FORCES THAT SURROUND YOU**
9. **NO LONGER IS ARCHITECTURE A ENCLOSED BOX WITH WINDOWS PUNCHED THROUGH STARK AND STERILE WALLS THAT IMPEDES AND ALIENATES YOU FROM THE LIVING BIOSPHERE THAT YOU INHABIT**
10. **ARCHITECTURE THAT IS ALIVE AND REQUIRES THAT YOU DAILY PARTICIPATE AND BE PHYSICALLY INVOLVED AND CHALLENGED BY NATURE AND NATURE’S UNPREDICTABLE DYNAMICS**
11. **LIVING IN A STRUCTURE THAT IS ALIVE WITH RELATIONSHIP—REQUIRING YOU TO BE AWARE, TO CONNECT, TO RESPOND TO THE PULSES OF THE LIVING WORLD OF WHICH YOU ARE AN INTEGRAL PART**
12. **AN ARCHITECTURE THAT DOES NO HARM TO THE NATURAL ENVIRONMENT, EXPELS NO TOXIC MATERIALS, AND CREATES MINIMAL HARM TO THE EARTH IN ITS MANUFACTURING AND DAY-TO-DAY FUNCTION**
13. **ARCHITECTURE THAT ENCOURAGES A PLANT-BASED WAY OF LIFE WHERE YOU GROW YOU OWN FRUITS AND VEGETABLES AS AN INTEGRAL PART OF YOUR HABITAT AND YOUR DAILY SURVIVAL**
14. **ARCHITECTURE THAT IS FIRE-PROOF, WATER-PROOF, DOES NOT MOLD-AND-MILDEW, IS INEXPENSIVE AND EASY TO BUILD USING FEW MATERIALS AND PEOPLE**
15. **ARCHITECTURE THAT IS AERODYNAMIC, HAS AN INSULATION VALUE OF R=50 THROUGHOUT, AND ALLOWS YOU TO SEE THE CHANGING SKY AND CLOUDS OVERHEAD**
16. **ARCHITECTURE THAT USES NO MECHANICAL AND ELECTRICAL HEATING, VENTILATION, AND AIR-CONDITIONING MECHANISMS AND DOES NOT POLLUTE THE ENVIRONMENT WITH CO2 IN ITS DAILY FUNCTION**
17. **ARCHITECTURE THAT MINIMIZES THE AMOUNT OF MATERIALS USED AND MAXIMIZES THE AMOUNT OF ENCLOSED SPACE FOR LIVING**
18. **ARCHITECTURE THAT INSPIRES FURTHER RESEARCH AND THE INCUBATION OF NEW IDEAS AND EXPERIMENTS IN CONSTRUCTION**
19. **ARCHITECTURE THAT IS THE STRONGEST IT CAN BE AND THE LIGHTEST IT CAN BE—THE UNIVERSALLY APPLIED PRINCIPAL OF ALL LIVING ORGANISMS AND HABITATS**
20. **ARCHITECTURE THAT COMPELLS YOU TO LIVE ATHLETICALLY, TO ACHIEVE OPTIMAL FITNESS, STRENGTH, AND HEALTH**