SURFACE AREA AWARENESS_3D GEOMETRY EXERCISE

GENERAL_THIS EXERCISE QUANTIFIES AND THEREFORE COMPARES THE BASE FOOTPRINT, ALL FLOOR LEVELS, ALL PERIMETER WALLS, AND ROOF AREAS IN 5 CONFIGURATIONS THAT RESULT IN THE SAME 1800 SQUARE FEET OF GROSS LIVING SPACE

.**SURFACE TYPE & COST**_EACH SURFACE TYPE HAS A DIFFERENT UNIT COST IN PLACE AND EACH SURFACE TYPE HAS AN ENERGY CONSEQUENCE. MORE SURFACE AREA ADD COSTS TO CONSTRUCT AND COSTS TO HEAT AND COOL.

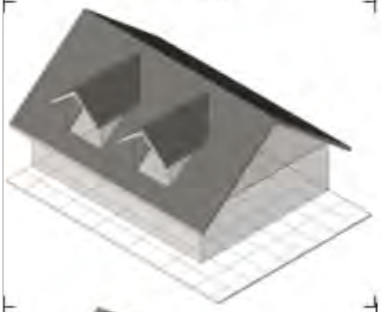
THERMAL ENVELOPE_(c9)THE THERMAL ENVELOPE DEFINES THE TOTAL SURFACE IN CONTACT WITH EXTERIOR WEATHER- OR THE TOTAL INSULATED SURFACE AREA. IT IS A IMPORTANT TERM BEING INTRODUCED HERE.

THIS MATH IS INCOMPLETE_THIS IS AN AWARENESS EXERCISE (ONLY). OTHER FACTORS CONTRIBUTE TO TOTAL COST SO THE TAKEAWAY HERE IS THAT **VERTICAL CONFIGURATION EFFECTS SURFACE AREA.**

1_MAIN
A: 1,800 sq ft
P: 172'

1 STORY_1800 SF

***FOOTPRINT/ROOF**_30' X 60' = 1800 SF
***PERIMETER**_30 LF+30 LF+60 LF+60 LF = 180 LF
***TOTAL WALL AREA**_180' X 10' H = 1800 SF
***WALLS & ROOF**_1800 SF + 1800 SF = **3600 SF**
***THERMAL ENVELOPE_5400 SF**

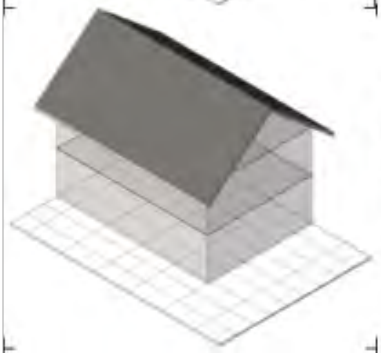


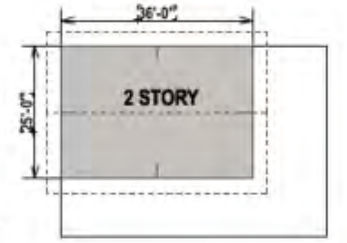
1_MAIN
A: 1,200 sq ft
P: 140'

1 1/2_UPPER
A: 600 sq ft
P: 136'

1 1/2 STORY_1800 SF

***FOOTPRINT/ROOF**_30' X 40' = 1200 SF
***PERIMETER**_30'+30'+40'+40' = 140 LF
***MAIN WALL AREA**_140' X 10' H = 1400 SF
***UPPER WALL AREA**_ 136' X 9' = 1224 SF
***WALLS & ROOF**_1400 SF+1224 SF+1200 SF = **3824 SF**
***THERMAL ENVELOPE_5024 SF**



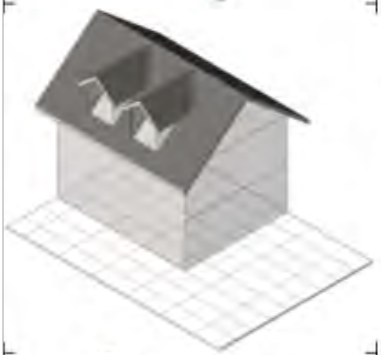


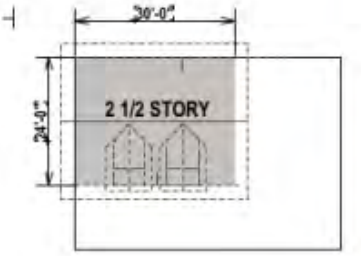
1_MAIN
A: 900 sq ft
P: 122'

2_UPPER
A: 900 sq ft
P: 122'

2 STORY_1800 SF

***FOOTPRINT/ROOF**_24' X 37.5' = 900 SF
***PERIMETER**_24'+24'+37.5'+37.5' = 123 LF
***MAIN WALL AREA**_122' X 10'= 1220 SF
***UPPER WALL AREA**_122' X 9' = 1098 SF
***TOTAL WALL AREA**_1220 SF+1098 SF = 2318 SF
***WALLS & ROOF**_2318 SF + 900 SF = **3218 SF**
***THERMAL ENVELOPE_4118 SF**





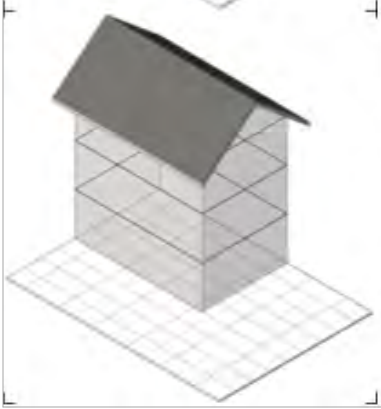
1_MAIN
A: 720 sq ft
P: 108'

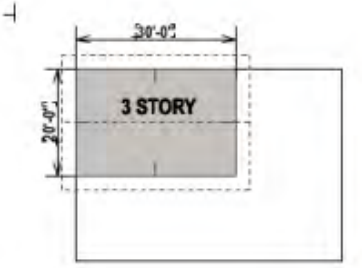
2_UPPER
A: 720 sq ft
P: 108'

2 1/2_UPPER
A: 360 sq ft
P: 104'

2 1/2 STORY_1800 SF

***FOOTPRINT/ROOF**_24' X 30' = 720 SF
***PERIMETER**_24'+24'+30'+30' = 108 LF
***MAIN LEVEL WALLS**_108' X 10' = 1080 SF
***UPPER LEVEL WALLS**_108' X 9' = 981 SF
***HALF LEVEL**_104' X 9' = 936 SF
***TOTAL WALL AREA**_1080 SF+981 SF+936 SF = 2997 SF
***WALLS & ROOF**_2997 SF = 720 SF = **3717 SF**
***THERMAL ENVELOPE_4437 SF**





1. MAIN
A: 600 sq ft
P: 100'

2. UPPER
A: 600 sq ft
P: 100'

3. UPPER
A: 600 sq ft
P: 100'

3 STORY_1800 SF

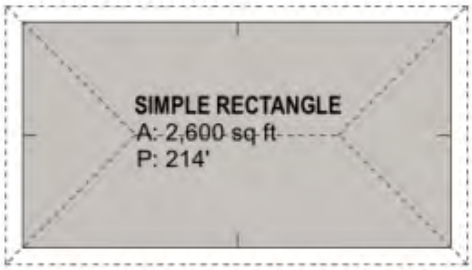
***FOOTPRINT/ROOF**_20' X 30' = 600 SF
***PERIMETER**_20 LF+20 LF+30 LF+30 LF = 100 LF
***MAIN LEVEL WALLS**_100 LF X 10' = 1000 SF
***UPPER LEVEL WALLS**_100 LF X 9' = 900 SF
***3RD LEVEL WALLS**_100 LF X 9' = 900 SF
***TOTAL WALL AREA**_1000 SF+900 SF+900 SF = 2800 SF
***WALLS & ROOF**_2800 SF + 600 SF = **3400 SF**
***THERMAL ENVELOPE_4000 SF**

HORIZONTAL CONFIGURATION QUANTITATIVE COMPARISON-2D GEOMETRY EXERCISE

GENERAL_THIS EXERCISE QUANTIFIES THE PERIMETER, AND CONSEQUENT WALL SURFACE AREA FOR DIFFERENT PLAN GEOMETRIES ALL ENCLOSING A 2600 SF FOOTPRINT. IN GENERAL, THE MORE COMPLICATED THE PLAN GEOMETRY GETS THE MORE PERIMETER AND CONSEQUENT WALL SURFACE AREA.

PROPORTION_SIMPLE GEOMETRY(MATH) SAYS THAT CHANGING THE RELATIVE PROPORTIONS OF THESE WALL LENGTHS WILL EFFECT THE TOTAL PERIMETER COUNT. E.G. IF THE 4 CORNER 'SIMPLE RECTANGLE' HAD EQUAL SIDES (SQUARE) THE TOTAL PERIMETER WOULD BE 204' INSTEAD OF 215' PER THE BELOW ILLUSTRATION. THIS GEOMETRY RULE APPLIES TO ALL EXAMPLES BELOW AND ALL HOMES. GIVEN A CONSTANT AREA_CHANGE THE X, AND Y, AND THE PERIMETER COUNT CHANGES

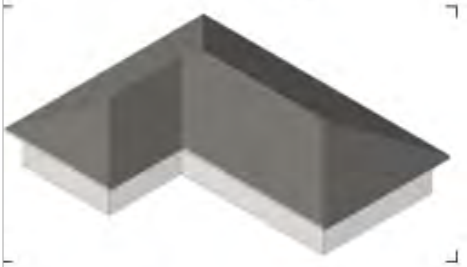
CORNERS_THE SAME CORNERS THAT ALLOW A UNIQUE AND HIGHLY CUSTOM DESIGN ADD COMPLICATION, WASTE, AND THEREFORE COST. AND (UNFORTUNATELY) ANGLED CORNERS HAVE AN ADDITIONAL COMPLICATION AND MATERIAL WASTE.

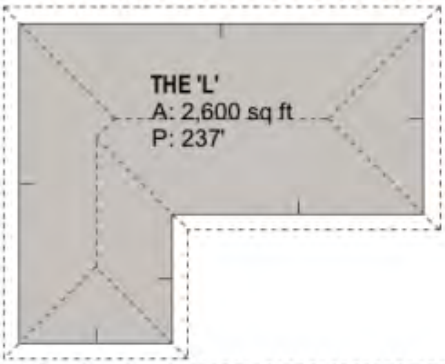


SIMPLE RECTANGLE

***FOOTPRINT**_2600 SF
***PERIMETER**_215 LF
***WALL AREA**_2150 SF
***ROOF PLANE**_2600 SF
***WALLS & ROOF_3850 SF**

EXTERIOR CORNERS_4
ROOF PLANES_4

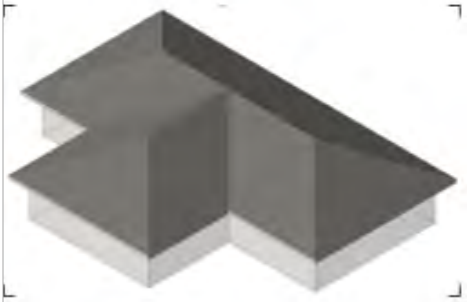


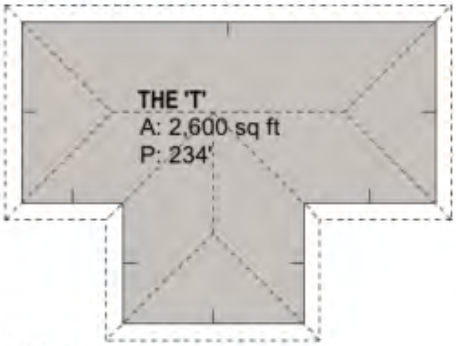


'L' SHAPE

***FOOTPRINT**_2600 SF
***PERIMETER**_237 LF
***WALL AREA**_2370 SF
***ROOF PLANE**_2600 SF
***WALLS & ROOF_4970 SF**

EXTERIOR CORNERS_6
ROOF PLANES_6

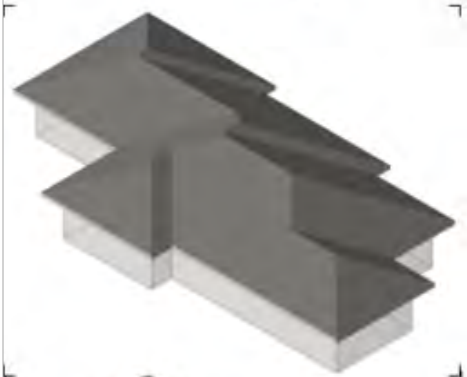


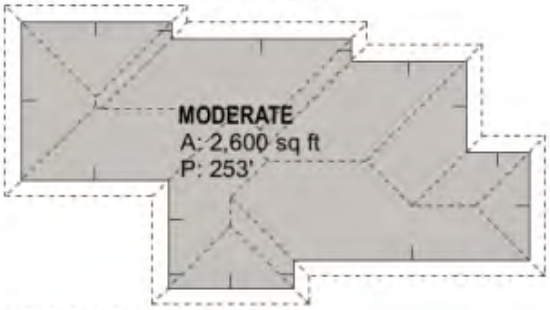


'T' SHAPE

***FOOTPRINT**_2600 SF
***PERIMETER**_235 LF
***WALL AREA**_2350 SF
***ROOF PLANE**_2600 SF
***WALLS & ROOF_4950 SF**

EXTERIOR CORNERS_8
ROOF PLANES_8

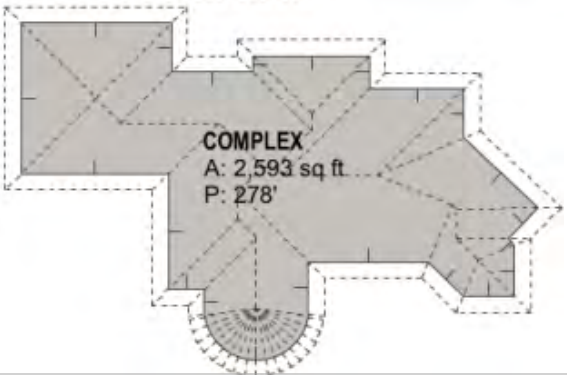




MODERATE

***FOOTPRINT**_2600 SF
***PERIMETER**_254 LF
***WALL AREA**_2540 SF
***ROOF PLANE**_2600 SF
***WALLS & ROOF_5140 SF**

EXTERIOR CORNERS_14
ROOF PLANES_14



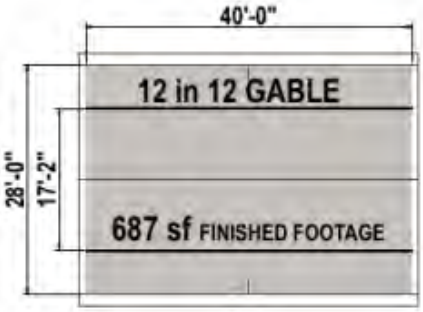
COMPLEX

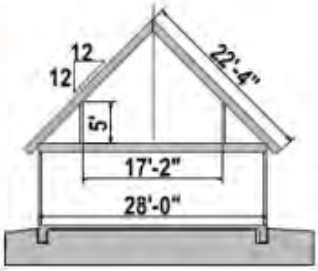
***FOOTPRINT**_2600 SF
***PERIMETER**_278 LF
***WALL AREA**_2780 SF
***ROOF PLANE**_2600 SF
***WALLS & ROOF_5380 SF**

EXTERIOR CORNERS_26
ROOF PLANES_26

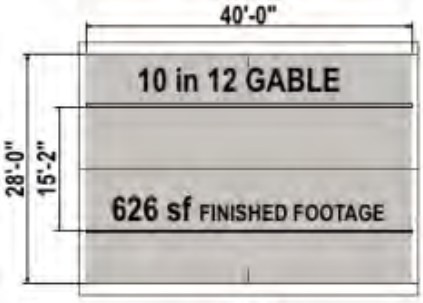
ROOF PITCH CONSIDERATIONS_3D GEOMETRY EXERCISE

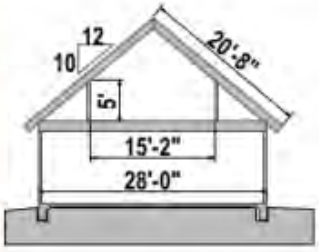
SPACE_THE STEEPER A PITCH THE MORE POTENTIALLY USEFUL SPACE CAN BE ADVANTAGED. GENERALLY PITCHES THAT ARE 5 IN 12 AND LESS CANNOT GENERATE MUCH USEFUL SPACE. 6 IN 12 TO 8 IN 12 PITCHES GENERATE STORAGE OR LIMITED HABITABLE SPACE. PITCHES OVER 8 IN 12 ALLOW MUCH MORE GENEROUS SPACE. SEE(d6.7, d6.8) FOR THE DIMENSIONAL MINIMUMS FOR 'LEGAL' SPACE.
"DEPTH"NOTE_ OBVIOUSLY THE DEPTH (IN THESE ILLUSTRATIONS 28' IS USED), HAS EVERYTHING TO DO WITH THAT NET USEFUL SPACE. 28' IS USED HERE BECAUSE IT IS A TYPICAL, FLEXIBLE & EFFICIENT HOUSE DEPTH. A 36' DEPTH WILL GENERATE MORE USEFUL SPACE AND A 16' DEPTH WILL GENERATE NONE TO VERY LITTLE USEFUL SPACE.
LUMBER_RAFTER LENGTHS INCREASE WITH A STEEPER PITCH. THIS MAY BE INCIDENTAL IF STRUCTURAL SPANS AND SINGLE PIECE RAFTER MEMBERS WORK. IF SPLIT SPANS OR MULTIPLE RAFTER PIECES BECOME REQUIRED COMPLICATION & COST INCREASES.
ROOF AREA_THE "LONGER" THE ROOF PLANE THE MORE SHEATHING/MEMBRANE/ AND ROOFING IS REQUIRED TO COVER. IF THE ROOF PLANE IS THE THERMAL BARRIER & THEREFORE INSULATED, THERE IS MORE INSULATION EXPENSE AND THERMAL EXPOSURE.



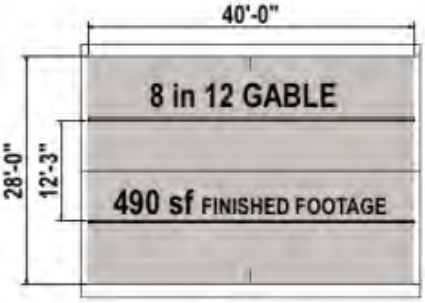


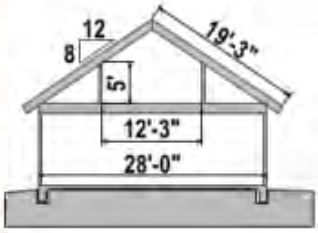
12 in 12
*FINISH FOOTAGE_**687 SF**
*RAFTER LENGTH_**22'-4"**
*ROOF SURFACE_**1876 SF**



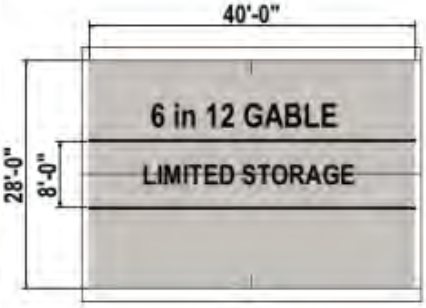


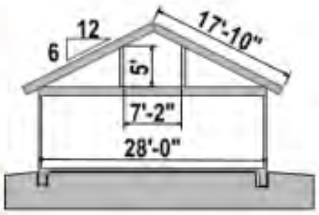
10 in 12
*FINISH FOOTAGE_**626 SF**
*RAFTER LENGTH_**20'-8"**
*ROOF SURFACE_**1736 SF**



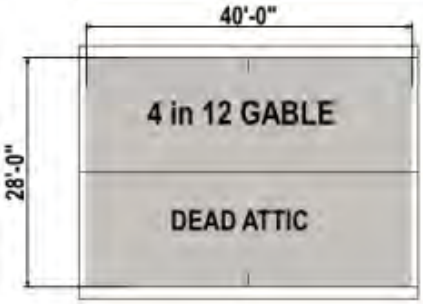


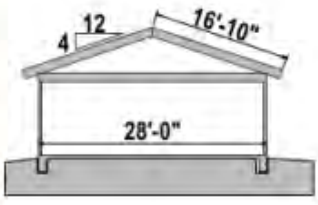
8 in 12
*FINISH FOOTAGE_**490 SF**
*RAFTER LENGTH_**19'-3"**
*ROOF SURFACE_**1617 SF**





10 in 12
*FINISH FOOTAGE_**NONE**
*RAFTER LENGTH_**17'-10"**
*ROOF SURFACE_**1498 SF**





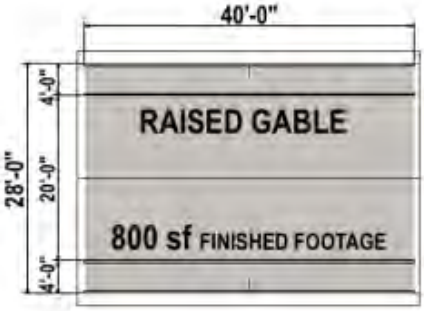
4 in 12
*FINISH FOOTAGE_**NONE**
*RAFTER LENGTH_**16'-10"**
*ROOF SURFACE_**1414 SF**

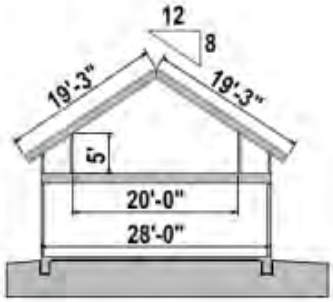
MANAGING THE GABLE ROOF_3D GEOMETRY EXERCISE

GABLE FLEXIBILITY_A STANDARD GABLE GEOMETRY- WHEN STICK FRAMED- IS AN EASY ONE TO MANIPULATE. CHANGING POTENTIAL FINISHED FOOTAGE, STRUCTURAL SPAN LENGTHS, LUMBER LENGTHS, AND TOTAL ROOF SURFACE HAPPENS WHEN PLATE HEIGHTS AND PITCHES ARE ADJUSTED.

RAISNG THE SUPPORT PLATES_WHETHER ON ONE OR BOTH BEARING SIDES, SYMMETRICALLY OR ASSYMETRICALLY, RAISING THE ROOF CREATES MORE SPACE. THIS IS USUALLY AN ECONOMICAL WAY TO CREATE MORE STORAGE OR FINISHED SPACE.

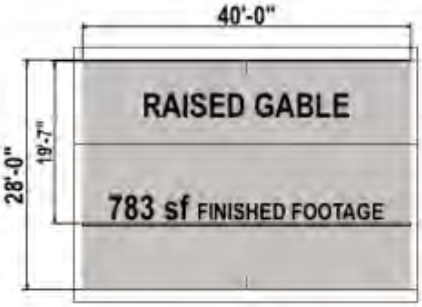
HOW HIGH?_OBVIOUSLY THESE WALLS CAN BE RAISED UNTIL A FULL 2 STORY STRUCTURE IS CREATED. AND THE 2 STORY BOX IS AN ECONOMICAL STRUCTURE2. THE 2 STORY SOLUTION MAY SIMPLY HAVE MORE SPACE THAN APPROPRIATE, OR THE 2 STORY BOX MAY NOT BE THE DESIRED ARCHITECTURE. SO THE TAKE AWAY HERE IS THAT THE RAISED GABLE CAN MAINTAIN A 1 STORY APPEARANCE FROM THE LOWER ROOF SIDE, AND OFFER SOME ADDITIONAL STORAGE OR LIVING SPACE BY INCREASING THE UPPER LEVEL PLATE HT(S).

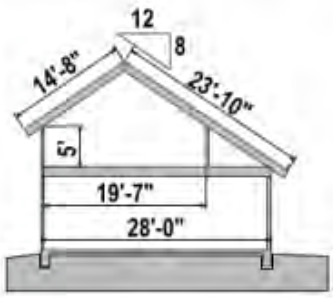




8 in 12 RAISED GABLE

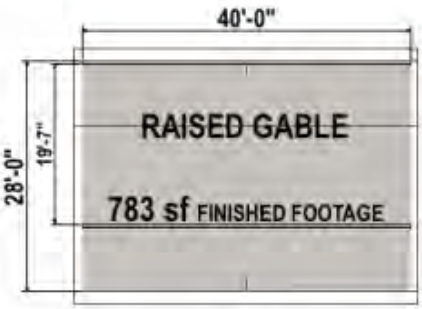
*FINISH FOOTAGE_**800 SF**
*RAFTER LENGTH_**19'-3"**
*ROOF SURFACE_**1617 SF**
RAISING THE ROOF IN GENERAL IS A COST EFFECTIVE WAY TO CREATE MORE SPACE.

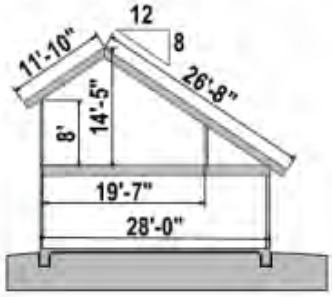




8 in 12 OFFSET GABLE

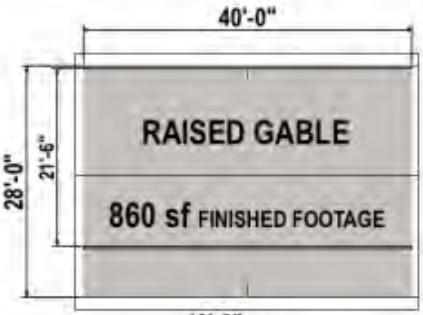
*FINISH FOOTAGE_**783 SF**
*RAFTER LENGTH 1_**23'-10"**
*RAFTER LENGTH 2_**14'-8"**
*ROOF SURFACE_**1617 SF**
VOLUME CAPTURED NOT AS GREAT AS 2 COMPARABLE EXERCISES BELOW

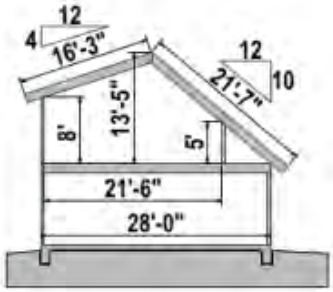




8 in 12 OFFSET GABLE

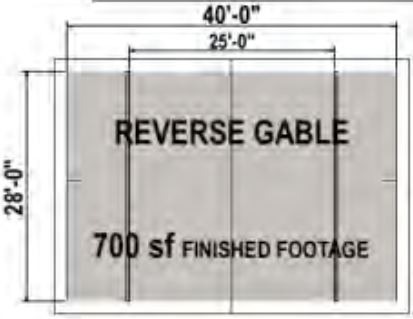
*FINISH FOOTAGE_**783 SF**
*RAFTER LENGTH 1_**26'-8"**
*RAFTER LENGTH 2_**11'-10"**
*ROOF SURFACE_**1617 SF**
FULL HT REAR WALL MAKES SPACE MORE USEFUL

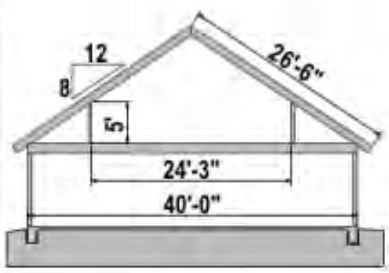




10 in 12 + 4 in 12 ASSYMETRICAL GABLE

*FINISH FOOTAGE_**860 SF**
*RAFTER LENGTH 1_**21'-7"**
*RAFTER LENGTH 2_**16'-3"**
*ROOF SURFACE_**1589 SF**
FULL HT REAR WALL PLUS STEEPER PITCH FRONT ROOF GENERATES MORE VOLUME



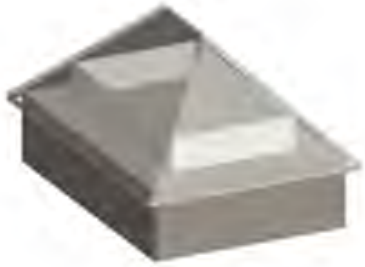


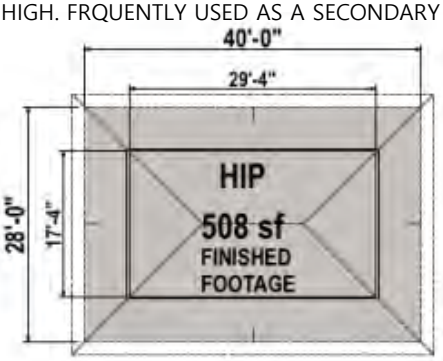
8 in 12 REVERSE GABLE

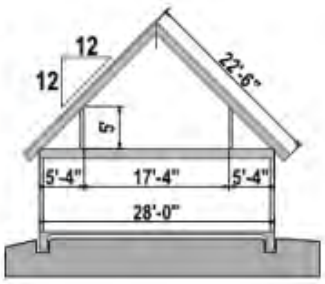
*FINISH FOOTAGE_**700 SF**
*RAFTER LENGTH_**26'-6"**
*ROOF SURFACE_**1590 SF**
GREATER WIDTH OF SPACE MAY MAKE THE LAYOUT MORE FLEXIBLE + OFFER MORE GENEROUS WINDOWS

OTHER ROOF STYLES_3D GEOMETRY EXERCISE

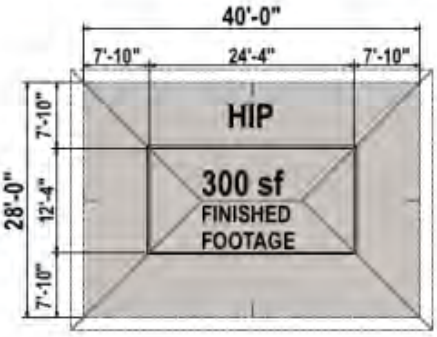
THE HIP AND THE SHED_ARE 2 OTHER VERY COMMON ROOF FORMATS INTRODUCED HERE. THESE SHOW THE SAME FOOTPRINT WITH CONSEQUENT SPACE CREATED ABOVE, BASED IN PART, ON ROOF PITCH.
ROOF CHARACTERISTICS_THESE 2 ROOF CONSTRUCTIONS ARE QUITE DIFFERENT. EACH CERTAINLY HAS AN BETTER/BEST APPLICATION.
THE HIP_THE HIP ROOF HAS NO 'END' WALLS. THE UPPER LEVEL IS ALL ROOF ABOVE. SPACE AND POTENTIAL LIGHT (WINDOWS) ARE NON EXISTANT IN THE HIP ROOF WITHOUT DORMERS OR SKYLIGHTS. THE ROOF IS A BIT MORE COMPLICATED TO CONSTRUCT.
THE SHED_IS A SINGLE PITCH ROOF. IT CAN BE STAND ALONE, AS ILLUSTRATED BELOW. IT IS ULTIMATELY SIMPLE AND EFFICIENT. AS A STAND ALONE IT IS MORE EFFECTIVE WHEN THE DEPTH OF THE FOOTPRINT IS RESTRICTED, AS ROOF SPANS/LENGTHS ARE TOO LONG FOR SINGLE MEMBERS AND FRONT WALL HTS TOO HIGH. FRQUENTLY USED AS A SECONDARY TIE-IN ROOF.

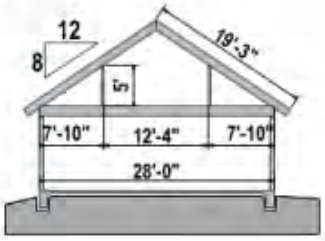




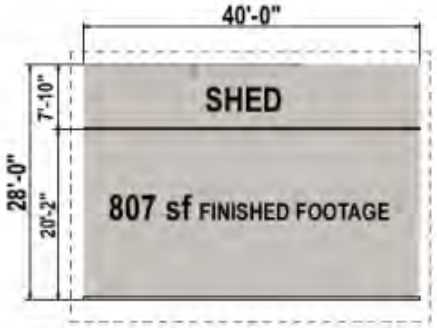


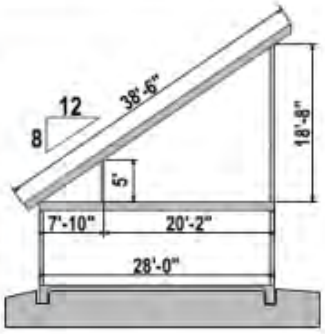
12 in 12 HIP
*FINISH FOOTAGE_**508 SF**
*RAFTER LENGTH_**22'-6"**
*ROOF SURFACE_**1782 SF**



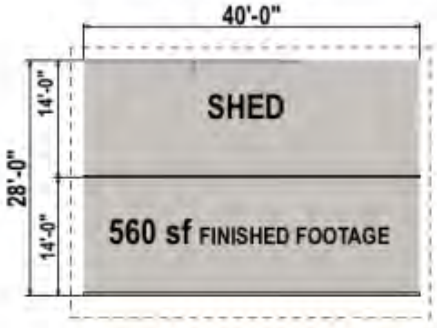


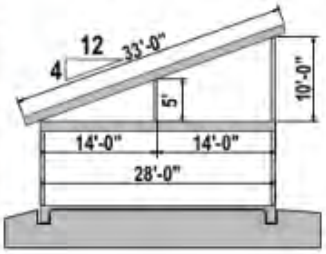
8 in 12 HIP
*FINISH FOOTAGE_**300 SF**
*RAFTER LENGTH_**19'-3"**
*ROOF SURFACE_**1514 SF**



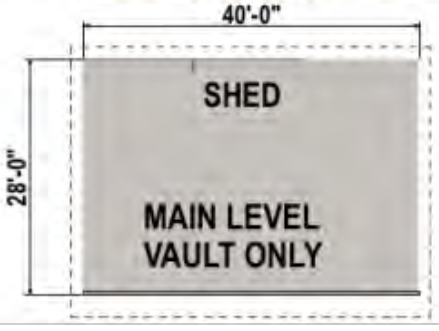


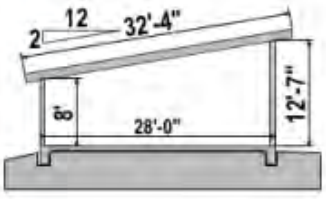
8 in 12 SHED
*FINISH FOOTAGE_**807 SF**
*RAFTER LENGTH_**38'-6"**
*ROOF SURFACE_**1617 SF**





6 in 12 SHED
*FINISH FOOTAGE_**NONE**
*RAFTER LENGTH_**33'-0"**
*ROOF SURFACE_**1386 SF**

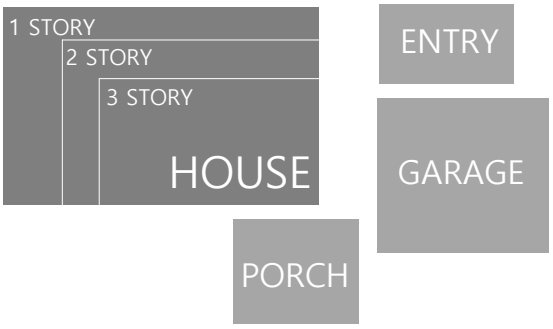




4 in 12 SHED
*FINISH FOOTAGE_**NONE**
*RAFTER LENGTH_**32'-4"**
*ROOF SURFACE_**1358 SF**

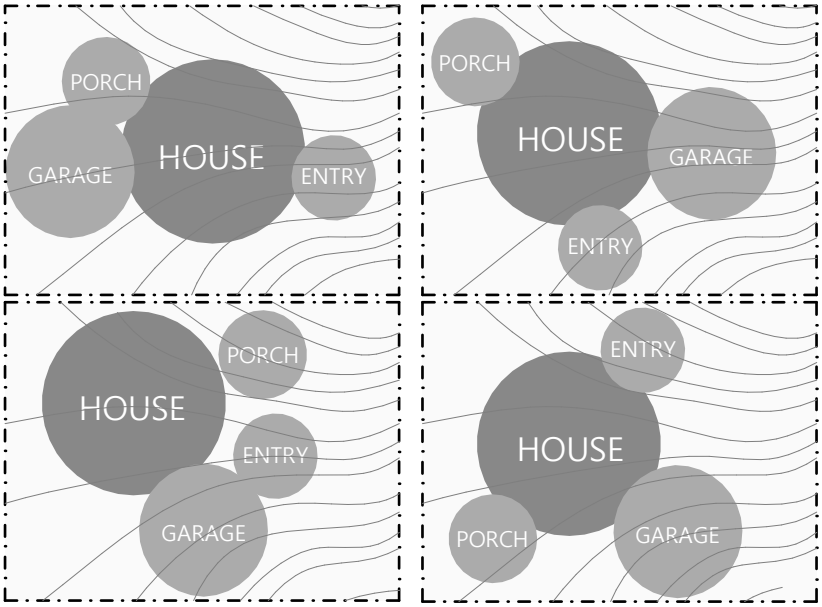
THE PRIMARY COMPONENTS

***THE SIMPLE HOUSE**_SOME HOMES ARE CONTENT WITH THE HOUSE FUNCTION ONLY. THESE CLEARLY ARE SIMPLER, AND CAN EXIST WITH A SINGLE FOUNDATION SYSTEM AND A SINGLE ROOF FORM. BUT THEY ARE NOT THE NORM.
***THE NOT SO SIMPLE HOUSE**_MOST PROJECTS INCORPORATE ONE OR ALL OF_ A GARAGE, AN ENTRY STOOP OR PORCH, AND SOME EXTERIOR LIVING SPACE. THE EXTERIOR LIVING MAY BE A PATIO AT GRADE, A DECK, OR A COVERED PORCH. FOUNDATIONS REQUIREMENTS AND ROOF REQUIREMENTS CAN GET MORE COMPLICATED.



COMPONENT 'SCALING'

***HOUSE FOOTPRINT**_THE HOUSE FOOTPRINT IS KEY. SETTING A DIMENSIONAL FOOTPRINT NECESSARY. THE NUMBER OF STORIES IS INTREGRAL TO THAT DECISION. UNFORTUNATELY BUT NECESSARILY THE NUMBER OF FLOORS SKEWS THIS EFFORT TO SCALE IN 2D THE HOUSE FOOTPRINT.
***VEHICLE FOOTPRINT**_NOT HARD TO DO, BUT NECESSARY TO QUANTIFY. ACTUALLY BASED ON A VEHICLE COUNT - AND THEIR REQUIRED MOVEMENT.
***ENTRY AND PORCHES**_USUALLY A LITTLE MORE FLEXIBLE IN SIZE AND POSITIONING, BUT NOT TO BE FORGOTTEN.



COMPONENT ARRANGEMENTS ON THE SITE

***THE 2D BUBBLE DIAGRAM**_COMPONENTS GET SHUFFFLED AROUND THE SITE TO DETERMINE A RELATIVE POSITIONING THAT SOLVES SITE CRITERION BASED ON THE SPECIFIC SITE SELECTION.
***CHAPTER d1-d4**_HAS ALREADY INTRODUCED SITE RELATED DATA, CONDITIONS, CONCERNS.
***PAGE d4.8_** SUMS UP THE TYPICAL LAYOUT CONCERNS NOTED BELOW.

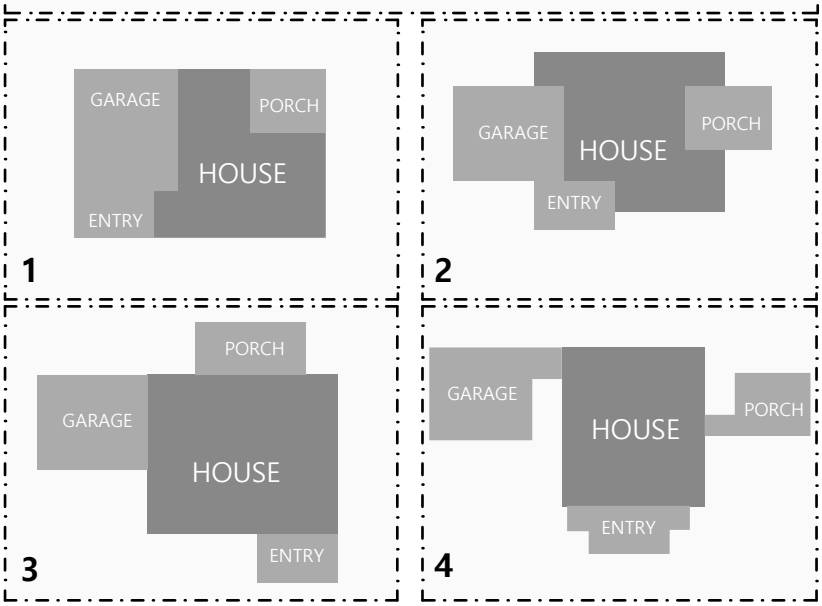
TOTAL PICTURE ANALYSIS KEYS

***TOPOGRAPHY_**
***APPROACH_**
***DRAINAGE_**
*VIEWS_
***SUN_**
***VEGETATION_**

SEE CHAPTER d7 FOR THIS STEP

ARRANGING FUNCTIONS+SPACES WITHIN

***OUT OF ORDER**_THIS FAIRLY COMPLICATED/LABORIOUS STEP OF ARRANGING ALL REQUIRED INTERNAL FUNCTIONS AND SPACES IS PURPOSEFULLY LEFT OUT OF THIS EXTERIOR/COMPONENT 'LINEAR' SEQUENCE. IT IS SMART TO GET COMFORTABLE WITH THE SITE RELATED CONDITIONS AND COMPONENT OPTIONS AND GEOMETRY BEFORE GETTING TOO ENTRENCHED IN A MORE DETAILED INTERNAL DESIGN.



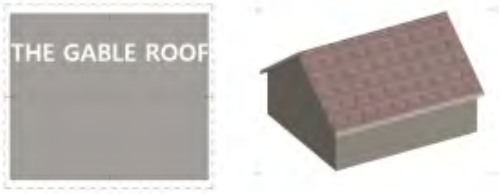
COMPONENT ARRANGEMENTS AS A STRUCTURE

***d5.8 thru d5.10**_THE BALANCE OF THIS CHAPTER RUNS THRU A FEW CONSIDERATIONS REGARDING COMPONENT DESIGN INTEGRATION. THIS BECOMES MORE CHALLENGING BECAUSE IT ADDS 3D GEOMETRY RESOLUTION ONTO WHAT HAS BEEN BASICALLY 2D LOGIC TYPE THINKING.
***THESE PLAN ILLUSTRATIONS**_SUGGEST THERE ARE A VARIETY OF GEOMETRIC WAYS TO INCORPORATE COMPONENTS. THEY SEQUENCE FROM FULLY INTEGRATED (1) TO SEMI DETACHED (4). IN OVERVIEW THE FULLY INTEGRATED APPROACH IS A TIGHTER MORE COST EFFICIENT PACKAGE BUT WITH 'BLOCKED' INTERIOR SPACES. THE SEMI DETACHED APPROACH IS A MORE RAMBLING COMPLICATED CONSTRUCTION OFFERING A MORE OPEN PLANNING PARTLY DUE TO MORE WINDOW OPPORTUNITIES.

COMPONENTS_ARRANGEMENT POTENTIAL BY ROOF TYPE

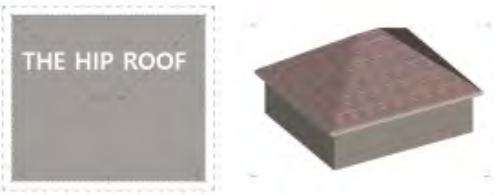
THE 3 ROOF BASICS

***INTEGRATING WITH THE SITE**_VIRTUALLY ALL RESIDENTIAL ROOFS ARE COMPOSED OF (ONE OR MORE) OF THESE 3 BASIC ROOF TYPES. VARIATIONS, ELABORATIONS, INVENTIVE COMBINATIONS EXIST, BUT AT THEIR CORE IS ONE OF THESE BASICS. THE CHARACTERISTICS OF 'SPACE UNDER ROOF' HAS JUST BEEN NOTED. BELOW THESE ROOF GEOMETRIES ARE SEPARATED TO GIVE INDEPENDENT EXPLANATION. COMPOSITE DESIGNS USING MORE THAN ONE OF THESE BASIC GEOMETRIES ARE VERY COMMON AND OFTEN BETTER/BEST SOLUTIONS.



THE GABLE ROOF

***DEFINITION+PARTS**_A GABLE CONSISTS OF 2 ROOF PLANES SHEDDING OPPOSITE DIRECTIONS AND MEETING AT THE TOP AT THE 'RIDGE'. THE ROOF THAT OVERHANGS THE LOW WALLS ARE CALLED THE 'EAVES'. THE TRIANGULAR WALL AREA UNDER THE 2 ROOF PLANES AT THE ENDS ARE CALLED THE 'GABLE ENDS'. THE ROOF THAT OVERHANGS THE GABLE END IS CALLED THE 'RAKE'.

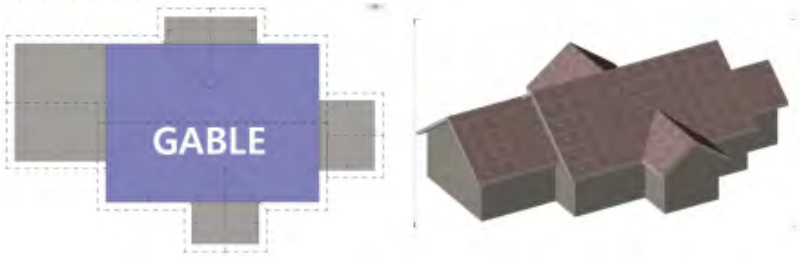


THE HIP ROOF

***DEFINITION+PARTS**_PITCHES MULTIPLE DIRECTIONS TO THE PERIMETER WALLS. THIS 4 SIDED HIP HAS A SHORT RIDGE AT THE TOP AND 4 'HIPS' FROM RIDGE TO WALL CORNER. ALL THE ROOF OVERHANGS WOULD BE 'EAVES'.

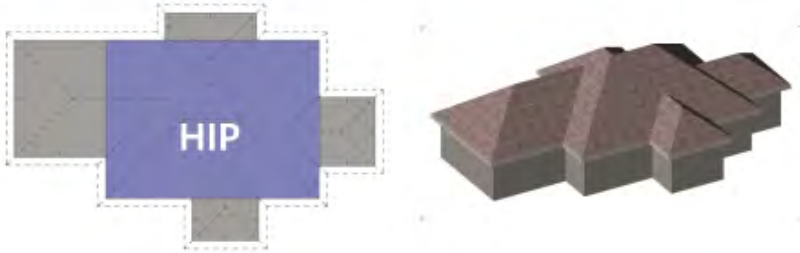
THE SHED ROOF

***DEFINITION+PARTS**_SINGLE PITCH DIRECTION, SINGLE PLANE. THIS PLANE COULD BE LOW ENOUGH TO BE CONSIDERED FLAT. ANY PROJECTS SHOWN HEREIN WILL HAVE ENOUGH PITCH (SAY 6" IN 12') TO SHED WATER AND WILL BE NOTED AS A SHED ROOF. THERE IS NO RIDGE OR HIP THERE IS A HIGHER WALL, A LOWER WALL, AND 2 END WALLS. THE HIGHER AND LOWER WALL OVERHANGS WOULD BE 'EAVES', AND THE END WALL OVERHANGS 'RAKES'. SOMETIMES CONTEMPORARY LOOKING SHED DESIGNS WILL NOT HAVE OVERHANGS.



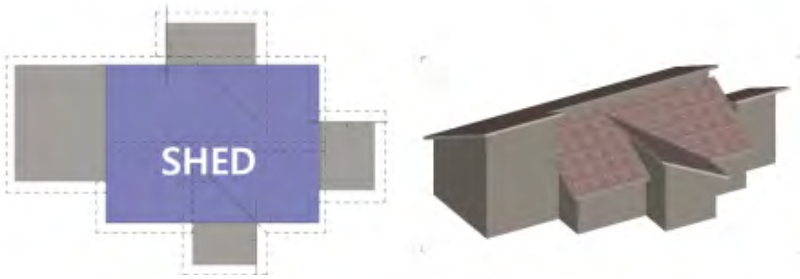
USING THE GABLE ROOF

***SUMMARY NOTES**_THE GABLE IS THE MOST COMMON OF ROOF FORMS. IT IS SIMPLE AND VERY FLEXIBLE. IT IS 'HARDER' IN APPEARANCE THAN THE HIP. THE SAME END WALLS THAT OFFER MORE SPACE (UNDER THE ROOF) AND LIGHT OPPORTUNITIES CAN BE BIG AND BLANK LOOKING



USING THE HIP ROOF

***SUMMARY NOTES**_THE HIP HAS AN EASY FLOW VISUALLY. IT IS A LITTLE 'SOFTER' IN APPEARANCE. IT IS VERY FLEXIBLE IN COMPLEX FOOTPRINT GEOMETRIES**.** IT IS A LITTLE MORE DIFFICULT TO BUILD (THE HIPS THEMSELVES), AND WASTEFUL OF MATERIALS. AND/BUT THERE ARE NO END WALLS TO BUILD. SPACE ABOVE IS LIGHTLESS WITHOUT DORMER CONSTRUCTION.



USING THE SHED ROOF

***SUMMARY NOTES**_THE SHED IS THE MOST SIMPLE- A SINGLE PITCH. IN A SMALL AND SIMPLE FOOTPRINT CONDITION IT DOES VERY WELL. IT DOES TEND TO HAVE A 'CONTEMPORARY' FLAVOR. IT DOES NOT DO WELL, EITHER IN CONSTRUCTION OR AESTHETICS, IN LARGER MORE COMPLEX FOOTPRINTS.

ULTIMATE FLEXIBILITY

***THE HIP**_CAN CONFIGURE ITSELF PRETTY COMFORTABLY TO DIFFERENT GEOMETRY OF WALLS BELOW. SEGMENTED CIRCLES, SHARP TRIANGLES, AND STANDARD RECTANGLES ALL CAN BE ACCOMODATED.

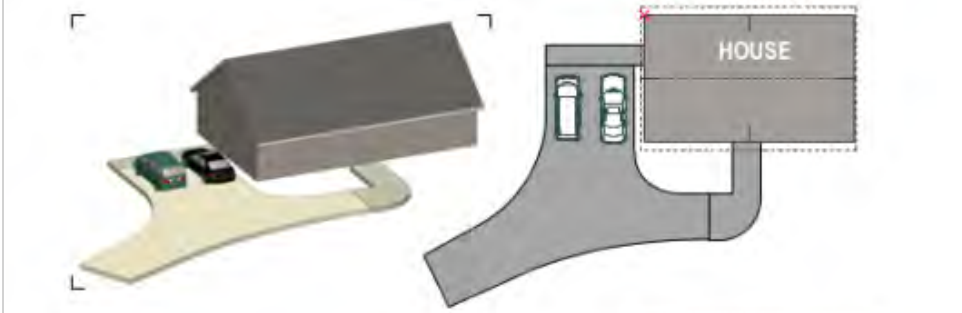
***BUT**_BY ITS NATURE THE HIP PUTS A LID OR HAT ON THE WALLS AND DOES LIMIT BRINGING LIGHT IN

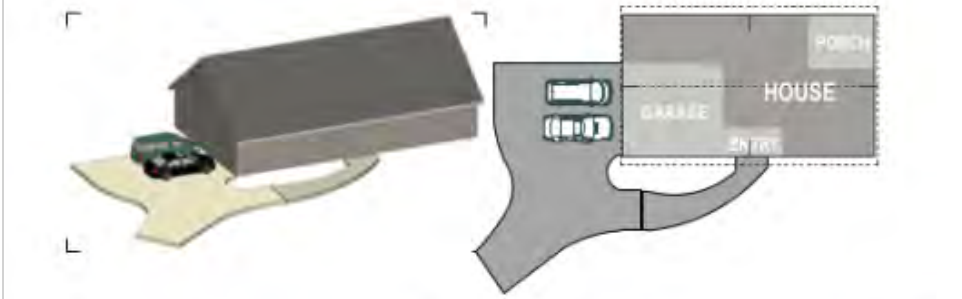
COMPONENTS_ARRANGEMENT OPTIONS AROUND THE HOUSE CORE

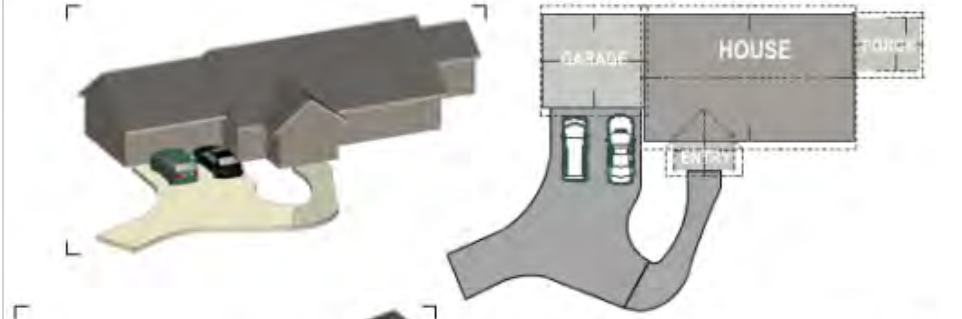
COMPONENT INTEGRATION

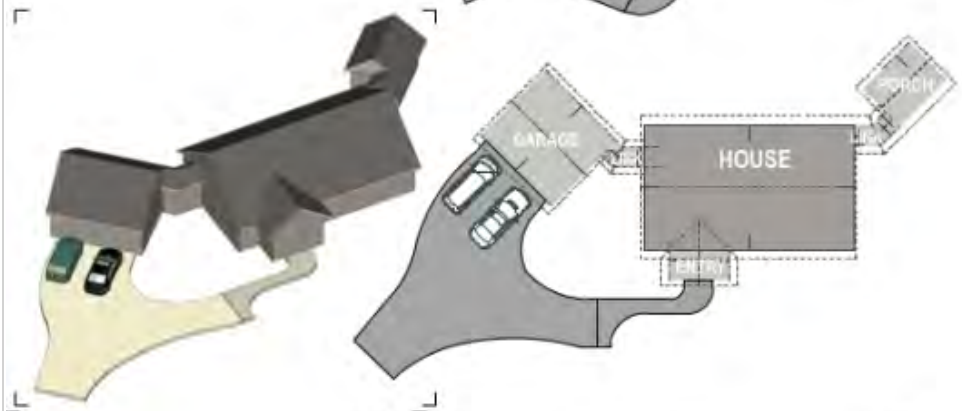
***METHODS**_THE ILLLUSTRATIONS BELOW SHOW THE 4 GENERIC WAYS ADDITIONAL COMPONENTS ARE PHYSICALLY INTEGRATED INTO THE MAIN HOUSE FOORPTINT**. I**NCLUDED ARE SOME GENERAL PRO AND CON COMMENTS.

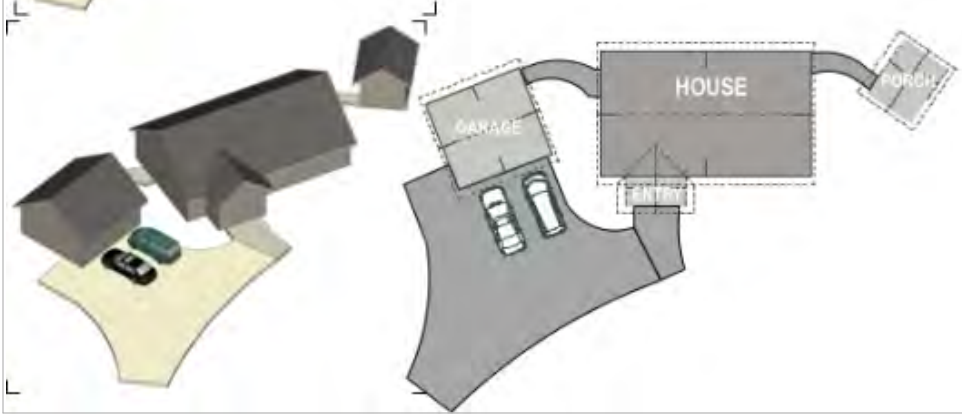
***MIXING IT UP_THESE** 4 TECHNIQUES (CONTAINED, CONTINGUOUS, ATTACHED AND DETACHED) ARE EACH AVAILABLE FOR ANY COMPONENT INDEPENDENTLY. FOR EXAMPLE A GARAGE MAY BE CONTIGUOUS, AN ENTRY CONTAINED, AND A PORCH DETACHED. THERE ARE NO DESIGN RULES EXCEPT WHAT WORKS AND LOOKS RIGHT.











NO AMMENITY COMPONENTS

PROS_

*CHEAPER & SIMPLER CONSTRUCTION

*ABSOLUTELY NOTHING TO BLOCK VIEWS

CONS_

*LIVING WITHOUT ENTRY FEATURE, GARAGE & PORCH IS A LIFESTYLE CHOICE. IT IS WHAT IT IS.

CONTAINED COMPONENTS

PROS_

*EVERYTHING UNDER ONE ROOF AFFORDS A SIMPLICITY OF ROOF CONSTRUCTION.

*IT ALSO RESTRICTS EXTERIOR CORNERS WHICH IS USUALLY A CONSTRUCTION EFFICIENCY.

CONS_

*INTERNAL PLANS AND WINDOW PLACEMENTS ARE INHERENTLY MORE RESTICTED

*THE EXTERIOR IS NECESSARILY BOXY AND MORE DIFFICULT TO MAKE ATTRACTIVE.

CONTIGUOUS COMPONENTS

PROS_

*THEY ARE A DIRECT PART OF THE HOME PLAN AND THEREFORE CONVENIENT & EASY FUNCTIONALLY

*MORE FREEDOM OF DESIGN BOTH WITHIN THE HOUSE, AND WITH EXTERIOR APPEARANCE.

*THE THERMAL ENVELOPE IS SIMPLE

CONS_

*MORE CORNERS AND ROOF PLANES THAT THE BOX ABOVE, HENCE 'BIGGER' AND MORE COSTLY .

ATTACHED COMPONENTS

PROS_

*THEY CAN BE PLACED ANYWHERE, AT ANY CONTROLLED ANGLE THAT PERMITS A GOOD ROOF CONNECTION, AND SET AT A DIFFERING GRADE.

*THEY CAN BE BUILT LATER WITH NO SIGNIFICANT PENALTY

*THEY DO NOT BLOCK HOUSE WALLS

CONS_

*THE CONNECTION TO THE HOUSE IS FAR AND USUALLY INCONVENIENT.

*THE CONNECTION TO THE HOUSE IS COVERED WHICH IS WORKABLE IN MOST CLIMATES

DETACHED COMPONENTS

PROS_

*THEY CAN BE PLACED ANYWHERE, AT ANY ANGLE, AND SET AT ANY GRADE.

*THEY CAN BE BUILT LATER WITH NO PENALTY

*THEY DO NOT BLOCK HOUSE WALLS

*SOMETIMES FUNCTIONS ARE WELL SERVED BY BEING DISCONNECTED FROM THE HOUSE.

CONS_

*THE CONNECTION TO THE HOUSE IS FAR AND USUALLY INCONVENIENT

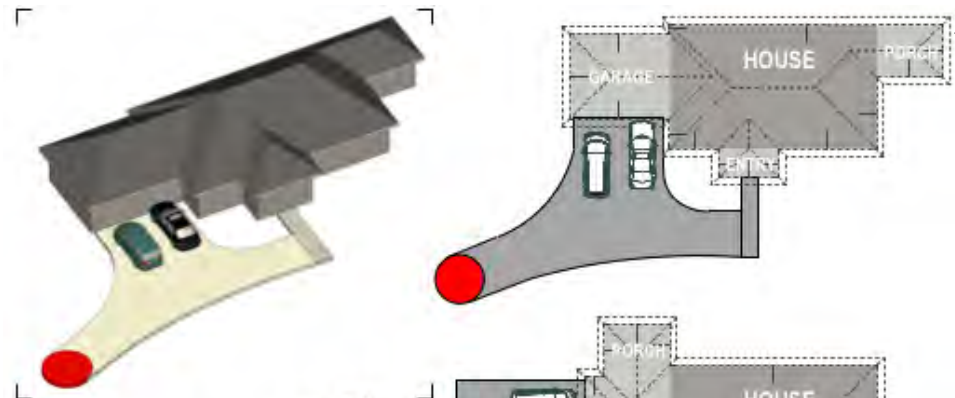
*THE CONNECTION TO THE HOUSE IS UNCOVERED WHICH CAN BE TOLERABLE IN SOME SITUATIONS AND INTOLERABLE IN OTHERS.

LAYOUTS BASED ON A FIXED ACCESS POINT

SOMETIMES A SITE CONDITION SETS THE TABLE

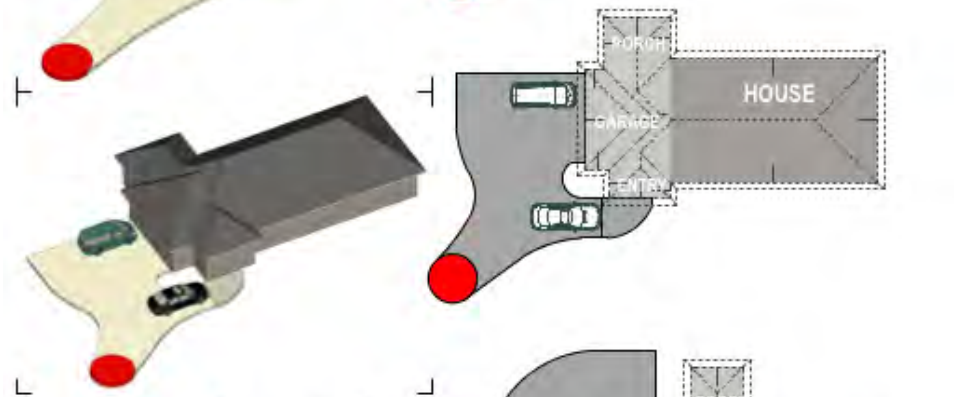
***THE FIXED APPROACH**_A SITE MAY HAVE ONLY 1 WAY IN, AND THAT ESTABLISHES AN ARRIVAL DIRECTION AND A VIEW TO HOUSE. THIS EXERCISE MAKES THE POINT THAT DESIGN OPTIONS STILL EXIST FOR THE ARRANGEMENT OF THE OTHER COMPONENTS. EACH COMPONENT NEEDS TO HAVE CRITERION ESTABLISHED FOR THEIR BEST AND DESIRED POSITION.

***THESE ILLUSTRATIONS** _JUST HAPPEN TO USE THE HIP ROOF, AND CONTIGUOUS COMPONENTS. THE RED DOT REPRESENTS THAT FIXED APPROACH POINT.



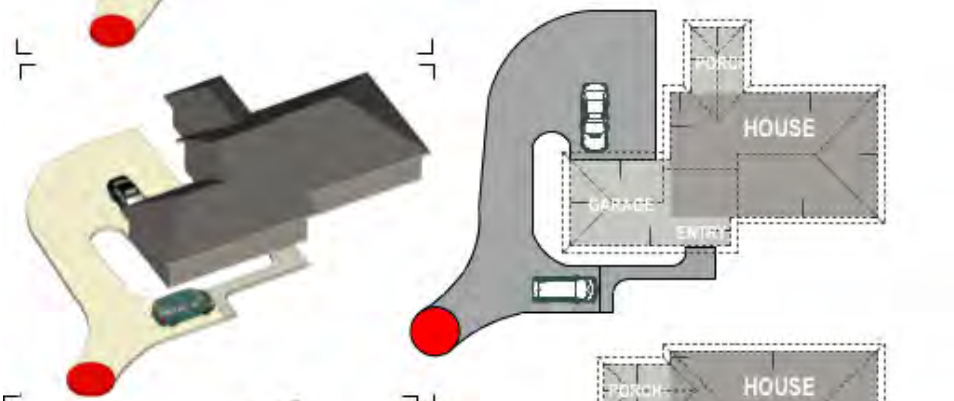
THE 'STANDARD' LAYOUT

*FRONT DOOR IN OR NEAR THE MIDDLE IS SYMPATHETIC TO MOST HOUSE PLANS
*ONE FUNCTION TO THE LEFT OF THE FRONT DOOR & ONE TO THE RIGHT (PRIVATE SPACES)
*AND THE PUBLIC SPACES AT THE REAR FACING THAT PRIVATE REAR YARD.
*WORKS BETTER ON MINIMAL TO MODERATE SLOPE LOTS



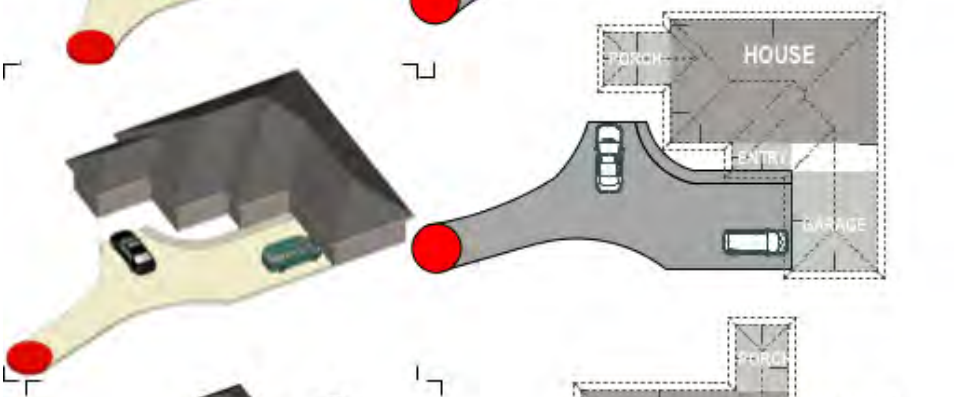
3 HOUSE SIDES 'UNENCUMBERED'

*ALLOWS VIEWS & GLASS AS DESIRED. NOTHING TO LOOK AROUND OR THRU
*ALLOWS STEEPER SLOPE AWAY (TO THE RIGHT) FOR PARTIAL OR WALKOUT BASEMENT
*OR ALLOWS FOR HOUSE TO BE BUILT INTO A SLOPE



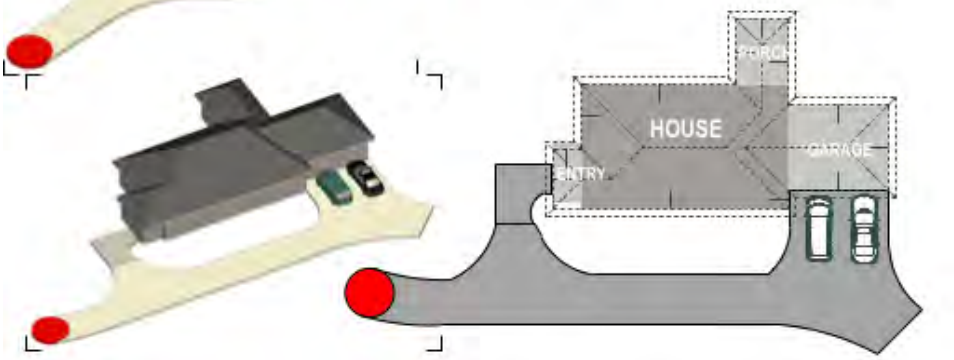
HIDE THE GARAGE DOORS

*MAKES VISUALLY PRIVATE THE GARAGE DOORS, AND ANY ACTIVITIES THAT MIGHT OCCUR OUTSIDE THE GARAGE DOORS
*SUCH AS SMALL CHILDREN WITH BIKES & TOYS WANTING A FLAT SURFACE-
*OR A HOBBY PERSON WANTING/NEEDING TO SPREAD WORK OUTSIDE THE GARAGE DOORS
*ACCESS TO PORCH FUNCTION FROM EXTENDED GARAGE
*MORE DRIVEWAY NEEDED- AND A FLATTER SITE



2 HOUSE SIDES 'UNEMCUMBERED'

*KEEPS ENTRY/GARAGE/PORCH THAT NEED ACCESS TO GRADE ON 2 SIDES OF THE HOUSE
*WHICH ALLOWS REAR & RIGHT TO ABSSORB GRADE
*AND OR BE FREE FOR GLASS & VIEW
*GARAGE DOORS ARE VERY VISIBLE



KEEP THE FRONT FACE OPEN

*THIS ALLOWS A FRONT ELEVATION TO BE FULLY OPEN TO DESIGN OPPORTUNITIES- SUCH AS GLASS AND VAULTED SPACES
*OR IF THE VIEW SIDE OF THE HOUSE IS IN THE FRONT SUCH AS IS THE CASE SOMETIMES IN UPHILL GRADE CONDITIONS THIS ALLOWS THE BIG VIEW SPACES TO BE FORWARD.

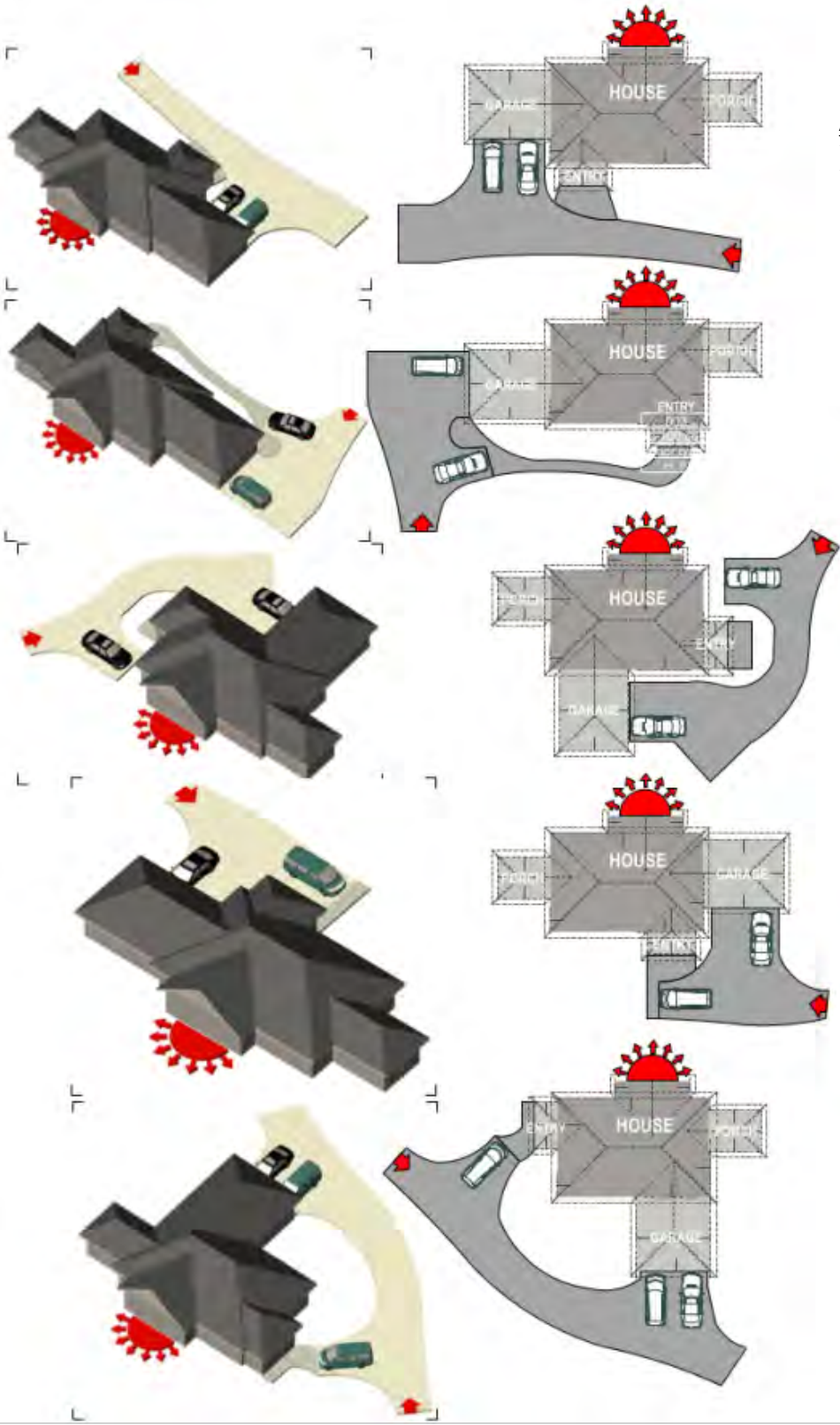
LAYOUTS BASED ON A FIXED PLAN IDEA

SOMETIMES A PLAN IDEA SETS THE TABLE

***IDENTIFYING THE IDEA(S)**_THE DESIGN IDEA MUST FIRST BE IDENTIFIED AND PRIORITIZED. A DESIGN IDEA, AS OPPOSED TO THE PREVIOUS ILLUSTRATION OF AN 'IMPOSED' CONDITION, IS USUALLY NOT IMPOSED-BUT VOLUNTARY. BECAUSE ANY SINGLE DEFINED LIMITATION EFFECTS OTHER DECISIONS, A RELATIVE IMPORTANCE NEEDS TO BE UNDERSTOOD.

***THIS PLAN IDEA**_IS SUGGESTING THERE IS A KILLER PANORAMIC VIEW. PRIORITY ONE IS TO NOT ALLOW ANY OTHER COMPONENT TO BLOCK OR OBSTRUCT THE VIEW. THE HOUSE FOOTPRINT ITSELF SHOWS A (ALBEIT MODEST) PROJECTION AT THAT SELECTED VIEW SPOT TO HELP ENHANCE THAT EXPERIENCE. THAT PHYSICAL SPOT BECOMES A FIXED ENTITY ON THE SITE AND OTHER CONSIDERATIONS AND THE OTHER COMPONENTS WANT TO BE SYMPATHETIC TO THAT PRIORITY.

***THESE ILLUSTRATIONS**_JUST HAPPEN TO USE THE HIP ROOF, (WITH CONTIGUOUS COMPONENTS) AND A GABLE ROOF AT THE VIEW LOCATION SUGGESTING A VAULTED SPACE AND MORE GLASS IN THAT ENDWALL. THE RED HALF CIRCLE AND ARROWS REPRESENTS THE PANORAMIC VIEW LOCATION. THE 3D VIGNETTES ARE TURNED 180 DEGREES FROM THE PLANS. DIFFERENT APPROACH DIRECTIONS ARE CHOSEN PURPOSEFULLY.



A 'STANDARD' LAYOUT

*FRONT DOOR VISIBLE FIRST, THEN THE GARAGE
*PORCH VISIBLE FROM DRIVE APPROACH MAYBE A PRIVACY CONCERN

SEE THROUGH

*THIS POSITIONING OF THE ENTRY AND BIG VIEW SPACE (ON AXIS) MAY ALLOW A NICE VIEW THROUGH THE HOUSE UPON ENTRY

FACE THE ENTRY/HIDE THE GARAGE

*FROM THIS ACCESS POINT COMPONENTS ARRANGE WELL.
*THE BIG VIEW WINDOW IS SEEN UPON SITE ENTRY. IT IS A STRONT FEATURE SO THAT MIGHT BE GOOD- BUT PRIVACY REQUIREMENTS NEED CHECKING.

EFFICIENT APPROACH & VEHICLE AREA

*LIMITED DRIVEWAY AREA FROM A COST AND TOPO CRITERION IS GOOD.
*VIEW INTO GARAGE MAY BE A NEGATIVE
*PORCH IS PRIVATE

FACE THE ENTRY/HIDE THE GARAGE

*ENTRY & GUEST PARKING SEPARATE IN FIRST VIEW
*FLATTER TOPOGRAPHY REQUIRED AS IS THE CASE
*MORE DRIVEWAY SURFACE REQUIRED

LAYOUTS BASED ON SUN POSITION

SUN BEHAVIOR

***THE SUN'S PATH**_IS ABSOLUTELY PREDICTABLE (d4.5) AND OBVIOUSLY IT IS FIXED ON ANY SITE. SO THE HOME DESIGN HAS TO ACCOMODATE. WE CAN'T MAKE THE SUN ACCOMODATE.

***DESIGN CRITERION**_HOW DO WE WANT THE SUN TO SHOW UP IN THE VARIOUS SPACES WITHIN THE HOME? LOW EAST AND WEST SUN, HIGH MIDDAY SUN, NORTH INDIRECT (SUN)LIGHT.

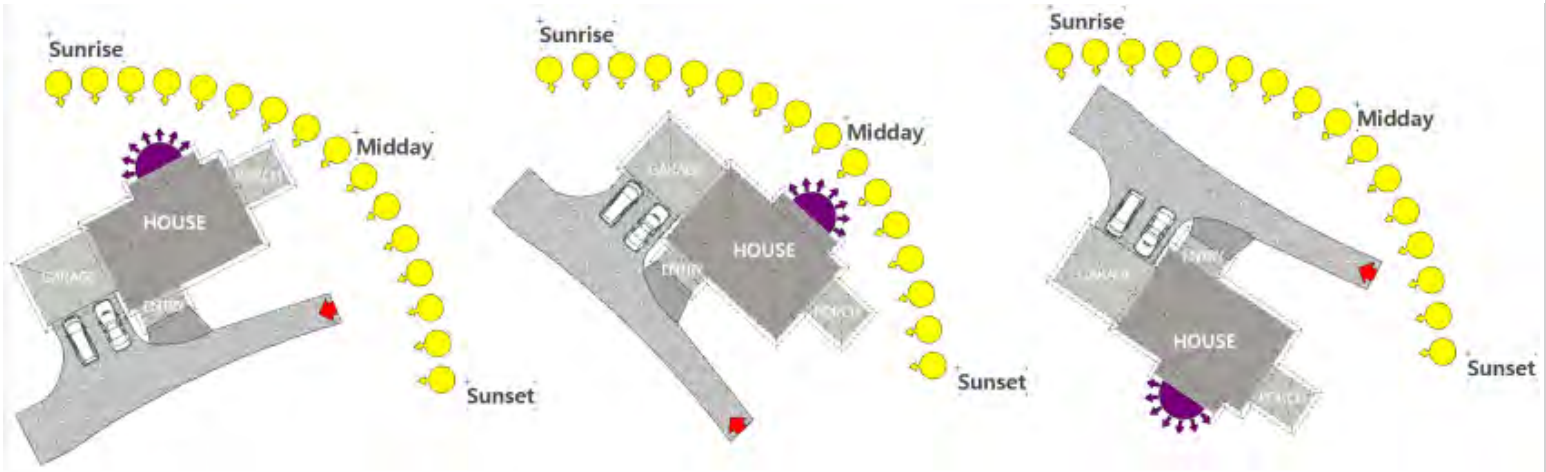
***DESIGN OPTIONS**_MAYBE MANAGING A HOMES GENERAL ORIENTATION, OR RE-ALIGNING COMPONENTS, OR WORKING HARD WITH SPACES AND WINDOW ARRANGEMENTS, OR ALL 3 TECHNIQUES BECOME REQUIRED TO ADVANTAGE THE SUN'S PRESENCE AS ONE PREFERS.

MIRRORING+ROTATING A GIVEN LAYOUT

***SUN IMPLICATIONS**_MIRRORING AND ROTATING A PLAN CAN OBVIOUSLY CHANGE SUN ORIENTATION AND IT DOES SO PRETTY THOROUGHLY.

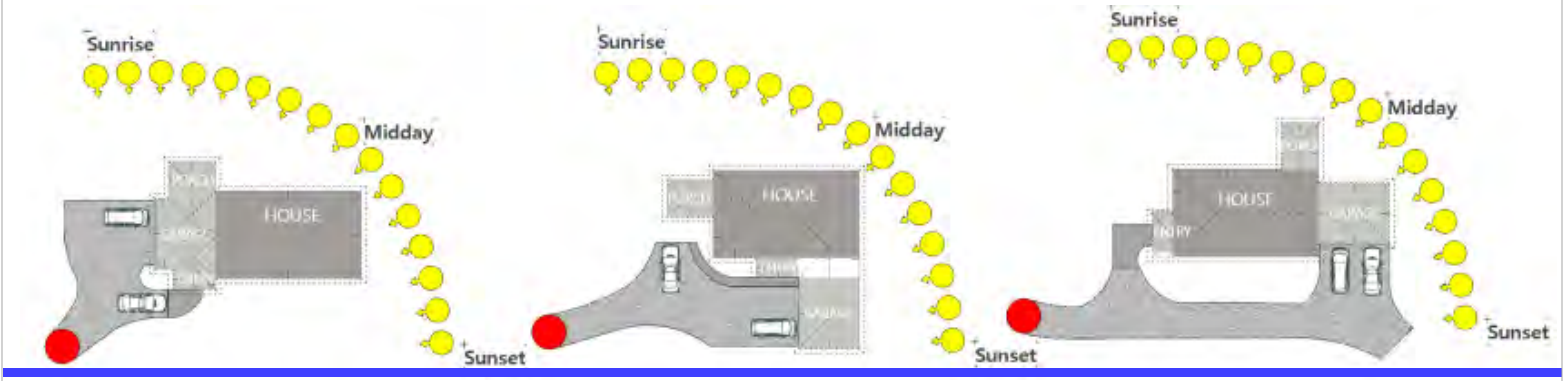
***OTHER IMPLICATIONS**_ALL SITE CONCERNS AND CRITERION AS WELL AS FOUNDATION IMPLICATIONS ARE TOTALLY EFFECTED ALSO.

***ALL HOME DESIGNS THIS PROJECT**_THE DESIGN SITE PLAN SHEETS REMIND ONE TO MIRROR AND ROTATE DESIGNS. GOOD OPPORTUNTIES CAN SHOW UP.



REARRANGING COMPONENTS FOR THE SUN

*MOVING COMPONENTS AROUND IN ANOTHER WHOLESALE WAY TO EFFECT HOW THE SUN ENTERS A HOME.



DESIGNING FUNCTIONS+SPACES FOR THE SUN

*WHEN BEGINNING THE CAREFUL RELATIONSHIPS AND PLANNING OF INTERNAL SPACES AS OVERVIEWED IN CHAPTE (d7) KEEP IN MIND THE VALUE OF THE SUN'S DIRECT AND INDIRECT PRESENCE.