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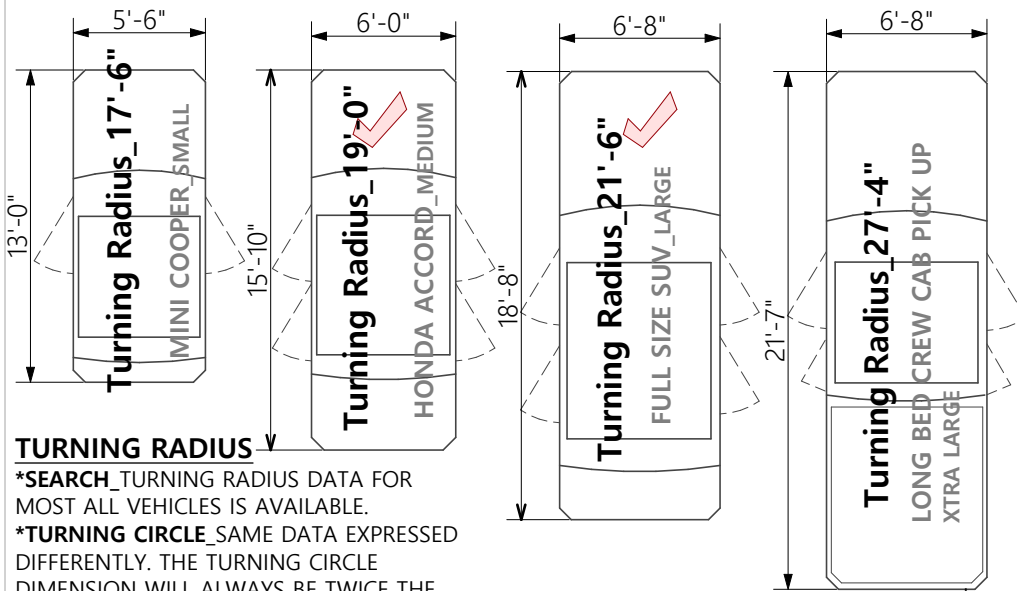
d8.14 MEP SPACE ALLOCATIONS_HVAC AIR HANDLERS

d8.15 MEP SPACE ALLOCATIONS_HVAC SYSTEM SCHEMATICS

THE VEHICLE DETERMINES THE SPACE REQUIRED

*THE EVERYDAY VEHICLE SIZE_AS PER THE EXERCISE SHOWN FIRST CONSIDER AND MAKE SURE REQUIREMENTS FOR THE EVERYDAY VEHICLE ARE SATISFIED.

*THE 'JUST IN CASE' VEHICLE SIZE_TRUCK DELIVERIES AND EMERGENCY VEHICLES ARE REAL EVENTS. OBVIOUSLY THE GARAGE DOES NOT NEED TO ACCOMMODATE VEHICLES OF THAT SIZE BUT ACCESS TO THE PROPERTY NEEDS CONSIDERATION.



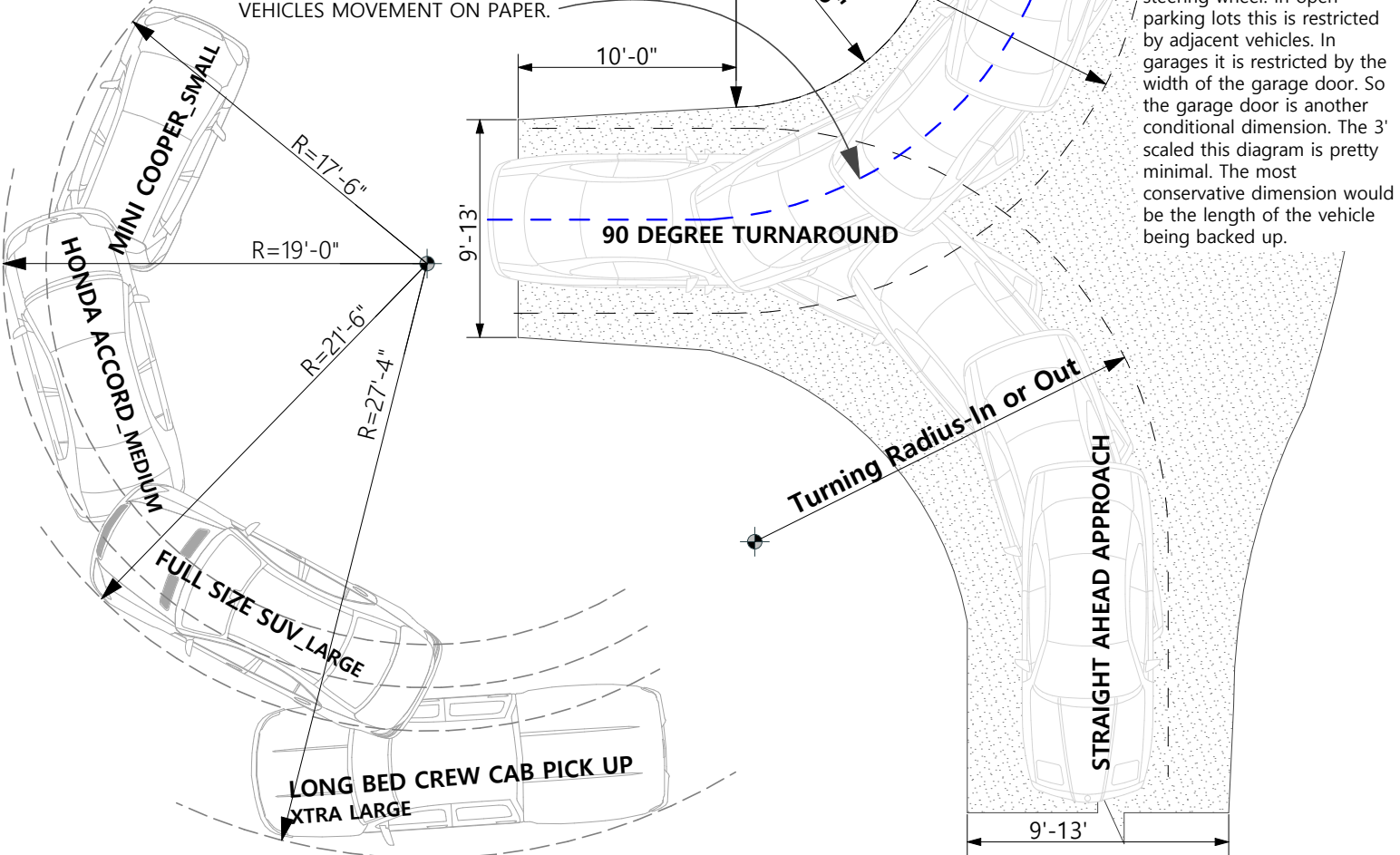
TURNING RADIUS

*SEARCH_TURNING RADIUS DATA FOR MOST ALL VEHICLES IS AVAILABLE.

*TURNING CIRCLE_SAME DATA EXPRESSED DIFFERENTLY. THE TURNING CIRCLE DIMENSION WILL ALWAYS BE TWICE THE RADIUS DIMENSION.

RADIUS CHECK WITH AUTO CENTERLINE

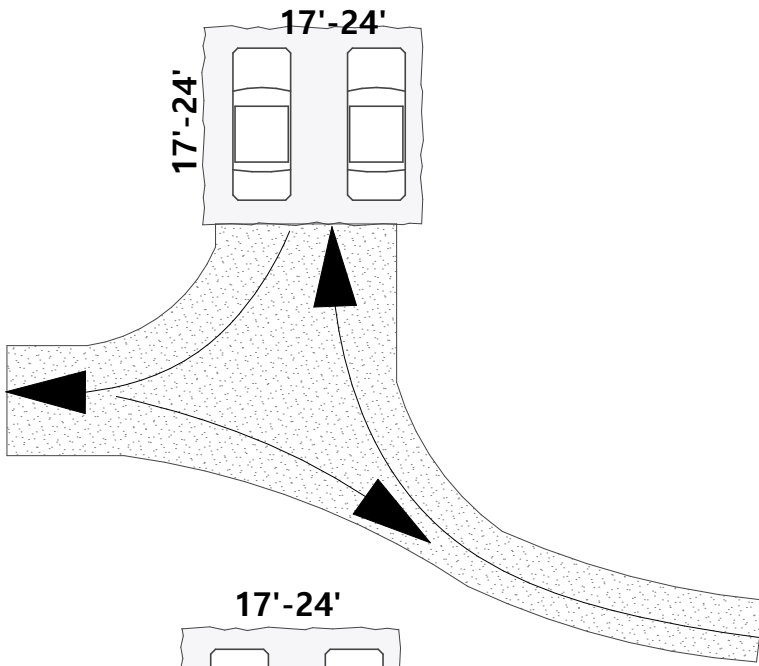
*REVISE RADIUS NUMBER_TAKE THE RADIUS DIMENSION FOR A GIVEN VEHICLE AND SUBTRACT HALF THE VEHICLE WIDTH. THE RESULT IS A WORKING RADIUS DIMENSION FOR THE VEHICLES CENTERLINE WHICH FACILITATES TRACKING A VEHICLES MOVEMENT ON PAPER.



TURNAROUND EXERCISE

*UNIVERSAL RULES_THIS BASIC EXERCISE USING VEHICLE SIZE AND TURNING RADIUS IN A STRAIGHT AHEAD DRIVE WITH 90 DEGREE TURNAROUND CAN BE APPLIED REALLY ANY OTHER APPROACH SITUATIONS. THE DIMENSIONS BELOW SUIT A MEDIUM SIZE (COMPACT CLASS) VEHICLE.

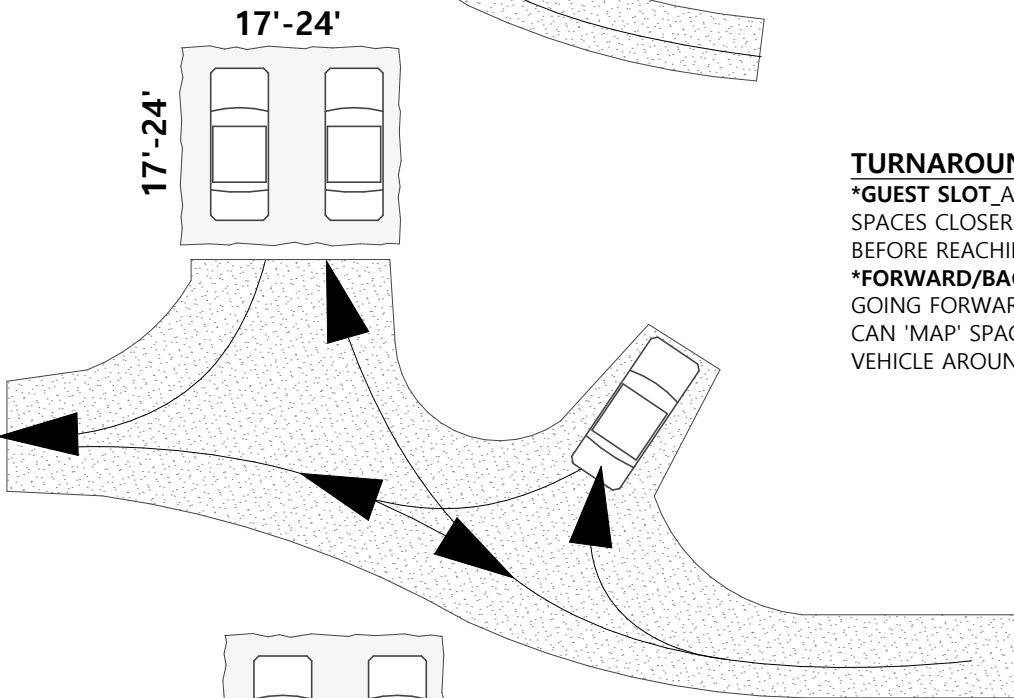
*CAR COUNT_THE TURNAROUND SHOWN FOR 1 CAR. A 2 CAR WIDTH WOULD BE 17'-24' WHICH MIGHT ALLOW 1 ADDITIONAL PARKED VEHICLE AND LEAVE 1 TURNAROUND SPACE.(d8.2)



TURNAROUND AREA

*GENERAL_SITE CONDITIONS, AS ALWAYS, PLAYS A PRETTY BIG PART IN DETERMINING A BEST APPROACH TO MANAGING VEHICLES. ON OPEN, FLAT, SITES WITH HARDPACKED SOIL ONE CAN BE MORE GENEROUS WITH DRIVEWAY AND TURAROUND SPACE. ON TIGHT, SLOPED, AND HEAVILY VEGETATED SITES THE DRIVE AND TURNAROUND CAN BE DIFFICULT TO LAY OUT AND EXPENSIVE. IN THIS LATTER INSTANCE A CAREFUL LAYOUT GETS IMPORTANT.

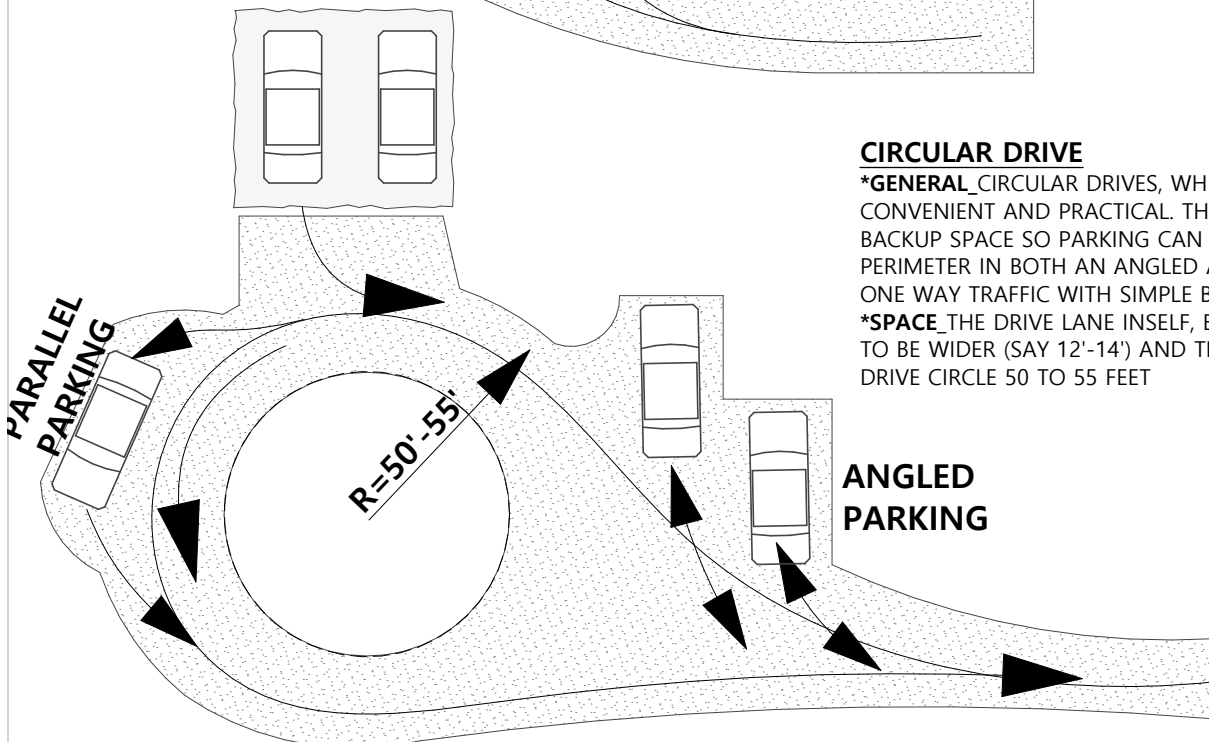
*THE CORE REQUIREMENT_ASSUMING A DRIVEWAY WOULD PRECLUDE BACKING A VEHICLE OUT ALL THE WAY TO THE FEEDER STREET, A TURNAROUND SPACE IS REQUIRED TO INITIATE A 3 POINT TURN. THE ANTICIPATED VEHICLE SIZE AND TURNING RADIUS IS ALL THAT IS NEEDED TO LAYOUT THE SPACE NEEDED.



TURNAROUND WITH GUEST PARKING

*GUEST SLOT_AN OPTION IS ALWAYS TO PROVIDE 1 OR 2 SPACES CLOSER TO THE ENTRY DOOR, VISIBLE AND ACCESSIBLE BEFORE REACHING FAMILY PARKING/GARAGE

*FORWARD/BACKWARD_THE SAME RADIUS RULES APPLY GOING FORWARD OR BACKWARD. WITH THAT RADIUS ONE CAN 'MAP' SPACE AND CLEARANCES FOR MOVING ANY VEHICLE AROUND.



CIRCULAR DRIVE

*GENERAL_CIRCULAR DRIVES, WHERE SPACE PERMITS, CAN BE CONVENIENT AND PRACTICAL. THE DRIVE ITSELF BECOMES THE BACKUP SPACE SO PARKING CAN OCCUR ALONG THE OUTSIDE PERIMETER IN BOTH AN ANGLED AND PARALLEL FORMAT. SO ONE WAY TRAFFIC WITH SIMPLE BACKUP.

*SPACE_THE DRIVE LANE INSELF, BECAUSE IT IS A CURVE, WANT TO BE WIDER (SAY 12'-14') AND THE OUTSIDE RADIUS OF THE DRIVE CIRCLE 50 TO 55 FEET

UNIVERSAL NOTES APPLICABLE TO ALL GARAGE CONFIGURATIONS

1*GARAGE SIZE_THIS EXERCISE IS INTENDED TO HELP ESTABLISH AN IDEAL SIZE AND POSSIBLY AN IDEAL SHAPE FOR THE GARAGE FUNCTION. THE GARAGE IS ACCOMODATING VEHICLES, STORAGE, PATHS OF TRAVEL AND GENERAL CLEARANCES. THE LARGER DESIGN PICTURE AND THE SITE MAY ULTIMATELY INFLUENCE BOTH THE SIZE AND SHAPE OF THE GARAGE COMPONENT,

2*VEHICLE(S) SIZE_OBVIOUSLY VEHICLE SIZE IS A CONSIDERATION, AND COMES MOST INTO PLAY IF PREFERRED VEHICLES ARE CONSISTENTLY LARGE TO OVERSIZE (SOME PICK UPS), OR CONSISTENTLY SMALL (SUB COMPACTS).

3*DBL GARAGE DOOR WIDTHS_16'W AND 18'W ARE MOST STANDARD.

4*SINGLE GARAGE DOOR WIDTHS_8'W,9'W,10'W ARE MOST STANDARD

5*GARAGE DOOR HEIGHTS_7'H, 8'H, AND 10'H ARE MOST STANDARD

6*CUSTOM SIZES_THE GARAGE DOOR INDUSTRY IS MORE FLEXIBLE THAN ONE MIGHT THINK. SOME LARGER MANUFACTUERS OFFER CUSTOM SIZES AVAILABLE IN 6" 'INCREMENTS' AT RESONABLE PRICING. CUSTOM SIZING FOR MOST VEHICLES IS NOT REQUIRED, BUT FOR TRUCKS,BOATS,RVS THEY MAY BE REQUIRED, OR FOR SMALLER BAYS AND DOORS FOR STORAGE ONLY/MOTORCYCLES, RIDING MOWERS, ETC.

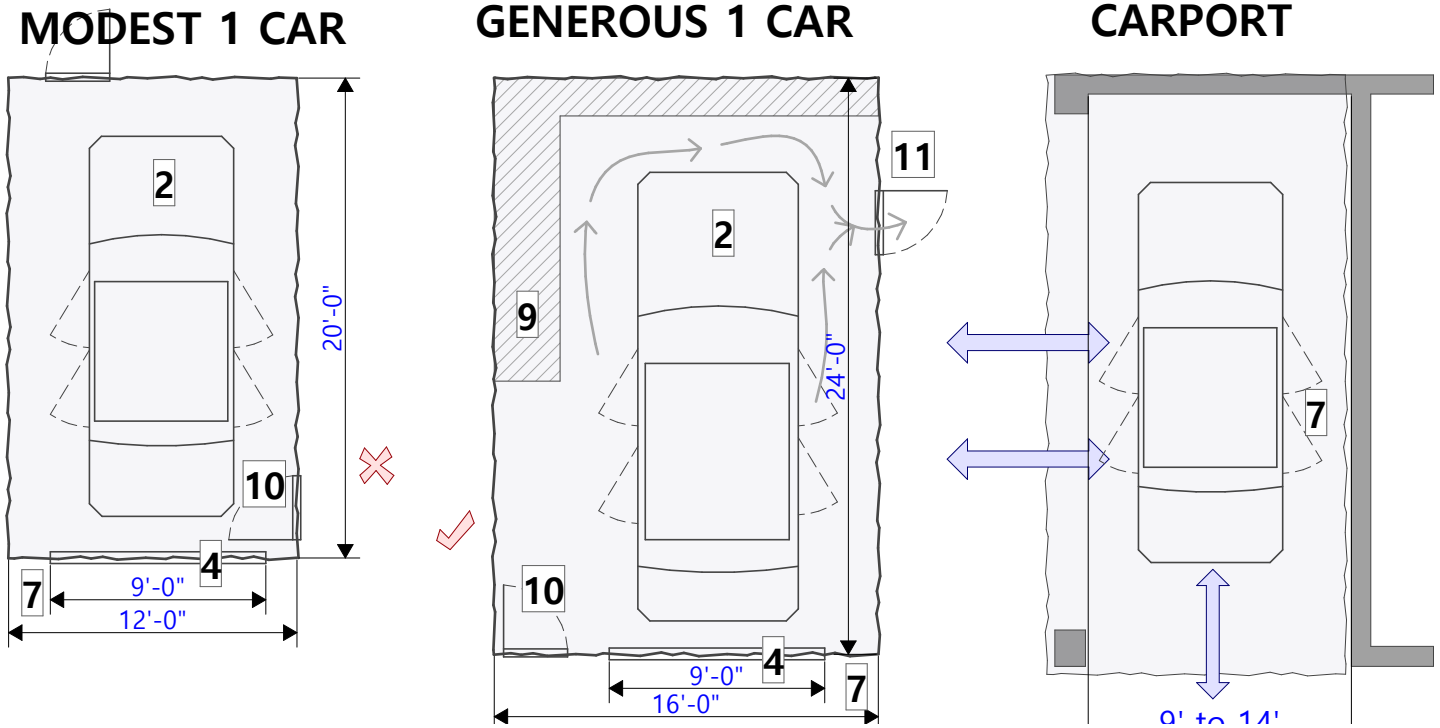
7*WIDTH FROM GARAGE DOOR JAMB TO WALL_FOR 2 DIFFERENT REASONS THIS WIDTH DOES NOT WANT TO BE COMPROMISED. THIS NET INSIDE WIDTH CREATES THE INTERNAL SPACE NEEDED TO OPEN THE CAR DOOR, GET OUT, PROCEED ON THE PATH OF TRAVEL. MAN DOOR CLEARANCE FROM THE OUTSIDE IN MAY ALSO REQUIRE THAT SPACE. AND THIS DISTANCE FROM GARAGE DOOR JAMB TO OUTSIDE CORNER **MAY** NEED A MINIMUM WIDTH OF 16" OR 24" SO THAT WALL SECTION CAN BE CONSTRUCTED TO MEET REQUIREMENTS AS A STRUCTURAL WIND RESISTING 'PANEL'.

8*PATH OF TRAVEL_THINKING THRU THE PATH OF TRAVEL, WHAT MAY NEED TO BE CARRIED, AND WHICH VEHICLE DOORS ARE ACTIVE WILL INFORM WHERE THE SPACE IS NEEDED. GROCERIES, INFANTS AND CAR SEATS, ACTIVE KIDS WITH GEAR, ALL WANTS CONSIDERATION. ENCLOSED GARAGES ARE NOT FORGIVING WITH THIS IMPORTANT MOVE AROUND SPACE. OPEN OUTSIDE PARKING AND TO A LESSER EXTENT-CARPORTS - DO HAVE SOME FOUND SPACE AT THE PERIMETERS.

9*STORAGE_MOST OF AMERICA USES THEIR GARAGE AS A STORAGE FACILITY. WALL SPACE IS ALWAYS VALUABLE. THE BEST DEPTH FOR THAT STORAGE IS IMPORTANT, AND IT VARIES. CONSIDER WHATS BEING STORED. SOME ITEMS UNFORTUNATELY (BIKES, LAWN MOWERS,WHEELBARROWS) WILL WANT TO MOVE IN AND OUT OF A GARAGE WITHOUT MOVING VEHICLES, WHICH CAN BE CHALLENGING TO IMPOSSIBLE. FREQUENTLY 1 GARAGE BAY IS GIVEN OVER TO THOSE LARGE MOVEABLE OBJECTS AND 1 CAR IS LEFT OUTSIDE.

10*MAN DOOR TO THE OUTSIDE_DOOR SWINGS AND CLEARANCES ARE THE LAYOUT ISSUE. USUALLY THE EXTERIOR DOOR USED WILL SWING INTO THE GARAGE SO SPACE INSIDE IS NEEDED. THIS INSIIDE SWING IS A FUNCTION OF THE PREFABRICATED 'INSWING' EXTERIOR STYLE DOOR. OUTSWING EXTERIOR DOORS EXIST BUT ARE LIMITED IN SELECTION.

11*MAN DOOR TO THE INSIDE_DITTO REGARDING SWINGS AND LAYOUT. THESE DOORS WILL TYPICALLY SWING INTO THE HOUSE. THESE GARAGE TO HOUSE DOORS REQUIRE A 20 MINUTE FIRE RATING, MUST HAVE A FORM OF SELF CLOSURE, AND MUST BE INSULATED AND WEATHER STRIPPED. SO MORE PURCHASE CHOICES EXIST WITH INSWING DOORS. THE OTHER CONSIDERATION IS THAT INSWING DOORS ARE A LITTLE EASIER TO MANAGE WHEN HANDS AND ARMS ARE OCCUPIED CARRYING STUFF.



OPEN PARKING/CARPORTS/GARAGES

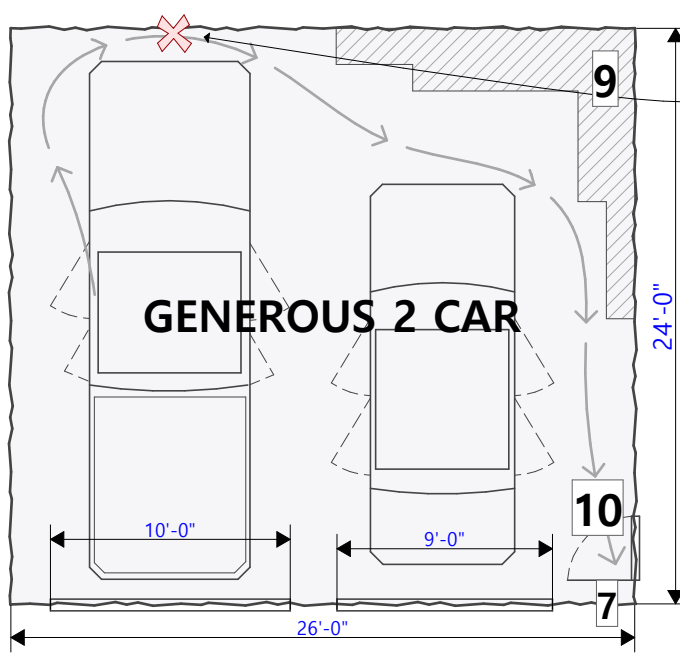
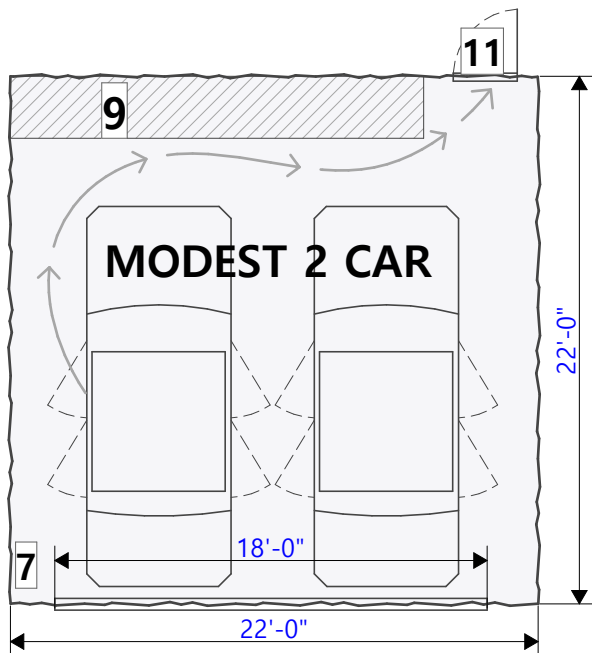
***THE OBVIOUS**_AVAILABLE SPACE, BUDGET, WEATHER, STORAGE REQUIREMENTS HELP DECIDE THE BEST PATH.

***SPACE REQUIRED**_A LITTLE MORE SPACE IS REQUIRED FOR A GARAGE FOOTPRINT THAN A CARPORT, WHICH REQUIRES MORE SPACE THAN AN OPEN PARKING PAD. WALLS CONFINE MOVEMENT AROUND, AND ACCESS IN+OUT OF VEHICLES,THEREBY REQUIRING MORE SPACE.

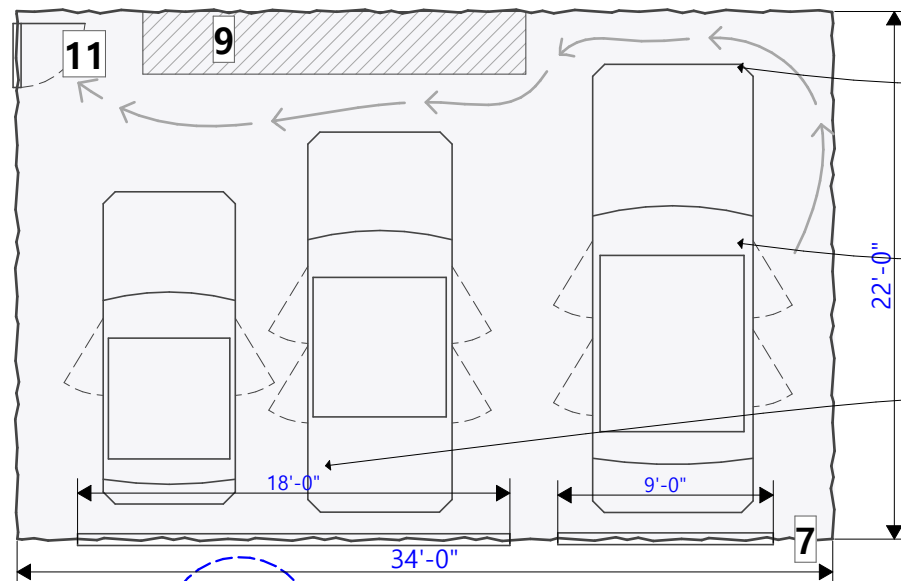
***PLANNING FOR DOWN THE ROAD**_A GARAGE (CONCRETE OR GRAVEL) PAD CAN TRANSITION INTO A DETACHED OR SEMI DETACHED GARAGE STRUCTURE AT A FUTURE DATE. A LITTLE PLANNING REQUIRED.

***STORAGE**_ALL HOMES HAVE SOME REQUIREMENT FOR 'OUTSIDE TYPE' STORAGE. WHAT IS JUNK AND WHAT IS USEFUL IF A NEVER ENDING QUESTION, AND REQUIREMENTS VARY SIGNIFICANTLY.

***PRE FAB**_STORAGE SHEDS AND FIXED VEHICLE COVERS (ROOFS) ARE AVAILABLE EVERYWHERE AND COMPARATIVELY INEXPENSIVE. THEY ALSO ARE VISUAL DETRACTORS, RATHER THAN AESTHETIC ASSETS. CONSTRUCTING THESE STRUCTURES TO COORDINATE WITH THE ARCHITECTURE OF THE HOME IS ALWAYS POSSIBLE, AND ABSOLUTELY WORTH CONSIDERING.



Path or travel from vehicle door to garage access door needs to be uninterrupted. Parking discipline required. Sometimes a floor stop or dangling tennis ball is required as an assist.

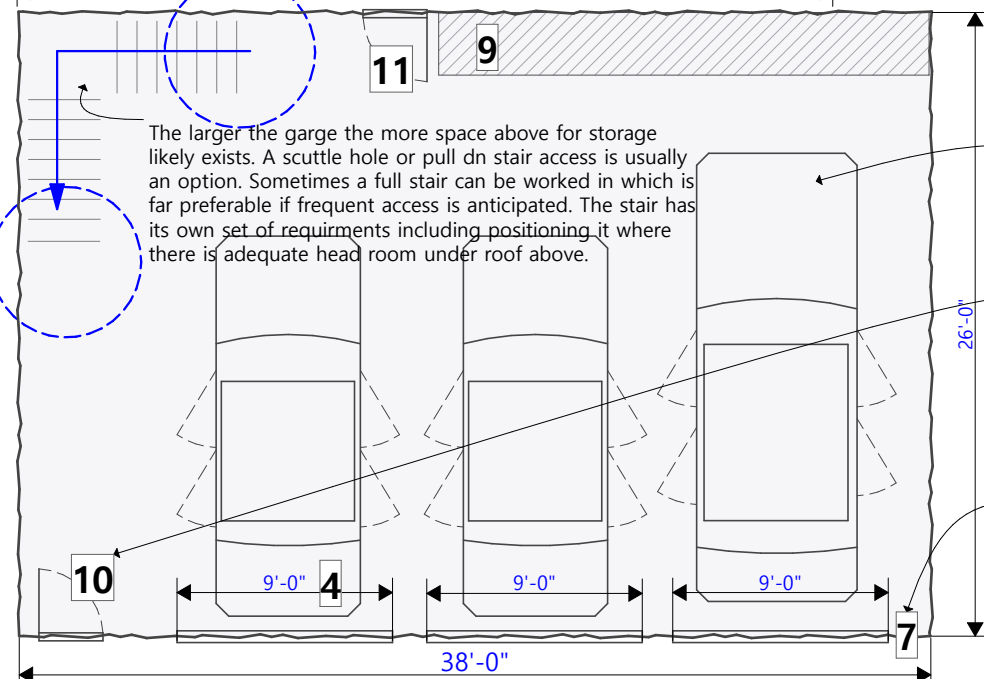


MODEST 3 CAR

Allocating which vehicle goes where shows here based on a size of vehicle logic. But if the larger vehicle is the kids transport and used all day, wanting direct access to the house man door, with both sides of the vehicle requiring ingress/egress, then location priority may not conform to the size priority shown.

The larger vehicle may have larger doors and require more ingress/egress space and want to have the single door location which automatically creates more space between vehicles than does the double door.

The double door is less expensive, requires less space and can reduce space requirements outside for moving vehicles in and out. (The vehicle can begin turning the wheel for a 3 point turnaround move before sooner than possible with a single garage door-usually). An 18'W door is recommended whenever it will fit.



GENEROUS 3 CAR

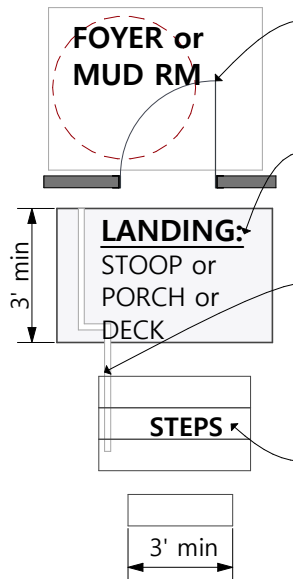
The larger the garage the more space above for storage likely exists. A scuttle hole or pull down stair access is usually an option. Sometimes a full stair can be worked in which is far preferable if frequent access is anticipated. The stair has its own set of requirements including positioning it where there is adequate head room under roof above.

This generous 3 car is not considering the long pick up truck. Specs for the specific truck should be checked before assuming anything. Wide mirrors, overall length and turning radius are unforgiving.

The man door to the outside is convenient and avoids having to open the larger more cumbersome garage door to move in and out of the garage. Think about frequency of movement from outside to garage+garage to outside to determine value for the man door option. More wall space is required.

The mentioned structural panel(s) for lateral bracing against wind pressure might be a real concern. This is discussed briefly in the construction guide, but/and must be checked locally. If a 16" or 24" or 32" 'bracing panel' is simple required then the available width has to be there.

ENTRY DOOR



DOOR

*A home requires 1 primary exit (egress) door for safely exiting. It must have a clear opening width of 32" and height of 78". The industry standard door size satisfying this requirement is 36" x 80" (3'-0" x 6'-8"), and is usually the 'front' door. (2'-10" doors pass code but are not as readily available) other exit doors and the access door to the garage is typically a 2'-8" x 6'-8" minimum.
 *All exterior exit doors are required by code to meet pretty decent insulation and air infiltration standards.

LANDING is the code language

*Exterior exit doors require a landing (or porch or deck) outside the door that is at least as wide as the door and a min 36" deep in the path of travel. That small a landing passes code but is too small to be satisfactory as an entry platform. This minimum can voluntarily be enlarged to any size suitable to the design idea (see below).
 *The outside landing/stoop may be covered or uncovered per weather situation. Undercover is preferable.

RAILINGS

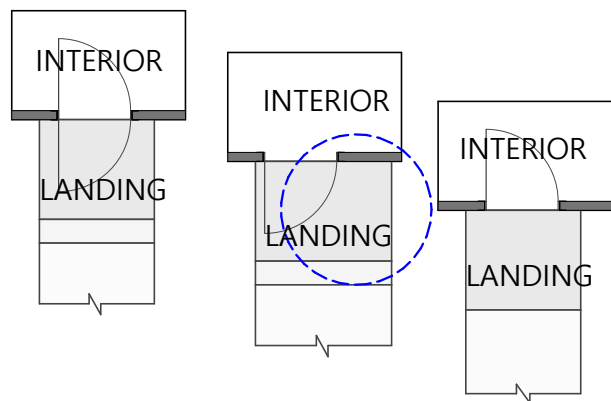
*Guardrails are required surrounding a landing, stoop, porch, deck whenever that surface is 30" or more above surrounding grade. Stair guardrails are required whenever 4 or more risers are required. (This matches the same height requirement. 4 x 7.5" riser = 30") The 'guard' term refers to the construction below the handrail ht that must prevent a 4" sphere from passing thru which is a child safety requirement.

*There are fairly specific dimensional and construction requirements for these required guardrails. There also are a lot of design options. They always can be constructed for aesthetic purposes even if not code required.

STEPS

*Min code width is 3'. Per the 2012 IRC min tread depth is 9" and max riser ht is 8 1/4". Per the 2015 and 2018 IRC min tread depth is 10" and max riser ht is 7 3/4". Frequently used steps should be more generous. A tread depth of 11", or 12" with riser ht of 7" +/- are more comfortable and safer. Stair width of 3' is perfectly comfortable and safe for single file access. Wider steps look more substantial and welcoming.

EXTERIOR EGRESS DOOR REQUIREMENTS



THE EGRESS DOOR

*Only one EGRESS door is required exiting directly to the outside. There needs to be a clear 'path of travel' from every habitable space in the house.

THE EGRESS DOOR SIZE

*32" wide NET opening and 78" high NET opening. 2'-10" x 6'-8" or 3'-0" x 6'-8" doors comply.

*The door must be side hinged (no sliders).

*The 3' door has become an industry standard. The most door construction types and styles will be available in this size. The 2'-10" door (which also meets handicap egress width requirements (32" net) are more available for interior doors than exterior doors & door assemblies.

THE EGRESS DOOR LANDING

*Landings are required at all egress doors.

*Landing width must be equal to or greater than the door width.

*Landing depth in the path of travel must be min 36".

*These min widths & depths are uncomfortably small.

THE EGRESS DOOR SWING

*The egress door may swing in (most common) or out.

*Inswing door egress doors allow the landing to be 7 3/4" or less below the door threshold.

*Outswing egress doors require the landing to be max 1 1/2" below the door threshold.

*Outswing doors are much benefited with larger landings particularly on the latch side of the door

THE HOUSE TO GARAGE DOOR REQUIREMENTS

*The house to garage walls require fire separation requiring 1/2" sheetrock >

*The house to garage door requires either a 20 minute (manufacturers) fire rated door. Or solid wood or steel doors (not rated) are usually also permitted. Check with local ceo for acceptable options.

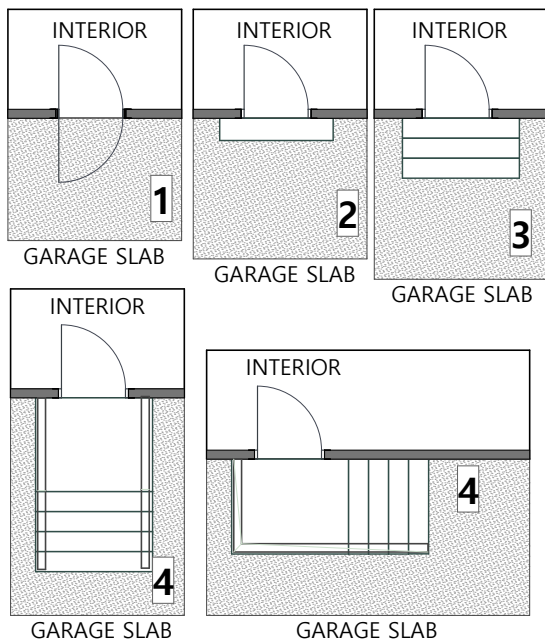
*The house to garage door is separating a conditioned from an unconditioned space and must comply with exterior door insulation and air infiltration requirements per the local energy zone requirements.

*Prefabricated doors with insulation/weatherstripping and integrated threshold are common+effective in this application and more commonly are designed to swing IN.

*There may be instances (where there is no space for an inswing door) where an outswing door is a better solution. Check above requirements.

HOUSE TO GARAGE DOOR

*THIS DOOR DOES **NOT** QUALIFY AS THE EGRESS DOOR AS ONE HAS TO PASS THRU THE GARAGE-A SPACE WHICH MAY WELL NOT MAINTAIN A CLEAR PATH OF TRAVEL.



1. INSWING/OUTSWING

*If garage slab 7 3/4" or less below the main floor the door **can** swing in or out.

2. 1 STEP

*A landing is not required here if the door swings in and also not a likely safety issue. The tread shown actually can be constructed as a 1 step landing if space permits, in which case the door can swing in or out.

3. SEVERAL STEPS/NO LANDING

*A landing is not required if the door swings in, but also not safe or convenient.

4. STEPS/LANDING & RAILING

*Site topography may require several to many steps to access the main floor from a garage level. Allow for the space required. If the landing is 30" or more above the garage slab guard railings will be required. No of treads and stair positioning requires best design for garage space efficiency.

ENTRY TYPE OVERVIEW

***THE (1) EVERYDAY ENTRY**_SMALLER HOMES THIS PROJECT MAY CONSOLIDATE THE ENTRY AND UTILITY REQUIREMENTS INTO 1 ZONE IN THE HOUSE COMBINING COVERED ENTRY PORCH, FOYER, MUD RM. PDR RM, AND SOMETIMES UTILITY CLOSET. THIS APPROACH HAS AN ECONOMY OF SPACE AND MAINTENANCE, AND CAN WORK JUST FINE. A SENSE OF ORDER AND TIDINESS IS HELPFUL.

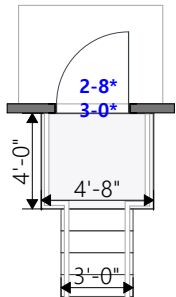
***THE FRONT ENTRY WITH SECONDARY ENTRY**_LARGER HOMES THIS PROJECT WILL SPLIT ENTRIES EMPLOYING A DEDICATED FRONT 'ARCHITECTURAL' ENTRY/FRONT PORCH/ENTRY FOYER., AND A SECONDARY MORE UTILITARIAN SIDE OR GARAGE ENTRY EASILY ACCESSIBLE FROM THE PARKING AREA/FUNCTION. THIS SECONDARY ENTRY WILL PROVIDE MUD RM, PDR RM, POSSIBLY THE LAUNDRY FUNCTION AND UTILITY CLOSET.

***ENTRY/EXTERIOR LIVING**_THIS REAR OR SIDE ENTRY/EXIT DOOR ACCESSES A REAR OR SIDE EXTERIOR LIVING SPACE AND IS ADDRESSED IN (d9) PUBLIC LIVING SPACES.

ENTRY DESIGNS WITH LANDING OR PORCH

***NO SET SOLUTIONS**_SIZES AND CONFIGURATIONS OF ALL ENTRY DESIGNS ARE PROJECT SPECIFIC. THEY ARE SPECIFIC IN LAYOUT AND ARCHITECTURE. SO OFFERING SMALL, MEDIUM, LARGE, PROTOTYPICAL LAYOUTS MAYBE NOT A SMART APPROACH.

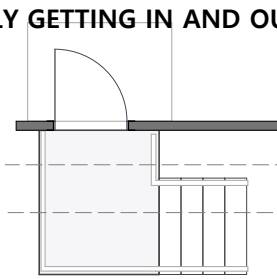
***BREAKING DOWN SOME WORKING PRINCIPLES**_SO THE BELOW WILL BREKDOWN THE ENTRY WITH LANDING AND ENTRY WITH PORCH TYPICAL CONDITIONS AND OFFER SOME WAYS TO THINK ABOUT THEM



LANDING IS A BENEFIT TO COMFORTABLY GETTING IN AND OUT-

SMALL+SYMMETRICAL

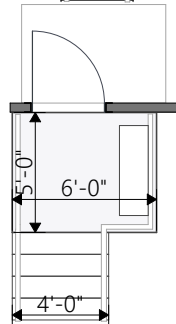
*This entry landing is just larger than code minimum and probably as small as one wants the landing.
*The symmetrical design is almost a default, that is we all tend to default to symmetrical (balanced, easy to look at, simple to figure out) designs. Compare with comment below.



SIDE APPROACH+OFF THE WALL

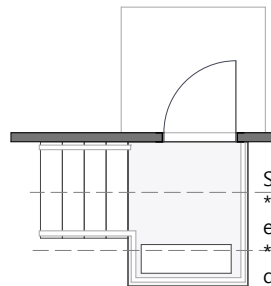
*There are 3 optional approach directions to an entry deck. 1 consideration is the path of travel to parking. 1 consideration is ht differential from finished interior floor to finished grade which establishes the # of risers+treads required for the stair. The grade along the side of a house may demand 1 or 2 fewer steps than the stair direction that is perpendicular to the house plane.

*This step set is off the wall. About 18" of clearance allows enough room for construction and maintenance of the stair. Beware the drip line of the roof(s). Dripping water along the stair line should be avoided.



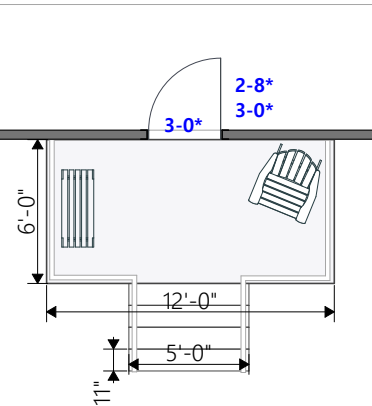
LARGER+ASYMMETRICAL

*This entry landing is more comfortable size.
*The asymmetrical design characterized by a straight path of travel from stair to door and a 'space' to the right of the door. In a entry configuration like this a bench or bench and shelf could be added in that space which has practical value.



SIDE APPROACH+ON THE WALL

*This arrangement allows a projected space on the entry landing for bench or bench/shelf.
*This step set is on the wall. review construction detailsof both stair and house face and confirm all will work and water from above and dripping down the house face will not sit around and cause trouble.



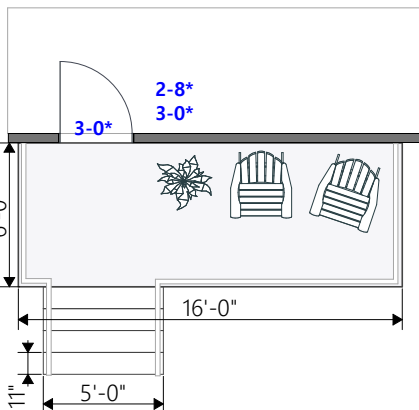
PORCH IMPLIES SPACE FOR AN ADDITIONAL FUNCTION-

SMALL+SYMMETRICAL

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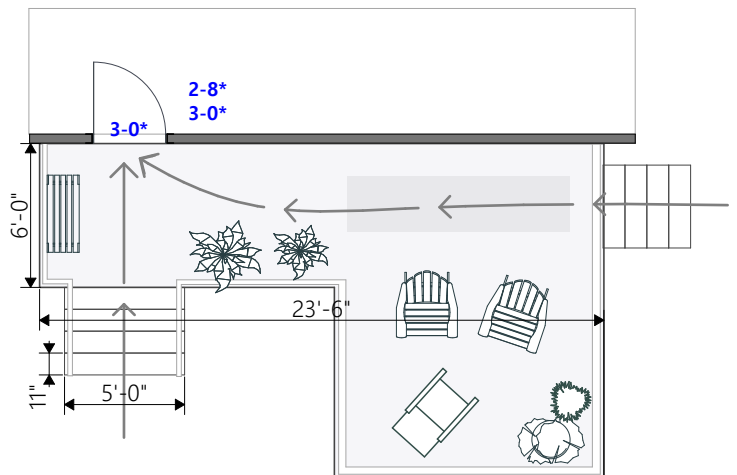
LARGER WITH ADDITIONAL SPACE

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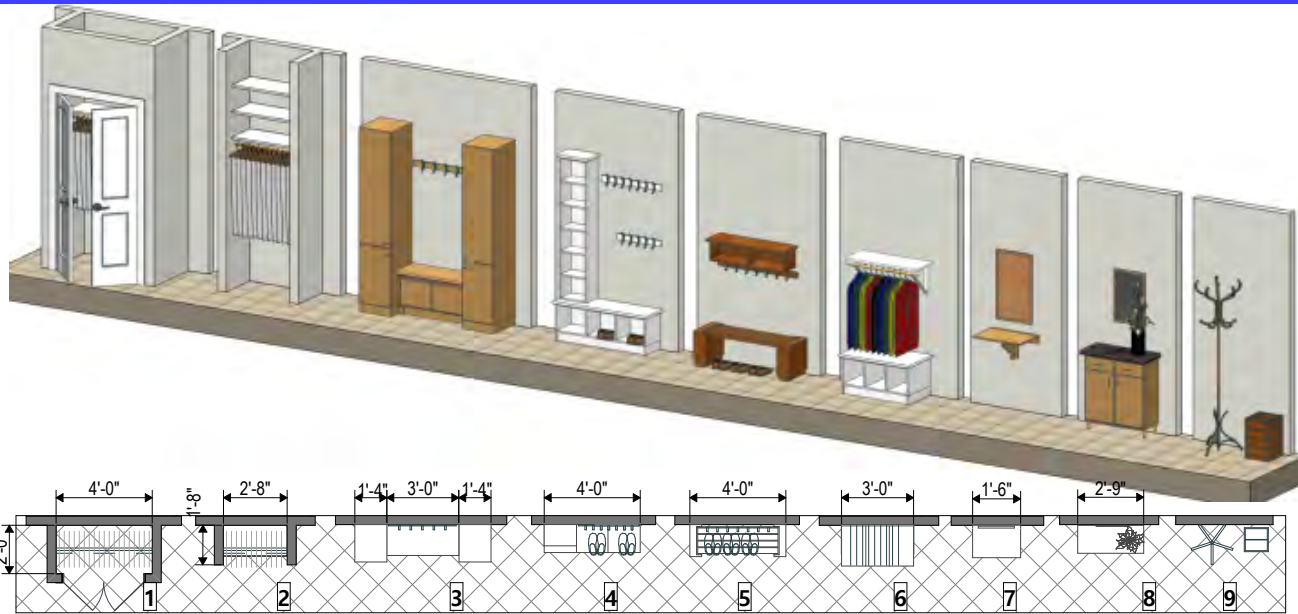
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PLANNING utility functions+spaces d8.7

COMPONENTS FOR THE FOYER+MUD RM



COMPONENTS
 *OPTIONS_AS SHOWN ARE OPTIONS EMPLOYED IN THESE DESIGNS TO HELP DEAL WITH ALL THE STUFF WE CARRY IN+OUT OF THE HOUSE. COATS, SHOES, KEYS, PACKAGES, UMBRELLAS. FAMILY NEEDS, PERSONAL PREFERENCES AND HOW THESE MAY FIT INTO A LAYOUT WILL DIRECT WHAT AND HOW BIG, AND WHAT GOES WHERE.

FOYER+MUD RM built-ins+furniture

- 1*CLOSET_STANDARD** 2' DEEP CLOSET WITH DOOR(S) ALWAYS WORKS. THE SMALLEST NARROW SINGLE DOOR WOULD BE 20" WIDE +NEEDS A CLOSET JUST OVER 2' WIDE. PAIR OF (HINGED OR BIFOLD) 3' DOORS CAN SUPPORT FULL ACCESS TO A CLOSET ABOUT 8' WIDE.
- 2*ALCOVE** 2 WING WALLS CAN SUPPORT A HANGROD AND SHELVES. WITHOUT A DOOR THE ALCOVE WIDTH CAN BE NARROW-IF SPACE IS LIMITED OR REQUIRED CAPACITY IS SMALL. HANGROD AND SHELF HEIGHTS CAN BE CUSTOMIZED TO SUIT NEEDS AND THE USERS' PHYSICAL HEIGHT. ANY WIDTH POSSIBLE.
- 3*COMBO BUILT-IN** ENCLOSED FINISHED LOOKING VERTICAL SHELF CABINETS WITH BENCH STORAGE AT FLOOR. HOOKS-AND OR SHELF
- 4*COMBO BUILT-IN** OPEN CUBBIES AND HOOKS. LOTS OF CONFIGURATIONS POSSIBLE.

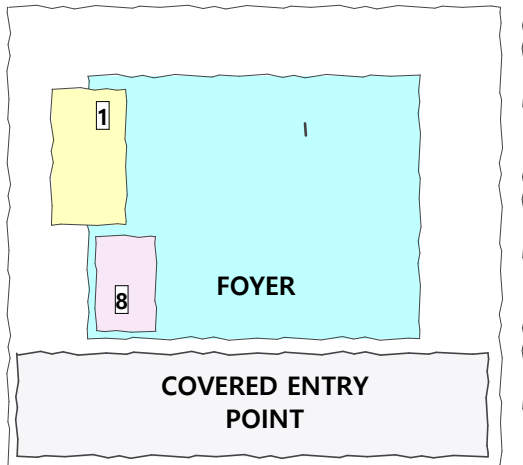
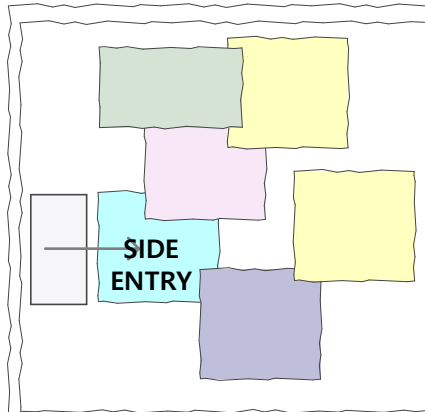
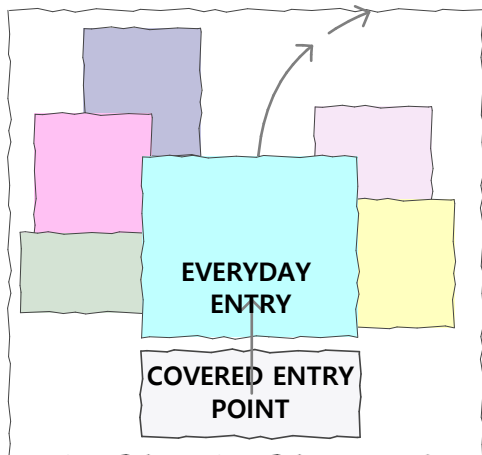
- 5*COMBO BUILT-IN_WALL SHELF** CUBBY WITH HOOKS. OPEN BENCH BELOW.
- 6*COMBO BUILT-IN_SUSPENDED HANG ROD/SHELF** OVER A STORAGE/BENCH.
- 7*DROP TABLE & MESSAGE BOARD** A USEFUL EVERYDAY SOLUTION AT THE EVERYDAY DOOR MAY BE A SMALL DUMP COUNTER FOR HANDHELD ITEMS SUCH AS KEYS & MAIL. A CORK OR MARKER BOARD FOR MESSAGES.
- 8*FOYER PIECE+MIRROR** TRADITIONAL AND USEFUL FOYER PIECE. PLACE FOR SOME FLOWERS, OR FAVORITE DISPLAY PIECE AND A USEFUL MIRROR. FOYER PIECE ITSELF CAN BE JUST A SHELF, AN OPEN TABLE, A CABINET OR AN HEIRLOOM.
- 9*COAT RACK** ALTHOUGH MOSTLY FORGOTTEN AS A FOYER PROBLEM SOLVER, THEY WORK, DON'T TAKE MUCH SPACE, AND CAN LOOK INTERESTING. THROW IN AN UMBRELLA STAND IF IN RAIN COUNTRY.

1 ENTRY-THE EVERYDAY ENTRANCE

*ASKS A LOT ASKING ONE ENTRANCE TO HANDLE ALL FUNCTIONAL REQUIREMENTS AND BE PLEASANT AND FEEL UNCROWDED IS A BIG TASK.
 *LAYOUTS ONE HAS TO SCAN THRU THE DESIGNS IN THIS PROJECT TO SEE A VARIETY OF LAYOUTS. SOME ARE PRETTY EFFECTIVE. SOME MAY HAVE REQUIRED A COMPROMISE. THE SINGLE ENTRANCE IS FOUND IN DESIGNS FOR SMALLER HOMES, AND USUALLY THOSE WITHOUT INTEGRAL GARAGES.
 *APPEAL SOME OF US LIKE CONSOLIDATION AND SPACE EFFICIENCY. THIS IS IT.

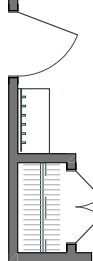
2 ENTRANCES- THE FRONT+'SIDE' ENTRANCES

*FRONT FOYER PURPOSE IS A PLEASANT ARRIVAL SPACE. A FOYER PIECE+MIRROR(8), AND MAYBE A GUEST COAT CLOSET OR COAT RACK. MAYBE A BENCH OR CHAIR. A CONTROLLED VIEW INTO THE HOME IS ORCHESTRATED HERE. MAYBE VERY OPEN INTO OR THRU A LIVING SPACE. OR MAYBE AN ENCLOSED SPACE SO THE VISITOR CANNOT SEE INTO THE HOUSE. THIS IS A DESIGN CHOICE.
 *SIDE ENTRY THE FRONT ENTRY IS HANDLING THE NICE ARRIVAL REQUIREMENT SO THIS ENTRY CAN BE ALL BUSINESS. BEST LOCATION IS CONVENIENT TO THE PARKING/GARAGE FUNCTION, AND HEADED TOWARD THE KITCHEN SPACE. ADDRESSES MUD RM, PDR RM, AND MAYBE LAUNDRY,UTILITY AND PANTRY FUNCTIONS.



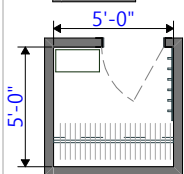
ENTRY VIGNETTES

***REMINDER** THESE DESIGN VIGNETTES ARE NOT INTENDED TO STICK IN A PLAN, BUT AS A SERIES OF SMALL THINKING IDEAS TO BE EVALUATED AND EMPLOYED WHERE/WHEN APPROPRIATE.



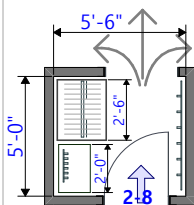
IN LINE COMBO_flexible+functional

- *Standard wall closet
- *Open built-in component combo. See component options
- *Some hangrod space behind doors helps keep out of season jackets out of site and a place for coats that require hangers.



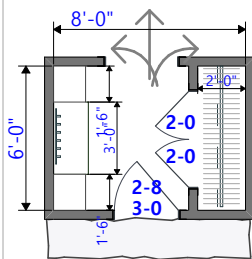
WALK-IN CLOSET

- *Showing hang rod and shelf with some shelving and hooks on available wall space. optional door does jam things up.
- *The small walk in closet, similar to small bedroom walk-ins, have the advantage of being hidden from view so can stay messy-but they are not space efficient in terms of storage per square foot.



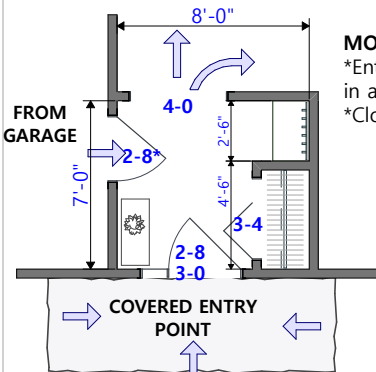
PASS THRU MINIMAL MUD RM

- *Open hang rod & shelf(s), and bench with shelf and or hooks above
- *Hooks along the long wall do not require much depth. Can't have enough hooks.



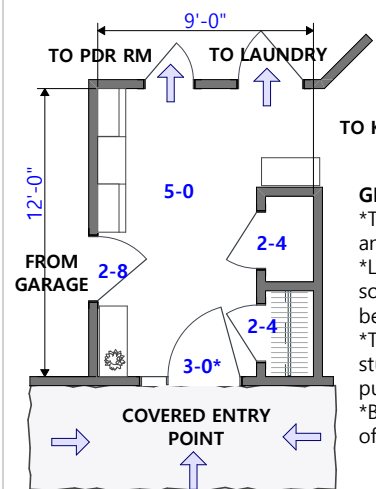
PASS THRU MODERATE MUD RM

- *Full closet on one wall. Shelves/cubbies on opposite wall with bench & hooks
- *Closet doors generally want to give wide access to the whole width of the closet. Hinged pair of doors shown. Bifold doors may work better in a tight space.



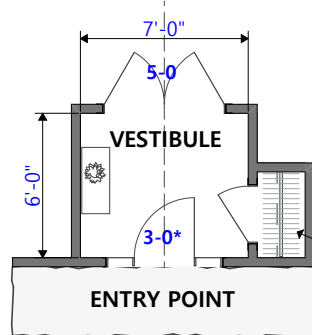
MODERATE SECOND ENTRY

- *Entry and mud rm requirements (only) in a smaller but workable space
- *Closet, built-in, and foyer table fit.



GENEROUS SECOND ENTRY

- *This is a generous 2nd entry, mud rm, and distribution point.
- *Light filled and big enough to have some finish touches like the foyer table between the doors.
- *The 2nd closet is unassigned. Cleaning stuff+vacuum, or recycling, or general purpose shelving are thoughts.
- *Built in along garage wall ideal for lots of cubbies/kids stuff.

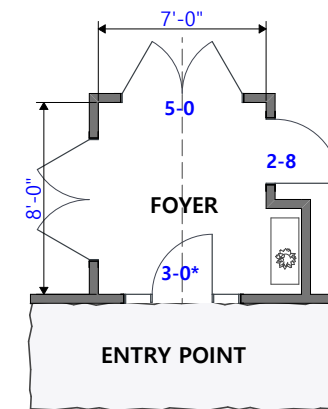


MINIMAL FOYER/VESTIBULE as air lock

- *This schematic is showing the foyer as contained space-the vestibule-
- *The design shows a side table and mirror and a coat closet for guest coats.
- *Traditionally the front door vestibule truly was a space to manage heat loss & gain, and would therefore be a contained buffer space.

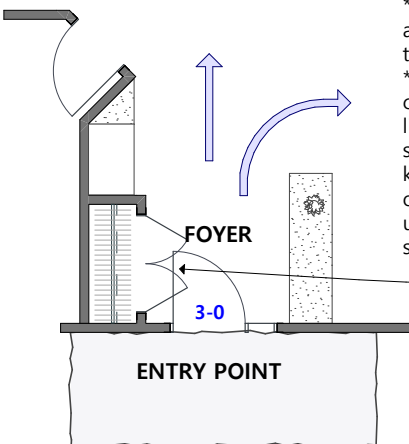
FOYER COAT CLOSET

- *Most people confess today that the traditional guest coat closet is not used for guest coats but for the vacuum cleaner. We are more culturally casual about guest arrivals and the management of a guest's coat, scarf, and hat is infrequently required. Having mentioned this there is nothing wrong with having a closet nearby just in case.



MODERATE FOYER/VESTIBULE as distribution point

- *This plan illustrates a foyer that connects to several 'public' spaces. A dining room might be to the left seen thru french doors. A study might be to the right thru a more private single entry door. And the larger open living space may be ahead through a larger opening or another pair of french doors. The space itself is still defined so arriving guests are not arriving in the middle of the house.
- *The vestibule may have a side table and mirror, and possibly a carefully selected light fixture.

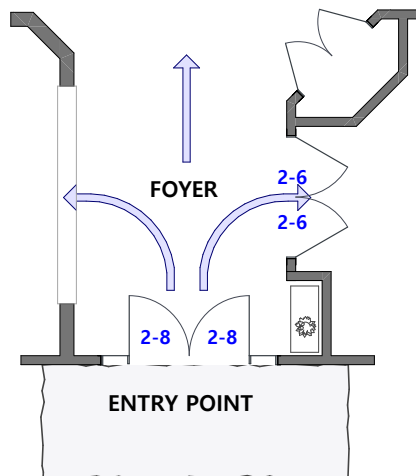


MODERATE_OPEN FOYER

- *Full coat closet and built-in alcove provided along the wall. Access to the adjacent room thru a door or opening out of the foyer space.
- *A low (36" up to 48"high) built in with counter top surface on the right creates a little storage, a place to put some plants or sculpture, a sense of space for the foyer, and keeps the whole package open feeling. Lots of variations for this approach. This approach used this project quite a bit in smaller/moderate size homes.

DOOR SWING PRIORITIES

- *Which way to swing a door in tight quarters is an ever recurring question. In this vignette the priority is to see into the space over the built-in upon opening the door. To access the closet door the entry door will need to be closed.



GENEROUS_OPEN FOYER

- *More generous front door design with glass sets up the sense of big & openness desired. (double entry doors not required).
- *This plan illustrates a foyer that opens up immediately to several 'public' spaces. a dining room might be to the left seen thru a large opening, a study might be to the right thru a french door, and the larger open living space may be ahead through a full wide angular opening.
- *This space (in the larger homes) is larger than the activity requires. the desire for openness is a criterion. but the larger home very often has functions left and right of the foyer that have to be passed to get to the heart of the house thereby requiring a deep foyer space.

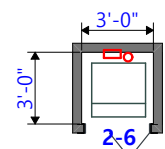
LAUNDRY TYPICALS

***ACCESS DOOR TO LAUNDRY RM_DIMENSION** OF HALLWAYS AND DOORWAYS NEED TO PERMIT DELIVERY, POSITIONING, AND INSTALLATION. THIS PROJECT TYPICALLY USES AN OLD STANDARD OF 2'-8" FOR LAUNDRY RM DOORS. COMPACT STACK UNITS IN SMALL CLOSETS MAY USE SMALLER DOORS.

***WASHER WATER SUPPLY+DRAIN_IS** STANDARD FOR ALL TYPES AND CONFIGURATIONS OF WASHERS. THE DRAIN LINE NEEDS TO BE TIED INTO THE HOUSE SYSTEM.

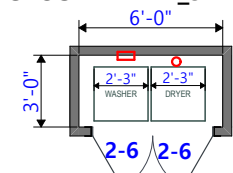
***DRYER VENT_ALL** DRYERS (EXCEPT THE COMBO UNIT CONDENSING DRYER) REQUIRES A 4" DRYER VENT TO THE OUTSIDE. USUALLY THERE IS A WAY TO GET THE 4" VENT TO AN OUTSIDE WALL. AS WITH ALL VENTING THE LONGER THE DISTANCE AND THE MORE ELBOWS AND TWISTS, THE LESS EFFECTIVE THE VENTING AND GREATER THE POSSIBILITY OF BLOCKAGE FROM LINT BUILD UP.

CLOSET TYPE_STACK



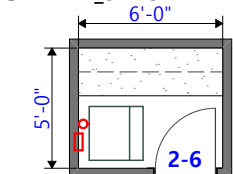
SMALLER DOORS
 *Compact stack units are just that and smaller access doors are ok
 *No real counter space is a functional problem. This is a 'learn to live with it' situation.

CLOSET TYPE_SIDE BY SIDE



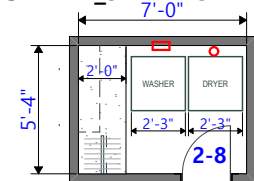
WIDER DOORS ARE HELPFUL
 *Check closet depth based on appliances selected
 *Shelves or wall cabinet above the appliances are possible
 *Doors can be hinged or bifold as a space permits, but should be as wide as the 2 appliances. The larger 30" wide appliances would want a 6' wide door opng.

SMALL_STACK



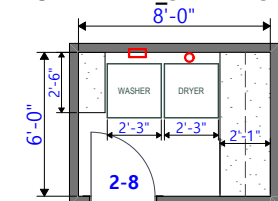
STACK UNITS
 *Check exact dimension of stack unit desired.
 *Space saving stack units are one thing
 *floor standing units that advertise the capability to stack take more space

SMALL_SIDE BY SIDE



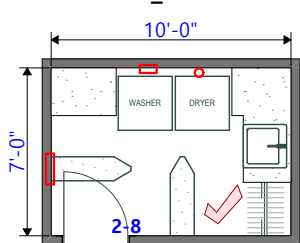
WORKABLE BUT TIGHT
 *Min size for a side by side and counter.
 *Inswing 2-8 door opens tight to dryer. Other door options exist
 *Left side counter with wall cab+hang space.

MODERATE_SIDE BY SIDE



STANDARD-COMFORTABLE
 *Increased size might allow counter top on each side of the washer/dryer. A (non standard) 30" deep counter will come out closer to the face of the washer/dryer and consequently more user friendly.
 *This size is still tight for an ironing board
 *Above counter hang rod

GENEROUS_SIDE BY SIDE W/D



FITTING MORE FUNCTIONS
 *Even a generous floor area can get consumed quickly as more .
 *The drop down ironing board, the hanging space, and a sink in this illustration all fit but do tighten things up.
 *In wall/drop down ironing boards are pretty convenient & efficient. Consider the preferred side for the person ironing- & elbow room when selecting a position.

WASHERS+DRYERS

***SIZE+CONFIGURATIONS_COMMENTS** BELOW ARE CONCERNED WITH CONFIGURATIONS AND LAYOUT CONSEQUENCES.

***WIDTHS_AN** INDUSTRY STANDARD 'FULL SIZE' WIDTH IS 27". SOME LARGER CAPACITY MODELS WILL BE 29"-30". AN INDUSTRY STANDARD 'COMPACT' WIDTHS ARE 24"AND 27"

***AS WITH ALL APPLIANCES_WHATEVER** THE FINAL CHOICE CHK EXACT DIMENSIONS, INSTALLATION SPECS AND PREPARE ACCORDINGLY.



COMPACT STACK (aka laundry center)
 *Available 24"+27" widths
 *Washer on floor/dryer above
 *Washer is top loading
 *Works with limited floor space



STACK UNITS
 *Independent washer+dryer designed to be stacked with dryer on top.
 *Capacity greater than the compact stacks.
 *Works with limited floor space



WASHER/DRYER COMBO
 *Single unit washes and dries.
 *Dryer technology different and does not require a vent. Does require condensate (water) drain which the washer requires anyway.
 *Typical criticism is long dry time.

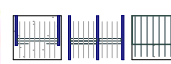


TRADITIONAL SIDE BY SIDE
 *Washer loads from the top
 *Dryer usually loads from the front and has a reversible door so washer/dryer positioning is a user choice.
 *Storage wall cabinets or shelving possible above units. Bit of a reach for some.

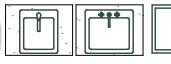


FRONT LOAD SIDE BY SIDE
 *Units frequently raised on storage drawer units so access doors to units are at a less stressful ht.
 *An advantage is the full use of the top surface for sorting/folding.
 *One negative is their physical bulk. They beg for a larger space.

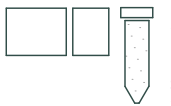
ADDITIONAL FUNCTIONS



HANG SPACE
 *Showing a few ways to incorporate hang space in the laundry rm.
 *Above counter works for shirts only.
 *Full ht for dbl hang or pants/dresses



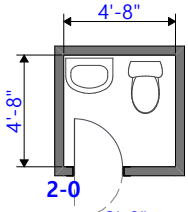
LAUNDRY/UTILITY SINKS
 *Drop in sinks available in a number of sizes with best suited faucet design
 *Floor standing utility sink an option. Note that someplace in a home the bigger utility sink can be useful.



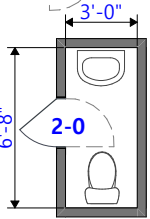
IRONING
 *Drop down half size ironing boards housed in shallow cabinets that fit in a stud space. Allowance for iron+light included.
 *Tall cabs can house full size ironing bds.

HALF BATHS_2 FIXTURES

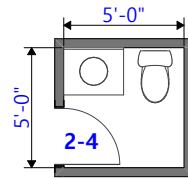
aka POWDER RM or PDR RM or PDR.
Plans this project use **PDR** for brevity



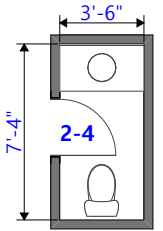
MINIMAL SIZE HALF BATH
*The toilet requires (code) clearances shown.
*Space remaining suggests a pedestal type sink that simply requires less space.
*Outswing door should be considered.



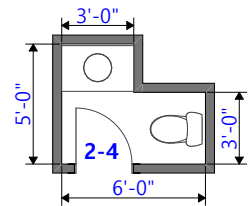
MINIMAL LONG HALF BATH
*The narrow/long bath sometimes just 'fits' when the classic square shape does not.
*Can be placed under stairs when head clearances are studied.
*Outswing door should be considered.



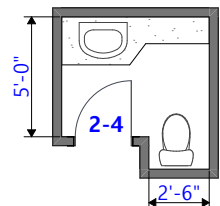
STANDARD SIZE HALF BATH
*The 5' x 5' half bath is a kind of default.
*It allows a 30" w vanity-or a comfortable pedestal sink and a 2-4 door can swing in still allowing 'turnaround' space.



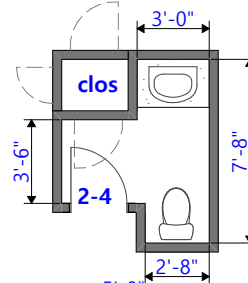
STANDARD LONG HALF BATH
*This shape will fit in certain layouts where the conventional square shape will not.
*Consider the outswing door but the 3'-6" width does allow the inswing door and room to maneuver around it. Increased room width still welcome.



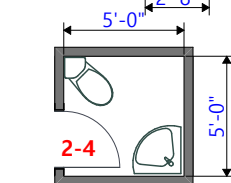
'L'SHAPE HALF BATH
*This layout might allow another adjacent space to take advantage of this unused corner. Entirely conditional on the plan.
*This size as drawn is adequate. Smaller gets very tight feeling.



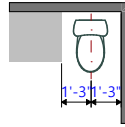
WC PRIVACY LAYOUTS
*If view to toilet/guest privacy is a priority the layout can be managed to help hide the toilet. More sapce needed for a layout like this
*Door swing is another design tool to help hide that toilet.



WC PRIVACY LAYOUTS
*Variation of above plan using extra few square feet for closet instead of floor space.



CORNER FIXTURES DO EXIST
*Sink and wc fixtures exist to be corner installed.
*These might make sense in some retrofit or oddball design situations
*In this rectangular space they **do not** make any sense. Corner sinks are particularly awkward.



CODE REQUIRED TOILET CLEARANCE

- *Aka water closet or WC
- *Min clearance to wall or other such as pedestal sink or vanity is 1'-3"
- *Comfortable clearance is 1'-5". Consider an additional couple on inches on the side supporting a toilet paper holder.



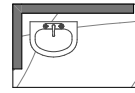
TOILET STYLES

- *Toilets available in different design styles-and different support geometries.
- *Toilets available with standard bowl (round shape), elongated bowl (oval shape and more comfortable as shown)
- *Toilets available in several heights (15" -19" seat height off ground). Taller hts considered "handicap" but bottom line is personal comfort.



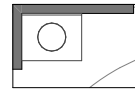
TOILET STORAGE

- *Variations of how to gain a little xtra storage above the toilet.
- *Wall hanging the shelves or cabinet generally desirable if possible. Blocking in wall is helpful.
- *Rear storage makes a possible window placed above the toilet a problem.



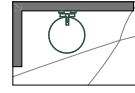
PEDESTAL SINK

- *No cabinet so no storage
- *Light and clean in appearance and in space required therefore a good consideration in tight and small spaces.
- *Some storage space may be created above the toilet- see above



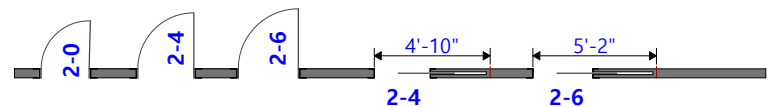
VANITY+SINK

- *Conventional format. Practical and lots of design options. Widths usually in 3" increments.
- *Cabinet styles+counter top choices are many
- *Round/oval/rectangular sinks in undermount and drop in configurations



SCUPTURAL SINK

- *A sculptural sink bowl sits on top of a counter or cabinet.
- *A faucet might be mounted in the counter/cabinet or wall
- *Lots of design flexibility and availability.
- *Water (splashing and dripping off hands) not being captured in the bowl needs some awareness.

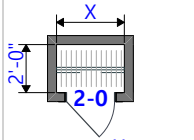


THE DOOR

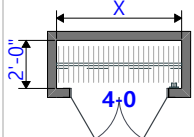
- *Smaller doors in smaller spaces keep the door swing from being objectionable. Smaller doors obviously tighter to move thru.
- *2'-0" door-once the door size standard for pdr rms- frequently replaced with 2'-4" size which is comfortable for all but really big people. 2'-6" door fine if the space can support the swing space.
- *The pocket door is an option if there is enough wall to take the pocket. The upside of the pocket door is the swing is a non issue, and the net opening is the full door width. The downside is the awkward closing and locking.

INTERIOR STORAGE CLOSETS

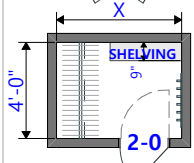
***SIZE+SHAPE_CLOSET SPACE ENDS UP MAKING ITSELF AVAILABLE IN ALL SIZES AND SHAPES AND IT IS THEREFORE WISE TO KNOW HOW TO BEST ADVANTAGE IT. COMMENTS ON CLOSETS AND CLOSET DOORS ARE INTENDED TO HELP MAXIMIZE USE OF CLOSETS.**



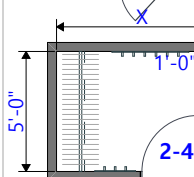
IN LINE CLOTHING CLOSET
 *Closet lengths are open ('x') and want to be as long as other surrounding space and conditions allow.
 *2'-0" net is an industry standard depth. a hanger is 17"-18" deep. Pants and other sleeveless clothes will hang within that hanger depth but sleeved clothes and jackets hang outside that hanger depth.
 *Door type and width want to be selected to give as much frontal access as possible. The interior gross jamb width should be kept to 12" or less.



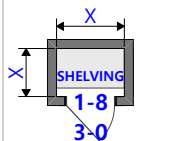
SMALL CLOTHING WALK-IN
 *This an example of the small walkin not very storage efficient and a very tight space inside. An in-line closet is more efficient at this size.
 *Shelving in here also a stretch unless one possesses a lot of fairly short shoes.



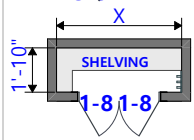
MODERATE CLOTHING WALK-IN
 *This size starts to work as a walk-in.
 *12" deep shelving will work for most shoes and folded clothing. 14" better yet.
 *Room for hooks and some turn around room



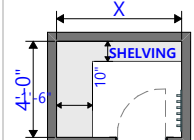
IN LINE STORAGE CLOSETS
 *Shelving and be fit to any length closet.
 *Shelving depth want first to suit whatever might be stored. Extra depth is not always best.
 *Turning corners makes an installation more difficult but is not rocket science.
 *Hooks- there is a good variety of types- are often useful and can fit in tight spots.



SMALL STORAGE WALK-IN
 *Shelves and hooks to fit.
 *Door size and swing to fit.

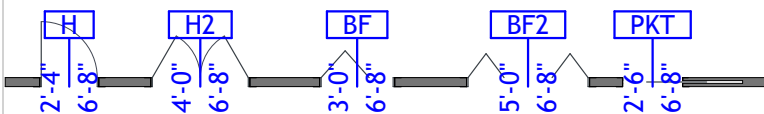


MODERATE STORAGE WALK-IN
 *Ditto above



INTERIOR CLOSET DOORS

***SIZE AND TYPE_DOOR TYPES HAVE OPERATIONAL CHARACTERISTICS AND A LOT OF SIZE OPTIONS. USUALLY A BETTER SELECTION CAN BE MADE. SEE d11 FOR MORE INTERIOR DOOR DATA.**



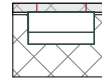
HINGE	HINGE PAIRS	BIFOLDS	TWIN BIFOLDS	POCKET
*2'-0"	*2-1'-6"=3'-0"	*2-1'-6"=3'-0"	*4-1'-0"=4'-0"	*2'-0"
*2'-4"	*2-1'-8"=3'-4"	*2-1'-8"=3'-4"	*4-1'-3"=5'-0"	*2'-4"
*2'-6"	*2-2'-0"=4'-0"	*2-2'-0"=4'-0"	*4-1'-6"=6'-0"	*2'-6"
*2'-8"	*2-2'-4"=4'-8"	*2-2'-4"=4'-8"	*4-2'-0"=8'-0"	*2'-8"
*3'-0"	*2-2'-6"=5'-0"	*2-2'-6"=5'-0"		*3'-0"
	*2-2'-8"=5'-4"	*2-2'-8"=5'-4"		
	*2-3'-0"=6'-0"			

INTERIOR STORAGE BUILT-INS+CABNETRY

***METHODS_BELOW COMMON WAYS TO CREATE STORAGE SHELVING. ALL CAN BE A LITTLE ROUGH AND UTILITARIAN-SAY SUITABLE FOR GARAGE USE, OR CAN BE NICELY CONSTRUCTED AND FINISHED AND IN VIEW. SHOWN IN WHITE**
***BUILD METHOD_KD KITS OR PARTS/ON SITE CONSTRUCTED, SHOP BUILT ARE OPTIONSF**
***GARBAGE_SPACE**



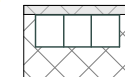
WALL TO WALL CUSTOM SHELVING
 *Wall to wall shelves are back and side supported with cleats
 *A front edge becomes the support 'beam' for the shelf span. like any beam the deeper the stonger and therefore the wider the shelf potential. Wood edging better than particle type boards.



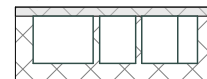
ADJUSTABLE SHELVING SYSTEMS
 *Vertical (metal) supports mounted on floor/floor base trim and/or into studs at stud centers.
 *Decorative to lightweight to heavyweight systems available in several finishes.
 *Shelving bracket depths typically from 6" d to 16"d. Shelving as selected. Pretty simple install



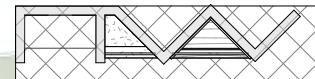
ASSEMBLED SHELVING
 *Kits usually with all hardware and sometimes shelving.
 *Ditto available in lightweight and finished looking to heavy duty and warehouse looking.
 *Flexible from the standpoint the units are self structured and can be moved around.
 *Sometimes want to be wall attached at top to prevent tipping.



CUBBY COMPARTMENTS
 *Sometimes the best solution. Great in mud rms for gloves,hats. kids knapsacks, boots.
 *Field built or shop built. Note if field built these can be pesky to finish once installed. Prefinishing or using prefinished shelving product, then constructing a good choice.
 *Cubby sizes per anticipated need.



TALL CABINETS
 *Available in kits, as 'stock' kitchen cabinetry, or custom as desired. Lots of widths, configurations, finishes.
 *Generally more expensive than open shelving.
 *Doors to hide the junk sometimes nice.
 *Tall cabs can be a viable substitute for in line closets- in most situations.



CORNERS
 *Plan layouts sometimes create corner conditions without a great use. Custom corner shelving of one form or another are an option.
 *Usually not a high value for storage, but an opportunity for display items, and can visually highlight otherwise dead corners

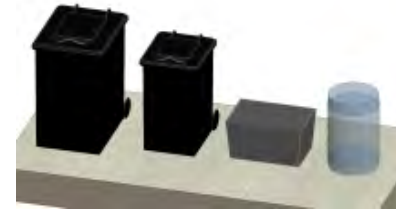
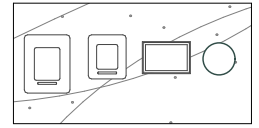
TRASH

***EVERYDAY**_SOMETIMES TAKEN FOR GRANTED AS 'NOT TO BE BOTHERED WITH' DESIGN CONSIDERATION BUT WE CREATE TRASH IN SEVERAL FORMS EVERYDAY AND WE ALL NEED A SYSTEMATIC METHOD TO DEAL WITH IT. THE 'EXTERNAL' TRASH PICK UP SYSTEM/SERVICE IS LOCATION DEPENDENT AND MAY IMPACT BEST WAY TO DESIGN THE 'INTERNAL' SYSTEM. SO FIND OUT HOW THAT 'EXTERNAL' SERVICE WORKS, IF IT EXISTS.

***TRASH**_NO MATTER THE RECYCLE/COMPOST SITUATION, TRASH HAPPENS AND USUALLY NEEDS TO BE REGULARLY MOVED TO AN OUTSIDE LOCATION FOR SANITARY REASONS BEFORE FINAL REMOVAL. SOME EXTERIOR SOLUTION FOR LARGER 'COLLECTION' TRASH BINS NEEDS A PLACE.

***RECYCLE**_RECYCLE BINS, OR BLUE BAG SYSTEMS ARE COMMON. STORAGE STRATEGY IS NEEDED WITHIN THE HOUSE DEPENDENT OF THE SYSTEM AND FREQUENCY OF REMOVAL. IN ACTIVE RECYCLING COMMUNITIES A HIGHER PERCENTAGE OF WASTE CAN BE RECYCLED AND THE RECYCLE VOLUME CAN BE FAR GREATER THAN GENERAL TRASH.

***COMPOSTING**_CAN BE A MEANS OF SIMPLY REDUCING TRASH VOLUME. A VERY SMALL AMOUNT OF EXTERIOR SPACE NEEDED. THIS CAN BE BIN PROTECTED, A RAISED PIT, A DUG PIT. ACTIVE COMPOSTERS/GARDENERS TYPICALLY KNOW THEY WANT TO ADVANTAGE THIS BASICALLY FREE RESOURCE.



EXTERIOR STORAGE

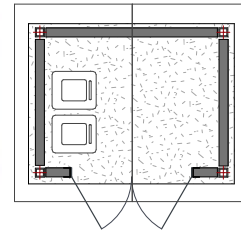
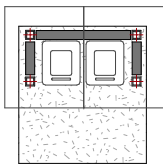
***WHY**_MAINTENANCE PRODUCTS AND EQUIPMENT, GARDENING AND LAWN PRODUCTS AND EQUIPMENT, SPORTING EQUIPMENT, A LITTLE LEFT OVER LUMBER, AND THE TRASH BINS, ALL NEED A PLACE TO RESIDE OTHER THAN IN THE HOUSE.

***GARAGE**_THE GARAGE IS THE OBVIOUS PLACE AND USUALLY A GOOD PLACE TO MANAGE THE ABOVE. IF A GARAGE IS NOT PLANNED THEN CONSIDER OPTIONS BELOW_

***BASEMENT OR TALL CRAWL SPACE**_BOTH THESE OPTIONS WILL OR MAY HAVE A CONCRETE OR GRAVEL FLOOR, ADEQUATE HEAD HEIGHT, AND A MAN DOOR OR DBL MAN DOOR WITH GRADE DIRECTLY OUTSIDE. IF ONE OF THESE FOUNDATION SYSTEMS IS OTHERWISE REQUIRED THIS IS A WAY TO MORE FULLY UTILIZE THE AVAILABLE SPACE UNDER THAT MAIN LEVEL FLOOR. LOW CRAWL SPACES ARE NOT GOOD CANDIDATES.

***INTEGRATED WITH HOUSE**_SIMILAR TO GARAGE OR PORCH CONSTRUCTION, EXTERIOR ACCESSED STORGE CAN BE INTEGRATED INTO A FOUNDATION AND ROOF DESIGN AND MADE PART OF THE ARCHITECTURE OF A HOUSE. THIS APPROACH MAY BE REASONABLE IF IT IS INTELLIGENTLY ACCESSIBLE FROM THE OUTSIDE, AND DOES NOT BLOCK ANY WINDOWS FROM THE INSIDE.

***FREESTANDING**_WITH A SMALLER HOME WITHOUT INTEGRATED GARAGE, DETACHED CONSTRUCTIONS CAN BE THOUGHTFULLY DESIGNED TO INTEGRATE VISUALLY WITH THE HOUSE, AND BE CUSTOMIZED TO SOLVE ANY SPECIFIC EXTERIOR STORAGE CHALLENGES.



TRASH SHEDS

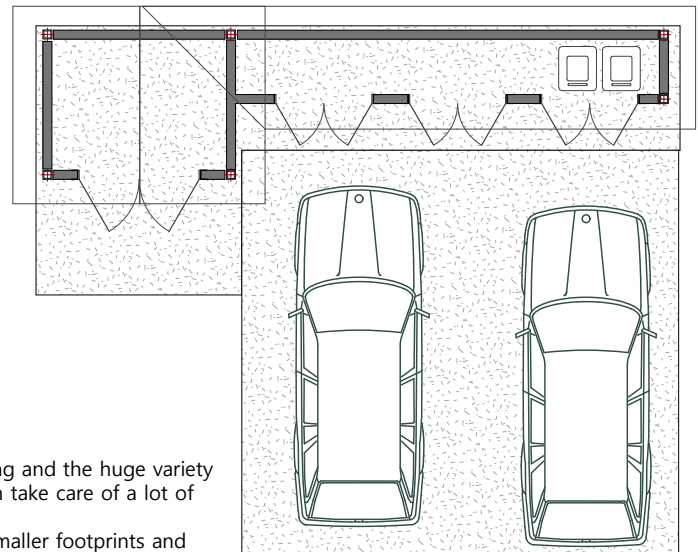
*To give the bins a place. If possible turned away from house entry or view windows.

*Some locations may need varment proof or bear proof bin designs or for the bins to be contained behind secure doors.

STORAGE SHEDS

*Size to suit. Door access to suit.

*Simply using the same roof pitch and roofing, and the same siding and trim color can integrate these with the home design.



MORE COMPLEX STORAGE SHEDS

*This deisgn idea is showing a shed room and in line storage. between shelving and the huge variety of 'garage hooks', a place can be found for everything. The in-line storage can take care of a lot of stuff, all easily accessible.

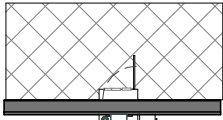
*Another idea behind this format is one of visual scale. Smaller homes have smaller footprints and visual volume. The scale of a 2 car garage can visually overpower the house and unfortunately be a liability. So these more complex storage sheds offer an option. Some climates will permit this thinking and some will not.

PLANNING_utility functions+spaces d8.13

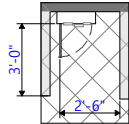
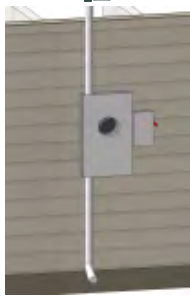
MEP SPACE ALLOCATIONS ELECTRICAL SERVICE+HOT WATER

ELECTRIC SERVICE d1.7

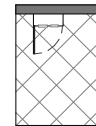
***SELECT EARLY** ELECTRICAL REQUIREMENTS AND WORK ARE REGULATED. THE NEC (NATIONAL ELECTRICAL CODE) IS THE UNIVERSALLY ACCEPTED GUIDE. BUT THE ELECTRICAL INSPECTOR WILL HAVE FINAL AUTHORITY. AN ELECTRICAL PERMIT, A LICENSED ELECTRICAL CONTRACTOR, AND REQUIRED ELECTRICAL INSPECTIONS ARE THANKFULLY NORMAL.



ELECTRICAL SERVICE
 *The service and meter location may be dictated by the power company or by some other limiting site factor.
 *If one has a choice..... then having it back to back with the interior utility space so meter and distribution panel are literally back to back. Or get it out of site on an exterior wall you seldom have to look at. Or both.
 *Save a little money if meter and panel are back to back, but not enough to have the meter in a terribly awkward place.



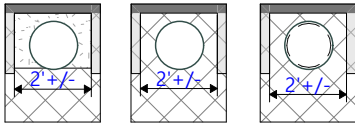
ELECTRICAL PANEL
 *(aka distribution or breaker panel)
 *Minimum compliant clearances for a wall mounted electrical panel are diagramed. Ceiling ht must be 6'-6".
 *The panel needs to be safely and reasonably accessible and adequately lit both for compliant and practical reasons.
 *For the small to modest home 100, 150, 200 amp services are usual and require a single corresponding panel. The service size is a math calculation adding up electrical demands.
 *Although required, double check that the panel breakers are clearly and accurately labelled.



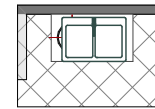
ELECTRICAL SUB PANEL
 *Point of use thinking.
 *Clearances are the same for sub panels unless exception is granted by the electrical inspector
 *Sub panels are viable when a separate function center has power requirements such as a detached garage or separate shop or hobby center
 *Sub panels might be viable trying to make more efficient the entire wiring distribution system. In spread out homes or 'pod' homes this might be the case.
 *Sub panels are sometimes mandatory with later additions to a core house.

WATER SERVICE (d1.5)

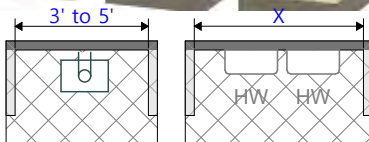
***LOCATION** SERVICE ENTRY INTO THE HOME IS SOMETIMES DETERMINED BY SITE CONDITIONS. FORTUNATELY RUNNING THE SERVICE MAIN TO THE APPROPRIATE UTILITY AREA INSIDE THE HOUSE IS STANDARD FARE.



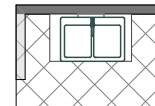
TANK WATER HTRs
 *Tank diameters are 20"-24" and ht (40"-80") based on gallons of hot water storage (20gallons -120 gallons). 30 gal, 40 gal 50 gal, 80 gal are standards for small, medium, large homes.
 *Clearance to side and back walls are pretty minimal (+/- 2"). Access to the front is required (+/- 24")
 *There are on line calculators and rules of thumb on people, use, tank size. A 50 gal tank is a standard for a family of 4 with normal usage. Typ size 22" diameter, 60" tall.
 *Energy source can be oil, gas (venting required) or electric (no venting required). Higher efficiency hybrid (heat pump) also now commonly available.
 *30 and 40 gal sizes can be elevated to create space under-or the reverse- if water supply lines are carefully placed. Supply lines usally are run above the unit.



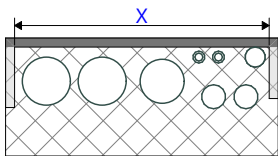
TANK TYPE FOR POINT OF USE
 *Symbolically showing a sink with an in cabinet installed baby tank.
 *The tank size would be based on a reasonable single use as recovery is slower with a tank type storage device.
 *These smaller tank types want to be compared to tankless types as shown below. In both cases comparing gas or electric types must include installation and venting considerations.



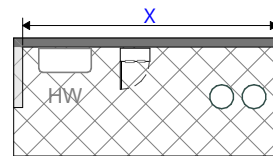
TANKLESS (ON DEMAND) WATER HTR
 *Water heats 'on demand' as it passes thru these small devices and delivered to the fixture requesting hot water. There is no tank storage.
 *These are wall mounted and may need some wall space left and right and above for the water lines or venting to be correctly positioned. Space for access/service is required in front.
 *A closet location is ok- or along any wall.
 *Proximity to kitchen/bath fixtures desirable
 *Gas or electric versions available. Gas typically less expensive to operate, and requires venting. These can be mounted inside or out.
 *Capacity based on lineal inches of supply pipe in contact with heat source



TANKLESS FOR POINT OF USE
 *Symbolically showing a sink with an above cabinet wall mounted tankless heater
 *The unit size based on flow rate-as are all tankless units-. The required flow rate of the sink (or shower or hose, etc) wants to match up to the rate of hot water production at the unit.
 *This unit could be installed in the base cabinet or in a wall cabinet or left exposed.



OTHER (WATER RELATED) TANKS
 *A hot water tank may want a sister tank in the same location OR some other location more efficiently serving fixtures.
 *A water well system will require an internal pressure (tank).
 *Water treatment systems utilize - sometimes multiple- tanks for filtering water.
 *Water treatment may require (packaged) chemical storage.
 *Water can be tested (county health dept's do this) early enough that these water treatment requirements can be allowed for.



OTHER MEP ITEMS REQUIRING SPACE
 *CENTRAL VAC a hot water tank may want a sister tank in the same location
 *SOLAR INVERTER a water well system will require an internal pressure (tank).
 *water treatment systems utilize - sometimes multiple- tanks for filtering water
 * SOLAR HWH PANEL a whole house vacuum will have its power source in the form of a tank

HVAC SYSTEM CHOICES

***CHOICES**_THERE ARE CERTAINLY SEVERAL HVAC CHOICES FOR ANY HOME. AND THEY ALL HAVE DIFFERENT PHYSICAL REQUIREMENTS- AND MOST HAVE SOME IMPACT ON BASIC DESIGN AND LAYOUT THINKING. DISCUSSING ALL THESE IS OUTSIDE THE SCOPE OF THIS PROJECT.

***SEE (C9)**_OUTLINES SOME USEFUL GENERAL PRINCIPLES ABOUT THE THERMAL ENVELOPE, AIR TIGHTNESS, INSULATION. IT DISCUSSES THE THERMAL ENVELOPE IN MORE DETAIL, INTRODUCES HEAT GAIN/HEAT LOSS, AND GOES THRU A SAMPLE CALCULATION. IT ALSO COVERS SOME DUCTING THOUGHTS AND STRATEGIES.

***THE FORCED AIR DUCTED SYSTEM**_IS THE SYSTEM DISCUSSED (d8.15,d8.16) AND THE SYSTEM REFERENCED WHERE APPROPRIATE IN THE DESIGN PLANS. THE DUCTED SYSTEM IS THE MORE UNIVERSAL, FLEXIBLE, APPROPRIATE TO A VARIETY OF CLIMATES- AND ONE THAT REQUIRES THE SOMETIMES DIFFICULT TO DESIGN DUCTWORK SYSTEM. IF OTHER SYSTEMS ARE EMPLOYED IN THIS PROJECTS DESIGN PLANS THERE IS NOT HARM DONE, AND TYPICALLY NO DESIGN CHANGES REQUIRED.

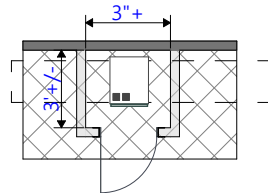
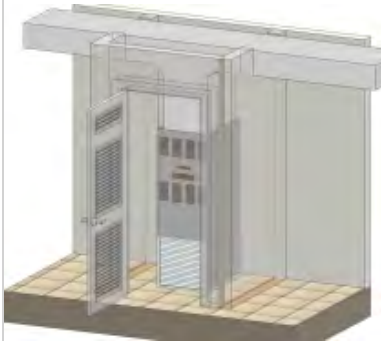
CONVENTIONAL DUCTED SYSTEM AND SPACE

***SELECT EARLY**_HEATING AND COOLING SYSTEMS HAVE SPACE AND OTHER REQUIREMENTS THAT NEED TO BE INTEGRATED INTO ANY DESIGN PACKAGE. THE DUCTED SYSTEM IS THE ONE THAT NEEDS THE MOST PRE-PLANNING BOTH FOR THE AIR HANDLING EQUIPMENT AND THE DUCTWORK. THE RULES OF THUMB NOTED THESE 2 SHEETS ARE APPLICABLE FOR MOST FORCED AIR SYSTEMS. KEEP IN MIND FORCED AIR SYSTEMS CAN INCLUDE GAS OR OIL FIRED FURNACE FORCED AIR, AC ONLY FORCED AIR, DUAL FUEL/HEAT PUMP FORCED AIR, HEAT PUMP ONLY FORCED AIR, GROUND SOURCE HEAT PUMP FORCED AIR. THE COMMON DENOMINATORS ARE THE AIR HANDLER AND THE DUCTWORK. THE AIR HANDLER FORCES AIR THRU THE DUCTS- A FORCED AIR SYSTEM. COMPRESSORS ARE REQUIRED FOR THE INTEGRAL AC SIDE OF A FORCED AIR SYSTEM AND ARE LOCATED OUTSIDE WHERE A BEST LOCATION CAN BE FOUND.

***UNIT OR UNITS**_A SINGLE UNIT, A ZONED SINGLE UNIT, OR MULTIPLE UNITS ARE DESIGN CHOICES. BEST CHOICES MUST CONSIDER HEATING AND COOLING LOADS FOR UNIT(S) SIZING, UNIT(S) POSITIONING, THERMOSTAT CONTROL PREFERENCES, + DUCTWORKS LAYOUTS. DECIDING ON THIS BASIC UNIT CONFIGURATION DETERMINES THE DISTRIBUTION AND DUCT SIZING REQUIREMENTS WHICH THEN DRIVES BEST POSITIONING FOR UNITS AND DUCTWORK. REPEAT THAT ADDRESSING THE HVAC DESIGN EARLY IS BEST. THE MISTAKES AND INEFFICIENCIES MADE BECAUSE THE SYSTEM IS DESIGNED AFTER THE HOME IS FRAMED ARE FAMOUS.

BELOW

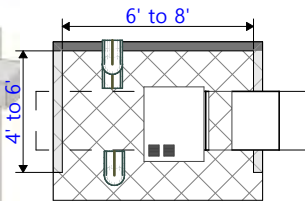
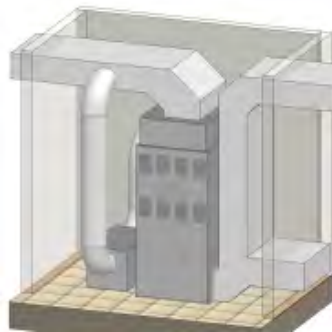
***SPACE ALLOWANCE**_SAMPLE ILLUSTRATIONS ARE GENERIC. THE ATTIC AND CRAWL (OR BASEMENT) UNIT POSITIONS ARE FAR LESS RESTRICTIVE BY NATURE. UNITS LOCATED ON LIVING LEVELS ARE MORE RESTRICTIVE AND CONDITIONAL AND REQUIRE EXTRA ATTENTION. THE HOME DESIGNS THIS PROJECT HAVE ATTEMPTED TO MAKE ALLOWANCE FOR THIS -BUT - SYSTEM VERIFICATION IS REQUIRED.



SMALL AIR HANDLER

*The truly compact system can fit in a closet. The upflow air handler distributes supply air through the ductwork as required. It is possible to forgo a ducted return and let the unit itself do the job. In small and simple layouts, with a more or less centrally located airhandler this can be acceptable. Air is drawn from the entire square footage under doors or via thruwall vents and into the air handler closet (thru usually a louvered door).

*See the 'slab foundation, 1story, 1unit' schematic (d8.16)



LARGER SYSTEM/ AIR HANDLER

*This diagram is slightly abstracted (inaccurate) but does show that larger systems get complicated quickly and require a good bit more space than required for the modestly sized air handler alone. The plenums and exiting and entering ductwork are substantial in size.

*ERV or HRV , or dehumidification options to a forced air system add efficiencies and comfort and additional space requirements.

*The whole house schematics on the next page suggest that the whole house strategy has to be determined before space allocations can be made.

*As always with ducted systems, finding or creating closet space for the air handler is the easier design task. Creating efficient concealed space for the ductwork itself is more of a challenge.

HORIZONTAL AIR HANDLER IN ATTIC SPACE

*It is highly recommended the attic space be within the thermal envelope when unit and ductwork are in this space.

*The attic space is open with few obstacles so unit and ductwork layouts are free to be direct and efficient.

*Works better in moderate to warmer climates with larger cooling demand as all supply registers are in the ceiling.

*Access for installation+maintenance must be considered.

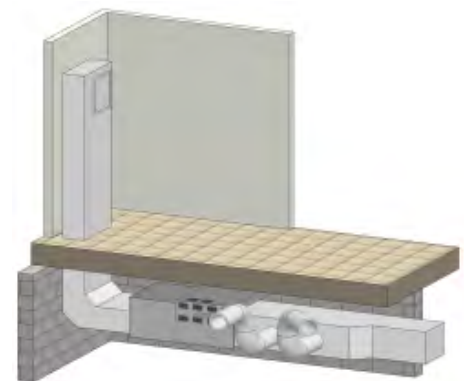
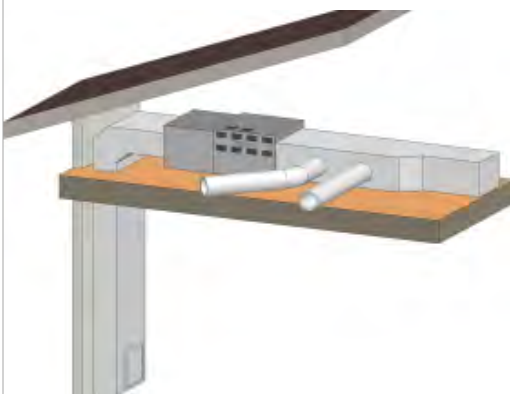
HORIZONTAL AIR HANDLER IN CRAWL SPACE

*It is recommended the crawl space be within the thermal envelope with unit and ductwork in this space. A 'sealed' or 'closed' crawl space is absolutely the recommendation.

*Limited obstacles allowing an efficient unit and ductwork layout

*Works better in moderate to warmer climates with larger heating demand as all supply registers are in the floor.

*Access for installation+maintenance must be considered.

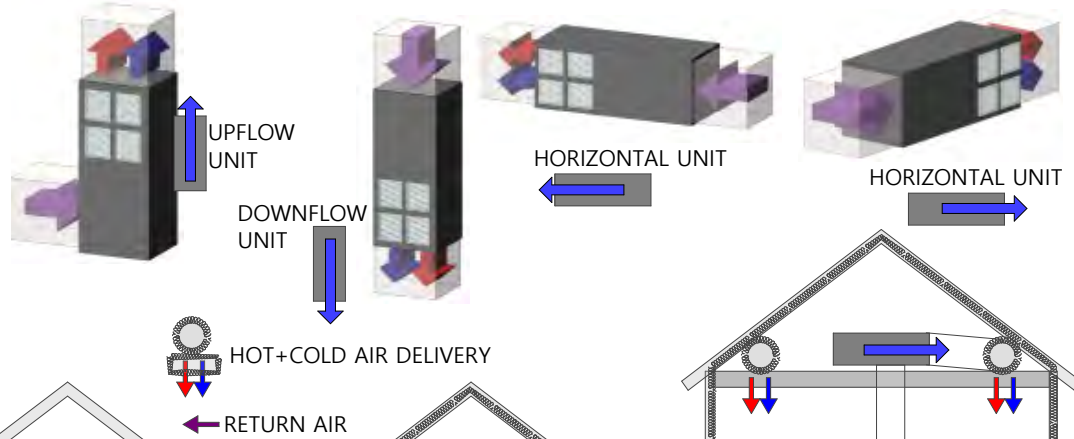


PLANNING_utility functions+spaces d8.15

MEP SPACE ALLOCATIONS_HVAC SYSTEM SCHEMATICS

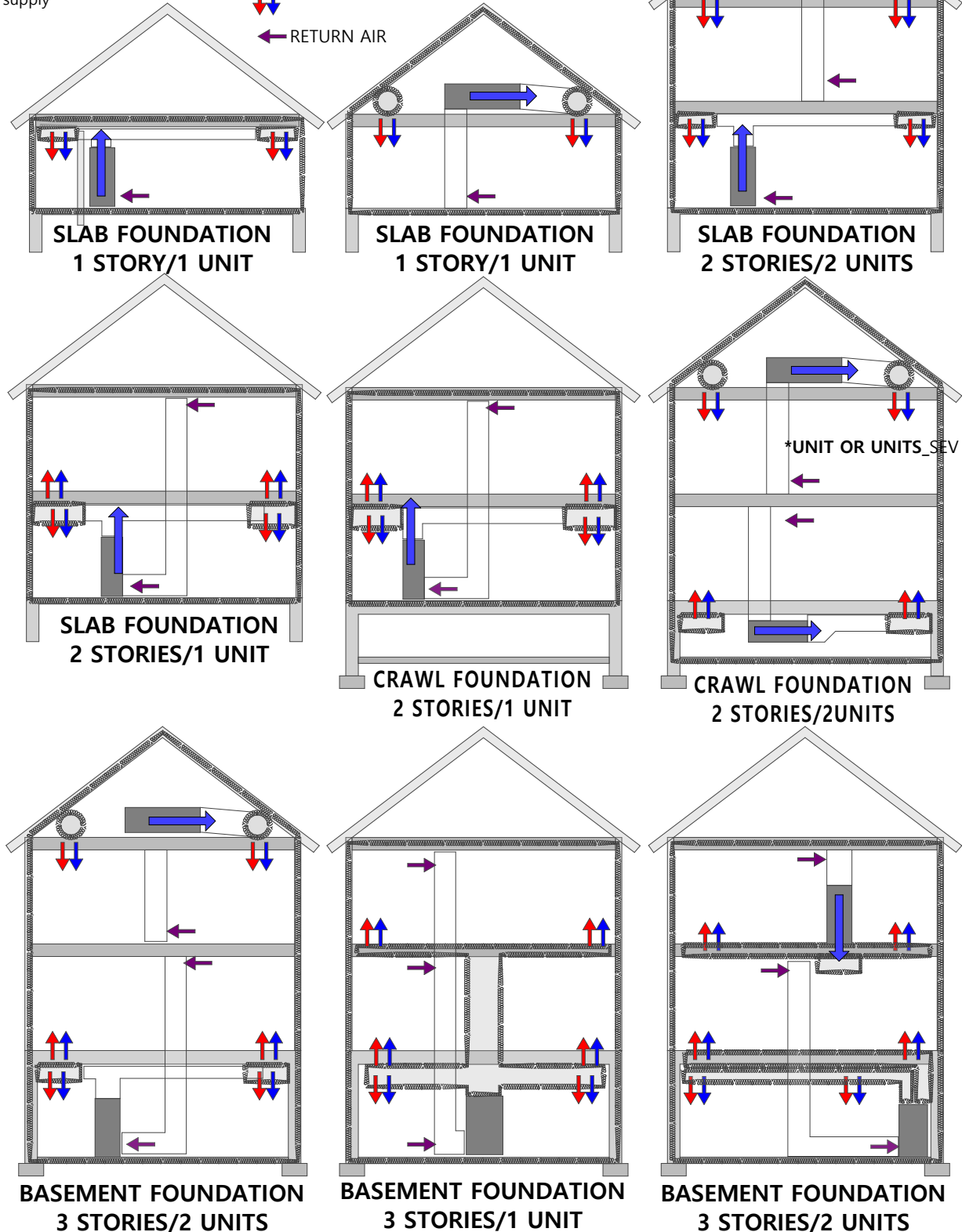
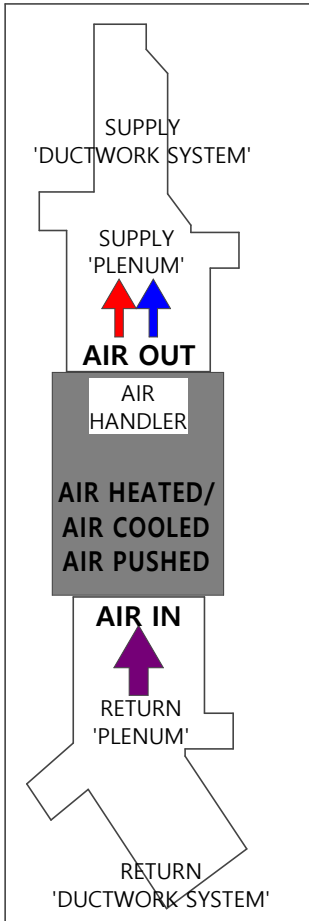
UNIT CONFIGURATIONS_

*The principle of air in/air conditioned(heated or cooled)/air out is the same regardless of unit orientation. Some manufacturers have multi-directional units which verifies this simple idea.
 *Arguments aside as to which configuration is inherently more efficient, the more important consideration is which configuration will lend itself to the simplest + best duct delivery and return system.



AIR IN/AIR OUT_

*Air volume needs to be balanced.
 Volume in = volume out. So this balance needs to extend thru the supply and return systems.



SUPPLY AND RETURN_

*A significant value to the ducted system is air circulation and distribution. Supplies and returns encourage that distribution when they are positioned apart-across a room or space. Logic.

DUCTWORK HIGHLIGHTS

*Supply ducting from the airhandler usually is destined to the outer perimeter of the home and typically positioned above or below glass.
 *Supply ductwork is sized to deliver a prescribed volume of air to the various spaces within the home. Big spaces need big ducts. Small spaces need small ducts.