

Order of Construction

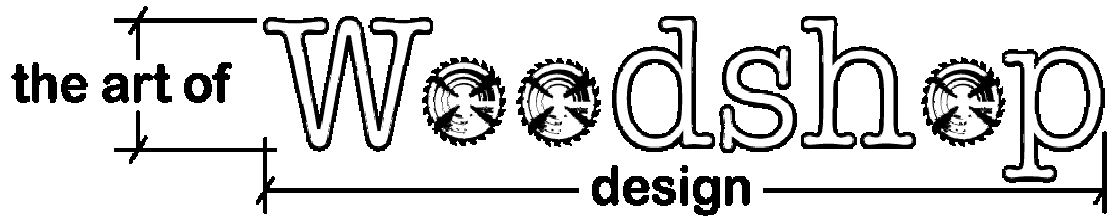
- Having a set Order of Construction is a huge advantage. It'll serve as a virtual recipe that you can follow, knowing you've done your deep thinking in advance.
- Keep in mind that even though you've written a complete list in the best order you could think of, there are times where you discover that doing something else first has more of a benefit, or you're not ready for the next step. So, where possible, make a note to yourself like:

(This could be done before the outlet boxes are installed)

(This could wait until later)

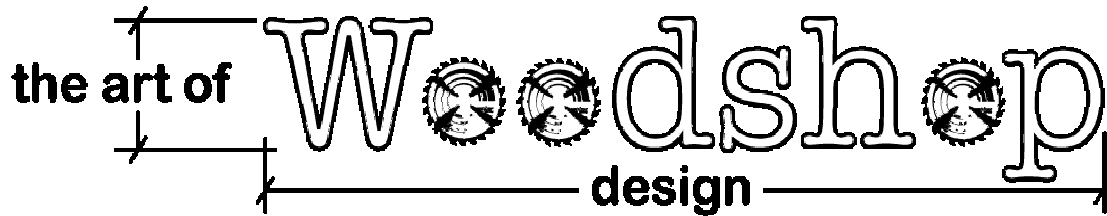
- You can make this extremely detailed, or just list the major things to serve as a reminder and take it from there on the fly. So by writing "Install Floor Sweep", you could just take that and follow your plan and do all the little things required without having to write out each step.
- Once you've written your tasks and projects in order, take a second look at it and see if you can push the "High ROI" tasks up front. ROI stands for "Return on Investment". For me, installing radiant barriers in my roof has a huge benefit for me this summer, so I pushed that up front, rather than working on the wall insulation. The wall insulation will benefit me during the winter months, but not as much right now. My roof sheathing temperature gets well over 120 deg. F, whereas my walls get to maybe 90 deg. If you need to build a temporary workbench to keep your business running, do that first to keep things functional, but then get back on track to your dream shop.
- Here is my Order of Construction that I'm currently using. I use a green felt-tip marker to check off the items as they're done so I know where I left off.





Order of Construction

- PHASE I: DEMOLITION & CLEANING
 - REMOVE ALL INTERIOR DRYWALL, MOLDING, ETC.
FOR THE SECTION WHERE CONSTRUCTION WILL
BEGIN.
 - CLEAN OUT INSIDE OF ALL WALL CAVITIES (USE
COMPRESSED AIR WHILE YOUR AIR CLEANER RUNS
WITH A SPARE FILTER, THEN VACUUM EACH STUD
BAY.)
 - PULL ANY SCREWS AND NAILS.
 - HOSE OUT SOFFIT VENTS.
 - REMOVE ANY CEILING DRYWALL, PULL OUT NAILS,
SCREWS, AND STAPLES. CLEAN OUT RAFTERS
WITH COMPRESSED AIR, VACUUM, AND HOSE OFF
IF NECESSARY
 - REMOVE ALL MOLDING AROUND ALL DOORWAYS
 - REMOVE ANY WEATHER STRIPPING OR
THRESHOLDS IF WORKING ON THAT PARTICULAR
WALL.
 - REMOVE ANYTHING THAT WILL BE REPLACED
LATER. LEAVE ITEMS TO REMAIN IF THEY WILL BE



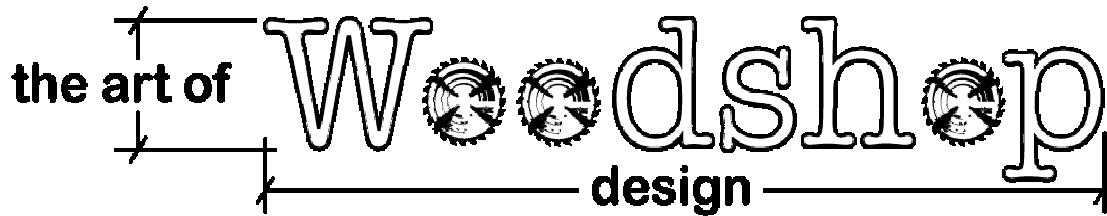
PART OF WALL/ CEILING/ FLOOR, ETC. OR ARE
NEEDED DURING CONSTRUCTION.

- KEEP GARAGE DOOR MECHANISM INTACT UNTIL
THE REPLACEMENT HAS BEEN PURCHASED OR
FABRICATED.
- KEEP THE LIGHTING INTACT UNTIL IT IS READY TO
BE REPLACED, SINCE YOU'LL NEED IT.
- COMPLETELY CLEAN (PRESSURE WASH WITH HOSE
AND HOUSE CLEANER) THE ENTIRE EXTERIOR
PRIOR TO SEALING AND PATCHING CRACKS.
- CAULK AND SEAL ALL CRACKS, ETC. ON EXTERIOR
OF EXISTING GARAGE, INCLUDING UNDER EAVES
AND AROUND ELECTRICAL/ TELEPHONE ACCESS
PANELS.
- EVALUATE THE EXTERIOR CONDITIONS AND PREP
FOR REPAINTING THE GARAGE PORTION OF THE
HOUSE.
- APPLY EXPANDED METAL SCREEN ANY LOUVER
OPENINGS WITH 1/8" OPENINGS ON THE INSIDE
OF EAVE VENTS. CREATE ADDITIONAL OPENINGS
AS NECESSARY TO EXCEED CODE FOR ATTIC
VENTILATION.

the art of Woodshop design



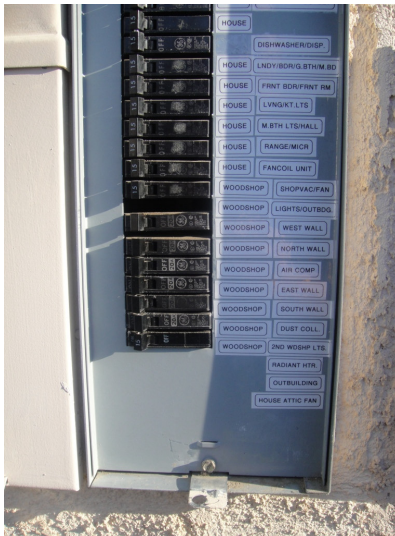
- PHASE I: EXISTING ENVELOPE UPGRADE--WALLS
 - USE CAULK AND EXPANDING FOAM, INCLUDING FIRECAULK WHERE NECESSARY TO SEAL ALL CRACKS & UTILITY PENETRATIONS.
 - REPAIR ANY STUD BAY FIRE BLOCKING AND SEAL EACH STUD BAY.
 - REPAIR ANY DAMAGED OR SUBSTANDARD STRUCTURAL ELEMENTS.
 - USE NEW LUMBER, METAL PLATES, HURRICANE CLIPS, STRAPS AND ANGLE BRACKETS TO REINFORCE EXISTING STRUCTURAL.



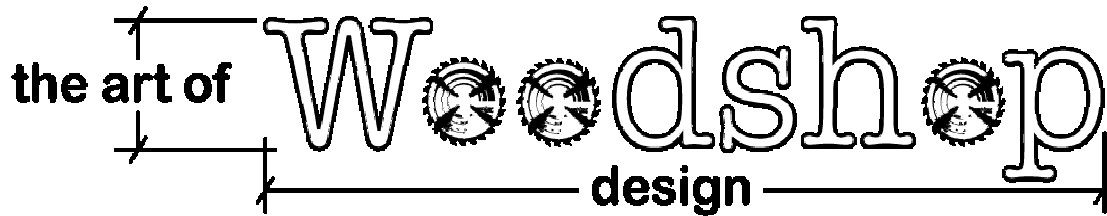
- ADD DIAGONAL BRACING AND SHEAR PANELS AS NEEDED. ADD GUSSETS TO TRUSSES THAT APPEAR WEAK.
- ADD LUMBER WHERE NEEDED TO BEEF UP STRUCTURE TO HELP SUPPORT FUTURE SHELVING, CABINETS, AND CEILING ELEMENTS.
- CAULK AND SEAL SEAMS IN CONCRETE WALL FOUNDATION AFTER ONE COAT OF DRYLOK AT THE EDGES AND SILL PLATE AREA.
- PROVIDE SLEEVES IN WALL ASSEMBLY FOR FUTURE ELECTRICAL WIRING FROM PANEL TO OUTSIDE THE SHOP, REFRIGERANT PIPING FOR HVAC, GAS PIPING, WATER LINES, ETC. PRIOR TO INSULATION. SEAL ANY PENETRATIONS WITH FIRE CAULK.
- SEPARATE WATER HEATER BY BUILDING AN ENCLOSURE W/ DOOR AND ADJACENT SEALED PARTITION STORAGE CLOSET. INSULATE ALL WALLS AND PROVIDE RADIANT BARRIER AT ROOF, AND INSULATE CEILING ABOVE WATER HEATER AND STORAGE AREA.

the art of Woodshop design

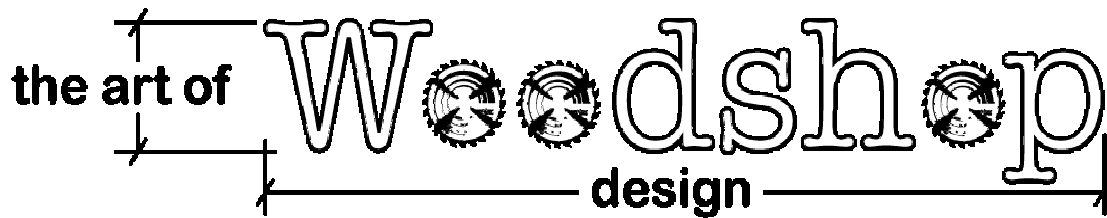
- INSTALL ROUND COMBUSTION AIR LOUVERS (HI-LOW CONFIGURATION) AT EXTERIOR WALL.
- SPRAY FIRE RETARDANT ON FRAMING OF WATER HEATER ENCLOSURE, THEN SOUND AND AIR SEAL TO PROTECT FROM DUST AND PREVENT SHOP NOISE FROM ESCAPING. ALLOW ROOM FOR FUTURE TANKLESS WATER HEATER INSTALLATION.



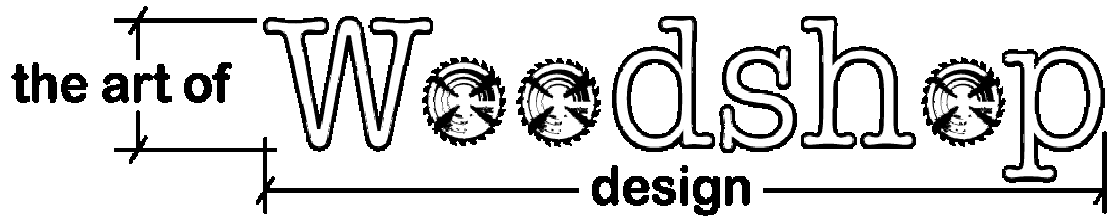
- PHASE I: ELECTRICAL UPGRADE
 - RUN ROMEX AND ROUGH IN JUNCTION BOXES PER LIGHTING PLAN.



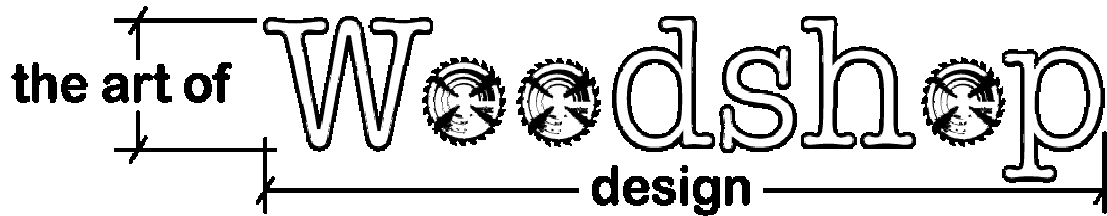
- ROUTE ROMEX AND OUTLET/ SWITCH BOXES PER CIRCUITING PLAN. FIRECAULK ALL STUD PENETRATIONS.
- FRAME AND SEAL A COMPARTMENT IN THE EXISTING STUD BAY FOR THE ELECTRICAL PANEL AND THE FUTURE ACCESS PANEL. LINE WITH DRYWALL, SEAL AND PAINT.
- PHASE I: EXISTING ENVELOPE UPGRADE--ROOF
 - SEAL ALL ROOF SHEATHING SEAMS FROM UNDERNEATH.
 - SEAL INSIDE OF JOINTS BETWEEN WALL TOP PLATE AND ROOF SOFFIT/ TRUSS HEAD.
 - UPGRADE SOFFIT VENTS WITH 1/8" EXPANDED METAL OR METAL MESH SCREEN, STAPLE IN PLACE AND CAULK AROUND EDGES FROM INSIDE. USE FORSTNER BIT IF NECESSARY TO INCREASE VENTILATION AREA IN EACH TRUSS OR RAFTER BAY.



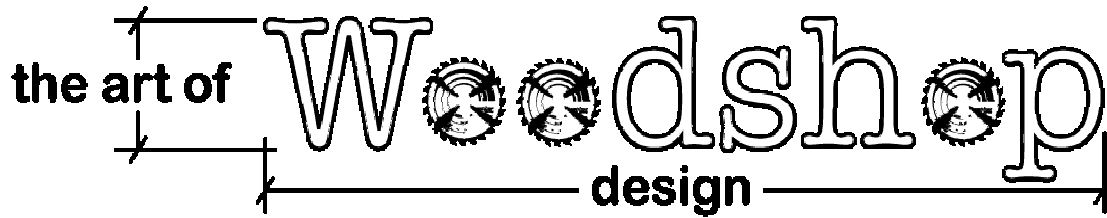
- PHASE I: ENVELOPE UPGRADE-WINDOWS, DOORS
 - REBUILD DOOR AND MATCHING FRAME (PRE-HANG) FOR SECURITY, THERMAL, AND ACOUSTICAL PERFORMANCE.
 - REPLACE WINDOW LOCKS, DOOR LOCKS WITH NEW SYSTEM. SEE SECURITY REQUIREMENTS.
 - ADD SECURITY BARS TO WINDOWS, A SHEET OF LEXAN TO INSIDE OF WINDOW FRAMING FOR SECURITY AND SOUND, AND LOW-E WINDOW FILM ON DUAL-PANE GLASS.
 - ADD FABRIC-COVERED RIGID FOAM, FOIL-FACED INSULATION AND RADIANT BARRIER TO GARAGE DOOR. PROVIDE 1" AIRSPACE BETWEEN FOIL SIDE OF INSULATION PANEL AND GARAGE DOOR. FABRIC TO FACE TOWARD SHOP. APPLY FABRIC WITH SPRAY-ADHESIVE.
 - ADD SECONDARY PHYSICAL LOCK TO GARAGE DOOR. WHEN THE DOOR IS TO BE OPENED, UNLOCK THE SECONDARY LOCK AND ENABLE THE CONTROLS. DISABLE CONTROLS WHEN ON VACATION AND ENGAGE THE LOCK.



- FULLY CAULK AND WEATHER SEAL ALL DOORS AND WINDOWS, INTERIOR AND EXTERIOR.
- LOOK FOR A SPACE-SAVING GARAGE OPENER FOR WOODSHOP, SO THE MECHANISM IS AS CLOSE TO THE DOOR AS POSSIBLE TO GET IT OUT OF THE CEILING.
- PHASE I: ENVELOPE UPGRADE--FLOOR
 - THOROUGHLY CLEAN FLOOR, USE DEGREASER AND PUSH-BROOM SCRUB, THEN RINSE OFF.
 - APPLY 2 COATS OF CONCRETE TILE-PREP SEALER ON ALL CONCRETE IN GARAGE TO PREVENT MOISTURE FROM GETTING IN SHOP, AND TO MAKE IT EASIER TO CONTROL HUMIDITY.
 - CAULK AND SEAL CRACKS AND SEAMS AFTER 1ST COAT OF SEALER IS APPLIED.
- PHASE I: ENVELOPE CONSTRUCTION--WALLS
 - FIRE-TREAT ALL WALL INSIDES WITH SPRAY-ON FIRE RETARDANT, AFTER ALL STUD BAYS HAVE BEEN COMPLETELY SEALED AND CAULKED TO PREP FOR RADIANT BARRIER INSTALLATION.



- ADD A 1" RIGID FOAM SHEET W/ RADIANT BARRIER WITH 1"x1" SQUARE FOAM SPACER BLOCKS TO PROVIDE 3/4" AIRSPACE ADJACENT TO STUCCO LAYER AND SEAL ALL AROUND TO CREATE AN AIRTIGHT 1" CAVITY BETWEEN RADIANT BARRIER AND STUCCO TAR PAPER LAYER.
- INSTALL ANY PLUMBING YOU WANT TO RUN IN THE WALLS.
- ADD RIGID FOAM INSULATION TO FILL THE REMAINING WALL CAVITY AND SEAL WITH EXPANDING FOAM AROUND THE EDGES TO COMPLETELY AIR SEAL AND FILL BAY PRIOR TO ANY DRYWALL OR PLYWOOD SHEAR PANELS.
- ADD FRAMING TO FUR OUT WALLS IF NECESSARY (TO INCREASE TO 2X6 OR MORE IF YOU WANT MORE INSULATION ROOM), CONTINUE INSULATION, AND DON'T FORGET TO RELOCATE OUTLET AND SWITCH BOXES TOWARD INSIDE OF WALL STUDS.
- SPRAY FOAM AROUND ALL ELECTRICAL OUTLETS AND SWITCHES.



- APPLY SHEAR WALL SHEATHING PER DESIGN DRAWINGS WHERE NEEDED.
- ADD LAYERS OF GYP. BOARD WITH DRY CAULK SQUIGGLES AND CONSTRUCTION ADHESIVE APPLIED TO FRAMING AS SOUND ISOLATION.
- ADD FRAMING AND ADDITIONAL PRESSURE-TREATED SILL PLATE W/ MOISTURE BARRIER FOR INTERIOR DEMISING WALL TO CREATE DOUBLE WALL WITH AIRSPACE.
- MUD, TAPE, AND CAULK ALL DRYWALL AND APPLY PRIMER. DO FINAL CAULKING PRIOR TO PAINTING.
- INSTALL ANY COMPRESSED AIR PIPING OUTSIDE OF THE WALLS FOR ACCESS.

the art of Woodshop design



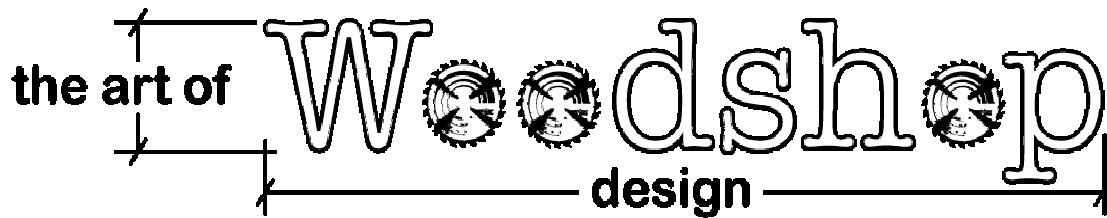
- PHASE I: ENVELOPE CONSTRUCTION--ROOF
 - SPRAY FIREPROOFING ON INSIDE OF ROOF PRIOR TO INSULATION.
 - ADD ENERFLEX RADIANT BARRIER BETWEEN THE RAFTER OR TRUSS BAYS, LEAVING ABOUT 6" FROM THE SOFFIT VENT AND 6" FROM ROOF APEX OPEN.
 - ADD A STRIP OF RADIANT BARRIER MATERIAL ALONG UNDERSIDE OF RIDGELINE (PEAK) TO REFLECT HEAT RADIATION BUT LEAVE 6" GAP OPEN FOR AIRFLOW BACK TO THE GABLE VENT WHILE MAINTAINING COMPLETE RADIANT BARRIER COVERAGE.

the art of Woodshop design

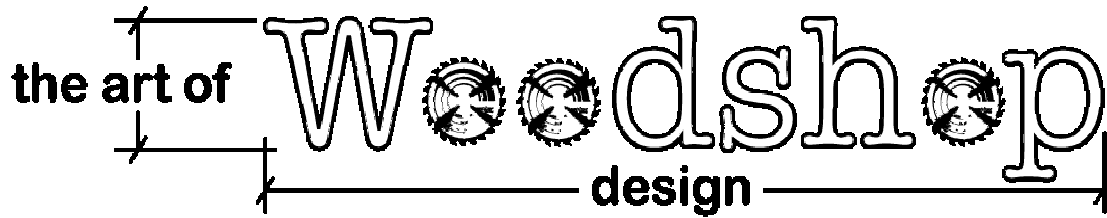
- ENSURE ADEQUATE VENTILATION USING SCREENED EAVE VENTS AND GABLE LOUVERS; EXCEED CODE FREE AREA REQUIREMENTS FOR ATTIC VENTILATION.
- REINFORCE ROOF STRUCTURE WITH METAL PLATES AND EXTRA DIAGONAL BRACING



- PHASE I: ENVELOPE CONSTRUCTION--CEILING
 - THE CEILING IS THE MAIN SHOP OVERHEAD ENVELOPE, DESIGNED FOR SOUND AND THERMAL PROTECTION.
 - CEILING TO BE COMPLETELY AIR-SEALED FROM ATTIC.
 - COORDINATE CEILING HEIGHT WITH DECORATIVE DROPPED CEILING PANELS; MAXIMIZE HEIGHT.

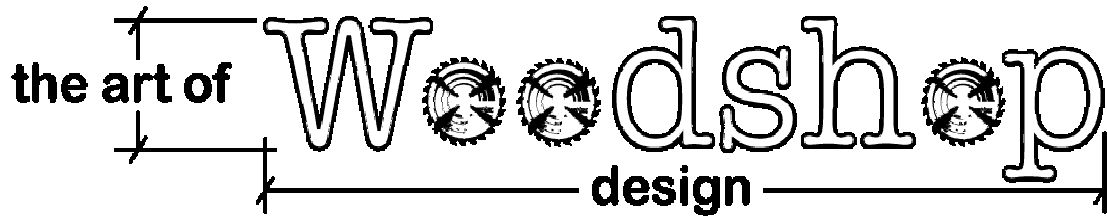


- WORK AROUND OR RE-ROUTE GAS PIPING AND WATER PIPING.
- PROVIDE R-38 BATT INSULATION ON TOP OF CEILING; INCORPORATE RIGID FOAM INSULATION BELOW FRAMING.
- DECIDE ON ATTIC ACCESS HATCH LOCATIONS—MAKE 30"X30". INSULATE HATCH, AND WEATHERSTRIP TO MAINTAIN YOUR ENVELOPE AIR SEAL.
- PHASE I: ENVELOPE CONSTRUCTION--FLOOR
 - LAY OUT TILE AND INLAY ARRANGEMENT ON THE FLOOR.
 - INSTALL PERIMETER AREAS FIRST.
 - DO THE FLOOR IN PHASES SO YOU CAN USE SOME OF THE SHOP.
 - SEAL THE TILE EDGES TO THE WALLS.
- PHASE I: DUST COLLECTION SYSTEM
 - ANCHOR 5" DIAMETER MAIN DUCT TO CEILING FRAMING, AND SEAL ANY PENETRATIONS. INCLUDE ALL LONG-RADIUS ELBOWS AND WYE FITTINGS PER DUST COLLECTION PLAN. INCLUDE



6" DUCT RISER FOR FLEX HOSE CONNECTION TO
DUST COLLECTOR.

- ROUGH-ARRANGE YOUR TOOLS SO YOU HAVE
REFERENCE FOR DUST COLLECTION BRANCH DUCT
INSTALLATION.
- INSTALL AND HANG 4" DIAMETER BRANCH DUCTS
PER DUST COLLECTION PLAN.
- INSTALL BLAST GATES AND CLEANOUTS, ETC.
- CUT FLEX DUCTS FOR EACH STATION TO A
LENGTH THAT ALLOWS MOBILE CABINET TO MOVE
AS MUCH AS IT NEEDS TO, AND PROVIDE
GROUND WIRE.
- INSTALL ACCESSORIES, E.G. FLOOR SWEEPS, 2-
1/2" VACUUM HOSE FOR GENERAL SHOP
CLEANUP.
- ASSEMBLE SHOP VAC DUCT NETWORK TO
SANDING STATIONS WHEN READY.
- HANG AIR CLEANER; ANCHOR TO CEILING JOISTS.
SEAL ANY PENETRATIONS IN DRYWALL WITH
CAULKING.



- PHASE I: HVAC

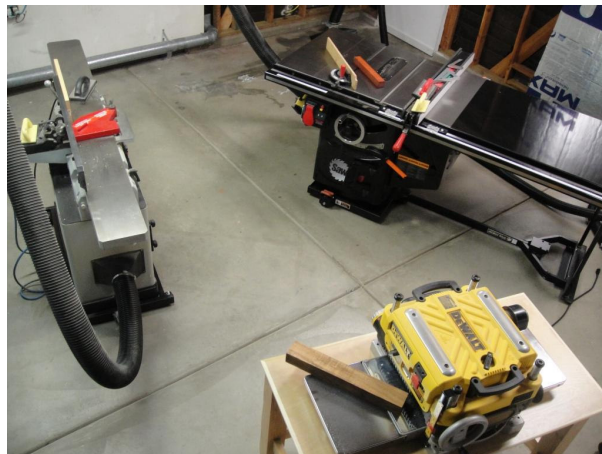
- INSTALL PANASONIC ENERGY RECOVERY VENTILATOR (ERV) FOR FRESH AIR INTAKE IN ATTIC SPACE. CONNECT TO FACTORY-PROVIDED INTAKE AND DISCHARGE LOUVERS. CAULK, SEAL, AND FLASH AT EXTERIOR PENETRATION.
- PLUG IN RADIANT HEATER (OR CONNECT GAS HEATER).
- INSTALL MINI-SPLIT HEAT PUMP UNIT; MOUNT INDOOR UNIT ON THE WALL, AND CONNECT TO REFRIGERANT PIPING AND WIRING FROM OUTDOOR UNIT. SEAL REFRIGERANT PIPE SLEEVE IN WALL.
- INSTALL DEHUMIDIFIER IF DESIRED.

- PHASE I: ELECTRICAL FINAL INSTALLATION

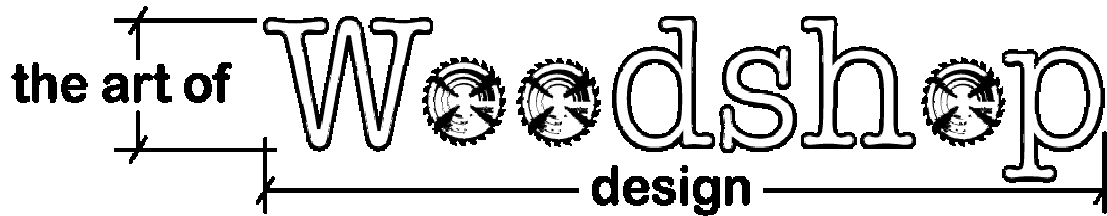
- WIRE UP ALL OUTLETS.
- CONNECT SWITCHES.
- INSTALL APPROPRIATE BREAKERS IN ELECTRICAL PANEL AND LABEL.
- CONNECT ROUGH-IN WIRES TO THE CORRECT CIRCUIT BREAKER WITH ALL HOUSE POWER OFF.
- TEST EACH CIRCUIT WITH A PLUG-IN TESTER.

the art of Woodshop design

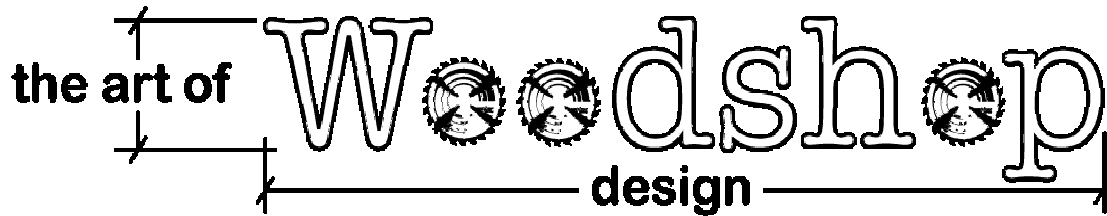
- PHASE II: TOOL AND STATION LAYOUT
 - ARRANGE TOOLS TO THEIR FINAL LAYOUT LOCATIONS, USING YOUR LAYOUT PLAN WITH DIMENSIONS.
 - HOOK UP DUST COLLECTION FLEX HOSES.
 - PLUG EVERYTHING IN AND TEST, TWEAK TOOL ORIENTATION IF NECESSARY.
 - HOOK UP TASK LIGHTING AT EACH WORKSTATION.



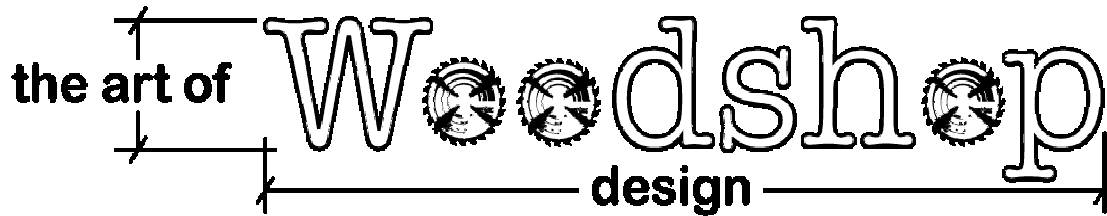
- PHASE II: TOOL STATIONS
 - GO STATION BY STATION AND BUILD YOUR CABINETS, STANDS, AND INTEGRAL STORAGE.
 - PUT ACCESSORIES AND TOOLS IN THEIR PLACES.



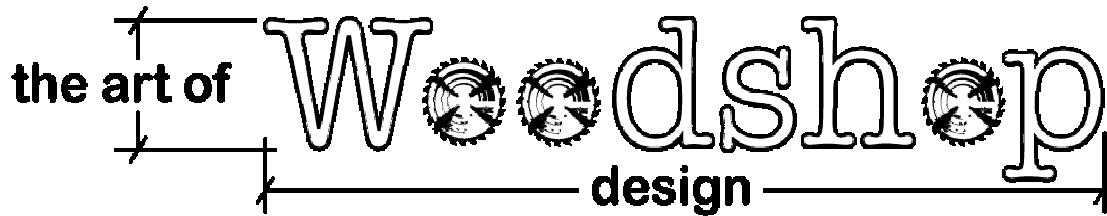
- INTEGRATE SOUND CONTROL STRATEGIES AT EACH STATION, INCLUDING SOUNDBOARD AND INSULATION IN TOOL CABINETS, VIBRATION ISOLATION BETWEEN CABINETS AND THE FLOOR, SOUND DAMPENING SPRAY RUBBER, LINK BELT INSTALLATION.
- BUILD THE MOST IMPORTANT JIGS AND FIXTURES FOR EACH STATION.
 - TABLE SAW PANEL SLED.
 - TABLE SAW CROSSCUT SLED.
 - TABLE SAW MITER FENCE.
 - TABLE SAW FENCE ACCESSORIES.
 - ROUTER TABLE FENCE.
 - ROUTER TABLE SLED.
 - BANDSAW RESAW FENCE.
 - MITER SAW FENCE SYSTEM.
 - DRILL PRESS TABLE SYSTEM.
 - CONSTRUCT MAIN WORKBENCH.
 - PRIMARY AND SECONDARY ASSEMBLY TABLES WITH ASSOCIATED STORAGE OF CLAMPS AND SUPPLIES.
 - PLANER STORAGE.



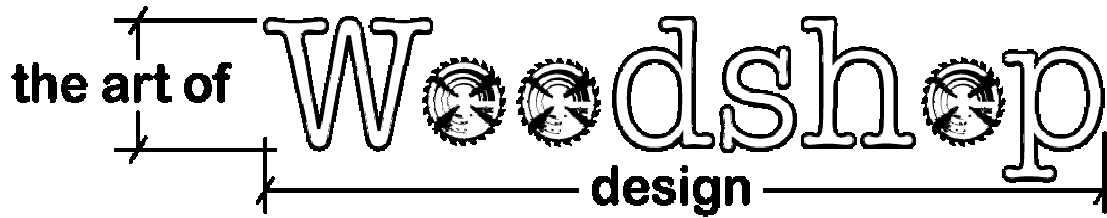
- PHASE III: FINISHES TO WALLS, CEILINGS, FLOORS
 - FRAME FOR 3-DIMENSIONAL DECORATIVE SHAPES AND CEILING TREATMENT (I.E. SUSPENDED ACOUSTICAL PANELS), THEN APPLY FINISH MATERIAL (DRYWALL, DECORATIVE SHEET METAL, ETC.).
 - FRAME LOFT FLOOR AND SUPPORTS, RAILING, ACCESS LADDER, ETC.
 - APPLY FINISH MATERIALS/ PAINT TO SURFACES.
 - FINALIZE LIGHTING ON WALLS AND CEILINGS.
 - INTEGRATE CABINETS AND STORAGE INTO WALLS.
 - INSTALL FIRE EXTINGUISHERS IN THEIR FINAL LOCATION
 - INSTALL FIRST AID STATION.
- OUTBUILDING (LUMBER STORAGE, FINISHING ROOM)
 - MARK PAD AREA ON GROUND, DIG HOLES FOR FOUNDATION AND FOOTINGS, ADD CRUSHED STONE, ETC.
 - ARRANGE FORMS FOR CONCRETE, INSTALL VAPOR BARRIER OVER PROPERLY GRADED AREA.



- POUR CONCRETE, INCLUDE REBAR AND SILL PLATE ANCHOR BOLTS AS NECESSARY.
- APPLY CONCRETE WATER/ TILE CRACK PREVENTING SEALER PRIOR TO SILL PLATES.
- APPLY SILL PLATE OVER FOAM WATER-PROOFING STRIP AND OVER ANCHOR BOLTS IN CONCRETE.
- FRAME WALLS WHILE HORIZONTAL ON GROUND AND INCLUDE VENT OPENINGS, WINDOWS, DOORWAYS, ETC.
- RAISE WALLS, ATTACH ADJACENT WALLS TO EACH OTHER, ADD STRUCTURAL CLIPS AND METAL FITTINGS.
- FRAME RAFTERS, ROOF AND INCLUDE ANY OPENINGS FOR EXHAUST, GRAVITY VENTS, UTILITY SLEEVES, ETC.
- ROUGH IN HOSE BIB
- DO PERIMETER GRADING AND DRAINAGE
- APPLY EXTERIOR SHEATHING.
- APPLY FIRE RETARDANT SPRAY,
- INSTALL ELECTRICAL SWITCHES, WIRING, OUTLETS, THERMOSTAT WIRING, LIGHTING ROUGH-INS.



- APPLY EXTERIOR RADIANT BARRIER AND 1 " FURRING STRIPS.
- INTERIOR PARTITION FRAMING.
- SEAL ALL STUD BAYS.
- FIRE CAULK PENETRATIONS.
- INSTALL INTERIOR INSULATION, AND SPRAY FOAM SEAL.
- SEAL SILL PLATE TO FLOOR AFTER APPLYING FLOOR SEALER COAT.
- DRYWALL OVER 2X6 STUDS, AND MARK STUD LOCATIONS WITH THUMBTACKS NEAR CEILING FOR LATER REFERENCE.
- APPLY 1 " RIGID FOAM INSULATION, THEN 1/2" DRYWALL. APPLY PLYWOOD WITH DECK SCREWS WHERE CABINETS WILL OCCUR.
- FRAME ANY ADDITIONAL WALL SHAPES AND APPLY FINISH MATERIALS/ PAINT.
- INSTALL LIGHTING PRIOR TO CEILING.
- INSTALL RADIANT BARRIERS TO ROOF RAFTERS.
- INSTALL AND SEAL AROUND 1/8" SOFFIT VENT SCREENS.
- INSTALL CEILING DRYWALL AND INSULATE.



- INSTALL EXHAUST FANS
- INSTALL LOUVERS AND WEATHER SEAL.
- INSTALL ACCESSORIES, CABINETRY, SHELVING, ETC. TO WALLS
- FINAL FITTING OF DOORS AND WINDOWS, FLASHING, LOCKS, UV WINDOW FILM, TRIM, ETC.
- APPLY EXTERIOR SIDING, FLASHING, AND WATERPROOFING
- INSTALL FINAL ROOFING OVER PLYWOOD SHEATHING.
- INSTALL RAIN GUTTERS.
- APPLY FINAL FINISH MATERIALS/ PAINT.
- POUR CONCRETE PADS PORCH AREA SO YOU CAN DO SOME SANDING OUTSIDE.
- DO EXTERIOR LANDSCAPING AND IRRIGATION.
- PROVIDE EXTERIOR LIGHTING.
- BUILD LUMBER RACKS AND INSTALL
- MARK PATHWAY FROM OUTBUILDING TO GARAGE SO YOU CAN GO BACK AND FORTH TO THE SHOP.
- BUILD THE PATHWAY OVERHEAD SHELTER FOR RAIN PROTECTION.
- ROUTER PLUMBING SUPPLY LINE TO HOSE BIBB.

the art of Woodshop design

- INSTALL EXTERIOR FIRE EXTINGUISHER BOXES
- INSTALL CAMERA(S) AND OTHER SECURITY ACCESSORIES
- INSTALL FIRE/ LIFE SAFETY ACCESSORIES, I.E. SMOKE DETECTORS.
- EAT LUNCH.

