

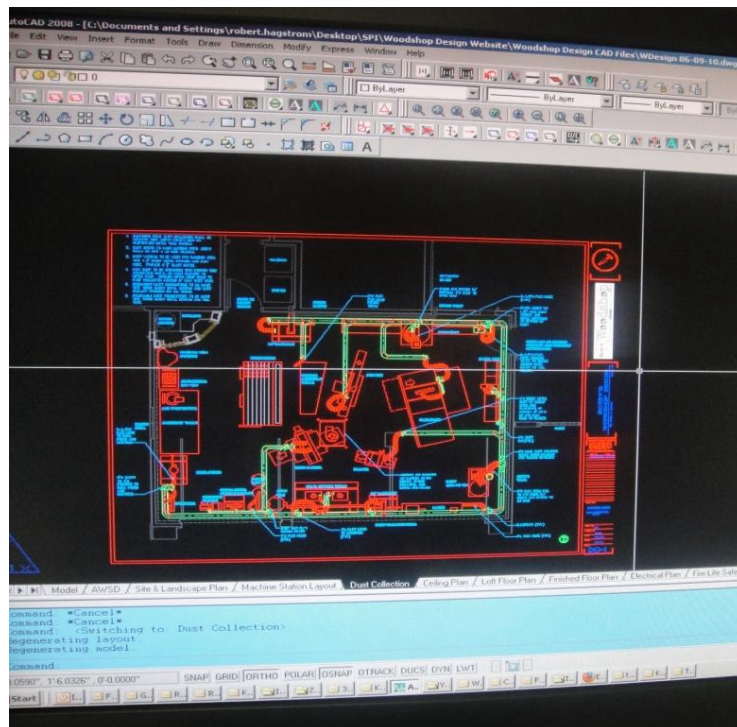
## Woodshop Design Outline

*Use the outline below as a guide to develop your complete “design checklist”- your unique list of requirements. This way, you’ll be confident you’re including everything you want in the design phase, and eliminate the fear of missing something after putting in so much effort to build it.*

### Ask yourself:

*What do I do and what will I do in this shop? What capabilities does it need to have? Tackle one-off studio art furniture? Large multi-piece commissions? Metalwork?*

*Expand on this outline, filling in details and requirements to match your needs as a woodworker, and note ideas now so you won’t forget them later. Have this handy when you’re perusing a woodworking magazine to collect these ideas.*

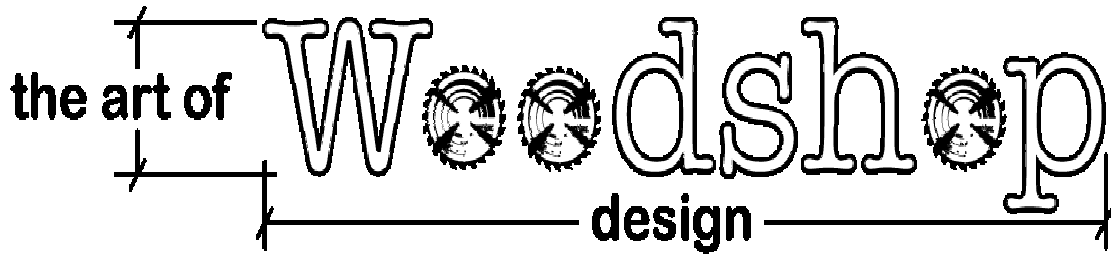


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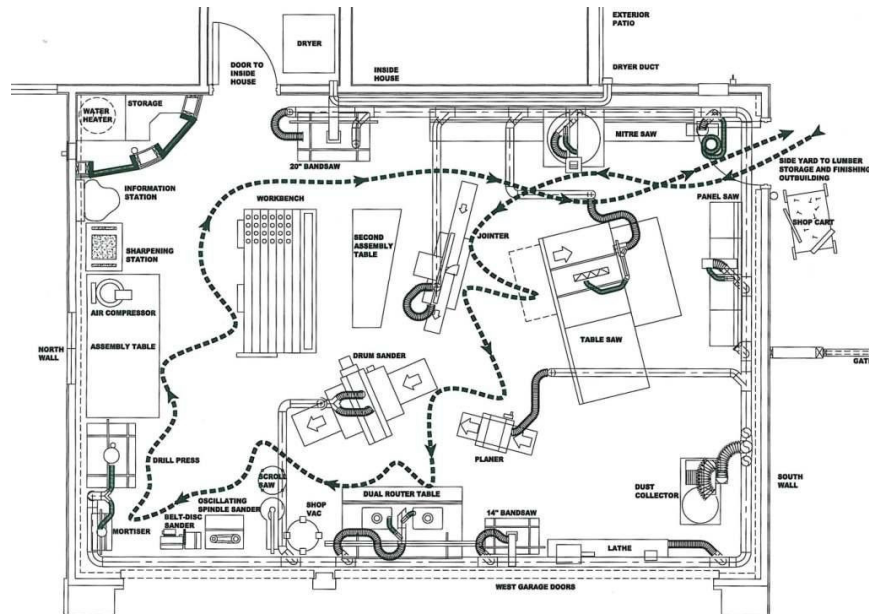
## A. General Shop Requirements

1. All machines/ stations are mobile
  - i. Double-locking casters
  - ii. Commercial Lockable Mobile Base
  - iii. Assembly Table & Workbench to have retractable mobility
2. Central Dust collection hook-up to all dust-producing machines, general dust control, and floor sweep
  - i. Main duct along ceiling/ walls with branches to each tool
  - ii. Each machine gets a blastgate and copper wire-grounded flex duct
  - iii. Floor sweep w/ mesh screen and rare-earth magnets along front



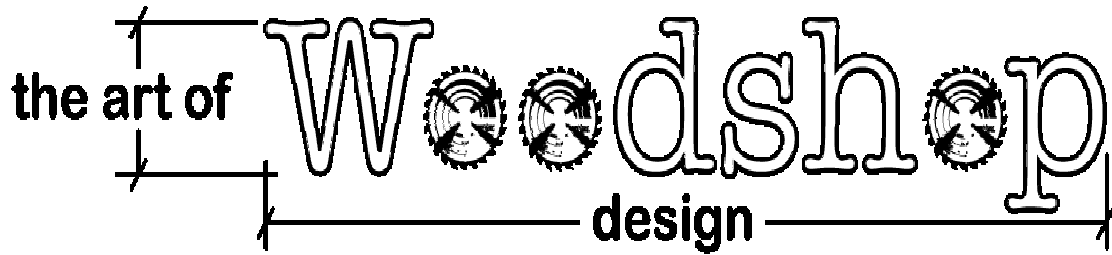
- iv. Minimum 25 ft. flex hose on a reel or cleat, 2-1/2" diameter, for general vacuuming. Provide attachments and backsaver handle.
  - v. Extra 2-1/2" hook-up with swivel joint for handheld power tools near the workbench
  - vi. Growth room—Add extra 45 deg. wye fittings and cap.
  - vii. Overhead air cleaner w/ remote control
  - viii. Dust brushes at all major stations
3. Separate station for each major woodworking operation (*to reduce set-up time*)
4. Security
- i. Record tool/ machine serial #'s and model #'s
  - ii. Engrave tools with your name and Driver License #
  - iii. Beef up door jambs, strike plates, hinges, locks
  - iv. Restrict access from the main house
  - v. Security shutters on windows
5. Fire/ Safety
- i. Fire extinguishers in strategic locations (show on plan)
  - ii. GFCI outlets (*where applicable*)
  - iii. Ground dust collection ducts (avoid PVC)
  - iv. Proper ventilation
  - v. Carbon Monoxide detectors (*for gas appliances*)
  - vi. First Aid kits in strategic locations
  - vii. Proper guards on all jigs and machines
  - viii. No wires or ducts across the floor

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## B. Workshop Layout and Flow

1. Workflow plan and diagram
  - i. Initial Wood Processing/ Stock Breakdown
  - ii. Milling, S4S
  - iii. Shaping & Joinery
  - iv. Artistic/ Deco Detail Work
  - v. Finish Prep (Sanding)
  - vi. Assembly
  - vii. Finishing
  - viii. Shop Support and Out-of-Workflow elements
2. Walk your proposed workflow path and re-enact your most typical operations
3. Check your infeed/ outfeed zones



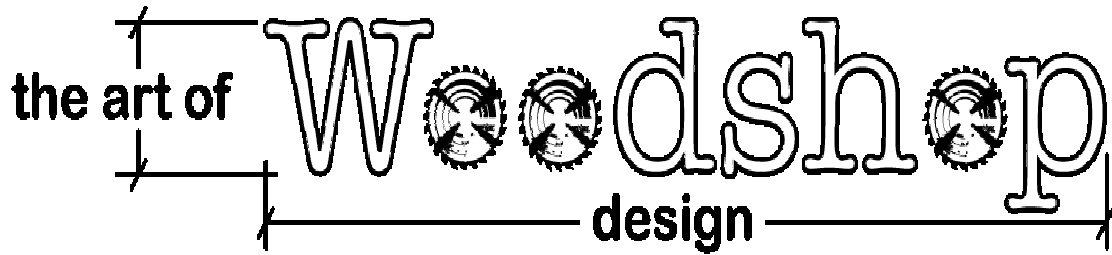
4. Do you have at least a 24” walking path around all the stations? Do you have maintenance access around each one?
5. Multiple project capability
6. “Out of Workflow” stations and tasks identified
  - i. Dust Collector
  - ii. Sharpening Station
  - iii. Information Station
  - iv. Off-Site Construction Tool Storage
  - v. Seating/ Lounge Areas
7. At least two “Open Areas” for temporary set-ups and assemblies to create shop flexibility
8. Consider two assembly tables
9. Mobile shop cart
10. Consider a separate re-saw bandsaw for stock-prep and a 14” bandsaw for joinery operations
11. Separate finishing area or outbuilding
12. Separate lumber storage area or outbuilding

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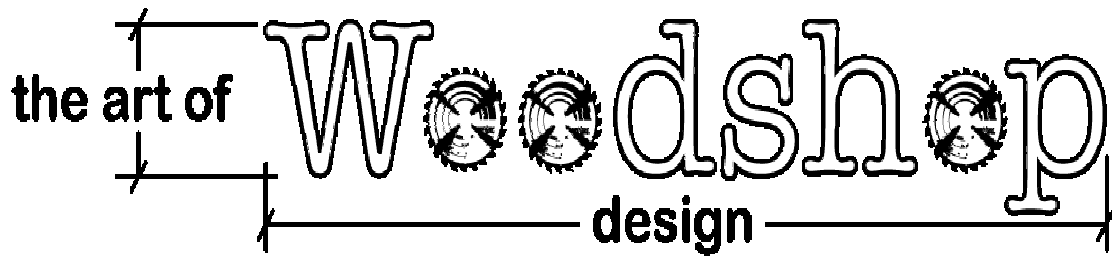


## C. Workshop Stations

1. Lumber Storage and Acclimation
  - i. Separate Shed or Outbuilding
    - (a) Exhaust Fan and Intake Louver for good crossflow ventilation
    - (b) Protect from moisture
2. Initial Wood Processing & Stock Breakdown
  - i. Panel Saw
  - ii. Mitre Saw
  - iii. Resaw Bandsaw
  - iv. TableSaw
3. Wood Prep/ Milling
  - i. Table Saw
  - ii. Jointer



- iii. Planer
- iv. Drum Sander
- 4. Shaping/ Joinery
  - i. Workbench
  - ii. Router Table
  - iii. Bandsaw
  - iv. Drill Press
  - v. Mortiser or Multi-Router
  - vi. Workbench (hand tools)
  - vii. Handheld Power Tools
- 5. Artistic/ Decorative Detail Work
  - i. Scroll Saw
  - ii. Lathe
  - iii. Workbench
  - iv. Veneering
  - v. Carving
- 6. Finish Prep/ Sanding
  - i. Drum Sander
  - ii. Belt/ Disc Sander
  - iii. Oscillating Spindle Sander
  - iv. Workbench/ Downdraft Table
- 7. Assembly
  - i. Main Assembly Table
  - ii. Secondary Assembly Table
  - iii. Glue
  - iv. Clamps



- v. Fasteners
- vi. Air Compressor
- vii. Nail Guns/ Pin Nailer

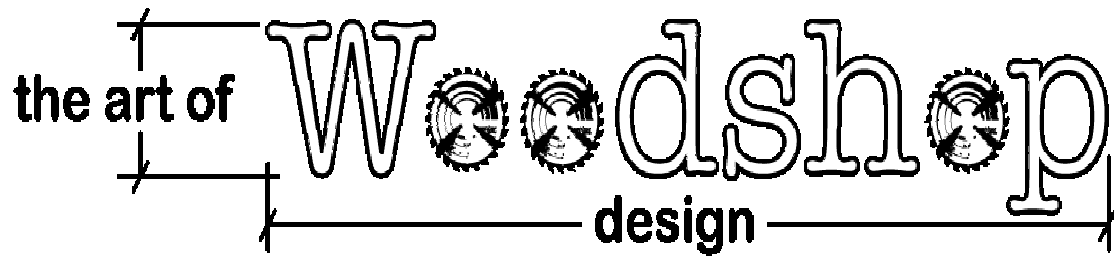
#### 8. Finishing

- i. Ideally, separate Finishing Outbuilding; otherwise a Spray Booth/ Finishing Station
- ii. Exhaust Fan/ Air Intake for good crossflow past your Breathing Zone
- iii. Spray Table
- iv. Lazy Suzan
- v. Drying Racks
- vi. Drying Shelves
- vii. Clean-Up
- viii. Flammables Storage
- ix. Fire Extinguisher/ Safety Gear

#### 9. Shop Support

- i. Sharpening Station
- ii. Measuring and Marking Tools
- iii. Information Station (Books, Plans, Magazines, Drafting Supplies)
- iv. Lumber Storage
- v. Mobile Shop Cart
- vi. Specialty Jigs
- vii. Safety Gear
- viii. Clean-Up
- ix. Entertainment/ Comfort Seating





x. Construction Tools/ Off-Site Equipment

10. Dust Collection

- i. Main Central Collector
- ii. Overhead Air Cleaner
- iii. Shop Vac

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## D. Workshop Envelope

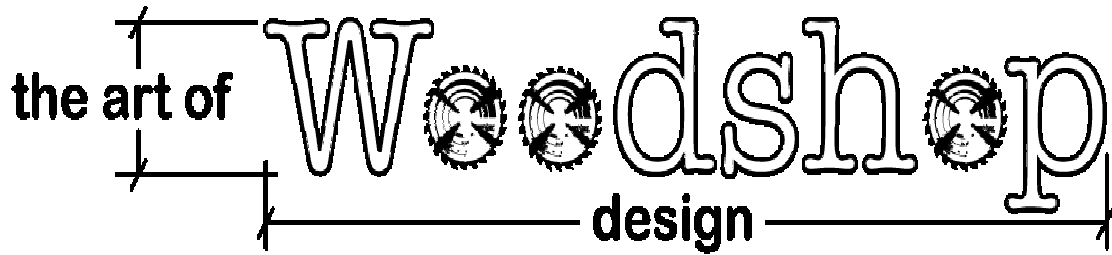
1. Initial Demolition and Clean-up
2. Walls

### i. Utilities in the Wall

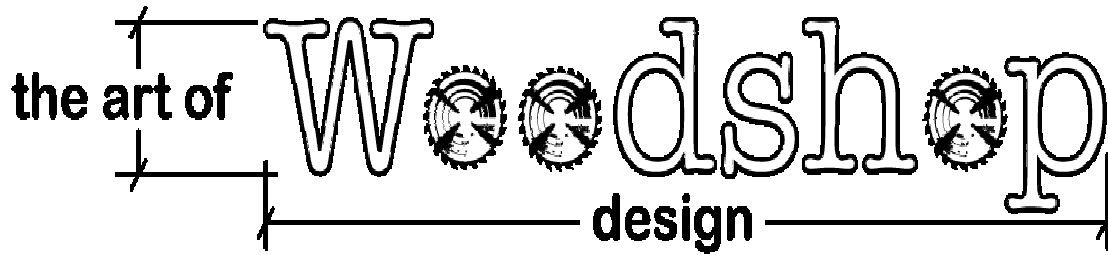
- (a) Electrical (Include Future Tools)
- (b) Compressed air piping
- (c) Water (Shop Sink)
- (d) Gas (To heaters or future heaters, stub-out with shut-off valve)

### ii. Insulation in the stud bays

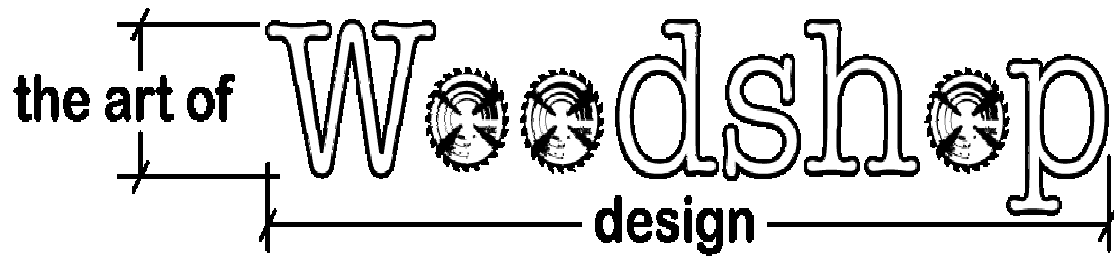
- (a) Batt Insulation (min. R-15)
- (b) Radiant Barriers
- (c) Foam Insulation



- iii. Drywall (2 Layers for sound control)
  - iv. Caulk (Seal everything-all corners)
  - v. Primer
  - vi. Paint
3. Doors & Windows
- i. Sealant around frame
  - ii. Weather-stripping at jambs
  - iii. Thresholds-with weather sweep at bottom of door
  - iv. Hinges-Beefy for security, hinge pins on the INSIDE
  - v. Locks-Deadbolts
  - vi. Screens-For nice weather
  - vii. Alarms
4. Roof/ Ceiling
- i. Insulation
    - (a) Batt Insulation-Min. R-38
    - (b) Leave Rafter Bays ventilated via channels to avoid moisture problems with condensation
  - ii. Utilities
    - (a) Electrical
    - (b) Compressed air piping
    - (c) Water
    - (d) Gas
    - (e) Attic fan
  - iii. Drywall
  - iv. Caulk
  - v. Primer



- vi. Paint
- 5. Floor
  - i. Clean/ Degrease Concrete
  - ii. Sealer (moisture barrier), Caulk at Corners
  - iii. Floor Materials
    - (a) Tile
    - (b) Epoxy Floor
    - (c) Wood Floor
    - (d) Stained Concrete Floor
  - iv. Inlays
    - (a) Metal
    - (b) Granite
    - (c) Slate
    - (d) Wood
- 6. Adjacent Landscape
  - i. Watershed (Land sloped away from foundation/ Drainage, drywells)
  - ii. Insect control
    - (a) Keep plants 6" or so from the wall
    - (b) Find plants that bugs don't like
    - (c) Plants with thorns to keep mice at bay
  - iii. Rain gutters
- 7. Sound Control
  - i. Isolate machine vibration
  - ii. Insulate machine tool cabinets
  - iii. Insulate and seal shop envelope



- (a) Walls
- (b) Roof
- (c) Ceiling
- (d) Doors
- (e) Windows

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## **E. Workshop Environment & Comfort**

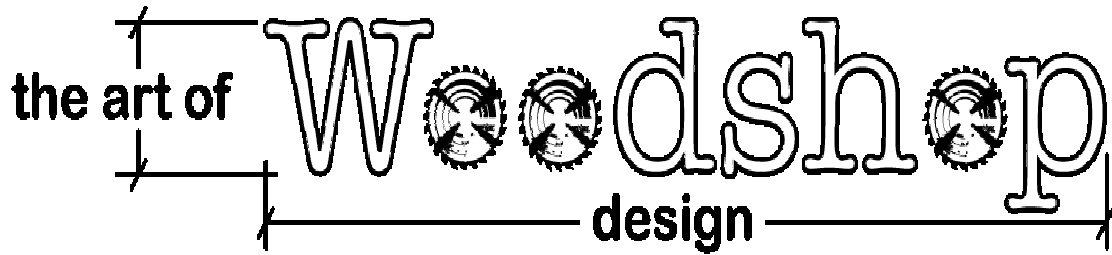
### 1. HVAC/ Climate Control

#### i. Cooling (AC)

- (a) Heat Pump
- (b) PTAC (through-the-wall package unit)

#### ii. Heating

- (a) Indirect Sealed Combustion Gas Radiant Heat  
(good option)
- (b) In-Floor Hydronic Heat (also good, but set  
controls to warm up prior to your shop time)
- (c) Forced-Air Heater (Filters will clog often)



(d) Electric Radiant Heater (not too effective but ok for temporary or mild climates)

iii. Ventilation (Fresh air)

2. Humidity Control

i. Dehumidification (humidistat controlled)

3. Lighting/ Electrical

i. Ambient Lighting

ii. Task Lighting

iii. Decorative Lighting

iv. Circuit Plan for machines

(a) 120 V outlets

(b) 240 V outlets

(c) Identify separate circuits

◆ Dust Collector

◆ Air Compressor

◆ Lighting (minimum 2 zones)

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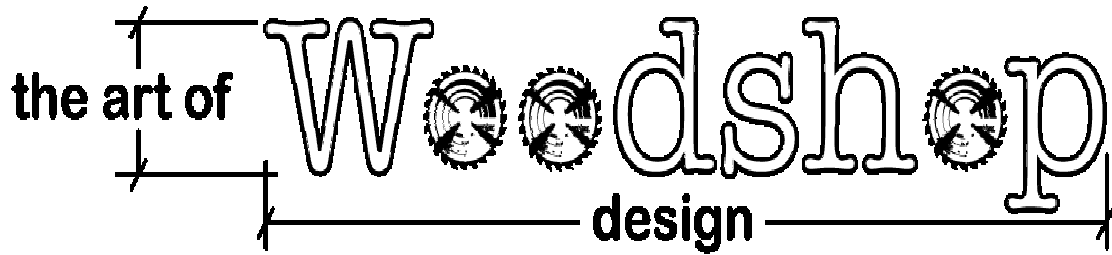
## F. Workshop Aesthetics

1. Pick a theme/ style

### i. Style

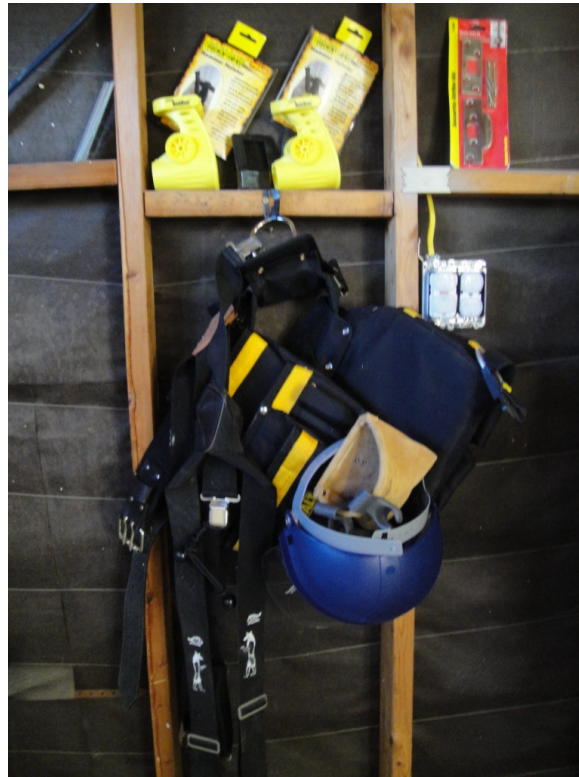
- (a) Modern
- (b) Arts and Crafts
- (c) Art Deco
- (d) Deconstructivist
- (e) Use Your Imagination; mirror the signature style of your work





- ii. Color selection for each surface
  - iii. Texture for each surface
  - iv. Try cool stuff like 3d-shaped walls, or morph your floor corners into the walls
- 2. Floor
  - i. Inlays
  - ii. Multiple Materials
- 3. Walls
  - i. Surface type
  - ii. Surface shape/ texture
  - iii. Integrate displays of your work and light it up
- 4. Ceiling
  - i. Surface type
  - ii. Surface shape/ texture
  - iii. Open or closed to roof
- 5. Cabinetry and Storage
  - i. Materials
  - ii. Style
  - iii. Integral to each station (makes more sense to do this)

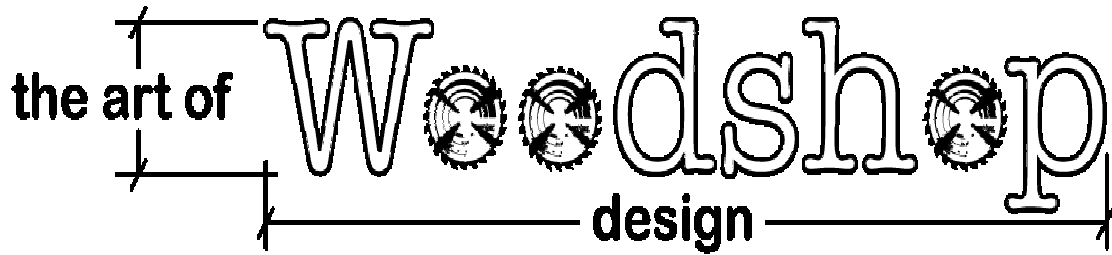
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## G. Order of Construction

### 1. Phase I

- i. Clean-up/ Demo existing space
- ii. Space clearing of all objects
- iii. Final vacuum and wash-down (clear the cobwebs)
- iv. Existing conditions repairs and upgrades
  - (a) Walls/ structure
  - (b) Roof
  - (c) Ceiling
  - (d) Floor/ Subfloor
- v. Electrical & utilities



(a) HVAC

- ◆ Cooling
- ◆ Heating
- ◆ Attic ventilation
- ◆ Fresh Air

(b) Lighting Infrastructure

(c) Fire/ Life Safety Infrastructure

- ◆ Sprinklers
- ◆ Carbon Monoxide detectors (if you have a gas appliance)

(d) Wiring

(e) Gas (to future heater locations with shut-off valves)

(f) Water

(g) Compressed air piping (you may want these pipes exposed)

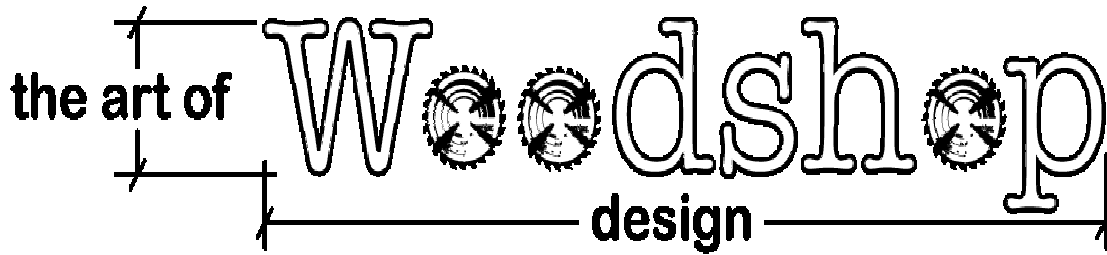
2. Phase II

i. Envelope Upgrades

(a) Walls

- ◆ Radiant barrier adjacent to exterior layer in stud bay, keep a 3/4" air space on radiant barrier shiny side, can face either direction
- ◆ Seal stud bay
- ◆ Add insulation
- ◆ Add soundboard and/or gyp. board layers

(b) Enclose utility equipment



- ◆ Water Heater (if gas, provide combustion air openings per code; preferably to the outside)
- ◆ Washer/ Dryer (provide air intake louver, min. 100 sq. inch free area, since your dryer is exhausting air out)

(c) Floor

- ◆ Sealing concrete
- ◆ Radiant heating if desired (in concrete or wood floor)

(d) Ceiling

(e) Roof

- ◆ Radiant barrier adjacent to roof sheathing (leave room for proper attic ventilation, and also you need a 3/4 " air space on one side of your radiant barrier)
- ◆ Insulate the attic space

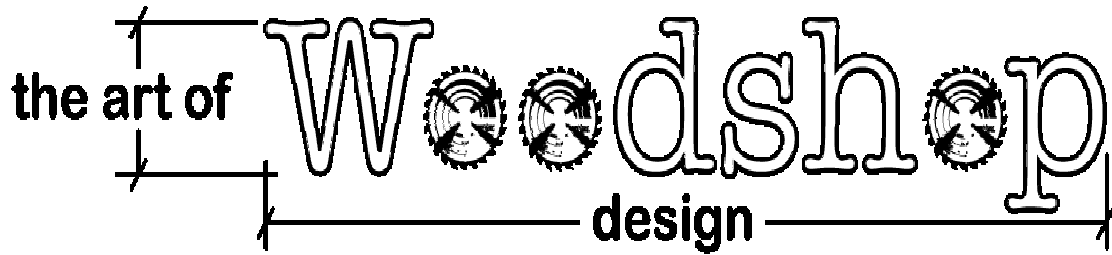
(f) Doors

- ◆ Security Upgrade of locks, jamb, hinges and strike plates
- ◆ Insulation of door

(g) Windows

- ◆ Replacement of windows with dual pane
- ◆ Add security features

(i) Locks



(ii) Films, coatings, bars, grates or  
Lexan barrier

### 3. Phase III

#### i. Dust Collection

(a) Main Collector

(b) Ductwork

- ◆ Main runs
- ◆ Secondary ducts to each machine w/  
blastgate
- ◆ Flexible ducts from each secondary duct

(c) Accessories

- ◆ Blast gates
- ◆ Remote control keychain
- ◆ Floor sweep
- ◆ 2-1/2" coiled flex-hose, maybe 25 ft., to clean  
your shop
- ◆ Seal all the ducts
- ◆ Ground the flex ducts with copper wire

### 4. Phase IV

#### i. Finishes

(a) Walls

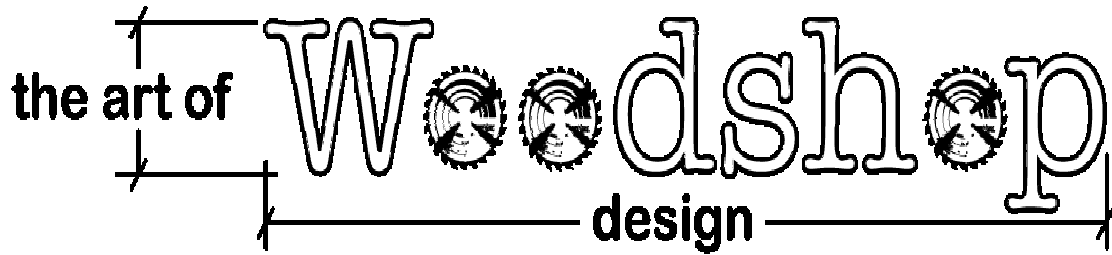
(b) Ceiling

(c) Floors

#### ii. Final lighting install

#### iii. Ceiling accessories

(a) Electrical outlets



- (b) Jig hangers
- (c) Air cleaner
- (d) Compressed air hose reel
- (e) Extension cord reel
- (f) Dust Collection Hose Reel for handheld power tool connection
- (g) Clamp Racks (Drop-Down) for clamping up panels and other glue-ups

#### 5. Phase V

- i. Position machines and tools according to layout design
- ii. Hook up machines to dust collection and electrical
- iii. Integral Storage
  - (a) Cabinets
  - (b) Hangers
  - (c) Shelves
  - (d) Drawers
  - (e) Magnetic strips

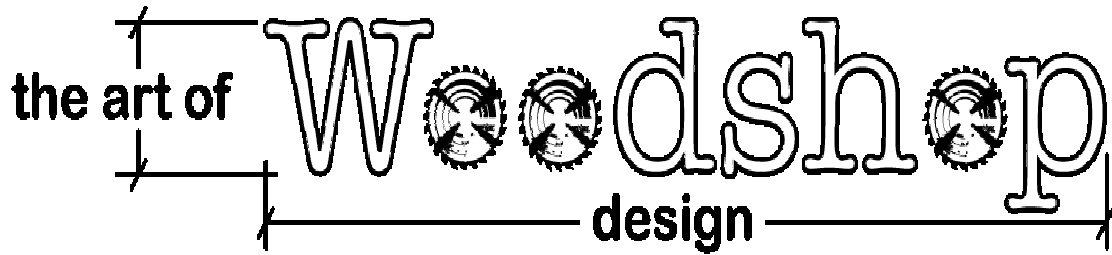
#### 6. Phase VI

- i. Landscape adjacent to building
  - (a) Irrigation sprinklers (recommend micro-irrigation)
  - (b) Hedges and plants for sound absorption
  - (c) Decorative plants and trellises

#### 7. Phase VII

- i. Finishing Outbuilding
- ii. Lumber Storage Outbuilding

#### 8. Phase VII



i. Upgrade each Station

- (a) Storage
- (b) Function
- (c) Minimize set-up time for each process
- (d) Duplicate certain items so they're at multiple stations (such as dust brushes)

ii. Jigs and Fixtures

- (a) Most often used jigs and fixtures-upgrade these one by one in priority order based on the impact they'll have on your work and saving time
- (b) Add new ones for each station to reduce time-consuming processes and to increase accuracy.

