NAILS

- The most popular fastener for securing wood
- Different styles and types for different uses
  - Common nails
  - Masonry nails
  - Finishing nails
  - Roofing nails
- Nails are sized by the term “penny”
STAPLES AND RIVETS

- Staples are available in a number of sizes for different applications, such as fastening wire in place.

- Rivets (pin or blind) are used to join two pieces of sheet metal.
USING THE BLIND OR PIN RIVET TO JOIN SHEET METAL

ALIGN THE TWO PIECES OF METAL TO BE JOINED

THEN DRILL A HOLE THROUGH BOTH PIECES OF METAL

THEN... SECURE THE RIVET WITH A RIVET GUN...

INSERT THE RIVET THROUGH THE HOLE

...AND THE RIVET IS IN PLACE
THREADED FASTENERS

• Wood Screws – Used to fasten materials to wood

• Self-tapping Screws – Used to secure sheet metal

Manufactured with hex heads…

…and drill tips…

…and installed using a special chuck that mounts in a drill
Other Screw Types

• Machine Screws or Bolts
  – Used in conjunction with nuts, which thread onto the screw
  – Manufactured with different head shapes including round and hex

• Set Screws
  – Can have different heads
  – Typically used to secure pulleys to motor or blower shafts
Anchor Shields

Anchor shields are often used to fasten objects to masonry. The shield is first inserted into a pre-drilled hole and then the bolt head is tightened to secure the shield.
Wall Anchors

Hollow wall anchors can be used in plaster, sheetrock, gypsum board or similar material.

Once the anchor is set, the screw can be removed as often as needed without affecting the anchor.
Wall Anchors

As the anchor screw is tightened in the wall, the sides of the wall anchor expand, securing the anchor in the wall.
TOGGLE BOLTS

Use a bolt…

…and a spring-loaded, folding toggle.
THE BOLT IS THREADED INTO THE TOGGLE
TOGGLE IS THEN FOLDED TOWARD THE BOLT

THE FOLDED TOGGLE IS INSERTED INTO THE WALL
TIGHTENING THE BOLT PULLS THE TOGGLE AGAINST THE WALL
Threaded rods are lengths of material that have threads on the entire length of the material.

Using these rods with angle steel and nuts, supports can be constructed for use with air conditioning equipment such as air handlers.
Always be sure that access and filter panels can be removed for service.
Other Fasteners…

- Cotter pins – Used to secure pins
- Pipe hooks – Wire bent to form a “U” to support pipes
- Pipe straps – Material used to mount pipes to a surface
- Perforated strap – Strapping material with spaced holes
- Nylon straps – Commonly used to secure flexible duct to sheet metal collars
- Grille clips – Used to mount supply registers and grilles
- Concrete fasteners – Used to secure materials to concrete