Carpentry Level One

Building Materials, Fasteners, and Adhesives 27102-13

Objectives

Describe the fasteners, anchors, and adhesives used in construction and explain their uses.

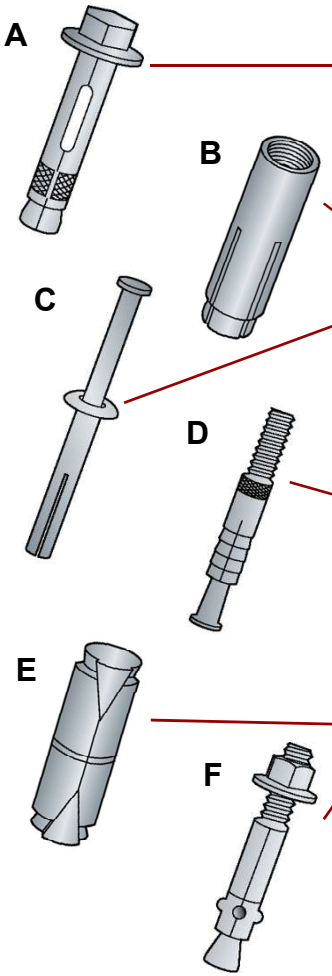
f. Identify various types of mechanical anchors and cite uses for each.
g. Identify various types of bolt anchors and explain how each is installed.
h. Identify various types of screw anchors and cite uses for each.
i. Identify various types of hollow-wall anchors and cite uses for each.
j. List the types of glues and adhesives used in construction.

Performance Task

3. Demonstrate safe and proper installation of drop-in anchors.

Kickoff Activity

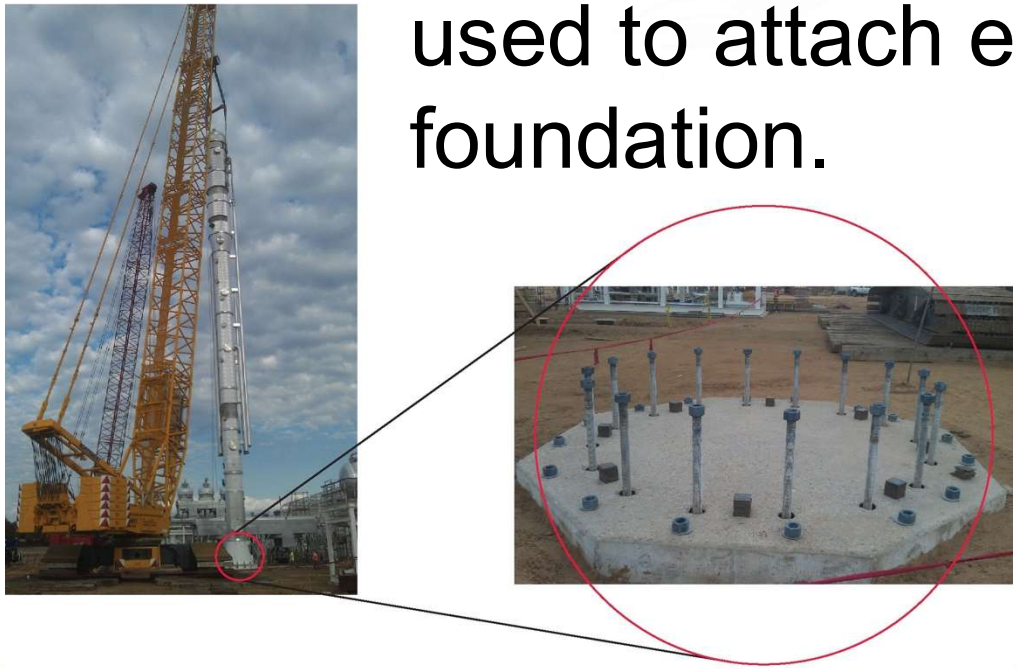
- Identify the pictured anchors.



1. Sleeve
2. Nail hammer-set
3. Wedge
4. Standard drop-in
5. Stud bolt
6. Double expansion

Section 5.6.1

- Anchor bolts are used to anchor the sill plate to a concrete or CMU foundation.
- Larger anchors bolts (ranging from 2 1/2" to 5" in diameter and 10' to 12' long) may be used to attach equipment to its foundation.



Section 5.6.2

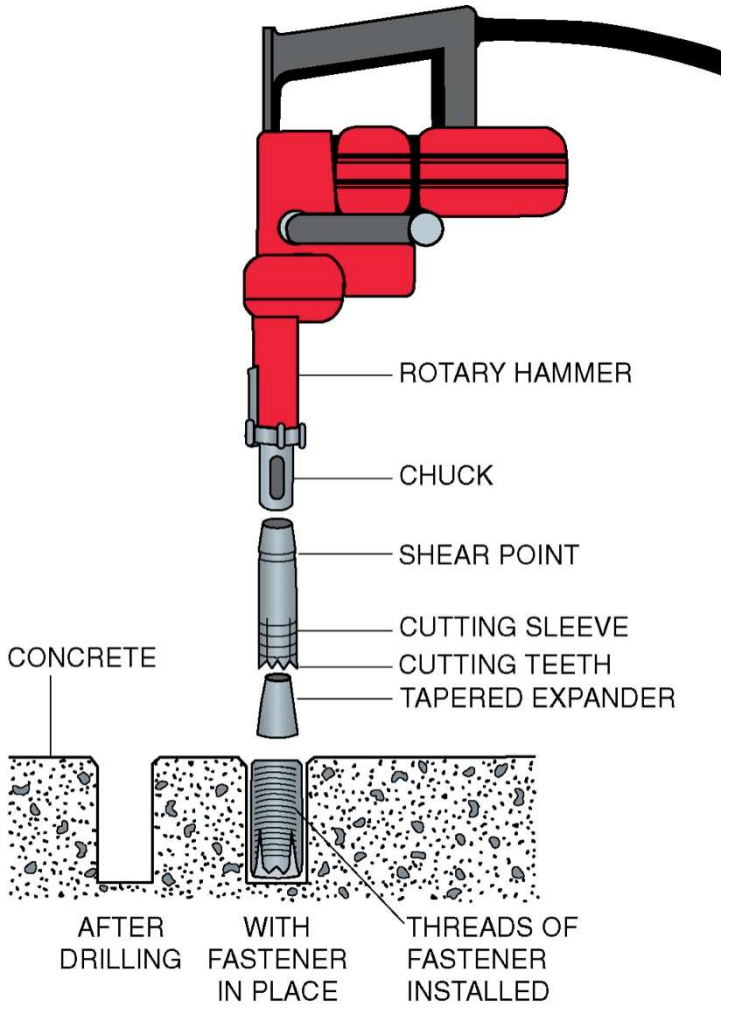
- One-step anchors are installed through the mounting holes in the component to be fastened.
  - Initially, the anchor and the hole into which the anchor is installed have the same diameter.
  - As the bolt or screw is tightened, the anchor expands to create a tight fit in the hole.

Section 5.7.0

- Common bolt-type anchors
  - Drop-in anchors are used for heavy-duty applications.
  - Expansion anchors are used in concrete and other masonry.

Section 5.7.3

- Self-drilling anchors are used in concrete and masonry.
  - Some types of self-drilling anchors have a cutting sleeve that is first used as a drill bit and later becomes the expandable anchor itself.



Section 5.7.4

- Installing an anchor bolt in hardened concrete
  1. Drill the anchor bolt hole the same diameter as the anchor bolt.
  2. Drive the anchor bolt into the hole using a hammer.
  3. Put a washer and nut on the bolt, and tighten the nut with a wrench until the anchor is secure.

Section 5.7.5

- Epoxy anchoring systems can be used to anchor threaded rods, dowels, and other fasteners in solid concrete, CMUs, and brick.

Section 5.8.0

- Screw anchors are light-duty anchors that are installed flush with the surface of the base material and used in conjunction with sheet-metal, wood, or lag screws.
  - Fiber and plastic anchors are common types of screw anchors.

Section 5.9.0

- Hollow-wall anchors
  - Used for hollow materials and thin materials such as concrete plank, CMUs, structural steel, gypsum board, and plaster

Section 5.9.1

- Toggle bolts
  - Consist of a slotted bolt or screw and spring-loaded wings
  - When inserted through the item to be fastened, then through a predrilled hole in the wall or ceiling, the wings spring apart and provide a firm hold on the inside of the hollow wall or ceiling as the bolt is tightened.

Section 5.9.2

- Sleeve-type wall anchors
  - Standard—installed by drilling a mounting hole to the required diameter
  - Drive-in—driven into the base material without the need for a mounting hole

Section 5.10.1

- Common types of glue
  - Animal or hide glue
  - Polyvinyl or white glue
  - Casein glue
  - Urea formaldehyde or plastic resin glue
  - Resorcinol resin or waterproof glue
  - Contact cement

Section 5.10.2

- Adhesives for fastening sheet materials to framing members
  - Construction adhesive
  - Neoprene adhesive
  - Contact cement
  - Drywall adhesive
  - Instant-bond glue
  - Epoxy

Section 5.10.3

- Mastics
  - Used to apply floor coverings, roofing materials, ceramic tile, or wall paneling
  - Important to apply with good coverage and no voids for satisfactory bonding
  - Follow manufacturer's recommendations for adhesives and secure installation

Wrap Up

In small groups, identify the fasteners and anchors presented by the instructor. If a group identifies the fastener or anchor correctly, other members of the group need to provide an application and safety precaution for the fastener/anchor.

Next Lesson: Review and Testing
Review Sections 1.0.0–5.10.4