EQUIPMENT AND PROCESSING TECHNIQUES

Equipment types: Make equipment selections based upon the type of activity to be carried out and the materials involved. The table below groups construction and demolition (C&D) processing equipment into three main types:

- ♦ conveying,
- ♦ crushing/reducing, and
- ♦ screening/separating.

	EQUIPMENT	MATERIALS HANDLED
Conveying Equipment	Conveyors transfer materials from one location to another. The most common type of conveying equipment used to process C&D is a belt conveyor which consists of a strip of belting material that is looped around a shaft on each end.	All types of C&D
Crushing/ Reducing Equipment	Size reduction is the unit operation in which waste materials are mechanically reduced in size. The objective is to obtain a product that is reasonably uniform and considerably reduced in size in comparison with its original form.	
1. Hydraulic breaker or jackhammer	A pneumatic impact tool is used for breaking oversized material into pieces small enough to be processed by the next crusher/reduction unit in the process.	Concrete pavement, foundations.
2. Jaw Crusher	Designed to crush large chunks of concrete, asphalt, etc.	Concrete, asphalt, pipes, steel, rebar, manhole lids, etc. Compressible materials such as wood and plastics tend to jam up the jaws and severely reduce throughput.
3. Hopper	Receives the chunks and feeds them to the cone, or impactor.	Can choose either cone or impactor, or both.

	EQUIPMENT	MATERIALS HANDLED
4. Cone	Crushes concrete and asphalt to aggregate size	Can choose either cone or impactor, or both.
5. Impactor	Crushes concrete and asphalt to aggregate size	
Hammermill	Also known as wood hogs, can process a variety of wood materials. Reduction occurs as the heavy hammers, attached to a rotating element, impact the material as it enters and eventually force the shredded material through the discharge of the unit.	Wood
Stump Grinder	Large machines, often trailer-mounted and top-loaded by on-board knuckleboom loaders. The machine is more expensive than a wood hog but can handle large bulky materials.	Wood, stumps
Rotary Shear Shredders	Low-speed, high-torque machines that rip and tear material apart.	Ideal for primary reduction of bulky wood material, such as pallets, crates and stumps, up to 3" to 4" in diameter. Large units can also reduce concrete, steel drums, white goods and furniture.
Screw Shredders	Shredding is done by two parallel screws with opposing threads.	bulky wood material, including tree stumps, brush, logs, scrap lumber, clean wood, pallets, trees, yard trimmings.
Screening/ Separating Equipment	Screening is a unit operation used to separate mixtures of materials of different sizes into two or more size fractions by means of one or more screening surfaces.	
Grizzly Screen	Vibrating grizzly feeders are ideal for feeding rubble and mixed C&D material to the primary crusher.	rubble and mixed C&D material
Vibrating Screen	Vibrating screens can be designed to vibrate from side to side, vertically, or lengthwise.	

	EQUIPMENT	MATERIALS HANDLED
Trommel Screen	An inclined rotating cylindrical screen where material to be separated tumbles and contacts the screen several times as it travels down the length of the screen.	
Disc Screen	Disc screens consist of parallel horizontal shafts equipped with interlocking lobed (or star-shaped) discs that run perpendicular to the flow of infeed material.	Wood
Air Classifiers	A separator which uses an air stream to separate materials based on the weight difference of the material.	Commingled waste (plastic, glass, paper, metal)
Flotation	A unit operation which employs water to separate wood from rubble-based material.	separate wood from rubble-based material
Magnetic & Electric Field Separation	Uses the electrical and magnetic properties of waste materials to separate them.	
Magnetic Separation	Designed to remove ferrous metals from a moving bed of material.	ferrous materials
Electrostatic Separation	High-voltage electrostatic fields can be used to separate nonconductors of electricity, such as glass, plastic, and paper, from conductors such as metals.	nonconductors such as glass, plastic, and paper
Eddy Current Separation	Separates non-ferrous metal (usually aluminum cans) from the waste stream by passing a current through the materials. These systems can be expensive.	
Manual Picking Station	An elevated platform with a conveyor and a catwalk along both sides of the conveyor. Manual sorting is done by removing specified items from the conveyor and dumping`` them in the appropriate chute provided.	

Processing techniques - wood, concrete, and asphalt

Table: The table below describes various processing techniques for wood, concrete, and asphalt.

Wood Processing	
Wood	C&D wood waste can be processed according to the intended end use. Options can include: • chipping with a mobile chipper or grinder at the site where the waste is produced; • hauling to a processing facility that accepts and processes wood waste only; or, • delivering to a full-service processing facility where multiple types of C&D wastes are processed.
Non-wood waste:	Non-wood wastes are first separated from the waste. If not source-separated, some facilities use flotation tanks to separate wood from non-wood material.
Concrete and asphalt processing	
Concrete	Portland cement concrete (PCC) is commonly called "concrete." Concrete is mostly made of aggregate; the cement serves to bind the aggregate together. Concrete can be crushed on-site and used immediately for aggregate base, or hauled to a crushing plant.
Asphalt concrete processing	Asphalt concrete (AC) pavement is commonly called "asphalt." Asphalt is mostly made of aggregate (94%); the asphalt binder serves to bind the aggregate together. Asphalt can be crushed on-site, mixed with crushed concrete, and used immediately for aggregate base, or hauled to crushing plant.