



ECTC Standard Guide for

Rolled Erosion Control Product (RECP) Fasteners

ECTC Designation: [SG01-22]

1. SCOPE

- 1.1. This standard guide covers the description, advantages, limitations, typical specifications, and typical applications of various fasteners used to anchor Rolled Erosion Control Products (RECPs).
- 1.2. The purpose of the guide is to maximize rolled erosion control product installation and intimate contact with the soil by proper fastener selection and deployment.
- 1.3. There are several fastener products commonly available in the market including staples, pins, helical pins, biodegradable fasteners and earth anchors. This guide will serve as a resource to help specifiers and designers decide which fastener best suits their project needs.

2. RECP FASTENERS

2.1. STAPLES

- 2.1.1. Description: Staples are typically U-shaped, steel wire fasteners widely used for RECP installation. Polylactic acid (PLA) plastic staples are also available. Staples are sometimes referred to as sod or turf staples.
- 2.1.2. Advantages: Staples are readily available and an economical fastener option.
- 2.1.3. Limitations: Staples may be difficult to drive into heavily compacted soils and have limited pull-out resistance. Thusly, longer staples are recommended in sandy soils.
- 2.1.4. Typical Specifications: Staple lengths vary, common variations are 4", 6", 8", 10" or 12" long. Leg spacing is typically 1" or 2" and 9 or 11 gauge steel wires. Plastic varieties are also available.
- 2.1.5. Typical Applications: Mild slopes and low flow channels.

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2.2. PINS

- 2.2.1. Description: Pins are often referred to as a fabric pin, washer pin, round top pin, or landscape pin/nail.
- 2.2.2. Advantages: Compared to staples, pins have a higher pull-out resistance and the ability to be used in heavily compacted soils.
- 2.2.3. Limitations: Pins are less economical than staples.
- 2.2.4. Typical Specifications: Pins are typically available in 12", 18" & 24". Pins typically have a single leg, rounded head and range from 7 to 9 gauge.
- 2.2.5. Typical Applications: Mild to moderate slopes and low to medium flow channels.

2.3. HELICAL PINS

- 2.3.1. Description: Helical pins are often referred to as pig tail anchors, twist pins, or corkscrew anchors.
- 2.3.2. Advantages: Helical pins have a higher pull-out resistance compared to stakes and pins.
- 2.3.3. Limitations: Helical pins may be challenging to drive into highly compacted soils and take longer to install compared to staples or pins.
- 2.3.4. Typical Specifications: Helical Pins typically are 8" – 12" long, with a flat head to accommodate an installation chuck with a straight neck and a helical twist at the bottom.
- 2.3.5. Typical Applications: Mild to steep slopes and low to high flow channels.

2.4. EARTH ANCHORS

- 2.4.1. Description: Earth Anchors are often referred to as percussion driven earth anchors, bullet anchors, or tendon anchors.
- 2.4.2. Advantages: Strongest pull-out resistance and superior longevity of fasteners covered in this document. Earth anchors are typically used to increase geotechnical stability for certain engineered applications.

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2.4.3. Limitations: Cost and they may be labor intensive to install.

2.4.4. Typical Specifications: Earth anchors typically have a top plate, a cable/ tendon, and a drivable anchor head. Cable/ tendon lengths are dependent on applications.

2.4.5. Typical Applications: Steep and/or engineered slopes and high flow channels.

2.5. REBAR

2.5.1. Description: Rebar fasteners are commonly “J” hooks or “U” hooks. The “J” hook has 2 legs, one being shorter than the other. The “U” hook is shaped similar to a staple with 2 legs equal length.

2.5.2. Advantages: Rebar fasteners can be customized for more specific requirements.

2.5.3. Limitations: Smooth edges may result in lower pull-out resistance compared to rougher materials.

2.5.4. Typical Specifications: Most rebar fasteners are #3 (3/8” DN) or #4 (1/2” DN) rebar.

2.5.5. Typical Applications: Below the water line on shores and securing articulated concrete systems.

2.6. BIODEGRADABLE FASTENERS

2.6.1. Description: Wooden stakes and pegs are available in different diameters and lengths. Stakes, staples, and pegs are available in other biodegradable forms such as Polyhydroxyalkanoate (PHA) “plastic”, made from plant components. “Natural plastics” eliminate the use of petroleum-based materials.

2.6.2. Advantages: Wildlife friendly, decreased environmental residual, PHA materials do not require a pre hydrolytic reduction in molecular weight for degradation to begin.

2.6.3. Limitations: Price, longevity, and they may be sensitive to climatic conditions.

2.6.4. Typical Specifications: 100% biodegradation from bacteria in accordance to ASTM D5338 & ASTM D5271.

2.6.5. Typical Applications: Whenever biodegradable products are required like in wildlife or other environmentally sensitive areas.

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