

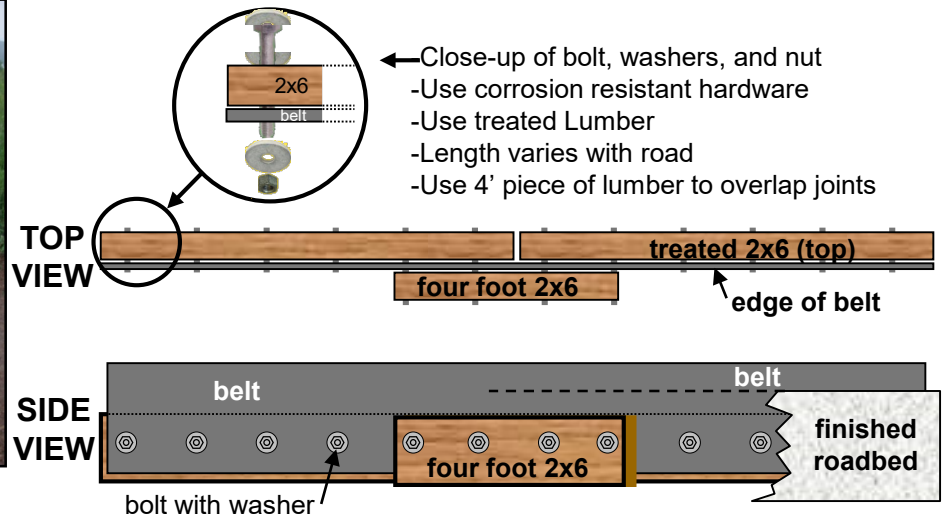
Technical Bulletin

Conveyor Belt Diversion

CONVEYOR BELT DIVERSION – A structure, consisting of a wide belt attached to treated lumber and buried in the road, that is used on unpaved access roads to divert water and prevent run-on to the main road.



Completed Conveyor Belt Diversion



PURPOSE

To reduce erosion on an unpaved road by diverting concentrated flow off of the road surface, and to reduce negative impacts to public roads caused by uncontrolled run-on flow from unpaved access roads. Generally, Belt Diversions benefit both the private access and the public road.

BENEFITS OF A CONVEYOR BELT DIVERSION

- Forces water off the road, similar to water bars or grade-breaks, to reduce erosion on the road surface.
- Functions when road crown is lost (provided Belt Diversions are properly installed and properly spaced).
- Belt Diversions give and spring back when run over, and will not deform under heavy hauling..
- Can have a long life expectancy with relatively low maintenance.
- Belt Diversions are inexpensive and easy to install.

WHERE TO USE A CONVEYOR BELT DIVERSION

- **On low volume access roads**, to prevent run-on to public roads (consider for driveways, farm lanes, and camp lanes). Belt Diversions are NOT suitable for roads that receive high traffic volume, fast traffic, routine grading, or snow plowing. They are a tool for “off right of way” water issues
- Where there is evidence of flowing water damage to the surface of an upslope access road near the intersection with a public road.
- On unpaved roads that do not receive sufficient surface maintenance to maintain proper crown or cross-slope.

CONSIDERATIONS

- Belt diversions require a stable outlet. A rock dissipater may be needed at the end of the diversion to slow water and disperse flow.
- Multiple Conveyor Belt Diversions can be used to prevent the buildup of erosive water volume. Spacing between each diversion is determined by the grade of the road, the stability of the surface material, available outlets, and the amount of water entering the road drainage system (including run-on sources).



Low volume access lanes such as this are ideal candidates for diversions.

TYPICAL REQUIREMENTS:

MATERIALS and TOOLS (to Build)

- (1) Conveyor Belt ½" x ~15" x necessary length
- Treated 2"x6" lumber. Total length depends on road width. Overlap joints with 4' length board (see diagram on front).
- (12) 3/8" diameter bolts and nuts. Bolt length varies with belt.
- (24) wide diameter washers
- Tools: utility knife; drill; hammer; adjustable wrenches

EQUIPMENT (to Install)

- Backhoe, excavator, or trenching machine
- Upright tamper (Jumping Jack)
- Shovel and rake

CONSTRUCTION: Building diversion (see diagram on front)

Note: These instructions assume 20' length. This will vary.

1. Cut conveyor belt into ~15" x 20' piece.
2. Lay belt on two 2"x6"x10' boards laid end to end. Leave ~10" of belt above board (5" to be buried & 5" left above road).
3. Starting at one end, drill holes through belt and lumber (~2' spacing) and secure with bolts and washers. **(Pic 1)**
4. On diversions longer than 16', a lumber joint is necessary. Longer bolts should be used to attach a 4' piece of lumber on the opposite side of the belt at the joint (visible in **Pic 2**).

INSTALLATION (Installing diversion)

1. Excavate a trench diagonally across the road
 - a. Angle: Dig trench at min 30% angle to road (**Pic 3**).
 - b. Fall: Minimum of 1% of continuous fall toward the outlet.
 - c. Width: Wide enough trench to allow for compaction equipment beside the belt diversion (typically ~18").
 - d. Depth: The trench should be deep enough to provide 4"-5" of cover over the top of the supporting 2" x 6" board.
2. Place the diversion against bottom edge of the trench, leaving ~5" of the belt exposed above the final road surface. **(Pic 2)**
3. Backfill the trench and compact with a tamper. **(Pic 3 & 4)**
4. Place stones at the end of the diversion to control erosion, but be careful not to prevent flow from freely leaving the belt.
5. Mark Conveyor Belt Diversion with reflective posts along the road edge to avoid damage during future maintenance.

ADDITIONAL NOTES

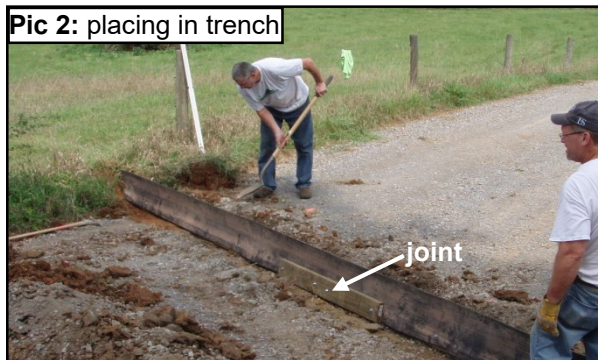
- Be sure diversion is long enough to angle across the roadway and prevent water from returning to the road around the belt.
- Used belts may be available at a local quarry or mine at low or no cost. Belts typically come in 26"-30" widths. Unless they contain steel, most belts can be cut with a utility knife.
- Diversions must be periodically cleaned to ensure function.
- Once the belt is cut in half lengthwise, it will begin to bow. You will need to adjust the belt as you secure it to the boards.
- For longer diversions. It may be easier to construct the belt, then remove the 4' joint board. The diversion can then be folded in half for transport and reassembled on site.

This document is based on a brochure produced by PA's Indiana County Conservation District.

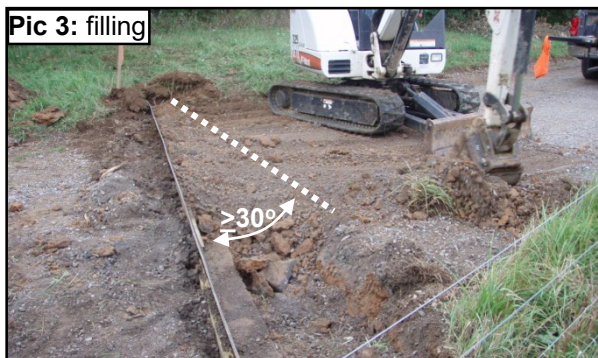
Pic 1: building



Pic 2: placing in trench



Pic 3: filling



Pic 4: compacting



Pic 5: completed

