A dip and reverse slope in a road surface with an out slope in the dip for a natural cross drainage.

- Effective on truck haul roads with low gradients
- Allows higher vehicle speeds than rolling dips
Temporary stream crossing made of hardwood cants bolted together that can span short distances.

- Easily installed and removed
- Handles heavy traffic
- Reusable
- Functions under high water conditions

Click to learn more about "Bridge Mats"
Operating on the Contour

Operating across the slope, following the contour of the land as opposed to operating up and down hills.

- Reduces runoff water and increases infiltration
- Reduces soil erosion
- Important for mechanical site prep and machine planting

Click to learn more about “Operating on the Contour”
Crowned Road

Road in which the centerline is the highest point on the road plane

- Promotes quick drainage
- Used in combination with side ditches
- Used on high volume permanent roads
- Reduces rutting and extends the longevity of the road

Click to learn more about "Crowned Roads"
Culverts – Cross Drainage

A conduit or pipe through which surface water is transferred between side ditches for dispersal

- Reduces ditch scouring and maintains road integrity
- Helps manage runoff water on high volume roads

Click to learn more about “Cross Drain Culverts”
Culverts – Stream Crossing

A conduit or pipe through which surface water can flow under roads that cross streams

- Ideal for permanent crossings on streams with high banks
- Must be sized correctly and installed properly to minimize blowouts
- Allows water flow and fish passage

Click to learn more about “Culverts as Stream Crossings”
Daylighting Road

Removal of trees along the edges of a road to reduce the shade and promote faster drying of the road surface.

- Reduces ponding of water on roadway
- Makes road more accessible
- Creates more stable roads by preventing rutting

Click to learn more about “Daylighting Roads”
Retired rail cars that have had the trucks and wheels removed

- Handles heavy traffic
- Minimizes sedimentation and erosion
- Functions under high water conditions
- Relatively expensive but durable and permanent

Click to learn more about “Flat Car Bridges”
Logging Slash/Debris

Residual woody material such as limbs, tops, and cull wood that remain in the forest following harvest operations.

- Effective in stabilizing temporary roads
- Readily available and inexpensive
- Can be used to limit access on retired roads

Click to learn more about “Logging Slash”
A permanent crossing for low flow streams with low banks and a firm stream bed suitable for driving across.

- Approaches should be stabilized.
- Geotextile fabric, geoweb, and aggregate may be used to reinforce stream bed.
- Low maintenance.
- Truck crossing only.

Click to learn more about “Low Water Crossings / Fords”
Rip-rap or aggregate placed at the outlet of a culvert or water-control device to reduce erosion

- Reduces scouring of stream channel
- Helps culverts function properly
- Reduces velocity of stream flow

Click to learn more about “Outfall Protection”
Establishment of grass and/or legume vegetation on disturbed soil areas not expected to naturally revegetate in time to prevent erosion.

- Effective at stabilizing roads and minimizing erosion
- Seeding rates found in Texas BMP Handbook
- Relatively inexpensive

Click here to learn more about "Seeding Roads"
Click here for "Seeding Rates"
Aggregate placed on road ways to reduce the impact of rain or surface runoff

- Reduces erosion potential
- Improves access during wet conditions
- Relatively expensive
- Primarily used on high traffic roads

Click to learn more about “Rock Armoring Roads”
A shallow depression built diagonally across a light duty road or trail to divert surface water runoff from the road or trail.

- Used on steeper grade roads than broad-based dips
- Provides cross drainage of in-sloped haul roads.
- Can be used in place of cross drain culverts
Streamside Management Zone (SMZ)

- ≥ 50 foot wide buffer strip of trees along each side of stream bank
- Filters sediment from runoff
- Provides shade to streams and habitat to wildlife
- Provides stability of stream bank

Click to learn more about “SMZs”
A cross drainage diversion ditch and/or a hump in a trail or road for the purpose of diverting surface water runoff into roadside vegetation

- Turns water runoff, doesn’t dam it
- Very effective drainage method on limited use roads, trails, and firelines
- Can be reinforced with hay or grass

Click to learn more about “Water Bars”
A water turnout or diversion ditch constructed to move and disperse water away from the road.

- Disperses water from side ditches to forest floor
- Minimizes scouring along road ditch and helps maintain integrity of road
- Should not discharge into streams or steep slopes

Click to learn more about “Wing Ditches”