

better culverts

minimizing water on road surface

Get the right size. The most important aspect of culvert installation is selecting the proper size for the job. A culvert too small will not effectively move storm runoff, causing erosion. One too large wastes money. Ideally, it would be best to install a culvert large enough to accommodate heavy flooding of whatever water source is nearby. If you are considering installing culverts you should consult a trained professional. MRC has a culvert calculator to help you get the proper size you'll need. **PLEASE NOTE: Installation of a culvert usually requires a 1603 permit from the Department of Fish and Game.**



helpful tips

Important! Remember, all culverts are subject to eventual failure. It is very important, however, to properly align, bed, backfill and cover each culvert that you install.

Preparation Before beginning culvert installation, the stream you are working with must be diverted.

Alignment The culvert should be aligned with natural stream channel. If it is not aligned properly, there may be erosion and a higher potential for debris plugging the culvert.

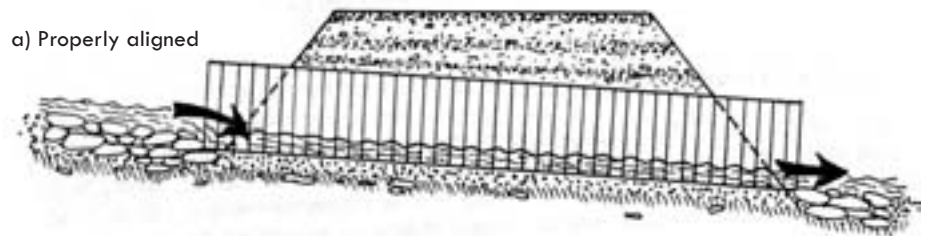
Insetting A culvert should be inset slightly into the natural streambed so that water drops several inches as it enters the pipe. Those set too low will plug with debris and those too high will allow water to undercut the culvert.

Bed A culvert bed can be made of either compacted rock-free soil or gravel. If gravel is used, a filter fabric is needed to separate the gravel from soil to minimize the potential for soil piping (water flooding under the culvert instead of going through it).

Sagging Most culverts sag after they are buried. To prevent this, install the culvert with a slight hump in the middle to compensate for the sag. The general rule of thumb is to raise it 1.5 - 3" for every 10 feet.

Backfilling Backfill material should be free of any large rocks, limbs or other debris. Before

a) Properly aligned



backfilling, cover each end of the culvert; then begin backfilling at the center of the culvert. The material should be tamped down and compacted as the process of backfilling is happening. You should use a vibrating compactor for all backfilling tasks. After this is completed, each end of the culvert must be armored.

Maintenance It is important to regularly check culverts to prevent road damage and lower road maintenance costs. The most important times to check culverts is after the first storm of the season, after any major storm, and at the end of the rainy season. During these times, the most material is being moved from the road surface. It is very likely that a culvert will become plugged. Remove floating debris from trash rack, move to where it will not get back in watercourse. Bent culvert ends should be straightened. Sediment deposits should be excavated.

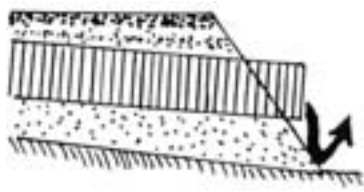
b) Inlet too low



c) Inlet too high



d) Outlet too high, resulting in shotgun culverts and much erosion, releasing sediment into nearby creeks



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