COUNTY OF APACHE

County Engineering

&

Roads Department

Culvert Installation Policy, Procedures, and Fees

COUNTY OF APACHE
APPLICATION TO ENTER UPON AND USE COUNTY RIGHT-OF-WAY
APPLICATION FEE $15.00 Email: btalano@apachecountyaz.gov

APACHE COUNTY ENGINEERING
PO Box 238
St. Johns, AZ 85936

JOB#
Est. Constr Start: _____

Est. Constr Comp: _____

The undersigned herewith makes application for a permit to enter upon and use a portion of the right-of-way of the Public Highway, Street, or Alley in or near (Subdivision, Town, etc.)
For the purpose of:_____

_____

(Attach a sketch showing the location of the work in relation to known section corner or other well-known reference point.)

FOR AND IN CONSIDERATION of the granting of a permit for the purpose set forth herein, the PERMITTEE hereby agrees, covenants, and binds said PERMITTEE to the conditions on the back hereof.

IN WITNESS WHEREOF this application has been duly signed this ____ of _____, 20____.

Name of Owner: _____
Contractor or Owner's Agent: _____
Name of Applicant: _____

Signature of Applicant: _____
Address: _____
Telephone Number: _____

Applicant - Do Not Write Below This Line

This application is approved with the following Directions, Requirements and Specifications:

PERMIT AND LICENSE NO.

A permit and license is hereby issued to the foregoing Permittee for the purpose contained in the application, upon the expressed condition that every agreement and covenant therein contained is faithfully performed, and said work is performed in accordance with the approved plans and specifications and in accordance with any stipulations contained herein.

Dated: _____

_____
Public Works Director

Construction to be completed by: _____

Telephone: 928-337-7528

OFFICE OF
APACHE COUNTY ENGINEERING
P.O. BOX 238
ST. JOHNS, AZ 85936

APACHE COUNTY RIGHT-OF-WAY PERMIT

Name:_____

Application No.#_____ Job Number_____

Application File Fee @ $15.00 Per Permit	_____
First Nine Electric/Telephone Poles @ $1.50 ea.	_____
First Nine Guy Wires for Poles @ $1.50 ea.	_____
Each Pole or Guy Wire Thereafter @ $1.25 ea.	_____
Underground Cable @ $00.08 per ft.	_____
TOTAL UTILITY	_____

CONDITIONS

1. The Permittee hereby agrees to save and hold harmless Apache County, any of its departments, agencies, officers or employees from all cost and damage incurred by any of the above and from any other damage to any person or property whatsoever, which is caused by any activity, condition, or event arising out of the performance or non-performance of any provision of this agreement or the exercise of this permit or license by the Permittee, any of its agents, or any of its independent contractors. The above cost incurred by the County, any of its departments, agencies, officers or employees shall include in the event of any action, court costs, expenses of litigation and reasonable attorneys' fees. When any above cost or damage occurs as aforesaid, the Permittee assumes the burden of proof that the above activity, condition, or event did not cause such cost, damage, or other damage.

2. All work done shall be at the sole cost and expense of the Permittee and shall be done at such time in such manner as to be least inconvenient to the traveling public, and as directed by the agent of the Permittor. Work must be finished in the time specified on the permit.

3. When the proposed work is completed, the Permittee shall repair the roadbed and replace the surfacing material thereon and shall leave the said road in as good or better condition as it was before any action by the Permittee, insofar as the road is affected by the Permittee.

4. If the subject of the permit or license fails to pass final inspection, the Permittee will remove or replace the same within such time as specified by written notice from the Permittor or if at any time hereafter, any material used by the Permittee in replacing or reconstructing any part of said highway proves defective, the Permittee will replace the same with the kind and quality specified by the Permittor.

5. If title and possession of any property placed upon the right-of-way by the Permittee remains in the said Permittee, the Permittee shall and will promptly perform all necessary repairs which work upon written notice from the Permittor and will not permit or allow any condition to exist could be a hazard or source of danger to the public.

6. If at any time hereafter, the right-of-way or any portion thereof, occupied and used by the Permittee may be needed or required by the Permittor, any permit or license granted in pursuance of this application, may be revoked by the Permittor and all rights thereunder terminated. Upon sufficient notice, the Permittee shall and will remove all property belonging to said Permittee.

7. In the event that the work to be done under the authority of the Permit necessitates the creation of any hazard or source of danger to any person or vehicle using said highway, said Permittee shall and will provide and maintain at all times, during the existence of said hazard, sufficient barriers, danger signals, lanterns, detours, and other such measures of precaution as the Permittor shall direct.

8. If the work to be undertaken is of such a nature or character that the Permittor deems it necessary that said work be laid out, or inspected by the Permittor, the Permittee will defray any and all expenses incurred by the Permittor and herein agrees to reimburse the Permittor. For that purpose, the Permittee will deposit with the Permittor a sum of money in the amount necessary to cover all costs incurred by the Permittor.

9. Permittee shall never install any underground device on the shoulder of the road or in the bottom of a roadside drainage ditch except by written permission from Apache County.

10. Permittee must provide a complete traffic control plan and approved prior to road work construction by the Engineering Department.

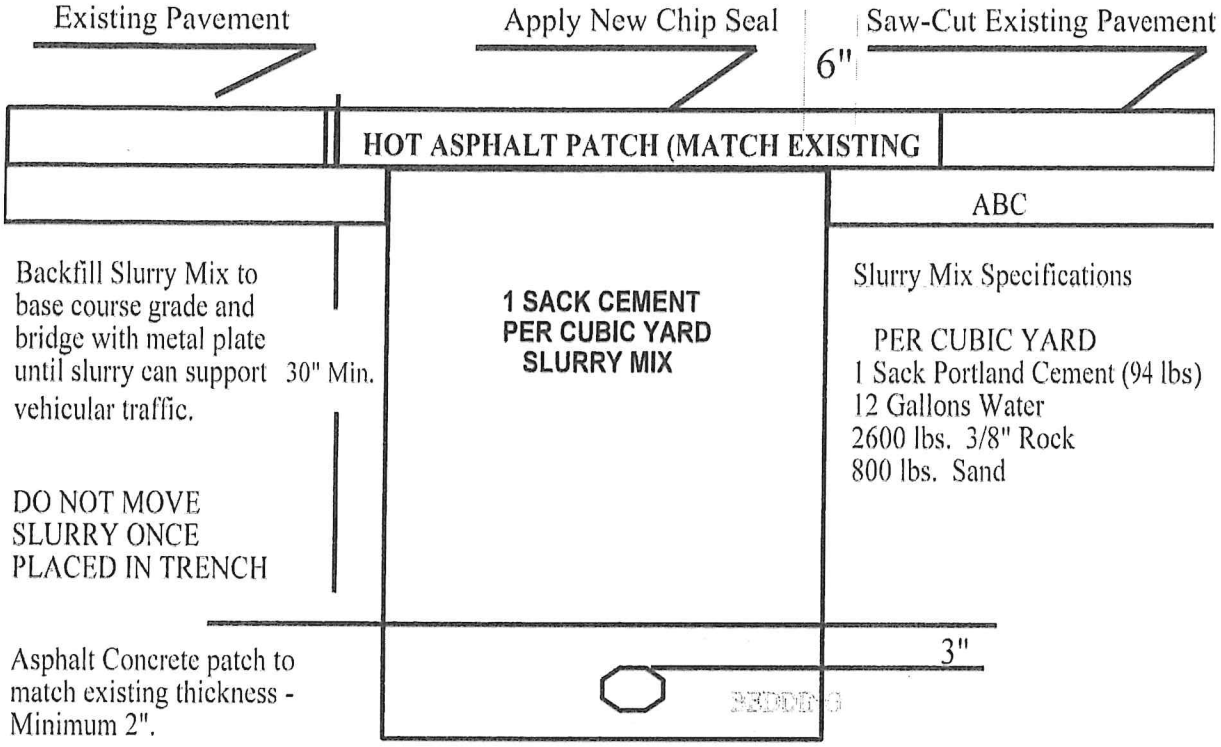
11. Permittee must provide a Certificate of Liability Insurance to include Apache County as additional insured prior to permit approval.

12. All exposed trenches must be covered during any departure of construction work during either day or nighttime hours.

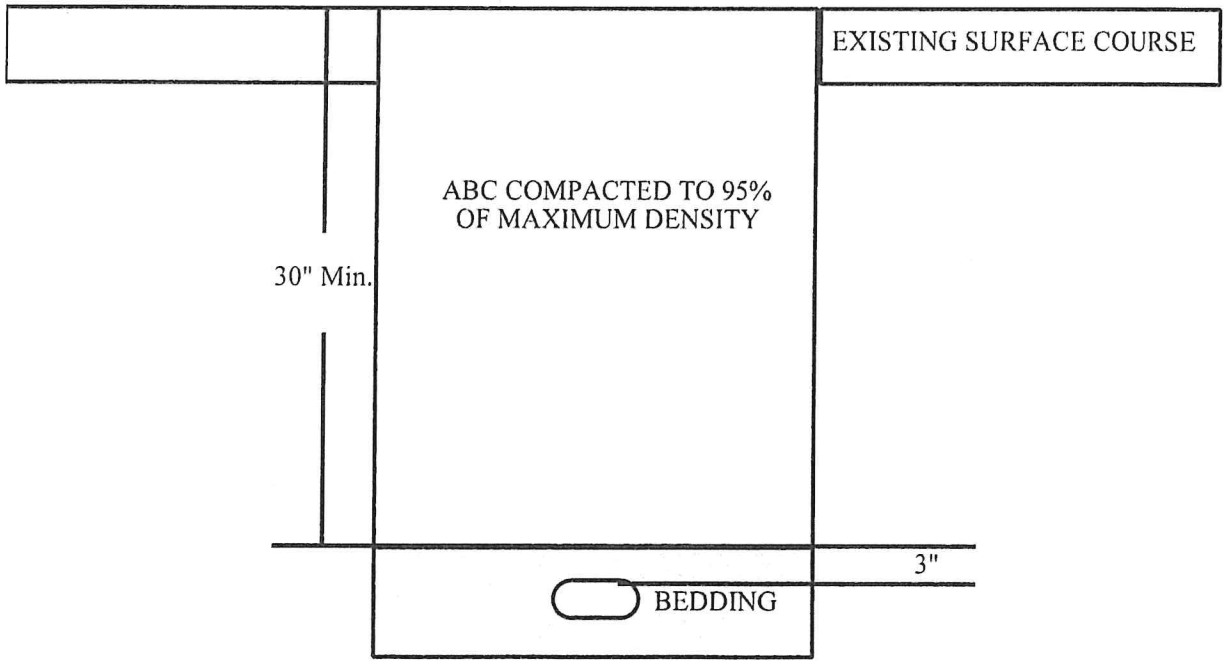
13. The Permittee must provide either a site safety plan, construction plan or written scope of work for approval prior to the issue of the ROW permit by the Apache County Engineering Department.

APACHE COUNTY "UTILITY CUT" STANDARDS

TYPE "A" PAVEMENT PATCH



TYPE "B" PAVEMENT PATCH



Permittee shall never install any underground device on the shoulder of the road or in the bottom of a roadside drainage ditch except by written permission from Apache County.

Office of
Apache County Engineering
P.O. Box 238, St. Johns, AZ 85936
Telephone: 928.337.7528

Culvert Installation on County Right-of-way

MINIMUM SPECIFICATIONS

All culverts installed on the county right of way shall be a minimum diameter of eighteen (18) inches, a minimum length of twenty (20) feet, and be constructed of 16 gauge galvanized corrugated steel. No concrete or plastic culverts will be permitted.

INSTALLATION COSTS

The county will install a culvert with costs starting at $41.50 per linear foot. the cost of installation only. You still need to provide the culvert.

WHERE TO PURCHASE

This is You may purchase your culvert from the vendor of your choice and there are multiple suppliers in the area. Please ensure that the culvert is onsite for installation and removed from any delivery vehicle. Ideally, have it placed where it is to be installed. We do not make recommendations for a supplier but have listed a few for convenience.

Pacific Ponderosa	928-368-6968
Canyon Pipe and Supply	928-532-5698
Tractor Supply	928-532-5232

STEPS TO TAKE

1. Obtain a permit and schedule a site assessment by contacting Apache County Engineering Department.
2. Mark the location where you want the culvert to go (stakes, flags, or paint). The driveway must be on a county-maintained road. We do not install culverts on "N" roads (non-system roads)

3. Contact AZ Blue Stake (8-1-1 or 1-800-STAKE-IT) to confirm you can dig in that area. AZ Blue Stake laws require all entities to notify the Arizona Blue Stake center two working days prior to opening an excavation or otherwise digging so that all underground public utilities can be properly located and marked.
4. Once you receive the assessment you can purchase the proper culvert.
5. If Apache County is installing the culvert, call the engineering department so we can schedule the work. *There could be long waiting periods due to previous scheduled work or weather conditions.*
6. You must provide traffic control per MUTCD. You cannot leave an open trench overnight.
7. After installation, the culvert and any future maintenance that might be needed is the responsibility of the landowner.

IF YOU WISH TO HAVE THE COUNTY INSTALL THE CULVERT

Once you have purchased the pipe, you must contact Apache County Engineering to schedule the work. The order will be processed for a crew to go out to set and cover the pipe. We will schedule the work and install the pipe as quickly as we can. Installation starts at $41.50 per linear foot.

IF YOU WISH TO INSTALL THE CULVERT YOURSELF

The county will specify the size of pipe and will inspect the installation prior to backfilling. You must call the engineers office before installation to schedule the inspection. You must follow specifications. Pipe that has been installed incorrectly without an inspection is subject to removal by the county.

Apache County will not sell or deliver culverts for private or commercial use. All persons needing a culvert installed must acquire culverts for themselves and have them delivered to the site where they are to be installed. The owner is responsible for keeping culverts clean and free flowing. The owner is responsible for keeping culverts visible for motor grader operators. Apache County is not responsible for any damage to the culvert, or any damages caused by the culvert.

Signature of applicant Date

Apache County Culvert Installation Assessment

Date: _____

Residence Name: _____

Contractors Name: _____

Pipe Address Location:

County Road #	Parcel #	Lot #	911 Address

Corrugated Metal Pipe (CMP) Only

Pipe Diameter:

18"	24"	30"	32"	36"	Other

Pipe Length:

20"	30"	40"	50"	60"	Other

End Piece Required:

Yes	No

Backfill Type:

Compacted ABC	2 Slack Slurry

- All CMP pipe location and installation must be approved by Apache County
- All CMP pipe must be installed to Apache County recommended installation procedures and/or Apache County inspector recommendation.
- When installing more than one section of CMP pipe, you must connect the CMP pipe with an approved band/clamp.

- All band bolts must be installed off to one side of the CMP pipe. Not on the top or bottom of the CMP pipe and must be properly tightened to manufacture's specifications
- CMP pipe must match existing ditch line grade. If CMP pipe must be lower than existing ditch line, then ditch line must be lowered to match with Apache County approval. CMP pipe must have a minimum cover of eight inches with recommendations of one foot or greater if possible.

Recommended Installation Procedures

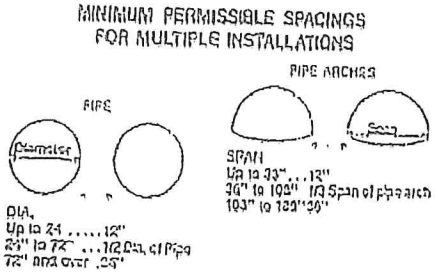
Excavation

Trenches should be as narrow as possible but sufficiently wide to permit tamping the backfill. Generally, trenches 12-24 inches wider than the structure are satisfactory. Wide trenches not only require more excavation and backfill but increase the load on the structure. Side walls should be practically vertical to an elevation above the top of the pipe.

When two or more corrugated steel drainage structures are to be installed in parallel lines, there must be space between them.

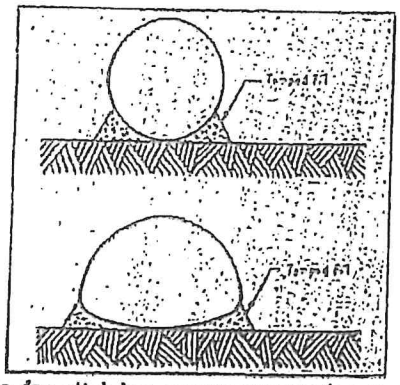
The reason for the spacing is to allow room for tamping of the backfill and to enable the structure to develop adequate side support.

Whether the structure is large or small, keep in mind that size and room required for the tamping equipment should also be considered in determining spacing.



Where heavy earth-moving equipment or bulldozers can be used, it is often economical to dig a wide, flat base.

With corrugated metal pipe, a satisfactory method of preparing the foundation is by excavating to a flat surface and then carefully tamping the fill under the haunches of the pipe. Good compaction can be achieved by tamping with wooden poles, 2x4's, or the smaller sizes of pneumatic tampers to eliminate all voids under the structure.



Methods for attaining proper compaction under haunches of corrugated metal pipe.

Bedding

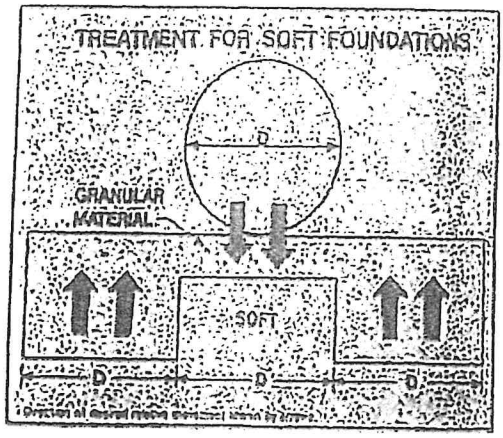
The bedding upon which the pipe is to be assembled should be to line and grade and of firm and even supportingability. Large rocks, timbers or other foreign matter should be removed to allow a cushion of firm material - preferably granular - at least 8 inches thick to be placed and compacted above any remaining hard material. The bedding surface should be shaped to fit the pipe for enough of the pipe's bottom surface so that the compacted backfill and bedding will form a complete and uniform earth structure around the pipe. For round pipes, it is sufficient to shape the bedding to approximately one quarter of the circumference. For pipe-arches, the bedding should be shaped to the width of the bottom arc.

If poor or non-uniform foundations are encountered, they must be treated correctly to assure satisfactory results. The critical factor is uniformity along the pipe with a tendency to yield under the pipe in relation to alongside the pipe.

Correcting Poor Foundations

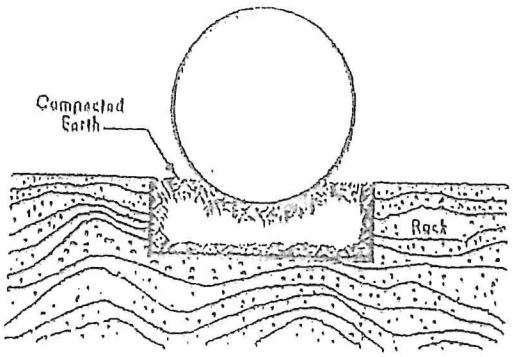
UNEVEN FOUNDATIONS: When the excavated grade line crosses soft and hard spots, foundations should be made as uniform as possible by excavation below grade and replacing with softer material. Sometimes it would be best to excavate the entire foundation slightly below grade line and replace it with suitable, uniform material. In any event, any abrupt changes from hard to soft foundation should be avoided.

SOFT FOUNDATIONS: When soft, unstable material is encountered at the foundation level, it should be excavated below the flow line grade and backfilled to grade with sand-gravel crushed stone or other suitable material. The zone of selected material should be 3 diameters wide and compacted.



POCKETS OF UNSTABLE SOIL: If unstable foundation material is in small pockets, it is best to excavate all of the poor foundation and replace it with suitable backfill material. Frequently, a relatively thin mat to provide a suitable foundation of granular material will provide a satisfactory support, but it may be necessary to replace very soft foundations to a depth of as much as 3 feet.

ROCK FOUNDATIONS: Rock encountered in the foundation should be removed to at least 12 inches below the bottom of the structure, excavate wide enough to avoid any possibility of the pipe resting on rock. The excavated area is then backfilled with compacted, granular soil to cushion the pipe.



Handling

Although corrugated steel drainage structures will withstand rough handling without deformation, they should be handled with reasonable care. They should be lifted or rolled to protect the galvanized or bituminous coating. Dragging the structures at any time may damage the coatings and jeopardize durability. Also avoid striking rocks or hard objects when lowering pipe into trenches.

Since corrugated steel structures are relatively light in weight, they can be handled with simple, light equipment. Frequently a small crew can lower pipe into trenches by means of rope slings.

Coupling

Care should be used to bring the ends of pipe sections into line with each other and correctly spaced to insure well fitted couplers making tight joints.

Bands are put into position at the end of one section of pipe with the band open to receive the next section. The second section is brought against or to within about 1 inch of the first section. After checking to see that connecting parts of both band and pipe sections match, that interior of bands and exterior of pipe are free of dirt, stones, etc., bolts are inserted and tightened. Bands utilizing gaskets are commonly used in restricted leakage applications.

When installing asphalt-coated couplers, brushing the mating surfaces liberally with crankcase oil or kerosene will make tightening easier.

Backfill Quality and Compaction

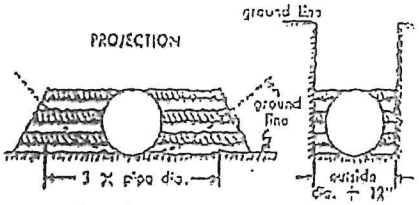
After the pipe has been placed on the bedding and the joint made, it can be immediately backfilled. The integrity of the embankment, the pavement, and adjacent structures as well as the alignment and cross-sectional shape of the pipe will depend on the quality and compaction of the backfill material, thus making this one of the most important phases of installation.

Side support must be provided for flexible pipe so that it will carry the fill and live loads without excessive deflection. Side support can only be obtained by adequate compaction of good fill material around the pipe.

Backfill of granular nature is considered best as it retains stability over a wide range of moisture content and is easily placed and compacted. If backfill material of a plastic nature must be used, careful attention should be given to insure optimum moisture content for compaction. It should be free of large rocks and hard lumps or clods larger than 2 inches in size. Granular material containing a small amount of silt or clay is ideal since it makes a dense stable fill. This material should be used within one pipe diameter of the sides of the pipe and to one foot over the pipe. Backfill beyond the one pipe diameter limit may be regular embankment fill.

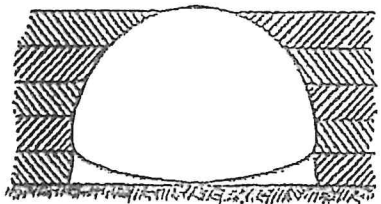
Fill material under haunches and around the structure should be placed alternately in 6-inch layers on both sides of the pipe to permit thorough tamping. The fill is placed alternately to keep it at the same elevation on both sides of the structure at all times. Compaction within 6 inches to 16 inches of the pipe is usually done with handheld tampers; heavier hand guided tampers are used for the remainder of the material out to the trench side. In wide, deep trenches, heavier tractor-powered equipment is used from about 24 inches from the pipe on out and for compaction of the fill material over the pipe, following adequate cover to avoid pipe damage.

RECOMMENDED BACKFILLING PRACTICE FOR PIPE TRENCH



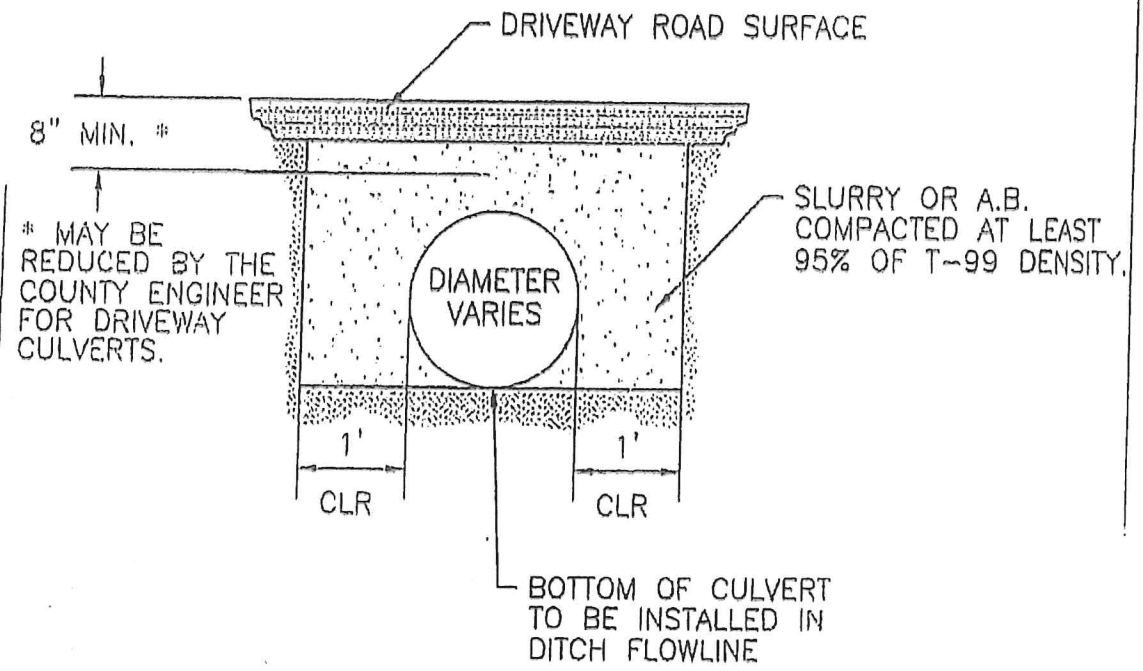
Notes: Place fill in uniform well tamped 6" layers.
Keep fill at same elevation on both sides of pipe.

RECOMMENDED BACKFILLING PRACTICE FOR PIPE-ARCH



Tamp fill carefully under haunch of pipe-arches.
Place fill in uniform well tamped 6" layers.
Keep fill at same elevation on both sides.

Apache County Standard for Typical Culvert Installation



GENERAL NOTES:

1. RESIDENTIAL DRIVEWAY CULVERTS SHALL HAVE NOT LESS THAN 8" OF TOTAL COVER, OR SHALL BE PROTECTED WITH A 4" THICK REINFORCED CONCRETE SLAB.
2. COMMERCIAL DRIVEWAY CULVERTS SHALL HAVE NOT LESS THAN 12" OF TOTAL COVER, OR SHALL BE PROTECTED WITH A 6" THICK REINFORCED CONCRETE SLAB.
3. CULVERT SIZE AND MATERIALS SHALL BE AS APPROVED BY THE COUNTY ENGINEER. INSTALLATION MAY VARY IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.