

# Installing Dry Hydrants

*A How-To Manual for Municipalities and Fire Companies*

This manual, compiled by Adams Electric Cooperative, is designed to help municipalities and fire companies install more dry hydrants.

*THE FIRST TEST: The Hampton Fire Company, located in Adams County, tests a new dry hydrant installed by the fire company and Reading Township.*



Adams Electric sponsors a dry hydrant program in its service territory to improve fire protection for members served by rural fire companies. The program includes government agencies, landowners and fire companies working together to install more dry hydrants.

## Who does what?

**Adams Electric Cooperative** helps bring together those who want to install more dry hydrants. The cooperative is a source for information about how to install dry hydrants and serves as a link to equipment manufacturers. It also donates dry hydrant kits (head, strainer, strainer clamp and sign) as available to non-profit organizations.

**Fire Companies** identify potential sites and agree to use and test the dry hydrant. They may help obtain landowner permission and provide labor on the installation.

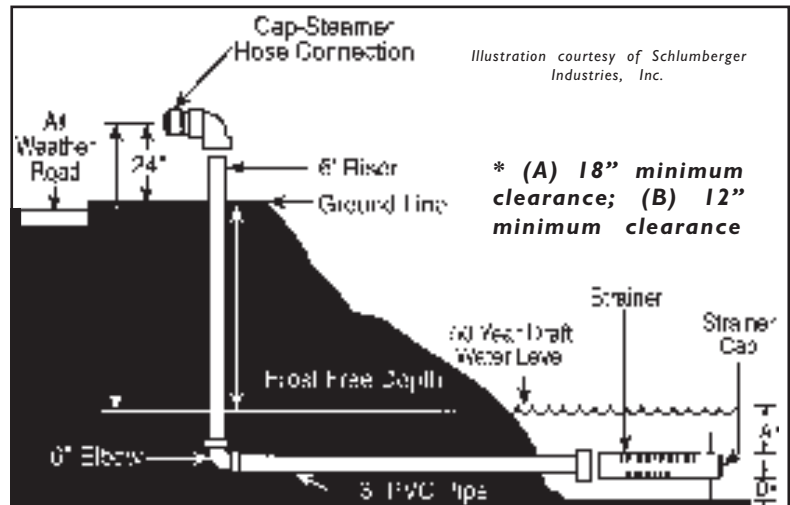
**Municipalities** provide the equipment, the labor and the materials needed for each installation. The municipality signs a construction agreement with the landowner.

**Benefits to the landowner:** With a dry hydrant in place, a fire company is less likely to damage property in order to get water to fight a fire. The hydrant will protect the landowner's property and neighboring properties. Depending upon the company, the landowner may receive a reduction in fire insurance premiums.

## A. Identify a good dry hydrant site

There are a few minimum standards established by the National Fire Protection Association (NFPA 1231 specifications) that can help to identify a good dry hydrant site.

1. The water source should be deep enough to maintain a minimum of 18 inches of water over the strainer and 12 inches underneath.



*SETTING THE STANDARD: This drawing shows a typical dry hydrant installation and lists some of the minimum standards used to determine if a site is suitable for a dry hydrant installation.*

2. Avoid lifting the water in the pipe in excess of 15 feet. Maintain a maximum lift of 10 feet for pumps other than Class A. Lift is the vertical distance from the water's surface to the hydrant head.
3. The size of the water source should sustain a minimum of 30,000 gallons pumped per hour — even in a dry season.
4. The landowner must allow access to the site at all times.
5. The access road should be at least 12 feet wide and should be accessible in all types of weather.
6. The site should be properly drained.

## B. Purchase the materials

Consult the Dry Hydrant Materials List for more information. Adams Electric may have a limited number of dry hydrant kits (head, strainer, support clamp and sign) to donate. If a kit is not available, the cooperative can help a township or municipality find a supplier of kits and materials.

## C. Obtain landowner permission

It is strongly suggested that a construction agreement be signed between the municipality or the fire company and the landowner. *(Use the fill-in construction agreement provided with this manual. The agreement should be reviewed by the municipality's solicitor prior to signing.)*

## D. Do the survey and design work

After a site is identified, a representative from the local NRCS office is asked to survey the site and complete a design. Municipalities and fire companies may assist in this effort by placing a stake at the site where they would like the hydrant head placed.

As part of the design phase, Pennsylvania One Call must be notified (1-800-242-1776) so that underground utility equipment can be located and marked at the site.

## E. Set a date to install the hydrant

After the design work is completed and a signed construction agreement is in hand by the municipality or fire company, a date can be set to install the hydrant.

## F. Install the hydrant

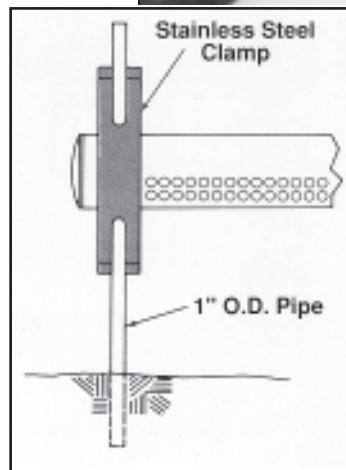
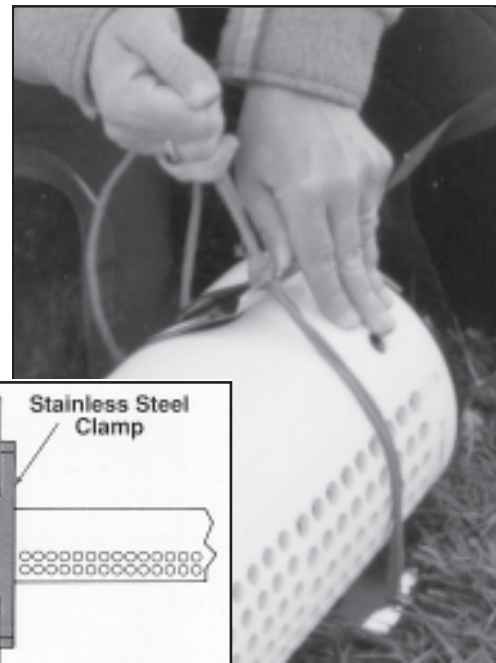
Sections of Schedule 40 PVC pipe (available in 10- and 20-foot lengths) are glued together with the dry hydrant head glued to one end and the strainer glued to the other.

1. Dig a trench at the predetermined depth listed on the design from the edge of the pond back to where the hydrant head will be positioned. The trench is usually dug wet, and measurements can be taken at different intervals to make sure the proper depth has been achieved. The trench should be backfilled starting at the head and finishing at the water source.

2. Prepare the strainer. Bend the stainless steel support clamp around the end of the strainer and hold it in place with a knotted rope. The rope will be pulled loose when the strainer has been positioned in the pond on its support pipe. Run the strainer support pipe through both the support clamp and the strainer.

Cement a PVC pipe coupling to the other end of the strainer. *(See Cementing Instructions.)*

3. Assemble the rest of the pipe from the strainer back to the riser, gluing together the couplings and pipe. Use a hack saw or portable blade saw to cut PVC to length. Use a file to remove any burrs before applying the primer and cement.



**PREPARING THE STRAINER:** Place two knots approximately seven inches apart at the end of a rope. Bend the support clamp around the strainer (as shown in the photo) and use the knotted rope to hold it in place. Place the support post through both the support clamp and the strainer. The rope can be pulled away and the support clamp released to hold the strainer fast against the support post after the strainer and the support post have been positioned in the pond (as shown in the drawing).



*INTO THE TRENCH: Position one person at each joint before dropping the pipe in the trench.*

4. After the entire assembly has had at least 15-20 minutes to set up, lower the assembly into the trench using at least one person at each cemented joint to prevent a break. On a 100-foot installation, 8 to 10 people may be needed — one at each joint.
5. Cut the riser leaving about two feet of pipe above ground. Deburr the pipe and cement the dry hydrant head into place.

## **G. Test and maintain the dry hydrant site**

Once the hydrant is installed, the fire department can connect to the hydrant head and test the hydrant. The first test can help to identify any leaks or other problems with the installation and will clear away silt and debris from around the strainer.

After the initial test, the fire department must commit to backflush and test the hydrant on at least an annual basis.

Unless otherwise specified, the dry hydrant heads donated by or purchased through Adams Electric are equipped with 6-inch male heads (NST thread). This was done to create a standard for dry hydrants across the cooperative's service territory and to remain consistent with most of the dry hydrants already installed.

## **Cementing Instructions**

- A. Wipe the surfaces to be glued with a clean cloth.
- B. Apply THF primer to the outside and the inside surfaces of the coupling or elbow. The primer will soften the pipe.
- C. Apply PVC cement (800-1,000 centipoise viscosity) and quickly assemble the pipe, couplings or elbow with a twisting motion. Allow the glued pieces to dry for 15-20 minutes.
- D. Make sure on the final assembly that the strainer holes are pointed down and the vertical riser section that will hold the head is pointed up. The head will be attached last after the assembly has been dropped in the trench.

The fire company may need to equip each of its pumpers with double-female adapters. These adapters cost around \$200 each, depending upon size, and are available from any local fire equipment dealer.



## **Adams Electric Cooperative, Inc.**

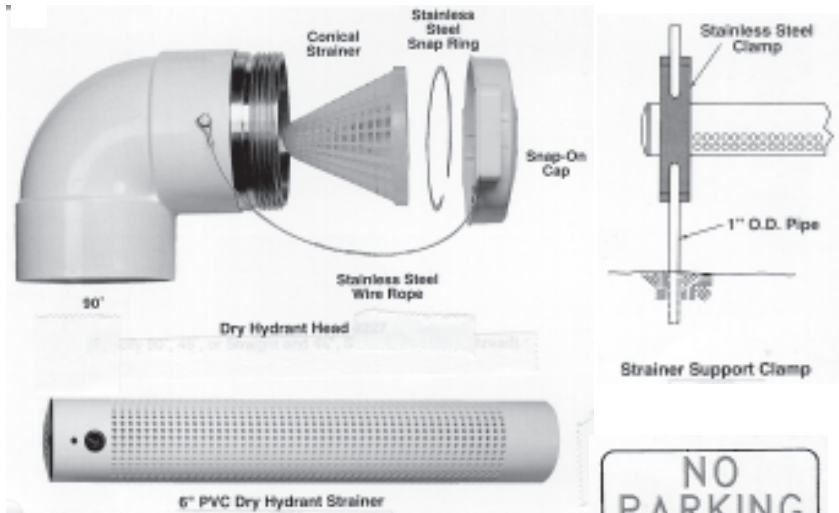
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# Dry Hydrant Materials List

## Dry hydrant kit

(Cost: approximately \$210\*)

- **Dry hydrant head** (90 degree pipe, bronze insert with 6-inch NST male thread, rubber “O” ring, conical strainer, stainless steel snap ring, snap-on cap and stainless steel wire rope).
- **Six-inch PVC strainer** (stream and barrel-style strainers also available for special installations).
- **Stainless steel strainer support clamp.**
- **Aluminum reflective sign** (identifies each hydrant site).



## Other Necessary Equipment

- **Six-inch Schedule-40 PVC pipe**
- **Six-inch PVC pipe couplings**
- **Six-inch PVC elbow**
  - **OPTIONAL FOR 8-INCH INSTALLATION:** 8-inch Schedule-40 PVC pipe, 8-inch PVC elbow, PVC reducer (to connect 6-inch strainer and 6-inch head with 8-inch pipe).
- **THF PVC primer.** Apply prior to cement.
- **PVC cement** (800-1,000 centipoise viscosity) to join PVC and fittings. Do not use all-purpose cement.
- **One-inch O.D. pipe or rebar post** to support strainer in water.
- **Grass seed, mulch** to improve the site after installation.
- **Miscellaneous:** Hack or blade saw, knife or file, sledge hammer, waders.
- **OPTIONAL:** Dry hydrant riser insulation sleeve. To insulate riser against freezing (comes in 2-foot sections).

**DRY HYDRANT CONSTRUCTION AGREEMENT**

**Township/Fire Company:** \_\_\_\_\_  
(name)

**Landowner:** \_\_\_\_\_  
(name)

\_\_\_\_\_  
(address)

**Subject:** Authorization to develop and utilize water source on my property. The aforementioned township and/or fire company is authorized to develop a refill site at:

\_\_\_\_\_  
(address of potential site)

for the purpose of providing water to extinguish fires in my community and for other uses with my permission.

I further give the township and/or fire company permission to erect a dry hydrant stand at this location. I understand the township and/or fire company will erect the stand and provide materials. The township and/or fire company will complete all excavation work so that the surrounding areas and the surface of the ground will be smooth, and all disturbed areas will be stabilized as conditions warrant at each site. The township and/or fire companies that serve within its borders will use and test the dry hydrant at any time they deem necessary for continuity of hydrant operations.

Permission is hereby granted to the participating township and/or the fire companies that serve within its borders to come upon my land to refill fire-fighting equipment no more than twice a year for regular maintenance or at any time for emergency repairs and/or maintenance in order to have the dry hydrant in a state of readiness for any and all emergencies. Upon completion, unless otherwise agreed by the parties prior to construction, the access used during construction shall become the permanent access route to the dry hydrant.

Township and/or fire company shall have the right to record this agreement in the county land records office.

The operation of the dry hydrant has been explained, all facets of the installation have been explained and I fully concur with all of the operation.

This agreement shall be binding on the parties hereto, their heirs, successors or assigns. Owner agrees to inform all successors to the existence of this agreement and the duties of the owner hereunder.

\_\_\_\_\_  
(Signature of Landowner) (Date)

I have advised the landowner of the purpose, type of stand, method of operation with the above facts explained.

\_\_\_\_\_  
(Signature of Township/Fire Company Rep) (Date)