



CITY OF RAPID CITY

Growth Management Department

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February 20, 2006

Mr. Jerry Volk
Kadmas Lee & Jackson
330 Knollwood Drive
PO Box 3416
Rapid City, SD 57709-3416

RE: Request for use of HDPE pipe for proposed water distribution system
Within Canyon Springs Preserve Subdivision

Dear Mr. Volk:

The City of Rapid City Development Service Center and Public Works received your request to use high density polyethylene (HDPE) pipe for the water distribution system within the Canyon Springs Preserve Subdivision.

After review and discussion, we will accept the use of HDPE pipe for the water distribution system within the Canyon Springs Preserve Subdivision. We specifically want to make known to you, the developer and users of this system that the subdivision will not be accepted by nor connected to the City of Rapid City water system. We have the following concerns and questions; we request they be addressed and other information requested be provided.

Concerns, questions and required information:

1. Are there local contractors that are familiar with, have the experience and have personnel trained in the installation and the heat-fusion joining of HDPE pipe?
2. Research has shown that HDPE fittings require that certain precautions be taken when installing them into a piping system. Are local contractors familiar with these requirements?
3. Research has shown that HDPE shrinks 10 times as much as DI and 3 times as much as PVC when it gets cold. This can loosen fittings installed on it. Also, it's length shrinks approximately 1.4 inch per 100 feet of pipe length with a temperature drop of 10° F, making it likely to pull out of unrestrained couplings. What measures are being taken to account for this?
4. HDPE will creep if the stress placed on it gets above a certain level. If care is not taken



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when designing the system, this stress level can be exceeded and fittings that work great today may fail later as the HDPE creeps. Provide design information used to account for the creep phenomenon

5. HDPE is very slick and this makes it easy for fittings to rotate on the pipe and migrate along it. This will require great care in designing to compensate for the pipe movement so as to prevent fittings from migrating or rotating on the pipe. Provide details of how this will be accomplished.
6. Bedding conditions for HDPE are very critical. Proper bedding is required to control deflection, which is a criterion in design of HDPE pipe for external loads. Standard practice for recommended installation suggests that the pipe be surrounded by soil with a minimum particle size, so that it can be compacted sufficiently to develop uniform lateral passive soil forces. We are not sure what you mean by ".....allow the pipe to be installed using the "trenching" method." We are not inclined to allow installation of HDPE pipe using a trencher. This area will probably be rocky and we will want proper bedding and backfilling around the pipe to protect it from rocks that could potentially cause reduction in pipe wall strength due to scratches or abrasions. Provide further explanation regarding "trenching", bedding, trench width and backfill material and methods.
7. The City of Rapid City does not have the specialized equipment or people trained in the use of this equipment to make repairs or taps. Who will be responsible for repairs, tapping for services, etc.? Who will furnish the specialized repair devices and equipment?
8. The City of Rapid City does not have HDPE specifications. Provide HDPE Pipe and Fittings specifications. Provide specifications for construction practices, testing procedures and precautions for installation of HDPE pipe and fittings.
9. Kadrmas Lee & Jackson's letter request mentioned the numerous curves in the road alignment and this was an argument for using HDPE instead of the usual DI or PVC water main pipe and the number of fittings required for installation. We have a question, if the engineer had considered the use of Cert-Lok C900 pipe? This meets the AWWA requirements and the City of Rapid City has considered this an "or-equal" in the past. This pipe allows for pipe deflection and curved installations.

If you have any questions, or require additional information, please let me know.

Sincerely,

CITY OF RAPID CITY

Robert H. Dominicak, P.E. / L.S.
Project Manager, DSCC

cc: Marcia Elkins – Growth Management Director
Dirk Jablonski – Public Works Director
Stacey Titus – Project Engineer, Public Works