American Concrete Pipe Association

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Dear MAG Standard Specifications and Details Committee member,

This letter is in regard to the current MAG Standard Specifications and Details case #12-12, "New Section 789 - Steel Reinforced Polyethylene Pipe (SRPE)". With the limited nature of discussion at committee meetings regarding the maximum allowable diameter of SRPE, the American Concrete Pipe Association and its Arizona membership strongly feel that further consideration is necessary so that committee members are thoroughly prepared to either establish the committee as one of, if not the largest regional specification authority in the US to approve those sizes before AASHTO, or not.

There are a number of issues requiring more thorough consideration, as follow:

- **Smaller agency adoption of MAG-approved products.** As has been mentioned at committee meetings, agencies have the power to reject MAG spec's as they see fit. Agencies also have the power to adopt MAG spec's and are encouraged to do so per the Forward of the "Uniform Standard Specifications and Details for Public Works Construction". Without AASHTO, ADOT or any other Arizona public agency approval, and with so very few installations, MAG approval of SRPE diameters above 60" seems premature and possibly detrimental to smaller agencies encouraged to adopt MAG standards.
- **Current listing of 120" "HDPE" in Section 738 of the MAG Standard Spec's and Details Book.** The 120" maximum diameter currently found in Section 738 applies to a completely different pipe product than SRPE. The products conforming to ASTM F894 in Section 738 have options for much stiffer pipe than SRPE, are designed completely differently, have different joint fusion welding processes and have had a great number more installations in sizes above 60" diameter than SRPE. There is one manufacturer with one out-of-state plant that currently makes SRPE and there is only one 120" diameter project in Arizona. That project is not within public ROW and experiences limited live loads.
- **Lack of AASHTO Approval Above 60" Diameter.** Manufacturing QC and materials testing processes of new products are established in ASTM. Agencies developing product material and construction specs pertaining to field performance developed through thorough research and testing historically have deferred to AASHTO, when possible. After much research and close work with the manufacturer for the last few years, AASHTO has clearly stated that they will not approve SRPE diameters above 60" until they can review test results of fully instrumented (strain-gaged) installations. There have been

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a number of documented SRPE performance issues related to a variety of design and installation errors that have been taken into account with each diameter range approval by AASHTO. Another issue causing significant AASHTO concern is the effect of reinforcing ribs leaning away from their designed perpendicular position. Pipe wall stresses in the proximity of leaning ribs can easily be higher than those caused by classic pipe deflections and greatly reduce service life. The control of shipping and handling stresses that cause rib-leaning and over-stressed pipe walls has been researched by AASHTO and if fact added to their Section 30 spec as follows:

> **"**Steel reinforced thermoplastic pipe shall be inspected prior to backfilling to ensure that external reinforcing ribs do not lean an average of more than 15 degrees off of vertical within any 24.0 in. long continuous section of the pipe. If this condition exists, that portion of the pipe shall be remediated or replaced."

QA/QC of rib-lean from installation and backfill stresses has not been addressed.

- ***Buried Pipe Design 2nd Edition*** **by A.P. Moser.** This book references several deflection tests performed on SRPE pipe and states the following:

> "….failure is much more catastrophic in the steel-ribbed polyethylene than in either corrugated steel or HDPE (i.e., collapse can progress without an increase in load)."

Deferring to AASHTO as they conduct proper technical diligence before considering acceptance of SRPE, particularly diameters above 60", is prudent without repercussion to the MAG Standard Spec's and Details Committee or the agencies that it represents. As more installation history is developed and researched by AASHTO and other major third party research entities, acceptance can be considered more thoroughly.

We trust the above information will be useful in considering your decision to delay acceptance of SRPE until more performance data and installation history is available.

Respectfully submitted,

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