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Water and Wastewater Line Extension and Service Standards (LESS) Memorandum Revisions

These memos have been issued by the Water and Wastewater Standards group to clarify requirements as listed below. The memos are attached for reference.

MEMO TITLE	REVISION DESCRIPTION	SECTION(S) AFFECTED
PVC Bell Restraints Clarification	Clarifying the cases in which bell restraints can still be used on PVC mains	2.6.F.7, 4.4.B.5, 4.4.B.6 (Water LESS) 2.5.F.1, 4.2.B.3 g) (Wastewater LESS)
CSU Valve Box Traffic Rating Clarification	Clarified valve box requirements and removed non-complying valve box	4.4.J, 4.4.R.5 d) (Water LESS) 4.2.M.5 c), 4.6.B.4 (Wastewater LESS)

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PVC BELL RESTRAINT CLARIFICATION MEMO

To: Housing and Building Association

From: Colorado Springs Utilities – Tara McGowan, Stefan Manning, and Maddi Dunbar

Date: March 3, 2026

Re: PVC Bell Restraint Updates and Clarification

Colorado Springs Utilities (Utilities) has identified the need to clarify expectations for the use of PVC pipe bell restraints versus restrained joint PVC pipe, as outlined in the 2026 Water and Wastewater Line Extension and Service Standards (2026 Water LESS and 2026 Wastewater LESS).

The purpose of this memorandum is to:

1. Explain the rationale for limiting the use of PVC bell restraints and requiring restrained joint PVC pipe, and
2. Clarify the conditions in which bell restraints remain permissible in lieu of restrained joint PVC pipe.

Historically, metallic bell restraints have been used on PVC pipe to provide joint restraint where water mains must withstand thrust forces, maintain stability on steep slopes, or remain secured within casing pipes. Over time, however, Operations and Maintenance staff have observed that these restraints have not consistently performed as intended, largely due to improper installation practices or corrosion.

During development of the 2026 Water and Wastewater LESS, internal stakeholders requested that bell restraints be removed from the standards and replaced with restrained joint PVC pipe (e.g., "Certalok") for improved long-term reliability.

Following publication of the updated standards, the Standards team identified specific scenarios in which the use of bell restraints remains appropriate and functionally equivalent to restrained joint PVC pipe.

- **Casing Pipes and Lowerings:**
  Within casing pipes and in lowering installations, bell restraints perform comparably to restrained joint systems. Concrete thrust blocks or anchors are installed near the restrained joints, casing pipes protect fittings from soil-related corrosion, and the system is anchored outside the casing. Therefore, bell restraints are acceptable for use in lowerings and within casing pipe installations.

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- **Wastewater Mains on Steep Slopes:**
  For wastewater mains installed on steep terrain, bell restraints may be used to ensure adequate restraint of the pipeline.

Note that the bell restraints approved for use in this manner can be referenced in the previously approved version of the LESS (2023 Water and Wastewater LESS) and are attached to this memo for reference.

Please contact Stefan Manning at 719-668-1854 or smanning@csu.org for any questions, comments, or concerns regarding these PVC Pipe Bell Restraint clarifications.

Sincerely,
Tara McGowan, Stefan Manning, and Maddi Dunbar, Water and Wastewater Standards

4.4.D.6 Mechanical Joint Pipe Restraints

General: Mechanical pipe joint restraints (MJ) restrain mechanical joints for many applications including valves, hydrants, and pipe. They can be used on all types of pipe when joining to mechanical appurtenances. MJs are used to replace external restraints such as concrete thrust blocks and metal tie rods. There are specific restraints for each type of pipe.

Size(s): 6-inch up to 36-inch Diameter Ductile Iron Pipe (DIP) and 6, 8, and 12-inch Diameter PVC Pipe.

Pressure Class: Mechanical pipe joint restraint devices shall have minimum Working Pressures not less than the Working Pressure ratings of the pipe.

Material: MJ restraints shall be manufactured of ductile iron. MJ gaskets shall be made from SBR or EPDM rubber.

Specifications: Glands of the mechanical joint restraint shall be manufactured of ductile iron in accordance to *ASTM A536*, grade 65-45-12. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 bhn. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to *ANSI/AWWA C111/A21.11* and *ANSI/AWWA C153/A21.53*. MJ gaskets shall be NSF-61 certified, conform to *AWWA C111/A21.11*, and be *Underwriters Laboratories* listed.

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Approved Manufacturer(s):

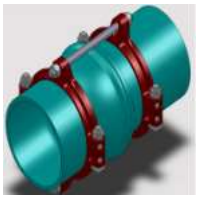
d. PVC Slip Joint Restraint:

Star
1100 C Series PVC pipe
(4" – 48")

EBAA Iron, Inc. - Megalug, Series 1600 for PVC
(4"-12")

EBAA Iron, Inc. - Megalug, Series 2800 for PVC
(16"-20")

Ford Meter Box Company
Uni-Flange - Series 1390 Series for PVC
(2"-36")

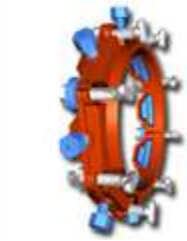


Sigma
PV-Lok Series PWP for PVC
(4"-12")

Sigma
PV- Lok series PWH for PVC
(4"-12")

e. Split Megalugs

EBAA Iron
Series 1100SD for DIP
(3" – 48")



EBAA Iron
Series 2000SV for PVC
(4" – 12")

Plain End to Flange Adaptor

EBAA Iron
Series 2100 MEGAFLANGE for allowed material and sizes see Table below.

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EBAA Iron Megaflange Series 2100 Allowable Material and Sizes

Approved Material	**Allowable Sizes**
DIP	3" – 16"
Steel[1]	3" – 12"
C900 PVC DR 14	4" – 12"
C900 PVC DR 18[2]	4" – 20"

[1]Transition gasket required

[2]Upon approval by Colorado Springs Utilities. See Section 4.4.B.4.

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To: Housing and Building Association

From: Colorado Springs Utilities – Tara McGowan, Stefan Manning, and Maddi Dunbar

Date: April 16, 2026

Re: Valve Box Traffic Rating Clarification

The intent of this memorandum is for Colorado Springs Utilities (Utilities) to (1) clarify the requirements for approved valve boxes as outlined in the 2026 Water and Wastewater Line Extension and Service Standards (WLESS and WWLESS) and (2) provide a risk assessment for valve boxes which do not meet the requirements of the WLESS and WWLESS.

Clarifications

Please note the clarifications below:

1. "Rated for traffic service" - WLESS sections 4.4.J, 4.4.R.5 d) and WWLESS Sections 4.2.M.5 c), 4.6.B.4

   Clarification: All castings which are required to be "rated for traffic service" must be H-20 traffic rated and tested in accordance with AASHTO M306. All other requirements for valve boxes as stated in the LESS sections identified above are still in effect.

2. Approved Materials in Chapter 4 of the WLESS and WWLESS

   Clarification: The valve box manufactured by Star Pipe with model number VB-0007 is not rated for traffic service and therefore does not meet the requirements of the WLESS and WWLESS. Effective immediately, Star Pipe's VB-0007 *is not permitted for use* in Colorado Springs Utilities' Water and Wastewater systems.

Risk Assessment

Utilities has conducted a risk assessment and determined that the Risk Level is currently Low for the failure of non-traffic rated valve boxes which may exist in the roadway. The Risk Level can be determined through assessment of both probability and consequence of failure.

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- **Probability of Failure: Low**
  - Recent usage of non-traffic rated valve boxes is likely low:
    - All valve boxes listed in the approved materials section of the WLESS and WWLESS, with the exception of Star Pipe VB-0007, are rated for traffic service and have been tested for H-20 loading.
    - The 2026 WLESS and WWLESS, which both list Star Pipe product VB-0007, have been published for only 3 months (January 2026 to present). The use of Star Pipe valve boxes has likely been limited during this short timeframe.
    - Previous versions of the WLESS (2014-2023) listed an incorrect model number for Star Pipe's valve box "HD(F)35". Star Pipe has confirmed that this model number does not currently match their catalog nor is it found in their historical records. As this model does not exist, the use of Star Pipe valve boxes was likely limited prior to the publication of the 2026 WLESS and WWLESS.
  - Traffic loads applied to valve boxes are likely low. Even non-traffic rated valve boxes may not break under typical driving conditions.
    - The surrounding soil and roadway help alleviate loads on valve boxes.
    - The surface area of a valve box lid is relatively small and generally does not receive the full load from a vehicle tire.

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- **Consequence of Failure: Low**
  - Economic: Replacement of a broken valve box costs approximately $2,000 for time and materials.
  - Operational: Valve boxes are not critical infrastructure and are unlikely to impact the water or wastewater systems.
  - Environmental: A valve box does not impact the environment differently when broken.
  - Social: A broken valve box likely would not affect the driving surface of the roadway. In extreme cases, a failed valve box may lead to a small (5.5" diameter) recess in the roadway which could have minor impacts on apparent road conditions for drivers.

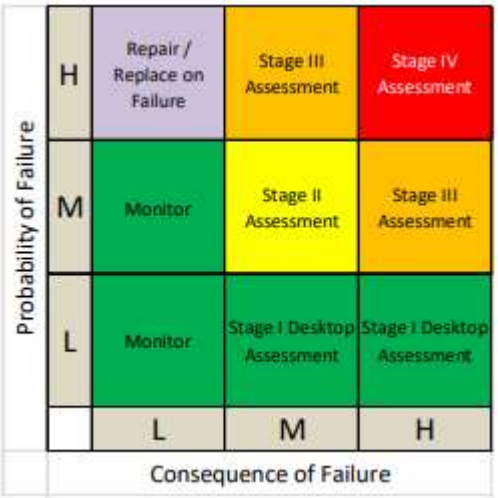

Figure 1. Risk assessment action matrix based on probability and consequence of failure.

Utilities assessed that there are both a low probability of failure and a low consequence of failure regarding non-traffic rated valve boxes in the Water and Wastewater systems. Based on the risk assessment matrix in Figure 1, Utilities will monitor for any issues which may arise regarding non-traffic rated valve boxes. Should the risk level change, a new assessment and action plan will be conducted at that time.

Please contact Maddi Dunbar at 719-668-8034 or mdunbar@csu.org for any questions, comments, or concerns regarding the clarifications or risk assessment.

Sincerely,
Tara McGowan, Stefan Manning, and Maddi Dunbar
Water and Wastewater Standards