CLAIMS

1. A gate valve comprising:

a first valve seat and a second valve seat spaced apart, wherein each of the first valve seat and the second valve seat comprise a flowpath formed therethrough; and

a gate, wherein longitudinal movement of the gate with respect to the first and second valve seats transitions the gate valve between an open position and a closed position;

wherein the gate comprises one or more openings formed therein, the one or more openings spanning an area having:

a first dimension in a direction parallel to a longitudinal axis of the gate valve; and

a second dimension in a direction perpendicular to the longitudinal axis of the gate valve, wherein the second dimension is longer than the first dimension, and

wherein a cross-sectional shape of the one or more openings has a first side or portion that has a convex shape relative to a centroid of the cross-sectional shape and a second side or portion that does not have a convex shape relative to the centroid, wherein the second side or portion is opposite to the first side or portion.

2. The gate valve of claim 1, wherein the one or more openings comprise only a single opening having a non-circular cross-sectional shape.

3. The gate valve of claim 2, wherein the cross-sectional shape of the single opening is crescent shaped having one side concave with respect to a centroid of the cross-sectional shape and an opposite side convex with respect to the centroid of the cross-sectional shape.

4. The gate valve of claim 2, wherein the cross-sectional shape of the single opening is an irregular shape that is not symmetric across the longitudinal axis of the gate valve.

5. The gate valve of claim 2, wherein the cross-sectional shape of the single opening is a semi-circle having a straight edge perpendicular to the longitudinal axis of the gate valve.

6. The gate valve of claim 2, wherein the single opening has a rectangular cross-sectional

shape.

7. The gate valve of claim 1, wherein the one or more openings comprise multiple openings distributed throughout a non-circular area within the gate.

8. The gate valve of claim 1, further comprising an actuator coupled to the gate, wherein the actuator selectively transitions the gate valve between the open position and the closed position by moving the gate longitudinally.

9. A tubing hanger system, comprising:

a tubing hanger body;

an annulus bore formed through the tubing hanger body; and

a gate valve disposed in the tubing hanger body, the gate valve comprising:

a first valve seat and a second valve seat spaced apart, wherein each of the first valve seat and the second valve seat comprise a flowpath formed therethrough; and

a gate, wherein longitudinal movement of the gate with respect to the first and second valve seats transitions the gate valve between an open position and a closed position;

wherein the gate comprises one or more openings formed therein, the one or more openings spanning an area having:

a first dimension in a direction parallel to a longitudinal axis of the gate valve; and

a second dimension in a direction perpendicular to the longitudinal axis of the gate valve, wherein the second dimension is longer than the first dimension, and

wherein a cross-sectional shape of the one or more openings has a first side or portion that has a convex shape relative to a centroid of the cross-sectional shape and a second side or portion that does not have a convex shape relative to the centroid, wherein the second side or portion is opposite to the first side or portion.

10. The tubing hanger system of claim 9, wherein the one or more openings comprise only

a single opening having a non-circular cross-sectional shape.

11. The tubing hanger system of claim 9, wherein the one or more openings comprise multiple openings distributed throughout a non-circular area within the gate.

12. The tubing hanger system of claim 9, wherein the gate valve further comprises an actuator coupled to the gate, wherein the actuator selectively transitions the gate valve between the open position and the closed position by moving the gate longitudinally.

13. A method comprising:

providing a gate valve comprising:

a first valve seat and a second valve seat spaced apart, wherein each of the first valve seat and the second valve seat comprise a flowpath formed therethrough; and

a gate comprising one or more openings formed therein, the one or more openings spanning an area having:

a first dimension in a direction parallel to a longitudinal axis of the gate valve; and

a second dimension in a direction perpendicular to the longitudinal axis of the gate valve, wherein the second dimension is longer than the first dimension, and

wherein a cross-sectional shape of the one or more openings has a first side or portion that has a convex shape relative to a centroid of the cross-sectional shape and a second side or portion that does not have a convex shape relative to the centroid, wherein the second side or portion is opposite to the first side or portion; and

longitudinally moving the gate with respect to the first and second valve seats to transition the gate valve between an open position and a closed position.

14. The method of claim 13, wherein the one or more openings comprise only a single opening having a non-circular cross-sectional shape.

15. The method of claim 13, wherein the one or more openings comprise multiple openings

distributed throughout a non-circular area within the gate.

16. The method of claim 13, further comprising longitudinally moving the gate via an actuator coupled to the gate.

5

17. The method of claim 13, further comprising operating the gate valve to selectively open and close an annulus bore formed through a tubing hanger.