Summary: an ordinance establishing various provisions relating to sewer pipe design criteria.

BILL NO. 114

ORDINANCE No. 2018 - 12

AN ORDINANCE RELATING TO SEWER PIPE DESIGN CRITERIA; AMENDING TITLE 18 APPENDIX (CARSON CITY DEVELOPMENT STANDARDS), DIVISION 15 (WATER, SEWER, RECLAIMED WATER STANDARDS) OF THE CARSON CITY MUNICIPAL CODE TO ESTABLISH CERTAIN SIZING AND PEAK FLOW REQUIREMENTS RELATING TO SEWER PIPES; MAKING CONFORMING CHANGES IN TITLE 12 (WATER, SEWERAGE AND DRAINAGE), CHAPTER 12.06 (INDUSTRIAL WASTEWATER DISCHARGES – SEWER DESIGN STANDARDS); AND PROVIDING OTHER MATTERS PROPERLY RELATED THERETO.

The Board of Supervisors of Carson City do ordain:

SECTION I:

That Title 18 Appendix (Carson City Development Standards), Division 15 (Water, Sewer, Reclaimed Water Standards), Section 15.3 (Design Requirements), is hereby amended (**bold, underlined** text is added, ~~[stricken]~~ text is deleted) as follows:

15.3 - Design requirements.

15.3.1 Water and Reclaimed Water Design Criteria.

a. Main Analysis. Water mains shall be analyzed to determine system capability to provide adequate flows and pressures. The analysis and calculations shall be provided to Carson City development engineering for review and approval, or the applicant may request that the analysis be done by the city. The cost to the city for performing the analysis shall be charged to the developer. Water mains shall be designed to deliver a minimum of sixty (60) psi at the meter during peak demand periods and to provide adequate fire flow as required by the fire department. If project is an infill development where the existing system is incapable of providing sixty (60) psi, the utilities director may waive the requirement.

Subdivisions, PUD's and large commercial or industrial projects having a significant impact on the city water system as determined by the Carson City development engineering department shall provide an update of the city water model using a format

that is compatible with the current model, or request the city perform the analysis as described above.

New construction or remodels adjacent to the existing Carson City water system where little or no additional system improvements are required; must provide a report with current date, project address (with location map), APN number, permit number, if available, comparing the required fire flow established by the building and safety department (UFC) and the "available" flow obtained by the actual fire flow data sheet, which shall be approved.

The report shall address system pressures at the project location to assure sixty (60) psi is available at all water meters during peak day demands.

Reclaimed water mains shall be analyzed to provide adequate flow and pressure at the points of service for new intended use. The analysis must consider future uses as determined by the utilities department.

b. Main Size and Material. Mains shall be sized as required by flow calculations, however, the minimum water main diameter shall be six inches (6″).

Water mains shall be PVC C-900 CL 150 unless otherwise required and approved by the utilities department. Reclaimed water mains shall be PVC C-900 CL 150, purple in color, unless otherwise required and approved by the utilities department.

c. Standard Details. The installation of all new water and reclaimed water lines shall conform to the "Standard Details for Public Works Construction" as adopted by Carson City.

d. Meters. Each building shall be served by a separate water service and meter unless otherwise approved by the utilities department. All meters shall be located within the street right-of-way or in a public utilities easement (P.U.E.) parallel and adjacent to the street right-of-way unless otherwise approved by the city engineer. Meters shall not be located within the driving surface.

Meter sizes available include 5/8 ″ x ¾″, 1″, 1 ½″, 2″, 3″, 4″, 6″, and 8″.

e. Services. Services shall be located as per the standard detail titled "typical utility laterals locations," unless otherwise approved by the utilities department. Reclaimed water meter boxes shall be painted purple. All services, except those located in cul-de-sacs, shall be installed perpendicular to the main.

Service lines may be ¾″, 1″, 1 ½″, 2″, 3″, 4″, 6″, and 8″. A 3″ service requires a 4″ gate valve with a 4″ line.

See standard details tilted "Water Service Tap," "¼″ Double and Single Pit Setter", "1″ Single Pit Setter," "1 ½″ to 2″ Meter Set," "3″ to 8″ Meter Set," "Service Saddle Detail, (¾″ to 2″), and "1″ Dual Meter Set."

f. Valves. Water valves on distribution mains shall be spaced at intervals not to exceed five hundred feet (500′). Reclaimed water valves shall be spaced at intervals not to exceed one thousand three hundred twenty feet (1,320′). No point within the system being designed shall require more than three (3) valve closures to discontinue service. Valves shall be located so that no more than fifteen (15) customers are taken out of service at any one time. Valves shall be placed a minimum of twenty feet (20′) from the end of all mains which may be extended in the future unless there is no possibility of future connections as determined by the utilities department. See standard details titled "valve detail" and "valve box detail".

Water valves at intersections shall be located at the curb returns. Reclaimed water valves shall not be located at intersections without approval by the city engineer.

All existing valves necessary to isolate the section of main to be extended shall be shown.

g. Flush Valve Assemblies. A four-inch (4″) flush valve assembly or fire hydrant is required at the end of all pressurized dead end water mains and stubs greater than ten feet (10′) as per standard detail titled "flush valve assembly."

h. Fire Hydrants Fire hydrants within a subdivision shall be spaced as approved by the fire department. Fire hydrants and their associated valve shall be shown on the plans and constructed as per standard detail titled "fire hydrant assembly detail."

i. Check-Valves. Check-valves shall be installed on all private fire hydrant lines per standard detail titled "check-valve detail." Pressure loss associated with all check-valves shall be included in fire flow calculations.

Check-valves shall be installed on the customer's side of the right-of-way line. When a P.U.E. is parallel to the right-of-way line, the check-valve shall be installed on the customer's side of the P.U.E.

j. Double Check-Valve Assemblies. Double check-valve assemblies shall be installed on all private fire sprinkler lines as per standard detail titled "Detail for Double Check Valve Assemblies." Fire systems utilizing chemicals require a reduced pressure backflow assembly. Pressure loss associated with all check-valves shall be included in fire flow calculations. The assemblies shall be tested prior to certificate of occupancy and annually by a certified backflow prevention assembly tester as approved by the utilities department.

Double check-valve assemblies shall be installed on the customer's side of the right-of-way line. When a P.U.E. is parallel to the right-of-way line, the double check-valve assembly shall be installed on the customer's side of the P.U.E.

k. Tapping Sleeves. Tapping sleeves are required when connecting a new main to an existing main when water service cannot be discontinued. See standard detail titled "tapping sleeve detail."

The water utility division shall tap all existing water mains when the tap size is greater than 2″ (4″, 6″, 10″, or 12″). The plans shall indicate when a tap is to be performed by the water utility division. Plans shall include a note indicating that the contractor shall notify Carson City water utility, in writing, forty-eight (48) hours prior to performing hot taps, either by fax or mail. (Fax number 775-887-2164)

l. Air-Release and Vacuum Valves. Air-release valves are required at all high points in water mains unless adequate relief is provided and approved by the utilities department. See standard detail titled "air-release valve detail." Air-release/vacuum valves are required at all high points in reclaimed water mains and shall be spaced at two thousand six hundred feet (2600′) maximum intervals, regardless of whether high points exist in the main. Provide calculations for sizing air-release/vacuum valves for review and approval by Carson City development engineering.

m. Separations. Minimum horizontal separation between water lines and sewer, storm drain and reclaimed water lines shall be ten feet (10′). Minimum horizontal separation from all other utilities shall be five feet (5′). Minimum vertical separation shall be eighteen inches (18″) unless otherwise approved by the utilities department. See standard detail titled "sanitary sewer and storm drain crossings."

n. Lowering Water Mains. Water mains in conflict with sewer, storm drain and reclaimed water lines shall be adjusted as per standard detail titled "lowering water mains." Other means for separation, such as designing with vertical curves, shall require approval of the Carson City development engineering. Provide calculations for review and approval by the Carson City development engineering.

o. Air-Gap Separation. Private receiving tanks require an air-gap and shall be installed as per standard detail titled "installation for air-gap separation." A backflow prevention assembly permit from the utilities department is required prior to installation.

p. Reduced Pressure Assemblies. Reduced pressure assemblies shall be per standard detail titled "detail for reduced pressure principle assemblies" and are required per Table I, Type of Backflow Protection Required. A backflow prevention assembly permit from the utilities department is required prior to installation. These assemblies shall be tested annually by a certified backflow prevention assembly tester as approved by the utilities department.

q. Thrust Blocks. Thrust blocks are required on all new water and reclaimed water main installations, public and private fire hydrants, and sprinkler line installations and shall be constructed as shown in the standard detail titled "Thrust Block Bearing Areas."

15.3.2 Sewer Design Criteria.

a. Main Analysis. Sewer mains shall be analyzed to determine system capability to provide capacity for the ultimate tributary population with the calculations provided to the city. **Except as otherwise provided in this paragraph, a sewage collection system for any project must be sized to carry the design peak hourly flow from the entire tributary area at buildout regardless of whether the tributary area is not located within the boundaries of the project, unless deemed unnecessary by the City Engineer.** Projects with less than ten (10) dwelling units or less than two hundred (200) fixture units are exempt from this criteria. Flow generation and peaking factors shall be per recommended standards for wastewater facilities (ten (10) state standards). Sewer mains are [~~considered~~] **deemed to be** at capacity when **the design** peak flow is at [~~d/D = 0.75.~~] **depth/diameter (d/D) = 0.50, for a pipe that is 15 inches or less in diameter, and depth/diameter (d/D) = 0.75, for a pipe that is greater than 15 inches in diameter.** Main analysis shall include a narrative report submitted to the utilities department with maps and calculations addressing the following:

Area of project

Tributary areas outside project

Adjacent areas

Contours usually extending a minimum of three hundred feet (300′) beyond the project or as needed to evaluate localized tributary areas

Line layout, pipe size and slope

Predicted average and peak flows at major junction points including flow coming from outside the project area

Direction of flow

Zoning used to predict flows

Special areas such as hospitals, schools, large office or industrial buildings, etc.

Boundaries of areas within the project which are tributary to points of major flow

Floodplains

Scale

Predicted flow from each area

Peaking factors

Cumulative flow

Pipe capacities and depths of flow

b. Sewer Size and Laterals. The minimum size for sewer mains shall be eight inches (8″) and laterals shall be four inches (4″). Mains shall be sized as

required by flow calculations. Sewer lines shall be PVC SDR-35 unless otherwise approved.

c. Standard Details. The installation of all new sewer lines shall conform to the "Standard Details for Public Works Construction," as adopted by Carson City.

d. Service Lateral. Each parcel shall be served by a separate sewer service lateral unless otherwise approved by the utilities department.

Sewer service laterals shall be located as per standard detail titled "typical utility laterals locations," unless otherwise approved by the utilities department. See standard details titled "sewer lateral connection detail" and "sewer service saddle detail." All service laterals, except those located in cul-de-sacs, shall be installed perpendicular to the main.

Sewer service laterals are not to be connected to manholes without prior approval of the city engineer.

e. Design Velocity. Two feet (2′) per second minimum, ten feet (10′) per second maximum for the design condition.

f. Mannings Formula. Mannings formula shall be used in determining slope, velocity, design flow and diameter.

g. Slope. Minimum pipe slope shall be as required to achieve the minimum velocity of two feet (2′) per second unless otherwise approved and as listed in the table below.

Size	Minimum Slope
8″	0.4%*
10″	0.25%
12″	0.19%
15″	0.14%

* Minimum slope for 8" PVC SDR-35 flexible pipe

The design engineer shall submit velocity and depth calculations for sewers less than minimum slope for review and approval prior to preparation of design drawings. For pipe slopes less than fourth-tenths of a percent (0.4%), the design engineer shall place the following note in a prominent location on each plan/profile sheet with slopes less than fourth-tenths of a percent (0.4%); "The contractor shall use due care in installing sewer mains." Minimum pipe slope for dead end sewers shall be five-tenths of a percent (0.5%) unless it can be shown by calculations that the velocity in the pipe is two (2) fps or greater. Dead end sewers shall generally end in a manhole. Dry sewers which shall be extended at a future date and installed without a manhole shall be certified as-built for line and grade by a Nevada professional engineer or land surveyor prior to backfill. The

engineer shall place a note in a prominent location on each plan/profile sheet including the as-built requirement.

h. Sanitary Sewer Design Standards and Specifications—Alignment.

1. Horizontal. Sewer line less than twenty-four inches (24″) in diameter shall be straight between manholes and generally parallel with the street or easement centerline whenever possible.

Sewer lines twenty-four inches (24″) and larger may be considered for horizontal curvature when approved by the department.

Vertical. Sewer lines with vertical curvature shall not be allowed.

i. Sanitary Sewer Design Standards and Specifications—Manholes and Laterals. Standard manholes shall be installed at the end of each line with continuing stubout; at all intersections of other sewer lines; at all changes in grade, size or alignment.

1. Spacing. Maximum spacing for manholes shall be four hundred feet (400′) for all lines smaller than fifteen inches (15″), and five hundred feet (500′) for lines fifteen inches (15″) to twenty-four inches (24″), and six hundred feet (600′) for twenty-four inches (24″) and larger.

Increasing Size. When a smaller sewer flows into a larger sewer, the invert of the larger sewer shall be lowered sufficiently to maintain the same energy gradient. An approximate method for obtaining this result is to place the crown at the same elevation for both pipes. The average energy gradient line shall be derived from anticipated full flow capacities of the pipes.

3. Drop Manholes. A drop connection shall be provided for a sewer entering a manhole at an elevation two feet (2′) or more above the manhole invert. When the difference in elevation between the incoming sewer and the manhole invert is less than two feet (2′), the manhole invert shall be filleted and channeled to prevent deposition of solids. The drop connection shall be constructed in accordance with standard detail requirements for manhole installation. Supporting calculations for hydraulic efficiency through manholes that do not meet the above requirements shall be submitted to the department for approval. Drop manholes shall be sixty inches (60″) in diameter.

4. General. Manholes shall be installed at the end of all sewer mains, at all intersections of mains, and changes of grade, size, or alignment. One foot (1′) stubs shall be provided at manholes for sewer mains which may be extended in the future. When extending a sewer main from an existing manhole without a stub, the existing manhole base shall be removed and replaced. Sewer mains entering manholes shall have a minimum one-tenth of a foot (0.1′) of fall across the manhole and a maximum two-tenths of a foot (0.2′) of fall across the manhole. Two-tenths of a foot (0.2′) of fall may be exceeded when matching crowns of different pipe diameters. Manholes with the angle between the entering sewer main and existing sewer main

less than seventy-five (75) degrees shall be sixty inches (60″) in diameter and maintain two-tenths of a foot (0.2′) of fall.

Watertight manhole covers shall be used in designated floodplains and in locations where covers may be flooded by local runoff.

5. Dead End Sewers. Dead end sewers shall generally end in a manhole. Dry sewers which shall be extended at a future date and installed without a manhole shall be certified as-built for line and grade by a Nevada professional engineer or land surveyor prior to backfill.

Each parcel shall be served by a separate sewer service lateral unless otherwise approved by the utilities department.

j. Separations. Separation of lines: Definitions. As used in Nevada Administrative Code (NAC), Chapter 445A, unless the context otherwise requires:

1. "Sewer main" includes:

(a) A sewer main of a sanitary sewer, storm sewer or any other type of sewer; and

(b) Any unidentified conduit with a diameter that exceeds six inches (6″).

"Sewer service lateral" includes:

(a) A sewer service lateral of a sanitary sewer, storm sewer or any other type of sewer; and

(b) Any unidentified conduit with a diameter of not more than six inches (6″).

Separation of lines: Sewer main parallel to water main or water service lateral. If a sewer main parallels a water main or water service lateral:

1. Whenever possible, the sewer main must be located lower than the water main or water service lateral.

Except as otherwise provided in subsection 3, the sewer main must be in a separate trench, and

(a) Located at least ten feet (10′) away from the water main or water service lateral, as measured horizontally from the exterior walls of the pipes;

(b) If compliance with paragraph (a) is not practicable, located:

(1) At least five feet (5′) away from the water main or water service lateral; as measured horizontally from the exterior walls of the pipes; and

(2) At least eighteen inches (18″) lower than the water main or water service lateral, as measured vertically from the exterior walls of the pipes; or

(c) If compliance with neither paragraph (a) nor paragraph (b) is practicable, located at least six feet (6′) away from the water main or water service lateral, as measured horizontally from the exterior walls of the pipes. If the sewer main:

(1) Is in place at the time a water project is performed, the sewer main must, except as otherwise provided in subparagraph (3), be totally encased in at least four inches (4″) of cement slurry;

(2) Is not in place at the time a water project is performed, the sewer main must, except as otherwise provided in subparagraph (3), be constructed of PVC with joints that comply with Standard D3212 of the America Society for Testing and Materials; or

(3) Is part of a storm sewer and has a diameter of not less than twenty-four inches (24″), the sewer main must be installed with watertight joints that use joint sealants or joint gaskets.

3. If compliance with the requirements for separation set forth in subsection 2 are not practicable:

(a) The water main or water service lateral must be encased in at least four inches (4″) of cement slurry; and

(b) The sewer main must comply with the requirements of subparagraphs (1), (2) and (3) of paragraph (c) of subsection 2.

Separation of lines: Sewer service lateral parallel to water main or water service lateral. If a sewer service lateral parallels a water main or water service lateral, the sewer service lateral must be in a separate trench, and

1. Located:

(a) At least 12 inches lower than the water main or water service lateral, as measured vertically from the exterior walls of the pipes; and

(b) At least 48 inches away from the water main or water service lateral, as measured horizontally from the exterior walls of the pipes; or

2. If compliance with subsection 1 is impracticable, located in such a manner as is authorized by the health division.

Separation of lines: Sewer main crossing water main. If a sewer main crosses a water main:

1. The sewer main must be located at least 18 inches lower than the water main, as measured vertically from the exterior walls of the pipes; or

If compliance with subsection 1 is impracticable:

(a) A reasonable effort must be made to place the pipeline joints of the sewer main and water main, other than any welded joints, an equal distance from the point of crossing;

(b) The sewer main and water main must be:

(1) Located at least 6 inches apart, as measured vertically from the exterior of the pipes; and

(2) Provided with such structural support as the supplier of water determines necessary; and

(c) The area of crossing must be constructed in such a manner that:

(1) The sewer main is constructed of materials that comply with Standard Specifications for Public Works Construction and the American Water Works Association Standards for Water System Materials;

(2) The sewer main consists of PVC which is constructed with joints that comply with Standard D3212 of the American Society for Testing and Materials;

(3) The sewer main or water main is totally encased in at least 4 inches of cement slurry for a distance of at least 10 feet on each side of the point of crossing; or

(4) The sewer main or water main is installed in a pipe sleeve that extends, without joints, at least 10 feet on each side of the point of crossing.

Separation of lines: Sewer main crossing water service lateral.

1. If a sewer main crosses a water service lateral, the sewer main must be located:

(a) At least 18 inches lower than the water service lateral, as measured vertically from the exterior walls of the pipes; or

(b) If compliance with paragraph (a) is impracticable, in such a manner as is authorized by the health division.

2. If a water service lateral is in place at the time a sewer main is constructed and must be relocated to comply with this section, the relocation must be performed:

(a) With the approval of an in accordance with the procedures and standards of the supplier of water; or

(b) If compliance with paragraph (a) is impracticable, in such a manner as is authorized by the health division.

Separation of lines: Sewer service lateral crossing water main or water service lateral.

1. If a sewer service lateral crosses a water main or water service lateral, the sewer service lateral must be located:

(a) At least 12 inches lower than the water main or water service lateral, as measured vertically from the exterior walls of the pipes; or

(b) If compliance with paragraph (a) is impracticable, in such a manner as is authorized by the health division.

2. If a water main or water service lateral is in place at time a sewer service lateral is constructed and must be relocated to comply with this section, the relocation must be performed:

(a) With the approval of and in accordance with the procedures and standards of the supplier of water; or

(b) If compliance with paragraph (a) is impracticable, in such a manner as is authorized by the health division. (Added to NAC by Board of Health, eff. 2-20-97.)

Separation of lines: Lines across surface water.

1. A supplier of water shall consult with the health authority before preparing any plans for the construction of a pipeline of the public water system across any surface water, regardless of whether the crossing will be over or under the surface of the water.

If the pipeline will cross over the surface of the water, the pipe must be adequately supported and anchored, protected from damage and freezing, and accessible for repair and replacement.

3. Except as otherwise provided in subsection 4, if the pipeline will cross under the surface of the water, the pipe must be:

(a) Covered with at least 5 feet of backfill; and

(b) Enclosed in a pipe sleeve or encased with at least 4 inches of cement slurry.

4. If the pipeline will cross under the surface of a channel of water that is 15 feet or more wide:

(a) The pipe must be constructed with watertight mechanical joints that are capable of deflection.

(b) Isolation valves must be located at both ends of the crossing in such a manner that the length of the crossing can be isolated for testing, repair and sampling. The isolation valves must be easily accessible and must not be subject to flooding. The isolation valve closest to the source of the supply of water must be located in a manhole or valve chamber which is large enough for human access. The manhole or valve chamber must contain a permanent sampling tap and means for pressure testing the pipe.

(c) The pipe must be enclosed in a pipe sleeve or encased with at least 4 inches of cement slurry.

Water mains in conflict with sewer, storm drain and reclaimed water lines shall be adjusted as per standard detail titled "lowering water mains." Other means for separation shall require approval of the utilities department.

k. Interceptor Connections. Sewer service laterals shall not be directly connected to sewer interceptors and sewer service laterals shall not be directly connected to sewer interceptor manholes without prior approval by the utilities department. A sewer interceptor is defined as any sewer main larger than 12 inches in diameter. Sewer service laterals may be connected to a parallel sewer main which is connected to an existing interceptor manhole.

l. Inverted Siphons. The design of siphons shall not be undertaken until approved by the city engineer. The siphons shall not have less than 2 barrels, with a minimum pipe size of 8 inches, and shall be provided with the necessary appurtenances for convenient flushing and maintenance. The manholes shall have adequate clearances for rodding. Sufficient head and pipe sizes shall be designed to obtain minimum velocities of 3 feet per second for average flow. The inlet and outlet details shall be arranged so that normal flow is diverted to 1 barrel and so that either barrel may be removed from service for cleaning.

m. Sewer Main Televising. All sewer mains shall have a television inspection prior to acceptance by the city and prior to paving, if applicable. All sewer mains and manholes shall be clear of debris prior to televising. Debris shall not be washed into existing sewer mains and shall be pumped to an approved disposal location or vacuumed. If sewer mains and manholes are not adequately cleaned prior to television inspection, the contractors shall be charged for cleaning and/or retelevising expenses incurred by the city.

n. Well Meters. For new development only, private well water meters are required for property connected to city sewer and not connected to city water. Meter location and type shall be approved by the utilities department prior to installation.

15.3.3 Sewer Lift/Pump Stations.

a. General Requirements. These standards apply only to those facilities to be owned and operated by the Carson City utilities department. The use of sewage lift stations or pump stations is allowed only where gravity flows are infeasible. The city engineer or designee shall determine if a lift/pump station is to be owned and operated by the city. The design of stations to be owned and operated by the city is subject to approval by the city engineer or designee.

Special design consideration shall be given to match existing systems and equipment as determined by the utilities director or designee. Lift stations shall not have any areas requiring routine or preventative maintenance, or normal operations, designated as a confined space.

All stations shall generally conform to the following:

b. Flows. The pumping system including the discharge piping and mains shall be designed for a minimum of 110% of the capacity of the tributary system leading to the station. The capacity shall be based on peak hour volumes.

c. Pumps. No fewer than 2 pumps shall be provided. When only 2 pumps are used, each pump shall pump the capacity of the system.

For stations with more than 2 pumps, there shall be a standby pump with the capacity of the largest unit.

Pumps shall be designed to operate automatically in alternate cycles with the idle pump in each cycle to function as standby. Pumps shall be specifically designed for the conveyance of wastewater.

Pumps in a drywell/wetwell application shall be equipped with motors that are premium efficiency with TEFC enclosures; double mechanical seals with external flushing water; seal water systems shall meet utilities department requirements (a standby seal water pump shall be provided).

d. Flow Metering. The pump station shall have 1 magnetic flow meter with 4-20 MA output installed on the pressure main in a suitable water-tight vault.

e. Piping. Drywell/wetwell piping applications shall be ductile iron with grooved or flanged joints.

Any fasteners used for joining pipes shall be stainless steel. Pump isolation valves shall be eccentric or full port plug valves. Swing check valves shall be provided on each pump discharge. The individual pump discharge shall connect into the main header horizontally to prevent grit buildup in the check valve. Sewage air relief valves are required at high points in the discharge line.

f. Wetwell. Openings to wetwells shall be sealed to prevent the escape of gasses. All surfaces of wetwells shall be coated with a coal tar epoxy coating to prevent concrete corrosion. Steel used in wetwells shall be stainless. Wetwell sizing shall be in accordance with the Hydraulic Institute Standards, latest issue. The wetwell shall be sized for no greater than 4 pump starts per hour to prevent motor overheating. Openings between the wetwell and drywell shall be sealed gas-tight.

g. Drywell. Drywell access shall be by straight stairs unless otherwise approved by the utilities director or designee. The drywell shall contain 2 sump pumps with 1 pump on the floor out of the sump. Each sump pump shall be capable of pumping 50 gallons per minute. The drywell layout shall allow for wastewater pump removal through a hatch at the ground level over each pump. The layout shall allow for personnel access to all sides of the installed equipment. The drywell shall contain an auxiliary space heater, station dehumidifying unit, and venting fan. Individual equipment lockouts are required for all motorized equipment.

h. Ventilation. Ventilation shall be in accordance with the latest edition on NFPA 820, Fire Protection in Wastewater Treatment and Collection Facilities or latest code as adopted by Carson City.

i. Flood Protection. Access to all spaces, all electrical panels, and motors shall be at an elevation above or protected from a 100 year flood.

j. Standby Power. A standby generator shall be provided capable of automatically running the entire station's load if power fails due to a sensed high or low voltage on any of 3 legs of 480 volt power. The generator shall be located in a weather-protective, sound-proofed, vandal-proof and lockable housing with access to all engine and generator components for servicing and maintenance. The generator shall be fueled by natural gas or propane with an above-ground, vandal-proof storage tank with a capacity to provide a 48 hour continuous run time. The generator engine block shall be equipped with a block heater and thermostat that shall allow for instantaneous start-up at -30 degrees F. The engine shall be protected with shutdown safeguards, gauges and indicator lamps for over-temperature, low oil pressure, overspeed and overcrank. The engine shall be equipped with an automatic battery charger, installed on the hot side of the transfer switch enabling the battery to maintain its charge when idle.

k. Applicable Design Codes. The following list of codes and standards are to be followed as a minimum:

Building Code (Latest Edition as adopted by Carson City);

Plumbing Code (Latest Edition as adopted by Carson City);

Mechanical Code (Latest Edition as adopted by Carson City);

Fire Code (Latest Edition as adopted by Carson City);

National Electrical Code (Latest Edition);

NFPA Article 820 (Latest Edition);

National Fire Code (Latest Edition);

Occupational Safety and Health Standards (Latest Edition);

Hydraulic Institute Standards (Latest Edition);

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers Standards for Wastewater Facilities (Latest Edition).

l. Controls. All controls and telemetry shall be above surface grade in suitable lockable and vandal-proof housings. Wastewater pump activation shall be by float or bubbler level control.

m. Alarms. Alarm system shall be of a radio telemetry type and shall include a sending unit at the lift station and a receiving unit at a city-designated facility. The telemetry system shall be compatible and of like type with those units presently in use at the wastewater reclamation facility or as determined by the

city engineer or designee. As a minimum, the following alarms shall be provided:

(1) High wetwell;

(2) Flooded drywell;

(3) Loss of power;

(4) Wetwell combustible gases;

(5) Loss of seal water;

(6) Wastewater pump failure (by check valve limit switch in addition to motor overload);

(7) Low level.

n. Electrical Components. In addition to the requirements of NFPA 820 and the National Electric Code, electrical enclosures shall be NEMA 4X, stainless steel out of doors and NEMA 4X fiberglass in drywells and wetwells as a minimum. Conduits and boxes located in wetwells shall be PVC coated.

o. Land. Suitable land area for the lift station installation and operation including access shall be provided by dedication to the city.

SECTION II:

That Title 12 (Water, Sewerage and Drainage), Chapter 12.06 (Industrial Wastewater Discharges- Sewer Design Standards), Section 12.06.380 (Sanitary sewer design standards and specifications—Sewer extension) is hereby amended (**bold, underlined** text is added, ~~[stricken]~~ text is deleted) as follows:

12.06.380 Sanitary sewer design standards and specifications—Sewer extension **and connection**.

A. In general, sewer connections and extensions shall be allowed only if the existing downstream system has capacity and if the sewage treatment facilities have capacity to accept the additional loading.

B. It shall be a requirement of the proposed project to determine the capacity of the downstream system. In the event there are restrictions or low capacities in portions of the existing system, it shall be the requirement of the proposed project to include the improvement of the restricted areas to accept the anticipated additional sewage flow.

C. Sewer mains are [~~considered~~] **deemed to be** at capacity when **the design** peak flow is at [~~d/D = seventy-five hundredths (0.75).~~] **depth/diameter (d/D) = 0.50, for a pipe that is 15 inches or less in diameter, and depth/diameter (d/D) = 0.75, for a pipe that is greater than 15 inches in diameter.**

D. All sewer main extensions shall be televised by the department. The applicant will be charged on a per foot basis for the actual cost of the televising as determined by the department.

SECTION III:

That no other provisions of Title 18 or Title 12 of the Carson City Municipal Code are affected by this ordinance.

PROPOSED on September 20, 2018, by Supervisor Brad Bonkowski.

PASSED October 4, 2018, by the following vote:

AYES: Supervisor Karen Abowd
Supervisor Lori Bagwell
Supervisor Brad Bonkowski
Supervisor John Barrette
Mayor Robert Crowell

NAYS: None.

ABSENT: None.

ABSTAIN: None.

_____
ROBERT L. CROWELL, Mayor

ATTEST:

_____
SUSAN MERRIWETHER, Clerk – Recorder

This ordinance shall be in force and effect from and after the 6th day of October, 2018.