

SUMMARY: Amends Washoe County Code, Chapter 110, Development Code, Article 420, Storm Drainage Standards by establishing options for the use of Low Impact Development (LID) storm drainage techniques for new development; adding guidelines for enforcement; providing a list of projects that require or may require a drainage report; referencing newly completed regional standards manuals and other development codes within the County which relate to drainage; adding sections on erosion and sediment control; omitting Sections 110.420.25, Drainage Report Contents and 110.420.30, Site Drainage and Grading Plans; removing design requirements; clarifying lot line drainage design standards; clarifying drainage easements for maintaining access; not allowing public storm water drainage to discharge into water supply ditches. In addition, a number of standards manuals have been updated, including the Truckee Meadows Regional Drainage Manual, which was completed in April of 2009, and these standards must be reflected in the current code requirements. Also, the proposed amendments have reorganized Article 420 by omitting many of the drainage standards, and keeping or adding County procedures, policies and processes, and other matters relating thereto.

BILL NO. 1605

ORDINANCE NO. 1425

AN ORDINANCE TO AMEND WASHOE COUNTY CODE, CHAPTER 110, DEVELOPMENT CODE, ARTICLE 420, TO ESTABLISH OPTIONS FOR THE USE OF LOW IMPACT DEVELOPMENT (LID) STORM DRAINAGE TECHNIQUES FOR NEW DEVELOPMENT; ADDING GUIDELINES FOR ENFORCEMENT; PROVIDING A LIST OF PROJECTS THAT REQUIRE OR MAY REQUIRE A DRAINAGE REPORT; REFERENCING NEWLY COMPLETED REGIONAL STANDARDS MANUALS AND OTHER DEVELOPMENT CODES WITHIN THE COUNTY WHICH RELATE TO DRAINAGE; ADDING SECTIONS ON EROSION AND SEDIMENT CONTROL; OMITTING SECTIONS 110.420.25, DRAINAGE REPORT CONTENTS AND 110.420.30, SITE DRAINAGE AND GRADING PLANS; REMOVING DESIGN REQUIREMENTS; CLARIFYING LOT LINE DRAINAGE DESIGN STANDARDS; CLARIFYING DRAINAGE EASEMENTS FOR MAINTAINING ACCESS; NOT ALLOWING PUBLIC STORM WATER DRAINAGE TO DISCHARGE INTO WATER SUPPLY DITCHES. IN ADDITION, A NUMBER OF STANDARDS MANUALS HAVE BEEN UPDATED, INCLUDING THE TRUCKEE MEADOWS REGIONAL DRAINAGE MANUAL, WHICH WAS COMPLETED IN APRIL OF 2009, AND THESE STANDARDS MUST BE REFLECTED IN THE CURRENT CODE REQUIREMENTS. ALSO, THE PROPOSED AMENDMENTS HAVE REORGANIZED ARTICLE 420 BY OMITTING MANY OF THE DRAINAGE STANDARDS, AND KEEPING OR ADDING COUNTY PROCEDURES, POLICIES AND PROCESSES; AND OTHER MATTERS RELATING THERETO;

THE BOARD OF COUNTY COMMISSIONERS OF THE COUNTY OF WASHOE DOES ORDAIN:

Sections:

110.420.00	Purpose
110.420.05	Applicability
110.420.10	Relation to Other Standards
110.420.15	Authorization of Alternative Standards
110.420.20	General Requirements
110.420.25	Other Improvements/Requirements (Public and Private)
110.420.30	Drainage Easements
110.420.35	Water Supply Ditches

Section 110.420.00 Purpose. The purpose of this article, Article 420, Storm Drainage Standards, is to set forth standards for ensuring that both private and public development provides adequate protection for citizens and property, minimizes and controls erosion and pollution impacts on the natural environment, and minimizes maintenance costs for drainage and flood control systems within Washoe County.

[Added by Ord. 908, provisions eff. 10/15/94.]

Section 110.420.05 Applicability. Per Article 910, Section 110.910.10, any building or structure erected or maintained or any use of property contrary to the provisions of the Development Code (Chapter 110, in its entirety) shall be and is hereby declared to be unlawful and a public nuisance. This includes requirements and publications incorporated therein by reference. Responsibility for enforcement is adopted in Section 110.910.05 of the Development Code.

The provisions of this article shall apply to public and private improvements for projects including, but not limited to, the following:

- (a) Projects that will require a Drainage Report:
 - (1) Public Works projects;
 - (2) Subdivisions; and subdivisions utilizing a grading permit;
 - (3) Projects in, containing or abutting a floodplain or Critical Flood Zone 1, stream, lake or major drainage facility; and
 - (4) Other projects as required by the County Engineer.
- (b) Projects that may require a Drainage Report:
 - (1) Parcel Maps;
 - (2) Projects requiring a special use permit;
 - (3) Projects requiring a building permit; and
 - (4) Projects requiring a grading permit.

[Added by Ord. 908, provisions eff. 10/15/94, amended by Ord. XXX, provisions eff. XX/XX/09.]

Section 110.420.10 Relation to Other Standards. The standards set forth in this article make reference to and shall be used in conjunction with the *Standard Specifications for Public Works Construction* and *Standard Details for Public Works Construction*, American Association of State Highway Transportation Officials (AASHTO) guidelines, the Truckee Meadows Regional Drainage Manual, Truckee Meadows Construction Site Best Management Practices Handbook, Truckee Meadows Structural Controls Design Manual and the Truckee Meadows Low Impact Development Handbook, latest editions.

[Added by Ord. 908, provisions eff. 10/15/94, amended by Ord. XXX, provisions eff. XX/XX/09.]

Section 110.420.15 Authorization of Alternative Standards. In instances where unique situations necessitate the application of storm drainage and flood control designs and systems not provided in this article, the following provisions shall apply:

- (a) **Accepted Engineering Practices.** Any storm drainage or flood control systems not allowed by these standards shall be designed in accordance with accepted engineering practices, the *Standard Specifications for Public Works Construction*, and the *Standard Details for Public Works Construction*, and shall be subject to the approval of the County Engineer.
- (b) **Alternative Standards.** The County Engineer may, at his or her discretion, authorize alternative standards not covered in this article, subject to the following:
 - (1) The alternative standards shall be the equivalent of the design requirements as set forth in this Code; and
 - (2) The alternative standards shall not be used for purposes of mere convenience or economy and the alternative must have equal or better function, quality, and safety.

[Added by Ord. 908, provisions eff. 10/15/94, amended by Ord. XXX, provisions eff. XX/XX/09.]

Section 110.420.20 General Requirements. The requirements set forth in this section shall apply to all development subject to this article.

- (a) The Truckee Meadows Regional Drainage Manual shall be the basis for all drainage design unless it is in conflict with this article, in which case the criteria in this article shall apply.
- (b) **Off-site Stormwater Discharge.** Discharge of the 100-year storm waters into a major drainage facility or natural water course shall not contribute to increasing the existing peak flow of storm drainage runoff in the drainage facility or natural water course. A major drainage facility is a channel or drainage way that has a drainage basin of one hundred (100) acres or more
- (c) **On-Site Facilities.** All drainage relating to the proposed development shall be collected on-site by facilities to accommodate, at a minimum, the storm drain waters for the 5-year return storm flow, both entering the site and generated on-site. The drainage shall be piped in accordance with

County standards to an existing public storm drain system, major drainage facility, natural water course, or a permanent surface drainage easement capable of conveying the drainage flows.

- (1) Where by reason of terrain or other circumstances the County Engineer determines that piping storm drain waters is inappropriate or unnecessary, alternative methods may be approved in lieu of piping, including methods pursuant to the provisions set forth in Section 110.420.15 to facilitate transporting such waters; and
 - (2) Easements to access and accommodate storm waters flowing across private property shall be provided as set forth in Section 110.420.35.
- (d) Natural Water Facilities. Development of property shall not adversely affect any natural drainage facility or natural water course, and shall be subject to the following provisions:
- (1) Natural facilities shall remain in as near a natural state as is practicable, with any modification proposed, including any erosion mitigating measures, addressed in the Drainage Report and drainage plans; and
 - (2) Be in compliance with Development Code Article 418, Significant Hydrologic Resources.
- (e) Flood Storage Zones. Development of property shall not adversely affect the flood storage zones and shall be in compliance with Development Code Article 416, Flood Hazards, and the Critical Flood Storage Ordinance.
- (f) Detention. On-site detention requirements for the 5-year and 100-year storms are as follows:
- (1) For a 5-year storm, detention of the difference in peak runoff between the developed and undeveloped conditions shall be required; and
 - (2) For a 100-year storm, detention of the difference in peak runoff between the developed and undeveloped conditions shall be required.
- (g) Erosive Soils/Sediment Control. Design of drainage systems in erosive soils may require the following in order to protect against plugging of the drainage system and to minimize maintenance as determined by the County Engineer:
- (1) Construction of sedimentation basins: The design shall calculate the annual sediment yield (in tons and cubic yards) from all on-site and off-site contributing areas. The calculation for sediment yield can be done using the Revised Universal Soil Loss Equation (RUSLE) or other methods acceptable to the County Engineer;
 - (2) Oversizing of storm drain pipes and ditches;

- (3) Steepening of pipe and channel grades;
 - (4) Use of self-cleaning channel lining; and
 - (5) Rear-yard landscaping.
- (h) Low Impact Development (LID) Handbook. Use of the LID Handbook is encouraged to the maximum extent practicable and should be complementary with Article 420, Storm Drainage Standards. The following are exceptions to the LID Handbook:
- (1) Porous pavement cannot be used for construction of County streets.
 - (2) LID improvements cannot be used in lieu of curb and gutter, unless specifically approved by the County Engineer.
 - (3) LID features on individual residential lots cannot be considered to reduce calculated stormwater flows unless directed to a central LID collection feature that is maintained by a Homeowners Association (HOA) or other acceptable maintenance organization.
 - (4) LID features shall not cause damage to County owned pavement section or other facilities.
 - (5) LID facilities shall be maintained by HOA's or other approved responsible private party.
- (i) Wetlands. When the U.S. Army Corps of Engineers (C.O.E.) has determined there are wetlands on a proposed site, a wetlands delineation map approved by the C.O.E. must be submitted to the Department of Community Development and the County Engineer. Any construction proposed in the wetland will require a permit from the C.O.E. with a copy provided to the County Engineer prior to construction.
- (j) Waters of the State of Nevada. Any work which requires fill intended to be placed within the "Waters of the State of Nevada" shall receive permission from the State Division of Environmental Protection prior to beginning construction. The County Engineer shall receive a copy of this permission prior to issuance of any permit.
- (k) Construction within a 100-Year Floodplain. Embankments and other structures shall not be placed within a 100-year floodplain, as determined by the most recent hydrologic study acceptable to the County Engineer, or of a major drainage facility without prior approval by the County Engineer. Where such approval is granted, embankments and structures shall be constructed in accordance with the standards outlined in Section 110.416.70. Development within areas shown on the Flood Insurance Rate Map (FIRM) shall comply with Article 416, Flood Hazards.
- (l) Discharge Across Property Lines. Surface drainage from any developed area shall not cross any property line except by way of a natural watercourse, major drainage facility, approved drainage system within a public storm drain easement, or permanent surface drainage easement. The manner of discharge shall be approved by the County Engineer and

the discharge must produce no significant adverse impacts to the downhill property. Surface flows should cross a property line within historic drainage ways and in a similar manner and quantity (or less) as the predeveloped conditions.

- (m) Extension of Storm Drain Facilities. Storm drain facilities shall be extended from within a development to adjacent undeveloped properties for future extensions in accordance with approved drainage plans.
- (n) Adjoining Property Surface Drainage. Existing surface drainage from adjoining property shall be perpetuated through a development unless other means of disposal acceptable to the County Engineer are used.
- (o) Irrigation Waters. Irrigation waters not controlled by a ditch or utility company and storm drain waters shall be conveyed by separate systems.

[Added by Ord. 908, provisions eff. 10/15/94. Amended by Ord. 1022, provisions eff. 7/1/98, amended by Ord. XXX, provisions eff. XX/XX/09.]

Section 110.420.25 Other Improvements/Requirements (Public and Private).

- (a) Minimum Pipe Diameter. Minimum pipe diameter for any public storm drain shall be twelve (12) inches.
- (b) Maintenance Access Roads. Access roads in a minimum easement width of twenty (20) feet shall be constructed in accordance with Development Code Article 436, Street Design Standards, when required by the County Engineer.
- (c) Corrugated Metal Pipe. Corrugated metal pipe is not acceptable for use in County-owned storm drain systems.
- (d) Storm Water Piping. Storm drains to a major drainage facility shall extend, in the direction of flow, at a minimum, to the 100-year flood line and be rip rapped from the outlet to the bottom of the channel. Channel modifications for erosion control shall be designed so that the receiving channel or entering channel will contain the flows without erosion. Channel alignment geometry shall minimize the depositing of stormwater sediment.
- (e) Overland Flow. Overland flow shall be provided for and channeled to County standards within dedicated easements or public rights-of-way to protect structures from flooding during storms that exceed the 5-year storm, up to and including the 100-year storm.
- (f) Public Drainage Facilities. Constructed public drainage facilities with design flows of sixty (60) cubic feet per second or less shall be piped in accordance with County standards. Constructed drainage facilities with flows exceeding sixty (60) cubic feet per second may be open channel construction in accordance with County standards, when approved by the County Engineer.
- (g) Piping in County Right-of-Way. The storm drain piping contained within County right-of-way shall be a minimum of Reinforced Concrete Pipe (RCP) Class III or the appropriate class when design requires a higher pipe

support strength. Thermoplastic pipe with a minimum pipe stiffness of 46 psi or the appropriate class or stiffness when design requires a higher pipe support strength is allowed when installed and tested in accordance with procedures in the Standards Specifications for Public Works Construction (Orange Book).

- (h) Headwalls. Standard headwalls or flared end sections shall be placed on the inlet and outlet of all public pipe and culverts. Pipes up to and including seventy-two (72) inches in diameter shall comply in all cases with County design, size and material standards. Headwalls for pipes exceeding seventy-two (72) inches require special design approved by the County Engineer.
- (i) Trash Racks. Trash racks shall be provided at the upper end of all closed public conduits as approved by the County Engineer.
- (j) Interceptor Swales. Paved interceptor swales, as per Washoe County *Standard Details for Public Works Construction*, shall be provided along the top of retaining walls and cut slopes to intercept drainage. When required by the County Engineer, paved swales shall be provided to intercept drainage from adjacent property.
- (k) Manholes. Manholes for public improvements shall be located at junction points, at changes in horizontal or vertical alignment exceeding the maximum allowable pipe deflection, at changes in conduit size, and at the end of public lines, unless otherwise approved by the County Engineer.
 - (1) When permitted by the County Engineer, pipe placed on curves (horizontal and vertical) shall meet manufacturer's recommendations for curved alignment.
 - (2) All curves, radii, length of pipe joints, and types of pipe shall be shown on the plans.
 - (3) Manholes shall be spaced at intervals not greater than three hundred (300) feet unless otherwise approved by the County Engineer.
- (l) Catch Basins. Catch basins are to be designed and located in accordance with the following criteria:
 - (1) Catch basins shall be installed at low points of vertical curves, at all major street intersections where appropriate, and at sufficient intervals to intake the peak flow for the 5-year return storm runoff, such that flows will not interfere with traffic or flood adjoining property;
 - (2) Laterals from catch basins are to tie into manholes in the direction of the flow (catch basins shall not tie into each other unless otherwise approved by the County Engineer);
 - (3) Oil Socks, or an approved equal, shall be installed within all catch basins to provide pre-treatment for petrochemicals;
 - (4) Sheet flow across intersections is not permitted; and

- (5) "Bubble up" type outlet basins are not permitted.
- (m) Drainage Facilities Crossing Under County Roadways. Drainage structures crossing under County roadways shall be designed to pass the 100-year storm flow resulting from a fully developed condition within the watershed. A depressed roadway section, or alternative route as approved by the County Engineer, shall be provided in the event stormwater flows overtop the roadway.
- (n) Valley Gutters. Reinforced concrete valley gutters for public improvements may be placed at street intersections only when approved by the County Engineer, and shall not be placed transverse to collector and arterial streets.
- (o) Floodplains. Embankment shall not be placed within the 100-year flood plain of a major drainage facility without prior approval by the County Engineer. Where such approval is given, the embankment shall be faced with rip rap or an approved lining designed for velocity to a minimum of one (1) foot above the 100-year flood line. Development within areas shown on the Flood Insurance Rate Map (FIRM) shall comply with Article 416, Flood Hazards.
- (p) Sump Conditions. Sump conditions within streets shall require paved overland concrete swales in drainage easements and a storm drain system for conveyance of storm water.
- (q) Lot Drainage Swales. Lot drainage swales on private property shall be provided in accordance with the provisions of this subsection.
- (1) Surface drainage swales collecting runoff from the area of two (2) or more lots are to be paved in accordance with County standards and are to be maintained and perpetuated by the property owners. Paving is not required for common side lot swales serving only two (2) adjacent lots.
- (2) Standard lot line drainage swales are to be designed to carry the waters generated by a 100-year storm with a maximum six (6) lots contributing run-off to the swale. Discharge from swales shall be conveyed to a public drainage facility. Should it be necessary to provide for drainage from more than six (6) lots and/or to exceed the maximum horizontal or vertical alignment, a modified design capable of conveying the run-off from the 100-year storm may be submitted for review by the County Engineer.
- (3) Easement requirements for lot drainage swales shall be established as a note on the official plat which reads: "A five (5) foot private drainage easement shall be located along all side and rear lot lines."

[Added by Ord. 908, provisions eff. 10/15/94. Amended by Ord. 1023, provisions eff. 7/1/98; Ord. 1022, provisions eff. 7/1/98. Renumbered from 110.420.35 and renamed from "Design/Improvement Requirements" amended by Ord. XXXX, provisions eff. XX/XX/09.]

Section 110.420.30 Drainage Easements. Easements shall be provided in accordance with the provisions set forth in this section.

- (a) Maintenance Access. Drainage easements with improved vehicular access in accordance with County standards shall be provided to publicly and privately owned storm drain manholes, storm drain inlets and outlets, ditches and associated structures not located within an improved street section. The portion of the easement used for vehicular access shall be a minimum of twenty (20) feet or as determined by the County Engineer.
- (b) Easement Widths. Storm drain easements for public and private improvements shall be a minimum width of twenty (20) feet. The easement width shall be determined by pipe or ditch width, required trench clearance, and excavated trench side slopes not less than one horizontal to one vertical (1:1), and as approved by the County Engineer.
- (c) Private Property. Storm drainage easement(s) will be required for storm waters generated within the boundaries of a development that discharge onto or across private property. If the storm drain waters generated within the boundaries of a development discharge from a public drain system onto or across private property, a permanent easement for access and maintenance shall be created from the property boundary to the point of discharge into an existing public storm drain system, major drainage facility, or natural water course. Improvements to County standards shall be required and the County Engineer shall determine if the easement(s) are to be accepted for maintenance.
- (d) 100-Year Floodplain. Easements for access to, and maintenance of, the 100-year storm floodplain associated with a major drainage facility or natural water course shall be provided. Improved vehicular access in accordance with County standards shall be provided when determined necessary by the County Engineer.

[Added by Ord. 908, provisions eff. 10/15/94. Renumbered from 110.420.40 and renamed from "Easements" amended by Ord. XXX, provisions eff. XX/XX/09.]

Section 110.420.35 Water Supply Ditches. Water supply ditches shall be designed in accordance with the conditions set forth in this section.

- (a) Public and Private Storm Drainage Runoff. No discharge of runoff from a public or private storm drain into a water supply ditch shall be allowed unless otherwise approved by the ditch or utility company and the County Engineer. Post development sheet flow into a water supply ditch shall not exceed pre-development sheet flow.
- (b) Access. Where water supply ditches are located within or adjacent to a proposed development, access and maintenance of the ditch shall not be hindered.
- (c) Improvements within Easements. Any improvements within the ditch company's easements are subject to the ditch company's approval.
- (d) Ditch or Watercourse Hazard. Fencing is required in accordance with Development Code Section 110.610.30(f).

[Added by Ord. 908, provisions eff. 10/15/94. Renumbered from 110.420.45 and amended by Ord. XXX, provisions eff. XX/XX/09.]

[Section 110.420.25, Drainage Report Contents, and Section 110.420.30, Site Drainage and Grading Plans, deleted by Ord. XXXX, provisions eff. xx/xx/09.]

[Business Impact Note: The Board of County Commissioners hereby finds that this ordinance does not impose a direct and significant economic burden upon a business, nor does it directly restrict the formation, operation or expansion of a business.]

Proposed December 8, 2009.

Proposed by Commissioner Weber.

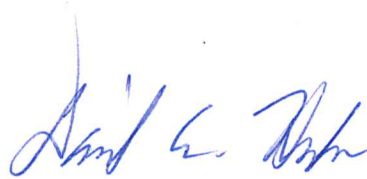
Passed January 12, 2010.

Vote:

Ayes: Humke, Weber, Larkin, Jung, Breternitz

Nays: none

Absent: none



David E. Humke, Chairman
Washoe County Commission



ATTEST:
County Clerk

This ordinance shall be in force and effective from and after the 22nd day of January, 2010.

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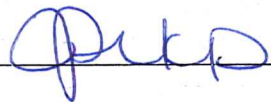
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STATE OF NEVADA
COUNTY OF WASHOE

Being first duly sworn, deposes and says: That as the legal clerk of the Reno Gazette-Journal, a daily newspaper of general circulation published in Reno, Washoe County, State of Nevada, that the notice referenced below has published in each regular and entire issue of said newspaper between the dates: **01/15/2010 - 01/22/2010**, for exact publication dates please see last line of Proof of Publication below.

Subscribed and sworn to before me

Signed: _____



JAN 22 2010



Tana Ciccotti

Proof of Publication

NOTICE OF ADOPTION WASHOE COUNTY ORDINANCE NO. 1425 BILL NO. 1605 An Ordinance to amend Washoe County Code, Chapter 110, Development Code, Article 420, to establish options for the use of Low Impact Development (LID) storm drainage techniques for new development; adding guidelines for enforcement; providing a list of projects that require or may require a drainage report; referencing newly completed regional standards manuals and other development codes within the county which relate to drainage; adding sections on erosion and sediment control; omitting sections 110.420.25, drainage report contents and 110.420.30, site drainage and grading plans; removing design requirements; clarifying lot line drainage design standards; clarifying drainage easements for maintaining access; not allowing public storm water drainage to discharge into water supply ditches. In addition, a number of standards manuals have been updated, including the Truckee Meadows Regional Drainage Manual, which was completed in April of 2009, and these standards must be reflected in the current code requirements. Also, the proposed amendments have reorganized Article 420 by omitting many of the drainage standards, and keeping or adding county procedures, policies and processes; and other matters relating thereto (Bill no. 1605) PUBLIC NOTICE IS HEREBY GIVEN that typewritten copies of the above-numbered and entitled ordinance are available for inspection by the interested parties at the

office of the County Clerk of Washoe County, Nevada, at heroffice at the County Courthouse, Virginia and CourtStreets, Reno, Nevada; and that said ordinance was proposed by Commissioner Weber on December 8, 2009, andfollowing a public hearing, was passed & adopted withoutamendment at a regular meeting on January 12, 2010, bythe following vote of the Board of County Commissioners: Those Voting Aye: David Humke, Bonnie Weber, Bob Larkin, John Breternitz, Kitty Jung Those Voting Nay: None Those Absent: None This Ordinance shall be in full force and effect from andafter January 22, 2010, i.e., the date of the second publication of such Ordinance by its title only. IN WITNESS WHEREOF, the Board of County Commissioners of Washoe County, Nevada, has caused this Ordinance to be published by title only. DATED: January 13, 2010. AMY HARVEY, Washoe County Clerk and Clerk of the Board of County Commissioners No. 678155 - Jan 15,22, 2010