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STATE OF NEVADA
COUNTY OF WASHOE

ss.

being first duly sworn, deposes and says:
That as the legal clerk of the RENO GAZETTE-JOURNAL, a daily newspaper published in Reno,
Washoe County, State of Nevada, that the notice:

Ordinance #1064

of which a copy is hereto attached, has been
published in each regular and entire issue of said
newspaper on the following dates to wit:

May 19, 26, 1999

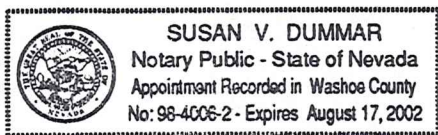
Signed *Flueth*

Subscribed and sworn to before me this

May 26, 1999

Susan V. Dummar

Public



PROOF OF PUBLICATION

NOTICE OF ADOPTION
WASHOE COUNTY ORDINANCE
NO. 1064

NOTICE IS HEREBY GIVEN THAT: Bill No. 1240, Ordinance No. 1064 entitled AN ORDINANCE AMENDING THE WASHOE COUNTY CODE BY AMENDING PROVISIONS RELATING TO CHAPTER 110 (DEVELOPMENT CODE), ARTICLE 436, STREET DESIGN STANDARDS AND OTHER MATTERS PERTAINING THERETO was adopted on May 11, 1999, by Commissioners Joanne Bond, Jim Galloway, Jim Shaw, and Ted Short, and Pete Sferazza voting "no," and will become effective on Friday, May 28, 1999.

Typewritten copies of the ordinance are available for inspection by all interested persons at the office of the County Clerk, 75 Court Street, Reno, Nevada.

AMY HARVEY
Washoe County Clerk

No.2100 May 29,26, 1999

JUN 01 1999

1064

SUMMARY: Amends Washoe County Code by revising provisions pertaining to Chapter 110 (Development Code) by modifying street design standards

BILL NO. 1240

ORDINANCE NO. 1064

AN ORDINANCE AMENDING THE WASHOE COUNTY CODE BY AMENDING PROVISIONS RELATING TO CHAPTER 110 (DEVELOPMENT CODE), ARTICLE 436, STREET DESIGN STANDARDS AND OTHER MATTERS PERTAINING THERETO.

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

SECTION 1.

Article 436, "Street Design Standard" of Chapter 110 of the Washoe County Code is hereby amended as set forth in Exhibit A which is attached and incorporated by reference.

SECTION 2.

The provisions of this ordinance shall be in force and effect from and after the 28 day of May 1999

Proposed on the 20th day of April, 1999.

Proposed by Commissioner Joanne Bond.

Passed on the 11th day of May, 1999.

Vote:

Ayes: Bond - Shaw - Short - Galloway

Nays: Sferazza

Absent: none

Jim Galloway
Chairman
Washoe County Commission

ATTEST:

Amy Haney
County Clerk

This ordinance shall be in force and effect from and after the 28th day of May, 1999

Article 436

STREET DESIGN STANDARDS

[This Article added by Ord. 908, provisions eff. 10/15/94. This Article amended in its entirety by Ord. 1064, provisions eff. 5/28/99.]

Sections:

110.436.00	Purpose
110.436.05	Applicability
110.436.10	Relation to Other Standards
110.436.15	Authorization of Alternative Standards
110.436.20	General Requirements
110.436.25	Street Sections
110.436.30	Grades
110.436.35	Street Intersections
110.436.40	Street Crowns
110.436.45	Street Curves
110.436.50	Curbs and Gutters
110.436.55	Arterial Median Openings
110.436.60	Paving
110.436.65	Temporary Patches
110.436.70	Retaining Walls
110.436.75	Street Signs
110.436.80	Hazard Locations
110.436.85	Bus Turnouts
110.436.90	Dead-End Streets
110.436.95	Emergency Access Roads
110.436.100	Improved Maintenance Access
110.436.105	Private Access
110.436.110	Private Streets
110.436.115	Driveways
110.436.120	Cul-de-sacs and Knuckles
110.436.125	Partial Width Streets
110.436.130	Street Extensions
110.436.135	Pedestrian and Bicycle Ways
110.436.140	Street Improvement Plans: General Requirements
110.436.145	Street Improvement Plans: Contents
110.436.150	Street Improvement Plans: Plan and Profile Sheets

Section 110.436.00 Purpose. The purpose of this article, Article 436, Street Design Standards, is to provide safe, properly designed, attractive streets that minimize environmental disturbance, including impacts on water quality, and minimize maintenance costs for the street system within Washoe County.

Section 110.436.05 Applicability. The provisions of this article shall apply to public and private street improvements for projects including, but not limited to, the following:

- (a) Projects that will be subject to this article are:
 - (1) Public Works projects;
 - (2) Subdivisions; and
 - (3) Subdivisions utilizing a Grading Permit.
- (b) Projects that may be subject to this article are:
 - (1) Projects requiring a site plan review;
 - (2) Projects requiring a special use permit;
 - (3) Projects utilizing a development agreement; and
 - (4) Parcel maps.

Section 110.436.10 Relation to Other Standards. The requirements set forth in this article make reference to and are to be used in conjunction with the following standards and guidelines:

- (a) The *Standard Specifications for Public Works Construction* and the *Standard Details for Public Works Construction*, latest editions;
- (b) The Washoe County Regional Transportation Commission (RTC) *Planning for Transit: A Guide for Community and Site Planning*;
- (c) The Institute of Traffic Engineers (ITE) guidelines;
- (d) The American Association of State Highway and Transportation Officials (AASHTO) guidelines;
- (e) The *Manual of Uniform Traffic Control Devices* (MUTCD); and
- (f) The Americans with Disabilities Act (ADA) standards.

Section 110.436.15 Authorization of Alternative Standards. The following situations may result in the use of alternative standards:

- (a) In instances where unique topographical or other physical constraints suggest the use of streets and associated systems that are not provided for in this article, the County Engineer may authorize alternative standards, provided that the alternative standards are equivalent standards in accordance with accepted engineering practices, the *Standard Specifications for Public Works Construction*, and the *Standard Details for Public Works Construction*.
- (b) In instances where the street or road is on or eligible for inclusion on the Regional Road Impact Fee (RRIF) Network, these standards do not apply. Prior to commencing planning or design of RRIF Network facilities, a developer shall contact the County Engineer who will convene a meeting with the developer and the Regional Transportation Commission staff to establish appropriate design standards and provide guidance on a RRIF credit agreement application.

Section 110.436.20 General Requirements. Street design requirements set forth in this section shall apply to all development subject to this article.

- (a) Level of Service. Streets shall be designed to meet a Level of Service (LOS) standard C, or as otherwise provided for by Regional Transportation Commission policy.
- (b) Street Improvements. All public and private streets within a development shall be improved to conform to the standards as set forth in this article.
- (c) Ingress and Egress. Unless otherwise approved by the County Engineer, at least two (2) means of ingress and egress built to County standards shall be provided to serve a subdivision development. Of the two (2) means, one (1) may be constructed to emergency access standards provided in Section 110.436.95, Emergency Access Roads.
- (d) Right-of-Way and Easement Acquisition. All necessary right-of-way or easement acquisition outside the boundaries of a proposed development, including any agreements pertaining to access, drainage, ownership and maintenance, shall be completed prior to the final map approval unless otherwise approved by the County Engineer.
- (e) Streets Adjacent to Property Boundaries. The location of streets adjacent to property boundaries shall comply with the following provisions:
 - (1) Unless otherwise approved by the County Engineer, a street shown by an adopted street pattern or indicated on the Streets and Highways System Plan map that lies along a boundary of a development is to be dedicated and constructed at full width and to County standards; and
 - (2) A proposed street, or streets or access adjacent to or necessary to serve a proposed development, which are not within the boundaries of the development, shall be improved full width with the development in accordance with County standards as required by the County Engineer.
- (f) Additional Right-of-Way. To facilitate turning movements near intersections, additional right-of-way shall be provided to the satisfaction of the County Engineer.
- (g) Partial Width Streets. Where permitted, partial width streets shall comply with the provisions set forth in Section 110.436.125, Partial Width Streets.
- (h) Street Extensions. Street extensions shall comply with the general provisions of this section and the provisions of Section 110.436.130, Street Extensions.
- (i) Asphalt Pavement Structural Section. Asphalt pavement structural sections shall be designed in accordance with AASHTO, Asphalt Institute or other industry standard design methods as may be approved by the County Engineer.
 - (1) Such design sections shall be prepared by a Nevada Registered Civil Engineer and submitted with street improvement plans; and
 - (2) Boring logs shall be shown on street improvement plans.

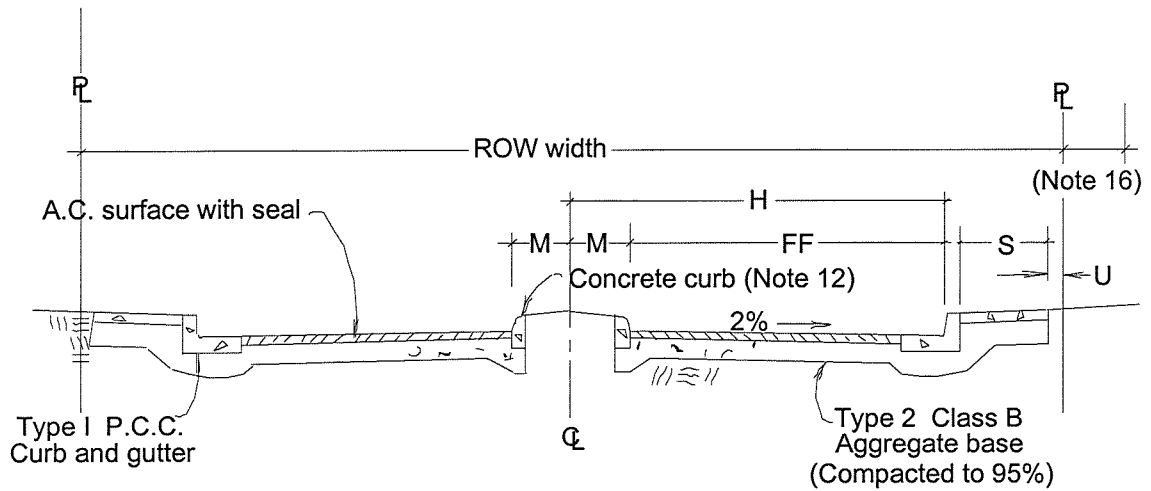
- (j) Traffic Studies. All traffic studies and reports shall be prepared in accordance with current ITE and AASHTO guidelines. Said studies and reports shall be prepared and stamped by a Nevada Registered Civil Engineer experienced in traffic engineering.
- (k) Utilities. All new utilities shall be placed underground consistent with the street specifications provided in this article.
- (l) Construction Traffic. Prior to final map approval, a proposed construction traffic haul route plan shall be submitted to the County Engineer for review and approval. Construction traffic includes all vehicles weighing in excess of 8,000 pounds unladen weight that are used to construct both off-site and on-site improvements.
 - (1) Existing residential streets that will be used as construction haul routes shall be evaluated by a geotechnical study to determine the existing pavement structural section and its load supporting capability; and
 - (2) If the pavement section is inadequate to support the proposed construction loadings but would be adequate in the absence of this construction traffic, the roadway shall be rehabilitated to support the anticipated additional loadings or reconstructed after construction use as needed to restore the existing design life, as approved by the County Engineer.
- (m) Occupancy Permits. A Permit of Occupancy shall be obtained from the Nevada Department of Transportation (NDOT) for access to, from or under roads and highways maintained by the NDOT. Applicant shall submit approved Permits of Occupancy to the County Engineer.
- (n) Signs. Signs and permanent markings shall be in accordance with the requirements of Section 110.436.75, Street Signs.

Section 110.436.25 Street Sections. All roadways dedicated and improved in Washoe County shall be constructed in accordance with the street sections for urban, suburban and rural areas illustrated in Tables 110.436.25.1 to 110.436.25.4. These standards are to be used in conjunction with the Land Use and Transportation Element of the Comprehensive Plan and the standards set forth in this article.

- (a) Exception. Any roadway that will be in the Regional Roadway Impact Fee Network must be designed in accordance with Regional Transportation Commission standards and conditions as directed under Section 110.436.15(b).
- (b) Variance from Street Sections. The Planning Commission may consider variations to the Street Section requirements under the provisions of Article 804, Variances, if appropriate considerations warrant different cross-section improvements.

Table 110.436.25.1

ROADWAY SECTIONS - A
GENERAL APPLICATIONS: ARTERIAL HIGHWAYS



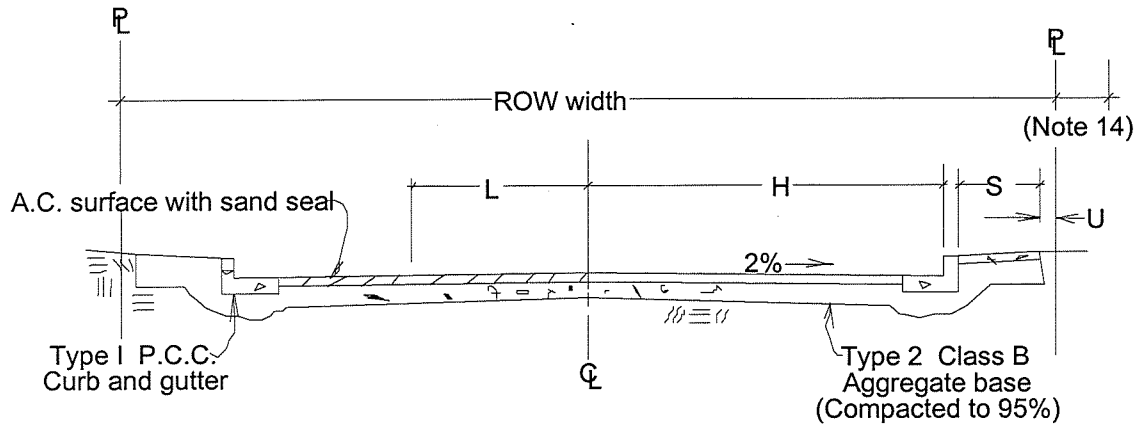
ROW	H	FF	M	S	U	ADT Maximum per 2 Travel Lanes	Remarks
100	44	36	8	5	0.5	12,100	Major Arterial
80	35	29.5		4	0.5	10,800	Minor Arterial

- Notes:
1. All widths are in feet.
 2. FF, H and M are measured to the front face of the curb. ROW is right-of-way; ADT is average daily traffic.
 3. ADT represents the design volume for a two (2) lane facility.
 4. Bicycle lanes shall be provided in accordance with the Bicycle and Pedestrian Element of the Regional Transportation Plan and to the satisfaction of the County Engineer.
 5. On street parking not allowed on arterials.
 6. Structural sections shall be designed by a registered engineer for a twenty (20) year life based on subgrade characteristics, as determined by a geotechnical investigation and anticipated traffic volume. Refer to Section 110.436.60(d) for minimum pavement section thickness.
 7. All curb and gutter is monolithic concrete and L shaped per standard detail.
 8. All sidewalk is concrete. Sidewalk shall be placed along both sides for arterials.
 9. All A.C. surfaces shall be sealed in accordance with Washoe County standards.
 10. Design of improvements to be done in accordance with Article 420, Storm Drainage Standards, and Article 436, Street Design Standards, of the *Washoe County Development Code*.
 11. All construction is to be done to current Washoe County standards and specifications.
 12. Median is concrete curb or other median construction approved by the County Engineer.
 13. Residential driveway access not allowed.
 14. Slope easements may be required in certain terrain to accommodate roadway section.
 15. Typical stripping is for twelve (12) foot lanes.
 16. A seven and one-half (7.5) foot public utility, traffic control signage and plowed snow easement on both sides of the ROW is required per standard detail.

Source: Washoe County Department of Public Works.

Table 110.436.25.2

ROADWAY SECTIONS - B
GENERAL APPLICATIONS: STREETS SERVING LOT SIZES LESS THAN 0.5 ACRES



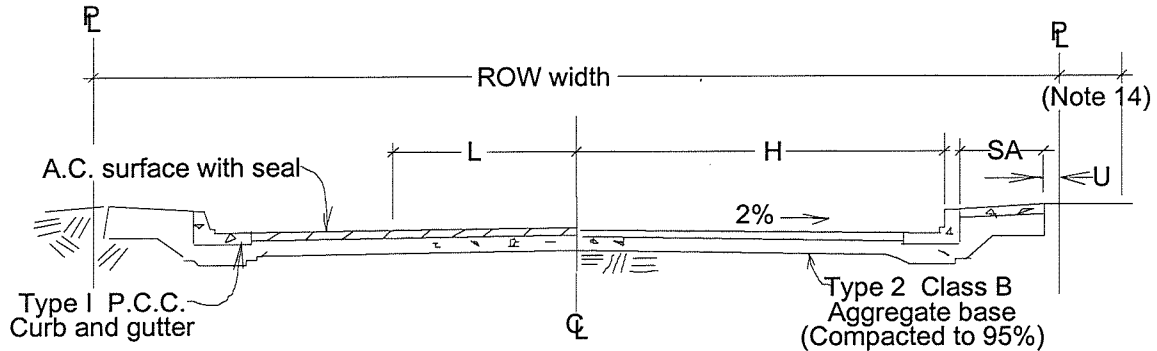
ROW	H	S	U	L	B	PL	ADT Maximum per 2 Travel Lanes	Remarks
52	20	5	0.5	12	4	0	9,600	Collector
42	16	4	0.5	11	0	2	1,000	Local

- Notes:
1. All widths are in feet.
 2. H is measured to the front face of the curb.
 3. L is travel lane; S is sidewalk; B is bicycle lane; PL is maximum number of parking lanes allowed; ROW is right-of-way, ADT is average daily traffic.
 4. ADT represents the design volume for a two (2) lane facility.
 5. Bicycle lanes shall be provided in accordance with the Bicycle and Pedestrian Element of the Regional Transportation Plan and to the satisfaction of the County Engineer.
 6. Structural sections shall be designed by a registered engineer for a twenty (20) year life based on subgrade characteristics, as determined by a geotechnical investigation and anticipated traffic volume. Refer to Section 110.436.60(d) for minimum pavement section thickness.
 7. All curb and gutter is monolithic concrete and L shaped per standard detail.
 8. Sidewalks are to be provided in accordance with Table 110.436.25.5.
 9. All A.C. surfaces shall be sealed in accordance with Washoe County standards.
 10. Residential driveway access not allowed to streets on which ten (10) year ADT design exceeds two thousand (2,000).
 11. Design of improvements to be done in accordance with Article 420, Storm Drainage Standards, and Article 436, Street Design Standards, of the *Washoe County Development Code*.
 12. All construction is to be done to current Washoe County standards and specifications.
 13. Slope easements may be required in certain terrain to accommodate roadway section.
 14. A seven and one-half (7.5) foot wide public utility, traffic control signage and plowed snow easement on both sides of the ROW is required per standard detail.

Source: Washoe County Department of Public Works.

Table 110.436.25.3

ROADWAY SECTIONS - C
GENERAL APPLICATIONS: STREETS SERVING LOT SIZES 0.5 - 1.5 ACRES



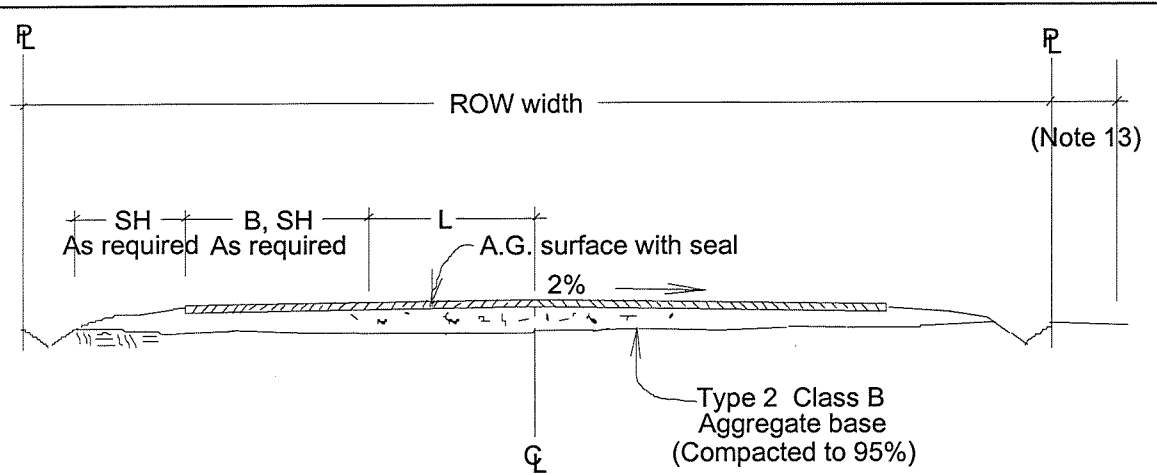
ROW	H	SA	U	L	B	PL	ADT Maximum per 2 Travel Lanes	Remarks
52	20	5	0.5	12	4	0	9,600	Collector
42	16	4	0.5	11	0	2	1,000	Local

- Notes:
1. All widths are in feet.
 2. H is measured to the front face of the curb.
 3. L is travel lane; SA is sidewalk area; B is bicycle lane; ROW is right-of-way; PL is maximum number of parking lanes; ADT is average daily traffic.
 4. ADT represents the design volume for a two (2) lane facility.
 5. Bicycle lanes shall be provided in accordance with the Bicycle and Pedestrian Element of the Regional Transportation Plan and to the satisfaction of the County Engineer.
 6. Structural sections shall be designed by a registered engineer for a twenty (20) year life based on subgrade characteristics, as determined by a geotechnical investigation and anticipated traffic volume. Refer to Section 110.436.60(d) for minimum pavement section thickness.
 7. All curb and gutter is monolithic concrete and L shaped per standard detail.
 8. Sidewalks in residential areas are to be provided in accordance with Table 110.436.25.5.
 9. All A.C. surfaces shall be sealed in accordance with Washoe County standards.
 10. Residential access is not allowed to streets on which ten (10) year design ADT exceeds two thousand (2,000).
 11. Design of improvements to be done in accordance with Article 420, Storm Drainage Standards, and Article 436, Street Design Standards, of the *Washoe County Development Code*.
 12. All construction is to be done to current Washoe County standards and specifications.
 13. Slope easements may be required in certain terrain to accommodate roadway section.
 14. A seven and one-half (7.5) foot wide public utility, traffic control signage and plowed snow easement on both sides of the ROW is required per standard detail.

Source: Washoe County Department of Public Works.

Table 110.436.25.4

ROADWAY SECTIONS - D
GENERAL APPLICATIONS: STREETS SERVING LOT SIZES GREATER THAN 1.5 ACRES



ROW	L	B	SH	ADT Maximum per 2 Travel Lanes	Remarks
60	12	0	0	9,600	Collector
50	11	0	0	1,000	Local

- Notes:
1. All widths are in feet.
 2. L is travel lane; B is bicycle lane; SH is shoulder; ROW is right-of-way; ADT is average daily traffic.
 3. ADT represents the design volume for a two (2) lane facility.
 4. Bicycle lanes shall be provided in accordance with the Bicycle and Pedestrian Element of the Regional Transportation Plan and to the satisfaction of the County Engineer.
 5. Structural sections shall be designed by a registered engineer for a twenty (20) year life based on subgrade characteristics, as determined by a geotechnical investigation and anticipated traffic volume. Refer to Section 110.436.60(d) for minimum pavement section thickness.
 6. All A.C. surfaces shall be sealed in accordance with Washoe County standards.
 7. Residential access not allowed to streets on which ten (10) year design ADT exceeds two thousand (2,000).
 8. The minimum paved shoulder width shall be two (2) feet, otherwise, the shoulder shall be engineered, Type 2 Class B aggregate base course or A.C. structural section as above, as required by the County Engineer.
 9. Erosion protection required for drainage ditches.
 10. Design of improvements to be done in accordance with Article 420, Storm Drainage Standards, and Article 436, Street Design Standards, of the *Washoe County Development Code*.
 11. All construction to be done to current Washoe County standards and specifications.
 12. Slope easements may be required in certain terrain to accommodate roadway section.
 13. A seven and one-half (7.5) foot public utility, traffic control signage and plowed snow easement on both sides of the ROW is required per standard detail.

Source: Washoe County Department of Public Works.

Table 110.436.25.5

SIDEWALK REQUIREMENTS

Factor	Sidewalk Both Sides	Sidewalk One Side	No Sidewalk
Street function	Collector ⁽¹⁾	Collector	Local/access/cul-de-sac ⁽³⁾
Traffic volume (ADT)	1,000+	251 to 1,000	250 or less
Comprehensive pedestrian plan ⁽²⁾	Per plan	Per plan	Per plan

- Notes:
1. May be limited to one side if separated from roadway improvements.
 2. Any sidewalk/pedestrianway requirements may be supplemented with a pedestrian circulation plan at the request of the County Engineer.
 3. Proximity of known or anticipated schools, shopping centers, etc., will be anticipated.

Source: Washoe County Department of Public Works.

Section 110.436.30 Grades. Street design shall comply with the following standards for minimum and maximum grades.

- (a) **Minimum Grades.** All streets shall have a minimum grade of five-tenths (0.5) of one (1) percent.
- (b) **Maximum Grades:**
 - (1) **Arterials.** Arterials shall have a maximum allowable grade of six (6) percent.
 - (2) **Residential and Collector Streets.** Residential collector and local streets shall have a maximum allowable grade of six (6) percent except as otherwise approved by the County Engineer, because of topographical constraints.
 - (3) **Residential Driveways.** The maximum grade for a driveway shall be fourteen (14) percent.
 - (4) **Street Grade Exceptions.** If approved by the County Engineer, the maximum grade for residential and collector streets may be increased as follows:
 - (i) Streets with a northern exposure may be allowed a maximum grade of nine (9) percent.
 - (ii) Streets with a southern exposure may be allowed a maximum grade of ten (10) percent.
 - (iii) All streets with grades greater than eight (8) percent shall be limited to a horizontal length of four hundred (400) feet, and shall be provided with landings on both ends of the steeper section of the grade. The grade of the landings shall be six (6) percent or less and at least one hundred (100) feet in length.

- (c) Long Grades. On long grades, the steeper grades shall be near the bottom of the ascent wherever possible, with shallower grades near the top of the ascent.
- (d) Street Intersections. Street intersection grades shall conform to the provisions set forth in Section 110.436.35, Street Intersections, and in accordance with Washoe County *Standard Details for Public Works Construction* for grade changes at intersections.
- (e) Horizontal Curvature. Horizontal curves shall be designed in accordance with Section 110.436.45, Street Curves.
- (f) Undulating Streets. "Roller coaster" and "hidden dip" patterns are not allowed on through streets.

Section 110.436.35 Street Intersections. Street intersections shall be designed in accordance with the provisions of this section.

- (a) Street Grades. Street grades at intersections shall be as follows:
 - (1) Intersections shall not be allowed when the grade on the primary street exceeds six (6) percent on streets with a northern exposure and eight (8) percent on streets with a southern exposure, unless otherwise approved by the County Engineer; and
 - (2) Street grades on the minor legs of intersections shall not exceed four (4) percent for a minimum distance of fifty (50) feet, measured from the extension of the face of the curb of the primary street through the intersection as improved to full County standards, unless otherwise approved by the County Engineer.
- (b) Local Streets at Stop Condition. Street intersections of two (2) local streets in a stop condition shall not require a vertical curve at the intersection of the crown section with the street grade.
- (c) No Stop Condition. No stop street intersections shall require a vertical curve transition at the intersection of the crown section with the street grade.
- (d) Intersection Angles. Any street or highway intersecting any other street or highway shall intersect at an angle as near to a right angle as is practicable, but in no event shall it intersect at an angle of less than sixty (60) degrees, unless approved by the County Engineer.
- (e) Offset Intersections. An offset distance of two hundred (200) feet or less separating two (2) local streets shall not be permitted.
- (f) Intersection Grade Change. Grade changes at intersections shall be in accordance with Washoe County *Standard Details for Public Works Construction*.

Section 110.436.40 Street Crowns. Street crowns shall be designed in accordance with the provisions of this section.

- (a) Definition. Unless otherwise approved by the County Engineer, the street crown shall be at the centerline of the traveled way.

- (b) Grade Specifications. The normal street crown grades shall be two (2) percent from the centerline to the lip of the gutter. When approved by the County Engineer, street crown grades may be a minimum of one (1) percent to a maximum of four (4) percent.

Section 110.436.45 Street Curves. Street curves shall be designed in accordance with the provisions of this section. Consideration for adjusting the minimum design speeds may be given if warranted by topographic constraints.

- (a) Vertical Curves. Vertical curves shall be provided wherever the algebraic difference between two (2) intersecting grades is two (2) percent or more, excluding intersections, unless otherwise approved by the County Engineer. Such vertical curves shall be of sufficient length to provide the following:
- (1) Minimum sight and stopping distances as established by AASHTO; and
 - (2) Minimum Design Speeds as follows:
 - (i) Twenty-five (25) mph (miles per hour) for local and collector streets;
 - (ii) Forty (40) mph for minor arterial streets; and
 - (iii) Fifty (50) mph for major arterials.
- (b) Horizontal Curves. Street design shall be consistent with the horizontal curve provisions set forth in this subsection.
- (1) Horizontal curve radii shall be determined using the following design speeds:
 - (i) Fifteen (15) mph (miles per hour) for local streets of two hundred fifty (250) average daily trips (ADT) or less;
 - (ii) Twenty-five (25) mph for local and collector streets;
 - (iii) Forty (40) mph for minor arterials; and
 - (iv) Fifty (50) mph for major arterial and expressway streets.
 - (2) Horizontal curvatures shall not be introduced at or near the top of a pronounced crest vertical curve or near the bottom of a pronounced sag vertical curve.
 - (3) The minimum design radius shall be determined using the following formula:

$$R_{min} = \frac{V^2}{15(e+f)}$$

- R = Centerline radius of roadway.
 e = Super elevation rate, decimal (for a normal crown section, e is assumed negative for adverse side). Super elevation may be required by the County Engineer on higher speed streets. Maximum allowable super elevation shall be four (4) percent.
 f = Friction factor from Table 110.436.45.1.
 V = Design speed (mph)

- (4) The friction factor (f) used in Subsection (b) (3) of this section shall be determined as follows:
- (i) All collector and arterial streets shall be designed using the friction factor from the "High Speed Urban Streets" as set forth in Table 110.436.45.1; and
 - (ii) Local streets shall be designed using the friction factor from the "Low Speed Urban Streets" as set forth in Table 110.436.45.1.
- (5) Stopping sight distances shall be in accordance with AASHTO recommended guidelines.
- (c) Curve Separations. Curves on any street, except local streets, shall be separated by a tangent of not less than one hundred (100) feet.
- (d) Right Angle Intersections. At each right angle street intersection, the property line at each block corner shall be rounded with a curve that conforms to the curb return radii set forth in Subsection (f) of this section.
- (e) Less Than Right Angle Intersections. Where streets intersect at angles of less than right angles or where peculiar conditions of intersection occur, the County Engineer may require a different radius.
- (f) Curb Returns. Curb returns shall have minimum face of curb radii as follows:
- (1) Twenty (20) feet on local streets;
 - (2) Twenty-five (25) feet on collector streets;
 - (3) Thirty (30) feet on minor arterial streets; and
 - (4) Forty (40) feet on major arterial and expressway streets.

Table 110.436.45.1

AASHTO MINIMUM DESIGN RADIUS CRITERIA

Design Speed V (mph)	f (Friction Factor)	
	Low Speed Urban Streets	High Speed Urban Streets
20	0.30	
25	0.25	
30	0.22	0.16
40		0.15
50		0.14

Source: American Association of State Highways and Transportation Official Publication, *A Policy on Geometric Design of Highways and Streets*, 1984.

Section 110.436.50 Curbs and Gutters. Curbs and gutters shall be provided in accordance with the requirements of this section.

- (a) Installation and Maintenance. When existing improvements are deteriorated or displaced, new curb and gutter shall be installed, including paving between street cut and gutter line on all streets.
- (b) Pedestrian Ramps. Curb returns shall be provided with pedestrian ramps for the handicapped in accordance with County and ADA standards.
- (c) Construction Materials. Curbs and gutters shall be constructed in accordance with the *Standard Specifications for Public Works Construction* and *Standard Details for Public Works Construction*, latest editions, unless otherwise approved by the County Engineer.

Section 110.436.55 Arterial Median Openings. Median openings on arterial streets that have continuous raised center medians shall not be permitted unless all of the provisions of this section are met.

- (a) Major Traffic Generator. The property to be served is a major traffic generator and has a minimum continuous frontage of six hundred (600) feet along a major street, or access easements are recorded to allow use of the opening by a minimum of two (2) properties which combined generate sufficient traffic to warrant the opening.
- (b) Proximity to Arterial Streets. The median opening is not less than seven hundred (700) feet from an intersection with an arterial.
- (c) Proximity to Collector or Local Streets. The median opening is not less than four hundred (400) feet from an intersection with a collector or local street.
- (d) Mid-block Median Openings. The median opening is not less than six hundred (600) feet from any other existing or planned mid-block median opening.
- (e) Sight Distance. Sight distance is adequate for the design speed of the major street.

- (f) Costs. All costs such as base material, pavements, safety lighting, traffic signals, reconstruction, or utility relocation required by a mid-block opening will be borne by the requesting party.
- (g) Design. The design of median openings shall be subject to the requirements and approval of the County Engineer, including storage, lengths and tapers, and in accordance with the AASHTO and/or ITE requirements.

Section 110.436.60 Paving. Design of the structural section for asphalt concrete pavement for public and private streets shall be in accordance with the provisions of this section.

- (a) Consistency. The design of the paving sections shall be in accordance with AASHTO, Asphalt Institute or other industry standard design methods as may be approved by the County Engineer.
- (b) Approvals. All paving shall require the approval of the County Engineer and be confirmed as adequate by the applicable soils investigation.
- (c) Design. The minimum design life of the structural section shall be twenty (20) years. A detailed geotechnical analysis and report shall be submitted to the County Engineer for review and approval. The resultant pavement section thickness shall be based on the geotechnical report and traffic analysis if the report indicates a structural section stronger than the minimum is required.
- (d) Minimum Pavement Thickness. The criteria defining the minimum thickness of the structural sections for asphalt concrete pavement for streets are as follows unless other equivalent minimum structural sections are approved by the County Engineer based on a geotechnical report:
 - (1) Arterial Streets. Asphalt concrete structural sections for arterial streets shall be a minimum of five (5) inches of pavement over six (6) inches of Type 2 Class B aggregate gravel base;
 - (2) Collector Streets. Asphalt concrete structural sections for collector streets shall be a minimum of four (4) inches of pavement over six (6) inches of Type 2 Class B aggregate gravel base;
 - (3) Local Streets. Asphalt concrete structural sections for local streets shall be a minimum of three (3) inches of pavement over six (6) inches of Type 2 Class B aggregate gravel base;
 - (4) Bus Routes. Asphalt concrete structural sections for proposed bus routes shall be a minimum of five (5) inches of full width pavement over six (6) inches of Type 2 Class B aggregate gravel base; and
- (e) Construction Haul Route. All on-site streets, both public and private, which are to be utilized by construction vehicles during development, shall be paved in accordance with the standards contained in Section 110.436.20, General Requirements.
- (f) Seal. A seal for private and public streets shall be placed within twenty (20) days after the asphalt concrete pavement has been constructed unless the temperature is below fifty (50) degrees Fahrenheit or when weather conditions, in

the opinion of the County Engineer, would prevent proper construction. The type of seal used shall be determined by the County Engineer.

Section 110.436.65 Temporary Patches. Temporary patches shall be provided in accordance with the provisions of this section.

- (a) **Thickness.** Temporary patches shall be a minimum of two (2) inches thick and compacted in accordance with procedures acceptable to the County Engineer.
- (b) **Elevation.** Temporary patches shall not deviate more than three-fourths (3/4) inch above the existing pavement grade when measured from the bottom of a straight edge laid two (2) feet beyond the patch on both sides of the existing pavement. In no case shall the elevation of the patch be lower than the existing adjacent pavement elevation.
- (c) **Loose Material.** All loose material shall be removed from the temporary patch site immediately after completion of the patch.

Section 110.436.70 Retaining Walls. All retaining walls shall be constructed in accordance with the provisions of this section.

- (a) **Design Calculations.** Unless using standard County details, all retaining walls constructed within the public right-of-way and those which are to be maintained by the County shall have a complete set of design calculations submitted with the improvement plans for review. All calculations shall be signed and sealed by a Nevada Registered Civil Engineer.
- (b) **Private Retaining Walls.** Any retaining walls associated with private streets and constructed on private property shall be reviewed by the Chief Building Inspector and shall be subject to the *Uniform Building Code* (UBC) design criteria and the provisions of this section.
- (c) **Anti-Graffiti Treatment.** An anti-graffiti treatment shall be applied to all masonry or concrete retaining walls.

Section 110.436.75 Street Signs. Street signs shall conform to the provisions of this section.

- (a) **Conformance.** Signs and pavement markings shall conform with the most recent edition of the *Manual on Uniform Traffic Control Devices* (MUTCD), published by the Federal Highway Administration.
- (b) **Intersections.** Street signs designed to County standards shall be installed at all intersections.
- (c) **Public Streets and Bikeways.** Signs and pavement markings shall be installed on all public streets and bikeways, as required by the County Engineer.
- (d) **Posted Speeds.** Posted speeds on County streets shall be in accordance with the following subsections, unless designated otherwise by the County Engineer:
 - (1) Twenty-five (25) miles per hour (mph) on local and collector streets;
 - (2) Thirty-five (35) mph on minor arterial streets; and

- (3) Forty-five (45) mph on major arterial streets.
- (e) Sign Layout. Proposed sign layouts shall be submitted with plans showing other public improvements (e.g. street improvement plans).
- (f) Private Streets. Street signs for private streets shall conform to the following requirements:
 - (1) Regulatory signs shall be installed at the juncture of all public streets with a private street, as approved by the County Engineer. Said sign shall state: "Private Street Not Maintained By County". All regulatory signs shall meet the *Manual on Uniform Traffic Control Devices* standards and be approved by the County Engineer.
 - (2) Private streets may be required by the County Engineer or Fire Marshal to be posted "No Parking" on one (1) or both sides, with the provision and maintenance of such signs being the responsibility of the homeowners or other association.

Section 110.436.80 Hazard Locations. High hazard locations along streets shall be mitigated by the use of protective devices approved by the County Engineer. Street right-of-way and width widening shall be provided where necessary for the installation of such protective devices.

Section 110.436.85 Bus Turnouts. Bus turnouts shall be provided when required by the County Engineer. The design of required bus turnouts shall be in accordance with Regional Transportation Commission (RTC) standards.

Section 110.436.90 Dead-End Streets. All dead-end streets shall be provided with a cul-de-sac in accordance with Section 110.436.120, Cul-de-sacs and Knuckles.

Section 110.436.95 Emergency Access Roads. Emergency access roads shall be designed in accordance with the provisions of this section.

- (a) Placement and Structural Design. Unless otherwise approved by the Fire Marshal, emergency access roads shall comply with the following standards:
 - (1) Emergency access roads shall be placed within a minimum thirty (30) foot wide easement; and
 - (2) The roadways shall be a minimum width of twenty (20) feet and structurally designed to support a tandem axle loading of twenty-five (25) tons, with a minimum outside turning radius of forty (40) feet.
- (b) Grades. Grades for emergency access roads shall not exceed the maximum for street grades, unless otherwise approved by the County Engineer.
- (c) Access. Access to such roadways shall be controlled by an emergency access control gate, and shall be posted with a sign stating "For Emergency Vehicles Only." Alternatives may be approved by the County Engineer.
- (d) Surfacing for Temporary Emergency Access Roads. Temporary emergency access roads shall be surfaced with a minimum of six (6) inches of Type 2 Class B aggregate base and sealed with a minimum of eight one-hundredths (0.08) gallon per square yard of asphalt or other alternative approved by the County

Engineer, and shall be provided with adequate roadside drainage consistent with County standards, including Article 420, Storm Drainage Standards.

- (e) Surfacing for Permanent Emergency Access Roads. Permanent emergency access roads shall be paved with a minimum of two and one-half (2.5) inches of asphalt concrete pavement on an engineered gravel base and shall be provided with adequate roadside drainage consistent with County standards, including Article 420, Storm Drainage Standards.

Section 110.436.100 Improved Maintenance Access. Vehicular access for maintenance of County-owned sanitary sewers and storm drainage facilities, and their related appurtenances, shall be designed in general accordance with the provisions of this section.

- (a) Minimum Width. Access ways/roads shall be constructed to a minimum width of twelve (12) feet.
- (b) Structural Design. Access ways shall be constructed to support a tandem axle loading of ten (10) tons.
- (c) Roadside Drainage. Access ways shall be constructed to provide adequate roadside drainage consistent with County standards, including Article 420, Storm Drainage Standards.
- (d) Grades. Improved maintenance access ways shall be constructed with grades not exceeding twelve (12) percent, unless approved by the County Engineer.
- (e) Surfacing for Temporary Maintenance Access Roads. Temporary emergency access roads shall be surfaced with a minimum of four (4) inches of Type 2 Class B aggregate base or other equivalent as approved by the County Engineer.
- (f) Surfacing for Permanent Maintenance Access Roads. Permanent maintenance access roads shall be a four (4) inch minimum thickness Type 2 Class B compacted gravel base on a compacted subgrade and shall be provided with adequate roadside drainage consistent with County standards, including Article 420, Storm Drainage Standards.
- (g) Snowplows. Snowplow maintenance turnarounds shall be located, and constructed to either permanent or temporary cul-de-sac standards, as determined by the County Engineer.

Section 110.436.105 Private Access. Private access roads serving not more than four (4) lots shall be designed in accordance with the following provisions:

- (a) Minimum Easement Width. Private access easements serving not more than four (4) residential units shall be a minimum of twenty (20) feet in width.
- (b) Improvement. Private access shall be improved to the satisfaction of the County Engineer.
- (c) Drainage. The access roadway shall be provided with adequate roadway drainage consistent with County standards, including Article 420, Storm Drainage Standards.

Section 110.436.110 Private Streets. Private streets for newly created subdivisions shall be designed in accordance with the provisions set forth in this section.

- (a) Street Section. The minimum pavement surface width for a private local street is twenty-two (22) feet and twenty-four (24) feet for a collector designated street. Concrete curb and gutter will be required for a lot size of less than 0.5 acres. The minimum required rights-of-way for these street sections shall be thirty-six (36) and thirty-eight (38) feet, respectively.
- (b) Street Signs. Street signs for private streets shall conform to the provisions of Section 110.436.75, Street Signs.
- (c) Traffic Carrying Capability. Lane widths of private streets shall be capable of safely carrying the projected traffic. This may need to be evidenced by a traffic report prepared by a Nevada Registered Civil Engineer, experienced in traffic engineering, to the satisfaction of the County Engineer.
- (d) Design and Construction. All private streets shall be geometrically designed and constructed to the applicable ITE and AASHTO criteria (e.g. curve radii, maximum slopes, setbacks) to the satisfaction of the County Engineer.
- (e) Right-of-Way. All street widths shall be sufficient to accommodate the projected traffic, attendant drainage, pedestrian demand, utilities, emergency vehicles, delivery and collection vehicles, and any bicycle lanes if planned by the developer, to the satisfaction of the County Engineer. The minimum right-of-way access widths shall be in accordance with Section 110.436.25, Street Sections, and this section.
- (f) Pavement Structural Section. The minimum pavement structural section shall be as provided for in Section 110.436.60, Paving.
- (g) CC&Rs. The conditions, covenants and restrictions (CC&Rs) shall prominently note to the satisfaction of the County Engineer that Washoe County will not assume responsibility for maintenance of the development's private street system or drainage system, or accept the streets for dedication to Washoe County unless the streets meet those Washoe County standards in effect at the time of offer for dedication.
- (h) Security Gates. Private streets that are designed with security gates shall have adequate on-site stacking space. The specific type and size of the stacking areas must be approved by and constructed to the satisfaction of the County Engineer.
- (i) Regulatory Signs. Signs must be posted in accordance with the provisions of Section 110.436.75, Street Signs.
- (j) 100-Year Flood. Private streets that are designed to permit passage of a portion of the 100-year flood over the roadway will be allowed, to the satisfaction of the County Engineer, if the following conditions are met:
 - (1) An alternate roadway access which is not susceptible to overtopping by the 100-year flood exists and is available for use;

- (2) The overtopped roadway is designed to not be washed out by the 100-year flood; and
- (3) Public safety will not be compromised.
- (k) Storm Drainage. Private streets for lot sizes of 0.5 acres or greater may be designed to use open drainage systems; all designs must be based on the requirements of Article 420, Storm Drainage Standards.
- (l) Final Map Notes. The applicable notes on the final map shall be modified to reflect the granting of the request for private streets to the satisfaction of the County Engineer. The map shall prominently note the private streets and drainages.
- (m) Turnarounds. Turnarounds shall be provided as needed.

Section 110.436.115 Driveways. Design and construction for driveways, approaches and curb cuts shall be in accordance with County standards and the provisions of this section.

- (a) Provision of Driveways. Where car storage or access for motor vehicles is desired in business, commercial or industrial districts, provisions shall be made for a driveway.
- (b) Commercial Driveways. Spacing from center to center shall be a minimum of two hundred thirty-five (235) feet on major arterials, one hundred fifty (150) feet on minor arterials, and fifty (50) feet on commercial collectors.
- (c) Driveway Approaches. All driveway approaches shall enter properties via a standard curb cut.
- (d) Unused Driveways. Unused driveways shall be replaced with new curb, gutter and sidewalks.

Section 110.436.120 Cul-de-sacs and Knuckles. Cul-de-sacs and knuckles shall be designed in accordance with the provisions of this section.

- (a) Minimum Grades. Minimum grades around cul-de-sacs and knuckle-type intersections shall be one-half of one (0.5) percent.
- (b) Street Crowns. The normal street crown may be increased to a maximum of four (4) percent from the centerline to the lip of the gutter.
- (c) Knuckle Turnouts. Without prior approval by the County Engineer, knuckle turnouts shall not be allowed on through streets or local streets serving more than twenty (20) lots.
- (d) Cul-de-sac Length. Cul-de-sacs shall not exceed fifteen hundred (1,500) feet in length as measured from the end of the cul-de-sac bulb to the intersecting street curb line. A maximum average daily traffic (ADT) of 300 is allowed.
- (e) Cul-de-sac Bulb Radius. The minimum turnaround radius of the cul-de-sac bulb shall be forty-eight (48) feet measured from the radius point to the face of the curb.

- (f) Cul-de-sac Bulb Right-of-Way. Minimum right-of-way for the cul-de-sac bulb shall be forty-eight (48) feet measured from the radius point to the right-of-way line.
- (g) Temporary Cul-de-sacs. Temporary cul-de-sacs shall comply with the provisions of this subsection.
- (1) When located within the development, temporary cul-de-sacs shall be constructed with the structural section used for the associated street, unless otherwise approved by the County Engineer. Asphalt curbing shall be used.
 - (2) Temporary cul-de-sacs shall be provided with adequate drainage consistent with County standards, including Article 420, Storm Drainage Standards.
 - (3) All temporary cul-de-sacs shall have a minimum radius of forty-eight (48) feet.

Section 110.436.125 Partial Width Streets. Partial width streets shall not be permitted whenever the street is used for access to a development. Where permitted, partial width streets shall comply with the provisions of this section.

- (a) Property Boundaries. The location of partial width streets adjacent to property boundaries shall comply with Section 110.436.20, General Requirements.
- (b) Street Improvement Plans. Partial width streets shall be clearly designated on street improvement plans as required by the provisions of Sections 110.436.140, Street Improvement Plans: General Requirements; 110.436.145, Street Improvement Plans: Contents; and 110.436.150, Street Improvement Plans: Plan and Profile Sheets, as being only a portion of a street and not a street of full width.
- (c) Existing Partial Width Streets. Where a dedicated and recorded partial width street exists adjacent to proposed development, the other portion shall be dedicated with the proposed development to make the street complete.
- (d) Minimum Improvements. Partial width streets which are permitted along the boundary of a development shall be improved at least to half width, but in no instance shall the paved travel way be less than twenty-four (24) feet in width (with no on-street parking). Curb, gutter and sidewalk adjacent to the development, and a minimum two (2) foot shoulder opposite the development, shall be provided. The final width of improvements shall be determined by the County Engineer.
- (e) Grading and Drainage. Provisions for cut and/or fill slopes along the shoulder and any necessary sanitary sewer, storm drain or utility extensions shall be provided and constructed to County standards.
- (f) Future Saw Cut. A two (2) inch by six (6) inch redwood header shall be placed along the open pavement edge, or a one (1) foot additional width shall be added to the pavement for a future saw cut.

Section 110.436.130 Street Extensions. Street extensions shall comply with the provisions of this section.

- (a) Development Boundary. Streets constructed to full width improvements shall be extended to the development boundary for extension to future development, when required by the County Engineer.
- (b) Temporary Cul-de-sac. Streets extending to the development boundary, which are proposed for future extension, shall be provided with temporary cul-de-sacs, when required by the County Engineer,
- (c) Future Development. The future removal of temporary cul-de-sacs and their replacement to full width County standard street improvements shall be provided with the extension of the street by future development.

Section 110.436.135 Pedestrian and Bicycle Ways. Pedestrian and bicycle ways shall be designed in accordance with the provisions of this section.

- (a) Sidewalk Widths. In no instance shall sidewalks be less than four (4) feet in width. In commercial areas, sidewalks shall not be less than five (5) feet in width.
- (b) Bikeway Design. The design of bikeways shall conform to *AASHTO Guide for Development of New Bicycle Facilities*, latest edition, unless otherwise specified by the County Code; *Standard Specifications for Public Works Construction*; *Standard Details for Public Works Construction*; Regional Transportation Commission guidelines; or this section.
- (c) Structural Section. The structural section of public and private bicycle and pedestrian paths shall conform to the following provisions:
 - (1) The structural section shall be based on a soils report recommendation; and
 - (2) The minimum structural section shall be two and one-half (2.5) inches of Type 2 or Type 3 asphalt concrete pavement compacted to ninety-five (95) percent minimum density over an engineered subgrade. Drainage shall be consistent with County standards, including Article 420, Storm Drainage Standards. The pavement shall be sealed in accordance with Washoe County standards.
- (d) Obstructions. No obstruction (i.e. power poles, street lights, signal poles and controls, water meter boxes, pull boxes, mail boxes, etc.) shall be located within sidewalk areas or pedestrian ways, except as allowed by the County Engineer. Any necessary additional right-of-way that may be required for locating such obstructions at the back of sidewalks shall be dedicated or easements provided for, if needed (e.g. for mailboxes).
- (e) Cut and Fill Slopes. Cut and fill slopes shall be set back a minimum of one (1) foot from the back of the sidewalk. If no sidewalk exists, the setback shall be a minimum of five (5) feet from the back of the curb.

Section 110.436.140 Street Improvement Plans: General Requirements. All street improvement plans submitted to the County shall conform to the requirements of this section.

- (a) Plan Size. Plans shall be on standard twenty-four (24) inch by thirty-six (36) inch sheets.

- (b) Plan Information. Each sheet of the plans shall include the north arrow, scale and a title block including the following:
- (1) The name of the project, owners and type of design shown on the plan;
 - (2) The name and seal of the Nevada Registered Professional Civil Engineer;
 - (3) The date, sheet number and total number of sheets; and
 - (4) Any information necessary to clarify the design.
- (c) Existing Conditions and Improvements. The plans shall clearly indicate, in plan and profile, the distinction between existing conditions and proposed improvements, and shall designate identified improvements as public or private.
- (d) Existing Paving. When showing existing pavement or concrete in relation to new work, suitable shading or delineation shall be made to highlight the proposed new work.
- (e) Adjacent Property. The plans shall show adjacent property owners.
- (f) Certification. All designs shall be certified by a Nevada Registered Professional Civil Engineer. Upon concurrence by the County with the plans, this engineer shall provide the County Engineer with reproducible sepia-mylar copies of the plans and at least one (1) set of prints of the plans, wet stamped and signed.

Section 110.436.145 Street Improvement Plans: Contents. The contents of the street improvement plan sheets shall include all items required by the County Engineer and the provisions of this section.

- (a) Title Sheet. Improvement plans shall include a title sheet which shows the entire project or assessment district and includes, at a minimum, the following:
- (1) Index;
 - (2) Legend;
 - (3) Vicinity map with any city limits shown thereon;
 - (4) Owner;
 - (5) Engineer; and
 - (6) All pertinent notes.
- (b) Utility Index. Improvement plans shall include a utility index which consists of a single sheet of the subdivision or development showing the following:
- (1) The general location of sanitary sewer and storm drain systems;
 - (2) All manholes and structures identified and numbered; and

- (3) All improvements indicated as either public or private as appropriate, including all rear lot drainage ways and piping to off-site systems and drainage ways where required.
- (c) Easements. The following right-of-way and easement lines shall be properly dimensioned and noted on the plans:
- (1) Right-of-way lines on both sides of all streets;
 - (2) Boundaries of lots fronting on both sides of all streets;
 - (3) Drainage and utility easements;
 - (4) Section lines and corners;
 - (5) Land grant lines; and
 - (6) Temporary construction easements, both existing and proposed.
- (d) Topography and Improvements. All pertinent topographic features and improvements shall be shown including:
- (1) Street lines;
 - (2) Curbs, sidewalks and shoulders;
 - (3) Location and size of sanitary sewers, storm drains and drainage ditches;
 - (4) Location and sizes of utilities including water, gas, electrical, telephone lines, utility poles, and fire hydrants; and
 - (5) Structures, houses, trees and other flora, and all other features of the area which may affect the design.
- (e) Proposed Improvements. Where proposed improvements meet existing infrastructure facilities, the plan shall show all of the following for a minimum distance of three hundred (300) feet from any boundary of the development:
- (1) Pertinent existing elevations;
 - (2) Gutter grades;
 - (3) Centerline of pavement;
 - (4) Sewer and storm drain inverts;
 - (5) Driveway locations; and
 - (6) Traffic signal equipment, detection loops, etc.
- (f) Stationing and Orientation. The stationing on plan and profile shall be from south to north and west to east insofar as practical and shall include:
- (1) All street centerlines;

- (2) Beginning of curves;
 - (3) Points of compound curves;
 - (4) End of curves; and
 - (5) Limits of work.
- (g) Curve Data. Curve data shall include:
- (1) Centerline radius;
 - (2) Length of curve; and
 - (3) Delta or central angle and tangent distances.
- (h) Vertical Curves. Vertical curves shall include:
- (1) The length of the curve;
 - (2) BVC (Beginning of Vertical Curve) and EVC (End of Vertical Curve) station and elevation; and
 - (3) K-value used (rate of vertical curvature).
- (i) Benchmarks. Benchmarks shall be clearly indicated on the plans as to location, description, elevation and datum.
- (j) Typical Section. A typical section(s) for each type of street within the area to be improved shall be a part of the plans and shall include the following:
- (1) Structural features (delineated);
 - (2) Width of right-of-way;
 - (3) Improvement dimensions and details on both sides of all streets; and
 - (4) Boring logs from the soils report are to be included in the construction plans.
- (k) Cross Sections. Cross sections shall be included in the plans, when directed by the County Engineer. Normally, this would occur in limited areas with unusual topographic features or when special conditions occur that would affect the work.
- (l) Grading and Drainage. Plans shall include existing and proposed drainage conditions according to the following requirements:
- (1) Existing contours every five (5) feet as fine continuous or dashed lines and proposed contours every five (5) feet as solid lines;
 - (2) All cut and fill slopes;
 - (3) Retaining walls;

- (4) Street grades in percent;
 - (5) Peak flows, for the 5-year and 100-year storms, entering and leaving the development and disposition of same;
 - (6) The 100-year flood line;
 - (7) Spot elevations on streets, top of curbs, retaining walls, lots and surface drainage improvements;
 - (8) Drainage arrows showing individual lot drainage; and
 - (9) Soil requirements printed thereon.
- (m) Plan and Profile Sheets. Plan and profile sheets shall be prepared in accordance with the requirements set forth in Section 110.436.150, Street Improvement Plans: Plan and Profile Sheets.
 - (n) Details. All County standard details being used in the project shall be shown. Any additional details shall be shown as necessary for clarification of the improvements. Any necessary general notes shall be provided, including the following note: "All construction shall conform to County standards".
 - (o) Permit. A Revocable Permit shall be obtained from the Nevada Department of Transportation for any facilities encroaching upon a state right-of-way or for any drainage disposal on the right-of-way. (Allow a minimum of 30 days for obtaining a permit.)
 - (p) Drawings of Record. Drawings of record noting all of the changes in the improvements constructed from the design plan shall be provided. The drawings of record shall be submitted on a reproducible sepia-mylar reproduced from the original drawings that have been stamped and sealed thereon by a Nevada Registered Civil Engineer verifying the drawings of record conditions. The distance from the nearest sanitary sewer manhole to each "Y" or "T" intersection, and to the terminus of each service at the property line shall be shown.
 - (q) Private Streets. The County will not assume maintenance responsibility for access and drainage facilities and their associated structures located outside the limits of dedicated street rights-of-way or public easements, or which are not constructed to County standards for public facilities. Private facilities for access and drainage located on private street, lots or parcels are to be owned and maintained by the property owners.

Section 110.436.150 Street Improvement Plans: Plan and Profile Sheets. Plan and profile sheets shall conform to the requirements set forth in this section.

- (a) Scale. Minimum vertical scale shall be 1" = 10' and minimum horizontal scale shall be 1" = 40'.
- (b) Streets and Access Roads. All information for streets and access roads shall be located on the plan and profile sheets in accordance to the provisions of this subsection.
 - (1) Name of street(s);

(2) Plan sections shall show the following information:

- (i) Monuments;
- (ii) Right-of-way widths;
- (iii) Improvements;
- (iv) Traffic control devices;
- (v) Intersecting street(s);
- (vi) Centerline stationing;
- (vii) Horizontal curve data and stationing;
- (viii) Benchmark locations and elevations; and
- (ix) Existing facilities.

(3) Profile sections shall show the following information:

- (i) Existing and proposed grades along centerline, including tangency slopes;
- (ii) Vertical curve elevations and data;
- (iii) Station and elevation of intersecting street(s); and
- (iv) Existing facilities.

(c) Storm Drains. If located within a public street section, all information for storm drains on the street plan and profile sheets shall be shown in accordance with the provisions of this subsection.

(1) Plan sections showing storm drainage facilities shall include the following information:

- (i) Location of pipe in relation to street centerline and/or easements and property lines;
- (ii) Type and location of manholes and catch basins, showing the station and number and rim elevations of each;
- (iii) Size, class and type of pipes;
- (iv) Type, location and 5-year storm flow of inlet and outlet structures;
- (v) Location and type of maintenance access roads to manholes or structures, where required;
- (vi) Typical channel section, where required;

- (vii) Benchmark locations and elevations; and
 - (viii) Existing utilities.
- (2) Profile sections showing storm drainage facilities shall include the following information:
- (i) Existing and finished surface grades and pipe profile showing type, size, slope, Q^5 (Volume of runoff from 5-year storm event), velocity at Q^5 , and the hydraulic grade line if the pipe is under pressure;
 - (ii) For channels, the depth of flow for the 5-year and 100-year storms;
 - (iii) Manhole station, number, rim elevation, and invert elevation of all pipes entering or exiting and distance between manholes; and
 - (iv) Existing utilities with pertinent elevations.
- (d) Sanitary Sewers. If located within a public street section, all information for sanitary sewers shall be shown on the street plan and profile sheets in accordance with the provisions of this subsection.
- (1) Plan sections showing sanitary sewers shall include the following information:
- (i) Location of pipe in relation to street centerline and/or easements and property lines;
 - (ii) Type and location of manholes, showing the station and number and rim elevation of each;
 - (iii) Size, class and type of pipe;
 - (iv) Service lateral locations with reference to station and property lines;
 - (v) Location and type of maintenance access roads, where required;
 - (vi) Benchmark locations and elevations; and
 - (vii) Existing utilities.
- (2) Profile sections showing sanitary sewers shall include the following information:
- (i) Existing and finished surface grades;
 - (ii) Pipe profile showing type and class, size, slope and velocity at peak flow;
 - (iii) Manhole station, number, rim elevation, and invert elevation of all pipes entering or exiting;

- (iv) Distance between manholes; and
- (v) Existing utilities with pertinent elevations.