CITY OF RENO

PUBLIC WORKS DESIGN MANUAL

REVISED DATE
JANUARY, 2009

Updates to the design manual will be posted on our website. Please check often. No hard copies will be mailed out. To receive email notification of future changes, please register at: http://renoconnect.com/

Visit our design standards website at: http://www.cityofreno.com/Index.aspx?page=363

Please call 775-334-2548 if you have questions, and your call will be directed to the appropriate person.

City of Reno Public Works Department
Capital Projects Division
1 East 1st Street
Reno, Nevada

Thank you.

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INTRODUCTION

The purpose of this manual is to establish minimum requirements for design, plans, testing, inspection, and supporting documents. The requirements herein, unless otherwise noted, apply to public and private improvements. It makes reference to and is to be used in conjunction with the Standard Specifications for Public Works Construction and Standard Details for Public Works Construction, latest editions. Additional design publications referenced herein include, but are not limited to:

A Policy on Geometric Designs of Highways, American Association of State Highway and Transportation Officials (AASHTO)
American National Standard Practice for Roadway Lighting, Illuminating Engineering Society of North America, July, 1983.
American National Standards Institute (ANSI)
Asphalt Institute Manual Series No. 1
Flood Insurance Rate Map, Federal Emergency Management Agency
Floodways Map, Federal Emergency Management Agency
Guidelines for Development of New Bicycle Facilities, AASHTO
Guidelines for Urban Major Street Design, Institute of Traffic Engineers (ITE)
HEC-1, HEC-2, HEC-RAS, Army Corps of Engineers
Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration
Reno Municipal Code
Technical Release No. 55, Urban Hydrology for Small Watersheds, Soil Conservation Service
The Blue Book (A Reference Manual of Nevada Law Governing Design for the Construction Industry)
Truckee Meadows Construction Site Best Management Practices Handbook (Truckee Meadows Regional Stormwater Quality Management Program), February 2003

The requirements herein apply to a Public Works Project, Subdivision, Special Use Permit, Site Plan Review, Parcel Map, Maps of Dedication, Zone Change, Annexation, excavation/encroachment permit or building permit.

This manual is intended to cover only standard situations encountered in design. Non-standard situations that arise which are not covered in this Manual are to be designed in accordance with accepted engineering practices, the Standard Specifications for Public Works Construction, Standard Details for Public Works Construction, shall contain supporting data, shall be subject to the approval in writing of the City Engineer, and shall not be authorized in any case for any purposes of mere convenience or economy.

Atypical situations may arise with respect to standards covered by this manual, and in

such cases, the City Engineer may authorize alternative standards, provided that any such alternative standards are the equivalent of the design standards and are in accordance with accepted engineering practices, provided that such alternatives shall not be authorized in any case for any purposes of mere convenience or economy, and provided further that such alternatives with all supporting data be submitted to the City Engineer in writing for his review and approval.

Additional information, explanation, calculation, details, non-standard parts approvals, warranties, instruction manuals, references or other design elements may be required at the discretion of the City Engineer.

The City does not assume maintenance responsibility for access, drainage facilities, sanitary sewer facilities, and their associated structures located outside the limits of dedicated street rights-of-way or public easements, or which are not constructed to City standards for public facilities.

Private facilities for access, drainage and sewerage located on private streets, lots or parcels are to be owned and maintained by the property owners.

All on-site private improvements are certified to the Community Development Department, Building Division, except as provided herein.

Users of this manual are cautioned that other policies or standards may apply. Examples include those provided by the Regional Transportation Commission; State of Nevada Department of Transportation; Washoe County; City of Reno, Fire Department; and City of Reno, Downtown Redevelopment District.

RESOLUTION NO. 7291

RESOLUTION APPROVING THE 2009
CITY OF RENO PUBLIC WORKS DESIGN MANUAL

WHEREAS, the City of Reno is desirous of revising the Public Works Design Manual related to engineering design, and to ensure consistency with the City of Reno Master Plan, Zoning Codes, and other associated design standards;

NOW, THEREFORE, be it resolved by the City Council of the City of Reno, Nevada, that the Public Works Design Manual, be revised to ensure consistency with the City of Reno Master Plan, Zoning Codes and other associated design standards as set forth in Exhibit "A", which is on deposit in the office of the City Clerk;

NOW, THEREFORE, be it resolved that the 2009 Public Works Design Manual as set forth in Exhibit "A" is hereby approved.

Upon motion of Councilmember Zadra, seconded by Councilmember Aiazzi, the forgoing Resolution was passed and adopted this 11th day of February, 2009, by the following vote of the Council:

AYES: Zadra, Aiazzi, Hascheff, Gustin, Sferrazza, Dortch, Cashell

NAYS: None

ABSTAIN: None ABSENT: None

APPROVED this 11th day of February, 2009.

~~Robert A. Cashell, Sr., Mayor~~ Dwight Dortch
Assistant Mayor

ATTEST:

CITY CLERK AND THE CLERK OF THE CITY COUNCIL OF THE CITY OF RENO, NEVADA

CITY OF RENO CORPORATE SEAL WASHOE COUNTY, NEVADA

DEFINITIONS

Definitions. The following words and phrases, when used in this chapter, shall have the meanings respectively ascribed to them:

Accessibility -- The extent to which facilities are usable by people with disabilities, including wheelchair users.

ADA -- Americans with Disabilities Act of 1990, a Federal law.

ADT -- Average Daily Traffic. An estimate or statistical value of traffic volume based on actual traffic counts, or counts generated by an acceptable software model, using a particular street or intersection that is adjusted to account for typical day of the week and month of the year variations. This term is also sometimes used to express the estimated daily trip generation for a particular land development.

Alley means an access way which is used primarily for vehicular service access to the back side of properties otherwise abutting on a street.

Benefit District means the geographic area established and defined in the Regional Road Impact Fee Ordinance, within which regional road impact fees collected in the District are required to be spent in the District to ensure that feepayers receive sufficient benefit from regional road impact fees paid.

Bicycle -- A vehicle having two tandem wheels, either of which is more than 16" in diameter or having three wheels in contact with the ground any of which is more than 16" in diameter, propelled solely by human power, upon which any person or persons may ride.

Bicycle Facilities -- A general term denoting improvements and/or provisions made by public agencies to accommodate or encourage bicycling, including parking facilities, mapping all bikeways, and shared roadways not specifically signed or designated for bicycle use.

Bicycle Lane (Bike Lane) -- A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bicycle Path (Bike Path) --A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

Bicycle Route (Bike Route) -- A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers, with or without specific bicycle route number.

Bikeway -- Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Building Permit -- The development permit issued by the City before any building or construction activity can be initiated on a parcel of land.

Capacity -- The maximum number of vehicles which have a reasonable expectation of passing over a given section of a street in one (1) direction, or in both directions of a highway, during a given time period, under prevailing traffic conditions, expressed in terms of vehicles per hour or maximum critical turn volumes each of which is described under Level of Service. Capacity is measured in the Regional Road Impact Fee Ordinance and the Regional Capital Improvement Plan during the PM Peak Hour.

CCFEA -- Capital Contribution Front-Ending Agreement means a pre-development agreement between the RTC and the Participating Local Government with any person who proposes to construct non site related street project capital improvements or to dedicate right-of-way identified in the Regional Road Impact Fee CIP. The Agreement shall specifically describe: (1) the contribution, payment, construction, or land dedication; (2) the time by which the construction of roadway improvements or dedication of land shall be paid; (3) the amount of credit to be issued; and (4) the schedule for when credits shall be issued during phases of construction or dedication of land.

CIP – Capital Improvements Plan..

Citifare -- The fixed-route public transit service operated by the RTC.

CitiLift -- The demand-response paratransit service operated by the RTC for individuals with disabilities who are certified as eligible for the service.

City Attorney means that official elected to the office of City Attorney of the City of Reno, or his/her designee.

City Engineer means that official charged with the title of City Engineer of the City of Reno, or his/her designee.

City Standards means the current edition in effect at time of project approval of "Construction Standards" and "Standard Specifications", as defined herein and as adopted by City Council. The most current standards shall apply at the time of project approval or submittal of the building permit.

Code: An article of the Reno Municipal Code together with related adopted documents.

Collector -- A street functional classification which relates to master plan documents and design standards. Collectors link local streets in neighborhood areas to arterial streets and provide access to abutting properties. STOP signs are often found at intersections with local streets, and intersections with arterial streets may have traffic signals. Typical width (curb to curb) is 40 feet in residential areas and 50 feet in commercial areas, with speed limits of 25 or 30 miles per hour.

Construction Standards means "The Standard Details for Public Works Construction" (Orange Book) or as amended by the Supplemental Standard Drawing Details, and the "Public Works Design Manual" as adopted by City Council.

Construction Standards - Downtown Redevelopment District means the most current standards, specifications and details available from the City of Reno Downtown Redevelopment Agency, also commonly called "Redevelopment Standards", "Downtown Standards", "Streetscape", etc.

Critical Drainage Area means the floodplain area where the existing drainage system is inadequate, or where some other unusual drainage pattern or criteria exists.

Default means that the improvements listed in Exhibit "A" to the improvement agreement have not been completed by the subdivider/developer within the period concurred to by the City Council including any applicable extensions in time, and/or the security posted by the subdivider/developer to insure that improvements will be completed, has lapsed or been revoked by the surety.

Developer means any party who causes property to be improved and/or developed.

Development means any man-made changes being made to real property.

Director of Public Works means that official charged with the title of Director of Public Works of the City of Reno, or his/her designee.

DOT -- United States Department of Transportation.

Drainage Plan means a plan prepared and sealed by a Nevada Registered Professional Civil Engineer, for the collection, transportation, treatment and discharge of storm water within and from a subdivision/development.

Drainage Report means a technical engineering report prepared and sealed by a Nevada Registered Professional Civil Engineer, whose purpose is to identify and define drainage characteristics associated with a proposed development and to define possible problems and conceptual solutions. In its final form, the drainage report shall transform the defined conceptual solutions to a final drainage plan.

Driveway means a privately owned and maintained vehicular access not used for address assignment and excluding alleys.

Driveway - shared means a driveway serving more than one owner, requiring approval of the City Engineer, and a recorded shared access easement from each impacted property owner.

Engineer means any person who is retained as a consultant by the owner/developer and is legally authorized to practice civil engineering in the State of Nevada in accordance with NRS Chapter 625, and includes Project Engineer and Engineer of Record as used in this title.

Engineer of Record means any person who is retained as a consultant by the owner/developer and is legally authorized to practice civil engineering in the State of Nevada in accordance with NRS Chapter 625, and maintains a valid City of Reno business license.

EPA -- Environmental Protection Agency.

ETR -- Employer-Based Trip Reduction Program.

Expansion of Street Capacity -- Any widening, intersection improvement, signalization or other capital improvement designed to increase the existing street's capacity to carry vehicles.

FHWA -- Federal Highway Administration.

Final Plat means a map prepared in accordance with the provisions of NRS Chapter 278 and City code.

Fire Chief means that official charged with the title of Fire Chief of the City of Reno, or his/her designee.

First Flush: Runoff from a defined precipitation event which results in a displacement

of the majority of pollutants from impervious surfaces.

Freeway -- Freeways are intended to move large volumes of traffic at high speeds through and between urban centers. No direct access to abutting properties is permitted and all surface streets crossing the facility are grade-separated. Speeds are normally 50-65 mph and right-of-way widths typically are 150-300 feet.

Improvement Agreement means an agreement executed between the City of Reno and the owner of land to be subdivided or developed where developer built public improvements are to be installed, modified or removed.

Improvement Plans of Record means the plans accepted by the City as the official plans of the subdivision or development which are placed on file with the City.

Interceptor -- A pipe having a minimum inside diameter of 18 inches, which conveys sewage and feeds by gravity to a publicly owned and maintained wastewater treatment.

Level of Service (LOS) -- A qualitative measure describing operational conditions, from "A" (best) to "E" (worst), within a traffic stream or at intersections, which is quantified for street segments by determination of a volume to capacity ratio (V/C), which is a measurement of the amount of capacity of a street which is being utilized by traffic, and which is quantified for signalized intersections in terms of either vehicle delay or total critical hourly volumes. The V/C for LOS "A" through "E" for street segments are:

Level of Service	Maximum Volume/ Capacity Ratio	Hourly Vehicles/Lane Mile			
		Major Arterial	Minor Arterial	Collector	Freeway Ramp
LOS "A"	0.60	435	390	390	960
LOS "B"	0.70	507	455	455	1,120
LOS "C"	0.80	580	520	520	1,280
LOS "D"	0.90	653	585	580	1,440
LOS "E"	1.00	725	650	650	1,600

Intersection level of service may be measured either in terms of vehicle delay or in terms of total critical turning movements, as follows:

Level of Service	Delay (seconds)	Maximum Critical Volume
LOS "A"	≤10	900
LOS "B"	>10 - ≤20	1,050
LOS "C"	>20 - ≤35	1,200
LOS "D"	>35 - ≤55	1,350
LOS "E"	>55 - ≤80	1,500

Local Street -- A low speed, low traffic volume street that provides access to abutting properties in neighborhoods.

Lot means and includes any distinct parcel, or any portion of real property divided with the intent of transfer of ownership or for building development.

Low Impact Development (LID):
The principles and techniques used in designing sites (starting from site layout, and grading and compaction phases of construction) that disturb only the smallest area necessary, minimize soil compaction and imperviousness, preserve natural drainages, vegetation, and buffer zones, and utilize on-site storm water treatment techniques. LID sites reduce and compensate for development's impact(s) on hydrology and water quality.

Major Arterial -- A functional classification for a street that accommodates large volumes of through traffic between city districts. Direct access is discouraged to individual properties, although limited access to major projects (i.e., business park, shopping mall, etc.) is allowable, provided such access does not compromise the roadway's ability to handle large volumes of through traffic. Access, parking and loading may be restricted or prohibited to improve capacity. Traffic signals are located at intersections with other arterials and some collector streets. The typical width provides for six travel lanes; speed limits on major arterials are usually 40-50 miles per hour.

Major Drainage Facility -- All storm drainage swales, channels, piping, basins, and appurtenances associated with drainage of storm water from a drainage basin of 100 acres or greater.

Master Plan: A comprehensive, long-term general plan for the physical development of the City in accordance with NRS 278.150 et sequia. The form of the master plan is defined by NRS 278.200.

Mechanical Stabilization means the application or use of structural measures such as rock rip-rap, gabions, Turfstone or an approved equal, to provide sufficient soil cover to prevent soil movement by action of wind, water or structure loading. Stabilization may include incorporation of vegetative measures if approved, so that in combination the structural and vegetative measures will provide an appropriate level of protection. The City Engineer will determine whether the proposed methods are appropriate.

Minor Arterial -- A minor arterial provides traffic access between neighborhoods and city centers. The minor arterial street is subject to some access control, channelized intersections, and parking restrictions, and is signalized at intersections with major arterial streets, other minor arterial streets and some collector streets. The city standard width of 68 feet allows for left turn lane and four travel lanes. Speed limits on minor arterials are typically 30-45 miles per hour.

MPO -- Metropolitan Planning Organizations are planning agencies consisting of a board representing the county and each incorporated city. The role of the MPO is to coordinate planning activities within the county. The RTC is the MPO for Washoe County.

Natural Watercourse means a natural creek, stream, or river, whether seasonal, intermittent, or perpetually flowing.

NDOT -- Nevada Department of Transportation.

Non-Site Related Improvements -- Capital improvements and right-of-way dedications for street improvements to the arterial streets and collector streets identified in the Regional CIP that are not Site Related Improvements.

Nevada Revised Statute (NRS): A codified collection of laws enacted by the State of Nevada.

Orange Book -- The specifications and details for public works for local entities, which is also known as the Standard Specifications for Public Works Construction, or Standard Details for Public Works Construction.

Ordinance: A law or decree enacted by the Reno City Council.

Overlay Zoning District: An overlay district, whether general or a planning area, is a zone which is superimposed on a base zone thus establishing additional regulations which restrict, prohibit, or add to the base zoning regulations set forth in RMC 18.08. Examples include Regional Center Plans and Transit Oriented Development Corridors.

Owner means the person, partnership, firm, corporation, or association having sufficient proprietary interest in the land sought to be subdivided or developed to commence and maintain proceedings to subdivide or develop the same per Reno Municipal Code.

Parcel Map means a map filed pursuant to NRS 278.461 to 278.469 inclusive, and City code, which creates 4 or fewer lots, parcels, sites, units, plots or interest. The City of Reno does not include streets offered for dedication as one of the four or fewer parcels. Minimum lot sizes are exclusive of areas encumbered by access easements.

Pedestrian Way means a pedestrian walkway constructed on a public easement or dedicated right-of-way.

PM Peak Hour -- The highest traffic volumes during four consecutive 15 minute periods usually between the hours of 4:00 PM and 6:00 PM.

Project Manager -- An individual who meets the following criteria:

A. Has been designated by his or her employer as that company's Project Manager on a given project,

B. The individual who has the responsibility and authority of planning and execution of the project, including:

1. Conformance to all applicable safety standards, quality control standards, quality assurance compliance

2. Scheduling of various construction activities, including coordinating sub-contractor activities, delivery of materials, and adherance to local ordinances for working hours

3. Coordination of required meetings and inspections with local government entities

4. Coordination of required permitting for project work

5. Change order decision making

6. Dispute resolution authority

PSC -- Nevada Public Service Commission.

Rational Method: A simple procedure for calculating the direct precipitation peak runoff from a watershed basin, using the rainfall intensity, the area of the watershed and the runoff coefficient appropriate for the type of watershed runoff surface.

Region -- See "Truckee Meadows Region"

Regional Road Impact Fee -- A fee collected at the time of building permit issuance from traffic generating land developments. Fees are subsequently utilized to fund road capital improvements identified in the Regional CIP.

Regional Road Impact Fee CIP -- The Regional CIP is the listing of road capital improvements necessary to maintain regional level of service standards relative to traffic volume increases associated with land development activity.

Regional Road Impact Fee Network -- All major arterial streets and minor arterial streets, and collector streets that are within the Service Area, including proposed arterial streets and collector streets necessitated by projected future traffic generating land development activity as identified in the Regional CIP.

Reno Municipal Code (RMC): A codified collection of laws enacted by the Reno City Council.

Road Capital Improvement includes the transportation planning of, preliminary engineering, engineering design studies, land surveys, alignment studies, right-of-way acquisition, engineering, permitting, and construction of all necessary features for any street construction project on any arterial or collector street on the Regional CIP, undertaken to accommodate additional traffic resulting from new traffic generating land development, including but not limited to: (a) construction of new through lanes, (b) construction of new bridges, (c) construction of new drainage facilities in conjunction with new street construction, (d) purchase and installation of traffic signals, including new and upgraded signalization, (e) construction of curbs, gutters, sidewalks, medians and shoulders, (f) relocating utilities to accommodate new street construction, (g) the construction and reconstruction of intersections, (h) the widening of existing streets, (i) bus turnouts, (j) acceleration and deceleration lanes, (k) interchanges, and (l) traffic control devices. Road Capital Improvement does not include sound walls or landscaping.

RTC -- The Regional Transportation Commission is a governing board representing Washoe County and the county's two incorporated cities, Reno and Sparks. The Commission consists of five board members: two Washoe County Commissioners; two Reno Council members; and one Sparks Council member.

RTP -- Regional Transportation Plan.

Security means a notarized letter of credit furnished by a bank or financial institution authorized to do business in the State of Nevada, in the form approved by the City Attorney; or in lieu thereof, a cashier's check or a certified check of the subdivider/developer made payable to the City of Reno; or a cash deposit with the City in lawful money of the government of the United States, provided further that under no circumstances shall the words be construed to authorize or permit a personal bond or other security other than that described herein.

Service Area -- The area encompassed within the boundaries of the Region is hereby designated as the Service Area for the imposition of regional road impact fees and the collection and expenditure of funds under the provisions of the Regional Road Impact Fee Ordinance. The Service Area specifically excludes the Washoe County High Desert Planning area, the Washoe County Truckee Canyon Planning Area, and the Washoe County Tahoe Planning Area. With regard to Citifare transit service, service area is defined as the area with 1/4 mile of a bus route.

Sidewalk means a public pedestrian walkway located adjacent to or immediately near a street.

Site-Related Improvements -- Those capital improvements and right-of-way dedications and/or site-related improvements not included in the Regional Road Impact Fee CIP that provide direct access to the development. Direct access improvements include but are not limited to the following: (a) site driveways and streets; (b) right and left turn lanes leading to those driveways and streets; (c) traffic control measures for those driveways; (d) frontage street; and (e) local and/or private streets.

Sphere of Influence (SOI): Area external to City of Reno for which a master plan has been adopted and is therefore subject to extra-territorial jurisdiction.

Stable Rock means a rock slope as certified by a Nevada registered engineer that will stand near vertical and provide perpetuity and stability against weathering.

Standard Specifications means the "Standard Specifications for Public Works Construction hereinafter referred to as S.S.P.W.C. (a.k.a., the orange book), as adopted by the Reno City Council.

Street means a way for vehicular access and address assignment whether designated as a street, freeway, highway, parkway, throughway, road, avenue, drive, lane, boulevard, place, or however otherwise designated, but not including alleys or driveways.

Street Designation means the categorization of a street as local, collector, arterial, etc., based on the average daily traffic (ADT) at ultimate buildout and/or Master Plan functional classification.

Street-Private means a street which is to be owned and maintained by parties other than the City or other government agency.

Street-Public means a street owned by the City or other government agency.

Structural Treatment Controls: Devices that are constructed to provide temporary storage and treatment of stormwater runoff and non-storm water flows.

Subdivider means a person who owns and causes land to be divided by means of a subdivision, parcel map or record of survey.

Subdivision means, pursuant to NRS 278.320, any land, vacant or improved, which is divided or proposed to be divided into 5 or more lots, parcels, sites, units or plots for the purpose of any transfer, development or any proposed transfer or development.

Surveyor means a person who is retained by the owner/developer and is currently licensed to practice land surveying in the State of Nevada in accordance with NRS Chapter 625.

TAZ -- Traffic Analysis Zone. A small geographic area used for transportation planning purposes. The metropolitan area is divided into hundreds of TAZs.

Temporary Work – A period of time not to exceed 18 months.

TIP -- A regional Transportation Improvement Program (TIP) is required each year. The TIP is prepared annually by the MPO and identifies federally funded transportation projects.

TMRPA -- Truckee Meadows Regional Planning Agency.

Traffic Calming means the combination of mainly physical measures that reduce speeds and/or volumes of motor vehicles on a roadway with calming features, alters driver behavior and improves conditions for non-motorized street users.

Trip -- A one-way movement of vehicular travel from an origin (one trip end) to a destination (the other trip end).

Trip Generation -- The attraction or production of trips caused by a certain type of land development.

Truckee Meadows Region or "the Region" -- The entirety of the City of Reno, the entirety of the City of Sparks, and that area of unincorporated Washoe County that has been subject to transportation modeling in the development of the Regional CIP.

Truckee Meadows Service Area (TMSA): The defined areas within which municipal services and infrastructure will be provided.

VMT -- Vehicle Miles Traveled refers to the number of miles traveled by all vehicles within a specified area over a specified time.

Water Supply Ditch means a ditch conveying water for domestic or agricultural purposes that is owned and/or controlled by a ditch or utility company.

WCDCP -- Washoe County Department of Comprehensive Planning.

WCDHD -- Washoe County District Health Department.

CHAPTER I - STREETS

SECTION 1. - General:

1. Unless otherwise specified by City ordinance, Standard Specifications and Details for Public Works Construction or items in this chapter, design of all streets and related improvements shall conform to the following: "Guidelines For Urban Major Street Design," published by the Institute of Transportation Engineers (ITE), and American Association of State Highway Transportation Officials (AASHTO) "A Policy on Geometric Designs of Highways and Streets", latest editions. The more restrictive standard shall prevail for design.

2. Street widths and alignments shall generally conform to the adopted City of Reno Master Plan, RTC RTP 2030, and elements thereof. All streets and alleys within a subdivision or development, shall be improved and conform to City standards. Additional right-of-way shall be provided near intersections as required by the City Engineer in order to facilitate turning movements. It will be the responsibility of the applicant or permittee to show compliance with any approvals including S.U.P., P.U.D., Transit Oriented Corridors, etc. Dedications will be required of any project shown on the 2012 RTP and easements will be required for any area shown on the 2040 RTP.

3. At least two separate points of ingress and egress to City standards shall be provided to serve a subdivision or development unless otherwise approved by the City Engineer with concurrence by the Fire Chief. Road widths can be impacted by the needs or requirements of the Fire Department.

4. Streets or access facilities that form a boundary to or are necessary to serve the subdivision or development which are not within the boundaries of the subdivision or development shall be improved with development to standards required by the City Engineer to promote public safety and welfare.

5. All necessary right-of-way or easement acquisition outside the boundaries of a subdivision or development, including any agreements as to access, ownership and maintenance, shall be completed prior to approval of a final map or prior to the issuance of any building permit for a development, whichever is first.

6. Unless otherwise required by an adopted or existing street pattern or indicated as such on the master plan, streets shall not be located along property boundaries. Unless otherwise approved by the City Engineer, a proposed street lying along a boundary of a subdivision or development is to be dedicated and constructed full width to City standards. Half streets may not be permitted along property lines unless they are in accordance

with an adopted street pattern and have been approved by the City Engineer.

7. Should half streets be permitted, they shall be distinctly designated upon the plans as being a portion only of a street and not a street of full width. Whenever a dedicated and recorded half street exists adjoining a proposed subdivision or development, the other half street must be dedicated and constructed with the proposed subdivision or development to make the street complete. When a half street is permitted along the boundary of a subdivision or development, it shall be improved half width, but in no instance shall the paved travel way be less than 24 feet in width (with no parking). Curb, gutter, sidewalk, and streetlights adjacent to the subdivision or development with a minimum 2 foot shoulder opposite shall be provided. 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 City standards. Whenever a one-half street is permitted, a 2"x 6" redwood header shall be placed along the open pavement edge, or a one foot minimum additional width shall be added to the pavement for a future saw cut line.

8. Streets shall be extended to the subdivision/development boundary for future development unless otherwise approved by the City Engineer. Streets extending to the subdivision or development boundary which are proposed for future extension and exceed 150 feet in length or more than one lot in depth are to be provided with temporary cul-de-sacs or looped emergency access road to City standards. The future removal of such cul-de-sac or emergency access road and its replacement to full width City standard street improvements must be provided with the extension of the street by future development.

9. Street design shall conform to standard details and be based on the design subgrade resilience modulus (R-value) shown in the soils report prepared by a Nevada licensed Civil Engineer, submitted with the improvement drawings. All soils report recommendations are to be incorporated into the plans and borings to be shown on plans. CTB, lime and geotextile stabilization shall not be allowed.

10. All boring and test pit logs shall be incorporated into the plans. Where ground water is encountered, the elevation of ground water shall be indicated in all profiles. Where percolation or flooding basin tests have been performed, they shall also be indicated in all profiles.

11. To prevent damage to structures due to storm waters over-topping the curb, building pads (finish grade) shall be set a minimum of one foot above the top of curb located at the point of primary access, or drainage around building pads shall be designed such that no building shall be subject to flooding as a result of storm waters over-topping the curb or driveway

approach along any public or private street. Where ponding for infiltration is allowed for LID features external to the curb and gutter, the maximum elevation of ponded water shall also be considered. Additional easements or ROW may be required.

SECTION 2. - Design Requirements:

1. All streets shall have a minimum grade of 0.6%, unless approved otherwise by the City Engineer. Commercial collector, arterial and expressway streets shall have a maximum grade of 6.0%, except as noted in item 1a below. It is desirable to have a maximum grade of 6.0% on residential collector and local streets. If approved by the City Engineer, residential collector and local streets with a northern exposure are allowed a maximum grade of 10.0% and residential collector and local streets with a southern exposure a maximum grade of 12.0%. The following criteria shall also apply to street grades for all functional classifications.

    a. Grades in excess of 8.0% shall be limited to a horizontal tangent length of 400 feet. Grades in excess of 10.0% shall be limited to a horizontal tangent length of 200 feet. Street segments with grades in excess of 8.0% shall provide landings contiguous to both sides of the steeper section. Each landing shall have a grade of 6.0% or less, and a length of at least 100 feet.

    b. On long grades, the steeper grades shall be provided near the bottom of the ascent wherever possible, with shallower grades near the top of the ascent.

    c. Street intersections shall not be allowed when the grade on the primary street exceeds 6.0% on streets with a northern exposure and 8.0% on streets with a southern exposure.

    d. Design controls for vertical curves shall conform to AASHTO's "A Policy on Geometric Design of Highways and Streets", Latest Edition.

    e. Sharp horizontal curvature 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. Consideration shall be given for stopping sight distances, as set forth by AASHTO's "A Policy on Geometric Design of Highways and Streets", Latest Edition.

    f. Maximum grade on a cul-de-sac shall be 6%.

    g. Grade Breaks shall extend to street crown. If partial grade breaks are used, the design engineer shall demonstrate the need, and how slopes affect curb returns and ADA ramps.

h. Grades on curb returns shall be consistent with requirements set forth by the Americans with Disabilities Act Accessibility Guidelines (ADAAG), as set forth by the U.S. Architectural & Transportation Barriers Board.

i. Streets greater than 6.0% may be approved through the tentative map process.

2. Street grades on the minor legs of intersections shall not exceed 4% for a minimum distance of 50 feet measured from the extension of the face of curb of the primary street through the intersection (improved to full City standards). Additional criteria are as follows:

a. Street intersections of two local streets in a stop condition do not require a vertical curve at the intersection of the crown section with the street grade.

b. Other street intersections shall require a vertical transition at the intersection of the crown section with the street grade.

Note: A local street is defined as having a maximum average daily traffic volume of 1,000 trips or, serving a maximum of 100 single family lots, and conforms to the description in the Master Plan.

3. Street Crown - The normal street crown is 2.0% from the centerline to the lip of gutter, with a minimum of 1.0% and a maximum of 4%. Unless approved otherwise, the crown shall be at the centerline of the traveled way.

4. Vertical curves shall be provided wherever the algebraic difference between two intersecting grades is greater than 1% on roadways 35MPH or greater, or greater than 2% on roadways less than 35MPH, excluding intersections. Such curves shall be of sufficient length to provide the minimum sight and stopping distances as established by the AASHTO's, "A Policy on Geometric Design of Highways and Streets", Latest Edition, for minimum design speeds of 30 MPH for local and collector streets, 40 MPH for minor arterial streets and 50 MPH for major arterial and expressway streets.

5. Minimum horizontal curve radii shall be as specified in the ensuing table:

Minimum Horizontal Centerline Design Radii for Streets in City of Reno

	Minimum Design	With Normal	With 2% Super-	With 4% Super-

Street Classification	Speed	Crown	elevation	elevation
Local Streets				
Serving less than 20 lots	20 mph	100 feet		
Serving between 20 & 50 lots	25 mph	185 feet		
Serving more than 50 lots	30 mph	300 feet	250 feet	230 feet
Collector Streets	30 mph	430 feet	335 feet	300 feet
Minor Arterial Streets	40 mph	820 feet	630 feet	565 feet
Major Arterial & Expressway Streets	50 mph	1,390 feet	1,045 feet	925 feet

Note: On local and residential collector streets (less than 4000 ADT), lesser radii may be permitted by special alternate designs approved by the City Engineer which include traffic calming, short tangent sections and short radii designed to restrict drivers from exceeding posted speed. In no instance shall such reduced radius be less than 60 feet. Traffic calming alternatives are shown in the "Supplemental Standard Drawing Details". The City Engineer will make the final determination on which alternative will be used in any particular situation.

Minimum Stopping Sight Distance for City Streets

DESIGN SPEED V (mph)	f (friction factor)		Minimum Stopping Sight Distance (feet)
	Low Speed Urban Street Design	High Speed Urban Street Design	
20*	0.30		115
25*	0.25		155
30	0.22	0.16	200
40		0.15	305
50		0.14	425

The minimum design radius shall be determined using the following formula:

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

R - Centerline Radius of roadway.

e - Superelevation rate, decimal (For a normal crown section, e is assumed negative for adverse side). Superelevation may be required by the City Engineer on higher speed streets. Maximum allowable superelevation shall be four (4) percent.

f - Friction factor from above table.

*Notes: Horizontal curves on local streets: (1) serving 20 lots or less may be designed at 20 mph and posted at 15 mph; and (2) 50 lots or less may be designed at 25 mph and posted at 25 mph, unless otherwise approved by the City Engineer. (Lots shall include existing and future development.)

Curves on any street, except local streets, shall be separated by a tangent of not less than one hundred 100 feet. Unless specifically approved in a tentative map or other public review, no local street in a residential district shall have a tangent of greater than six hundred (600) feet or the distance of twelve (12) lots on one side of the street, whichever is less, unless it can be demonstrated that the tangent is visually broken by a vertical curve or that a longer tangent is necessary to preclude a traffic hazard. A successful street design will result in traffic calming and reduce the need for future installation of traffic calming measures

6. Unless specifically approved or conditioned by the Planning Commission of the City Council alternatively, public street, private street, and driveway sections (widths) shall be per the Standard Details. Alternate street sections shown herein may be used when approved by the City Engineer or as conditioned or approved by the Planning Commission or City Council a submission requiring public process. Driveway access from single-family dwellings shall not be permitted on collector streets which are anticipated to carry more than four thousand (4,000) average daily vehicle trips. Reference the Residential Standards Table on page 107 and Roadway Sections Graphics for alternate sections on pages 108-109.

7. Street spacing and intersection placement shall be as follows:

Minimum distance between intersections (unless otherwise approved with a tentative map or special use permit).

Classification	Downtown	Outside Downtown
Major arterial	1/3 mile (1,760')	1/2 mile (2,640')
Minor arterial	1/4 mile (1,320')	1/3 mile (1,760')
Commercial collector	600 feet	800 feet

Residential collector	400 feet	400 feet
Local	200 feet	200 feet

8. Median openings on arterial streets that have continuous raised center medians, will not normally be permitted unless all the following conditions exist:

   a. The property to be served is a major traffic generator and has a minimum continuous frontage of 600 feet along the major street, or access easements are recorded to allow use of the opening by a minimum of two properties which combined generate sufficient traffic to warrant the opening.

   b. The median opening is not less than 700 feet from an intersection with an arterial street.

   c. The median opening is not less than 400 feet from an intersection with a collector or local street.

   d. The median opening is not less than 600 feet from any other existing or planned midblock median opening.

   e. Sight distance is adequate for the design speed of the major street.

   f. All costs such as base material, pavements, safety lighting, traffic signals, landscaping, irrigation, reconstruction or utility relocation required by a midblock opening will be borne by the requesting party.

   g. The design of median openings shall be subject to the requirements and approval of the City Engineer including storage lengths and tapers to AASHTO requirements.

9. All regional roads shall follow access management standards as outlined in the RTC's most recently adopted RTP.

WITHOUT PARKWAY STRIPS

TYPE	FIRE SPRINK-LERS	WIDTH (1) (FEET)			CURB REQ'D	MAX CUL-DE-SAC LENGTH (FEET)	BULB DIAMETER (FEET)		MAXI-MUM LOTS SERVED	MAXI-MUM ADT	BIKE LANE (8)	SIDE-WALK BOTH SIDES (FEET) (10)	ROW WIDTH (FEET)			PUE EACH SIDE (FEET) (3)
		W/O PARKING (A)	WITH PARKING ONE SIDE (B)	WITH PARKING BOTH SIDES (C)	R=ROLLED V=VERTICAL (5)		W/O PARKING	WITH PARKING					W/O PARKING (A)	WITH PARKING ONE SIDE (B)	WITH PARKING BOTH SIDES (C)	
Shared Driveway, Alleys and Permanent Emergency Access	Yes	20	26	34	Optional	1000	Hammer-head or 80	100	12	N/A	No	Optional	20	28	36	7.5 or as required
Shared Driveway, Alleys and Permanent Emergency Access	No	20	28	34	Optional	600	Hammer-head or 100	100	8	N/A	No	Optional	22	30	38	7.5 or as required
Local Street	Yes	N/A	26	34	V	1000	80	100	100	1000	No	4	N/A	36	44	7.5
Local Street	No	N/A	28	36	V	600	100	100	100	1000	No	4	N/A	38	46	7.5
Collector Street	N/A	28	32	40	V	N/A	N/A	N/A	N/A	8000 (2)	Optional	4	38	42	50	7.5

WITH PARKWAY STRIPS

TYPE	FIRE SPRINK-LERS	WIDTH (1) (FEET)			CURB REQ'D	MAX CUL-DE-SAC LENGTH (FEET)	BULB DIAMETER (FEET)		MAXI-MUM LOTS SERVED	MAXI-MUM ADT	BIKE LANE (8)	SIDE-WALK BOTH SIDES (FEET) (10)	ROW WIDTH (FEET)			PUE EACH SIDE (FEET) (3)
		W/O PARKING (A)	WITH PARKING ONE SIDE (B)	WITH PARKING BOTH SIDES (C)	R=ROLLED V=VERTICAL (5)		W/O PARKING	WITH PARKING					W/O PARKING (A)	WITH PARKING ONE SIDE (B)	WITH PARKING BOTH SIDES (C)	
Local Street	Yes	N/A	26	34	R or V	1000	80	100	100	1000	No	4	N/A	56	64	7.5
Local Street	No	N/A	28	34	R or V	600	100	100	100	1000	No	4	N/A	58	64	7.5
Collector Street	N/A	26	30	38	V	N/A	N/A	N/A	N/A	8000 (2)	Optional	4 or 8 one side	56	60	68	7.5 (4)

(1) All widths measured from front face of curb to front face of curb (or gutter flow line for rolled curbs, or EOP without curb).
(2) 4000 maximum ADT with lots having access.
(3) Utility stubs and services must extend beyond right-of-way, sidewalk, or PUE, whichever is greater.
(4) If 8' path option is exercised, add 4' on one side and delete 4' from opposite side.
(5) Lay-down curbs may be permitted in mobile home parks.
(6) Additional right-of-way or easement may be required for parallel roadway drainage.
(7) PUE shall be public utility easement/public use easement (sidewalk).
(8) Bike lanes require additional 5' of pavement and right-of-way per lane in accordance with the Master Plan and/or Bikeways Plan.
(9) Deviations from above standards for addition of medians or wider planting strips in commercial areas shall require prior approval of the City Engineer.
(10) ADA requires a passing space at intervals not to exceed 200' or sidewalk must be 5' wide.
(11) All street widths shall be 20' or greater as required by Fire Code.
(12) Right of Way requirements may be impacted by LID/SWQM features.

10. Any street, highway, or driveway, 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 an intersection be allowed at an angle of less than 60 degrees unless approved otherwise by the City Engineer.

11. Cul-de-sacs and dead end streets shall conform to Fire Code requirements. Shared driveways may be terminated in a hammerhead. The minimum lot frontage on cul-de-sac streets shall be thirty (30) feet. "No Outlet" signs shall be posted on cul-de-sacs with length greater than 100'.

12. Private streets shall be designed to City standards, including horizontal and vertical alignment. Gated private streets shall provide a means to turn around if gates are closed. All gates shall be “click to enter” per Fire Department standards unless otherwise approved by the City Engineer. Storm drain systems and sanitary sewer systems located within a private street shall be constructed to City standards. Maintenance of the gates shall be by the private development. Signs shall be posted stating "Private Street, Not Maintained by City".

13. Shared driveways shall be structurally designed and paved with a minimum of 2 inches of asphalt concrete pavement placed over an engineered base of not less than 6" of Type II, Class B aggregate base or with a pervious pavement system defined in the Truckee Meadows Structural Controls Manual with the approval of the City Engineer.

14. Design of the structural section for Asphalt Concrete Pavement for both public and private streets shall conform to the procedures as set forth in the current Asphalt Institute Manual Series No. 1 (MS-l), based on subgrade strength values determined by Resilient Modulus (MR) Value, Resistance (R) value or California Bearing Ratio (CBR). Subgrade shall be corrected to a minimum R-value of 30. Sufficient tests shall be made to evaluate fully each different soil type in the project. Asphalt Concrete Pavement (ACP) mix shall be Type II with hydrated lime (mineral filler) added at one and one-half percent of the weight of the dry aggregates, except Type III asphalt concrete pavements shall be used for the top lift on all local streets unless otherwise approved. Asphalt cement grade PG64-22 shall be used for the top 2 inches minimum of all finished pavements. The minimum design life of the structural section shall be 20 years. Minimum street structural sections for both public and private streets

shall be 4" ACP on 6" of aggregate base for local streets, 5" ACP on 8" aggregate base for collector streets, and 6" ACP on 12" aggregate base for arterial streets. All streets, both public and private, which are to be utilized by construction vehicles during development shall be designed to carry the maximum anticipated loads and temporary road surfaces that are open to traffic are required to be paved for project duration. Concrete streets may be permitted upon approval of structural designs by the City Engineer.

15. Asphalt test core holes shall be plugged with 4,000 PSI concrete per the Standard Specifications.

16. Cul-de-sacs and Knuckles - Minimum grades around Cul-de-sac bulbs and within Knuckle-type intersections shall be 0.5%. The street crown within cul-de-sac bulbs and knuckle type intersections may be increased to a maximum of 4.0% from the centerline to the lip of gutter. Knuckle turnouts are not allowed on streets serving more than 20 lots, without prior approval by the City Engineer. Cul-de-sac lengths shall be measured from the front face of curb (or edge of pavement where no curb is present) of the intersecting street to the radius point of the bulb turnaround, unless provided with an emergency access to City standards. The minimum right-of-way for the bulb shall be 6" beyond the curb if no sidewalk is required or 6" behind the sidewalk if sidewalk is required.

17. Temporary cul-de-sac bulbs shall be constructed with a minimum of 2 inches asphalt concrete pavement on an engineered base with asphalt curbing when located within the development. When located within an adjacent future developable area it shall conform to temporary emergency access road standards within an access easement. All temporary cul-de-sac bulbs shall have a minimum 50 foot radius. Final approval for temporary cul-de-sacs will be the responsibility of the Reno Fire Department.

18. Emergency Access Roads - Roadways are to be a minimum width of 24 feet structurally designed to support a tandem axle loading of 30 tons, with a minimum centerline turning radius of 40 feet, unless otherwise approved by the Fire Marshal. Grades shall not exceed the maximum for street grades unless otherwise approved by the Fire Chief and the City Engineer. It is intended that emergency access roads be open and usable at all times. Where required, access to the roadway at each entrance shall be controlled by an "Emergency Access Control Gate", shall be posted "For Emergency Vehicles Only", and shall incorporate strobe actuated gate opening devices. Maintenance of the gates shall be by the private development. Installation and maintenance of the gates shall be by the private development.

a. Temporary emergency access roads shall be surfaced with a minimum of 2 inches of Type 2, Class B Aggregate Base applied with a minimum of 0.08 gallon per square yard of a non-latex emulsion asphalt seal coat, such as SS-1 or SS-1h, and be provided with adequate roadside drainage.

b. Permanent emergency access roads shall be paved with a minimum of 2 inches of asphalt concrete pavement on an engineered base and are to be provided with adequate roadside drainage.

Unless otherwise approved by the City Engineer, all improved emergency access roads shall provide for vehicles to enter traffic nose-first.

19. Improved Maintenance Access - Vehicular access roads for maintenance of City owned sanitary sewer and storm drain facilities and their related appurtenances are to be constructed to a minimum unencroached width of 12 feet clear of all lateral obstructions, structurally designed to support a tandem axle loading of 25 tons, with adequate roadside drainage, and are not to exceed 12% in grade. Dead-end access roads in excess of 150 feet shall require termination in a hammerhead, turnaround or 'Y' -turn.

a. Temporary maintenance access roads shall be surfaced with a minimum of 2 inches of Type 2, Class "B" aggregate base applied with a minimum of 0.08 gallon per square yard of a non-latex emulsion asphalt seal coat, such as SS-1 or SS-1h, and be provided with adequate roadside drainage.

b. Permanent maintenance access roads shall be paved with a minimum of 2 inches of asphalt concrete pavement on an engineered base and be provided with adequate roadside drainage. The driveway entrances for the permanent maintenance access roads shall be commercial rated per City of Reno Standard Detail Nos. R-114A and R-114B, with removable bollards per City of Reno Standard Detail No. R-503. Where sewer or storm drain manholes are located behind the sidewalk, a commercial rated driveway entrance shall be provided with appropriate access to include, as a minimum, a surrounding 4’ asphalt concrete pad located outside the concrete manhole collar, terrain permitting. Unless otherwise approved by the City Engineer, all improved maintenance accesses shall provide for vehicles to enter traffic nose first.

c. Under special hillside terrain conditions, alternate access roads per City of Reno Standard Detail No. R-227 may be used, with approval of the City Engineer.

20. Temporary Patches - Temporary patches on public streets are to be a minimum of 2" thick and compacted, and shall not deviate more than 3/4 inch above the existing pavement grade when measured from the bottom of a straight edge laid two 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. All loose material shall be removed from the temporary patch in conformance with the requirements of this paragraph immediately after completion of the patch. It will be the responsibility of the excavation contractor to maintain the temporary patch until the permanent patch is made. All patches on collector or larger streets shall be hot mix asphalt.

21. Retaining Walls - Unless using standard City details, all retaining walls constructed within the public right-of-way must have an easement granted of sufficient width on the private property to maintain the wall. All retaining walls which are to be maintained by the City 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 Licensed Civil or Structural Engineer. Any retaining walls constructed on private property shall be reviewed by the Building Department and shall be subject to current design criteria. An anti-graffiti treatment shall be incorporated on all masonry or concrete retaining walls. Retaining walls shall be located within the property it supports with adequate space and access at the low end to permit reconstruction.

22. "Rock Pockets" in the final surface of the asphalt shall be filled with Type II Slurry Seal, if applicable, or by patching or reconstruction as designated by the City Engineer.

23. Additional standards that may apply include, but are not limited to, Redevelopment Streetscape standards, Regional Center Plans, Transit Oriented Develoment Corridor Plans, SUP, SPD, Planning Overlay, Neighborhood plans, etc. per Section 18.06 of the Reno Municipal Code.

24. Where applicable, the use of raised landscape medians to channelize and control left turn movements from a street are preferred over the use of pavement markings and signs only to delineate left turn storage facilities.

25. Alternative paving surfaces such as stamped concrete may be considered instead of the treatment shown on the approved street section detail. Alternate paving surfaces shall be approved by the City Engineer and will require that a "hold harmless" agreement (see Appendix A11) be completed between the City and the property owner.

26. Parkways are required on certain new streets. The specific streets to receive parkway treatments are contained in Section 18.06 of the Reno Municipal Code. See also Regional Center Plans and Transit Oriented Corridor Plans per Section 18.06 of the Reno Municipal Code. Sidewalk widths and right-of-way may be impacted also.

27. Maintenance of parkways will be the responsibility of the adjacent property owner, homeowners association or landscape maintenance district.

28. Site grading shall be minimized so as to maximize undisturbed areas. Where expanded grading is necessary and as approved by the City Engineer, it shall include erosion control Best Management Practices in conformance with the most current version of the Truckee Meadows Construction Site BMP Handbook.

29. Fill material containing over 30 percent (by weight) of rock larger than ¾ inches is defined as rock fill. Rock fill located three or more feet below finished grade may be constructed in loose lifts up to the maximum size of the rock in the material, but not exceeding 18 inches in thickness. Material shall be placed to avoid keying or nesting. The voids around the rock in each rock lift shall be filled with granular material and fines and compacted to the satisfaction of the City Engineer. Rock larger than 18 inches shall not be allowed in the rock fill without the approval of the City Engineer. Rock larger than 4 inches shall not be placed in the upper 1 foot of structural fill.

30. To assure proper future pavement mating, paper joints are to be used at the ends of any new public pavement project (saw cutting shall not be allowed). In addition, the terminus of adjoining asphalt pavement pull lines are to be staggered a minimum of three feet (3.0'). Longitudinal joints shall be offset a minimum of 6" from the joint in underlying lifts.

31. Where paving or overlays involve intersections of secondary and primary streets, the intersection paving joint shall be located in the secondary street, a minimum of four feet off the gutter line of the primary street, and neat lined for the subsequent paving of the adjoining street. Asphalt concrete pavement joints/seams will not be

allowed in any drainage flow lines. Any alternative paving configurations must be approved by the City Engineer.

32. Per the Standard Specifications, subgrade compaction shall be accomplished per the test procedures set forth in ASTM D1557. Time-rated consolidation analyses or tests will not be accepted for compaction of subgrades on public improvement projects.

33. For adjoining asphalt concrete pavement top lifts, the contractor shall assure a tight, smooth and unraveled joint. For pavement edge joints, such as along gutter lines, the joint must be contoured to avoid future raveling. Pavement joints shall be placed such that they are not be in the wheel paths.

34. Recycled asphalt base material may be utilized as a substitute for Type 2, Class B, aggregate base for use under bituminous pavement if it meets the following criteria:

    a. Recycled asphalt base material shall conform to the Standard Specifications, Subsection 200.01.04, Type I Recycled Asphalt Concrete Base.

    b. The Engineer of Record shall provide documentation to confirm that adequate testing was performed to ensure compliance with the Standard Specifications.

    c. Recycled asphalt base shall not be substituted for Type 2, Class B, aggregate base under any Portland Cement Concrete structure.

    d. Density testing must be per ASTM Standards. No direct-read nuclear gauge tests will be allowed without proper correlation. Nuclear gauge tests reporting moistures will be rejected.

    e. For street reconstruction, AC grindings may be combined, in place, with base course and subgrade, per gradation requirements as set forth in Orange Book sec. 200.01.04. Sufficient test results shall be provided prior to approval for use.

35. Slurry seal of streets shall be required on all new acceptances.

SECTION 3. - Sidewalks, Curb and Gutters, Driveway Aprons, Curb-Cuts, Alleys and Bikeways:

1. Public sidewalks, curbs and gutters shall be installed with all new developments, except as noted below in this paragraph. Existing improvements shall be replaced when those improvements are deteriorated or displaced, including paving between the street cut and gutter line on all streets. Sidewalks may only be omitted where the sidewalk has been waived in accordance with RMC 18.12.801. In no instance, shall sidewalks be less than 4 feet in width. In commercial areas sidewalks shall not be less than 6 feet in width. All sidewalk widths specified in this paragraph are to be free of all lateral obstructions and street furniture that would hamper pedestrian flow. Pedestrian ways shall be provided from all public sidewalks to the entrance of buildings as required by the City Engineer. Necessary rights-of-way shall be dedicated or easements granted for the pedestrian ways as required by the City Engineer. In new developments, sidewalk requirements shall be determined at time of tentative map or parcel map approval, typically on both sides of all streets, public and private, unless another means of pedestrian access is approved, or if sidewalk is impractical or is unnecessary for pedestrian access purposes as determined by the City Engineer. At the discretion of the City Engineer, sidewalks in commercial or industrial developments may be deferred until a building permit is issued.

2. Unused driveway aprons that do not provide access onto private property, or portions thereof, shall be replaced with new curb, gutter and sidewalk. The driveways shall be designed as nearly perpendicular as possible to the adjoining street or cul-de-sac.

3. Curb returns shall be constructed with "Pedestrian Ramps for the Disabled" in accordance with City standards. A minimum of one mid-block ramp shall be provided at 'T'-intersections. Alignment of ramps and crosswalks shall provide for minimum pedestrian exposure to traffic during crossing of streets.

4. Curbs, gutters and curb cuts to allow for storm water runoff to enter treatment areas are to be constructed of Portland Cement Concrete, per City standards. Glue-down curbs are not permitted for new construction.

5. At each right angle street intersection, the property line at each corner shall be rounded with a curve having a radius of not less than 15 feet on local streets, 20 feet on collector streets, 23 feet on minor arterial streets and 33 feet on major arterial and expressway streets. The major street shall dictate radii. The City Engineer may require a different radii when streets intersect at an angle other than 90 degrees, or to accommodate existing and future utility and public

improvements, to include drainage facilities and traffic control devices.

6. Unless specifically approved otherwise, curb returns shall have minimum face of curb radii of 20 feet on local streets, 25 feet on collector streets, 30 feet on minor arterial streets and 40 feet on major arterial and expressway streets.

7. Driveway spacing and location shall conform to City Standard Details for driveway geometrics.

8. The design of bikeways shall conform to the AASHTO "Guide for Development of New Bicycle Facilities", latest edition, unless otherwise specified by City ordinance, Standard Specifications and Details for Public Works Construction, or items in this section. Where bike lanes are required, street sections may vary.

9. Bicycle and Pedestrian Paths - The structural section for these facilities shall be based on a soils report recommendation. The minimum structural section shall be 2 inches of Type II or Type III asphalt concrete pavement over 6 inches of Type II Class B aggregate base, except that where they are integrated with adjoining pavement for vehicular access, the associated minimum street structural section shall apply.

10. No obstruction (i.e., power poles, street lights, signal poles and controls, water meter boxes, pull boxes, mail boxes, etc.) shall be allowed to be located within public sidewalks or pedestrian ways, or within sight triangle, except as may be allowed by the City Engineer A minimum unobstructed clearance of 36" shall be maintained from any obstacle. Additional right-of-way or easement shall be provided where required.

11. Cut and fill slopes are to be set back a minimum of 1 foot from the back of the sidewalk. If no sidewalk exists the setback shall be a minimum of 5 feet from back of curb.

12. Where car storage or access for motor vehicles is a standard curb cut, drive approach and driveway must be constructed.

13. At existing or future RTC RIDE bus stops, rights-of-way shall be dedicated and concrete bench/shelter pads constructed, as required by the City Engineer and Regional Transportation Commission. Bus turnouts are to be provided when required by the City Engineer. The distance from the flowline to front face of curb shall be 12 feet. Bus turnouts shall be reviewed by the Regional Transportation Commission.

14. Any construction work beneath existing concrete structures (i.e., sidewalks, curbs, gutters, aprons, walls, etc.) that are within the public right-of-way shall require the removal and replacement of the affected concrete structure. Construction operations (i.e., tunneling, directional drilling, boring, etc.) shall not be allowed under any of the above stated concrete structures, unless specifically authorized in writing by the City Engineer.

15. Patching will not be allowed to repair concrete structures such as curbs, sidewalks, gutters, ramps, driveway aprons, etc., except for the sealing of gaps in older sections. On older sidewalks where gaps exist between the sidewalk and the curb, these gaps may be filled with white cap or backer rod and caulk, if approved by the City Engineer. The white cap/backer is a closed backer rod and the caulk shall be Lithoseal Trafficalk-3G (L.M. Scofield Company), or Silaflex 2C SL (D.M. Figley Company), or an approved equal.

SECTION 4. - Traffic Devices, Construction Traffic Control, and Traffic Calming:

1. The application, design, and installation of traffic control devices shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), latest edition, published by the Federal Highway Administration.

2. Traffic control devices shall be installed, modified, or removed, as appropriate, on all public and private streets, alleys, and bikeways either newly constructed or improved with development.

3. Street name signs to City standards shall be installed at all intersections, and may be required on arterial streets in advance of intersections. Where private streets intersect public streets, standard signs which say "Private Street Not Maintained by City" shall be installed.

4. Speed limit signs shall be installed in proximity to all arterial or collector street intersections, and on local streets having a different speed limit than the intersecting street. Posted speeds on City streets shall be 25 MPH on local and collector streets, 35 MPH on minor arterial streets and 45 MPH on major arterial streets, unless designated otherwise by the City Engineer consistent with City policies or law. Speed limit signage shall be installed on all streets where the limit changes from one speed to another.

5. When the design speed of a curve falls below the posted speed limit, curve warning signage with an advisory speed plate and 4 inch

double solid yellow centerline striping shall be installed from beginning of curve to end of curve.

6. A "No Outlet" sign shall be installed at the entrance to any cul-de-sac exceeding 100 feet in length.

7. At driveways on minor street intersections with one-way or median-divided streets, "One Way" and/or "Right (Left) Turn Only" signs shall be installed. Corresponding pavement markings may also be required.

8. Parking control signs shall be installed and curbs painted at street intersections, at fire hydrants, adjacent to driveways, and other locations as required. Curb colors are red for parking prohibited, yellow for restricted parking. The top and face of the curb shall be painted with standard traffic paint. Parking is prohibited within 15 feet centered on the fire hydrant; Reno Fire Department policy establishes locations for required hydrant markers.

9. Within the parking meter district, the removal, relocation, or installation of parking meter poles and parking space marking may be required. The removal or installation of parking meters shall only be performed by the City. Meter bags may be obtained from the Community Development Department.

10. When half street improvements are constructed abutting existing pavement, the entire width of the street and adjacent transition areas shall be striped in accordance with applicable MUTCD and City standards. Existing, conflicting pavement markings shall be removed.

11. All longitudinal pavement striping shall consist of traffic-rated paint as specified in Section 214 of the Standard Specifications for Public Works Construction or an approved equivalent. Transverse striping, letters and symbols shall be installed with preformed thermoplastic material with a minimum thickness of 0.125 inch. All striping materials are to be installed per the manufacturer=s instructions (refer to Section 5 - Traffic Policies, Materials and Equipment Standards). On existing streets where the pavement surface is not in good condition, painted pavement markings may be approved by the City Engineer.

12. Where there is stop or yield control on a residential street, a 12 inch white stop bar with 50 feet of solid 4" yellow centerline striping shall be installed. On minor or major arterial streets, a 24 inch white stop bar shall be installed.

13. School related traffic devices shall be installed, relocated, or removed as required, and as consistent with the applicable "safe route to school plan". New or updated "safe route to school plans" shall be required in conjunction with the development of new schools or expansion of existing schools. Traffic Engineering shall review, approve and maintain all new or updated “safe route to school plans”. Following approval in writing of such plans by the Washoe County School District, all new or updated plans must be submitted to Traffic Engineering for review and approval. The "Nevada School Traffic Safety Handbook" establishes guidelines for the application of school-related traffic devices.

14. Warning signs and/or retroreflective end of roadway markers shall be installed at the end of streets (except fully improved residential cul-de-sacs). For street ends where there is a significant elevation change adjacent or there is a need to control access, barrier rail, guardrail, bollards, or barricades may also be required.

15. When triangular islands are constructed at street or driveway intersections, the curb shall be painted white and reflective markers installed at the corners. The ends of center medians shall be painted yellow; and reflective markers installed at the ends and along the median.

16. When new construction affects elements of an existing traffic signal, relocation and/or replacement is required. After proposed traffic signal loop detector locations have been marked, City of Reno Traffic Signal Maintenance staff will verify locations prior to construction. Damaged loop detectors shall be repaired within two working days, unless impractical due to other scheduled work. Exceptions to the two working day requirement shall be approved by the City Engineer. Loops that have not been repaired within the time specified, the City shall back charge the contractor the cost of repairs.

17. For the installation of new traffic signals or modification of existing signals, refer to Chapter I - Section 5 for equipment standards, Chapter V for improvement plan requirements, and Chapter VI for inspection, testing, and turn-on procedures. Also refer to the Traffic Signal Pole, Traffic Signal Pole Street Name Sign and General Traffic Signal Notes (Drawings R-413A through R-413E) in the Standard Details.

18. For work within public streets, the issuance of excavation and/or encroachment permits with approval of construction staging/traffic control plans is required. Necessary temporary construction traffic control devices shall be properly maintained at all times, until the

permanent construction is completed and traffic devices installed. When possible, construction heavy equipment shall be required to use specific truck routes as addressed in Section 6.14.160 of the Reno Municipal Code. The Engineer of Record shall provide a map identifying the construction equipment route from the site to the nearest collector or arterial street that will have the least impact on surrounding residents. Streets or portions thereof used for construction staging or primary access shall be repaired or reconstructed as directed by the City Engineer. Haul routes may be required when 50 cy or more are being transported.

19. Where temporary access or turnarounds are proposed, security will be required and maintained until permanent improvements are installed.

20.. Traffic reports shall conform to the Regional Transportation Commission "Traffic Report Guidelines - Regional Road Impact Fee", latest edition. If a traffic report is required, the final striping plan must be reviewed by the licensed professional who prepared the report.

21. Copies of technical analyses associated with street design and traffic device improvements may be required by the City Engineer.

22. Prior to the dedication of any public rights-of-way, adequate sight distance shall be demonstrated at all intersections. The design of all new commercial driveways shall provide for adequate sight distance. All above ground utility features (such as transformer boxes) shall be located or relocated so as to not adversely affect sight distance in proximity to street intersections and driveways.

23. Traffic signs and/or pavement markings shall be installed on all street segments within or adjacent to a development to designate bicycle routes or bicycle lanes identified in the City of Reno Bikeways Plan.

24. The design and placement of speed humps or other traffic calming improvements on new or existing streets shall conform to applicable City policies and standards.

25. All existing or temporary pavement markings or striping shall be removed by wet sandblasting or grinding. Excess damage during removal may require slurry seal or chip seal at the discretion of the City Engineer. Remove existing markings so that at least 95% of the underlying pavement is visible. Blacking out, or otherwise covering existing markings shall not be permitted.

26. School zones shall have a 15 MPH speed limit during the times set forth on signs erected at the beginning of the school zone or as indicated by alternating yellow flashing beacons. School crossing zones, as defined as areas not directly adjacent to the school, shall have a 25 MPH limit or less as designated by signage erected at the beginning of the school crossing zone. The times of the speed limit for the school crossing zone shall be set forth on the sign or indicated by alternating yellow flashing beacons.

27. All signs, sign posts and other public property that are removed from the public right-of-way, not to be reused on the project, are to be dispositioned by the City Engineer for either salvage to the City of Reno's Corporation Yard or disposal by the contractor.

28. The Nevada Department of Transportation (NDOT) specification for Type X – Fluorescent Orange Sign Sheeting shall be required on all Public Works construction projects within the City's right-of-way. This sheeting requirement only affects construction signs and not the sheeting required for cones, drums and barricades.

29. New crosswalks shall consist of solid white longitudinal lines, parallel to the flow of traffic, 24" wide x 10' long, and spaced 24" apart

SECTION 5. - Traffic Policies, Materials and Equipment Standards:

Traffic policies, materials and equipment standards included in Appendix B, supplement, extend, and modify applicable provisions of the MUTCD and Standard Specifications for Public Works Construction. It is the responsibility of the user of this manual to obtain the up-to-date versions of the policies listed in Appendix B from the Traffic Engineering Division.

SECTION 6 – ALLEYS –

1. Alleys required to serve a development or project shall be constructed as part of the project. Existing improved alleys serving a project shall be reconstructed or repaired as part of the project if deteriorated, as defined herein. No alley repair or reconstruction work shall be required for an addition consisting of 500 square feet or less to an existing structure or a tenant improvement or interior remodel consisting of 1,000 square feet or less. Improvements not adjacent to the project parcel may be required if needed to provide safe and adequate access to the property.

2. Longitudinal grades of the alley shall conform to standards for streets, with a cross slope of 2.0% minimum from the property line toward the center of the alley.

3. All alleys shall be 4 inches of Portland Cement Concrete on 6 inches of Type II, Class B aggregate base with subgrade corrected to a minimum R-value of 30 unless otherwise approved by the City Engineer. If approved, the minimum asphalt structural section shall be 6 inches of asphalt concrete pavement on 6 inches of Type II, Class B aggregate base with subgrade corrected to a minimum R-value of 30.

4. Alleys shall be constructed or reconstructed to full width and from the lip of asphalt on each adjacent street.

5. The proportion of alley contribution required by an individual project will be determined by the percentage of traffic to the alley that is attributable to that parcel of land compared to all parcels adjacent to that alley on that block. Traffic contribution will be assumed for any parcel that can access their property from the alley, regardless of whether the project increases, decreases or does not change alley access. The traffic proportion based on average daily weekday trip rate is to be determined by the Institute of Transportation Engineers (ITE), Trip Generation, most recent addition.

6. For purposes of determining proportional cost contribution for an individual project, the value of reconstructing the entire alley with PCC will be determined by measuring the length of the entire alley including the alley approach from lip of asphalt to the opposite end of the alley and multiplying that number by the width and multiplying that by the cost per square foot from Exhibit A of the Public Works Design Manual.

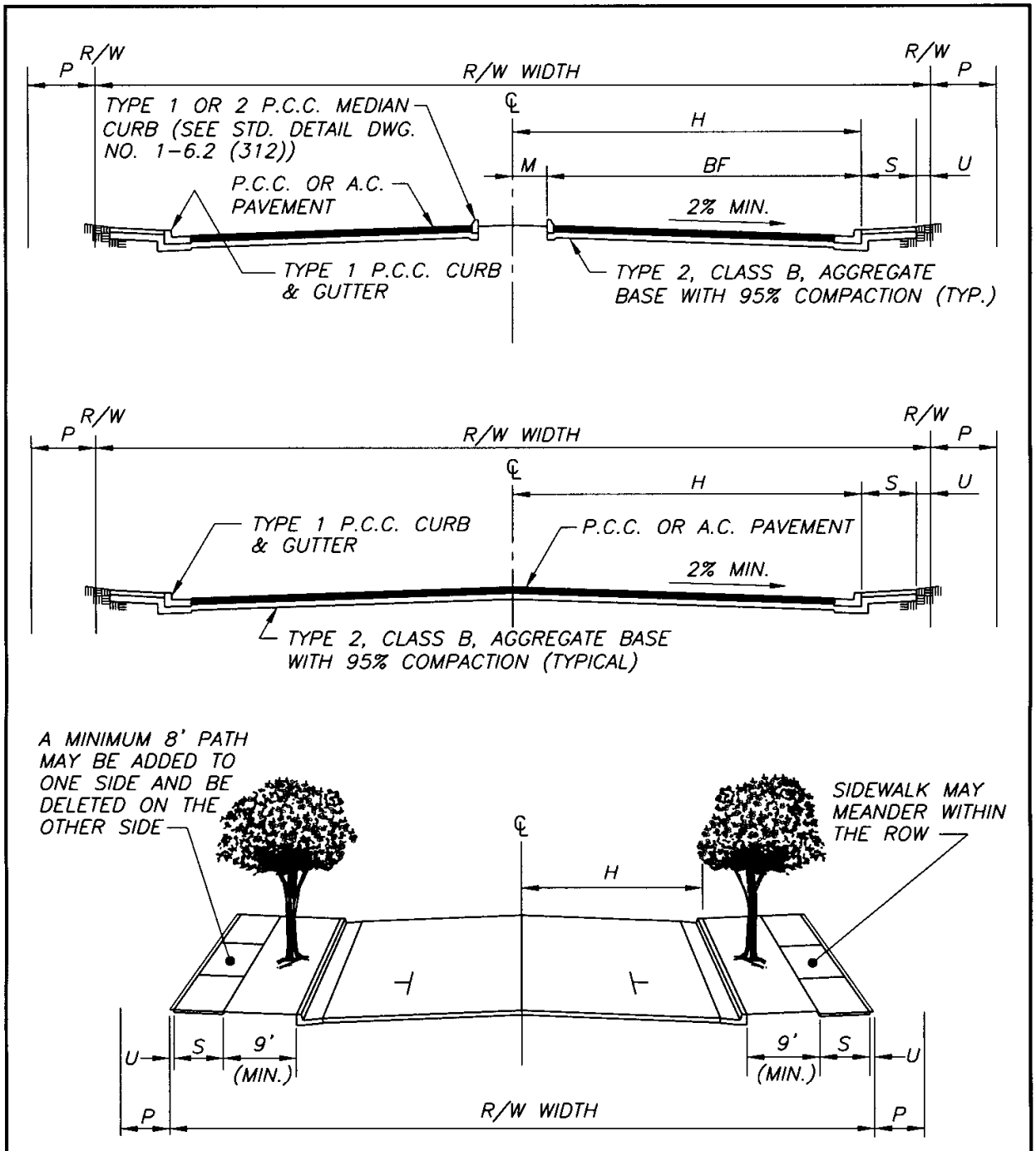
Sample calculation:
Length of the entire alley = 300 feet
Width of alley = 20 feet
Alley cost from Exhibit A = $18 per square foot (for illustration purposed only – check current manual for prices
Length x width x cost = 300 x 20 x $18 = $108,000 total value of alley
Proportional contribution for the project as determined by ITE study = 17%
$108,000 x 17 % = $18, 360 maximum required alley contribution for the project

7. The alley contribution required for a project many be used for repair or reconstruction as determined by the Alley Distress Table. Staff will evaluate alleys on a case by case basis to determine the best use for the alley contribution. Portions of the contribution may be used on sections of the alley not adjacent to the project parcel.

8 P.C.C. Alley deterioration shall be determined in conformance with the PAVER Concrete Distress Manual published by the US Army Corps of Engineers, TR97/105, June 1997, or current edition. Individual distresses shall be mitigated in conformance with the P.C.C. Alley Distress Table. Alleys comprised of alternative materials will be evaluated by other methods, on a case by case basis.

P.C.C. Alley Distress Table

Distress No.	Distress	Severity	Remediation
22	Corner Break	Low-Medium	Seal Cracks
		High	Sawcut , remove and replace affected area
23	Divided Slab	Low-Medium	Seal Cracks
		High	Sawcut, remove and replace slab
24	Durability Cracking	Low - High	Epoxy patch / fill
28	Linear Cracking	Low to High	Fill cracks
	Faulting	>3/4 inch	Grind Transition
29/30	Patching Large/Small	Condition worse than that of alley	Sawcut , Remove and Replace affected area
32/36	Popout /Scaling	Medium < 50% or < 1/4” to ½”depth	Epoxy Sand Seal
		High>50% of slab	Sawcut , Remove and Replace affected area
34	Punchout	Low	Seal Cracks
		Medium to High	Sawcut , Remove and Replace affected area
38/39	Joint /Corner Spalling	Low-Medium	Epoxy Patch
		High	Sawcut , Remove and Replace affected area
W	Standing Water	> ¼ inch in depth	Sawcut , Remove and Replace affected area, grade to drain



WITH PARKWAY

(RESIDENTIAL COLLECTOR AND LOCAL STREETS ONLY)

NO.	REVISION	DATE	STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	SECTION	
			ROADWAY SECTIONS	DRAWING NO. R-101A (314,320)	
				DATE 08/00	PAGE 1
APPROVED BY: S.V.		08/00			

TYPE	R/W WIDTH	P	H	BF	M	S	U	A.D.T. (MAX.)
ARTERIAL–MAJOR	102 4	7.5	44.5	37	7.5	6	0.5	----
ARTERIAL–MINOR	82 4	7.5	34.5	--	--	6	0.5	30,000
COLLECTOR–COMMERCIAL	64	7.5	25.5	--	--	6	0.5	15,000
COLLECTOR–RESIDENTIAL (WITHOUT PARKWAY)	50	7.5	20.5	--	--	4	0.5	8,000 6
COLLECTOR–RESIDENTIAL (WITH PARKWAY)	68	7.5	19.5	--	--	4	0.5	8,000 6
LOCAL (WITHOUT PARKWAY)	46	7.5	17.5	--	--	4	0.5	1,000
LOCAL (WITH PARKWAY)	64	7.5	17.5	--	--	4	0.5	1,000

NOTES:

1. BF AND H ARE MEASURED TO THE BACK FACE OF CURB.
2. CURB & GUTTER SECTIONS SHALL BE POURED SEPARATELY FROM SIDEWALK SECTIONS.
3. STRUCTURAL SECTION TO BE DETERMINED BY ENGINEERING DESIGN BASED ON RESILIENT MODULUS TESTING, BUT IN NO CASE SHALL THE A.C. BE LESS THAN 4" OVER 6" BASE.

4 ADDITIONAL R/W MAY BE REQUIRED ON ARTERIAL STREETS AND AT INTERSECTIONS.

5. WIDER SIDEWALKS ARE TO BE PROVIDED WHEN REQUIRED BY THE CITY ENGINEER.

6 RESIDENTIAL DRIVEWAY ACCESS SHALL NOT BE ALLOWED ON RESIDENTIAL COLLECTORS WHERE THE A.D.T. IS GREATER THAN 4,000.

7. REFER TO ADDITIONAL INFORMATION ON WIDTHS AND REQUIREMENTS FOR RESIDENTIAL COLLECTORS, LOCAL STREETS, ALLEYS, PERMANENT EMERGENCY ACCESS AND SHARED DRIVEWAYS AS CONTAINED IN THE CITY OF RENO'S DESIGN MANUAL.

NO.	REVISION	DATE	STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	SECTION RENO	
			ROADWAY SECTIONS	DRAWING NO. R-101B (314,320)	
APPROVED BY : S.V.		08/00		DATE 08/00	PAGE 2

CHAPTER II - STORM DRAINAGE

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- 201.2 Triggers for Drainage Report
- 201.3 Relationship to Chapter on Storm Water Quality

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  - 202.1.2 Design Storm Frequency
- 202.2 Hydraulic Design
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- 202.7 Flood Hazard Areas
- 202.8 Safety
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- 203.1 Drainage Report

201 General

201.1 Use of Chapter II

Chapter II of the City of Reno Public Works Design Manual is intended to be used in conjunction with the Truckee Meadows Regional Drainage Manual (TMRDM). The TMRDM (formerly known as the Washoe County Hydrologic Criteria and Drainage Design Manual) is the primary reference document for hydrologic criteria and drainage design for the City. The topics and criteria covered in Chapter II of the Public Works design manual are intended to:

1. address those topics not included in the TMRDM
2. provide alternate or more restrictive criteria as compared to the TMRDM
3. emphasize specific criteria from the TMRDM

The TMRDM shall be adhered to except for those cases in which alternative or more restrictive criteria are proposed in this chapter, or where directed by the City Engineer.

For the purposes of this chapter the terms "public facilities" and "City owned facilities" shall be interpreted to mean those facilities built by the City as public facilities, those facilities built by private interests and intended for dedication to the City, or those facilities built by any party other than the City which are reasonable candidates for dedication to the City, or for which it can be reasonably anticipated that the City will maintain at any point in the future.

201.2 Triggers for Drainage Report

A drainage report shall be submitted for any of the following:

1. Permit relating to coverage of 10,000 or more sq. ft. of impervious surface within the property.

2. Where development is in a critical drainage area.

3. Grading permit which entails 20,000 sq. ft. or greater.

4. Subdivision Improvement Plans.

5. Where required by the City Engineer.

The drainage report shall be signed and stamped by a Nevada Licensed Civil Engineer in accordance with City standards unless requirement is waived by the City Engineer.

The drainage report shall be based on current zoning or Master Plan whichever produces the greater runoff.

201.3 Relationship to Chapter on Storm Water Quality

This chapter contains criteria primarily directed toward the consideration of conveyance of stormwater flows and related facilities. The design engineer cannot, however, overlook storm water quality considerations and requirements during the design of conveyance facilities, as they are integrally related and will many times control or heavily influence the design of storm water conveyance facilities. The requirements and criteria relating to storm water quality (Chapter X) are intended to work in conjunction with the requirements presented in this chapter, and the requirements of this chapter are not intended to preclude any requirement or criteria of Chapter X.

202 Design Guidelines

202.1 Hydrology

202.1.1 General

NOAA Atlas 14 shall be used for rainfall in the City of Reno (see http://nws.noaa.gov/ohd/hdsc/). See the TMRDM for alternate methodology, where applicable.

The Rational Method may be used in computations for the rate of runoff for urban and small watersheds 100 acres or less. The SCS method, SCS TR-55 "Urban Hydrology for Small Watersheds", HEC-1/HEC-HMS, or the methods outlined in the TMRDM shall be used for larger watersheds.

The Rational Method:

The design flow for the Rational Method is expressed as:

$$Q = CiA,$$

where:

Q = peak rate of runoff, cubic feet per second

C = runoff coefficient

i = average rainfall intensity, inches per hour

A = watershed area, acres

The following Table 201 listing runoff coefficients based depending on future use, shall be used:

TABLE 201 RUNOFF COEFFICIENTS "C"

Land Use Type	Runoff Coefficient "C"
Rural	0.25-0.35
Single Family Residential	0.45-0.60
Multi-Residential	0.60-0.70
Neighborhood Commercial	0.85
Community Commercial	0.85
Tourist Commercial	0.85
Office	0.85
Manufacturing	0.85-0.90
Distribution and Warehousing	0.85-0.90
Public Facility	0.50-0.85
Pavement and Concrete Surfaces	0.90-0.95
Park	0.25
Open Space (0-5% grade - vegetated)	0.20-0.30
Open Space (0-5% grade - no vegetation)	0.30-0.40
Open Space (5-15% grade - vegetated or unvegetated)	0.40-0.50
Open Space (Over 15% grade - sparsely vegetated, rock or clay soils)	0.40-0.60

Weighted values of the runoff coefficient "C" may be required where land use is most accurately described as a mixture of the land uses listed above or where it is a mixture of impervious and pervious areas and not well represented by a single entry in the preceding list.

Sub-areas which include an LID feature will typically require special consideration and weighting of the runoff coefficient "C". See Chapter X for specific guidance on post construction storm water quality design considerations.

Included below for reference is Table 202 from both the TMRDM and the Truckee Meadows Structural Controls Manual.

TABLE 202 ADDITIONAL RUNOFF COEFFICIENTS "C" FOR REFERENCE

Runoff coefficients for the Rational Method from the Washoe County Hydrologic Criteria and Drainage Design Manual (a.k.a., the TMRDM) and the City of Sparks (1998 and 1996, respectively), and as per the Truckee Meadows Structural Controls Design Manual.

		Runoff Coefficients	
Land Use or Surface Characteristics	**Aver. % Impervious Area**	**5-Year (C_5)**	**100-Year (C_{100})**
Business/Commercial:			
Downtown Areas	85	.82	.85
Neighborhood Areas	70	.65	.80
Residential:			
(Average Lot Size)			
⅛ Acre or Less (Multi-Unit)	65	.60	.78
¼ Acre	38	.50	.65
⅓ Acre	30	.45	.60
½ Acre	25	.40	.55
1 Acre	20	.35	.50
Industrial:	72	.68	.82
Open Space:			
(Lawns, Parks, Golf Courses)	5	.05	.30
Undeveloped Areas:			
Range	0	.20	.50
Forest	0	.05	.30
Streets/Roads:			
Paved	100	.88	.93
Gravel	20	.25	.50
Drives/Walks:	95	.87	.90
Roofs:	90	.85	.87

Notes:

1. Composite runoff coefficients shown for Residential, Industrial, and Business/Commercial Areas assume irrigated grass landscaping for all previous areas. For development with landscaping other than irrigated grass, the designer must develop project specific composite runoff coefficients from the surface characteristics presented in this table.

Intensity-Duration-Frequency curves from NOAA Atlas 14 (at http://hdsc.nws.noaa.gov/hdsc/pfds/sa/nv_pfds.html) shall be used for determining the applicable intensity. The time of concentration is expressed as:

$$t_c = 10 \text{ or } \frac{L}{V \times 60}, \text{ whichever is greater}$$

where:

t_c	=	initial time of concentration at inlet, minutes
L	=	length from uppermost point of watershed inlet, feet
V	=	channel or overland velocity, feet per second

Given the time of concentration at a design point, the time of concentration at the next design point is determined by adding travel time, expressed as:

$$t = \frac{L}{V \times 60}$$

where:

t	=	travel time, minutes
L	=	length of channel or conduit between design points, feet
V	=	channel or conduit velocity, feet per second

Refer to Chapter X for additional hydrologic criteria relating to storm water quality.

202.1.2 Design Storm Frequency

For Streets and Roads see the TMRDM for requirements.

For developed sites, both onsite and offsite flows are to be provided for and channelized to City standards within dedicated easements, streets or public right-of-way to protect structures from flooding for events up to and including the 100-yr return frequency storm. Additionally, onsite and offsite flows for the 5-yr return frequency are to be contained within the storm drain, where less than 60 cfs. See section 2.2.4 for additional criteria for storm drain. A lesser return period may be acceptable for some limited cases such as where minor flows are present or for improvements in built-out areas, and will require prior approval by the City Engineer.

For onsite calculations, runoff from surface drainage of streets and roads shall be computed by the Rational Method.

See Chapter X for additional criteria on design storm frequencies.

See the TMRDM for special criteria relating to the Silver and Swan Lake (a.k.a. Lemmon Lake) basins.

202.2 Hydraulic Design

202.2.1 General

Discharge of stormwater runoff into a major drainage facility or natural water course shall not be allowed to increase the 100-yr historical peak flow in said facility, unless it can be demonstrated that any increase in peak flow will not adversely affect or cause damage to:

1. the facility itself, whether it be a natural or improved conveyance
2. any property along said drainage facility or water course now or in the future, based on existing zoning, master plan and elements thereof.

This shall be demonstrated to the City in the drainage report, and include consideration of runoff volumes, flow velocities, flow depths, timing of peaks, sediment and erosion.

Constructed public drainage facilities with design flows of 60 cubic feet per second or less shall be piped in accordance with City standards. Constructed drainage facilities with flows exceeding 60 cubic feet per second may be open channel conveyances, when approved by the City Engineer.

Drainage shall not be diverted from one major drainage basin to another without prior approval from the City Engineer and documentation demonstrating no adverse impact with consideration given to peak flows, flow duration, volume of flow, sediment, erosion, timing of peak flow or other factors.

202.2.2 Site Design/Subdivisions

202.2.2.1 Runoff Increases

Development shall not increase peak runoff from a site for all storm events between the 5-yr and 100-yr return period unless it can be demonstrated that no adverse impacts will occur (including demonstration that any downstream storm drain system has the capacity to handle the 5-yr event). Paths of the 100-yr flows must be considered in the design and must not be diverted or obstructed, and must be evaluated to ensure they will not cause damage to existing facilities or infrastructure (public or private). Mitigation of increases in runoff peaks and volume where

downstream systems do not have the capacity to handle the increase, or where adverse impacts will otherwise occur shall be addressed though:

1. detention of flows
2. upgrading of existing downstream system
3. Low Impact Development
4. on-site retention/infiltration system

202.2.2.2 Flow Paths

Surface drainage from any developed area shall not cross any property line except by way of a natural watercourse, major drainage facility, an approved drainage system within a public storm drain easement, or a permanent surface drainage easement. Historic drainages will require new easements, even if no easement existed before.

Existing surface drainage from adjoining property shall be perpetuated through the development, or other means of disposal provided, acceptable to the City Engineer.

202.2.2.3 Future Connections

Storm drain facilities (and post construction storm water quality treatment controls) shall be extended with a subdivision or development to adjacent undeveloped properties for future extensions in accordance with approved drainage plans (or an approved post construction stormwater management plan), unless otherwise approved by the City Engineer.

202.2.2.4 Curb, Gutter and Swales

Reinforced concrete interceptor swales are to be provided along the top of retaining walls and cut slopes to intercept drainage. Discharge swales and wall drains into approved drainages. When required by the City Engineer, reinforced concrete swales shall be provided to intercept drainage from adjacent property.

All drainage from impermeable surfaces on retail, commercial, industrial or similarly developed sites shall be contained by Portland Cement concrete curb and gutter or longitudinal valley gutter to City standards, except where required for LID features as part of the post construction stormwater quality treatment approach.

Surface drainage swales collecting runoff from the area of 2 or more lots are to be addressed through either a paved swale in accordance with City standards, or an LID feature which addresses drainage concerns, and are to be maintained and perpetuated by the property owners. Paving is not required for common side lot swales serving only 2 adjacent lots.

Easements for rear lot drainage swales shall be established by a note on the official plat substantially as follows:

The rear 5.0 feet of Lots, shall be subject to a permanent private and reciprocal drainage swale easement.

-- When Appropriate Add --

Which easement shall be further reciprocal with all lots the rear lots lines of which abut such easement.

Standard lot line drainage swales are to be designed to carry the waters generated by a 100-yr frequency storm, with a maximum of 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 6 lots and/or to exceed the maximum horizontal or vertical alignment (as shown in standard detail), a modified design capable of conveying the run-off from the 100-yr storm may be submitted for review by the City Engineer.

202.2.2.5 Edge Drains and Landscape Drains

All perforated pipe used for landscape drains that connect to the public system must be enclosed around entire circumference (full envelope) in non-woven Geotextile filter fabric.

Edge drains located in streets, parkways, medians, etc. shall extend at least 12 inches below the street subgrade and consist of either a narrow trench backfilled with Class B or C drain rock or a synthetic edge drain product such as MiraDrain 5000 or approved equal. Drain rock should be separated from native soil backfill by a geotextile, such as Geotex 311 or equal. In non-cohesive soils, the fabric should also be placed on the upslope side, between the native soils and the drain rock/backfill.

See section 202.2.5 for special criteria on connections pertaining to approved drains for the benefit of stormwater quality treatment controls and LID features.

All LOMR related improvements must be completed with the associated portion of the project.

202.2.3 Open Channels

202.2.3.1 Design Frequency

All open channels shall be designed to carry the runoff generated by the 100-yr storm from fully developed conditions within the watershed, based on maximum density and in accordance with current zoning. This includes minor roadside channels/ditches and those found within subdivisions or other developed sites. A lesser return period may be acceptable to the City Engineer for some limited cases such as where minor flows

are present or for improvements in already built-out areas, and will require prior approval. In such cases the impacts of the 100-yr flows shall still be considered, and shall not be exacerbated or likely to cause damage.

202.2.3.2 Manning's n Values

Manning's Formula is to be used in computing capacities of all open channels with the following minimum values for roughness coefficient "n":

Open channels with gunite lining 0.019
Open channels with paved bottom..... 0.025
Earth channels (no rock or gravel) 0.030

The n value for other linings shall be determined per approved Engineers Manual based on size and placement of materials. See Truckee Meadows Structural Controls Manual for additional guidance on n values for shallow flow depths or for materials typical of LID features.

202.2.3.3 Lining

Lining for drainage channels shall conform to the following requirements:

a. Design velocity of less than 6 fps - Channel lining of non-eroding, long life, low maintenance material as approved by the City Engineer. Side slopes 3:1 maximum unless otherwise approved by the City Engineer. For highly erosive soils, riprap may be required by the City Engineer, even for velocities less than 6 fps.

b. Design velocity 6 to 15 fps - Channel lining of loose rock riprap sized for velocity. Side slopes 2:1 maximum. Other lining types may be allowed as approved.

c. Design velocity greater than 15 fps - Channel lining of concrete or an engineered equivalent.

For criteria on riprap sizing, see the TMRDM.

For riprap lined channels, 1 ft min freeboard is required.

Any connecting or entering channels must be designed with consideration given to the lining or erosion control measures of the primary channel, and shall not cause damage, scour or erosion.

The use of grouted riprap is not allowed. Any exceptions must be approved by the City Engineer, and the installation must still conform to criteria in the TMRDM.

202.2.3.4 Easements and Access

Easements and access are also required along drainage ditches for the entire ditch length for general maintenance, vegetation maintenance and control, herbicide spraying, and Washoe County Vector Control. This includes features intended for post construction stormwater quality management

202.2.4 Storm Drain Systems

202.2.4.1 Design Frequency

Design the storm drain system to convey the five year storm including all downstream improvements and discharge to an existing adequate public storm drain system, major drainage facility or natural watercourse. Where by reason of terrain or other circumstances, the City Engineer determines that piping stormwater runoff is inappropriate or unnecessary, alternative approaches may be approved.

Minimum design velocity shall be 3 feet per second for storm drains and gutter pans to avoid deposition of sediment.

202.2.4.2 Material

Corrugated metal pipe (CMP) is not acceptable for storm drain systems for public improvements. All storm drain piping over 36" in diameter and located within the City right-of-way shall be a minimum of RCP Class III or the appropriate class when design requires a higher pipe support strength. Storm drain piping 36" and less shall be RCP III or solid wall plastic pipe with a minimum stiffness of 46 psi as specified in the Standard Specifications (Orange Book), except for culvert crossings. Individual catch basin leads may be constructed of unreinforced concrete pipe Class III or solid wall plastic pipe with minimum stiffness of 46 psi as specified in the Orange Book.

For open-jointed storm drain pipe placed below the water table, non-woven Geotextile filter fabric wrap shall be used with trench gravels, enclosed around entire circumference (full envelope).

202.2.4.3 Manning's n Values

Manning's formula is to be used in computing capacities of all closed conduits with the following minimum values for roughness coefficient "n":

PVC or ABS 0.013
Concrete Pipe 0.013

Corrugated Metal Pipe (100% paved).....0.015
Corrugated Metal Pipe (paved invert).....0.019
Corrugated Metal (plain).....0.024

202.2.4.4 Minimum Diameter

Minimum pipe diameter for any public storm drain shall be 12 inch except for individual catch basin laterals not exceeding 80 feet in length which may be 10 inch minimum diameter.

202.2.4.5 Discharge to Channel

Where storm drain discharges to a major drainageway, the storm drain shall extend, as a minimum, to the water surface elevation of the 100-yr flood and be riprapped from the outlet of the storm drain to the bottom of the channel in the direction of flow.

202.2.4.6 Headwalls

Headwalls shall be placed on the inlet and outlet of all storm drain systems per applicable standards for culvert headwalls (see 2.2.6) unless due to hydraulic or geometric considerations a concrete end section is more appropriate (i.e., where a storm drain discharges to an open channel).

202.2.4.7 Manholes

Manholes shall be spaced at intervals not greater than 350 feet for pipes 21 inches dia. and smaller and at 600 feet maximum spacing for pipes 24 inches dia. and larger, unless otherwise approved by the City Engineer. Concrete collars shall be placed around all manholes, valves or other appurtenances within any right-of-way or easement. Such collar shall encircle all casting with a minimum width of one foot. Manhole collars shall conform to standard details; all others shall extend to a minimum depth of one foot.

Within storm drain manholes, the difference between the invert elevations of the primary inlet and outlet pipes shall create a minimum fall of one tenth (0.1) of a foot. When smaller secondary inlet pipes are to be added to the manhole, these pipes shall be positioned to optimize flow, where possible, and to prevent adverse flow conditions, as approved by the City Engineer.

202.2.4.8 Catch Basins

Flow through catch basins (i.e., catch basins which tie into each other) shall not be allowed in public systems.

202.2.4.9 Maintenance and Access

Maintenance access roads for storm drain structures (including inlets, outlets and manholes) sufficient for a backhoe to clear debris from trash racks during storm events must be provided.

202.2.4.10 Abandoned Pipe

Storm drain pipe that is abandoned must be solid grouted or removed.

202.2.4.11 Laterals

For ease of maintenance, laterals from catch basins must tie into trunk lines at a manhole and may not make a blind connection. See TMRDM for special criteria where trunk lines are greater than or equal to 48 inches. Where blind connections are specifically allowed for storm drain laterals, pipe inverts are to be at spring line or lower, preferably matching invert, and shall be positioned to provide maximum hydraulic efficiency. However, yard drains, landscaping drains, foundation drains and other similar local drain systems common to developed sites must tie directly into trunk line via a blind connection, and are not allowed to connect to manholes or catch basins. This criterion for local drain systems accomplishes the following:

1. discourages private interests from entering the public storm drain system for maintenance
2. promotes orderly placement of drain lines, typically perpendicular to trunk line and front lot lines
3. encourages consolidation of multiple drains from developed site into single conduit before connection to public system, thereby reducing utility clutter

Due to the special nature of LID features, especially in retrofit situations, where it is not feasible or practical to tie into the storm drain main, all City approved drains for the benefit of stormwater quality treatment controls (including edge drains where appropriate) may tie directly to catch basins and manholes with approval of the City Engineer.

202.2.4.12 Cover

Depth of cover on pipes shall be measured from bottom of A.C. to top of bells per the City of Reno Supplemental Standard Drawings.

202.2.5 Streets and Roads (surface drainage)

202.2.5.1 Sump Inlets

Except for where design approach varies due to LID features, catch basins shall be installed at low points of vertical curves, at all major street intersections, and at sufficient intervals to intercept the peak flow for the 5-yr storm runoff such that flows

will not interfere with traffic or flood adjoining property. Alternate design approaches which direct storm water quality flows to into an LID feature must still intercept and divert flows out of street section, and be no less effective or reliable than an appropriately designed catch basin for all events up to the 100 year event.

For all sump inlets in a street section, size the inlet and connecting pipe for the 100-yr event, or provide a paved overland concrete swale within a corresponding drainage easement (where necessary) to convey storm runoff in excess of the inlet or storm drain capacity for flows up to the 100-yr event.

Where practicable locate inlets on grade (not in a sump) and design site to eliminate or minimize the number of inlets in a sump condition.

202.2.5.2 Allowable Spread

In no instance shall the flow of water from the 5-yr storm extend more than halfway into the travel lane adjacent the curb. Streets without parking lanes will require more frequent inlet locations. At intersections, catch basins shall be located behind the curb returns (not on the radius).

202.2.5.3 General

See section 202.2.2 for applicable requirements for edge drains in streets and medians.

Reinforced concrete valley gutters for public improvements may be placed at street intersections only when approved by the City Engineer.

202.2.6 Culverts and Bridges

202.2.6.1 Design Frequency

All culverts shall be designed to convey flows from the 100-yr event, based on fully developed conditions within the upstream watershed. This applies to roadway culverts, approach culverts, and culverts within subdivisions or other developed private sites. A lesser return period may be acceptable to the City Engineer for some limited cases such as where minor flows are present or for improvements in already built-out areas, and will require prior approval by the City Engineer. In such cases the impacts of the 100-yr flows must still be considered, and must not be exacerbated or likely to cause damage.

202.2.6.2 Minimum Size

For public improvements, the minimum culvert size shall be 18 inches in diameter for round pipe or shall have a minimum flow area of 2.2 square feet for other pipe shapes.

202.2.6.3 Material

Corrugated metal pipe (CMP) is not allowed for public improvements. CMP may be approved for retrofit projects to match existing systems with the approval of the City Engineer.

202.2.6.4 Headwalls

Headwalls or concrete end sections are required on all public culverts (this includes residential driveway culverts). All headwalls shall be designed with consideration given to skew angle of flows with respect to the culvert (The Nevada Department of Transportation standard culvert headwalls are acceptable and accommodate various skew angles). The City Engineer may require additional riprap armoring for any headwalls where scour or erosion is a concern, especially due to the angle of attack of any approach channel or ditch. For pipes up to and including 72 inches in diameter: the design, size, and material used shall comply in all cases with City standards. Headwalls for pipes exceeding 72 inches require special design as approved by the City Engineer.

202.2.6.5 Retrofit Criteria

New developments are required to utilize storm drainage in place of roadside ditches. For those areas where retrofit of drainage systems is a factor, driveway culverts for single family residences shall be sized for 100-yr flows, or shall be sized for the equivalent roadside ditch flow area and be a minimum of 12 inches in diameter. Where headwalls are used for residential driveway culverts 18 inches in diameter and smaller, the following factors should be considered:

1. environment which is friendly to the residential user
2. aesthetics
3. protecting the culvert from damage due to anticipated residential wheel traffic
4. protecting the culvert from equipment during removal of sediment and debris
5. hydraulic efficiency

For such culverts, alternate headwall designs (i.e., smaller headwalls) which address these design concerns are acceptable and encouraged.

202.2.7 Detention/Retention

Detention of 5- to 100-yr storm(s) is required based on limiting conditions downstream, and is many times the primary option for the mitigation of increases to peak runoff due to development.

See Chapter X for additional requirements pertaining to detention and retention

basins. The size of required basins may be reduced through the use of LID features, with appropriate consideration given to effectiveness of LID feature for longer return periods.

Infiltration systems shall require a percolation test as basis of design. The operation and maintenance of such a system is the responsibility of the property owner.

Provide for an emergency spillway which will not cause a direct impact to neighboring sites. The TMRDM provides criteria for the design and sizing of spillways.

Where required, provide a secondary outlet (in addition to the emergency spillway) based on the following criteria:

1. must be a piped system
2. secondary outlet elevation must be above the primary outlet
3. secondary outlet must be sized assuming that primary outlet is completely plugged
4. secondary outlet may tie into the conduit used for the primary outlet; its purpose is to provide an alternate outlet in case the primary outlet is plugged
5. secondary outlet must utilize a trash rack or beehive style grate

202.2.8 Sediment and Stream Stability

See TMRDM.

202.2.9 Additional Hydraulic Structures

Trash racks shall be provided at the upper end of all storm drain as approved by the City Engineer.

Do not place access prevention grate at outlet of drainage structures.

202.3 Major Drainageways

Criteria relating to Major Drainageways are specified in Reno Municipal Code (RMC) 18.12. Major Drainageways may be either natural or improved systems, including both perennial streams and intermittent drainages meeting the applicable criteria. Development of property shall not adversely affect any major drainageway. Natural facilities shall remain in as near a natural state as is practicable with any modification proposed, including any erosion mitigation measures, addressed in the drainage report and drainage plan.

Embankment shall not be placed within the 100-yr floodplain of a major drainage facility. For approved exceptions, the embankment shall be faced with

appropriately sized riprap with freeboard required as for open channels.

The protection of drainage ways in the City of Reno is important to the public health, safety, and welfare and their protection implements the city's mandated policies to preserve major drainage ways as open and recreational space and to save and improve these public resource areas for future generations.

202.4 Easements

Storm runoff generated within the boundaries of a subdivision or development which discharges from a public drain system onto and across private property requires that a permanent easement for access and maintenance be granted the City Engineer from the subdivision or development boundary to the point of discharge into an existing public storm drain system, major drainage facility or natural water course. Improvements to City standards will be required to assure access and proper maintenance within said easement.

Easements with improved vehicular access in accordance with City standards shall be provided to publicly owned storm drain manholes, storm drain inlets and outlets, channels, storm drain ponds and to associated structures not located within an improved street section.

Easements for access to and maintenance of the 100-yr floodplain associated with a major drainage facility or natural water course are to be provided to the City. Improved vehicular access in accordance with City standards shall be provided when determined necessary by the City Engineer.

Consideration shall be given to appropriate maintenance operations and equipment when sizing easements for public improvements and shall be a minimum width of 15 feet. The final easement width shall also consider pipe width, required trench clearance, and excavated trench side slopes (not less than 1:1 horizontal to vertical, from top of pipe), unless approved by the City Engineer.

See Section 202.2.2 for requirements for easement requirements pertaining to site design and subdivisions.

202.5 Access

Where required, access for maintenance of facilities shall consist of a 15 foot easement with a 12’ access road. The required surface treatment of the access road will be based on many considerations, including permeability, anticipated vehicle type and frequency, potential for erosion, slopes of adjacent terrain, priority to City, and anticipated future maintenance requirements, and is to be determined by the City. Where required adjacent a channel, the access road shall be at an elevation higher than the 100-yr water surface elevation in the channel.

For large open channels and those facilities which in the opinion of the City may require emergency vehicle access, a 12' clear lane shall be provided for emergency vehicles at all times.

For channels less than 30 feet in top width, one maintenance access shall be provided as part of the channel improvements. For channels greater than 30 feet in top width, the maintenance road shall be located at the bottom of the channel or on both sides at the channel top. Deviations from this are subject to approval by the City Engineer. Access to the bottom of the channel for maintenance shall be provided at approximately every ¼ mile.

Easements for access shall be dedicated "For Public Use" and shall provide for access by other public entities.

202.6 Irrigation or Water Supply Ditches

Irrigation flows and public storm drain flows shall be conveyed by separate systems, unless specifically approved by ditch companies. All plans adjacent to or containing an irrigation or water supply ditch shall require the signature of the ditch company on the face of the plans.

No public storm drainage runoff shall be allowed to flow or discharge into any irrigation or water supply ditch. Private storm drainage runoff shall be allowed to flow or discharge into an irrigation or water supply ditch only with the approval of the ditch or utility company. Where allowed, discharge of private storm drain flows into an irrigation or water supply ditch are not to be a contributing factor insofar as increasing the peak flow or total volume of water for a 24-hour, 5-yr frequency storm in said facility above existing conditions.

All approved stormwater discharges to a natural waterway, irrigation ditch or water supply ditch must show that source controls have been applied to the maximum extent practicable. See chapter on Post Construction Stormwater Quality Management for additional requirements.

Where irrigation or water supply ditches are located within or adjacent to a subdivision/development, improvements and access as required for the operation and maintenance of the ditch shall be provided to the ditch company's approval. Any improvements within the ditch company's easements are subject to the ditch company's approval.

Any irrigation or water supply ditch adjacent to residential units is to be fenced with 54" fencing, approved by the City Engineer, to safeguard the general public [RMC 18.12.604].

202.7 Flood Hazard Areas

Development within areas shown on the Flood Insurance Rate Map (FIRM) shall comply with Chapter 18.12 of the Reno Municipal Code (RMC). The RMC regulates development in which any portion of a structure or facility is within a FEMA regulated Flood Hazard Area. If a structure or facility lies within two or more Flood Hazard Areas, the most restrictive shall apply. Flood Zone regulations shall also apply to any portion of a parcel within a FEMA regulated Flood Hazard Area for which grading or other improvements are proposed.

Construction shall meet building requirements for the Truckee River Flood Plain Storage Zone 1: Critical Flood Pool per RMC 18.12.605.

202.8 Safety

When the flows, velocity, or side slope as determined by the Drainage Report indicate a potential safety issue, fencing shall be provided.

202.9 Other Agencies

Any work which requires fill be placed within the "waters of the State of Nevada" shall require a permit from the State Department of Environmental Protection prior to beginning construction. The City of Reno shall receive a copy of the State permit prior to issuance of a City permit.

Prior to issuance of any City permit for any facility encroaching on state right-of-way, and for disposal of any drainage onto state right-of-way, the approved NDOT encroachment permit shall be furnished to the City.

203 Submittal Requirements

203.1 Drainage Report

The following standards apply to the Drainage Report (public and private). The report is required to identify problems and present solutions with engineering documentation. Where appropriate, tabularized data on maps is preferred to lengthy written descriptions.

1. Title Page:

    a. Project name.

    b. Preparer's name, firm, date.

c. Professional engineer's seal of preparer and signature.

2. Introduction:

a. Site location:

(1) Street location, assessor's parcel number(s), and section reference.

(2) Adjacent developments.

b. Site description:

(1) Topography, ground cover, etc.

(2) Existing drainage facilities, major drainage facilities, flood hazard areas, irrigation ditches, other site conditions that must be considered.

c. Proposed project description.

d. Other previous studies relevant to site.

3. Historic drainage system (discuss the following):

a. Major basins and offsite contributions:

(1) Relationship to major drainage facilities.

(2) Major basin drainage characteristics (topography, runoff, cover, use, erosion, etc.).

b. Sub-basin and site drainage (1 and 2 may be tabulated on map):

(1) Minor (5-yr) and major (100-yr) storm flows for each sub-basin affecting the site.

(2) Existing drainage patterns: channelized or overland flow, point of discharge, etc.

(3) Effect of historic flows on adjacent properties.

4. Proposed (developed) drainage system (discuss each of the following):

a. Criteria:

(1) Size of major basins, tributary sub-basins, and other offsite contributions.

(2) Hydrologic method to be used for analysis (Rational, SCS, etc.).

(3) Design storm intensities (minor 5-yr, major 100-yr) or as required by the City Engineer.

b. Runoff and other contributions:

(1) Historic storm flow rates and paths.

(2) Developed storm flow rates and paths for minor and major storms.

(3) Contributions added from open joined system.

(4) Demonstrate that flows are routed to a public system with adequate capacity.

c. Piping:

(1) Demonstrate the capacity of the storm drain system, including all downstream improvements.

(2) Verify storm flows from inlets to ultimate outlets of the drainage system.

d. Detention system including

(1) Volume required and provided for zero increase in peak flows.

(2) Release rates and method of release.

(3) Passage of storms exceeding the 5-yr up to the 100-yr.

(4) Engineer to provide detailed description of downstream constraints (or none) and design calculations on how to mitigate the problem.

(5) Need for detention shall be clearly identified in the preliminary or schematic report and the necessary detention area shall be identified on preliminary plans.

e. Streets (This information may be shown on the plans.):

(1) Depth and velocity of flow for major and minor storms. Demonstrate that a 12’ clear lane exists for emergency vehicles at all times.

(2) Drainage system.

f. Open channel flow (This information may be shown on the plans.):

(1) Type.

(2) Depth and velocity.

(3) Freeboard.

(4) HEC-RAS analysis when required by the City Engineer.

g. Storm drains and culverts (Show all data on plans.):

5. Areas within flood hazard zone when applicable:

a. Impacts.

b. Protection.

c. Compliance with Federal Emergency Management Administration (FEMA) requirements, RMC 18.12 "Flood Hazard Areas", and critical flood zones. Show existing and proposed CLOMR and LOMR information, and show status of submittal and review process.

6. Conclusions - Discuss impact of improvements:

a. Benefits.

b. Adverse affects with solutions for mitigation of impacts.

7. Appendices:

a. Hydrologic and hydraulic computations:

(1) List and explain basic assumptions and input factors used:

(a) Tabularized and/or discussed as necessary.

(b) Indicate any sensitivity analysis performed.

(c) Include source tables and references for parameters, such as soils groups, SCS curve numbers, C values, n values, etc.

(2) Historic runoff:

(a) Off-site.

(b) On-site.

(3) Developed runoff:

(a) Off-site.

(b) On-site.

(4) Detention for up to the 100-yr storm.

(5) Hydraulic computations:

(a) Hydraulic grade line (HGL) minor storm.

(b) Hydraulic grade line (HGL) major storm.

(c) Inlet/outlet calculations.

(6) Rip-rap sizing.

b. Drainage plan:

(1) Site drainage plan:

(a) Show the existing and proposed contours at least 100 feet beyond property line.

(b) The site drainage plan may be at the same scale as the grading plan but must meet legibility requirements for scanned documents. Show all sub-drainage areas per catch basin or channel and tabulate existing and proposed drainage showing length, assumed velocity and time of concentration on various runs of grass, gutters, etc., cumulative time of concentration, average rainfall intensity, area, runoff coefficient (weighted if necessary), and peak flows for 5- and 100-yr storms.

(c) All inlets and manholes shall be labeled to correspond to tabular numbering system used in drainage report. Pipe sizes, grades, velocities, peak flows and hydraulic grade lines shall be shown for all parts of the system in a tabular form on the plans.

(d) Both location plan (overall drainage) and subdrainage plan shall be signed and sealed by a Nevada Registered Civil Engineer and shall be included in the construction plans for the subdivision/development.

(e) On grading plans show peak flows for 5- and 100-yr storms at inlets and other sub-basin points of concentration, at discharge points and in channels. Show peak flows entering and leaving the site; trace path leaving site to nearest major drainage facility without adverse impact to downstream owners.

(f) On plan and profile sheets, show peak flows for 5- and 100-yr storms at all inlets and in pipes as per above, and in pipes show slope, velocity, and capacity, and hydraulic grade line if surcharged.

(3) Bench marks - To be shown on plans with description and elevation.

(4) Existing and proposed property lines.

(5) Existing and proposed drainage easements.

(6) Street names, grades, widths and rights-of-way or easements.

(7) Routing and accumulative flows at the upstream and downstream ends of the site and at various critical points on-site for both minor and major runoff. Inflow and outflow for both storms for all sub basins.

(8) Street cross sections showing 100-yr flood levels. Show 12' emergency vehicle clear lane.

(9) Existing and proposed major drainage facilities.

(10) Open channel flow in major channels shall be provided with the following information on plans:

(a) Channel and hydraulic grade line (HGL) profiles.

(b) Cross sections and required rights-of-way at 100 foot intervals.

(c) Location and size of all existing and proposed structures.

(d) Channel section and lining details.

(e) Freeboard for 100-yr flows.

(f) Channel capacity and storm flows, 5- and 100-yr flows and velocities.

(11) Storm sewers (show on plans):

(a) Hydraulic grade line (HGL) profiles.

(b) Location and size of all existing and proposed structures.

(c) Proposed materials.

(d) Pertinent elevations and slopes.

(e) Pipe capacity and 5- and 100-yr flows and velocities.

CHAPTER III
EROSION CONTROL AND LANDSCAPING

SECTION 1. - Authority:

The City of Reno, the City of Sparks and Washoe County have been issued a municipal permit by the Nevada Division of Environmental Protection (NDEP) for stormwater discharges. The permit requires that a program be implemented to control pollutants in stormwater discharges in the Truckee Meadows to the maximum extent practicable.

As a part of that program, impacts of erosion and sedimentation from a construction site are prohibited. Polluting substances such as construction materials and wastes shall be contained on-site where they cannot drain or be transported by stormwater into a water body, channel or storm drain. Best Management Practices shall be implemented for all construction sites with a disturbed area of one acre or greater, for sites less than one acre if in a sensitive area, and for sites that are a part of a larger planned development.

The City's designated authority for issues related to erosion control and landscaping is the Landscape Architect, except for slopes steeper than 2:1 where the City Engineer shall decide upon stabilization method in consultation with the City Landscape Architect. Further requirements concerning this issue can be found in the applicable Reno Municipal Code. If a slope between 3:1 and 2:1 is to be stabilized by any means other than rip-rap, stability calculations shall be provided and reviewed by the City Engineer.

SECTION 2. - Construction Site Discharge Requirements :

Specific requirements concerning this issue can be found in the applicable Reno Municipal Code (RMC). The “Truckee Meadows Construction Site Best Management Practices Handbook” (“BMP Manual”) is adopted by reference and incorporated into the RMC. The BMP manual addresses procedures for construction projects, it provides a menu of best management practices, it provides guidance on the preparation of a Stormwater Pollution Prevention Plan, it advises how to install and maintain BMPs, and it includes the checklists needed for

permits at the City of Reno.

Prior to the issuance of a grading permit, the following must be submitted:

(1) Construction Permit Submittal Checklist,
(2) Performance Standards Compliance Checklist, and
(3) Copy of Receipt or Approval Letter from NDEP,

The installation and maintenance of stormwater controls are to be in accordance with the standards as set forth in the BMP manual.

At the end of construction when the site has been finished, cleaned and permanent erosion controls are in place, a re-vegetation plan together with associated security may be required by the City to assure permanent establishment of installed measures.

SECTION 3 – Post Costruction Storm Water Quality Management

Specific Requirements concerning this issue can be found in the applicable RMC. The "Truckee Meadows Low Impact Development Manual" and the "Truckee Meadows Structural Controls Manual" provide design criteria.
The Low Impact Development (LID) features utilized can be counted towards the landscaping requirements imposed by the City.

Where LID features are proposed that incorporate the use of vegetation, mulch or other similar elements, plans are required to be prepared and sealed by a Nevada Registered Professional Landscape Architect. Plans shall incorporate proposed maintenance procedures and inspection frequencies for each different type of LID feature installed.

SECTION 4. - Revegetation Plan:

The revegetation plan shall address revegetation of all disturbed areas contained within the site that are not formally landscaped, including rockery walls and rip-rap slopes, with a native seed mix in accordance with plans developed for the site by a certified professional in Erosion and Sediment Control (CPESC) or other qualified erosion control professional.

The revegetation plan shall include plans to stockpile existing topsoil and vegetative strippings and reapply the material to all disturbed areas that are not formally landscaped.

Temporary stabilization shall be applied in accordance with the BMP manual and in accordance with the State's General Permit for Stormwater Associated with Construction Activity.

Revegetation shall commence as soon as practical, but no later than the following fall, with bonding and temporary irrigation (if necessary) provided to ensure proper re-establishment of disturbed areas.

Revegetation shall be a uniform perennial vegetative cover with a density of 70% of the native background vegetative cover for the unpaved areas and areas not covered by permanent structures.

Rocks used for rip-rap and retaining walls shall be of a color consistent with the site, or landscaping shall be installed sufficient to provide 20 percent coverage in three years.

Revegetation required after final grading shall be in accordance with Section 18.06.803.075 of the Reno Municipal Code and the following:

1. Slopes will be protected with temporary BMP's for erosion and sediment control until revegetation is established.

2. Before issuance of a grading permit on slopes exceeding 3:1, or as required by the City to protect areas disturbed by project grading and/or other associated construction activity, the applicant shall deposit with the Community Development Department a bond or letter of credit in the amount determined by the applicant and approved by the City to assure that the plantings on cut and fill slopes will be established.

Prior to any on-site grading, all erosion control devices shall be installed to prevent erosion and accidental disturbance of wetlands and areas designated to remain undisturbed or "natural".

Cut and fill slopes may not exceed 2:1, unless it can be demonstrated that the slopes are in stable rock or with approved walls as determined by the City Engineer.

Except in areas located within single family lots or along common lot lines between single family residences, cut and fill slopes between 3:1 and 5:1 shall be stabilized by landscape materials, hydroseeding or seeding and all methods shall be irrigated until established to the satisfaction of the City Landscape Architect.

Cut and fill slopes between 3:1 and 2:1 shall be stabilized by mechanical stabilization, or by landscape materials if approved. The requirement for mechanical stabilization or landscape materials may be waived by the City Engineer if it can be demonstrated that some other means of restoration will be effective (See Section 5).

SECTION 5. - Seeding Slope Stabilization - Slopes flatter than 3:1 or as otherwise alternatively approved by the City Landscape Architect:

1. Preparation:

When possible, topsoil should be salvaged prior to construction. Topsoil is generally defined as the top 6" to 12". When possible topsoil should be salvage when moist but not wet. Storage of topsoil should be accomplished in shallow piles less than 2' deep. The topsoil should be placed no more than a few days prior to seeding to prevent weed invasion and wind and rain erosion. If topsoil is not salvaged, the following preparation must be adhered to.

After slopes have been compacted, the top 3" of soil shall be disked and 3" of fine sandy loam topsoil, free of rocks, shall be rototilled into the disked surface. A soil test of the mixture shall be performed by an approved licensed soil testing laboratory capable of completing a standard Agricultural Soil Nutrient test as approved by the City. The cost for the test shall be paid by the developer. The soil shall meet the following minimum criteria:

Soil ph	6.8 - 8.2
Nitrates	80 lbs/acre
Phosphorus	75 lbs/acre
Salinity	Less than 2 ds/m

The developer shall make the necessary amendments or fertilizer additions to the soil mixture as recommended by the soil testing firm to meet the minimum criteria. The application of any amendments or fertilizer shall be done under the observation of the landscape architect at the site and the soil mixture shall be retested by the testing firm. This procedure shall continue until a satisfactory mixture has been obtained.

2. Application:

The seed mixture and application rate for slope stabilization shall be to the approval of the landscape architect and provide a variety of grasses, shrubs and wildflowers which provide erosion control and are in keeping with the surrounding site. This will avoid the establishment of a monoculture or single species stand. Variation in soil, elevation, site exposure and climate must be considered when blend is specified. Specification of blends must include species by category and Pure Live Seed (PLS) lbs/acre. PLS equals the percent of purity times percent of germination. Seed blends must be applied at a minimum rate depending on application method. Immediate erosion control shall be accomplished by the use of nurse grass crop which will provide 50% coverage in the first year of growth. Nurse grass crop must be a minimum of 15% of the overall seed blend.

Drilling typically provides high germination rates and is a preferred application method. Seed shall be drilled into the soil to a depth recommended by the seed supplier. Seed drilling should be conducted along the contour to avoid erosion from water flowing down drill furrows. A minimum application rate of 20 PLS lbs/acre should be specified when drilling is provided.

Broadcast seeding shall be applied at a minimum rate of 32 PLS lbs/acre and is recommended where slopes are too steep for seed drilling equipment or too rocky to allow effective drilling. To improve seed/soil contact the area must be raked or harrowed just before seeding. Raking or harrowing is also recommended after broadcasting is complete. Broadcasting must not be done on windy days and uniform coverage shall be provided.

3. Irrigation:

All slopes shall be irrigated until established as approved by the City Landscape Architect. Temporary irrigation must be in place to assure

germination. To prevent rills created by irrigation heads, an area of rock or bark mulch must be provided around each sprinkler head and over-irrigation must be avoided to prevent ponding of water.

SECTION 6. - Slope Stabilization - for Slopes Between 3:1 and 2:1:

1. Mechanical Slope Stabilization - Standard Requirement:

a. Rock riprap shall be used for slope stabilization. It shall contain a minimum of four fractured faces and be placed to a minimum depth of 12 inches. A minimum of 75% of the rip rap shall be 8 inch diameter rock or greater.

Within one week of installation, the riprapped slope shall have an approved hydromulch seed mix applied. Hydromulch shall consist of degradable green-dyed wood cellulose fiber or 100% recycled long-fiber pulp, free from weeds or other foreign matter toxic to seed germination.

Seed mix shall be a blend of grasses and wild flowers which are specified to match locally adapted species. Variation in soil, elevation, site exposure and climate must be considered when blend is specified. Shrubs may also be added to mix if sufficient growth area is provided. Specification of blends must include species by category and Pure Live Seed (PLS) lbs/acre. PLS equals the percent of purity times percent of germination. Seed blends must be applied at a minimum rate of 15 PLS lbs/acre.

If hydromulch is not used on the project, color of rock must be similar to the native rock within area and approved by staff. A combination of landscape plants and hydromulch is encourage. The use of landscape plants requires the use of a drip irrigation system.

b. Engineered retaining walls, rockery, concrete or alternate masonry as approved by the City Engineer may be used to form terraces which will eventually catch grade. The minimum dimension of a terrace shall be 8' to allow for adequate drain rock and planting areas. In no case shall walls and terraces exceed 2:1.

Terraces must be backfilled at the surface with a minimum of 12" of salvaged topsoil. Within one week of installation the terraces shall

have an approved hydromulch seed mix applied. A seed mix of grasses, shrubs and wildflowers shall be used at a minimum rate 32 PLS lbs/acre. If irrigation is not provided a tackifier must be applied and hydromulch applied in spring or fall.

c. The use of an approved erosion control mat may be allowed upon the recommendation of a registered professional civil or geological engineer or landscape architect and approval of the City Engineer. Erosion control mats muxt be a thin excelsior matrix with netting top and bottom. Other types of matrix may be allowed with approval of the City Engineer. Mats must be photodegradable with an average blanket life of 12 months. Blankets must be laid and slope seeding must be done to manufacturers' specifications. Seeding is required in addition to this mechanical stabilization in accordance with Section 4.

2. Landscape Slope Stabilization - Alternate Method - All slope stabilization plans shall be approved by City Landscape Architect:

a. Preparation:

Landscape materials may be obtained for transplant from a nursery in containers or bareroot. Live plants may also be salvaged from the site during grading. Salvaged plants have a higher degree of success if collected with as much native soil as practical. Soil preparation should be followed as in Seeding Slope Stabilization (Section 4).

b. Installation:

Landscaping with live plants may be done exclusively or in conjunction with seeding slope stabilization plan. Revegetation with live plants is warranted when a more rapid plant establishment is needed than can be met through seeding. All stock, whether purchased or salvaged, should be handled as little as possible before transplanting. Only a minimum number of seedlings necessary to complete a designated section of the planting should be removed from their containers/packaging at one time. Planting area should be fully prepared with all personnel ready to plant when seedlings arrive. Short term storage at the planting site can be facilitated by "heeling in" as directed by the nursery.

Holes can be made in variety of methods but to avoid drying out the soil, only holes ready for transplant should be made. Insert plants into holes as vertical as possible. Plant roots should not be bent, kinked or tangled, or bunched up at the bottom of the hole. Once the seedling is placed in the hole, pack the soil firmly around the root in order to avoid air pockets. To assure good root contact and minimize air pockets, all transplants should be irrigated at the time of establishment. Working on steep slopes requires that planters begin at the top of the slope and traverse, eventually working downslope. The positioning of transplants on 3:1 slopes will require catchment basins approximately 12" in diameter placed around each plant.

c. Irrigation:

All slopes shall be irrigated until established as approved by the City Landscape Architect. Temporary irrigation must be in place to assure germination. To prevent rills created by irrigation heads an area of rock or bark mulch must be provided around each sprinkler head.

SECTION 7. – Landscaping in Public Rights-of-Way:

1. Design/Plan Requirements:

Improvement drawings must show the area to be landscaped, type(s) of trees and shrubs, size and depth of mulch or rock, automatic drip irrigation system with locations of all shut-off and drain valves. These improvement drawings must meet submittal and all other requirements of Reno Municipal Code. If the developer desires to install more landscaping than trees, shrubs and mulch or rock, then he must execute a maintenance agreement in which he agrees to maintain it until the subdivision is sold out or for two years, whichever is longer.

No spray irrigation will be allowed in medians or parkways. Landscaping requiring irrigation shall be designed such that it does not allow runoff or overspray onto paved surfaces in the right-of-way, controller cabinets, service and fire hydrants, which must also remain clear of vegetation.

a. Right-of-Way Development:

The City right-of-way should be developed in keeping with the City of Reno Master Plan. The Master Plan provides direction and appropriate uses for these rights-of-way within the Community Design and other portions of the Policies Section.

(1) Development of attractive landscaping and green spaces in close proximity to the downtown area, focal centers and along arterial streets is encouraged.

(2) Construction of raised landscape medians in lieu of center left-turn lanes on boulevards is preferred.

(3) Median landscaping shall be predominately hardscape with accent shrubs and trees irrigated by a drip system.

(4) Landscape areas adjacent to soundwalls shall be provided and maintained by owners of commercial and multi-residential properties. Developers of subdivisions shall create homeowners' association or apply for a Maintenance District to maintain these landscaped areas.

(5) Street trees shall be provided in accordance with the City of Reno Urban Forestry Commission's Approved Street Tree List. All trees proposed for City right-of-way must first be approved by the Urban Forester.

(6) Per Reno Municipal Code, when work is done in existing right-of-way, upgrades shall be made to sidewalks, landscaping or other physical improvements.

b. Parkways Development:

(1) Parkways and sidewalks should be placed within the public rights-of-way.

(2) Residential streets should be designed to include a landscaped parkway strip between the curb and sidewalk, except in cases where a sidewalk is deemed to be inappropriate. Landscaped

parkways shall include approved street trees, plants or decorative hardscape.

(3) With the Zoning Administrator=s approval parkways may be established in nonresidential districts and count towards the front yard setback and landscaping requirement on a 1' to 1' basis.

(4) Parkway Design and Specifications:

(a) Sidewalks with parkways may meander and as such the largest shade tree practical must be used. The size of shade tree for a given space is provided within the Reno Urban Forestry Commission's Approved Street Tree Species List. If there are special situations such as overhead utility lines, existing walks/driveways, structures, or other utilities, then smaller size categories of trees may be used. The goal for parkway planting is to achieve crown to crown street trees upon maturity. All trees must meet all sightline requirements. Trees must meet City of Reno Nursery Stock Quality Standards and must be planted according to City of Reno Planting Details.

(b) In accordance with the Reno Municipal Code, a permit must be obtained from Parks Division, Urban Forester, as well as an encroachment and excavation permit from Community Development Department before planting trees on City of Reno property, including parkways and street rights-of-way.

(c) Parkway tree planting shall provide for species diversity.

(d) Riparian or other invasive tree species shall not be allowed in parkways.

(e) Evergreen trees should be avoided as street trees due to problems with shading in winter resulting in ice hazards.

(f) Smaller ornamental trees may be used between adequately spaced large canopy trees.

(g) Automatic drip irrigation shall be provided in all new parkway designs. One 3" PVC irrigation sleeve will be provided beneath sidewalks for each property adjoining parkway. Drip lines shall be run down the side of the parkway and not through the middle. Lines should be buried six inches as measured from the bottom of the mulch, landscape rock or grass. Emitters should be attached to the main drip line and a leader of drip tubing taken to the final watering position.

The emitters shall be placed at the root ball and outside the root ball area in a line encouraging root growth along the length of the parkway. Four two-gallon emitters shall be provided for each tree delivering eight gallons twice a week. Species, solar exposure, wind exposure, soil type, etc. may necessitate a change to irrigation amounts and irrigation schedules. Changes to irrigation amounts and schedules should be confirmed with the Urban Forester.

(h) The minium size of a parkway tree shall be one inch in caliper. All plant material located within parkways shall meet City of Reno Nursery Stock Quality Standards.

(i) All parkway trees shall be planted and staked as per the Reno Municipal Code Section 18.06 planting detail.

(j) Final grade for parkway planters shall be a maximum of two inches below top of curb or sidewalk. In no case should final grading produce any type of trip hazard.

(k) Planting areas shall be over-excavated and backfilled with a quality topsoil as approved by Urban Forester.

(l) Parkway trees shall have an approved root barrier placed along the sidewalk and inside curb face for a length of ten feet for each tree. Root barriers shall be approved by the City Urban Forester.

(m) The use of shrubs in parkways are allowed and must meet all sightline requirements as per A.A.S.H.T.O.

2. Plan Checking:

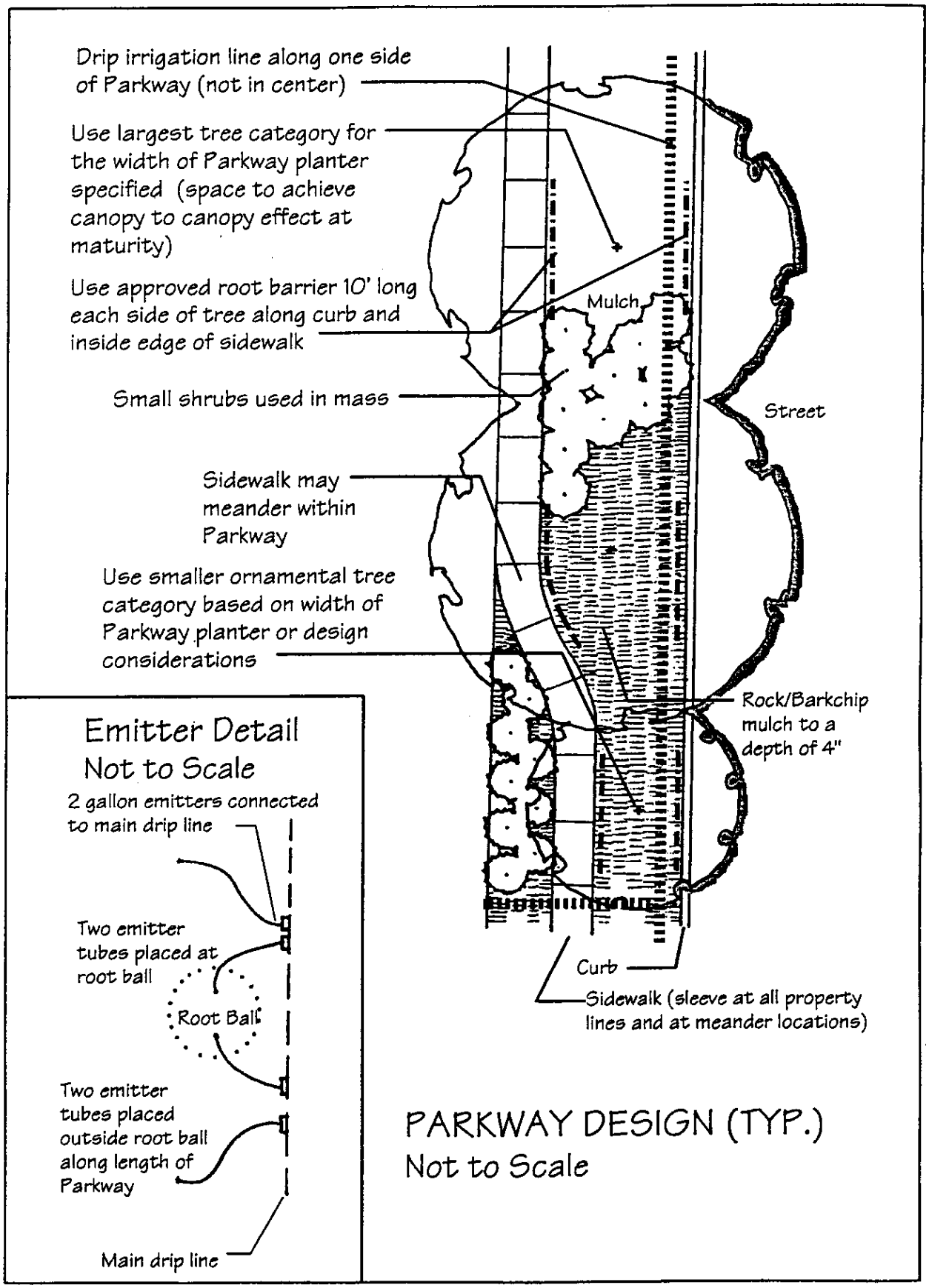
a. The Planning Division staff will check the improvement drawings to make sure that the landscaping is in the appropriate easement. Engineering staff will make all determinations as to whether additional water rights have been dedicated, if necessary. The planning staff will also check to make sure that the number of trees is correct and that no additional landscaping is proposed. If additional landscaping is proposed, the planning staff will advise the developer of the requirement for a maintenance agreement, or other means of maintenance, and process any necessary agreement through the City Council.

b. The Planning Division will check the plans to assure that the slope in the area to be landscaped does not exceed 5:1, and require a note be placed on the improvement drawings requiring the Engineer-of-Record to provide written notification to the Parks Division 48 hours in advance of installation of both the landscaping and the irrigation system to make arrangements for the appropriate inspections.

c. The Parks Division staff will check the improvement drawings to make sure that the type of trees, depth and size of mulch or rock, and automatic irrigation system are acceptable.

3. Maintenance Agreement:

If a maintenance agreement has been executed, then the agreement must contain a provision requiring the developer to notify the Parks Division 60 days prior to the expiration of the agreement so that they can inspect the landscaping, irrigation system, provide for the developer to continue maintenance until all plants are healthy, the irrigation system is functional, and the Parks Division has accepted them.


Drip irrigation line along one side of Parkway (not in center)
Use largest tree category for the width of Parkway planter specified (space to achieve canopy to canopy effect at maturity)
Use approved root barrier 10' long each side of tree along curb and inside edge of sidewalk
Small shrubs used in mass
Sidewalk may meander within Parkway
Use smaller ornamental tree category based on width of Parkway planter or design considerations
Mulch
Street
Rock/Barkchip mulch to a depth of 4"
Curb
Sidewalk (sleeve at all property lines and at meander locations)
Emitter Detail
Not to Scale
2 gallon emitters connected to main drip line
Two emitter tubes placed at root ball
Root Ball
Two emitter tubes placed outside root ball along length of Parkway
Main drip line
PARKWAY DESIGN (TYP.)
Not to Scale

CHAPTER IV - SANITARY SEWERS

SECTION 1. - General:

1. Sewage collection and treatment shall comply with the regulations imposed by State law and local ordinances, shall be approved by the City, and shall conform to City standards.

2. At no time shall storm water, groundwater, or other surface water be allowed to enter the sewer system. Failure to prevent inflow of storm water or other surface water into the sewer system is a violation of state and local ordinances, and is subject to penalties.

3. The subdivider/developer shall determine the adequacy of the existing sanitary sewer system to accommodate the proposed subdivision or development from the point of connection to a sanitary sewer interceptor. The City Engineer may require additional modeling and analysis for high discharge developments, or where sewer capacity is limited.

4. All sanitary sewers, inclusive of laterals, shall be constructed to a depth sufficient to allow for gravity flow to public sanitary sewers from all floors of residential or commercial structures, inclusive of basement areas. Alternative means may be approved on a case-by-case basis, and shall require the approval of the City Engineer prior to construction. Cost for any required easements or rights-of-way shall be included in the estimate.

5. Sanitary sewer lift stations shall be designed in accordance with the most recent edition of the City of Reno's Wastewater Lift Station Design Manual.

6. Sewer service laterals shall be installed to each lot. Laterals shall have the end capped on the private property side and marked per the City of Reno Supplemental Standard Details for Public Works Construction. The location of each lateral shall be permanently identified by stamping an "S" in the top of curb at the location where the lateral crosses the curb line. The end of each capped lateral shall be marked with a wood or plastic stake, nominally 2 inch x 2 inch, painted green, and marked with an "S".

7. Concrete collars shall be placed around all manholes, valves or other appurtenances within any right-of-way or easement. Such collar shall encircle all casting with a minimum width of one foot. Manhole collars shall conform to standard details; all others shall extend to a minimum depth of one foot.

8. Public sewerage facilities shall be installed within public street sections. No public sewerage facilities will be permitted along lot lines or other locations unless approved by the City Engineer, and appropriate public sanitary sewer easements and improved access in accordance with City standards are provided for maintenance purposes.

9. Sanitary sewer mains shall be extended with a subdivision or development to adjacent undeveloped property for future extensions in accordance with approved plans, unless otherwise approved by the City Engineer. A sanitary sewer manhole shall be placed at the terminus of the main line at the property line of the adjacent undeveloped property. Pipe extensions out of the base of the terminus manhole shall have the end properly capped and a mechanical plug installed in the manhole.

SECTION 2. - Capacity Requirements for Public Sewers:

DESIGN PERIOD

In general, sewer systems shall be designed for the estimated ultimate population of the tributary and consideration shall be given to the maximum anticipated flows from institutions, industrial parks, etc.

DESIGN FACTORS

In determining the required capacities of sanitary sewers, the following factors shall be considered:

1. Peak sewage flows.

2. Additional sewage or waste flow from industrial plants or institutions.

3. Tributary sewer drainage basin.

4. Topography of area to be sewered.

5. Location of waste treatment plant.

6. Depth of excavation.

7. Pumping requirements.

DESIGN BASIS

New sewer systems shall be designed in accordance with City standards, on the basis of the most recent zoning using the following per capita contributions:

1. Mains (8 inches to 10 inches) - 350 gallons per capita per day (peak flow).

2. Trunk sewers (over 10 inches and under 18 inches) and interceptor sewers - (18 inches and over) - 250 gallons per capita per day (peak flow).

OCCUPANCY RATES

The following are minimum occupancy rates for dwelling units in computing sewage contributions:

1.	Single Family Residential	3.0	capita/dwelling unit
2.	Condominium	2.0	capita/dwelling unit
3.	Mobile Home	2.5	capita/dwelling unit
4.	Apartment	2.0	capita/dwelling unit

QUANTITY OF SANITARY SEWAGE PER ACRE

The following are minimum quantities of sanitary sewage per acre for computing sewage contributions from non-residential sources:

1.	Office	3,200	gal. per acre per day (peak flow)
2.	Public Facility	3,200	gal. per acre per day (peak flow)
3.	Commercial	10,000	gal. per acre per day (peak flow)
	Resort Hotels and Casinos	650	gal. per day per room (peak flow)
	Motels	500	gal. per day per room (peak flow)
4.	Industrial (unless water intensive usage is identified)	3,000	gal. per acre per day (peak flow)

The City Engineer may require different design quantities based on an individual case review.

SECTION 3. - Design and General Requirements:

1. Design Requirements for Public Sewers:

Manning's Formula is to be used in computing depth of flow and velocities of all sanitary sewer conduits, with the roughness coefficient "n" value equal to 0.014. Sewer lines shall be designed to give mean velocities of not less than 2 feet per second based on calculated peak or half-full flow, whichever yields the lower velocity. Sewers with less than 10,000 gallons per day shall be placed at not less than a one percent slope. For slopes less than 1%, velocity calculations shall be provided. Slopes less than those required for mean velocities of 2 feet per second during peak flows, may be permitted when approved by the City Engineer. Such decreased slopes shall be avoided whenever possible and the pipe diameter and slope shall be selected to obtain the greatest practical velocity to minimize settling problems. The Engineer shall submit computations of the mean velocities during peak flows. The depth of the design peak flow shall not exceed one-half full. Where velocities greater than 15 feet per second are attained special provision shall be made to protect against displacement by erosion and/or shock. Sewers on 20 percent slopes or greater shall be anchored securely with concrete anchors or equal, spaces as follows:

a. Not over 36 feet center to center on grades 20 percent and up to 35 percent.

b. Not over 24 feet center to center on grades 35 percent and up to 50 percent.

c. Not over 16 feet center to center on grades 50 percent and over.

2. General Requirements:

a. No public sanitary sewer main shall have a pipe diameter of less than 8 inches. All plastic pipe shall be solid wall and have a minimum stiffness of 46 psi.

b. All public sanitary sewers 8 inches and larger, located within the public right-of-way or easements, shall be constructed to City standards and be City owned and maintained.

c. Sewer pipe including mains and service laterals installed in a traveled way shall have a minimum coverage of 3 feet from the top of the pipe to the bottom of the asphalt or be reinforced, based on live loading.

d. Service laterals shall have a minimum pipe diameter of 4 inches with a minimum slope of 1/4 inch per foot (unless otherwise approved by Building Official) and be constructed to the property line. No cleanouts shall be permitted to be constructed on public right-of-

way. Laterals shall have a minimum coverage of 3.0 feet in the public right-of-way unless otherwise approved by the City Engineer. Private service laterals to a public main are to be provided for each individual parcel. Private service laterals shall not be connected to the manhole nor to the sewer main within 5.0 feet of the manhole. Private service laterals shall not be connected to the sewer main unless it is located in between two manholes.

e. Sewer easements for public improvements shall be a minimum width of 15 feet. The final easement width shall be determined by pipe width, required trench clearance, and excavated trench side slopes not less than 1:1 horizontal to vertical, from top of pipe, unless approved by the City Engineer.

f. Manholes shall be located at junction points, changes in horizontal and/or vertical alignment exceeding the minimum allowable pipe deflection, changes in conduit size and at the end of public lines unless approved otherwise by the City Engineer. Sanitary sewer pipe shall be installed in straight line segments. Vertical curves shall not be permitted. Horizontal curves shall not be used only unless specifically approved by the City Engineer. Manholes shall be spaced at intervals not greater than 350 feet for all lines smaller than 24 inches and 600 feet maximum for lines 24 inches and larger, unless otherwise approved by the City Engineer. Large diameter sewers (>30") shall be constructed so that angle points are 45° or less.

g. Increasing Size - When a smaller sewer flows into a larger sewer, the invert of the larger sewer shall be sufficiently lower to maintain the same hydraulic gradient.

h. Drop Manholes - A drop connection shall be provided for a sewer entering a manhole at an elevation 2 feet or more above the manhole invert. Drop manholes shall not be used without prior approval from the City Engineer. Drop manholes/connections shall not be permitted unless unusual circumstances are present and written approval is granted by the City Engineer.

When the difference in elevation between the incoming sewer and the manhole invert is less than 2 feet, the manhole invert shall be filleted and channeled to prevent deposition of solids. The drop connection shall be constructed in accordance with the standard detail requirements for manhole installation. The engineer shall present supporting calculations for hydraulic efficiency through manholes that do not meet the above requirements.

i. A minimum of 16.5 feet of overhead clearance shall be provided at all manholes.

j. Sanitary sewer pipe that is abandoned must be removed. Leaving sewer pipe in-place and filling with concrete slurry in not acceptable, unless approved by the City Engineer.

k. Within sewer manholes, the difference between the invert elevations of the inlet and outlet pipes shall create a minimum fall of one tenth (0.1) of a foot. When smaller secondary inlet pipes are to be added to the manhole, these pipes shall be channelized and positioned for optimum flow, as approved by the City Engineer.

l. Force main piping shall be installed with a metal tracer wire over the entire length of the run for future location via metal detection devices. GPS data shall be provided for all installed force main manholes, along with GPS data points at a minimum of every three hundred feet (300') along the force main piping run.

m. Pipe inverts shall be positioned to provide maximum hydraulic efficiency and to prevent backwash & stall conditions.

SECTION 4. - Sewerage Report:

Required when the number of dwelling units exceed 10 or the number of fixture units exceed 200. The subdivider/developer shall determine the adequacy of the existing sanitary sewer system to accommodate the proposed subdivision or development from the point of connection to a major sanitary sewer interceptor. Normally the adequacy can be determined based on the developed area contributing to the existing facility. However, if infiltration is a factor, metering will be required.

The following shall be addressed in the sewerage report to substantiate the design of the system.

1. Area of project.

2. Tributary areas outside project.

3. Adjacent areas.

4. Contours as required by the City Engineer.

5. Line layout, pipe size, slope and material type.

6. Any non-domestic waste being introduced into system such as industrial process wastes, cooling waters, etc. and the types of pretreatment devices to be provided.

7. Calculations showing predicted average and peak flows at major junction points including flow coming from area outside the project area.

8. Direction of flow.

9. Cumulative flow.

10. Zoning used to predict flows.

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

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

13. Design calculations (hydrologics, trench design, pipe structural design, etc.).

14. Public vs. private piping.

CHAPTER V - IMPROVEMENT PLANS

SECTION 1. - General Plan Requirements:

1. All plans and designs shall conform to City Standards, be signed and sealed by a Nevada Licensed Civil Engineer, or as appropriate, and conform to the following outline of procedures. Any significant changes to the approved plans prior to or during construction shall require approval by the City Engineer prior to installation. All plans shall incorporate the following note: In the event of a conflict between these drawings and Reno Municipal Code, code shall prevail.

2. Upon acceptance of the plans by the City, the engineer shall provide the Community Development Department three sets of prints of the plans, wet stamped and signed.

3. All plans submitted shall at a minimum meet the following requirements:

   a. Standard size for plan sheets and mylars shall be 24" x 36" sheets.

   b. Each sheet of the plans shall have a north arrow and indicate scales used.

   c. Each sheet shall carry a title block which shall be located along the right-hand margin (24" side) and which shall contain the following information:

      (1) The name of the project.
      (2) Name of owners and developer.
      (3) An indication of the type of design shown on the plan.
      (4) The name, date and seal of the Nevada Licensed Civil Engineer, or as appropriate.
      (5) The date plans were drawn.
      (6) A sheet number and total number of sheets shall be indicated, and shall be located in the lower right-hand corner of the 36" side of the sheet.
      (7) Any additional information necessary to clarify the design.

4. The plans shall clearly indicate in plan and profile, the distinction between existing conditions and proposed improvements, and shall designate

improvements as public or private. The plans shall show adjacent property owners and parcel numbers.

5. Right-of-way lines on both sides of all streets, the boundaries of lots fronting on both sides of all streets, drainage easements, storm water quality management easements, utility easements, public use easements, landscape easements, section lines and corners, land grant lines, and temporary construction easements both existing and proposed shall be shown on the plans. All right-of-way and easement lines shall be properly dimensioned and noted.

6. All pertinent existing and proposed topographic features shall be shown, such as street lines, curbs, sidewalks, shoulders, location and size of sanitary sewers, storm drains, water, gas, electrical, telephone lines and other underground facilities. Also show structures, houses, trees and other flora, drainage ditches, utility poles, fire hydrants, and all other features of the area which may affect the design.

   Where proposed improvements meet existing infrastructure facilities, the plan shall show all pertinent existing elevations, gutter grades, centerline of pavement, sewer and storm drain inverts, driveway locations, traffic signal equipment, detection loops, etc. for a minimum distance of 100 feet from any boundary of the subdivision or development. Contact City Signal Shop for location of detection loops.

   When showing existing pavement or concrete in relation to new work, suitable shading and delineation shall be made of the new work.

7. The stationing and orientation on plan and profile shall be from south to north and west to east insofar as practical. All street centerlines, beginning of curves, points of compound curves, end of curves, and limits of work shall be stationed on the plans. Curve data shall include: centerline radius, length of curve, delta or central angle and tangent distance. Vertical curves shall include the length of the curve, BVC and EVC stations and elevation and the K-value used (rate of vertical curvature).

8. Vertical control bench marks shall be clearly indicated on the plans as to location, description, elevation and datum. The datum shall be that of the National Geodetic Survey, North American Vertical Datum of 1988 (NAVD '88), or its successor. The Reno Vertical Control System (RVCS) is based upon the above datum. Consult the latest edition of the RVCS directory, or contact the Survey Section of the City of Reno Engineering

Division for location and elevation of the nearest official bench mark. Bench marks shall be clearly shown on the title sheet and all grading and plan and profile sheets.

9. Horizontal Control - All land division maps, reversionary and amended maps, records of survey for boundary line adjustments, commercial and industrial development, and waiver of parcel map, require positioning and orientation to a common horizontal datum jointly adopted by the July 14, 1998 Interlocal Agreement between Washoe County, and the cities of Reno and Sparks. The purpose for this requirement is to promote a common, multi-jurisdictional county-wide parcel database in support of a Geographic Information System (GIS). The Interlocal Agreement contains digital base map standards for submittals.

   An approved listing of geodetic control monuments may be obtained from the office of the Washoe County Surveyor. A minimum of two (2) of these control points must be tied-in and utilized to position and orient all mapping to a common basis at ground level. This is to be the basis of bearings expressed on all maps submitted for approval.

   Datum for the horizontal control is the North American Datum of 1983 (NAD '83) as identified on Record of Survey No. 2775, filed in the office of the Washoe County Recorder on September 21, 1994, as Document No. 1834848. The combined mapping factor in Reno for West Zone (Nev. 2703), Nevada State Plane Coordinate conversion from Grid to Ground is 1.000197939; Ground to Grid is 0.999802100. Surveyors are advised that these values result in coordinates on a localized, mean ground surface network that has been devised for uniform GIS mapping and related digital submittal purposes only. Survey level control and other geodetic work must adhere to procedures that will result in true, official State Plane Coordinate values. Mapping required to be digitally submitted and oriented to the localized regional control system must also contain sufficient information to maintain and carry forward a historical lineage to the legal cadastral fabric.

10. A typical section(s) for each type of street within the area to be improved, delineating the structural features, width of right-of-way, improvement dimensions, landscape, pedestrian way, bike path, easement areas and details on both sides of all streets. Reference soils report and include information on design subgrade resilience modulus , subgrade corrections, with each section, and compaction requirements for each type and lift of

material shall be shown. Street name and stationing shall be identified for each section.

11. All plans submitted to the City of Reno shall be clean, uncluttered and legible, with all information clearly indicated and readable. The City of Reno reserves the right to reject any set of plans, and establishes the following minimum standards:

    a. Minimum text size shall be 0.1 inch height.
    b. Shall allow for reproduction and/or scanning without loss of integrity.
    c. Shaded areas shall not occlude underlying information.
    d. Any print, mylar, sepia-mylar or other document which is determined by the City to be illegible shall be replaced at no cost or expense to the City.

SECTION 2 - Plans Required, Order of Binding and Specific Requirements:

1. A typical set of plans for construction of public works shall include all of the listed plans unless waived by the City Engineer. Order of binding shall be as follows:

    a. Title sheet.
    b. Key Sheet
    c. Record map sheet.
    d. Utility index.
    e. Grading and drainage.
    f. Plan and profile sheets.
    g. Detail sheets.
    h. Cross sections (if required).
    i. Traffic signs and pavement markings.
    j. Traffic signal.
    k. Landscaping.
    l. Boring logs.
    m. Site drainage (from drainage report).
    n. Storm water quality management plan

2. The title sheet shall show the entire project, or assessment district, to include but not limited to, index, legend, vicinity map with the City limits shown thereon, street names, section lines, grant lines and corners, bench marks, basis of bearing and datum, pertinent notes, project owner, developer, engineer of record, testing company, design engineer, signature, wet-stamp and date by design engineer. RMC Section 18.14.202(b) requires the title sheet to contain the statement, "These plans, sheets 1 through __, have been prepared in accordance with the approved tentative map, city council conditions of approval, and the Reno Municipal Code."

3. Record maps include, but are not limited to, the associated final map, parcel map, map of dedication, existing FEMA information, record of survey or easement and shall be included as part of the approved construction plans.

4. The utility index shall be contained on a single sheet of the subdivision or development showing the general location of sanitary sewer and storm drain systems, identifying and numbering all manholes and structures and indicating improvements as either public or private as appropriate. This shall include all rear lot drainageways and piping to off-site systems and drainageways. All other existing aboveground and underground facilities, including proposed services for water, gas, electric, telephone, cable television, fire hydrants, street lights, valves, major junction boxes and manholes, fiber optic cables, etc., shall be schematically shown. Structure numbering shall match that in the sanitary sewer or storm drainage reports.

5. Grading and drainage plans shall depict existing contours as fine continuous or dashed lines and proposed contours as solid lines. Elevations of contours labeled as appropriate; existing and proposed FEMA information; all cut and fill slopes labeled 2:1, 3:1, etc.; retaining walls labeled with top and bottom elevations, maximum height, and a front elevation drawing, if required, all clearly identified as requiring a separate building permit and special inspection; mainline and intersecting street grades in percent; peak flows, for the 5- and 100-year storms, entering and leaving the subdivision or development and disposition of same; the 100-year flood line; spot elevations on streets, top of curbs, retaining walls, and lots; surface drainage improvements; drainage arrows showing individual lot drainage; soil report requirements printed thereon; and storm drain system with lines, catch basins and 5- and 100-year flows, all concrete swales, including overflow swales, cross sections identifying base flood elevations for predevelopment conditions in flood hazard zone "A", information showing before and after conditions for C.L.O.M.R., L.O.M.R., and critical flood zones, and any other pertinent and offsite

drainage features. Any catch basin bypass or 100 year breakout flows shall be clearly identified on the drainage report, plan, and profile sheets.

6. Plan and profile sheets shall have minimum scales of 1" = 10' vertical and 1" = 40' horizontal:

   a. Streets and access roads:

      (1) Name of street and stationing on plan view and in title block of street.

      (2) For all plan view sheets, show:

         a. Monuments.
         b. Right-of-way widths.
         c. Improvements.
         d. Traffic control devices.
         e. Intersecting streets and names.
         f. Centerline stationing.
         g. Horizontal curve data and stationing.
         h. Indicate bench mark location and elevation.
         i. Show existing facilities and match lines.
         j. Show location of any borings, test pits, monitoring wells, etc.
         k. Street Lighting.

      (3) Profiles shall be along centerline, shall include cross streets, spur lines, additional crossings, etc., and shall show:

         a. Existing and proposed grades, including tangency slopes.
         b. Vertical curve elevations and data.
         c. Station and elevation of intersecting streets.
         d. Show existing facilities.
         e. Show groundwater elevation from soils report where available.

   b. Storm Drains:

Where storm drains are located within a public street section, they shall show on the street plan and profile sheets; where exterior to a street section, storm drains shall show on separate plan and profile sheets, indicating the appropriate easements and easement widths.

(1) Plan sections for all storm drains shall show at a minimum the following:

a. Location of pipe in relation to street centerline and/or easements, property lines, etc.
b. Type and location of manholes and catch basins showing the station, number and rim elevations of each.
c. Size, class and type of pipe including catch basin leads
d. Type, location, Q capacity, Q_5, Q_{100} of storm flows of inlet and outlet structures, catch basins and catch basin leads, bypass, and overflows.
e. Location and type of maintenance access roads to manholes or structures, where required.
f. Typical channel section, where required.
g. Indicate bench mark location and elevation.
h. Show existing utilities; extent, location and size of riprap or energy dissipater at discharge points.
i. Show match lines clearly.
j. Type of water quality treatment feature and connection to storm drain system

(2) Profile sections for all storm drain shall show, at a minimum, the following:

a. Existing and finished surface grades and pipe profile showing type, size, slope, Q capacity, Q_5 and Q_{100}, the velocity flowing full and the hydraulic grade line if $Q_{100}>Q_{cap}$, and labeling of clearances.
b. For channels, also show the depth of flow for the 5- and 100-year storms, Q capacity, freeboard, maximum slope, minimum slope, maximum and minimum velocities.
c. Manhole station, number, rim elevation and the invert elevation of all pipes entering or exiting and distance between manholes.
d. Show existing utilities with pertinent elevations, including labeling of clearances.

e. Show match lines clearly.
f. Identify all piping as being public or private.

c. Sanitary Sewers:

Where sanitary sewers are located within a public street section, they shall show on the street plan and profile sheets; where exterior to a street section, sanitary sewers shall show on separate plan and profile sheets, indicating the appropriate easements and easement widths.

(1) Plan sections for all sanitary sewers shall show at a minimum the following:

a. Location of pipe in relation to street centerline and/or easements, property lines, etc.
b. Type and location of manholes showing the station and number and rim elevations of each.
c. Size, class and type of pipe.
d. Service lateral locations with reference to station and property lines (where lateral locations are not shown on utility plans).
e. Location and type of maintenance access roads, where required.
f. Indicate bench mark location and elevation.
g. Show existing utilities, including labeling of clearances.
h. Show match lines clearly.

(2) Profile sections for all sanitary sewers shall show, at a minimum, the following:

a. Existing and finished surface grades.
b. Pipe profile showing type and class, size, slope, and velocity for half-full flow.
c. Manhole type, station, number, rim elevation and invert elevation of all pipes entering or exiting.
d. Distance between manholes.
e. Show existing utilities with pertinent elevations, including labeling of clearances.
f. Show match lines clearly.

g. Identify all piping as being public or private.

7. Display on the plans all City Standard Details being used in the project. Show any additional details as necessary for clarification of the improvements. Provide any necessary notes, such as:

"All construction shall conform to City standards."

8. Cross sections shall be included in the plans. Normally this would occur in limited areas with unusual topographic features or when special conditions occur that would affect the work. Any change in standard centerline crown design shall be depicted on cross sections to demonstrate run-out. The street cross sections are to identify the type of asphalt mix design required (i.e. 50 or 75 blow mix, Type II or Type III mix, the R value, etc.) and the geotechnical report shall be referenced on the cross section, including any relevant notes. Additional cross sections may be required, if directed by the City Engineer.

9. Traffic signs and pavement markings (both existing and proposed) to be removed, remain in place, relocated, or installed shall be shown. Include appropriate notes, MUTCD designations, and standard detail references. Use a separate sheet for extensive or complex traffic device work; separate plan sheets are not required for minor work. These plans shall also show curb markings and parking meter poles, when appropriate.

10. Plan sheets for the modification of existing traffic signals shall show both existing and proposed improvements. Plans shall show underground utilities, traffic lane configuration, channelization, property lines, curbs, and such other existing or proposed physical features as may be likely to affect the signal installation. Reference NDOT standard plans and specifications, or appropriate City of Reno equipment standards, construction standards, or standard specifications.

11. Landscape.

12. Miscellaneous.

13. Boring logs.

14. Site drainage map shall be included from the drainage report, including a reproducible sepia-mylar.

SECTION 3 - Digital Submission of Selected Items from Improvement Plans:

1. Land division maps that entail recordation and require associated improvement drawings with final map approval, must be accompanied by digital submission of selected street and utility improvements. Specific improvements required are those outlined in the Improvement Layering Scheme jointly adopted by the three local jurisdictions in accordance with the July 14, 1998 Interlocal Agreement.

2. Selected improvement submittals must be in DWG format and are to be submitted with the approved sepia-mylars at the 10-day final map submittal. Appropriate format of the selected improvement submittals is required prior to recordation of the official plat.

3. Digital submission of hydrology report and supporting calculations may be requested by the City Engineer.

SECTION 4 - Drawings of Record:

1. Upon completion of the project, and at time of acceptance by the City for maintenance, drawings of record noting all of the changes in the improvements constructed from the design plan shall be submitted on Compact Disc, in TIFF format, which resolution 300 dpi or greater, reproduced from the original drawings that have been wet-stamped and sealed thereon by a Nevada Licensed Civil Engineer, or as appropriate, verifying the drawings of record conditions. All drawings of record shall be legible upon reproduction as determined by the City Engineer. Approved vault drawings may be annotated by the Engineer of Record to become the record prints. Drawings submitted must conform to the requirements of NRS 625 and NAC 625.

2. Improvements constructed in substantial conformance with submitted improvement drawings will not require additional digital improvement submittals. Improvements not constructed in substantial conformance with initial submittals will require that drawings of record be digitally resubmitted in the appropriate format prior to release of financial assurances associated with the development.

3. Digital submission of the drawings of record shall include the following layers:

   a. Streets
   b. Underground utilities

c. Sewer and storm drainage
d. Easements

CHAPTER VI

INSPECTION, TESTING AND VERIFICATION AND QUALITY ASSURANCE PROGRAM (QAP)

SECTION 1 - General:

It is the intent of this chapter to set forth the requirements and responsibilities of those parties involved in the inspection, testing, verification, and acceptance of bonded improvements or other new construction to provide consistent and satisfactory quality of such improvements.

All new construction shall have an Engineer of Record (EOR), when required by the City Engineer or his designated representative, retained by the owner and reporting to the Quality Assurance Inspector (QAI), who shall serve as the City's representative during the construction of the secured improvements. The contractor shall not retain the EOR, unless he is also the owner. The EOR shall not be the contractor. The EOR shall be responsible for all inspection, testing and verification of the constructed improvements as to compliance with this chapter, the improvement plans of record and with Reno Municipal Code. All new construction requiring an EOR shall have a Testing Firm responsible to the EOR and reporting to the EOR. The EOR is not responsible for means, methods, techniques, sequences or procedures of construction nor safety of the construction site.

The QAP elements contained herein shall apply to:

1. All public improvements in subdivisions, parcel maps, maps of dedication, records of survey, and easements related to subdivision of land.

2. Other major public improvements as required by the City Engineer.

   All private subdivision related street, sanitary sewer and storm drain improvements shall comply with all of the EOR requirements contained herein without the QAP, and without acceptance for maintenance by the City. The EOR shall verify to the City compliance with City standards and furnish acceptance by the private maintenance entity (PME) prior to issuance by the City of any temporary or permanent certificate of occupancy (except for model homes). The City does not require security for completion of private improvements, and cannot assure completion of same, nor can it assure the quality of such private improvements. The

private maintenance entity may at its discretion enforce the one-year warranty (see also, Section 2, 1.e.)

SECTION 2 - Responsibilities:

1. Owner:

   a. Shall retain the services of an EOR.

   b. Shall retain the services of a Testing Firm which shall be responsible to the EOR and report to the EOR.

   c. Shall make every reasonable effort to retain as the EOR, the services of the firms or persons responsible for the preparation of the approved soils report and the improvement plans of record.

   d. Shall retain the services of a contractor and notify said contractor of the requirements of this chapter.

   e. Shall be responsible to the City for the adequacy of completed work covered under this chapter. Any defective material, equipment, or workmanship, or any unsatisfactory work which may be discovered before final acceptance, or within 1 year thereafter, shall be corrected immediately on the requirement of the EOR or City Engineer, without extra charge, notwithstanding that it may have been overlooked in previous inspections. Failure to ensure adequate inspection and performance of the work shall not relieve the owner from any obligation to perform sound and reliable work.

   f. Shall designate a representative with authority to act on behalf of the owner for all work performed.

   g. The owner acknowledges the need for continuing involvement of the firms or persons responsible for the preparation of the approved project soils report and the improvement plans of record during construction. In the event the EOR is different from the above-mentioned firms or persons, the owner agrees to be financially responsible for services provided by the said firms or persons as requested by the EOR.

2. Engineer of Record (EOR):

a. Shall initiate a pre-construction conference for construction of improvements at least one week in advance of initial construction. Representatives of the owner, contractor, City Engineer, EOR and testing firm shall attend. No permit shall be issued prior to said pre-construction meeting.

b. Shall submit for review, prior to initiation of the preconstruction conference, the qualifications of the testing firm and the field inspection and testing technician personnel for the project. Said qualifications shall meet the minimum specified in this chapter. The Engineer of Record shall provide documentation to confirm that adequate testing was performed to ensure compliance with the Standard Specifications.

c. Shall provide a written summary of the pre-construction conference to the owner, contractor and the City Engineer, and will also notify the participants of any significant changes in writing at least 2 working days in advance of implementing the changes. The preconstruction checklist will be submitted prior to any permit being issued.

d. Shall notify the QAI of the date and hour that work on any of the following items is expected to begin. Notification shall be given not less than 24 hours in advance or as otherwise provided in City standards; and, if thereafter conditions develop to delay the start of work, the EOR shall notify the QAI of the delay, not less than 2 hours before the work is to begin:

(1) Grading, excavation, and fill operations within public right-of-way.

(2) Installation of sewer lines, drainage lines or appurtenances.

(3) Backfilling of sewer lines, drainage lines or appurtenances.

(4) Placing of reinforcing steel, forms and falsework for concrete structures.

(5) Placing the concrete for curbs, gutters, sidewalks, alleys, valley gutters, headwalls, or structures.

(6) Placing of any type of base course or courses.

(7) Tacking bituminous or concrete surfaces.

(8) Placing asphalt concrete or Portland cement concrete pavement.

(9) Sealing asphalt concrete or Portland cement concrete pavement.

e. Shall perform inspections for encroachment and excavation permits.

f. Shall make inspection of workmanship and materials in accordance with this chapter. No work or materials will be accepted without such inspection. The EOR will make every reasonable effort to perform inspection and testing services in a manner which will accommodate the construction schedule.

g. Shall provide to the Quality Assurance Inspector (QAI), on a bi-weekly basis, copies of the daily inspection/testing reports for the previous 2 weeks. Not required for private improvements -- see Section 1.

h. Shall immediately notify the QAI in writing of any proposed changes from the improvement drawings of record. Should the QAI determine that the proposed change is major in nature, such change shall require prior approval by the QAI. The City will not be liable for any delays caused by the review and approval of such changes.

i. Shall arrange as part of his contract with the owner to confer and coordinate with the firms or persons responsible for the preparation of the approved project soils report and the improvement plans of record throughout the construction of the project to evaluate compliance with the requirements of this chapter. In the event that the firms or persons responsible for the preparation of the approved

project soils report or drawings of record are not available for consultation, the EOR shall notify the City Engineer of such prior to commencement of construction. In this event, the EOR and the City Engineer shall agree to an alternative arrangement for providing the necessary soils report and improvement plans of record interpretations prior to commencement of construction.

j. Shall, if during the course of construction, the EOR finds that defective materials or workmanship not meeting City requirements have been incorporated into the improvements and not satisfactorily corrected by the contractor within one week of verbal notification to the contractor, notify in writing the owner, contractor and the City Engineer. The written notification shall be supported by field reports and/or test results.

k. Shall, upon completion of the construction of improvements, provide the City with a letter of verification on the format provided by the City verifying the adequacy of the improvements. The letter must include the following: construction, inspection, and testing were performed in compliance with this chapter, improvement plans of record and City standards. Attached to the letter must be the following: a compact disc containing the drawings of record in tif format, at a resolution of 300 dpi or greater, reproduced from the original drawings that have beet wet stamped and sealed by a Nevada licensed civil engineer per requirements in Chapter V. Section 4 of this Manual. Drawings shall depict any changes from the approved drawings of record (per requirements in Chapter V, Sections 3 and 4) or a statement that no changes were made; and a complete packet of inspection and test reports. The final completion and acceptance of all such improvements, including recommendations to release and return any security, shall be subject to the approval of the City Engineer (or PME per Section 1).

l. Shall sign and wet-stamp, or cause to be signed and wet-stamped by a Nevada Licensed Engineer, all drawings of record, all reports and test data as required by Nevada Revised Statutes Chapter 625. All such documents shall be forwarded to the City, owner and the contractor. Unsatisfactory conditions addressed will be identified on the cover sheet of any report package. Permit numbers shall be clearly identified on any dailies, reports, or submittals to the QAI.

3. City Engineer, or his designated representative:

   a. Shall assign a primary contact to the EOR who shall serve as the City's representative during construction of bonded improvements. This primary contact shall be known as the City Quality Assurance Inspector (QAI). The qualifications of the QAI, as a minimum, will meet the qualifications of a Public Works Construction Inspector. The QAI, with the City Engineer's approval, shall have the authority to issue a stop work order for non-compliance with the QAP.

   b. Shall review the qualifications of the EOR to determine if they meet the minimum requirements of this chapter. If it is determined that the EOR does not meet said minimum requirements, the owner shall revise the improvement agreement (Exhibit C) and retain an EOR meeting the qualifications of this chapter as determined by the City Engineer.

   c. Shall review the qualifications of the EOR's field inspection personnel to determine if the qualifications meet the minimum requirements of this chapter. If it is determined that the EOR's field inspection personnel do not meet said requirements, substitute field personnel will be required.

   d. Shall attend the preconstruction conference initiated by the EOR.

   e. Shall check and evaluate that adequate inspection personnel are on-site during the construction of bonded improvements. Should the QAI determine that adequate personnel are not available on-site for inspection, the QAI shall immediately advise the EOR of the situation and so record the incident.

   f. Shall keep a daily log of sites visited and document any discrepancies noted including pertinent conversations with the EOR.

   g. Shall, on a bi-weekly basis, review the daily inspection/testing reports submitted by the EOR. Any unsatisfactory test results shall be called to the attention of the EOR who shall take immediate action to correct the deficiency.

   h. Shall evaluate the performance of the EOR's field inspection personnel. The City Engineer shall have the authority to reject the selection of the testing firm, testing technicians or field inspection

personnel for the project. The City Engineer shall also have the authority to reject the field inspection personnel or testing technician and direct substitute personnel in the event of unsatisfactory performance by said personnel in the opinion of the City Engineer.

4. Contractor:

a. Shall be responsible for construction of improvements. This responsibility shall include the means, methods, techniques, sequence, and procedures of construction and safety of the construction site. All such construction shall conform to the requirements of both the most recently adopted version of the Standard Specifications for Public Works Construction (SSPWC) and the requirements of this Manual.

b. Shall attend the pre-construction conference initiated by the EOR. The contractor shall present a proposed construction schedule including construction milestones, and designate a representative who has the authority to resolve issues during construction.

c. Shall provide accessibility and exposure of all construction work subject to inspection until inspected by the EOR. Neither the City nor the EOR shall be liable for expenses entailed in the removal or replacement of any material required to allow inspection.

d. Shall notify the EOR two (2) working days in advance of initiating construction of items outlined in Section 2d. of this chapter.

e. Shall notify the EOR two (2) working days in advance of initiating construction or resuming construction after any unscheduled interruptions.

f. Shall coordinate all sub-contractors for required inspections and testing.

SECTION 3 - Inspection Requirements:

1. General:

For the purpose of implementing the requirements of this chapter, <u>full-time inspection</u> shall mean the EOR or his field inspector shall be present at all

times to observe the operations of the contractor during the designated construction activity.

2. Grading, Excavation, and Fills:

   Full-time inspection of all materials, native or imported, to evaluate their compliance with City standards; that the subgrade is prepared according to City standards; that all subgrade materials encountered are as expected according to the approved soils report, or if not, are appropriately addressed by over-excavation and stabilization with suitable material or as otherwise recommended in the approved soils report or by redesign of the pavement section.

3. Street:

   Inspection by survey, hand level or string line to determine that alignment and grade of sub-grade, base grade and finish grade of the street conforms to the improvement plans of record.

4. Underground Utilities:

   a. Inspection of pipe materials and bedding prior to the placing of any pipe to evaluate conformance with City standards. Collection of applicable manufacturer's certifications.

   b. Inspection of installation of pipe laid to grade, to include mortar joints or gaskets prior to placing any material around or above pipe to evaluate conformance with City standards.

   c. Full-time inspection of each lift of backfill to evaluate conformance with City standards. The EOR, in the presence of utility personnel, shall verify all valves are "on" prior to paving, and shall provide documentation of inspection to QAI a minimum of 48 hours prior to paving.

   d. Inspection for pipe installation, not including backfill, by utility company shall be the responsibility of the appropriate utility.

   e. Inspection of construction and/or installation of manholes, catch basins, and drop inlets to evaluate compliance with City standards.

f. Inspection of alignment and elevations to evaluate compliance with the improvement plans of record and specifications.

5. Aggregate Base Courses for Streets, Curbs, Gutters, Sidewalks, and Alleys:

Inspection of all material brought to the site to evaluate uniformity with tested and approved samples; inspection of placement and compaction of aggregate base to evaluate compliance with City standards and to confirm that grades conform to those specified in the improvement plans of record.

6. Reinforcing Steel, Forms, and Falsework:

Inspection of reinforcing steel, forms, and falsework prior to placement of concrete to evaluate compliance with the improvement plans of record, specifications, shop drawings and City standards.

7. Portland Cement Concrete:

Full-time inspection of all exposed concrete pours including curb, gutter, sidewalks, driveway apron, alleys, valley gutters, structures, headwalls, slope paving, roadway pavement and manhole, valve and monument collars to evaluate compliance with the improvement plans of record, specifications, details, and City standards.

8. Asphalt Concrete:

a. Full-time inspection to evaluate compliance with the improvement plans of record, details, specifications, and City standards.

b. Until a regional testing and certification program is developed and in-place, a bituminous mixing plant inspection per ASTM 290-67, shall be required for each day or portion thereof of asphalt pavement placement or portion thereof. This inspection shall include, but is not limited to, the following:

(1) Collection of samples -- aggregate and asphaltic cement.

(2) Verification of lime addition to the mix.

(3) Verification of temperature of mix leaving plant.

(4) Verification of asphalt cement type and obtainment of refinery certification.

Should an unacceptable problem be observed, the engineer of record shall be informed immediately, and the engineer of record shall require corrective action.

c. Full-time inspection of the installation of all pavement markings for compliance to the manufacturer=s specification for each product, contract drawings, MUTCD and City standards.

9. Prime Coat, Tack Coat, Seal Coat and Surface Treatment:

Sufficient inspection to evaluate compliance with City standards.

10. Testing and/or inspections required in addition to those listed in subsection 4 of this Section. The following tests will be under the direction of the assigned Engineer of Record for the project. The City reserves the right to require additional testing and/or inspections at its discretion and the costs of which shall be the responsibility of the owner.

a. Videotaping Lines (Video Inspection of Sanitary Sewer and Storm Drain Lines): The interior of all sanitary sewer and storm drain lines, 48” or smaller in diameter, shall be inspected with a video camera. If a DVD is submitted, it shall be capable of viewing in a format compatible with a standard DVD player. The videotaping shall be performed after successfully passing a ball and mandrel test. The ball and mandrel test and video taping shall not occur sooner than 30 days after the placement and backfill of the associated pipe. A video tape or DVD shall be submitted for the approval of the QAI no later than 10 business days prior to paving. At the discretion of the QAI, an open cut penalty fee may be assessed if deficiencies are found and the 10 business day submittal policy was not adhered to.

1) The EOR or his field inspector shall be present for all video tape inspections. If the EOR or his field inspector is not certified as a Pipe Assessment Certification Program (PACP) operator, a PACP certified operator shall also be present. The absence of voice-over by the EOR or field inspector shall be grounds for rejection. Proof of certification as a PACP operator must be submitted to the QAI prior to video taping.

2) All pipes shall be clean and free of debris and no standing water present prior to video taping.

3) All manholes, catch basin laterals, and sewer laterals shall be identified using the numbering system from the approved plan set.

4) Each segment videotaped shall begin with a voice-over by the EOR stating the date, project name (detailed enough to identify similarly named projects), starting point, ending point, direction of travel, pipe type, pipe size, and whether sanitary or storm line. The absence of voice-over shall be cause for rejection by the QAI.

5) The camera shall be stopped at all defects encountered and a still photo taken of the defect. The EOR shall not authorize paving activities until said defects have been satisfactorily corrected and meet the applicable City standards as identified via additional video taping following correction of the defects.

6) The EOR shall submit the video tape or DVD, along with a written report of the findings or other notes, what deficiencies were encountered, how they were corrected, still photos, all plans used to produce the report and a set of as-built drawings identifying all lines that were video taped. Said report and drawings shall be submitted to the QAI prior to paving.

7) With the submittal of the video tape or DVD, as-built drawings and written report by the EOR, the piping is conditionally accepted based on item 8 below and the Contractor is released to proceed with the subsequent paving operations.

8) The EOR shall be responsible for any ensuing work required to remedy any problems that are subsequently identified by the City of Reno on the video tapes. All repairs shall be re-videoed a minimum of 30 days after the repairs have been made. QAI shall determine if the repaired sections can be video taped prior to 30 days after the actual repair and backfill is complete.

b. Vacuum testing shall be required on all newly constructed sanitary sewer manholes per the requirements of ASTM C-1244 unless waived by the City Engineer in writing. These tests shall be performed in the presence of the assigned EOR or his representative. These tests shall be performed, as applicable, prior to any paving operations. The EOR shall not authorize paving unless the tests are satisfactorily passed. A report summarizing the results of the applicable test will be forwarded to the Engineering Manager.

c. Video inspection equipment shall be capable of meeting all of the following requirements:

    1. The camera shall be capable of producing a true color inspection.

    2. The tractor shall be capable of being adjusted to the centerline of any size pipe.

    3. The camera used shall have an articulated head.

    4. The camera lens shall be adjustable as to be positioned looking along the axis of the pipe and should be within 10% of the vertical centerline of the pipe being televised.

    5. The camera shall have an adequate illumination system, be capable of taking color still photos and provide visibility to the inside diameter of the pipe.

d. .Ball and Mandrel Test - A ball and mandrel operation shall be required on all newly constructed sewer mains per SSPWC. The tests shall be performed in the presence of the assigned EOR or his representative. The first test shall occur not sooner than 30 days after the backfill of the associated pipe. The second test shall be performed after paving, prior to the final walk-through by the Quality Assurance Inspector. A report which includes and summarizes the results of this test will be forwarded to the QAI.

e. Sanitary sewer or storm drain facilities shall be recommended for acceptance to the City Council by the QAI based on the information contained in the reports of the previously mentioned tests and the verification of the EOR.

11. Landscaping and Irrigation within the City Right-of-way or Within a Public Improvement Easement, Common Area Amenities:

    Sufficient inspections to evaluate compliance with City standards, the improvement plans of record, and specifications. No public landscaping or irrigation shall be accepted for maintenance by the City without a memo from the Parks Department. Prior to acceptance of improvements within the project, the Engineering Division will notify the Parks Division and make arrangements for an on-site inspection of the landscaping to make sure that the landscaping is healthy and that the irrigation system is in a good state of repair and meets City of Reno code requirements. The Engineering Division will notify the developer of any necessary plant replacements or irrigation repairs that are necessary prior to acceptance. Following any replacements or repairs, the Engineering Division will arrange another on-site inspection with the Parks Division. When everything is acceptable and the developer has submitted drawings of record, then the Engineering Division will notify the Parks Division of the date when the City accepts the improvements and becomes responsible for maintenance.

12. All public improvements required to comply with the Downtown Redevelopment District Standards shall not be accepted for maintenance without a memo from the Downtown Redevelopment Agency.

13. Sufficient inspection of the construction traffic control in active streets to assure compliance with the City of Reno's issued encroachment permit traffic control plans. If the contractor is working in the City right-of-way in violation of such encroachment permit or without said permit, the EOR shall immediately notify the QAI.

14. Traffic signal loop detector locations shall be laid out in the field by the contractor per the design plans. After the loop locations are identified, EOR shall notify QAI, then City of Reno Traffic Signal Maintenance staff, to verify locations (see also - City of Reno Standard Detail R-406A and R-406B). Before new traffic signal installations are accepted by the City, the Engineer of Record shall provide the following:

a. A complete inspection of the signal installation by experienced personnel.

b. Signal phasing and timing patterns.

c. Proof of completion by the Engineer of Record prior to signal turn-on.

d. A copy of the building permit for the electrical service with a sign off by the City's Building and Safety Division.

e. Copies of non-standard parts approvals, warranties, instruction manuals, etc.

The signal will be turned on only after City of Reno signal maintenance staff have made a final walk-thru and have verified that the signal installation is complete. When the construction of new improvements disturbs existing City of Reno facilities, said facilities shall be relocated by the developer to current standard detail locations.

15. The quantity, if any, of asphalt patches that have occurred prior to final acceptance of a street, will be determined by the City of Reno. The patch quantity will be assessed a 300% penalty consistent with the "5-year, No Cut" policy enforced by the City of Reno. Said penalty will be due and payable prior to final acceptance by the City of Reno.

SECTION 4 - Testing Requirements:

Shall comply with the requirements set forth in the latest revision of City standards.

SECTION 5 - Personnel Qualifications:

1. Engineer of Record (EOR):

An Engineer of Record who is retained as a consultant by the owner is required to be legally authorized to practice civil engineering in the State of Nevada in accordance with NRS Chapter 625, and maintain a valid City of Reno business license.

A firm, a copartnership, a corporation or joint-stock association may engage in the practice of Engineer of Record for the City of Reno, if the member or members of the firm, copartnership, corporation or joint-stock association immediately responsible for engineering work performed in the City of Reno are Nevada licensed professional civil or geological engineers in accordance with NRS Chapter 625.

Every office or place of business of any firm, copartnership, corporation or joint-stock association engaged in the practice of Engineer of Record in the City of Reno shall have a registered professional civil engineer in residence and in direct responsible supervision of the work needed to satisfy the requirements of this chapter conducted in such office or place of business.

An Engineer of Record shall be familiar with City standards and all associated testing procedures.

2. Field Inspector:

a. General - The field inspectors' qualifications shall include sufficient education and experience to assure understanding of the quality control principles and the ability to implement the procedures related to their assigned duties.

The education and experience requirements specified below shall not be treated as absolute when other factors provide reasonable assurance that a person can competently perform a particular task. One factor may be "demonstrated capability" in a given job through previous performance.

The City of Reno does not require that individuals performing acceptance or field testing and sampling be certified in accordance with the Nevada Alliance for Quality Transportation Construction (NAQTC), unless specified in writing by the City Engineer.

b. Education and Experience - To be considered qualified as a City of Reno approved field inspector, a candidate must meet the general requirements as mentioned above and satisfy at least one of the following requirements:

(1) High school graduate plus at least three years of construction quality control experience in equivalent testing, or inspection activities.

(2) Completion of college level work leading to an associates degree in a related discipline plus at least two years of construction quality control experience in equivalent testing, or inspection activities.

(3) Four-year college degree in a related discipline plus at least six months of construction quality control experience in equivalent testing, examination or inspection activities.

c. All personnel who are to perform as Field Inspector for the first time shall submit a resume to the QAI before commencing their duties. The QAI shall reject any candidate not meeting the minimum qualifications of this subsection.

The field inspector shall be familiar with City standards and this chapter, as well as all associated testing procedures.

3. Testing Technician:

To be considered qualified as a City of Reno approved testing technician, a candidate must meet the general requirements mentioned in 2.a. above and satisfy at least one of the following requirements:

a. One year of construction quality control experience in equivalent testing or inspection activities.

b. High school graduate plus at least six months of construction quality control experience in equivalent testing or inspection activities.

c. Completion of college level work leading to an associates degree in a related construction quality control discipline plus at least three months of experience in equivalent testing or inspection activities.

d. Completion of at least two years college level work towards a four-year degree in a related discipline plus at least three months of

construction quality control experience in equivalent testing or inspection activities.

All new personnel shall submit a resume to the City of Reno Quality Assurance inspector.

The testing technician shall be familiar with the testing procedures outlined in City standards.

4. Testing Firm:

a. General - The testing services of the testing firm shall be under the direction of a registered Civil or Geological Engineer in the State of Nevada who is a full-time employee of the firm and has at least 5 years engineering experience in the inspection and testing of soil, concrete, and asphalt. The testing firm shall maintain a City of Reno business license.

b. Laboratory - The testing firm is responsible for laboratory testing of soil, concrete and asphalt and shall have suitable test equipment and laboratory facilities for storing, preparing and testing samples. The firm shall have the capability of performing all laboratory testing associated with its intended functions according to governing procedures and shall have the facilities and equipment required for all laboratory testing performed. If at any one time equipment or expertise in the performance of a specialized test is not available in-house, the services of a qualified subconsultant or his equipment may be utilized.

As evidence of its competence to perform the required tests or inspections, the agency shall have its laboratory procedures and equipment inspected at intervals of not more than 3 years by a qualified authority in accordance with a recognized plan.

c. Quality of Testing Systems - The firm shall make available information (as applicable) describing its procedural systems (procedures which directly affect the quality of services offered). In addition, the firm shall maintain documentation which provides evidence of compliance with the requirements of its procedural systems. The agency's procedural systems shall include the following:

(1) Equipment calibration programs.

(2) Standardization of methods of test, measurement, and determination.

(3) Data recording, processing, and reporting.

(4) A current quality assurance manual.

CHAPTER VII - STREET LIGHTING

SECTION 1 - General:

Street lighting shall be installed with any subdivision or development in accordance with the following requirements:

1. All street lighting shall be the responsibility of the subdivider or developer who shall make all necessary arrangements with the utility company involved for the installation of such lights as approved by the City.

2. Street lighting plans shall be prepared by the utility and shall be submitted by the subdivider or developer to the Public Works Department, Traffic Engineering Section for review. Such plans shall show the location of each light, size of luminaires in watts or lumens, type of luminaire, number of street lights, and total additional charge to the City. If a lighting analysis is deemed necessary for the proposed project, it will be the responsibility of the developer to provide the analysis. The analysis shall be in plan view format and display illuminance or luminance (foot candles) levels through light contours.

3. All street lighting within each construction phase shall be complete and operational prior to issuance of any certificate of occupancy.

4. Street lighting shall be installed on all medium to high arterials, as defined by RTC, and on minor to major arterials as defined by the City. Safety lighting is required at a minimum for all other classifications. Lighting may be installed on private streets, but is not required. City requirements for lighting are outlined within the Sierra Pacific Power Company Streetlight Design Guide. All costs (installation, energy, and maintenance) associated with such lighting on private streets are the responsibility of the adjacent property owner(s). All fixture types are to comply with City of Reno standards and shall be 180° cutoff.

5. All walkway/bikeway lighting levels are to comply with the Roadway Lighting, Illuminating Engineering Society (see Publication No. RP-8-00).

SECTION 2 – Illuminance Method Levels:

The appropriate average illumination level may be determined from the following table (adapted from Roadway Lighting, Illuminating Engineering Society of North America, RP-8-00, 6-27-00; Table 2):

Street Classification	ILLUMINATION LEVELS			Uniformity Ratio
	Commercial	Intermediate	Residential	
Major Arterial	1.3	1.1	0.8	3:1
Minor Arterial	1.6	1.2	0.8	3:1
Collector	1.1	0.8	0.6	4:1
Local	0.8	0.7	0.4	6:1
Sidewalk	0.9	0.6	0.3	6:1

All values are in foot candles, except uniformity ratio, which is average-to-minimum.

Commercial is defined as that portion of the City in a business development where ordinarily there are large numbers of pedestrians during business hours. This definition applied to densely developed business areas outside of, as well as those that are within, the downtown area. Commercial areas contain land uses which attract a relatively heavy volume of nighttime vehicular and/or pedestrian traffic on a frequent basis.

Intermediate is defined as that portion of the City often characterized as in blocks containing libraries, community recreation centers, large apartment buildings, or neighborhood retail stores.

Residential is defined as a residential development, or a mixture of residential and commercial establishments, characterized by a few pedestrians at night. This definition includes areas with single family homes, townhouses, and/or small apartment buildings.

SECTION 3 - Downtown Lighting Master Plan:

This report outlines the current lighting levels in the downtown area. The accepted levels exceed recognized national standards in some locations. Lighting in the downtown area will be in accordance with the Redevelopment Streetscape Master Plan and as approved by the City.

To obtain information on the Redevelopment Streetscape Master Plan, or copies of the plan, contact the City of Reno Redevelopment Agency at (775) 334-2594.

CHAPTER VIII

CERTIFICATES AND PROCEDURES FOR FINAL MAPS

SECTION 1 – Final Maps:

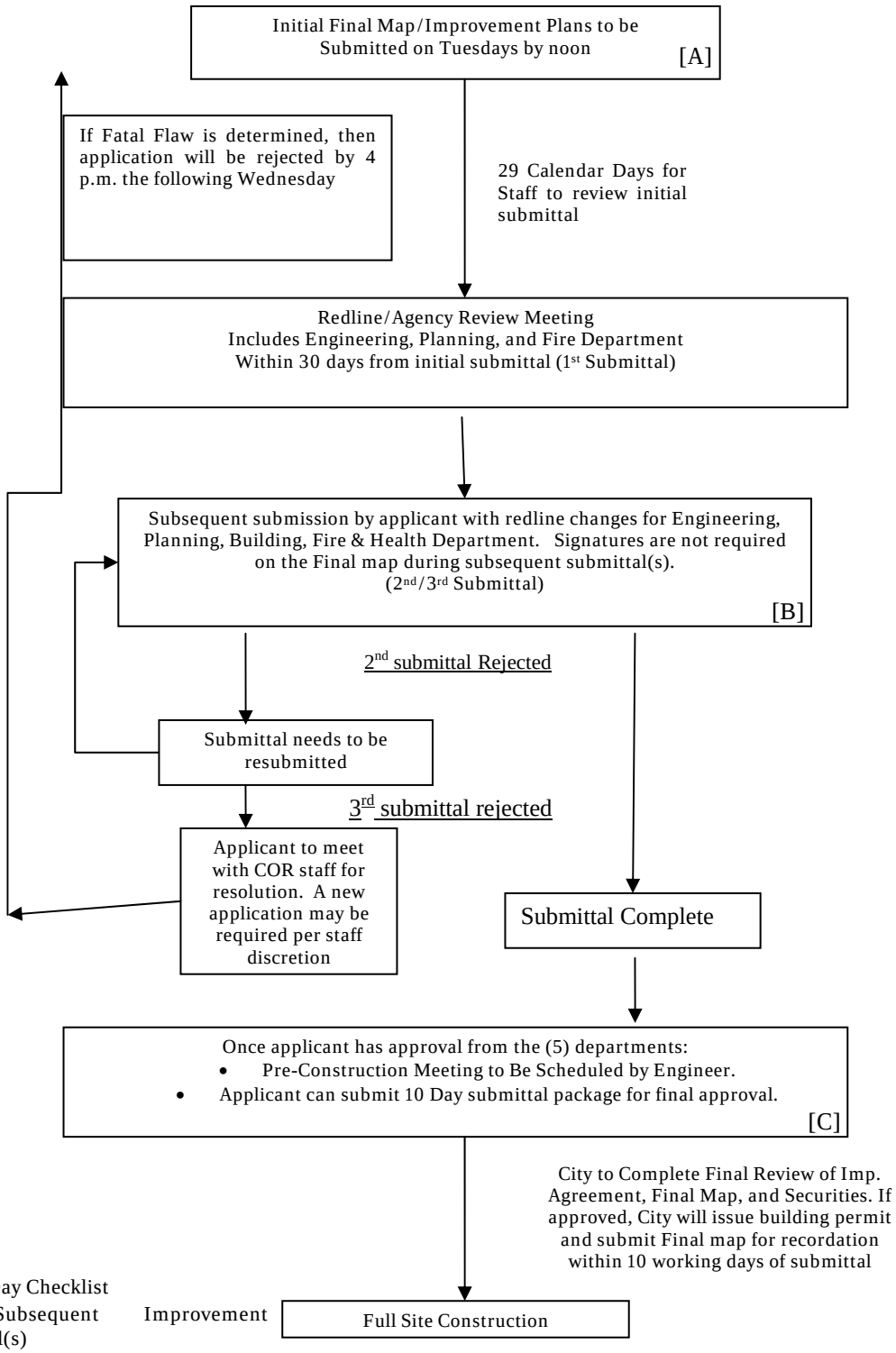
The final map process is outlined in the following flowchart. Submittals for final map take the form of a "30-day" Preliminary Submittal and a "10-day" Submittal, per the checklists in Appendix D. Submittals are only accepted if complete.

The City of Reno final map process requires that the subdivider/developer enter into an improvement agreement with the City of Reno. Only the agreement form provided by the City will be accepted. Within this agreement are three exhibits. Exhibit "A" is a cost estimate generated, wet-stamped and signed by the developer's engineer. Only the City of Reno form shall be used. Exhibit "B" is a phasing plan, identifying the proposed build out of the subdivision. Exhibit "C" identifies the developer, the engineer of record and the testing firm, to guarantee the proper inspection and testing of the improvements in accordance with the Public Works Design Manual. Security is required for all public improvements. The City of Reno accepts subdivision bond, letter of credit or cash as security. (see Appendix D for required format).

Upon City approval of the final map, the map is recorded with the Washoe County Recorder and the improvement agreement is filed with the Reno City Clerk. Should the developer fail to have the improvements completed and accepted by the City prior to expiration of the improvement agreement, the subdivision will be deemed in default. The only method available to correct the default status is to extend the improvement agreement by submitting the extension form provided by the City, paying the appropriate fee and extending the security through the duration of the extension. If the default status is not corrected, the City will immediately issue a stop work order against the subdivision, red-tag the job and proceed to call the security.

A reduction in security may be requested by the subdivider/developer once each calendar year upon completion of 25%, 50% and 80% of the secured items. At no time shall the security be reduced below 20% of the original security amount based on the most current costs contained in the Exhibit "A". The request for security reduction will be considered by the City upon receipt of a Revised Exhibit "A" for Reduction in Security, completed and wet-stamped by the engineer of record for the project, and the appropriate fee.

FINAL MAP/IMPROVEMENT PLAN PROCESS



[A] 30-Day Checklist
[B] Subsequent Improvement Submittal(s)
[C] 10-Day Checklist

(MONUMENTS SET)
SURVEYOR' S CERTIFICATE

I, _____, (Name of Surveyor) a Professional Land Surveyor licensed in the State of Nevada, certify that:

1. This plat represents the results of a survey conducted under my direct supervision at the instance of _____
(Owner, Trustee, etc.)
2. The lands surveyed lie within _____
(Section, Township, Range, Meridian and, if required by the governing body, a description by metes and bounds for any subdivision which is divided into lots containing 5 acres in area or less),
and the survey was completed on _____ (Date).
3. This plat complies with the applicable state statutes and any local ordinances in effect on the date that the governing body gave its final approval.
4. The monuments depicted on the plat are of the character shown, occupy the positions indicated and are of sufficient number and durability.

_____ Registration Number and Seal:
(NAME OF SURVEYOR)

(MONUMENTS NOT SET)
SURVEYOR' S CERTIFICATE

I, _____, (Name of Surveyor) a Professional Land Surveyor licensed in the State of Nevada, certify that:

1. This plat represents the results of a survey conducted under my direct supervision at the instance of _____
(Owner, Trustee, etc.)
2. The lands surveyed lie within _____
(Section, Township, Range, Meridian and, if required by the governing body, a description by metes and bounds for any subdivision which is divided into lots containing 5 acres in area or less),
and the survey was completed on _____ (Date).
3. This plat complies with the applicable state statutes and any local ordinances in effect on the date that the governing body gave its final approval.
4. The monuments depicted on the plat are of the character shown and occupy the positions indicated by _____ (a day certain) and an appropriate financial guarantee will be posted with the governing body before recordation to ensure the installation of the monuments.

_____ Registration Number and Seal:
(NAME OF SURVEYOR)

DIVISION OF WATER RESOURCES CERTIFICATE

This plat is approved by the State of Nevada Division of Water Resources of the Department of Conservation and Natural Resources concerning water quantity, subject to review of approval on file in this office.

_____ _____
DIVISION OF WATER RESOURCES DATE

DISTRICT HEALTH DEPARTMENT CERTIFICATE

This final map is approved by the Washoe County District Board of Health. This approval concerns sewage disposal, water pollution, water quality, and water supply facilities and is predicated upon plans for a (public, private) water supply and (a community, individual systems) for disposal of sewage.

_____ _____
FOR THE DISTRICT BOARD OF HEALTH DATE

UTILITY COMPANIES CERTIFICATE

The utility easements shown on this plat have been checked, accepted, and approved by the undersigned public utility companies.

_____ _____
SIERRA PACIFIC POWER COMPANY DATE

_____ _____
NEVADA BELL DATE

_____ _____
(NAME OF TELEVISION COMPANY) DATE

_____ _____
TRUCKEE MEADOWS WATER AUTHORITY DATE

(MONUMENTS SET)

CITY ENGINEER' S CERTIFICATE

I hereby certify that I am the duly appointed City Engineer of the City of Reno, Washoe County, Nevada, and that I have examined the final plat to which this certificate is attached, that the plat is technically correct and that the monuments are of the character shown and occupy the positions indicated.

_____ _____
CITY ENGINEER DATE

(MONUMENTS NOT SET)

CITY ENGINEER' S CERTIFICATE

I hereby certify that I am the duly appointed City Engineer of the City of Reno, Washoe County, Nevada, and that I have examined the final plat to which this certificate is attached, that the plat is technically correct and that a proper performance bond has been deposited guaranteeing the setting of survey monuments by _____.

_____ _____
CITY ENGINEER DATE

SECURITY INTEREST HOLDERS CERTIFICATE

This is to certify that the undersigned (Name of Security Holder) consents to the preparation and recordation of this plat.

_____(SIGNATURE)_____ _____
(NAME AND TITLE PRINTED) DATE

(PROVIDE ACKNOWLEDGMENT)

TITLE COMPANY CERTIFICATE

The undersigned hereby certifies that this plat has been examined and the subdivider offering this plat is the last title holder of record for all the lands delineated hereon, and the lands are free from any liens or encumbrances as of _____ , 20_____.

(NAME OF TITLE COMPANY)

_____
TITLE COMPANY

BY_____ _____
(TITLE OF OFFICER) DATE

COUNTY RECORDER' S CERTIFICATE

FILE NO._____ FEE:_____ , filed for record at the request of _____ on this _____ day of _____, 20_____, at_____ minutes past_____ O'clock _____.M. Official Records of Washoe County Nevada.

_____ _____
COUNTY RECORDER BY DEPUTY

RENO CITY PLANNING CERTIFICATE

A tentative map of this subdivision was recommended for approval by the Planning Commission of the City of Reno, Washoe County, Nevada this _____ day of _____, 20 ___. This final map is in substantial compliance with the tentative map and all conditions of approval.

_____ _____

Planning Manager Date

*NOTE: FOR AN AMENDED MAP, SUBSTITUTE THE FOLLOWING PHRASE FOR THE LAST SENTENCE:

"This amended plat is in substantial compliance with the tentative map and all conditions of approval".

RENO CITY PLANNING CERTIFICATE

A tentative map of this subdivision was recommended for denial by the Planning Commission of the City of Reno, Washoe County, Nevada, on the _____ day of _____, 20 ___, but such recommendation was overruled by the Reno City Council on the _____ day of _____, 20 ___. This final map is in substantial compliance with the tentative map and all conditions of approval. *

_____ _____

Planning Manager Date

*NOTE: FOR AN AMENDED MAP SUBSTITUTE THE FOLLOWING PHRASE FOR THE LAST SENTENCE:

"This amended plat is in substantial compliance with the tentative map and all conditions of approval".

(STREET DEDICATION REJECTED)

CITY CERTIFICATE

Approved and accepted by the Community Development Director of the City of Reno, Washoe County, Nevada, this _____ day of _____ , 20__. A tentative map of this subdivision was approved by the Reno City Planning Commission* on the day of _____, 20__, **/*** and the offer of dedication of the streets shown hereon being rejected at this time by the City with the offer to remain open in accordance with the provisions of NRS Chapter 278.390.

_____ _____

COMMUNITY DEVELOPMENT DIRECTOR DATE

* IF THE PLANNING COMMISSION DECISION WAS APPEALED, REPLACE WITH THE FOLLOWING: "A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, "

** IF THE TENTATIVE MAP HAS BEEN GRANTED A ONE YEAR EXTENSION ADD THE FOLLOWING:
"and a one year extension was granted on _____"

*** IF APPLICABLE ADD THE FOLLOWING:
"and in accordance with NRS 278.360 a one year extension was provided due to City approval of _____on the _____ of___, 20__ , and recorded as Document No. _____."

(NO DEDICATION)

CITY CERTIFICATE

Approved and accepted by the Community Development Director of the City of Reno, Washoe County, Nevada, this _____day of _____, 20___. A tentative map of this subdivision was approved by the Reno City Planning Commission* on the day of _____, 20__,**/***

_____ _____

COMMUNITY DEVELOPMENT DIRECTOR DATE

* IF THE PLANNING COMMISSION DECISION WAS APPEALED, REPLACE WITH THE FOLLOWING: "A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, "

** IF THE TENTATIVE MAP HAS BEEN GRANTED A ONE YEAR EXTENSION ADD THE FOLLOWING:
"and a one year extension was granted on _____"

*** IF APPLICABLE ADD THE FOLLOWING:
"and in accordance with NRS 278.360 a one year extension was provided due to City approval of _____on the _____ day of _____ , 20__ , and recorded as Document No. _____"

(STREET AND PARCEL DEDICATION REJECTED)

CITY CERTIFICATE

Approved and accepted by the Community Development Director of the City of Reno, Washoe County, Nevada, this _____day of _____, 20___. A tentative map of this subdivision was approved by the Reno City Planning Commission* on the day of _____, 20__, **/*** and the offer of dedication of the streets and parcels shown hereon being rejected at this time by the City with the offer to remain open in accordance with the provisions of NRS Chapter 278.390, and at the time the final map is approved any parcels that are rejected, the offer of dedication shall be deemed to remain open and the City Council may by resolution at any later date, and without further action by the subdivider, rescind its action and accept the parcels for public use.

_____ _____

COMMUNITY DEVELOPMENT DIRECTOR DATE

* IF THE PLANNING COMMISSION DECISION WAS APPEALED, REPLACE WITH THE FOLLOWING: "A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, "

** IF THE TENTATIVE MAP HAS BEEN GRANTED A ONE YEAR EXTENSION ADD THE FOLLOWING:
"and a one year extension was granted on _____"

*** IF APPLICABLE ADD THE FOLLOWING:
"and in accordance with NRS 278.360 a one year extension was provided due to City approval of _____on the _____ of _____, 20__ , and recorded as Document No. _____."

(DEDICATION ACCEPTED)

CITY COUNCIL CERTIFICATE

Approved and accepted by the City Council of the City of Reno, Washoe County, Nevada, this _____ day of _____, 20_____. A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, on the _____ day of _____, 20_____,*/** and the Council approves and accepts on behalf of the public any parcels of land offered for dedication for public use in conformity with the terms of the offer of dedication shown hereon.

_____ _____
MAYOR DATE

ATTEST:_____ _____
CITY CLERK DATE

* IF THE TENTATIVE MAP HAS BEEN GRANTED A ONE YEAR EXTENSION ADD THE FOLLOWING:
$ $ $ and a one year extension was granted on _____ $ $ $

** IF APPLICABLE ADD THE FOLLOWING:
$ $ $ and in accordance with NRS 278.360 a one year extension was provided due to Council approval of_____ on the _____ day of _____, 20_____, and recorded as Document No._____.

(CONCURRENT TENTATIVE)
(AND FINAL MAP APPROVAL)

CITY COUNCIL CERTIFICATE

Approved and accepted by the City Council of the City of Reno, Washoe County, Nevada, this _____ day of _____, 20_____. A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, on the _____ day of _____, 20_____.*

_____ _____
MAYOR DATE

ATTEST:_____ _____
CITY CLERK DATE

*NOTE: TO BE USED AS DIRECTED BY THE CITY ENGINEER:

$ $ $ the offer of dedication of the streets shown hereon is rejected at this time by the City Council, with the offer to remain open in accordance with the provisions of NRS Chapter 278.390 $ $ $

(AMENDED MAP)

CITY COUNCIL CERTIFICATE

Approved and accepted by the City Council of the City of Reno, Washoe County, Nevada, this _____ day of _____, 20_____. A tentative map of this subdivision was approved by the City Council of the City of Reno, Washoe County, Nevada, on the _____ day of _____, 20_____, and a final map was approved on the _____ day of _____, 20_____, and recorded as document No. _____.*

_____ _____
MAYOR DATE

ATTEST:_____ _____
CITY CLERK DATE

* ADD THE FOLLOWING PHRASE AS REQUIRED:

$ $ $ the offer of dedication of the streets shown hereon is rejected at this time by the City Council, with the offer to remain open in accordance with the provisions of NRS Chapter 278.390 $ $ $

OWNER'S CERTIFICATE

This is to certify that the undersigned _____ is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278, (and 116 if common area, or 278A if PUD) and that the streets, avenues, and highways and all appurtenances thereto as shown are hereby dedicated and set apart to be used as public thoroughfares forever; and hereby grants to all public utilities and the City of Reno a permanent easement shown on this plat for the construction and maintenance of drainage and utility systems together with the right of access thereto forever.

(SIGNATURE)_____ _____
(OWNERS NAME PRINTED) (DATE)

(PROVIDE ACKNOWLEDGMENT)

OWNER' S CERTIFICATE

This is to certify that the undersigned _____ a _____ Corporation, is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278, (and 116 if common area, or 278A if PUD) and that the streets, avenues, and highways and all appurtenances thereto as shown are hereby dedicated and set apart to be used as public thoroughfares forever; and hereby grants to all public utilities and the City of Reno, a permanent easement shown on this plat for the construction and maintenance of drainage and utility systems, together with the right of access thereto forever.

(SIGNATURE)_____ _____
(OWNERS NAME PRINTED) (DATE)

(PROVIDE ACKNOWLEDGMENT)

NOTE: THE FOLLOWING CERTIFICATE IS TO BE USED WITH THE ABOVE CERTIFICATE WHEN THE OWNER IS A CORPORATION.

CORPORATION OFFICER CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

The undersigned, holding an interest in the property within the exterior boundary shown on this plat does hereby consent to the recordation of said plat.

(NAME OF CORPORATION)_____, a (NAME OF STATE) Corporation

(SIGNATURE)_____ _____
(NAME AND TITLE PRINTED) (DATE)

(PROVIDE ACKNOWLEDGMENT)

PARTNERSHIP WHERE GENERAL PARTNER SIGNS, WHICH REQUIRES THAT A WRITTEN AUTHORIZATION FROM ALL PARTNERS BE SUBMITTED. PUBLIC AND PRIVATE ROADS.

OWNER' S CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

This is to certify that the undersigned,_____, a limited partnership, _____ , general partner, is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area, or 278A if PUD) and the streets, avenues, and highways and all appurtenances thereto as shown on this plat designated DEDICATED TO THE CITY OF RENO are hereby dedicated and set apart to be used as public thoroughfares forever, and the streets, avenues, and highways as shown on this plat designated PRIVATE are hereby set apart to be used as private access forever; the owners hereby grant to all public utilities and the City of Reno, a permanent easement shown on this plat for the construction and maintenance of drainage and utility systems, together with the right of access thereto forever.

In witness whereof, _____, a limited partnership has caused its name to be signed by its authorized officer on this _____ day of _____, 20_____,

(NAME OF PARTNERSHIP)_____

BY: (SIGNATURE)_____
(NAME AND TITLE PRINTED)

(PROVIDE ACKNOWLEDGMENT)

PARTNERSHIP WHERE ALL PARTNERS SIGN

PUBLIC AND PRIVATE ROADS

OWNER' S CERTIFICATE

This is to certify that the undersigned, _____, a partnership, are the owners of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area, or 278A if PUD) and the streets, avenues, and highways and all appurtenances thereto as shown on this plat designated DEDICATED TO THE CITY OF RENO are hereby dedicated and set apart to be used as public thoroughfares forever: and the streets, avenues, and highways as shown on this plat designated PRIVATE are hereby set apart to be used as private access forever: the owners hereby grant to all public utilities and the City of Reno, a permanent easement shown on this plat for the construction and maintenance of drainage and utility systems, together with the right of access thereto forever.

In witness whereof, _____, a limited partnership has caused its name to be signed by its authorized officer on this _____ day of _____, 20_____,

(NAME OF PARTNERSHIP)_____

BY: (SIGNATURE)_____
(NAME AND TITLE PRINTED)

(PROVIDE ACKNOWLEDGMENT)

CONDOMINIUMS & TOWNHOUSES

CORPORATION DOING BUSINESS

AS A LIMITED PARTNERSHIP

OWNER' S CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

This is to certify that the undersigned, _____, a corporation doing business as _____, a limited partnership, is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area); and hereby grants to all public utilities and the City of Reno, a blanket easement for the construction and maintenance of drainage and utility systems, together with the right of access thereto, over all common areas as shown hereon, forever.

NAME OF CORPORATION AND LIMITED PARTNERSHIP)

BY: (SIGNATURE)_____ _____
(OWNERS NAME PRINTED) (TITLE)

_____
(DATE)

(PROVIDE ACKNOWLEDGMENT)

CONDOMINIUMS & TOWNHOUSES ALL ROADS PRIVATE

PARTNERSHIP WHERE ALL PARTNERS ARE REQUIRED TO SIGN

OWNER' S CERTIFICATE

STATE OF NEVADA
S. S.
COUNTY OF WASHOE

This is to certify that the undersigned, _____, a partnership, are the owners of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area); and hereby grants to all public utilities and the City of Reno, a blanket easement for the construction and maintenance of drainage and utility systems, together with the right of access thereto, over all common areas as shown hereon, forever.

(SIGNATURE)_____ _____
(PARTNERS NAME PRINTED) (DATE)

(SIGNATURE)_____ _____
(PARTNERS NAME PRINTED) (DATE)

(SIGNATURE)_____ _____
(PARTNERS NAME PRINTED) (DATE)

(PROVIDE ACKNOWLEDGMENT)

CONDOMINIUMS & TOWNHOUSES ALL ROADS PRIVATE

PARTNERSHIP WHERE GENERAL PARTNER SIGNS WHICH

REQUIRES THAT A WRITTEN AUTHORIZATION FROM ALL

PARTNERS BE SUBMITTED

OWNER' S CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

This is to certify that the undersigned, _____, a limited partnership, _____, general partner, is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area); and the owner hereby grants to all public utilities and the City of Reno, a blanket easement for the construction and maintenance of drainage and utility systems, together with the right of access thereto, over all common areas as shown hereon, forever.

In witness whereof, the said _____, has caused its name to be signed this ____ day of _____, 20___.

(SIGNATURE)_____
(GENERAL PARTNERS NAME PRINTED)

(PROVIDE ACKNOWLEDGMENT)

CONDOMINIUMS & TOWNHOUSES, PARTNERSHIP WHERE ALL PARTNERS SIGN. PUBLIC AND PRIVATE ROADS.

OWNER' S CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

This is to certify that the undersigned, _____, a partnership, are the owners of that tract of land represented on this plat and has consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area) and the streets, avenues, and highways and all appurtenances thereto as shown on this plat designated DEDICATED TO THE CITY OF RENO are hereby dedicated and set apart to be used as public thoroughfares forever, and the streets, avenues, and highways as shown on this plat designated PRIVATE are hereby set apart to be used as private access forever; the owners hereby grant to all public utilities and the City of Reno, a blanket easement for the construction and maintenance of drainage and utility systems, together with the right of access thereto over all common areas as shown hereon, forever.

In witness whereof, _____, a partnership has caused the partners' names to be signed on this ____ day of _____, 20____.

(NAME OF PARTNERSHIP)_____

(SIGNATURE)_____
(NAME AND TITLE PRINTED)

(PROVIDE ACKNOWLEDGMENT)

CONDOMINIUMS & TOWNHOUSES, PARTNERSHIP WHERE GENERAL PARTNER SIGNS, WHICH REQUIRES THAT A WRITTEN AUTHORIZATION FROM ALL PARTNERS BE SUBMITTED. PUBLIC AND PRIVATE ROADS.

OWNER' S CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

This is to certify that the undersigned, _____, a limited partnership,_____, general partner, is the owner of that tract of land represented on this plat and has consented to the preparation and recordation of the plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278 (and 116 if common area) and the streets, avenues, and highways and all appurtenances thereto as shown on this plat designated DEDICATED TO THE CITY OF RENO are hereby dedicated and set apart to be used as public thoroughfares forever, and the streets, avenues, and highways as shown on this plat designated PRIVATE are hereby set apart to be used as private access forever: the owners hereby grant to all public utilities and the City of Reno, a blanket easement for the construction and maintenance of drainage and utility systems, together with the right of access thereto over all common areas as shown hereon, forever.

In witness whereof, _____, a limited partnership has caused its name to be signed on this _____ day of ____ _____, 20____.

(NAME OF PARTNERSHIP)_____

(SIGNATURE)_____
(NAME AND TITLE PRINTED)

(PROVIDE ACKNOWLEDGMENT)

TAX CERTIFICATE

The undersigned hereby certifies that all property taxes on the land for the fiscal year have been paid and that the full amount of any deferred property taxes for the conversion of the property from agricultural use has been paid pursuant to NRS 361A.265.

_____ _____
WASHOE COUNTY TREASURER DATE

_____
TITLE

NOTARY PUBLIC ACKNOWLEDGMENT

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

On this _____ day of _____, 20____, personally appeared before me, a Notary Public, in the County of Washoe, _____

_____

_____

who acknowledged to me that he executed the above instrument. In witness whereof, I hereunto set my hand and affix my official seal the date and year first above written.

_____
NOTARY PUBLIC

SECTION 2 - Parcel Maps and Records of Survey:

1. Parcel Map Process:

Parcel map means a map filed pursuant to NRS 278.461 to 278.469 inclusive, and City of Reno Municipal Code Chapters 18.09.040 and 18.10 to 18.10.080 inclusive, which creates four or fewer lots, parcels, sites, units, plots or interests. The City of Reno does not include streets offered for dedication as one of the four or fewer parcels. Minimum lot sizes are exclusive of areas encumbered by access easements, and shall conform to zoning boundaries.

Final map processing has no defined submittal dates, but do require the filings of the application with the Parcel Map Committee on forms supplied by the City. The applicant shall pay applicable application fees upon the filing of a parcel map. The Parcel Map Committee has forty-five (45) days to review and approve, conditionally approve or disapprove, or upon no action, the parcel map shall be deemed approved. The Parcel Map Committee may on the second or subsequent parcelization of the same property, impose requirements for improvements as though it were a subdivision. The applicant shall be notified in writing of the decision of the Parcel Map Committee. Applicant can appeal to the Planning Commission, or if this fails, to the City Council. If the Parcel Map Committee's decision is overruled, the map will be returned to the Parcel Map Committee for action as directed by the Planning Commission or City Council. At the time of submittal, the applicant shall submit the map with the following information:

a. Vicinity map.
b. Proposed parcels.
c. Survey ties.
d. Section references.
e. Boundary dimensions (bearings and distances).
f. Lot areas (in square feet if less than two acres).
g. Total area.
h. Names of all adjacent owners and Assessor's parcel numbers for all adjacent owners.
i. Names of adjacent streets.
j. Scale and north arrow.
k. Monuments.
l. Graphic border.
m. Existing and proposed easements.
n. All certificates as required by NRS and RMC.
o. All referenced maps.
p. General notes.

Applicant shall also submit the following items:

a. Fees for the application.
b. 2 copies of the preliminary title report (not more than thirty days old).
c. 2 copies of Assessor's map with subject parcel(s) identified.
d. 1 copy of the lot closures.
e. Owner's affidavits.

All submittals must be wet-stamped and signed by the surveyor.

After review and approval by the Parcel Map Committee, the owner shall be responsible for the following:

a. Installation of all improvements in accordance with RMC 18.09 as parcels are developed.
b. Fire hydrants shall be installed per Fire Department requirements with the issuance of building permits.
c. Dedication of water rights to the servicing utility sufficient to serve the development.
d. Public utility easements to be granted within each parcel for the exclusive purpose of installing and maintaining utility service facilities.
e. If access is private, the maintenance shall be the responsibility of the individual parcel owners.
f. Sewage disposal shall be by connection to a public sewer system.
g. Any further division of the property may require full subdivision improvements.

If the applicant fails to cause recordation of the parcel map within two years from the date of the letter of notification, the parcel map application shall be deemed expired, and a new application, including the appropriate application fee, shall be required to continue the parcel map.

An improvement agreement and security per RMC 18.08.080 may be required for construction of public improvements if not constructed prior to recordation. If within the term of the agreement, the applicant fails to complete the required improvements, the City may resort to the security (if any) in accordance with Section 18.08.080, unless an extension of the improvement agreement has been granted.

Please note that all maps require submission to Washoe County Engineering for technical check, and that a separate fee is charged and collected directly by Washoe County. Please contact Washoe County Engineering for information on timing and submittal requirements. No map may be filed with the Washoe County Recorder until the technical check is completed and approved. The Washoe County Recorder has ten days from the point of submission to place the maps on file or to reject them.

2. Merger and Resubdivision of Property

A recent change in the Nevada Revised Statutes (NRS 278.4925) enables the elimination of existing parcel lines by subdividing over the top of existing parcels. Where this process is to be utilized with parcel maps, the following additional information will be required:

a. All parcel lines to be removed are to be clearly labeled or otherwise delineated.

b. All streets, easements and utility easements, whether public or private, to remain in effect after the merger and resubdivision must be clearly delineated on the parcel map.

c. The following note shall be added to the face of the map:

   This map is being executed in conformance with NRS 278.4925 for the express purpose of merger and resubdivision of the property as shown hereon.

d. Where the property is owned or encumbered by more than one security interest holder, or where only a portion of the property is encumbered by a security interest holder, all security interest holders shall be signatory to the map. This may be by certificate on the face of the map, or by separate document with the appropriate document numbers entered on the face of the map.

Please note that existing public easements or rights-of-way to be eliminated must be abandoned in conformance with the Nevada Revised Statutes prior to execution and recordation of the parcel map, and appropriate document information must be shown on the face of the map. All existing private easements or rights-of-way to be eliminated, or other quitclaimed of rights relative to the affected property, must be identified on the map.

3. Commercial Condominium

Where a commercial condominium is proposed to be executed via parcel maps, a separate administrative variance must also be processed with the City. Covenants, conditions and restrictions (CC&R's) required per NRS 116 must be recorded with the first map.

4. Plan Information to Accompany Parcel Map When Required:

ITEM NO.	ITEMS REQUIRED
1.	Plan drawn on 24" x 36" sheet using standard engineering scales. Minimum scale shall be 1" = 40' for sites of 10 acres or less. For larger sites, minimum scale 1" = 100'. (If parcel map contains an offer of dedication, an 8” x 11" reduction of the map sheets is required.)
2.	Date, north arrow, scale and number of sheet in relation to the total number of sheets.
3.	All streets indicated as either public or private.
4.	If the plan includes portions of land within the boundary of the project located within Zones "A" or “Shaded X” (formerly Zone “B”) of the FEMA Flood Map, the boundary of the respective flood zone and referenced FEMA map information shall be indicated on the parcel map.
5.	The location and outline to scale of each existing building, permanent structure, or other permanent physical feature, and any alteration or removal of the same.
6.	The width and approximate location of all existing or proposed easements, whether public or private, for roads, drainage, sewers, irrigation or public utility purposes.
7.	All existing drainage pipes or channels with direction of flow and size.
8.	The location, size and direction of flow of the nearest available public storm drain and sanitary sewer.
9.	Ownership, direction of flow and the approximate location and size of proposed storm drains and sanitary sewers.
10.	a. Topography with maximum 5 foot contours. b. Street location, names, widths of right-of-way, and pavement widths (including existing curb cuts of both sides of the streets). c. Direction of drainage including all adjoining streets or public ways. d. Existing utilities, manholes, cleanouts, septic tanks, leach fields, structures, etc.
11.	The width of right-of-way and approximate grade of each street (public or private) and alley within and necessary to serve the proposed project, and the radius of all curves and diameter of each cul-de-sac bulb, including a typical section for each type of street.
12.	Any and all information determined by the City to be necessary for the logical interpretation of the proposed subdivision of land.

5. General Notes for Parcel Maps:

   a. All required improvements shall be installed by the owner in accordance with RMC Chapter 18.09 as parcels are developed.

   b. Fire hydrants shall be installed as per Fire Department requirements with the issuance of building permits.

   c. With the development of each parcel and prior to the issuance of any building permit for said parcel, the owner shall dedicate water rights to the servicing utility sufficient to serve the development, and shall provide the City of Reno with a will serve letter.

   d. A public utility easement is also hereby granted within each parcel for the exclusive purpose of installing and maintaining utility service facilities to that parcel, with the right to exit that parcel with said utility facilities for the purpose of serving adjacent parcels, at locations mutually agreed upon by the owner of record at the time of installation and the utility company. Public utility easements shall include use by cable television providers.

   e. Sewage disposal shall be by connection to a public sewer system unless otherwise approved at the time of development.

6. Add When Appropriate:

   a. Access is by private easement; maintenance of same is the responsibility of the individual parcel owners.

   b. With issuance of the first building permit, improvements within the access easement shall be constructed to a minimum of permanent emergency access road standards. Note: When appropriate, add one or both of the following: (a) including public sanitary sewer and/or storm drain; and (b) including a 50' radius turnaround.

   c. Any further division of this property may require full subdivision improvements in accordance with NRS Chapter 278.

   d. Any future division of Parcel No. _____ will require full subdivision improvements in accordance with NRS Chapter 278.

7. Parcel Map and Record of Survey Certificates:

OWNER'S CERTIFICATE

This is to certify that the undersigned (Name of Owner(s) as title is held) is/are the owner(s) of that tract of land represented on this plat and has/have consented to the preparation and recordation of this plat and that the same is executed in compliance with and subject to the provisions of NRS Chapter 278.

Add the appropriate option(s):

1. The (access, drainage, sewer, public utility, etc.) easements as shown hereon are hereby granted.

2. [Name of Street(s)] as identified hereon including all appurtenances thereto is/are hereby dedicated to the City of Reno and to be a public thoroughfare forever.

(SIGNATURE)_____ _____
(OWNER'S NAME PRINTED) (DATE)
(PROVIDE ACKNOWLEDGMENT)

COUNTY RECORDER'S CERTIFICATE

FILE NO. _____ FEE: _,

filed for record at the request of _____

on this _____ day of _____, 20_____, at _____ minutes past _____

O'clock _____.M. Official Records of Washoe County, Nevada.

COUNTY RECORDER	BY DEPUTY

NOTARY PUBLIC CERTIFICATE

STATE OF NEVADA
S.S.
COUNTY OF WASHOE

On this _____ day of _____, 20_____, personally appeared before me, a Notary Public, in the County of Washoe,

_____

_____

_____

who acknowledged to me that they executed the above instrument. In witness whereof, I hereunto set my hand and affix my official seal on the date and year first above written.

_____
NOTARY PUBLIC

TITLE COMPANY CERTIFICATE

The undersigned hereby certifies that this plat has been examined and the subdivider offering this plat is the last title holder of record for all the lands delineated hereon, and the lands are free from any liens or encumbrances, as of _____, 20___.

(NAME OF TITLE COMPANY)

_____
TITLE COMPANY

BY_____
_____
(TITLE OF OFFICER) DATE

SURVEYOR' S CERTIFICATE

I, _____, (Name of Surveyor) a Professional Land Surveyor licensed in the State of Nevada, certify that:

1. This plat represents the results of a survey conducted under my direct supervision at the instance of _____
(Owner, Trustee, etc.)
2. The lands surveyed lie within _____
(Section, Township, Range, Meridian and, if required by the governing body, a description by metes and bounds for any subdivision which is divided into lots containing 5 acres in area or less),
and the survey was completed on _____ (Date).
3. This plat complies with the applicable state statutes and any local ordinances in effect on the date that the governing body gave its final approval.
4. The monuments depicted on the plat are of the character shown, occupy the positions indicated and are of sufficient number and durability.

_____ Registration Number and Seal:
(NAME OF SURVEYOR)

UTILITY COMPANIES CERTIFICATE

The utility easements shown on this plat have been checked, accepted, and approved by the undersigned public utility companies.

_____ _____
SIERRA PACIFIC POWER COMPANY DATE

_____ _____
NEVADA BELL DATE

_____ _____
AT&T CABLE DATE

_____ _____
(OTHERS WHEN NECESSARY) DATE

PARCEL MAP COMMITTEE CERTIFICATE

Approved and accepted by the Parcel Map Committee of the City of Reno, Washoe County, Nevada, this _____ day of _____, 20___. Conditional approval of this map was granted by the Parcel Map Committee on the ____ day of _____, 20 .*/**

_____ _____
CHAIRMAN PARCEL MAP COMMITTEE DATE

NOTE: Provide two (2) inches for Chairman's seal over signature.

* When right-of-way is dedicated to the City add:
Dedication of (Name of Street(s)) was accepted by the City Council of the City of Reno, Washoe County, Nevada on the ____ day of _____, 20 .

** When dedication is rejected add:
The offer of dedication of (Names of Street(s)) shown hereon is rejected by the City Council on this ____ day of _____, 20___, with the offer to remain open in accordance with the provisions of NRS Chapter 278.

TAX CERTIFICATE

The undersigned hereby certifies that all property taxes on the land for the fiscal year have been paid and that the full amount of any deferred property taxes for the conversion of the property from agricultural use has been paid pursuant to NRS 361A.265.

_____ _____
WASHOE COUNTY TREASURER DATE

_____
TITLE

NOTE:ADD THE FOLLOWING CERTIFICATES TO RESIDENTIAL CONDOMINIUM MAPS ONLY

DIVISION OF WATER RESOURCES CERTIFICATE

This plat is approved by the State of Nevada Division of Water Resources of the Department of Conservation and Natural Resources concerning water quantity, subject to review of approval on file in this office.

_____ _____
DIVISION OF WATER RESOURCES DATE

HEALTH DIVISION CERTIFICATE

This plat is approved by the Environmental Services Division of the Washoe County District Health Department concerning sewage disposal, water pollution, water quality, and water supply facilities in accordance with the Nevada Revised Statutes. This approval predicates community water supply and community sewage disposal.

_____ _____
ENVIRONMENTAL SERVICES DIVISION OF THE WASHOE COUNTY DISTRICT HEALTH DEPARTMENT DATE

CITY COUNCIL CERTIFICATE

Approved and accepted by the City Council of the City of Reno, Washoe County, Nevada, on the _____ day of _____, 20_____.*

MAYOR

ATTEST:

_____
CITY CLERK

*NOTE: TO BE ADDED WHEN DIRECTED BY THE CITY ENGINEER:
$$$$The offer of dedication of [Names of Street(s)] shown hereon is rejected at this time, with the offer to remain open in accordance with the provisions of NRS Chapter 278.

NOTE: ADD THE FOLLOWING CERTIFICATE TO RESIDENTIAL CONDOMINIUM MAPS ONLY

CITY ENGINEER'S CERTIFICATE

I hereby certify that I am the duly appointed City Engineer of the City of Reno, Washoe County, Nevada, and that I have examined the plat to which this certificate is attached, that the plat is technically correct and that the monuments are of the character shown and occupy the position indicated.

_____ _____

CITY ENGINEER DATE

NOTE: SUBSTITUTE THE FOLLOWING CERTIFICATE FOR RESIDENTIAL CONDOMINIUM MAPS ONLY

PARCEL MAP COMMITTEE CERTIFICATION (CONDOMINIUM)

Received and accepted by the Parcel Map Committee of the City of Reno, Nevada, on the day of _____, 20___.

_____

CHAIRMAN

NOTE: THE FOLLOWING CERTIFICATES TO BE USED FOR RECORD OF SURVEY MAPS

OWNER'S CERTIFICATE

We, the undersigned owner(s) of the affected parcels as shown on this map, do hereby state:

(1) We have examined this plat and approve and authorize its recording;

(2) We agree to execute the required documents creating any easement which is shown hereon;

(3) We agree to execute the required documents abandoning any existing easement(s) pursuant to the provisions of NRS 278.010 to 278.630, inclusive;

(4) All property taxes on the land for the fiscal year have been paid;

(5) Any lender with an impound account for the payment of taxes has been notified of the adjustment of the boundary line or the transfer of the land;

(6) The property owners hereby agree to accept any drainage onto their property resulting from this boundary line adjustment.

(SIGNATURE)_____ _____
(OWNER'S NAME PRINTED) DATE
(PROVIDE ACKNOWLEDGMENT)

TAX CERTIFICATE

The undersigned hereby certifies that all property taxes on the land for the fiscal year have been paid and that the full amount of any deferred property taxes for the conversion of the property from agricultural use has been paid pursuant to NRS 361A.265.

_____ _____
WASHOE COUNTY TREASURER DATE

_____
TITLE

NOTE: THE FOLLOWING CERTIFICATES TO BE USED FOR RECORD OF SURVEY MAPS IN SUPPORT OF BOUNDARY LINE ADJUSTMENTS

CITY OF RENO CERTIFICATE

The undersigned certifies that this map has been reviewed and approved by the City of Reno.

_____ _____
PRINCIPAL PLANNER DATE

SURVEYOR'S CERTIFICATE

I, _____, a professional land surveyor registered in the State of Nevada, do hereby state:

(1) I have performed a field survey sufficient to locate and identify properly the proposed boundary line adjustment;

(2) All corners and angle points of the adjusted boundary have been defined by monuments or will be otherwise defined on a document of record as required by NRS 625.340;

(3) This map is not in conflict with the provisions of NRS 278.010 to 278.630, inclusive;

(4) I have prepared this map at the instance of _____;

(5) The survey was completed on _____;

(6) The property surveyed lies within Section _____.

(SIGNATURE)_____ _____
(SURVEYOR'S NAME PRINTED) DATE

COUNTY RECORDER'S CERTIFICATE

FILE NO. _____ FEE: _,
filed for record at the request of _____
on this _____ day of _____, 20_____, at _____ minutes past _____
O'clock _____.M. Official Records of Washoe County, Nevada.

_____ _____
COUNTY RECORDER BY DEPUTY

CHAPTER IX – RECLAIMED WATER

REFERENCES

1. Reference Standards. The following documents have been referenced in the preparation of the Reclaimed Water Treated Effluent Design & Performance Standards herein:

a) NDEP WTS-1A: General Design Criteria for Reclaimed Water Irrigation Use
b) NDEP WTS-1B: General Criteria for Preparing an Effluent Management Plan
c) NDEP WTS-37: Guidance Document for Design of Wastewater Detention Basins
d) NDEP WTS-4: Guidance Document for Design of Groundwater Monitoring Wells
e) NDEP Discharge Permit application forms, DMR form, and Permit fees
f) NAC 445A.275 – 445A.280, Use of Treated Effluent (Reuse Regulations)
g) NAC 445A.6715 – 445A.67215, Water/Sewer System Separation Regulations
h) TMWA Engineering & Construction Standard Sections 8 and 8a
i) AWWA C600: Standard for Installation of Ductile Iron Water Mains and their Appurtenances
j) AWWA C605: Standard for Underground Installation of PVC Pressure Pipe and Fittings for Water
k) Standard Specifications for Public Works Construction, Latest Edition
l) Uniform Plumbing Code, Latest Edition

2. Definitions

NDEP	Nevada Division of Environmental Protection Bureau of Water Pollution Control
NRS	Nevada Revised Statutes
NAC	Nevada Administrative Code
WTS	Water Technical Sheet
TMWA	Truckee Meadows Water Authority
AWWA	American Water Works Association
PWC	Public Works Construction
APWA	American Public Works Association
DIP	Ductile Iron Pipe
PVC	Polyvinyl Chloride
RJ-DIP	Restrained Joint Ductile Iron Pipe
PRV	Pressure Reducing Valve
AWG	American Wire Gage
DMR	Discharge Monitoring Report
SSPWC	Standard Specifications for Public Works Construction
HOA	Homeowner's Association
City of Reno	City of Reno (Public Works Department)
Service Provider	City of Reno (Public Works Department)
Customer	City Park or Golf Course, Business, HOA, Developer, or other entity utilizing reclaimed water treated effluent from the City of Reno
Design Engineer	Registered Professional Engineer in the State of Nevada hired by the Customer to provide design services

Section 1 - DISTRIBUTION SYSTEM STANDARDS FOR RECLAIMED WATER TREATED EFFLUENT

1. Design Standards

a) All reclaimed water treated effluent systems shall be designed and constructed in accordance with all applicable federal, state and local laws and requirements including, but not limited to;
   i) State of Nevada
   ii) Nevada Division of Environmental Protection
   iii) City of Reno

iv) the applicable water purveyor

b) All reclaimed water treated effluent reuse systems must be included in an Effluent Discharge Permit issued by NDEP.

2. Hydraulic Analysis

a) A hydraulic analysis shall be provided for all proposed reclaimed water treated effluent distribution systems within public right-of-way to insure adequate flow and pressures at points of service. Two (2) copies of the hydraulic analysis report shall be submitted to the City of Reno for review and approval. The final report will also be provided electronically. At a minimum, the report submittal shall include the following:
   i) Complete contact information for the Customer and the Design Engineer.
   ii) Project description.
   iii) Name and version of hydraulic modeling software.
   iv) Site plan.
   v) Assessor's parcel number and address.
   vi) Hydraulic model input data.
   vii) Hydraulic node map.
   viii) Hydraulic model output data.

b) All pump systems require coordination and approval from the City of Reno Public Works Department. If you are designing a system with pumps, tanks, etc., contact Public Works during the planning phase of the project.

3. Design Pressure

a) Service point(s). As determined by the Design Engineer to accommodate irrigation system requirements.

b) Mainline termination point(s). As required by the City of Reno.

4. Pipe Material Type

a) PVC - PVC pipe shall be purple in color. Joints shall be bell and spigot type with gaskets designed for potable water service.
   i) Sizes 4-inch to 12-inch shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C900.
      (1) PVC pipe connected directly to the reclaimed water mainline distribution system with <u>no</u> PRV shall be Pressure Class 200 (DR-14).
      (2) PVC pipe downstream of a PRV may be Pressure Class 150 (DR-18).
   ii) Sizes 14-inch to 30-inch shall meet all the dimensional, chemical, and physical requirements as outlined in AWWA C905, cast iron O.D.
      (1) PVC pipe connected directly to the reclaimed water mainline distribution system with <u>no</u> PRV shall be Pressure Class 200 (DR-21).
      (2) PVC pipe downstream of a PRV may be Pressure Class 165 (DR-25).
   iii) Sizes larger than 30-inch require special approval from the City of Reno.

b) Restrained Joint PVC pipe and fittings.
   i) Pipe – Bell Restraint Harness
      (1) Sizes 4-inch to 12-inch (C900), Series 1600 Bell Restraint Harness as manufactured by Ebaa Iron, Inc. or City of Reno approved equal.
      (2) Sizes 14-inch to 30-inch (C905), Series 2800 Bell Restraint Harness as manufactured by Ebaa Iron, Inc. or City of Reno approved equal.
   ii) Fittings – Reference Section 4.c.viii(3) Restrained Joint Ductile Iron Fittings of this Section.

c) Ductile Iron Pipe and Restrained Joint Ductile Iron Pipe (DIP and RJ-DIP) may be used **with prior approval of the City of Reno in consideration of soil corrosion issues. All DIP and RJ-DIP shall receive polyethylene pipe encasement per Section 17 of this Standard.**
   i) All DIP and RJ-DIP shall meet the requirements of the following AWWA Standards:
      (1) AWWA C151: Ductile-Iron Pipe, Centrifugally Cast, For Water
      (2) AWWA C111: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

(3) AWWA C104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
(4) AWWA C105: Polyethylene Encasement for Ductile-Iron Pipe Systems

ii) Pressure Classes for pipe sizes shall be as follows:
(1) Sizes 3-inch to 12-inch shall be Pressure Class 350.
(2) Sizes 14-inch to 20-inch shall be Pressure Class 250.
(3) Sizes 24-inch to 30-inch shall be Pressure Class 200.
(4) Sizes larger than 30-inch require special approval from the City of Reno.

iii) Restrained Joint Ductile Iron Pipe (RJ-DIP) shall include:
(1) Push-on joint with standard gasket with interlocking segments inserted through a slot in the bell face, TR Flex as manufactured by U.S. Pipe or City of Reno approved equal.
(2) Push-on joint with restrained joint gasket, Field Lok Gasket for specified pipe size as manufactured by U.S. Pipe or City of Reno approved equal.
(3) Mechanical joint pipe with wedge style mechanical joint restraint, Megalug as manufactured by Ebaa Iron, Inc. or City of Reno approved equal.

iv) Pipe Joint Deflection per AWWA C600, Table 3. Confirm manufacturer's recommended maximum deflection will provide radii and angle points required.

v) Threaded Flanges, Ductile Iron per AWWA C115. DIP requiring threads for flanges shall not be less than that required by thickness Class 53, pressure class 350.

vi) Flanges Bolts and Gaskets per AWWA C115, Appendix A

vii) Ductile Iron Fittings and Restrained Joint Ductile Iron Fittings. AWWA C110, AWWA C104, Cement mortar lined and seal coated for potable water

viii) Restrained Joint Ductile Iron Fittings shall include:
(1) Push-on joint with standard gasket with interlocking segments inserted through a slot in the bell face, TR Flex as manufactured by U.S. Pipe or City of Reno approved equal.
(2) Push-on joint with restrained joint gasket, Field Lok Gasket for specified pipe size as manufactured by U.S. Pipe or City of Reno approved equal.
(3) Mechanical joint fittings with wedge style mechanical joint restraint, Megalug as manufactured by Ebaa Iron, Inc. or City of Reno approved equal.

d) Effluent Service Lateral Pipe (1-1/2 inch and 2-inch)
i) Service lateral is defined as the piping between the mainline and a meter box or meter vault.
ii) Minimum service size shall be 1-1/2 inch.
iii) Polyethylene (PE) pressure pipe per AWWA C901 for 1-1/2 inch and 2-inch service connections. Purple in color or purple striped, Pressure Class 200 (DR-9).
iv) Service Line Fittings per AWWA C800.

5. Buried Warning and Identification Tape

a) Buried warning and identification tape shall be polyethylene plastic, metallic core detectable warning tape. AWWA, APWA, acid and alkali resistant, permanent marking, unaffected by moisture or soil, minimum five (5) mils thick by 3-inches wide. Warning tape shall be manufactured specifically for locating, warning, and identification of buried utility lines. APWA color coded PURPLE for reclaimed water with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read "CAUTION: BURIED RECLAIMED WATER LINE BELOW" or similar.

6. Tracer Wire and Test Stations

a) Tracer wire shall be provided for all distribution reclaimed water lines and service laterals and shall be placed on top of pipe and attached with duct tape at 6 feet maximum intervals. At 500 feet intervals, tracer wire shall be extended into separate test stations consisting of risers and valve boxes (ref. City of Reno Reclaimed Water Treated Effluent Detail SR-3). Test lead wire shall be long enough to extend four (4) feet above ground level and shall terminate in test station box. Tracer wire shall be attached to service laterals with duct tape at 3 feet maximum intervals, and shall be long enough to extend four (4) feet above ground and shall terminate in meter box. Wire shall be #12 AWG, insulated, stranded copper, THHN 600V. Prior to acceptance of the reclaimed waterline(s) by the City of Reno, the contractor shall perform a continuity test after backfilling the trench to the satisfaction of the City of Reno Inspector and/or Engineer.

7. Thrust Restraint

a) Mechanical joint fittings/pipe with wedge style mechanical joint restraint, Megalug as manufactured by Ebaa Iron, Inc. or City of Reno approved equal.
b) Concrete Thrust Blocking per City of Reno Reclaimed Water Treated Effluent Detail SR-13.
c) Restrained Joint Ductile Iron pipe (RJ-DIP), TR Flex as manufactured by U.S. Pipe or City of Reno approved equal.
d) Ductile Iron pipe push-on joint with restrained joint gasket, Field Lok Gasket for specified pipe size as manufactured by U.S. Pipe or City of Reno approved equal.
e) PVC Pipe Bell Restraint Harness as previously specified in Section 4.b of this Standard.
f) For vertical deflections, thrust blocks are not allowed for thrust restraint.

8. Depth of cover

a) Design depth of cover = 4 feet
    i) Adjacent to existing water and gas, as required providing minimum separation requirements.
    ii) Per NAC 445A.67145. Minimum depth of cover = 3 feet.
b) Design depth of cover which exceeds 5 feet shall require approval by the City of Reno
c) Restrained Joint Ductile Iron Pipe (RJ-DIP) shall be used for all crossings under ditches, existing pipelines, reinforced concrete boxes, and any other structure that will impede access for maintenance purposes.

9. Pipe Deflection/Bending

a) PVC Pipe – per AWWA C605.
b) DIP – per AWWA C600.
c) Per pipe manufacturer's recommendation.

10. Trench Backfill

a) Reference City of Reno Reclaimed Water Treated Effluent Detail SR-4.
b) Reference SSPWC

11. Buoyancy

a) As determined by the Design Engineer and approved by the City of Reno. Buoyancy parameters and concerns shall be discussed by the Design Engineer with City of Reno Public Works Engineering staff during the design phase of the project and shall be mitigated on a case by case basis.

12. Surge Protection

a) As determined by the Design Engineer and approved by the City of Reno. Surge protection parameters and concerns shall be discussed by the Design Engineer with City of Reno Public Works Engineering staff during the design phase of the project and shall be mitigated on a case by case basis.

13. Isolation Valves

a) Gate Valve, 3 to 12 inch, AWWA C500.
b) Butterfly Valve, 14 to 30 inch, AWWA C504.
c) As required for operation and maintenance of the system.
d) As approved by the City of Reno.
    i) In residential / commercial developed areas, 500 ft. maximum (as required in NAC 445A).
    ii) Other areas, 1200 ft., maximum.

14. Combination Air Vacuum and Air Release Valve Assemblies

a) Located at high points in the effluent mainline.
b) As determined by the Design Engineer and approved by the City of Reno.
c) Air release valve assembly materials and construction, including the valve, enclosure, and vent piping shall be per City of Reno Reclaimed Water Treated Effluent Details SR-12A and SR-12B.

15. Mainline Blow Off

a) For mainlines greater than 20 inches in diameter.
b) Located at low points in effluent mainline and approved by the City of Reno.
c) 6 inch minimum pipe size for blow-off structure.
d) Sized to provide minimum velocity of 2.5 fps in the main.

16. Purple Coloration and Warning

a) All covers for meter boxes, valve boxes, flush valves, pressure reducing vaults, air/vac release assemblies, and all other appurtenances requiring vaults or boxes shall be purple in color (Pantone Color #512), labeled "RECLAIMED WATER" or "EFFLUENT", and have secured or locking lids. Purple coloration shall be obtained from the manufacturer or be applied by powder coating or epoxy paint. All appurtenances shall have a purple tag attached with the wording "WARNING RECYCLED/RECLAIMED WATER DO NOT DRINK" and "AVISO AGUA IMPURA NO TOMAR" (T. Christy Enterprises, MAXI valve identification tag, ID-MAX-P2-RC006 or City of Reno approved equal). A debris cap with purple coloration shall be installed inside all round boxes.
b) All above ground piping shall be epoxy painted purple (Pantone Color #512) and have a purple tag attached with the wording "WARNING RECYCLED/RECLAIMED WATER DO NOT DRINK" and "AVISO AGUA IMPURA NO TOMAR" (T. Christy Enterprises, MAXI valve identification tag, ID-MAX-P2-RC006 or City of Reno approved equal).

17. Corrosion Protection

a) As recommended by the pipe manufacturer for actual soil conditions, not less than the following:
b) Polyethylene Pipe Encasement, AWWA C105, 8-mil minimum thickness. All buried DIP, fittings, and valves shall be encased with low-density, polyethylene film (min. 8-mils thick). The polyethylene film shall be in tube form and colored purple. The film shall be clearly marked "RECLAIMED WATER" or "EFFLUENT" in BLACK letters at regular intervals.
c) Mastic shall be applied to all bolts and exposed steel.

18. Sewer / Water Separation Standards

a) NAC 445A.6715 - 445A.67215
b) TMWA Engineering & Construction Standard Sections 8 and 8a

19. Direct Connections to Potable Water System

a) Direct connections between potable water piping and reclaimed water piping shall not exist under any condition, with or without backflow protection. Reference Section 603.3.5 of the Uniform Plumbing Code, Latest Edition.

20. Effluent Service Connections (Public / Private Ownership and Maintenance)

a) Transitions from publicly owned facilities (City of Reno) to privately owned facilities (Customer) shall be clearly delineated. Typically, the meter at the point of connection shall serve as the point of transition, with facilities upstream of the meter being owned and maintained by the City of Reno, and facilities downstream of the meter being owned and maintained by the Customer. In cases where mainlines exist within public right-of-way downstream of a meter (typically a "master" meter), the transition between City owned and maintained facilities and Customer owned and maintained facilities shall be delineated by, and include an isolation valve and test station located as near possible to the boundary (property line) between public right-of-way and private property, if applicable.
b) All piping and appurtenances located on private property shall be owned and maintained by the Customer, unless within a dedicated easement and approved in writing by the City of Reno.
c) All reclaimed water mains less than 4-inch diameter shall be owned and maintained by the Customer, and will be considered irrigation piping.
d) Publicly owned facilities (City of Reno) and privately owned facilities (Customer) shall be clearly delineated and labeled on the design drawings.

21. Service Laterals

a) Sized to provide peak demand without excessive pressure loss through the meter and setter.
b) Minimum service size is 1-1/2 inch.
c) Service lateral shall be installed perpendicular to the water main and the meter, unless otherwise approved by the City of Reno.
d) All services 3-inch and larger shall include a tee, gate valve and valve box.
e) Maintain minimum separation between effluent and potable water per required separation standards (NDEP and TMWA).

22. Meters

a) Meter manufacturer shall be BadgerMeter, Inc.
b) Meter type shall be:
   i) Recordall Turbo Series Meter with integral strainer (1-1/2 inch to 4-inch)
   ii) Recordall Turbo Series Meter without integral strainer (6-inch and larger)
   iii) Recordall Disc Meter (1-1/2 inch and 2-inch)
   iv) Magnetoflow Mag Meter
c) Meter shall be rated for reclaimed water use:
   i) Purple colored register and lid.
   ii) Non-potable water symbol on register lid.
   iii) The word “RECLAIMED” is cast or engraved in the meter body, and printed on the register dial face and lid.
d) For meters 6 inch and larger, provide upstream plate strainer.
e) Minimum meter size shall be 1-1/2 inch.
f) Meters shall be supplied by the City of Reno, unless otherwise stated in the Effluent Agreement with the City .
g) Meter enclosure and setter with idler shall be constructed by the Customer, per the applicable City of Reno Reclaimed Water Treated Effluent detail.
h) The meter shall be installed on the property served immediately adjacent to the public right-of-way.

23. Flow Control Facilities (PRV)

a) Direct connections to the reclaimed water main line shall require a pressure reducing valve. Flow control facility requirements shall be as determined by the Design Engineer and approved by the City of Reno.
b) Services 3-inch and larger shall install a pressure reducing/pressure sustaining valve. The valve will reduce the pressure from the main distribution system to the required irrigation distribution system pressure. The sustaining feature will close the valve in the event that the pressure in the main distribution system drops below a set point. Valve shall be a Cla-Val Model 92-01 Combination Pressure Reducing and Pressure Sustaining Valve or City of Reno approved equal. Size of valve shall be determined by the Design Engineer.
   i) Valve body shall be fusion bonded epoxy coated ductile iron, globe configuration.
   ii) Standard trim materials.
   iii) Pressure class 250, flanged (150 lb. ANSI)
   iv) Downstream adjustment range shall be determined by the Design Engineer based on the irrigation distribution system pressure requirements (30 to 300 psi is standard setting).
   v) Upstream adjustment range shall be 20 to 200 psi (standard setting). Sustaining pressure shall be set per City of Reno requirements (site specific).
   vi) Valve options shall include:
      (1) brass opening and closing speed control valves
      (2) bronze shutoff cock
      (3) Y-strainer
   vii) If the valve will be used as a shutoff valve, a solenoid control feature shall be added to the valve. Specify voltage, AC or DC power, and whether the valve shall be energized open (normally closed) or energized closed (normally open). Provide electrical service and conduit through vault wall. Grout wall penetrations.

viii) If the valve will be used to control rate of flow, or if cavitation is possible downstream from the valve, specify orifice plate bore size per manufacturer's literature. Install orifice plate downstream from pressure reducing valve.

c) 1-1/2 inch and 2-inch services shall install a pressure reducing valve. The valve will reduce the pressure flow from the main distribution system to the required irrigation distribution system pressure. Valve shall be a Cla-Val Model 90-01 Pressure Reducing Valve or City of Reno approved equal. Size of valve shall be determined by the Design Engineer.
   i) Valve body shall be fusion bonded epoxy coated ductile iron, globe configuration.
   ii) Standard trim materials.
   iii) Pressure class 400, threaded (ANSI B2.1)
   iv) Downstream adjustment range shall be determined by the Design Engineer based on the irrigation distribution system pressure requirements (30 to 300 psi is standard setting).
   v) Valve options shall include:
      (1) brass opening and closing speed control valves
      (2) bronze shutoff cock
      (3) Y-strainer
   vi) If the valve will be used as a shutoff valve, a solenoid control feature shall be added to the valve. Specify voltage, AC or DC power, and whether the valve shall be energized open (normally closed) or energized closed (normally open). Provide electrical service and conduit through vault wall. Grout wall penetrations.

24. Pressure Relief Valves

a) All services require a pressure relief valve downstream of a pressure reducing valve. The valve will release excess pressure to protect the irrigation system. Size of valve shall be approximately 1/3 (one-third) of pressure reducing valve size, to be determined by the Design Engineer. Set relief pressure above irrigation line operating pressure and below irrigation line maximum pressure. These set points shall be specified in the design drawings.

b) Pressure relief valves 1-1/4 inch and larger shall be Cla-Val Model 50-01 Pressure Relief, Pressure Sustaining Valves or City of Reno approved equal. Size of valve shall be determined by the Design Engineer.
   i) Valve body shall be fusion bonded epoxy coated ductile iron, globe configuration.
   ii) Standard trim materials.
   iii) Pressure class 250
   iv) 4-inch and larger valves shall be flanged (150 lb. ANSI). 1-1/4 inch to 3-inch valves may be flanged (150 lb. ANSI) or threaded (specified in design drawings).
   v) Discharge pressure adjustment range shall be 20 to 200 psi (standard setting).
   vi) Valve options shall include:
      (1) brass opening and closing speed control valves
      (2) bronze shutoff cock
      (3) Y-strainer

c) Pressure relief valves smaller than 1-1/4 inch shall be Cla-Val model 55F Pressure Relief Valves or City of Reno approved equal.
   i) Valve body shall be cast bronze.
   ii) Standard trim materials.
   iii) Pressure class 400
   iv) Discharge pressure adjustment range shall be 20 to 200 psi.

25. Pressure Gauges

a) Provide pressure gauges with ¼ inch NPT stem.
b) Gauges shall be liquid filled, 4-1/2 inch, 270-degree dial, with built-in or separate snubber.
c) Provide polypropylene, aluminum, or stainless steel case with stainless steel internals.
d) Provide dual gauge scale in psi and feet of water.
e) Gauge shall have an accuracy of ½ to 1 percent of full range.
f) Provide a brass isolation ball valve for each gauge assembly.
g) Provide gauge ranges as follows:

i) 0-200 psi on the supply (high pressure) side of the pressure reducing valve.
ii) 0-150 psi on the discharge (low pressure) side of the pressure reducing valve.

26. Flush Valve Assembly

a) Provide Flush Valve Assembly on all dead end pipe runs.
b) Sized to provide 2.5 fps in the main line.

Section 2 - IRRIGATION SYSTEM STANDARDS FOR RECLAIMED WATER TREATED EFFLUENT

1. Design

a) The Reclaimed Water irrigation system shall be designed to standard potable water system requirements except as specified herein.
b) The Reclaimed Water irrigation system shall meet distribution system requirements included herein.

2. Tracer Wire and Test Stations

a) Tracer wire shall be provided for all irrigation reclaimed water piping 3-inches diameter and larger, both within public right-of-way and private property, and shall be placed on top of pipe and attached with duct tape at 6 feet maximum intervals. Tracer wire shall be long enough to extend four (4) feet above ground and shall terminate in appropriate irrigation control/valve box at maximum 500 feet intervals. Wire shall be #12 AWG, insulated, stranded copper, THHN 600V. Prior to acceptance of the reclaimed waterline(s) by the City of Reno, the contractor shall perform a continuity test after backfilling the trench to the satisfaction of the City of Reno Inspector and/or Engineer.

3. Sleeves for Irrigation Piping

a) All irrigation piping under hardscaped public right-of-way improvements (roads, curb & gutter, sidewalk, etc.), that does not meet the requirements of Section 4 of the Distribution System Standards (i.e. SCH-40 PVC pipe), shall be placed inside sleeves.
b) Sleeves shall be SDR-35 PVC pipe, colored purple or otherwise identified for reclaimed water per subsequent Section 7 of this Standard.
c) Sleeves shall be sized by the Design Engineer to accommodate the irrigation piping, but in no case shall be less than 4-inch diameter.
d) Sleeves shall extend a minimum of 3 feet beyond hardscaped public right-of-way improvements.
e) Sleeves shall be installed per City of Reno Reclaimed Water Treated Effluent Typical Trench Section Detail SR-4. Design depth of cover = 4 feet.
f) Tracer wire shall be installed on all sleeves per previous Section 2 of this Standard.

4. Filtration

a) Provide in-line filtration / strainer to insure proper operation of irrigation system.

5. Manual Drains

a) Provide gravel infiltration pit at manual reclaimed water treated effluent drains. Pit shall be adequately sized to prevent reclaimed water treated effluent runoff.

6. High Wind Shutdown

a) Provide anemometer and automatic system shutdown to prevent aerosol drift **IF** required per NDEP discharge permit.

7. Purple Coloration and Warning

a) All covers for meter boxes, valve boxes, flush valves, pressure reducing vaults, and all other appurtenances requiring vaults or boxes shall be purple in color (Pantone Color #512), labeled “RECLAIMED WATER” or “EFFLUENT”, and have secured or locking lids. Purple coloration shall be obtained from the manufacturer or be applied by powder coating or epoxy paint. All

appurtenances shall have a purple tag attached with the wording "WARNING RECYCLED/RECLAIMED WATER DO NOT DRINK" and "AVISO AGUA IMPURA NO TOMAR" (T. Christy Enterprises, MAXI valve identification tag, ID-MAX-P2-RC006 or City of Reno approved equal). A debris cap with purple coloration shall be installed inside all round boxes.

b) All above ground piping shall be epoxy painted purple (Pantone Color #512) and have a purple tag attached with the wording "WARNING RECYCLED/RECLAIMED WATER DO NOT DRINK" and "AVISO AGUA IMPURA NO TOMAR" (T. Christy Enterprises, MAXI valve identification tag, ID-MAX-P2-RC006 or City of Reno approved equal).

c) All buried irrigation piping upstream of an electrical control valve shall be purple plastic pipe or be encased in purple polyethylene or bags labeled "CAUTION: BURIED RECLAIMED WATER LINE BELOW" at intervals no greater than 5 feet. For polyethylene (PE) service pipe, purple stripes are acceptable.

d) All piping downstream of an electric control valve shall be purple plastic or have purple reclaimed warning tape placed on top of the pipe. This does not apply to flexible polyethylene tubing used in drip zones.

8. Minimize Public Exposure

a) The effluent irrigation system shall be designed and operated to minimize effluent exposure to the public.
   i) Irrigation time schedule:
      (1) Irrigation may be scheduled seven days per week.
      (2) Daily irrigation shall be scheduled to minimize public exposure. Typically, only drip irrigation will be allowed during daytime hours (4:00 A.M. to 8:00 P.M.), and spray irrigation will be allowed during nighttime hours (8:00 P.M. to 4:00 A.M.). Site specific irrigation hours will be established in the Effluent Agreement with the City of Reno.
   ii) Maximize areas of drip irrigation in lieu of spray irrigation.
   iii) Adjust spray irrigation heads to prevent aerosol drift toward public areas.
   iv) Adjust irrigation duration to minimize reclaimed water treated effluent runoff.
   v) Grade surface to minimize runoff to paved travel ways.

9. Quick Couplers

a) All quick coupler valves shall have purple, lockable covers (Rain Bird 44NP or City of Reno approved equal).

10. Irrigation Controllers

a) All irrigation controller enclosures shall be labeled inside and outside warning that the system uses reclaimed water (T. Christy Enterprises, Controller Marking Decal, Part Number #ID-4100, or City of Reno approved equal).

11. Hose Bibs

a) Hose bibs shall not be installed on reclaimed water systems.

Section 3 - SITE STANDARDS FOR RECLAIMED WATER TREATED EFFLUENT

1. The following referenced documents shall serve as Site Standards

a) TMWA Engineering & Construction Standard Sections 8 and 8a
b) Section 1620.0 of the Uniform Plumbing Code, Latest Edition (Cross-Connection testing)
c) NDEP WTS-1A: General Design Criteria for Reclaimed Water Irrigation Use
d) NDEP WTS-1B: General Criteria for Preparing an Effluent Management Plan
e) NDEP WTS-37: Guidance Document for Design of Wastewater Detention Basins
f) NAC 445A.275 – 445A.280, Use of Treated Effluent (Reuse Regulations)
g) NAC 445A.6715 – 445A.67215, Water/Sewer System Separation Regulations

CHAPTER X
POST CONSTRUCTION STORM WATER QUALITY MANAGEMENT

(1) Section 1 – General
a) Authority
(2) Section 2 – Post Construction Storm Water Quality Management
a) References
b) Structural Controls
c) Low Impact Development
(3) Section 3 Submittals and Requirements
a) Site Requirements
b) Storm Water Quality Management Plan
c) Detention and Retention Basins

(1) Section 1. General

a) Authority:The City of Reno, the City of Sparks, and Washoe County have been issued a municipal permit by the Nevada Division of Environmental Protection (NDEP) for storm water discharges. The permit requires that a program be implemented to control pollutants in storm water discharges in the Truckee Meadows to the maximum extent practicable. As a part of that program, post construction storm water quality must be addressed through the use of Structural Controls.

(2) Section 2. – Post Construction Storm Water Quality Management

a) Specific requirements concerning this issue can be found in Title 18 of the Reno Municipal Code that requires treatment of storm water flows prior to entering the storm drain system or waterways. The Truckee Meadows Low Impact Development Manual and the Truckee Meadows Structural Controls Design Manual provide design criteria. City of Reno Design Guidance Worksheets have been created to provide a consistent submittal format, and are available on-line at www.tmstormwater.com or available on disk at the Community Development "Permit Place".

b) **Structural Treatment Controls -** Structural treatment controls can be public domain treatment controls or manufactured (proprietary) treatment controls. Public domain treatment controls are those that can be designed by an engineer and have been implemented and tested by numerous communities throughout the nation. Manufactured (proprietary treatment controls are patented devices that have been engineered and constructed by private companies.

c) Low Impact Development - *Low Impact Development* (LID) features are considered public domain treatment controls. LID are principles and techniques used in designing sites (starting from site layout, and grading and compaction phases of construction) that disturb only the smallest area necessary, minimize soil compaction and imperviousness, preserve natural drainages, vegetation and buffer zones, and utilize on-site storm water treatment techniques. LID sites reduce and compensate for development's impact(s) on hydrology and water quality. Rather than conventional hardpiping from impervious surfaces, use of

features such as vegetated swales, bioretention systems and permeable pavements are used.

(3) Section 3: Submittals and Requirements:

a) **Site Requirements – In general** all sites increasing impervious cover by 10,000 square feet or which disturb a soil area greater than 1 acre in size shall analyze storm flows generated from the site for potential contaminants and treatment prior to discharge, specifically defined in Title 18 of the Reno Municipal Code.

b) **Post Construction Storm water Quality Management Plan -** A post construction storm water quality management plan (SWQMP) shall be prepared by a professional civil engineer, registered in the State of Nevada, using the "Truckee Meadows Low Impact Development Manual", the "Truckee Meadows Structural Controls Design Manual", and this manual as design guidance for the implementation of the post construction storm water quality management requirements described in this section. The plan, supporting calculations and documents may be included with the drainage report, or provided as a separate document. The post construction storm water quality management plan shall, at a minimum, include the following information:

i) Sufficient information (e.g., maps, hydrologic calculations, etc) to evaluate the environmental characteristics of the project site, the potential impacts of all proposed development of the site as currently entitled and in future phases outlined in the entitlement, the water resources, and the effectiveness of the measures proposed for managing storm water quality generated at the project site.

ii) A site plan drawn to scale indicating the location of existing and proposed buildings, roads, parking areas, utilities, drainage patterns, easements, limits of grading, structural storm water quality management and sediment control facilities. The plan(s) shall also clearly show proposed land use with tabulation of the percentage of area to be adapted to various uses.

iii) Sufficient engineering analysis to show that the proposed storm water quality management measures are capable of capturing runoff and potential pollutants from the site in compliance with this section and the specifications of the Truckee Meadows Low Impact Development Manual and the Truckee Meadows Structural Controls Design Manual. The engineering analysis must illustrate the drainage subareas and demonstrate the proposed mitigation measures, which are to be designed to meet or exceed the minimum treatment standard required. City of Reno Design Guidance Worksheets have been created to provide a consistent submittal format and when properly completed, demonstrate sufficient engineering analysis. The City of Reno Design Guidance Worksheets are available on-line at www.tmstormwater.com or available on disk at the City of Reno's "Permit Place".

iv) A written or graphic inventory of the site and surrounding area as it exists prior to the commencement of the project and a description of the watershed and its relation to the project site. This description should include a discussion of soil conditions (e.g. description of soil type, infiltration/percolation rates, depth to groundwater, etc), topography, wetlands, springs and other water bodies, and native or other vegetative areas on the site. Particular attention should be paid to environmentally sensitive features that provide specific

opportunities or constraints for development.

v) A written description of the required maintenance for each proposed storm water quality management facility that follows the inspection and maintenance procedures outlined in the Truckee Meadows Structural Controls Manual, which shall include, at a minimum, a site map showing the storm drainage system, structural treatment controls and LID practices, maintenance procedures and inspection frequencies.

(1) Treatment facilities, which receive storm water from private land and are constructed on private land, shall be maintained by the owner of the land upon which they are constructed.

(2) Treatment facilities, which receive storm water from public land, may be constructed on public or private land at the discretion of the applicant. If they are constructed on private land, they shall be maintained by the owner of said land. If they are constructed on public land, offered for dedication and accepted, they shall be maintained by the City of Reno, and the access and maintenance agreement will not be required.

vi) The plan shall include measures for controlling storm water runoff generated from the developed portion of the site in accordance with the standards of this section to the maximum extent practicable (MEP).

vii) Those elements integral to the proper functioning of each constructed phase shall be incorporated in the "As-built" record drawings, identifying the final design specifications for all installed storm water management facilities, and must be sealed by a professional civil engineer, registered in the State of Nevada, and shall be submitted after final construction is completed.

viii) ..... Digitally record GPS data identifying within 10 feet the locations of structural treatment controls and Low Impact Development (LID) features identified on the plan. The information shall be recorded with the current coordinate system standard and datum currently acceptable to the City of Reno.

c) **Detention and Retention**

i) Design of detention/retention basins shall include storm water quality treatment provisions as described in the Truckee Meadows Structural Controls Manual.

APPENDICES

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The following items are commonly used by Public Works and Community Development and are only samples. Always obtain the most recent copy as these samples are subject to change without notice.

Appendix A - Improvement Plans (C. D. Development Services at 334-2576)

A1. Site Plan Checklist
A2. Grading Permit Checklist
A3. Guidelines for Deteriorated Sidewalk, Curb & Gutter
A4. Inspection/Testing Certificate for Public Improvements
A5. Verification of Public Improvements
A6. Request for 3-Car Approach to Remain
A7. Instructions and Samples of Common Types of Easements
A8. Major Publications List - Originating Agency & Price List
A9. Grading and Drainage Verification Letter
A10. Sidewalk Waiver Agreement
A11. Hold Harmless
A12. Construction Management & Access Plan Requirements

Appendix B - Traffic (P. W. Traffic Engineering at 334-2333)

B1. Traffic Policy # 1 - Pedestrian Crosswalks
B2. Traffic Policy # 2 - Speed Limit Regulations
B3. Traffic Policy # 3 - Curb Use
B4. Traffic Policy # 4 - Taxi Zones
B5. Traffic Policy # 5 - Median Openings
B6. Policy on Traffic Calming
B7. VMS/ATMS Interconnected Traffic Signal Controllers and Cabinets

Appendix C – Service/Business Parking

C1 Service/Business Parking
C2 Service/Business Parking Permit Application
C3 Service/Business Parking Permit Regulations

Appendix D - Final Maps and Supporting Documents (C. D. Development Services at 334-2576)

D1. Subdivision Plans & Documents Checklist
D2. Final Plat and Documents Checklist
D3. Exhibit “A”
D4. Exhibit “B”
D5. Exhibit “C”
D6. Irrevocable Letter of Credit
D7. Subdivision Bond Form
D8. Revised Exhibit “A” for Reduction of Security
D9. Subsequent Improvement Plan Submittal Checklist

COMMUNITY DEVELOPMENT DEPARTMENT
P.O. BOX 1900
RENO, NEVADA 89505

SITE PLAN CHECKLIST

Submitted herewith is the checklist as per City of Reno site permit requirements. Plans include the following:

1. Scale, north arrow, and street names.

2. Entire property and dimensions.

3. Existing and proposed contours in two-foot intervals, including site drainage, directional flow arrows, and swales for entire site, plus a minimum distance of 100' on all sides.

4. Existing and proposed easements with their dimensions, labels, and recorded document number(s).

5. Existing and proposed improvements including curb, gutter, driveway, sidewalk, etc. Provide current details for all proposed civil improvements.

6. Proposed cut and fill slopes and degree of slope.

7. Proposed sewer hook-up.

8. Sewer and storm drain systems labeled as public or private.

9. Elevations of finished floor, garage slab elevation, finished grade adjacent to corners of structure, grade breaks, top of curb, lot corners, and slope of driveway.

10. SWPPP requirements for erosion control for disturbing one acre or more:
    a. Construction Permit Submittal Checklist
    b. Performance Standards Compliance Checklist
    c. Copy of receipt or approval letter from NDEP

11. Proposed and existing traffic equipment, markings, and signage.

I hereby verify this date that each of the above items have been addressed on the site permit. I further verify the following statement has been placed on the plans: "These plans have been prepared in accordance with Conditions of Approval and City Code."

Submitted By: _____ Date: _____

Last Revised March, 2004
Reviewed, no changes January 2009

COMMUNITY DEVELOPMENT DEPARTMENT
P.O. Box 1900, Reno, NV 89505

Submitted herewith is the checklist as per City of Reno Grading Permit requirements:

GRADING CHECKLIST

		Yes	No
1.	Does grading balance on site?	☐	☐
2.	Total cubic yards to be moved including on-site, import and export? _____cubic yards		
3.	Will material be exported? If **yes**, give the cubic yards to be exported and the permit number for the export site. _____cubic yards _____active permit number or pit name	☐	☐
4.	Will material be imported? If **yes**, give the cubic yards to be imported and the permit number for the import site. _____cubic yards _____active permit number or pit name	☐	☐
5.	Total disturbed area _____ (acreage or sq. ft.) Total project land area _____ (acreage or sq. ft.)		
6.	If disturbed area equals or exceeds one acre in size, &/or has a potential to violate water quality standards, &/or may significantly contribute pollutants to sensitive water areas, attach: (a) Construction Permit Submittal Checklist (b) Performance Standards Compliance Checklist (c) Copy of NOI application fee receipt or exemption approval letter from NDEP. CSW number _____ *(Note: 6a and 6b forms can be found in Appendix D of the BMP.)*	 ☐ ☐ ☐	 ☐ ☐ ☐
7.	If this project is subject to Conditions of Approvals, a copy must be attached to the plans. Case number _____	☐	☐

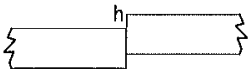
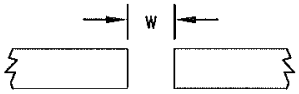
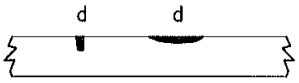
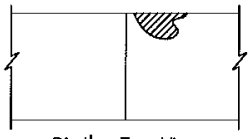
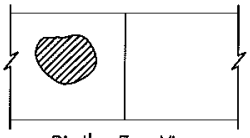
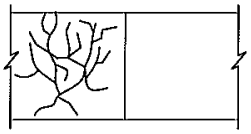
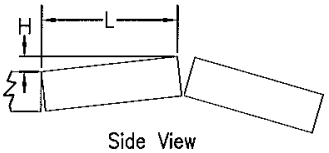
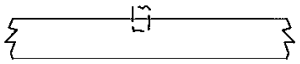
I hereby certify that each of the above items have been addressed on the Grading Permit plans. I understand that all BMP's must be in place prior to the start of any grading operations, and to contact the SWP Inspector a minimum of 24 hours prior to construction for inspection and

verification of BMP's. To schedule an inspection for a project north of the Truckee River, call 334-4275. If the project is south of the Truckee River, call 334-4276.

Submitted by_____ Date_____

GUIDELINES FOR DETERMINATION OF DETERIORATED SIDEWALKS, CURB AND GUTTER

Adopted by
City Council: 1/28/97

1	 Side View h = Height	Vertical Displacement sidewalk, curb & gutter, driveway approach (Longitudinal) Any displacement greater than one inch shall be removed and replaced. Vertical Displacement sidewalk, curb and gutter, driveway approach (Transverse) Any displacement greater than one-half inch shall be removed and replaced. This criteria applies to all sidewalk, whether adjacent to the curb & gutter or not. However, for curb & gutter adjacent to a the curb & gutter will be evaluated with regard to storm drain capabilities.
2	 Side View w = Width	Horizontal displacement or crack equal to one inch or more for 50% or more of the gutter pan or sidewalk in the transverse direction (perpendicular to the sidewalk). Note: Also included are longitudinal cracks that appear to impede the function of the gutter pan.
3	 Side View d = Diameter	Holes equal to one inch or more in diameter, and one-half inch or more in depth, located such that they create an unsafe condition. (patching as an alternative may be allowed)
4	 Bird's-Eye View	A missing portion of sidewalk, curb and gutter section, nine square inches or greater in area. (A section is defined as an area between any two consecutive construction joints, expansions joints, or score marks.) Note: Missing portion should be one-half inch depth or greater.
5	 Bird's-Eye View	Spalling (missing surface fragments) over 50% of the surface of a sidewalk or curb and gutter. Curb and gutter sections must be spalled to a depth of one-half inch or greater. Sidewalk sections must be spalled to a depth of 3/16 inch or greater.
6	 Bird's-Eye View	Cracking over 50% of the surface of a sidewalk or curb and gutter section. Note: Spider web cracks or surface cracks that have not opened are not included.
7	 Side View	An abrupt change in the slope of the sidewalk or curb and gutter of one-half inch per foot or more. L = Length H = Height slope = Height/Length
8	 Side View	Any abnormal protrusion, depression or inclusion which creates an unsafe condition. (As an example, the figure on the left displays a portion of pipe extending from the sidewalk. Patching as an alternative may be allowed.)

Note: 1. The above figures only use views of sidewalk sections for simplicity in portrayal of guideline concepts.
Note: 2. Minimum sections to be replaced shall be from score mark or construction joint to the next score mark or construction joint. Curb and gutter replacement shall be 10 feet minimum.

\\Rnopwfiles\projects\STEVE'S SAD WORK\Steve's SAD Folder\Steve's SAD Admin Folder\FORMS\Sidewalk Criteria_2008.dwg

Note: Please retype without <u>any</u> changes except for entering the applicable information and <u>signatures</u> as indicated within the parentheses.

_____ *(Date)*

Community Development Department
Engineering Manager
P. O. Box 1900
Reno, NV 89505

RE: INSPECTION/TESTING CERTIFICATE FOR PUBLIC IMPROVEMENTS FOR *(NAME OF PROJECT, LOCATION, & PERMIT NUMBER)*

Dear Sir:

This letter is to inform you that *(name of owner/developer)* has obtained the services of *(name of engineering firm)* as the Engineer of Record (EOR) to oversee the construction, inspection, and testing of work on the above named project. *(Add one or both of the following lines if subcontracted.) (Name of testing firm)*, a material testing laboratory, has been retained to perform the required testing. *(Name of inspection firm)* has been retained to perform the required inspections.

During construction the EOR, or above named firm(s), will perform the necessary inspection of all materials and construction methods, and verify to the City that the public improvements are constructed in substantial accordance with the approved plans, specifications, special provisions and applicable City ordinances. The EOR will furnish test and inspection reports provided by the above named firm(s) in compliance with Chapter VI of the Public Works Design Manual. Upon completion of all improvements, the EOR shall verify to the City that said public improvements are constructed in accordance with the Improvement Drawings of record, City standards and City Code, and the testing has met the minimum requirements as set forth in latest edition of the Public Works Design Manual.

Owner/Developer agrees that he shall not terminate the contract for services with the above named engineering, testing, &/or inspection firms until he has obtained the services of another engineering, testing, &/or inspection firm, and has filed with Development Services a new inspection/testing certificate which has been signed by the owner, developer, engineering firm, testing firm, and inspection firm. In the event that any of the services are terminated, the firm(s) so terminated unconditionally agree to verify and provide to the City inspection and testing reports of all items constructed to date of said termination.

All parties acknowledge that failure to comply with any and all terms of this letter shall result in a Stop Work Order upon the project.

_____	_____
(Owner/developer's name typed)	(Name of engineering firm typed)
_____	_____

Last Revised March, 2004
Reviewed, No changes January 2009

(Owner/developer's name typed)	(Name of engineering firm typed)
(Name of testing firm typed, if applicable)	(Name of inspection firm typed, if applicable)

Last Revised March, 2004
Reviewed, No changes January 2009

Note: To be typed on firm's letterhead.

_____ *(Date)*

Community Development Department
Engineering Manager
P. O. Box 1900
Reno, NV 89505

RE: VERIFICATION OF PUBLIC IMPROVEMENTS FOR *(NAME OF PROJECT, LOCATION, & PERMIT NUMBER)*

Dear Sir:

This letter is a request for acceptance of the public improvements on the above referenced project. *(Name of Engineering Firm)*, the Engineer of Record, has overseen the construction, inspection and testing of the work completed on this project.

Sincerely,

_____
(Owner/Developer's name typed)

The construction of all public improvements have been completed and I, *(Name of Engineer)*, verify that inspection and testing as performed for this development was done in compliance with City standard inspection and testing policy and that to the best of my knowledge, information, and belief all work and materials incorporated therein conform to the requirements of the improvement plans of record, specifications, special provisions, statutes, applicable ordinances and policies of the City of Reno.

(Insert applicable statement, Option 1 or Option 2)
(Option 1) There have been no changes made to the Improvement Drawings of Record on file in your office.
(Option 2) Attached are sepia-mylars of the "Drawings of Record" improvement plans which show all changes which were necessary and have been previously approved by your office.

If there are any questions regarding this letter of verification, please contact me at *(address and telephone number)*. Your consideration in processing this matter is appreciated.

Sincerely,

_____
(Name of engineer, license number typed, & seal)

Last Revised March, 2004
Reviewed, no changes January 2009

_____ (Date)

Community Development
Engineering Manager
P.O. Box 1900
Reno, NV 89505

RE: REQUEST FOR 3-CAR APPROACH TO REMAIN

Dear Sir:

I prefer to allow the three-car approach to remain as it is. This will allow for future expansion of a parking pad or RV approach at the following address:

Owner's name: _____
Address:_____
Subdivision name & unit #: _____
Lot: _____ Block: _____

Sincerely,

_____ Date: _____
(Owner's signature)

Last Revised March, 2004
Reviewed, no changes January 2009

INSTRUCTIONS FOR COMPLETING EASEMENT DOCUMENTS

Documents submitted for recording must:

(a) Be on paper that is 8 ½ inches by 11 inches in size; and

(b) Have 1 inch top, bottom and side margins (the notary stamp, surveyor's stamp, signatures etc., cannot encroach into the margin area); and

(c) Have a clear space, 3 inches by 3 inches, at the upper right corner of the first page for placement of the county recorder's document information.

TYPE THE DOCUMENT USING THE SAMPLE FORMATS PROVIDED,
ENTERING THE FOLLOWING INFORMATION IN THE APPROPRIATE FIELD:

(1) Enter name of Grantor EXACTLY as title in the property is held.

examples: **XYX Incorporated, a Nevada corporation,**
ABC LLC, a Nevada limited liability company
ACME, a Nevada general partnership,
JOHN H. DOE AND MARY C. DOE, co-trustees of the DOE FAMILY TRUST, dated January 1, 2005,

(2) Enter name of Grantor and have authorized person sign

(3) Notary acknowledgment, including the signer's capacity if appropriate.

(4) Return ORIGINAL, signed document to the City of Reno for recording.

PLEASE CALL CITY OF RENO WITH ANY RELATED QUESTIONS - 326-6690.

Last Revised June 2006
Reviewed and no changes January 2009

APN:
Return recorded document to:
City of Reno
P.O. Box 1900
Reno, NV 89505

FOLLOW PRECEDING INSTRUCTIONS FOR COMPLETING EASEMENTS DOCUMENTS

STORM DRAIN EASEMENT

_____(1) _____, "Grantor", hereby grants and conveys to the **CITY OF RENO**, a Nevada municipal corporation, "Grantee", a permanent easement for the construction. maintenance and use of storm drain facilities, and appurtenances thereto, over, across, under and through a portion of Grantor's property described as follows:

See attached Exhibit "A"

TOGETHER WITH the right of ingress to and egress from the above described parcel across adjacent property now owned by Grantor.

EXECUTED on this ___ day of _____, ____ .

Grantor: (2)
_____
By:

STATE OF)
)ss (3)
COUNTY OF)

This instrument was acknowledged before me on _____, by as _____ of _____.

_____
Notary Public
Area below for recorder's use only

SAMPLE

APN:
Return recorded document to:
City of Reno
P.O. Box 1900
Reno, NV 89505

FOLLOW PRECEDING INSTRUCTIONS FOR COMPLETING EASEMENTS DOCUMENTS

SANITARY SEWER EASEMENT

_____(1) _____, "Grantor", hereby grants and conveys to the **CITY OF RENO**, a Nevada municipal corporation, "Grantee", a permanent easement for the construction. maintenance and use of a sanitary sewer line, and appurtenances thereto, over, across, under and through a portion of Grantor's property described as follows:

See attached Exhibit "A"

TOGETHER WITH the right of ingress to and egress from the above described parcel across adjacent property now owned by Grantor.

EXECUTED on this ___ day of _____, ____ .

Grantor: (2)
_____
By:

STATE OF)
)ss (3)
COUNTY OF)

This instrument was acknowledged before me on _____, by as _____ of _____.

_____
Notary Public
Area below for recorder's use only

SAMPLE

APN:
Return recorded document to:
City of Reno
P.O. Box 1900
Reno, NV 89505

FOLLOW PRECEDING INSTRUCTIONS FOR COMPLETING EASEMENTS DOCUMENTS

PUBLIC USE EASEMENT

_____(1) _____, "Grantor", hereby grants and conveys to the **CITY OF RENO**, a Nevada municipal corporation, "Grantee", a permanent easement for a public sidewalk, and appurtenances thereto, over, across and through a portion of Grantor's property described as follows:

See attached Exhibit "A"

TOGETHER WITH the right of public access thereto forever. Maintenance of said easement area is the responsibility of the underlying fee owner.

EXECUTED on this ___ day of _____, ____ .

Grantor: (2)
_____
By:

STATE OF)
)ss (3)
COUNTY OF)

This instrument was acknowledged before me on _____, by as _____ of _____.

_____
Notary Public
Area below for recorder's use only

SAMPLE

APN:
Return recorded document to:
City of Reno
P.O. Box 1900
Reno, NV 89505

FOLLOW PRECEDING INSTRUCTIONS FOR COMPLETING EASEMENTS DOCUMENTS

BUS STOP EASEMENT

_____(1) _____, "Grantor", hereby grants and conveys to the **CITY OF RENO**, a Nevada municipal corporation, "Grantee", a permanent easement for the construction, maintenance and use of a public transportation pickup and drop-off point, pedestrian shelter and related improvements, over, across and through a portion of Grantor's property described as follows:

See attached Exhibit "A"

TO HAVE AND TO HOLD said easement unto Grantee and their successors and assigns forever.

EXECUTED on this ___ day of _____, ____ .

Grantor: (2)
_____
By:

STATE OF)
)ss (3)
COUNTY OF)

This instrument was acknowledged before me on _____, by as _____ of _____.

_____
Notary Public
Area below for recorder's use only

SAMPLE

APN:
Return recorded document to:
City of Reno
P.O. Box 1900
Reno, NV 89505

FOLLOW PRECEDING INSTRUCTIONS FOR COMPLETING EASEMENTS DOCUMENTS

DEED OF DEDICATION

_____(1) _____, "Grantor", hereby dedicates and conveys to the **CITY OF RENO**, a Nevada municipal corporation, "Grantee", all right, title and interest in and to that certain parcel of land for use as a public street and other public uses, said parcel being described as follows:

See attached Exhibit "A"

TOGETHER WITH all and singular, the tenements, hereditaments and appurtenances thereto belonging or anywise appertaining.

EXECUTED on this ___ day of _____, ____ .

Grantor: (2)
_____
By:

STATE OF)
)ss (3)
COUNTY OF)

This instrument was acknowledged before me on _____, by as _____ of _____.

_____
Notary Public

Area below for recorder's use only

_____

SAMPLE

MAJOR PUBLICATIONS LIST

(Please contact originating agency for current copies and prices)

	Publication	Originating Agency	Phone #	Cost
1.	Capital Improvement Projects Manual	Regional Transportation Commission 1105 Terminal Way #108 Reno, NV 89502	(775)348-0171	None
2.	City of Reno Public Works Design Manual	City of Reno Engineering Division 1 East First Street, 9th Floor Reno, NV 89501 Obtain free at www.cityofreno.com	(775)334-2350	Contact for cost
3.	City of Reno Supplemental Standard Drawing Details	City of Reno Engineering Division 1 East First Street, 9th Floor Reno, NV 89501 Obtain free at www.cityofreno.com	(775)334-2350	Contact for cost
4.	Flood Certificates Booklet	City of Reno New Development 450 Sinclair Street, 3rd Floor Reno, NV 89501	(775)334-2576	None
5.	Flood Ordinance, Reno Municipal Code 18.12.1701	City of Reno New Development 450 Sinclair Street, 3rd Floor Reno, NV 89501	(775)334-2576	None
6.	Impact Fees - General Manual	Regional Transportation Commission 1105 Terminal Way #108 Reno, NV 89502	(775)348-0171	None
7.	Information Delivery Service (IDS)	City of Reno Central Cashier 1 East First Street, 2th Floor Reno, NV 89501	(775)334-2032	Contact for cost

	Publication	Originating Agency	Phone #	Cost
8.	Laws Relating to Planning	State of Nevada Department of Conservation & Natural Resources Division of State Lands Capitol Complex 333 West Nye Lane, Room 118 Carson City, NV 89706	(775)687-4363	Contact for cost
9.	Reno Fire Department Policy for Construction, Design and Installation of Fire Protection & Life Safety Systems	Fire Prevention Bureau 200 Evans Avenue Reno, NV 89501	(775)334-2323	Contact for cost
10.	Standard Details for Public Works Construction	Washoe County Engineering Division 1001 East 9th Street Reno, NV 89520	(775)328-2041	Contact for cost
11.	Standard Specifications for Public Works Construction	Regional Transportation Commission 1105 Terminal Way #108 Reno, NV 89502	(775)348-0171	Contact for cost
12.	Street Directory	Go to the library for the publication. Washoe County no longer provides it.	Call Washoe County if you have questions. (775)328-6100	None
13.	"Truckee Meadows Construction Site Best Management Practices Handbook"	City of Reno New Development 450 Sinclair Street 1st floor Reno, NV 89501	(775)334-2063	Contact for cost
14.	Redevelopment Street Scape Master Plan	City of Reno New Development 450 Sinclair Street 1st floor Reno, NV 89501	(775)334-2063	Contact for cost

	Publication	Originating Agency	Phone #	Cost
	"Truckee Meadows Structural Controls Design Manual"	City of Reno New Development 450 Sinclair Street 1st floor Reno, NV 89501	(775)334-2063	Contact for cost
	"Truckee Meadows Low Impact Development Manual"	City of Reno New Development 450 Sinclair Street 1st floor Reno, NV 89501	(775)334-2063	Contact for cost

VERIFICATION FORMAT

TO BE TYPED ON FIRM'S LETTERHEAD

(Date) _____

City of Reno
Community Development Department
Building Division
P. O. Box 1900
Reno, NV 89505

RE: **GRADING AND DRAINAGE VERIFICATION**

On this date, I inspected the grading, drainage and erosion control of the lot at _____ _____(address)_____, and hereby verify that all conform to the approved building permit plans and City Code.

Sincerely,

_____

Note: Requires Seal of Nevada Registered Civil Engineer or Registered Land Surveyor

SAMPLE

APN:
Recorder, please return to:
City of Reno, Director of Public Works
P.O. Box 1900
Reno, NV 89505

SAMPLE

WAIVER AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between the CITY OF RENO, a Nevada municipal corporation, hereinafter referred to as "City", and _____

_____

_____

_____

hereinafter referred to as "Owner(s)";

WITNESSETH:

WHEREAS, City is desirous that properties within the City limits of the City of Reno be provided with certain public improvements; and

WHEREAS, Reno Municipal Code, Sections 12.18.010 and 18.09.040, among other things, requires the installation and/or improvements of streets, sidewalks, curbs, gutters, and other public improvements on all lots or parcels of land in the City of Reno on which any building or construction takes place, or which lots or parcels of land are otherwise improved; and

WHEREAS, the City Council of the City of Reno, realizing that in certain specific instances this said requirement could result in undue hardship to the affected property Owner,

that upon application by the Owner to the City of Reno, said requirement may be considered for waiver; and

WHEREAS, the City of Reno, recognizing that even in the event of a temporary waiver of the said requirement(s), future development of the City of Reno may result in the necessity for the establishment of Special Improvement Districts for the installation of certain public improvements in areas abutting properties for which temporary waivers have been granted, has established the policy of, in certain instances, granting the said waivers upon the representation of the property owners that they will not oppose the installation of, and assessment for, certain public improvements in the event of the establishment of a Special Improvement District; and

WHEREAS, Owner is desirous of obtaining a waiver of the requirement for

(1)_____

adjacent to owner=s property located at (2)_____

Reno, Nevada, APN (3)_____, being further described as

(4)_____

hereinafter referred to as AProperty@.

NOW, THEREFORE, for and in consideration of the mutual promises, covenants and conditions hereinafter contained, the parties hereto agree as follows:

1. City hereby agrees to waive the above referenced improvement(s) at said Property.

2. Owner agrees that he will not oppose in any manner the special assessments which may be imposed by the future establishment of any Special Improvement District which includes said Property(s).

SAMPLE

3. Owner further agrees to hold the City of Reno, its officials, agents and employees, harmless from any and all liability which may result from the temporary omission or non-construction of above referenced improvement(s) adjacent to said property to be improved; further, Owner agrees to defend, at his own cost and expense, all actions or suits in law or equity for damages which may be filed or initiated as a result of the lack or non-existence of such above referenced improvement(s).

4. Owner further agrees that should the City Engineer determine in the future that conditions warrant the installation of above referenced improvement(s) adjacent to said Property, Owner will install same at no cost to the City within 60 days of receiving written notice from the City Engineer.

5. This agreement constitutes the entire agreement between the City of Reno and the Owner, and upon execution by both parties, this agreement shall be recorded in the office of the County Recorder of Washoe County, Nevada, and shall be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

6. For purposes of construction and clarity in this agreement, terms in the singular may be construed in the plural, terms in the masculine may be construed in the feminine, and vice versa.

SAMPLE

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

CITY OF RENO

By: _____
DIRECTOR OF PUBLIC WORKS

OWNER(S)

_____

_____

APPROVED AS TO LEGAL FORM:

_____
DEPUTY CITY ATTORNEY

SAMPLE

STATE OF NEVADA)
) S.S.
COUNTY OF WASHOE)

This instrument was acknowledged before me on _____, 20____,

by _____.

_____
NOTARY PUBLIC

STATE OF NEVADA)
) S.S.
COUNTY OF WASHOE)

This instrument was acknowledged before me on _____, 20____,

by _____.

_____
NOTARY PUBLIC

SAMPLE

WAIVER AGREEMENT INSTRUCTIONS

This agreement shall be retyped with all the blanks completed, using the instructions and/or choices below:

1. a. Sidewalk.

   b. Paving, sidewalk, curb and gutter.

   c. Public street improvements.

   d. Alley.

2. Insert property address.

3. Insert Assessor's Parcel Number (APN) for this address.

4. Insert legal description as shown on the recorded deed. Attach a copy of the deed to this Waiver Agreement request.

SAMPLE

A11

APN:
Recorder, please return to:
City of Reno, Director of Public Works
P.O. Box 1900
Reno, NV 89505

HOLD HARMLESS AGREEMENT

THIS HOLD HARMLESS AGREEMENT, made and entered into this _____ day of _____, 20_____, by and between the CITY OF RENO, a Nevada municipal corporation existing under and by virtue of the laws of the State of Nevada, hereinafter referred to as "City", and _(1)_____

_____

hereinafter referred to as "Owner";

WITNESSETH:

WHEREAS, _(1)_____ is Owner of the property commonly known as _(2)_____

_____, Reno, Nevada, APN(s) _(3)_____; and

WHEREAS, the said property is adjacent to public right-of-way owned by the City of Reno; and

SAMPLE

WHEREAS, the Owner has requested permission to _(4)_____ _____in the public right-of-way, which is non-standard material(s), not in conformance with the City of Reno's standard specifications; and

WHEREAS, Owner represents that the materials to be used will equal or exceed City of Reno engineering standards; and

WHEREAS, the Reno City Engineer, on this date, pursuant to Reno Municipal Code §12.18.010(b)(c), approved the request of the Owner for installation of this non-standard material subject to the Owner executing an agreement to hold harmless, indemnify and defend the City.

NOW, THEREFORE, it is agreed by and between the parties hereto as follows:

1. The Owner may install the aforementioned non-standard material

2. In consideration of the City's granting permission to do so, Owner agrees that at all times hereafter he shall defend, indemnify and hold harmless the City, its officers, boards, commissions, agents, or employees from any and all claims by any person whatsoever on account of injury to or death of a person or persons, or property damage arising from the actions of the Owner, his employees, agents, officers, contractors, or other person or persons acting on behalf of or upon the request of Owner relating to the aforementioned non-standard material.

3. In consideration of permission to install the aforementioned non-standard material, Owner hereby agrees to indemnify and defend and save harmless the City from any and all claims, demands or action for injury to a person or persons and any claims, demands or action for damage to property, which may now exist or may hereafter result from the Owner installing the aforementioned non-standard material.

SAMPLE

4. Owner hereby covenants that he shall maintain the aforementioned non-standard material at his sole expense and obligation. Owner also agrees that the aforementioned non-standard material will be maintained in good repair and safe condition at his sole expense and obligation.

5. It is further covenanted and agreed that the Owner's liability pursuant to this Hold Harmless Agreement shall continue so long as the City owns title in the adjacent public right-of-way, and so long as the non-standard material continues to exist. Upon the destruction or removal of the non-standard material, Owner shall install standard materials which meet or exceed the current requirements of the Reno Municipal Code.

6. The terms of this agreement shall be binding on the heirs, successors, and assigns of Owner, and Owner further covenants that he shall notify prospective heirs, successors, assigns, and/or purchasers of the subject property of the terms of this Hold Harmless Agreement.

7. Pursuant to RMC §12.18.010(c), Owner waives any protest or objection pursuant to state statutes to any future assessment district which may be formed to incorporate sidewalk upon all the tracts in the district.

8. It is further covenanted and agreed that this document, when executed, shall be recorded in the office of the County Recorder of Washoe County, Nevada.

-THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK-

SAMPLE

9. Attached hereto and incorporated herein by this reference is a map depicting the subject property and the general location and description of the non-standard material to be constructed.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first above written.

OWNER 1:

_____
PRINTED NAME

_____
SIGNATURE DATE

OWNER 2:

_____
PRINTED NAME

_____
SIGNATURE DATE

OWNER NOTARIES:

STATE OF NEVADA)
) S.S.
COUNTY OF WASHOE)

On the _____ day of _____ 20____, personally appeared before me, a Notary Public in and for said County and State, _____, who acknowledged to me that he executed the above instrument.

_____

SAMPLE

OWNER NOTARIES (CONT.)

STATE OF NEVADA)
) S.S.
COUNTY OF WASHOE)

On the _____ day of _____ 20____, personally appeared before me, a Notary Public in and for said County and State, _____, who acknowledged to me that he executed the above instrument.

_____
NOTARY PUBLIC
CITY OF RENO

APPROVED BY DIRECTOR OF PUBLIC WORKS:

_____
SIGNATURE DATE

APPROVED AS TO LEGAL FORM:

_____
CITY ATTORNEY

SAMPLE

HOLD HARMLESS AGREEMENT INSTRUCTIONS

A. Insert the following:

(1) Name(s) of property owner, exactly as shown on title
(2) Physical street address
(3) Assessor's parcel number(s)
(4) Description of the non-standard action being requested
(i.e., cover sidewalk with Durastone material,, install colored concrete, etc.)

B. Per #9 in above text, attach map depicting the subject property and the general location and description of the non-standard material to be constructed.

C. Submit a check made payable to W.C. Treasurer in amount sufficient to record the document.

D. Note: Documents submitted for recording must:

a. Be on paper that is 8 ½ x 11 inches is size,
b. Have a margin of 1 inch on all sides, for all sheets, and
c. The first page must have a 3" x 3" space in the upper right corner.

SAMPLE

Construction Management & Access Plan Requirements

Minimum Requirements:

- Provisions for on-site and off-site construction material storage, including earth, rock and topsoil stockpiling areas as needed.

- Depiction of the construction site transportation plan, including truck haul routes, material delivery areas, worker entrance/exit routes and parking areas and emergency access as needed.

- Plan for traffic control measures for adjacent roadways and pedestrian paths impacted by the project and the construction site transportation plan.

- Access maintenance plan, as needed, to ensure safe and unobstructed access (vehicular and pedestrian) is maintained for adjacent and/or nearby properties impacted by construction activities. Special emphasis shall be placed on residential traffic that must traverse the construction site on a daily basis as the only means of access to homes.

Construction Management and Access Plans should be presented and reviewed during project pre-con meetings and revised thereafter as needed.

These plans may be provided entirely in an exhibit or drawing format with adequate notation or they can be a combination of exhibits and operational manual materials.

Once approved, the plans are intended to be kept at the job site and updated as needed to reflect changes during construction.

Reviewed, no changes January 2009

CITY OF RENO

TRAFFIC POLICY #1

PEDESTRIAN CROSSWALKS

(Excluding school crosswalks and signalized intersections)

1.1_ Purpose

The purpose of a marked crosswalk is to indicate to the pedestrian a preferred route of travel to cross either a street or a complex intersection. The purpose of this policy is to establish minimum criteria for the installation of marked crosswalks so that they may provide the greatest possible benefit to both pedestrians and motorists.

1.2 General

In general, marked crosswalks have some of the following advantages and disadvantages:

a) Advantages:

1. May help pedestrians orient themselves and find their way across complex intersections.
2. May help show pedestrians the shortest route across traffic.
3. May help position pedestrians where they can be seen best by oncoming traffic.
4. May help utilize the presence of luminaries to improve pedestrian nighttime safety.
5. May help channelize and limit pedestrian traffic to specific locations.

b) Disadvantages:

1. May give pedestrians a false sense of security.
2. May lead pedestrians to believe that motorists can and will stop in all cases.
3. May cause an increase in rear-end and associated collisions due to pedestrians not waiting for gaps in traffic.

1.3 Point System

a) Pedestrian Volume:

Criterion	Point Assignment Pedestrian Total Points	
The total number of pedestrians crossing the street under study during the peak pedestrian hour. This includes pedestrians on both sides of an intersection. Crosswalks will not be installed where The ped. volume (peak ped. hr.) is 10 or less.	0-10	0
	11-30	2
	31-60	4
	61-90	6
	91-100	8
	>100	10
	Maximum	10

b) General Conditions

1.	Will clarify and define pedestrian routes across complex intersections.	2
2.	Will channelize pedestrians into a significantly shorter path.	2
3.	Will position pedestrians to be seen better by motorists.	2
4.	Will expose pedestrian to fewer vehicles.	2
5.	Engineering judgment, unusual conditions.	2
	Maximum	10

c) Gap Time (see worksheet)

Criterion	Point Assignments Average Number of Gaps per 5-Minute Period	Points
The number of unimpeded vehicle time gaps equal to or exceeding the required pedestrian crossing time in an average five-minute period during peak vehicle hour.	0-0.99	10
	1-1.99	8
	2-2.99	6
	3-3.99	4
	4-4.99	2
	5+	0
	Maximum	10
	TOTAL POINTS	30

1.4 Policy

In order to be considered for a crosswalk, a location must rate at least 16 points on the Point System (Section 1.3). The location must also meet the following basic conditions:

a) Crosswalks will not be installed where the pedestrian volume is less than 10 pedestrians per hour during peak pedestrian hours.

b) If approved by the City Engineer, crosswalks installed on roadways where the 85th percentile speed exceeds 40 m.p.h. must have in-pavement flasher lights, raised medians, and other substantial safety improvements.

c) Crosswalks will not be installed unless the motorist has an unrestricted view of all pedestrians at the proposed crosswalk location, for a distance not less than 200 feet approaching from each direction. Locations with restrictive views will require special attention.

CITY OF RENO

TRAFFIC POLICY #2

SPEED LIMIT REGULATIONS

1.1_ Purpose

The intent of proper speed zoning is to reflect the behavior of the norm of the population and to control that segment of the population which behaves in an unreasonable manner. Generally, 85 percent of the motorists drive in a manner safe for prevailing road conditions. The intent of a speed zone will be to control that 15 percent of the motorists who drive unsafely for roadway conditions.

1.2 General

The City Traffic Engineer may post prima-facie 25 m.p.h. speed limit signs in low volume residential areas upon identification of speed related problems. On streets carrying an excess of 2000 vehicles per day, including arterial roads, collector streets, and residential collector streets, realistic speed limits must be established by action of the City Council following a Traffic Engineering Survey. The Traffic Engineering Survey shall include a review of roadway characteristics such as alignment, grade, and roadside development; existing traffic controls; prevailing vehicle speeds, pedestrian movements, and traffic volumes; and accident history. Generally the speed limit shall be established as close as practicable to the critical speed (85th percentile) at which motorists are using the roadway.

1.3 Policy

Streets which carry less than 2000 vehicles per day are adequately covered by the Nevada Motor Vehicle Law 484.361 "Basic Rule," which states: "It is unlawful for any person to drive or operate a vehicle of any kind or character at:

a) A rate of speed greater than is reasonable or proper, having due regard for the traffic, surface, and width of the highway.

b) Such a rate of speed as to endanger the life, limb, or property of any person.

c) A rate of speed greater than that posted by a public authority for the particular portion of highway being traversed.

d) A rate of speed greater than the national maximum speed limit specified in section 114 of P.L. 93-643 (23 U.S.C.§ 154)."

Streets which carry less than 2000 vehicles per day shall not be speed zoned unless a special condition exists. On low volume streets, generally each motorist will determine the safe speed for the given condition and will not be hindered by other roadway traffic.

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CITY OF RENO

TRAFFIC POLICY #3

CURB USE

1.1_ Purpose

The purpose of establishing curb use is to indicate to the motorist proper use of a curb zone. The purpose of this policy is to establish minimum criteria for curb zones so that they may provide the greatest possible benefit to both pedestrians and motorists.

1.2 General

In general, curb use shall be zoned based on parking occupancy and duration studies. Loading zones, bus/taxi zones, disabled zones, and time zones shall be determined based on the criteria outlined in this policy.

1.3 Policy

The following zones shall be established for curb use:

a) Time Zones (1 hour - 10 hours)

Time zones must be justified by a parking occupancy and duration study which indicates parking in the area is utilized 70 percent of the time, the duration exceeds the requested time limit by at least one hour, and the time zone can be shown to benefit the area.

b) 30 Minute Zones

30 minute zones are not intended to replace loading zones and shall be limited to locations adjacent to businesses which meet one of the following requirements:

1. No off-street parking,
2. The business demonstrates a demand for short term, high turnover parking,
3. A traffic engineering parking study indicates the street parking approaches full utilization with a duration exceeding one hour.

c) Disabled Zones

Disabled parking shall be provided adjacent to public buildings and within all public parking facilities. The number of disabled spaces provided shall be as stated in the Reno Municipal Code Section 18.06.340(g)(2) and (3).

d) Hotel Zones

New valet services on public streets will not be permitted. Hotel zones shall be limited to the main hotel entrance and shall be of sufficient length to meet loading and unloading requirements, subject to approval of the Traffic Engineer.

e) Bus Zones

1. Bus zones are provided adjacent to hotels and casinos to meet the needs for passenger loading and unloading.

2. When properly marked, bus zones may be shared with taxis and/or commercial delivery vehicles. When the zones are shared, the priority use of the zones shall be as follows:

4:00 a.m. - 9:00 a.m.	Commercial Delivery
9:00 a.m. - 4:00 a.m.	Tour Buses (charter)

3. Taxis must vacate these zones until the loading activities are completed.

4. Bus zone requirements shall be determined by the Traffic Engineer based on weekly peak day bus arrivals, data provided by the applicant. The number of bus zones shall be determined from the following table:

Bus Arrivals (24 hours)*	Bus Zones
1 - 4	1
5 - 8	2
9 - 16	3
17 - 22	4
23 - 31	5
32 - 37	6
38 - 43	7

44 - 51	8

* Inbound bus to disembark passengers, the return trip to pick passengers up included in the formula used to derive these bus zone requirements.

f) Loading Zones

1. Loading zones are provided to meet the needs of adjacent land uses to receive good and supplies. Whenever possible, loading zones shall be provided off-street.

2. The need for and number of loading zones provided at any location shall be determined by the Traffic Engineer.

CITY OF RENO

TRAFFIC POLICY #4

TAXI ZONES

1.1_ Purpose

The purpose of this policy is to establish minimum criteria for taxi zones so that they may provide the greatest possible benefit to both pedestrians and motorists.

1.2 General

In general, taxi zones shall be established based on the minimum criteria defined in this policy.

1.3 Policy

The following criteria shall be used in establishing taxi zones:

1) Curb spaces shall be available for joint use by taxi and bus or commercial delivery vehicle loading whenever possible.

2) The priority of use for zones shared by taxis and buses or commercial vehicles shall be granted to buses or commercial vehicles. Taxis must vacate these zones until the loading activities are completed.

3) All zones available for taxi use are non-exclusive and shall be shared by all legally licensed taxi companies on a first arrival basis.

4) The number and location of taxi zones shall be determined by the city manager or his designated representative based on consideration of the interests of the taxi companies, adjacent land use, curb availability, and usage characteristics.

CITY OF RENO

TRAFFIC POLICY #5

MEDIAN OPENINGS

1.1_ General

The following warrants for median openings are established to facilitate traffic movement and promote traffic safety. Medians (center dividing strips) shall be constructed of physical substance, such as curbs, jiggle bars, or plant mix berms. Painted medians, median openings, and related left turn storage and acceleration lanes are not considered adequate.

1.2 Major Streets

Median openings will normally be permitted at all intersections with dedicated City streets except where such an opening will impair traffic movements. Midblock median openings or other openings with turns permitted into adjacent property will not normally be permitted unless all following conditions exist:

1) The property to be served is a major traffic generator and has a continuing frontage of 1,200 feet or more along the major street between streets which intersect the major street from the side occupied by the property.
2) The median opening is not less than 600 feet from an intersection with an arterial or collector street.
3) The median opening is not less than 400 feet from an intersection with a local street.
4) The median opening is not less than 600 feet from any other existing or proposed midblock median opening.
5) All costs such as base material, surfacing, safety lighting, traffic signals, reconstruction or utility relocation required by a midblock opening will be borne by the requesting party. The design of median openings shall be subject to the requirements and approval of the City Engineer and City Traffic Engineer.

1.3 Divided Collector Street and Split Level Local Streets

Median openings will normally be permitted at all intersections with dedicated City streets. Normally the spacing between median openings should be no more than 1,200 feet. Midblock median openings or other openings with turns permitted into adjacent property will not normally be permitted unless all the following conditions exist:

a) The median opening is not less than 400 feet from an intersection with an arterial or collector street.

b) The median opening is not less than 250 feet from any other intersecting street.

c) The median opening is not less than 400 feet from any other existing or proposed midblock median opening.

d) All costs of constructing the opening shall be borne by the developer or the petitioner. The design of median openings shall be subject to the requirements and approval of the City Engineer and the City Traffic Engineer.

1.4 Freeways and Expressways

a) There shall be no median openings except as designed by the responsible governmental agency.

b) There shall be no access to any existing or proposed ramp.

CITY OF RENO
Policy of Traffic Calming

A. Introduction

Speeding violations are the number one complaint to the Reno Police Department. A primary goal at the City of Reno (City) is "to attain the highest quality of life possible for each resident." Accordingly, this policy defines the proper use of traffic calming alternatives on residential streets.

Residents concerned about speeding frequently request stop signs. However, the Federal Highway Administration developed warrants for the Manual on Uniform Traffic Control Devices (MUTCD) regarding stop signs. Studies show unwarranted stop signs cause accidents they are designed to prevent, breed contempt for other necessary stop signs, are responsible for millions of gallons of wasted fuel annually, create added noise and air pollution, and increase rather than decrease speeds between intersections. As a result, the City does not install stop signs for speed control purposes.

The existing City of Reno policy on traffic calming has been one way to address speeding in residential areas. However, speed humps cause damage to emergency equipment and increase emergency response times. Many residential streets are considered primary emergency vehicle routes (PEVR) by the fire department and speed humps cannot be utilized.

B. Statement of Purpose

This policy establishes traffic calming alternatives for reduction in vehicular speed without adversely affecting emergency vehicles. An approval procedure and evaluation methodology is included in this policy.

C. Request and Approval Procedures

1. City staff will determine if the street meets the City of Reno's basic criteria.
2. Petition for traffic calming (forms provided by the City), with signatures from at least 2/3 of residents with addresses on the street where traffic calming is desired must be submitted.
3. After receipt and verification of petition, staff will gather traffic data to determine if traffic calming is needed.
4. Fire Department approval of a traffic calming device shall be obtained by staff in writing prior to installation.
5. Staff will prioritize qualified streets for funding based on the ranking system described below. If residents wish to fund the traffic calming alternative, they must submit full payment on estimated cost before contract is sent out for bid.
6. Temporary devices approximating proposed traffic calming shall be installed and evaluated by staff for 3-4 months before permanent installation. Speed hump installation would be permanent.

Text reviewed, no changes January 2009

CITY OF RENO
Policy of Traffic Calming

D. Location Evaluation and Prioritization

1) Basic Criteria
   a. Street is classified as a minor collector or local street.
   b. 2/3 of the street frontage must be residential, park, and/or school.
   c. The posted speed limit is 30 mph or less.
   d. The longitudinal grade of the street does not adversely affect the motorist in going through the traffic calming device.

2) Operational Criteria
   a. Street is at least 1,000 feet long between all-way stop or traffic controlled intersections.
   b. Minimum 85th percentile speeds are 22 mph on a 15 mph street, 32 mph on a 25 mph street and 37 mph on a 30 mph speed limit street.
   c. Average daily traffic (ADT) of 4,000 vehicles a day or less.

3) Priority ranking will be done annually on all petitions received (including previous years) using a point system. Streets under consideration will be investigated and data accumulated. Data collection includes a traffic count, speed survey, and measurement of street frontage by houses, schools, parks, playground, or multi-family dwellings.

   Points will be awarded in the following manner:
   a. One point for every 50 vehicles traveling the street in a 24 hour study period.
   b. One point for each percentage point of traffic exceeding the posted speed limit and one-half point for each mile per hour speed differential between the posted speed limit and the 85th percentile speed.
   c. Two points for every residential unit fronting the street.
   d. One point for each 50 feet of school, park, playground, or apartment frontage.

E. Location Guidelines

1. The minimum distance from an intersection to a traffic calming device shall range from 0 to 200 feet.
2. Any traffic calming treatment shall be visible to oncoming traffic for at least the minimum safe stopping sight distance based on the 85th percentile speed.
3. Traffic calming shall take into account existing drainage features and bicycle facilities.
4. Where possible, devices shall be located to minimize impacts to on-street parking.
5. The following should apply where feasible:
   a. Devices should be placed near street lights.
   b. Related signage should be placed on property lines.
6. Diverters shall not be installed where traffic is likely to be rerouted to other residential streets.

Please call Traffic Engineering at 334-2264 with any questions for further explanation of the program.

Traffic Signal Controller Cabinet Specifications

City of Reno

Contact Traffic Engineering, 334-2333, for the latest Traffic Signal Controller Cabinet Specifications.

SERVICE/BUSINESS PARKING

(RMC 6.06.505)

Fill out the **Service/Business Parking Permit** Application to apply for either the cloth and/or paper bags.

Paper bags are good for one day only. Bag numbers shall be logged on the permit.

Cloth bags require a deposit. Deposit is refundable upon return of bag in good, reusable condition. Monthly meter bag rental fees are billed for regular calendar months. A minimum charge of one month is made on any bag rental. As long as you retain the meter bag, regular monthly charges will be made. All cloth meter bag rentals are due on or before the first day of the month for which they are to be used. Recurring monthly charges will be billed on or near the 15th day of the preceding month. This policy is consistent with depositing money in a parking meter before you park - not after the hour is up.

Meter bags are to be used with properly permitted vehicles. Failure to display the permit with the use of the bag will result in the vehicle being ticketed the bag being removed by Reno Police Department personnel. When you rent a meter bag, you are paying for the privilege of parking a vehicle where needed for an extended period of time in metered space.

ITEM	PRICE
Paper bags	(per current Fee Schedule)
Cloth bag	(per current Fee Schedule)
Cloth bag deposit	(per current Fee Schedule)

If a bag is lost or stolen, it must be reported to the Reno Police Department and a report made. Bring a copy of report to 1 East First Street, 9th Floor, Public Works. Monthly charges will be discontinued, but the deposit on the bag will not be refunded. If a bag is returned damaged in any way, the deposit will not be refunded.

SERVICE/BUSINESS PARKING PERMIT APPLICATION

(RMC 6.06.505)

City of Reno
Public Works
1 E. First Street, 9th Floor
P. O. Box 1900
Reno, NV 89505
Phone: 334-2458

Date_____

- Approved Permit to Customer
- Copy to File

Company Name:_____

Address:_____Phone #_____

Signature:_____
(person responsible for permit)

Print Name:_____Phone #_____

hereby requests the use of public right-of-way for service parking purposes as listed below:

1. Service/Business Parking Location:_____

   _____

2. Reason for Service/Business Parking:_____

   _____

3. Type of Vehicle/Equipment:_____

   _____

4. Duration of Service/Business Parking: Expiration Date_____

STAFF REVIEW BY_____

___ APPROVED, PERMIT #_____

BAG # _____

___ DENIED, REASON_____
_____

SPECIAL CONDITIONS_____
_____
_____
_____
_____

Requirements: This permit must be displayed at all times. A parking meter Bag/hood must accompany the service parking permit. If special conditions are not met, the permit shall be deemed invalid. The City of Reno reserves the right to modify or revoke the permit at any time.

SERVICE/BUSINESS PARKING PERMIT REGULATIONS

I. Spaces available for:

Service Parking

A. Parking meter space
B. Alley (do not block)
C. Loading zone
D. Taxicab stand
E. Bus stand

Business Parking

A. Parking meter space immediately adjacent to business
B. Other location as allowed under special conditions

II. Permit Parking is Not to be Used:

A. When space is occupied by another vehicle
B. When meter setting is for less than one hour
C. When space is not occupied by permittee vehicle
   1. Unless
      a. Permittee vehicle returning within (1) hour
      b. Construction material and supplies being delivered from time to time for actual construction
D. After 6:00 p.m.
E. On Sundays or holidays
F. In red curb areas
G. In fire lanes

III. Permit Parking is Used for:

A. Service parking is generally for the services of:
   1. Cleaning
   2. Painting
   3. Minor repairs on or in buildings or building equipment
   4. Public utilities

B. Business Parking is used for parking of vehicles associated with the permitted, adjacent business with a limit of one permit per business.

IV. Proper Use of Hood and Permit:

A. Metered spaces:
   1. Place hood over meter
   2. Secure hood to meter
   3. Place permit on dashboard, driver's side
   4. Indicate on paper bag, in permanent marker
      a. Name of permittee
      b. Location of service work or business
      c. Date of use – valid for one day only
B. If in an alley, loading zone, taxi stand, bus stand:
   1. Display hood and copy of permit on dashboard, driver's side.

City of Reno, Community Development
Checklist for 30-Day Preliminary Submittal for Subdivision Final Map or Dedication Map

(Submittal – on Tuesday before noon)

Name of Subdivision: _____

APN (s): _____

(TBA) Final Map LDC_____ Site LDP_____ Road LDP_____

Item No. Items Required: *(If all of the items listed below are not submitted in one complete package, your application will be considered incomplete and rejected.)*

☐ 1. 2 prints of the official map. Stamped and signed.

☐ 2. 1 copy of the boundary calculations. Stamped and signed.

☐ 3. Review fee of $300.00 per each lot/parcel, including common areas and private streets.

☐ 4. 3 complete sets of improvement plans including official map. Stamped and signed. (When appropriate, submit one additional copy of landscaping & irrigation sheets if plans include City maintained landscaping in public right-of-way.)

☐ 5. Acknowledgment of water service letter from appropriate water authority. *(Submit only with final map.)*

☐ 6. 4 copies of the Conditions of Approval from City Council or Planning Commission.

☐ 7. 1 copy each of supporting reports and calculations. Stamped and signed.

☐ 8. 1 copy of the approval letter from Washoe County Street Naming Committee.

☐ 9. 2 copies of the soils report. Stamped and signed.

☐ 10. 1 copy of the hydrology report. Stamped and signed.

☐ 11. 1 copy of the sewerage report, in accordance with Section IV of the PW Design Manual. Stamped and signed. *(Submit only with final map.)*

☐ 12. 1 copy of Exhibit "A" (engineer's estimate of quantities and costs for public improvements). Stamped and signed.

Note: The undersigned acknowledges that acceptance of this submittal by the City of Reno does not constitute assurance that the documents provided are complete, that statutory requirements can be met, or that the associated final map will record prior to tentative map expiration. The subdivider and/or his agents are solely responsible to assure the timeliness and completeness of all submittals, and to monitor the processing of all improvement plans and the final map.

_____ Submitted by _____

Name of Engineering Firm Signature and Date

Revised June 2006
Reviewed Jan 2009, no changes

City of Reno, Community Development
Checklist for 10-Day Submittal for Subdivision
Final Map or Dedication Map

Site LDP_____ Road LDP_____

Grading LDP_____ Wall LDP_____

Name of Subdivision: _____

APN(s): _____

Item No.	Items required: *(If all of the items listed below are not submitted in one complete package, your application will be considered incomplete and rejected.)*
☐ 1.	1 original sepia-mylar of the final map and one reduced copy (8½ x 11”). Final map must have all signatures including District Board of Health.
☐ 2.	Map recording fee of $54.00 plus $10.00 for each additional sheet payable to Washoe County Recorder. *(Submit only with final map.)*
☐ 3.	Original Improvement Agreement, signed and acknowledged, with exhibits A, B, & C attached.
☐ 4.	2 copies of Improvement Agreement including exhibits A, B, & C.
☐ 5.	Original subdivision security, signed and acknowledged.
☐ 6.	2 copies of subdivision security.
☐ 7.	2 copies of the will-serve water rights letter. *(Submit only with final map.)*
☐ 8.	Title report (no older than 30 days).
☐ 9.	1 copy of approval letter from U.S. Postal Service Growth Management Coordinator. To obtain letter, email Ms. Hanbury at PATRICIA.M.HANBURY@usps.gov *(Submit only with final map.)*
☐ 10.	Original Restoration, Landscaping and Revegetation bond, including 8½ x 11” display map and estimate based on unit price.

(Continued on page 2)

Last revised July 2007
Reviewed Jan 2009, no changes

Checklist for 10-Day Submittal for Subdivision Final Map or Dedication Map

(Continued from page 1)

- ☐ 11. 2 copies of Restoration, Landscaping and Revegetation bond, including 8½ x 11" display map and estimate based on unit price.
- ☐ 12. Copy of NOI receipt or approval letter from NDEP. *(Submit only with grading.)*
- ☐ 13. When appropriate, any easements requiring separate recordation, including recording fee of $14.00 for first page and $1.00 for each additional page.
- ☐ 14. When appropriate, original and one copy of Covenants, Conditions and Restrictions, signed and acknowledged, including recording fee of $14.00 for first page and $1.00 for each additional page.
- ☐ 15. When appropriate, monies required as condition of tentative map approval.

Note: The undersigned acknowledges that acceptance of this submittal by the City of Reno does not constitute assurance that the documents provided are complete, that statutory requirements can be met, or that the associated final map will record prior to tentative map expiration. The subdivider and/or his agents are solely responsible to assure the timeliness and completeness of all submittals, and to monitor the processing of all improvement plans and the final map.

_____ Submitted by _____

Name of Engineering Firm Signature and Date

Last revised July 2007
Reviewed Jan 2009, no changes

EXHIBIT A (D-3)

(FOR BONDING PURPOSES ONLY AT THE CITY OF RENO)

PROJECT: New Project
DEVELOPER: Joe (Developer)
ENGINEER: Me (Engineer)

PREPARED BY:
DATE:
AREA:
OF LOTS/UNITS:

-STREETS-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
2-1/2" A.C. PAVEMENT		SF	$1.63	$0.00
4" A.C. PAVEMENT		SF	$2.02	$0.00
5" A.C. PAVEMENT		SF	$2.57	$0.00
6" A.C. PAVEMENT		SF	$3.08	$0.00
2" - 4" BASE MATERIAL		SF	$0.70	$0.00
5" BASE MATERIAL		SF	$0.82	$0.00
6" BASE MATERIAL		SF	$0.96	$0.00
8" BASE MATERIAL		SF	$1.24	$0.00
10" BASE MATERIAL		SF	$1.68	$0.00
FOG SEAL		SY	$0.09	$0.00
SLURRY SEAL		SY	$0.23	$0.00

-GRADING-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
ROADWAY (WITHIN RIGHT-OF-WAY)		CY	$5.60	$0.00
ON-SITE (MASS GRADING)		CY	$4.60	$0.00

-CONCRETE-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
TYPE 1 CURB & GUTTER WITH BASE		LF	$20.00	$0.00
ROLLED CURB & GUTTER WITH BASE		LF	$20.00	$0.00
MEDIAN CURB WITH BASE		LF	$17.00	$0.00
4' SIDEWALK WITH BASE		LF	$23.00	$0.00
5' SIDEWALK WITH BASE		LF	$26.00	$0.00
ALLEY SECTION		SF	$10.00	$0.00
P.C.C. VALLEY GUTTER		SF	$11.00	$0.00
3' LONGITUDINAL P.C.C. VALLEY GUTTER		LF	$29.00	$0.00
3' P.C.C. DRAINAGE SWALE		LF	$29.00	$0.00

-WALLS-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
4' - 6' RETAINING WALL		LF	$66.00	$0.00
6' - 8' RETAINING WALL		LF	$94.00	$0.00
6' - 8' SOUND BARRIER		LF	$130.00	$0.00
8' - 10' SOUND BARRIER		LF	$172.00	$0.00
1' - 3' ROCKERY RETAINING WALL		LF	$66.00	$0.00
3' - 6' ROCKERY RETAINING WALL		LF	$94.00	$0.00
6' - 10'+ ROCKERY RETAINING WALL		LF	$155.00	$0.00

PAGE 1 SUBTOTAL: $0.00

EXHIBIT A (continued)

-SANITARY SEWER-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
TYPE I - 48" MANHOLE		EA	$3,250.00	$0.00
TYPE IV - MANHOLE		EA	$6,000.00	$0.00
TYPE V - 60" MANHOLE		EA	$4,000.00	$0.00
48" DROP MANHOLE		EA	$3,625.00	$0.00
60" DROP MANHOLE		EA	$4,750.00	$0.00
4" SERVICE LATERALS		EA	$950.00	$0.00
6" SDR-35 PIPE		LF	$37.00	$0.00
8" SDR-35 PIPE		LF	$45.00	$0.00
10" SDR-35 PIPE		LF	$50.00	$0.00
12" SDR-35 PIPE		LF	$55.00	$0.00
15" SDR-35 PIPE		LF	$60.00	$0.00
18" SDR-35 PIPE		LF	$67.00	$0.00

-STORM DRAIN-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
TYPE I - 48" MANHOLE		EA	$3,250.00	$0.00
TYPE IV - MANHOLE		EA	$6,000.00	$0.00
TYPE V - 60" MANHOLE		EA	$4,000.00	$0.00
TYPE 3-R CATCH BASIN		EA	$1,550.00	$0.00
TYPE 4-R CATCH BASIN		EA	$1,900.00	$0.00
STEEL SIDEWALK CROSS-DRAIN		EA	$1,000.00	$0.00
YARD DRAIN		EA	$775.00	$0.00
10" RCP PIPE (LATERALS)		LF	$55.00	$0.00
12" RCP PIPE		LF	$55.00	$0.00
15" RCP PIPE		LF	$60.00	$0.00
18" RCP PIPE		LF	$67.00	$0.00
21" RCP PIPE		LF	$80.00	$0.00
24" RCP PIPE		LF	$85.00	$0.00
27" RCP PIPE		LF	$90.00	$0.00
30" RCP PIPE		LF	$100.00	$0.00
36" RCP PIPE		LF	$125.00	$0.00
42" RCP PIPE		LF	$140.00	$0.00
48" RCP PIPE		LF	$180.00	$0.00
54" RCP PIPE		LF	$200.00	$0.00
60" RCP PIPE		LF	$225.00	$0.00
72" RCP PIPE		LF	$250.00	$0.00
6" - 12" RIPRAP		SF	$6.00	$0.00
8" - 16" RIPRAP		SF	$8.00	$0.00
12" - 24" RIPRAP		SF	$10.00	$0.00
12" - 36" HEADWALL		EA	$3,650.00	$0.00
36" - 72" HEADWALL		EA	$8,000.00	$0.00
24"- TRASH RACK		EA	$6,500.00	$0.00
27" TRASH RACK		EA	$7,500.00	$0.00
30" TRASH RACK		EA	$8,500.00	$0.00
36" TRASH RACK		EA	$9,500.00	$0.00
42" TRASH RACK		EA	$10,500.00	$0.00
48" TRASH RACK		EA	$11,500.00	$0.00
54" TRASH RACK		EA	$13,000.00	$0.00

PAGE 2 SUBTOTAL: $0.00

EXHIBIT A (continued)

-PUBLIC UTILITIES-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
STREET LIGHTING		EA	$1,350.00	$0.00
ELECTRIC SERVICE		LF	$17.50	$0.00
TELEPHONE		LF	$40.00	$0.00
WATER		LF	$50.00	$0.00
GAS		LF	$25.00	$0.00
CABLE TELEVISION		LF	$10.00	$0.00

-MISCELLANEOUS-

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
LANDSCAPING		LS		$0.00
EROSION CONTROL		LS		$0.00
STREET SIGNAGE		EA	$525.00	$0.00
TRAFFIC CONTROL SIGNAGE		EA	$265.00	$0.00
SURVEY MONUMENTS		EA	$500.00	$0.00
FIRE HYDRANTS AND MARKERS		EA	$4,200.00	$0.00
STREET BARRICADES		EA	$1,465.00	$0.00
DITCH FENCING (54")		LF	$25.00	$0.00
EMERGENCY ACCESS GATE		EA	$3,750.00	$0.00
LOT MONUMENTS		EA	$95.00	$0.00
PAVEMENT MARKINGS (STRIPING, ETC.)		LS		$0.00
INSERT PROJECT SPECIFIC ITEMS BELOW ↓	--	--	--	--
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00

PAGE 1 SUBTOTAL:	**$0.00**
PAGE 2 SUBTOTAL:	**$0.00**
PAGE 3 SUBTOTAL:	**$0.00**
PAGES 1-3 SUBTOTAL:	**$0.00**
20% CONTINGENCY:	**$0.00**
TOTAL:	**$0.00**
AMOUNT OF SECURITY REQUIRED:	**$0.00**

City ordinance does not allow any one item to be reduced below 10% nor the reduction of the total security below 20% of the original Exhibit "A" total based upon the most current prices.

STAMP, SIGNATURE AND DATE

*Prices current as of 7/1/07

"EXHIBIT B"

A statement of the proposed build-out of the subdivision to be recorded; or when the subdivision to be recorded is to be constructed in more than one phase, a phasing plan for all improvements within each construction phase. Each construction phase as developed, must stand on its own and meet the requirements of the total subdivision. All improvements shown on the plans of record, including primary and secondary or emergency access, must be constructed and completed within and to serve a construction phase prior to the issuance of any certificate of occupancy for that phase.

The requirement for sidewalk may be temporarily waived by the city engineer with the exception that sidewalk must be constructed along the street(s) fronting individual dwelling units prior to the issuance of a certificate of occupancy for said dwelling units. To qualify for a temporary sidewalk waiver, the developer must file with the city engineer the following:

(i) A request for a temporary waiver along with justification for said temporary waiver.

(ii) An original, signed agreement referred to in the succeeding paragraph, on the form provided by the city engineer.

Whenever an owner or developer requests a temporary waiver of sidewalk construction prior to the issuance of a certificate of occupancy pursuant to the provisions of this section, the owner shall first execute an agreement with the city engineer, on the format provided by the city holding the city harmless from any claims or damages attributable to the absence of sidewalks within the construction phase.

NOTE: Please retype Exhibit "C" without any changes except for entering the applicable information and signatures as indicated within the parentheses and attach to the Improvement Agreement.

"EXHIBIT 'C'"

(Name of Owner and Developer) has obtained the services of (Name of Engineering Firm) as "engineer of record" to oversee the construction, inspection and testing of the work on the (Name of Project and Location). (Name of Testing Firm), a material testing laboratory, has been retained to perform the required testing.

During construction (Name of Engineering Firm) will perform the necessary inspection, in compliance with Chapter VI of the Public Works Design Manual, of all materials and construction methods, to verify that the improvements are constructed in substantial accordance with the plans, specifications, special provisions and applicable City ordinances. In the event services for either inspection or testing, or both, are terminated, the firm or firms so terminated unconditionally agree to verify to the City, and to provide inspection and testing reports, of all items listed in Exhibit "A" constructed to date of said termination.

We, the undersigned, hereby acknowledge that final verification shall include all items listed in Exhibit "A" attached to the Improvement Agreement, and the testing shall meet the minimum requirements as set forth in the latest edition of the Standard Specifications for Public Works Construction.

Owner, Developer, hereby agrees that he shall not terminate his contract for engineering and/or testing services with the above named firms until he has obtained the services with the above named firms until he has obtained the services of another engineering and/or testing firm and has filed a new Exhibit "C", approved by the City Engineer of the City of Reno and same has been filed with the City Clerk.

All parties acknowledge that failure to comply with any and all terms of this exhibit shall result in a stop work order upon the project.

_____ (Signature of Owner)
Owner's Name Typed

_____ (Signature of (Developer)
Developer's Name Typed

_____ (Signature of Engineering Firm)
Name of Engineering Firm Typed

_____ (Signature of Testing Firm)
Name of Testing Firm Typed

IRREVOCABLE LETTER OF CREDIT

_____(1)_____

Amount: $ ___(2)_____ Letter of Credit No. _____

RE: _____(3)_____

City of Reno
Municipal Corporation
Community Development
P.O. Box 1900
Reno, NV 89505

Ladies and Gentlemen:

We hereby irrevocably authorize the City of Reno (the "City") to draw on the ___(4)____, _____(5)_____ , Nevada (the "Lender") , draft or drafts at sight for any sum or sums not to exceed a total amount of $ _____(6)____ , which sum or sums shall be applied toward the payment of all or any costs or expenses which may be projected or incurred in connection with any or all subdivision/development improvements which are subject of that certain subdivision/development Improvement Agreement pursuant to RMC 18.14 and the Public Works Design Manual, executed by the owners in connection with the captioned subdivision/development, a copy of which Improvement Agreement is attached hereto as Exhibit "1".

This Letter of Credit is only for the benefit of the City and no other person shall have any claim against any portion of said sum or sums or against the Lender by reason of this Letter of Credit.

It is expressly understood that if the Owner or any successor in interest does not perform under the Improvement Agreement, the City shall have the right to withdraw whatever sums it deems necessary under this Letter of Credit to ascertain the status and condition of existing improvements in said subdivision. It is further understood and agreed that said sum or any part of said sum designated in this letter may be drawn by draft prior to actually incurring costs or expenses for said subdivision improvements or reversion to acreage by means of notice to the Lender, and further that if the sum or sums drawn exceeds the actual cost and expenses so incurred, then such excess shall be returned to the Lender.

Drafts must be accompanied by the signed statement of the City that the funds are required in connection with the completion of subdivision/development improvements or reversion to acreage above described. All drafts hereunder must be marked "Drawn on _____(7)_____ _____(8)___ , Nevada, Irrevocable Letter of Credit No. _____ ." The amount of each draft drawn under this credit must be endorsed hereon and the presentation of each draft, if negotiated, shall be a warranty by the negotiating financial institution that such endorsement has been made and that documents have been forwarded as herein required.

Last revised June, 2006
Reviewed, no changes, Jan 2009

We hereby engage with the drawers, endorsers, and bona fide holders of drafts drawn under and in compliance with the terms of the Letter of Credit that the same shall be honored on presentation and delivery of documents as specified providing such presentation is made to the Lender no later than __(9)_____ . The Lender agrees to notify the City in writing of the impending expiration of this Letter of Credit ninety (90) days prior to the date of expiration.

This Letter of Credit shall be automatically extended one year from the original expiration date; and shall be extended automatically for an indefinite period of time in one year intervals until such time as the improvements are completed and accepted by the City pursuant to Case No. LDP__ - __(10)___ or any subsequent LDP related to Case No. LDC__ - __(11)___, and the conditions of approval.

_____

By: _____

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this _____ day of _____, 20___, personally appeared before me, a Notary Public in and for said County and State, _____, known to me to be the _____ of _____, who acknowledged before me that _____ is authorized to and did execute the above instrument on behalf of said corporation.

_____
NOTARY PUBLIC

Instructions

1. Issuance Date
2. To correspond with dollar amount in Improvement Agreement
3. Name of Owner (s) as shown on the Improvement Agreement and name of Subdivision/Development
4. Name of Lending institution
5. Name of City where Lending institution is located
6. To correspond to dollar amount in Improvement Agreement
7. Name of Lending institution
8. Name of City where Lending institution is located
9. Date letter of credit will expire, which shall be issuance date plus the number of months of Improvement Agreement.
10. Site Improvement Permit #
11. Final Map Case #

Last revised June, 2006
Reviewed, no changes, Jan 2009

NOTE: The Letter of Credit shall be on the Bank's letterhead. The format and wording shall be precisely as shown. The City will not accept a document that has been changed in any way from the provided format and wording.

Last revised June, 2006
Reviewed, no changes, Jan 2009

INSTRUCTIONS

for

SUBDIVISION BOND FORM

KNOW ALL PEOPLE BY THESE PRESENTS:

That I, _____(1)_____, as Principal, and _____(2)_____, a corporation, incorporated under the laws of the State of ____(3)____, and authorized by the laws of the State of Nevada to execute bonds and undertaking as sole surety, as Surety, are held and firmly bound unto the CITY OF RENO, NEVADA, as Obligee, in the just and full sum of _____(4)_____ (_$___(5)___) for the payment whereof, well and truly to be made said Principal and Surety bind themselves, their heirs, administrators, successors and assigns jointly and severally firmly by these presents.

THE CONDITION of the foregoing obligation is such that whereas the above-bound Principal has agreed to do and perform the following, to-wit:

Construct all improvements in and adjoining _____(6)_____ Subdivision tract as set forth in the Improvement Agreement, City Council Conditions of Approval, and the Improvement Plans of Record.

All the foregoing work is to be done in accordance with applicable codes of the City of Reno.

This bond is conditioned upon and guarantees due compliance, particularly with Chapters 18.08 and 18.09 of the Reno Municipal Code and the Public Works Design Manual of the City of Reno, which requires completion of the proposed improvements or that the land be reverted to acreage pursuant to NRS 278.490 if necessary for the health, safety, and welfare of the community. In the event of the reversion of the land to acreage, the land must be restored to a condition that does not pose a threat to the health, safety and welfare of the community, and any public improvements which are determined by the City to be necessary for the well being of the community shall be provided within such a period as is approved by the City Council.

NOW, THEREFORE, if the above-bound Principal shall well and truly perform the work hereinabove specified to be performed within ____(7)____ months from the effective date hereof, then this obligation shall be void upon the delivery to the Principal of a statement signed by the City Engineer, of the completion to the satisfaction of the City Engineer, of all improvements required to be done by the Principal; otherwise, this obligation shall remain in full force and effect.

It being specifically understood and agreed that the Obligee shall have the right to bring suit to enforce the provisions of this bond in the event of the failure of the Principal to complete the improvements provided for.

The total amount of Surety's liability under this bond, to the Obligee, shall in no event exceed the penalty hereof.

SIGNED AND SEALED THIS ___ day of _____(8)_____, 20__, effective (9)_____.

_____
PRINCIPAL

_____
BONDING COMPANY

By: _____
ATTORNEY-IN-FACT

(ACKNOWLEDGMENT BY NOTARY FOR ALL SIGNATURES TO BE ATTACHED HERETO)

BOND

1. Owner(s) name(s), and identify further as individual, partnership, firm, corporations, etc.
2. Name of Bonding Company
3. State where Bonding Company incorporated.
4. Dollar amount of bond (written).
5. Dollar amount of bond (figures).
6. Name of Subdivision
7. Number of months required to complete development – to correspond with number of months in Improvement Agreement.
8. Date signed.
9. Effective date of bond.

NOTE:

1: THE SUBDIVISION BOND SHALL BE ON THE BONDING COMPANY'S LETTERHEAD.

2: If not authorized by the laws of the State of Nevada to execute bonds, then the bond cannot be accepted.

3: The bond must be either executed by an attorney-in-fact within the State of Nevada, or be countersigned by a resident agent in Nevada in addition to the signature by a nonresident attorney-in-fact.

Last revised June, 2006
Reviewed, no changes, Jan 2009

REVISED EXHIBIT A FOR REDUCTION IN SECURITY **D8**

CONTACT COMMUNITY DEVELOPMENT FOR THE LATEST UNIT PRICE SCHEDULE

Project: _____ PREPARED BY:
DEVELOPER:_____ DATE:
ENGINEER: _____ AREA: Acres
NUMBER OF LOTS/UNITS

-STREETS-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
2&1/2" ASPHALT CONCRETE PAVEMENT		10	$0.00
4" ASPHALT CONCRETE PAVEMENT		10	$0.00
5" ASPHALT CONCRETE PAVEMENT		10	$0.00
6" ASPHALT CONCRETE PAVEMENT		10	$0.00
2" -4" BASE MATERIAL		10	$0.00
5" BASE MATERIAL		10	$0.00
6" BASE MATERIAL		10	$0.00
8" BASE MATERIAL		10	$0.00
10" BASE MATERIAL		10	$0.00
FOG SEAL		10	$0.00
#REF!		10	$0.00

-GRADING-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
ROADWAY (WIDTH OF RIGHT-OF-WAY)		10	$0.00
ON-SITE (MASS GRADING)		10	$0.00

-CONCRETE-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
TYPE 1 CURB & GUTTER WITH BASE		10	$0.00
ROLLED CURB & GUTTER WITH BASE		10	$0.00
MEDIAN CURB WITH BASE		10	$0.00
SIDEWALK 4' WITH BASE		10	$0.00
SIDEWALK 5' WITH BASE		10	$0.00
ALLEY SECTION		10	$0.00
P.C.C. VALLEY GUTTER		10	$0.00
3' LONGITUDINAL VALLEY GUTTTER		10	$0.00
3' P.C.C. DRAINAGE SWALE		10	$0.00

-WALLS-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
RETAINING WALL 4' - 6'		10	$0.00
RETAINING WALL 6' - 8'		10	$0.00
SOUND BARRIER 6' - 8'		10	$0.00
SOUND BARRIER 8' - 10'		10	$0.00
ROCKERY RETAINING WALL 1' - 3'		10	$0.00
ROCKERY RETAINING WALL 3' - 6'		10	$0.00
ROCKERY RETAINING WALL 6' - 10+'		10	$0.00

PAGE 1 SUBTOTAL: $0.00

REVISED EXHIBIT A FOR REDUCTION IN SECURITY (Cont.) **D8**

-SANITARY SEWER-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
TYPE I - 48" MANHOLE		10	$0.00
TYPE IV - MANHOLE		10	$0.00
TYPE V - 60" MANHOLE		10	$0.00
48" DROP MANHOLE		10	$0.00
60" DROP MANHOLE		10	$0.00
4" SERVICE LATERALS		10	$0.00
6" SDR-35 PIPE		10	$0.00
8" SDR-35 PIPE		10	$0.00
10" SDR-35 PIPE		10	$0.00
12" SDR-35 PIPE		10	$0.00
15" SDR-35 PIPE		10	$0.00
18" SDR-35 PIPE		10	$0.00

-STORM DRAIN-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
TYPE I - 48" MANHOLE		10	$0.00
TYPE IV - MANHOLE		10	$0.00
TYPE V - 60" MANHOLE		10	$0.00
TYPE 3-R CATCH BASIN		10	$0.00
TYPE 4-R CATCH BASIN		10	$0.00
STEEL SIDEWALK CROSS-DRAIN		10	$0.00
YARD DRAIN		10	$0.00
10" RCP PIPE (LATERALS)		10	$0.00
12" RCP PIPE		10	$0.00
15" RCP PIPE		10	$0.00
18" RCP PIPE		10	$0.00
21" RCP PIPE		10	$0.00
24" RCP PIPE		10	$0.00
27" RCP PIPE		10	$0.00
30" RCP PIPE		10	$0.00
36" RCP PIPE		10	$0.00
42" RCP PIPE		10	$0.00
48" RCP PIPE		10	$0.00
54" RCP PIPE		10	$0.00
60" RCP PIPE		10	$0.00
72" RCP PIPE		10	$0.00
6" - 12" RIPRAP		10	$0.00
8" - 16" RIPRAP		10	$0.00
12" - 24" RIPRAP		10	$0.00
12" - 36" HEADWALL		10	$0.00
36" - 72" HEADWALL		10	$0.00
24"- TRASH RACK		10	$0.00
27" TRASH RACK		10	$0.00
30" TRASH RACK		10	$0.00
36" TRASH RACK		10	$0.00
42" TRASH RACK		10	$0.00
48" TRASH RACK		10	$0.00
54" TRASH RACK		10	$0.00

PAGE 2 SUBTOTAL: $0.00

REVISED EXHIBIT A FOR REDUCTION IN SECURITY (Cont.)

D8

-PUBLIC UTILITIES-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
STREET LIGHTS		10	$0.00

ELECTRIC SERVICE		10	$0.00
TELEPHONE		10	$0.00
WATER		10	$0.00
GAS		10	$0.00
CABLE TELEVISION		10	$0.00

-MISCELLANEOUS-	DOLLAR AMOUNT FROM	WORK REMAINING	
DESCRIPTION	ORIGINAL EXHIBIT "A"	%	$ AMOUNT
LANDSCAPING		10	$0.00
EROSION CONTROL		10	$0.00
STREET SIGNS		10	$0.00
TRAFFIC CONTROL SIGNS		10	$0.00
SURVEY MONUMENTS		10	$0.00
FIRE HYDRANTS AND MARKERS		10	$0.00
STREET BARRICADES		10	$0.00
DITCH FENCING 54"		10	$0.00
EMERGENCY ACCESS CONTROL GATE		10	$0.00
LOT MONUMENTS		10	$0.00
PAVEMENT MARKINGS (STRIPING, ETC.)		10	$0.00

STAMP, SIGNATURE AND DATE

PAGE 1 SUBTOTAL:	$0.00
PAGE 2 SUBTOTAL:	$0.00
PAGE 3 SUBTOTAL:	$0.00
PAGE 1-3 SUBTOTAL:	$0.00
20% CONTINGENCY:	$0.00
TOTAL:	$0.00
AMOUNT OF SECURITY:	**$0.00**

City Ordinance does not allow any one item to be reduced below 10% nor the reduction of the total security below 20% of the original Exhibit "A" total based upon the most current prices.

City of Reno, Community Development
Subsequent Improvement Plan Submittal Checklist

Site LDP_____ Road LDP_____

Grading LDP_____ Wall LDP_____

Name of Subdivision: _____

APN(s): _____

Item No.	Items required: *(If all of the items listed below are not submitted in one complete package, your application will be considered incomplete and rejected.)*
☐ 1.	5 complete sets of prints of the improvement plans. Stamped and signed.
☐ 2.	Original redlines of improvement plans from review meeting.
☐ 3.	Building Permit Application, including the private and public valuations.
☐ 4.	Green grading checklist. *(Submit only with grading.)*
☐ 5.	Construction Permit Submittal checklist. *(Submit only with grading.)*
☐ 6.	Performance Standards Compliance checklist. *(Submit only with grading.)*
☐ 7.	Final Map Building Permit Fee Calculation Worksheet.
☐ 8.	Design/drainage verification letter. Stamped and signed.
☐ 9.	Check to the City of Reno for all fees (i.e., plan review, building permit, SWP, etc.)
☐ 10.	Check to Washoe County Health Department for the vector fee. *(Submit only with grading.)*
☐ 11.	When appropriate, 1704 Special Inspection form and calculations for retaining walls.

Note: The undersigned acknowledges that acceptance of this submittal by the City of Reno does not constitute assurance that the documents provided are complete, that statutory requirements can be met, or that the associated final map will record prior to tentative map expiration. The subdivider and/or his agents are solely responsible to assure the timeliness and completeness of all submittals, and to monitor the processing of all improvement plans and the final map.

_____ Submitted by _____

Name of Engineering Firm Signature and Date

July 2007
No changes Jan 2009