

CITY OF AMADOR CITY

RESOLUTION NO. 846

**A RESOLUTION ESTABLISHING IMPROVEMENT STANDARDS FOR ROADS,  
DRAINAGE, SEWERS AND RELATED PUBLIC IMPROVEMENTS**

WHEREAS the purpose of Improvements Standards is to provide minimum standards to be applied to improvements and private works to be dedicated to the public and accepted by the City for maintenance or operation, as well as improvements to be installed within existing rights of way and easements, and

WHEREAS this is necessary in order to provide for coordinated development of required facilities to be used by and for the protection of the public, and

WHEREAS these standards shall apply to and regulate the design and preparation of plans for construction of streets, highways, drainage, sewerage, street lighting, water supply facilities and related public improvements.

BE IT HEREBY RESOLVED to adopt the attached improvements standards as submitted.

The foregoing resolution was duly passed and adopted at a regular meeting by the City Council of the City of Amador City on the 20th day of March, 1997.

AYES: 5

NOES: 0

ABSTAIN:

ABSENT:

Susan Bragstad  
Susan Bragstad, Mayor

Charlotte Matson  
Charlotte Matson, City Clerk

# CITY OF AMADOR CITY

## IMPROVEMENT STANDARDS

### 1997

#### 1.00 PURPOSE

**1.01 General** - It is the purpose of these Improvement Standards to provide minimum standards to be applied to improvements and private works to be dedicated to the public and accepted by the City for maintenance or operation, as well as improvements to be installed within existing rights of way and easements. This is necessary in order to provide for coordinated development of required facilities to be used by and for the protection of the public. These standards shall apply to and regulate the design and preparation of plans for construction of streets, highways, drainage, sewerage, street lighting, water supply facilities and related public improvements. *Standards must meet Amador City's General Plan Circulation Element of goals and policies, and the City Council can over rule certain guidelines to maintain the historic appearance of the City.*

Water system design criteria has been established by water purveyor for Amador City. For specific requirements or specifications contact:

Amador County Water Agency  
12800 Ridge Road  
Sutter Creek, CA 95685  
(209) 223-3018

Water lines shall be sized to meet the fire flow requirements of the Sutter Creek Fire Protection District. For specific requirements or specifications contact:

Dominic Moreno, Fire Protection Officer  
Sutter Creek Fire District  
P.O. Box 365  
Sutter Creek, CA 95685  
(209) 267-0285

**1.02 Exceptions** - It is recognized that it is not humanly possible to anticipate all situations that may arise or to prescribe standards applicable to every situation. Therefore, any items or situation not included in these Improvement Standards shall be designed in accordance with accepted engineering practice, the Standard Specifications of the State of California Department of Transportation, subject to the approval of the City Engineer.

## 2.00 DEFINITIONS

**2.01 General** - In these Improvement Standards, the intent and meaning of the terms that are used shall be as defined in State Standard Specifications, and as herein specifically noted.

**CONTRACTOR** - Shall mean any person or persons, firm, partnership, corporation, or combination thereof, licensed to perform the type of work involved, who has entered into a contract with any person, corporation, company, special district of the City of Amador City, or his or their legal representative, for the construction of any improvement or portions of any improvement within the City.

**CITY** - Shall mean City of Amador City including any special districts administered by the City Council.

**DEVELOPER** - Shall mean any person or persons, firm, partnership, corporation, or combination thereof, financially responsible for the work involved.

**DEVELOPMENT** - Shall mean single properties as well as subdivision improvement.

**CITY ENGINEER** - Shall mean the Engineer acting either directly or through the City Council or their authorized representatives.

**LABORATORY** - Shall mean any testing agency or testing firm which has been approved by the City Engineer.

**SITE IMPROVEMENTS** - Shall mean required improvements for projects other than subdivisions.

**STANDARD SPECIFICATIONS** - Shall mean the most recent issued volume of the State of California Standard Specifications as issued by the Business and Transportation Agency, Department of Transportation, State of California.

**STATE** - As used in the State Specifications, or Standard Drawings, shall mean City of Amador City.

**STATE STANDARD DRAWINGS** - Shall mean the Standard Drawings and Plans of the State of California, Business and Transportation Agency, Department of Transportation.

**ZONING CLASSIFICATIONS** - Shall mean those zones established by and as listed in the Amador City Zoning Ordinance.

### 3.00 GENERAL REQUIREMENTS

**3.01 Plans and Specifications Required** - Complete plans and specifications shall be prepared by an engineer for all proposed streets, drainage facilities, sewerage, street lighting, and water distribution system improvements. All plans and specifications for improvements to be accepted for maintenance by the City shall be prepared by an Engineer of the appropriate branch of engineering covering the work submitted. All dedications and easements necessary to accommodate all improvements shall be submitted to the City Engineer for approval and offered for dedication to the City. Possession of a complete set of City approved plans and a valid encroachment permit shall constitute the only necessary permit for a Contractor to perform work of the type involved in the City right of way or easement. Engineer or his representative shall order the Contractor to cease work on any project if said Contractor does not have properly approved plans in his possession. Contractor shall be duly licensed by the State of California and shall be bonded as required to meet the requirements of the City.

**3.02 Standard Specifications** - The Standard Specifications shall be made a part of contract documents by note or reference which shall appear in the Special Provisions and in the General Notes on the plans. The note or reference shall be as follows:

*"The Standard Specifications are part of the contract documents of this project and all materials and construction shall be in strict conformance with said Standard Specifications or as authorized by these plans."*

**3.03 Plan Submittal** - Two sets of plans for subdivisions and two sets of plans for site improvements, complete and in accordance with these Improvement Standards and the Standard Specifications, shall be submitted along with any required specifications, computations, test data, and other material required by the City Engineer for approval. When the plans are initially submitted to the City, a plan check fee will be required as a deposit to initiate checking of the plans by the City Engineer.

Any portion of the required deposit over and above the accumulated costs expended by the City on the development will be refunded to the Developer. Should there be required alterations or revisions to the plans as submitted, the City Engineer will return one copy with the required corrections marked or indicated thereon. Plans not prepared in accordance with these Improvement Standards and the Standard Specifications or plans not prepared consistent with the standards of the profession, will be returned unmarked and unapproved.

No plans will be approved nor construction authorized until such times as the City Engineer signifies his approval by his signature on the plans. All changes, corrections, or additions required shall be resubmitted to the City Engineer for approval as prescribed for original plans. At such times as the Engineer preparing the plans has made the necessary revisions and the plan check and inspection fees have been paid, the City Engineer will sign the tracings in the space provided. The Engineer shall deliver not less than two complete sets of plans to the City Engineer.

Excepted from approval are any features of the plans that are contrary to or in conflict with or do not conform to any California State Law, City ordinance, or resolution or generally accepted good engineering practice, in keeping with the standards of the profession; even though such errors, omissions or conflict may have been overlooked in the City Engineer's review of the plans.

3.04 Change in Plans During Construction - Should changes become necessary during construction, the Engineer shall resubmit "red lined" plan sheet prints for approval by the City Engineer. Necessary changes shall be clearly shown and dated on the plans. Minor changes, which do not affect the basic design or contract, may be made upon the authorization of the City Engineer. All changes shall be shown on "as-built" plans when the work is completed.

3.05 Contractor and Developer Responsibility - Contractor and Developer are directed to the Construction Safety Orders of the Division of Industrial Safety. Contractor and Developer shall conduct all work in accordance with these standards. Contractor and Developer shall be responsible for any damage arising from any failure to comply with such orders regardless of any action taken by the City or its authorized agents.

Contractor and Developer are directed to the regulatory provisions of the State Standard Specifications. City will assume no costs or liability for complying with these provisions.

## 4.00 CONSTRUCTION STAKING

**4.01 Scope** - It is the intent of this section to define the responsibilities of the Contractor regarding the use, maintenance, and replacement of construction stakes.

The Developer's Engineer or Contractor shall furnish the stakes and reference points for the improvements relative to the work and restaking as required by the City as set forth in Section 4.03.

**4.02 Control Stakes** - Control and reference stakes for all construction work shall be conspicuously flagged. Contractor shall be responsible for the preservation and perpetuation of these points, marks, and stakes. When removal of a control point, mark, or stake is required by construction operations, Contractor shall notify the Developer's Engineer at least two (2) working days in advance of such operations. Developer's Engineer shall perpetuate such control points subject to approval of City Engineer.

**4.03 Required Staking** - The Developer's Engineer shall provide the stakes and reference marks sufficient to control the work. Staking requirements shall be not less than:

a. **Street Grading**

1. One set of slope stakes will be set at fifty (50) foot intervals. Reference stakes will be set at an appropriate offset from the top of cut or toe of fill. The top of cut or toe of fill need not be staked. The reference stake will indicate the offset to the top of cut or toe of fill and indicate the cut or fill from the reference point to the top of cut or toe of fill. The reference stakes will indicate the cuts or fills and distances from the top of cut or toe of fill to the subgrade hinge point and centerline subgrade elevation.
2. At street intersections, the radius points for pavement rounding will be staked. The elevation of the top of the stake will be established and marked on witness lath.

b. **Clearing**

When slope stakes are not required, clearing stakes will be set on streets and roads. Lath marked "CLEAR" will be set at fifty (50) foot intervals at the clearing limits. Lath will be oriented so the marking faces the centerline of the road or street.

c. **Sewer**

Sewer trunk lines will be staked on an appropriate offset from centerline at fifty (50) foot intervals on tangents and twenty-five (25) foot intervals on horizontal and vertical curves. All manholes and curve points will be staked on an appropriate offset from the sewer centerline. Stakes will indicate the cut to the flow line of the sewer

pipe. When a flow-line grade is indicated on the plans for a sewer service, a cut to the flow line at the end of the service will be marked on the offset stake or witness lath thereto.

d. Curb and Gutter

Stakes for curb and gutter will be set no more than five (5) feet from the proposed work and at twenty-five (25) foot intervals. Subgrade and forms shall be checked and approved by the City prior to placing curb and gutter.

e. Cross Culverts

The ends of all cross culverts will be staked by an offset stake set on the prolongation of the centerline of the culvert. Offset stakes will be marked with a cut or fill to the flow line at the ends of the culverts. The final length of cross culverts shall be determined in the field at the time of staking.

f. Underground Storm Drains

Underground storm drains will be staked in the same general manner as sewer trunk lines.

g. Drain Channels

The centerline of drainage channels will be marked with lath at fifty (50) foot intervals for horizontal alignment only. When vertical alignment is noted on the plans, offset grade stakes will be set at fifty (50) foot intervals.

h. Finish Subgrade

One set of finish subgrade stakes will be set on centerline at finished subgrade at fifty (50) foot intervals on tangent and twenty-five (25) foot intervals on vertical curve by the Developer's Engineer. An additional set of stakes will be set on hinge points at finished subgrade at fifty (50) foot intervals on tangents and twenty-five (25) feet on vertical curves by Contractor and checked by Developer's Engineer. Any realignment or adjustments of blue tops on hinge points will be reset and rechecked as necessary. Developer will be responsible for staking base rock grade from the finished subgrade once the subgrade has been accepted by the City Engineer. The method of staking shall be approved by the City Engineer.

I. Additional Stakes

Any additional stakes required by the City will be set at the Developer's expense.

**4.04 Construction Stake Checking** - Should occasion arise where the validity of a stake is questionable, either as to its location, the offset, cut or fill marked thereon, Contractor shall notify the City Engineer and Developer's Engineer, who will check the stake or stakes in question. It shall be the Contractor's responsibility to examine the stakes before commencing operations. Any stakes found to be in error shall be reset. The Developer shall be responsible for any error in the finished work resulting from any questionable or erroneous stakes.

**4.05 Construction Staking Section** - When the Developer elects to have a registered civil engineer or licensed land surveyor, other than the engineer that prepared the plans, provide construction staking, he shall provide the City Engineer, in writing, with the name of the individual or firm one week prior to the staking of the project for construction. Developer shall be responsible for providing professional engineering services for any plan change which may be required during the construction phase and for the preparation of revised plans and "as-built" plans upon completion of the improvements.

**4.06 Lines and Grades:** At all points along any grade line shown on the drawings, between the points along any grade line shown on the drawings, and between the points at which the grade elevations are given, the grades shall conform to a straight line except that grading through a vertical curve shall conform to a smooth curvilinear alignment. In any case where grade variation exists, it shall be reported to the Developer and City Engineer.

Contractor shall preserve all stakes and points set for lines, grades, or measurements of the work in their proper place until authorized to remove them by the Developer and City Engineer.

**4.07 Utilities** - All utilities shall be shown on the plans. The Engineer shall contact utilities early in the planning stage. Prints with the utilities approval shall be submitted to the City. All utilities must be contacted so they can properly plan their relocation projects and construction of additional facilities. Engineer shall notify the City Engineer, by letter, when and which utility companies have been so notified. Utility company approved plans for underground work in city streets shall be submitted to the City Engineer for review and approval prior to start of work.

5.00 BLANK

## 6.00 PLAN DETAILS

**6.01 General** - All plans submitted to the City shall be prepared in a manner that will produce legible prints. All line work must be clear, sharp and heavy. Letter and numerals must be 1/8 inch minimum height, well formed, and sharp. Numerals showing profile elevations shall not be bisected by station grid lines.

**6.02 Plan Content Requirements** - The following requirements shall apply to all plans submitted for approval. Engineer shall prepare plans neat, accurate, and comprehensive in keeping with the standards of the profession. Engineers are directed to CalTrans Standard Plans.

a. **Title Sheet**

On subdivision or improvement plans, exceeding three sheets in the set, a title sheet shall be prepared showing the entire subdivision or project complete with subdivision or assessment district limits, city limits, street names, section lines, corners, and the location within the City. (Minimum scale 1"=500'.) The title sheet shall also include an index of the sheets; Engineer's name, license number, and signature; the date and scale of the drawing; north arrow; and the block for the necessary approval of the City Engineer and other officials. A sample of the City approval block may be obtained from the City Engineer. All sheets shall be 24" x 36".

b. **Layout Sheet**

The layout sheet (Sheet 2) shall contain thereon the entire subdivision unit on one sheet in skeleton form shown drainage features and sewer and water lines. Drainage pipe, sewer pipe, water lines, and other underground utilities shall each be identifiable from other underground conduits. Appurtenances such as manholes, valves, and drop inlets shall be shown in their proper location. The scale of the project shall be 1" = 100' or 1" = 200'. An index of the plan and profiles sheets shall be shown on the layout sheet.

c. **Title Blocks**

Each sheet within the set of drawings shall show the sheet title, sheet number, date, scale, and the Engineer's name, signature, and license number.

d. **Right of Way**

Right-of-way lines, the boundaries of lots fronting on the street, drainage easements, utility easements, planting 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.

e. Topography

All pertinent topographic features shall be shown such as street lines, curbs, sidewalks, shoulders, location and size of storm and sanitary sewer lines, high water and frequent inundation levels, water lines, gas lines, telephone conduits, other underground utilities, existing structures, houses, trees (6" and larger) and other foliage, traffic signals, street lights, pull boxes, underground electrical conduits, drainage ditches, utility poles, fire hydrants, retaining walls, masonry structures, and all other features in the area which may affect the design requirements for the area. Any tree (6" and larger) which falls within the existing or proposed right of way or easement shall be shown on the cross section when requested by the City Engineer. Permission to remove any tree (not required to be removed by construction) in the City rights of way or easements shall be obtained from the City Engineer prior to removal.

f. Contours, Elevations, and Drainage Plan

Existing contours or supporting elevation data shall be shown on all plans. The Drainage Study, if required, shall contain contours of the subdivision unit and the immediate vicinity sufficient to indicate the perimeter of areas to be drained by each structure. Calculations supporting the design of drainage studies shall be submitted with the drainage sheet. Scale of map shall be of sufficient size to clearly show the drainage features and the location of major structures.

g. Profiles

Plans shall show the profile of all existing roadway centerlines, existing edges of pavement, existing curb and gutter flow lines, drainage ditches, storm and sanitary sewers. All profiles of proposed improvement shall state centerline elevations at fifty (50) foot intervals and rate of grades, vertical curves and other vertical alignment data. Elevations of any warped surfaces shall be set at twenty-five (25) foot intervals. When required by the City Engineer, the Engineer shall provide centerline profiles and cross section information beyond the limits of the proposed development to facilitate setting proper vertical alignment within the proposed improvement limits.

h. Stationing and Orientation

The stationing on plan and profiles sheets shall read from left to right. Plans shall be so arranged that the north arrow points toward the top or upper 180 degrees of the sheet, insofar as practical.

i. Bench Marks

The bench marks and datum shall be clearly noted on the plans both as to location, description, and elevations. The datum shall be U.S.G.S. or otherwise approved by the City Engineer.

j. Typical Sections

A typical section, setting out the structural features for each type of facility within the improvement, shall be set forth on the plans.

k. Cross Sections

Cross sections, when required, shall be included with the plans. When, in limited areas, unusual topographic features or special conditions occur that would affect the work, individual cross sections or typical sections may be shown on the pertinent plan sheet.

l. Special Notes

Special notes shall be clearly indicated and it shall be conspicuously noted on the plans that all construction work and installation shall conform to the State Standard Specifications, the City of Amador City Improvement Standards, and that all work is subject to the approval of the City Engineer.

**6.03 Plan Format Requirements** - All improvement plans shall be prepared on plan and profile sheets, 24" x 36". Scales: Horizontal 1" = 20', 40', or 50'; Vertical 1" = 2', 5', or 10', but only the scale, horizontal or vertical for which the sheet was intended. Design cross sections plotted on 1" = 5' scale, taken on maximum 50' intervals shall be submitted with preliminary improvement plans or cut and fill slopes shall be shown on the plans.

**6.04 Additional Improvements to Be Shown** - Storm drainage improvements shall be shown on the street plans. Sanitary sewer and water improvements may be shown on the street plans or separately as indicated above. Street lighting shall be shown separately. Street lighting plans shall be drawn to a scale of 1" = 100' with individual lot dimensions and street dimensions shown. Location of all utilities shall be shown on the "as-built" plans.

**6.05 Sign and Striping Plan** - Sign and striping plan shall be set forth on a separate plan sheet or detail sheet.

**6.06 Compliance** - Plans shall be checked for compliance with these standards and all conditions of approval by City Engineer. Plan checking deposit shall be as set forth in Section 7.10 of these standards.

## 7.00 INSPECTION DURING CONSTRUCTION

7.01 General - Any improvement which is intended for future City maintenance responsibility, shall be constructed to City requirements and inspected during construction by the City Engineer. Each phase of construction shall be inspected and approved prior to proceeding to subsequent phases.

Inspection includes field inspection during the course of construction and materials testing of those improvements over which no other public agency or utility exercises inspection responsibility.

7.02 Notification - The Engineer shall notify the City Engineer when the Contractor first calls for grades or staking. Any improvements constructed without inspection as provided above or any construction contrary to the orders or instructions of the City Engineer shall be deemed not in compliance with City requirements and will not be accepted by City.

7.03 Compliance and Responsibility - The City will inspect the work for ultimate compliance with the specifications but will not be responsible for the conduct of the work itself or the manner in which it is performed.

7.11 Inspection Fees - The applicant shall deposit an estimated fee to cover the City's actual cost of inspection of the project. This fee may be deposited in two installments. The first installment shall be paid when plans are submitted for checking. The balance of the inspection fee shall be deposited prior to the start of work. All other public agency or utility fees shall be paid separately by the developer. The inspection fee deposit shall be determined in accordance with Table II.

7.13 Inspection Deposit - Inspection deposits shall be placed in a plan check fund and all charges for inspection, as deemed necessary by the City shall be charged against that fund. No inspection work or construction work shall be undertaken if the cost of such inspection or work exceeds the funds remaining in the trust account for the project.

Whenever the inspection fee deposit is exhausted, the developer shall deposit additional funds for further inspection work. When the total inspection charges are less than the deposit, the balance will be returned to the applicant after the improvements have been certified as complete by the City Engineer and all conditions of approval complied with.

| TABLE I                                 |            |            |                 |
|-----------------------------------------|------------|------------|-----------------|
| FEE DEPOSIT AMOUNTS                     |            |            |                 |
| Total Estimated<br>Cost of Improvements | Plan Check | Inspection | Total           |
| Less than \$10,000                      | \$ 300.00  | \$ 500.00  | \$ 800.00       |
| \$10,000 to \$49,999                    | \$ 500.00  | \$1,000.00 | \$1,500.00      |
| \$50,000 to \$99,999                    | \$1,000.00 | \$5,000.00 | \$6,000.00      |
| \$100,000 to \$399,999                  | 1%*        | \$6,000.00 | \$6,000.00 +1%* |
| \$400,000 and over                      | 1%*        | 1.5%*      | 2.5%*           |

\*Percentage of Engineer's Estimate of Improvement Costs.

## 8.00 FINAL INSPECTION

**8.01 Clean Up** - Upon completion of any improvements which are constructed under and in conformance with these Improvement Standards and prior to requesting a final inspection, the work area shall be thoroughly cleaned of all rubbish, excess material, and all portions of the work shall be left in a neat and orderly condition.

**8.02 City Engineer Inspection** - Within five (5) working days after receiving a request for final inspection, the City Engineer shall inspect the work. Contractor, Engineer, and Developer will be notified in writing as to any particular defects or deficiencies to be remedied. Contractor shall proceed to correct all defects or deficiencies at the earliest possible date. At such time as the work has been completed, an inspection shall be made by the City Engineer to determine if all defects have been repaired, altered, and completed in accordance with these Improvement Standards. At such time as the City Engineer approves the work and accepts the work for the City, the Contractor, Engineer, and Developer will be notified in writing as to the date of final approval and acceptance by the City Council.

## 9.00 "AS-BUILT" PLAN

9.01 "As-Built" Plan Requirements - One complete set of "as-built" reproducible mylar plans, as prescribed by the City Engineer, shall be submitted to the City Engineer prior to acceptance of the improvements.

Engineer shall keep an accurate record of all approved deviations from the plans. These are to be utilized with the Inspector's plans for preparing a complete and accurate set of "as-built" tracings for the permanent records of the City. "As-built" plans shall be prepared by the Engineer responsible for the work. Preparation of as-built plans, complete and in accordance with these standards, shall be the responsibility of the Developer.

## 10.00 DESIGN STANDARDS

**10.01 General** - The Design Standards provide the minimum standards for the design, construction and alterations for all streets, roadways, drainage, utility placement, and all appurtenances thereto. The Design Standards shall consist of the applicable provisions in the Highway Design Manual, the Standard Plans, and this Chapter.

The City Engineer, at his discretion, may approve or require modifications to the minimum standards for a particular development whenever it appears necessary, reasonable, and proper. Exceptions to these standards will not be allowed unless the request is accompanied by written justification and certification by a licensed engineer that traffic safety is not compromised.

The Planning Commission or the City Council may specify project specific road improvement requirements different from the standards set forth herein. In all such cases, the "project specific" requirements of the Planning Commission or City Council shall govern.

The City Engineer shall be the final authority on all questions which may arise as to the interpretation of the Design Standards. The City Engineer's decision shall be final and he shall have authority to enforce and make effective such decisions. Appeals of the City Engineer's decisions may be made pursuant to City Code Chapter 17.32.

**10.02 Street Classifications** - Streets shall be classified as arterial, collector, or local streets. Street classification shall be as follows:

- Arterial:** A through street collecting traffic from minor and collector streets and classified in the Circulation Element of the City as an "arterial" street.
- Collector:** A primary street that collects traffic from local streets and is classified in the Circulation Element of the City as a "collector" street.
- Local:** A local street that collects traffic along its frontage.

**10.03 Grades, Cross Slope, and Intersections** - The criteria for road grades and cross slopes shall be as follows:

- a. Minimum grade on new streets shall be 0.30 percent.
- b. Minimum grade of gutter section constructed on existing street shall be 0.20 percent with approval of City Engineer.
- c. Standard cross slope on new streets shall be 2.0 percent.
- d. Minimum cross slope on widening shall be 1.5 percent.

- e. Maximum cross slope of the traveled way shall be 3.0 percent.
- f. The roadway minimum vertical curve length allowable at the intersection of two grades shall be fifty (50) feet. Vertical curves may be omitted at intersections where the algebraic difference in grades does not exceed 2.0 percent.
- g. Streets shall have a desirable maximum grade of 15 percent. Steeper grades may be authorized where justified and approved by the City Engineer. Decision of the City Engineer concerning grades in excess of 15 percent shall be based upon local conditions.
- h. When two streets intersect, the minor street shall not have a grade greater than 7.0 percent for a minimum distance of forty (40) feet measured from the curb line of the intersecting street, except in unusually rough terrain, as determined by the City Engineer. The centerline of the lesser intersecting street shall meet the crown slope at the projected lip of gutter. Crown slope of the major street may be reduced to 1.0 percent within the intersection when approved by the City Engineer.

10.04 Design Speed - Arterial roads shall be based upon a design speed of not less than 35 miles per hour and shall meet the requirements of the City Engineer.

Collector, local, and cul-de-sac roads shall be based upon a design speed of 25 miles per hour. Cul-de-sac roads less than 300' in length may be designed for 15 miles per hour.

Roads with grades in excess of 5 percent intersecting highways or arterial roads shall have a minimum of thirty (30) feet "storage" area from the edge of pavement of the primary road to the beginning of vertical curve (BVC).

10.05 Geometric and Structural Sections - Geometric and structural sections for proposed improvements shall comply with the following:

- a. Cross gutters will be allowed only with the specific approval of the City Engineer.
- b. The curve data for all centerline curves shall be computed and shown on the plans. Where unusually difficult alignment problems exist, less than minimum curve radii may be allowed when approved by the City Engineer. Property lines radius at curb returns for intersecting streets shall be twenty (20) feet.
- c. The property line radius for cul-de-sacs shall be fifty (50) feet unless otherwise specified by the City Engineer. A curve of twenty (20) foot radius shall connect the tangent and the fifty (50) foot radius curve. (See Standard Drawing No. ST-20.)

- d. **Cut and fill slopes:** Fill slopes shall be 2:1 or flatter and cut slopes shall be 1.5:1 or flatter depending upon the material encountered. Desired slopes are 3:1 where compatible with other project design criteria. This condition may be modified when engineering studies indicate the need for flatter slopes or when stable slopes can be maintained on steeper grades and are approved by the City Engineer. Slope rounding shall be provided where the height of cuts or fills exceeds six (6) feet.
- e. **Clearing Right of Way:** All trees and brush shall be removed from the road right of way when within a distance of seven (7) feet from the edge of the paved surface of the roadway regardless of the width of the paved section. The right of way shall be cleared to a minimum of three (3) feet outside of any cut or fill slope. At the intersections, clearing may be required to the property line for a distance of 100 feet from the centerline of the intersection should it be found necessary to provide safe sight distance for approaching traffic.

Tree removal may be restricted by project specific conditions. Trees 18" in diameter or larger shall be protected and preserved where possible. The clearing limits of this section may be modified to protect such trees.

- f. **Driveways:** In areas where sidehill cuts and fills exceed three (3) feet or where damage may occur to public right of way during future driveway construction, driveways shall be graded into each lot at the time of grading for the roadway. All material from driveway construction shall be disposed of consistent with the grading plan or Chapter 70 of the Uniform Building Code.
- g. **Access Roads:** All roads to be accepted for dedication and maintenance by the City shall be paved to the boundary of the subdivision. Private road approaches that encroach into a city street shall be constructed in accordance with these standards.
- h. **Minimum allowable roadbed structural section shall be as follows:**
- |                              |                                                |
|------------------------------|------------------------------------------------|
| 1. Collector & Local Streets | 0.17' asphalt concrete<br>0.5' aggregate base  |
| 2. Arterial Streets          | 0.20' asphalt concrete<br>0.67' aggregate base |
- i. **Pavement thickness and total structural section shall be designed on the basis of resistance factor "R" determined in accordance with State of California, Department of Transportation, California R-value determination or other approved method.**
- j. **The thickness of various structural components shall be determined by the tables, charts, formulas, and procedures contained in Section 600 of the State Design Manual with a safety factor of 0.0 and shall be approved by the City Engineer.**

- k. The minimum traffic index used for structural section design shall be as follows:

| <u>Street Type</u> | <u>Traffic Index</u> |
|--------------------|----------------------|
| Arterial           | 8                    |
| Collector          | 6                    |
| Local              | 5                    |
| Cul-De-Sac         | 4.5                  |

- l. Where new paving meets the existing paving, the Developer shall overlay all low areas to maintain a uniform cross slope and provide required drainage improvements.

10.06 Testing of Materials - Testing of materials for compliance with these Standards shall be performed in accordance with the methods set forth in the Standard Specifications. Signed copies of all test results required shall be submitted to the City Engineer. Test results shall show clearly the name of the individual and the firm performing the tests, as well as the name of the project, the date of sampling, and the date of testing.

The tests indicated in the Standard Specifications will be required at locations and frequencies determined by the City Engineer.

10.07 Right of Way - Minimum right-of-way widths shall be as set forth in these Standards for the type of street under consideration. In no instance, without specific approval of the City Council, shall a street have a right-of-way width which is less than fifty (50) feet. Right-of-way requirements for widening at intersections shall be as approved by the City Engineer.

10.08 Signing and Barricades - Street name signs shall be furnished and erected by the Developer. Street name signs shall conform to requirements of these Standards. Street names shall appear on plans submitted for approval.

Where phased improvement covers a portion of the ultimate improvement and where an improved street is proposed to be extended in the future, the improvements shall include a permanent-type barricade at the end of such a street to extend completely across the right of way to serve as a warning to the public. The barricade shall be constructed, erected, and painted, and signed in accordance with the Standard Specifications and Standard Plans. Gates may be required where streets stub into areas where ingress and egress is required.

## 11.00 STORM DRAINAGE

**11.01 General** - These standards shall serve as a guideline for drainage system design and indicate the minimum design standards acceptable to the City.

Improvement projects shall be protected from inundation, flood hazard, sheet overflow, and ponding of storm water, springs, and other surface waters. The design of improvements shall be such that water accumulating within the project will be carried away from the project without injury to any adjacent improvements, residential sites, or residences to be constructed on sites within the project, or to adjoining areas. Water accumulating within the project shall be carried to storm drainage facilities or to a natural water course by closed conduit or as allowed under Section 11.08, and shall meet the design standards herein set forth.

Drainage systems within the project shall accommodate anticipated future development (consistent with the General Plan) within the drainage area. Off-site drainage facilities shall be made adequate for ultimate development of the drainage basin. The diversion of natural drainage will be allowed only within the limits of the proposed improvement. All natural drainage must enter and leave the improve area at its original horizontal and vertical alignment unless an agreement, approved by the City, has been executed with the adjoining property owners. All concentrated drainage leaving the boundaries of an improvement area shall be connected to existing drainage ways as approved by the City Engineer.

### 11.02 Classification of Storm Drains

**Cross Culverts** - Drainage culverts transporting runoff across roadways into open ditches or natural drainage courses.

**Driveway Culverts** - Drainage culverts transporting runoff across driveways.

**Onsite Drainage Facilities** - All surface drains and underground drainage pipe within the development.

**Offsite Drainage Facilities** - Facilities required to carry storm water from the proposed project to a natural drainage course or existing conduit.

Modification of storm drain classifications may be required by special conditions. Any modification of classifications will be resolved on an individual basis by the City Engineer.

**11.03 Alignment** - The location of storm drainage pipelines in new streets shall be under the curb and gutter. Pipes placed under curb and gutter shall have minimum clearance of 0.5 feet between the bottom of gutter section and top of pipe.

**11.04 Lines** - Lines shall be as near parallel with the centerline of streets as possible. Angular changes shall not exceed 90 degrees. Open ditches, lined channels, swales, and flood plain

areas shall be maintained as nearly as possible in their existing alignment. When an open ditch, other than a roadside ditch, is to be constructed parallel to an existing roadway, the ditch shall be constructed outside the proposed right of way of the ultimate street development.

**11.05 Easements** - Drainage conduits and channels, when not located in a public street, road or alley, or within an existing public drainage easement, shall be located in a recorded or dedicated public easement.

Dedications necessary for construction on private property shall be completed prior to acceptance of improvements by the City. Where a minor improvement of a drainage channel falls on adjacent property, a right of entry shall be obtained from the property owners, and a copy of the right of entry shall be submitted to the City prior to approval of the improvement plans.

Easements for closed conduits shall have a minimum width of fifteen (15) feet. The centerline of the pipe shall be not less than five (5) feet from the easement limit. Pipe may reverse sides of the easement at angle points.

Easements shall provide sufficient widths for vehicle access and working space.

For pipes exceeding 24" in diameter or trenches exceeding five (5) feet in depth, the easement shall have additional width to provide working space as required by the City Engineer.

Easements shall be provided for all ditches, culverts, and conduit systems whether constructed as newly built improvements or as rebuilt improvements and shall adequately meet the minimum width specified herein.

**11.06 Natural Drainage Courses** - All natural drainage courses within the boundaries of an area to be improved shall be provided with drainage easements extending the full length of the drainage courses within the improved area. The width of such easement shall be determined by the limit of the 100-year flood plain. A natural drainage course is defined as an existing drainage way having specific sides and bottom, but may not necessarily have year-round flow.

**11.07 Drainage Study** - A drainage study consisting of calculations and a drainage map shall be submitted with all improvement plans requiring storm drain improvements. The following information shall be included in the drainage study:

- a. A drainage map that depicts onsite facilities, offsite drainage adjacent to the project, and all natural water courses within the project limits.
- b. All existing drainage structures shall be checked to see that sufficient capacity exists to safely pass the increased runoff.
- c. Calculations as set forth herein.

**11.08 Drainage Map** - A drainage map shall be submitted with each set of improvement plans and shall reflect the following criteria:

- a. Must be of adequate scale and accurately and clearly show contour lines referenced to the datum.
- b. All individual watershed areas shall be clearly delineated on the map.
- c. Concentrated storm flow patterns shall be delineated on the map.
- d. The quantity of water arriving at each structure, pipe or ditch from a 10-year and a 100-year frequency storm shall be calculated and shown on the map.
- e. The size and type of conduit proposed.
- f. Channel dimensions and water surface profile computations for 100-year storm when required.

**11.09 Calculations** - One set of drainage calculations shall be submitted with each set of improvement plans. The calculations shall be submitted by a civil engineer and shall conform to standard engineering practice.

Drainage calculations shall be checked and approved by the City Engineer. Drainage calculations may be made from any accepted engineering method. The City will check all flow determinations by the rational method.

Storm drains shall be designed to pass a 10-year storm with no head. The 100-year storm must be carried within drainage facility or roadways with no potential for property damage. All major structures shall be designed to pass the 100-year storm.

Runoff factors for the rational method shall be not less than the following:

| <u>Land Use</u>           | <u>Runoff Factor "C"</u> |
|---------------------------|--------------------------|
| Rural Residential         | 0.5                      |
| Single Family Residential | 0.5 - 0.6                |
| Multi-Family Residential  | 0.6 - 0.75               |
| Commercial and Industrial | 0.75 - 0.95              |

Time of concentration shall be determined by accepted methods. The Engineer may use a 10 minute minimum for unsurfaced basins.

Rainfall intensities shall be in accordance with the "Rainfall Intensity Chart," Detail SD-5.

**11.10 Closed Storm Drain Systems** - Closed conduits shall be of either cast-in-place concrete pipe, precast reinforced concrete pipe, non-reinforced concrete pipe, or PVC pipe as set forth in the Standard Specifications. The specific type of pipe or alternate pipes to be used in the development shall be shown on the plans.

The minimum pipe diameter allowable on any storm drain shall be 15 inches for onsite development.

The minimum velocity in closed conduits shall be 2 f.p.s. when flowing at a depth of 0.8 D, (D = pipe diameter).

Minimum cover requirements are shown on Standard Drawings. At locations where the minimum cover requirements cannot feasibly be obtained, conduit shall be backfilled with cement slurry backfill or other method of pipe protection approved by the City Engineer.

**11.11 Open Channels** - Open channels shall consist of concrete-lined channels, rock slope protection lined channels, or earth channels with approved fabric liners. Open channels shall be designed to the following criteria:

**Minimum Velocity**

1. Unlined channels - 2 f.p.s.
2. Lined channels - 2 f.p.s.
3. Paved invert channels - 2 f.p.s.

**Maximum Velocity**

1. Unlined channels - 6 f.p.s.
2. Lined channels - 10 f.p.s.
3. Paved invert channels - 8 f.p.s.

All channels with earth sides shall have freeboard of not less than 1.5 feet at design capacity for a 10-year storm. All lined channels shall have freeboard of not less than 0.5 feet at design capacity for a 100-year storm.

In existing channels, all abrupt changes in alignment or profile and all underbrush and debris, which restricts flow, shall be regraded or otherwise improved.

All open channels shall pass the 100-year storm without the potential for property damage.

**11.12 Drainage Structures** - Drainage structures shall comply with the following specifications:

**Manholes**- Manholes shall be standard precast concrete. Cast-in-place type manholes may be used where required. Where special manholes or junction boxes are required, the design shall be approved by the City Engineer. In no case will junction boxes be allowed which are smaller than twenty-four (24) inches (inside dimensions). Manholes shall have a forty-eight (48) inch inside diameter.

Manholes shall be located at junction points and changes in conduit size. Manholes shall be placed at the BC and EC of all curves and on 300-foot maximum intervals along the curve.

Manholes, junction boxes or inlets shall be placed at intervals not to exceed 400 feet. All manholes and junction boxes other than inlets shall have standard manhole covers, as shown in Standard Drawing SD-1. Manholes will not be allowed in gutter flow lines.

**Drop Inlets (DI)** - Drop inlets shall be open curb-face types as shown in the Standard Drawings or other approved inlets.

Drop inlets shall be spaced so that the length of flow in the gutter does not exceed 600 feet. The depth of the flow in the gutter shall not exceed 0.35 feet for a 10-year storm. Outfall pipes shall accommodate the design runoff taking into consideration bypass flow from upstream inlets.

**Junction Boxes** - Junction boxes shall be constructed of reinforced concrete or fabricated from reinforced pipe sections.

Minimum wall thickness for reinforced concrete junction boxes shall be 3.5 inches.

The inside dimension of junction boxes shall be sufficient to provide a minimum of three inches clearance on the outside diameter of the largest pipe in each face. All junction boxes shall be rectangular in shape unless otherwise approved by the City Engineer. Junction boxes deeper than four feet shall have a minimum inside dimension of 48 inches.

**Headwalls, Wingwalls, Endwalls, Trash Racks, and Railings** - All headwalls, wingwalls, and endwalls shall be considered individually and shall be, in general, designed in accordance with the Standards and Specifications of the California Department of Transportation and the requirements of the City.

Trash racks shall be provided where, in the opinion of the City Engineer, they are necessary to prevent clogging of culverts and storm drains and eliminate hazards. Trash racks shall conform to the requirements of the City Engineer. Temporary trash racks will be allowed where pipe will be extended in the near future.

On cross culvert drains, flared-end sections shall be used where required by the City Engineer.

Metal beam guardrail may be required by the City Engineer at culverts, headwalls, and box culverts and on steep side slopes. When so required, the railing shall be installed in accordance with the requirements of the State of California, Department of Transportation.

Pipe used as cross culverts to open ditches may be corrugated steel.

## 12.00 IMPROVEMENT AGREEMENTS AND SECURITY

**12.01 Improvement Agreement** - When project improvements are not completed at the time the Final or Parcel Map is ready for approval by the City Engineer, the applicant shall enter into an Improvement Agreement with the City. The agreement shall require the applicant to complete all conditions of approval and improvements as shown on the approved improvement plans within the time frame set forth therein.

**12.02 Improvement Agreement Security** - Applicant's performance under any such agreement shall be secured by a good and sufficient instrument of surety in an amount fixed by the estimated costs of the improvement in accordance with Table II. The estimate of construction costs shall be submitted to the City Engineer for review and approval. Security for City maintained street improvements shall provide that ten percent of the secured amount be withheld by the City for a period of one year after the completion of improvements. The ten percent retention may be used by the City to correct any defects in material or workmanship which become evident in the one year period following completion.

| TABLE II                                                                                                              |             |                     |       |
|-----------------------------------------------------------------------------------------------------------------------|-------------|---------------------|-------|
| AMOUNT OF AGREEMENT SECURITY                                                                                          |             |                     |       |
| TYPE OF SECURITY                                                                                                      | PERFORMANCE | LABOR/<br>MATERIALS | TOTAL |
| Bonds                                                                                                                 | 100%        | 100%                | 200%  |
| Letter of Credit                                                                                                      | 75%         | 75%                 | 150%  |
| Bank Deposit (1)                                                                                                      | 75%         | 75%                 | 150%  |
| Deposit with City (2)                                                                                                 | 75%         | 50%                 | 125%  |
| (1) Savings account assigned to City.                                                                                 |             |                     |       |
| (2) Deposit in a trust account or a negotiable certificate of deposit with principal payable to the City upon demand. |             |                     |       |

**12.03 Termination** - Termination date of any security shall extend beyond the termination date of the agreement or any extension thereof. Termination date shall be subject to the requirements of the City Engineer.

**12.04 Deposits and Certificates** - Bank deposits and certificates of deposit shall be purchased or an account opened so that the principal and interest are payable to the City of Amador City.

When the account or certificate is made jointly payable to the developer and the City, the developer shall submit a negotiable order of withdrawal with the bank book or an endorsed certificate.

12.05 Letter of Credit - The letter of credit shall be extended prior to its expiration date for any extension of time requested.

12.06 Performance Bond - Performance bonds shall be for the amount set forth in Table II. Performance bonds shall be provided by an "admitted California surety."

12.07 Security Release - Security will be released upon request of the project proponent in accordance with the terms of these standards and the Improvement Agreement.

12.08 Time Extension - Upon written request by the developer, no less than thirty days prior to the expiration of the agreement, an extension of time may be requested from the City. The developer shall have made a good faith effort to complete improvement requirements, or weather conditions or litigation prevents completion of the improvements. An extension of time of up to one year may be approved, provided the improvement security is adjusted subject to approval of the City Engineer.