
THE CITY OF AMERICAN CANYON
DEPARTMENT OF PUBLIC WORKS

**ENGINEERING STANDARD
PLANS AND SPECIFICATIONS
FOR
PUBLIC IMPROVEMENTS**



MAY 1, 1995

CITY OF AMERICAN CANYON
ENGINEERING STANDARD PLANS AND SPECIFICATIONS
FOR PUBLIC IMPROVEMENTS

Public improvements within the City of American Canyon shall be constructed in accordance with the Standard Plans and Specifications of the State of California, Department of Transportation, Division of Highways, dated July, 1992, and in accordance with the following modifications and revisions of the City of American Canyon Engineering Standard Plans and Specifications.

The combination of these two documents are hereinafter collectively referred to as the Engineering Standard Plans and Specifications of the City of American Canyon.

In the event of discrepancy between the contract documents, the order of precedence from highest to lowest shall be as follows: (1) Contract Change Order, (2) Permits from other agencies, as may be required by law, (3) Special Provisions, (4) Approved Plans, (5) Standard Plans, and (6) Standard Specifications.

Specifications pertaining to the administration of the City contracts will be contained in the Special Provisions for the contract.

References to contract administration, measurement, and payment shall not apply to subdivisions or other private developments.

For development plans within the City of American Canyon such as tentative plans, grading plans, improvement plans, or others, the order of precedence for standards from highest to lowest are as follows:

1. Improvement Plans
2. City of American Canyon
3. State of California

All exceptions to #2 or #3 shall be noted and initialed by the City Engineer on each Improvement Plan.

The City Engineer, from time to time, may revise any and all engineering designs, standards, plans, specifications, and procedures contained within the Engineering Standards. The contractor, developer, builder, etc., has the responsibility to ensure they have the latest revisions to these engineering design standards, plans, specifications, and procedures.

CITY OF AMERICAN CANYON
PUBLIC WORKS DEPARTMENT
ENGINEERING STANDARD PLANS AND SPECIFICATIONS

PRICE: \$50.00 (Tax included)

This edition of the City of American Canyon's Engineering Standard Plans and Specifications has been printed in loose leaf form in order than it may be updated on a yearly basis, or as required, to reflect the changing technology and thinking of the engineering profession and the construction industry.

Each and every purchaser of these standards shall be responsible for obtaining the revisions from the City of American Canyon Public Works Department 10 West American Canyon Road, American Canyon, California, 94589.

Interested parties who wish to suggest changes or amendments to these drawings may communicate with the Director of Public Works.

Copies of these drawings may be obtained at 10 West American Canyon Road, American Canyon, California, 94589. There will be an additional charge of \$.50 per copy per drawing/page for mail orders to cover postage and handling. Minimum charge is \$10.00 per order.

TABLE OF CONTENTS

ENGINEERING DESIGN STANDARDS

STANDARD SPECIFICATIONS

STANDARD PLANS

DISCLAIMER

This manual includes Design and Construction Standards of the City of American Canyon for public and private improvements. It is neither intended as, nor does it establish a legal standard for these functions.

ACKNOWLEDGEMENT

The preparation of these Engineering Standard Plans and Specifications has been facilitated with the help of several people:

Mark Clarkson, P.E.
City of American Canyon
Director of Public Works

Mark Hicks
City of American Canyon
Construction Inspector

Robert L. Schwerin, III
City of American Canyon
Operations Superintendent

Jerome Dohrman
City of American Canyon
Senior Wastewater Operator

Steve Moore
City of American Canyon
Senior Water Operator

Alice Rae
City of American Canyon
Administrative Secretary

Peter Sarant
Sarant Engineering

Damon Sarant
Sarant Engineering

Emmanuel Langit
Independent CAD Contractor

**TABLE OF CONTENTS
ENGINEERING DESIGN STANDARDS**

	<u>PAGE</u>
ADDENDA	
<u>SECTION 1 -- GENERAL</u>	1
1.01 Purpose.....	1
1.02 Definitions.....	1
<u>SECTION 2 -- CONSTRUCTION PLANS</u>	3
2.01 General.....	3
2.02 Preparation	4
2.03 Submission.....	6
<u>SECTION 3 -- STREET DESIGN</u>	8
3.01 General.....	8
3.02 Geometrics	8
3.03 Appurtenances	9
<u>SECTION 4 -- STORM DRAINAGE</u>	11
4.01 General.....	11
4.02 Design	12
Table 1 -- Runoff Coefficients for Rational Method	17
Figure 1 -- Travel Time for Overland Flow	19
Figure 2 -- Bank and Shore Protection	20
<u>SECTION 5 -- SANITARY SEWER SYSTEM</u>	21
5.01 Purpose.....	21
<u>SECTION 6 -- WATER SYSTEM</u>	30
6.01 Purpose.....	30
6.02 Water System	30
<u>SECTION 7 -- STREET LIGHTING</u>	40
7.01 General.....	40
7.02 Design	40
<u>SECTION 8 -- PREPARATION OF TRAFFIC STUDIES</u>	42
8.01 Introduction	42
8.02 Traffic Study Analysis.....	42
8.03 Presentation and Results of Traffic Studies	44

PUBLIC WORKS DEPARTMENT



ENGINEERING STANDARD PLANS & SPECIFICATIONS

Addendum 1 – July 23, 1998

The City of American Canyon Public Works Department (PWD) has changed Standard Drawing #7.08 - Installation of Private Fire Protection Services. Due to ongoing maintenance problems with the Ames Double Detector Check Valve assemblies, the Department will no longer allow the installation of Ames backflow prevention devices. Standard Drawing #7.08 is revised as follows:

Notes

1. Backflow prevention devices shall be Febco 806 (Double Check Detector Assembly) with a 5/8" Sensus meter, except where an onsite fire department connection is required by the Fire District or where the City Engineer determines that additional protection is required. In these cases, the backflow prevention device shall be a Febco 826 (Reduced Pressure Detector assembly) with a 5/8" Sensus meter. Sensus meters shall read in increments of 100 cu. ft.

Installation of the Ames backflow prevention device will be allowed only for plans approved prior to July 15, 1998. However, we request the hydraulic calculations for the fire service be reviewed and, if possible, the Ames device be replaced with the appropriate Febco. The PWD has been maintaining the Ames backflow prevention devices at no charge to the property owners. The Department has been able to do this because Ames has been supplying replacement parts to the City at no charge. If in the future the City is charged for replacement parts, this charge will be passed on to the property owner.

Addendum 2 - November 13, 2000

The following changes have been made to City Standard Detail 7.07, "Fire Hydrant Installation, Water Distribution System."

1. Hydrants shall be painted "safety yellow."
2. Concrete pier blocks are required, rather than 2"x8" redwood block.
3. Break-away hydrant bolts are no longer required at the check valve.
4. Long Beach #615 is no longer on the approved list of hydrants.
5. Disregard detail note #5.

Questions about the City's Standard Plans and Specifications may be directed to the Public Works Department at (707) 647-4550.

Addendum No. 3

Please note the following changes, additions and/or clarifications to the City of American Canyon Public Works Department Engineering Standards and Specifications for Public Improvements dated May 1995

Standard Drawing No. 3.06 and 3.07- disregard 2% slope callout in gutter pan.

Standard Drawing No. 3.07 -4 ¾" dimension shown shall be from top of asphalt at gutter lip to top of curb (similar to Standard Drawing 3.06

Standard Drawing No. 3.07 – Polypropylene is not required.

Standard Drawing No. 3.10 – Woven wire is not required in new driveways. Woven wire is required in driveways when replacing an existing driveway.

Standard Drawing No. 3.10 – Residential driveway throat widths; One-car garage 12'; Two-car garage 16'; Three-car garage 24'.

Standard Drawing No. 3.18 – U-bolt type mounting devices are acceptable.

Standard Drawing No. 4.01 – Cover shall be defined as top of pipe to finish grade for water and sewer pipe. Cover shall be defined as top of pipe to subgrade for storm drain pipe and culverts.

Standard Drawing No. 4.01 – For water mains add caution tape and tracer wire per Standard Drawing 7.11 except tracer wire shall be laid on top of pipe not at bottom of trench.

Standard Drawing No. 5.03 - Trash bars are required on all curb inlets.

Standard Drawing No. 5.03, 5.04 and 5.07 - Fossil filters shall be required in all catchbasins unless otherwise noted on the plans.

Standard Drawing No. 7.02 and 7.03 – When meters are not yet installed, curb stops shall be shut off and a cable tie installed in the top of the curb stop; cutting or tampering of the cable tie will constitute a straight tie-in connection, subject to penalties.

Standard Drawing No. 7.07 – Replace 2"x8" redwood blocks with concrete piers
Fire hydrant to be painted safety yellow
Eliminate breakaway hydrant bolts.
Delete note #5 and support bars.
Pipe is 6" ductile iron pipe.
Delete Long Beach #615 fire hydrant option.

Standard Drawing No. 7.11 – Note #3 – tracer wire shall be laid on top of pipe not at bottom of trench.

Standard Drawing No. 7.14 – Valves shall be bolted to crosses and tees.

Standard Drawing No. 8.01 - Hand holes shall be located on the down stream side of the pole in relation to traffic flow

Standard Drawing No. 9.01, 9.02 and 9.03 – Stake stabilizers are required on all tree stakes

Section 71-1.08 Sewer Structures - Add: Sanitary sewer manholes shall be subjected to a vacuum or water testing for ex-filtration.

Standard Drawing 3.06, 3.07 and 3.15 - All concrete surface finishes shall be a Class "A" finish per Section 51.

Section 19-1.03 Grade Tolerance – Add item C: Certification of grading plane by a licensed surveyor or professional engineer of sub-grade, sub-base and base grade shall be provided to the City Engineer for review and approval prior to placing of subsequent layers of material

Section 3.03F Signing, Striping and Barricades – Add 3.03F-6: All required signage and striping shall be installed by the developer and approved by the City Engineer prior to public access to the project site.

Section 19-3.06 Structure Backfill – Change to: Structure backfill material shall be ¾" Class II aggregate base, compacted to 95.

Standard Drawing No. 10.04 - Irrigation piping shall be purple pipe, minimum schedule 40.

Section 99-1.12 Hydrostatic Testing – Add: Irrigation systems shall be subjected to a hydrostatic test of 200 psi for 2 hours prior to connecting to the water main.

SECTION 1 -- GENERAL

1.01 PURPOSE

The purpose of these design standards is to provide certain minimum standards for the design of public works improvements within the City of American Canyon. Any items which are not included in these Standards shall be designed in accordance with the State Planning Manual, State Highway Design Manual, Subdivision Ordinance, or Zoning Ordinance, as defined below or as directed by the City Engineer.

1.02 DEFINITIONS -- In these Standards, the intent and meaning of the terms that are used shall be as defined:

- A. City -- Shall mean the City of American Canyon, a municipal corporation.
- B. City Engineer -- Shall mean the City Engineer of the City of American Canyon, California, or designee.
- C. Consulting Engineer -- Any person or persons, firm, partnership, or corporation legally authorized to practice Civil Engineering in the State of California who prepares or submits improvement plans and specifications to the Department of Public Works of the City of American Canyon for approval.
- D. Department of Public Works (Public Works) -- Shall mean the Department of Public Works of the City of American Canyon.
- E. Design -- Shall mean street alignment, grade, geometric section, structural section; sanitary sewer alignment, grade, size; water system alignment, grade, size, valving, fire hydrant location; storm drain alignment, grade, size, and miscellaneous improvements as required by the City Engineer.
- F. Developer -- Shall mean any person, firm, corporation, partnership, or association engaged in the development of property in part or in whole by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.
- G. Director of Public Works -- Shall mean the Director of Public Works of the City of American Canyon.
- H. Easement -- Shall mean an easement dedicated to the City or Public Utility which shall be continuing and irrevocable unless formally abandoned.
- I. Improvements -- Refers to street work, sidewalk, curb, gutter, driveways, water mains, sanitary sewer, storm drainage, public utilities, landscaping, and fences to be installed by the developer on land to be used for public right-of-way.
- J. Manual of Warning Signs -- Shall mean the "Manual of Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways" of the State of California, Department of Transportation, current edition.
- K. Soils Report -- Shall mean a report prepared by any person(s), firm, partnership, or corporation legally licensed to prepare "Soils Reports" in the State of California.

- L. Standard Plans and Specifications -- Shall mean the Engineering Standard Plans and Specifications of the City of American Canyon.
- M. Standards -- Shall mean the Engineering Standard Plans and Specifications of the City of American Canyon.
- N. State Highway Design Manual -- Shall mean the State of California, Department of Transportation Highway Design Manual, latest edition, unless otherwise stated.
- O. State Materials Manual -- Shall mean the Materials Manual of Testing and Control Procedures of the State of California, Public Transportation Laboratory manual of Tests, Department of Transportation, latest edition, unless otherwise stated.
- P. State Planning Manual -- Shall mean the Planning Manual of Instructions of the State of California, Department of Public Works, Department of Transportation, Parts 1-8, latest edition, unless otherwise stated.
- Q. State Specifications -- Shall mean the Standard Specifications of the State of California, Department of Transportation, latest edition, unless otherwise stated.
- R. State Standard Plans -- Shall mean the Standard Plans of the State of California, Department of Transportation, latest edition.
- S. Subdivision Ordinance -- Shall mean the Subdivision Ordinance as adopted by the City.
- T. Zoning Ordinance -- Shall mean the Zoning Ordinance as adopted by the City.

SECTION 2 -- CONSTRUCTION PLANS

2.01 GENERAL

Complete plans and specifications for all proposed improvements including any necessary dedications and easements shall be submitted to the Department of Public Works for approval and must receive the required approval prior to the beginning of construction of any such improvements. This shall apply where it is the intent that maintenance responsibility for any portion of such improvement will be transferred to the City of American Canyon. Such plans shall be prepared under the direction of a Registered Civil Engineer in accordance with the provisions of "Civil Engineer's Act" Chapter 7, Division 3, of the Business and Professions Code, relating to the practice of Civil Engineering.

The City of American Canyon Department of Public Works has provided a list of submittal requirements and guidelines as shown below. In order to reduce review time, each submittal package should be as complete as possible. The information required for a specific project may vary. Therefore, the applicant is encouraged to meet with the Public Works staff for a pre-submittal meeting. A complete submittal of Improvement Plans may include any or all of the following:

- Five (5) sets of signed Improvement Plans to include grading, erosion control, and other improvements as needed for both public and private civil engineering.
- Three (3) sets of hydraulic and hydrologic calculations for the proposed drainage system.
- Three (3) sets of signed engineer's estimate of all work performed establishing public improvements.
- Three (3) sets of signed engineer's estimate of all work performed establishing private civil improvements.
- Payment of 5% cash deposit of the total public engineer's estimate.
- Three (3) sets of Soils Engineer's Report.
- Three (3) sets of hydraulic calculations for the proposed water system.
- Three (3) sets of draft Improvements Agreement for public improvements.
- One (1) complete improvement plan review checklist signed by the Engineer with submittal cover letter.

Improvement Plans shall be approved in its entirety only. Incomplete submittals will delay the processing time and may be returned unprocessed. It is advised that prior to submittal an applicant review all design of improvements with current City standards.

All costs associated with the plan review and construction inspection of the project shall be borne by the Applicant. Complete plans will decrease time of review and reduce review costs.

All improvements must be shown in detail. Examples of items to include in the Improvement Plans may show the complete plans, profiles, and details for all street work; drainage channels and structures; retaining walls or other improvements to support cut slopes and embankments; bridges; the location of underground utilities

which may control the location and elevation of storm drains and culverts; the location of fire hydrants, street monuments, curbs, gutters, and sidewalks, fences, gates, and driveways; if constructed in conjunction with the improvements, show structures and drainage facilities to control slides; location of street lights, sanitary sewers, and other improvements which may be required to complete the work.

All applicable bonds shall be in place prior to the start of the work. Furthermore, all public improvements must have an Improvement Agreement in place prior to acceptance of the project.

Applicable connection fees shall be paid prior to insurance of the building permit or connection of utilities, whichever comes first.

The Director of Public Works reserves the right to require any and all information needed to design and construct the proposed improvement.

Any changes to the City of American Canyon's Standards shall be called out in the submittals. Written prior approval from the City Engineer shall be obtained by the designer. If a set of improvement plans have been signed by the City Engineer and changes by the designer to the City's Standards have not been called out and approved in writing, the developer will be held to meet the City's Standards at no cost to the City.

Right-of-Way Policy

The right-of-way policy requires that all public sewers, water mains, and storm drainage be in easements or rights-of-way granted or dedicated for sewers, mains, and storm drainage, and/or public use. In the case of public right-of-way for streets, further dedication is not necessary.

Easements for public utilities shall meet both of the following width criteria:

1. Minimum width of any easement shall be 20 feet for one utility, with greater widths required for multiple utilities.
2. All easements shall have a minimum width in feet equal to the required trench width according to the Standards for trench backfill plus two (2) additional feet of width for every foot of depth of the pipe as measured from the bottom of the pipe to the finished grade. All utilities shall be centered within their easements.

2.02 PREPARATION

Construction plans and specifications shall be prepared in accordance with the following requirements:

- A. Dimensions – Construction plans shall be clearly and legibly drawn in ink on Mylar shell 24" x 36" with a 1 1/2" clear margin on the left edge and 1" margins on all other edges.
- B. Scale -- Horizontal scale shall be 1" = 40'; vertical scale shall be 1" = 4'. Other scales shall be approved in writing, in advance, by the City Engineer.
- C. Form:
 1. Title Sheet:
 - a. Name and number of subdivision or project.
 - b. Vicinity map with North arrow.

- c. Index of sheets.
- d. City Engineer's signature block.
- e. Plan view showing the entire street right-of-way layout (Scale: 1" = 100'), proposed water and sewer mains, storm drainage system, lot numbers, street lights, sheet index, flow arrows, and other miscellaneous improvements to be installed.
- f. Complete legend.
- g. Typical street section for each varying width street.
- h. Title block -- located along the lower, right edge of the paper.
- i. Temporary and permanent bench marks including their descriptions.
- j. General and special notes relating to construction methods.
- k. Soils engineer's, developer's, and design engineer's name, address, and telephone number.
- l. Date completed.
- m. Design engineer signature and seal on all sheet.
- n. All lettering or printing shall be 1/8" minimum in height and of such shape and weight as to be readily legible on prints and microfilm reproductions.
- o. Minimum pen size shall be "0".

2. Street Plan and Profile

- a. Plan view of each street to be improved shall be shown on separate sheets indicating existing improvements and contours/elevations within 100' of the project boundary, proposed improvements and future improvements, if known. Proposed improvements shall include sidewalk, curb, gutter, driveways, sewer mains, water mains, water service and sewer lateral locations, storm drains, manholes, valves, fire hydrants, fencing, barricades, monuments, survey stationing, face of curb data for all curves, and other data as required by the City Engineer. The survey stationing shall read from left to right with the north arrow pointing either to the top or left edge of the sheet. All stationing shall be a continuation of existing improvements where possible.
- b. Profile view of each street shall be shown immediately below or above its plan view. The profile shall include existing grade lines, sewer mains, storm drains, water mains, public utility mains, all utility crossings, and top of curb. Discrete elevations shall be shown of top of curb, at grade break points, manhole and catch basin inverts, and water main crossings with other utilities, and at each lot line in plan view or every 100', whichever is less.

3. Site Development Plan

Site development plan shall include building pad, finished floor elevations, individual lot drainage pattern, adjacent land drainage, driveway size and locations, fencing, existing contours, existing trees, wells, ditches, and other landmarks important in the construction of the improvements. In addition, adjacent lot grades shall be shown for a minimum of twenty-five feet (25') from the project boundary. The site development plan shall conform to F.H.A. standards.

4. Street Light Layout

The street light layout plan shall include the location of proposed electroliers, service point(s), pull boxes, the intensity of the proposed Luminare, a location plan of the Conduit Run showing wire size and length,

and the mounting height and arm length of the proposed electrolier/pole assembly. The street light layout plan shall be approved by the City Engineer.

2.03 SUBMISSION

Five (5) sets of construction plans shall be submitted along with five (5) copies of the subdivision final map to the City Engineer for checking to ensure compliance with these Standards and City's Ordinances, along with plan checking fees. Submitted plans shall include specifications, test data, materials list, drainage calculations, sewer calculations, soils report and design, lot closures, easement and right-of-way descriptions, ties to the City of American Canyon Bench Mark and Monument System, special call-out section of plans not meeting the Engineering Standards, and other material as requested by the City Engineer.

A current title report (6 months or less) shall be submitted with the final map. The title report shall include the entire legal boundary of property being divided.

Closure calculations shall be provided at the time of initial map check submittal. All calculated points within the map shall be based upon one common set of coordinates. All information on the map shall be directly verifiable by information shown on the closure calculation print-out. The point(s) of beginning shall be clearly defined and all lot acreage shall be shown and verifiable from information shown on the closure calculation print-out.

Soils Reports shall be submitted in 8 1/2" x 11" bound folders. The analysis must, at a minimum, include a map of the subject area showing proposed and existing streets, contours, and location and type of soils samples obtained. The results of all field data and laboratory tests shall be included. Design for proposed street sections shall be part of the report. Street structural section design shall include recommendations for: natural subgrade, sub-base, base and pavement compaction, and thickness to achieve design strength.

A minimum of fifteen (15) working days shall be allowed for review of Construction Plans and Final Subdivision Maps. Should there be required alterations or revisions to the plans submitted, one copy shall be returned by the City Engineer with the requested clarifications indicated thereon. At such time as the consulting engineer has made the necessary revisions, the plans shall again be submitted (5 copies) for checking. However, plans shall not be considered approved until the City Engineer has signed in the approval block on the plans. There shall be no changes permitted to an approved set of plans unless such changes, corrections, or additions are re-submitted to the City Engineer for approval as previously described for original plans. Excepted from approval are any features of the plans that are contrary to, in conflict with, or do not conform to any California State Law, City's Ordinance or Resolution; even though such errors, omissions, or conflicts may have been overlooked by the Department of Public Works.

After formal approval of the plans by the City Engineer, five (5) copies plus one (1) Mylar (polyester film 3ml) sepia copy (with matte surface up) shall be filed with the City Engineer's office for City records. Three (3) additional copies of reduced improvement plans (11" x 17" or 18" x 26") are required and shall be furnished by the developer or his representative to the City Engineer without cost.

Three (3) copies plus one (1) Mylar of as-built drawings shall also be submitted to the City Engineer's office upon completion of the project. If the record drawings are found to be inadequate in any area, the drawings will be rejected and the developer will be required to re-submit. The warranty period on the project will not begin until approved record drawings are on file with the City Engineer.

Prior to installation, all equipment and materials are to be inspected by the City. The City Engineer reserves the right to have the developer submit manufacturers specifications on any or all equipment and material to be used on the project.

