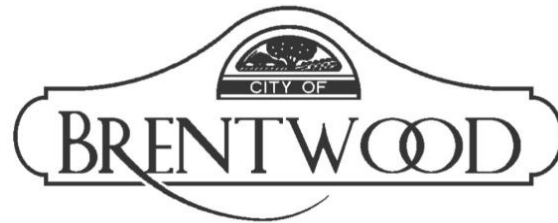


Engineering Department

Brentwood, California



ENGINEERING
PROCEDURES MANUAL

For
Public and Private Development
Projects

708 Third Street • Brentwood • CA 94513

CITY OF BRENTWOOD

**ENGINEERING PROCEDURES MANUAL FOR PUBLIC AND
PRIVATE DEVELOPMENT PROJECTS**

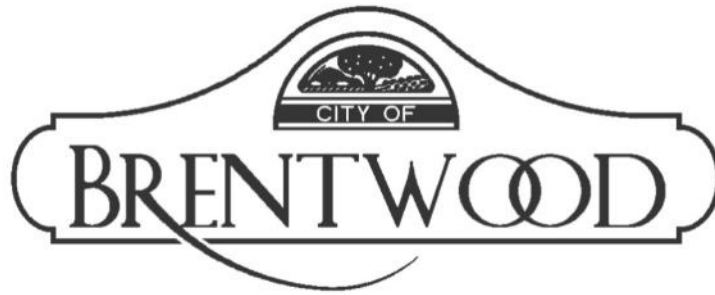
Price: \$25.00 (tax included)

Revision Date: May 6, 2005

The City of Brentwood has established minimum standards for the design, preparation of plans, and construction of public as well as privately owned improvements within the City. These standards and requirements have been compiled in this Engineering Procedures Manual for Public and Private Development Projects ("Manual").

In order to continue to ensure the construction of quality improvements and to satisfy changing industry standards, the City Engineer may from time to time issue amendments and clarifications to the Manual. It is the responsibility of all persons utilizing this manual to obtain the latest revisions. Interpretations of the materials contained herein can be obtained from the City Engineer.

Copies of this Manual may be obtained from the City of Brentwood, Engineering Department at 708 Third Street, Brentwood, CA 94513. There will be an additional charge of \$4.00 per copy for mail orders.



**ENGINEERING PROCEDURES MANUAL
FOR PUBLIC AND PRIVATE DEVELOPMENT PROJECTS**

TABLE OF CONTENTS

I.	INTRODUCTION	I
II.	SUBMITTAL PROCEDURES	SP
III.	DEVELOPMENT FEES	DF
IV.	FINAL MAPS (PARCEL OR TRACT).....	FM
V.	GRADING PLANS	GP
VI.	IMPROVEMENT PLANS (CONSTRUCTION, TRAFFIC, IRRIGATION AND LANDSCAPE, SOUND AND RETAINING WALLS).....	IP
VII.	JOINT TRENCH PLANS	JT
VIII.	ENGINEERING DESIGN STANDARDS FOR PUBLIC AND PRIVATE IMPROVEMENTS	ED
IX.	INSPECTION PROCEDURES AND ACCEPTANCE OF PUBLIC IMPROVEMENTS	IA
X.	APPENDIX	AP

I
INTRODUCTION

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. GENERAL	I - 3
2. DEFINITIONS.....	I - 4

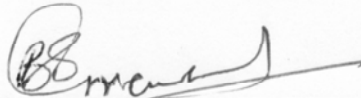
I INTRODUCTION

1. **GENERAL**

The purpose of the Engineering Procedures Manual for Public and Private Development Projects is to establish guidelines and standards for the design, preparation, submittal, and approval of plans for both public and private improvements within the City of Brentwood. This Manual is designed to assist all persons involved in the land development process.

This Manual is intended to conform with and supplement the latest City of Brentwood Standard Plans and Specifications as well as other publications and standards that are referenced herein.

We hope that the preparation and publishing of this Manual is useful to all owners, developers, engineers, builders, and contractors in the planning, design, and construction of your project in the City of Brentwood.



Balwinder S. Grewal, City Engineer

2. **DEFINITIONS**

In this manual, the intent and meaning of the terms that are used shall be as defined:

- (A) **APPLICANT** - A person, resident, landowner, firm, agency, corporation, partnership, association or their representative, engaged in the land development process.
- (B) **BOND** – Bid performance and payment bond or other instrument of security.
- (C) **CITY** - Shall mean the City of Brentwood, a municipal corporation.
- (D) **CITY ENGINEER** - Shall mean the City Engineer of the City of Brentwood, California.
- (E) **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 City Engineer of the City of Brentwood for approval.
- (F) **COUNCIL** - The City Council of the City of Brentwood.
- (G) **DESIGN** - Shall mean street alignment, grade, geometric section, structural section; sanitary sewer alignment, grade, size; water system alignment, valve sizing, fire hydrant location; storm drain alignment, grade, size; location and size of all required easements and rights-of-way; lands to be dedicated; lot size and configuration; grading; traffic access; and such other specific physical requirements in the plan and configuration of the entire subdivision or development project as may be necessary to ensure consistency with or implementation of, any applicable tentative Map, General or Specific Plan, or Conditions of Approval.
- (H) **DEVELOPER** - Shall mean any person, resident, landowner, firm, agency, corporation, partnership or association or their representative 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.
- (I) **EASEMENT** - Shall mean a right created by grant, reservation, agreement, prescription, or necessary implication, which the City, Public Utility or private entity has in the land of another, which shall be continuing and irrevocable unless formally abandoned.
- (J) **ENCROACHMENT PERMIT** – Permit required when work is performed within existing or future City Right-of-Way as per City of Brentwood Municipal Code Chapter 12.08.
- (K) **FINAL MAP** - A map prepared in accordance with the provisions of local ordinance and the Subdivision Map Act which map is designed to be recorded in the office of the Recorder of Contra Costa County.

- (L) GRADING PERMIT – Permit required when performing grading operations as per City of Brentwood Municipal Code Chapter 15.52 and City of Brentwood Ordinance 463.
- (M) IMPROVEMENTS - Includes, but no limited to, street work, sidewalk, curb, gutter, driveways, water mains, sanitary sewer, storm drainage, public utilities, landscaping, fences, lighting, signing and pavement markings, and any and all other related improvements and facilities installed by the developer on land for both public and private improvements.
- (N) IMPROVEMENT PLAN - An engineering plan, prepared by a licensed civil engineer in the State of California, showing the design, sanitary sewers, storm drain, water systems, grading and earthwork, roadways, and all other development, appurtenant structures, and facilities and construction, including engineering calculations therefore, comprising on-site improvements required for a subdivision or land development project.
- (O) LOT LINE ADJUSTMENT – The changing of parcel lines between two or more parcels without processing a subdivision map, as long as the Lot Line Adjustment does not create a greater number of parcels and complies with local zoning and building ordinances.
- (P) MANUAL OF TRAFFIC CONTROL - Shall mean the “Manual of Traffic Controls for Construction and Maintenance Work Zones” issued by the State of California, Department of Transportation, latest edition, unless otherwise stated.
- (Q) ONSITE IMPROVEMENTS – Shall mean structures erected and/or constructed permanently for use on a site.
- (R) OFFSITE IMPROVEMENTS – Shall mean the development of land to make adjacent property suitable for construction, not limited to sidewalks, curbs or streets.
- (S) OVERSIZED LOAD PERMIT – Permit required when moving any vehicle on City streets in excess width of eight (8) feet and /or length of sixty-five feet. Permit will be issued as per City of Brentwood Municipal Code Chapter 10.16 and the California Vehicle Code.
- (T) RIGHT-OF-WAY – Shall mean a strip of land, which is used as a roadbed, either for a street or railway. The land is set aside as an easement or in fee, either by agreement or condemnation. May also be used to describe the right itself to pass the land of another.
- (U) SOILS REPORT - Shall mean a report prepared by any person or persons, firm, partnership, or corporation legally licensed to prepare “Soils Reports” in the State of California, and shall be current within 12 months.
- (V) STANDARD PLANS AND SPECIFICATIONS - Shall mean the Standard Plans and Specifications of the City of Brentwood, latest edition.

- (W) STATE HIGHWAY DESIGN MANUAL - Shall mean the State of California Department of Transportation Highway Design Manual, latest edition, unless otherwise stated.
- (X) STATE MATERIALS MANUAL - Shall mean the Materials Manual of Testing and Control Procedures of the State of California, Public Transportation Laboratory Manual of Test, Department of Transportation, latest edition, unless otherwise stated.
- (Y) 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.
- (Z) STATE SPECIFICATIONS - Shall mean the Standard Specifications for the State of California, Department of Transportation, latest edition, unless otherwise stated.
- (AA) STATE STANDARD PLANS - Shall mean the Standard Plans of the State of California, Department of Transportation, latest edition, unless otherwise stated.
- (BB) SUBDIVIDER - A person, resident or property owner, firm, corporation, partnership, association or their representative who proposes to divide, or causes to divide real property into a subdivision for himself/herself or for others except that employees and consultants of such persons or entities, acting in such capacity, are not subdividers.
- (CC) SUBDIVISION - The division, by any subdivider, of any unit or work of improved or unimproved land, or any portion thereof, shown on the latest equalized county assessment roll as a unit or contiguous units, for the purpose of sale, lease, or financing, whether immediate or future.
- (DD) SUBDIVISION MAP ACT - The Subdivision Map Act of the State of California (Title 7 of the Government Code), as amended.
- (EE) SUBDIVISION ORDINANCE - Shall mean the Brentwood Subdivision and Land Development Ordinance as adopted and amended by the City Council of the City of Brentwood.
- (FF) TENTATIVE MAP - A map, prepared by or under the direction of a land surveyor or civil engineer, for the purpose of showing the design of a proposed subdivision, the existing conditions in and around said subdivision, and other information as may be required.
- (GG) TENTATIVE MAP, VESTING - A tentative map for a residential subdivision, as defined herein, that shall have printed conspicuously on its face the words "Vesting Tentative Map" at the time it is filed.
- (HH) TITLE REPORT – Shall mean a report showing the condition of title before a sale or loan transaction, which is current within 6 months.

- (II) ZONING ORDINANCE - Shall mean Brentwood Zoning Ordinance as adopted and amended by the City Council of the City of Brentwood.

II
SUBMITTAL PROCEDURES

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. APPLICANT	SP - 2
2. FIRST PLAN CHECK	SP - 2
(A) Final Maps (Parcel or Tract Maps)	SP - 2
(B) Grading Plans	SP - 3
(C) Improvement Plans for Public and Private Development Projects	SP - 3
(D) Lot Line Adjustments	SP - 5
3. SECOND PLAN CHECK	SP - 8
(A) Final Maps (Parcel Maps or Tract Maps)	SP - 8
(B) Grading Plans	SP - 8
(C) Improvement Plans for Public and Private Development	SP - 9
4. THIRD PLAN CHECK (AND SUBSEQUENT CHECKS, IF REQUIRED)	SP - 9
5. PRIOR TO PERMIT ISSUANCE	SP - 10
6. PROCESSING BY CITY STAFF	SP - 11
7. PLAN CHECK SCHEDULE	SP - 14
8. ELECTRONIC FILE SUBMISSION	SP - 14
(A) Required Data	SP - 14
(B) Layers	SP - 16

II SUBMITTAL PROCEDURES

1. **APPLICANT**

The applicant is responsible to make certain that the following items are included with each application and submittal package that is submitted to the City Engineer for plan check. Applications failing to include one or more of these items will not be accepted for processing. All applications and submittals shall be made in person with a representative of the Engineering Department. No initial submittals for plan check will be accepted by mail. All submitted plans shall be folded to no larger than 9" x 12".

2. **FIRST PLAN CHECK**

(A) FINAL MAPS (PARCEL MAPS OR TRACT MAPS)

The following items are required for submittal and processing of Final Parcel and Tract Maps. Applications failing to include one or more of these items will not be accepted for processing.

- (1) Six (6) sets of blueline prints or bond copies of the subject map.
- (2) Two (2) complete sets of closure calculations with a coordinate map indicating points referenced in the calculations.
- (3) One (1) set of final project Conditions of Approval along with a signed Planning Commission Resolution.
- (3) Two (2) copies of the current preliminary title report and subdivision guarantee. The title report shall not be more than six months old.
- (4) One (1) copy of the approved Tentative Map.
- (5) Copies of all reference documents utilized in the preparation of the map:
 - (a) Abutting record maps, records-of-survey, etc.
 - (b) All related easement documents
 - (c) Survey notes, tie notes and reference maps.
- (7) Completed application form and map check deposit.
- (8) Any additional information deemed reasonable and necessary by the City Engineer or required by local ordinance.

(B) GRADING PLANS

The following items are required for submittal and processing of grading plans. Applications failing to include one or more of these items will not be accepted for processing. All grading plan submittals shall be signed and stamped by a Civil Engineer and a Soils/Geologic Engineer who are responsible for the preparation of the grading plans.

- (1) Six (6) sets of bluelines or bond copies prepared by or under the direction of a Civil Engineer and a Soils/Geologic Engineer registered in the State of California with every plan sheet signed, with seal or stamp and expiration date.
- (2) Two (2) copies of a project specific geological (soils) report prepared by a registered Soils/Geologic Engineer experienced in geotechnical engineering in this area and dated within 12 months. Soils report shall include shrinkage, subsidence, pH of the native soils and pesticide levels. Soils reports shall be submitted in 8½" x 11" bound folders.
- (3) Two (2) completed Engineer's quantity and cost estimates (City of Brentwood form), including shrinkage and subsidence.
- (4) Completed application form and plan check deposit (calculated on the application form).
- (5) One (1) set of final project Conditions of Approval and signed Planning Commission Resolution.
- (6) Copies of any drainage or grading acceptance letters from adjacent property owners.
- (7) One (1) complete set of any other materials or information necessary for the plan check of the subject grading plan (improvement plans, adjacent grading plans, grading specifications, erosion control plans and specifications, earthwork calculations, dewatering plans, drainage and diversion structures, etc.).
- (8) A copy of the Storm Water Pollution Prevention Plan (SWPPP) including the WDID number for all projects of one (1) acre and more.
- (9) A copy of mitigation measures related to grading operations.
- (10) Any additional information deemed reasonable and necessary by the City Engineer or required by local ordinance.

(C) IMPROVEMENT PLANS FOR PUBLIC AND PRIVATE DEVELOPMENT PROJECTS

The following items are required for submittal and processing of improvement plans for both public and private development projects within the City of

Brentwood. Applications failing to include one or more of these items will not be accepted for processing. All improvement plans shall be signed and stamped by the responsible Design Engineer and shall have all other agency review signatures affixed prior to submittal for plan check.

- (1) Ten (10) sets of bluelines or bond copies prepared by or under the direction of a Civil Engineer registered in the State of California, with every plan sheet signed, with seal or stamp and expiration date.
- (2) Two (2) sets of hydrology and hydraulic calculations (with hydrology maps).
- (3) Two (2) sets of Sanitary Sewer Hydraulic Calculations.
- (4) Two (2) sets of Water System Calculations.
- (5) One (1) copy of the "Plan Check Submittals Applicant Check List" completed in its entirety by the applicant.
- (6) Two (2) completed Engineer's quantity and cost estimates (City of Brentwood form).
- (7) Completed application form and plan check deposit (calculated on the application form).
- (8) One (1) set of final project Conditions of Approval and signed Planning Commission Resolution.
- (9) One (1) complete set of any other applicable materials and information necessary for the plan check of the subject project improvement plans (approved Tentative or Final Map, grading plans, adjacent improvement plans, record or as-built drawing of existing facilities, current soils report, cross sections, special designs, structural calculations, lighting calculations, sight distance calculations, etc.).
- (10) Copy of submitted "Notice of Intent" and Storm Water Pollution Plan, submitted to the Regional Water Quality Control Board, if project encompasses one (1) or more acres unless previously submitted with a grading plan.
- (11) Copies of Mitigation Measures.
- (12) Any additional information deemed reasonable and necessary by the City Engineer or required by local ordinance.

(D) LOT LINE ADJUSTMENTS

(1) GENERAL PROVISIONS

The Subdivision Map Act has provisions allowing minor adjustments of property lines for four (4) or fewer existing adjoining parcels to be made without the necessity of filing a parcel or tract map. In order for the applicant to utilize this procedure, however, the following criteria must be met:

- (a) All of the property owners of the affected parcels must consent to the Lot Line Adjustment.
- (b) The adjustment may not create a greater number of parcels than existed originally.
- (c) The adjustment may not reduce the size of any parcel to less than minimum development standards as set by the City of Brentwood's building and zoning ordinances.
- (d) The resulting changes in ownership of the affected land must be conveyed by legal document if the subject property is not held under one ownership. The adjustment may be reflected by deed and/or by a Record of Survey prepared by a Licensed Land Surveyor or qualified Registered Civil Engineer if the subject property is held under a common ownership.

(2) SUBMITTAL AND PROCESSING REQUIREMENTS (APPLICANT)

Prior to submittal of a Lot Line Adjustment, the applicant should contact the City's Engineering Department to verify that the adjustment will not violate any of the restrictions governing the use of this procedure. The following items must be included in the original submittal package. Applications failing to include one or more of these items will not be accepted for processing.

- (a) One (1) application form fully completed with notarized signatures from all property owners affected.
- (b) One (1) Title Report on each affected parcel (current within 6 months)
- (c) Two (2) sets of legal description for the original transfer and resultant areas of all affected parcels prepared by a Licensed Land Surveyor or qualified Registered Civil Engineer.
- (d) Two (2) sets of 8 ½" x 11" plat showing old and new lot lines and the transfer area hatch-marked, prepared by a Licensed Land Surveyor or qualified Registered Civil Engineer.

- (e) Closure/Area calculations of original, transfer and resultant areas in order to verify new legal descriptions.
- (f) Grant Deeds effecting property transfer.
- (g) Submittal fee.
- (h) Any other information deemed reasonable and necessary by the City Engineer.
- (i) Proof from the Contra Costa County Tax Collector that current and prior years' property taxes for all affected parcels have been paid.

(3) PROCESSING

- (a) All submittals are to be made to an Engineering Department representative.
- (b) Engineering Department representative review submittal package for required information and completeness.
- (c) Engineering Department representative distributes for checking to the appropriate departments/agencies if the submittal package is in order and the fees have been paid.
- (d) Following notification of approval, the applicant shall submit an original legal description and plat map "wet" stamped and signed by the appropriate Land Surveyor or Civil Engineer.
- (e) The applicant is responsible for taking the signed and notarized document to the Contra Costa County Recorder for recordation. The applicant should get a conformed copy of the document from the County Recorder, as the original will be returned to the City of Brentwood after recordation.

(4) CHECKLIST

- (a) PLAT FORMAT
The lot line adjustment plat shall be drawn, printed or otherwise reproduced in a manner guaranteeing a permanent record in black ink on a sheet size of 8 ½" x 11".
- (b) PLAT REQUIREMENTS
The plat shall be drawn to 1" = 20' scale unless otherwise specified by the City Engineer. It shall show the following applicable information as well as any other information necessary to adequately describe the adjusted lot line.
 - (aa) Each lot in its entirety.

- (bb) All bearings and distances, all curve data including the delta, radius length and radial bearing, if not perpendicular to tangent line.
- (cc) Areas (net and gross acreage) of existing and proposed lots. Also provide the original and resultant areas for each proposed lot at the end of each legal description.
- (dd) Lot numbers of the new lots.
- (ee) Existing lot designations such as lot number and subdivision number for affected parcels and contiguous parcels.
- (ff) Assessor's parcel numbers.
- (gg) All existing easements.
- (hh) Tie to the nearest existing monument for basis of bearing.
- (ii) Abutting streets and alleys showing names, centerlines, widths and monuments (with LS No. and recording map information.
- (jj) Old lot line shall be shown as lightly dashed and new lot line shall be shown as a solid line with dimensioning between them. Hatch-mark the transfer area and label as such.
- (kk) Vicinity map at a scale of approximately 1" = 200'.
- (ll) North arrow and scale.
- (mm) Show all structures, walls fences or trees that are located adjacent to the adjusted lot line, sufficient to determine the location of these facilities with respect to the new lot line, if the new lot line corresponds with the exception of structures. Structures adjacent to the adjusted lot line or within 20' must be shown so required setbacks can be verified.
- (nn) Title of Lot Line Adjustment shall include recorded map or deed information, if original parcel was created without a map
- (oo) Depict Point of Beginning (P.O.B.) or Point of Commencement (P.O.C.) as identified in legal description.

3. SECOND PLAN CHECK

(A) FINAL MAPS (PARCEL MAPS OR TRACT MAPS)

- (1) Three (3) sets of the subject map revised to include all the necessary revisions, changes, and/or additions noted on the initial plan check.
- (2) Two (2) complete sets of any revised closure calculations together with a revised coordinate map if any changes were made.
- (3) Return to the City ALL previous check prints of the Final Map and all other plan check materials.
- (4) The applicant shall submit a signed statement indicating that the map revisions comply with the previous plan check comments. The applicant shall also indicate any changes to the map that are not in response to the previous check comments, and shall explain any exceptions taken to the plan check comments.
- (5) The applicant shall submit a signed statement indicating that the final parcel or tract map satisfies all the Conditions of Approval. The statement shall also explain or clarify how the Conditions of Approval are being met.
- (6) Any additional information deemed reasonable and necessary by the City Engineer and the plan checker.

(B) GRADING PLANS

- (1) Three (3) sets of revised grading plans showing all the requested revisions, changes, and/or additions.
- (2) Three (3) sets of masonry soundwall and/or retaining wall plan showing plan, profile and special details. Applicant shall also include necessary structural calculations and a letter from the Geotechnical Engineer stating that plans and calculations conform to report recommendations.
- (3) Two (2) complete sets of any other previously submitted information, which required revisions or changes.
- (4) Return to the City ALL previous check prints and plan check materials.
- (5) The applicant shall submit a signed statement indicating that the grading plan revisions comply with the previous plan check comments. The applicant shall also indicate any changes to the plans that are not in response to the previous check comments, and shall explain any exceptions taken to the check comments.

- (6) The applicant shall submit a signed statement indicating that the grading plans comply with and satisfy all Conditions of Approval.
 - (7) Any additional information deemed reasonable and necessary by the City Engineer and the plan checker.
- (C) IMPROVEMENT PLANS FOR PUBLIC AND PRIVATE DEVELOPMENT
- (1) Three (3) sets of revised improvement plans showing all the requested revisions, changes, and/or additions.
 - (2) Three (3) complete sets of bluelines or bond copies of the project composite joint trench plans (including all underground utilities, street lighting system, box and vault locations, wiring, location and layout of other public improvements, etc.) signed and stamped by the responsible Design Engineer. Submit three (3) sets of traffic signal plans and specifications, if required for the project.
 - (3) Three (3) complete sets of landscaping/irrigation systems plans (including medians, onsite, offsite, sleeving, walls, decorative features, water service locations, etc.) signed and stamped by the responsible design professional.
 - (4) Two (2) complete sets of any other additional previously submitted information, which required revisions or changes.
 - (5) Return to the City ALL previous check prints and plan check materials.
 - (6) The applicant shall submit a signed statement indicating that the improvement plan revisions comply with the previous plan check comments. The applicant shall also indicate any changes to the plans that are not in response to the previous check comments, and shall explain any exceptions taken to the check comments.
 - (7) The applicant shall submit a signed statement that the improvement plans comply with and satisfy all the Conditions of Approval.
 - (8) Any additional information deemed reasonable and necessary by the City Engineer and the plan checker.

4. THIRD PLAN CHECK (AND SUBSEQUENT CHECKS, IF REQUIRED)

- (A) Applicant shall submit complete sets of revised Final Maps, grading plans, improvement plans, and all other submittal and plan check material in the same number and following the same procedures described in the preceding section. This process is continued until the applicant is notified by the Engineering Department Representative of map and/or plan approval.

- (B) Prior to plan approval, the engineer or developer shall submit a complete videotape of the property boundary, walking the perimeter, verbally describing the property line for future reference.
- (C) An additional plan check deposit may be required by the Engineering Department Representative if the previously collected deposit is not sufficient to cover the actual plan check costs or if there are significant changes to the scope or basic parameters of the proposed work.

5. PRIOR TO PERMIT ISSUANCE

(A) All permit processing and inspection fees as calculated by the current Engineering Fee Schedule shall be paid to the Engineering Department.

(B) Bonds

- (1) Grading Permits: The applicant shall provide security for the performance of the work described and delineated on the approved grading plan and interim and final erosion and sediment control plans in an amount not less than ten (10) percent of the total estimated cost of the work. The estimated cost of work shall be approved by the City Engineer.

The type of security shall be either:

- (a) Cash deposit with the City; or
 - (b) A certificate of deposit approved by the City Attorney from a financial institution subject to regulations by the state or Federal government who's said financial institution pledges fund are on deposit and guaranteed for payment, and payable immediately, partially or in full to the City upon demand.
- (2) Encroachment Permits: The applicant must file with the City Engineer a bond or cashier's check payable to the City of Brentwood for the following projects:
 - (a) On small projects (i.e., driveways, sidewalks, sewer and water service laterals, etc.), an amount equal to the cost of the work plus twenty percent (20%) or an amount based on the discretion of the City Engineer.
 - (b) On large projects (i.e., subdivisions, commercial and industrial developments, etc.), Performance and Payment (Labor and Material) bonds, each in the amount equal to one hundred percent (100%) of the cost of work, which also shall be specified in the Subdivision Improvement Agreement.

The Maintenance Bond shall be filed with the City prior to acceptance of improvements. The amount of the Maintenance bond shall be

twenty percent (20%) for small projects and a minimum of ten percent (10%) of the cost of the improvements for large projects. This amount shall be specified in the Subdivision Improvement Agreement.

In both cases, the Maintenance Bond shall be held for a period of one (1) year. In the event of non-compliance on items that the City requires before acceptance, the City may deduct the actual cost it incurred from the deposit account. In the event of the bond having been posted, the City may proceed to take action against the surety and principal for the actual cost the City incurred plus twenty percent (20%) for administration and overhead costs.

- (C) Prior to issuance of approved permit, a complete set of signed, approved plans prepared on 4 mil mylar photo mylar (reverse reading with matte surface up) along with three (3) blueprint or bond copies must be on file with the City.
- (D) Compliance with and/or completion of any condition required prior to permit issuance.

6. PROCESSING BY CITY STAFF

- (A) All applications and submittals are made to the Engineering Department Representative. The initial (first) plan check application and submittal must be made in person by the applicant to the Engineering Department Representative. No initial plan checks will be accepted by mail.
- (B) Prior to accepting the application for plan check, Engineering Department Representative reviews the submittal for completeness of the required information. The Engineering Department Representative will use the completed "Plan Check Submittals Applicant Checklist" provided by the applicant as a basis for comparison with the actual submitted items.
- (C) Submittals will be accepted for plan check only if all required items and information are included. Incomplete submittals will not be accepted and will be returned to the applicant unchecked.
- (D) The Engineering Department Representative will collect the required fee(s) and deposits and issue a receipt to the applicant. The Finance Department will establish a deposit account number. The initial grading plan and improvement plan deposits will be made based upon the Engineer's initial cost estimate of the work (City of Brentwood form).
- (E) The Engineering Department Representative will date stamp each map and plan sheet and the first sheet of all other bound documents and materials included in the submittal package. The submittal will be logged and a project file started.
- (F) Engineering Department Representative distributes the map and plans to Engineering and other appropriate City departments (Maintenance

Department, Police Department, Planning Department, etc.) and affected outside agencies (East Contra Costa Irrigation District, Contra Costa County Flood Control District, East Bay Regional Parks, etc.) for review. Applicant should allow sufficient time for turn-around of all plan checks as described elsewhere in this manual. Review by outside agencies may increase the plan check turn-around time.

- (G) Engineering returns ALL redlined plan check maps, plans, and accompanying related submittal materials to the applicant for revisions and changes. The Engineering Department Representative will note in the file the date the submittal was returned to the applicant.
- (H) Where items of concern cannot be noted on the map or plans, Engineering will provide a letter to the applicant detailing the plan check comments. The information returned by Engineering to the applicant will incorporate all the comments that have been received from the various City departments and other agencies.
- (I) Applicant revises the map and plans in accordance with Engineering's plan check comments and requirements. Applicant resubmits revised maps and plans, with Engineering's check prints and comments along with any requested additional information or documentation, for subsequent plan check. Submittals addressing comments from other agencies shall include said agency's red lines and/or comments.
- (J) This process is continued and repeated until all the plan checker's comments and the project Conditions of Approval have been satisfactorily addressed, and the map and plans are ready for approval.
- (K) Based on the approved Engineer's cost estimate, Engineering will calculate the necessary additional fees and prepare the final security and agreement forms for execution by the applicant/developer. Forms are transmitted to the applicant for execution.
- (L) Upon notification, applicant submits the original map with all required signatures, Subdivision Agreement, securities, and fees still outstanding. All required signatures must be executed on the original map (i.e. "wet" signatures). Maps may not be submitted for signature until after the City Engineer has signed any associated public improvement plans.
- (M) Upon notification, the applicant submits the original grading plans, improvement plans, and/or site development plans for City Engineer's signature. City Engineer will not sign the plans until applicant has had the plans signed by the responsible Engineer of Record, Soils Engineer, Fire District, and any other affected outside agencies (ECCID, EBRP, CCFCD, etc.).
- (N) The Engineering Department Representative schedules the map for City Council action and prepares the staff report. The complete submittal shall be received by the department three (3) weeks prior to the City Council meeting.

The applicant will be notified in writing of the City Council's action regarding the Final or Parcel Map, bonds, and agreements.

- (O) After receiving all necessary approvals and signatures from the City, the map is transmitted to the applicant's title company for the remaining processing through to recordation.
- (P) Within 30 days of recordation of the Final or Parcel Map, the applicant is responsible to provide one (1) set of full-size duplicate photo mylars, (4-mil, reverse-read, matte side up) one (1) set of 8 ½ " X 11" reductions of the map, and three (3) sets of bluelines or bond copies of the recorded map to the City for record keeping purposes.

Important: The applicant should note that no subdivision addresses will be assigned and the City will issue no building permits until such time as the City receives these mylars and copies of the Final or Parcel Map.

- (Q) 30 days of signature by the City Engineer on the grading, improvement, and/or site development plans, applicant shall provide to the City one (1) set of full-size duplicate photo mylars (4-mil, reverse-read, matte side up) and three (3) sets of blueline or bond copies of the signed plans for record keeping purposes. A duplicate set of original mylar plots of the approved grading, improvement, and/or site development plans may be submitted in lieu of photo mylar.

Important: The applicant should note that no grading permit, encroachment permit, or building permits will be issued by the City until such time as these mylars and copies are received.

- (R) Any proposed changes made during construction shall be noted and shown on the original improvement plans by the Engineer of Record, and submitted to the City for review and written approval.
- (S) Engineer of Record shall submit record drawings to the Engineering Department Representative prior to final inspection and acceptance of the improvements. The record drawings shall contain all the signatures obtained from the City and other affected agencies.
- (T) Final acceptance of public improvements will not be done until all the items of work as shown on the approved improvement plans, and any corrections, are completed. When all items are completed, the developer shall request final acceptance and, after acceptance by the City Engineer, shall be agendaized for formal acceptance by City Council.
- (U) Upon acceptance of the improvements by the City Council, the City Clerk releases the retained security.

7. PLAN CHECK SCHEDULE

The Engineering Department Representative will check the applicant's map and/or plan submittal as outlined in this manual. The submittal will be checked for completeness of information and to make certain that all related materials are included. **Incomplete submittals cannot be plan checked, and will not be accepted for processing.** The submittal will not be accepted for checking until all the required information has been included, and the plan check deposits have been satisfactorily made.

For submittals that satisfy the map and plan criteria and requirements, the City of Brentwood (City) intends to adhere to the following plan-check schedule:

First Plan Check: Return to applicant within fifteen (15) working days of initial receipt of the submittal.

Second Plan Check: Return to applicant within ten (10) to fifteen (15) working days of receipt of the submittal.

Third Plan Check (and subsequent checks, if necessary): Return to applicant within five (5) to ten (10) working days of receipt of plans by the City.

In order to maintain the above schedule, timely and thorough responses to the City's comments are required by the applicant. Incomplete submittals will make it impossible for the City to meet these turnaround times. The actual length of time to complete each plan check is also dependent upon several factors that are not controlled by the City, including size of the project/number of lots; level, completeness, and accuracy of information shown on the plans; complexity of the project; and responsiveness to project Conditions of Approval and previous plan check comments.

Applicable throughout this manual, all final map and plan submittals that are prepared electronically (e.g. CAD drawn) shall be accompanied by an electronic file (.dwg or .dxf format). See the section in this manual on Electronic File Submission.

8. ELECTRONIC FILE SUBMISSION

(A) REQUIRED DATA

In addition to the hard copies of all map and plan materials currently being submitted, a digital graphics file containing the following data is required to be submitted in order to facilitate transferring of the file into the City mapping system in a .dwg or .dxf file format (see section on LAYERS for layering designations).

Coordinate System: California Coordinate North American Datum 1983 (NAD 83), Zone III, US Survey Feet.

All line works shall connect at line end points, not overlapping or coming short of connecting. Polygonal objects, such as parcels or other such boundaries, shall be created from line segments, connecting to other line work at intersections. Polygons are not to be constructed from a single, closed polygon where coincidental boundaries occur. All text shall be placed in such a manner that the intersection point falls within the polygonal area.

Digital files for maps shall be submitted to the City within 30 days of recordation of the Final or Parcel Map. Upon completion of the project construction and prior to acceptance of the improvements by the City Council, digital files for all public, private, and site development improvements shall be submitted. These digital files shall contain all information shown on the approved plans; any approved changes or revisions, as well as all "As-Built" information. Any deviation from these requirements will be considered by the City Engineer on an individual project basis.

- (1) CHANNELIZATION/SIGNALIZATION DATA:
 - Striping and Legends Traffic Signs and Signals

- (2) CONTOUR DATA:
 - Contour Lines Contour Elevations

- (3) GRADING DATA:
 - Pad Elevation Top of Curb Elevation
 - Street Grade

- (4) ROAD DATA:
 - Right-of-Way Lines Street Name Sign Location
 - Centerline Median Islands
 - Sidewalk Retaining/Sound Wall
 - Driveway Gutter Line Location
 - Curb Lines Handicap Ramp
 - Street Lights Tree/Shrubs

- (5) SURFACE DATA:
 - Creek/Stream Ditch
 - Lake/Pond Marsh
 - Park Railroad
 - Trails Canals
 - Wells Tanks

- (6) SURVEY DATA:
 - Boundary Line Monument Locations
 - Center Line Lot and Parcel Lines
 - Easement Lines Control Lines

- (7) UTILITIES DATA:
- | | |
|-------------------|--------------------|
| Main Lines | Poles |
| Controllers | Vaults |
| Service Laterals | Transformers |
| Meters and Valves | Lift Station |
| Cleanout | Manholes and Boxes |
| Culvert | Riprap |
| Catch Basin | |

(B) LAYERS

- (1) Introduction: The objective of setting up a Layering Standard to be used in Digital Mapping Systems is to reduce redundancy and duplication in map maintenance. This section defines the minimum standards for such digital submissions.

The format for digital submissions of the graphical data, which will be accepted by the City, shall be in the DWG, DXF or SHP format.

- (2) Standard Layers: The City has broken down its layer convention to three categories, those being *Modifier*, *Group* and *Root*:

Modifier_Group_Root: For Example: EX_H2O_M12, would denote an existing 12" Water Main Line.

Two to four characters per category separated by an underscore () are used. This restricts the length of any layer name to a maximum of twelve characters, which is all that will appear on AutoCAD's layer manager.

Any drawing symbols and/or text styles other than the standard AutoCAD fonts used must be saved as separate drawing files.

- (3) Modifier: The Modifier category is used to describe the proceeding Group category. In this category, there should only be a maximum of two characters before the underscore (i.e., EX_ for existing, PR_ for proposed, etc.).
- (4) Group: The Group category groups objects into related fields, such as water, sanitary sewer, storm drainage, etc.
- (5) Root: The Root category is used to break down the Group category into smaller divisions of objects to be worked with individually or in groups.
- (6) 'Read-Me' Layer: A 'Read-Me' layer (X_READ_ME) shall be included on each drawing for "not-to-be-plotted information" on file organization. Any new layers added to the standard layers shall be documented on the Read-Me Layer.

- (7) Border: When working in paper space, all information contained in the border of the drawing (including text, logos, etc.) shall be placed under the BORDER layer.
- (8) Color vs. Pen Weight - The City utilizes a color vs. Pen weight (black ink) configuration in plotting a hard copy of a drawing. The following pen to color assignments may be used or as a reference only:

Color Vs. Pen Weight Table

Pen Weight (mm)	Color Number	Color Description
0.08 mm	1	Red
0.17 mm	2	Yellow
0.25 mm	3	Green
0.34 mm	4	Cyan
0.42 mm	5	Blue
0.51 mm	6	Magenta
0.59 mm	7	Black
0.68 mm	8	Light Gray
0.78 mm	9	Brown
0.85 mm	10	Dark Green
0.93 mm	11	Dark Blue
1.01 mm	12	Orange
1.10 mm	13	Purple
1.18 mm	14	Medium Gray
1.27 mm	15	Dark Gray
	All others	All others

- (9) Standard Layers (Group and Root)

The “??” in all of the following layering conventions represents the modifier of the information. The following lists show the layering guidelines that have been established, and being in the format of layer name, linetype/block symbol/element, and description.

(10) Channelization Features

??_CHNL_AR*	{SYMBOL}	LANE CONTROL ARROWS
??_CHNL_BA	{SYMBOL}	CONCRETE BARRIER
??_CHNL_BD	{SYMBOL}	BARRICADE
??_CHNL_BL	CONTINUOUS	BIKE LANE
??_CHNL_DL	{SYMBOL}	DELINEATORS
??_CHNL_LG*	{SYMBOL}	STREET LEGEND
??_CHNL_LM	{SYMBOL}	LANE MARKERS
??_CHNL_MS	CONTINUOUS	MISCELLANEOUS
??_CHNL_SI	{SYMBOL}	SIGNAGE
??_CHNL_TS	{SYMBOL}	TRAFFIC SIGNAL
??_CHNL_TX	{TEXT}	TEXT
??_CHNL_WC	CONTINUOUS	WHITE CONT STRIPING
??_CHNL_WD	DASHED	WHITE DASH STIPING
??_CHNL_YC	CONTINUOUS	YELLOW CONT STRIPING
??_CHNL_YD	DASHED	YELLOW DASH STRIPING

* - By size or type of facilities

(11) Contour Features

??_CNTR_CN	DASHDOT	CONTOUR
??_CNTR_DI	DASHDOT	DEPRESSION INDEX CONTOUR
??_CNTR_DT	DASHDOT	DEPRESSION INTERMEDIATE CONTOUR
??_CNTR_EL	CONTINUOUS	ELEVATIONS
??_CNTR_IN	DIVIDE	INDEX CONTOUR
??_CNTR_IT	DIVIDE	INTERMEDIATE CONTOUR
??_CNTR_MS	CONTINUOUS	MISCELLANEOUS
??_CNTR_SU	DIVIDE	SUPPLEMENTAL CONTOUR
??_CNTR_TX	{TEXT}	TEXT

(12) Easement Features

??_ESMT_AE	HIDDEN	ACCESS EASEMENT
??_ESMT_CE	HIDDEN	CONSTRUCTION EASEMENT
??_ESMT_EC	HIDDEN	ECCID EASEMENT
??_ESMT_GE	HIDDEN	GAS EASEMENT
??_ESMT_IR	HIDDEN	IRRIGATION EASEMENT
??_ESMT_MS	CONTINUOUS	MISCELLANEOUS
??_ESMT_PGE	HIDDEN	PG&E EASEMENT
??_ESMT_PH	HIDDEN	TELEPHONE EASEMENT
??_ESMT_PU	HIDDEN	PUBLIC UTILITY EASEMENT
??_ESMT_RW	HIDDEN	RIGHT-OF-WAY EASEMENT
??_ESMT_SD	HIDDEN	STORM DRAINAGE EASEMENT
??_ESMT_SS	HIDDEN	SANITARY SEWER EASEMENT
??_ESMT_TP	HIDDEN	TEMPORARY EASEMENT
??_ESMT_TV	HIDDEN	TELEVISION EASEMENT
??_ESMT_TX	{TEXT}	TEXT
??_ESMT_WA	HIDDEN	WATER EASEMENT
??_ESMT_WL	HIDDEN	WELL EASEMENT

(13) Gas Features

??_GAS_M*	DASHDOT	MAIN LINE
??_GAS_MS	CONTINUOUS	MISCELLANEOUS
??_GAS_MT*	{SYMBOL}	METER
??_GAS_LS*	DASHDOT	LATERAL SERVICE LINE
??_GAS_TX	{TEXT}	TEXT
??_GAS_VV*	{SYMBOL}	VALVE

* - By size or type of facilities

(14) Grading Features

??_GRD_EL	DASHDOT	PAD ELEVATION
??_GRD_GB	CONTINUOUS	GRADE BREAK
??_GRD_HP	DASHDOT	HIGH POINT
??_GRD_MS	CONTINUOUS	MISCELLANEOUS
??_GRD_SG	CONTINUOUS	STREET GRADE
??_GRD_SLP	{SYMBOL}	TOP & TOE OF GRADED SLOPE
??_GRD_SL	DASHDOT WITH ARROW	SWALE-DIRECTION OF FLOW
??_GRD_TC	CONTINUOUS	TOP OF CURB
??_GRD_TX	{TEXT}	TEXT

(15) Irrigation Features

??_IRRIG_BF	{SYMBOL}	BACKFLOW ASSEMBLY
??_IRRIG_BB*	{SYMBOL}	BUBBLER
??_IRRIG_CA	CONTINUOUS	CANAL
??_IRRIG_CTL	{SYMBOL}	IRRIGATION CONTROLLER
??_IRRIG_LS*	HIDDEN	LATERAL SERVICE LINE
??_IRRIG_M*	HIDDEN	MAIN LINE
??_IRRIG_MS	CONTINUOUS	MISCELLANEOUS
??_IRRIG_PS*	{SYMBOL}	POPOP SPRAY
??_IRRIG_RW	PHANTOM	RIGHT-OF-WAY
??_IRRIG_SP*	{SYMBOL}	SHRUB SPRAY
??_IRRIG_SV	DOUBLE HIDDEN LINE	SLEEVE
??_IRRIG_TX	{TEXT}	TEXT
??_IRRIG_VV*	{SYMBOL}	VALVE

* - By size or type of facilities

(16) Power Features

??_PWR_BX*	{SYMBOL}	STREET LIGHT BOX
??_PWR_LS*	CONTINUOUS	LATERAL SERVICE LINE
??_PWR_MH*	{SYMBOL}	MANHOLE
??_PWR_M*	PHANTOM	MAIN LINE
??_PWR_MS	CONTINUOUS	MISCELLANEOUS
??_PWR_PE	CONTINUOUS	PEDESTAL
??_PWR_POL	CONTINUOUS	POLE
??_PWR_TF	CONTINUOUS	TRANSFORMER
??_PWR_TL*	CONTINUOUS	TRANSMISSION LINE
??_PWR_TT	CONTINUOUS	TRANSMISSION TOWER
??_PWR_TX	{TEXT}	TEXT
??_PWR_VU*	{SYMBOL}	VAULT

* - By size or type of facilities

(17) Sanitary Sewer Features

??_SS_CO	CONTINUOUS	CLEAN OUT
??_SS_FM	CONTINUOUS	FORCE MAIN
??_SS_LF	CONTINUOUS	LIFT STATION
??_SS_LS*	HIDDEN	LATERAL SERVICE LINE
??_SS_MH*	{SYMBOL}	MANHOLE
??_SS_M*	HIDDEN	MAIN LINE
??_SS_MS	CONTINUOUS	MISCELLANEOUS
??_SS_TX	{TEXT}	TEXT

* - By size or type of facilities

(18) Signalization Features

??_SGNL_DC	{SYMBOL}	DETECTORS
??_SGNL_M*	CONTINUOUS	MAIN LINE
??_SGNL_MS	CONTINUOUS	MISCELLANEOUS
??_SGNL_POL	CONTINUOUS	POLE
??_SGNL_SI	CONTINUOUS	TRAFFIC SIGNS
??_SGNL_TX	{TEXT}	TEXT
??_SGNL_VL	CONTINUOUS	EMERGENCY VEHICLE INDICATOR LIGHTS

* - By size or type of facilities

(19) Storm Drainage Features

??_SD_CB	{SYMBOL}	CATCH BASIN
??_SD_CO	{SYMBOL}	CLEAN OUT
??_SD_CU	{SYMBOL}	CULVERT
??_SD_LS*	HIDDEN	LATERAL SERVICE LINE
??_SD_MH*	{SYMBOL}	MANHOLE
??_SD_M*	HIDDEN	MAIN LINE
??_SD_MS	CONTINUOUS	MISCELLANEOUS
??_SD_RA	{SYMBOL}	RIP RAP
??_SD_SLP	CONTINUOUS	SLOPE EMBANKMENT
??_SD_ST	{TEXT}	STATIONING
??_SD_TE	{SYMBOL}	TEST HOLE
??_SD_TX	{TEXT}	TEXT

* - By size or type of facilities

(20) Street Features

??_STRT_BC	CONTINUOUS	BACK OF CURB
??_STRT_BD	{SYMBOL}	STREET BARRICADE
??_STRT_CL	CENTER	CENTER LINE
??_STRT_CR	CONTINUOUS	CURB LINE
??_STRT_DW	{SYMBOL}	DRIVEWAY
??_STRT_FC	CONTINUOUS	FACE OF CURB
??_STRT_GD	{SYMBOL}	GUARD RAIL
??_STRT_GR	CONTINUOUS	GRAVEL
??_STRT_GU	CONTINUOUS	GUTTER
??_STRT_HR	CONTINUOUS	HANDICAP RAMP
??_STRT_LRW	PHANTOM	LIMITED ACCESS RIGHT-OF-WAY
??_STRT_LT	{SYMBOL}	ELECTROLIER LIGHTS
??_STRT_MS	CONTINUOUS	MISCELLANEOUS
??_STRT_NS	{SYMBOL}	STREET NAME SIGN
??_STRT_PV	CONTINUOUS	PAVEMENT
??_STRT_RE	CONTINUOUS	RETAINING WALL
??_STRT_RW	PHANTOM	RIGHT-OF-WAY
??_STRT_SH	HIDDEN	SHOULDER
??_STRT_SN	CONTINUOUS	SOUND WALL
??_STRT_SW	CONTINUOUS	SIDEWALK
??_STRT_TC	CONTINUOUS	TOP OF CURB
??_STRT_TF	{SYMBOL}	ELECTRICAL TRANSFORMER
??_STRT_TN	HIDDEN	TRENCH
??_STRT_TX	{TEXT}	TEXT

(21) Structure Features

??_STRC_BU	CONTINUOUS	BUILDING
??_STRC_CP	CONTINUOUS	CONCRETE PADS
??_STRC_DE	CONTINUOUS	DECK
??_STRC_FN	CONTINUOUS	FOUNDATION
??_STRC_MS	CONTINUOUS	MISCELLANEOUS
??_STRC_PO	CONTINUOUS	POOL
??_STRC_PP	CONTINUOUS	PAVED PADS
??_STRC_RE	CONTINUOUS	RETAINING WALL
??_STRC_TA	CONTINUOUS	TANKS
??_STRC_TH	CONTINUOUS	HOUSE TRAILER
??_STRC_TX	{TEXT}	TEXT
??_STRC_WE	CONTINUOUS	WELL

(22) Surface Features

??_SURF_BR	CONTINUOUS	BRUSH
??_SURF_CK	CONTINUOUS	CREEK
??_SURF_DH	PHANTOM	DITCH
??_SURF_DR	{SYMBOL}	AREA/SURFACE DRAIN
??_SURF_EM	CONTINUOUS	EMBANKMENT
??_SURF_FE*	CONTINUOUS	FENCE
??_SURF_HE	{SYMBOL}	HEDGE
??_SURF_IS	CONTINUOUS	ISLAND
??_SURF_LA	PHANTOM	LAKE/POND
??_SURF_MR	{HATCH PATTERN}	MARSH
??_SURF_MS	CONTINUOUS	MISCELLANEOUS
??_SURF_OR	{HATCH PATTERN}	ORCHARD
??_SURF_PA	PHANTOM	PARK
??_SURF_RO	CONTINUOUS	ROCK
??_SURF_RR	CONTINUOUS	RAILROAD
??_SURF_SE	PHANTOM	STREAM
??_SURF_SI	{SYMBOL}	SIGNAGE
??_SURF_SR	CONTINUOUS	SHRUBS
??_SURF_TI	CONTINUOUS	TRAIL
??_SURF_TR	CONTINUOUS	TREE
??_SURF_TX	{TEXT}	TEXT

* - By size or type of facilities

(23) Survey Features

??_SRVY_AB	DIAGONAL LINES	ABUTTERS, RIGHTS RELIQUISHED
??_SRVY_BM	{SYMBOL}	BENCH MARK
??_SRVY_BN	CONTINUOUS	BOUNDARY
??_SRVY_CL	CENTER	CENTER LINE OF STREET, ETC.
??_SRVY_CT	CONTINUOUS	CITY LIMIT LINE
??_SRVY_GL	DASHDOT	GRADING LINE
??_SRVY_HW	CONTINUOUS	HIGH WATER LINE
??_SRVY_LL	CONTINUOUS	LOT LINE
??_SRVY_MO*	{SYMBOL}	MONUMENT
??_SRVY_MS	CONTINUOUS	MISCELLANEOUS
??_SRVY_PL	PHANTOM	PROPERTY LINE
??_SRVY_RS	{SYMBOL}	RAILROAD SPIKE
??_SRVY_RW	CONTINUOUS	RIGHT-OF-WAY LINE

* - By size or type of facilities

(24) Telephone Features

??_TEL_BX	{SYMBOL}	TELEPHONE BOX
??_TEL_LS*	DASHDOT	LATERAL SERVICE LINE
??_TEL_MH*	{SYMBOL}	MANHOLE
??_TEL_M*	DASHDOT	MAIN LINE
??_TEL_MS	CONTINUOUS	MISCELLANEOUS
??_TEL_PE	CONTINUOUS	PEDESTAL
??_TEL_POL	{SYMBOL}	POLE
??_TEL_TT	{SYMBOL}	TRANSMISSION TOWER
??_TEL_TX	{TEXT}	TEXT
??_TEL_VU	{SYMBOL}	VAULT

* - By size or type of facilities

(25) Television Features

??_TV_PE	CONTINUOUS	PEDESTAL
??_TV_PO	{SYMBOL}	POLE
??_TV_MH*	{SYMBOL}	MANHOLE
??_TV_M*	DASHDOT	MAIN LINE
??_TV_LS*	DASHDOT	LATERAL SERVICE LINE
??_TV_TT	CONTINUOUS	TRANSMISSION TOWER
??_TV_VU	CONTINUOUS	VAULT
??_TV_MS	CONTINUOUS	MISCELLANEOUS
??_TV_TX	{TEXT}	TEXT

* - By size or type of facilities

(26) Water Features

??_H2O_AV	{SYMBOL}	AIR RELIEF VALVE
??_H2O_BO	{SYMBOL}	BLOWOFF
??_H2O_CAP	{SYMBOL}	CAP
??_H2O_FH	{SYMBOL}	FIRE HYDRANT
??_H2O_LS*	CONTINUOUS	LATERAL SERVICE LINE
??_H2O_M*	CONTINUOUS	MAIN LINE
??_H2O_MS	CONTINUOUS	MISCELLANEOUS
??_H2O_MT*	{SYMBOL}	METER
??_H2O_NP	CONTINUOUS	NON-POTABLE WATER LINE
??_H2O_TX	{TEXT}	TEXT
??_H2O_VV *	{SYMBOL}	VALVE

* - By size or type of facilities

III
DEVELOPMENT FEES

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. GENERAL	DF - 2
2. PAYMENT OF FEES.....	DF - 2
3. BONDS.....	DF - 2

III

DEVELOPMENT FEES

1. GENERAL

- (A) Fees for map checking, plan checking, document review, inspection of public and private improvements, encroachment permits, grading permits, water meters, miscellaneous processing, plan revisions, deposits, bonding amounts, and all other processing fees associated with the applicant's requested subdivision or land development projects shall be as shown on the latest City of Brentwood Engineering Fee Schedule adopted by the City.
- (B) Fees for various products and reproduction services, including blueprint/large Xerox, CAD-generated maps, electronic basemap files, custom plots, and digital output on disk, shall be as shown on the latest City of Brentwood Engineering Department Products and Services Fee Schedule adopted by the City.

2. PAYMENT OF FEES

- (A) Plan checking deposits for the fees noted above shall be made by the applicant to the City with every project application. The applicant's submittal will not be considered to be complete and no map or plan checking will be done by the City until the appropriate plan checking deposit has been received.
- (B) Deposit amounts for map and plan checking, and grading and encroachment permit fees, will be based on the projected City costs to service the applicant's request as shown on the latest City of Brentwood Engineering Fee Schedule. These deposits and fees will be calculated by the Engineering Department Representative on the standard Engineering Fees form.
- (C) The applicant shall pay fees for grading and encroachment permits to the City prior to the issuance of any permit.

3. BONDS

(A) GRADING AND ASSOCIATED IMPROVEMENTS

The applicant shall provide security for the performance of the work described and delineated on the approved grading plan and interim and final erosion and sediment control plans in an amount not less than ten (10%) percent of the total estimated cost of the work. The City Engineer shall approve the estimated cost of work.

The type of security shall be either:

- (1) Cash deposit with the City; or

- (2) A certificate of deposit approved by the City Attorney from a financial institution subject to regulations by the State or Federal government who said financial institution pledges funds are on deposit and guaranteed for payment, and payable immediately, partially or in full, to the City upon demand.

(B) PUBLIC IMPROVEMENTS

The applicant must file with the City a bond or cashier's check payable to the City of Brentwood. The Maintenance Bond shall be filed with the City prior to acceptance of improvements. The amount of the Maintenance bond shall be twenty percent (20%) for small projects (i.e., driveways, sidewalks, sewer and water service laterals, etc.) and a minimum of ten percent (10%) of the cost of the improvements for large projects (i.e., subdivision, commercial and industrial developments, etc.). This amount shall be specified in the Subdivision Improvement Agreement.

In both cases, the Maintenance Bond shall be held for a period of one (1) year. In the event of non-compliance on items that the City requires before acceptance, the City may deduct the actual cost it incurred from the deposit account. In the event of the bond having been posted, the City may proceed to take action against the surety and principal for the actual cost the City incurred plus twenty percent (20%) for administration and overhead costs.

IV
FINAL MAPS (PARCEL OR TRACT)

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. MAP REQUIREMENTS.....	FM - 2
(A) Map Form	FM - 2
(B) Map Content	FM - 2
2. CHECKLIST	FM - 4
(A) General Information.....	FM - 4
(B) Title Report.....	FM - 4
(C) Dedications and Certifications	FM - 4
(D) Monumentation.....	FM - 10
(E) Mathematical Accuracy and Geometry.....	FM - 11

IV FINAL MAPS (PARCEL OR TRACT)

1. **MAP REQUIREMENTS**

(A) MAP FORM

The Final Map (parcel or tract) shall be drawn, printed or otherwise reproduced in a manner guaranteeing a permanent record in black ink. The map shall be prepared on 4 mil. mylar (reverse reading with matte surface up), having an overall size of 18 inches by 26 inches.

A one-inch margin shall be left on each map edge, leaving an interior sheet size of 16 inches by 24 inches. No writing or marking of any type shall be inserted within the one-inch margin. The border shall be a black indelible line having a thickness of 1/16".

(B) MAP CONTENT

- (1) Vicinity map, which shall include the surrounding areas and nearby major roadway arterials.
- (2) All discrepancies with record data shall be shown.
- (3) Non-measured record lines shall be indicated.
- (3) Approved access shall be indicated with street name and recorded book and page number.
- (4) Private streets: Note; "Not maintained by the City of Brentwood", under the approved street name.
- (5) Private storm drain, sanitary sewer, or any other facilities shall be so noted within appropriate easements. Include additional 5' public utility easement on the map and dedication statement.
- (6) Title Information: The assigned subdivision number/parcel map number shall be shown on the map. A legal description of the property is to be included under the assigned map number. The date of map preparation, north arrow and scale, in addition to the firm preparing the map, must be shown in conjunction with the assigned map number.
- (7) Legend: A complete legend shall be provided on each sheet indicating at least the following;
 - (a) Found monumentation: Solid
 - (b) Set monuments: Open

- (8) Adjacent parcels shall be indicated on the map to the extent possible, including recorded map book and page number and/or the Assessor's Parcel Number (APN). Any recent subdivisions shall be noted, including any recording information.
- (9) Privately maintained roads shall be indicated by dashed lines. Publicly maintained roads (dedicated and accepted) shall be shown by solid lines.
- (10) All existing easements shall be indicated by dashed lines, with all associated dimensions referenced. Bearings, distances and ties to easements shall also be included. Holder of easement, purpose and recordation data to be referenced. Easements whose locations are not defined of record shall be noted as such on the map.
- (11) Ties to nearest existing street intersection shall be shown. Tie map to the monument shown on the City of Brentwood Record of Survey, in book 118 pages 40-42 of Land Surveyors Maps.
- (12) All road names, widths, setback lines and required widenings shall be indicated on the map.
- (13) Lots shall be numbered consecutively beginning with the number "1". Lots used for streets, alleys or barrier strips shall be lettered. Parcels shall be consecutively lettered beginning with the letter "A".
- (14) Ground to grid factor.
- (15) California Coordinate System Plane coordinates (NAD 83, Zone III, US Survey Feet) describing the boundaries of the subdivision.
- (16) The difference between magnetic north and true north (theta angle) and indicate where the theta angle is taken.
- (17) Common area notations required for condominium projects must appear on the map.
- (18) City boundaries must appear on the map when applicable.
- (19) Future street lines and original property lines must be indicated by dashed lines on the map.
- (20) Each lot or parcel must be shown completely on one sheet. If more than one sheet is required, the first sheet of the map shall contain an index map indicating limits of property covered by each sheet.
- (21) All lots or parcels shall show lot areas (net) in applicable English measurements.

2. **CHECK LIST**

(A) GENERAL INFORMATION

Prior to submittal of a Final Parcel or Tract Map, a Tentative Map must have been submitted and approved. The Final Map must be submitted prior to expiration of the Tentative Map, and must be in substantial conformance with said approved Tentative Map.

The Final Map shall be prepared by or under the direction of a licensed land surveyor or registered civil engineer authorized to practice land surveying.

A Final Map will not be approved until all Conditions of Approval attached to the approved Tentative Map have been satisfied, and all required public improvements have been constructed and accepted by the City, or the owner posts a good and sufficient bond to complete said construction and all required agreements have been executed. Bonding requirements are contained in this manual.

State law requires the Engineer or Surveyor of Record to monument the recorded map per Article 9, "Monuments", of the Subdivision Map Act. Prior to acceptance of a Final Map for recording, a statement signed by the Engineer of Record will be required that he/she has been retained and paid for the monumentation called for on the map, and that he/she guarantees the monumentation will be set following construction, or at a date approved by the City.

(B) TITLE REPORT

- (1) Report provided must cover the entire area as shown on the Final Map.
- (2) Owner's name on title report must match the name shown on the Final Map.
- (3) All easements listed on the title report must be shown on the map (i.e., Signature Omissions.)
- (4) The City shall receive a letter from all public entities or utilities that hold existing easements on the title report that they have no objections of the filing of the map.

(C) DEDICATIONS AND CERTIFICATIONS

The following statements are typical in general. Additional information may be required.

(1) OWNERS STATEMENT

THE UNDERSIGNED, BEING A PARTY HAVING A RECORD TITLE INTEREST IN THE LANDS DELINEATED AND EMBRACED WITHIN THE HEAVY BLACK LINES UPON THIS MAP, DOES HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THE SAME AND DOES HEREBY OFFER FOR DEDICATION TO THE CITY OF BRENTWOOD IN FEE FOR PUBLIC USE THOSE PORTIONS OF SAID LAND DESIGNATED ON SAID MAP AS *{list street name/s and applicable parcel/s}*.

THE AREAS DESIGNATED AS "PUBLIC UTILITY EASEMENT" OR "P.U.E." ARE HEREBY DEDICATED TO THE CITY OF BRENTWOOD OR ITS DESIGNEE FOR UNDERGROUND ELECTRIC, GAS, CABLE TELEVISION, AND TELEPHONE USE AND ANY ALL IMPROVEMENTS AND APPURTENANCES INSTALLED, INCLUDING CONSTRUCTION, ACCESS, AND MAINTENANCE EASEMENT OF THESE IMPROVEMENTS AND APPURTENANCES.

THE AREAS DESIGNATED AS SAID "P.U.E." AND/OR PUBLIC STREET/S ARE HEREBY DEDICATED TO THE CITY OF BRENTWOOD OR ITS DESIGNEE FOR FIBER OPTIC, STREET LIGHT, SANITARY SEWER, STORM DRAIN, AND WATER USE AND ANY ALL IMPROVEMENTS AND APPURTENANCES INSTALLED, INCLUDING THE CONSTRUCTION, ACCESS AND MAINTENANCE EASEMENT OF THESE PUBLIC IMPROVEMENTS AND APPURTENANCES.

THE MAP SHOWS ALL THE EASEMENTS ON THE PREMISES, OR OF RECORD WITHIN THE BOUNDARY LINES OF THE HEREIN EMBODIED MAP AS SHOWN ON THE PRELIMINARY TITLE REPORT ORDER NUMBER *{state order number}*, DATED *{state date}*, PREPARED BY *{Company Name}*.

THE UNDERSIGNED FURTHER RELINQUISHES TO THE CITY OF BRENTWOOD ALL ABUTTER'S RIGHTS OF ACCESS ALONG THE PROPERTY LINES ADJACENT TO *{list complete street name}* AND *{list complete street name}* IN THOSE AREAS DEPICTED HEREON BY THE SYMBOL |||||||.

THE UNDERSIGNED FURTHER RELINQUISHES TO THE CITY OF BRENTWOOD ALL INTEREST IN SUB-SURFACE WATER RIGHTS BELOW 300 FEET THAT THEY MAY HAVE.

{Owner's Name}

BY:

{Signature}
{Name}
{Title}

DATE

- (2) TRUSTEES STATEMENT (when required).
- (3) SURVEYOR'S STATEMENT (including signature, seal, number and expiration date.)

I, *{Name}*, HEREBY STATE THAT I AM A LICENSED LAND SURVEYOR IN THE STATE OF CALIFORNIA, THAT THIS MAP, ENTITLED "SUBDIVISION *{Number}* *{Subdivision Name}*" CONSISTING OF *{total number of sheets}* SHEETS, WAS PREPARED BY ME, THAT IT CORRECTLY REPRESENTS A SURVEY MADE UNDER MY DIRECTION DURING THE MONTH OF *{Month}*, 200__ THAT THE SURVEY IS TRUE AND COMPLETE AS SHOWN. THAT ALL OF THE MONUMENTS ARE OF THE CHARACTER AND OCCUPY THE POSITIONS INDICATED, OR WILL BE SET IN THOSE POSITIONS ON OR BEFORE *{Date}*, 200__ AND THAT SAID MONUMENTS WILL BE SUFFICIENT TO ENABLE THE SURVEY TO BE RETRACED. THE AREA OF THIS SUBDIVISION IS *{Calculated Area}* ACRES, MORE OR LESS.

DATE: _____

{Surveyor's Name}
 L.S. NO. #####
 REGISTRATION EXPIRES *{Date}*

- (4) CITY ENGINEER'S STATEMENT (including signature, seal, number and expiration date)

I, *{Name}*, CITY ENGINEER OF THE CITY OF BRENTWOOD COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, HEREBY STATE THAT I HAVE EXAMINED THIS MAP, ENTITLED "SUBDIVISION *{Number}* *{Subdivision Name}*", THAT SAID SUBDIVISION IS SUBSTANTIALLY THE SAME AS IT APPEARED ON THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF, AS APPROVED BY THE CITY OF BRENTWOOD PLANNING COMMISSION ON *{Date}* THAT ALL OF THE PROVISIONS OF STATE LAW AND LOCAL ORDINANCES APPLICABLE AT THE TIME OF APPROVAL OF THE TENTATIVE MAP HAVE BEEN COMPLIED WITH, AND THAT I AM SATISFIED THAT THE MAP IS TECHNICALLY CORRECT.

DATE: _____

{City Engineer's Name}, R.C.E. NO. #####
 CITY ENGINEER
 REGISTRATION EXPIRES *{Date}*

- (5) NAME OF PERSON AUTHORIZING MAP.

(6) PLANNING COMMISSION STATEMENT

I, {Name}, COMMUNITY DEVELOPMENT DIRECTOR OF THE CITY OF BRENTWOOD, HEREBY STATE THAT THE PLANNING COMMISSION HAS APPROVED THE AMENDED TENTATIVE MAP OF SUBDIVISION {Number} {Subdivision Name}, WHICH INCLUDES THIS SUBDIVISION, UPON WHICH THIS FINAL MAP IS BASED.

DATE: _____
_____ {Name}
COMMUNITY DEVELOPMENT DIRECTOR

(7) CITY CLERK'S STATEMENT

I, {Name}, CITY CLERK OF THE CITY OF BRENTWOOD, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA, DO HEREBY STATE THAT THIS MAP, ENTITLED, "SUBDIVISION {Number} {Subdivision Name}", WAS PRESENTED TO THE CITY COUNCIL OF THE CITY OF BRENTWOOD AS PROVIDED BY LAW AT A REGULAR MEETING THEREOF HELD ON THE {Day} DAY OF {Month} 200__ AND THAT SAID CITY COUNCIL DID THEREUPON APPROVE SAID MAP AND ACCEPT ON BEHALF OF THE PUBLIC ALL PARCLES OF LAND AS OFFERED FOR DEDICATION, ABUTTER'S RIGHTS OF ACCESS, AND SUBSURFACE WATER RIGHTS, SUBJECT TO THE ACCEPTANCE OF IMPROVEMENTS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR PUBLIC USE IN CONFORMITY WITH TERMS OF THE OFFER OF DEDICATION.

If land is offered for dedication of a park, pedestrian trail, and/or wetlands, then the following shall be added to the City Clerk's statement:

SUBJECT TO THE ACCEPTANCE OF IMPROVEMENTS, AND ACCEPTING PARCELS X, Y AND Z IN FEE WITH THIS MAP...

I FURTHER STATE THAT ALL AGREEMENTS AND BONDS REQUIRED BY LAW TO ACCOMPANY THE MAP HAVE BEEN APPROVED BY THE CITY COUNCIL OF THE CITY OF BRENTWOOD, AND ARE ON FILE IN MY OFFICE.

IN WITNESS WHEREOF I HAVE HEREUNTO SET MY HANDS THIS {Day} DAY OF {Month}, 200__.

{Name}, CMC
CITY CLERK

(8) ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
COUNTY OF {County Name}) S.S.

ON {Date}, 200___, BEFORE ME, {Notarian's Name} PERSONALLY APPEARED {Name} PERSONALLY KNOWN TO ME (OR PROVED TO ME ON THE BASIS OF SATISFACTORY EVIDENCE) TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE WITHIN INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME IN HIS AUTHORIZED CAPACITY, AND THAT BY HIS SIGNATURE ON THE INSTRUMENT THE PERSON, OR ENTITY UPON BEHALF OF WHICH THE PERSON ACTED, EXECUTED THE INSTRUMENT.

WITNESS MY HAND,

SIGNATURE: _____
NOTARY PUBLIC IN AND FOR THE COUNTY OF: _____ {County}
STATE OF: _____ {State}
PRINCIPAL PLACE OF BUSINESS _____ {County} COUNTY
COMMISSION EXPIRES: _____ {Date}

(9) COUNTY RECORDER'S STATEMENT

THIS MAP, ENTITLED "SUBDIVISION {Number} {Subdivision Name}, IS HEREBY ACCEPTED FOR RECORDATION, SHOWING A CLEAR TITLE AS PER LETTER OF TITLE WRITTEN BY {Title Company}, DATED THE {Day}TH DAY OF {Month}, 200___, AND AFTER EXAMINING THE SAME, I DEEM THAT SAID MAP COMPLIES IN ALL RESPECTS WITH THE PROVISIONS OF STATE LAW AND LOCAL ORDINANCES GOVERNING THE FILING OF SUBDIVISION MAPS.

RECORDED AT THE REQUEST OF {Requester's Name} AT {Time} A.M./P.M. ON THE {Day} TH DAY OF {Month} , 200___ IN BOOK _____ OF MAPS, AT PAGE _____ IN THE OFFICE OF THE COUNTY RECORDER OF CONTRA COSTA COUNTY, STATE OF CALIFORNIA.

STEPHEN L. WEIR _____
COUNTY RECORDER
COUNTY OF CONTRA COSTA
STATE OF CALIFORNIA

BY: _____
DEPUTY COUNTY RECORDER

- (10) GEOTECHNICAL SOILS REPORT (include company name, report number and date)

A SOILS REPORT HAS BEEN PREPARED BY *{Individual or Company's Name}* PROJECT NO. *{Reference Project No.}* DATED *{Date}*, AND IS ON FILE IN THE OFFICE OF THE CITY ENGINEER OF THE CITY OF BRENTWOOD, COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA.

- (11) CLERK OF THE BOARD OF SUPERVISORS' STATEMENT

I HEREBY STATE, AS CHECKED BELOW, THAT:

- A TAX BOND ASSURING PAYMENT OF ALL TAXES WHICH ARE NOW A LIEN, BUT ARE NOT YET PAYABLE, HAS BEEN RECEIVED AND FILED WITH THE BOARD OF SUPERVISORS OF CONTRA COSTA COUNTY, STATE OF CALIFORNIA.
- ALL TAXES DUE HAVE BEEN PAID, AS CERTIFIED BY THE COUNTY REDEMPTION OFFICER.

DATED: _____ *{Name}*
CLERK OF THE BOARD OF SUPERVISORS
AND COUNTY ADMINISTRATOR
COUNTY OF CONTRA COSTA
STATE OF CALIFORNIA

- (12) Dedication of public service easements, public utility easements, sanitary sewer, and all other dedications of public use.
- (13) Dedication of drainage, irrigation and Flood Control easements.
- (14) Certificate of Dedication for sample public purpose (per Subdivision Map Act).
- (15) Consent to Dedication forms executed by all existing easement holders over areas being dedicated for roadway purposes.
- (16) Waiver of signatures on map from public utilities or public entities, if necessary (per Subdivision Map Act, Section 66436).
- (17) Easement Dedications to be appropriately reflected in Owner's Certificate and the purpose of the easement indicated on the map, including the additional five-foot (5') public utility easement.
- (18) Other certificates, statements, and acknowledgments required by statute, local ordinance, or the City Engineer.

(D) MONUMENTATION

- (1) All found monuments of record shall be tied by survey and described with tag numbers and recorded reference. Indicate "Record Data" within parenthesis for all boundary and monumentation information that differs from the field survey.
- (2) Basis of Bearings shall be based on the California Coordinate System (NAD 83), 1990 Adjustment, or current adjustment as directed by the City Engineer, as established by the use of two (2) found monuments of record on a single line from that Record Map. The Basis of Bearings must appear in a statement and be labeled on each sheet of the map.

Datum Statement may be similar to the following:

THE BASIS OF BEARING FOR THIS MAP IS DETERMINED FROM FOUND MONUMENTS SHOWN HEREON: THE BEARING BEING *{state bearing}* BETWEEN STATION *{station no.}* AND STATION *{station no.}* AS SHOWN ON RECORD OF SURVEY NO. 2496 (118 LSM 40). CALIFORNIA COORDINATE SYSTEM ZONE III (NAD 83). MULTIPLY DISTANCE AS SHOWN BY *{0.9999####}* TO OBTAIN GRID DISTANCES.

- (3) Tie to basis of bearings.
- (4) Tie to adjoining surveys.
- (5) Monumentation in conformance with the Subdivision Map Act, local ordinance, and the requirements specified in this manual.
- (6) Monument boxes required in existing or proposed roads.
- (7) Monumentation of right-of-way at B.C., E.C., angle points, and property line, if necessary, or if directed by the City Engineer.
- (8) Minimum 2" diameter, 18" long iron pipe set in concrete in a well-monument per City standards is required at all section, quarter-section and rancho corners, as well as at major street intersections.
- (9) A monumented line shall be shown on all new subdivision streets, with 1" diameter, 18" long, iron pipe set in concrete, monuments set on centerline or as otherwise approved by the City Engineer and with ties to rights-of-way.
- (10) 1" diameter 18" long iron pipes are to be set at all significant boundary lines, angle points and shall be shown on the map.
- (11) Other monumentation as required by statute, local ordinance, or the City Engineer.

(E) MATHEMATICAL ACCURACY AND GEOMETRY

- (1) All bearings, distances and curve data shown to nearest one hundredth of a foot, and to nearest second.
- (2) All curve data included (delta, radius length, and tangent).
- (3) Radial bearing and non-tangent curve data.
- (4) Sum of increments must equal the total distance or delta.
- (5) Net or gross areas must be shown to nearest one hundredth of a square foot.
- (6) Roadway radii shown.
- (7) Street widths, setbacks and or required widening must be shown on the map.
- (8) Closure calculations must be submitted along with the Final Map. Closure calculations must close within 0.01 feet northing and 0.01 feet easting. Closure calculations must be performed for the subdivision boundary, each lot or parcel, each grouping of lots or parcels, monuments, and right-of-ways; and must close as described above. **Closure calculations must agree precisely with the bearings and distances shown on the Final Map. Forced closures will not be accepted.**

V
GRADING PLANS

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. GRADING PLAN FORM	GP - 2
2. PLAN REQUIREMENTS	GP - 2
(A) General Information	GP - 2
(B) Grading Plan Checklist	GP - 3
3. OTHER ITEMS TO BE INCLUDED AND SUBMITTED WITH THE GRADING PLANS	GP - 6
4. IMPORT/EXPORT OF EARTH MATERIALS	GP - 10
5. HAUL ROUTES.....	GP - 11
6. CONDITIONS OF APPROVAL.....	GP - 11
7. PROTECTION OF ADJOINING PROPERTY	GP - 11

V

GRADING PLANS

1. GRADING PLAN FORM

Grading plans shall be drawn, printed, or otherwise reproduced in a manner guaranteeing a permanent record in black ink. The plans shall be prepared on 4 mil. mylar (reverse reading with matte surface up), having an overall size of 24 inches by 36 inches. Every plan sheet shall be wet-signed, with seal or stamp and expiration date, by the responsible design engineer. In addition, the plans shall have a statement wet-signed and sealed by the project soils/geologic engineer indicating that the plans comply with the recommendations contained in the project soils report. Submittals that are not properly signed and sealed will not be accepted for plan check.

A one-inch margin shall be left on each plan sheet edge, leaving an interior sheet size of 22 inches by 34 inches. No writing or marking of any type shall be inserted within the one-inch margin. The border shall be black indelible line having a thickness of 1/16". Grading plans shall be at 20 or 30 scale. Plans will be accepted at 40 scale only if extraordinary clarification is not required to show the proposed scope of the work and when approved by the City Engineer. All sheets shall be at the same scale and orientation. North shall be toward the top or left of the standard sheet.

2. PLAN REQUIREMENTS

(A) GENERAL INFORMATION

- (1) The site address or location and assessor's parcel number.
- (2) The owner's representative name, address and phone number.
- (3) Vicinity map, sheet index and key map with scale at 1" = 100".
- (4) Temporary and permanent benchmarks including their descriptions in conformance with the City of Brentwood Record of Survey RS 2496 (118 LMS 40) NAD 83, Zone III US Survey Feet.
- (5) General grading notes on the title sheet and specific grading notes applicable to that sheet on the remaining sheets.
- (6) Use standard title block and sheet layout (see sample plan sheet). The sample plan sheet is available in electronic file format from the City.
- (7) All work within Highway 4, other State of California right-of-way, is subject to CalTrans review and approval. Pacific Gas & Electric, Contra Costa Water District, East Bay Municipal Utility District, East Contra Costa Irrigation District, East Bay Regional Park District or other agency's right-of-way is subject to their review and approval.

- (8) Signature blocks for all applicable governing agencies and City departments.

The City Engineer's signature block shall appear on the cover sheet of each plan set as follows:

REVIEWED FOR CONFORMANCE WITH CITY OF BRENTWOOD STANDARDS AND REQUIREMENTS. APPROVAL FOR CONSTRUCTION IS SUBJECT TO THE INFORMATION SHOWN HEREIN. CITY OF BRENTWOOD AND THE UNDERSIGNED ARE NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY EXIST ON THESE PLANS.

BALWINDER S. GREWAL, CITY ENGINEER
RCE NO. 49122
REGISTRATION EXPIRES 9/30/05

DATE

- (9) Date drawing completed.
- (10) Soil's Engineer's signature and seal with expiration date on all sheets.
- (11) The names, addresses, and phone numbers of the supervising civil engineer, the soils engineer and the grading contractor; those of the grading contractor could be optional in the event that he/she has not yet been selected.
- (12) **The volume of cut and fill needed, including those quantities generated by shrinkage, subsidence and over-excavation of pad areas, footing excavation, utility spoils as determined by the soils engineer.**
- (13) Property lines and boundaries.
- (14) North arrow, scale and legend on all sheets.
- (15) Show use permit number or subdivision name and tract number in all title blocks of the set of plans.
- (16) Adjacent sheet numbers shown. All sheets numbered consecutively. Name and number of subdivision or project in all sheets of the set of plans.
- (17) Give reference number for adjoining grading and improvement plans.
- (18) Provide the Contra Costa Flood Control Drainage Area Number.
- (B) GRADING PLAN CHECKLIST
- (1) The proposed use of each parcel.

- (2) Accurate contours showing the present topography of the grading site and adjacent property; existing and proposed contours shall be shown at intervals of one foot or less on slopes up to five percent (5%), and not more than five (5) feet on slopes in excess of five percent (5%), and shall extend a minimum of 50 feet past the limits of grading (or as required by the City Engineer) in all directions and no less than is necessary to show the potential off-site effects to or caused by the graded site. Show all cuts and fills with continuous "daylight" lines.
- (3) Site development plans generally shall include the information specified along with the building pad elevation finished floor elevation, 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 along with the direction of drainage of adjacent property. The site development plan shall conform to F.H.A. standards. When necessary, detailed section of the pad and foundation shall be included to show and clarify any special grading conditions, retained fills, special backfill, differences in grade, etc.
- (4) Elevations, dimensions, locations, extents, and slopes of all proposed grading, by contours or other means, including: finish curb at points of extension of lot lines and curb return points; finish and existing grades at each principal corner for the structure or the graded pad; points of change and grades of the pad grading; hingelines and points of change in slope of the pad or lot grading; and center of driveway elevation at property line and curb face. Elevations at all lot corners. Contours and elevations shall be on the same datum as the Tentative Map and improvement plans.
- (5) Plans shall clearly show the existing and proposed overland drainage patterns and flows, including historical agricultural flows. Grading shall not block or impede the existing overland drainage from adjacent contiguous parcels. Any diversion, increased flow, or concentration of drainage runoff, requires a drainage acceptance letter from the downstream parcel owner.
- (6) Adequate drainage notes and specifications. Entire lot drainage pattern and disposition of surface and roof drainage. Roof, rear yard, patio, etc., impervious areas drainage is to be collected and conveyed in a closed pipe to the street gutter through the curb. Swales with a minimum slope of one percent (1%) shall be provided to drain rear and side yards; grade from all structures to drainage swales shall to be a two percent (2%) minimum, sloping away from the structure, unless otherwise allowed or required by the project soils engineer.
- (7) Top and toe of all cut and fill slopes.

- (8) Location of any buildings, structures, driveways, drainage ditches, or elements of the project such as pool, patio, tennis court, etc., on or within 25 feet of the property where the work is to be performed.
- (9) Location and height of all retaining walls (Note: Retaining walls with a height of one (1) foot or more shall be reinforced concrete, concrete blocks or masonry, and shall be approved by the City Engineer prior to construction, see Standard Plan G3a to G4b).
- (10) Detailed plans of all drainage devices, walls, cribbing, or other protection devices to be constructed as part of the proposed work.
- (11) How finish grades join contiguous properties and setbacks from property lines in all directions.
- (12) Existing easements, streets with centerlines, sewer, storm drain, and access easements, existing and proposed.
- (13) The location and species of all trees having a trunk diameter of one and a half inches (1-1/2") or greater or, if massed, the outline of the tree mass. Trunk diameters of six inches (6") inches or greater, measured forty-two inches (42") above ground level shall be noted for all species.
- (14) All cut and fill control specifications and/or reference to the project Geotechnical Report and the recommendations contained therein.
- (15) Provisions for protecting adjacent properties and/or existing improvements during construction. Any proposed grading on adjacent parcel(s) requires a grading acceptance letter from the adjoining property owner(s).
- (16) Erosion control and/or slope protection.
- (17) Desilting basins for any adjacent agricultural land.
- (18) Owner, developer or agency shall provide pad elevations one foot (1') foot above the 100-year base flood elevation as shown on the latest Flood Emergency Management Association (FEMA) flood plain maps for Contra Costa County, California. The developer shall be responsible for all necessary activities, applications, documentation and costs to amend floodplain maps for their development. The reference document is commonly known as "Letter of Map Amendment Revision" (LOMAR).
- (19) Provide typical cross-sections for the boundary of the project, to depict the impact to the surrounding areas.

3. OTHER ITEMS TO BE INCLUDED AND SUBMITTED WITH THE GRADING PLAN(S)

- (A) Erosion and sediment control plans. Plan preparation shall satisfy current Storm Water Pollution Prevention Plan (SWPPP) requirements.
- (B) Copy of owner's "Notice of Intent" Storm Water Pollution Plan, submitted to the Regional Water Quality Control Board, if project encompasses one (1) or more acres for residential and for five thousand (5,000) square feet or more impervious surface for commercial/industrial projects.
- (C) Hydrology maps.
- (D) Calculations for any hydraulic structures need to be supplied for review. Hydraulic structures include: pipes, storm drains, catch basins, drainage ditches, rip-rap, gabion and erosion control measures.
- (E) Drainage acceptance and grading acceptance letters from adjacent property owners.
- (F) Grading and/or drainage plans of adjacent subdivisions and land development projects.
- (G) All retaining walls required for the rough or fine grading of the site shall be depicted in detail on the plan and structural calculations submitted along with the plans.
- (H) Soils Report (Current within a year prior to the grading plan approval by the City Engineer)

(1) Soils Engineering/Engineering Geology and Reports

The following soil and geologic factors shall be addressed in the Geotechnical Reports required for each site. Design recommendations shall be made from information gathered by physical inspection of the site and laboratory tests. Soils reports shall be site specific and are to be prepared and submitted for individual subdivisions and/or project sites. Reports prepared for adjacent sites will not be considered for the subject project site unless the report specifically addresses and makes recommendations to the project site.

Obviously, not all of the following items will apply to each site, nor it is intended to encompass all possibilities, but is included as a minimum standard for geotechnical reports:

(2) Geologic Conditions

The following geologic conditions should be addressed in the report regardless of whether it is a geologic, geotechnical or soils report:

- (a) Previously mapped landslides on the site as well as any known recent earth movements and citation/ reference source.
- (b) The basic geologic units, their strength properties and how the geometry of these units affect the site.
- (c) The seismic environment, including the nearest active faults, the probable magnitude and recurrence interval of earthquakes that could be expected, and peak bedrock accelerations that could be anticipated at the site.
- (d) Public occupancy buildings (such as fire stations, hospitals, schools, hotels and multi-story buildings requiring a structural engineer), need an earthquake engineering section in the report detailing site period, ground response and design parameters. A dynamic site response analysis might be required for the first three categories listed above. These categories may be expanded by the City Engineer.

(3) Subsurface Conditions

The following items should be addressed in the report with regard to what lies below the surface of the ground at the site.

- (a) The types of soils or bedrock encountered.
- (b) The in-situ dry density and moisture content of those units.
- (c) Presence and depth of any groundwater encountered.
- (d) Standard Penetration Tests (SPT) blow count may be used for strength characteristics in either saturated clays or sandy units.
- (e) Block or drive samples for unsaturated clays are required to evaluate the engineering properties thereof.
- (f) Saturated clays may be sampled by drive or piston sampler for the purpose of consolidation testing to evaluate settlement potential on sites.

(4) Laboratory Testing

The following laboratory tests, as applicable to site conditions, are considered the minimum necessary to deduce soil engineering properties at any given site. Each report should stand on its own.

- (a) Classification tests: These consist of sieve analyses and plasticity index test results used to classify each soil type encountered, using the Unified Soil Classification system.

- (b) Soil strength tests: Either tri-axial or direct shear tests may be used. These tests should be saturated and drained when evaluating long-term problems (as in slope stability) and may be run undrained when evaluating short-term problems (such as retained excavations and trench slope stability problems). Each significant soil type, or weakest soil type, must be so tested.
 - (c) Consolidation tests: are required to estimate settlements in clayey soils and may be required when fills are placed upon clayey units that could consolidate.
 - (d) Expansion tests: (such as UBC Standard 29-1) should be used when clays are expected to be within five (5) feet of finished grade (a plasticity index correlation to expansion potential alone is not sufficient). Very high expansion quality can be assumed for design purposes in lieu of this test.
 - (e) Compaction tests: When soils are to be used in either engineering fills or for the backfill of retaining walls, a compaction test run in accordance with ASTM D1557-78 is required in order to estimate fill densities.
 - (f) Permeability testing: When subsurface drainage is required, permeability tests, and a sieve analysis (to determine piping potential and requirement for filter design) shall also be conducted, or a recommendation for the thickness of a gravel base under the sub-drain should be included.
 - (g) Stabilometer Tests: R-values for subgrade soils, run in accordance with California Test Method 301, will be required for paving recommendations.
 - (h) pH: Hydrogen ion concentration testing is required for all import and trench backfill.
 - (i) Resistivity: Minimum resistivity testing in accordance with California Test Method 643 will be required for buried steel structures such as pipes or piles.
- (5) Report Recommendations

The soils, geologic or geotechnical engineering report should have recommendations that cover the following topics as are appropriate for the site specific subdivision and/or development site and the proposed construction:

- (a) Foundation Type and Capacity: These recommendations should have supporting laboratory tests and other rational analysis or prior experience cited to justify them.

- (b) Settlement Potential: This should address how much settlement potential is expected on the site and when it will occur.
- (c) Presence of Expansive Soils: Expansive soils can have very detrimental effects on building structures. Special mitigation measures such as, but not limited to, foundation and drainage are normally recommended for these conditions.
- (d) Lateral Loads: Recommendations for passive, active and at rest lateral loads (with supporting laboratory test data) should be tailored to current site conditions, as well as construction conditions and the future as-built site conditions.
- (e) Slope Stability: Slope stability should be quantitatively evaluated with supporting data stated. The type of analysis, the soil parameters used and other assumptions used in the analysis should also be stated. An appendix with the actual calculation (computer printout is sufficient) is recommended, but not necessarily required.
- (f) Grading: Recommendations should be given for cut and fill slope inclinations, surface and subsurface drainage, depth of hills, settlement potential and repairs of failed slopes. The location and depth of any areas requiring over-excavation should be indicated in the report, as well as procedures for the grading of keyways, buttresses or other sensitive areas. There should be a laboratory maximum density curve or curves run on the materials expected to be used for the fill. Recommendations and evaluations should be appropriate to the size of the development and the height of the earthworks contemplated. The expected shrinkage in fill areas shall also be noted.
- (g) Paving: Pavement design in the area of both private and public roads is subject to the approval of the City Engineer and shall in all cases conform to the minimum standards of the City of Brentwood. Paving standards shall be arrived at through a rational analysis of the subgrade soil types encountered, with the worst soil type being tested and evaluated. Caltrans design procedures shall use California Test Method 301. Recommended Pavement Sections for, roadways, parking and traffic areas shall be included in the report. No pavement section recommendations shall be less than City standards.
- (h) Soil Corrosivity: Corrosivity testing of the soils present as well as any planned import embankment, fill, or backfill materials is required. California Tests Method procedures shall be used to determine both the pH of the soil system and its lowest relative resistivity.

4. IMPORT/EXPORT OF EARTH MATERIALS

The following requirements shall be observed when earth material is being transported to/from the construction site:

- (A) The quantity of import/export shall be shown on the grading plan, including the calculations on how it was obtained, including raw cut, raw fill, shrinkage, subsidence, footing spoils, and utility spoils.
- (B) The material shall be transported in a manner approved by the City Engineer.
- (C) Material to be exported, or excavated material to be utilized on another portion of the site shall not remain stockpiled on site for more than five (5) working days. Special circumstances may prevent the placement or removal of the stockpile, in which case written approval from the City Engineer will be required to exceed the five (5) day period.
- (D) Import material shall not be stockpiled on site more than five (5) working days prior to its ultimate placement.
- (E) Either water, or dust palliative, or both shall be applied for the alleviation or prevention of excessive dust resulting from the loading or transportation of earth to or from the project site on public roadways. The permittee shall be responsible for maintaining public rights-of-way used for handling purposes in a condition free of dust, earth, or debris resulting from the grading operation.
- (F) Loading and transportation of earth to or from the site shall be conducted between 7:30 A.M. and 3:30 P.M., Monday through Friday, unless written application for alternate hours is made to and approved by the City Engineer.
- (G) Access roads to the premises shall be at points designated on the approved grading plan only.
- (H) The last fifty feet of the access road, as it approaches the intersection with the public roadway, shall have a three hundred foot (300') clear, unobstructed line of sight to the intersection from both the public roadway and the access road. If the 300' sight distance cannot be achieved, flag persons shall be posted.
- (I) A stop sign conforming to the requirements of Section 21400 of the California Vehicle Code shall be posted at the junction of the access road and the public roadway.
- (J) An advance warning sign must be posted on the public roadway, four hundred foot (400') on either side of the access intersection, carrying the words "Truck Crossing". The sign shall be diamond in shape, each side being thirty inches (30") in length, having a yellow background, and the letters thereon shall be five (5) inches in height. The sign shall be placed six feet (6') from the edge of the pavement, and the base of the sign shall be five feet above the pavement level.

The advance warning sign shall be covered or removed when the access intersection is not in use.

- (K) The applicant's failure to dispose of any import/export material within the stated time frame may result in a fine, or the suspension or revocation of the permit, at the discretion of the City Engineer.

5. HAUL ROUTES

The Contractor's proposed haul route shall be submitted for review and approved by the City Engineer for any site requiring import/export of any earth materials. This will serve to prevent the use and congestion of public rights-of-way which cannot adequately support this type of traffic. No grading permits shall be issued until the proposed haul routes have been reviewed and approved. The City Engineer shall be notified if any alternate route will be used. This alternate shall not be utilized until such time that it is approved. Failure to obtain approval of proposed or alternate haul routes may result in a fine, or the suspension of the grading permit, at the discretion of the City Engineer.

6. CONDITIONS OF APPROVAL

Approval of grading permits shall be made subject to the appropriate conditions or reservations required to protect public health, safety, and general welfare, including but not limited to the following:

- (A) Completion of the work within a period approved by the City Engineer.
- (B) Reasonable provisions for controlling excessive dust.
- (C) Hours of operation.
- (D) Safety precautions to guide pedestrian and vehicular traffic in, around, and by the operation.
- (E) Posting of a good and sufficient bond to assure compliance with the conditions.
- (F) Other conditions deemed necessary by the City Engineer, and based upon accepted engineering practices.

7. PROTECTION OF ADJOINING PROPERTY

No work shall be undertaken which may result in damages to, obstruction of, or possible hazards to any adjoining property. Whenever any portion of the work requires entry onto adjacent property for any reason, the permit applicant shall obtain the written consent of the adjacent property owner or his/her authorized representative, and shall file a copy of the consent with the City Engineer before a permit for such work may be issued.

Research historical irrigation patterns including irrigation runoff and assure continued drainage and inflow to a City facility, the system must include desilting of the agricultural runoff.

VI
IMPROVEMENT PLANS
(CONSTRUCTION, TRAFFIC, LANDSCAPE AND IRRIGATION,
SOUND AND RETAINING WALLS)

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. PLAN REQUIREMENTS	IP - 2
(A) General Information	IP - 2
(B) Improvement Plan Checklist.....	IP - 4
(C) Drainage Improvement Checklist	IP - 7
2. GENERAL NOTES.....	IP - 8
3. CHANGES IN THE WORK.....	IP - 12
4. RECORD DRAWINGS (“AS BUILTS”).....	IP - 12
5. PLAN REMOVAL AND ALTERATIONS.....	IP - 13
6. CHANGE IN ENGINEER OF RECORD OR ENGINEER OF WORK.....	IP - 13

VI
IMPROVEMENT PLANS
(CONSTRUCTION, TRAFFIC, LANDSCAPE AND
IRRIGATION, SOUND AND RETAINING WALLS)

1. PLAN REQUIREMENTS

Improvement plans shall be drawn, printed, or otherwise reproduced in a manner guaranteeing a permanent record in black ink. The plans shall be prepared on 4 mil. photo mylar (reverse reading with matte surface up), having an overall size of 24 inches by 36 inches. Every plan sheet shall be wet-signed, with seal or stamp and expiration date, by the responsible design engineer. Submittals that are not signed and sealed will not be accepted for plan check.

A one-inch margin shall be left on each plan sheet edge, leaving an interior sheet size of 22 inches by 34 inches. No writing or marking of any type shall be inserted within the one-inch margin. The border shall be black indelible line having a thickness of 1/16". All sheets shall be at the same scale and orientation. North shall be toward the top or left of the standard sheet.

Improvement plans for public and private development projects shall be prepared in accordance with the Engineering Design Standards and submitted to the City Engineer for plan check and approval.

(A) GENERAL INFORMATION

- (1) Key Map with legend at 1" = 100'; sheet index and legend.
- (2) Project address or location and assessor's parcel number.
- (3) Vicinity map showing project location.
- (4) North arrow and scale on all sheets.
- (5) General construction notes on title sheet and construction notes applicable to that sheet on remaining sheets (referencing City of Brentwood Standard Plan numbers).
- (6) Signature blocks for all applicable governing agencies and City Departments (City Engineer for all improvements, Community Development Director and Parks and Recreation Department for Landscape/Irrigation Plans; and CCC Fire Protection District).

The City Engineer's signature block shall appear on the cover sheet of each plan set as follows:

REVIEWED FOR CONFORMANCE WITH CITY OF BRENTWOOD STANDARDS AND REQUIREMENTS. APPROVAL FOR CONSTRUCTION IS SUBJECT TO THE INFORMATION SHOWN HEREIN. CITY OF BRENTWOOD AND THE UNDERSIGNED ARE NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY EXIST ON THESE PLANS.

BALWINDER S. GREWAL, CITY ENGINEER
RCE NO. 49122,
REGISTRATION EXPIRES 9/30/04

DATE

- (7) Temporary and permanent benchmarks including their descriptions, in conformance with City of Brentwood record of Survey RS 2496 (118 LSM 40), NAD 837 Zone III, Us Survey Feet.
- (8) Plan view showing the entire street right-of-way layout (Scale 1" = 100) proposed water and sewer mains, storm drainage system, lot numbers, streetlights, flow arrows, and other miscellaneous improvements to be installed. Show pipe sizes.
- (9) Standard title block located along lower edge (See sample plan sheet in the Appendix section. Electronic file is available upon request.)
- (10) Date drawing completed.
- (11) Typical street sections for each varying street width.
- (12) Owner's representative name, address, and telephone number (title sheet).
- (13) Design Engineer's name, address and telephone number (title sheet).
- (14) Show use permit number, or subdivision name and tract number (on title block of all sheets).
- (15) Affected utility companies shall be tabulated showing name of utility, address, phone number, and contact person.
- (16) Listing of owner's representatives to be contacted in the event of an "Emergency" and their 24-hour telephone numbers.
- (17) Adjacent sheet numbers shown. All sheets numbered consecutively.
- (18) Scale – Horizontal scale shall be 1" = 40' and vertical scale shall be 1" = 4'. The City Engineer shall approve other scales in writing, in advance.
- (19) General and special notes relating to construction methods.

- (20) All work within Highway 4, other State of California right-of-way is subject to CalTrans review and approval. Pacific Gas & Electric, Contra Costa Water District, East Bay Municipal District, East Contra Costa Irrigation District, East Bay Regional Park District or other agency's right-of-way's subject to their review and approval.

(B) IMPROVEMENT PLAN CHECKLIST

- (1) Plan view of each street to be improved shall be shown on separate sheets indicating the disposition of existing improvements and contours/elevations within one hundred feet (100') of the project boundary, proposed improvements and future improvements. Proposed improvements shall include, but not be limited to, 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, street lighting, traffic signs, pavement markings, and other data as required by the City Engineer. They 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.
- (2) 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. Elevations shall be shown at 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 one hundred feet (100'), whichever is less.
- (3) Street widening shall include cross-sections at one hundred feet (100') intervals together with existing and proposed cross-slopes, pavement sections, and pavement tie-in details.
- (4) Stationing to conform to existing street, stationing, and distances on Final Map.
- (5) Street widths and improvements comply with any Master Plan and the Tentative Map.
- (6) All elevations, distances, and slopes are mathematically correct.
- (7) Provide profiles of all cul-de-sac and curb returns, which must conform to City standards. Curve data to be shown.
- (8) Dimension street and right-of-way widths in plan view on each sheet.
- (9) Show horizontal curve data for all sewer, storm drain, and water lines.

- (10) Grade breaks in excess of half a percent (0.5%) or more shall be constructed with vertical curves designed in conformance with Caltrans design standards. Show all vertical curve data.
- (11) Label pavement cross-slope on all typical sections and cross-sections. Show existing and proposed cross-slopes.
- (12) Show special erosion control measures in median islands, parkways where street grade exceeds seven percent (7%).
- (13) Show saw cut lines in existing asphalt concrete at all pavement conforms.
- (14) Overlay existing pavement as necessary to provide smooth transitions.
- (15) Proposed design for the extension of streets two hundred feet (200') beyond property line (plan & profile) is demonstrated. For arterial and collector streets, show all existing and future driveways and median breaks.
- (16) Horizontal and vertical curves to conform to these Engineering Design Standards, local ordinance, State Highway Design Manual, and the requirements of the City Engineer.
- (17) Verify that streets intersect at right angles (+/- 5 degrees).
- (18) A summary of quantities table shall be provide for the major civil improvement items relating, but not limited, to water, sewer, storm drainage, joint trench, street lighting, pavement quantities and others as required by the City Engineer.
- (19) Show the pavement design with note to verify after rough grading. Pavement design shall reflect T.I.s and 'R' values used in design. Any design to overlay existing pavement rather than place new pavement shall core the existing pavement to confirm existing pavement section and its adequacy.
- (20) Appropriate transition to be provided from widened sections, including berms, barricades and markers.
- (21) Label clearance dimensions between pipe crossings. Show minimum cover on underground facilities. Elevations of existing facilities to be verified by design drawings or potholing.
- (22) Pedestrian and handicap access ramps to conform to Title 24 California Code of Regulations requirements.
- (23) Verify corner sight distance requirements.
- (24) Monuments to be installed are shown per the Final Map locations.

- (25) Found street monuments shall be shown and protected or reestablished in conformance with the Land Surveyors Act.
- (26) Existing and proposed traffic signs and markings shall be shown on striping and signing sheets, dimension of all lane widths and layout of signs, legends, parking stalls, markings, etc.
- (27) Show streetlights with stationing, and pole numbers.
- (28) Guardrails shown where applicable.
- (29) Sewer lines, water lines, storm drain lines and joint trench extended to all subdivision boundaries and outside to roadway pavement.
- (30) Plans to show approved street names assigned by the Community Development Department.
- (31) Fire hydrant layout shown.
- (32) Compare with Final Map for street widths and easement locations.
- (33) Lot lines shown and stationed.
- (34) Sewer laterals and water services shown and stationed.
- (35) Compare with grading plan for consistency.
- (36) All proposed soundwalls and retaining walls shall be shown on the improvement plans.
- (37) Adjacent improvement plans and subdivisions referenced.
- (38) Traffic signal design shown where required.
- (39) Provide detailed traffic control and construction staging plans when warranted.
- (40) Driveway widths and locations shall be shown and checked for adequate sight distance and conformance to grade requirements. Driveways on the opposite side of the street shall be shown, and also any street intersections or driveways within one hundred feet (100') of the property line.
- (41) Any deviations from City Standard Plans and Specifications shall be indicated on the plans and requires prior approval by the City Engineer.
- (42) Show any other information required by the Engineering Design Standards, local ordinance, or the City Engineer.
- (43) Detailed plans reflecting the design and construction of all public infrastructure improvements for street, sewer, water, fiber optics and

storm drain, both on and off site, shall be in conformance with the adopted Infrastructure Master Plan and as directed by the City Engineer. Developer shall have written approval from the City Engineer for any variations from the City's Master Plan prior to any final map or plan approval.

- (44) Provide typical cross-sections for the boundary of the project, to depict the impact to the surrounding areas.
- (45) Provide designed water pressure for development (if pressure exceeds 80 psi, pressure reducing valves are required).

(C) DRAINAGE IMPROVEMENT CHECKLIST

- (1) Master planned facilities designated as Contra Costa County Flood Control facilities shall be submitted to the Engineering Department, who will then submit same to be checked and approved by the Contra Costa County Flood Control District.
- (2) Drainage area map (with the designated drainage area number) and hydrology calculations in the form of a report shall conform to Contra Costa County Flood Control District standards.
- (3) Gutter flow, inlet Q and bypass Q calculations to be submitted and values shown on plans.
- (4) Channel or pipe calculations, including entrance and exit conditions, hydraulic losses and velocity to be submitted.
- (5) HGL for 10 year storm shown on plans and shall be 1.25' below the flowline of the gutter.
- (6) Show storm drain pipe slopes. Storm drain grade shall be 0.2% and shall agree with approved hydraulic calculations.
- (7) Pipe size for publicly maintained lines shall be 18 inches or greater and shall conform to hydraulic calculations.
- (8) Label all proposed pipe materials and class of pipe.
- (9) Invert elevations and D-load requirements to be shown on improvement plans.
- (10) Change in pipe size allowed only at a structure.
- (11) Appropriate design consideration for grades of 20% or more.
- (12) Existing conditions at discharge points shall be adequately protected from damage due to erosion.

- (13) Inlets shall conform to the City of Brentwood standards and shall be adequately sized.
- (14) Desilting basins and/or energy dissipators detailed and properly sized.
- (15) Crossings with any existing or proposed utilities shall be shown with adequate clearance or required encasement indicated.
- (16) No angles greater than 90° are allowed in storm drain systems without the permission of the City Engineer.
- (17) Hydrology studies shall include an analysis of historical agricultural drainage. Incorporate maintenance of those drainage patterns, including acceptance of and desilting of upstream agricultural runoff.

2. GENERAL NOTES

The following General Notes shall be included on all Public Improvement Plans and on site development plans (as warranted), however, additional notes may be required when applicable:

- (1) An encroachment permit shall be obtained from the City of Brentwood for any work to be performed within the public right-of-way. (Note all other permit requirements from any other affected agencies.)
- (2) Approval of these Public Improvement Plans as shown does not constitute approval of any construction outside the project boundary.
- (3) The existence and location of existing underground facilities shown on these plans were obtained by a search of the available records. To the best of our knowledge, there are no other existing facilities except as shown on these plans. However, the Contractor is required to take precautionary measures to protect any existing facility whether or not it is shown hereon, and is responsible for correcting any damage to said utilities.
- (4) Location and elevation of existing improvements shall be confirmed by field measurements prior to construction of new work. Prior to commencement of construction, the Contractor shall contact Underground Service Alert (1-800-227-2600) to obtain a U.S.A. identification number and to have existing utilities located. Contractor shall make exploratory excavations and locate existing underground facilities sufficiently ahead of construction to permit revisions to plans if revisions are necessary due to actual location of existing facilities.
- (5) All work shall conform to the currently adopted editions of the Standard Plans and Specifications of the City of Brentwood unless otherwise noted.
- (6) "City Engineer" shall mean the City Engineer or his/her authorized agent acting within the scope of his/her authority.

- (7) The developer shall telephone the City of Brentwood Engineering Department, (925) 516-5420, at least two (2) working days prior to starting construction work.
- (8) The Contractor shall schedule a preconstruction conference at the job site with the City, developer, subcontractors, utilities, and other affected agencies at least two (2) working days prior to starting any construction work.
- (9) Traffic Control shall be provided in conformance with the latest edition of the "Manual of Traffic Controls for Construction and Maintenance Work Zones" issued by the State of California, Department of Transportation and as required by the City Engineer.
- (10) If any cultural features or archaeological materials are uncovered during grading, trenching, or other excavation work, all work within one hundred feet (100') of these materials shall be stopped until a professional archaeologist certified by the Society of Professional Archaeology (SOPA) and/or the Society of California Archaeology (SCA) has had an opportunity to evaluate the significance of the find and appropriate mitigation measures are determined and implemented.
- (11) Regular hours of work will be limited to 7:00 A.M. to 3:30 P.M., Monday through Friday. The owner or developer must submit a written request for approval by the City Engineer at least two (2) working days in advance to work during any other hours, weekends, or holidays.

The following special hours of work will be enforced from Monday through Friday:

- A. Work affecting traffic on Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way, Sand Creek Road, Central Boulevard or Walnut Boulevard will be limited to 9:00 am to 3:00 pm.
- B. Work adjacent to or within fifteen hundred feet (1500') of any school while school is in session will be limited to 9:00 am to 3:00 pm.
- C. Work within three hundred feet (300') of occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road will be limited to 8:00 am to 4:30 pm.
- D. Work in excess of three hundred feet (300') from occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road, will be limited to 7:00 am to 5:00 pm.

- E. All Saturday work shall be restricted to 9:00 am to 4:00 pm.
- (12) Contractor's operations shall conform to the rules and regulations of the State of California Construction Safety Orders pertaining to trenches and excavations.
 - (13) Contractor shall provide at least two (2) working days advance notice to the City Engineer prior to connecting to existing water facilities. The manipulation of existing water valves shall be done under the direction of City water division personnel.
 - (14) The installation of erosion control facilities and measures is necessary at all times. (Erosion Control Plan shall be approved by the City Engineer).
 - (15) Mailboxes shall be installed in locations approved by the local postmaster and per City of Brentwood Standard Plans.
 - (16) All driveway locations and widths are approved based on the information provided by the developer/owner. If there is a required change in the floor plan, the developer/owner shall widen or relocate the driveway solely at his/her own cost.
 - (17) If driveway depressions are made in any curb, driveway approaches are then considered to be part of the Improvement Plan and shall be constructed in accordance with the City of Brentwood Standard Plans.
 - (18) Monuments are to be set as shown on the plans and per the requirements of the Subdivision Map Act, Land Surveyors Act, and the City Subdivision Ordinance and shall be in accordance with the rules and procedures approved by the County Surveyor. All lot corners and tract boundaries shall be located and monumented in accordance with the recorded Tract Map and written certification shall be submitted to the City Engineer by the project civil engineer.
 - (19) Trees shall not be planted within the City of Brentwood right of-way unless a permit has been obtained from the Parks and Recreation Department, or if the trees are planted in accordance with a landscape plan approved by the City Engineer and the Parks and Recreation Director.
 - (20) Joints between new pavement and existing pavement shall be made by saw-cutting existing pavement to effect a neat butt joint as depicted on the City Standard Plans. Feathering new asphalt paving over existing pavement is not allowed.
 - (21) The contractor shall notify the Contra Costa County Flood Control District and East Contra Costa Irrigation District prior to starting work near District's facilities and shall coordinate all work with District's representatives.

- (22) Location and height of all retaining walls shall be as shown on these plans. Retaining walls higher than one (1) foot shall be structurally designed and approved by the City Engineer prior to construction (see Standard Plans G-3a, G-3b, G-4a and G-4b for details).
- (23) It shall be the responsibility of the applicant/engineer to contact the various utility agencies, advise the agencies of the proposed improvements, and pay for the cost of relocations, if needed.
- (24) No final paving shall be done until existing power poles and other existing facilities, are relocated outside the areas to be paved.
- (25) Sub grade for all street, curb and gutter, and concrete flatwork shall be compacted to ninety-five percent (95%) relative compaction.
- (26) All underground utilities shall be constructed prior to the placement of baserock unless otherwise approved by the City Engineer.
- (27) All pavement markings in the public right-of-way shall be thermoplastic unless specifically called out as paint. No permanent markings shall be placed until the City Traffic Engineer, City Engineer or his representative approves cat tracking in the fill.
- (28) Blue reflective pavement markers shall be installed at each fire hydrant location as shown on the City of Brentwood Standard Plans.
- (29) All traffic signs and street name signs shall be high reflective grade materials.
- (30) The improvement plans shall reflect that all on-site/off-site storm drain inlets shall be "No Dumping Drains To Creek" stenciled, using a two-step thermoplastic on the face of the curb adjacent to the inlet. The project plans shall also include erosion control measures to prevent soil, dirt and debris from entering the storm drain system, in accordance with the regulations outlined in the Association of Bay Area Governments (ABAG) Erosion and Sediment Control Handbook.
- (31) The City Engineer prior to the placement of concrete must approve forms for curbs, gutters, and sidewalks.
- (32) All storm drain structures shall be constructed to City of Brentwood Standards (with weep holes at subgrade elevation) unless otherwise noted.
- (33) The Contractor shall review the current Storm Water Pollution Prevention Plan (SWPPP) provided by the owner. It is the Contractor's sole responsibility for conducting his/her operations in adherence to the SWPPP. The Contractor is responsible for any fines, delays, and/or damages resulting from any State Water Quality Control Board sanctions caused by the operation of the Contractor or his/her Subcontractors.

- (34) Benchmark used - *(number, location, description and elevation)*.
- (35) Basis of bearings used - *(description, bearing, and record reference)*.
- (36) Applicable City of Brentwood Standard Plans include but are not limited to, the following: *(list Standard plans)*.

3. CHANGES IN THE WORK

Prior to commencing any construction not shown on the approved plans, the following actions shall be taken:

- (A) The Engineer of Record shall submit a red-lined print showing the proposed change, along with a justification for the change.
- (B) The proposed change will be reviewed by the City Engineer.
- (C) Once the proposed change is accepted, the Engineer of Record shall submit a revised print of the original drawing, showing the proposed change, for final review and approval by the City Engineer. The City Engineer will approve the change by signing the plan revision in the space provided on the plans.
- (D) All changes shall be clearly designated by "clouding" the plan revision in both plan and profile on each plan sheet and by labelling each change with a revision number and date of revision.
- (E) After the revised original plan is approved by the City Engineer, three (3) blue-line prints, and a photo mylar (4 mil, reverse-read, matte surface up) shall be submitted to the City. No work on the proposed change shall commence prior to the submission of these items.

4. RECORD DRAWINGS ("AS-BUILTS")

Prior to the final acceptance of work by the City, the Engineer or Architect of Record shall:

- (A) Provide written certification that improvements and/or grading have been substantially constructed in the locations and to the grades shown on the plans. Substantially shall mean + or - 0.1'.
- (B) Submit a redlined set of the original plans showing all "As-Built" information including approved construction changes, "As-Built" elevations, and final pavement sections. City staff will check the redlined prints and return them to the Engineer of Record for amendment of the original plans. The Engineer of record shall then submit to the City one (1) complete set of photo mylars (4-mil, reverse-read, matte side up) showing and incorporating all the "As-Built" information. All "As-Built" information and changes shall be "clouded" and labelled. All plan sheets shall be clearly marked "RECORD DRAWING", dated, stamped and signed by the Record Engineer on each sheet.

- (C) Provide a written statement by the project surveyor certifying that survey monuments have been set in accordance with the Final Map, and that the surveyor setting the monuments has been paid for the work. The developer's subdivision bonds will not be released until the "As-Built" photo mylars, the required electronic (digital) files and surveyor's written statement have been submitted to the City.
- (D) Provide written certification from other affected agencies and/or parties that all work to be accepted by other agencies has been accepted.
- (E) Submit an electronic file of the improvements as required on the Submittal Procedures, Section 8, "Electronic File Submission."

5. PLAN REMOVAL AND ALTERATIONS

- (A) All maps and plans, once approved, signed and made part of the public record, may be loaned by the Engineering Department to a representative of the Record Design professional or the City's bonded blueprint company.
- (B) All proposed revisions to previously city-approved plans must be reviewed and approved in concept by the City Engineer prior to commencement of alterations on the original plans. One (1) original reproducible (photo mylar) copy of the signed original plans must be provided to the City prior to revising the original plans. The Engineer of Record for the previously approved plans shall be the only party permitted to revise the original plans. Unauthorized revisions to plans borrowed from the City shall be removed.

All loaned plan sheets or sets must be returned to the Engineering Department within two (2) working days from the date borrowed.

- (C) Plans and maps, which have been issued for any reason, become the responsibility of the engineering or land surveying firm originating the request until such time that the plans are returned to an Engineering Department Representative. The loss of or damage to any plans which are on loan shall result in the responsible party being fined the cost of replacement, including necessary engineering, by the City of Brentwood. No revisions to the issued and damaged plans shall be approved or additional plans released to said responsible party until such time that the fine has been paid.

6. CHANGE IN ENGINEER OF RECORD OR ENGINEER OF WORK

Prior to any change in the Design Engineer status on a project, the previous Design Engineer, Engineer of Record, or Engineer of Work shall submit a release to the City of Brentwood and a statement that they have been paid in full. The City will not accept changing design professionals without this safeguard.

VII

JOINT TRENCH PLAN REQUIREMENTS

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. PLAN REQUIREMENTS	JT - 2
(A) General Information	JT - 3
(B) Composite Plans	JT - 3
(C) Streetlight Plans	JT - 3
(D) Fiber Optic Plans	JT - 4
(E) Electrical and Gas Plans	JT - 8

VII JOINT TRENCH PLAN REQUIREMENTS

1. **PLAN REQUIREMENTS**

Joint Trench plans shall be drawn, printed, or otherwise reproduced in a manner guaranteeing a permanent record in black ink. The plans shall be prepared on 4 mil. photo mylar (reverse reading with matte surface up), having an overall size of 24 inches by 36 inches. Every plan sheet shall be wet signed, with seal or stamp and expiration date, by the responsible design engineer. Submittals that are not signed and sealed will not be accepted for plan check.

A one-inch margin shall be left on each plan sheet edge, leaving an interior sheet size of 22 inches by 34 inches. No writing or marking of any type shall be inserted within the one-inch margin. The border shall be black indelible line having a thickness of 1/16". All sheets shall be at the same scale and orientation. North shall be toward the top or left of the standard sheet.

Joint Trench Plans for public and private development projects shall be prepared in accordance with the Engineering Design Standards and submitted to the City Engineer for plan check and approval.

(A) GENERAL INFORMATION



- (1) A Civil Engineer must sign and stamp all Joint Trench plans prior to City Engineer approval.
- (2) Submit a copy of the approved Tentative Map with the draft layout of the streetlight locations and the fiber optic trunk line and/or main line for approval. Once approved, utilize this layout for the design of the subsequent tract plans.
- (3) Include five-foot (5') public utility easement (PUE). Verify with the Developer's Civil Engineer that the five-foot (5') PUE is dedicated on the Final Map.
- (4) Smallest allowable scale is 1=40'. City reserves the right to request 1'=20' if plan information is too congested and difficult to read.
- (5) Refer to the Improvement plan sheet requirement list for additional information.
- (6) At minimum, title sheet needs to show Tract Number, Developer's Name, Utility Contact Name and Numbers, Utility Company Job Numbers, Vicinity Map, Key Map, Sheet Index, General Notes, City Engineer Signature Block and Legend.
- (7) The following sheets must be included in the Joint Trench Plan Set: Composite, Streetlight, Fiber Optics, Gas and Electric Plans.

(B) COMPOSITE PLANS

- (1) Storm drain line shall be on the opposite side of the street as the joint trench. Unless otherwise approved by the City Engineer, no joint trench is permitted parallel and adjacent to the storm drain on the same street side of the right-of-way.
- (2) Provide typical roadway cross-section depicting ROW, PUE, trench, and type of sidewalk (meandering or integral to curb and gutter).
- (3) Provide typical cross-section of joint trench.
- (4) All Joint Trench plans must include a detail depicting how the Joint Trench will cross over/under City Utilities (sewer, water and storm drain). Splitting the Joint Trench to cross-city utilities is prohibited.
- (5) If project includes already paved streets, add the following note: "All conduit crossings of *{state Street Names}* shall be installed by directional drilling or jack and bore method."
- (6) If new power poles must be constructed off-site to service the new development, submit written request to City Engineer for approval.
- (7) Provide a detail depicting the branching of the joint trench laterals within the 5' PUE and not within the private lots.
- (8) Label the Composite sheet numbers as: C1/#, C2/#, etc. (where # is the total number of sheets within the joint trench set).
- (9) Provide the following General Notes:
 - (a) All PG&E, PacBell, Cable TV and Fiber Optic Boxes and Joint Trench Facilities are to maintain a minimum of 3' separation from sewer and water laterals and driveways.
 - (b) All utility vaults, boxes, pedestals, etc. must maintain a 5' minimum clearance from fire hydrants and 3' minimum from streetlights.
- (10) If aboveground structures are required, provide a detail for acceptable screening devices. The City Engineer shall approve all locations for aboveground structures prior to plan approvals.
- (11) On the title sheet, with bold font, state the "**X LF of Joint Trench and Y Street Lights shall be installed with this Joint Trench Plan Set."**

(C) STREETLIGHT PLANS

- (1) Refer to Engineering Design Standards section (ED) of this manual for additional information.

- (2) The streetlight layout plan shall include the location of proposed lighting standards and its assigned pole numbers, electroliers, service point(s), pull boxes, the intensity of the proposed luminaire, a location plan of the conduit run showing wire size and length of proposed electrolier/pole assembly.
- (3) Include the following notes:
 - (a) Upon tract acceptance, the streetlights shall be maintained by Lighting and Landscaping District No. *{state LLD No.}*.
 - (b) Lights shall be energized per PG&E's rate schedule LS-2A (Owner owned and maintained).
- (4) Indicate the type of streetlight, Cobra or Decorative Style. For the legend use:
 -  symbol to represent Cobra
 -  symbol to represent Decorative
- (5) Streetlights should be placed on the property line or at the curb return on the long side of the house. Avoid installing streetlights at the curb return on the front side of the house.
- (6) The preliminary layouts of streetlights will be reviewed during the first plan check of the Improvement Plans; however, the Joint Trench Plans shall govern for the final location of streetlights.
- (7) Label the Streetlight sheet numbers as: SL1/#, SL2/#, etc. (where # is the total number of sheets within the joint trench set.)

(D) FIBER OPTIC PLANS

- (1) Refer to the Engineering Design (ED) section of this manual for additional information.
- (2) Avoid utilizing the additional five-foot (5') public utility easement (PUE) for placement of vaults or pedestals. If space permits, install within the right-of-way.
- (3) If vaults are not placed on the property line, the boxes shall be located within the right-of-way and not within the five-foot (5') PUE.
- (4) Label the Fiber Optic sheet numbers as: FO1/#, FO2/#, etc. (where # is the total number of sheets within the joint trench set).
- (5) The developer shall depict the fiber optic conduit system in the joint trench composite plans and provide a separate fiber optic conduit plan for the review and approval by the City Engineer. Both plans shall be

signed and stamped by a Civil Engineer registered in the State of California.

- (6) The Fiber Optic Plan shall include typical cross-sections of the streets, which shall include a five-foot (5') PUE beyond the right-of-way. Prior to inserting the PUE, the joint trench designer shall verify that this easement will be dedicated on the Final Map.
- (7) Show centerline stations within the streets.
- (8) Utilize the labels shown on the specifications for identifying the conduit and vault type and function. Provide lengths for all conduits.
- (9) Future stubs shall terminate into vaults. If providing stub conduits, provide stub and ultimate lengths.
- (10) Superimpose location of secondary electrical service box location within two hundred (200) feet of the Fiber Optic Node Vault (V_n). Future boring and/or trenching of streets is not allowed for future electrical service.
- (11) Include conduit design table on plan sheets (see sample on the Engineering Design section of this manual).
- (12) Include the following General Notes to the Fiber Optic Plans:

(a) Conduit Material Specifications

	<u>Quantity and Diameter Size</u>	<u>Material of Conduit</u>
Fiber Optic Trunk Line (T) ^{1/}	2 – 4" ϕ	PVC Schedule 40
Fiber Optic Main Line (M) ^{2/}	1 – 4" ϕ	PVC Schedule 40
Coaxial Distribution (C) ^{3/}	2 – 2" ϕ	PVC Schedule 40 (color orange)
Services (S) ^{4/}	2 – 1-1/4" ϕ	PVC Schedule 40 (color orange)

^{1/} The "Fiber Optic Master Ring" carries all optical fibers throughout the trunk line system from the point(s) of connection to the node vaults (V_n).

^{2/} It carries all optical fibers from node vaults (V_n) to fiber optic splice boxes (V_f).

^{3/} It carries distribution cables from node vaults (V_n) to service vaults (V_s).

^{4/} It carries service drop cables from service vaults (V_s) to serviced residences.

(b) Vault Material Specification

(aa) Vault for Fiber Optic Node (V_n)

- Minimum size: 3' (W) x 5' (L) x 4'-6" (D)
- Type and material of box: concrete, Pac Bell – 3660 standard
- Type and material of lid: Utility Vault or equal, H10 loading, torsion assist, adjustable frame style, penta head bolts, diamond, and painted black
- Marking of lid: "City of Brentwood"
- Conduit Entrance into Box: from the side
- Maximum number of terminations: 12 (4 - 4" Φ , plus 4 - 2" Φ pairs)
- Only the fiber optic trunk line (T), main line (F) and/or coaxial conduits (C) shall interconnect this node vault.
- Add rigid cap for all empty conduits.

(bb) Vault for Splices of Fiber Optic Main (V_f)

- Minimum size: 30" (W) x 48" (L) x 34" (D)
- Type and material of box: reinforced concrete
- Type and material of lid: reinforced concrete, single lid – type "D"
- Marking of lid: "City of Brentwood"
- Acceptable Manufacturer: Christy B48 Utility Box, or equal, with two extensions
- Maximum number of terminations: 4 - 4" Φ
- Conduit Entrance into Box: from the side
- After installation of box and conduits, pour concrete sump.
- Only the fiber optic trunk line (T) and/or main line (F) enters and exits this splice vault.

- If the V_f vault is not on the property line, the box shall be installed within the right-of-way (ROW) and not within the five-foot (5') public utility easement (PUE).
- Add rigid cap for all empty conduits.

(cc) Vault for Services (V_s)

- Minimum size: 24"(W) x 36"(L) x 34"(D).
- Type and material of box: reinforced concrete.
- Type and material of lid: reinforced concrete, single lid – type "D."
- Marking of lid: "City of Brentwood."
- Acceptable Manufacturer: Christy B40 Utility Box, or equal, with two extensions.
- Maximum number of terminations: 20 (4 - 2" Φ pairs, plus 6 - 1 ¼" Φ pairs).
- Conduit entrance into box: from the side
- Only the coaxial conduit (C) and services (S) shall interconnect at this service vault.
- Maximum number of homes to serve: 6 (5 homes is not allowed).
- If the V_s vault is not on the property line, the box shall be installed within the right-of-way and not within the five-foot (5') public utility easement (PUE).
- Add rigid cap for all empty conduits.

(dd) Sweeps: Minimum radius is 24" horizontal or vertical.

(ee) Installation

A pull rope shall be installed in all conduits that are to receive future cables. A pull rope shall be nylon or polypropylene with a minimum tensile strength of 500 pounds. At least 2 feet of pull rope shall be doubled back into the conduit at each termination. Prior to acceptance by the City of Brentwood, all fiber optic and coaxial conduits shall be cleaned with a mandrel.

(ff) Terminations into Private Dwellings

All communications, cable and fiber optic conduit shall terminate into one (1) joint use panel, to be shared by all providers. (Contact Building Department for latest panel specification). Supply separate #10 copper ground wire from the UFER common building electrode to panel. A dedicated 20 amp circuit shall be located adjacent to the distribution hub and installed on the inside wall of the structure.

(E) ELECTRICAL AND GAS PLANS

- (1) Electrical and Gas plans need to include with the Joint Trench Plan set.
- (2) Label the Electrical sheet numbers as: E1/#, E2/#, etc. (where # is the total number of sheets within the set of plans).
- (3) Label the Gas sheet numbers as: G1/#, G2/#, etc. (The number below shall indicate the entire # of sheets within the joint trench set.)

VIII
ENGINEERING DESIGN STANDARDS

INDEX

SECTION	PAGE
1. PURPOSE.....	ED - 4
2. GENERAL	ED - 4
3. RIGHT-OF-WAY POLICY	ED - 5
4. STREET DESIGN	ED - 5
(A) General.....	ED - 5
(B) Geometrics and Layout	ED - 6
(C) Appurtenances	ED - 8
5. STORM DRAINAGE.....	ED - 11
(A) General.....	ED - 11
(B) Design	ED - 13
6. SANITARY SEWERS.....	ED - 14
(A) General.....	ED - 14
(B) Design	ED - 16
7. WATER SYSTEM.....	ED - 20
(A) General.....	ED - 20
(B) Design	ED - 21
8. STREET LIGHTING	ED - 24
(A) General.....	ED - 24
(B) Design	ED - 25
9. FIBER OPTIC CONDUIT SYSTEM.....	ED - 28

	(A) General.....	ED - 28
	(B) Design	ED - 28
	(C) Conduit Layout Criteria.....	ED - 29
	(D) Vault Layout Criteria	ED - 30
10.	IRRIGATION SYSTEMS	ED - 31
	(A) General.....	ED - 31
	(B) Controllers	ED - 32
	(C) Valves.....	ED - 32
	(D) Spinklers.....	ED - 32
	(E) Pipes and Appurtenances	ED - 33
	(F) Wiring	ED - 33
	(G) Watering	ED - 33
11.	LANDSCAPING.....	ED - 34
	(A) General.....	ED - 34
	(B) Trees	ED - 34
	(C) Shrubs	ED - 35
	(D) Turf, Etc.....	ED - 35
	(E) Erosion Control.....	ED - 35
	(F) Fertilizer.....	ED - 36
12.	PARKS AND TRAILS	ED - 36
	(A) General.....	ED - 36
	(B) Park Sign.....	ED - 37
	(C) Paving.....	ED - 37
	(D) Lighting	ED - 37
	(E) Play Area	ED - 38
	(F) Courts and Field	ED - 38

(G)	Restrooms	ED - 38
(H)	Drinking Fountains.....	ED - 40
(I)	Other Structures	ED - 40
13.	SOLID WASTE ENCLOSURES.....	ED - 41

VIII

ENGINEERING DESIGN STANDARDS

1. PURPOSE

The purpose of these Design Standards is to provide certain minimum standards for the design and construction of both publicly and privately maintained improvements within the City of Brentwood. Plans shall be designed to meet the criteria and requirements established or referenced in these Engineering Design Standards. Any facilities or items which are not specifically included in these Standards shall be designed in accordance with the applicable requirements of the following publications, and the order of precedence of these documents shall be as listed. In case of a discrepancy between this document and any of the following documents, the more stringent requirement shall control:

- (A) Subdivision Ordinance, Grading Ordinance, and Zoning Ordinance, and all other provisions of the City of Brentwood Municipal Code.
- (B) Uniform Building Code
- (C) State Highway Design Manual, latest edition
- (D) State Planning Manual, latest edition
- (E) Standard Plans and Specifications of the City of Brentwood, latest editions
- (F) State Standard Plans and Specifications, latest editions
- (G) Other Standards as required or specified by the City Engineer
- (H) Conditions of Approval from Planning Commission or City Council.

Any proposed deviations from these Design Standards will be subject to the review and approval of the City Engineer.

2. GENERAL

Complete plans and specifications for all proposed improvements, including any necessary dedications and easements, shall be submitted to the Engineering Department for review and approval and must receive the required approval prior to the beginning of construction of any such improvements. This shall apply for both public and private improvements. 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.

Any proposed deviations from the City of Brentwood Standard Plans shall be called out in the submittals. The designer for any such changes shall obtain prior written approval from the City Engineer. If a set of improvement plans has been signed by

the City Engineer, and changes to the City of Brentwood Standard Plans and Specifications have been made by the designer and have not been called out and approved in writing by the City Engineer, the developer will be held to meet the City of Brentwood Standard Plans and Specifications at no cost to the City of Brentwood.

3. RIGHT-OF-WAY POLICY

The City's 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 for public utilities.

Public facilities shall be designed and constructed within public street right-of-ways whenever possible. Public facilities within easements on private property are not encouraged, and will be reviewed on an individual basis by the City Engineer. Cul-de-sacs shall not be designed with public facilities in easements between properties at the end of the bulb.

Utility easements shall meet the more restrictive of the following width criteria:

- (A) Minimum width of any easement shall be fifteen feet (15') for one (1) utility, with greater widths required for multiple utilities.
- (B) All easements shall have a minimum width in feet equal to the required trench width according to the standard detail 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 finished grade. All pipes shall be centered within their easements.

4. STREET DESIGN

(A) GENERAL

For purposes of geometric and structural design, streets shall be classified according to the General Plan. Any deviation from the following standard shall require the approval of the City Engineer.

Table I: Street Design

Class	Right of Way (Feet)	Width Bet. Curbs (Feet)	Min. Traffic Index ^{1/}	Max. Grade Rate (%)	Min. Centerline R for Hor. Curve (Feet) ^{2/}	Min. AC ^{3/}	Min. Base AB	Min. Comp. AC and AB
Arterial Street	100-140	80	9.0	8	1200	4"	14"	95%
Collector Street	76-96	56	9.0	10	800	4"	14"	95%
Major Residential Collector	70	40	7.0	10	600	4"	10"	95%
Minor Residential Collector	60	40	6.5	15	250	4"	8"	95%
Industrial/Commercial	64	44	6.5	8	250	4"	10"	95%
Residential Local ^{4/}	56	36	5.0	15	250	4"	8"	95%
Private Streets/Parking Lots ^{5/}	Varies	Varies	5.0	15	250	4"	6"	95%

^{1/} May be raised at the discretion of the City Engineer if traffic warrants a higher value. Traffic routes will require a higher Traffic Index (TI) as approved by the City Engineer

^{2/} Actual design of horizontal curves shall be based on the design speed of the street and approved by the City Engineer.

^{3/} To be installed in at least two (2) lifts.

^{4/} Local streets and cul-de-sacs less than 250 . in length.

^{5/} Parking lot aisles subject to truck traffic shall be designed to industrial/commercial standards.

Street sections shall be calculated based on "R" values obtained from material gathered from the level of the proposed subgrade using the State of California Division of Highways design method. If subgrade has an "R" value of 10 or less, geotextile fabric shall be installed on subgrade prior to placement of AB material. No structural allowance will be made for the geotextile fabric. The minimum street section shall not be less than four inches (4") of asphalt concrete and eight (8) inches of aggregate base. Aggregate base and subbase shall conform to the State Standard Specifications, Sections 25 and 26. The use of "Sierracrete" manufactured by Dupont is not permitted.

Private streets, parking lots, and commercial developments shall use local residential requirements as a minimum. Off-street parking shall be provided, designed, and constructed in accordance with the requirements of local ordinance and as required by the City Engineer.

(B) GEOMETRICS AND LAYOUT

(1) Street centerlines shall intersect at right angles with a variance of plus or minus five (+/-5) degrees. A minimum of two hundred feet (200')

shall be maintained between street centerline intersections. Whenever possible, streets must line up with opposite streets. Variances from this standard must be secured in advance, and in writing, from the City Engineer.

- (2) Curb line radii shall be tabulated on the construction plans. Numbering shall not repeat from sheet to sheet.
- (3) Curb return radii:

The minimum face of curb radius at street intersections is determined based on the class of the intersecting streets as follows:

Table II: Curb Return Radii

Class	Min. Curb Return Radius (feet)
Arterial Street to Arterial Street	50
Arterial Street to Any collector Street	40
Any Collector Street to Any Collector Street	30
Any Collector Street to Residential Local	30
Residential Local to Residential Local	25
Industrial/Commercial to Any Street	35

- (4) Gutter flow line grades shall have a minimum slope of 0.01 feet per foot on all cul-de-sacs and 0.005 feet per foot at all other locations and maximum depicted on Table I of this section, "Street Deign."
- (5) Cross slope on all streets shall be as shown on the Standard Plans unless a deviation has been approved by the City Engineer.
- (6) The minimum vertical curve length allowable at the intersection of two grades shall be fifty- (50) feet. Actual design of the vertical curve shall be based on the design speed of the street and stopping sight distance as determined by the City Engineer. However, vertical curves may be omitted where the algebraic difference in grades is less than one-half percent (0.5%), and will not be visible to the driving public.
- (7) The minimum stopping sight distance over any segment of the roadway on residential, collector or arterial streets shall conform to the Highway Design Manual.
- (8) Perimeter streets shall be a minimum of one-half the roadway width plus a twelve-foot (12') foot travel lane.

- (9) Minimum longitudinal grades are one percent (1%) on all asphalt concrete. Normal crown is two percent (2%) on all streets. Offset crowns on cul-de-sacs are not allowed.
- (10) Provide special pavement design where grades are twelve percent (12%) or greater.
- (11) Tangent sections are required at all street intersections and between reverse horizontal curves.
- (12) Maximum length of cul-de-sacs is six hundred feet (600').
 - a. No more than twenty-five (25) single-family residential units shall have access off any individual cul-de-sac.
- (14) Subdivisions, subdivision phases, streets, and blocks of single-family lots shall be arranged and staged such that no more than twenty-five (25) lots are developed with access from a single public roadway. Development of any additional lots will require construction of an acceptable additional connecting roadway providing secondary ingress and egress. Twenty-six (26) to seventy-five (75) lots require two (2) access roads; seventy-six (76) to one hundred seventy-five (175) lots require three (3) access roads, and one hundred seventy-six (176) or more lots require four (4) access points.

(C) APPURTENANCES

(1) Driveways

- (a) No driveway shall be permitted within five feet (5') of a property line on multi-family property and commercial property. Driveway locations for single family property shall not be permitted within five feet (5') of a property line unless a property fronts on a cul-de-sac bulb in which case a driveway may be constructed up to the property line. Special consideration by the City Engineer may be given to major and minor street driveway configurations of an unusual nature.
- (b) Commercial/industrial and multi-family driveways shall have a minimum width of forty (40) feet and a maximum width of forty-two- (42) feet. Commercial driveways shall have a minimum radius return of twenty-five (25) feet. The minimum width for a single-family residential driveway shall be twelve (12) feet with a maximum of thirty (30) feet. Transitions at each side of the driveway shall be three (3) feet.
- (c) When adjacent to a street intersection, commercial/industrial driveways shall have a minimum of sixty-five (65) feet from the curb return to the centerline of the driveway or as approved by the City Engineer.

- (d) The minimum distance between commercial driveways shall not be less than twenty (20) feet as measured at the face of curb, including transitions.
- (e) All driveways shall conform to the City of Brentwood Standard Plans.
- (f) For Residential driveways shall be of the same width as the garage doors, not more than forty percent (40%) of the lot frontage of any parcel shall be devoted to driveways and a minimum of twenty feet (20') of clear distance per lot frontage is required for on-street parking. Lots fronting on a cul-de-sac and knuckles are exempt from this requirement.

(2) Parking

Parking requirements shall be considered on a street-by-street basis. The aggregate number of provided on-street parking spaces will be considered within the limits of each individual street or cul-de-sac.

For all single-family properties, a minimum of one (1) on street parking space (20' clear distance) is required. For lots which front on a cul-de-sac bulb, one on-street parking space, eighteen (18) feet in length, shall be provided.

On-site parking and all parking lots shall be designed and provided as required by the Zoning Ordinance and the City Engineer.

(3) Valley Gutters

Valley gutters will not be allowed within the public right-of-way or public easement.

(4) Sidewalks, Curbs and Gutters

- (a) Sidewalks shall be a minimum of five (5) feet wide as measured from face of curb. The City Engineer may require wider and/or separated sidewalks.
- (b) Sidewalk, curb and gutter shall be of the design as shown on the Standard Plans or as required by the City Engineer.
- (c) Curb ramps for the handicapped (Handicap Ramps) shall be installed at all street crossings and curb returns and shall be constructed in conformance with Section 39-7, "Miscellaneous" (Asphalt Concrete), Section 73, "Concrete Curbs and Sidewalks," of the State Specifications, the most current edition of the State Standard Plans, and in conformance with the Americans with Disabilities Act.

(5) Survey Monuments

Survey monuments shall be provided as shown on the Final Map and shall be installed as a minimum at the following locations:

- (a) On the roadway centerline at all intersections.
- (b) At beginning and end of each horizontal curve on the centerline.
- (c) On the roadway centerline at the end of any stub street or cul-de-sac.
- (d) At all other locations as required by the City Engineer.
- (e) A minimum of two (2) monuments shall be installed in all subdivisions, with coordinates on the California Coordinate System NAD 83, Zone III.
- (f) Extensions of lot lines shall be tagged and marked in accordance with Board of Registration of Civil Engineers and Licensed Surveyors Policy Resolution No. 96-04.
- (g) All monuments set shall be as shown on the Standard Plans and shall clearly show the registration number of the licensed Civil Engineer or Land Surveyor who prepared the Final or Parcel Map.
- (h) For street reconstruction and overlay projects, existing monuments shall be referenced by a registered land surveyor prior to the start of construction, and recovered and/or replaced at the conclusion of the work. The surveyor shall file corner records required by statute with the County.

(6) Signing, Pavement Markings, and Barricades

- (a) Street names shall require approval by the Planning Department, Police Department and the Fire District.
- (b) Street name signs, stop signs, and pavement markings shall be paid for and installed by the developer or subdivider.
- (c) All pavement markings in the public right-of-way shall be thermoplastic unless specifically called out as paint.
- (d) All private pavement markings shall be thermoplastic or two (2) coats of traffic paint with reflective glass beads incorporated into each coat.

- (e) Other regulatory and warning signs to control traffic, such as speed zone signs, are to be installed by the developer or subdivider.
- (f) Permanent barricades shall be installed where improvements cover only a portion of the ultimate development or as directed by the City Engineer. The barricade shall be constructed, erected, painted and signed in accordance with the Standard Plans.
- (g) Signs and pavement markings shall be in accordance with the Caltrans Traffic Manual and Caltrans Standard Plans.
- (h) Thermoplastic stencils stating "No Dumping-Drains to Creek" shall be installed at each catch basin. Stencils may be purchased at the Engineering Department.

(7) Easements

Public service, drainage, landscaping, and fence easements shall be located as required by the utility companies and the City Engineer. Publicly maintained facilities within easements on private property are subject to the review and approval of the City Engineer.

(8) Existing Roadways

All new underground facilities crossing existing arterial or collector streets shall be by boring or jacking, unless otherwise approved by the City Engineer.

(9) Underground Utilities

Sufficient information shall be shown to establish the elevation and/or profile of water services and sewer laterals at crossings with other underground utilities (storm drain, joint trench, etc.). The plans shall ensure that minimum clearances at pipe crossings are maintained. Minimum clearance is 1' between any water main/service and other facilities. Minimum clearance between all other underground pipes and facilities is six inches (6"). Services and laterals shall cross above or below the conduit bank in joint trenches.

5. **STORM DRAINAGE**

(A) GENERAL

All design shall be in conformance with the current Contra Costa County Flood Control District Master Plan.

These standards are intended to insure that watercourse and surface water laws are complied with and that runoff from storms up to the 100-year return

frequency are conveyed through storm facilities and disposed of in a manner, which protects public and private improvements from flood hazards.

The diversion of natural drainage will be allowed only within the limits of a proposed improvement. All natural drainage must leave the improved area at its original horizontal and vertical alignment unless a special agreement, approved by the City Engineer, has been executed with adjoining property owners. Additional drainage runoff resulting from the improved area shall not be allowed to drain onto, or cause to be ponded on, adjacent properties. Existing drainage patterns on adjacent properties shall be maintained.

All storm drainage facilities shall include provisions for ultimate future upstream development and no development shall discharge at a rate, which exceeds the capacity of any portion of the existing downstream system. Calculations for storm drain design within a development as well as calculations for runoff generated by upstream areas within the contributing watershed shall be submitted to the City Engineer for approval. These calculations are to be based upon the ultimate watershed development and shall include:

- (1) Topographic Map showing the relationship between the proposed development and the remainder of the watershed, including acreages of all sub-areas.
- (2) (2) Map of the proposed development indicating:
 - (a) All applicable existing and proposed improvements.
 - (b) Runoff coefficients for all areas where runoff was calculated.
 - (c) Time of concentration and intensity of rainfall at each hydraulic structure.
 - (d) The magnitude and direction (indicated by arrow) of flow in each pipe and flow to each structure contributed by its tributary area. All flow rates shall be in cubic feet per second (CFS).
 - (e) Elevation of pipe inverts at structures and the top of structure elevation at each structure.
 - (f) Sizes and slopes of all stormwater conveyance structures and conduits.
 - (g) The 10-year HGL with elevations at all junction structures, manholes and catch basins.
 - (h) Contra Costa County Flood Control Drainage Area Number.
- (3) Tabulation sheet (Hydrology/Hydraulics Report), which includes all of the above information and summarizes the design in a clear, concise, professional format.

- (4) Construction drawings shall include:
- (a) 10-year storm water surface elevation to be called out on profile view at each structure.
 - (b) All flow rates in cubic-feet-per-second called out on profile view for each conduit.

All proposed improvements shall be designed such that, the minimum hydraulic grade line or water surface shall be 1.25 feet below the gutter flowline or when applicable, as required by the Federal Emergency Management Agency (FEMA) and the Department of Water Resources (DWR) Division of Safety of Dams, whichever is greater.

Containment of floodwaters within the public right-of-way is required at all times. Flood waters shall be confined to streets or other approved right-of-ways by grading, levees or alternative means acceptable to the City Engineer. In no instance shall an improvement be designed such that floodwaters can reach a depth of 0.50 feet, as measured from the top of curb, before overland release occurs. The design of all bridges, box culverts, levees, detention basins, spillways, and other applicable structures shall comply with the latest FEMA and DWR Division of Safety of Dams regulations.

At intersections of pipes, the downstream pipe shall have a crown elevation, which is equal to the crowns of all upstream connecting pipes. Pipe diameters shall not decrease in the downstream direction.

(B) DESIGN

All storm drain design criteria, unless otherwise stated herein or directed by the City Engineer, shall be in accordance with the Contra Costa County Standard Specifications for Public Works Construction.

(1) Easements

Publicly maintained drainage conduits and channels on private property are subject to the approval of the City Engineer and will not be allowed unless they lie within a dedicated public easement. Where minor improvement of a drainage channel falls on adjacent property (such as daylighting a ditch profile) written permission from the adjacent property owner(s) for such construction shall be required. A copy of the document which grants said approval shall be submitted to the City Engineer prior to the approval of the improvement plans.

Easements for closed conduits shall meet the more restrictive of the following width criteria:

- (a) Minimum width of any easement for a closed conduit shall be fifteen (15) feet.
- (b) All easements for closed conduits shall have a minimum width in feet equal to the required trench width according to the standard detail 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 finished grade. All conduits shall be centered within their easements. Drainage easements for open channels shall have sufficient width to contain the open channel and two seventeen-foot (17') wide service roads. The toe of a bank shall not be within seventeen (17) feet of an easement boundary. Easement boundary lines shall, at changes of alignment, have a fifty-foot (50') radius sufficient to provide turning room for vehicles operating on the service road.

(2) Pipe and Appurtenances

The minimum allowable inside diameter of any publicly maintained system and storm drain pipe in private streets shall be eighteen (18) inches and designed to flow with a minimum velocity of two (2) feet per second when flowing full. The pipe materials, which may be used for storm drainage improvements within the City and right-of-way and easements, are specified in Sections 63 and 65 of the Caltrans Standard Specifications and Sections 63 and 65 of the Contra Costa County Standard Specifications. Under no circumstances shall storm drain (top of bell) encroach into subgrade material. Cover less than two (2) feet requires concrete cap and City Engineer's approval. CMP, CAP, PVC, and ABS will not be allowed.

For publicly maintained pipes the minimum pipe slope for any storm drainpipe shall be 0.2%. Minimum depth shall be two (2) feet below street subgrade. Maximum manhole spacing shall be three hundred (300) feet. The City Engineer shall approve any deviation from these minimum allowable criteria.

The City Engineer may allow the use of smaller diameter pipe, and alternate pipe materials and structure design, for privately maintained storm drain systems. In all cases, the private storm drain system shall be designed to comply in all other aspects with the design criteria established in these Design Standards.

6. **SANITARY SEWERS**

(A) GENERAL

The City Engineer retains the right to require additional upgrading and sizing on all plans in accordance with the most recent Master Plan. The City Engineer must approve any deviation from the City's Master Plan in writing.

- (1) Sanitary sewer system design within a developing area must include provisions for size and capacity to adequately convey all domestic and industrial waste that can be reasonably anticipated under conditions of full ultimate development. Engineering calculations to support the sewer system design shall be submitted to the City Engineer for approval. The calculations shall include:
 - (a) Map indicating service area within the sewer system including any future contributing development with projected land use, zoning, and any physical features contributing to the sewer system design.
 - (b) Sanitary sewer waste volumes (design capacity, full pipe capacity, design flow, cleansing velocity), both existing and proposed, within the service area of the system.
 - (c) Size and slope of each pipe between appurtenant structures.
 - (d) Invert/RIM elevations of each pipe and appurtenant structure.
- (2) Line Size, Service Policy, and Easements
 - (a) The line size and service policy requires that the minimum size of any new public sewer shall be 8 inches in diameter.
 - (b) All side sewers (laterals) eight (8) inches and larger, or any lateral connection to a main trunk line eighteen (18) inches or larger, shall be connected by or at a manhole.
 - (c) The minimum lateral size is four (4) inches with the lateral's intended use to serve single-family residences. Six (6) inch or larger laterals shall be installed where intended use is industrial, commercial or greater than single-family residential flows. Joint use of laterals will not be permitted except in multi-family residential uses, or as approved by the City Engineer.
 - (d) Publicly maintained sewer lines on private property are subject to the approval of the City Engineer and will not be allowed unless they lie within a dedicated public easement.
 - (e) Sewers serving two (2) or more residential units or two (2) or more properties or businesses shall be public from five (5) feet outside the building line downstream, or as approved by the City Engineer.

(B) DESIGN

(1) Flow

The design sanitary sewer flow shall be computed using the following formula:

$$QD = QP + I$$

Where: QD = design flow (gallons per day)

QP = peak flow

I = Infiltration

The peak flow (QP) for residential service areas is defined as three times the average flow, with the average flow for the service area being computed from two basic assumptions:

- (a) Three (3) persons per single-family dwelling.
- (b) One hundred (100) gallons per person per day.

Acreage flow estimates for other than residential service areas are as follows:

	<u>Average Flow</u> <u>(Gal./Acre/Day)</u>	<u>Peak Flow</u> <u>(Gal./Acre/Day)</u>
Commercial Areas	1600	4000
Business Park/Office	2000	4000
Schools	2000	4000
Light Industrial Areas	2500	4000

Heavy Industrial Areas Sewage flow rate shall be considered on a case-by-case basis and may require special design.

Infiltration and inflow (I & I) shall be computed by using five hundred (500) gallons per inch-diameter-mile per day for sewer mains and laterals. Residential laterals shall be assumed to be a minimum of seventy-five (75) feet in length.

(2) Pipe Capacity

- (a) Manning's Formula $[Q = A (1.49/n) R^{2/3} S^{1/2}]$ shall be used to determine pipe capacity. The "n" value shall be 0.013 or the pipe manufacturer's recommendation, whichever is greater.

- All main sewers shall be sized to carry the design flow at capacities of fifty percent (50%) for pipes up to twelve (12) inches in diameter and seventy-five percent (75%) for pipes twelve (12) inches and greater in diameter.
- Design capacities for trunk sewers twelve (12) inches and larger shall require approval by the City Engineer.

(3) Velocity

Sewer velocity shall be equal to or greater than two (2) feet per second for all sewers when flowing at design capacity. Where design velocities for main sewers exceed 10 feet per second, polyethylene lined ductile iron pipe conforming to the requirements of ANSI/AWWA C151/A2.51 and shall have a minimum 35 mil polyethylene lining in conformance with ASTM Designation D1248. Class of pipe shall be as required for design loads. All ductile iron pipes shall be wrapped with an 8-mil polyethylene blanket.

(4) Pipe Cover and Clearances

- (a) Minimum pipe cover and clearance shall be maintained in the design of sanitary sewers. If conditions exist which make it impractical to meet the minimum cover and clearance requirements, the conditions and locations shall be specifically noted above the sewer profile on the plans. Each location not meeting the minimum cover and clearance requirements will require special approval. Any planned condition being specially approved with less than minimum cover will require special pipe, casing, bedding, and/or backfill as directed by the City Engineer.

Other utilities shall not, under any circumstances, be installed directly over and parallel to any sanitary sewer line installation.

- (b) Main and trunk sewers shall have a minimum depth of five (5) feet as measured from the top of the pipe to the street subgrade.
- (c) Laterals shall have a minimum depth of five (5) feet from the top of the pipe to the finish grade where they connect to the main.
- (d) Pipe shall be laid with a minimum of twelve (12) inches vertical clearance from water lines and six (6) inches vertical clearance from all other improvements and utilities, unless otherwise approved by the City Engineer.

(5) Horizontal and Vertical Curves

- (a) Except for frontage roads, the centerline of sewer mains and trunks shall be located a minimum of six (6) feet off centerline to the south or west side of the street. Sewer mains shall be located such that ten (10) feet clear horizontal distance is provided to adjacent water lines.
- (b) Sanitary sewer mains shall be on a straight line between manholes. Whenever it is essential that a horizontal curved alignment be used, a minimum radius of two hundred (200) feet shall be required, but shall be greater whenever possible. The radius and delta of all curves shall be indicated on the plans adjacent to the curve. Sewer manholes must be located at either the B.C. or E.C. of all curves.
- (c) The deflection in the joint between any two successive pipe sections shall not exceed eighty percent (80%) of the maximum deflection as recommended in writing by the pipe manufacturer. Minimum 2-foot pipe lengths may be used to install short radius curves providing the requirements specified herein are met.

(6) Lateral Sewers

Laterals are those portions of the sewer system between the sewer main and the portions of the sewer maintained by the property owner. The usual location of the line of responsibility is the sidewalk cleanout. In all cases, City maintained sewer lines would lie in a street right-of-way or dedicated public easement. In all new subdivision work, the house lateral line from the sewer to the property line shall be installed at the time the sewer main is constructed. Whenever a sanitary sewer is installed which will serve existing houses or other buildings, a lateral line shall be constructed for each existing individual house or building. Each lateral line shall be referenced to the improvement plan stationing. A separate lateral to the sewer main shall service each individual on-site building.

- (a) All laterals, from property line or edge of easement to the point of connection with the main line or a manhole shall have an alignment that provides an angle of intersection with the downstream section of the main sewer of no less than 90°.
- (b) The maximum deflection at any one point in a lateral, not including fittings at saddle or wye connection to main sewer or at angle points having clean outs, shall be 22-1/2° (1/16 bend) and any two consecutive deflections (bends) shall not be less than two (2) feet apart.

- (c) Cleanouts shall be provided on the lateral sewer within the City right-of-way at the back of sidewalk as shown on the Standard Plans.
- (d) Laterals connecting houses having a finished floor elevation twelve (12) inches or less above the highest rim elevation of the nearest upstream structure shall require installation of a backflow prevention device next to the cleanout at the house.
- (e) Sewer lines being built in streets shall incorporate the installation of wyes and laterals to all adjoining properties.

(7) Appurtenances

- (a) Manholes – All manholes shall be located in the center of the travel lanes. Normal maximum spacing for manholes shall be three hundred (300) feet. Where intersecting lines determine the location of two manholes, the distances between intervening manholes shall be approximately equal. Sewers on curved alignment with a radius of less than four hundred (400) feet shall have manholes spaced at a maximum of 300 feet on the B.C. or E.C. of the curve or adjusted to fit the individual case.

The spacing of manholes on trunk sewer lines ten (10) inches and larger in diameter shall be proposed for each individual case and shall be approved by the City Engineer.

Whenever, at manholes, a change in the size of pipe, or an angle of 20° or more in alignment occurs, the flow line of the incoming pipe shall be a minimum of 0.10 feet above the flow line of the outgoing pipe, or an amount necessary to match inside pipe crowns. The plans shall show invert in and invert out of the proposed manhole. Manholes shall be used at the termination of all sewer mains including cul-de-sacs. Laterals shall be connected to this manhole for services to adjacent properties within the cul-de-sac.

- (b) Drop manholes will not be allowed. The maximum shelf height above crown of the outlet pipe shall be one (1) foot. The invert of any inlet pipe shall not be higher than the top of the shelf.
- (c) Manholes shall be installed at the upstream end of mains (proposed to be extended in the future and stubbed out as approved by the City Engineer).
- (d) Pump Station/Lift Stations - no pumping of sanitary flows is permitted, unless approved by the City Engineer. In order to qualify for approval, pump stations must be part of the City's Master Plan or maintained by a privately funded source on a permanent basis.

(8) Unusual Design

Special design of unusual features or structures requires individual study and approval by the City Engineer. Force mains will not be allowed.

(9) Allowable Pipe Materials

Only vitrified clay, SDR 35, and ductile iron pipe will be allowed. Refer to Section 71, "Sewers," of the Standard Plans and Specifications for further material specifications.

7. WATER SYSTEM

(A) GENERAL

- (1) Water system design within a development area shall conform to the City of Brentwood General Plan and Water Master Plan. The City Engineer shall approve any deviation from the City's Master Plan in writing. All systems serving more than twenty-five (25) units shall have two (2) points of connection to the public system. The City Engineer retains the right to require additional upgrading and sizing on all plans in accordance with the most recent Master Plan or as required to assure adequate fire flow and a reliable secure system. All improvements including extensions, replacements, and repairs shall conform to the requirements of the, National Board of Fire Underwriters, American Water Works Association Standards, City of Brentwood Regulations, and the Standard Plans and Specifications of the City of Brentwood.
- (2) The existing City of Brentwood water system supplies treated water within the developed area of the City. Brentwood uses a reservoir gravity network to pressurize its distribution system. Water storage for the present distribution system consists of 6.8 million gallons within Zone I and 4.0 million gallons within Zone II.
- (3) All City-owned water system facilities shall be installed only in public streets, or rights-of-way. Public water facilities within dedicated easements on private property are discouraged, and require the approval of the City Engineer. A single service connection shall not serve more than one premises except in multi-family dwellings. Separate premises under a single ownership, control or management shall be supplied water through separate service connections. More than one property shall not be connected to a single service for the purpose of avoiding water connection charges.

Reference is also made to Title 17, Chapter V, Sections 7583-7622 inclusive of the California Administrative Code, regulating the construction of cross connections between drinking water systems and other sources of water. All construction shall be in strict compliance with said regulations and City of Brentwood Regulations.

Booster pump stations are only permitted in special circumstances and then only with prior written authorization by the City Engineer.

(B) DESIGN

(1) Layout of Mains

The distribution system, whenever possible, shall employ the "Gridiron System" of water circulation so as to allow pressure equalization. All water pipelines designed for the transmission or distribution of domestic water supply shall be constructed and installed within the right-of-way of public streets or roads, unless such construction or installation is determined to be impractical by the City Engineer.

Water lines and services are not allowed to cross under sanitary lines unless suitable separation between said facilities and/or appropriate protective casings have been provided in accordance with all applicable water regulations, as approved by the City Engineer.

The location of the water main in any street shall be a minimum of six (6) feet from the centerline of the street on the northerly or easterly side of the street. Water mains shall be located such that ten (10) feet clear horizontal distance is provided to adjacent sewer lines.

The applicant shall show, on the profile of improvement plans, inverts of pipe at all changes in grade in all areas where conflicts with other utilities might arise, the top of pipe will also be shown. A detail shall be drawn of such conflicts with sufficient information shown that the City Engineer can make a determination as to the adequacy of the solution shown.

(2) Sizes

In general, the minimum size publicly maintained water main shall be eight (8) inches in diameter. The installation of six (6) inch mains may be permitted in cul-de-sacs where there is no fire hydrant installed within the court and shall not extend over three hundred (300) feet. All dead end mains shall be provided with a standard blow-off located behind the sidewalk or other acceptable means of flushing.

In all cases, water mains shall be of sufficient size to meet fire flow requirements as outlined by the requirements of the Insurance Services Office and the Fire Marshall.

Pipe sizes used in City of Brentwood public water systems are 6" (end of cul-de-sac only), 8", 12", 16", 18", 20", 24" and 30".

(3) Pipe Materials

Allowable materials for publicly maintained mains are those specified in Section 99 of the City Standard Specifications.

(4) Valves

All water valves shall be located in the middle of the travel lanes.

The distribution system shall be equipped with a sufficient number of valves so that no single shutdown will result in shutting down a transmission main, or necessitate the removal from service of a length of pipe greater than five hundred (500) feet in high density districts or greater than eight hundred (800) feet in other districts; additionally, in no case shall more than two fire hydrants be removed from service. The valves shall be so located that any section of main can be shut down without going to more than three locations to close valves. The valve-operating nut shall be no more than two (2) feet below the top of valve box. All valves shall be gate valves with fully encapsulated wedge, resilient seat, and integral bronze nut and stem. All tees shall have three valves and all crosses shall have four valves. Blow-offs shall be installed on the ends of all pipe stubs at the boundary of development. A valve shall be installed on each side of services to all hospitals, schools and major industrial sites as directed by the City Engineer.

(5) Fire Hydrants

Fire hydrants shall be placed at the end of the bulb on all cul-de-sacs, at street intersections, and at a maximum spacing of five hundred (500) feet measured along the street frontage, and as approved by the Contra Costa County Fire District and by the City Engineer. Fire hydrants on streets without fronting residential lots shall have a maximum spacing of one thousand (1,000) feet. For streets with fronting residential lots, the maximum shall be five hundred (500) feet and three hundred (300) feet maximum on commercial/industrial developments.

The minimum size water main serving a fire hydrant shall be eight (8) inches and no more than two hydrants will be allowed on any eight- (8) inch line between intersecting lines. Connections made to fire hydrant laterals will not be allowed.

Fire hydrants shall be installed as specified in the City Standard Plans.

All design fire flows and residential pressures shall meet the criteria and shall be approved by the Contra Costa County Fire District.

(6) Other Appurtenances

Blow-offs shall be provided at all low points in water main profiles. Temporary blow-offs shall be installed at the ends of any line subject to future extension.

Air release valves shall be constructed at all high points in water main profiles.

(7) Services

Service lines from the water main to the property line shall normally be installed at the time the main is constructed to avoid frequent cutting of the street.

In all new subdivisions, the residential service line shall be located on the centerline of the lot to be served. The service line to existing buildings shall be located so as to make the most direct connection to the existing structure.

Minimum service line sizes to single-family residences shall be one- (1) inch. Service lines in sizes up to and including two (2) inches shall be Type K soft copper tubing. Zinc Anodes shall be provided and installed at the locations shown on the City of Brentwood Standard Plans.

Pressure reducing valves shall be required on all structures where pressure exceeds 80-psi. The pressure reducing valves shall be installed on the water entrance side of and at the location of the house gate valve. The pressure shall be set at 80-psi at the time of installation. It will be the responsibility of the applicant to show which structures will not exceed the 80-psi pressure.

(8) Anchors

Concrete anchors or thrust blocks shall be provided at all bends, behind tees, fire hydrants, crosses which are valved in such a manner that they can be used as tees, and at valves, as shown on the City Standard Plans.

(9) Fittings

Standard approved fittings shall be used at all bends of 11-1/4 degrees and greater. Deflections shall not exceed eighty (80) percent of manufacturer's recommended values.

(10) Cover Requirements

Water mains and services shall be installed at a depth, which will provide a minimum of thirty-six inches (36") from the top of the pipe to the subgrade. In case of utility conflict in which the water main is

required to go over another utility, City Standard Plan W-14, "Concrete Cap over Water Main", applies.

(11) Easement Requirements

On-site interior water lines outside the public right-of-way to be dedicated to the City shall require easement dedication.

Easements for water lines shall meet the more restrictive of the following width criteria:

- (a) Minimum width of any easement shall be fifteen (15) feet.
- (b) All easements shall have a minimum width in feet equal to the required trench width according to the standard detail 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 finished grade. All water lines shall be centered within their easements.

(12) Backflow Prevention Devices

Backflow prevention devices shall conform to current California Department of Health Services Standards.

8. STREET LIGHTING

(A) GENERAL

These specifications shall cover the design and installation of streetlights, parking lot lights, and park trail lights. The design and installation of public street lighting systems shall conform to these standards, the City of Brentwood Standard Plans and Specifications, and Section 86 of the State Specifications, and Illuminating Engineers Society of North America (IES) Guidelines.

The applicant shall show the proposed street lighting system, parking lot lighting, or park trail lighting system on the project improvement plans.

The plans shall include the following items:

- (1) Location of electroliers, its pole number and lamp size.
- (2) Location of service point.
- (3) Locations of pull boxes.
- (4) Intensity of luminaires.
- (5) Wire size and length.

- (6) Mounting height and arm length.
- (7) Light distribution pattern.
- (8) Layout of street features including curbs, driveways, storm drain, sewer, water line, fire hydrants, catch basins, manholes, and walls.

Streetlight photometric shall be required whenever the designer has any variations from the City guidelines. At the minimum, the photometric shall include information such as average lighting level in foot candles, uniformity ratio ($F_{c_{avg}}/F_{c_{min}}$), and maximum to minimum light level ratio $F_{c_{max}}/F_{c_{min}}$.

The applicant shall then obtain service locations and pole identification numbers from the Pacific Gas and Electric Company (PG&E).

After the applicant receives the service locations, he/she shall determine the wire size and length of each conduit run. These items shall be shown in tabular form or denoted next to each conduit run on the plans.

The developer or contractor shall pay for the cost for all PG&E services. This shall include the PG&E connection charge for energizing streetlights. All streetlights shall be energized according to PG&E rate schedule LS-2A.

- (9) State the Lighting and Landscaping District Number for maintenance of the streetlights upon tract acceptance.

(B) DESIGN

(1) Spacing, Intensity and Mounting Heights

- (a) Streetlights for public lighting systems shall be standard or decorative streetlights as shown on the City of Brentwood Standard Plans. Determination of the type of light to be used shall be made by the City Engineer.
- (b) High-pressure sodium bulbs shall be used for all streetlights. Each bulb shall have its own solar switch and each electrolier its own regulator ballast. Minimum wire size shall be AWG No. 6.
- (c) Standard streetlights shall have the following maximum spacing, minimum intensity and mounting heights according to the type of street the lights are to be installed on.

	SPACING (FT.)	LUMINAIRE WATTAGE	MOUNTING HT. (FT-IN.)
Residential Local	200	70	31-6
All Residential Collector	200	70	31-6
Arterial and Collector	175 - 185	200	36-6
Industrial/Commercial	200	100	31-6

The City Engineer may approve variations to the aforementioned requirements on an individual basis.

- (d) Residential and commercial decorative streetlights, when used, shall use 100-watt luminaires installed at one hundred-sixty (160) to one hundred-eighty (180) foot spacing on alternating sides of the street.

(2) Pole Height and Arm Length

State Type 15 pole height shall be as shown on City of Brentwood Standard Plan SL-2 and Caltrans Standard Plan ES-6B. For poles installed behind the back of curb, the mast arm shall be 6' in length. Poles installed more than six feet (6') behind the back of curb shall have longer mast arms so that the luminaire head is located above the curblines. Poles installed within the median island on arterial streets shall use twin eight-foot (8') mast arms.

Signal and lighting standards shall be as shown on Caltrans Standard Plan ES-6J, ES-6K, ES-6L, ES-6M, and ES-6MA.

(3) Location Of Streetlights

- (a) Whenever possible, streetlights shall be located on a property line or at a curb return.
- (b) On streets with meandering (separated) sidewalks, the center of the lighting pole shall be located two (2) feet from face of curb.
- (c) On streets with monolithic curb, gutter, and sidewalk, streetlights shall be located so that the center of the pole is two (2) feet from the back of sidewalk.
- (d) Where there is only curb and gutter, the center of the streetlight pole shall be located two (2) feet from the face of curb unless otherwise directed by the City Engineer.

- (e) T intersections: For collector and residential streets, a streetlight shall be located on the through street along the projected centerline of the intersecting street. For thoroughfares, a streetlight shall be located at each mid-radius point.
- (f) Cul-de-sacs: A streetlight shall be located at the end of the bulb.
- (g) Four-way intersection/thoroughfares: Streetlights shall be located at all curb returns.
- (h) Four-way intersection/thoroughfares and collector streets: Streetlights shall be located at the far right curb returns of the major street in the direction of travel.
- (i) Four-way intersection/collector and residential streets: A streetlight shall be located at one of the returns.
- (j) Electroliers should be staggered on opposite sides of the street. Electroliers shall be placed on the outer edge of continuous curves rather than the inside.
- (k) Where traffic signals are installed, streetlights shall be included on signal poles wherever feasible, to reduce the number of poles at intersections.

(4) Lighting Distribution Pattern

All street lighting shall be Type III light distribution pattern, except lights at the end of a cul de sac and decorative street lighting shall use a Type V light distribution pattern.

(5) Pull Boxes

- (a) Pull boxes shall be spaced at a maximum of two hundred (200) feet.
- (b) One (1) pull box shall be located next to each electrolier on all streets.
- (c) One pull box shall be located at each side of all street crossings, at or near the curb return.
- (d) Pull boxes shall be placed immediately behind the sidewalk in sidewalk areas or between the streetlight and edge of sidewalk in meandering (separated) sidewalk areas.

9. **FIBER OPTIC CONDUIT SYSTEM**

(A) GENERAL

- (1) The fiber optic conduit system shall conform to the City of Brentwood Advanced Technology Master Plan, adopted August 22, 2000 by Resolution No. 2139. The City Engineer retains the right to require additional upgrading and sizing on all plans in accordance with the most recent Master Plan or as required assuring reliable fiber optic communication system. All improvements shall conform to the requirements of the manufacturers of the products, and the Standard Plans and Specifications of the City of Brentwood.
- (2) Ordinance No. 609 stipulates that the developer shall design, install, test, and dedicate to the City conduits within the public right of way and to design, install, test, and dedicate to the property owner conduits to the individual dwellings for the purposes of advanced technology systems.
- (3) The Fiber Optic Master Ring depicts the ultimate alignment of a fiber optic conduit system throughout the City and is designed to be "fiber optic" ready at a future time. The trunk line conduit system shall consist of 2 - 4" Φ conduits, or equivalent duct capacities. Currently with new development and Capital Improvement Projects, portions of the fiber optic conduit system are being installed. With future projects, the City anticipates linking all the conduits to form the Fiber Optic Master Ring (Trunk Line System) as attached.

(B) DESIGN

- (1) Refer to the City of Brentwood Advanced Technology Master Plan.
- (2) Where applicable, the developer shall extend a fiber optic vault to all segments of the fiber optic trunk line and shall interconnect the trunk line conduit, if existing.
- (3) The joint trench designer shall submit a copy of the Approved Tentative Map with a schematic layout of the locations of the fiber optic main line (1-4" Φ conduit), fiber optic trunk line (2-4" Φ conduits), if applicable, and the node vaults (V_n) for the review and approval of the City Engineer.
- (4) The premise of the fiber optic design is that in the future when the fiber optic plant is pulled, the conversion from coaxial (C) to fiber optics (F) will take place at the Node Vault (V_n). The V_n vault is the only junction where the coaxial conduit (C) and fiber optic conduit (F) will interconnect. After that, the fiber conduit (F) goes into the Fiber Splice Vault (V_f) and the coaxial conduit (C) goes into the Service Vault (V_s).

- (5) The fiber optic conduit designer shall submit a design table (see below for sample template) that depicts maximum lengths and bends of all conduit runs and the designer shall certify that all design criteria has been met. This table shall be signed and stamped by a Civil Engineer registered in the State of California.

Sample Template: Fiber Optic Table

C A B L E				V A U L T T Y P E		NO of HOMES
ID#	Type	Length	Degrees Bend*	Out	In	
1	C	103'	90°	Ex. V _s	V _s	4
2	C	146'	0°	V _s	V _s	4
3	C	101'	0°	V _s	V _s	4
4	C	201'	0°	V _s	V _s	2
5	C	89'	0°	V _s	V _s	3

* Not counting 90° transition bends into vaults

(C) CONDUIT LAYOUT CRITERIA

- (1) Fiber Optic Trunk Line (T), Fiber Optic Main Line (M) and Distribution Conduits (C):
- (a) No cable segment between enclosures may include more than 360 degrees of total bend, including an allowance of 90 degrees for the transition into each enclosure. In other words, there may no more than two (2) 90 degrees bends in the conduit placed in the street, not counting the transition bends into the vault at each end of the segment.
 - (b) Maximum length of conduit shall be 400' for runs with bends greater than 90 degrees, but less than 180 degrees (excluding the bends in and out of vaults).
 - (c) Maximum length of conduit shall be five hundred feet (500') for runs with bends greater than 0 degree, but less than 90 degrees (excluding the bends in and out of vaults).
 - (d) Maximum length of conduit shall be six hundred feet (600') for straight runs (excluding the bends in and out of the vaults).
 - (e) Termination into node vaults shall be gradually swept (15° -30° bends) to the elevation where the conduit enters through the side of the vault.
- (2) Service Conduits (S):

- (a) Service conduits extend between the service vault and the termination panel at each dwelling. Two service conduits must extend between each service vault and each dwelling served from that vault.
- (b) Eighty percent (80%) of such conduits must be no greater than one hundred twenty feet (120') in length and no conduit may be greater than one hundred feet (180') in length.
- (c) In order to limit cable tension during installation, no service conduit may include more than 270 degrees of bend, including the 90 degrees sweep up into the service panel at the dwelling and an allowance of 90 degrees for the sweep transition out of the service vault. Where bending in excess of 270 degrees is required, intervening service vaults must be employed.
- (d) All communications, cable and fiber optic conduit shall terminate into one (1) point use panel, to be shared by all providers. Contact the Building Department for latest panel specification. Supply separate #10 copper ground wire from the UFER common building electrode to panel. A dedicated 20 amp circuit shall be located adjacent to the distribution hub and installed on the inside wall of the structure.

(D) VAULT LAYOUT CRITERIA

(1) Node Vaults (V_n):

- (a) Every new subdivision shall contain at least one (1) node vault. These vaults shall be located near the entrance points of subdivisions in landscape parcels, so that the nodes can also serve homes in existing or future adjacent subdivisions.
- (b) The total length of the distribution (C) between the node vault and the most distance served home shall not exceed twenty-four hundred feet (2400'). If the distribution run is split to create multiple distribution branches, then the maximum length must be shortened by one hundred fifty feet (150') per branch circuit.
- (c) No more than four (4) distribution conduits may originate from any node vault.
- (d) No more than three hundred (300) homes may be served from any node vault.
- (e) 120/240-volt electric power (at least 5 kW) must be available within two hundred (200) feet of the node vault location and must not require boring of streets to access.

- (f) Natural gas must be available within two hundred (200) feet of the node vault location and must not require boring of streets to access.
- (2) Fiber Splice Vaults (V_f):
 - (a) Fiber splice vaults shall be placed where each road leaves the subdivision and shall extend to the Fiber Optic Master Ring, if applicable. If the trunk line of the Fiber Optic Master Ring exists, interconnection of the trunk line to the vault is required.
 - (b) Fiber splice vaults shall be placed as required to meet the maximum requirements for fiber optic trunk line (T) and main line (F) conduit lengths and total bend angle.
 - (c) Vaults must be placed in such a way that they can easily be accessed for service.
- (3) Service Vaults (V_s):
 - (a) Service vaults are placed at locations where the two (2) distribution conduits intersect pairs of drop conduits serving several homes. Wherever possible, each service vault should provide service to two (2), four (4), or six (6) homes, with a strong preference for serving four (4) home groups. It is occasionally permissible to serve three (3) homes from a tap location, but serving five (5) homes is not allowed.
 - (b) In addition to providing a transition between distribution and service conduits, service vaults must be provided at every point where the service is stubbed-off for future expansion.
 - (c) Additional service vaults may be required to limit pulling tension on cables in accordance with the criteria on distribution with the criteria on distribution conduit placement.

10. IRRIGATION SYSTEMS

(A) GENERAL

- (1) Irrigation system shall be designed to complete eighty percent (80%) ET of summer watering in an 8-hour period.
- (2) Minimum irrigation efficiency shall be sixty-two percent (62%).
- (3) Booster pumps shall be used on any project using, or potentially using reclaimed water.. All other systems shall be designed to operate at 50 psi or less without a booster pump.

(B) CONTROLLERS

- (1) Irrigation controller boxes shall be stainless steel with slant top lids. If more than one (1) controller or device is required, an alternate shall be designed which shall be approved by the Park and Recreation Department.
- (2) Controller shall be City-approved, compatible with the Central Irrigation System, wired to function with one (1) Rain Master Pro Max remote control or one (1) Rain Master RTC/RADD with 32TC connecting harness per subdivision.
- (3) The communication used in the system shall be regular dial-up telephone or radio configuration to all satellite units. Only the Controller manufacturer communications cable shall be used.
- (4) Splices for communication cable shall be made ONLY in controller enclosures or in an approved pull box using a Serviseal Closure Kit Model-Super, manufactured by Preformed Products or approved equal. A 1-1/2" conduit shall be used with pull boxes every 100 feet; splice boxes shall be provided at the end of the terminal of the conduit.
- (5) All system shall include master control valves and flow sensors, which connects to the satellite components necessary for operation. Where possible, phone lines shall be installed to all satellites.
- (6) Rain guard switches shall be used on all AC powered irrigation controllers not connected to the Central Irrigation System.

(C) VALVES

- (1) Check valves, either built-in or add-on, shall be installed on any ten feet (10') or higher slope. Use KBI brand or Rain Bird AVC-050 (1/2"), AVC-075 (3/4") or AVC-100 (1", if not built-in) check valves.
- (2) Isolation valves shall be AVK (or approved equal) resilient-seated, full-ported gate valves with 2" hex head or approved equal.
- (3) Valve numbers shall be sequenced in geographic order.
- (4) Locate all valves outside of turf areas where possible.
- (5) Quick couplers shall be located next to tennis courts and picnic tables. There shall be one (1) quick coupler at two (2) opposing corners of the tennis court and one (1) quick coupler within forty feet (40') of picnic tables.

(D) SPRINKLERS

- (1) No sprinklers shall be installed on fixed risers or quick couplers.

- (2) Bubbler sprinkler ratio shall be one (1) per shrub and two (2) per tree. In lawn areas, there shall be two (2) bubblers per tree and shall be on an independent valve circuit.
- (3) Sprinklers and piping shall be no closer than four inches (4") from walkways, fences, curb, etc. and eight inches (8") from buildings and other permanent structures.

(E) PIPES AND APPURTENANCES

- (1) Sleeves, twice the pipe diameter, are required under all pavements and shall have identifying marks on top of the curb or sidewalk and shall be at eighteen inches (18") minimum depth.
- (2) Main line and lateral line irrigation pipe type shall be PVC-1120-1220, Type I, Schedule 40.
- (3) For pipes under three inches (3"): PVC solvent welds, square cut, primer shall be used. For pipes over three inches (3"), use ring-tight fittings.
- (4) Fittings to be used shall be Schedule 80 for main lines and Schedule 40 for laterals. Use a non-hardening thread sealant compatible with the pipe.
- (5) Pipes 3" in diameter and larger shall require thrust blocks.

(J) WIRING

- (1) Valve wiring shall be UL approved for direct burial, copper, AWG-UF 600 volt #14 (minimum). Common wire shall be white (2 per system); control wires shall be of a different color other than white; spare wires shall be of a color different than the used station and/or common wires.
- (2) Wires shall be color-coded according to use and shall be labeled at clock with station numbers.
- (3) Spare wires shall run along the main line at a ratio of one (1) extra wire per six (6) stations used on clock. Provide a three feet (3') wire loop inside all valve boxes
- (4) There shall be no valve wire splices other than in automatic valve boxes. Only Pentite, Snaptite or 3M-DBY Seal Pack shall be accepted for underground splice connectors.

(G) WATERING

- (1) Irrigation system over-spray shall not be allowed in play areas, play courts, streets and sidewalks.

- (2) Watering of high usage and/or close contact areas (i.e. benches, picnic tables and picnic areas, play areas, water fountains, etc.) shall not be allowed. Watering of sidewalks shall be allowed in parks only where irrigation runoff and/or drainage is contained on site.

11. LANDSCAPING

(A) GENERAL

- (1) All appropriately selected plants shall be grouped into hydro-zones.
- (2) AB 395 standards shall be met in all landscaped areas.
- (3) Areas under trees and shrubs shall be excavated to a depth of three feet (3') in areas where previous compaction has occurred due to the construction of medians or parking lots and in areas where a road base was installed in the planting location.
- (4) A six-foot (6') bench shall be provided at the top and bottom of all slopes adjacent to property lines for maintenance requirements.
- (5) Drain tubes may not be necessary. Consult the soils report for the suitability of soil.

(B) TREES

- (1) All tree-planting holes shall be scarified on all sides and bottom to remove any glazing.
- (2) Root deflection panels shall be provided on all trees within five feet (5') of pavement. Install lineal panels parallel to pavement twelve feet (12') in length (6' on either side of tree).
- (3) Trees shall not be planted in areas confined by pavement with less than ten (10) feet from the pavement nor closer than ten (10) feet from property line, fences or walls. Trees planted within fifteen (15) feet of property lines shall be compact, small varieties. Keep trees twenty (20) feet away from streetlights, thirty-five (35) feet away from intersections and directional signage.
- (4) All trees shall be 15-gallon size, all other sizes shall be as approved by the Park and Recreation Department.
- (5) "Ready Stakes" shall be used on all trees staked in landscaped projects.
- (6) Agriform 20-10-5 tablets shall be installed under all trees and shrubs at manufacturer's recommended rate.

(C) SHRUBS

- (1) Shrub type shall be a maximum of three (3) feet in height, when mature, on any median or intersection radius in view of traffic.
- (2) If overhead irrigation is the watering source, DO NOT plant any variety of *Ceanothus* or *Cistus*.

(D) TURF, ETC.

- (1) Turf area must allow a minimum of ten (10) feet between plant material and permanent structures for mower equipment use.
- (2) Turf varieties shall be a blend approved by the City. Varieties from the most recent University of California Cooperative Extension (UCCE) Turf Trials at the San Jose Research Center are recommended.
- (3) Irrigated meadows and slope situations shall be Hard Fescue (*Festuca ovina ssp. Duriuscula*) at a rate of:
 - (a) Seed: 220 lbs./acre (95% purity, 85% germination)
 - (b) Mulch: 1800 lbs./acre
 - (c) R-binder: 60 lbs./acre
 - (d) Fertilizer: 400 lbs./acre

(E) EROSION CONTROL

- (1) For irrigated slope erosion, use Hard Fescue Fescue (*Festuca ovina ssp. Duriuscula*).
- (2) The following erosion control mixture shall be used for all non-irrigated hydro-seeded applications, unless otherwise noted:

Table I: Erosion Control Mixture

Botanical Name (Common Name)	Minimum % Purity	Minimum % Germination	Lbs./Acre
Festuca meglura (<i>Zorro Annual Fescue</i>)	95%	85%	20
"Hycon" Rose Clover	98%	90%	6
Lupinus Nanus (<i>Sky Lupine</i>)	90%	70%	4
Eschscholtzia Californica (<i>California Poppy</i>)	90%	70%	5
Lobularia Maritima (<i>Sweet Alyssum</i>)	90%	70%	4
Blando Brome	95%	85%	15
California Brome	95%	85%	10

- (3) The erosion control materials shall be mixed and applied in approximately the following proportions:

Table II: Erosion Control Materials Proportions

Material	Slope Measurement (per acre)
Seed	60 lbs.
Wood Fiber Mulch	1800 lbs.
Binder	80 lbs.
Fertilizer (20-20-10)	500 lbs.
Water	As needed for application

- (F) FERTILIZER: Fertilizer shall be a urea-based 16-6-8 or approved equal at a recommended rate per soil analysis and shall be approved by the City.

12. PARKS AND TRAILS

(A) GENERAL

- (1) Any park within a quarter (1/4) mile of a non-potable waterline is required to connect to and utilize non-potable water for irrigation.
- (2) Concrete "V" ditch at the base of the slope shall be adjacent to the property line.
- (3) On any planted slope (other than turf) greater than 3:1, jute netting is required.
- (4) Use sweeping curves for vehicular traffic from street through park.

- (5) Any fees associated with soil compaction, moisture, concrete and asphalt, sub-grade or sub-base tests shall be the responsibility of the contractor or developer.
 - (6) All controls (timers, photocell, etc.) shall be located in the restroom storage area or in other permanent structure. Control devices shall have a bypass operation feature.
 - (7) A twelve- (12") inch minimum mow band shall be provided at the base of a fence. There shall be a minimum clearance of twelve inches (12") on the turf side. See Standard Plan L-9, "Concrete Mowing Strip."
- (B) PARK SIGN
- (1) A standard City park name sign shall be provided and installed at the expense of developer/owner per City detail.
 - (2) Park regulation sign shall be installed at each park entrance.
- (C) PAVING
- (1) Paving for parks and trails shall be concrete, unless otherwise approved by the Park and Recreation Department.
 - (2) Main Access Path shall be shall be a ten-foot (10') width paving, six inches (6") thick with #3 rebar at 24" O.C. and 1½ lbs. of fiber mesh per cu. yd.
 - (3) Turf pavers shall be Tufftrack Grass Pavers by NDS or approved equal.
- (D) LIGHTING
- (1) City approved area lights shall be provided in all park areas. Access plates shall have vandal-proof screws. Construct a six inches (6") concrete pad around the base.
 - (2) Sport courts shall have a lighting system with a dedicated control device. Control timers shall be vandal-resistant, push button, solid state and re-settable.
 - (3) The park lighting system shall have a separate PG&E meter and enclosure.
 - (4) Electrical lighting conduits and pull boxes shall be provided on tennis courts if the lighting system is not installed at the time of construction.
 - (5) All street light foundations shall be per Standard Plan SL-1, "Street Light Foundation."

(E) PLAY AREA

- (1) Play equipment shall be metal and powder-coated.
- (2) Play area surfacing shall be "Fi-bar" or an equally engineered wood product.
- (3) Provide ten (10) feet of concrete curb and sidewalk around the play area.
- (4) There shall be at least one (1) entry and one (1) exit area from each play structure that has poured in place safety surfacing connecting to the play structure to the closest concrete pathway.

(F) COURTS AND FIELDS

- (1) Tennis Court: Post shall be Patterson Williams #2201-40 with #8351 net.
- (2) Basketball Court: Concrete with sawed joints on ten feet (10') centers; standard dimensions with all typical painted lines trowelled into final finish.
- (3) Baseball Fields: Use "Hollywood" brand or approved equal.
 - (a) Base Anchors: BBP-44
 - (b) Bases: BBP
 - (c) Home Plate: HPS
 - (d) Pitching: BBPB
 - (e) Infield: 4" infield mix (minimum). Mix shall be cinder, clay sand mix approved by the City. Infield areas shall slope away from infield, including pavement behind backstop. "Play-Ball," "Turface" or other approved infield conditioner material shall be incorporated at manufacturer's recommendation.

(G) RESTROOMS

- (a) Vandal-proof fasteners shall be used on all inside fixtures and amenities.
- (b) Provide two (2) inches diameter water service supply to building.
- (c) Cleanout shall be installed at drinking fountain trap. Provide a pressure regulator on supply line to avoid fluctuation.

- (d) Roof details shall match the subdivision's design. Whenever applicable, check the Subdivision's Conditions of Approval.
- (e) For plastic panels, Santana integral color plastic partitions
- (f) Fluorescent lights shall be vandal proof fixtures: one (1) on each exterior corner of building, one (1) over lavatory, one (1) over toilet area and one (1) in storeroom. All lights shall be on timer, except storeroom.
- (g) Install pneumatic closures on the exterior doors.
- (h) City-approved automatic door locks shall be installed on restroom doors.
- (i) Provide appropriate state-approved signs.
- (j) Separate remote shut-off valve for building drinking fountain shall be located inside building chase.
- (k) Provide for a shut-off valve for the building water supply.
- (l) Hose bib with check valve shall be installed inside each restroom.
- (l) Use stainless steel mirrors.
- (m) All fixtures shall be of penal quality stainless steel design.
- (n) Sink faucets shall be self-closing.
- (o) Each area/room shall have its own floor drain.
- (p) Sewer clean out shall be located outside building.
- (q) Toilet paper dispensers shall be roll type. Submit for approval.
- (r) All roof sewer vents shall be capped.
- (s) Phone line shall be stubbed into storeroom for irrigation controller.
- (t) Separate 100-amp service to circuit breaker panel for use by City mobile stage.
- (u) Eliminate outside privacy partition that attaches to building. Leave partition that is placed in front of door.

- (v) Install an electrified exit time lock device with timer (such as is available from Adam Rite Manufacturers) and battery backup on restroom doors.
- (w) All interior walls shall be covered with Fiberglass Reinforced Concrete (FRP).

(H) DRINKING FOUNTAINS

- (1) Drinking fountain shall be HAWS 001 A or approved equal.
- (2) Drinking fountains shall be located outside of the one hundred (100') radius of any sand lot.
- (3) Provide one (1) drain cleanout and one (1) shut-off valve in boxes next to the drinking fountains. All screws shall be vandal-resistant. See Standard Plan L-13 and L-14 for details.
- (4) Bac-T and Backflow Tests shall be the responsibility of the Developer.

(I) OTHER STRUCTURES

- (1) Removable bollards shall be powder-coated round steel pipe Timberform 2190-3R or approved equal, see Standard Plan L-12 for details. City shall be provided with locks keyed to the City system.
- (2) Park benches shall be made of recycled or plastic-coated expanded metal with arm rests.
- (3) City approved garbage can holders shall be located on pathways on its separate pad alongside the path. City shall be provided with locks keyed to the City system. Other locations of the garbage cans:
 - (a) Two (2) cans next to tot lot located at the opposite ends of the area.
 - (b) One (1) can next to the restroom.
 - (c) One (1) can next to every two (2) picnic tables.
 - (d) Two (2) cans next to dugouts at baseball fields.
 - (e) Two (2) cans per tennis court or basketball court.
- (4) Any park area shall have two (2) barbeque grills (Miracle #1104 or approved equal) per three (3) picnic tables (Wabash S606 or approved equal).
- (5) Pet stations: Use "Mutt Mitts" dispensers or approved equal.

13. SOLID WASTE REFUSE AND RECYCLING ENCLOSURE

Refer to the “Solid Waste Plan Guide and Enclosure Standards” in Appendix AP-H of this manual for the guidelines.

IX
INSPECTION AND ACCEPTANCE PROCEDURES

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. INSPECTION PROCEDURES	IA – 2
2. DOCUMENTATION FOR PROJECT ACCEPTANCE	IA – 7

IX

INSPECTION AND ACCEPTANCE PROCEDURES

1. CONSTRUCTION AND INSPECTION OF OFFSITE AND ONSITE IMPROVEMENTS

All utilities need to be located and a copy of the USA ticket number must be current within fourteen (14) days of ticket date.

Prior to Rough Grading, a Final Soils Report shall be submitted before the issuance of a Grading Permit. Construction Easements, additional Right-Of-Way Purchase, Right of Entry signed by the owner and the like shall be finalized and approved as well.

The following is the sequencing of inspection in the course of construction:

(A) Rough Grading

- (1) A pre-construction meeting shall be held with the City Inspector and the Project Manager/s before the start of the site grading.
- (2) All required signatures should have been acquired on the Rough Grading Plans. These complete city-approved sets of Rough Grading plans shall be available on site.

(B) At the time of Final Grading, signed letters by the Engineer of Record and/or Geologist attesting to the following compliances:

- (1) Certificate of Rough Grading completion.
- (2) Certificate of Compaction.
- (3) Certificate of Building Pad.
- (4) A Soils Report shall be submitted.
- (5) A copy of the grading plan depicting the correct pad elevations shall be submitted together with the certification.
- (6) The construction of the Retaining Walls shall be completed.

(C) Wet Utilities Installation

- (1) A pre-construction meeting shall be held with the City Inspector and the Project Manager before the installation of all wet utilities.
- (2) All plan submittals shall be city-approved and available on site.

- (3) Installation of the sewer lines according to the Improvement Plans.
 - (4) Installation of the storm drain lines according to the Improvement Plans.
 - (5) Sub grade shall be installed before the installation of the water lines according to the plan specifications.
 - (6) Installation of the water lines according to the Improvement Plans.
- (D) Joint Trench Utilities Installation
- (1) A pre-construction meeting shall be held with the City Inspector and the Project Manager/s before the installation of all joint trench utilities.
 - (2) All plan submittals shall be approved by the City and all other involved agencies.
 - (3) Installation of all Joint Trench Utilities according to the plan specifications.
- (E) Pavement Section
- (1) The subgrade, curb and gutter shall be graded, processed and compacted. If the compaction passed, the 'R' value of the soil shall be taken to determine the street section to be constructed.
 - (2) The Project Surveyor shall certify subgrade and shall provide a written certification of such.
 - (3) Eighty (80%) percent of the aggregate base (AB) for street curb and gutter shall be brought in and installed.
 - (4) AB shall be compacted to ninety-five (95%) percent ASTM.
 - (5) Inspection of forms and string lines testing shall be taken at 2500 psi before the balance of the remaining AB is placed.
 - (6) The remaining balance of aggregate base shall be put in place after seven (7) days or whenever seventy-five (75%) percent of the required pressure is satisfied, whichever comes first.
 - (7) Aggregate base (AB) shall be tested for ninety-five (95%) percent compaction. City Inspector shall pass and certify it on site.
 - (8) Concrete curb and gutter shall be poured.
- (F) Street Lights
- (1) Installation of the street lights according to the city-approved Joint Trench Utility plans.

- (2) Inspection of bases and concrete shall take place. Soil testing on concrete bases shall be taken at 4500 psi.
- (G) Wet Utilities Inspection
- (1) At the completion on rock grade, all sewer lines shall be tested. Sewer lines shall be balled, flushed and TVed, where a 0.5" +/- tolerance shall be maintained on sagging. Sewer lines that did not meet the tolerance requirement shall be repaired based on the discretion of the City Engineer.
 - (2) Water line pressure shall be tested at 150 psi for four (4) hours. It will then be chlorinated. Chlorine has to set in the water line for a minimum of 24 hours before it is flushed out.
 - (3) A sample shall be taken for laboratory certification (Note: verbal certification is acceptable prior to the written certification that will be supplied to the City within ten (10) days of sampling).
- (H) Asphalt Installation
- (1) Prior to the installation of asphalt, an asphalt mixture shall be submitted according to the City Standard Plans and Specifications. A water testing shall be conducted to guarantee the absence of bacteria on the water system.
 - (2) Install asphalt per the pavement design section on the improvement plans.
 - (3) Soil testing of AC shall be required after the asphalt installation to make sure that it has met the City and CalTrans requirements.
 - (4) Building permits can only be issued after pavement is complete.
- (I) Contractor shall adjust required sewer manholes and water valves at least forty-eight (48) hours after paving.
- (J) Irrigation System and Landscaping Installation
- (1) A pre-construction meeting shall be held with the City Inspector before the construction of site begins. See "Pre-Job Meeting Information and Checklist" in the Appendix section.
 - (2) A SWPPP plan shall be in place with all basins protected and shall be kept on site at all times.
 - (3) NPDES shall be in place October 1st to April 15th. It shall include straw rolls, basin bags, etc.

- (4) Four (4) sets of submittals, in individual binders, shall be submitted to the city by pre-construction meeting.
- (5) A written construction schedule shall be provided to the city before the work commences and shall be updated weekly thereafter.
- (6) After installation of the irrigation system, the contractor shall provide the following:
 - (a) A table of specifications listing all information which includes the actual soak time, flow rates, cycle time, landscape coefficient and precipitation rate for each valve.
 - (b) A certification from the manufacturer's representative indicating that the installation is appropriately complete according to specifications.
- (7) Pressure-check the irrigation system at 125 psi for two (2) hours on the main and lateral lines (excluding swing joints).
- (8) A 14-day watering period and coverage checks shall be required before planting. This period includes weed-removal before a final grading is performed.
- (9) Irrigation coverage test shall occur before any planting takes place. No planting shall commence until the entire irrigation system is in a fully automatic operation.
- (10) Soil Preparation:
 - (a) All construction materials shall be removed prior to soil preparation.
 - (b) Contractor shall pay for a pre-plant soil analysis from a City-approved laboratory, where a City staff shall collect samples and send to the laboratory. Resulting recommendations of the analysis shall be supplied to the City.
 - (c) Prior to planting, the contractor shall pay for subsequent post amendment soil testing to verify compliance of the resulting recommendations.
 - (d) Minimum amendments shall be six (6) cu. yards/1,000 sq. ft. of nitrified Redwood or Fir compost, roto-tilled eight (8) inches into native soil, unless soil test determines otherwise. Amendments shall be added when grading is at +/- 0.1% of the finish grade.
 - (e) A three- (3) inch layer of ½" – ¾" bark mulch (walk-on or chips) shall be distributed over the areas of ground cover, under shrubs and trees, unless soil test determines otherwise.

- (f) City shall be notified three (3) days prior to amending or fertilizing planting areas for inspection during work.
 - (g) Prior to sand and bark installation, a pre-emergent herbicide shall be applied to all groundcover, non-planted areas and tot lots at manufacturer's recommended specified rates.
 - (h) Prior to installation, the City shall inspect all plant material. Notify the City forty-eight (48) hours in advance prior to inspection.
 - (i) Provide a written one (1) year guarantee on trees and shrubs.
 - (j) Installation of play area equipment shall meet all Federal, State and Consumer Product Safety Commission (CPSC) product and installation codes. The manufacturer's representative shall do certification.
 - (k) There shall be a 90-day maintenance period after the final inspection on all areas. The developer is responsible for scheduling inspections every thirty (30) days during the required 90-day maintenance period. If any of these provisions are not met, inspection period shall re-commence at the beginning of the 90-day maintenance period.
 - (l) City shall be notified three (3) days prior to amending or fertilizing planting areas for inspection during work.
- (11) Playground Installation Certification shall be submitted to the City Inspector after the installation of the playground equipment. A Certified Playground Safety Inspector shall complete certification at the contractor's expense.
- (K) Vacuum testing of sewer manholes are mandated.
 - (L) Front Yard and Side Yard Irrigation and Landscaping Installation (per Building Department requirements).
 - (M) Punch List
 - (1) A walk-through with the developer/owner, contractor or their representative shall be conducted with the City Inspector in charge of the project.
 - (2) A punch list shall be provided to the developer for compliance and completion of all items within nine (9) months.
 - (3) Upon completion of all punch list items a written notification from the Landscaping Contractor shall be provided to the City notifying completion of the punch list items for a final walk through inspection.

- (4) The City Inspector shall verify the completion of all punch list items and shall then submit a "Letter of Completion" to Development Engineering recommending that the project can be processed for City Council acceptance (refer to "Documentation for Project Acceptance" proceeding this section).

Note: After the City Council acceptance of the improvements, the maintenance bond shall take effect for one (1) year.

- (5) Six (6) months after the City Council acceptance of the project, the City Inspector will conduct another documented punch list walk-through, which will also be provided to the developer/owner.
- (6) Developer/owner shall complete and satisfy the City all punch list items by the tenth (10th) month of the one (1) year maintenance period. Once the maintenance period has expired, and all punch list items has been completed, the maintenance bond shall be released.
- (7) If the developer/owner has not completed the punch list items by the tenth (10th) month within the one (1) year maintenance period, the City will send a letter to the bonding company requesting that the required funds be made available to the City for the completion of the project per the final punch list items.

2. DOCUMENTATION FOR PROJECT ACCEPTANCE

- (A) Developer shall submit a formal request for project acceptance, listings all bonds with the corresponding amounts to be released.
- (B) Written certification from other involved agencies and/or parties, not limited to those referenced below, stating that all work required on the project in their jurisdiction has been accepted:
 - (1) US Army Corps – No interest Letter
 - (2) Contra Costa County Flood Control – Acceptance Letter or No Interest Letter.
 - (3) Contra Costa County Health Services
 - (4) Pacific Gas and Electric
 - (5) Pacific Bell
 - (6) California Department of Fish and Game
 - (7) US Fish and Wildlife Services
 - (8) California Regional Water Quality Control Board

- (9) East Bay Municipal Utility District (EBMUD)
- (C) Written certifications from other involved agencies (not limited to those referenced below) shall be provided with a statement that all terms and conditions on the encroachment permit have been complied with:
 - (1) Contra Costa County
 - (2) California Department of Transportation (CalTrans)
- (D) A written certification to the City of Brentwood Engineering Department shall be provided with a statement that all grading and improvements have been substantially graded and constructed as shown according to the approved plans.
- (E) A written statement by the project surveyor shall be provided to the City certifying that survey monuments have been set in accordance with the approved and recorded Final (Tract) Map. In addition, the letter shall state that the surveyor on record has been paid for his services.
- (F) The following soils and geologic grading reports shall be submitted:
 - (1) Soils Compaction Test Results (including location and elevation of field density test).
 - (2) Daily Reports.
 - (3) Summaries of field and laboratory test and other substantiating data on any changes that earthwork compaction and improvements were constructed in accordance with the plans and specifications.
 - (4) A letter from the soils company who conducted all tests that their services had been compensated.
- (H) All punch list items shall be completed prior to requesting project acceptance.
- (I) A complete set of "Record Drawings" (As Built) shall be submitted with the words "Record Drawings" clearly marked on each sheet, date stamped and signed by the record engineer or architect.

The set of "Record Drawings" shall show all original signatures as previously signed when the City approved the said plans.

Under no condition shall the City accept Record Drawing plans marked as "Previously Approved" on any of the signature blocks. (This requirement applies to all plans not limited to Grading, Improvement, Joint Trench Utility, Irrigation, Landscape, Erosion Control or Traffic Signal and Striping).

- (J) Electronic files of the “As- Built” with the required data as stated in the Submittal Procedures section.
- (J) All overtime charges billed to the developer by the City shall be cleared and must be paid in full.
- (K) All hydrant water meters shall be turned in and all water bill balances must be paid in full.
- (L) All off-site improvements shall be completed and accepted prior to or concurrently with the on-site improvement project acceptance.
- (M) Irrigation and Landscape: At the final 90-day walk-through, the following are required to be submitted to the Parks and Recreation Department:
 - (1) Three (3) blue-line sets of landscaping and irrigation plan, annotated to show actual flow rates for each controller zone. Actual pressure shall be indicated in the submission.
 - (2) An inventory on all irrigation equipment, plant counts, and area measurements (not limited to turf, ground cover, hardscape).
 - (3) Two (2) sets of 11” x 17” reduced scale, plastic-laminated, “As-Built” irrigation layout plans showing color-coded and numbered irrigation circuits.

Note: One set shall be an inset into door of irrigation controller.
 - (4) Certification by Horizon indicating that irrigation controller is fully operational (to include telemetry line).
 - (5) Backflow Certification.
 - (6) Bac-T Certificate for drinking fountains.
 - (7) Copy of the Building Inspector’s Final Inspection.
 - (8) Meter Pedestal Specifications.
 - (9) Two (2) Specifications and User’s Guide Instruction Manual for operations and maintenance of the irrigation controller. One (1) copy will be inserted in the door of the irrigation controller.
 - (10) Two (2) copies of the Operations Manual (related to all irrigation system operation) in a three-ring binder. It must include manufacturer data sheets, maintenance and parts information on all equipment installed (with exploded views for each piece of equipment), and supplier from where those parts were obtained.
 - (11) A written certification from the developer guaranteeing the sprinkler system from any defects within a year.

- (12) A monthly and annual irrigation schedules specifying the estimated water use and the documented actual flow rates from the contractor.
- (13) Written manufacturer's warranty statement for all components. All manufacture and contractor warranties shall commence after City's acceptance of the project.
- (14) A maintenance kit for playground equipment shall be provided to the City.
- (15) The following equipment shall be provided and turned over to the Park and Recreation Department's representative:
 - (a) Two (2) sets of sprinkler wrenches.
 - (b) Two (2) sets of keys for irrigation controller, meter pedestal and booster pump.
 - (c) Two (2) quick coupler keys with hose swivels.
 - (d) Two (2) sets of special tools for each piece of equipment.
 - (e) Backflow enclosure and insulation cover.

X
APPENDIX

INDEX

<u>SECTION</u>	<u>PAGE</u>
1. PLAN CHECK SUBMITTALS APPLICANT CHECKLIST.....	AP - A
2. MAP AND PLAN CHECK SUBMITTAL.....	AP - B
3. UNIT PRICE LIST FOR BOND ESTIMATES.....	AP - C
4. GRADING PERMIT	AP - D
5. GRADING NOTES	AP - D
6. ENCROACHMENT PERMIT	AP - E
7. ENCROACHMENT PERMIT NOTES.....	AP - E
8. SAMPLE TITLE SHEET	AP - F
9. SAMPLE PLAN AND PROFILE SHEET	AP - F
10. PARKS AND RECREATION PRE-JOB INFORMATION AND CHECKLIST..	AP - G
11. SOLID WASTE PLAN GUIDE AND ENCLOSURE STANDARDS.....	AP-H



PLAN CHECK SUBMITTALS APPLICANT CHECKLIST

SUBD/CUP/DR NO. _____

DATE ACCEPTED FOR PLAN CHECK _____ BY: _____

The following items must be included in the original submittal package. Applications failing to include one or more of these items will not be accepted for processing. All plans shall have required signatures prior to submitting for final plan check and approval.

ALL PLANS SHALL BE FOLDED TO NOT LARGER THAN 9" x 12"

- | REQ | INC. | |
|--------------------------|--------------------------|---|
| | | FIRST PLAN CHECK: |
| <input type="checkbox"/> | <input type="checkbox"/> | 1. 10 sets blueines (improvement plans)/ 6 sets blueines (Final Map & grading plans) prepared under the direction of and signed by, a Registered Civil Engineer. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. 2 sets hydrology and hydraulic calculations (with hydrology map). |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. 1 completed copy "Public Improvement Plan Review Check List". |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. 2 completed quantity and cost estimate (City of Brentwood form). |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Plan/Map checking deposit (calculated on application). |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. 2 copies of Preliminary Title Report (current 6 months). |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. 1 complete set of all applicable reference materials (approved Tentative and underlying Final Map, conditions of approval, adjacent improvement and grading plans, current soils report (two copies), sight distance calculations, cross sections, closure calculations, etc.) |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. SWPPP and Copy of "Notice of Intent" submitted to Regional Water Quality Control Board if project encompasses 1 or more acres. |
| | | SECOND (AND SUBSEQUENT) PLAN CHECKS: |
| <input type="checkbox"/> | <input type="checkbox"/> | 1. 3 sets revised blueines showing all requested revisions, corrections and additions. Additionally, any other submittal information, which required revisions shall be resubmitted. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Return all previous check prints. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. 3 sets preliminary joint trench composite plans |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. 3 sets median/perimeter landscape plans. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. 3 sets masonry soundwall plans and structural calculations. |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Any additional information deemed necessary by the City Engineer, or requested by the plan checker. |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. If a letter has been sent out requesting additional funds for the plan check deposit account, the additional amount must accompany the subsequent submittal (unless received by the City prior to submittal). |



708 Third Street, Brentwood, CA 94513

MAP AND PLAN CHECK SUBMITTAL

PLANNING NO: _____

PROJECT NAME: _____

Engineer's Name: _____ Address: _____ _____ Contact: _____ Phone: _____	Developer's Name: _____ Address: _____ _____ Contact: _____ Phone: _____
---	--

No. of Lots: _____ Grading Cost Est: \$ _____ Improvement Cost Est: \$ _____

SUBMITTAL CHECKLIST:

1. Maps
 - _____ 6 sets of prints
 - _____ 2 sets of closure calculations
 - _____ 2 copies of the Preliminary Title Report
2. Grading Plan
 - _____ 6 sets of prints
 - _____ 2 copies of the Preliminary Soils Report
 - _____ 2 copies of the Preliminary Cost Estimate
3. Improvement Plans
 - _____ 10 sets of prints
 - _____ 2 sets of Hydrology/Hydraulic Calculations
 - _____ 2 sets of the Preliminary Cost Estimate

DEPOSIT CALCULATION:

Map:	Checking Deposit	\$ _____
	Checking Fee – Planning	\$ _____
Grading Plan:	Checking Deposit	\$ _____
Improvement Plan:	Checking Deposit	\$ _____
	_____	\$ _____
	_____	\$ _____
	_____	\$ _____
TOTAL DEPOSIT:		\$ _____

FOR CITY USE ONLY

Initial submittal appears complete: _____ Date: _____



UNIT PRICE LIST FOR BOND ESTIMATES

GRADING

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
Clearing & Grubbing	_____	AC	\$1,000.00	_____
Rough Grading (balanced)	_____	CY	\$3.20	_____
Finish Grading	_____	LOT	\$500.00	_____
Import	_____	CY	\$2.50	_____
Export	_____	CY	\$10.00	_____

Subtotal Grading:

STREET IMPROVEMENTS

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
AC Overlay (2")	_____	SF	\$0.88	_____
Asphalt Concrete	_____	SF/in	\$0.25	_____
Aggregate Base	_____	SF/in	\$0.08	_____
Pavement Sealant (Fog)	_____	SF	\$0.05	_____
3" or 5" Rubberized Asphalt Concrete	_____	TON	\$65.00	_____
Pavement Saw Cut	_____	LF	\$1.00	_____
Relocate Signs	_____	MILE	\$4,050.00	_____
Type "B" Curb & Gutter	_____	LF	\$9.00	_____
Valley Gutter	_____	SF	\$3.00	_____
Median Curb	_____	LF	\$12.00	_____
Sidewalk (with 4" CL 2 AB)	_____	SF	\$2.85	_____

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
Under Sidewalk Drain (Schedule 40 PVC)	_____	EA	\$20.00	_____
AC Berm	_____	LF	\$5.00	_____
Handicap Ramp	_____	EA	\$100.00	_____
Driveway Approach	_____	SF	\$3.00	_____
Driveway Approach (Commercial)	_____	SF	\$4.00	_____
Striping	_____	LF	\$1.00	_____
Joint Trench	_____	LF	\$18.00	_____
6' Sound Wall	_____	LF	\$65.00	_____
Barricade (Metal: ST 12)	_____	LF	\$35.00	_____
Street Trees	_____	EA	\$90.00	_____
Signs	_____	MILE	\$8,100.00	_____
Curb & Gutter	_____	LF	\$12.00	_____
Survey Monuments	_____	EA	\$300.00	_____
Lot Corners	_____	EA	\$160.00	_____
Geofabric	_____	SF	\$0.20	_____
At-Grade RR Crossing	_____	EA	\$175,000.00	_____
Retaining Wall (3' max)	_____	SF	\$15.00	_____
Chain Link Fence	_____	LF	\$12.50	_____
Thermoplastic Pavement Markings	_____	SF	\$0.50	_____
Canal Relocation	_____	LF	\$150.00	_____
2" x 6" Redwood Header	_____	LF	\$6.00	_____
AC Berm Removal	_____	LF	\$3.00	_____
AC Removal	_____	SF	\$1.50	_____
Sidewalk Removal	_____	SF	\$1.00	_____
Curb & Gutter Removal	_____	LF	\$3.00	_____

Subtotal Street Improvements:

DRAINAGE IMPROVEMENTS

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
RCP (up to 30" diameter)	_____	LF/in ϕ	\$2.50	_____
RCP (36" diameter & over)	_____	LF/in ϕ	\$2.25	_____
CIPP (24" min.)	_____	LF/in ϕ	\$1.15	_____
Type A & C Inlets	_____	EA	\$1,400.00	_____
Type B, D & E Inlets	_____	EA	\$1,800.00	_____
SD Manhole Type I	_____	EA	\$1,600.00	_____
SD Manhole Type II	_____	EA	\$2,600.00	_____
SD Manhole Type III	_____	EA	\$4,000.00	_____
Christy V9 Drain Box	_____	EA	\$200.00	_____
B-58 Concrete Ditch	_____	LF	\$25.00	_____
Concrete Structure	_____	CY	\$450.00	_____
Adjust MH to Grade	_____	EA	\$400.00	_____
Rip Rap	_____	CY	\$60.00	_____
Grouted Rip Rap	_____	CY	\$80.00	_____
Earth Ditch	_____	LF	\$12.00	_____

Subtotal Drainage Improvements:

SANITARY SEWER

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
8" VCP	_____	LF	\$33.00	_____
8" PVC (SDR-35)	_____	LF	\$30.00	_____
10"VCP	_____	LF	\$56.38	_____
10"PVC (SDR-35)	_____	LF	\$50.00	_____
12" VCP	_____	LF	\$61.17	_____
12" PVC (SDR-35)	_____	LF	\$55.00	_____
15" VCP	_____	LF	\$67.19	_____
15" PVC (SDR-35)	_____	LF	\$65.00	_____
18" VCP	_____	LF	\$74.33	_____

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
18" PVC (SDR-35)	_____	LF	\$70.00	_____
21" VCP	_____	LF	\$82.29	_____
21" PVC (SDR-35)	_____	LF	\$75.00	_____
24" VCP	_____	LF	\$90.20	_____
24" PVC (SDR-35)	_____	LF	\$85.00	_____
27" VCP	_____	LF	\$103.52	_____
27" PVC (SDR-35)	_____	LF	\$95.00	_____
30" VCP	_____	LF	\$116.80	_____
33" VCP	_____	LF	\$129.49	_____
36" VCP	_____	LF	\$142.11	_____
42" VCP	_____	LF	\$160.45	_____
Manhole	_____	EA	\$2,500.00	_____
Adjust MH to Grade	_____	EA	\$400.00	_____
Manhole, Break & Enter	_____	EA	\$500.00	_____
Service Connections	_____	EA	\$200.00	_____
Cleanout	_____	EA	\$950.00	_____
6" Force Main	_____	LF	\$40.00	_____

Subtotal Sanitary Sewer:

WATER IMPROVEMENTS

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
4" PVC (C900) Class 200	_____	LF	\$17.00	_____
6" PVC (C900) Class 200	_____	LF	\$19.00	_____
8" PVC (C900) Class 200	_____	LF	\$21.00	_____
10" PVC (C900) Class 200	_____	LF	\$24.00	_____
12" PVC (C900) Class 200	_____	LF	\$27.00	_____
16" PVC (C900) Class 200	_____	LF	\$45.00	_____
20" PVC (C900) Class 200	_____	LF	\$65.00	_____
Service Connections incl. Meter (1.0")	_____	EA	\$1,000.00	_____
Stub (1")	_____	EA	\$400.00	_____

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
Service Connections incl. Meter (1.5")	_____	EA	\$1,200.00	_____
Stub (1.5")	_____	EA	\$550.00	_____
Service Connections incl. Meter (2.0")	_____	EA	\$1,500.00	_____
Stub (2")	_____	EA	\$650.00	_____
Fire Hydrant	_____	EA	\$2,500.00	_____
Blow-off Valves	_____	EA	\$1,500.00	_____
Air Release Valve	_____	EA	\$2,000.00	_____
8" Gate	_____	EA	\$1,000.00	_____
10" Gate	_____	EA	\$1,000.00	_____
12" Butterfly	_____	EA	\$1,500.00	_____
24" Butterfly	_____	EA	\$2,400.00	_____
Hot Tap	_____	EA	\$1,000.00	_____
4" PVC Sleeves	_____	LF	\$12.00	_____
Concrete Cap	_____	LF	\$300.00	_____
Adjust Water Valve to Grade	_____	EA	\$200.00	_____
12" DIP	_____	LF	\$86.40	_____
14" DIP	_____	LF	\$90.00	_____
16" DIP	_____	LF	\$96.00	_____
18" DIP	_____	LF	\$108.00	_____
20" DIP	_____	LF	\$115.00	_____
24" DIP	_____	LF	\$120.00	_____
30" DIP	_____	LF	\$144.00	_____
32" DIP	_____	LF	\$144.00	_____
36" DIP	_____	LF	\$172.80	_____
42" DIP	_____	LF	\$201.60	_____
Cathodic Protection	_____	LF	\$100.00	_____
Reclaimed Water Line (8" PVC)	_____	LF	\$30.00	_____

Subtotal Water Improvements:

ELECTRICAL

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
Traffic Signal 4 way/4 phase	_____	EA	\$150,000.00	_____
Traffic Signal 4 way/8 phase	_____	EA	\$200,000.00	_____
Decorative Streetlight	_____	EA	\$2,000.00	_____
Electrolier (Residential Collector)	_____	EA	\$1,500.00	_____
Electrolier (Industrial/Commercial)	_____	EA	\$2,000.00	_____
Underground PMH4	_____	EA	\$50,000.00	_____
Services (Underground) Conversion	_____	EA	\$4,500.00	_____
Elec. Duct Bank	_____	EA	\$6.00	_____
Elec. Control Box	_____	EA	\$5,000.00	_____
Electrolier Pull Box	_____	EA	\$85.00	_____

Subtotal Electrical:

BORING & JACKING

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
10" Pipe	_____	LF	\$263.00	_____
12" Pipe	_____	LF	\$327.00	_____
15" Pipe	_____	LF	\$382.00	_____
18" Pipe	_____	LF	\$451.00	_____
21" Pipe	_____	LF	\$499.00	_____
24" Pipe	_____	LF	\$545.00	_____
27" Pipe	_____	LF	\$584.00	_____
30" Pipe	_____	LF	\$622.00	_____
33" Pipe	_____	LF	\$681.00	_____
36" Pipe	_____	LF	\$741.00	_____
42" Pipe	_____	LF	\$835.00	_____

Subtotal Boring & Jacking:

MISCELLANEOUS

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Total</u>
Mobilization	_____	LS		_____
Winterization	_____	LS		_____
Landscaping	_____	SF	\$2.00	_____
Irrigation	_____	SF	\$2.00	_____
Shoulder Backing	_____	CY	\$25.00	_____
Land Acquisition	_____	AC	\$70,000.00 or purchase	_____

Subtotal Miscellaneous:

SUBTOTAL:

10% Contingency:

TOTAL:

NOTE:

Items in addition to this list necessary for construction of your project should be added to this list.



708 Third Street, Brentwood, CA 94513

GRADING PERMIT

PERMIT NO: _____

PERMIT FEE: _____

BOND AMT: _____

<p>Owner/ Applicant: _____</p> <p>Address: _____ _____</p> <p>Contractor: _____</p> <p>Address: _____ _____</p> <p>Phone: _____</p> <p>Contractor License No.: _____</p> <p>Business License No.: _____</p> <p>After Hour Contact: _____</p> <p>Phone: _____</p>	<p>Engineer: _____</p> <p>RCE No.: _____</p> <p>Address: _____ _____</p> <p>Phone: _____</p> <p>Soil Engineer/Geologist: _____</p> <p>RCE/REG No: _____</p> <p>Address: _____ _____</p> <p>Phone: _____</p> <p>Engineering Estimate (CY): _____</p> <p>Engineering Est. Cost: _____</p>
--	---

Description of work:

Schedule of Work:

I hereby certify that all information provided in this application is true and complete and I agree to comply with the conditions listed below and on the reverse side hereof.

Applicant's Signature

Date

Permission is granted to perform the work as described above.

Work completed is substantial conformance with chapter 15.52 of the Brentwood Municipal Code.

City Engineer

Date

City Engineer

Date

GRADING NOTES

1. This permit is void if work is not begun within 60 days of issuance and not completed within one year.
2. At least 48 hours notice is required to the City of Brentwood Engineering Department. Call (925) 516-5420 to arrange for inspection.
3. Call Underground Service Alert (USA) at least 48 hours prior to the start any construction.
4. All grading and noise therefrom including, but not limited to, warming of equipment motors in residential zones or within one thousand (1000) feet of any residential occupancy, hotel, motel or hospital shall be limited between the regular hours of 7:00 A.M. to 3:30 P.M., Monday through Friday. The owner or developer must submit a written request for approval by the City Engineer at least two (2) working days in advance to work during any other hours, weekends, or holidays.

The following special hours of work will be enforced from Monday through Friday:

- A. Work affecting traffic on Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way, Sand Creek Road, Central Boulevard or Walnut Boulevard will be limited to 9:00 am to 3:00 pm.
 - B. Work adjacent to or within fifteen hundred feet (1500') of any school while school is in session will be limited to 9:00 am to 3:00 pm.
 - C. Work within three hundred feet (300') of occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road will be limited to 8:00 am to 4:30 pm.
 - D. Work in excess of three hundred feet (300') from occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road, will be limited to 7:00 am to 5:00 pm.
 - E. All Saturday work shall be restricted to 9:00 am to 4:00 pm.
5. Whenever any portion of the work requires entry onto adjacent property for any reason, the permit applicant shall obtain a right-of-entry from the adjacent property owner or his authorized representative in a form acceptable to the City and shall file a copy of the fully executed right-of-entry with the City prior to issuance of the grading permit and/or approval of the grading plans.
 6. The permittee and/or the permittee's engineers, contractors or agents shall be responsible for the satisfactory and safe conduct of all work.
 7. The permit applicant and grading contractor shall be responsible for the protection of adjacent properties during grading operations. Prior to commencing any grading of the site, the exterior boundaries shall be marked as required by the City Engineer. Boundary markers shall be maintained throughout the grading operation. Temporary barriers and/or protective fencing shall be used when necessary to protect adjacent properties.
 8. The permittee the permittee's contractors and agents shall indemnify and save harmless the City and all officers and employees thereof connected with the work, from all claims, suits or actions of every name, kind and description, brought for, or on account of, injuries to or death of any person or damaged to property resulting from the issuance of the grading permit, construction of the work or by or in consequence of any negligence in guarding the work, use of improper materials in construction of the work, or by or on account of any act or omission by the permittee or permittee's agents.
 9. All exposed or finished banks or slopes of any fill or excavation shall be protected from erosion by approved planting, irrigation, hydroseeding, cribbing, walls or terracing or a combination thereof. All graded surfaces exceeding five thousand (5,000) square feet in area shall be planted and irrigated, paved or built upon and shall be provided with berms and approved drainage facilities adequate to prevent erosion and to conduct the accumulation of runoff of surface waters to an approved place of discharge.
 10. For commencement of the activity during the wet season, the applicant shall demonstrate to the satisfaction of the City Engineer, that land disturbances is relatively minor and that erosions and sedimentation can be controlled.
 11. Erosion and sediment control measures shall be implemented as specified by the approved interim and final sediment and erosion control plans. Erosion and sediment control measures shall be consistent with the Manual of Sediment and Erosion Control Practices and Best Management Practices.
 12. The applicant shall provide security for the performance of the work described and delineated on the approved grading plan and interim and final erosion and sediment control plans in an amount not less than ten (10) percent of the total estimated cost of the work. The estimated cost of work shall be approved by the City Engineer.

The type of security shall be either:

- A. Cash deposit with the City; or
 - B. A certificate of deposit approved by the City Attorney from a financial institution subject to regulations by the State or Federal government who said financial institution pledges funds are on deposit and guaranteed for payment, and payable immediately, partially or in full, to the City upon demand.
13. Any unused security posted with the City for faithful performance shall be released as follows:
 - A. Eighty (80) percent of the unused security will be returned upon completion and acceptance of the work by the City Engineer (less any outstanding claims);
 - B. Any remainder of the security will be released twelve (12) months after completion and acceptance of the work by the City Engineer provided all defective work is corrected to the satisfaction of the City Engineer.
 14. Upon the final completion of the work, the following reports and drawings and supplements thereto shall be submitted to the City Engineer.
 - A. A soils and geologic grading report prepared by the Soils Engineer and/or engineering geologist including location and elevations of field density test, summaries of field and laboratory tests and other substantiating data and comments on any changes made during grading and their effect on the recommendations made in the Soil Engineering Investigation Report. The report shall include a final description of the geology of the site, including any new information disclosed during the grading and the effect of same on recommendations incorporated in the approved grading plan. A certification shall be provided as to the adequacy of the site for the intended use as affected by soil and geologic factors.
 - B. An as-graded grading plan prepared by the Civil Engineer, including original ground surface elevations, as graded ground surface elevations, lot drainage patterns and locations and elevation of all surface and subsurface drainage facilities.
 - C. An as-built erosion and sediment control plan prepared by the Civil Engineer.

*****This form shall not be changed except where a blank exists. If a change is made to this form, the permit shall be void.*****



ENCROACHMENT PERMIT

PERMIT NO: _____
 EXPIRES: _____
 BOND AMT: _____

708 Third Street, Brentwood, CA 94513

Applicant: _____ Address: _____ _____ Phone: _____ Contractor License No.: _____	Contractor: _____ Address: _____ _____ Phone: _____ Business License No: _____
--	--

Location of Work: _____ Cross Street: _____	Cost of Work: _____ Completion Date: _____
--	---

Description of Work:

I hereby certify that all information provided in this application is true and complete and I agree to comply with the conditions listed below and on the reverse side hereof.

 Applicant's Signature Date

Applicable Standard Details and Special Provisions:

<p style="text-align: center;">FEE CALCULATION</p> Processing: \$ _____ Inspection Fee: \$ _____ Other: \$ _____ Total Fee: \$ _____ Date Paid: _____ Receipt No: _____	<p style="text-align: center;">PERMIT APPROVED:</p> _____ Date City Engineer WORK ACCEPTED: _____ Date Public Works Inspector _____ Date City Engineer
---	---

ENCROACHMENT PERMIT NOTES

1. The permittee shall begin the work or use authorized by this permit within 30 calendar days from date issuance, unless a different period is stated in the permit. If the work or use is not begun accordingly, then the permit shall become void.
2. The permittee shall complete the work or use authorized by a permit issued pursuant to this chapter within the time and according to the terms specified in the permit. If work is unduly delayed by the permittee and if the interest of the public reasonably so demand, the city engineer shall have authority to complete the work or any portion thereof. The actual cost is such work by the city plus twenty percent as an overhead charge shall be charged to and paid by the permittee or his surety.
3. The permittee shall keep this permit at the site at work and the permit must be shown to any authorized representative of the Engineering Department or the law enforcement officer on demand.
4. Permits shall be issued only to the person making application therefore and may not be assigned to another person or location by the permittee. If any permittee assigns his permit to another person or another location, the permit shall become void.
5. The permittee will hold the City of Brentwood and its officers and employees harmless from and will indemnify them against all claims, liability and loss, and in particular from and against all such claims, liability and loss predicated on active or passive negligence of the City of Brentwood resulting directly or indirectly from operations under an issued encroachment permit. This hold harmless obligation shall not terminate during the life of the permit. The permittee shall inform himself as to the existence and location of all underground facilities and protect the same against damage. The permittee shall not interfere with any existing utility without the written consent of the City Engineer and owner of the utility. If it is necessary to relocate an existing utility, such relocation shall be done by the owner. No utility owned by the City shall be moved to accommodate the permittee, unless the cost of such work is borne by the permittee. The cost of moving privately owned utilities shall be similarly borne by the permittee, unless other contractual arrangements are made. The permittee shall support and protect all pipes, conduits, poles, wires, or other underground structures affected by excavation work, and shall inform the owner if any damage occurs to such facilities during the conduct of the work. All repairs, including replacement of protective pipe coatings shall be made by the owner of the damaged facilities, unless other arrangements are made. The expense of repairs of any damage shall be charged to the permittee. If any claim as such liability is made against the City of Brentwood, its officers or employees, permittee shall defend, indemnify and hold them, and each of them harmless from such claim.
6. The applicant must file with the City Engineer a bond or cashier's check payable to the City of Brentwood in an amount equal to the cost of the work plus twenty per cent. Upon satisfactory completion of all work and receipt of a Maintenance Bond in amount equal to 20% of the cost of the work, the bond or cash deposit shall be released. The Maintenance Bond will be held for a period of one (1) year. In the event of noncompliance, the City may deduct from the cash deposit the actual cost incurred by the City pursuant to Section 12.08.150 of the Brentwood Municipal Code. In the event of a bond having been posted, the City may proceed against the surety and principal for the actual cost to the City plus twenty percent.
7. Any encroachment permit may be revoked at any time at the option of the City Engineer, whenever:
 - (1) It appears to the City Engineer that the continuing allowance of the encroachment, whether because of changed conditions or otherwise, interferes with the full, adequate or safe public use of the right-of-way or watercourse involved: and/or
 - (2) The permittee fails to comply with or violates any City Ordinance, City standards, safety regulations, or any condition of issuance of the permits.
8. Upon revocation of the permit, the permittee shall immediately restore the public right-of-way or watercourse to a condition as required by the City Engineer. If the restoration is not completed within the time specified by the City Engineer, the City may take any and all necessary action so required to restore the right-of-way or watercourse. Any and all costs incurred by the City for the enforcement of this Section shall be at the expense of the permittee. Cost incurred by the City will be deducted from any deposits and/or bonds posted by the permittee and, if necessary, recovered by legal action.
9. Notify Underground Service Alert 48 hours prior to any excavation at (800) 642-2444.
10. All work performed under this permit is to be in accordance with the standard plans and specifications of the Engineering Department of the City of Brentwood, subject to the inspection and approval of the City Engineer.
11. Notify Public Works construction inspection at (925) 516-5420 at least 48 hours prior to the start of construction. This also applies to restart of the job when closed down by rain or other reasons for more than 10 days.
12. No changes may be made in the location, dimension, character or duration of the encroachment or use as granted by the permit except upon written authorization of the City Engineer.
13. The granting of the permit does not relieve the applicant of the responsibility of obtaining any other permit required by other public or private agencies, or individuals, i.e. CCCFC & WCD, Corps of Engineers, Dept. of Fish and Game, etc.
14. All site safety measures are the applicant's responsibility, including providing, erecting, and maintaining all warning signs, lights, barriers, or other devices necessary for the protection of the public. When working a city street, at least one 12 foot wide traffic lane shall be open at all times.
15. Temporary paving of a minimum of 2 inches of asphalt concrete shall be placed on all excavations within the street at the end of each day's work. It shall be kept in good repair at all times, and when directed by the Public Services Inspector, immediate attention shall be given to correct any noted deficiencies.
16. The hours of work within the public right-of-way shall be the regular hours of 7:00 A.M. to 3:30 P.M., Monday through Friday. The owner or developer must submit a written request for approval by the City Engineer at least two (2) working days in advance to work during any other hours, weekends, or holidays. Work on days other than regular workdays requires additional compensation for overtime inspection and written approval from the City.

The following special hours of work will be enforced from Monday through Friday:

 - (1) Work affecting traffic on Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way, Sand Creek Road, Central Boulevard or Walnut Boulevard will be limited to 9:00 am to 3:00 pm.
 - (2) Work adjacent to or within fifteen hundred feet (1500') of any school while school is in session will be limited to 9:00 am to 3:00 pm.
 - (3) Work within three hundred feet (300') of occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road will be limited to 8:00 am to 4:30 pm.
 - (4) Work in excess of three hundred feet (300') from occupied residential units and not affecting Balfour Road, Brentwood Boulevard, Fairview Avenue, Lone Tree Way or Walnut Boulevard, south of Balfour Road, will be limited to 7:00 am to 5:00 pm.
 - (5) All Saturday work shall be restricted to 9:00 am to 4:00 pm.
17. 8:00 a.m. to 5:00 p.m. Monday – Friday (excluding holidays) or as directed by the City Engineer. Work on days other than regular workdays requires additional compensation for overtime inspection and written approval from the City.
18. Upon completion of the work the applicant shall clean the right-of-way of all rubbish, debris, trees, brush, excess materials, temporary structures and equipment. Grounds and landscaping shall be restored to the approval of the property owner.
19. Any individual or corporation contracting the work within the City of Brentwood is required to have a current City business license.

*****This form shall not be changed except where a blank exists. If a change is made to this form, the permit shall be void.*****

Sample Title Sheet

REVIEWED FOR COMPLIANCE WITH THE CITY OF BRENTWOOD STANDARDS AND REQUIREMENTS. APPROVAL FOR CONSTRUCTION IS SUBJECT TO THE INFORMATION SHOWN HEREIN. CITY OF BRENTWOOD AND THE UNDERSIGNED ARE NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY EXIST ON THESE PLANS.

BALVINDER S. GRENVAL, CITY ENGINEER
 P.O. B. NO. 481122 DATE EXPIRES 9-00-04
 COO FIRE PROTECTION DISTRICT

RICHARD RIVAN, CHIEF INSPECTOR
 DESIGNED UNDER THE DIRECTION OF: DATE
 SHEET

FOR THE YEAR 2000	DATE 2000-00-00
FOR THE YEAR 2001	DATE 2001-00-00
FOR THE YEAR 2002	DATE 2002-00-00
FOR THE YEAR 2003	DATE 2003-00-00
FOR THE YEAR 2004	DATE 2004-00-00

DESIGNED UNDER THE DIRECTION OF: _____
 FOR THE YEAR 2000: _____ DATE: 2000-00-00
 FOR THE YEAR 2001: _____ DATE: 2001-00-00
 FOR THE YEAR 2002: _____ DATE: 2002-00-00
 FOR THE YEAR 2003: _____ DATE: 2003-00-00
 FOR THE YEAR 2004: _____ DATE: 2004-00-00

NO.	REVISIONS	BY	APP	DATE

IMPROVEMENT PLAN
BRENTWOOD
 CALIFORNIA



Consultant Logo Here



"Providing excellence in care and service for the people, issues, and resources of our community."

PRE-JOB MEETING INFORMATION AND CHECKLIST

GENERAL

- 1. SWPPP plan to be in place with all basins protected **prior to starting any work.**
- 2. SWPPP is required for sites 1 acre or more. SWPPP plan must be kept on site at all times.
- 3. NPDES to be in place October 1 – April 15th and shall include straw rolls, basin bags, etc.
- 4. Construction rock entrance 20' x 50' and wash down area must provided as documented in SWPPP.
- 5. No material will be stored within 50' of any area drains and shall be covered during winter months (October 1 – April 15).
- 6. Rough grading is to be certified to be within + or – one tenth of final grade as per grading plans. All changes are to be approved by the architect and the City's representative and shall be shown on plans **prior to starting work.**
- 7. Temporary fencing must be in place after rough grading has been completed.
- 8. All utilities need to be located and a copy of USA ticket number must be current and within 14 days of ticket date.
- 9. Copy of soils report is to be submitted to Construction Inspector prior to start of work.
- 10. All inspections are to be called 48 hours in advance to Park Manager Ken DeSilva, Park Planner Janet Hansen, or Construction Inspector Ken Byrd at (925) 516-5444.
- 11. Work hours are from 7:00 a.m. to 3:30 p.m. If complaints are received by the City, hours will be changed to 8:00 a.m. – 3:30 p.m. All overtime must be approved by the City of Brentwood's Engineering Department at least 48 hours in advance. A new request for overtime must be submitted every two weeks.
- 12. Any work that is to be performed in a median or street will require a traffic control plan that needs to be approved by the City of Brentwood's Traffic Engineer. Traffic control plan must be submitted a minimum of 48 hours prior to starting work and be approved prior to any work beginning in medians or streets.
- 13. A construction schedule of the project is to be submitted every two weeks to the

Construction Inspector. If any changes are made to this schedule, an updated schedule needs to be submitted immediately.

- 14. Standard Pipeline and PG&E are to be notified and present during any crossings of their utilities. All crossings are to have least a 2' clearance.
- 15. No planting until water and electric services are installed and hydrostatic pressure test and soil amendments meet City of Brentwood Standard Plans and Specifications.

SAFETY ISSUES

- 16. Spill prevention
- 17. MSDS information
- 18. Right-to-Know information
- 19. First Aid
- 20. Signs (traffic control/barricades)
- 21. Excavation and trenches
- 22. Fire protection/fire extinguishers
- 23. Security
- 24. Emergency contact numbers (24 hours per day) including all subcontractors and suppliers
- 25. Sample accident investigation report form

DIFFERING SITE CONDITIONS:

- 26. Process for immediate notification (in writing)
- 27. Contact consultants in a timely fashion to resolve issues
- 28. Review impact on schedule (any critical path concerns)

OTHER ISSUES:

- 29. Regular updates of construction schedule
- 30. Number of working days on project
- 31. Issuance of building permits is part of Conditions of Approval
- 32. Shop drawing schedules and performance standards review
- 33. Subcontractors relationship with owner and inspectors
- 34. Independent testing requirements and procedures
- 35. Regularly scheduled meetings

- 36. Record retention (including location)
- 37. Material handling plan (storage, etc.)
- 38. Litter abatement
- 39. Water needs

I have read and understand the above policies and will comply with them in their entirety.

Development Name

Subdivision/Project No.

Developer/Contractor

Date

The items listed below must be completed or resolved to the satisfaction of the individual or agency involved prior to acceptance of the project.

Documentation:

- 1) One complete set of 4mm as-built mylars
- 2) Three full set of as-built landscaping and irrigation plans, annotated to reflect as-built condition, noted plant substitutions, plant relocation, irrigation main, lateral and sprinkler head locations.
- 3) Three sets of landscaping and irrigation plans on blueines, annotated to show actual flow rates for each controller zone, and actual pressure must be submitted.
- 4) Two sets of irrigation plans, reduced scale (11x17), photocopy black line on bond paper showing color-coded and numbered irrigation circuits. One set to be plastic laminated inset into door of irrigation controller.
- 5) Irrigation controller certified by Horizon to be fully operational, to include telemetry line.
- 6) Backflow certification report.
- 7) Bac-T certification report for drinking fountains.
- 8) Copies of final inspection of meter pedestal approval from Building Inspector.
- 9) Specifications for meter pedestal.
- 10) Specifications and users guide instruction manual for operations and maintenance for irrigation controller (2 copies). One copy will be inserted in door of irrigation controller.
- 11) Two sets of instruction manuals for operation and maintenance of all equipment items.
- 12) Two sets of parts manuals showing exploded views for each piece of equipment. Manuals should include applicable parts catalog numbers.
- 13) Written manufacturer's warranty statement for all components.
- 14) Written notification from landscaping contractor notifying completion of punch list items for final walk through inspection.
- 15) A copy of Playground Installation Certification must be submitted to Construction Inspector after installation of playground equipment. Certification will be completed by manufacturer's representative.
- 16) A maintenance kit for play ground equipment.
- 17) Inventory of all irrigation equipment, plants, and square footage of turf and planting areas must be submitted to Construction Inspector.

Equipment:

- 1) Provide two sets of sprinkler wrenches.
- 2) Provide two sets of keys for irrigation controller, meter pedestal, and booster pump.
- 3) Two quick coupler keys with hose swivels.
- 4) Two sets of special tools for each piece of equipment.
- 5) Backflow enclosure and insulation cover.



SOLID WASTE PLAN GUIDE & ENCLOSURE STANDARDS

Each applicant for a land use permit is required to develop and submit a solid waste and recycling plan as part of the permit process. The plan must demonstrate those steps the applicant will take to meet the State mandate to reduce or divert 50% of the waste generated by all residences and businesses in the City of Brentwood.

The *Plan Guide* includes pre-construction, construction and operational phase of each project. Some helpful generations guidelines are included as well as some conversions to help assess the level of collection service required for each project. Each applicant is free to develop and attach their own, more detailed plan if they choose.

The *Enclosure Standards* detail the standard bin sizes and offers direction on the dimensions, placement and construction of the solid waste enclosure.



If you have any questions regarding the *Plan Guide* or the *Enclosure Standards*, please contact:

Jon Carlson
Solid Waste Manager
925-516-6090
(email: jcarlson@ci.brentwood.ca.us)

PLAN GUIDE

PRE-CONSTRUCTION

INITIAL
Contact the City Planning Department; determine if you are required to comply with the Construction & Demolition Recycling Ordinance (Chapter 8.40). If you are covered, complete the necessary paperwork.

INITIAL
Get a copy of the Builder's Guide for a list of local recycling facilities from the Planning Department. Reuse dirt, concrete, asphalt, wood, green waste, metals, etc. on site whenever possible.

INITIAL
Divert unused dirt, concrete, asphalt, wood, green waste, metals etc. to a recycling facility – do not landfill these reusable materials!

INITIAL
Provide adequate bin enclosure space for solid waste and recycling collection (PLEASE REFER TO CITY ENCLOSURE STANDARDS).

CONSTRUCTION

INITIAL
Reuse dirt, concrete, asphalt, wood, green waste, etc. on site whenever possible. Divert unused dirt, concrete, asphalt, wood, green waste, etc. to a recycling facility – do not landfill these reusable materials! Refer to the Builder's Guide for a list of local recycling facilities.

INITIAL
If you are required to follow the requirements of the Construction & Demolition Recycling Ordinance (Chapter 8.40), KEEP TRACK OF ALL OF YOUR RECEIPTS!!

GENERAL

INITIAL
Include solid waste and recycling information in your employee orientations, policy manuals, lease agreements and CC&R's.

Color code inside containers and provide graphic signs that instruct your employees and/or customers to separate materials in the containers used to transport recyclables and refuse to the outdoor enclosures.

INITIAL
Review your operations at least annually, contact the city for a free waste audit to reduce waste and keep your solid waste services cost effective and up to date.

DESIGN

INITIAL
Incorporate adequate space for trash, green waste and recycling containers inside the facilities where waste and recyclables will be generated. Incorporate space for recycling containers in the enclosure where they will be stored for collection. Design in a manner that facilitates reuse.

Recyclable materials that are currently recycled include:

- plastic bottles and containers (#1-7) , *no shrink wrap or polystyrene peanuts*
- glass bottle and jars, *no ceramics, plate glass or windows*
- aluminum & tin cans, pie tins, metal clothes hangers
- mixed paper including junk mail, colored paper, office paper & magazines
- newspaper and cardboard boxes, including cereal boxes, phone books
- paperboard milk & juice containers
- linen and clothing textiles
- small metal appliances (i.e. toasters, microwaves) – *no TV's/monitors (E-waste)*
- wood products, *no treated lumber*
- concrete and asphalt rippings
- yard waste including tree leaves, branches and grass clippings

Solid Waste Generation Guidelines

<u>Classification</u>	<u>Building Type</u>	<u>Quantities Generated</u>
Apartments	No kitchen facilities	.25 - .50 C.Y./Unit/Mth
	Single/No Children	1.50 – 2.00 C.Y./Unit/Mth
	Family	2.00 – 2.50 C.Y./Unit/Mth
Commercial Buildings	Office	1.00 C.Y./10,000 Sq. Ft./Day
	Department Store	1.00 C.Y./2,500 Sq. Ft./Day
	Supermarkets	1.00 C.Y./1,250 Sq. Ft./Day
	Drugstores	1.00 C.Y./2,000 Sq. Ft./Day
Hotels & Motels	High Occupancy (90%)	50 C.Y./Room/Week w/restaurant
	High Occupancy (90%)	.24 C.Y./Room/Week w/o restaurant
Institutions	Nursing Homes	1.00 C.Y./20 Persons/Day
	Retire. Homes	1.00 C.Y./20 Persons/Day
Restaurants	Family Style	1.00 C.Y./250 Meals/Week
Schools	Grade Schools	1.00 C.Y./8 Rooms/Day
	High Schools	1.00 C.Y./10 Rooms/Day
	Universities	Audit required

Note: These guidelines are approximate and can be helpful when observation of the current service level is not possible, or, in pre-construction planning. Recycling services may reduce the above volumes.

Helpful Conversion Table for Various Containers

1 gallon.....	0.134 cu. ft.
27 cu. ft.....	1.00 cu. yd.
1 cu. yd.....	203 gallons

One cubic yard is approximately six (6) 35-gallon carts

One cubic yard is approximately three (3) 65-gallon carts

One cubic yard is approximately two (2) 95-gallon carts

To find container capacity in cubic yards, measure Length X Width X Height in inches and divide by 46,656. This will give you the approximate volume in cubic yards.

**** It is important to provide enough service as to prevent material from overflowing from the bins or being stored on the ground!!**

Any debris uncontainerized will not be serviced.

ENCLOSURE STANDARDS

A. BIN SIZES

1. Commercial bins for refuse or recycling come in sizes ranging from 1 cubic yard (cu yd) to 8 cu yd (see Table A for actual dimensions). Sizes 1 cu yd – 4 cu yd are equipped with wheels for maneuvering, while sizes 5 cu yd –8 cu yd are stationary (no wheels). If a stationary bin is used, the bin **MUST** be directly accessible by our collection truck. (See Diagram A below)

2. Smaller 96-gallon carts are available also for greater flexibility, for limited-sized lots or for low-volume generators of refuse or recycling (see Table A for actual dimensions).

TABLE A

Be sure to indicate on the plans the number and size of bins.

<u>SIZE</u>	<u>HEIGHT(*)</u>	<u>WIDTH(*)</u>	<u>LENGTH(*)</u>
35 gallon cart	38.50 inches	18.88 inches	22.50 inches
65 gallon cart	42.12 inches	25.25 inches	26.38 inches
95 gallon cart	46.50 inches	26.38 inches	33.62 inches
1 yard front-load bin	36.00 inches	30.00 inches	72.00 (*) inches
2 yard front-load bin	41.50 inches	29.50 inches	72.00 (*) inches
3 yard front-load bin	50.50 inches	34.50 inches	72.00 (*) inches
4 yard front-load bin	57.00 inches	41.50 inches	72.00 (*) inches
5 yard front-load bin	62.00 inches	50.50 inches	72.00 (*) inches
6 yard front-load bin	71.00 inches	58.00 inches	72.00 (*) inches
8 yard front-load bin	89.00 inches	58.00 inches	72.00 (*) inches
10 yard roll-off box	3.25 feet	8.00 feet	12.00 feet
20 yard roll-off box	4.00 feet	8.00 feet	18.00 feet
30 yard roll-off box	5.50 feet	8.00 feet	20.00 feet
40 yard roll-off box	7.25 feet	8.00 feet	20.00 feet

(*) Add eight (8) inches to the overall length to include 4 inch pockets on each side

Some of the above measurements are approximated due to variations from manufacturers. Therefore, if you need a precise measurement, please call our office.

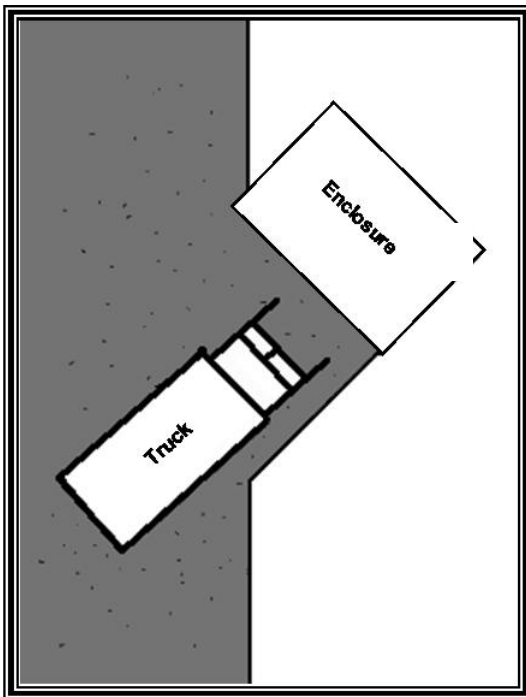
B. ENCLOSURE DESIGN, LOCATION & ACCESSABILITY

INITIAL

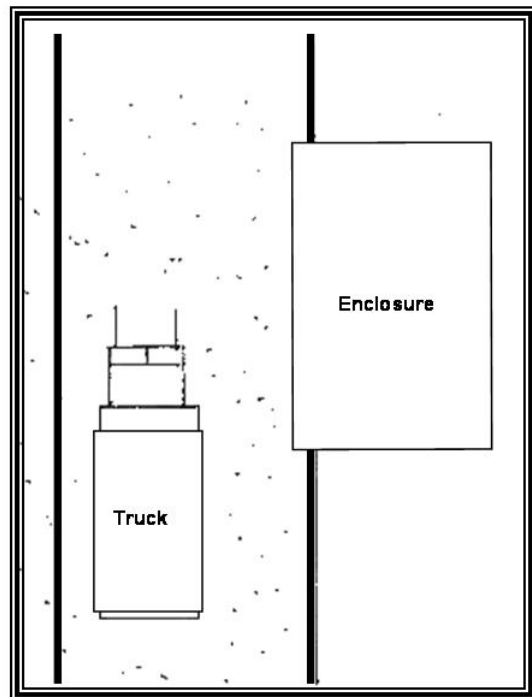
1. We require all bins/enclosures to have *direct access* for our collection trucks. Direct access means the collection truck can drive directly at the bin, and insert the forks into the sides of the bin without having to get out of the truck to move the bin (See Diagram A). A *minimum straight approach of 50 feet is necessary to line up directly with the bin*. Opening/closing gates or fences and locking/unlocking the bin lids are part of the driver responsibility and is included as part of the service provided.

DIAGRAM A

DIRECT ACCESS
(Mandatory)



NON-DIRECT ACCESS
(Allowed under special circumstances only)



Enclosures with poor or no accessibility or enclosures with atypical orientations are not recommended because the likelihood of driver injury and/or property damage increases. In addition, if a driver is required to move or push the bin for servicing, an additional collection fee may be charged.

2. It is difficult and dangerous for a collection truck to back up. Providing a turn around or separate exit that allows the truck to move forward rather than backwards is required. *Maximum backup distance is 50 feet for any maneuver and must be in a straight line.*
3. Bins shall not be placed in front of fire hydrants and no bin shall be placed within 5 feet of a combustible wall, opening or combustible roof eave line.
4. Trash enclosures cannot be installed behind parking spaces.

INITIAL

C. TURNING RADIUS REQUIRED FOR ACCESS TO ENCLOSURE

Must be adequate for a 3-axle truck. The overall length, including the forks is 36 feet. Minimum outside turning radius is actual is 46.5 feet. Please detail this on your plans (see attached Diagram B).

INITIAL

D. HEIGHT CLEARANCE OF THE ENCLOSURE APPROACH

Refuse Trucks require at least 18 feet of vertical clearance over the entire approach to and from the enclosure and 32 feet above the enclosure itself or wherever the bin will be serviced.

INITIAL

E. DRIVEWAYS

An asphalt or concrete driveway with 50 feet of straight, direct access that leads to and from the enclosures to the bin, is required and should be built in accordance with the City Standard Plans and Specifications and be able to withstand trucks weighing up to 62,000 lbs. Gross Vehicle Weight (GVW).

INITIAL

F. STRESS CONCRETE PAD

1. A concrete stress pad shall be installed to cover the front of the 10 feet x 18 feet enclosure and extend out an additional 8 feet from the enclosure opening. The pad shall be engineered to withstand up to 20,000 lbs. of direct force from a single truck axle.
2. Apron surface shall be the same elevation as the pad threshold and the surrounding surfaces.

INITIAL

G. ENCLOSURE CONCRETE PAD

1. Enclosure pad shall be engineered to withstand up to 20,000 lbs. of direct force from a single truck axle.
2. Apron must extend 8 feet from the pad times the width of the enclosure opening.
3. Trash enclosure pad and apron shall slope 1/8 inch per foot.
4. Pad surface shall be the same elevation as the apron threshold.

H. TRASH ENCLOSURE

1. Material

Generally, the material should match the exterior surface of the building, but SEE THE PLANNING DEPARTMENT GUIDELINES!

Some options include:

- a) Reinforced masonry or concrete block.
- b) Wood
- c) Cyclone fencing with slats to block visibility.

2. Height

Minimum 6 feet or if the bins are greater than 6 feet, at least 6 inches above the top of the bin.

3. Inside Dimension

- a) The minimum interior dimension for a trash enclosure needed to house at least two four (4) cubic yard bins is 18 feet x 10 feet. *Interior dimensions may increase depending on the size and number of bins.*
- b) The enclosure must be large enough to provide a 2-foot clearance from the interior walls to each side of the bins.

4. Wheel Stops

- a) Provide wheel stops or bumpers (e.g. 6-inch high curbs) set back 10 inches from each wall to prevent damage to the interior walls.
- b) Angle and extend the wheel stops inward to the edge of the enclosure opening to protect the wall edge or posts at the gate opening.

5. Gate/Doors

- a) Gates shall be solid metal.
- b) Gated opening for ingress/egress of bins must be a minimum of 16 feet wide with no posts in the middle.
- c) A separate, additional pedestrian entrance is encouraged from the backside.
- d) Use bolts, not screws, to secure gate to the poles or walls.
- e) Provide means to secure gate doors both opened and closed, e.g. cane bolt w/sleeve and latch between doors and sleeve in pavement.
- f) Hung gates must have a 4-inch clearance off the finished pad or apron.
- g) Gates in the opened position shall not infringe on the traffic aisles and open to at least 180 degrees when secured open.

6. Lighting

- a) The area around and inside the enclosure should be provided with adequate lighting.

7. No Parking Signs

- a) The area directly in front of the enclosure and the pad shall have “NO PARKING” signs posted with adequate lighting of the signage.

8. Bollards

- a) The corners of the enclosure where the door hinges are attached shall be protected with brightly colored bollards with reflective taping at the top.

INITIAL

I. STORM WATER COLLECTION

- 1. All properties should make plans to comply with the Federal Clean Water Act.
- 2. The property owner shall ensure that no other materials (i.e. hazardous wastes, grease, etc.) are stored in the enclosure.

Please sign below to document that you have read and understand the above *Plan Guide* and *Enclosure Standards*, and that the below listed project fully complies with the requirements outlined above.

SIGNATURE _____ DATE _____

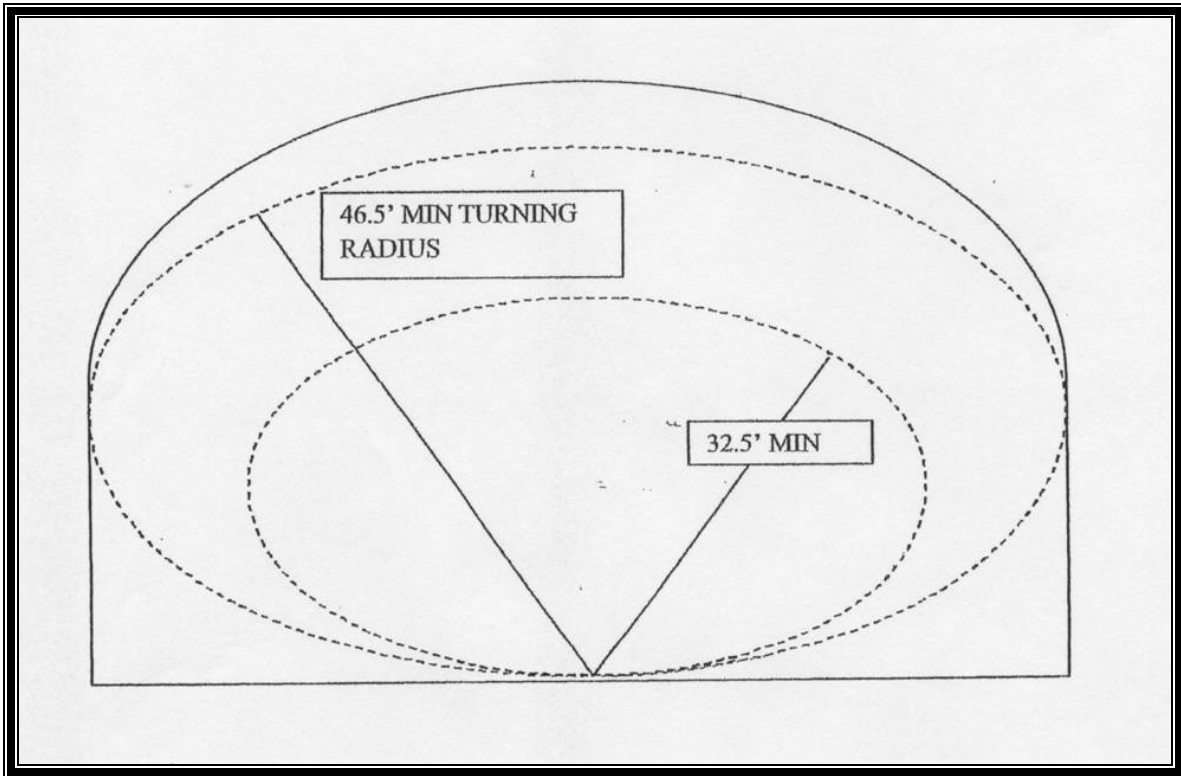
PROJECT NAME / NUMBER _____

CONTACT NAME _____

PHONE NUMBER _____

DIAGRAM B

MINIMUM TURNING PATH FOR GARBAGE TRUCKS



TRUCK IS APPROXIMATELY 32 FEET LONG, 8 FEET WIDE AND 13' - 4" IN HEIGHT.

MINIMUM OF 50 FEET IS REQUIRED IN FRONT OF ENCLOSURE FOR TRUCK MANEUVERING.