

## SECTION 2 STREET DESIGN STANDARDS

### 2.1 Introduction

Design procedures shall conform to accepted engineering practices, and shall be certified by a registered professional civil engineer, licensed by the State of California. All projects will be constructed in conformance with Town of Los Gatos Engineering Design Standards and the current edition of the Caltrans Standard Specifications for Road, Bridge, and Municipal Construction and such amendments that modify these specifications.

### 2.2 Street Classifications

All streets within the Town are classified into five major road classifications: arterial streets, collector streets, neighborhood collectors, hillside collectors, and local streets. These street classifications are to be used with the street design standards. A list of streets with their designation is available in The Town of Los Gatos General Plan, Appendix A.

#### A. *Arterial Streets*

Arterial streets are designed to facilitate two or more lanes of moving traffic in each direction, and provide intra-community travel and access to the county-wide highway system. Arterial streets may be divided by a median island that controls left turn lanes and provides lanes for left-turn movements. Access to community arterials should be provided at collector roads and local streets. Highways and arterial streets shall conform to the width as adopted by the circulation element of the general plan.

#### B. *Collector Streets*

Collector street is a street that provides circulation within and between neighborhoods. Collectors usually serve short trips and are intended for collecting trips from local streets and distributing them to the arterial network. Collectors serve abutting property and carry traffic to other collectors, the arterial and expressways. See **Standard Plan #201** for typical section.

#### C. *Neighborhood Collectors*

Neighborhood collector, in an identifiable neighborhood, carries traffic that is predominantly generated within that neighborhood. See **Standard Plan #201** for typical section.

#### D. *Hillside Collectors*

A hillside collector street serves abutting property in the hillside areas, carrying traffic to arterial streets or other collectors. The cross-section of the hillside collector shall be dictated by grade and other topographical or botanical considerations. In general, two lanes without parking, with or without sidewalk along one side of the road (depending on topographical considerations), shall be provided. See **Standard Plan #202** for typical section.

#### E. *Local Streets*

Local streets provide for local (neighborhood), traffic movement with direct access to abutting property, carry traffic from individual properties to collector and arterial streets, and shall not, by design, encourage through traffic. See **Standard Plan #203** for typical section. See **Standard Plan #204** for typical hillside local street section.

Some existing local streets may have 50 foot right-of-ways. No new 50 foot right-of-ways may be constructed per section 24.50.015 in Los Gatos Town Code.

### 2.3 Other Roads

#### A. *Special Design Streets*

Special design streets shall be allowed wherever warranted by unique land use, circulation conditions, or environmental conditions. These streets can either be arterial streets, collectors, existing local hillside streets or scenic residential streets. Their design will take into consideration the following features:

1. Retention of existing physical amenities.
2. Protection of existing trees within existing right-of-way.
3. Special treatment of transition sections when conforming to standard street sections.

#### B. *Private Roads*

Road safety, function and reliability are best served if the road is owned and maintained by the Town. However, recognizing that private roads may be occasionally allowed in Planned Residential Developments, provision is made for them in these standards. Private roads, defined as those roads serving more than 20 Average Daily Traffic (ADT), shall meet the following conditions:

1. Permanently established by tract or easement providing legal access to each affected lot, dwelling unit, or business and sufficient to accommodate required

improvements, and to include future use by adjacent property owners when applicable.

2. Designed to serve up to the maximum potential of dwelling units based on the ADT thresholds when the entire length of the private road system to the nearest public road is considered. The maximum potential is the number of dwelling units that can possibly be served by the road when physical barriers, zoning or other legal constraints are considered.
3. Accessible at all times for emergency and public service vehicle use.
4. Located so that land locking of present or future parcels will not occur.
5. Maintained by capable and legally responsible owner or homeowners association or other legal entity made up of all benefited property owners.
6. Covenants shall be required for maintenance of the private road binding each lot owner and all subsequent lot owners, such that by acceptance of a deed or other conveyance, is deemed to covenant and agree that if at any time the Town of Los Gatos concludes that maintenance of the roadway included in the common property is necessary and has not been done by the Association, the Town of Los Gatos may perform such maintenance as agent for the Association, and the Town of Los Gatos will charge the Association for the cost of any such maintenance, which charge shall be an obligation of the Association. Such reimbursement shall be a cost subject to assessment, and there shall be a lien on the property, which may be placed on the tax bill and collected as ordinary taxes by the Town.
7. Clearly described on the face of the plat, short plat, or other development authorization and clearly signed as a private road.

## **2.4 Surfacing**

### *A. Arterial, Commercial, and Industrial Streets*

Any pavement arterials, commercial and industrial collector streets shall be designed to accommodate "all weather traffic" using the current AASHTO Pavement Design Method, or other accepted methodology that considers the load bearing capacity of the soils and the traffic-carrying requirements of the roadway. All weather roads are defined as road pavement sections and drainage required to assure no weight restrictions on roads during periods of thaw. Plans shall be accompanied by a pavement thickness design based on soil strength parameters reflecting actual field tests and traffic loading analyses. Design year shall be 30 years later than that year construction is scheduled. The analysis shall include the traffic volume and axle loading, the type and thickness of roadway materials and the recommended method of placement and compaction. Pavement sections shall not be less than those required for residential access streets.

The subgrade shall be designed by a Professional Geotechnical Engineer prior to placement of asphalt. The basis of proposed pavement design shall be reviewed and approved by the Town Engineer. These sections shall not be less than:

- 4" Asphalt Concrete (2 lifts)
- 9" Class II Aggregate Base (95% Relative Compaction)

**B. *Collector Residential Streets, and Private Streets***

The minimum paved section, with alternate combinations of materials, for all other streets shall be as shown below. These sections are acceptable only on visually good, well-drained, stable compacted subgrade. Any proposed exception to these materials will be subject to soils strength testing and traffic loading analysis. All expenses for determining revised materials shall be borne by the Applicant and subject to review and approval by the Town Engineer. The subgrade shall be designed by a Professional Geotechnical Engineer prior to placement of asphalt.

- 3" Asphalt Concrete
- 6" Class II Aggregate Base (95% Relative Compaction)

These material thicknesses are not acceptable if there is any evidence of instability in the subgrade. This includes free water, swamp conditions, fine-grained or organic soil, slides, uneven settlement, or pumping resulting from construction equipment including loaded trucks. If there are any of these characteristics, the soil shall be sampled and tested sufficiently to establish a pavement design as specified in Section 2-4.A, Arterials, Commercial, and Industrial Streets, that will support the proposed use. Measures may include, but are not limited to, a stronger paved section, a strengthening of subgrade by adding or substituting fractured aggregate, asphalt treated base, geotextile, more extensive drainage or a combination of such measures. The soils test report and the resulting pavement design are subject to review and approval by the Town Engineer.

**2.5 Bicycle Lane Widths**

Bicycle lanes will be designed per Caltrans Design Standards. The Town of Los Gatos can modify any proposed bikeway design for specific projects.

**2.6 Horizontal Design Standards**

**A. *Horizontal Curves***

Design shall be based upon accepted engineering practices and the requirements listed in this manual. The AASHTO tables for curvature, or Caltrans Design Manual may be

considered accepted engineering practices to be used in conjunction with the design speed requirements that follow:

#### Minimum Design Speed Requirements (mph)

Arterials	45
Collector Streets	45
Local Streets	35
Private Street	35

#### B. *Horizontal Stopping Sight Distance*

Stopping sight distance is where sight obstructions such as bridges, walls, cut slopes, wooded areas, buildings, etc. exist on the inside of a curve. Use Caltrans Highway Design Manual to check for adequate stopping sight distance.

### **2.7 Vertical Design Standards**

#### A. *Grades*

Grades and vertical sight distance are subject to approval by the Town Engineer to ensure proper drainage and/or safety for vehicles and pedestrians. Grades of roads shall not be less than 0.5%. Per Town Code Sec. 24.50.045, the grades of highways, streets and alleys in subdivisions shall not exceed fifteen (15) percent unless otherwise approved by the Town Engineer and the advisory agency.

#### B. *Vertical Curves*

To achieve minimum stopping sight distance, vertical curve lengths shall meet or exceed the criteria listed in Caltrans Highway Design Manual.

All vertical curves shall be symmetrical parabolic curves.

### **2.8 Intersections**

#### A. *Angles*

Proposed public streets shall intersect on another at 90 degree angles or as close to 90 degrees as topography permits but in no case shall be less than 75 degrees.

#### B. *Corner Radii*

At public road intersections, the following minimum curb line radius is required:

Arterial Intersection - Any Street	35 Feet
Local Street to Local Street	30 Feet
Truck Route and/or Bus Turns	55 Feet

C. Minimum Center Offset at Adjacent Streets (Either same side or opposite sides of primary street.)

Local Streets Intersecting Each Other	150 Feet
Local Streets Intersecting Arterials/Collectors	250 Feet
Arterials Intersecting Arterials	300 Feet

D. Line of Sight at Intersections

At any intersection of a private road with a Town street, or a Town street with a Town street, there shall be a sight distance triangle which provides an unobstructed line of sight. The operator of a vehicle approaching an intersection at grade should have an unobstructed view of the whole intersection and of a length of the intersecting roadway sufficient for vehicle control. See **Standard Plan #232**.

Within the sight triangle, cut slopes, hedges, trees, signs, utility poles, or anything large enough to constitute a sight obstruction should be removed or lowered within the line of sight to a maximum height of 3 feet. Signs should be offset so sight distance is not obstructed.

In order to verify acceptable sight distance, the Town Engineer may require a developer to evaluate and document an existing sight distance condition. The evaluation and documentation of sight distance shall include adequate plan and profile drawings necessary to make a definitive determination. When the Engineer determines from the evidence presented that a location has insufficient sight distance, the developer may be required to provide a plan to improve the sight distance to at least the minimum acceptable standard.

## 2.9 Clear Zone/Side Slopes

A. *Analysis*

Clear zone is that roadside border area starting at the edge of the traveled lane that is available for safe use by errant vehicles. The available clear zone is the distance measured in feet normal to the highway beginning at the edge of the traveled way to the closest part of any fixed object. Traffic control signs and luminaries with breakaway supports are not considered hazardous for the purpose of defining the available clear zone distance. The required clear zone is a function of the posted speed, side slope, and traffic volume.

In some conditions, with travel speeds of 35 mph or less, it is desirable to place any rigid object as far away as possible from the edge of the travel lane, such as beyond the sidewalk or at the edge of the right of way. Where this cannot be accomplished, the minimum clear zone distance is established at 30" inches beyond the face of the curb.

## B. *Hazards*

There are three general categories of hazards: embankment hazards, objects, and water.

### 1. Side Slopes

Height and slope of embankments are the basic factors in determining barrier needs for a fill section. The preferred mitigation, over the installation of a traffic barrier, is the flattening of the side slopes where it is feasible.

### 2. Fixed Objects

When feasible, objects which are hazards as determined by the Town Engineer, should be removed. Other mitigative measures include relocating an object outside of the clear zone, reducing the hazard such as using an appropriate breakaway feature, and installing a traffic barrier or earth berm.

### 3. Water

Open water with a depth of 2 feet or more and located within the clear zone shall be considered a hazard and require mitigation.

## **2.10 Vertical Clearance**

A minimum vertical clearance of 15 feet shall be provided for all overhead obstacles measured from the crown of the street or useable shoulder to the lowest portion of the obstacle.

## **2.11 Road Width Transition Tapers**

The need for road width transition tapers in conjunction with development proposals will be determined by the Town Engineer on a case by case basis. The Caltrans Design Manual will be used as a guide in evaluating such proposals.

## 2.12 Construction Notes

Quality control monitoring of subgrade backfill and embankment materials and construction shall be by a geotechnical firm approved by the Town and secured and paid for by the Applicant.

All improvements shall meet current ADA standards.

All contractors are responsible for verification of all existing utilities in field. Call Underground Service Alert (USA) 1-800-227-2600 before starting any excavations. It is the sole responsibility of the contractor to verify existence of and protect all existing utilities. Any damage to an existing utility will be repaired at the expense of the contractor.

It is the responsibility of the contractor to protect any existing utility boxes. Any cracked or broken boxes shall be brought to the attention of the Town Inspector prior to any work.

Pedestrian and vehicular access will be maintained at all times unless authorized by the Town Engineer.

All compaction tests performed shall be in accordance to ASTM D1557. Special care must be taken during the compaction and testing to prevent damages to the utility lines.

Materials shall conform to the requirements specified for materials in the Caltrans Standard Specifications:

All concrete used for curb, gutter, and sidewalk must be Class A (six sacks per cubic yard) as per State of California Specifications and must attain a strength of 3,000 PSI minimum in 28 days. Concrete shall include one (1) pound of lamp black per cubic yard of concrete or equivalent.

All aggregate base, and gravel base course shall have a 95% maximum dry density compaction based on the ASTM D1557.

A tack coat of asphalt shall be applied at a rate of 0.06 gallons per square yard of retained asphalt shall be applied to all paved surfaced on which any layer of asphalt concrete is to be placed on.

All asphalt concrete shall be compacted to 92% of the RICE gravity density. A minimum of 5 nuclear densometer compaction tests shall be taken each day per 400 tons of asphalt placed.

Dowel old concrete to new concrete with #4 Rebar. There will be two (2) dowels at each sidewalk cut and two (2) at each curb cut.



Grading of subgrade shall be accomplished by power grader of suitable size and by hand shoveling and raking as required to produce a neat and smooth uniform surface.

The subgrade shall be compacted prior to placement of aggregate base. The subgrade shall be compacted with rollers, mechanical tampers, or other suitable equipment until a 95% maximum density compaction is attained. (ASTM D1557)

Where required by the Town, the existing subgrade material shall be removed and replaced with aggregate base. Base material shall be placed to the depth required by the Town and shall be mechanically compacted to 95 percent of maximum density (ASTM D1557)

All grading shall conform to Chapter 12 of the Town Code of The Town of Los Gatos, entitled "Grading, Erosion and Sediment Control."

A pre-job meeting shall be held with the Engineering Inspector from the Town of Los Gatos Department of Parks and Public Works prior to any work being done for development projects.

All fills shall be constructed in loose lifts (8-10") and compacted to 90% relative compaction, unless otherwise directed by the Town Engineer.

Slopes to receive fills shall be stripped and keyed into hillside slope or benched prior of receiving fills.

All excess soil shall be off-hauled to an approved site.

All cut and fill slopes shall be properly maintained until effective erosion control has been established to the approval of the Town Engineer.

Call the Inspection Request Line at (408) 399-7530 to arrange for inspection of erosion control measures and grading operations.

## **2.13 Centerline Monuments**

Monuments shall be located at all centerline intersections of intersecting streets. Curved streets shall be monumented at PC (Point of Curvature) and PT (Point of Tangency) of curve. The installation detail is shown in **Standard Plan #233**.

- A. All existing centerline monuments which are disturbed, lost, or destroyed during surveying or construction shall be replaced at the expense of the responsible applicant, by a professional land surveyor registered in the State of California.

- B. All existing centerline monuments which are covered over by a street improvement shall be raised to the new finished surface.
- C. At unmonumented street intersections, new centerline monuments shall be established in the centers of all intersecting rights-of-way on a street improvement project. Additional centerline monuments shall be installed if requested by the Town Engineer.
- D. Centerline monuments shall be set in accordance with **Standard Plan #233** for all PC, PT, center of cul-de-sac, and intersection points. The point of intersection (PI) will be acceptable in lieu of a PC and PT for plan road curves, provided that such PI falls within the paved roadway or sidewalk.
- E. Boundaries of final plats shall be established with standard steel reinforcing bar.
- F. Standard steel reinforcing bars shall be 24 inches in length and at least 1/2 inch in diameter or at least 3/4-inch I.D. for iron pipe. Such pipe or rebar shall be permanently tagged with the Land surveyor's registration number and clearly show lot corners.
- G. In the case where a property corner is occupied by any obstruction, an offset standard steel reinforcing bar shall be provided along one of the boundary lines. Offset concrete monuments shall only be set to witness section and one-quarter section corners.
- H. If any of the above conditions occur, a Land Corner Record or Record of Survey shall be filed by a Licensed Land Surveyor in accordance with all Federal, State, County, and Town laws, regulations and standards. The Town shall be provided with a mylar copy.

## **2.14 Curbs and Gutters**

Vertical Cement Concrete Curb and Gutter shall be used for all curbed roadways and shall be 24 inches wide. All concrete shall be air entrained concrete Class A. Construction shall be in accordance with **Standard Plan #210**.

Extruded Cement Concrete or Asphalt Curb, **Standard Plan #214**, may be used for parking areas, and driveways which will not become part of the Town public street system.

Where new cement concrete curb and gutter is constructed to connect to existing curbed roadway, care shall be taken to assure that no abrupt offsets in line or grade shall be constructed which will be unsightly or impede flow in the gutter line.

## 2.15 Curb Ramps

Curb ramps shall meet current ADA requirements. Curb ramps shall be provided at all pedestrian crossings. One ramp shall be used on each curb return on access roads and unsignalized intersections. At signalized intersections, a curb ramp shall be aligned with each crosswalk. Ramps shall also be provided across driveways where radius returns border the driveway. **Standard Plans #220, 221, and 222** show alternatives for curb ramps. **Standard Plan #223** Shows the typical curb ramp locations.

## 2.16 Sidewalks

Sidewalks shall be constructed in accordance with **Standard Plan #216**. Some sidewalks may need pedestrian handrail as shown in **Standard Plan #230**. The following specifications apply to pedestrian handrail:

1. Aluminum pedestrian rail shall be fabricated and installed in accordance with these special provisions and **standard plan #230**.
2. Aluminum pedestrian rail shall be natural aluminum color.
3. Completed aluminum railing units shall be anodized after fabrication conforming to the requirements of the aluminum association standard for anodized architectural aluminum, Class I Anodic Coating, AA-C22-A41.
4. Welding shall conform to the requirements of the specifications for aluminum structures of the aluminum association. All exposed welds shall be ground flush with adjacent surfaces.
5. The base metal for aluminum railing shall be ASA Alloy Designation 6063-T6. Pipe and tubing shall be extruded conforming to the requirements of ASTM B 429, plates and sheets shall be rolled conforming to ASTM B 209, and rods, bars, or shapes shall be extruded conforming to ASTM B 221.
6. Horizontal rails and vertical support posts shall be 1½ inch diameter standard pipe and balusters be ¾ inch diameter standard aluminum pipe. Rails, posts, and balusters shall be machine cut to provide a uniform length prior to assembly.
7. Railing shall be erected and adjusted, if necessary, to ensure a continuous line and grade.

A. *Private Streets*

1. For private roads ultimately serving 2 or less residential lots (20 ADT or less), the road is classified as a driveway and concrete sidewalks are not required.
2. For private roads ultimately serving 3 or more residential lots (30 ADT or more), concrete sidewalks shall be provided on one side of the street only.

B. *Residential Subdivisions*

1. Concrete sidewalks shall be constructed on all streets and highways within a subdivision; except for the exceptions noted in Town Code Sec. 24.50.065.

C. *Commercial/Industrial Developments*

1. Concrete sidewalks shall be provided on both sides of all streets.

D. *Width*

1. All sidewalks shall be a minimum of five (5) feet wide measured from back of curb or 5-1/2 feet measured from face of curb when directly attached to the curb.
2. All sidewalks shall be a minimum of five feet (5') when placed behind a planter area.

E. *Thickness*

Concrete sidewalks shall be 4" inches in thickness when placed behind curb and gutter. Concrete Sidewalks shall be 6" thick across the entire length of all driveways or back of rolled curbs.

F. *Planter*

Planter strips are required on all arterial and collector roads. A minimum 4' foot separation between the back of the curb and the sidewalk is required.

**2.17 Site Access/Driveways**

- A. Access to Town Streets is regulated by the Town of Los Gatos through one of the following permits:

1. Agreement to Construct Improvements - Industrial or Commercial Properties
2. Encroachment Permit - Residential Property

No construction, relocation or reconstruction of access points, driveways, or related improvements will be allowed without an encroachment permit. The permit shall be obtained prior to beginning any work within the right of way.

- B. Property owners abutting roadway rights-of-way are normally allowed access to the roadway unless their access rights have been limited by plat restriction or State law. However, even where the property owner is allowed access, the physical design of the driveways shall be controlled by the Town to maintain the safety and efficiency of the public roadway.
- C. A Traffic Study may be required as outlined in Section 2.36.

## **2.18 Number of Access Points**

The standard number of access points for a development giving access to an abutting arterial street are:

1. Residential property uses : one two-way access point or two one- way access points.
2. Commercial or industrial property uses : one two-way access points per 300 feet of total property frontage.

Additional access points may be considered by the Engineer provided a traffic engineering study or circulation plan is submitted to the Engineer indicating that more than the maximum number of access points permitted are required to adequately handle access point volumes, and will benefit the traffic flow on adjacent roads.

The requirements of this section are not intended to override the need for a secondary access for emergency vehicles if such access has been determined by the Fire Marshal to be necessary under the provisions of section 10.207 of the Uniform Fire Code.

## **2.19 Location of Access Points**

- A. Where a property has frontage on more than one roadway, access will generally be limited to the lowest volume roadway where the impacts of a new access will be minimized. Access onto higher volume roads may be denied in the interest of traffic safety or in order to lessen congestion on the higher volume road.

- B. Access points shall be aligned wherever possible with existing access points on the opposite side of the street. If this is not possible, a separation between the nearest edges of such opposite access point shall conform to Section 2.20 and Section 2.21.

## **2.20 Access Point Separation**

- A. Where two or more access points serve adjacent residential properties, the minimum distance between nearest edges for non-arterials must be at least 10 feet.

Where two or more access points serve adjacent residential properties, the minimum distance between nearest edges for arterials must be at least 50 feet.

When residential property frontages are narrow, such that minimum access point spacing criteria cannot be met, it may be necessary to require joint access locations at property lines.

- B. Where two or more access points serve the same or adjacent commercial or industrial property uses, the minimum access point spacing for non-arterials is 75 feet.

Where two or more access points serve the same or adjacent commercial or industrial property uses, the minimum access point spacing for arterials is 200 feet.

- C. In cases where access point spacing is not attainable because existing frontages are narrow, the owner of the parcel shall make good faith attempts to secure joint access through an adjoining parcel or access parcel from another street. If this is not possible, access points shall be located as close to the required values shown above as possible while maintaining proper corner clearance.

## **2.21 Corner Clearance from Intersection**

- A. Corner clearances from access points for all uses fronting a non-arterial or non-collector road shall be a minimum of 50 feet.
- B. Corner clearances from residential access points fronting an arterial or collector road shall be a minimum of 50 feet.

Corner clearances for commercial/industrial access points, fronting an arterial or collector road with signalized intersection control shall be a minimum of 275 feet.

Corner clearances for commercial/industrial access points, fronting an arterial or collector road with stop sign intersection control shall be a minimum of 135 feet.

- C. In cases where corner clearances are not attainable because frontages are narrow, access points shall be located as close as practicable to the property line most distant from the intersection. At such locations, the Town may require investigations to substantiate whether left turns should be prohibited into or out of the access point.
- D. Access points near stop or signalized intersections shall be checked by the Applicant to determine whether stopping queues will block the access point.

## **2.22 Sight Distance**

All access points shall be constructed in such a manner that the minimum sight distances are available along the arterial in each direction from the access point as shown in **Standard Plan #232**.

## **2.23 Widths**

- A. For residential access points, the minimum driveway width is 14 feet and the maximum width shall be 30 feet.
- B. Commercial or industrial access points shall have minimum width of 25 feet fronting a non-arterial, and 30 feet fronting an arterial.
- C. The maximum two-way access point width shall be 40 feet for commercial property uses and 50 feet for industrial.
- D. See **Standard Plans #218 and #219** for driveway details.

Wider commercial or industrial widths may be approved by the Town where a substantial percentage of oversized vehicle traffic exists. In this case, the access shall be sized to accommodate the largest design vehicle likely to use the access with considerable frequency.

## **2.24 Access Point Angles**

All access points shall intersect public roads at a 90 degree angle or as close to 90 degrees as topography permits, but in no case shall be less than 75 degrees.

## 2.25 Access Points Types and Radii

The design of the access point must take into consideration the percentage of truck traffic utilizing the access point. Drainage patterns must also be taken into account in the design of access points.

## 2.26 Vertical Alignment of Access Points

A landing area shall be provided, beginning at the cement concrete curb and gutter and extending for the following width:

Residential driveway	5 ft. min, 20 ft. desirable
Commercial / Industrial	10 ft. min, 30 ft. desirable

The pavement slope within the landing area shall not exceed 5.0%. Vertical curves shall not exceed a 3-1/4-inch hump or a 2-inch depression in a 10-foot cord.

The back edges of the access points shall be at the same elevation as the back of the sidewalk adjacent to the access point approach.

## 2.27 Grades

Access point grades beyond the landing area shall not exceed the following grades, measured from the pivot point between the intersection with the landing area:

Residential driveway / accessing Non-arterial	15% Max.
Residential driveway / accessing Arterial	6% Max.
Commercial or Industrial / accessing Non-arterial	8% Max.
Commercial or Industrial / accessing Arterial	5% Max.

## 2.28 Left-Turn, Acceleration, Deceleration Lanes

The need for left-turn, acceleration, and deceleration lanes in conjunction with a development proposal will be determined by the Town on a case-by-case basis. Evaluation by the Town Engineer may require submittal of traffic data by the Applicant/Developer.

## 2.29 Construction of Access Points

A. Access point approaches shall be constructed in accordance with **Standard Plan #218 and #219**. Access approaches must extend from the curb to the back of



sidewalk. Access point is to be surfaced with Class A cement concrete, 6 inches thick.

- B. When an opening for an access point is to be constructed through an existing portland cement concrete vertical curb, the existing curb, or curb and gutter shall be saw cut at the limits of the work or removed to the nearest construction joint and the opening replaced with standard curb and driveway.
- C. Prior to commencing any necessary removal or relocation of any public utilities, structures, trees, or plantings due to construction of an access point, the applicant/developer must secure approval from the person or persons having ownership or control of such facilities or features.

### **2.30 Maintenance**

Maintenance of driveway approaches or access roads shall be the responsibility of the legally responsible owner(s) whose property they serve.

If at any time the Town concludes that maintenance of the site access / driveway has not been done by the responsible owner, the Town may perform such maintenance, and the Town may charge the Owner for the cost of any such maintenance, which charge shall be an obligation of the Owner. Such reimbursement shall be a cost subject to assessment, and there shall be a lien on the property, which may be placed on the tax bill and collected as ordinary taxes by the Town.

### **2.31 Stormwater Site Plan and Water Quality Plan**

All Applicants for new development and redevelopment of sites must prepare a Stormwater Site Plan and Water Quality Plan as outlined in Section 1. All project shall incorporate erosion control measures per **standard plan # 250-257**.

### **2.32 Cul-de-Sacs**

Generally, all residential parcels should be accessible from two directions. However, with the approval of the Town Engineer, cul-de-sacs will be allowed for roads with a total length less than 450 feet. Cul-de-sacs shall not exceed eight hundred (800) feet in length; provided, the length of the cul-de-sac may be increased by action of the advisory agency upon finding that emergency access, utility services, and circulation are satisfactory. (Town Code Sec. 24.50.075) The cul-de-sac shall be designed in accordance with **Standard Plan #208**.

### **2.33 Signing**

All signing shall be in accordance with the current edition of the Manual of Uniform Traffic Control Devices, Caltrans Traffic Manual, and Town of Los Gatos **Standard Plan #239-242**.

### **2.34 Striping**

Striping shall be in accordance with the current edition of the Manual of Uniform Traffic Control Devices and Caltrans Standard Details. All new developments shall submit plans for signing and striping (centerlines, edgelines, turnlines, crosswalks and stopbars) to the Town for review and approval. The developer is responsible for all signing and striping of his project. See **Standard Plan #261-265**. The paints used for striping shall be 100% acrylic waterborne paint, type HLIY 297 (Yellow) and HLIW 197 (White) manufactured by Morton Corporation. The paint shall be applied to a wet film thickness of 15 mils at a pavement temperature of no less than 55 degrees Fahrenheit and air temperature rising. Paints shall not be thinned.

All liquid applied pavement striping shall be top dressed with glass beads. The beads used shall be M247/AC110 manufactured by Potters Corporation or equal.

The application rate on spray applied marking shall be 7 pounds minimum of beads per gallon of paint. The bead application system shall provide a uniform bead distribution over the entire surface of the marking. Beads shall be applied to the material while in the semi-liquid state on the roadway.

All pavement markings for crosswalk, stop bars, symbols, and arrows shall be "Stamark" 420 with liner and adhesive manufactured by 3M Corporation. All pavement markings shall be inlay and applied after placement of new asphalt per manufactures application procedures.

### **2.35 Utilities**

1. Utility companies or municipal corporations desiring to construct and/or maintain their facilities within the Town right of way are required to obtain a franchise with the Town unless specifically exempted by State law.
2. Utility installations shall be located to minimize need for later adjustment, to accommodate future roadway improvements and to provide service access to such installations with minimum interference to roadway traffic. Refer to Standard Plan #200 for typical utility locations.
3. Electric utilities, power, telephone, cable TV, and fiber optics lines shall be installed underground, for all new streets.

4. When trenching through existing pavement, the open cut shall be a neat-line cut made by saw cutting a continuous line. Utility Trench Restoration shall be in accordance with **Standard Plans #207, #305, and #306**.
5. Gravel shoulders distributed by excavation shall be replaced full depth with 4 inches crushed rock.
6. Quality control monitoring of subgrade backfill and embankment materials shall be by a certified independent laboratory approved by the Town and secured and paid for by Applicant. A minimum of 1 test shall be taken within every 100 feet of trench length and at depths of 50 percent of trench depth and at the surface, or as required by the Town. Compaction of laterals or service line trenches shall be tested where required by the Town. Testing of Controlled Density Fill shall be in accordance with ASTM D4832.
7. The Town shall be notified not less than two working days prior to actual trenching work in existing or proposed traveled Town streets.
8. The utility company or property owner who will be doing any trenching within public roadways will be required to resurface the road within the limits of their trenching operations. The extent and type of road resurfacing will be determined by the Town Engineer and shall be performed and paid for by the applicant.

#### *Road Cuts Parallel to Road Alignment*

1. All trench backfill under roadway shall be mechanically compacted to 95 percent of maximum density.
2. Restoration of a trench within an asphalt pavement shall be per **Standard Plan #207, #305, and #306**.

#### *Road Cuts Transverse to Street Alignment*

1. Utility trenching through existing pavement across the road alignment will be discouraged. It will not be permitted unless it can be shown that alternatives such as boring or jacking are not possible due to conflicts or soil conditions, or unless the utility can be installed just prior to reconstruction or overlay of the road.
2. The trench backfill transverse to street shall be CDF with appropriate color as designated by the Town.

#### *Controlled Density Fill (CDF)*

CDF shall conform to the following:

1. Portland Cement: Type I-II AASHTO M85 (minimum 2-sack mix).
2. Mineral Filler Admixtures: pozzolans or fly ash (ASTM C-618, Class F).
3. Aggregate: Washed Coarse Sand.

Washed Coarse Sand shall be a clean mixture free from organic matter and conforming to the following gradation:

<u>U.S. Standard Sieve Size</u>	<u>Percent Passing By Weight</u>
1/2 inch	100
#4	65-100
#50	0-10
#200	0-3

All percentages are by weight

CDF shall be used in the following proportions for 1 cubic yard. Batch weights may vary depending on specific weights of aggregates.

Portland Cement	50 lbs/yd <sup>3</sup>
Fly Ash	250 lbs/yd <sup>3</sup>
Washed Coarse Sand	3,200 lbs/yd <sup>3</sup>
Water	50 gals/yd <sup>3</sup> (max.)

Testing of CDF shall be in accordance with ASTM D4832.

### **2.36 Traffic Study**

New developments may require a Transportation Impact Analysis, the extent of which is dependent on the type of development. The primary responsibility for assessing the traffic impacts associated with a proposed development rests with the permit applicant, with the Town serving in a review capacity. The study is the responsibility of the applicant and must be prepared by, or under the supervision of, a Professional Traffic Engineer, licensed in the State of California, with experience in traffic engineering and/or transportation planning.

A traffic impact study may be required for any development which meets the following criteria:

1. Proposed development has direct access to a State Highway and generates 10 peak hour trips or more.

2. Proposed development can be expected to generate 20 peak hour trips or more.
3. Changes in use of an existing commercial or industrial site.
4. Developments that require new curb cuts, or changes in traffic controls.
5. Any development which is located in an area where existing levels of service on area roads are "D", "E", or "F."

The applicant's transportation professional shall contact the Public Works Department for a scoping meeting prior to submittal of a traffic study. Scoping the requirements for the study is intended to identify key issues early in the project planning and development stage and assist the Town during the review and approval process.

Three copies of the traffic study must be submitted. The applicant will be notified if additional copies are needed.

Traffic Impact Analysis must show how the proposed development will affect the existing transportation network. If the final use(s) of the proposed development is not determined at the time of the study, the land use with the greatest overall traffic impact must be assumed for the study. Once the Town has reviewed the traffic study and comments have been returned to the applicant, all required changes must be incorporated into the study, and revised study must be submitted to the Town for final review and approval.

#### *Traffic Impact Analysis Guidelines*

While individual reports may vary in style and format, certain information must be included. Typical information required is included below.

1. Project Description
  - a. Project type and size.
  - b. Project location, with vicinity map.
  - c. Proposed site access, with site plan.
  - d. Horizon planning year.
2. Existing conditions
  - a. Existing traffic volumes.
  - b. Daily and peak hour intersection turning movement counts completed within six (6) months prior to the application date.
  - c. Roadway network, including traffic control.
  - d. Level of service calculations for peak hour at intersections impacted by the project outlined in the current Highway Capacity Manual.
  - e. Parking supply.

3. Accident/Safety Conditions
  - a. Accident history at intersections and access points.
  - b. Sight distance analysis at intersections and access points.
  - c. Clear zone analysis.
  
4. Trip Generation and Distribution
  - a. Daily and peak hour trip generation using the latest ITE Trip Generation Manual.
  - b. Trip distribution map showing daily and peak hour turning movements assigned to the roadway network. The proposed development's trips are to be distributed through the street network to a level of three peak hour trips.
  - c. Parking generation analysis using the latest Town of Los Gatos codes and ordinances, and ITE Parking Generation Manual.
  
5. Public Transit and Non-Motorized Facilities
  - a. Identification of existing transit service.
  - b. Identification of existing trails, bicycles lanes, and other non-motorized facilities.
  
6. Future Conditions
  - a. Annual growth rate determined by actual data or other approved source. This shall include approved traffic estimates from other projects within the Town.
  - b. Future conditions, with and without the project with commentary on compliance with concurrency requirements as needed.
  - c. Level of service calculations sheets for peak hour traffic at all intersections impacted by the project and site access points, with and without the proposed project.
  - d. Parking demand analysis.
  - e. Effect on proposed development on public transit and non-motorized facilities. Any transportation facilities proposed by the Comprehensive Plan which may affect the development.
  - f. Analysis of internal site circulation for vehicles, transit, non-motorized users, and handicap access.

## **2.37 Signals, Lighting, Electrical System**

### **General**

Signals, lighting and electrical work shall conform to the provisions of Section 86, "Signals, Lighting and Electrical Systems," of the State of California Department of Transportation SSS (henceforth referred to as "SSS"), the State of California

Department of Transportation SSP (henceforth referred to “SSP” and these Town Specifications.

### **Town Standard Equipment**

Unless specified otherwise, the following standard equipment shall be used for the Town:

1. NEMA TS-2 Type “P” controller cabinet.
2. ECONOLITE ASC2/2S and ASC/2M signal controllers.
3. ITERIS Video Detection system.
4. VCALM speed radar signs.
5. EMTRAC emergency vehicle preemption system.

### **Conduit**

Conduit material, use, and installation shall conform to the provisions of Section 86-2.05, “Conduit,” of the SSS, the SSP and the following.

All conduits shall be Schedule 40 polyvinyl chloride conduit unless otherwise specified. End bells shall be installed on all PVC conduits ends.

Conduit 1 1/2- inch and larger and in runs of more than ten (10) feet shall have bending radius of not less than eighteen (18) inches or twelve (12) times the inside diameter of the conduit, whichever is greater. Maximum bend rise of elbows into pull boxes shall be 45 degrees.

A bare #8 AWG (minimum) equipment grounding conductor shall be installed in all new conduit runs and in all existing conduit runs in which work is to be performed, regardless of conduit material type, that remain a part of an existing traffic signal and/or lighting system. Exceptions to this requirement are empty conduits and conduits containing only detector lead-in cable(s) and/or communication cable(s), provided that the conduits are terminated in pull box(es) that do not have metallic covers or components; or as exempted by the Engineer.

All conduits placed in utility joint trenches shall be inspected and approved by the respective utility (PG&E, SBC, Verizon, Comcast) prior to backfill. The Contractor shall coordinate all such inspections with each Utility Company.

Conduits shall be installed either parallel to or perpendicular to the curb, unless otherwise approved by the Engineer prior to placement. Conduit at an oblique angle to the curb will not be permitted.

### **Trenching Installation of Conduit in Paved Streets (Single Conduit)**

Conduit may be placed under existing pavement in a trench approximately two (2) inches wider than the outside diameter of the conduit to be installed. The trench shall

not exceed 6 inches in width or thirty (30) inches in depth, unless otherwise approved by the Engineer. The top of the installed conduit shall be a minimum of twenty-four (24) inches below the finished grade. With the Engineer's approval, the minimum depth may be reduced at locations where existing underground facilities require special precautions.

Before the start of excavation work, the outline of all areas of pavement to be removed shall be cut through the pavement section with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter outside the removal area. The rock-cutting excavator shall be shielded to prevent loose material from being thrown away from the machine. The conduit shall be placed in the bottom of the trench and the trench shall be backfilled with sand to a maximum depth of four (4) inches over the conduit. The sand shall then be watered to promote densification. The trench shall then be backfilled with concrete containing not less than 564 pounds of cement per cubic yard, to a depth of 0.10 feet below the pavement surface. The concrete shall be tamped or vibrated to provide a dense material free from excessive voids and rock pockets.

The top 0.10 foot shall be backfilled with asphalt concrete, Type "A" ½-inch medium gradation.

Excavation and installation of conduit and concrete backfill shall be completed within the same working day. Asphalt concrete backfill shall be completed within twenty-four (24) hours after the excavation of the trench.

#### Trenching Installation of Conduit in Paved Streets (Multiple Conduits)

Before the start of the excavation work, the outline of all areas of pavement to be removed shall be cut through the pavement section with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter outside the removal area.

Where two (2) or more conduits are placed in a common trench, the following requirements shall be met:

1. A minimum of one (1) inch of separation shall be provided between outer sides of conduits.
2. A minimum of one (1) inch of separation between outer sides of conduits and the trench walls.

Conduit separation shall be effectively maintained by the use of spacers of proper size specifically designed for the purpose. Spacers shall be placed at four (4) to six (6)-foot intervals maximum.

The conduit arrangement shall be such that the minimum cover over the uppermost conduit shall be twenty-four (24) inches.



Conduits shall be covered with sand to a depth of four (4) inches above the uppermost conduit. The sand shall then be watered to promote densification. Care shall be taken not to over water during densification.

After the sand is densified, the trench shall then be backfilled with concrete, containing not less than 564 pounds of cement per cubic yard, to a depth of 0.10 feet below the pavement surface. The concrete shall be tamped or vibrated to provide a dense material free from excessive voids and rock pockets. The top 0.10 foot shall be backfilled with asphalt concrete, Type "A" 1/2-inch medium gradation

Excavation/installation of conduit and concrete backfill shall be completed within the same working day. Asphalt concrete backfill shall be completed within twenty-four (24) hours after the excavation of the trench.

#### Jacking, Drilling, or Directional Boring Methods of Installation of Conduit

Jacking or drilling method shall conform to the provisions of Section 86-2.05C, "Installation," of the SSS and the following.

Conduits may be installed by either jacking, drilling or directional boring methods with the approval of the Engineer.

#### Installation of Conduit by Directional Boring Method

Conduit may be placed by the directional boring method, utilizing a surface launch drill to install the conduit conforming to the following.

The Contractor shall obtain approval from the Town before the start of any directional boring operation.

If this method is utilized, all crossings in the proposed bore alignment shall be potholed and exposed to verify depth prior to commencing with the boring operation. Potholes shall then remain open until the reamer that widens the bore has passed the exposed utility, the Town Inspector will check and verify that no damage to the utility has occurred.

Horizontal alignment of the new conduit shall be straight and no deviation of more than six (6) inches will be accepted. The Contractor shall mark the approved horizontal alignment before beginning boring operations. The Contractor shall mark the progress and depth of the bore at twenty (20)-foot intervals by applying a paint dot to the ground in the same color scheme as used for Underground Service Alert. Deviations from the approved plans shall be corrected immediately to get the bore back to the approved alignment and depth.

Long sweeping bends shall not be used when making a 90 degree turn.

Directional guidance shall be by means of a tracking system consisting of a radio beacon mounted in the bore head and a hand held receiver/locator, allowing tracking of the bore and changes of the bore path due to the presence of obstacles such as existing utilities. Bentonite or approved equal shall be placed inside the hole to fill all voids around the conduit(s).

## **Pullboxes**

Pullboxes shall conform to the provisions of Section 86-2.06, "Pull Boxes," of the SSS, the SSP, and the following.

The identification "LOS GATOS" shall be engraved, welded or casted on the top face of all covers and followed by one of the following applicable markings:

1. "IRRIGATION" (for pullboxes containing irrigation controller circuits of 120 volts or higher).
2. "COMMUNICATIONS" (for pullboxes in telephone service runs and where utilities company conduits terminate).
3. "SERVICE" (for pullboxes in service runs and where utilities company conduits terminate).
4. "SPRINKLER-CONTROL" (for pullboxes containing sprinkler control circuits of 50 volts or less).
5. "STREET LIGHTING" (for pullboxes containing lighting circuits of 600 volts or less).
6. "TRAFFIC SIGNAL" (for pullboxes containing traffic signal circuits with or without street lighting circuits).
7. "TRAFFIC COMMUNICATIONS" (for pullboxes containing fiber-optic cabling system).

Pullboxes shall be No. 5 with the following exceptions:

1. No. 6 pullbox shall be used when five or more conduits entering the pullbox.
2. No. 3 ½ pullbox may be used if it is solely used for lighting purpose.
3. Pullbox for fiber-optic cabling system shall have the following minimum inside dimensions, unless specified otherwise in the contract documents: 48-inch long by 30-inch wide by 14-inch high. It shall be provided with a locking lid. Pullbox extension shall be in 14-inch high increment.

## **Conductors**

Conductors shall conform to the provisions of Section 86-2.08, "Conductors", of the SSS and the following.

Identification stripe color shall be permanently impregnated the conductor insulating jacket.

No. 10 or smaller traffic signal conductors shall be solid copper with either:

- Type USE insulation with a minimum thickness of 1 mm (40 mils), or
- Type THW insulation with a minimum thickness of 1 mm (40 mils).

### **Bonding and Grounding**

Bonding and grounding shall conform to the provisions of Section 86-2.10, "Bonding and Grounding," of the SSS and the following.

All metallic electrical equipment including, but not limited to, poles, metal conduit, service pedestals, controller cabinets, anchor bolts, foundation reinforcement, and metallic cable sheaths shall be tied to ground electrical potential and shall be interconnected by means of copper conductors and clamps to form a single, grounded and electrically bonded system. Grounding of the electrical system shall be accomplished by means of approved 5/8-inch x 10-foot copper-clad steel or 3/4-inch x 10-foot galvanized steel ground rods installed in all cabinet foundations and in all pull boxes that contain conduits with equipment ground conductors as shown on the project plans. Ground rods shall extend above the finished cabinet foundation or grouted pull box bottom sufficiently to attach a ground clamp and #8 AWG bare copper equipment ground conductor.

### **Galvanizing**

New traffic signal and street light poles shall have a galvanized finish in conformance to the provisions of Section 86-2.15, "Galvanizing," of the SSS.

### **Painting**

Painting shall conform to Section 86-2.16, "Painting", of the SSS and the following.

Galvanized steel poles or standards shall not be painted.

### **Controller Assembly**

The controller assembly shall conform to the provisions of Section 86-3.02, "Type 90 Controller Assemblies," of the SSS and the following.

The controller assembly shall be NEMA TS-2 Type "P" traffic signal controller cabinet. See 2.37B for the traffic signal controller cabinet specifications.

### **Traffic Signal Faces and Fittings**

Traffic signal faces and fittings shall conform to the provisions of Section 86-4, "Traffic Signal Faces and Fittings," of the SSS, the SSP and the following.

Traffic signal faces shall have metal signal sections and visors conforming to Section 86-4.01 "Vehicle Signal Faces", of the SSS. Plastic signal faces and visors shall not be allowed.

Vehicle signal face reflectors shall be made of specular aluminum conforming to Section 86-4.01A "Optical Units" of the SSS.

Backplates shall be furnished and installed on all signal faces. Backplates shall be made of aluminum and installable from the front of the signal head and conform to Section 86-4.03 "Backplates" of the SSS and the SSP ES-4C. Louvers shall not be used unless otherwise specified. Plastic backplates shall not be allowed.

Signal mounting assemblies shall conform to Section 86-4.06 "Signal Mounting Assemblies" except that terminal compartments, post top adapters, and plain side pole mounts shall be cast bronze. "Clam Shell" mounts shall not be used.

Pedestrian signal faces shall be Type A with 3/16 inch tempered glass message plate and z-crate type screen conforming to Section 86-4.05 "Pedestrian Signal Faces" of the SSS and the SSP ES-4B.

All new vehicle signal heads shall have 12" red, amber and green (circular and/or arrow) light emitting diode (LED) modules and all new pedestrian signal heads shall have a combination Portland orange "upraised hand"/lunar white "walking person" LED module. The LED modules shall be Gelcore brand or approved equal.

### **Pedestrian Push Buttons**

Type "B" pedestrian push button assemblies shall conform to the provisions of Section 86-5.02, "Pedestrian Push Button Assemblies", of the SSS, the SSP ES-5C and the following.

Pedestrian push buttons shall be ADA compliant.

Pedestrian push buttons shall be mounted on their respective poles and post such that the actuator button is positioned thirty-six (36) inches above the surface upon which a pedestrian using the button would stand.

Multiple push buttons on the same standard shall be mounted at the same height with a maximum vertical offset of plus or minus 2 inches between push buttons.

Pedestrian push buttons shall be located within 5 feet of the crosswalk centerline, the wheelchair ramp, or entrance to the designated crosswalk.

## **Detector Loops**

Vehicle detectors shall conform to the provisions of Section 86-5, "Detectors", of the SSS, the SSP and the following.

1. Detector loops shall have square or circular configuration.
2. Loop conductor shall be Type 2 loop wires. The conductor shall be identified throughout the length per NEC Article 310-11 "Marking".
3. Detector lead-in cable shall be Type B.
4. Detector lead-in cables between pull boxes (immediately adjacent to the detector handhole) and controller cabinet shall run continuously and shall be unspliced throughout the length of the conductors.
5. The sealant for filling slots shall be asphaltic emulsion sealant for asphaltic concrete pavement application and hot-melt rubberized asphalt sealant for Portland cement concrete pavement, both as specified in the State SSS.

## **Luminaires**

Luminaires shall conform to the provisions of Section 86-6.01, "High Pressure Sodium Luminaires," of the SSS and the SSP.

Unless otherwise specified, luminaires shall be 250-watt, high pressure sodium, Type III cutoff lamp. Ballasts for luminaires shall be of regulated multitap (120/208/240/277 volt) integral ballasts.

Fused splice connectors for luminaire circuits shall be provided per Section 86-2.095 "Fused Splice Connectors" or the SSS.

## **Photoelectric Controls**

Photoelectric controls for luminaires shall conform to the provisions of Section 86-6.07, "Photoelectric Controls," of the SSS and the following.

Photoelectric controls shall be Type IV.

## **Removing, Reinstalling or Salvaging Electrical Equipment**

Removing and/or salvaging of equipment shall conform to the provisions of Section 86-7.01, "Removing Electrical Equipment," of the SSS and the following.

All salvaged equipment shall be delivered to the Town of Los Gatos Service Center at 41 Miles Avenue. The Contractor shall contact the Town of Los Gatos Department of Public Works at (408) 395-2859, forty-eight (48) hours in advance to arrange for acceptance of salvaged equipment.

## **2.38 Street Illumination**

Street lighting systems design shall conform to the following standards.

- A. Street lights shall be provided with the development of all new subdivisions, and for other commercial, industrial or institutional property development.
- B. All new street light wiring, conduit and service connections shall be located underground. The applicant will be responsible for providing or obtaining necessary easements for underground power for street lighting systems designed and constructed as part of an approved development permit.
- C. For private development projects, streetlights along the frontage shall be brought into conformance with these street lighting standards as part of their development process.
- D. For all new street light installations, the applicant shall coordinate jointly with Pacific Gas & Electric and the Parks & Public Works Department to prepare a street lighting plan for submittal to and approval by the Parks & Public Works Department.
- E. All new public street light plans, specifications, and a professional electrical engineering firm shall prepare calculations. All new developments shall submit the lighting plan on a separate drawing to the Town for review and approval. All street light plans, specifications, and calculations, including pole locations, types, and heights shall be reviewed and approved by the Town of Los Gatos.
- F. Street lights located within the public right-of-way shall be supplied by the applicant. The applicant is responsible for the installation of street lights and all accessories necessary to energize the street light system consistent with Standards. If approved, the installation of special luminaries shall be the responsibility of the applicant.
- G. Private lighting systems shall be maintained by the property owner or homeowners association.

### **Design Standards**

#### **1. Illumination Levels**

Street light illumination levels shall conform to the levels listed in the table below:

**Table 2-1**  
**Illumination Standards Average**  
**Maintained Horizontal Illumination (Foot Candles)**

Road Class	Area Class	
	Residential	Industrial/Commercial
Private	0.4	N/A
Residential (Access)	0.6	1.2
Arterial *	0.8	1.6
* Intersection lighting is required. Street lights shall be placed in accordance with the Standards listed below.		

Uniformity Ratio:           6:1 average to minimum for private  
                                       4:1 average to minimum for residential (access)  
                                       3:1 average to minimum for arterial

Average illumination levels at intersections shall be 1.5 times the illumination required on the more highly illuminated street. Exception: Local residential streets intersecting other local residential streets shall not require 1.5 times the illumination at other intersections, provided that one luminaires is placed at the intersection.

At signalized intersections, all signal poles shall include a street light. Lighting levels at these locations may be higher than the criteria listed above.

2. Luminaires

- a. The following luminaires have been approved for use in the Town of Los Gatos:

- “Cobrahead” flat lens standard arm aluminum
  - Union Metal Design B40674-184-B1-Y1F
  - Sternberg 3800 Leesberg

- b. All Luminaires shall have clear lamps.
- c. All luminaires shall be high pressure sodium
  - 1. 400 watt lamp = 50,000 initial lamp lumens
  - 250 watt lamp = 29,000 initial lamp lumens

200 watt lamp = 22,000 initial lamp lumens  
 150 watt lamp = 16,000 initial lamp lumens  
 100 watt lamp = 9,500 initial lamp lumens

2. Lamp Dirt Depreciation factor (LDD) = 0.90
3. Lamp Lumen Depreciation factor (LLD) = 0.85
4. Combined LDD+LLD = 0.76

3. Light Standards

- a. Light standards shall be located on one side of the roadway only or shall be located opposite each other when placed along both sides of the roadway.

Staggered spacing will be allowed upon approval of the Town Engineer where there is an established staggered pattern and it is necessary to continue this pattern, or when site or safety conditions prevent locating luminaires on only one side of the roadway.

- b. In areas where the street width differs from the Town standard, or there are other factors influencing the location of the street lights, the Town Engineer will provide input to the applicant on acceptable options.

Luminaire mounting heights shall be as shown in the following table:

**Table 2-2  
 Recommended Mounting Heights**

<b>Type of Road</b>	<b>Wattage</b>	<b>Mounting Height</b>
Arterial	200	30 feet
Residential, Private	100	30 feet

4. Line Loss

Line loss calculations shall show that no more than a 5 percent voltage drop occurs in any circuits. Branch circuits shall serve a minimum of four luminaries.

5. Conductors

The minimum wire size for any illumination circuit shall be No. 6 Aluminum. No. 10 wire will be acceptable for the pole and bracket cable within the light standard only.



## 6. Conduit

Conduits shall be sized to provide 26 percent maximum fill. A minimum one and one-half inch conduit shall be installed

### **2.39 Testing and Inspection Schedule & Requirements for Construction Projects**

#### *1. General*

##### **1.1 References**

- 1.1.1 ASTM: American Society for Testing and Materials, 2002 Annual Book of Standards
- 1.1.2 Caltrans Standard Specifications for Road, Bridge and Municipal Construction.
- 1.1.3 Town of Los Gatos 2004 Engineering Design Standards

#### *2. Utility Trenches*

##### **2.1 Compaction Testing**

- 2.1.1 Perform at least 2 compaction tests (ASTM D 2922 nuclear method) per 200 lineal feet of trench, one at subgrade level, one at 50% of the trench depth if a hoe-pack is used for compaction. In addition, test all road crossings at subgrade and 50% depth. If walk-behind compaction equipment is used (i.e. jumping jack) test each 12" of depth.
- 2.1.2 Trench Backfill should be compacted to at least 95% of the maximum dry density (ASTM D 1557). Fill should be placed in horizontal lifts not to exceed 12 inches of loose thickness.

##### **2.2 Sieve analysis of backfill material**

- 2.2.1 Sample the imported fill material for sieve analysis prior to trench backfilling and at an interval of every 500 tons placed in the utility trenches.
- 2.2.2 Samples of materials to be used shall be submitted prior to construction to determine conformance to specifications for trench backfill.
- 2.2.3 Samples should be taken from material delivered to the site.

### 3. Road Sections

#### 3.1 Proof Rolling

- 3.1.1 Prior to placing structural fill for the road section, the Town inspector should observe a proof roll of the undisturbed native sub-base using a loaded dump truck. In areas of significant pumping and yielding, scarify, aerate and recompact existing materials. If loose native soil conditions prevail, over-excavate the deleterious material to the satisfaction of the Town inspector. After 18" of over-excavation, place a woven structural geo textile fabric that is equivalent to or better than a Mirafi 500x product. Backfill over-excavated areas with clean (<7% fines) structural fill compacted to 95% of the maximum dry density (ASTM D1557).
- 3.1.2 Once the entire road section is placed and prior to paving, the Town Inspector shall observe a proof roll the subgrade to ensure that there are no yielding or pumping areas.

#### 3.2 Compaction Testing

##### 3.2.1 Granular and crushed aggregate

3.2.1.1 Roadbed fill materials should be compacted to 95% of the maximum dry density (ASTM D 1557) and verified with the nuclear method (ASTM D 2922).

3.2.1.2 For every lift placed in the roadway, compaction testing should occur for each 100 linear feet, one on either side of the centerline.

##### 3.2.2 Asphalt Concrete Pavement

3.2.2.1 Asphalt should be compacted to 92% of the RICE density. A minimum of 5 nuclear densometer tests should be taken each day per 400 tons of asphalt placed.

#### 3.3 Laboratory Analysis of Roadway Materials

- 3.3.1 Perform a sieve analysis of all granular and crushed aggregate prior to placement in the roadway and at an interval of every 500 tons of material placed.
- 3.3.2 Sample the asphalt each day of paving in order to determine the RICE density for the mix.

- 3.3.3 Collect on sample for each 400 tons of asphalt placed to verify bituminous content, grain size, and fracture count.

#### 4. *Reinforced Concrete Special Inspection*

##### **4.1 Concrete Quality Control**

- 4.1.1 The Town inspector should be on site for each concrete pour that requires a 28-day compressive strength greater than 2500 psi.
- 4.1.2 Concrete will be monitored for slump, air content, and temperature.
- 4.1.3 Four concrete cylinders (6" x 12") shall be taken per 150 cubic yards of concrete placed to verify compressive strength requirements  $f_c$ .

##### **4.2 Reinforcing Steel**

- 4.2.1 Prior to concrete placement the Town inspector shall inspect reinforcing steel to ensure that it is placed with the appropriate spacing, clearance, cleanness, size, and conformance to other structural plan specifications.

#### 5. *Soil Testing for Structures*

##### **5.1 Solid Bearing Capacity Verification and T-probing**

- 5.1.1 After excavation of footings down to the native sub-base and prior to placement of concrete forms, observe the condition of the native, undisturbed soil by T-probing or other methods deemed necessary by the Town inspector (such as dynamic cone penetrometer).
- 5.1.2 Soils with a T-probe penetration of greater than 6" will typically be deemed loose and unstable.
- 5.1.3 By direction of the Town inspector, unsuitable native soils should be over excavated and backfilled with structural fill. Woven geotextile fabric (equivalent to or better than a Mirafi 500x product) or quarry spall may be recommended if the soil conditions are significantly deleterious.

##### **5.2 Compaction Testing**

- 5.2.1 For structural fill in footings, foundation slabs, perform 1 compaction test for each 1,000 square feet of area. Each lift of material that is up to 12" thick should be tested.

5.2.2 Structural fill should be compacted to 95% of the maximum dry density (ASTM D 1557).

Town of Los Gatos Public Works Department  
Testing and Inspection Quick Reference

**Compaction Testing**

Work Phase	Frequency of Testing/Inspection	Required Result
Trench back filling	4 tests every 200 feet of trench, at subgrade and 50% of fill depth	95%
Roadbed materials	1 test every 100 feet of roadway, one on each side of centerline	95%
Asphalt	5 tests per 300 tons	92%
Building structural fill	4 test per 1,000 square feet	95%

**Proof Rolling and T-Probing**

Work Phase	Frequency of Testing/Inspection	Required Result
Native roadway subbase	1 Proof roll of moisturized and compacted native soil prior to placing fill, with fully loaded water truck or equivalent	No yielding or pumping
Roadbed fill materials	1 Proof roll at subgrade elevation, prior to paving, with fully loaded water truck or equivalent.	No yielding or pumping
Footing and slab excavation	T-probe after native soils have been excavated to footing subgrade, prior to placing concrete forms.	<6" of penetration

**Laboratory Analysis**

Work Phase	Frequency of Testing/Inspection	Required Result
Trench back filling	1 gradation prior to backfilling and for each 500 tons of fill placed prior to backfilling. ASTM 1557	To design spec.
Roadbed materials	1 gradation prior to backfilling and for each 500 tons of fill placed prior to placing fill. ASTM 1557	To design spec.
Asphalt	1 RICE density per day of paving, 1 extraction, fracture and gradation for every 400 tons of asphalt placed in a day.	To design spec.
Building structural fill	1 gradation prior to backfilling and for each 200 tons of fill placed prior to placing fill. ASTM 1557	To design spec.

**Concrete Special Inspection**

Work Phase	Frequency of Testing/Inspection	Required Result
Any phase	1 set of 4 cylinders per 100 yd <sup>3</sup> placed in a day. Inspect rebar for spacing, clearance, size, location and cleanness, and radius bends prior to concrete pour.	To design spec.