

THE CITY OF SANTA MONICA'S GUIDE TO: PLANNING & PROTECTION OF PUBLIC TREES DURING CONSTRUCTION PROJECTS



South-East Corner of Michigan Ave & 16th st
City of Santa Monica - Public Works Department - Public Landscape Division
1601 14th St - Santa Monica, CA 90401 - (310) 458 - 8974

Tree Protection & Why it is Necessary:

Santa Monica's urban forest is a highly valued resource and a cornerstone of sustainable communities. Larger trees provide significantly greater environmental benefits to the community than smaller ones.

New construction can cause irreparable damage to trees if not designed and executed correctly. The movement of building materials onto construction sites, the use of heavy building equipment, grading, and/or trenching for underground utilities all have the potential to physically damage trees. Damage can occur to tree parts both above and below ground including their associated soil resource. Therefore, the protection and preservation of City trees must be an essential element within any new construction project from design throughout the completion of construction.

The City's plan check process allows for Santa Monica's Public Landscape Division staff to review and comment on how a proposed construction project may affect existing public trees during the design phase. Santa Monica's Urban Forestry staff will specify plans that require specific tree related notes be included on plans to prevent any unreasonable negative impacts to City trees.

City of Santa Monica's Tree Code & Related Industry Standards

Public trees are protected from injury by Santa Monica City's Municipal Tree Code (7.40.160). The City of Santa Monica therefore mandates that during any demolition or construction activity an appropriate Tree Protection Zone (TPZ) fence is established around City trees. The tree protection fence and the continued management of public trees impacted by construction or demolition must follow current industry specifications, standards and Best Management Practices including:

- American National Standards Institute (ANSI) A300 Part 5: - American National Standard for Tree Care Operations - Tree Shrub, and Other Woody Plant Management - Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 5)

I – The Design Phase and Preparing for Plan Check:

The design phase is very important when planning for a new project. Projects can vary in form such as largescale developments, new construction, major alterations, tenant improvements, ADU's etc. Santa Monica City owned trees shall be considered part of the existing infrastructure similar to subsurface utilities & associated meters, utility/light poles, fire hydrants, gas lines, water and sewer lines. However, it is important to recognize that a tree is a dynamic and living organism requiring special care and consideration.

The checklist below are items that must be considered and accounted for when planning a project adjacent to existing City trees:

- For designated Landmarks, the entire parcel may be designated. If so, all existing trees are included in the Landmark designation, and require protection.
- How many existing City-owned trees are onsite requiring preservation?
- How many existing trees might need to be relocated (transplanted)? Has this been agreed upon with Santa Monica Urban Forestry? Please see 1a below.
- Are any existing trees being proposed for removal? Has this been agreed upon with Santa Monica Urban Forestry? Please see 1b below.
- Where are the opportunities to plant new trees?
- How does the existing tree canopy impact the proposed project profile?
 - Are there awnings, balconies, or other structures protruding from the building that may interfere with a curbside City tree?
- Will a sidewalk bridge/pedestrian tunnel be installed?
- Is there excavation & shoring for subterranean parking or basement?
 - Is there an overcut needed?
- Is there a storm water retention basin to be installed and where?
- Does the sidewalk and/or curb require removal and replacement?
 - Will an existing driveway be relocated or decommissioned & replaced with parkway or new sidewalk?
 - Please note that driveways should be positioned at least ten-feet (10') from nearest edge of existing trees.
- What is the parkway length and width?
- Is there street furniture including but not limited to bus stops and shelters, mailboxes, signs, bicycle racks, fire hydrants or any other obstructions on the sidewalk being moved or installed that might impact City trees?
- Are there manholes, storm drains, catch basins, or valve boxes being moved or installed that might impact City trees?

Furthermore, when designing a new project, it should be determined how a structure will be built. The construction of the project and how contractors access the site should not impact existing City trees.

1a - Proposed Tree Relocations:

In the design phase, if a tree up to five inches (5") in diameter (measured 4 ½ ft above the trunk flare) is proposed for relocation (transplanting) please contact the Public Landscape Division in writing. It is unlikely that trees exceeding this size will be approved for transplanting unless the tree is a palm species. Santa Monica Urban Forestry staff will review a submitted arborist report and assess palms for transplant if brown trunk height (BTH) is over 35 ft.

Santa Monica Urban Forestry staff will require concise details, including any supplemental plans, to explain why a tree needs to be relocated. Please note that trees should be relocated to a more favorable location onsite where possible. If approved by Santa Monica Urban Forestry, boxing trees and having them maintained offsite by a reputable tree company until re-installation near the end of construction may be an option at developer's cost.



Onsite Jacaranda relocation as part of Reed Park landscape improvement & exercise area retrofit.

Santa Monica Urban Forestry requires that transplanting work complies fully with ANSI A300 Part 5 and the associated ISA Best Management Practices (BMP). If transplanting is approved by Santa Monica Urban Forestry, a scheduled field meeting with a reputable tree/landscape contractor will need to be coordinated by the applicant. At this meeting the final details, including maintenance, will be agreed upon and added to plans. Parkway trees can be challenging to transplant and may require the removal of adjacent sidewalk to achieve the best root ball per industry standards (10"-12" of root mass per diameter inch of tree) or as determined by Santa Monica Urban Forestry staff in the field.

Trees and palms, including the adjacent soil, shall be sufficiently watered in the days prior to transplanting. They must also be regularly watered afterwards, preferably by automatic irrigation, to ensure successful establishment. If Santa Monica Urban Forestry staff assess that a tree or palm is unsuccessful within 12 months of transplanting, often due to a lack of sufficient aftercare, the developer will be responsible for replacing the tree or palm with an equivalent sized tree or palm at no cost to the City of Santa Monica.

1b – Proposed Removals:

It is recommended that the design phase of a project explore all options to avoid removal of a Santa Monica City tree. If there is an unavoidable conflict with construction and a City tree cannot be preserved, please submit a [Public Tree Removal Appeal Application](#) and explain why a tree will need to be removed with concise details and any supplemental plans.

Santa Monica's Urban Forest Master Plan has strict criteria on when a City tree is authorized for removal. Trees in Santa Monica are usually only removed when they are dead, dying or pose an unreasonable risk as determined by Santa Monica Urban Forestry staff. Tree removal for new construction is often not permitted and may require lengthy review processes involving the City of Santa Monica's Urban Forest Task Force. Ultimately, the Director of Public Works approves all Santa Monica tree removals. If approved, restitution shall be provided to the City to offset the loss of the tree.

Please note Santa Monica City trees up to 5" diameter may be transplanted safely to another location ([see section 1a "Proposed Tree Relocations"](#)).



Restitution resolved, posted and removed for Fire & vehicular access at the "Pen Factory" remodel 2701 Olympic blvd.

Calculating Tree Restitution:

The provision of restitution to replace the value of a removed tree is a vital component of a sustainable urban forest. It helps ensure that Santa Monica's urban tree canopy is not negatively impacted by the removal of healthy trees for development. When a City tree is removed for a new construction project, its loss is mitigated by sufficient levels of replacement tree planting. Often, a replacement tree of similar size as the one removed cannot be planted as it could be impractical and cost prohibitive. As a result, the Council of Tree & Landscape Appraisers (CTLA) have suggested industry recognized methodologies for valuing trees. Their Trunk Formula Method calculates the number of standard sized new trees needed to replace a larger tree.

As part of the valuation process, the methodology factors:

- Tree size (diameter measured 4 ½ ft above trunk flare)
- Tree species
- Tree health condition
- Tree location

The CTLA's Trunk Formula Method is therefore comprehensive and detailed in determining the number of replacement trees required to mitigate the loss of a larger tree. Additional information on how the City of Santa Monica uses this tree valuation methodology is available on request.

The CTLA Trunk Formula Method is unsuitable for palms. Therefore, palms are measured in brown trunk height (BTH) and require "in kind" replacement. For example, if a palm tree is 50 ft tall, five 10 ft BTH palms or two 25 ft BTH palms would be an equivalent replacement.

The calculated number of replacement trees or palms is converted into a dollar value using Santa Monica's current planting contract rates including the cost of 18 month tree aftercare & guarantee period. This value, plus Santa Monica contractor's removal cost, will be invoiced as the restitution required by the applicant to provide to the City of Santa Monica.

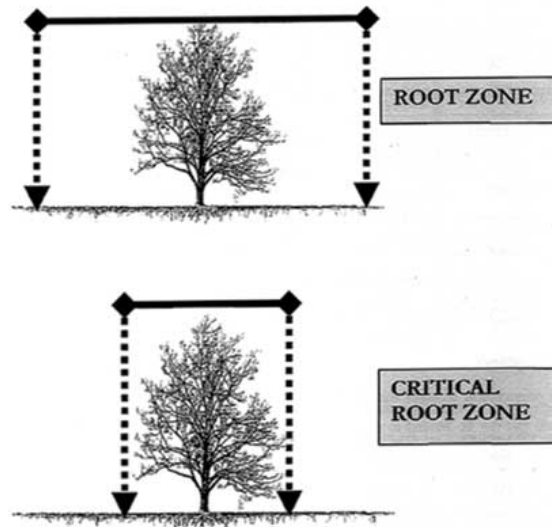
Approved removals will be posted for 14 calendar days to notify the public as part of Santa Monica's tree removal processes.

II – The Tree Protection Plan:

Critical Root Zone (CRZ) & Tree Protection Zone (TPZ):

During the plan check phase, calculating the critical root zone (CRZ) will help a developer better understand a project's potential impact on existing City trees.

Illustration 2-1: Root zone vs. Critical root zone (CRZ)
From: Urban Forest Management Plan.



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To accurately determine the critical root zone of a tree, use a diameter tape to measure its trunk diameter at 4 ½ feet above the trunk flare. That number is then multiplied by 1.5 and the results expressed in feet. For example, if a tree has a trunk diameter of 24 inches, then the critical root zone has a radial distance of 36 feet out from the trunk, or a total diameter of 72 feet.

Construction equipment can injure tree parts above & below ground by compacting soil, breaking branches, severing roots, tearing tree bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal to the tree. Mitigation options may be available and will require a meeting with Santa Monica Urban Forestry & a third party arborist at the cost of the developer prior to final signoff.

The City of Santa Monica mandates that a Tree Protection Zone (TPZ) is established around all public trees prior to the commencement of any demolition or construction phases of a project. The TPZ protects a tree's CRZ and its associated soil resource, from damage caused by construction activities within the public right of way or as determined in plan check.

TPZ fencing must enclose the parkway to protect street trees during construction. The location of the fence must be shown on the plans. Three to four inches of mulch should be applied to the entire area of the TPZ to improve the growing

environment for tree roots. Soil or mulch must not be piled against the trunk of the tree.

Mulch generally consists of shredded leaves, bark, pine straw, peat moss, wood chips or composted green waste. Weeds and overgrown grass are to be maintained throughout the life of the project.

At times, the tree protection fence cannot be installed at the outermost edge of the CRZ. Public Landscape Division staff should be contacted with any tree protection fence installation questions.

The management of public trees impacted by construction or demolition follows current industry standards and best management practices including:

- American National Standards Institute (ANSI) A300 Part 5: American National Standard for Tree Care Operations – Tree Shrub, and Other Woody Plant Management – Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 5)



633 21st St with Tree Protection Fence installed below:



Ila – The Tree Protection Plan:
Labeling Public Trees, CRZs and TPZs on Submitted Plans

A tree protection plan is required with submission of plans. The tree protection plan can also be layered onto the site and demo plans by labeling the following:

- Existing curbside public trees
- Location of construction access
- Existing utilities to remain or change
 - o Electrical above or below ground
 - o Water and sewer
 - o Gas
 - o Fiber optic
- Gutter and bio-retention overflow units
- Existing driveway to remain or be relocated onsite
- Sidewalk removal and installation
- Proposed awnings, balconies, business signs/displays
- Sidewalk bridges (posts or footings of sidewalk bridges should not be placed in the tree well or on any surface roots)
- Any other proposed changes that could impact a City tree

Plans must portray the public tree characteristics listed below:

- o Exact location of each tree trunk on City right of way
 - At times neighboring trees within 25 ft of the property line may require protection including those adjacent to alleys
- o Tree species
- o Trunk diameter (expressed in inches) at 4.5ft from trunk flare
- o Actual tree canopy size, labeled to scale, reflecting the 'drip-line'
- o Boundary of the proposed TPZ fence labeled to scale
- o Photo of each public tree to be preserved (while in leaf, and preferably not from Google street view)

IIb - The Tree Protection Plan:

Projects & Plan Sheets that Require Reference note to Tree Protection Guidelines

Project activities occur in stages and are reflected on different sheets in a set of plans. Certain activities can impact preserved onsite trees and should be displayed accordingly. City maintained trees should be included on any plans where trees could be impacted.

Tenant improvement permits are usually localized within a building and cause minimal impact to curbside trees or the neighboring area. Pending the impact of the project, most tenant Improvement (T.I.) permit applications will be acceptable if the following items are labeled on the site plan:

- Curbside City trees
- Tree Protection Guidelines ([See pages 19-21](#))
- Construction access (If construction access or scale of job impacts City trees, more information may be requested)

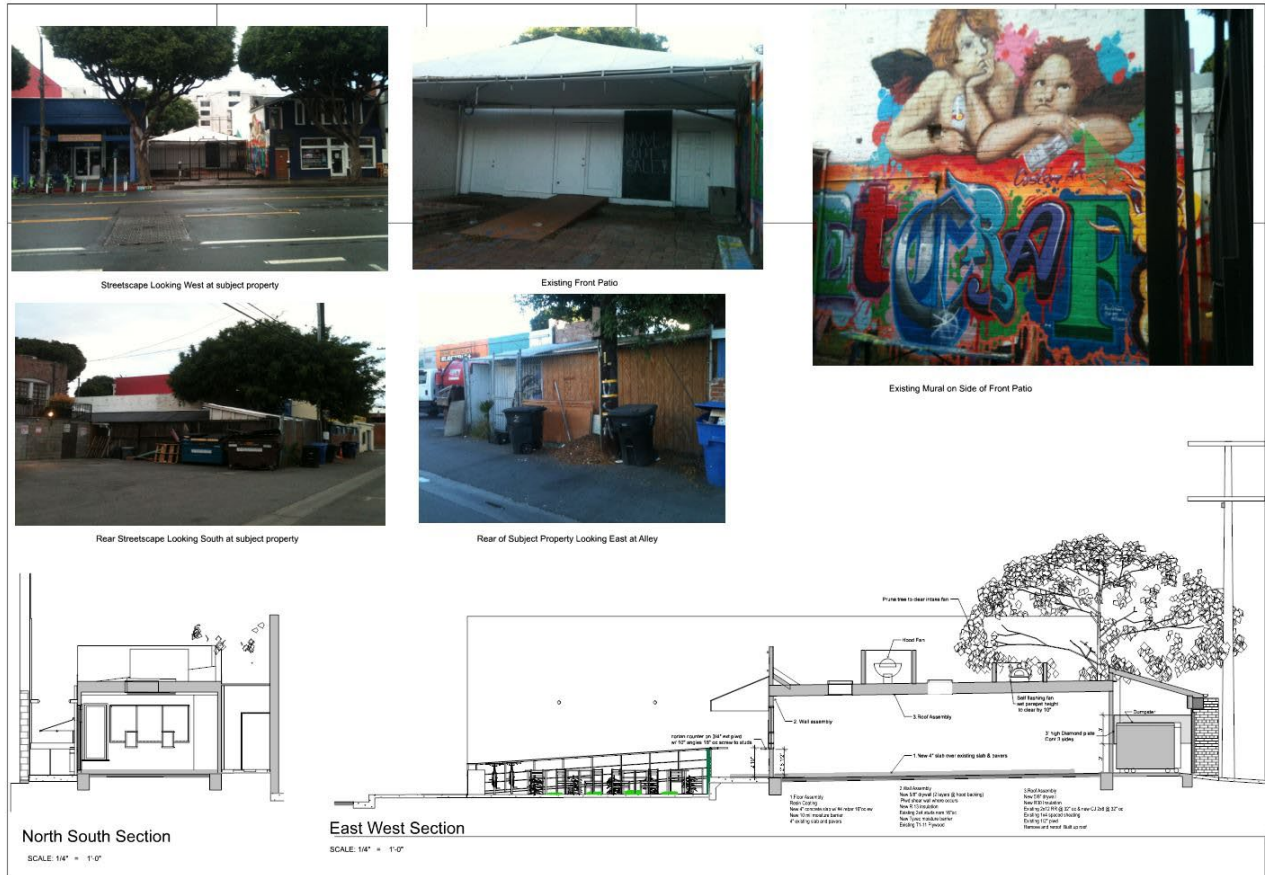
Additional Dwelling Unit & Structure Re-model permits are usually localized within or at the rear of a structure and cause minimal impact to curbside trees or the neighboring area. Pending the impact of the project, most Additional Dwelling Unit & Structure Re-model permit applications will be acceptable if the following items are labeled on the site plan:

- Curbside City trees
- Tree Protection Guidelines ([See pages 19-21](#))
- Construction access (If construction access or scale of job impacts City trees, more information may be requested)

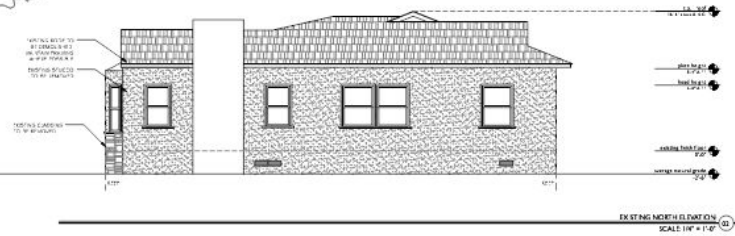
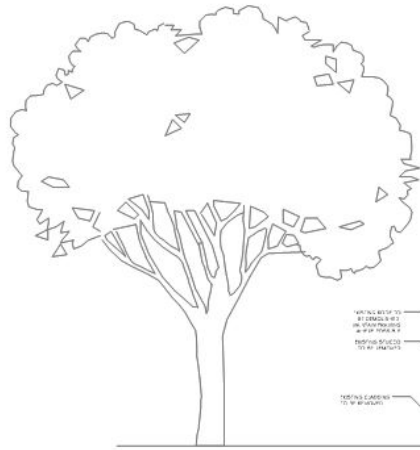
Plans on which Santa Monica's Tree Protection Guidelines ([See pages 19-21](#)) should be referenced include but are not limited to:

- Demolition and staging (trailers, equipment, vehicles etc.)
- Excavation, foundation, & shoring
- Grading & drainage
- Site plan
- Elevation plan
- Proposed landscape plans

Restaurant update:



New home:



Architectural drawing of the North Elevation (Arizona Ave.) of a building. The drawing shows a three-story structure with a flat roof, multiple windows, and a central entrance. Key features include a parking lot on the left, a tree on the right, and a series of elevations on the right side. The drawing is labeled with various callouts and dimensions.

Callouts and Dimensions:

- CR1 3
- MP1 2
- RF1 8
- WS1 10
- RL1 2
- FR1 5
- BR1 5
- AW1
- GT2 9
- 11'-6"
- 36'-0"
- 11'-6"
- 12'-0"
- TO CHIMNEY +102.80'
- ROOF +101.80'
- 3RD FLOOR +98.12'
- 2ND FLOOR +96.12'
- 1ST FLOOR +94.12'
- BASELINE GRADE +93.27'
- PASSENGER +93.52'

Other Labels:

- PARKING LOT
- 2ND ST

Scale: 3/16" = 1'-0"

North Elevation (ARIZONA AVE.)

Ilc - The Tree Protection Plan:

Excavation & Utilities within the CRZ:

The design phase of a project is the best time to consider tree root presence and growth. Any excavation within the CRZ can have a negative impact on sections of street tree roots adjacent to a project if not planned and mitigated accordingly. All excavation within the CRZ shall be done with the use of an air spade or by hand, which helps to avoid unnecessary damage to roots that should be preserved. This in turn helps prolong a tree's life and ensure its stability after construction has been completed.

The amount of damage a tree can suffer from root loss depends, in part, on species, season, percentage of root loss and how close to the tree the cut is made relative to the tree trunk. The drip line can be used as a guide during excavation as staying outside the drip line will lessen impact to a City tree and maximize root preservation. Exploratory trenching using pneumatic tools like an air spade exposes roots that can be approved for removal or preservation for proposed new driveways, excavation & shoring, stormwater retention units, and property boundary walls.

Excavation occurs on different scales at different times of a project and the combination can be detrimental to a tree. For example, a combination of property-side excavation for a new developed unit, a trench dug for relocating or installing new underground utility lines, and a new driveway within the TPZ can lead a tree to the end of its life. Project managers must be mindful of the aggregate effect of construction/demolition work and are encouraged to use City staff as a resource for reviewing plans in order to minimize impact to City trees.

In cases where proposed utility lines conflict with existing tree roots, trenchless methods are preferred to best preserve the most roots possible. Trenchless technologies are also generally safer both for the construction workers and the public.

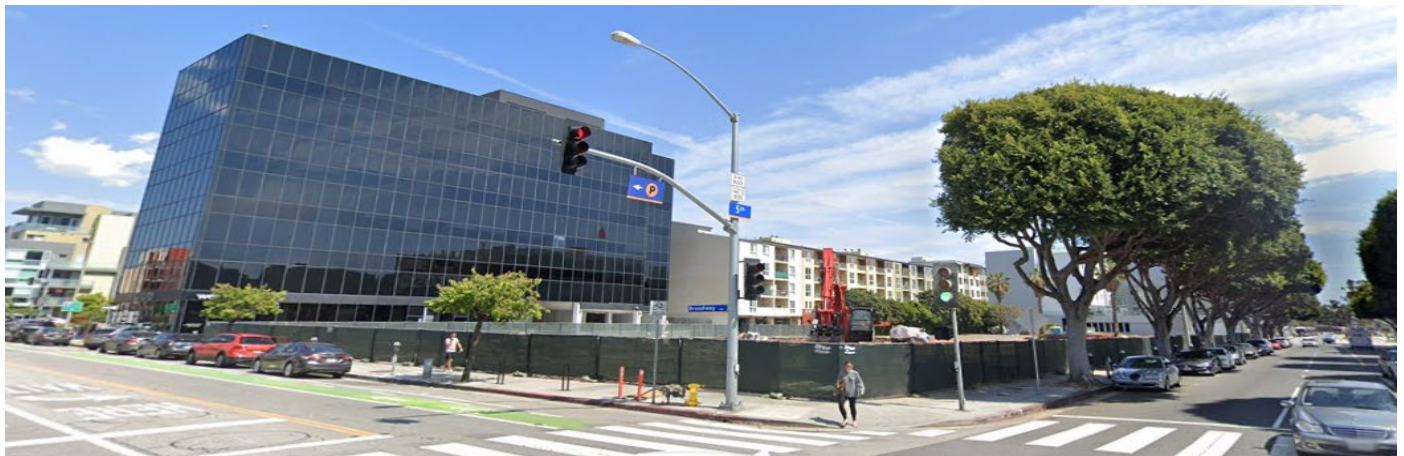
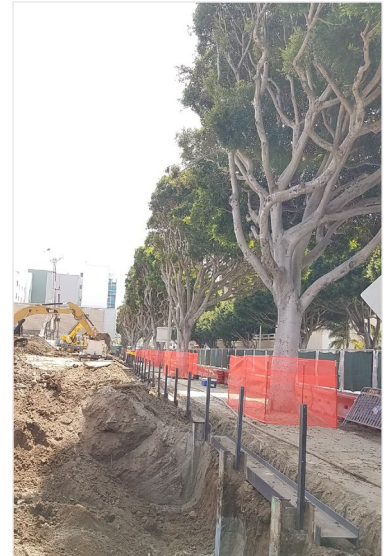
Fibrous and structural roots should be thought of as the two major components to a tree's health. The important fibrous roots of street trees are found mostly in the upper 6 to 12 inches of the soil for water absorption while the structural roots of a mature tree contribute to stability. Both can extend far beyond the edge of the canopy.

Any root that is two inches or greater in diameter is to be reviewed and approved for cutting or removal by Urban Forest staff.



500 Broadway:
Collaboration with applicant & 3rd party arborists opening an exploratory trench to review and mitigate conflicting roots for steel-beam installation prior to excavation & shoring. GC waters trees monthly & provides plant health care treatments for sustained tree health during demo and construction.

Trees were methodically pruned for property line clearance & tower crane installation of 8-story structure to be developed to the property line.



Ild – Construction Access, Driveways & Sidewalks:

Once the Critical Root Zone has been established, a better understanding can be gained of how the proposed design can fit into the project site. Equally as important is how to access the site, both during the construction phase and once the project is completed. It is always best to utilize an existing driveway for construction access and as the permanent driveway to minimize impact on existing street trees. The existing concrete prevents soil compaction and preserves soil structure.

Occasionally there are circumstances that require access to the construction site in conflict with the proposed TPZ. A steel plate may be utilized to bridge over the parkway for access. Steel plates should rest on concrete and serve as a bridge or be set on six inches of mulch to prevent soil compaction within the Critical Root Zone of the tree.

Plan accordingly, consider the project scope and label plans accordingly. Determine if the special access within the TPZ will be temporary or for the duration of the project. Make a note for the Project Manager to contact the Urban Forest staff in the Public Landscape Division one week in advance of the special access preparation.

Driveways:

The project design should always be based upon the assumption that a city owned tree will not be permitted for removal. On projects where a new driveway or driveway expansion is proposed, it is important to remember the Critical Root Zone of existing trees. Keep in mind that the trunk of an existing street tree as well as its root system will increase in size. To avoid any plan check delay due to potential conflict between a driveway approach and the roots of an existing curbside City-owned tree, please contact Public.Landscape@santamonica.gov to review your proposed plans with Santa Monica Urban Forestry staff.

Concrete Removal and Installation:

Sidewalk or driveway repairs can be conducted with minimal impact to the tree if done correctly. The impact of that work normally could lead to significant decline or tree death within a short period of time if the Critical Root Zone and individual roots are not properly preserved.

Removal of hardscape materials with the use of mechanical equipment is acceptable. However, to avoid damaging the surface roots, the broken-up material must be carefully removed manually.

Contact Santa Monica Urban Forest staff at Public.Landscape@santamonica.gov or 310-458-8974 prior to concrete removal to schedule an onsite inspection.

Tree Protection Deficiency and Mitigation:

Pending the extent of construction damage or deficiency in proper preservation of trees during construction, the developer or applicant seeking sign off may be required to hire an ISA certified arborist or ASCA consulting arborist to meet with Santa Monica Urban Forestry staff. Discussion will occur regarding what reports and corrective work are required to save or replace the tree(s) in question and successfully close out the project. Any mitigation and/or corrective work is to be completed by the applicant and may require a Public Works permit.

Summary:

Trees are dynamic living pieces of our infrastructure that contribute to our society on many levels. The many years of resources invested in urban forest planning, labor, irrigation, maintenance & resident support returns a long-lived green community. Invest time and critical thinking when designing new construction projects & developments. Page 17 represents a combination of planning, onsite critical thinking and collaboration with 3rd party arborists and the development community. Two hotels were constructed on the North side of the 5th Street & Colorado Ave intersection while also preserving most onsite trees.

To prevent this in advance please review additional references below:

Best Management Practices: Managing Trees During Construction

ISBN:978-1-881956-67-9

Best Management Practices: Tree Planting 2nd edition

ISBN:975-1-881956-84-6

ANSI A300 Part 6 2012

British Standard Institute. (1989). BS 4043:1989 Recommendations for Transplanting root-balled trees. London: British Standards Institute.

ISBN: 0-580-17144-2

British Standard Institute. (2005). BS 5837:2005 Trees in relation to construction - Recommendations. London: British Standards Institute.

ISBN: 0-580-46418-0

2012



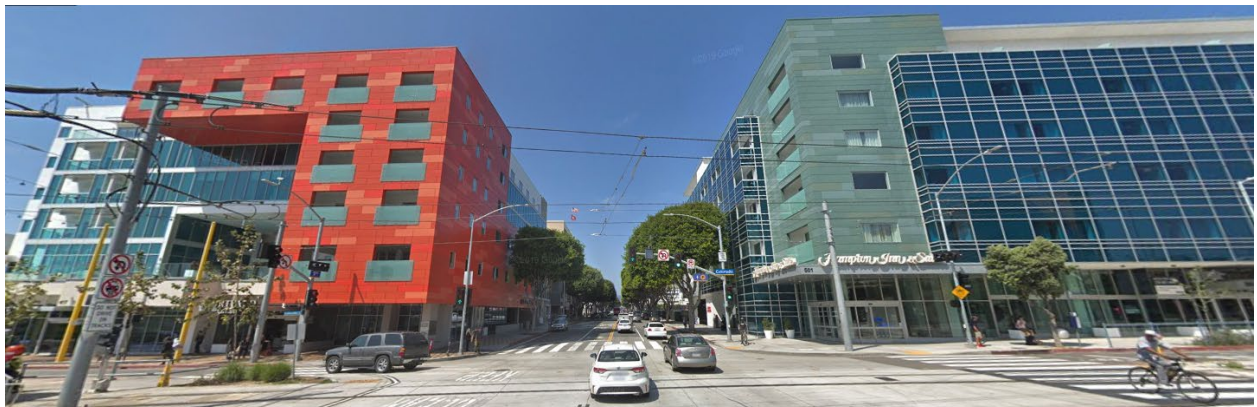
2015



2016



2019



Final signoff

All the planning and tree preservation during development has been ongoing. Once you are no longer receiving material deliveries and conducting final touches, the tree protection fences can come down. If any questions, please follow-up with Santa Monica Urban Forestry staff at Public.Landscape@santamonica.gov.

All the efforts can easily be lost on the final approaches toward final signoff during landscape retrofit and/or during scheduled sidewalk replacement. Plant healthcare treatments may be required pending site conditions and tree health status post construction. Concrete under the dripline should be removed either by hand or carefully with equipment while not operating or staging equipment under the dripline. Touch base with your Publics Works Inspector respective to compaction and base within the dripline. New parkway or tree well locations & dimensions should be confirmed with Santa Monica Urban Forest Staff in advance prior to setting forms.

Removal of any existing turf or existing landscape should be done by hand within the dripline to minimize impact to any tree roots. There should be no machine compaction within the critical root zone. Keep in mind fibrous tree roots can be impacted during turf layer removal or DG preparation. Artificial turf shall not be installed under the dripline. New landscape planning and installation is not to interfere with existing tree roots or other tree parts. Tree roots are not to be severed for new landscape installation. Consider mulch around the tree trunk area and utilize smaller plant material to minimize tree root impact. Relocate larger container material away from any discovered roots. Tree trunk flares should be exposed and not buried by any material. Tree canopies will not be thinned to accommodate for prescribed planting within the dripline. Drip irrigation should be enough to successfully water tree(s) pending species requirements and site conditions.

1. Applicant/contractor is defined as any parties involved in the planning, demolition, and construction of any work on the proposed project including subcontractors. It is the project manager's responsibility to contact the Public Landscape Division at 310-458-8974 or Public.Landscape@santamonica.gov about any work that may impact existing trees a minimum of one week in advance.
2. Trees within the jurisdiction of the City of Santa Monica are public assets. They may not be removed for any reason and are to be protected from injury or damage during all phases of demolition and construction. The applicant/contractor shall be responsible for the protection and preservation of all existing trees that are located completely or partially within but not limited to the contract limit line. Adjacent trees within proximity to the project may require protection. If construction is occurring via the alley, trees at the alley entrances may require protection.
3. If a healthy public tree is removed or destroyed, its loss will be accounted for by sufficient levels of replacement tree planting. Often, a replacement tree of a similar size as the one removed or destroyed cannot be planted as it would be impractical and/or cost prohibitive. As a result, the City of Santa Monica uses the Council of Tree & Landscape Appraisers methodologies for valuing trees. Unpermitted removals, accidental damage to trees that ultimately leads to the removal of trees and neglect to preserve trees that ultimately leads to the removal of trees within the jurisdiction of the City of Santa Monica will be valued and billed to the applicant. Signoff will be frozen until resolved. The contractor shall be assessed restitution for trees that are injured, irreparably damaged, destroyed or removed without authorization.
4. Any damage to existing trees during construction shall be the responsibility of the applicant/contractor. The applicant shall mitigate any damage at their expense to the satisfaction of the Public Landscape Division. Final signoff will not be approved until mitigation is resolved.
5. Approved tree removals are to be posted for public review and removed immediately after the review period provided there is no appeal. The applicant/contractor is responsible for confirming there is no appeal prior to the approved removal. Removal cost is included in approved removals.
6. Schedule an appointment with Public Landscape Division staff at 310-458-8974 to review any tree parts in conflict with construction. Pruning for construction clearance shall only be done by Public Landscape Division staff approval.
7. All public trees being preserved are to receive water per the City of Santa Monica guidelines for watering trees during a drought. Water shall not be pooled around the tree at any time.

8. Prior to the release of a demo or construction permit, the tree protection fence shall be made with six foot (6 ft) high chain link with fence posts in the ground. Tree wells may be marked to be expanded by applicant to best install tree protection fence prior to demo or proposed work. The fence is to be maintained throughout the entire duration of the project and is not to be removed without written permission from the Public Landscape Division. Contact Public Landscape Division staff at 310-458-8974 or Public.Landscape@santamonica.gov if there are any questions about determining the precise requirements of the tree protection fence. "Tree Protection Zone" signs can be picked up at 1601 14th St in Santa Monica.
9. Metal tree grates, cobblestones or other debris in the parkway are to be removed prior to tree protection fence installation.
Apply three to four inches of mulch to the entire area inside the tree protection fence over the soil surface to reduce soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch generally consists of shredded leaves, bark, pine straw, peat moss and/or wood chips. Weeds and overgrown grass are to be mowed and/or removed prior to mulch installation and maintained throughout the project.
10. At no time shall any vehicles, equipment, supplies, materials, fill, or soil be allowed/stockpiled in the Tree Protection Zone.
11. In the case of tree protection deficiency, as identified by the Public Landscape Division, immediate remedy at the cost of the applicant/contractor is to be completed within the timeframe issued by the Public Landscape Division. Failure to correct the deficiency within the designated timeframe may result in a delayed final sign-off, stop work order, summons and/or fines.
12. Take note that the critical root zone may encroach on private property. This should be reviewed with the Public Landscape Division staff to minimize impact on existing tree roots during excavation.
13. The minimum distance between an open trench and any tree shall be between six inches (6") and one foot (1') for every inch of trunk diameter measured at four and a half feet (4 ½') above existing grade, depending on the species of tree. Minimum clearance shall be ten feet (10') from either the trunk of the tree or the dripline (whichever is greater).
14. Should it be necessary to trench within the dripline of a tree all trenches shall be done carefully with an air spade or by hand. If at any time twenty-five percent (25%) of the area within the critical root zone is being separated from the tree by a trench, then the line shall be either relocated or trenchless methods are to be used. No roots larger than two inches (2") shall be cut unless approved by urban forestry staff. All smaller roots that require cutting shall be cut with clean, sterile pruning tools. Cuts shall be made flush with the side of the trench.
15. The excavation area within the tree protection zone shall be backfilled immediately. Roots shall be kept moist by wrapping them with burlap and white plastic and checked a minimum of two times a day. Burlap shall be inspected

once in the morning and again in the afternoon. If directed, soaker hoses shall be installed to facilitate properly moist conditions.

16. If roots are to be exposed for a period greater than forty-eight (48) hours, the exposed area shall be covered with at least six (6) inches of mulch and maintained moist during the course of construction until the area can be properly backfilled. Periodic photos must be provided to Santa Monica Urban Forestry staff by the contractor or contracted certified arborist.
17. No runoff or spillage of noxious materials while mixing, placing or storing construction material shall occur within the tree protection zone. No ponding, eroding or excessive wetting caused by dewatering or equipment cleaning operations shall occur within the tree protection zone or critical root zone.
18. In the event root pruning is required to accommodate grade changes or the installation of hardscape features the root pruning procedures can be recommended by a consulting arborist but shall be directed by Santa Monica Urban Forestry staff.
19. Concrete should be left intact throughout the demolition and construction process to prevent further soil compaction on existing tree roots. Other work may be specified by Santa Monica Urban Forestry staff to be completed within a prescribed timeframe if required upon inspection.
20. Removal of hardscape and/or excavation within the TPZ shall be done manually. To best protect tree roots, the applicant shall exercise extreme care in removing concrete or asphalt within the dripline of existing trees. Pavement should be lifted rather than dragged. Any excavation within the dripline, on site as indicated shall be broken with pneumatic tools and removed by hand in the presence of the Santa Monica Urban Forestry staff or the contracted certified arborist with associated photos and report submitted to Santa Monica Urban Forestry staff. Applicant shall schedule appointments with Santa Monica Urban Forestry staff at least one week in advance.
21. If any vehicles are to pass over unpaved ground in conflict with the tree protection zone, the pathway will be covered with at least six (6) inches of course mulch/wood chips and covered with $\frac{3}{4}$ inch exterior plywood, $\frac{1}{2}$ inch steel plates, ground protection mats or combination thereof, to abate soil compaction and root damage caused by heavy equipment. The plywood and/or steel plates shall be installed doubled up in a half lap configuration and staked or secured to prevent shifting. Such coverings shall be maintained during the course of construction and removed by hand or as specified by the contracted certified arborist or Santa Monica Urban Forestry staff. Associated photos shall be reported accordingly.
22. Fertilizer application to encourage root growth after the completion of all exterior work on the building prior to the parkway landscape phase is to occur. This could be granular or soil drench application. Your arborist can contact Santa Monica Urban Forestry staff for best direction.