

Austin Technical Manuals - Standard Specifications Preservation of Trees and Other Vegetation (610S) 03/27/2000

610S.1 Description

This item shall govern the proper care and treatment of all trees and other vegetation in the vicinity of any development activity.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text and accompanying tables, the inch-pound units are given preference followed by SI units shown within parentheses.

610S.2 Submittals

The submittal requirements for this specification item shall include:

- A. Identification of the location, type of protective fencing (i.e. A, B or C), materials of construction and installation details;
- B. Proposed tree dressing;
- C. Type, location and construction details for proposed tree wells;
- D. Location, type, materials of construction and installation details for permeable paving;
- E. Type and rate of application of fertilizer;

610S.3 Materials

A. Protective Fencing

Protective fencing is designated as the materials used to protect the root zones of trees as illustrated in City of Austin Standard Detail 610S-1. Three basic types of protective fencing materials are allowed by the City of Austin. Type A and Type B are typical applications and shall be installed where damage potential to a tree root system is high, while Type C shall be installed where damage potential is minimal. The specific type of protective fencing for the work shall be as indicated on the Drawings. Type C fence materials shall be subject to approval by the City Arborist for Site Permit Projects, or the Engineer or designated representative for The City of Austin administered projects. Type C fencing shall be replaced by Type A or Type B fencing as directed by the Engineer or designated representative if it fails to perform the necessary function.

1. Type A Chain Link fence (Typical Application-high potential damage)

Type A protective fencing shall be installed in accordance with City of Austin Standard Details 610S-2 and 610S-4 and shall consist of a minimum five-foot (1.5 meters) high chain link fencing with tubular steel support poles or "T" posts.

2. Type B Wood Fence (Typical Application-high potential damage)

Type B protective fencing shall be installed in accordance with City of Austin Standard Details 610S-3 and 610S-5 and shall consist of any vertical planking attached to 2x4-inch (50 x 100 mm) horizontal stringers which are supported by 2x4-inch (50 x 100 mm) intermediate vertical supports and a 4x4-inch (100 x 100 mm) at every fourth vertical support .

3. Type C Other Materials (Limited Application-minimal potential damage)

The following materials may be permitted as alternates for limited or temporary applications (3 days or less) where tree damage potential is minimal (as determined by the City Arborist or designated representative for Site Permit Projects, or the Engineer or designated representative on City of Austin administered projects):

(a) High visibility plastic construction fencing.

The fabric shall be 4 feet (1.2 meters) in width and made of high density polyethylene resin, extruded and stretched to provide a highly visible international orange, non-fading fence. The fabric shall remain flexible from -60°F to 200°F (-16°C to 93°C) and shall be inert to most chemicals and acid. The fabric pattern may vary from diamond to circular with a minimum unit weight of 0.4 lbs./Ft. (0.6 kilograms per meter).

The fabric shall have a 4 foot (1.2 meters) width minimum tensile yield strength (Horizontal) of 2000 psi [13.9 megaPascals], ultimate tensile strength of 2680 psi [18.5 megaPascals] (Horizontal) and a maximum opening no greater than 2 inches (50 mm).

(b) Other approved equivalent restraining material.

The fencing materials, identified in (a) and (b) above, shall be supported by-steel pipe, tee posts, U posts or 2" x 4" (50 mm x 100 mm) timber posts that are a minimum of 5-1/2 feet (1.68 meters) in

height and spaced no more than 8 feet (2.44 meters) on centers. The fabric shall be secured to post by bands or wire ties.

B. Trunk Protection (Limited Application)

When indicated on the Drawings or directed by the City Arborist or designated representative for Site Permit Projects or the Engineer or designated representative for City of Austin administered projects, tree trunk protection shall be provided in accordance with City of Austin Standard Details 610S-4 and 610S-5. Tree trunk protection shall consist of any 2 x 4-inch (50 x 100 mm) or 2 x 6-inch (50 x 150 mm) planking or plastic strapping.

C. Tree Dressing

Tree dressing of any damaged areas shall be accomplished using any approved asphaltic tree wound paint, immediately after damage occurs.

D. Tree Wells for Raised Grades

When existing grades are raised by more than 6 inches (150 mm), the tree root system shall be protected by the installation of tree wells in accordance with City of Austin Standard Detail 610S-6. Native stone, railroad ties or equivalent timber shall be used for the separator wall of the well and PVC conforming to ASTM D-2729, SDR-35 shall be used for the aeration systems in fill areas.

E. Permeable Paving (Environmental Criteria Manual Section 3.5.A.1)

Permeable segmented pavers in conjunction with PVC pipe aeration system or concrete on gravel base with cored holes shall be used to protect existing tree root zones when indicated on the Drawings or directed by the City Arborist or designated representative for Site Permit Projects or the Engineer or designated representative for City of Austin administered projects.

F. Fertilizer

Fertilizer shall conform to City of Austin Standard Specification Item No. 606S, "Fertilizer".

610S.4 Construction Methods

A. Protective Fencing

All trees and shrubs in the proximity of the construction site shall be carefully checked for damage prior to initiation of any development activity.

All individual trees, shrubs, and natural areas scheduled for preservation shall be protected during construction with temporary fencing as indicated on the Drawings or directed by the City Arborist or designated representative for Site Permit Projects or the Engineer or designated representative for City of Austin administered projects.

Protective fences (section 610S.3.A) shall be installed prior to the start of any site preparation work (clearing, grubbing, or grading), and shall be maintained in functioning condition throughout all phases of the construction project.

Protective fence locations in close proximity to intersecting streets or drives shall adhere to the sight distance (Section 1.3.1.C.6) and desirable sight triangle (Figure 1-6 criteria found in the City of Austin Transportation Criteria Manual).

1. Protective fences shall be constructed at the locations (typically the outer limits of the Critical Root Zone) and with materials indicated on the Drawings to prevent the following (Environment Criteria Manual, Appendix P-2, Note 6):

- (a). Soil compaction in the root zone area resulting from vehicular traffic or storage of equipment or materials.
- (b). Root zone disturbances due to grade changes [greater than 6" (150 mm) cut or fill] or trenching not reviewed and authorized by the City Arborist or designated representative or the Engineer or designated representative.
- (c). Damage to exposed roots, trunks or limbs by mechanical equipment.
- (d). Other activities detrimental to trees such as chemical storage, concrete truck cleaning, and fires.

2. Exceptions to the installation of protective fences at the tree drip lines may be permitted in the following cases:

- (a). Where there is to be an approved grade change, impermeable paving surface, tree well, or other such site development, the fence shall be erected approximately 2 to 4 feet (0.6 to 1.2 meters) beyond the area of disturbance;
- (b). When permeable paving is to be installed within a tree drip line, the fence shall be erected at the outer limits of the permeable paving area (prior to any site grading so that this enclosed area is graded separately to minimize root damage);

- (c). When trees are located close to a proposed building or other construction activity (Environment Criteria Manual, Appendix P-2, Note 6.c), the fence shall be erected to allow 6 to 10 feet (1.8 to 3 meters) work space between the fence and the structure and apply organic mulch to a depth of four (4) to six (6) inches [100 to 150 mm] in the unprotected root zone area;
- (d). When there are street-side pedestrian walkways, fences shall be constructed in a manner that does not obstruct safe passage;
- (e). When there are severe space constraints due to tract size or other special requirements, the Contractor shall contact the City Arborist on Site Permit projects or the Engineer or designated representative for City Administered projects to discuss alternatives.

When any of the exceptions listed above will result in a fence being located closer than five (5) feet (1.5 meters) to a tree trunk, the Contractor shall also protect the trunk with strapped-on planking to a height of 8 feet [2.4 meters] (or to the limits of lower branching) in addition to the reduced fencing required (City of Austin Standard Details 610S-4 and 610S-5).

B. Repair of Damage

Tree roots scarred by equipment shall be cut cleanly and covered with topsoil. When tree roots are pruned, a comparable portion of selected branches shall be cut from the tree on the opposite side. Limb pruning shall be made at the branch collar as indicated on the Drawings. All limbs greater than 1 inch (25 mm) in diameter shall be precut in accordance with ANSI 300 pruning methods to prevent splitting. All cut limbs shall be treated with an approved tree dressing. Tools shall be disinfected with alcohol or 5 ppm chlorine solution between repairs to trees to prevent the transmission of diseases from one tree to another.

All trees damaged during construction shall receive an application of fertilizer within the drip line conforming to Standard Specification Item No. 606S, "Fertilizer" at the rate of 4 pounds per caliper inch (.07 kilograms per caliper mm).

C. Cutting and Filling Around Trees

When the depth of an excavation or embankment exceeds 6 inches (150 mm) within the drip line of any tree with a diameter greater than 8 inches (200 mm), a tree well (Section 610S.3.D and City of Austin Standard Detail 610S-6) shall be constructed to protect the tree as indicated on the Drawings.

D. Paving Around Trees

Where paving within the dripline of any tree greater than a 6 inch (150 mm) diameter is necessary, a permeable pavement and aeration system (Section 610S.3.E, Environmental Criteria Manual Section 3.5.A.1 and Figure 3-8) must be installed as indicated on the Drawings, except for street construction.

E. Tree Removal

Any trees which are indicated on the Drawings for removal or which may interfere with the construction shall be removed subject to the approval of the Engineer or designated representative. Trees with diameters that exceed 19 inches (483 mm) as measured 4 1/2 feet (1.37 meters) above the existing ground, shall require review by the City Arborist or designated representative (Environmental Criteria Manual Section 3.3.2.A.2) prior to removal in accordance with the Tree Ordinance (Land Development Code Section 25-8-623). When a tree or shrub is scheduled for removal, it shall be cut to a depth of 12 inches (300 mm) below the surrounding ground line. After removal, soil shall be placed in the hole to a depth matching the existing grade. The tree shall be cut into sections that can be managed, removed from the site and disposed of. All work shall be conducted in such a manner as to protect all facilities, improvements and vegetation in the work area.

All damage resulting from tree removal or pruning shall be repaired at the Contractor's own expense.

F. Final Cleanup

All temporary tree and shrub preservation and protection measures shall be removed when the construction has been completed.

610S.5 Measurement

Tree and shrub trimming, fencing, drains, fertilization, etc. will not be measured for payment unless included as a contract pay item. Tree wells for tree protection will be measured by the units, complete in place, conforming to the Drawings and City of Austin Standard Detail 610S-6, "Tree Protection, Tree Wells".

610S.6 Payment

The work and materials prescribed herein with the exception of the Tree Wells will not be paid for directly but shall be considered subsidiary to other items unless a payment item is included as a contract pay item.

Payment will be made under:

Pay Item 610S-A: Protective Fencing Type A Chain Link fence
(Typical Application-high damage potential) Per Lineal Foot

Pay Item 610S-B: Protective Fencing Type B Wood Fence
(Typical Application-high damage potential) Per Lineal Foot

Pay Item 610S-C: Protective Fencing Type C Other Materials
(Limited Application-minimal damage potential) Per Lineal Foot

Pay Item 610S-D: Tree Well (Tree Protection) Per Each.

End

<i>SPECIFIC</i> CROSS REFERENCE MATERIALS
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City of Austin Standard Specification Items

Designation	Description
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Item No. 606S	Fertilizer
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City of Austin Standard Details

Designation	Description
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Item No. 610S-1	Tree Protection Fence Locations
Item No. 610S-2	Tree Protection Fence, Type A, Chainlink
Item No. 610S-3	Tree Protection Fence, Type B, Wood
Item No. 610S-4	Tree Protection Fence, Modified Type A, Chainlink
Item No. 610S-5	Tree Protection Fence, Modified Type B, Wood
Item No. 610S-6	Tree Protection, Tree Wells

City of Austin Transportation Criteria Manual

Designation	Description
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Section 1.3.1.C.6	Sight Distance
Figure 1-6	Desirable Sight Triangle

City of Austin Environmental Criteria Manual

Designation	Description
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Appendix P-2, Note 6	Exceptions to Installing Fences
Appendix P-2, Note 6c	Trees close to proposed buildings-----
Section 3.3.2.A.2	Diameter of trees-----
Section 3.5.0	Design Criteria
Section 3.5.3.A.1	Permeable Paving
Figure 3-8	Example of Minimum Design Criteria Applied to Permeable Parking

City of Austin Land Development Code

Designation	Description
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Section 25-8-623	Inspection by City Arborist
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ASTM, American Society for Testing and Materials

Designation	Description
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D-2729	Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
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<i>RELATED</i> CROSS REFERENCE MATERIALS

Specification 610S, "Preservation of Trees and Other Vegetation"
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City of Austin Standard Specification Items

Designation	Description
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Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 132S	Embankment
Item No. 606S	Fertilizer
Item No. 608S	Planting

Texas Department of Transportation: Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges

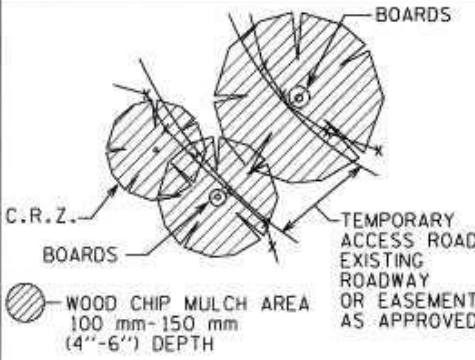
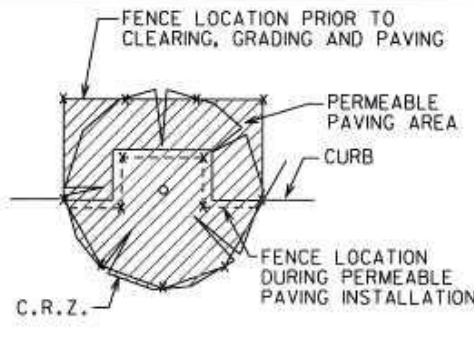
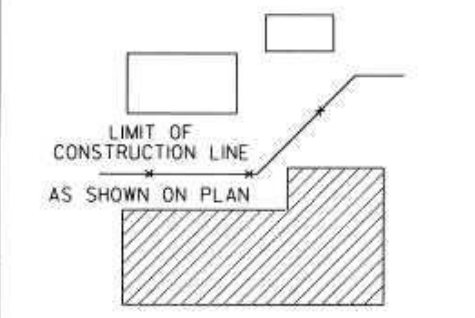
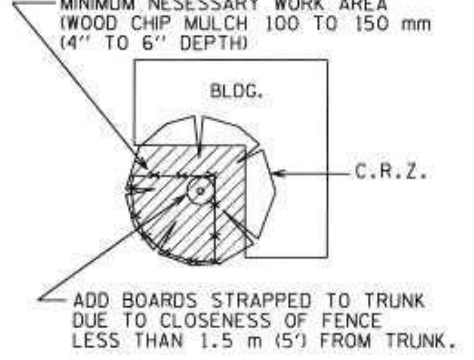
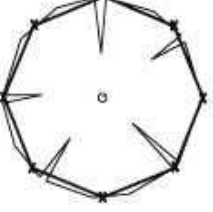
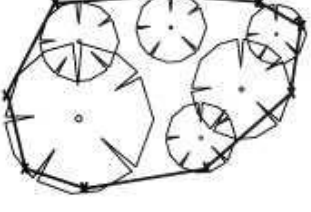
<u>Designation</u>	<u>Description</u>
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Item No. 100	Preparing Right of Way
Item No. 110	Excavation
Item No. 132	Embankment
Item No. 158	Specialized Excavation Work
Item No. 160	Furnishing and Placing Topsoil
Item No. 166	Fertilizer
Item No. 168	Vegetative Watering

STANDARDS – ENVIRONMENTAL (SERIES 600)

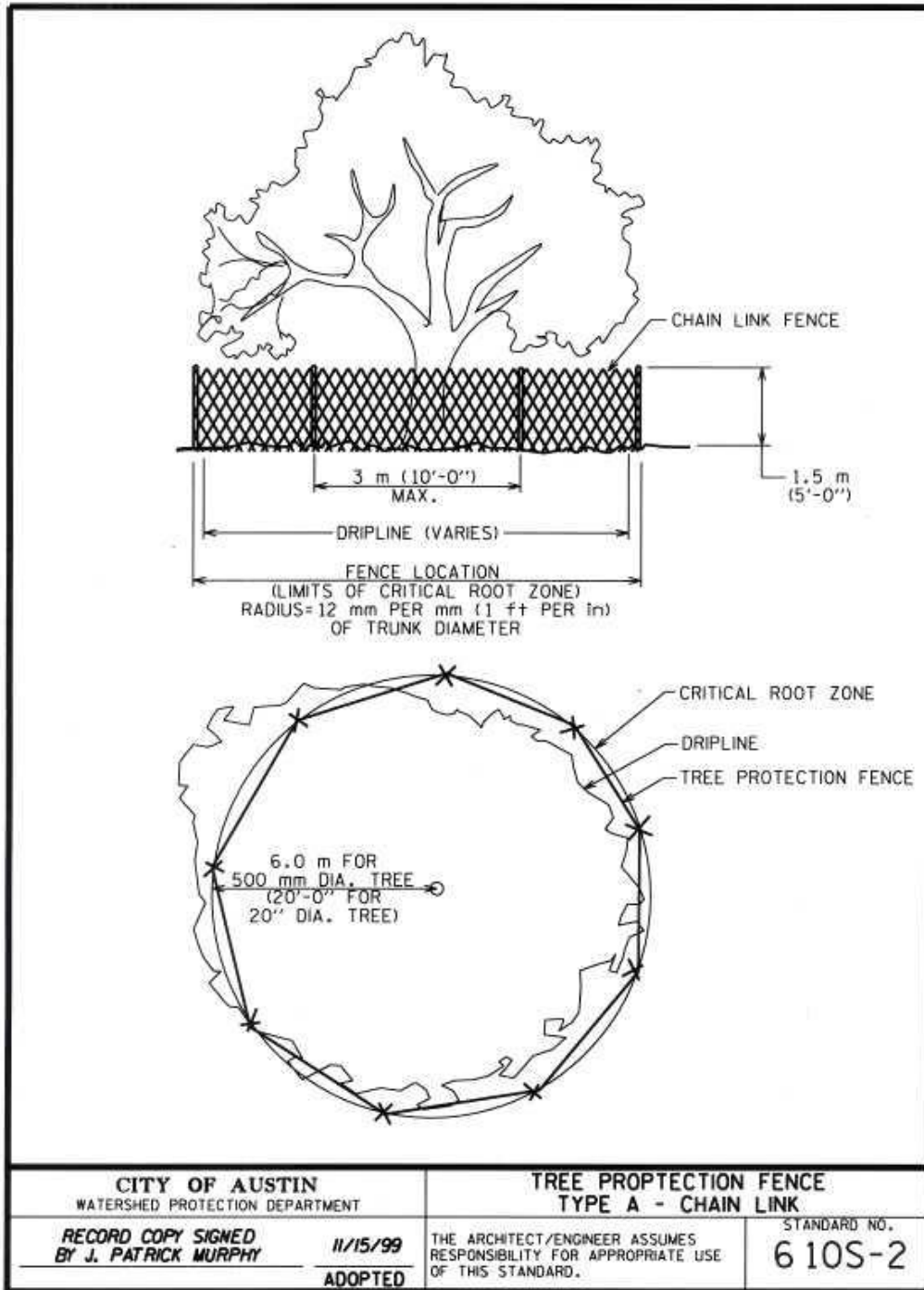
610S-1

Tree Protection Fence Locations

 <p>BOARDS</p> <p>C.R.Z.</p> <p>BOARDS</p> <p>WOOD CHIP MULCH AREA 100 mm-150 mm (4"-6") DEPTH</p> <p>TEMPORARY ACCESS ROAD, EXISTING ROADWAY OR EASEMENT AS APPROVED</p> <p>LINEAR CONSTRUCTION THROUGH TREES</p>	 <p>FENCE LOCATION PRIOR TO CLEARING, GRADING AND PAVING</p> <p>PERMEABLE PAVING AREA</p> <p>CURB</p> <p>FENCE LOCATION DURING PERMEABLE PAVING INSTALLATION</p> <p>C.R.Z.</p> <p>TREES IN PAVING AREA</p>
 <p>LIMIT OF CONSTRUCTION LINE AS SHOWN ON PLAN</p> <p>NATURAL AREAS</p>	 <p>MINIMUM NECESSARY WORK AREA (WOOD CHIP MULCH 100 TO 150 mm (4" TO 6" DEPTH)</p> <p>BLDG.</p> <p>C.R.Z.</p> <p>ADD BOARDS STRAPPED TO TRUNK DUE TO CLOSENESS OF FENCE LESS THAN 1.5 m (5') FROM TRUNK.</p> <p>TREES NEAR CONSTRUCTION ACTIVITY</p>
<p>CRITICAL ROOT ZONE (C.R.Z.) RADIUS = 12 mm PER mm (1 FT. PER INCH) OF TRUNK DIAMETER</p>  <p>INDIVIDUAL TREE</p>	 <p>GROUP OF TREES</p>
<p>CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT</p>	
<p>TREE PROTECTION FENCE LOCATIONS</p> <p>RECORD COPY SIGNED BY J. PATRICK MURPHY</p> <p>11/15/99 ADOPTED</p> <p>THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.</p> <p>STANDARD NO. 610S-1</p>	

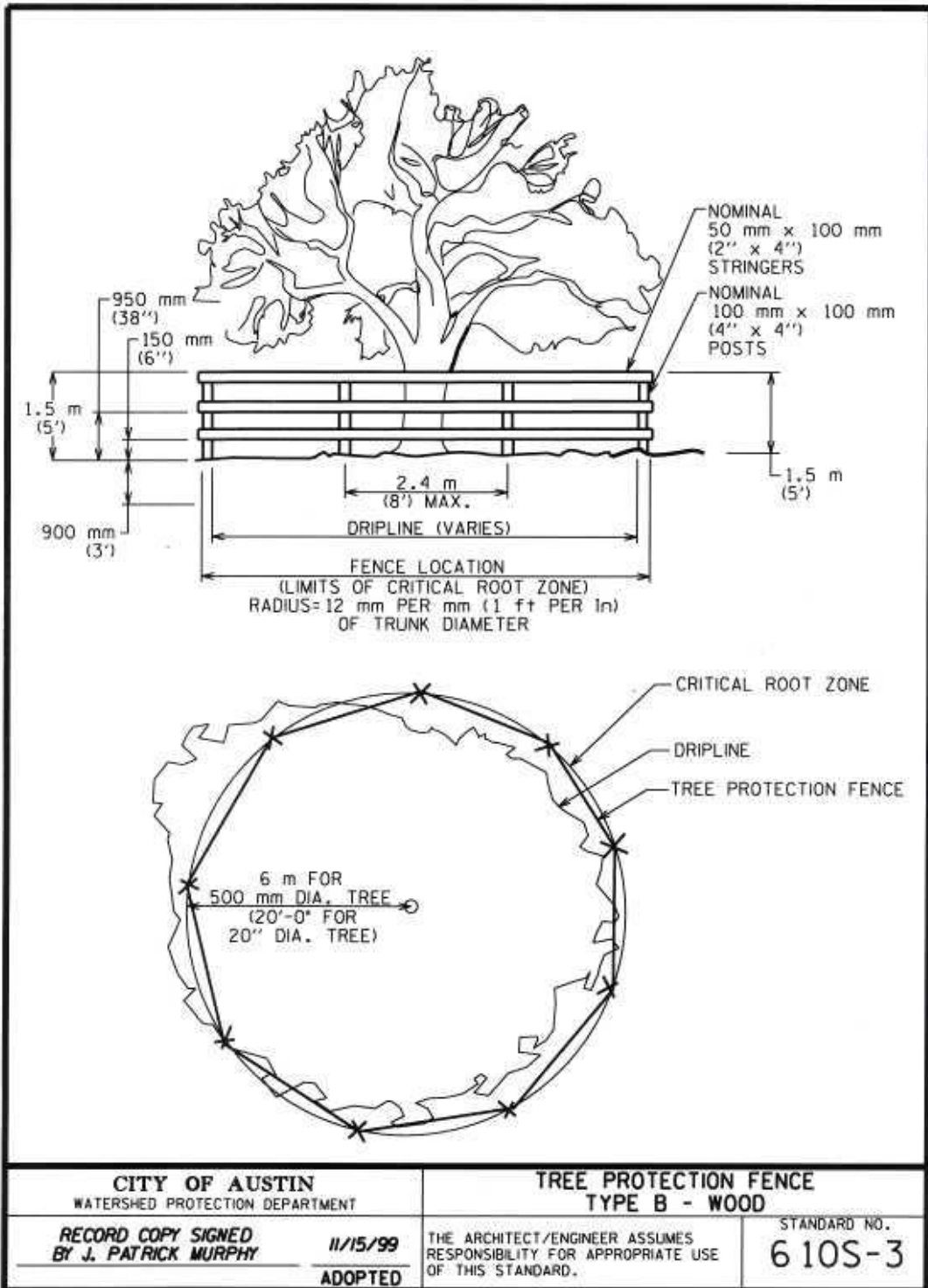
610S-2

Tree Protection Fence Type A – Chain Link



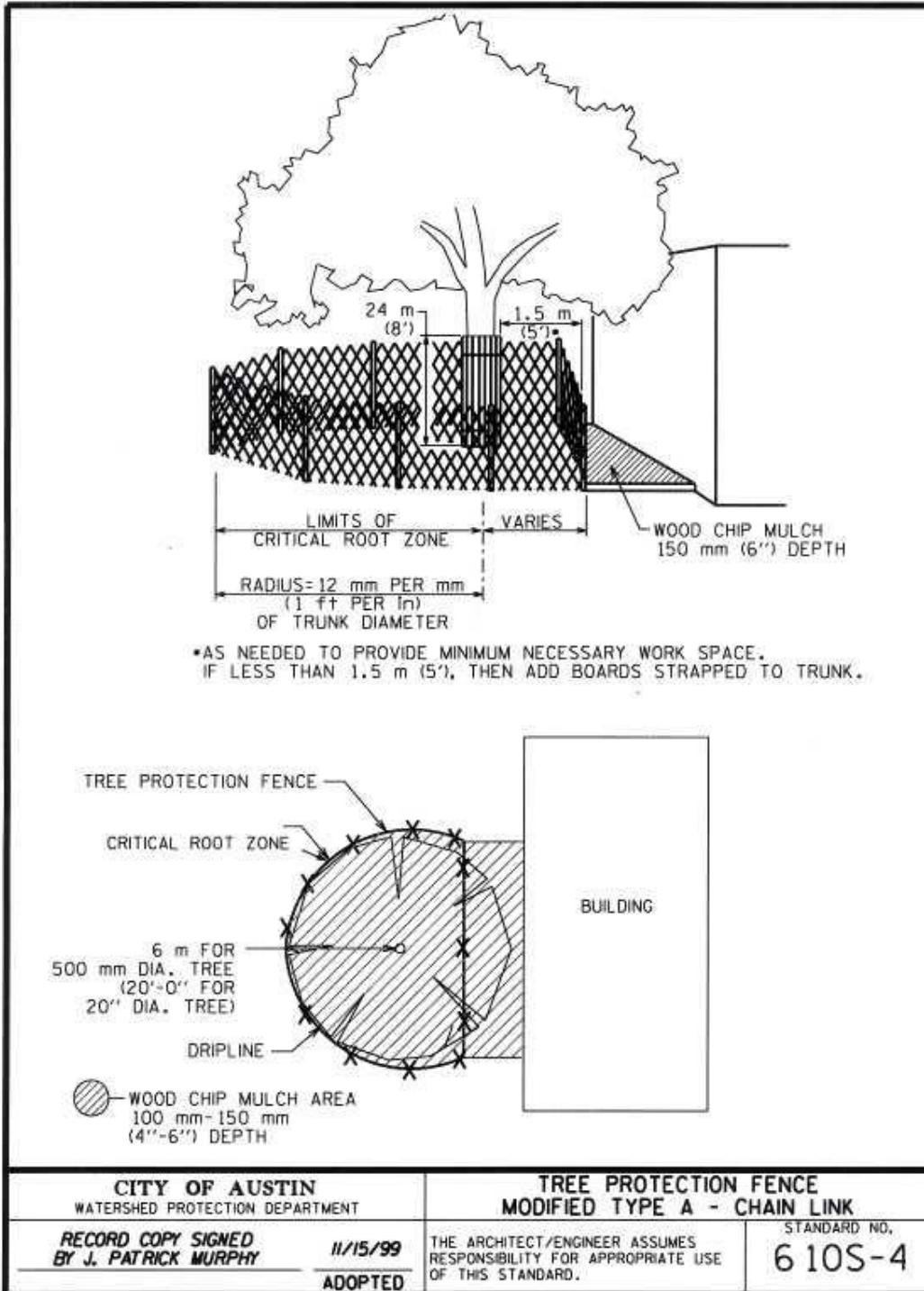
610S-3

Tree Protection Fence Type B – Wood

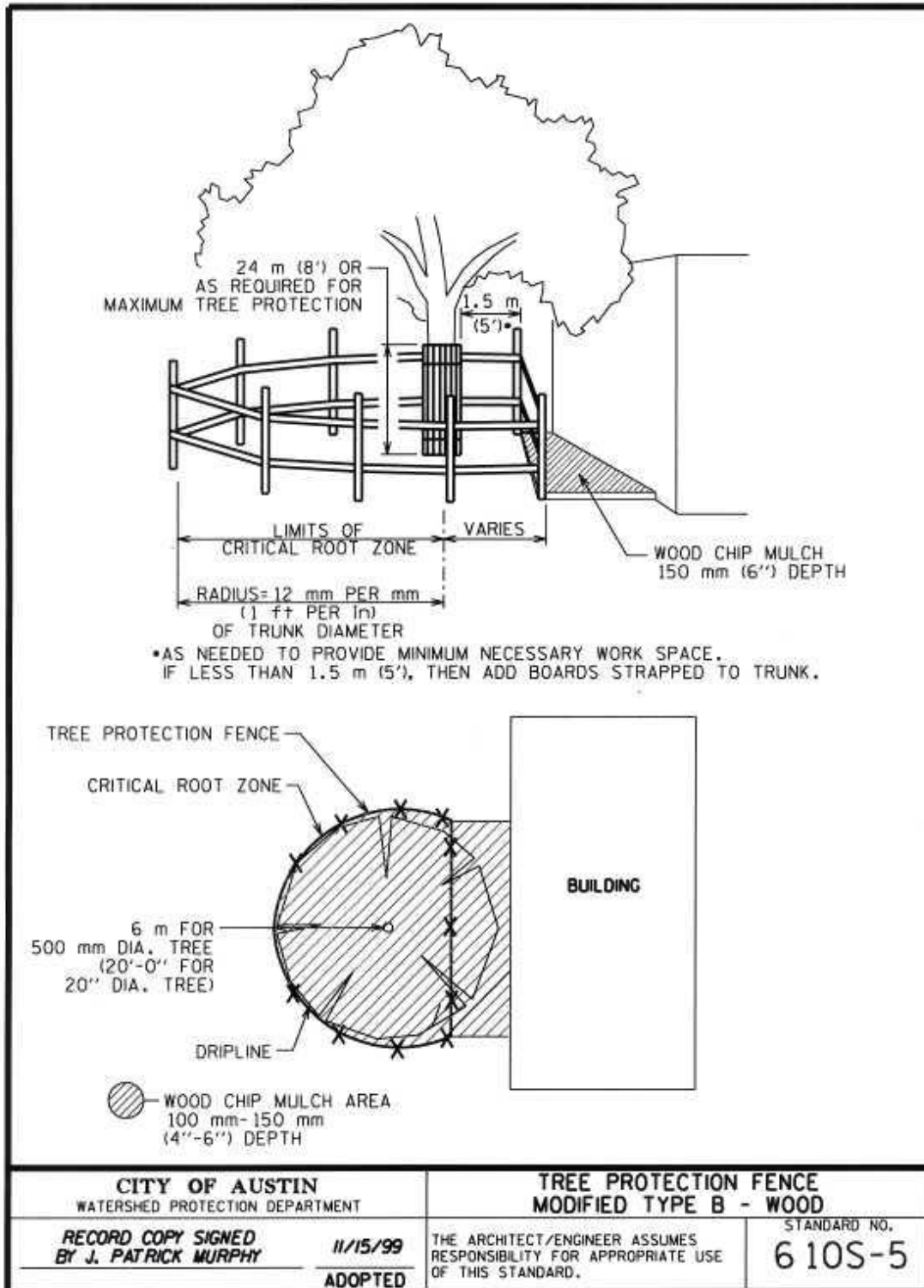


610S-4

Tree Protection Fence Modified Type A – Chain Link



610S-5 Tree Protection Fence Modified Type B – Wood



WALL SECTION:

- 150 mm (6") MIN. (width of footing)
- VARIES 1.8 m (6') MIN. (height of wall)
- 150 mm X 300 mm X 600 mm (6" X 1' X 2') LIMESTONE
- 75 mm (3") GRANULAR BLANKET SEE ITEM 2105 FLEXIBLE BASE
- 2 STONE LAYERS MORTARED SEE ITEM 403.2 (6) MORTAR (GROUT)
- FILTER FABRIC OVER ERODIBLE, AS DEFINED BY ENGINEER
- ENGINEERED REINFORCED CONCRETE FOOTING
 - BARS ϕ mm (---") C-C E.W.
 - mm (---") WIDE
 - mm (---") THICK

PERMANENT PROTECTIVE WALL: Shows a tree with a proposed cut and fill slope.

OPEN TREE WELL: Shows a tree with a well structure on original ground.

TREE WELL WITH RAISED GRADE: Shows a tree with a well structure on raised grade, including vertical tiles, drain tiles, fill, and loose stone.

NOTES:

- DESIGN AND CONSTRUCTION OF ROCK WALL SHALL CONFORM TO THE REQUIREMENTS OF CITY CODE 16-7-2, PLACEMENT OF FENCES IN STREET CORNER AREAS, AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL FOR MINIMUM SIGHT DISTANCE.
- CONCRETE SHALL CONFORM TO ITEM 403, 'CONCRETE FOR STRUCTURES'.

THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:

- H AND Z ARE SPECIFIED ON THE DRAWING.
- GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
- THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.
- THE MATERIAL BEHIND THE WALL HAS A LEVEL SURFACE.
- THE MATERIAL IN FRONT OF THE WALL HAS A SLOPE NO STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL.
- THE FACE OF THE WALL IS NO STEEPER THAN 1 HORIZONTAL TO 2 VERTICAL.
- SURCHARGE LOADS BEHIND THE WALL ARE NO CLOSER THAN DISTANCE H FROM THE TOP OF WALL.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROTECTION, TREE WELLS		CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		TREE PROTECTION, TREE WELLS	
RECORD COPY SIGNED BY J. PATRICK MURPHY	3/27/00	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-6 1 OF 2	RECORD COPY SIGNED BY J. PATRICK MURPHY	3/27/00	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 610S-6 2 OF 2
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