SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

TIPS:

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the protection and trimming/pruning of existing trees and plants that are affected by or interfere with execution of the Work, whether temporary or permanent construction.

B. Includes measures for protecting existing plantings and vegetation in place before construction begins.

1.2 DEFINITIONS

A. Tree: Any tree, palm, or shrub, regardless of current size or form, determined by Trust to warrant the protections as set forth herein.

B. Plant/Vegetation: Any plants, flowers, bush, grasses, planted ground cover, regardless of size or form, determined by Trust to warrant the protection set forth herein.

C. Injury: Without limitation, is any bruising, scarring, tearing, breaking of roots, branches, or trunk, and/or changes in tree health and physical condition including but not limited to loss of vigor, infestation, leaning of trunk.

D. Drip line: The outermost limits of the tree canopy.

E. Tree Protection Measures: Trust-accepted work and controls intended to protect existing Trees To Be Preserved from physical damage and/or harmful changes in growing conditions as may be established by Trust throughout the Project duration.

F. Tree Protection Zone(s): Trust-Forestry accepted areas of the Project subject to tree protection requirements as established herein and/or delimited on the Project Documents or modified by written instruction issued by Trust.

G. Plant Protection Zone(s): Trust-Natural Resources accepted areas of the Project subject to vegetation protection requirements as established herein and/or delimited on the Project Documents or modified by written instruction issued by Trust.

H. Project: The total demolition, construction, and implementation of the Work to be provided under the Contract Documents.

1.3 SUBMITTALS

A. See Section 013300 “Submittal Procedures” for requirements pertaining to submittals.

B. Tree Protection Plan:

1. Submit a Tree Protection Plan to Trust for review and to obtain Trust acceptance prior to commencing any staging, mobilization, or other construction activities on Project Site.
2. Identify construction activities planned within Tree Protection Zones and within canopy drip line area of all trees identified in the Documents and Drawings as “Trees To Be Preserved”.

    a. Construction activities include but are not limited to: proposed equipment/vehicle access routes; equipment staging locations and aerial movements; ground disturbing construction means and methods; storage and stockpile locations/types; construction fencing locations; and required Tree Protection Measures.

3. Promptly notify Trust of proposed changes to the previously accepted Tree Protection Plan where and when such proposed changes occur beneath the tree canopy or within the Tree Protection Zone, whichever is the greater. Obtain Trust acceptance for all such changes prior to proceeding with the Work affected.
4. Installed Tree Protection Measures: Obtain Trust acceptance of installed Tree Protection Measures prior to commencement of any construction, including mobilization or staging activities, on site. Once accepted by Trust, the installed Tree Protection Measures must not be removed nor altered without the prior written approval of Trust.
5. Periodic Field Assessment: Trust reserves the right to periodically visit the Project Site and observe Tree Protection Measures at any time during normal working hours throughout the Project Duration. Trust will issue a Field Assessment and Observation Report describing any remedial actions required based on Project Site observations.

C. **[Plant Protection Plan:**

1. Submit a Plant Protection Plan to Trust for review and to obtain Trust acceptance prior to commencing any staging, mobilization, or other construction activities on site.
2. Identify construction activities planned within Plant Protection Zones identified in the Documents and Drawings as “Plants To Be Preserved.”

a. Construction activities include but are not limited to: any foot traffic; proposed equipment/vehicle access routes; equipment staging locations; ground disturbing construction means and methods; storage and stockpile locations/types; construction fencing locations; and required Plant Protection Measures.

3. Promptly notify Trust of proposed changes to the previously accepted Plant Protection Plan. Obtain Trust acceptance for all such changes prior to proceeding with the Work affected.
4. Installed Plant Protection Measures: Obtain Trust acceptance of installed Plant Protection Measures prior to commencement of any construction, including mobilization or staging activities, on site. Once accepted by Trust, the installed Plant Protection Measures must not be removed nor altered without the prior written approval of Trust.

5. Periodic Field Assessment: Trust reserves the right to periodically visit the Project Site and observe Plant Protection Measures at any time throughout the Project Duration. Trust will issue a Field Assessment and Observation Report describing any remedial actions required based upon site observations.]

D. Product Data: For each type of product indicated.

E. Tree Pruning Schedule: Written schedule from Arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

F. Qualification Data: For tree service firm and arborist.

G. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

H. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.4 PRE-CONSTRUCTION AND PREINSTALLATION MEETING

A. Preinstallation Conference: Conduct conference at the Project Site to comply with requirements in Section 013100 "Project Management and Coordination."

1. Before any tree protection and trimming operations begin, meet with representatives of any authorities having jurisdiction, Trust Forestry, Trust Representative, Architect/Engineer, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.

B. Conduct pre-construction meeting at the Project Site in the Presidio.

C. All Other contractors: Arrange and have all other contractors working in the vicinity of Trees To Be Preserved attend a Pre-Construction Meeting with Trust to review Project specific tree protection requirements and review work procedures prior to commencing on-site activities. Schedule meeting after Tree Protection Measures have been installed and accepted by Trust.

1.5 QUALITY ASSURANCE

A. Qualifications of Workers: Tree Work must be performed by Tree Work Contractor(s), under the direct supervision of a Certified Arborist, and when required by Trust, continuously monitored by Trust. Coordinate scheduling of Work with the availability of the designated monitor. Provide at least one person accepted by Trust who must be present at all times during tree protection and

trimming operations, who must be thoroughly familiar with the type of work involved, and who will direct all protection and trimming work.

1. Tree Work Contractor: Trust-accepted, licensed, bonded, and insured Contractor possessing a valid State of California Type 61-D49 Contractor License. The Tree Work Contractor must continuously maintain on staff a Certified Arborist and crews fully trained and experienced in performing the types of Tree Work required.

B. Arborist: An arborist certified by the International Society of Arboriculture (ISA). The Arborist must possess a good working knowledge of tree species occurring within the Project Site and the growing conditions present at the Presidio. The Arborist cannot be removed from the Project without Trust acceptance of proposed replacement.

C. References and Standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to the Work of this Section.

1. "Council of Tree and Landscape Appraisers Guide for Plant Appraisal" 10th edition revised. prepared by the Council of Tree and Landscape Appraisers (CTLA).
2. "Best Management Practices – Root Management," published by the International Society of Arboriculture.
3. "Best Management Practices- Pruning", 3rd edition, published by International Society of Arboriculture.
4. Best Management Practices – Tree Planting" 2nd edition, published by the International Society of Arboriculture.
5. American National Standards Institute (ANSI) Z 133.1 (2017), and ANSI A300 Parts 1 -8 Standards
6. "Best Management Practices - Managing Trees During Site Development and Construction" 3rd ed., published by the International Society of Arboriculture

D. Tree Protection Standards and Monitoring: Perform Work in accordance with all applicable provisions of the American National Standards Institute (ANSI) standards referenced above, in a manner consistent with ISA Standards and Best Management Practices, and in accordance with all applicable safety regulations and applicable Trust-accepted Submittals.

E. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for the Project and that will assign an experienced, qualified arborist to the Project site during execution of tree protection and trimming.

F. During the course of construction and throughout the Project duration, take all necessary precautions to protect the existing "Trees To Be Preserved" from injury or death. Protection must be given to the roots, trunk, and foliage of all existing trees to remain.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Drainage Fill:

1. In accordance with the requirements of Section 310516 “Aggregates for Earthwork.”
2. ASTM D 448 Size 24 with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.

B. Topsoil:

1. In accordance with the requirements of Section 310513 “Soils for Earthwork.”
2. Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of weeds, roots, and toxic and other non-soil materials.
3. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Chain-Link Fence: Unless otherwise indicated on the Tree Protection Plan or expressly permitted by Trust in writing, 6-foot high self-supporting metallic chain link fence, sturdy and capable of acting as a barrier against objects, vehicles, etc., and designed so as to allow for relocations as required and must have gate access to inside for care of tree. It must be continuously maintained and repaired as necessary.

E. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:

1. Type: Wood and bark chips
2. Size Range: 3 inches maximum, 1/2 inch minimum

F. Snow Fence for Plant Protection (separate from tree protection fencing): To prevent equipment and foot traffic in Plant Protection Zone(s) construct a barrier around the protected plants.

1. Type: 4-ft tall, orange, secured in the ground by posts.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the limits of Work as laid out on the ground, confirm locations of trees matches design documents and construction approach does not change the impacts to Tree Protection Zones.

B. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

3.2 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Erection of sheds or structures.
4. Impoundment of water.
5. Excavation or other digging unless otherwise indicated.
6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

3.3 PREPARATION

A. See Section 015000 "Temporary Facilities and Controls" for temporary controls, utilities, support facilities, temporary site fencing, and, if applicable, temporary erosion and sedimentation controls if not specified in Section 311000 "Site Clearing."

B. See Section 311000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion and sedimentation control measures, if not specified in Section 015000 "Temporary Facilities and Controls."

C. Temporary Fencing: Install temporary fencing around Tree Protection Zones **[and Plant Protection Zones]** to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.

1. Install chain-link fence according to ASTM F567 and manufacturer's written instructions.
2. Posts: Set or drive posts into the ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Trust Representative.
3. Access Gates: Install [**where indicated**] <**Insert requirement, show on Drawings**>; adjust to operate smoothly, easily, and quietly; free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction throughout the entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

D. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

E. Mulch areas [**inside tree protection zones**] [**and**] [**within the drip line of trees to remain**] and other areas indicated.

F. Apply 2-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

G. Do not store construction materials, debris, or excavated material inside Tree Protection Zones. Do not permit vehicles or foot traffic within Tree Protection Zones; prevent soil compaction over root systems.

H. Maintain Tree Protection Zones free of weeds and trash.

I. Do not allow fires within Tree Protection Zones.

3.4 PROTECTION OF TREES

A. Tree Protection Measures: Unless otherwise expressly permitted in writing by Trust, provide and maintain Tree Protection Measures set forth herein and as may be required by Trust throughout the Project duration. Once accepted by Trust, the Tree Protection Measures must not be altered without the prior written permission of Trust.

B. Tree Protection Measures Maintenance and Removal:

1. Maintain the integrity of Tree Protection Measures at all times, including but not limited to maintaining plumb posts, repairing fabric, remounting signs, and replenishing wood chips.
2. Tree Protection Measures must remain in place until all the Project Site Work and all other construction activities potentially harmful to trees have been completed.
3. After all such construction activities are complete, request and obtain Trust permission prior to commencing removal of any Tree Protection Measures.

C. Tree Protection Zones: Unless otherwise indicated on the plans or expressly permitted by Trust in writing, establish a 20 to 40-foot (determined on a tree-by-tree basis and the type of Work being performed) Tree Protection Zone as measured horizontally and radially from the edge of the root flare at the ground surface at all "Trees To Be Preserved."

D. Tree Protection Zone Access and Uses:

1. Tree Protection Zones are intended to control access and limit physical damage to canopy and root system, and to prevent harmful changes to growing conditions such as altered drainage, or soil compaction.
2. Do not alter the existing site surface drainage patterns within Tree Protection Zones.
3. Do not alter the existing water table within Tree Protection Zones.
4. Ground-disturbing construction activities are not permitted within Tree Protection Zones including, but not limited to:

    a. Clearing and grubbing, trenching, grading, excavation, or demolition, unless specifically authorized by Trust.
    b. Long or short-term debris, spoils, soils, and materials stockpiling or storage.
    c. Washout or dumping of wastes and contaminants, including but not limited to paint, petroleum products, contaminated water, or other deleterious materials.
    d. Equipment staging, equipment access, worker access, or parking.
    e. Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.
    f. Excessive water or heat from equipment, utility line construction, or burning of trash.

g. Flooding, erosion, and excessive wetting and drying resulting from dewatering and other operations.
h. Skinning or bruising of bark.

E. Ground Disturbance Controls:

1. Relocate from and/or limit ground disturbing activities within Tree Protection Zones.
2. Obtain Trust approval of all ground disturbing Work and Contractor means and methods proposed within the Tree Protection Zones prior to commencing such work.
3. Perform ground disturbing Work in a manner that minimizes root disturbance and soil compaction.
4. As may be requested by Trust, employ less impactful alternative means and methods including, but not limited to clearing and grubbing by hand tools and/or hand operated equipment.
5. Roots 1-inch and smaller that interfere with installation of new Work may be cut with prior approval.
6. Reflect Trust-accepted ground disturbance control measures in the Work Plan as appropriate.

F. Equipment Access Controls:

1. Where mechanized equipment access within Tree Protection Zones is accepted by Trust, but prior to accessing equipment, protect tree trunks and limbs to a minimum height of 12 feet above the soil line.
2. Wrap the tree trunk and/or limbs with 2-inch thick layer of coir netting, place vertical 2-inch x 4-inch wood slats set 8 inches O.C. over the netting and secure with orange safety fencing and nylon or metal banding, or continuously spiral wrap trunk and limbs with burlap covered rice straw wattles.
3. Do not attach fasteners into the tree.
4. Prior to accessing equipment within Tree Protection Zones, protect soil from compaction by placing and then maintaining wood chips to a depth of 6 inches in all areas of the Tree Protection Zone subject to equipment traffic.
5. Throughout the Project duration, Trust reserves the right to require the Contractor to reposition equipment or utilize alternative construction methods to avoid damage to Trees to be Preserved.
6. Reflect Trust-accepted access control measures in Work Plan as appropriate.

G. Aerial Equipment Controls:

1. When the Work requires use of aerial equipment such as cranes or boom trucks, such equipment staging and maneuvering must be subject to Trust Acceptance.
   a. For clearances from overhead electrical utilities, coordinate with both Trust Forester and Trust High Voltage Supervisor.
2. Aerial movements of boom or suspended loads must avoid passing over or in close proximity to canopies of “Trees To Be Preserved.”
3. Trust reserves the right to require spotters and/or to require the repositioning of equipment or utilization of alternative equipment to avoid movements in close proximity to canopies of “Trees To Be Preserved.”
4. Reflect Trust Forester-accepted Aerial Equipment Control measures in Work Plan as appropriate.

H. Tree Protection Fencing:

1. Install tree protection fencing at perimeter of Tree Protection Zone of all "Trees To Be Preserved" before materials or equipment are brought on the site and construction operations begin in a manner that will prevent unwanted access except at designated entrance points. Where site constraints and safety considerations prevent placement of the tree protection fencing at the limits of the Tree Protection Zone, obtain direction from Trust and locate fence as directed. Approval by Trust for Work within the fenced area will not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved.
2. Mount Trust-furnished tree protection signs on fencing in a manner and in locations as may be directed by Trust.
3. Where Trust-accepted Work within Tree Protection Zones requires temporary relocation of fencing, obtain Trust acceptance for proposed fence relocation prior to relocation. Promptly move fencing to the original alignment whenever not actively engaged in working within a specific Tree Protection Zone. Trust-accepted adjustments in fencing locations do not alter the extent of the actual Tree Protection Zones or the requirements related thereto.

I. Work Monitoring: When required by Trust, all Work performed within Tree Protection Zones must be continuously monitored by Trust. Work within Tree Protection Zone must be performed per Trust accepted schedule and with prior notice to Trust by the Contractor.

J. Water: Provide ample water supply of potable quality and sufficient quantity for all operations required under this Section.

K. Tree Maintenance:

1. Do not allow trees to deteriorate and maintain trees in a healthy and vigorous condition during the construction and maintenance periods. Take necessary measures to maintain healthy living conditions for existing trees to be preserved. Such measures include but are not limited to: periodic washing of leaves for the removal of dust and maintaining proper hydration levels to assure plant survival.
2. Perform periodic inspections of existing trees to be preserved and submit written proposals to Trust for additional maintenance Work as may be required to ensure the health and general well-being of the trees. Retain, at the direction of Trust, additional specialists as may be required to perform this Work.

L. Tree Roots:

1. During construction of approved Work within the Tree Protection Zone, no roots larger than 1-inch in diameter will be cut without prior written approval by Trust.
2. Where roots in excess of 1-inch in diameter are encountered within the Tree Protection Zone, avoid damaging the roots.
3. If damage is unavoidable, suspend Work prior to damaging the roots, protect exposed roots, and inform Trust. Do not resume Work or damage roots until Trust Forester has provided written instructions.
4. Any roots damaged during construction must be exposed to sound tissue and cut cleanly. Sever roots cleanly by cutting with a sharp hand saw. Severed roots greater than 1-inch in diameter are subject to field review by Trust prior to backfilling.

5. Exposed roots must not be allowed to dry out before permanent backfill is placed. Temporary earth cover must be provided, or roots must be packed with wet peat moss or four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill. The cover over the roots must be wetted to the point of runoff daily.

M. Canopy Pruning:

1. Any pruning of tree canopies for clearance during construction will only be allowed with prior Trust acceptance. Notify Trust of proposed canopy pruning and request a Change Assessment.
2. Where practical, Trust may require that tree limbs be temporarily tied back in lieu of pruning.
3. When pruning is not permitted, perform Work by alternate means that does not require pruning of canopies.
4. All tying and pruning Work must be performed by Tree Work Contractor.
5. Arborist must direct the pruning.
6. Pruning must be performed in accordance with the guidance references.
7. For clearances from overhead electrical utilities, coordinate with both Trust Forester and Trust High Voltage Supervisor.

N. Herbicide Use: Herbicides proposed for use within the Project area are subject to Trust acceptance and approval. All herbicides must be labeled as safe for use around existing trees. Conditions for herbicide application are as follows:

1. Contact Trust IPM Coordinator at least 24 hours prior to any herbicide application.
2. Do not apply herbicide in areas where standing surface water is closer than 50 feet.
3. Do not apply herbicide when wind speeds exceed 10 MPH.
4. Do not apply herbicide within 24 hours of forecast rain.
5. Following herbicide application, Contractor must submit the following information to the Presidio Trust IPM Coordinator before the end of the month in which the application took place:
   a. Name of herbicide;
   b. EPA number of herbicide;
   c. Date of application;
   d. Amount of herbicide applied;
   e. Location of application

3.5 PROTECTION OF PLANTS

A. **<INSERT>**

3.6 EXCAVATION

A. Excavations

1. Install shoring or other protective support systems to minimize sloping or benching of excavations.
2. Do not excavate within Tree Protection Zones, unless otherwise indicated.

3. Where excavation for new construction is required within Tree Protection Zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

    a. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.
    b. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

B. Utility Trenching

1. Utilities must not be installed in Tree Protection Zones without prior written approval from Trust Forester and Trust Utility Engineering.

    a. Identify methods of root avoidance during construction, including but not limited to; tunneling under or around roots by drilling, auger boring, pipe jacking, and/or digging by hand.
    b. For clearances from overhead electrical utilities, contact Trust Forester and Trust High Voltage Supervisor.
2. Where utility trenching is required and approved within Tree Protection Zones,

    a. Where roots in excess of 1-inch in diameter are encountered within the Tree Protection Zone, avoid damaging the roots without prior written approval by Trust Forester.
    b. An arborist must prune roots 1-inch in diameter and greater.
    c. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

        1) Cut roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts.
        2) Do not use a backhoe or other equipment that rips, tears, or pulls roots.
        3) Do not paint or apply sealants to wounds.
    d. Any roots damaged during construction must be exposed to sound tissue and cut cleanly. Severed roots greater than 1" in diameter are subject to field review by Trust Forester prior to backfilling.

3.7 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond Tree Protection Zones. Maintain existing grades within Tree Protection Zones.

B. Grade Lowering within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist, unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

C. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

D. Moderate Fill: Where existing grade is more than 6 inches but less than 12 inches below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:

1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
2. Place filter fabric with edges overlapping 6 inches minimum.
3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.8 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction. Prune branches as directed by Trust Forester.

1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.

B. Cut branches with sharp pruning instruments; do not break or chop.

C. Do not paint or apply sealants to wounds.

D. Chip removed tree branches and [**spread over areas identified in Drawings**] [**stockpile in areas approved by Trust Representative <Insert>**] [**dispose of off-site**].

3.9 TREE INJURY

A. If injury should occur to any "Tree To Be Preserved," immediately suspend Work associated with the injury and report the injury to Trust.

B. Notify Trust of injury and request a Change Assessment. Trust will inspect the injury and make recommendations as to appropriate treatment measures.

C. Depending on the nature of the injury, Trust may require that treatment be performed by an approved, Arborist engaged by the Contractor.

D. Repair must include removal of rough edges and sprung bark and severely injured branches as directed by Trust. Perform all necessary tree Work up to and including the removal of the injured tree. Provide any additional Tree Protection Measures as directed by Trust.

3.10 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations that Trust Representative and/or Trust Forester determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size and species as those being replaced; plant and maintain [**as specified in <Insert section/detail of requirement>**] [**Trust Representative/arborist**] [**Architect/Engineer**].
2. Provide new trees of 6-inch caliper size and of a species selected by [**Trust Representative/arborist**] [**Architect/Engineer**] when damaged trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced. Plant and maintain new trees [**as specified in <Insert section/detail of requirement>**] [**in accordance with Trust Representative/arborist** (**Architect/Engineer**)].

C. Aerate surface soil, compacted during construction, 10 feet beyond drip line, and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches on center. Backfill holes with an equal mix of augered soil and sand.

3.11 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Trust's property

3.12 UNAUTHORIZED DAMAGE AND PENALTIES

A. Unauthorized damage to "Trees To Be Preserved" **[**and "Plants To Be Protected"**]** must be mitigated in a manner acceptable to Trust at no added cost to Trust. Trust reserves the right to perform any or all such mitigation Work. All indirect and direct costs associated with mitigations incurred by Trust must be borne by the responsible party(s) and reimbursed to Trust on an actual cost incurred basis including Trust staffing costs fully burdened. Such costs must be assessed and apportioned at the sole discretion and determination of Trust.

B. Penalties: Unauthorized damage to "Trees To Be Preserved" **[and** "Plants To Be Protected"**]** may subject the party(s) responsible to monetary penalties levied by Trust. Penalties will be assessed and apportioned at the sole discretion and determination of Trust. Penalty amounts will be per penalty amounts in effect for Trust projects at the time of the damage, or those Trust determines to be reasonable and appropriate based upon the value of the arboricultural resource and damage inflicted. Such penalties will be in addition to charges associated with mitigation of Unauthorized Damage as set forth above.

3.13 TRUST'S RIGHT TO REMEDY HAZARDOUS CONDITIONS

A. Trust reserves the right to perform any necessary or required tree and plant/vegetation Work required by the Documents or deemed necessary by Trust Representative and/or Trust Forester utilizing in-house Trust forces or Trust retained contractors, when in the opinion of Trust Representative and/or Trust Forester, failure to perform such tree and/or plant/vegetation Work poses an imminent danger to public safety, park resources or real property. The actual costs of such Trust performed Work must be borne by the Project upon presentation of documentation of costs incurred. Failure of Trust Representative and/or Trust Forester to identify and or have performed such tree and/or plant/vegetation Work does not relieve the Project of its obligation to provide for protection of people, resources, and property throughout the Project duration.

END OF SECTION 015639