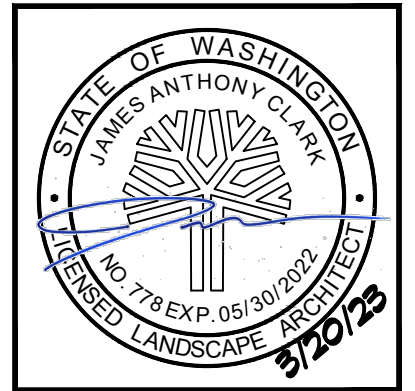


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GREEN MOUNTAIN PRD - POD B1
CAMAS, WASHINGTON



SHEET TITLE
LANDSCAPE & PARK PLANS

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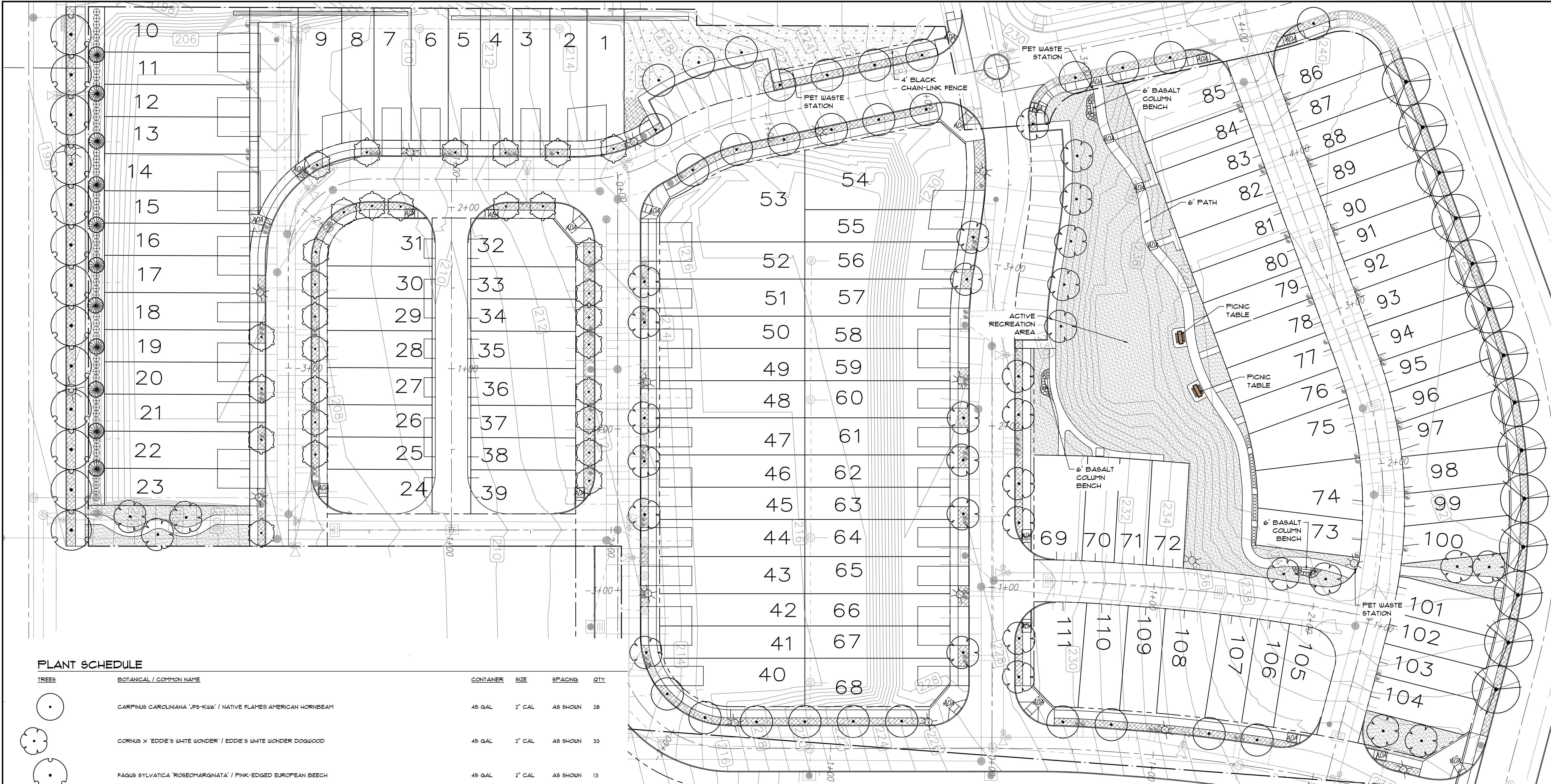
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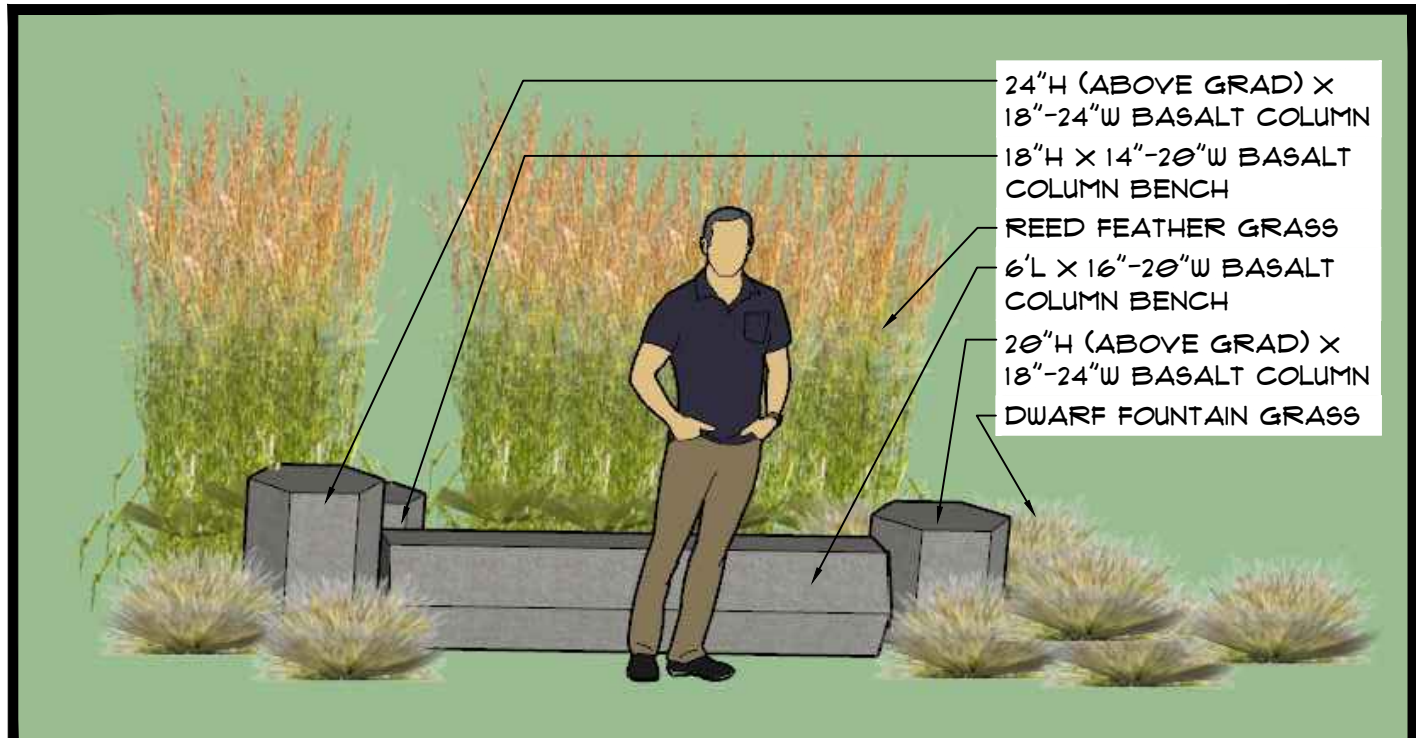
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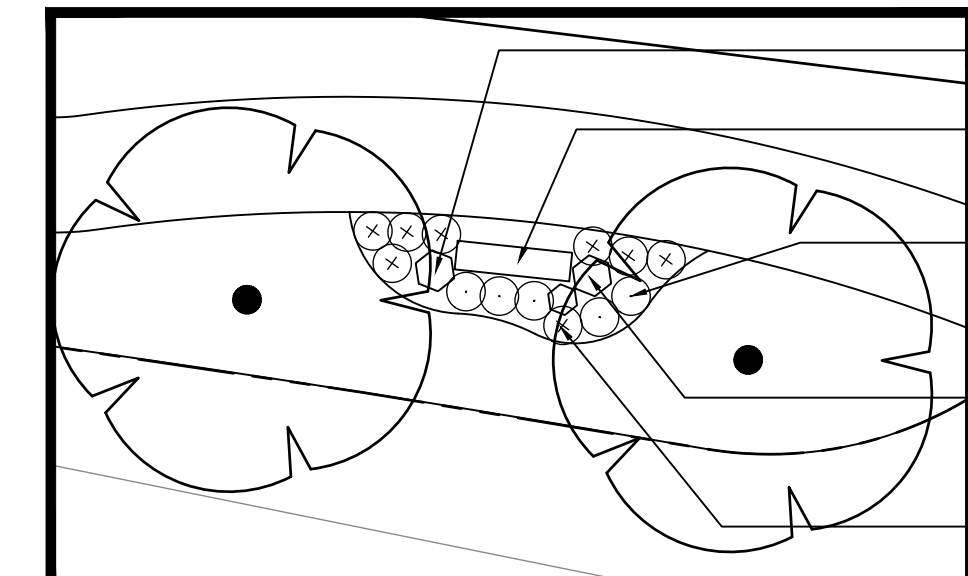


PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONTAINER	SIZE	SPACING	QTY
	CARPINUS CAROLINIANA 'JFS-KW6' / NATIVE FLAME® AMERICAN HORNBEAM	45 GAL	2" CAL	AS SHOWN	28
	CORNUS X 'EDDIE'S WHITE WONDER' / EDDIE'S WHITE WONDER DOGWOOD	45 GAL	2" CAL	AS SHOWN	33
	FAGUS SYLVATICA 'ROSEOMARGINATA' / PINK-EDGED EUROPEAN BEECH	45 GAL	2" CAL	AS SHOWN	13
	GINKGO BILOBA 'SARATOGA' / SARATOGA MAIDENHAIR TREE	45 GAL	2" CAL	AS SHOWN	14
	MALUS X 'PARRIS' TM / PINK PRINCESS CRABAPPLE	45 GAL	2" CAL	AS SHOWN	30
	THUJA X 'GREEN GIANT' / GREEN GIANT ARBORVITAE	15 GAL	6"	AS SHOWN	11
SHRUBS	BOTANICAL / COMMON NAME	CONTAINER	SPREAD	SPACING	QTY
	MAHONIA AQUIFOLIUM / OREGON GRAPE	2 GAL	15"-18"	4' O.C.	51
ORNAMENTAL GRASSES	BOTANICAL / COMMON NAME	CONTAINER	SPREAD	SPACING	QTY
	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL		24" O.C.	45
	PENNISETUM ALOPECUROIDES 'HAMELIN' / HAMELIN FOUNTAIN GRASS	1 GAL		24" O.C.	28
GROUND COVERS	BOTANICAL / COMMON NAME	CONTAINER	SPREAD	SPACING	QTY
	PT 161 DOG PARK ECO-LAWN MIX WITH MICROCOVER® HTTPS://PTLAINSEED.COM/COLLECTIONS/ECO-AND-ALTERNATIVE-LAWNS/PRODUCTS/PT-161-DOG-PARK-ECO-TURF-MIX				4,003 SF 4,003 SF
	PT 155 FLEUR DE LAWN® HTTPS://PTLAINSEED.COM/COLLECTIONS/ECO-AND-ALTERNATIVE-LAWNS/PRODUCTS/FLEUR-DE-LAWN				23,811 SF 23,811 SF
	COTONEASTER DAMMERI / BEARBERRY COTONEASTER	1 GAL		4' O.C.	119,390



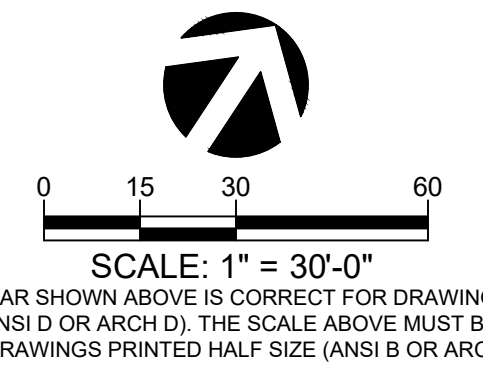
TYPICAL BASALT BENCH ILLUSTRATION



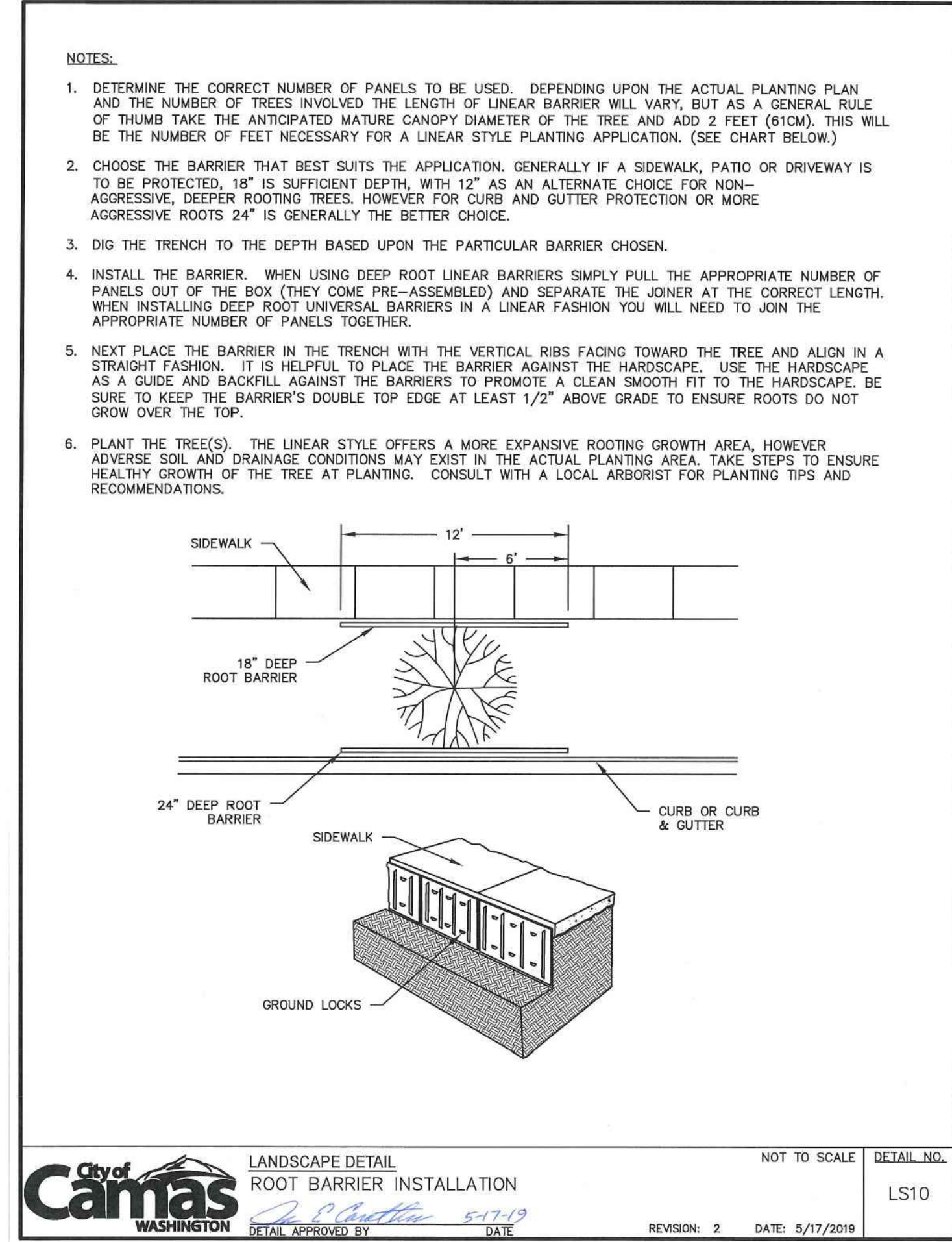
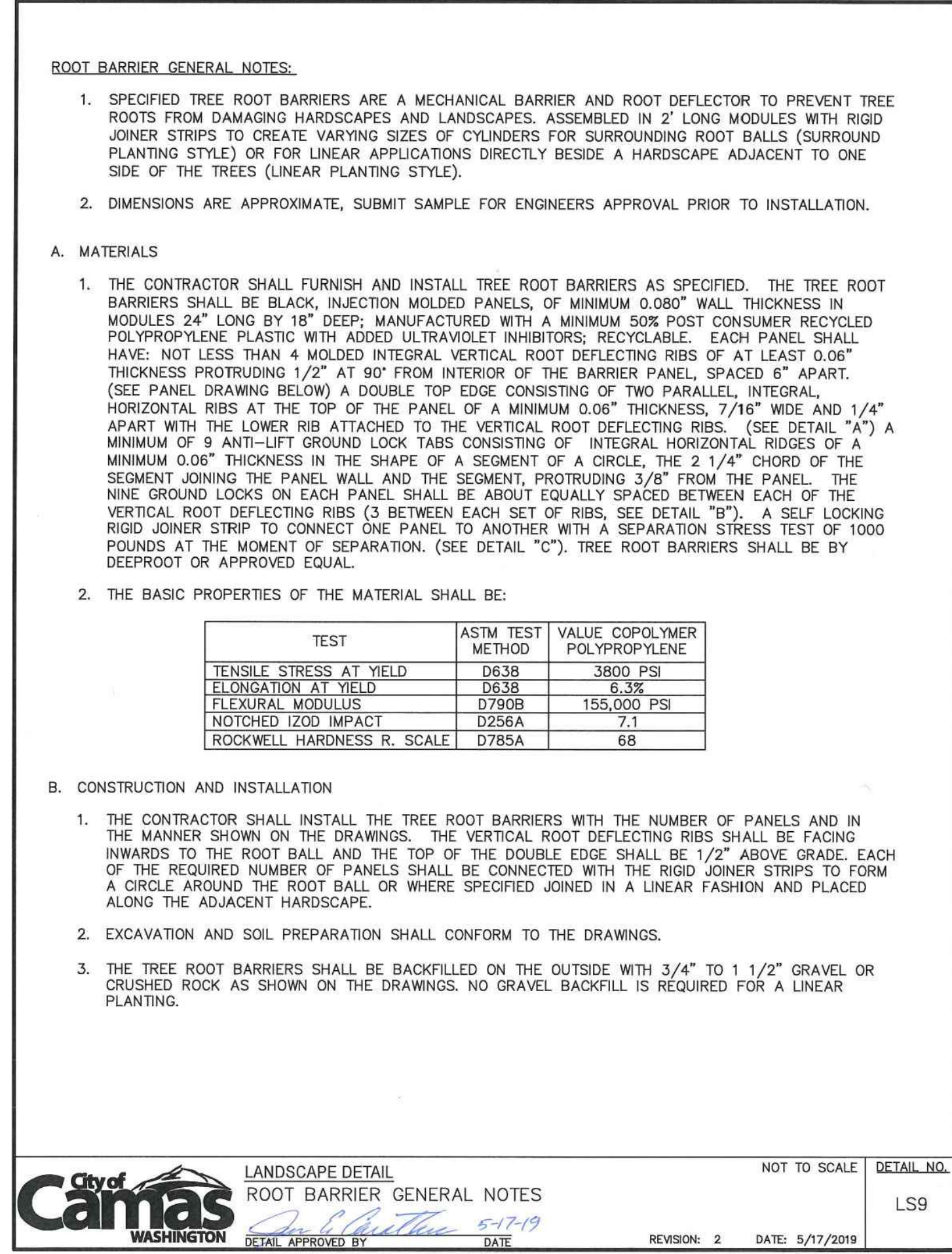
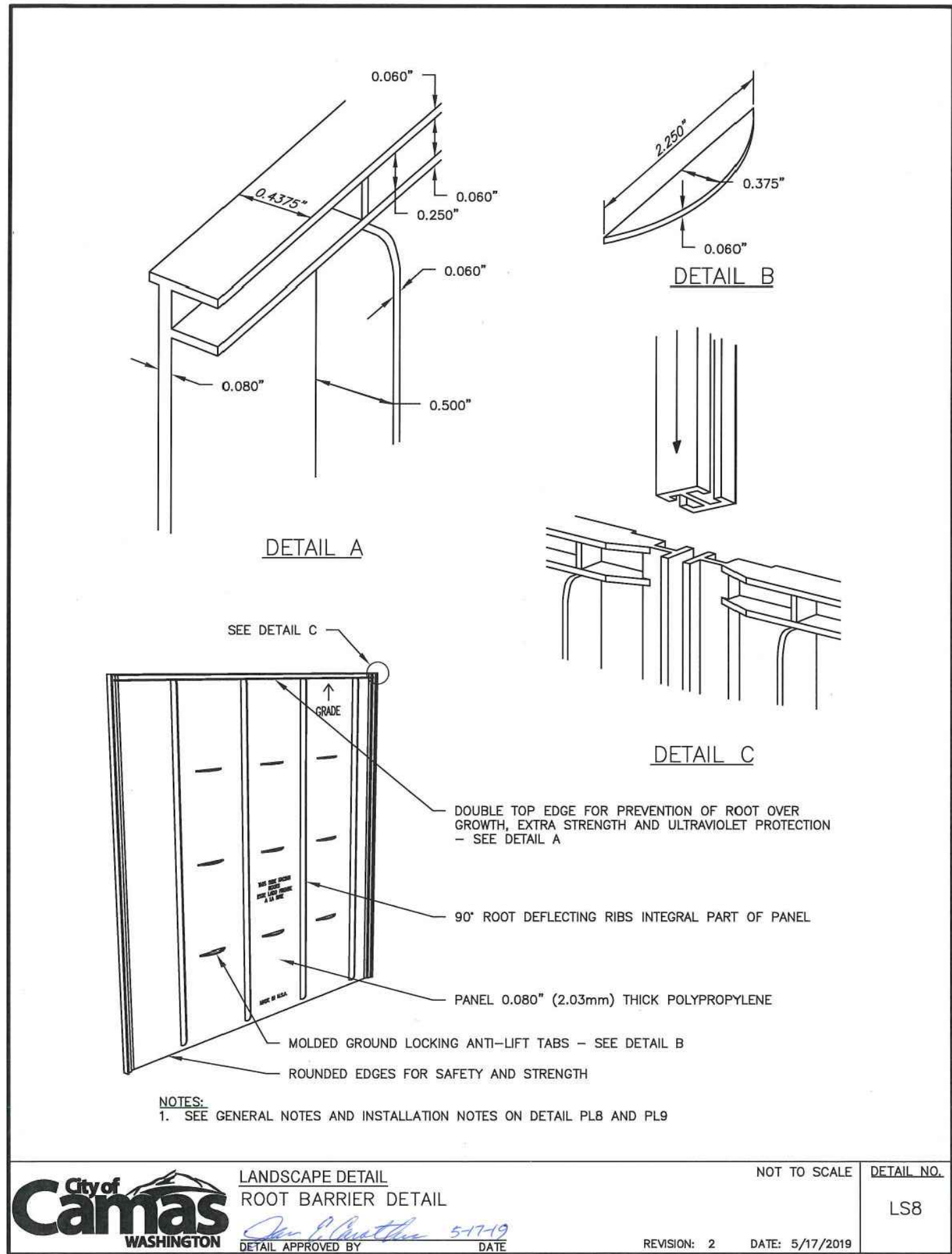
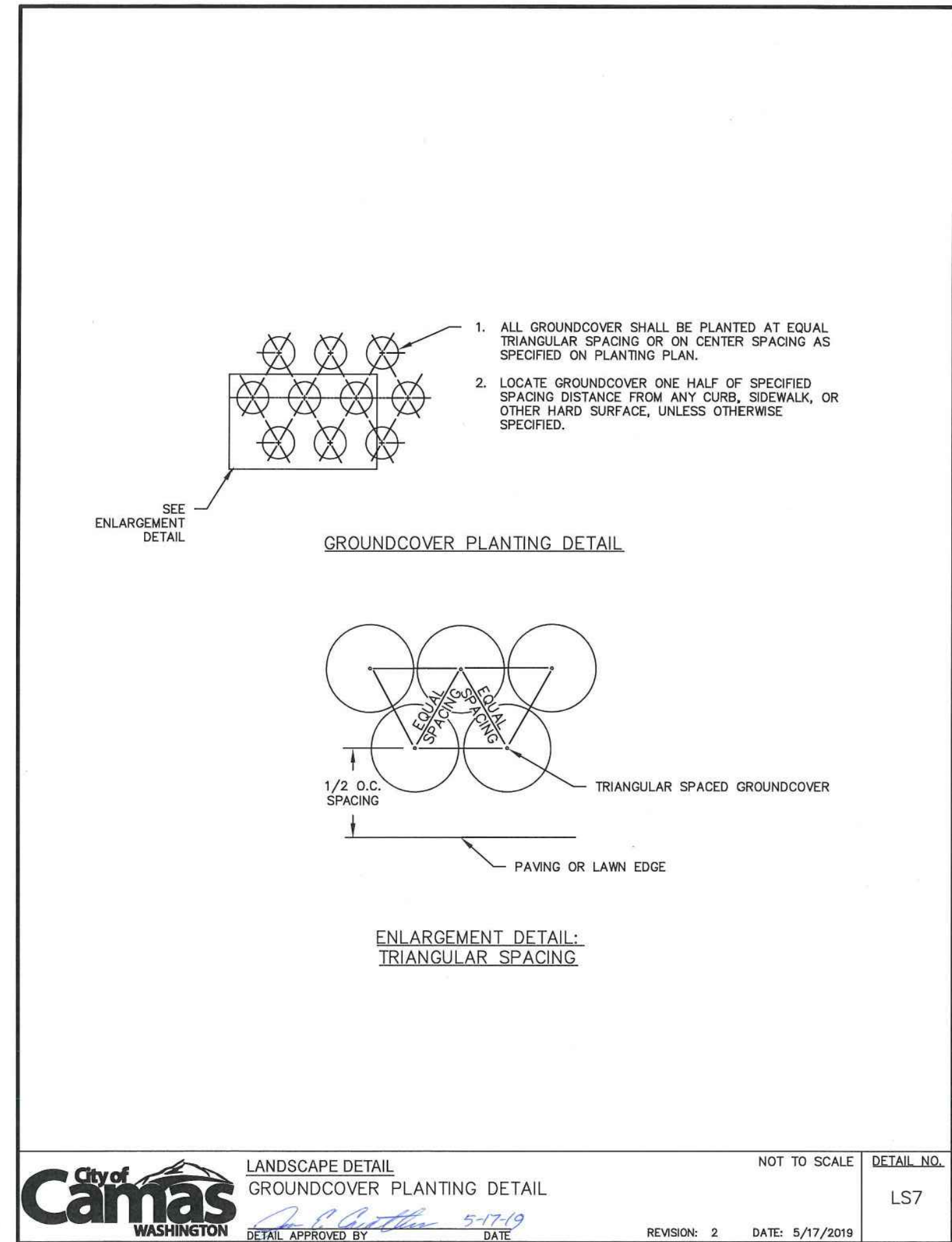
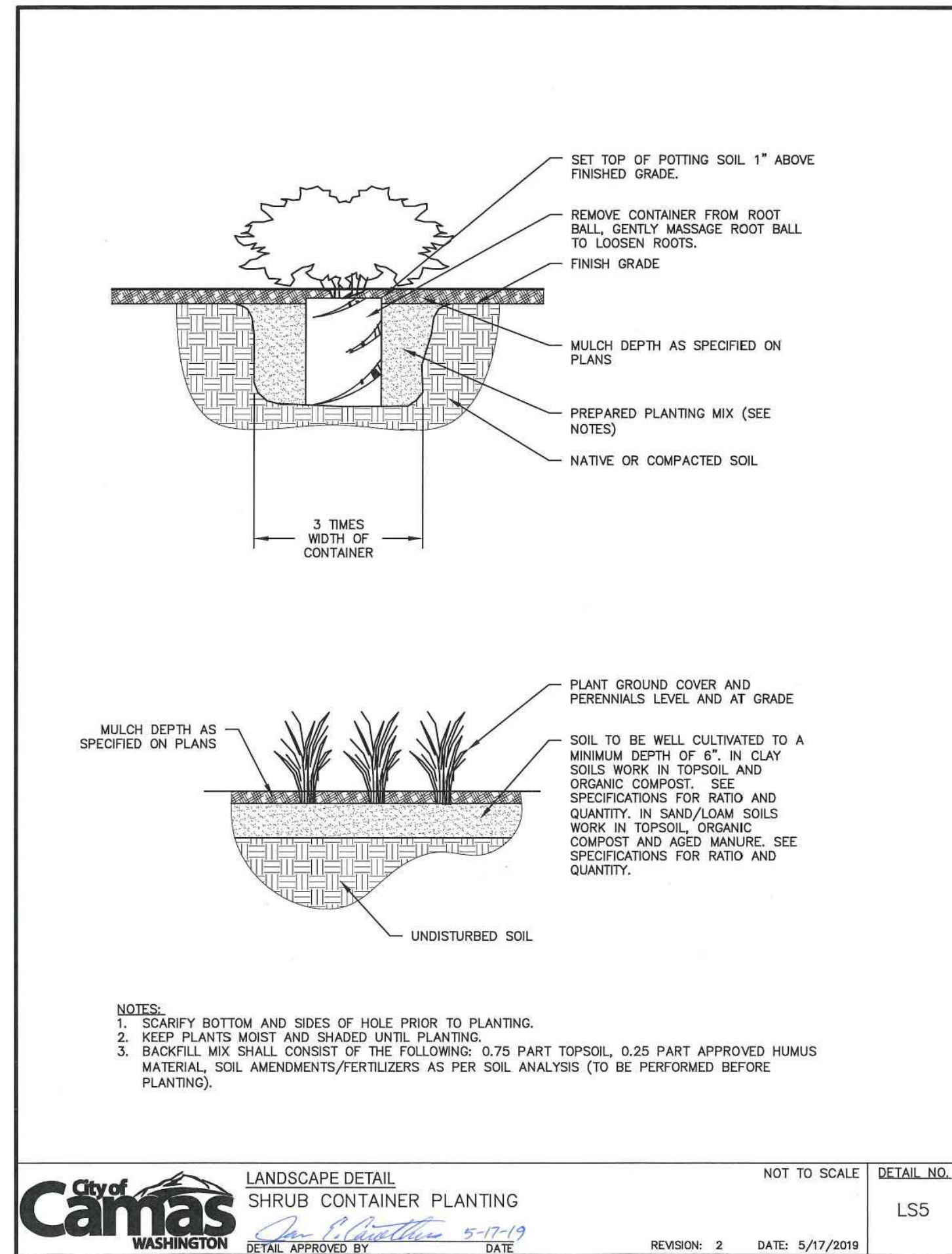
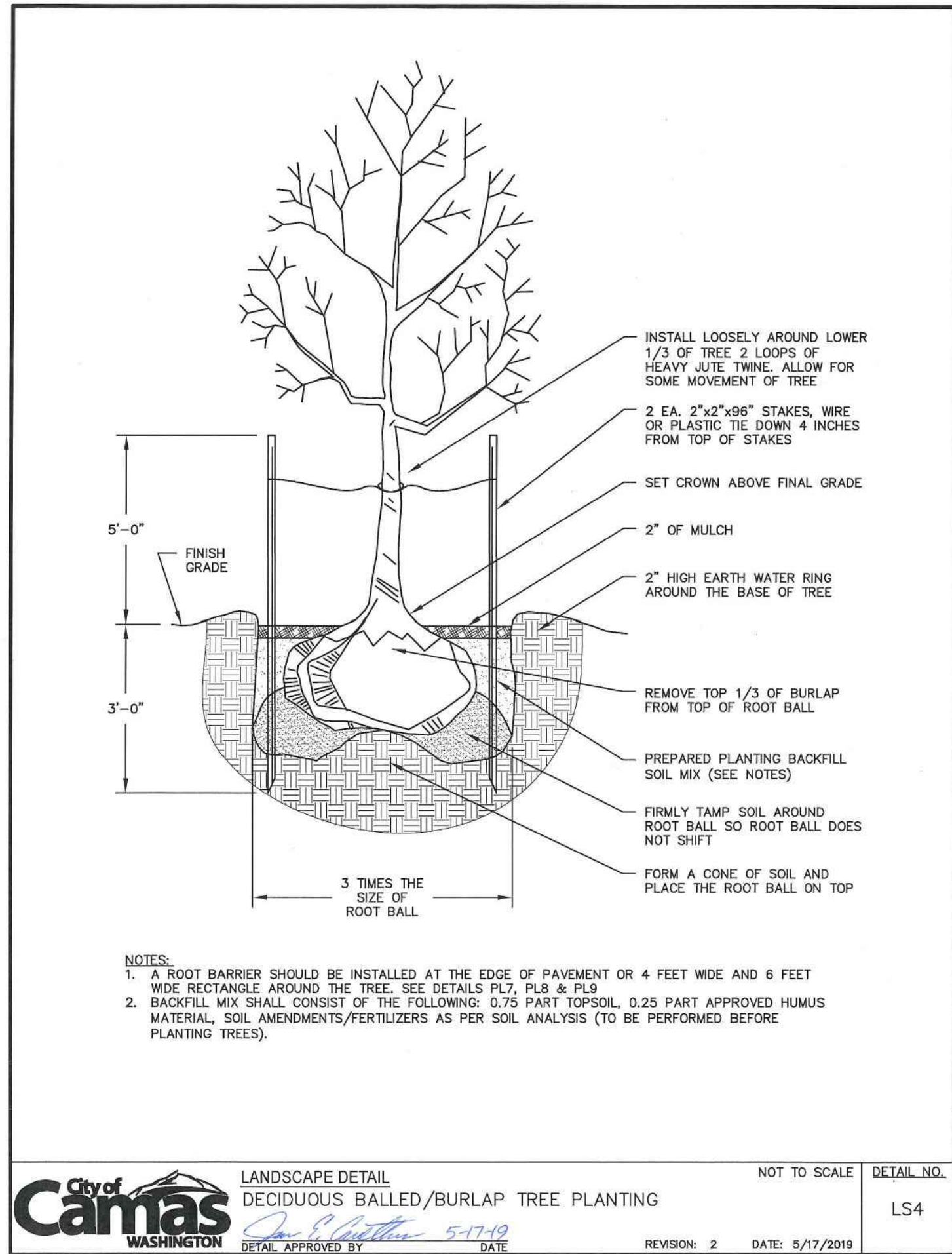
TYPICAL BASALT BENCH INSTALLATION
SCALE 1" = 10'-0"

24" H (ABOVE GRAD) X 18"-24" W BASALT COLUMN
18" H X 14"-20" W BASALT COLUMN BENCH
REED FEATHER GRASS
6' L X 16"-20" W BASALT COLUMN BENCH
20" H (ABOVE GRAD) X 18"-24" W BASALT COLUMN
DWARF FOUNTAIN GRASS, TYP.

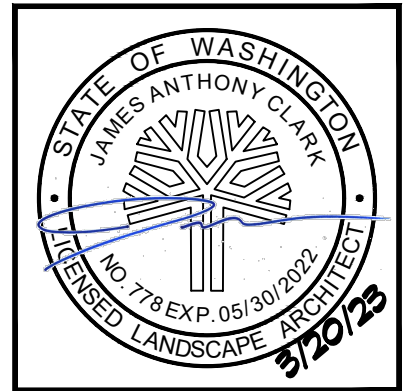
- NOTES:**
- PLANTS ON THE PLANT SCHEDULE MAY BE SUBSTITUTED WITH A PLANT THAT IS "AN APPROVED EQUAL". "AN APPROVED EQUAL" MEANS: APPROVED BY THE LANDSCAPE ARCHITECT ONLY IF THE REPLACEMENT PLANT IS SELECTED FROM THE CITY OF CAMAS'S PLANT MATERIALS LIST. IF THE PROPOSED PLANT IS NOT SELECTED FROM THE CITY'S PLANT MATERIALS LIST, THE REPLACEMENT PLANT MUST BE APPROVED BY THE CITY AND THE LANDSCAPE ARCHITECT. APPROVAL SHALL BE IN WRITING AND MAY TAKE THE FORM OF AN EMAIL FROM THE DESIGNATED AUTHORITY(S).
 - THE USDA ZONE FOR THIS SITE IS ZONE 8. ALL PLANTS ON THIS PLAN WILL GROW IN ZONE 8 AND ARE ADAPTED TO THIS NORTHWEST CLIMATE IN ACCORDANCE WITH CMC 18.13.050 C.1.
 - STREET TREES MAY BE ELIMINATED OR RELOCATED TO AVOID CONFLICTS WITH FUTURE DRIVEWAYS AND UTILITIES.
 - IRRIGATION WILL BE PROVIDED DESIGN / BUILD BY THE CONTRACTOR. SEE NOTES ON SHEET L5 FOR IRRIGATION INSTALLATION GUIDELINES.
 - SITE FURNISHINGS AND AMENITIES SHALL BE SELECTED BY THE DEVELOPER / PROJECT OWNER.



SCALE: 1" = 30'-0"
THE SCALE BAR SHOWN ABOVE IS CORRECT FOR DRAWINGS PRINTED FULL SIZE (ANSI D OR ARCH D). THE SCALE ABOVE MUST BE DOUBLED FOR DRAWINGS PRINTED HALF SIZE (ANSI B OR ARCH B).



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Clark Land Design, PLLC
Land Use Planning
Landscape Architecture
Development Consulting

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CAMAS, WASHINGTON



SHEET TITLE
LANDSCAPE
DETAILS

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SHEET NUMBER
L2

18.13.051 - Minimum tree density requirement.

A. Tree Density. A minimum tree density per net acre is required and must be incorporated within the overall landscape plan. The tree density may consist of existing trees, replacement trees or a combination of existing and replacement trees, pursuant to the priority established in Section 18.13.052.

18.13.051 Table 1: Required Tree Density

Table with 3 columns: Proposed Activity, Required Minimum Tree Density per Net Acre, and Required Tree Replacement. Rows include New Development, Residential, and Developed commercial and industrial properties.

EXPAND

B. Tree Density Calculation. Specific instructions on how to perform tree density calculations are provided in the Design Standards Manual. "Tree Unit" is a unit of measurement based upon the size of the diameter of the tree measured at the breast height ("dbh").

18.13.050 - Standards for landscape, tree and vegetation plans.

- A. The property owner shall be responsible for any future damage to a street, curb, or sidewalk caused by landscaping.
B. Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy, reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character.
C. Landscape, Tree and Vegetation Plan must include a combination of trees, shrubs, and ground cover to achieve the purposes of this chapter.
D. Street trees will be required as part of the frontage improvements. Species, size and spacing of the trees must be consistent with the Design Standards Manual.
E. Proposed vegetation cannot be an invasive species as listed within the most current edition of the Clark County Noxious Weed List (e.g. English Ivy cultivars).
F. Shrubs shall be a minimum of five-gallon pot size. Upright shrubs shall have a minimum height at planting of eighteen inches.
G. Ground Cover, defined as living material and not including bark chips or other mulch, shall be from containers of one gallon or larger.
H. Appropriate measures shall be taken, e.g., installation of irrigation system, to assure landscaping success.
I. Required trees, as they grow, shall be pruned in accordance with the International Society of Arboriculture.
J. Existing trees may be used as street trees if there will be no damage from the development which will kill or weaken the tree.
K. Vision clearance hazards shall be prohibited.
L. Street trees and other required landscaping which dies or is removed, must be replaced within one year of death or removal.

18.13.060 - Parking areas.

- A. Parking areas are to be landscaped at all perimeters.
B. All parking areas shall provide interior landscaping for shade and visual relief.
C. Parking lots shall include a minimum ratio of one tree per six parking spaces.

In this example, there are three medium-sized trees ("A") for eighteen parking spaces, with ground cover ("B") and shrubs ("C").

- D. Planter strips (medians) and tree wells shall be used within parking areas and around the perimeter to accommodate trees, shrubs and groundcover.
E. Planter areas for trees must provide a minimum of five hundred cubic feet of soil, and shall provide eight-foot by eight-foot minimum of clear planting space.
F. Wheel stops should be used adjacent to tree wells and planter areas to protect landscaping from car overhangs.
G. Curbed planting areas shall be provided at the end of each parking aisle to protect parked vehicles.
H. No more than fifteen parking spaces shall be located in a row without a landscaped divider strip (See Figure 18.13.060-1).

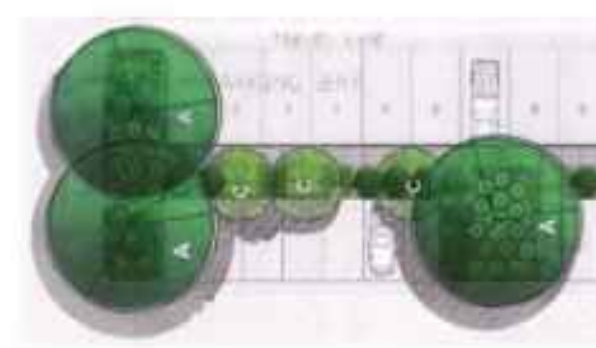


Figure 18.13.060-1 Example of Parking Lot Planter Areas.

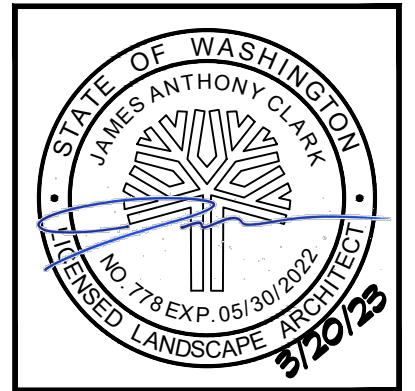
LANDSCAPING GENERAL NOTES: 1. DEVELOPER SHALL SUBMIT A LANDSCAPE PLAN SHOWING PLANT TYPE, LOCATION, AND QUANTITY OF PLANTS, THAT IS DESIGNED BY A QUALIFIED LANDSCAPE DESIGNER. 2. SHOW THE LOCATION OF SIDEWALK, LIGHT POLES, MAIL BOXES, DRIVEWAYS, FIRE HYDRANTS, INTERSECTIONS, AND ANY OTHER APPURTENANCE THAT MAY INFLUENCE THE PLACEMENT OF PLANTS. 3. LANDSCAPING SHALL BE SELECTED AND LOCATED TO DETER SOUND, FILTER AIR CONTAMINANTS, CURTAIL EROSION, MINIMIZE STORM WATER RUN-OFF, CONTRIBUTE TO LIVING PRIVACY, REDUCE THE VISUAL IMPACTS OF BUILDINGS/EQUIPMENT AND PAVED AREAS, SCREEN, REDUCE GLARE, AND EMPHASIZE OR SEPARATE OUTDOOR SPACES OF DIFFERENT USES OR CHARACTER. 4. LANDSCAPING SHALL BE DESIGNED TO BE HARMONIOUS WITH THE LOCAL SETTING AND WITH NEIGHBORING DEVELOPMENTS. 5. PLANTS AND TREES SHALL COMPLEMENT OR SUPPLEMENT SURROUNDING NATURAL VEGETATION. 6. PLANTS AND TREES CHOSEN SHALL BE IN SCALE WITH THE STRUCTURES AND EQUIPMENT DEVELOPMENT, KEEPING IN MIND THE MATURE SIZE OF PLANTINGS. 7. MINIMUM LANDSCAPING AS A PERCENT OF GROSS SITE AREA SHALL BE 15%. 8. DEVELOPER SHALL PROVIDE AN IRRIGATION PLAN. 8.1 APPROPRIATE IRRIGATION SYSTEMS SHALL BE INSTALLED WHERE NEEDED TO ASSURE LANDSCAPING SUCCESS. 8.2 DESIGN OF LANDSCAPING THAT INCLUDES XERISCAPE PRINCIPLES IS ENCOURAGED TO REDUCE LONG-TERM MAINTENANCE DEMANDS AND TO CONSERVE WATER. 8.3 XERISCAPE IS DEFINED AS LANDSCAPE DESIGN, WHICH WOULD INCORPORATE PLANT MATERIALS THAT REQUIRE LITTLE OR NO IRRIGATION AND RELY ON NATURAL MOISTURE AND RAINFALL FOR SURVIVAL ONCE ESTABLISHED. 9. LANDSCAPE SHALL BE DESIGNED WITH MAINTENANCE IN MIND: 9.1 DEVELOPER SHALL PROVIDE A MAINTENANCE PLAN DESCRIBING FUNDING, RESPONSIBILITY, AND FREQUENCY OF MAINTENANCE. 9.2 PLANTS AND TREES THAT MINIMIZE UPKEEP AND MAINTENANCE SHALL BE SELECTED. 9.3 TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 12 FEET ABOVE STREET ROADWAY SURFACES. 9.4 SHRUBS SHALL BE MAINTAINED TO A MAXIMUM HEIGHT OF 42 INCHES FROM TOP OF CURB TO TOP OF PLANT. ENSURE THAT SHRUBS ARE TRIMMED BACK FROM FACE OF CURB. 10. WHERE THERE ARE OVERHEAD UTILITY LINES, TREE SPECIES THAT WILL NOT INTERFERE WITH THOSE LINES SHALL BE CHOSEN. DEVELOPER IS TO VERIFY WITH UTILITY ON SPECIES SELECTION. 11. TREES SHALL NOT BE PLANTED WITHIN 2 FEET OF ANY PERMANENT HARD SURFACE PAVING OR WALKWAY. 12. PARKING AND LOADING AREAS SHALL BE SCREENED FROM HORIZONTAL VIEW WITH THE USE OF DENSE LANDSCAPING, MOUNDS OR BERMS. 13. PERIMETER AND SECURITY FENCING SHALL BE CONSTRUCTED TO MINIMIZE VISUAL IMPACT. WALLS OR FENCES SEPARATING ADJOINING PARCELS MAY BE LOCATED AT THE PROPERTY LINE. SECURITY FENCING SHALL BLEND INTO AND BE COMPATIBLE WITH LANDSCAPING AND SURROUNDING ENVIRONMENT. FENCING SHALL HAVE EARTH TONE COLORS OF BROWN, TAN GRAY, OR GREEN. WALLS SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE BUILDING ARCHITECTURE, LANDSCAPING, AND SURROUNDING ENVIRONMENT. 14. SITE AND BUILDING LIGHTING SHALL BE DESIGNED TO MINIMIZE GLARE OR OBJECTIONABLE EFFECTS TO THE ADJACENT PROPERTIES. SITE LIGHTING POLES SHALL NOT EXCEED 20 FEET IN HEIGHT AND SHALL DIRECT THE LIGHT DOWNWARD. LIGHTING SOURCES VIEWED FROM ABOVE OR BELOW ON ADJACENT PROPERTY SHALL BE SHIELDED. BUILDING LIGHTING IS TO BE CONCEALED AND INDIRECT. SITE LIGHTING IS TO BE DESIGNED TO PROVIDE UNIFORM DISTRIBUTION AND THE LIGHT LEVELS SHALL BE ADEQUATE FOR REASONABLE SECURITY AND SAFETY ON THE PREMISES. 15. EARTH BERMS MAY BE USED TO PROVIDE VARIATION IN THE GROUND PLANE AND FOR SCREENING INTERIOR PROTONS OF THE SITE. CARE MUST BE TAKEN IN THEIR DESIGN TO AVOID CREATING AN ARTIFICIAL APPEARING LANDSCAPE. THE BERMED AREAS SHALL BE A MINIMUM HEIGHT ABOVE SURROUNDING GRADE OF THREE FEET. MAXIMUM SLOPES FOR BERMED AREAS SHALL BE 3:1 FOR TURF AREAS AND 2:1 FOR GROUNDCOVER AREAS.

LANDSCAPING W/IN R.O.W. NOTES: 1. TREES SHALL NOT BE PLANTED CLOSER THAN 25 FEET FROM THE CURB LINE OF THE INTERSECTIONS OF STREETS OR ALLEYS, AND NOT CLOSER THAN 10 FEET FROM DRIVEWAYS, FIRE HYDRANTS, OR UTILITY POLES. 2. STREET TREES SHALL NOT BE PLANTED CLOSER THAN 20 FEET TO LIGHT STANDARDS, EXCEPT FOR PUBLIC SAFETY, NO NEW LIGHT STANDARD SHOULD BE POSITIONED CLOSER THAN 10 FEET TO ANY EXISTING STREET TREE, AND PREFERABLY SUCH LOCATIONS WILL BE AT LEAST 20 FEET DISTANCE. 3. TREES SHALL NOT BE PLANTED CLOSER THAN 2-1/2 FEET FROM THE FACE OF THE CURB EXCEPT AT INTERSECTIONS, WHERE IT SHOULD BE 25 FEET FROM THE CURB IN A CURB RETURN AREA. 4. EXISTING TREES MAY BE USED AS STREET TREES IF THERE WILL BE NO DAMAGE FROM THE DEVELOPMENT WHICH WILL KILL OR WEAKEN THE TREE. 5. VISION CLEARANCE HAZARDS SHALL BE AVOIDED AND VISION CLEARANCE STANDARDS SHALL BE ADHERED TO.

PLANTING NOTES: 1. ALL PLANTING TO BE OF NURSERY STOCK GRADE NO. 1 OR BETTER AND MUST BE APPROVED PRIOR TO PLANTING. 2. ALL PLANTING HOLES SHALL BE EXCAVATED THREE TIMES THE DIAMETER OF THE TREE ROOT BALL OR ROOT SYSTEM. 3. DECIDUOUS TREES SHALL HAVE STRAIGHT TRUNKS, BE FULL BRANCHED, HAVE A MINIMUM CALIPER OF 2 INCHES AND BE ADEQUATELY STAKED FOR PLANTING. CALIPER OF TREES SHALL BE LARGER WHEN REQUIRED BY OTHER CITY STANDARDS OR PLANS. 4. EVERGREEN TREES SHALL BE A MINIMUM OF THREE FEET IN HEIGHT, FULLY BRANCHED AND ADEQUATELY STAKED FOR PLANTING. 5. DECIDUOUS TREES SHALL BE A MINIMUM 2" CALIPER UNLESS APPROVED BY THE CITY. 6. POTTED OR B&B PLANTS SHALL BE A MINIMUM SIZE OF 3 GALLONS UNLESS APPROVED BY THE CITY. 7. SHRUBS SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, HEALTH OF THE PLANTS, AND OVERALL AESTHETICS. 8. PLANT UPRIGHT AND FACE TO GIVE BEST APPEARANCE OR RELATIONSHIP TO OTHER PLANTS AND STRUCTURES. 8.1. LOOSEN AND REMOVE TWINE BINDING AND BURLAP FROM AROUND THE TOP OF EACH ROOT BALL. 8.2. SET TREES AN INCH ABOVE FINISH GRADE. 8.3. STAKE OR GUY TREES IMMEDIATELY AFTER PLANTING (SEE DETAIL PL3, PL4, & PL5) 8.4. REMOVE STAKES OR GUY WIRES ONE YEAR AFTER INSTALLATION. 9. PLACE AND COMPACT BACKFILL SOIL MIXTURE CAREFULLY TO AVOID INJURY TO ROOTS, AND TO FILL ALL VOIDS. BACKFILL MIX SHALL CONSIST OF 1/4 APPROVED HUMUS MATERIAL TO 3/4 TOPSOIL, PLUS SOIL AMENDMENTS/FERTILIZERS AS PER SOIL ANALYSIS (TO BE PERFORMED PRIOR TO PLANTING TREES). 10. WHEN HOLE IS NEARLY FILLED, COMPLETELY SOAK AND ALLOW WATER TO DRAIN AWAY. FILL HOLE TO FINISH GRADE. PROVIDE 2 INCH HIGH BERM WATER RING AT THE BASE OF EACH TREE. REMOVE BERM AT THE END OF CONTRACT MAINTENANCE PERIOD. 11. GROUND COVER, SHALL BE PLANTED ACCORDING TO RECOGNIZED LANDSCAPE STANDARD PRACTICE FOR MAINTENANCE, APPEARANCE, OVERALL AESTHETICS, AND HEALTH OF THE PLANTS. 12. TREES, AS THEY GROW, SHALL BE PRUNED TO THEIR NATURAL FORM TO PROVIDE AT LEAST 10 FEET OF CLEARANCE ABOVE SIDEWALKS AND 14 FEET ABOVE STREET ROADWAY SURFACES. 13. TREE MAINTENANCE - IN ORDER TO INSURE ESTABLISHMENT, SURVIVAL AND GROWTH, TREES SHALL BE MULCHED WITH 4" DEEP COMPOST AND WATERED AS NECESSARY DURING THE FIRST TWO GROWING SEASONS. PRUNING TO BE AS FOLLOWS: 13.1. YEAR 1 - ONLY DEAD, BROKEN, OR CROSSING BRANCHES SHALL BE PRUNED. 13.2. YEAR 2 - A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO ESTABLISH PROPER SCAFFOLD BRANCHING, RAISE THE CROWN FOR ROAD/SIDEWALK CLEARANCE, AND REMOVE ANY DEAD, DYING OR CROSSING BRANCHES. 13.3. YEAR 3 - A CLASS 1 PRUNE, PURSUANT TO NATIONAL ARBORIST ASSOCIATION STANDARDS, SHALL BE PERFORMED. THE PURPOSE OF THIS PRUNING IS TO ESTABLISH THE PROPER SCAFFOLD BRANCHING, CONTINUE TO RAISE THE CROSSING FOR ROAD/SIDEWALK CLEARANCE, AND TO REMOVE ANY DEAD, DYING, OR CROSSING BRANCHES. 14. DEFINITIONS: 14.1. BALLED AND BURLAPPED (B&B) - TREES AND SHRUBS WITH A LARGE BALL OF SOIL AROUND THE ROOTS WRAPPED IN BURLAP. 14.2. BARE-ROOT - OFFERED BY NURSERIES IN WINTER AND EARLY SPRING WITH ALL THE SOIL REMOVED FROM THEIR ROOTS. 14.3. CALIPER - THE DIAMETER OF THE TRUNK MEASURED AT 4-FEET FROM THE GROUND. 14.4. GROUND COVER - LIVING MATERIAL THAT DOES NOT INCLUDE BARK CHIPS OR OTHER MULCH.

CITY OF CAMAS WASHINGTON LANDSCAPE DETAIL PLANTING NOTES NOT TO SCALE DETAIL NO. LS2 DATE: 5-17-19

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811 Know what's below. Call before you dig.

SHEET TITLE LANDSCAPE NOTES

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IRRIGATION SYSTEM: 02810

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Design / Build Irrigation system capable of providing even distribution of water to all landscape parking areas within the limits of work described on Landscape Plan and as reviewed with Contractor. Verify irrigation limits of work on relevant planting sheet with color marker and review scope with Owner's representative prior to preparing irrigation system design. All irrigation work to conform to this Performance Specification. Provide cost option to provide for a centrally controlled irrigation system that could be expanded to provide for future landscape phases on this site (if applicable).

1.2 Related work specified elsewhere:

- A. Section 02900 Landscaping

1.3 PERMITS AND CODES

- A. Obtain and pay for any permits and / or inspections required by governing agencies and or utilities.
- B. Conform to local codes governing work described in these specifications.

1.4 SUBMITTALS

- A. Maintain during construction and provide the Owner with Record Drawings showing arrangement and locations of lines, valves, and heads. Major underground elements to be noted with triangular measurements from a permanent feature.
- B. Two (2) sets complete product submittals covering all materials and equipment required for the finished system.
- C. During the course of the installation, keep updated record documents and make available to the Landscape Architect or Owner as may be required.

1.5 STANDARDS

- A. Design and Build to governing Plumbing Codes. If more restrictive than specified, contact Landscape Architect.

1.6 OPERATION & MAINTENANCE MANUALS

- A. Provide Four (4) copies of all operations and maintenance manuals, including but not limited to:
 1. Manufacturer's model numbers
 2. Product descriptions for equipment used
 3. Procedures regarding winterization shut-down and spring start -up.

1.7 EXISTING CONDITIONS

IRRIGATION SYSTEM: 02810

with suitable cross wheel for operation with a standard key and shall have a service rating of not less than 150 psi. The Contractor shall furnish three standard operating keys.

- 11. Hose Bibs: Bronze or brass, angle type threaded to accommodate a 3/4-inch hose connection.
- 12. Double Check Valve Assemblies (DCVA's): Installed, inspected, and tested in accordance with the applicable portions of local codes and regulations.
- 13. Check Valves: Heavy duty bronze or brass.
- 14. Electrical Wire and Splices: Comply with Section 9-29.3. Wire: ASTM B-3 copper, type UF, AWG, size no. 14 minimum. Connectors: Scotch lock #3570, Rainbird PT101-104

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspect the conditions in the field and verify that work may properly begin. Start work denotes acceptance.
- B. Install sleeves under surfaces to be paved prior to paving.
- C. Coordinate location of automatic controller with Owner.

3.2 INSTALLATION

- A. Source Connection and Controller: Locate the water source and determine requirements. Install backflow prevention and manual globe valve as needed, to local codes. Verify controller location and electrical source with Owner prior to controller installation. Install controller and wiring per manufacturer's specifications.
- B. Excavation: Pipe trenches snaked slightly to allow for expansion and contraction of piping. Main or supply lines shall be a minimum of 18" deep. Zone lines shall be a minimum of 12 inches deep. The bottom of the trenches shall be smooth and free of sharp rocks or objects that may damage pipe. Trenches shall slope to a low point to allow lines to completely drain. Install 3/4-inch drain valve at mainline low points. Provide minimum five (5) cubic foot gravel sump.
- C. Sleeve Installation: Class 40 PVC pipe sleeves installed prior to paving beneath all paved areas, including walks and drives (diameter to be minimum 4"). Bed pipe in minimum three (3) inches of fine sand. Provide minimum 12 inches fine sand cover over top of pipe. Do not allow rock over 1/2" diameter in backfill material. Mark sleeve ends with orange painted 2 x 4 stakes and attach together w/ wire. Extend sleeves 12 inches beyond paved edges into planter.
- D. Pipe installation: Lay pipe in accordance with manufacturer's recommendations, "snaked" slightly and supported at all points within the trench. Cut all pipe square, chamfer edges and deburr, wipe surface free of all moisture or dirt. Solvent-weld all

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- A. Before proceeding with installation of any section, verify ground measurement and Design-Build System layout correlation.
 1. Contractor to provide necessary adjustments in field to assure complete and uniform irrigation coverage.
 2. All field adjustments are to be without cost to the Owner.
 3. Locate and protect all existing utilities. If damage occurs, notify proper agency and obtain repairs.
- B. Determine and Document:
 1. Projected water flow rate
 2. Static and residual pressure
 3. Other factors affecting design and installation of irrigation system.

1.8 PROJECT CONDITIONS

- A. Provide protection at all times to prevent dirt or debris from entering piping or equipment. Storage of materials shall be kept orderly and to accepted practices for full protection of the material from damage.

1.9 WARRANTY

- A. Entire system to have an unconditional warranty as to materials and workmanship, including but not limited to, settling of backfill areas, or damage to planting, lawns, paving, etc., for a period of one year from final acceptance of work.
 1. Areas or materials requiring repair to be at no cost to the Owner.

1.10 QUALIFICATIONS

- A. Installation by a contractor with a minimum of two (2) years' experience doing similar work and who has a minimum of five (5) successful sprinkler installations of comparable size in the greater Federal Way Area.
 1. Submit project name and address of five (5) projects completed within the last two years with bid.

1.11 WORKMANSHIP

- A. These specifications govern installation, equipment, material, and workmanship.
 1. Installation shall be in strict accordance with manufacturer's instructions and recommendations and local and / or State codes.

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joints except those requiring threaded fittings. Align pipe in trench with manufacturer's stampings visible to surface for inspection prior to backfill. Do no solvent welding on wet pipe, or in temperatures below 40 degrees F.

- E. Valve installation: Flush mainline thoroughly prior to installing automatic control valves, gate valves, etc., in shrub beds. Provide valve boxes or sleeves with locking lids at each location. Valves shall be horizontal, firm, and set on a clean, three-inch-deep pea gravel base. All valves shall have a minimum of one union. All valves with flow adjustment to be set for proper performance.
- F. Control Wiring: Lay in trenches next to lines when practical. Place in conduit above ground. Control wire shall be red, and the common neutral wire, white. Provide 18 inches curled coil at each valve connection and at 100-foot intervals along mainline. Provide additional spare Ground and One additional Hot Wire accessible for each valve. Tag spare wires so that they may be readily identified as spares. Bundle wire with tape. Provide additional 18-inch coil at controller location. Avoid field splicing. Provide locator tape in trench with wire.
- G. Head Installation: Install swing joints or "funny pipe" at all heads. Provide leak-free joints with free movement. Cap heads temporarily and test all piping and joints at maximum source pressure for one hour. Repair all leaks.
- H. Backfill Procedure: Backfill trenches by bedding pipe in fine soil and tamp firm. Fill trench to six inches below surrounding grade and water settle. Fill remaining trench with topsoil and tamp firm.
- I. Adjustment and Balancing: Adjust sprinkler nozzles to provide uniform coverage and to limit sprinkler over-throw onto unwanted areas, windows, and building surfaces
- J. Clean Up: Remove debris, equipment, surplus materials, etc., from each area as the divisions are completed. At completion of system, site should be neat and orderly.
- K. Submittals: At completion of the project and before final inspection, submit the following to the General Contractor for inclusion in Owner's Maintenance Manual: Accurate "as-built" drawings, parts list schedule, written operating and maintenance procedures including: winterization procedures, and schedules indicating required open valve times for each zone necessary to apply one (1) inch of water per week.

END OF SECTION

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Irrigation: All materials and equipment incorporated in the system shall be new, undamaged, of standard quality, and are subject to testing as specified.
 1. Pipe, Tubing and Fittings: Galvanized iron, PVC, or polyethylene as required by irrigation application.
 2. Galvanized Pipe and Fittings: Standard weight, hot-dip galvanized iron or steel pipe, threaded and coupled. Pipe shall meet the requirements of ASTM A 120. All pipe fittings shall be standard threaded galvanized malleable iron fittings.
 3. Polyvinyl Chloride Pipe and Fittings: PVC compound Type 1, Grade 1, conforming to ASTM D 1784 specifications. Pipe and Fittings shall be free from defects in material workmanship, and handling. PVC solvent weld pipe shall be of PVC 1 1/2 material and shall have 200 psi minimum pressure rating. PVC threaded pipe shall be of PVC 1 1/2 material and shall be schedule 80 which conform to ASTM D 2466, Type I, Grades 1 or 2.
 4. Automatic Controllers: Rainbird or Hunter. Electrically timed device for automatically opening and closing control valves for predetermined periods of time and mounted so that all normal adjustments will be conveniently located for use by the operator.
 5. Sprinkler Heads: Rainbird or Hunter. Pattern and coverage as required to provide uniform coverage of turf, shrub and groundcover plantings as shown on Landscape Plan.
 6. Valve Box: "Ametek" with locking lid, size as required.
 7. Gate Valves: Heavy duty brass conforming to the requirements of ASTM B 62. Valves shall be of the same size as the pipes on which they are placed and shall have union or flange connections. Service rating (for nonshock cold water) shall be 150 psi.
 8. Automatic Control Valves: Rainbird or Hunter. Remote control valves shall be globe pattern with flanged or screwed connections as required. Threaded valves shall be provided with union connections. Valves shall be of normally closed design and shall be electric solenoid operated, having maximum rating of 6.5 watts utilizing 24-volt AC power.
 9. Quick Coupler Valves: Service rating not less than 150 psi for non-shock cold water. Couplers shall be of one-piece construction with steel reinforced side handles attached. All couplers shall have standard male pipe threads at the top. Couplers furnished with quick coupler valves unless otherwise specified.
 10. Drain Valves: 3/4 inch in size, made from bronze or brass, manual angle globe type, with rising stem, hex brass union, removable bonnet and stem, and adjustable packing gland. Valves shall be designed for underground installation



GREEN MOUNTAIN PRD - POD B1

CAMAS, WASHINGTON



SHEET TITLE
IRRIGATION NOTES

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