

CITY OF LA CENTER
ENGINEERING STANDARDS FOR CONSTRUCTION
SECTION 6
LANDSCAPE AND IRRIGATION STANDARD DETAILS

APRIL 4, 2019

City of La Center
305 NW PACIFIC HIGHWAY
La Center, Washington 98629
(360) 263-7665

SEE STANDARD DETAILS SEPARATE

City of La Center Private Park and Public Landscape Standards and Specifications

2019 Revision

1. General

1.1. General design requirements.

1.1.1. All areas with an average grade less than 2:1 slope shall have a gate or other entry unobstructed by fencing or permanent barriers that is at least 84" wide.

1.1.2. Storm-water during site construction or upon completed construction shall not drain to landscaped surfaces.

1.1.3. Restroom buildings shall have a maintenance room or an independent building to house electrical timers and miscellaneous park and maintenance equipment unless otherwise allowed by the City.

1.1.4. All lighting for parks shall be provided via LED fixtures per city requirements.

1.1.5. In general, submittals for materials or equipment must be submitted to the city for review prior to installation or construction.

1.2. Construction.

1.2.1. All construction and installation shall be done in strict accordance with the final approved plans, WSDOT standard specifications, the City of La Center Engineering Standards, manufacturer installation instructions and specifications or as directed by the City.

1.2.1.1. The project plans and specifications for Public Work Construction projects shall take precedent, followed by WSDOT specifications and the City of La Center Standards or as directed by the City. For private constructions projects, the City of La Center and WSDOT specifications for construction shall take precedent over the approved plans.

1.2.2. The contractor shall follow WSDOT standard specifications for submittal and approval of project materials as approved by the City.

1.2.2.1. Substitutions installed by the contractor that have not been approved are subject to rejection by the City.

1.2.3. All chemicals, including herbicides and other pesticides, shall be pre-approved by the City prior to application.

1.2.3.1. Pesticide application records shall be submitted to the City within one business day of application.

1.3. Inspections.

In general, the City of La Center must be notified by the contractor for inspection and approval of public improvements per WSDOT specifications and the City of La Center Standards. The City shall be contacted at least 24-hours in advance for all inspection per approved project plans for irrigation systems and parks.

1.4. As-builts.

1.4.1. As-built drawings shall be maintained by the contractor. The contractor shall submit as-built drawings to the City for review and approval.

1.4.2. Final as-built (record drawings) submittals shall include three hard copies of full size 22" by 34" as well digital drawings in PDF format and the latest version of Autocad.

1.5. Clean Up.

1.5.1. Contractor shall keep project clean at all times to insure a safe and orderly work place.

1.5.2. All streets, sidewalks, and hardscaping that is open to the public shall be cleaned at the end of the day.

1.5.3. All containers, pallets or other delivery material shall be removed promptly from the site once the material has been installed.

1.5.4. All trash, debris, and excess materials shall be removed and legally disposed of prior to the completion of the project.

2. Landscaping and hardscaping.

2.1. Soil preparation.

2.1.1. Soil in landscape areas with a slope of 3:1 or less shall be tilled a minimum of 6" deep.

2.1.2. Soil in landscape areas shall meet a minimum standard set by the landscape architect, or be otherwise approved by the City.

2.2. Finish grade.

2.2.1. Finish grade shall be free of dirt clumps and rocks and raked smooth prior to seed, sod, or planting.

2.2.2. Turf and bed areas with a slope of 3:1 or less shall not contain any rock or debris over $\frac{3}{4}$ " in diameter within the top 3" of soil.

2.2.3. Finish grade shall be determined using the properly compacted soil state.

2.2.4. Finish grade for turf areas shall be between $\frac{1}{16}$ " and $\frac{1}{2}$ " below adjacent hardscaping.

2.2.5. Finish grade (including bark) for bed areas shall be between 1" and 2" below adjacent hardscaping.

2.2.6. Ponding of water shall not be permitted except where such areas are specifically designated for water quality treatment or management.

2.3. Planting.

2.3.1. All plant material shall be the same as specified in the drawings, including botanical species, sub-species, and variety.

2.3.2. The contractor will be required to supply and plants that are healthy and as described in the approved plans for specifications and guarantee the plants for one-year following planting. Any plants that die or are not growing adequately for the species shall be replaced at the contractor's expense.

2.4. All plant material shall be free of pest, plant diseases, abrasions or any other objectionable disfigurements. The condition of the plants that need to be replaced, during the year maintenance period, is at the discretion of the City. Any plant material with evidence of insects, pests, larvae, eggs, plant diseases, root rot, abrasions, mechanical damage, wind damage, salt burn, sun burn or objectionable disfigurements or discolorations shall be rejected.

2.4.1. Plant layout shall be inspected in the field and approved by the City prior to digging.

- 2.4.1.1. All plants located above utilities, irrigation, or other underground features shall be specifically approved by the City.
- 2.4.2. Plants shall be installed in holes that are excavated a minimum of 6" deeper and twice as wide as the root ball.
 - 2.4.2.1. When an auger is used, the contractor shall scarify the sides with a shovel or digging bar.
- 2.4.3. All burlap and wire shall be removed from root balls prior to burial.
- 2.4.4. Plants shall not be installed in a root bound condition. When necessary, roots shall be massaged, abraded, or cut so that they will promptly grow into new soil.
- 2.4.5. Backfill material shall be compacted in 6" lifts to eliminate all air pockets and voids.
- 2.4.6. Mycorrhizal Inoculum shall be amended into burial soil at the following rates unless otherwise specified by the landscape architect.
 - 2.4.6.1. Trees: 3 tbsp. (1 oz.)
 - 2.4.6.2. Shrubs & ground cover: 1 tbsp. (0.3 oz.)
- 2.4.7. Root balls shall protrude 1" – 2" from finish grade (excluding bark), and be covered with 2" of bark.
- 2.4.8. Root barriers shall be installed along all buildings, curbs, sidewalks, paths, streets, asphalt, pavers, gravel, and other hardscaping within 8 feet of a tree. Measurement shall be to the center of the tree trunk, or the center of the root ball for multi-leader species.
 - 2.4.8.1. Root barriers shall extend from the surface of final grade (including bark) to a minimum of 24" deep. (See Detail.)
- 2.4.9. Trunk flare on trees shall be visible and the root ball will be exposed within 6" of the trunk.
- 2.4.10. Trees, plants, and ground cover shall not be pruned except:
 - 2.4.10.1. To provide clearance from paths and obstructions.

2.4.10.2. To clean up broken or damaged limbs and branches. The City shall determine if the item is acceptable or needs to be replaced at no charge to the City.

2.4.10.3. At the direction of the City.

2.4.11. As-builts shall be provided to the City that show final field placement of all trees and plants. Botanical names, with specific variety, shall be indicated for all trees, plants, and ground cover.

2.5. Bark Mulch and cover mulch.

2.5.1. Mulch shall consist of a medium fir bark unless otherwise specified.

2.5.2. The City shall approve color, size, and consistency prior to application.

2.5.3. Mulch shall have a minimum thickness of 2" unless otherwise specified.

2.5.4. Bark and rock shall be free of weeds and contaminants, and have an application of pre-emergent herbicide made within the last two months prior to acceptance by the City.

2.6. Hardscaping.

2.6.1. Pavers shall be edged with concrete curbing unless otherwise approved by the City.

2.6.2. Paver installation and subgrade shall be adequate for maintenance equipment access.

2.6.3. Pavers, gravel, and other rock shall be free of weeds and contaminants, and have an application of pre-emergent herbicide made within the last two months prior to acceptance by the City.

2.6.4. Pavers that have continuous surface with no gaps, such as brick, and pavers that are filled with grass are exempt from the pre-emergent requirement.

2.6.5. The contractor shall submit manufactures information for details for subgrade and placement of pavers. Any settlement of pavers by more than 1/2" inch, shall be removed and replaced with adequate compaction at the contractor's expense.

3. Irrigation.

3.1. System Design.

3.1.1. Irrigation zoning shall take into account as much as possible:

3.1.1.1. Landscaping, slopes, reflective heat, subgrade material, and current and future shading in regards to water needs.

3.1.1.2. The potential for partial landscape water conservation based on usage/aesthetic priorities.

3.1.1.3. Localization.

3.1.2. Head spacing shall allow for a minimum of head to head coverage under operating pressure, and in no case shall exceed the maximum manufacturers recommendations.

3.1.3. Systems shall not be designed to utilize maximum nozzles.

3.1.4. Head selection and placement shall account for mature plants.

3.2. Point-of-Connection.

3.2.1. All irrigation systems shall have an approved backflow device.

3.2.2. Backflow devices shall be installed using brass ells, unions, and nipples.

3.2.3. All properties 0.5 acre and larger shall have a flow meter and a master valve rated for a minimum of twice the street pressure.

3.2.3.1. Flow meters shall be installed directly downstream of the master valve and to the manufacturer's instructions.

3.2.3.2. Flow meters and irrigation zones shall be sized so that the meter is capable of reading the minimum and the maximum expected flows.

3.3. Pipe

3.3.1. All pipe shall be schedule 40 or better.

3.3.2. Standard pipe sizes shall be used, including only $\frac{3}{4}$ ", 1", 1.5", and 2" and larger. No quarter sized pipes shall be used for design or construction.

3.3.3. Minimum depth of pipe, measured from top of pipe to the final grade, excluding bark, shall be:

3.3.3.1. 12" for laterals.

3.3.3.2. 18" for mainlines

3.3.3.3. 18" for wiring conduit.

- 3.3.4. Lateral trenches shall contain a sand backfill enclosing the pipe a minimum of 4" above, 2" below, and 1" to each side of pipe.
- 3.3.5. Mainline and conduit trenches shall contain a sand backfill enclosing the pipe a minimum of 6" above, 2" below, and 1" to each side of pipe.
- 3.3.6. Trenches shall be compacted after every 6" of backfill. Contractor shall be responsible for any settling.
- 3.3.7. All runs of pipe shall have a minimum clearance of 4" from each other and 24" from other trades.
- 3.3.8. Mainline pipe shall not be bent or otherwise externally loaded.
- 3.3.9. Pipe sized 1.5" and larger shall not be bent or otherwise externally loaded.
- 3.3.10. Mainlines shall not use 90-degree fittings except for tee junctions, unless otherwise approved by the City.
- 3.3.11. Pipe sized 1.5" and larger shall not use 90-degree fittings except for tee junctions.
- 3.3.12. At minimum fittings shall be schedule 40 PVC or stronger. Class 200 PVC will not be allowed for irrigation piping.
- 3.3.13. Crosses and other 4-way fittings shall not be used.
- 3.3.14. Tee junctions shall not be installed within 12" of any other fitting.
- 3.3.15. All slip connections shall be scuffed, and receive a thorough coating PVC primer and glue of different colors.
- 3.3.16. All threaded fittings shall be properly Teflon taped.
- 3.3.17. PVC to metal connections shall be made by threading male PVC fittings into female metal fittings.
- 3.3.18. All pipe $\frac{3}{4}$ " and larger shall be marked with locate tape or wire. Locate tape and wire shall have an accessible connection point such as a locate station or valve box flush with the ground surface.
- 3.3.19. All pipe installed underneath a non-permeable surface shall have sleeves made of schedule 40 PVC or stronger.

- 3.3.19.1. Sleeves shall extend a minimum of 18" beyond the non-permeable surface.
 - 3.3.19.2. Sleeves shall be sealed at the ends to prevent dirt entry with foam or other durable method.
 - 3.3.19.3. Sleeves shall be a minimum of twice the diameter of the pipe. Sleeves containing multiple pipes shall be a minimum diameter of twice the largest pipe plus the diameters of the remaining pipes as approved by the City.
 - 3.3.19.4. Wire shall be sleeved independently from pipe. Wire sleeves may be placed inside pipe sleeves, but must extend an additional 12
- 3.3.20. Isolation valves shall be provided for all mainline branches with pipe in excess of 120 linear feet.

3.4. Valves.

- 3.4.1. All manual valves shall be of the ball valve variety.
- 3.4.2. All valves shall have an identification tag.
- 3.4.3. Valves shall be no more than 18" below final grade (excluding bark.) Valves with lines deeper than 18" shall use 45-degree ells to raise the valve to 18".
 - 3.4.3.1. System drains are exempt from the depth requirement.
- 3.4.4. Automatic valves shall be Rain Bird PEB series unless otherwise approved by the City.
- 3.4.5. A zone-specific pressure regulator, such as a PRS-Dial, or other method as approved by the City, shall be used if needed to prevent erratic water pressure.
- 3.4.6. Automatic valves shall have a union fitting immediately upstream and downstream of the valve.
- 3.4.7. Isolation valves shall be installed for all automatic control valves.
- 3.4.8. Each automatic valve shall be independently operated from the controller.
- 3.4.9. Isolation valves shall be installed for each quick coupler valve.

3.5. Quick Couplers.

- 3.5.1. Quick coupling valves shall be installed such that all points on the property are within 150' of a quick coupling valve.

3.5.2. Quick coupler valves shall be a Rain Bird model 44-RC unless otherwise approved by the City.

3.5.3. Each quick coupler shall be installed on a swing joint, and secured with stainless hose clamps to #4 rebar with a minimum length of 24". The quick coupler lid shall be approximately 3" below the box lid.

3.6. Valve Boxes.

3.6.1. Valve boxes shall be HDPE landscape boxes with latching lids, as approved by the City.

3.6.1.1. Round boxes may be twist lock instead of latching.

3.6.2. Boxes shall be set level and square to hardscaping, other boxes, and internal components.

3.6.3. Boxes shall have a minimum separation of 12" to hardscaping and 9" to other boxes.

3.6.4. Quick connects, angle-valve drains, and isolation valves shall be placed individually into 10" round boxes, or as a pair in a standard box (approximately 12" x 17").

3.6.5. Automatic valves shall be placed individually in a standard box.

3.6.6. Automatic valves 1.5" and smaller may be placed with the associated isolation valve only when placed in jumbo boxes (approximately 14" x 21" and larger.)

3.6.7. Ball valve system drains shall be placed in a standard box.

3.6.8. Valve boxes shall be placed on brick, or other acceptable material to secure from settling. The bottom edge of the box shall be a minimum 2" below the valve.

3.6.8.1. Quick connects and drain valves are exempt from the minimum box depth requirement.

3.6.9. Valve boxes shall have a secured fabric barrier underneath the box to prevent soil intrusion.

3.6.9.1. Drain valves shall not have fabric below.

3.6.10. Boxes shall have a minimum of 12" sand below the fabric barrier that extends beyond the edges of the box.

3.6.11. The number of boxes set in turf areas shall be minimized.

3.7. System Drains.

3.7.1. All irrigation mainlines shall have sufficient low-point drains to empty the mainline.

3.7.2. For pipe depth of 24" or less system drains shall have a horizontal brass ball valve with a vertical drain.

3.7.3. System drains with a pipe depth in excess of 24" shall be a brass angle valve.

3.7.4. System drains shall empty into a minimum of 3 cubic feet of drain rock.

3.8. Irrigation Heads.

3.8.1. All irrigation heads shall contain an integrated check valve to prevent leakage.

3.8.1.1. The check valves may be omitted for popup zones without any elevation change.

3.8.2. Heads shall be installed perpendicular and flush with finished grade in grass areas, and 1" to 2" above finished grade (including bark) in bed areas.

3.8.3. Rotor heads shall have stainless steel risers.

3.8.4. Rotor heads shall be Rain Bird 5000-plus series or Rain Bird 8000 series unless otherwise approved by the City.

3.8.5. Rotors shall be installed on swing fittings sized no smaller than the inlet port and set at an angle no greater than 45 degrees above horizontal.

3.8.6. Swing fittings (see detail) shall consist of one of the following:

3.8.6.1. A street ell installed horizontally into the lateral line, followed by a second street ell, a nipple, and two street ells.

3.8.6.2. The equivalent pre-made solution, such as a Rain Bird TSJ or TSJ-PRS series swing joint installed above a street ell installed horizontally into the lateral line.

3.8.7. Popup heads shall be Rain Bird 1800 series unless otherwise approved by the City.

3.8.8. Popups shall be a minimum of 6" in turf zones and 12" in beds.

3.8.9. Each popup head shall have a filter or screen installed.

3.8.10. Popups shall be installed on a swing fitting (see detail) consisting of:

3.8.10.1. A street ell installed horizontally into the lateral line, followed by a swing pip ell, swing pipe, a swing pip ell, and two street ells.

3.9. Controllers.

3.9.1. Each site shall have one Irrigation clock/controller.

3.9.2. The controller shall be a Rain Bird ESP-LXME, ESP-LXMEF, or ESP-LXD.

3.9.2.1. The controller shall be installed with an IQ Communications Cartridge and a local rain gauge, such as a Rain Bird WR2-RFC or equivalent.

3.9.2.2. The controller shall be installed in an above ground, locking, water-tight stainless-steel enclosure as approved by the City.

3.9.3. If AC power is not available onsite, Rain Bird TBOS-BT controllers shall be used.

3.9.3.1. The controllers shall be installed with a moisture or rain sensor such as an RSD-BEx.

3.9.3.2. The number of controllers shall be minimized.

3.9.3.3. The contractor shall provide one TBOS-II field transmitter.

3.9.4. An irrigation zone map shall be provided with the as-built drawings for city review.

3.10. Wire.

3.10.1. All wire shall be UL approved direct-bury, solid copper insulated wire.

3.10.2. Wire shall be a minimum AWG 14 gauge.

3.10.2.1. Double jacketed multi conductor cable control wire used for irrigation valves may be AWG 18 gauge.

3.10.2.2. Installation shall comply with all manufacture's requirements.

3.10.3. Control wire shall be color coded and labeled.

3.10.3.1. Common wire shall be white in color.

3.10.4. Wire splices shall be made inside a valve box, and shall be approved by the City on a case by case basis.

3.10.5. All connections shall be made with waterproof connectors.

3.10.6. Expansion loops/curls 24" in length shall be provided as follows:

- At every valve, sensor, flow meter, and AC controller.
- Within two feet of every junction or direction change of 45 degrees and greater.
- For every 100' of run without an expansion loop.

3.10.7. Wiring not installed in schedule 80 PVC conduit shall be buried underneath the mainline and bundled every 10 feet.

3.10.8. Extra control wires shall be installed at a ratio of one wire for every five valves, with a minimum of two extra wires to the end of every control wire run.

3.11. Inspections, testing.

3.11.1. Pressure lines shall be tested to be water tight under hydrostatic water pressure at 150 PSI for one hour with a line loss of 5 psi per WSDOT specifications..

3.11.2. All pipe shall be flushed per WSDOT specification 8-03.3(7)

3.11.3. All pipe shall not be backfilled until pressure tested and inspected.

3.11.4. All lines must be flushed to remove debris prior to the installation of nozzles.

3.11.5. Heads and nozzles must be adjusted for head to head coverage and minimal overspray.

3.11.6. Hydroseeding shall not be done until 100% coverage of the irrigation system is demonstrated.

3.11.7. Proper operation of all valves and sensors shall be demonstrated from the controller.

3.11.8. The controller shall be programmed by the contractor with city review prior to acceptance.

3.11.9. As built drawings shall reflect all changes of the plans and with measurements taken in the field.

3.11.9.1. The length and depth of all sleeves and runs of pipe shall be indicated.

3.11.9.2. Operations manuals shall be submitted for all materials.

4. Playgrounds, including new, upgrades, and renovations.

4.1. Definitions.

4.1.1. ADA – Americans with Disabilities Act.

- 4.1.2. ASTM – American Society for Testing and Materials.
- 4.1.3. CPSC – Consumer Product Safety Commission.
- 4.1.4. CPSI – NRPA Certified Playground Safety Inspector.
- 4.1.5. EWF – Engineered Wood Fiber used as a playground surface material.
- 4.1.6. IPEMA – International Play Equipment Manufacturers Association.
- 4.1.7. NRPA – National Recreation and Park Association.
- 4.1.8. Pre-school age – Children 2 through 5 years old.
- 4.1.9. School age – Children 5 through 12 years old.
- 4.1.10. Use Zone – Area requiring impact attenuation for an associated piece of play equipment, as defined in ASTM F1487.

4.2. Performance Requirements.

- 4.2.1. Playgrounds shall meet or exceed the requirements of the ADA “Final Accessibility Guidelines for Play Areas.”
- 4.2.2. Equipment shall be IPEMA certified compliant with the most recent ASTM F1487 standard.
- 4.2.3. Equipment shall be compliant with the most recent CPSC Public Playground Safety Handbook, unless otherwise approved by a CPSI designated by the City.
- 4.2.4. Surfacing within the use zone of play equipment shall comply with the most recent ASTM F1292, F2075, F2223, F2479, and F3012.

4.3. Design and Layout.

- 4.3.1. Equipment placement shall provide for separation and grouping of pre-school and school age children. Equipment spanning multiple age groups shall be placed in consideration of adjacent age groups.
- 4.3.2. Equipment placement shall account for circulation paths and motion types.
- 4.3.3. Shade shall be provided on or near the playground via shade structures or landscaping. Composite structures shall have integrated shading. Additional shading of play elements is encouraged.
- 4.3.4. Site lines to the playground shall be unobstructed by fencing, landscaping, or other elements wherever possible.

- 4.3.5. Benches, picnic tables, and other structures shall be provided near the playground with unobstructed views of the play elements.
- 4.3.6. Landscape elements in or near the playground shall have root barriers to protect the playground.
- 4.3.7. Playgrounds shall have appropriate signage in compliance with the most recent version of ASTM F1487, sections 14 and 15.
- 4.3.8. Equipment not permitted in the playground include:
 - 4.3.8.1. Sand Boxes
 - 4.3.8.2. Crawl tubes longer than 6'.

4.4. Safety Surfacing.

- 4.4.1. The City shall approve the type or types of surfacing material with consideration of ownership and maintenance costs, including accessibility, warranty, labor, product life expectancy, repair costs, and replacement costs.
- 4.4.2. Selection of surfacing ratings shall account for anticipated rating degradation over the expected life of the product.
- 4.4.3. When used, EWF surfacing shall be installed with a minimum compacted thickness of 12".
- 4.4.4. EWF or other loose fill systems shall not be used in locations expected to see heavy displacement, such as underneath swings, slide exits, and around most motion equipment.
- 4.4.5. Where loose fill surfacing is used, minimum surfacing depth shall be marked on the equipment.
- 4.4.6. Adequate drainage shall be provided for all surfacing, and surrounding areas shall not drain through or across the surfacing material.

4.5. Installation.

- 4.5.1. Plans and all changes must be reviewed and approved by the City's planning department and the City's designated CPSI.
- 4.5.2. Playground equipment and surfacing material shall be installed in accordance with all manufacturer installation specifications.

- 4.5.3. Prior to opening the playground, the City shall be provided with a certification of compliance by a third party CPSI not employed by the installer.
- 4.5.4. The City shall be provided with the following prior to acceptance of the playground:
- 4.5.4.1. A copy of all manufacturer supplied information including installation instructions, maintenance instructions, detail drawings, and warranty information shall be submitted for city review.
 - 4.5.4.2. Exact location and layout of all elements within the playground, the fall heights, and the corresponding use zones.
 - 4.5.4.3. An itemized final list of all equipment installed.
 - 4.5.4.4. A table specifying number and type of accessible and non-accessible play components confirming ADA compliance.
 - 4.5.4.5. Documentation proving the surfacing material or materials meet or exceed the specifications in ASTM F1292 and associated ASTM standards.
 - 4.5.4.6. All prepared drawings and, if applicable, the corresponding CAD files.
 - 4.5.4.7. As built drawings including sufficient distance measurements to locate all drainage components. All components shall be located with, at minimum, two measurements from permanent, above ground points, with perpendicular measurements preferred. As-built drawings shall be submitted to the city for review on 22" by 34" sheet drawings and final as-builts will be provided in PDF and Autocad format with distance measurements.