

**CITY OF MEDFORD PARKS, OREGON
LANDSCAPE IRRIGATION SPECIFICATIONS**

01. GENERAL REQUIREMENTS

- A. Due to the scale of drawings, it is not possible to indicate all offsets, fittings, materials, devices and equipment which may be required. The CONTRACTOR shall carefully investigate all conditions affecting his work and plan his work accordingly, furnishing such fittings, materials, devices and equipment as may be required to meet all conditions.
- B. The drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in the most direct and workman like manner so that conflicts between the irrigation systems, planting and other site features will be avoided.
- C. This **CONTRACTOR** shall be responsible for repairing all damage he impacts on the existing landscape to a state equal to or better than that which existed prior to the commencement of this contract. All repairs shall conform to the City of Medford planting standards, local codes, regulations and industry standards.
- D. A pre-construction meeting shall be required prior to the commencement of work within the scope of the Irrigation portions of this contract. The pre-construction meeting shall include a review of plans and a review of required inspections and applicable specifications.
- E. A work schedule shall be submitted by the Irrigation Contractor within 48 hours of the commencement of work within the scope of the irrigation portions of this contract.
- F. The CONTRACTOR shall furnish to the Owner's Representative one copy of as-built notes on the contract drawings to the Owner's Representative. The as-built notes shall have measurements to all valves, controllers, and major components from noted land marks. The Owner's Representative and the CONTRACTOR shall work cooperatively in keeping an on-going as-built drawing.

02. SUBMITTALS

- A. Action Submittals
 - 1. Product Data
 - a. Submit copies of manufacturer's product data for all materials to be used for this portion of work.
 - 2. Qualification Statement
 - a. Submit documentation that the installer is a licensed landscape contractor business that specializes in and has experience in successfully installing similar irrigation systems.

B. Informational Submittals

C. Closeout Submittals

1. Operation and maintenance data

- a. The Landscape Contracting Business shall provide an irrigation valve schedule, laminated on both sides with plastic, for placement inside the appropriate controller cabinet.
- b. The Landscape Contracting Business shall provide a clean legible print of the final project record drawing with all zones clearly color coated. The Landscape Contracting Business shall laminate both sides in plastic Submit to Owner's Representative for approval.
- c. The Landscape Contracting Business shall provide copies of all equipment operation instructions, parts lists, service manuals, specifications sheets, warranty information, winterization instructions, precipitation rates for irrigation heads, and circuit time for each zone; properly collated, punched and bound in a (3) three-ring binder. Each binder shall be clearly marked;

PROJECT MANUAL

"Project Name" (From Contract Documents)

Date of Project Completion

Landscape Contracting Business's Name and Address

- d. Submit project manuals to Owner's Representative for review and consideration of approval. Final project closure shall not occur without approval by Owner's Representative.

2. Adjustment keys

- a. Provide (2) two sets of keys to:
 - quick coupling valves (include hose swivel);
 - valve boxes;
 - controller; and
 - sprinkler and rotor head adjustment keys.

03. AS-BUILT DRAWINGS

- a. Provide an as-built plan in AutoCAD format showing changes to the irrigation construction drawings.
- b. An as-built print of record shall remain on-site and be available at any time for review by the Owner's Representative.
- c. Revise as-built prints for work accomplished that day in red ink. As-built field print of record shall be brought up-to-date at the close of each work week. As-built drawings shall in all cases be reviewed by Owner's

Representative prior to backfill of irrigation piping or wires.

- d. Final as-built plans in AutoCad format shall be presented to the Owner's Representative at the final walk-through and shall show the completed irrigation system in relationship to final locations of park improvements.
- e. Provide irrigation schedule and controller zone chart.
- f. Provide one irrigation schedule per automatic controller. Provide all information needed to program the irrigation controller for peak season weekly irrigation needs including station start times, run times, run days, precipitation rates, the available watering window, etc. Provide all calculations used in developing the irrigation program.
- g. Provide one controller zone chart per automatic controller identifying the area of coverage for irrigation zone valve using a distinctly different pastel color on an irrigation plan map over the entire area for each zone's coverage.
- h. Provide a comprehensive operation and maintenance manual with all project components represented. Use manufactures literature for the specific product used on the project.

03. INSPECTIONS OF WORK

CONTRACTOR shall give **two working days'** notice for inspection. The following job inspections will be required during construction:

- A. Pre-construction meeting
- B. Head layout verification (before trenching)
- C. Trench layout verification
- D. Head layout verification after trenching
- E. Trench depth verification
- F. Lateral line visual test
- G. Backfill Inspections
- H. Trench compaction
- I. Nozzle size and adjustment check
- J. Mainline Pressure Test
- K. Mainline Visual Test of Valves
- L. Final walk-through

04. VERIFICATION OF DIMENSIONS AND CONDITIONS

- A. All noted dimensions are approximate. Before proceeding with any work, the CONTRACTOR shall carefully check and verify all dimensions of quantities and shall immediately inform the OWNER of any discrepancy between the drawings and/or specifications and actual site conditions. No work shall be done in any area where there is any such discrepancy until approval for same has been given by the Owner's Representative.
- B. This CONTRACTOR shall verify and be familiar with the locations, size and detail of all points of connections for the irrigation system. Prior to installation the CONTRACTOR shall locate all cables, conduits, sewer lines, water lines and other utilities and take proper precautions not to damage or disturb such improvements.
- C. It is the intent of this irrigation sprinkler system design to reflect the most uniform spacing and thus the most uniform application of water. It is the Contractors' responsibility to reflect this concern by communicating to the Owner's Representative any conflicts which exist between this irrigation system design and the actual site, and by merging actual site conditions and the irrigation plan design. The OWNER will assist the CONTRACTOR in design changes to sprinkler head placement, sprinkler head lay-out, and piping as needed.

05. CODES AND REGULATIONS

- A. All work and materials shall be in full accordance with the applicable codes and regulations and any other legally constituted public authorities having jurisdiction.
- B. Nothing in the specifications or drawings is to be construed to permit work not conforming to the above codes or regulations.

06. MATERIALS AND EQUIPMENT

- A. All material and equipment used in the installation of the work, except as noted otherwise, shall be new and of the best commercial quality normally used for the products of reputable manufacturers of materials.
- B. The following is a list of standard materials to be used in City Park projects:
 - 1. Irrigation systems- general

- | | | |
|----|----------------------------|---|
| a. | P.V.C. Pipe & Fittings | Schedule 40 PVC mainline before valves up to 4".
Class 200 PVC for mainline 6" and larger.
SDR class 315 1/2" mainlines and lateral lines.
Class 200 PVC for laterals 3/4" & larger.
Schedule 40 PVC for all glue fittings. |
| b. | Quick Coupler Valves | Rain Bird #44 – 1” |
| c. | Automatic Controller | Toro Sentinel V3 Satellite Assembly (Radio Ready) with Sierra Wireless LS300 Modem for Sentinel Central Control. Powder coated wall mount for indoor installations, and stainless steel vandal resistant cabinets or pedestal mount for exterior installations. |
| | | Sites w/out Power:
Hunter Node 200, 400, 600 |
| d. | Backflow Prevention Device | 3/4” – 2” Wilkins 950XLT Double Check or Wilkins 975XL Reduced Pressure Assembly. For larger sizes, please contact owner for options. |
| e. | Automatic Control Valves | Hunter ICV valve or Hunter ICZ for drip zones. Angle configuration not allowed. |
| f. | Automatic Control Wires | U.F. #12 or #14 Gauge, 600 Volt, U.L. Listed. Wire connections at valves shall be made with Silicone filled (irrigation type) wire nuts. Wire splices shall be made using “pen-tight” Connectors; crimped and filled with RTV silicone. |
| g. | Automatic Valve Containers | Rectangular standard valve box for 1-1 1/2” valves. Jumbo box to be used on larger valves. All boxes set to grade on pressure treated 4”x4” blocks on compacted fill material. Blocks shall run full length of rectangular boxes. Boxes to be wrapped with geotextile fabric to prevent dirt intrusion. |
| h. | Manual Valve Containers | 10" Round Box & 6" sleeve as needed |
| i. | Glue and Primer | Weldon 721 PVC glue/P70 PVC Primer |
| j. | Ball Valve | Brass, Full Port – For Control valve isolation |

k.	Resilient Seat Isolation Valve	Kennedy Ken-Seal II with flange ends
l.	Quick coupler swing joint	Consist of (3) Sch. 40 PVC Street ells, (1) 8" Sch 80 PVC Nipple, connected to threaded tee or elbow. All threaded fittings to be sealed with Teflon tape.
m.	Swing joint assembly for heads	Consist of (1) Sch 40 PVC street ell at tee or elbow connected with appropriate length Sch 80 nipple set at approximately a 45 degree angle to two Sch 40 Marlex street ells under sprinkler head. All Threaded fittings must be sealed with Teflon Tape; All swing joints must be the same size as sprinkler/distributor inlet.
n.	Sprinkler Heads	Hunter I-25-04 pop-up rotors for turf Hunter I-20-04 pop-up rotors for turf Hunter I-40-04-ON pop-up rotors for turf Hunter PGJ-04/06 for turf or shrubs Rainbird 1806 or 1812 SAM-PRS for turf or shrubs (Side inlets are not to be used without owner approval)
o.	Drip Distributors	Rainbird XBD-80 – With written owner approval only
p.	Inline emitter dripline	Rainbird XFS Series
q.	Flow Sensor	Toro TFS Flow Sensor – Sensors should be sized for flow rather than pipe size.
r.	Communication Cable	The communication cable from flow meter and master valve to controller shall be PE-89
s.	Master Valve	Bermad 410 Series Normally-Open iron body valve

07. TRENCHING AND BACKFILLING

A. This CONTRACTOR shall do all necessary excavation, shoring and backfilling required for the proper installation of the work of this division.

B. Damage to turf from wet soil conditions:

1. During the "wet season" vehicular traffic on turf areas shall be subject to approval by Owner's Representative on a case by case basis.
2. During the "wet season" trenching shall only be performed with a trencher or by hand on turf areas. Written consent for any other method of trenching may be obtained from Owner's Representative when CONTRACTOR can demonstrate his ability to perform said trenching without impacting excessive damage to turf areas. Such consent will not waive Contractors' liability for damage to the existing facility.

C. Trenching

1. Excavation shall be open vertical construction. Provide free working space around the work installed and provide ample space for backfilling and compacting.
2. Trenches for pipe shall be cut to required grade lines, and trench bottoms shall be compacted to provide an accurate grade and uniform bearing for the full length of the line.

D. Backfilling

1. In no event shall the CONTRACTOR cover up or otherwise remove from view any work under this contract without prior approval of the Owner's Representative. Any work covered prior to inspection shall be opened to view by the CONTRACTOR at his expense.
2. Trenches shall be back filled with excavated earth after all clods, rocks or large lumps have been removed or broken up **with initial backfill over plastic pipe being of a fine granular material.**
3. Backfill material shall be approved soil to adjacent depth of topsoil. Unsuitable material, including rocks over 2½" in size, shall be removed by the CONTRACTOR at no cost to the OWNER.

E. Backfill Compaction

1. Backfill shall be "water jetted" or compacted with an appropriately sized gas powered mechanical compactor in 6" lifts when soil moisture level is low enough to permit. Soil moisture level shall be evaluated by Owner's Representative.
2. Backfill must be "water jetted" when soil moisture level is too high for proper mechanical compaction.

08. INSTALLATION

A. Pipe:

1. Pipe lines shall be installed of the sizes shown on the drawings or specified herein and of the materials and workmanship specified. Pipe in shrub beds to be located at edges of beds where ever possible to avoid piping under shrubs and trees.
2. All pipes shall be assembled free from dirt and pipe scale and shall be reamed and have burrs removed. Flushing of installed pipes is required prior to the installation of sprinkler heads.
3. Permission to cut or break sidewalks and/or concrete must be obtained from the Owner's Representative. All pipes and wires under walks, pavement, and concrete are to be sleeved.
4. P.V.C. Plastic Pipe - Solvent Weld
 - a. All solvent welds shall be made according to industry standards and to manufacturer's labeled instructions and will include the use of primer on all welded joints.
 - b. All welded joints shall cure at least 15 minutes before being moved or handled and at least 24 hours before water is permitted into the pipe.
 - c. Pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction. One additional foot per 100 foot of pipe is the minimum allowance for snaking. Never lay PVC pipe when there is water in trench or when temperature is 32° degrees F or below.
 - d. Underground lines shall have a minimum horizontal clearance 2 x pipe size between each pipe. The requirement does not apply to any lines crossing at angles from 45° to 90° degrees with each other. A minimum 2" inch vertical clearance shall be maintained between lines that cross at these angles.
 - e. Required cover over top of pipe is as follows:

Pressure mainline - 18" min./ 24" max.
Lateral line - 10" min./ 16" max.
1/4" low volume vinyl distribution tubing/inline emitter tubing- 2" cover of soil and 3" cover bark for a total of 5" of cover.

5. Sleeves:

All pipes and wires under rock, paved, or concrete surfaces shall be in Schedule 40 PVC sleeves. All sleeves are to be twice the size of passing pipe. All wires to valves to be in separate sleeves, adequate for carrying twice the intended number of wires.

Sleeves to be marked with "Tico" style nail on both ends of sleeve 6" from edge of paved surface. One nail can be used to mark multiple sleeves in same area.

B. Valves:

Piping systems shall be supplied with valves at all points shown on the drawings or specified herein, arranged to give complete regulating control throughout and shall be installed as detailed and in accordance with manufacturer's recommendations.

Remote control valves:

Install per City of Medford Irrigation standard detail.

Provide valve box for all valves. In athletic sports fields and at Owner's direction, bury box 2" below grade. In non-athletic play areas, set at grade visible to the eye. Protect if necessary below base of box to prevent soil from encompassing valve. Set all boxes on pressure treated 4"x4"s running full length of rectangular boxes and on two sides of round boxes. Install with a minimum of 1" clearance between pipe and any part of box or blocking. Holes in boxes must be blocked with plastic to prevent dirt intrusion.

C. Control Wire:

1. Wire shall be laid in trenches traveling via the mainline whenever possible from controller to the valve.
2. Wire shall be "taped" below mainline with electrical tape at 10 foot intervals.
3. Provide a 36" expansion loop at each control valve.
4. All splices shall be in boxes and noted on as-built.
5. Splicing of wire shall be made with Rain Bird Pen-Tite wire connectors or approved equal. Crimp style direct bury connectors. Connections to solenoids shall be made with silicone-filled wire nuts.
6. All control wire shall have 18 inches minimum cover.
7. All control wiring under paving, curbs, walls etc., shall be protected by a pipe (Such. 40 PVC) sleeve of adequate size and proper installation for "pulling" twice the required number of wires.
No taping of wire inside sleeve.
8. Install 1 extra wire to each extreme end of the mainline unless additional wires have been required for future development.

D. Thrust Blocks

Install concrete thrust blocks in burlap at all angle points and terminations of mainline pipe 2½"

inclusive and larger. Build thrust block against undisturbed soil. Thrust block must not “wrap” over top of pipe. See City of Medford standard detail for thrust block size and bearing surface area.

09. TEST

A. Pressure Test of Mainline

1. Pressure test only the portions of the irrigation system which are installed in this contract. Before "tying into" an existing piping system, cap the end which is to be connected and pressure test the new piping only.
2. Pressure test mainline with valves installed. Cap off down-stream of valves prior to testing.
3. Center load all mainline pipe leaving all glue joints exposed.
4. Install thrust blocks before pressure test.
5. Flush dirt prior to installation of valves & bleed air from main line prior to test.
6. 120# pressure shall be sustained in the lines for two hours. If leak develops in glued joints, the joints shall be replaced and the test repeated until the entire system is proved to be water tight.

B. Visual Mainline Test

1. Prior to the connection of valves to lateral lines, a visual inspection of valves and valve manifolds shall be required.
3. The mainline shall be held at the existing static pressure for 24 hours. A visual inspection shall be performed to determine if leaks develop in the threaded and glued portions of the manifolds. Corrective steps shall be taken and the test shall be repeated until the mainline is shown to be drip-tight.

C. Visual Lateral Line Test

A visual inspection shall be performed to determine if leaks develop in the glued portions of the lateral line. Cap the swing joints with threaded caps, and maintain static line pressure on the line for a period of two hours. The test shall be repeated until the glued portions of the lateral line is shown to be drip-tight. Threaded portions of the lateral lines shall be tightened to eliminate leakage unless leakage occurs at temporary caps.

Tests shall be observed and approved by the Owner's Representative prior to backfill.

D. Visual Inspection of heads/emission devices, boxes, controller installation, and zone sequencing.

- 1) Heads shall be at grade and plumb.
- 2) Nozzles shall be free of debris, aimed to maximize efficiency and minimize overspray.
- 3) Drip distributors shall be just visible above grade/mulch.
- 4) Boxes shall be flush with grade
- 5) Boxes on athletic field shall be buried 4" deep, with sod grown over top of box

10. GUARANTEE

Guarantee sprinkler system work, and all parts thereof against defective material and workmanship for one year from date of acceptance. Correct same with no expense to OWNER.

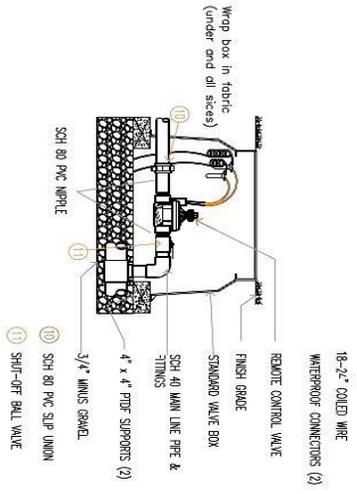
Repair any settling of back-filled trenches occurring during a one year period after final acceptance with no expense to owner. Include complete restoration of all damaged planting, paving, or other improvements of any kind.

CONTRACTOR shall not be held liable for damages to sprinkler system caused by acts of God or vandalism.

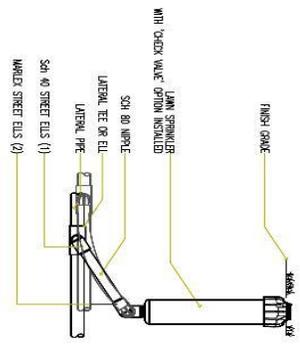
IRRIGATION INSPECTION SCHEDULE

CONTRACTOR shall give two working days notice for inspection. The following job inspections will be considered complete when dated and initialed by inspector:

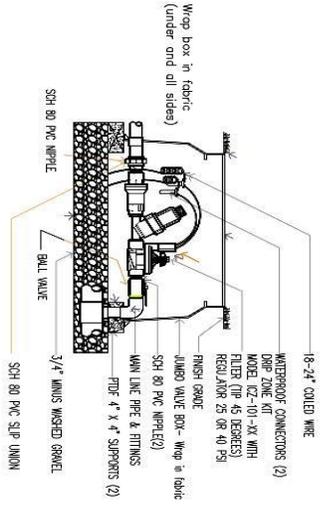
ITEM	INSPECTION DESCRIPTION	CONTRACTOR NAME	INSPECTOR NAME	DATE
1	Pre Construction Meeting			
2	Head Layout (flagged before trenching is begun)			
3	Trench layout changes provided on paper to irrigation designer for pipe sizing modifications			
4	Lateral Line & Head Layout checked after trenching			
5	Trench Depth Verification			
6	Lateral Line Visual Test			
7	Backfill Inspections			
8	Trench compaction			
9	Nozzle size and head adjustment checked			
10	Final walk through			



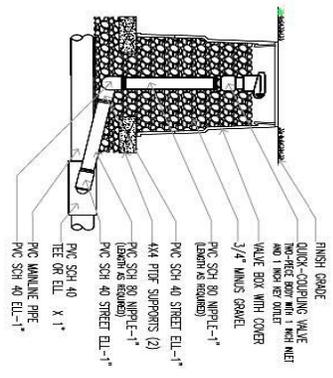
V1 GLOBE VALVE



Sp1 Sprinkler & swing assembly



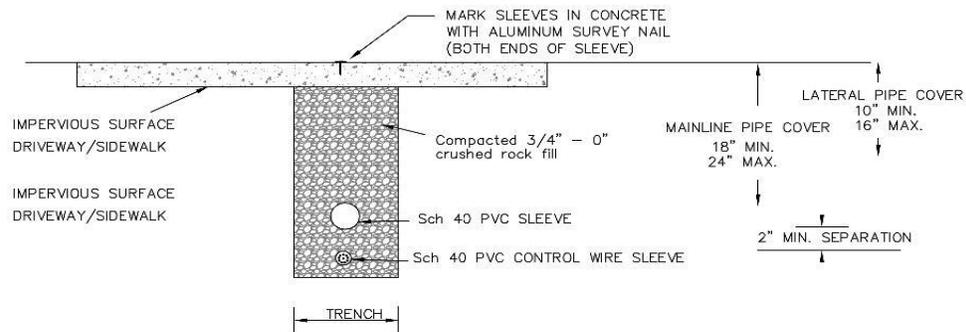
V2 DRIP CONTROL ZONE



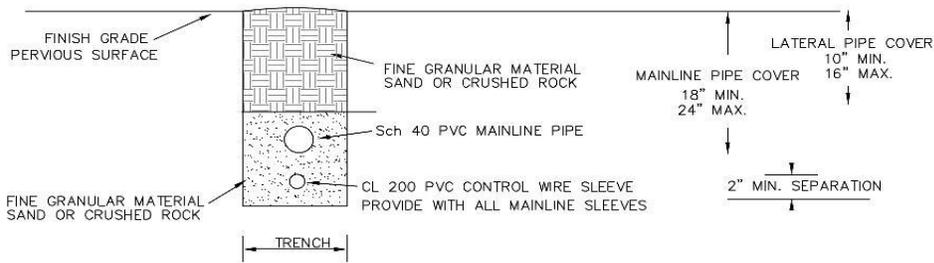
V3 QUICK COUPLING VALVE

IRRIGATION DETAIL SHEET
NO SCALE

Sch 40 PVC mainline sleeves, installed with 18" cover.
 Sch 40 PVC lateral line sleeves, installed with 12" cover.
 Perm. mark ends of each set of sleeves with P.K. nail placed in concrete directly above sleeve, 2" from edge of AC or concrete. Install at appropriate time as concrete dries after pour.
 Temp. mark ends of sleeve sets with 1" x 2" wood stake protruding 12" above finish grade.
 Sleeves to extend 24" beyond hard surface. Tape ends with duct tape too keep out dirt.
 Tape irrigation tracer wire to bottom of each set of sleeves.



IRRIGATION SLEEVE TRENCH DETAIL
 NO SCALE



IRRIGATION PIPE TRENCH DETAIL
 (WHERE NOT UNDER IMPERVIOUS SURFACE)
 NO SCALE

Irr 3

February 2015

LANDSCAPE PLANTING SPECIFICATIONS

SCHEDULE OF WORK

- A. Site preparation and preliminary grading
- B. Soil preparation
- C. Finish grading
- D. General planting and hydro-mulching
- E. Cleanup and protection
- F. Establishment maintenance
- G. Guarantee

GENERAL REQUIREMENTS

- A. Due to the scale of drawings, it is not possible to indicate all offsets, fittings, materials, devices and equipment which may be required. The CONTRACTOR shall carefully investigate all conditions affecting his work and plan his work accordingly, furnishing such plant material, soil amendments, devices and equipment as may be required to meet all conditions.
- B. The drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in the most direct and workman like manner so that conflicts between the landscape planting and other site features will be avoided.
- C. This CONTRACTOR shall be responsible for repairing all damage he impacts on the existing landscape to a state equal to or better than that which existed prior to the commencement of this contract. All repairs shall conform to the City of Medford planting standards, local codes, regulations and industry standards.
- D. A Pre-construction meeting shall be required prior to the commencement of work within the scope of this contract. The pre-construction meeting shall include a review of plans and a review of required inspections and applicable specifications.
- E. A work schedule shall be submitted by the Landscape CONTRACTOR within 48 hours of the commencement of work within the scope of this contract.
- F. The CONTRACTOR shall furnish two (2) copies of as-built drawings to the Owner, or his representative, which shall be separate, clean, blueline prints showing a complete and accurate picture of the work as actually installed. These shall be provided within fourteen (14) days of completion of the work performed.
- G. It is the intention of this contract to ensure a top quality growing medium throughout the planted areas on this project site. This applies to the preservation of the top three feet of native soils in said planted areas, including turf, groundcover, shrub and tree locations. Adequate measures shall be taken to preserve soil structure in native and imported soils to be used within the top three feet of planted areas.

VERIFICATION OF DIMENSIONS AND CONDITIONS

- A. All noted dimensions are approximate. Before proceeding with any work, the CONTRACTOR shall carefully check and verify all dimensions of quantities and shall immediately inform the OWNER of any discrepancy between the drawings and/or specifications and actual site conditions. No work shall be done in any area where there is any such discrepancy until approval for same has been given by the OWNER or his representative.

- B. This CONTRACTOR shall verify and be familiar with the locations, size and detail of all points of connections for the irrigation system. Prior to installation the CONTRACTOR shall locate all cables, conduits, sewer lines, water lines and other utilities and take proper precautions not to damage or disturb such improvements.

CODES AND REGULATIONS

- A. All work and materials shall be in full accordance with the applicable codes and regulations and any other legally constituted public authorities having jurisdiction.
- B. Nothing in the specifications or drawings is to be construed to permit work not conforming to the above codes or regulations.

MATERIALS

- A. **Product Handling:** Deliver fertilizer, seed, etc., in original unopened containers each bearing manufacturer's guaranteed analysis, name, trade mark, and conformance with governing regulations and laws. Upon job site delivery, protect plant material against damage or dehydration. Store plant material in shade and protect against harmful weather. Cover and maintain plant roots and root balls with acceptable material.
- B. **Fertilizers and Soil Conditioners:** All material shall be first grade commercial quality and shall have certificates of source of material, analysis, weight, attached to each sack or container. Delivery certificates shall be given to the OWNER's Representatives as material is delivered. A list of materials used, together with typical certificates of each material, shall be submitted to the OWNER's REPRESENTATIVE prior to the final acceptance of the job. Tree and shrub fertilizer shall be Agriform plant tablets or equal.
- D. **Pre-emergence:** Product and application rates per approval by OWNER'S REPRESENTATIVE.
- E. **Plant Materials**
 - (1) Plant materials shall be furnished in quantities and spacing as indicated or noted for each location and shall be of species, types, sizes, etc., as indicated in the planting plan. Quantities called out on the planting schedule are for the convenience of the CONTRACTOR only. Provide sufficient plants, not smaller than indicated, to complete work shown on drawings.
 - (2) Plants shall be protected from the wind in transit and after delivery to the project site. Plants in broken containers will not be accepted, and plants with broken branches or injured trunks will be rejected.
 - (3) Shrubs and trees are specified by container size or by caliper of trunk. Plant material shall be first class material equal to the size of similar material in local retail nurseries.
 - (4) All plant materials shall be healthy, vigorous, with a good root system and shall be free from pests or disease. Plants shall be first class representations of their normal species or varieties. They shall have normally well developed branch systems and vigorous and fibrous root systems, free from kinked or girdling roots, as shown in the current edition of "Horticulture Standards" for number one grade nursery stock as adopted by the American Association of Nurserymen.
 - (5) Ground covers shall be purchased from a reputable grower. All material shall be first quality, fresh and well rooted, free from pests.
 - (6) Sodded Lawn: Shall be purchased from a reputable grower. All sod shall be first quality, fresh, well rooted,

free from thatch, weeds, and all pests. Sod shall be sufficiently mature so that it will hold together when handled.

- (7) Seeded Lawns: Three-way rye grass blend. Mixture shall be a minimum of 1/3 turf-type improved perennial rye mix with no single cultivar representing no more than 35% of the total mix. Seed shall contain no more than 1% other grasses and be free of Poa Anna and coarse grasses. Seed shall be Blue-tag Certified and the current season's crop; treated with appropriate fungicide at time of mixing to prevent damping off.

F. Hydro-seeding

(1). Materials:

- a. Equipment shall have a built in agitation system and operating capacity sufficient to agitate, suspend and homogeneously mix a slurry containing not less than 20 kilos (44 lbs.) of organic mulching amendment plus fertilizer, chemical additives and solids for each 100 gallons of water.
- b. Cellulose Fiber Mulch: Apply at a minimum rate of 1500 lbs./acre.
- c. Fertilizers: Best 6-20-20 or Best 15-15-15 or approved equal applied at rate appropriate for product.
- d. Organic tackifier shall be applied at rate of 70 lbs./acre.
- e. Hydroseed seed mix shall be applied at the lbs./1000 sq.ft. designated on the planting plans.

(2) Installation procedures:

- a. Inspection of conditions: Examine related work including irrigation and grading of surface before proceeding with any work and notify the Engineer in writing on conditions which may prevent the proper execution of this work. Failure to report unsuitable conditions will require the contractor to rectify unacceptable work at no additional cost to the City.
- b. Water all plant areas thoroughly to saturate upper layers of soil prior to the hydroseeding operation.
- c. Allow the planting area soil surface to dry out for one day only prior to the hydroseeding application. Exercise care not to allow the soil surface to be overly saturated with water prior to the hydroseeding installation. At the same time the soil surface should not become too dry during this period. There should be some residual moisture within the first 1/4 inch of the soil surface.
- d. Prior to starting the hydroseeding operation notify the Engineer forty eight (48) hours in advance to be present at start of start of hydroseeding.

(3) Application:

- a. Apply the hydroseeding in the form of a slurry consisting of organic soil amendments, commercial fertilizer, and any other chemicals that are called out. When hydraulically sprayed onto the soil, the mulch shall form a blotter-like material. Direct the spray operation so that this procedure will drill and mix the slurry components into the soil, the slurry spray will also penetrate the soil surface, thus ensuring maximum impregnation and coverage. The impregnation and mixing of the components will help in retaining moisture while stabilizing soil surface from superficial erosion.
- b. Do not let the hydroseeding slurry components in the hydroseeding machine for more than two (2) hours because of possible seed destruction. If slurry components are left for more than two hours in the machine,

add 50% more of the originally specified seed mix to any slurry mixture which has not been applied within the two hours after mixing. Add 75% more of the original seed mix to any slurry mixture which has not been applied eight (8) hours after mixing. All mixtures more than eight (8) hours old, must be disposed, off-site, at the contractor's expense.

c. Spray the area with a uniform visible coat, using the dark color of the cellulose fiber as a visual guide. The slurry shall be applied in a downward drilling motion via a fan stream nozzle. Insure that all of the slurry components enter and mix with the soil. Insure the uniformity of the hydroseed application. The hydraulic contractor shall be approved by the Engineer.

d. Exercise special care to prevent any of the slurry from being sprayed onto any hardscape areas including concrete walks, fences, walls, buildings, etc. Remove all slurry sprayed onto these surfaces at the contractor's expense.

e. Contractor shall save all seed and fertilizer tags and fiber mulch bags for the Engineer to verify compliance with the drawings and specifications.

f. The City Engineer shall be present during the hydroseeding operation and has final determination if conditions are acceptable for hydroseed application.

(4). Maintenance

Upon acceptance of hydroseeding operations, maintain all hydroseeding areas for a period of 90 calendar days as follows:

a. Germination stage irrigation: Approximately 25 hours after hydroseeding the planting areas, initiate the watering sequence. Leave the water on long enough to moisten the soil thoroughly to the depth of the slurry mulch taking care not to super saturate or wash away the slurry and seed. Perform frequent, light irrigation until the seed has germinated. Repair all seed washings and erosion.

b. Establishment stage irrigation: After germination, reduce each watering. The specific watering program shall be approved by the Engineer.

c. Fertilization: Fertilize all hydroseed areas with an approved commercial fertilizer, 30 calendar days from the start of the maintenance period and continuing once every 60 calendar days until the completion of the 90 calendar day maintenance period.

d. Weeding: All concentrated developments of weed growth appearing in the seed mix planting areas during the maintenance period shall be removed at two (2) week intervals. The contractor may elect to remove such concentrations of weeds manually or by a City approved herbicide program.

e. Minimum Coverage and Acceptance:

i. Minimum coverage: Final acceptance may be given at the end of the 90 calendar day maintenance period if an acceptable germination of turf and adequate plant establishment has been obtained, as determined by the Engineer.

ii. Final approval and acceptance will be given in writing by the Engineer following a final acceptance inspection. The Engineer reserves the option to extend the maintenance period to achieve complete germination of all turf or other plant materials with a uniform height, color and density throughout all hydroseeded areas.

F. TREES SELECTION AND PRODUCTS

(1) General Appearance

- a. The tree should have a balanced shape.
- b. Balled and burlapped trees are bought during the dormant season, so have no leaves.
- c. For containerized trees, make sure there are no bare spots in the foliage, missing or damaged limbs, or discolored or spotted leaves, unless it's the end of the summer season.
- d. The tree should have a single strong "central leader"
- e. Check the size of the crown and rootball in relation to the caliper size of the tree.

(2) Crown

- a. Make sure the branches come off the leader trunk at between 45-degree and 90-degree angle. -The more the angle (the more parallel to the ground), the better.
- b. Wounds from pruned branches should be calloused over, or well on their way.
- c. Branches should be distributed evenly through out the tree. This is called good scaffolding.
- d. There should not be any "clusters" of branches. Branches should be about one-quarter of the height of the tree. Too long limbs place undue burden on the tree.

(3) Trunk

- a. The trunk should be straight.
- b. Look for insect damage such as bore holes.
- c. The trunk should be free of discolored, swollen, or sunken areas.
- d. No wound should be longer than one-quarter of the trunk's circumference.

(4) Stakes and Ties:

- a. Ties: Heavy duty 1" stretch tie; reinforced rubber tie, or approved equal
- b. Tree stakes: 2" diameter treated lodge-pole stake, or 2" x 2" x 8' fir stake

- G. **Shrub Bed Mulch:** Mulch shall be approved by OWNER'S REPRESENTATIVE. Apply an approved pre-emergence in all barked areas.

GRADING

- A. The CONTRACTOR shall grade all areas within the scope of these plans and specifications and shall also be responsible for a smooth transition and appropriate drainage from his work to adjacent lands. Rough grades shall take into consideration the amount of soil amendments and sod, if required, to be tilled into the soil.

It is the intention of this contract to hold to a standard that is higher than common practice for soil grading, excavation and preparation in Southern Oregon.

Final grades:

½" below walk and curb surfaces for seeded turf.

¾" below walk and curb surfaces for sodded turf and planting areas.

3/8" below catch basins and drain inlets, manholes and similar features.

slope all beds 1/4" per foot away from walkway for a minimum of 5 feet unless otherwise indicated on the grading plan.

swales and mounds created shall have rounded contours with no abrupt edges, shall be aesthetically pleasing, and shall not exceed a slope of 1:6 in mowed lawn areas.

Grades between such points shall be sustained grades, carefully blended to eliminate abrupt changes. Grades at building walls shall slope from the building at a minimum of 20% gradient for a minimum of 5 linear feet.

No grade changes shall occur under the drip lines of existing trees which are to be preserved.

No excavation, grading, or cultivation shall occur within landscaped areas when soil moisture levels do not conform to section "SOIL MOISTURE LEVELS" of this contract

Local grading ordinances shall have precedence.

B. Prior to planting the following conditions shall exist:

(1) Imported topsoil- shall be free of all deleterious matter (as defined below) over 3/4"

(2) Existing topsoil:

- a. in seeded areas- the top two inches shall be cleaned of all deleterious matter (as defined below) over 1" in diameter
- b. in planted areas- the top 6 inches shall be cleaned of all deleterious matter (as define below) over 2" in diameter
- c. Top 12" of soil in planted area shall be well draining, friable topsoil, as determined by Owner;
- d. Existing soils compacted when soil is excessively wet shall be removed to a minimum depth of 12", or down to a depth where soil has not been compacted, whichever is greater.

(3) In all landscaped areas:

- a. Remove all rock base material beyond a zone required to support said concrete as defined by a line extending at a 45 degree angle form the corner of concrete; and
- b. Remove all rock base material beyond a zone required to support said asphalt path or roadway as defined by a line extending at a 45 degree angle form the corner of required rock shoulder.

Deleterious material shall be considered to be all weeds, stones, stumps, roots, wire, plaster or similar objects that would be a hindrance to planting or maintenance.

C. It is understood that the CONTRACTOR shall accept conditions of the site upon submittal of bid except where extensive subgrade obstructions of native rock or pre-existing debris are encountered.

D. If on-site topsoil is approved by Owner for use, topsoil shall be mined from the existing top 12" of the natural soil grade that existed prior to the construction of the park. Stockpiled topsoil shall be stored separate from other soils or contaminants. Topsoil shall be required in all areas shown to require grasses, groundcovers, shrubs, and or trees

to the full depth required to match the finish grades shown on grading plans for this project.

SOIL PREPARATION

- A. Load tickets, bags, labels and other physical descriptive material will be required to be presented or shown to the OWNER's REPRESENTATIVE prior to acceptance.
- B. Prior to tilling, required soil preparation shall be spread upon the ground to check uniformity of distribution and depth.
- C. Till all shrub beds to a depth of 10 inches and seeded lawn areas to a depth of 6 inches unless so noted on plan.
- D. Precautions are to be taken to avoid soil stratification and to insure a gradual transition throughout the soil profile to a minimum of 36 inches and more optimally down to the native soils.
- E. Tilled areas shall receive a comprehensive soil test, sent to a certified soils testing laboratory, to be approved by OWNER's REPRESENTATIVE. Apply recommended soil amendments, in addition to and in compliment to the following:

(1) Definitions:

Manure shall be decomposed, un-leached, stable or cattle manure; free of weed seed and refuse containing harmful chemicals or materials

Peat Moss shall be brown, acid reaction from 4 to 5 pH; low in content of woody material and free from mineral matter harmful to plant growth; water absorbing capacity of 1,100 to 1,200 percent; moisture content not to exceed 30 percent; natural fine shredded or granulated.

Sawdust shall be nitrified, at least 10 years old and free of foreign matter. Cedar or Redwood sawdust is unacceptable.

(2) Lawn Areas

6 cu. yd/1000 S.F. (approximately 2" thick) of sawdust
10 pounds/1000 S.F. of Iron Sulfate
30 pounds/1000 S.F. of 6-0-6

(3) Shrub & tree Areas

12 cu. yd/1000 S.F. (approximately 4" thick) of manure
50 pounds/1000 S.F. of dolomite limestone
20 pounds/1000 S.F. of super phosphate
5 pounds/1000 S.F. of muriate of potash
30 pounds/1000 S.F. of ammonium sulfate

Apply the following per each plant:

Container

Fertilizer & Amendment

1 gallon

one (21 gram) Agriform tablet

5 gallon	two (42 gram) Agriform tablet
15 gallon	six (126 gram) Agriform tablet
All boxed & B&B	one (21 gram) Agriform tablet/cubic feet of excavation

The OWNER's REPRESENTATIVE may require the CONTRACTOR to "pull up" an adequate number of plants, at random, of the various sizes indicated on the plan to inspect for proper backfill mixture and fertilizer, i.e. 1% or a minimum of two (2) for each plant size.

(4) Annual Flower Beds

- 12 cu. yd/1000 S.F. (approximately 4" thick) of manure
- 6 cu. yd/1000 S.F. (approximately 2" thick) of peat moss
- 50 pounds/1000 S.F. of dolomite limestone
- 20 pounds/1000 S.F. of super phosphate
- 5 pounds/1000 S.F. of muriate of potash
- 30 pounds/1000 S.F. of ammonium sulfate

- F. Tilled soil shall be uniform in texture to required depth, soil amendments well distributed throughout the tilled depth, and the entire depth loose and friable.
- G. **Structural Soil mix and installation:** shall be consistent with Cornell University specifications for Structural Soils, "Canadian Mix", or approved equal. CONTRACTOR shall submit specifications and samples to the Owner's Representative, and shall receive written approval for the proposed Structural Soil ingredients a minimum of two weeks prior to delivery onto this project site. All phases of the Structural Soils delivery, mixing and installation process shall be inspected by the OWNER'S REPRESENTATIVE. A minimum of a one week advanced notice shall be given to OWNER'S REPRESENTATIVE for inspection of mixing/installation of Structural Soils.
- H. **Parking lot planter bed islands:** Precautions shall be taken to avoid soil stratification and to insure a gradual transition throughout the soil profile to a minimum depth of 4 feet, or down to the undisturbed native soils if less than 4 feet deep. Blend with a backhoe or tiller 1/3 of the imported topsoil (native to park site) and required amendments into the top 4" of the existing sub-soil. Remove all deleterious material (as defined above including base rock and geotextile fabric) from the blended subsoil prior to importing the remainder of the required topsoil.

SOIL MOISTURE LEVELS

- A. When dry soils exist: water shall be applied to all planted areas prior to tilling and planting. Moisture should reach a depth of at least 6" from the soil surface. Moisture levels shall be at a level which will not promote soil compaction during soil prepping, tilling and planting. Water application rates shall be consistent with soil texture and percolation rates. Care should be taken to eliminate excessive erosion. Should it be deemed necessary, by the OWNER's REPRESENTATIVE, additional soil checks may be required to insure a proper growing medium.
- B. Prior to planting trees and shrubs in dry soils, plant pits shall be irrigated and then allowed to dry to a firm but moist condition.

- C. When moist soils exist: no excavation, grading, or cultivation of any kind shall occur within planted areas when soil moisture levels are high. OWNER's REPRESENTATIVE shall approve soil disturbance if a determination must be made regarding the presence of moist soils.

GENERAL PLANTING

A. Lawn seeding

- (1) **Grading:** Smooth surface soil. Remove all depressions and provide smooth surface slope. Lightly compact surface.
- (2) Sow seed at a rate of 10 pounds per 1,000 square feet.
- (3) Apply 1/8" layer of fine bark mulch.
- (4) Apply lawn fertilizer at a rate of not more or less than one pound of actual nitrogen and potassium per 1,000 square feet per application.
- (5) Roll with filled sod roller or approved equal process ensuring compaction.
- (6) Water immediately and keep seed and soil surface evenly moist through the germination period.
- (7) Reduce moisture levels as needed after germination is complete and turf is visible.
- (8) **Protection:** Place barriers to adequately protect the seeded area from traffic until turf has been mowed as required.
- (9) **Lawn Seed Establishment:** The seed shall be protected and maintained by watering, weeding, fertilizing, and reseeding as needed to establish a dense, uniformly green colored lawn. The Lawn shall not be seeded before all phases required for the establishment of the lawn seed have been accepted (i.e. grading, soil preparation, irrigation). The Lawn Seed Establishment period shall end after the first mowing (see item #11), when a uniform cover of turf is established, and the OWNER's REPRESENTATIVE issues a ***Written Completion of the Lawn Seed Establishment Period.***
- (10) The first mowing shall not be attempted until the turf is rooted and secure in place. Not more than 30% of the grass leaf shall be removed by the initial or subsequent mowing. All turf shall be mowed before it has reached a height of 4". The first mowing shall be at mower blade height of 3 1/2", and shall be reduced by 1/2" per mowing per week until a mowing height of 2 1/2" is achieved.
- (11) **60 Day Lawn Maintenance:** The new lawn shall be protected and maintained by watering, weeding, fertilizing, and reseeding as needed to establish a dense, uniformly green colored lawn for 60 days from the date of ***Written Completion of the Lawn Seed Establishment Period.*** The turf shall be mowed as needed to maintain a 2 1/2" height. This lawn maintenance period shall end with ***Written Completion of the 60 Day Lawn Maintenance Period.*** from the OWNER's REPRESENTATIVE.
- (12) The CONTRACTOR shall not be held liable for damages to turf caused by acts of God or vandalism of seeded turf areas during the Maintenance Period.

B. Ground Cover:

- (1) Ground covers shall be planted in the areas as indicated by the drawings.
- (2) Prior to planting any ground cover during the dry season, all planting areas shall be pre-moistened to a depth of 6".
- (3) All ground covers shall be planted to their proper depth, neither too deep nor too shallow. All roots shall be properly covered.
- (4) In dry season, all ground cover plantings shall be thoroughly watered after completion of each 500 square feet of planted area.
- (5) All ground covers shall be planted in staggered rows, evenly spaced at designated intervals. All plantings shall be brought to all tree and shrub wells.
- (6) Ground cover areas shall receive an application of an approved pre-emergence.

C. **Trees and Shrubs** (See City of Medford standard tree detail for tree installation)

- (1) Plant trees and shrubs only during periods which are normal for such work, as determined by the seasonal weather conditions, and accepted practices.
- (2) Before digging holes, lay out location of all plants and adjust as necessary to existing condition. Location shall be approved by OWNER's REPRESENTATIVE.
- (3) Commercially-engineered root barriers shall be installed for all new trees located within three feet of any public right-of-way impervious surface, and shall consist of six linear feet of 18-inch (minimum) barrier, running parallel to the impervious surface, centered on the tree. (See City of Medford standard tree detail for root barrier installation)
- (4) Balled and Burlapped Trees
 - a. The trunk should not move independently of the rootball.
 - b. The burlap should be tightly wrapped.
 - c. The trunk should be in the center of the rootball.
 - d. Tree roots are pruned and cut before they are wrapped.
 - e. Avoid trees with cut root tips wider than an average finger.
 - f. The more fibrous or "hairy" roots you have, the better.
 - g. It is stressful for any tree to be replanted, and more intact roots give the tree a better chance to survive.
- (5) Containerized Trees
 - a. Pot-bound roots are in danger of "girdling" - encircling the inside of the pot. This occurs when the tree has outgrown its container; girdled roots strangle the tree and do not provide an adequate support system when the tree is planted.
 - b. Avoid trees that have large roots coming out of the water holes or with roots circling on the surface of the soil.
 - c. Store trees out of direct sunlight and keep the burlap moist.
 - d. Caliper size refers to the diameter of a tree's trunk six inches above the ground or the base of the tree where the roots connect. It is an important part of selecting a tree because it will help you ensure that you are getting the proper dimensions for both the height of the tree and size of the rootball. Ideally, the bigger the rootball, the better.
- (6) All plants shall have pits prepared to the following minimum standards unless superseded by local codes or governing agencies:
 - Holes shall be twice as wide as the root ball.

- Holes shall be no deeper than the root ball.
 - Holes shall penetrate to 12" below any layers of disturbed or compacted soil into an un-compacted soil layer. If this is not possible, notify the OWNER'S REPRESENTATIVE for direction.
 - Scarify all sides and bottom of hole. Holes shall not be excavated with an auger.
 - The root ball shall be placed in the middle of the hole.
- (7) Plants shall be set so that when settled, the root crown or flare shall be 1 ½" higher than the finished grade for the planting pit or strip. This may require excavation at the top of the root ball down to the root flare. The top of the root crown or flare of the trees shall be visible upon inspection.
 - (8) Thoroughly moisten root ball to field capacity prior to removing burlap wrap or metal cage. Remove the bottom 1/3 of the burlap and cage. Gently place the tree into the hole in the location specified, taking care not to fracture the root ball. After ensuring there are no girdling roots on the exposed bottom of the root ball, backfill enough to support the tree and remove the rest of the wire cage, twine, and burlap material. If applicable, remove plastic container, felt grow bag, or any other non-biodegradable material from the root ball, ensuring there are no girdling roots present.
 - (9) All broken and frayed roots are to be cut off cleanly without damaging the root ball. All circling and girdling roots shall be pruned prior to backfilling the hole. Place and compact specified backfill carefully to avoid injury to roots. Water settle to fill all voids. Any plant material damaged in planting shall be replaced at once. No plants will be accepted if the root ball is cracked or broken for any reason whatsoever.
 - (10) Plants shall be watered as they are planted and soil basins shall be built around each plant to retain water. Remove basins prior to lawn or ground cover installation. All plants shall be planted immediately after containers are cut and containers shall be regularly removed so as not to present a hazard to those people using the area. No soil in a muddy condition shall be used for backfill.
 - (11) Staking: All trees shall be staked as outlined. Trees shall be staked to protect and anchor only. Stakes shall not be used to support plant material.
 - (12) Bark mulching: Mulch with 3" compacted layer of decorative bark mulch in tree wells. Do not apply mulch within 3" of trunk/crown of trees.
 - (13) All barked areas shall receive an application of an approved pre-emergence applied per the manufacturer's recommendation.

BOTANICALLY SENSITIVE AREAS

Areas under existing trees are labeled Botanically Sensitive Areas (BSA) and shall have added protection afforded them per this contract document. The following steps shall be followed:

- 1) No equipment or vehicles shall enter the BSA without the supervision of the City Arborist and in accordance with the approved tree protection plan.
- 2) No Grade changes shall occur within the BSA
- 3) Install approved construction fencing to protect the BSA as directed by the Owner's Representative
- 4) Work within the BSA shall not commence without notice to the City Arborist from the Contractor. Contractor shall provide a description of all work to be undertaken within the BSA

PRUNING

The OWNER's REPRESENTATIVE may require, when necessary, pruning on any plant material for reason of health, safety, or aesthetic value. Pruning may require thinning, crown reduction, or shaping, and shall be under the direction of the OWNER's REPRESENTATIVE. Tree seal compounds and sprays are not to be used.

PLANTING COMPLETION

Upon completion, all planted areas shall be left clean and shall have all soil between plants lightly cultivated and neatly raked.

CLEAN UP

The CONTRACTOR shall keep the site free from all waste material and debris. Upon completion of the installation, the CONTRACTOR shall remove all waste materials from the site and shall maintain all walks and paved areas free of litter and debris.

TURF, GROUND COVER, SHRUBS, & TREES- Sixty Day Plant Establishment Maintenance Period

A. Scope

- (1) Routine care shall begin immediately after installation of all work. The *Sixty Day Plant Establishment Maintenance Period* of this contract shall begin the first day after all installation work on this project has been completed, inspected, and accepted by the OWNER's REPRESENTATIVE in writing; and shall continue for a sixty (60) day period of time. This sixty day maintenance period shall not begin until *Written Completion of the 60 Day Lawn Maintenance Period* has been issued.
- (2) The CONTRACTOR shall maintain all installed areas of the contract including planting, irrigation system, paving, and other improvements made. It is the intent of this *Sixty Day Plant Establishment Maintenance Period* to maintain the landscaped areas under this contract in a first class condition and to enhance the appearance of this project.
- (3) Plants and ground covers shall be kept in a healthy, vigorous and pleasing condition at all times. Maintenance shall include continuous watering, pruning, trimming, edging, fertilizing, re-staking, pest control, spraying, weeding, replacing, cleaning, mowing, edging, washing, and any other operation deemed necessary to fulfill the intent of the maintenance period.
- (4) The irrigation system shall be maintained in good working condition at all times. Repair of automatic controllers, valves, and continued fine tuning and adjustment of the system shall be part of this maintenance period. Irrigation frequency shall be commensurate with the dictates of the plants' needs, climatic conditions and soil. Excessive and shortages of water application are to be avoided.
- (5) The area shall be kept free of all insects, diseases, and weeds at all times. In particular, all landscaped areas shall be kept free of broadleafed weeds, noxious grasses, and all other undesired vegetation and debris.
- (6) Trimming & Pruning: trimming, pruning, thinning and training of ornamental plants, shall be done as needed or required to maintain a pleasing appearance and shall conform to A.N.S.I A300 standards.
- (7) Shrubs and trees: water all shrubs and trees to required depth. A periodic check of moisture content in the root zone on trees should be made and deep watering adjusted as deemed necessary.
- (8) Lawn Maintenance: follow all requirements described under "General Planting, Lawn Seeding"

B. Certification

- (1) CONTRACTOR shall furnish certified delivery slips for all material used in performance of his work. Delivery slips shall list brand names, material strength and rate of application. The OWNER's REPRESENTATIVE may request samples periodically.
- (2) It is the CONTRACTOR's Supervisor's responsibility to report to the OWNER's REPRESENTATIVE any and all conditions that may exist or occur which detract from the appearance of the landscaping and is beyond the scope of this Contract.
- (3) Certification of Completion

GUARANTEE

- A. All shrubs and trees shall be guaranteed by the CONTRACTOR for a period of one (1) year following the date of final acceptance.
- B. The CONTRACTOR within fifteen (15) days of notification by the OWNER's REPRESENTATIVE shall remove and replace all plant materials which for any reason fail to meet the requirements of the guarantee. Replacement shall be made with plant materials as indicated or specified for the original planting, and all such replacement materials shall be guaranteed as specified for the original guaranteed materials. Labor or material involved in such replacements shall be supplied by the CONTRACTOR at his own expense.

AS-BUILT DRAWINGS

The CONTRACTOR will be required to supply electronic AutoCAD as-built drawings for any changes to the contract drawings.

INSPECTIONS

It will be the CONTRACTORS responsibility to notify the OWNER's REPRESENTATIVE as to when he will be ready for inspection as specified. Further, he will be required to secure the OWNER's REPRESENTATIVE'S signature designating acceptance of that portion of the work, prior to proceeding with the section of work covered by the next inspection.

The CONTRACTOR is to notify the OWNER's REPRESENTATIVE no later than twenty-four (24) hours prior to a requested inspection. The CONTRACTOR is to supply the OWNER's REPRESENTATIVE an updated work schedule of the job with weekly updates on progress.

Request the following list of landscape planting inspections from the OWNER's REPRESENTATIVE at appropriate times and before covering.

A. **Pre-Construction**

1. Review plans, required inspections, and specifications
2. Walk site
3. Work Schedule

B. **Grading**

1. Sub grade check- (not Applicable to this Contract)
2. Topsoil acceptance

3. Final grade check

C. Planting

1. Ground covers, shrubs, trees
 - (a) Plant material acceptance upon delivery
 - (b) Plant location
 - (c) Soil moisture level for soil prepping
 - (d) Soil Prepping
 - (e) Soil moisture level for planting
 - (f) Plant pits and backfill mix
 - (g) Fertilizing
 - (h) Staking and ties
2. Lawns and Lawn substitute
 - (a) Soil prepping
 - (b) Seed mix acceptance
 - (c) *Lawn Seed Establishment Period*

D. Construction Maintenance Period

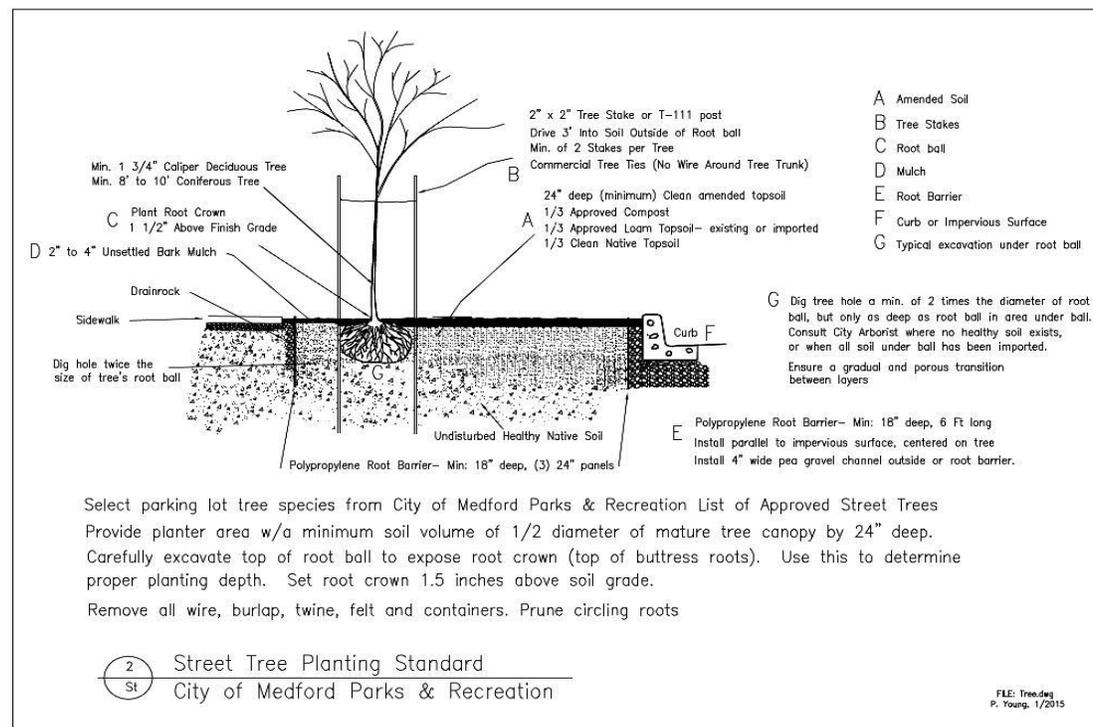
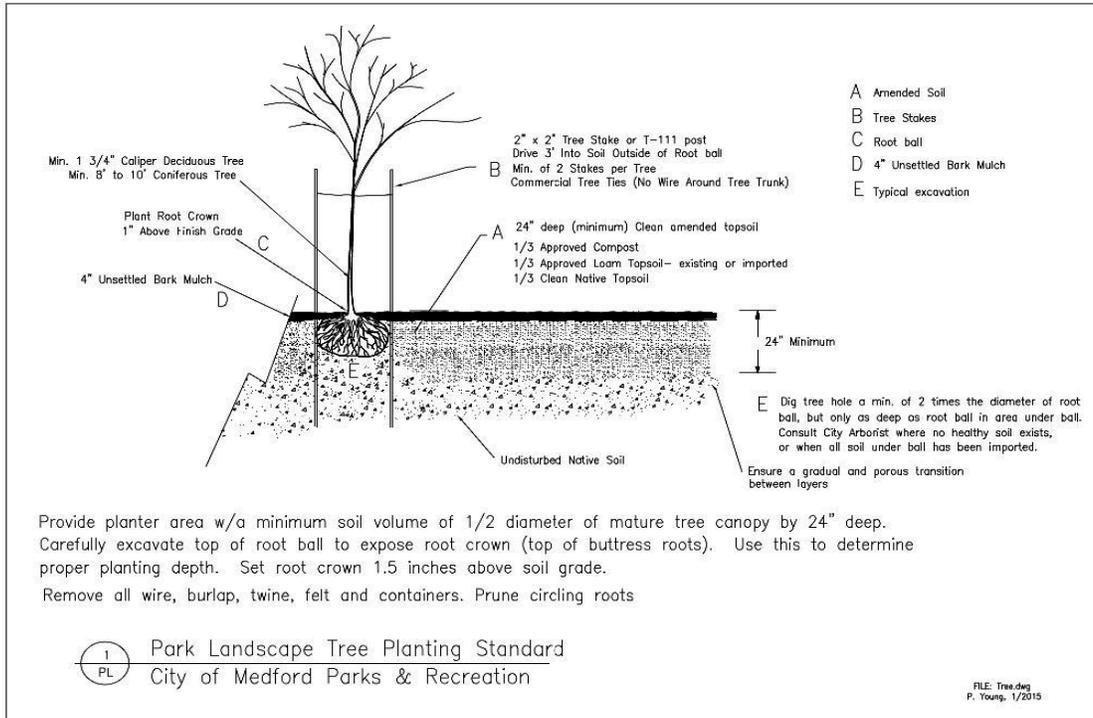
1. *Sixty Day Lawn Maintenance Period*
2. *Sixty Day Plant Establishment Maintenance Period*
3. Punch List
4. Replace dead or dying
5. Certification letters
6. As-built drawings

E. Final Inspection

1. Punch list
2. Certification of completion

F. Post Construction Maintenance Period

1. For the maintenance of all landscaping & irrigation installed as a part of this contract, and the period of the growing season (March through September) inspections shall be conducted at two (2) week intervals to ascertain compliance with specification. The CONTRACTOR will be given two (2) weeks to correct any deficiencies. If, in the opinion of the OWNER's REPRESENTATIVE, the corrections have not been completed at the time of the next scheduled inspection, the establishment period shall be extended, at no cost to OWNER, until corrections have been completed, to the satisfaction of the OWNER's REPRESENTATIVE, but in any event, no less than two (2) weeks.
2. For the maintenance of all landscaping & irrigation installed as a part of this contract, and for the period **not** during the growing season (March through September) inspections shall be conducted at one (1) month intervals to ascertain compliance with specification. The CONTRACTOR will be given two (2) weeks to correct any deficiencies. If, in the opinion of the OWNER's REPRESENTATIVE, the corrections have not been completed at the time of the next scheduled inspection, the establishment period shall be extended, at no cost to OWNER, until corrections have been completed, to the satisfaction of the OWNER's REPRESENTATIVE, but in any event, no less than two (2) weeks.



Follow all of Medford Code 10.780, (10) Tree Requirements.

a. Soil Volume:

Each new or existing tree shall have sufficient soil volume to establish and maintain a root system that will support the tree at maturity. For each tree, at least two cubic feet of soil volume is required for each one square foot of tree canopy at maturity.

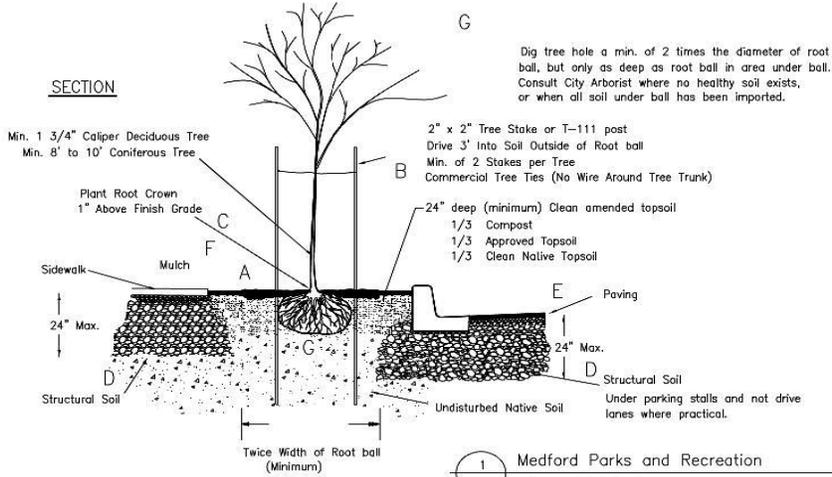
1. Soil volume is calculated as the landscaping area under the tree canopy, free of impervious surface or paving, and at a depth of three (3) feet.
2. For trees within parking area planters or sidewalk planters, in lieu of the soil volume provisions above, structural soil may be utilized as an alternative material under impervious surfaces to meet the required soil volume calculation.

As noted below, the Parks and Recreation Department requires that structural soil be no more than 24" deep placed on native soils on Parks and Recreation Dept. projects.

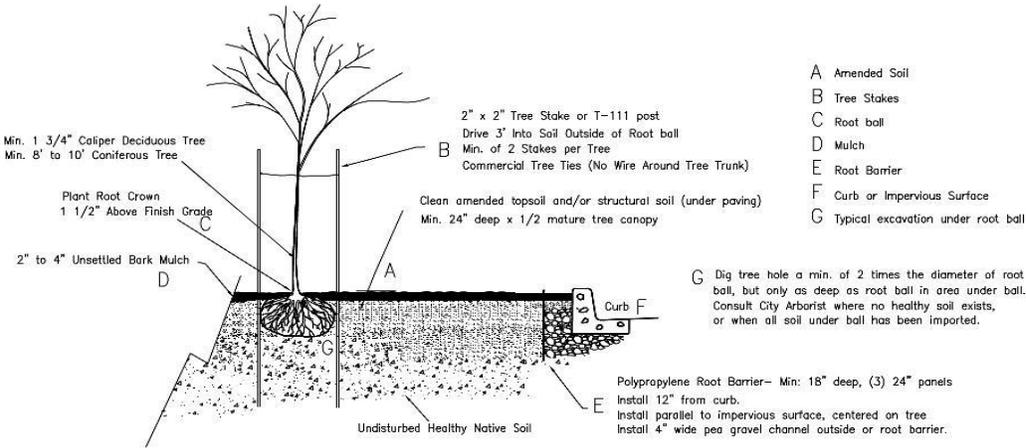
PLAN VIEW

- A Amended Soil
- B Tree Stakes
- C Root ball
- D Structural Soil
- E Impervious Surface
- F Mulch
- G Typical excavation

SECTION



FILE: Tree.dwg
P. Young, 1/2015



Provide planter area w/a minimum soil volume of 1/2 diameter of mature tree canopy by 24" deep.
Carefully excavate top of root ball to expose root crown (top of buttress roots). Use this to determine proper planting depth. Set root crown 1.5 inches above soil grade.
Remove all wire, burlap, twine, felt and containers. Prune circling roots

3
Prkg

Parking Lot Tree Planting Standard
City of Medford Parks & Recreation

FILE: Tree.dwg
P. Young, 1/2015

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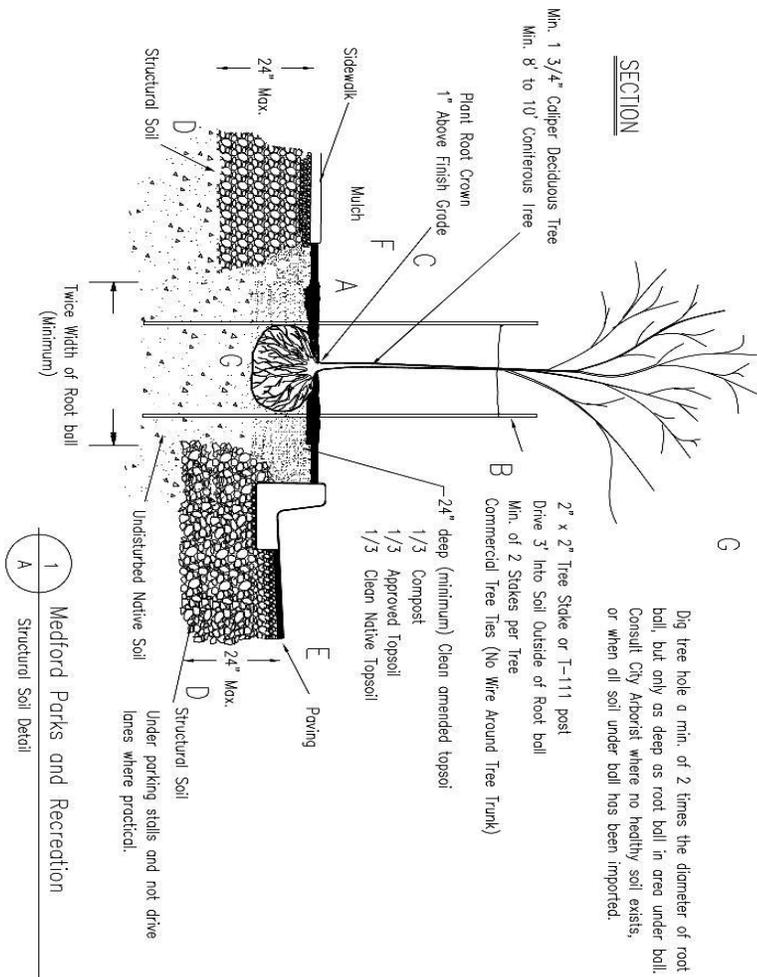
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PLAN VIEW

- A Amended Soil
- B Tree Stakes
- C Root ball
- D Structural Soil
- E Impervious Surface
- F Mulch
- G Typical excavation

SECTION



1 Medford Parks and Recreation
A Structural Soil Detail

**City of Medford
Parks & Recreation Department**

Guideline for the Protection of Trees

This guideline is intended to be used for the preservation of trees on private property.

Trees found within the Public Right-of-way are governed by Medford Municipal Code 6.725 Permit Required, which states “No person . . . shall plant, prune, root prune, remove, cut above ground, or otherwise disturb any tree on public property without prior written permission of the Parks and Recreation Director.”

The following steps will help in developing a viable tree preservation program for the existing trees on your property:

1) Protect the Root Zone

Consider first the path of the construction and where tree roots lie. Approximately 90 to 95 percent of a tree’s root system is in the top three feet of soil; more than half is in the top one foot alone. Every tree has a Protected Root Zone (PRZ), or critical root radius. Calculate this by measuring the tree’s diameter 4.5 feet above the ground. Measure in inches and for each inch allow 1 to 1.5 feet of critical root radius. So for instance if a tree’s diameter is 10 inches, its critical root **radius** is 10 to 15 feet, or 20 to 30 foot **diameter**. This is the minimum area you need to protect (the larger the area, the better).

- a. Measure the tree’s diameter (in inches) about 4 feet off of the ground.
- b. Multiply the diameter by 18
- c. This gives you the radius of the Critical Root Zone

Example: 10” DBH tree x 18 = 180” or 15’ radius.

So, 30’ diameter Critical Root Zone

This area contains most of the roots essential to the tree’s continued health and vigor. If construction encroaches too far into the Critical Root Zone, the structural integrity of the tree may be jeopardized, creating a hazardous tree. Where construction impacts more than 30 percent of the Critical Root Zone, the tree is considered damaged beyond probable recovery.

2) Install metal construction fencing surrounding the Critical Root Zone prior to beginning any construction activity.

- a. Maintain all tree preservation protective fencing until completion of all construction activities.
- b. None of the following may occur within the Critical Root Zone:
 - Grade changes,
 - Parking of equipment, and
 - Spillage of chemicals, fuel, or other toxins
 - Storage of materials.

3) Hire a Project Arborist (PA)

- a. Project Arborist must be certified by the International Society of Arboriculture

b. Project Arborist to identify limbs of trees to be preserved that may interfere with construction activity and equipment. The Project Arborist shall recommend and supervise appropriate methods for protecting the tree limbs, such as careful moving or removing of limbs. Pruning and removal of limbs of trees to be preserved shall be completed by the Project Arborist, according to ANSI A300-1995 standards, using a sharp saw or hand pruners. In no case shall more than 25 percent of a tree's canopy be removed.

c. Roots within the Critical Root Zone of trees to be preserved that may interfere with construction activity shall be located and pruned by Project Arborist as follows:

- Roots encountered within the Critical Root Zone shall be cut using a sharp saw or hand pruners. Roots shall be severed cleanly perpendicular to the long axis of the root and cut ends immediately covered with wet burlap or loam.
- Exposed roots of trees to be preserved shall be covered with burlap, mulch or backfill and kept damp.
- Burlap wrap shall be removed after construction work is completed, prior to final backfill. Exposed roots shall be permanently backfilled as soon as possible.

4) Water trees throughout the duration of construction, at the rate of one inch of water over the undisturbed Critical Root Zone area per week, or as directed by the Project Arborist.

5) Boring or tunneling for utilities installation at a depth of 30 inches or greater is allowed within the Critical Root Zone of a tree to be preserved. Access pits shall be located outside the Critical Root Zone.

6) In certain cases, construction may be allowed to encroach into the Critical Root Zone, but only with additional tree protection measures. The plan may show a zone of protection within the Critical Root Zone of a tree to be preserved, protecting 80 percent of the Critical Root Zone, and allowing construction within the remaining 20 percent. Special tree protection measures will be required for work within that tree's Critical Root Zone, but construction would be prohibited within the remaining Critical Root Zone.