

AVALON AVENUE APARTMENTS

624 Avalon Avenue, Santa Rosa, California





SCALE: 1/16" = 1'-0"

PROJECT DATA

PROJECT LOCATION:

ASSESSOR PARCEL #:

GENERAL PLAN:

SITE AREA:

ZONING:

NEW GARAGE: NEW OFFICE: NEW STORAGE: 500 Square Feet 330 Square Feet 680 Square Feet

Approx. 0.89 acres

624 Avalon Avenue, Santa Rosa, California

Medium Density Residential

125-231-032

PD 96-002

NUMBER OF UNITS: 20 (Existing - No new units proposed)

> 19 one-bedrom units 1 two-bedroom unit

PARKING:

31 (2 Garage + 25 Carport + 4 Uncovered) 31 Required (19 x 1.5 + 1 x 2.5)

NOTES

(1) Grade elevations based on SCWA As-Built Drawings and City of Santa Rosa Sewer & Water Improvement Record Plans (City of Santa Rosa file numbers 87-58, 91-20 and 2002-0023









FLOOR PLAN

AVALON AVENUE APARTMENTS

624 Avalon Avenue, Santa Rosa, California





CONCEPTUAL FLOOR PLAN and ELEVATIONS



PARTIAL REAR VIEW South Elevation







PHOTO 1 - COVERED PARKING



PHOTO 5 - LOOKING EAST

AVALON AVENUE APARTMENTS

624 Avalon Avenue, Santa Rosa, California



PHOTO 2 - FRONT STAIRS



PHOTO 4 - FRONT LOOKING WEST

SITE PLAN & SITE PHOTOS



PHOTO 3 - FRONT LOOKING EAST







04/15/2020 TFA #1619



- 2. THE SPRINKLER SYSTEM DESIGN IS BASED ON THE MINIMUM STATIC PRESSURE OF 25 PSI AT THE VALVES AND THE MAXIMUM FLOW DEMAND SHOWN ON THE IRRIGATION DRAWINGS AT THE POINT OF CONNECTION. THE IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION OF THE IRRIGATION SYSTEM. IF THE WATER PRESSURE SHOWN ON THE DRAWINGS DIFFERS FROM THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY. IN THE EVENT PRESSURE DIFFERENCES ARE NOT REPORTED PRIOR TO THE START OF CONSTRUCTION, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY
- 3. THE LOCATION OF THE CONTROLLER TO BE VERIFIED BY OWNER. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTING ALL PROPOSED STATIONS TO THE CONTROLLER. CONTROLLER TO BE CONFIGURED TO OPERATE 6 STATIONS. CONTROLLER SHALL BE HUNTER IC-600M.
- 4. ONE IRRIGATION CONTROLLER STATION SHALL BE DEDICATED FOR MANUAL OPERATION TO PRESSURIZE THE MAIN LINE FOR QUICK COUPLER AND HOSE BIB USE.
- 5. ALL CONSTRUCTION IS TO BE PER THE LATEST EDITION OF THE UNIFORM BUILDING CODE.
- 6. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ROOT BARRIERS, ETC. SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY. INSTALL PIPING AND VALVES IN PLANTING AREAS WHERE POSSIBLE, AND LOCATE ELECTRIC CONTROL AND QUICK COUPLING VALVES IN GROUND COVER/SHRUB AREAS, 6" TO 12" AWAY FROM HARDSCAPE OR TURF AREA FOR EASY ACCESS.
- 7. THE IRRIGATION CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS FOR OPTIMUM PERFORMANCE AND TO PREVENT OVER SPRAY ONTO WALKS, ROADWAYS, AND/OR BUILDINGS. THIS SHALL INCLUDE SELECTING THE BEST DEGREE OF ARC TO FIT THE EXISTING SITE CONDITIONS AND THROTTLING THE FLOW CONTROL AT EACH VALVE TO OBTAIN THE OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM.
- 8. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE HIMSELF WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, STRUCTURES, AND UTILITIES. THE IRRIGATION CONTRACTOR SHALL EXERCISE EXTREME CARE, AND BE RESPONSIBLE FOR ANY DAMAGE IN EXCAVATING AND WORKING NEAR UTILITIES. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE GENERAL CONTRACTOR AND OTHER SUB-CONTRACTORS FOR THE LOCATION OF UTILITIES AND THE INSTALLATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, AND NEAR STRUCTURES. PRIOR TO CONSTRUCTION, CONTACT ALL APPLICABLE AGENCIES AND U.S.A. AT 1-800-642-2444 TO FIELD LOCATE ALL EXISTING UTILITIES.
- 9. FIELD ADJUSTMENTS MAY BE REQUIRED TO PROVIDE OPTIMUM OPERATING EFFICIENCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE LANDSCAPE ARCHITECT TO REVIEW FIELD ADJUSTMENTS PRIOR TO INSTALLATION. IN THE EVENT THAT NO CONTACT IS MADE WITH THE LANDSCAPE ARCHITECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS
- 10. SLEEVE ALL IRRIGATION PIPE AND CONTROL WIRES UNDER STREETS AND CONCRETE WALKWAYS WITH THE PROPER SIZE CLASS 200 PVC PIPE TO DEPTH AS SPECIFIED. 11. FOR ADDITIONAL INFORMATION, SEE PROJECT DETAILS AND SPECIFICATIONS.
- 12. ALL WORK SHALL CONFORM TO ALL APPLICABLE CITY OF SANTA ROSA CONSTRUCTION STANDARDS.
- 13. NO GALVANIZED IRON PIPE OR FITTINGS SHALL BE ALLOWED.
- 14. A BALL VALVE IN A SEPARATE ROUND VALVE BOX IS TO BE INSTALLED IMMEDIATELY UPSTREAM FROM EACH REMOTE CONTROL VALVE. VALVE SHALL BE SIZED TO MAINLINE SUPPLY AT THE RC VALVE. SEE DETAIL.
- 15. NSTALL 3" WIDE DETECTABLE TAPE (#3" DTP, AS MANUFACTURED BY T. CHRISTY). TAPE SHALL BE INSTALLED 6" ABOVE THE IRRIGATION MAIN. 16. INSTALL ALL LANDSCAPE DRIPLINE 3" BENEATH GRADE AND ALL LINES PARALLEL AT THE SPACING INDICATED. USE LANDSCAPE STAPLES IN ACCORDANCE WITH MANUFACTURER'S
- RECOMMENDATIONS TO SECURE TO TUBING TO GROUND. 17. A SIGNED CERTIFICATE OF COMPLETION IS REQUIRED PRIOR TO FINAL ACCEPTANCE BY THE CITY OF SANTA ROSA. IF THE INSTALLATION OF THE LANDSCAPE DOES MEET OR SUBSTANTIALLY
- COMPLY WITH THE APPROVED LANDSCAPE CONSTRUCTION DOCUMENTS, THE CERTIFICATE OF COMPLETION WILL NOT BE SIGNED OR APPROVED BY THE LANDSCAPE ARCHITECT OF RECORD.

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	Annual Eto							
	43.90							
	Annual Rainfall				Effective Rainfall			
	27.20	Х	0.25	=	6.8			
	Net Evapotranspiration Calculation	=	Annual Eto	-	Effective Rainfall	=	37.10	
В.)	Adjusted Landscape Area Calculation							
	Landscape Area 1.5	33 X	Adjustment Facto 0.45	r =	689.75			
	Special Landscape Area	0 X	Adjustment Facto 0.4	r = =	0 689 75			ACTUAL ACTUAL
		iujuste		-	609.75			DUPLICA
MAWA	37.10	X	0.62	X	689.75	=	15,866 Gallons	
2.) Estimated	d Total Water Use (ETWU)							
A.)	Net Evapotranspiration Calculation							
	Net Evapotranspiration Calculation	=	Annual Eto	-	Effective Rainfall	=	37.10	
	Very Low Water Plant Use SF	0 X	0.10	=	0.00			
	Low water Plant Use SF 1,2	95 X	0.30	=	388.51			
	Moderate Water Plant Use SF	38 X	0.60	=	142.65			
	High Water Plant Use SF -	Х	1.00	=	0.00			
	Sum of A	djuste	ed Landscape Area	=	531.16			
ETWU	= 37.10	х	0.62	X	531.16	/	0.81 = 15,084 Gallons	5

AREA CALCULATION NOTE:

WATER USE CALCULATIONS ARE BASED ON ACTUAL AND DUPLICATED LANDSCAPE AREAS. ACTUAL LANDSCAPE AREAS INCLUDE ALL SITE AREAS OCCUPIED WITH LANDSCAPE TREATMENT. DUPLICATED LANDSCAPE AREAS ARE THOSE AREAS WHERE A PROPOSED TREE CANOPY OVERLAPS AN ACTUAL LANDSCAPE AREA. ACTUAL LANDSCAPE AREAS PLUS DUPLICATE LANDSCAPE AREAS ARE INCLUDED IN THE OVERALL LANDSCAPE AREA AS REQUIRED BY THE CITY OF SANTA ROSA FOR MAWA CALCULATIONS.

FOR MAWA AREA AND HYDROZONE CALCULATIONS (PER CITY OF SANTA ROSA POLICY), SQUARE FOOTAGE BENEATH THE DRIP LINE OF A TREE IS CONSIDERED A SEPARATE HYDROZONE. THIS SQUARE FOOTAGE IS ALSO INCLUDED AS PART OF THE LANDSCAPE HYDROZONE FOR NON-TREE LANDSCAPE AREAS WHICH RESULTS IN CALCULATED LANDSCAPE AREAS GREATER THAN ACTUAL SQUARE FOOTAGE. FOR ALL TREES, THE AREA OF THE MATURE TREE CANOPY HAS BEEN USED IN THE WATER USE CALCULATIONS.

THESE DRAWINGS COMPLY WITH THE CRITERIA OF THE ORDINANCE. ORDINANCE REQUIREMENTS HAVE BEEN APPLIED FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN AND THE LANDSCAPE IRRIGATION LEGEND DESIGN PLAN." MANUFACTURER MODEL REMARKS HUNTER PROS-06-PRS30-MSBN-25Q REE WELL BUBBLER, AIM AT ROOT BALL; 1 PER TREE PER TREE, INSTALL ADJACENT TO & UPHILL FROM TREE RZWS-10-25-CV HUNTER TREE BUBBLER CIRCUIT VALVE HUNTER ICV-101G-AS-ADJ DRIP CIRCUIT VALVE HUNTER ICZ-101-LF-40 MOUNT ON PANEL AT EYE LEVEL HUNTER IC-600-M ROOF MOUNT ABOVE CONTROLLER LOCATION PER MANUF. SPE HUNTER WSS-SENS BTU-XXXX-V MATCH MAINLINE SIZE, SEE DETAIL KBI SEE PLAN FOR SIZE PVC CL 200 TL050MFV NETAFIM NST. IN VALVE BOX @ END OF CIRCUIT NST. IN VALVE BOX @ HIGH POINT NETAFIM TLAVRV RAINBIRD XFS-06-12-XX NSTALL 3" BELOW GRADE @ SPACING SHOWN SEE DETAIL H/L3 SCH 40 SEE PLAN FOR SIZE PVC SCH 40 SEE PLAN FOR SIZE PVC INSTALL AT POINT OF CONNECTION **U009QT SERIES** WATTS HUNTER ICV101-G NSTALL DOWNSTREAM FROM BACKFLOW PREVENTER

WATER SOURCE IS A PRIVATE WELL. MINIMUM OPERATING PRESSURE AT THE VALVES SHALL BE 25 PSI. PUMP SHALL BE SET AT 45 PSI/65 PSI MINIMUM (VERIFY FOR ACTUAL CONDITIONS)



IRRIGATION POINT OF CONNECTION SCHEMATIC

CITY REQUIRED NOTES (W.E.L.O. COMPLIANCE)

1. UPON COMPLETION OF INSTALLATION, CONTRACTOR SHALL SUBMIT TO THE ENGINEERING DEVELOPMENT SERVICES INSPECTOR A COMPLETED AND SIGNED "CERTIFICATE OF COMPLETION" STATING THE PROJECT HAS BEEN INSTALLED AS DESIGNED.

2. THE CERTIFICATE OF COMPLETION SHALL BE ACCOMPANIED BY AN IRRIGATION AUDIT, IRRIGATION SCHEDULE AND A MAINTENANCE SCHEDULE, AS DESCRIBED IN THE CITY ORDINANCE.

3. A FINAL CITY INSPECTION SHALL BE PERFORMED. THE INSTALLATION CONTRACTOR SHALL ATTEND THIS INSPECTION AND MAKLE ALL REQUIRED REPAIRS AND ADJUSTMENTS TO ACHIEVE APPROVAL AND COMPLETION FROM THE CITY. TO SCHEDULE AN INSPECTION, CONTACT ENGINEERING DEVELOPMENT SERVICES AT (707) 543-4611.

4. PURSUANT TO CITY OF SANTA ROSA POLICY, ALL SUBSTITUTIONS SHALL BE APPROVED BY THE CITY INSPECTOR.

CITY REQUIRED NOTES

1. A MINIMUM OF 8" OF NON-MECHANICALLY COMPACTED SOIL SHALL BE AVAILABLE FOR WATER ABSORPTION AND ROOT GROWTH IN PLANTED AREAS.

2. INCORPORATE COMPOST OR NATURAL FERTILIZER INTO THE SOIL TO A MINIMUM DEPTH OF 8" AT A MINIMUM RATE OF 8 CUBIC YARDS PER 1000 SQUARE FEET OR PER SPECIFIC AMENDMENT RECOMMENDATIONS FROM A SOILS LABORATORY REPORT.

3. A MINIIMUM 3" LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT IN TURF AREAS, CREEPING OR ROOTING GROUNDCOVERS OR DIRECT SEEDING APPLICATIONS.

HYDRC	ZONE	TABLE	

VAI VF HYDROZONE

D-1

D-2

B-3

BUBBLER	MODERATE	0.5	0.20	237.75	16%
IN-LINE DRIP	LOW	2.6	0.54	460.26	30%
IN-LINE DRIP	LOW	5.3	0.61	834.77	54%
METHOD	PLANT TYPE	GPM	HOUR	SQUARE FEET	LANDSCAPE
IRRIGATION			INCHES PER	AREA IN	% OF
			RATE IN		
			PRECIPITATION		

TOTAL SQUARE FEET 1,532.78 100%

UMI	MARY HYDROZONE	ТАВ	LE

PLANT TYPE	AREA (SF)	% OF LANDSCAPE
VERY LOW WATER USE	-	0.00%
LOW WATER USE	1,295.03	84.49%
MODERATE WATER USE	237.75	15.51%
HIGH WATER USE (POOL)	-	0.00%
TOTAL	1,533	100%

ACTUAL LANDSCAPE AREA 1,295.03

DUPLICATE LANDSCAPE AREA CALCULATED LANDSCAPE AREA FOR MAWA

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DATE: JOB:

6/28/19 2019-03 1/16" = 1'-0" DM

OF

SCALE: DRAMN:

SHEET

IRRIGATION PLAN



EXISTING REDWOOD

PLANTING NOTES

- 1. ALL GROUND COVER TO BE SPACED IN A TRIANGULAR PATTERN. CONTRACTOR RESPONSIBLE FOR COMPLETE COVERAGE.
- 2. SUPPLY AGRIFORM 21 GRAM TABLETS AS FOLLOWS: 5-15 GAL., 3-5 GAL., 1-1 GAL.
- 3. DIG PLANTING PITS 2 TIMES THE DIAMETER AND EQUAL THE HEIGHT OF ROOTBALL.
- 4. BACKFILL PITS WITH 2/3 EXISTING SOIL, 1/3 ORGANIC AMENDMENT
- 5. ALL PLANTS TO BE SPOTTED IN THE FIELD BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.
- 6. WHEN LANDSCAPING IN EXISTING PLANTED AREAS, CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE OR DESTROY ANY EXISTING PLANT MATERIAL OR IRRIGATION. EXISTING PLANT MATERIAL AND IRRIGATION THAT IS DAMAGED SHALL BE REPLACED WITH LIKE, SIZE, QUALITY, ETC. BY THE CONTRACTOR AT HIS EXPENSE.
- 7. SPECIAL ATTENTION IS TO BE PAID TO THE PLANTING AREAS SURROUNDING THE BUILDINGS. COMPACTED SOIL IS TO BE SUFFICIENTLY EXCAVATED TO ALLOW FOR PROPER ROOT GROWTH AND DRAINAGE OF ALL AREAS. CHECK SOIL FOR PROPER DRAINAGE PRIOR TO PLANTING. AUGER THROUGH COMPACTED SOIL WHERE NECESSARY. DO NOT PLANT IN THE DRAINAGE SMALES.
- 8. ALL CONSTRUCTION IS TO BE PER ALL APPLICABLE AND PREVAILING CITY OF SANTA ROSA CONSTRUCTION STANDARDS 9. A SIGNED CERTIFICATE OF COMPLETION IS REQUIRED PRIOR TO FINAL ACCEPTANCE BY THE CITY OF SANTA ROSA. IF THE
- INSTALLATION OF THE LANDSCAPE DOES MEET OR SUBSTANTIALLY COMPLY WITH THE APPROVED LANDSCAPE CONSTRUCTION DOCUMENTS, THE CERTIFICATE OF COMPLETION WILL NOT BE SIGNED OR APPROVED BY THE LANDSCAPE ARCHITECT OF RECORD.

- EXISTING REDWOOD TO REMAIN

PLANT LEGEND

YMBOL	SIZE	BOTANICAL NAME	COMMON NAME	REMARKS	WATER USE PER WUCOLS IV
		TREES			
ARA	24	ACER RUBRUM 'ARMSTRONG'	SCARLET MAPLE		М
		SHRUBS			
LIP	5	LAVANDULA INTERMEDIA 'PHENOMENAL'	LAVENDER		L
LCR	5	LOROPETALUM CHINENSE 'RUBY'	CHINESE FRINGE FLOWER		L
NDC	5	NANDINA DOMESTICA 'COMPACTA'	COMPACT HEAVENLY BAMBOO		L
PTW	5	PITTOSPORUM TOBIRA 'WHEELER'S DWARF'	DWARF MOCK ORANGE	3' O.C. TRI. SPACING	L
		GROUNDCOVER			
	1	COTONEASTER DAMMERI 'CORAL BEAUTY'	COTONEASTER	6' O.C. TRI. SPACING	L
		PERENNIALS			
ALM		ACHILLEA 'LITTLE MOONSHINE'	YARROW		L
NFW	1	NEPETA FAASSENII 'WALKER'S LOW	CATMINT	2' O.C. TRI SPACING	L
SCA	1	SALVIA CLEVELANDII 'CELESTIAL BLUE'	SAGE		L
		GRASSES			
BGB	1	BOUTELOUA GRACILLIS 'BLONDE AMBITION'	BLONDE AMBITION BLUE GAMA	2' OC, TRI. SPACING	L
MDU	1	MUHLENBERGIA DUBIA	PINE MUHLY	36" OC, TRI. SPACING	L
		OTHER			
		MULCH: FIR BARK, 1/2" MINUS		3" DEPTH; ALL LANDSCAPE AREAS	
DETAIL		LINEAR ROOT BARRIER	ROOT SOLUTIONS, OR EQUAL	24" DEPTH; INSTALL WHERE TREE IS CLOSER THAN 7' TO EDGE	

THESE DRAWINGS COMPLY WITH THE CRITERIA OF THE ORDINANCE. ORDINANCE REQUIREMENTS HAVE BEEN APPLIED FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN AND THE LANDSCAPE DESIGN PLAN."

CITY REQUIRED NOTES (W.E.L.O. COMPLIANCE)

1. UPON COMPLETION OF INSTALLATION, CONTRACTOR SHALL SUBMIT TO THE ENGINEERING DEVELOPMENT SERVICES INSPECTOR A COMPLETED AND SIGNED "CERTIFICATE OF COMPLETION" STATING THE PROJECT HAS BEEN INSTALLED AS DESIGNED.

2. THE CERTIFICATE OF COMPLETION SHALL BE ACCOMPANIED BY AN IRRIGATION AUDIT, IRRIGATION SCHEDULE AND A MAINTENANCE SCHEDULE, AS DESCRIBED IN THE CITY ORDINANCE.

3. A FINAL CITY INSPECTION SHALL BE PERFORMED. THE INSTALLATION CONTRACTOR SHALL ATTEND THIS INSPECTION AND MAKLE ALL REQUIRED REPAIRS AND ADJUSTMENTS TO ACHIEVE APPROVAL AND COMPLETION FROM THE CITY. TO SCHEDULE AN INSPECTION, CONTACT ENGINEERING DEVELOPMENT SERVICES AT (707) 543-4611.

4. PURSUANT TO CITY OF SANTA ROSA POLICY, ALL SUBSTITUTIONS SHALL BE APPROVED BY THE CITY INSPECTOR.

CITY REQUIRED NOTES

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3. A MINIIMUM 3" LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT IN TURF AREAS, CREEPING OR ROOTING GROUNDCOVERS OR DIRECT SEEDING APPLICATIONS.

CITY REQUIREMENT OF DOCUMENT OF COMPLIANCE

(ITEMS TO BE INCLUDED WITH CERTIFICATE OF COMPLETION)

A. PROJECT APPLICANT MUST SUBMIT DOCUMENTATION VERIFYING IMPLEMENTATION OF SOIL ANALYSIS REPORT RECOMMENDATIONS TO THE CITY WITH CERTIFICATE OF COMPLETION B. THE CERTIFICATE OF COMPLETION MUST BE ACCOMPANIED BY AN IRRIGATION AUDIT THAT CONTAINS THE FOLLOWING:

- ♦ OPERATING PRESSURE OF THE IRRIGATION SYSTEM
- DISTRIBUTION UNIFORMITY OF OVERHEAD IRRIGATION
- PRECIPITATION RATE OF OVERHEAD IRRIGATION ◆ REPORT OF ANY OVERSPRAY OR BROKEN IRRIGATION EQUIPMENT
- IRRIGATION SCHEDULE INCLUDING:
- 1. PLANT ESTABLISHMENT IRRIGATION SCHEDULE 2. REGULAR IRRIGATION SCHEDULE BY MONTH (SEE ORDINANCE FOR DETAILS) 3. VERIFICATION THAT A DIAGRAM OF THE IRRIGATION PLAN SHOWING
- HYDROZONES IS KEPT WITH THE IRRIGATION CONTROLLER FOR SUBSEQUENT MANAGEMENT PURPOSES .

 ALL LANDSCAPE IRRIGATION AUDITS MUST BE CONDUCTED BY A CITY CERTIFIED LANDSCAPE IRRIGATION AUDITOR OR A THIRD PARTY CERTIFIED LANDSCAPE IRRIGATION AUDITOR.

 AN IRRIGATION MAINTENANCE SCHEDULE TIMELINE MUST BE ATTACHED TO THE CERTIFICATE OF COMPLETION (SEE ORDINANCE FOR DETAILS)

C. IRRIGATION AUDIT: AN IN-DEPTH EVALUATION OF THE PERFORMANCE OF AN IRRIGATION SYSTEM CONDUCTED BY A CERTIFIED LANDSCAPE IRRIGATION AUDITOR (SEE ORDINANCE FOR DETAILS). THE AUDIT MUST BE CONDUCTED IN A MANNER CONSISTENT WITH THE IRRIGATION ASSOCIATION 'S LANDSCAPE IRRIGATION AUDITOR CERTIFICATION PROGRAM OR OTHER U.S. EPA "WATERSENSE "LABELED AUDITING PROGRAM





019 MACNAIR LANDSCAPE ARCHITECTUR

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DATE: SCALE: DRAWN: DM

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6/28/19 2019-03 1/16" = 1'-0"

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DIVISION 2 SITEWORK SECTION 02750

UNDERGROUND IRRIGATION SYSTEM

PART 1 GENERAL

1.01 SCOPE

A. Work Included: perform all work necessary and required for the construction of the project as indicated. Such work includes but is not limited to the following:

1. Furnish and install complete irrigation system.

Trenching and backfilling 3. Sleeves for irrigation piping and remote control valve wiring under pavements and walls as noted

B. Related Work in Other Sections: The following items of associated work are included in other sections of these specifications:

1. Landscaping, Section 02800

C. By Others: The following items of work will be performed by others and are not included in the contract.

- Electrical stubout for irrigation controller.
- 2. Irrigation water meter. 3. Water stubout(s) for irrigation system.

1.02 INSPECTION OF CONDITIONS: Examine related work and surfaces before starting work of this section. Report to the landscape architect, in writing, conditions which will prevent the proper provision of this work Beginning the work of this section without reporting unsuitable conditions to the landscape architect constitutes acceptance of conditions by the contractor. Any required removal, repair, or replacement of this work caused by unsuitable conditions to be done at no additional cost to the

1.03 CODES, RULES AND SAFETY ORDERS

A. All work and materials to be in full accordance with the latest rules and regulations of safety orders of Division of Industrial Safety; the Uniform Plumbing Code published by the Western Plumbing Officials' Association and other applicable laws or regulations, including the presiding loca plumbing code. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes. Should the construction documents, or instructions, be at variance with the aforementioned rules and regulations, notify the landscape architect and get instructions before proceeding with the work affected.

B. Furnish and maintain all warning signs, shoring, barricades, red lanterns, etc., as required by the Safety Orders of the Division of Industrial Safety and local ordinances.

C. Contact U.S.A. for location of underground utilities.

1.04 STANDARDS: American Society of Testing and Materials (ASTM).

1.05 PERMITS AND FEES: Obtain all permits and pay required fees to any governmental agency having jurisdiction over the work. Arrange inspections required by local agencies and ordinances during the course of construction as required.

1.06 APPROVAL: Wherever the terms "approve", "approval", or "approved" are used in the specifications, they mean approval of landscape architect in writing.

1.07 WORK SCHEDULE: Submit a proposed work schedule to landscape architect at least 5 days prior to start of work under this Section. After approval, no modification shall be made to this schedule with out written authorization by the landscape architect

1.08 OBSERVATION SCHEDULE Schedule a job start meeting with the landscape architect at least 5 days before beginning work under this Section. All requests for observation must be made 72 hours in advance

A. Job start meeting The purpose of this conference is to review questions the contractor may have regarding the work, administrative procedures during construction and project work schedule.

B. Irrigation installation and hydrostatic tests Observation of installation and hydrostatic test results to be made by the landscape architect prior to backfilling of trenches.

C. Pre-maintenance

When all work has been completed a pre-maintenance walk-through will be conducted. If approved, the 90 calendar day maintenance period will

D. Final Observation Final Observation will be after the 90 calendar day maintenance period and all required work is completed. Please give 1 week notice for this observation meeting.

1.09 SUBSTITUTIONS

A. Specific reference to manufacturer's names and products specified in this Section are used as standards, but this implies no right to substitute other material or methods without written approval of the landscape architect.

B. Installation of any approved substitution is contractor's responsibility Any changes required for installation of any approved substitution must be made to the satisfaction of the landscape architect and without additional cost to the owner.

1.10 PROTECTION OF EXISTING CONDITIONS

A. Contractor shall acquaint himself with all site conditions. Should utilities or other work not shown on the plans be found during excavations contractor shall promptly notify landscape architect for instructions as to further action. Failure to do so will make contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.

1.11 COORDINATION: Coordinate and cooperate with other contractors to enable the work to proceed as rapidly and efficiently as possible.

1.12 PRODUCT HANDLING: Protect work and materials under this Section from damage during construction and storage. Protect polyving chloride (PVC) pipe and fittings from direct sunlight. Beds on which PVC is stored must be full length of pipe. Do not use any pipe or fitting that has been damaged or dented.

1.13 SAMPLES: Landscape architect reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request by the landscape architec Rejected material shall be removed from the site immediately and replaced at the contractors expense. Cost of testing materials not meeting specifications shall be paid by contractor.

1.14 HYDROSTATIC TESTS

A. Make hydrostatic tests when welded PVC joints have cured at least 24 hours. Apply continuous static water pressure of 100 psi as follows:

1. All piping on the pressure side of control valves shall be tested for 2 2. At completion of hydrostatic test, mainline shall be opened at farthest

most point from the location of the pump to verify continuity of mainline.

B. Leaks resulting from tests shall be repaired and tests repeated until system passes tests.

1.15 "AS-BUILT" IRRIGATION DRAWINGS: Contractor shall furnish Record Drawings of the complete irrigation system. Procure from the landscape architect full sized sepias of Contract Drawings. Construction drawings shall be on the construction site at all times while the irrigation system is being installed. Actual location of valves and all irrigation and drainage piping shall be shown on the prints by dimensions from easily identified permanent features, such as buildings, curbs, fences, walks of property lines. Drawings shall show approved substitutions, if any, of material including manufacturer's name and catalog number. Th drawings shall be to scale and all indications shall be neat. All information noted on the print shall be transferred to the prints by contractor and all indications shall be recorded in a neat, orderly way. The record drawings shall be turned over to the landscape architect at or before the Final Acceptance of the project.

1.16 CONTROLLER CHARTS

1. As-built drawings shall be approved by the landscape architect before charts are prepared.

2. Provide one controller chart for each controller supplied. 3. The chart shall show the area controlled by automatic controller and shall be the maximum size controller door will allow.

4. The chart is to be reduced drawing of the actual as-built system However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.

5. Chart shall be blackline print and a different color shall be used to show area of coverage for each station. 6. The chart shall be mounted using Velcro, or an approved equal type 7. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick. 8. These charts shall be completed and approved prior to final inspection of the irrigation system.

1.17 MATERIALS TO BE FURNISHED

A. Prior to final inspection the contractor shall furnish the following materials to the owner:

1. Two wrenches for disassembling and adjusting each type of sprinkler head supplied. 2. Two keys for each automatic controller

3. Four keys for loose key hose bibbs. Twelve 12 inch pop-up sprinkler bodies.

1.18 CLEAN-UP: Keep all areas of work clean, neat and orderly at all times. Keep payed areas clean during installation. Clean up and remove all debris from the entire work area prior to Final Acceptance to satisfaction of landscape architect.

1.19 FINAL ACCEPTANCE: Work under this Section will be accepted by landscape architect upon satisfactory completion of all work. Upon Final Acceptance, owner will assume responsibility for maintenance of the work. Said assumption does not relieve contractor of obligations under Warranty

1.20 WARRANTY: In addition to manufacturer's guarantees or warranties all work shall be warranted for one year from the date of Final Acceptance against defects in material, equipment and workmanship by contractor Warranty shall also cover repair of damage to any part of the premises resulting from leaks or other defects in materials, equipment and workmanship to the satisfaction of the owner.

PART 2 MATERIALS

2.01 GENERAL: Materials throughout the system shall be new and in perfect condition. At least 14 days prior to beginning work, submit for approval 2 copies of manufacturer's catalog cuts, specifications, and operating instructions of the complete list of materials and assemblies to be installed. Quantities of materials and equipment need not be included. No deviations from the specifications shall be allowed. The decision of the landscape architect shall be final in the determination of the quality of materials and equipment.

2.02 WATER METERS: Shall be provided by others.

2.03 PIPE

A. Mainline piping on pressure side of irrigation control valves:

1. 2" size and greater to be Polyvinyl Chloride (P.V.C.) 1120-1220, Class 315 and shall conform to ASTM D 2241-73 and D 2672-73. 2. Up to and including 1-1/2" size to be Polyvinyl Chloride (P.V.C.)

1120-1220. Schedule 40 and shall conform to ASTM D 1785-73. 3. Galvanized Steel: Standard wall. Schedule 40. capable of working pressure up to 600 psi shall run from point of connection to backflow

preventer device. 4. Piping from the point of connection to the backflow prevention device shall be as approved by local code.

B. Lateral line piping on non-pressure side of irrigation control valves: 1. 2" size and greater to be Polyvinyl Chloride (P.V.C.) 1120-1220,

Class 315 and shall conform to ASTM D 2241-73 and D 2672-73. 2. Up to and including 1-1/2" size to be Polyvinyl Chloride (P.V.C.) 1120-1220, Schedule 40 and shall conform to ASTM D 1785-73. 2 04 FITTINGS

A. PVC Fittings: Schedule 40, Polyvinyl Chloride, high impact weight, as manufactured by Sloane, Lasco, medium or approved equal. B. Fittings for Galvanized Steel Pipe: Schedule 40, standard weight as

manufactured by Grinnell, or approved equal. C. Connections between main and valves shall be PVC Schedule 80

nipples and fittings. 2.05 SLEEVE MATERIALS

A. For Control Wires: PVC 1120-1220, Class 200 pipe or heavy wall aalvanized steel conduit.

B. For Water Lines: PVC 1120-1220, Class 200 pipe or heavy wall alvanized steel conduit. 2.06 IRRIGATION CONTROLLERS

A. Controller to be as shown on plans and is to be installed as per detail and manufacturer's specifications.

2.07 IRRIGATION CONTROL VALVES

A. Remote Control Valves

1. Valves to be as shown on plans and installed per details and manufacturer's specifications.

2.08 CONTROL WIRE

connectors

A. Wire: Solid copper wire, U.L. approved for direct burial in ground.

Minimum gauge: #14. Common ground wire shall be white. B. Splicing Materials: Wire connectors shall be Pentite or snap

C. All wires shall be labeled with the valve number at the controller and

D. 120 wiring shall be as required by local code and installed by an electrician. It shall not be on a switched circuit.

Common wire shall be white Control wires shall be other than white Use a different color control wire for each controller 2.09 VALVE BOXES

A. Remote Control Valves: To be Brooks, Green or approved equal, one per valve.

B. Gate Valves and Control Wire Stub-out Locations: To be Brooks. Green or approved equal, one per valve or stub-out location

2.10 QUICK-COUPLING VALVES

A. Quick coupling valves to be as per plans and details.

B. Furnish 2 valve keys fitted with hose valve assembly.

2.11 LANDSCAPE DRIPLINE A . Install in parallel and consistant rows at spacing indicated in all

specified areas.

B. Install 3" below grade. 2.12 SPRINKLER HEADS

A. Heads as shown in legend and drawings. 2.13 BACKFLOW PREVENTION ASSEMBLIES

A. Backflow prevention device as shown in legend and drawings.

PART 3 EXECUTION

3.01 LAYOU

A. Layout work as accurately as possible to drawings. Drawings are diagrammatic to the extent that swing joints, offsets and all fittings are not

B. Full and complete coverage is required. Contractor shall make any necessary minor adjustments to layout required to achieve full coverage of rrigated areas at no additional cost to owner.

C. Where connections to existing stubouts are required, make necessary adjustments in layout to connect should stubs not be located exactly as shown. Adjust layout as necessary to install around existing work. 3.02 EXCAVATING AND TRENCHING

A. Perform all excavations as required for installation of work included under this Section, including shoring of earth banks, if necessary. Restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations, to their original condition.

B. Should utilities not shown on the plans be found during excavations, contractor shall promptly notify landscape architect for instructions as to urther action. Failure to do so will make contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities.

C. Dig trenches wide enough to allow a minimum of 6 in. between parallel pipe lines. Trenches shall be of sufficient depth to provide minimum cover from finish grade as follows:

1. Over PVC pipe on pressure side of irrigation control valve, control wires and quick coupling valves: 18 inches. 2. Over pipe on non-pressure side of irrigation control valve: 12 inches.

3.03 BACKFLOW PREVENTION DEVICE INSTALLATION A. Install according to local code and manufacturer's instructions.

required

3.04 SLEEVING

rrigation lines and/or wires.

but kept in groundcover areas.)

3.05 PIPE LINE ASSEMBLY

adapters.

grade as follows:

B. Install with union on discharge side for servicing, or with flanges, as

A. Where pipes or wires must be installed under paving place them in sleeves with a 24" minimum depth and sufficient size to accommodate

B. Lack of pipe chase coordination does not relieve the contractor from installing the pipes and control wire shown on the drawing. In the event pipe chases were not installed prior to paving the contractor shall bore under the paving to accommodate pipes and wires.

C. All control wire shall be in Schedule 40 conduit from trench to controller. When valves are grouped together allow 12" between valve boxes, each valve in a separate box, (not to be placed in drainage swales,

A. Install pipe in accordance with manufacturer's instructions.

B. Solvent weld all PVC pipe and fittings using solvents (including primer) and methods as recommended by the manufacturer, except where screw connections are required. Clean pipe and fittings of dirt and moisture before assembly. PVC pipe may be assembled on ground surface beside trench. Snake pipe from side to side of trench bottom to allow for expansion and contraction. Make all connections between PVC pipe and metal valves or pipe with threaded fittings using PVC male

C. Use Teflon tape on all threaded fittings.

D. Thrust blocks shall be installed where the irrigation main changes direction as at ells and tees and where the irrigation main terminates. Pressure tests shall not be made for a period of 36-48 hours following the completion of pouring of the thrust blocks. Concrete thrust blocks for supply mains shall be sized and placed in strict accordance with the pipe manufacturer's specifications and shall be of an adequate size and so placed as to take all thrust created by the maximum internal water

3.06 IRRIGATION CONTROL VALVES: A. Install control valves in valve boxes where shown and group together where practical. Place no closer than 18 in. to walk edges, buildings and

walls and other valves. Valve boxes shall be placed in relation to finish

1. 1" above grade when no mulch is used

1/2" with seeded lawr

3. 1 1/2" with sod lawn

4. 2" with plant beds

must not rest on the piping.)

3.07 SPRINKLER HEADS

A. Install heads as per details.

approval from the landscape architect

3.09 AUTOMATIC CONTROLLER

3.10 CONTROL WIRING

other hydrants.

before testing.

rock free backfill

planted areas.

PART 1 GENERAL

imited to the following:

5. Soil amendment.

6. Planting.

2. Laboratory soil analysis.

Furnishing and spreading topsoil

4. Finish grading of planted areas.

other sections of these specifications.

1.01 SCOPE

B. Test as specified.

3.12 PRESSURE TESTS

pressure and visually check all fittings.

3.13 BACKFILL AND COMPACTING

minimum of 3".

as per detail.

B. The contractor shall paint on the cover of each valve box in 2" white stenciled letters with the value number as designated on the plan. C. Clearance between the highest part of the valve and the bottom of the

valve box lid shall be 2" minimum and 4" maximum. (Lid must not rest on any part of valve and valves must not be buried too deep for convenient

D. Clearance between the top of the piping and the bottom of the valve box and/or the valve box knock outs, shall be a minimum of 2". (The box

E. Clearance between the valve and the sides of the valve box shall be a

B. Nozzles may be changed to control precipitation rate and G.P.M. with

3.08 QUICK COUPLING VALVES: Quick coupling valves to be installed

A. Install per local code and manufacturer's instructions.

B. Grounding of Irrigation controller shall be as per manufacturer's recommendations and as per local code.

A. Install control wires with sprinkler mains and laterals in commor trenches wherever possible. Lay to the side of pipe line. Provide looped slack at valves of 18" and snake wires in trench to allow for contraction of wires. Tie wires in bundles at 10 ft. intervals. Provide expansion loop at all 90 degree angles, and every 100' of straight wire run.

B. Control wire splices at remote control valves to be crimped and sealed with specified splicing materials. Line splices will be allowed only on runs of more than 500 ft. All line splices to be in separate valve box.

C. Install one continuous ground wire and one extra wire to all valves. 3.11 CLOSING OF PIPE AND FLUSHING OF LINES

A. Thoroughly flush out all water lines before installing heads, valves and

A. The contractor shall partially backfill, leaving all fittings exposed

B. Cap all valve openings and test the mainline pipe at full line working

A. After system is operating and required tests and inspections have been made, backfill excavations and trenches with clean soil, free of rubbish. All pipe shall have a bedding of 2" under and 4" over of select,

B. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to minimum 95% density under pavements, 85% under

C. Compact trenches in areas to be planted by thoroughly flooding the backfill. Jetting process may be used in those areas.

D. Dress off all areas to finish grades. E. Any settling of more than 1" which may occur during the guarantee period shall be brought to finish grade by the contractor at his expense.

END OF SECTION 02750

SECTION 02800

LANDSCAPING

A. Work Included: Perform all work necessary and required for the construction of the project as indicated. Such work includes but is not

Site preparation including weed and rubble removal.

B. Related Work: The following items of associated work are included in

1. Section 02750: Underground Irrigation System.

C. By Others: The following items of work will be performed by others and are not included in the contract.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Perform work in accordance with all applicable laws, codes, and regulations required by authorities having jurisdiction over such work and provide for all inspections and permits required by federal, state, and local authorities in furnishing, transporting and installing materials.

B. Certificates of inspection required by law for transportation shall accompany the invoice for each shipment of plants. File copies of certificates with landscape architect after acceptance of material. Inspections of federal and state governments at place of growth does not preclude rejection of plants at project site.

1.03 SELECTION, TAGGING AND ORDERING OF PLANT MATERIAL

A. Submit documentation to landscape architect at least 7 days prior to start of work under this section that all plant material has been ordered. Arrange procedure for observation with landscape architect at time of

B. Plants shall be subject to observation and approval by landscape architect at place of growth or upon delivery for conformity to specifications. Such approval shall not impair the right of observation and rejection during progress of the work. Submit written request for observation of plant material at place of growth to landscape architect. Written request shall state the place of growth and the quantity and variety of plants to be observed. Landscape architect reserves the right to refuse observation at this time if, in his judgment, a sufficient number of plants are not available for observation or not in the landscape architect's contract.

C. Substitution of plant material will not be permitted unless authorized in writing by landscape architect. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of contract price.

1.04 COORDINATION: Contractor shall coordinate and cooperate with other contractors to enable the work to proceed as rapidly and efficiently as possible.

1.05 INSPECTION OF SITE: Contractor shall visit site and inspect conditions as they exist prior to submitting bid. Site dimensions, water pressure and general conditions shall be verified prior to beginning of any

1.06 INTENT OF DRAWINGS AND SPECIFICATIONS: It is the intent of the drawings and specifications to provide planting with plants in vigorous growth, ready for owner's use. Any items not specifically shown in the drawings or called for in the specifications, but normally required to conform with such intent, are to be considered as part of the work. Written dimensions take precedence over scale dimensions

1.07 APPROVAL: Wherever the terms "approve", "approval" or "approved" are used herein, they mean approval of landscape architect in writing.

1.08 PRODUCT HANDLING

A. Furnish standard products in manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer

B. Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.

1.09 PROTECTION OF EXISTING PLANTS TO REMAIN

A. Do not store materials or equipment, permit burning, or operate or park equipment within designated plant protection zones as specified on

B. Notify landscape architect in any case where contractor feels grading or other construction called for by Contract Documents may damage existing plants to remain. Do not proceed with such work until directed by landscape architect.

C. If existing plants are damaged during construction, contractor shall replace such plants of the same species and size as those damaged at no cost to owner. Determination of extent of damage and value of damaged plant shall rest solely with landscape architect.

1.10 GRADING

A. Prior to planting grading will be brought to within .10 + foot of finish grade with soil suitable for planting by the landscape contractor. It is the sponsibility of the landscape contractor to verify that no conflict exists with the grading plan. Fine finish grading will be done by the landscape

B. Finish grade in ground cover areas shall be 2 inches below surrounding concrete or asphalt. In lawn areas, sodded areas shall be 2 nches and seeded areas shall be 1 inch below sidewa or mow strips and examined by the landscape architect, owner, or his representative

1.11 CLEAN-UP: Keep all areas of work clean, neat and orderly at all times. Keep all paved areas clean during planting and maintenance operations. Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance to the satisfaction of landscape architect. The landscape contractor shall bear final esponsibility for proper surface drainage of planted areas. Any prior work done by another party or obstructions on the site which the contractor feels precludes establishing proper drainage shall be brought to the attention of the landscape architect, owner or his representative for correction or the relief of responsibility.

1.12 SAMPLES, TESTS AND SUBMITTALS: Landscape architect reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples and/or manufacturer's specification sheets for any construction material or item upon request by the landscape architect. Rejected materials shall be immediately removed from the site at contractor's expense. The cost of testing materials not meeting specifications shall be paid by the contractor.

1.13 PROJECT SCHEDULE: Contractor shall submit for approval a complete work schedule indicating tentative dates for inspections. This schedule is to be submitted prior to the job start meeting.

1.14 OBSERVATION SCHEDULE: Schedule a job start meeting with the landscape architect at least 5 days before beginning work under this Section. All requests for observation must be made 72 hours in advance.

The purpose of this conference is to review questions the contractor may have regarding the work, administrative procedures during construction and project work schedule.

B. Planting - Fine Grading and Soil Preparation The fine grading and soil preparation of all planting areas must be observed prior to installation of plant material.

C. Plant Material

A. Job Start Meeting

Landscape architect shall observe plant material for quality prior to planting. Plants shall be subject to observation and approval at place of growth or upon delivery for quality, size and variety; such approval shall not impair the right of inspection and condition of ball and roots, latent defects or injuries. Rejected plants shall be removed immediately from site.

D. Plant Layout Layout plants (in containers) in locations shown on drawings Landscape architect will check location of plants in the field and adjust to exact position before planting begins. Landscape architect reserves the right to refuse inspection if, in his opinion, an insufficient quantity of plants is available for layout check.

E. Pre-maintenance When all work has been completed a pre-maintenance walk-through will be conducted. If approved, the 90 calendar day maintenance period will begin.

F. Final Observation Final Observation will be after the 90 calendar day maintenance period and all required work is completed. Please give 1 week notice for this observation meeting.

1.15 MAINTENANCE

A. All landscape areas shall be substantially weed free at beginning of maintenance period and at final acceptance

B. Begin maintenance after each plant and each portion of lawn or ground cover is installed and continue until Final Acceptance.

C. Maintenance Period shall begin upon inspection and approval by landscape architect and shall be for 90 calendar days.

D. Maintenance of new planting shall consist of watering, cultivating, weeding, fertilizing, mulching, restaking, tightening and repairing of guys resetting plants to proper grades or upright position, restoration of the plant saucer, and furnishing and applying such sprays and fertilizers as are necessary to keep the plants free of insects and disease and in thriving

E. Protect planting areas and plants at all times against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection fences, barriers and signs as required for protection. If any plants become damaged or injured, treat or replace as directed by landscape architect at no additional cost to owner.

1.16 FINAL ACCEPTANCE: Work under this Section will be accepted by landscape architect upon satisfactory completion of all work, including maintenance, but exclusive of replacement of plant materials under the Warranty Period. Upon Final Acceptance, the owner will assume responsibility for maintenance of the work.

1.17 WARRANTY PERIOD AND REPLACEMENTS

A. Contractor shall warrant that all plant material except annual color planted under this contract will be healthy and in flourishing condition of active growth one year from date of Final Acceptance.

B. Any delay in completion of planting operations which extends the planting period shall extend the Maintenance and Warranty Periods correspondingly.

C. Replace, without cost to owner, and as soon as weather conditions permit, all dead plants and all plants not in vigorous, thriving condition, as determined by landscape architect during and at the end of Warranty Period. Plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of the same species and shall be subject to all requirements of this specification.

D. Contractor shall not be held responsible for failures due to neglect by owner, vandalism, or acts of god, etc., during Warranty Period. Report such conditions to landscape architect in writing.

PART 2 - MATERIALS

2.01 PLANTS

A. Plant Quality: Plants shall be fresh, well established, vigorous, of normal habit of growth, free of disease, insects, insect eggs and larvae. Roots shall be healthy and extend to the bottom and sides of the container, and rooting shall be extensive enough to hold the rood ball together during planting, but not so dense as to discourage root establishment into surrounding soils. Roots shall not show any signs of restriction due to kinked, circular, or distorted growth. No trees will be accepted that will not stand on their own trunks after the nursery stakes have been removed. All plants will be inspected prior to planting and may be rejected if noted quality standards are not met

B. Plant Quantity: Plant materials shall be furnished in size, quantities, species and at the spacing indicated or as noted on the plans. Ground cover material shall be provided in quantity adequate to fill the entire ground cover areas at the spacing shown.

C. Plant Spacing: No planting, except for ground covers, espaliers and vines shall be placed closer than two feet to pavement, structures or other landscape edges. Ground covers adjacent to pavement, structures or landscape edges shall be no closer to these than 75% of their spacing. No plants that would obstruct the sprinkler coverage shall be placed closer than 30% of the radius of the sprinkler throw as specified by the sprinkler manufacturer at the optimum operating pressure unless approved by the landscape architect.

2.02 LANDSCAPE AREA PLANTING SOILS

A. Soil to be tested by testing agency as per specifications.

B. All landscape area planting soils shall be equal or coarser in texture to the original on-site topsoil. All landscape area soils shall be free from stones larger than 1 in. in size, sub-soil, refuse, plants or roots, clods, weeds, sticks, or other extraneous material. All landscape area soils shall be tested by an approved soils laboratory for horticultural suitability and verified to be capable of sustaining healthy plant life. Landscape area planting soils may be obtained through stockpiling of existing topsoil or imported soil of equal texture and quality as determined by approved soil laboratory analysis.

C. Soil Chemistry: All planting soils shall meet the following soil chemistry parameters.

- Reaction pH of saturated paste = 5.5 to 7.5 2. Salinity (Electrical conductivity in mmho/cm) = <4.0
- 3 Sodium Adsorption Ratio (SAR) = <6.0
- 4. Sodium = <5.0 milliequivalents per liter
- 6. Boron (Parts Per Million in extract) = <1.0

2.03 PREPARATION OF LANDSCAPE AREA PLANTING SOILS

removed

sustaining healthy plant life.

to a depth of 12 inches.

when the site or the topsoil is wet.

2.04 COMMERCIAL FERTILIZER

percent by weight

horticultural suitability.

landscape architect.

stakes per tree.

2.06 STAKING MATERIALS

residuals

2.05 SOIL AMENDMENTS

D. Soil Fertility: Adequate amounts of nitrogen, potassium, phosphorus, calcium, and magnesium shall be available to support healthy plant growth. Soil shall be analyzed for fertility and any deficiencies shall be treated with inorganic fertilizer amendments prior to planting.

E. Lime Treated Soil: If lime is used for soil compaction in landscape areas, all lime treated soil shall be removed to a depth equal or more to the depth of the treated soil. Soil shall be replaced with import soil as described in the landscape specifications.

A. Prior to any work in planting areas all construction debris shall be

B. Structural fill and/or compacted engineered fill and/or any other soil

deemed unsuitable for horticultural use as defined by Sections 2.2-A, 2.2-B

and 2.2-C, shall be excavated and removed to a depth of 12 inches in

landscape planting areas by the landscape contractor. Replacement

planting soil shall be equal or coarser to the on-site soil in texture. This

may be obtained through stockpiling of existing topsoil or imported soil of

equal quality as determined by approved soil laboratory analysis. It shall be

free from stones larger than 1 in. in size, sub-soil, refuse, plants or roots,

clods, weeds, sticks, or other extraneous material. It shall be capable of

C. All landscape area soils shall be ripped in two directions to a depth of

12 inches. In areas not accessible by large equipment, ripping shall be

accomplished by small backhoe or manually to thoroughly cultivate the soil

D. Landscape area planting soil, imported or otherwise, shall be spread

evenly over the site. Minimum depth of friable soil shall be 12 inches deep

in all landscape planting areas and finish surface shall be within one inch

of finish grade. Import topsoil shall be supplied by the landscape contractor

to meet this requirement and shall meet all specifications as defined

Sections 2.2-A, 2.2-B and 2.2-C. Imported landscape area planting soils

shall be compacted to 85%± relative compaction. Never apply the topsoil

A. Pre-plant fertilizer for soil incorporation shall consist of the following

20% Phosphoric Acid

8% Phosphoric Acid

C. Fertilizer requirement is subject to change based on soil testing for

A. Organic Amendment: Shall be nitrolized and derived from fir wood

B. Physical Properties: 1/2" minus fir bark, nitrolized fortified or entranced.

C. Chemical Amendments: As required by soil analysis with approval of

A. Contractor shall use staking materials necessary to meet

requirements of specifications, subject to approval of landscape architect.

B. Tree Stakes: 2" x 2" X 8' lodgepole pine pressure treated stakes.

Construction heart grade. (Do not drive stakes through the rootball). Use 2

C. Tree Ties: Corded rubber tree ties, 18" without wire.

6% Nitrogen

20% Potash

16% Nitrogen

8% Potash

B. Post Planting/Surface Application Fertilizer:

A. "Root Solutions" control planter, or equal. Install according to local code and manufacturer's instructions. Use in all areas where tree is within 7 feet of any walkway wall building or other structural edge 1 inear type barrier shall be used in all cases. Linear barriers shall be installed a minimum of 7 feet to either side of tree's relative position to sidewalk or structural edge.

B. All root barriers to be 24" deep, interlocking linear panels. C. All root barriers shall be installed 4" from the back of curb or other hardscape edge with 4" of 3/4" gravel drain rock 24" deep on the root

2.08 WATER: Furnished by owner. Transport as required.

2.07 ROOT BARRIERS

barrier side away from the tree.

PART 3 EXECUTION

backhoe or manually.

3.03 SPREADING OF TOPSOIL

3.04 AMENDMENT OF SOIL

dimensions:

architect.

3.08 PLANTING OPERATIONS

B. Planting Soil (excluding trees):

1/3 Organic Amendments

2/3 Existing Soil

pit, eliminating all air pockets.

wider that the root ball diameter

stand plumb after staking.

settlement has occurred.

3 09 STAKING

2.09 MULCH: Fir bark 1" to 2", free of sticks, dirt, dust and other debris, as approved to a depth of 3" to be placed in all landscaped areas except where flats have been planted or annual beds and drainage swales. Fir bark, 1/2" minus, free of sticks, dirt, dust and other debris, as approved, to a depth of 1" to be placed in all landscaped areas where flats have been planted or in annual beds. Shredded bark mulch shall be used in conjunction with jute netting on all slopes greater than 6:1.

2.10 PRE-EMERGENT WEED CONTROL: All herbicides used to control weeds shall comply with all governmental regulations and shall be appropriate to weed species. Contact the local county agricultural agent or pest control advisor for proper herbicide recommendations. Follow manufacturers instructions carefully

3.01 HANDLING OF PLANT MATERIAL

A. Canned stock shall be removed carefully after cans have been cut on two sides Do not use spade to cut cans. Do not lift or handle container plants by tops, stems, or trunks at any time.

3.02 PREPARATION OF SUBGRADE AND/OR EXISTING SOILS A. Prior to any work in planting areas by landscape contractor, the

general contractor shall clear all construction debris from planting areas. B. Soil shall be ripped in two directions to a depth of 12". In areas not accessible by large equipment, ripping shall be accomplished by small

A. After subgrade has been prepared, the landscape contractor shall be responsible for furnishing and installing topsoil to within (1) inches of finish

B. Topsoil should be spread evenly over the site. Minimum depth of friable to be 12 inches within five feet of all structures and 24 inches deep in all other areas. If this condition does not exist on the site, the balance of topsoil shall be imported by the landscape contractor to meet this requirement. Import soil shall be compacted to 85% relative compaction. Never apply the topsoil when the site or the topsoil is wet.

A. Apply amendments to all planting and lawn areas at the following rates per 1,000 sq.ft, at zero to eight inches depth;

> 8 cubic vards organic amendment as specified. 20 pounds preplant fertilizer

Additional amendments as determined from soil test

B. Incorporate thoroughly with top 8 in, soil layer and remove stones ove 1 in, in diameter, roots, clods, weeds, and other extraneous material. Brind amended soil to finish grades and elevations shown on Contract Documents. Do not work soils under frozen or muddy conditions.

3.05 SURFACE DRAINAGE OF PLANTED AREAS: Landscape Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings or specifications, obstructions on the site. or prior work done by another party, which contractor feels precludes establishing proper drainage shall be bought to the attention of landscape architect in writing for correction or relief of said responsibility

3.06 EXCAVATION OF PLANTING AREAS A. Excavate container grown tree, shrub, and vine pits to the following

1. Two times as large in diameter as the original growing container (Rhododendron and azaleas 3 times the diameter) 2 The depth should be equal to the root ball height

B. Scarify all sides of planting hole. Auger through structural fill. compacted soil or hardpan if encountered or as directed by landscape

3.07 DRAINAGE, DETRIMENTAL SOIL AND OBSTRUCTIONS A. Notify landscape architect in writing of all soil or drainage conditions contractor considers detrimental to growth of plant material. State condition and submit proposal and cost estimate for correcting condition.

A. Protect plants at all times from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected, and shall be kept well watered.

C. Prior to planting test hole for drainage by filling with water, if hole does not drain within four hours, do not plant. Contact landscape architect.

D. Use planting soil to backfill plant pits. Crown of root ball shall be 1" above finished grade Set plant plumb and brace rigidly in position until planting soil has been tamped solidly around the ball and roots. When plant pits have been backfilled approximately 2/3 full, water thoroughly. saturating rootball, before installing remainder of the planting soil to top of

E. Smooth planting areas to conform to specified grades after full

F. Form saucer with 4 in. high berm around tree and shrub pits 12 inches G. Water all plants immediately after planting.

A. Staking shall be completed immediately after planting. Plants shall

B. Locate stakes in position relative to the prevailing wind as shown on

C. Attach tree straps as per details.

D Need for auxiliary stake shall be determined in the field by the andscape architect and shall only be used when trees are exceptionally spindly. If necessary, place auxiliary stake adjacent to tree leader and tie with polyethylene nursery tape at 10 inch intervals. Auxiliary stake to be bamboo or equal.

3.10 PRUNING: Prune plants only at the time of planting and according to standard horticultural practices to preserve the natural character of the plant. Trees shall be pruned at the direction of the landscape architect in accordance with current I.S.A. Standards. Remove all dead wood, suckers and broken or badly bruised branches. Use only clean sharp tools. Do not prune to compensate for root loss. Landscape contractor is responsible for replacement of all improperly pruned plant material.

3.11 GROUND COVER PLANTING

A. Plant ground cover plant at optimum depth for proper growth. Do not bury deeper than the original soil level which was established in the nursery can. Avoid air pockets.

B. Apply post plant or surface application fertilizer at the rate of 5 lbs. per 1000 sq.ft. Water bed thoroughly after fertilizer application. Wash all fertilizer from leaves of plant materials.

PART 4 TREE PRESERVATION

4.01 CONSTRUCTION IMPACT: The impact of construction within the project area will be minimal when appropriate protection measures are implemented. The following specifications have been developed to minimize impact on the area.

A. The landscape architect shall be called to inspect and verify staked location of trenches within the project zone. No trenching, pruning or tree removal shall take place without the approval of the landscape architect.

B. The smallest possible equipment shall be used for all construction work to minimize damage to the existing trees.

C. If the installation of storm drains or irrigation lines is to occur within the dripline of any major tree, a professional arborist shall be called upon to inspect the tree and determine whether head pruning will be necessary to balance the projected loss of roots.

D. Following completion of grading, all soil shall be brought back to original grade. No additional soil shall be allowed to remain at the base of any shrub or tree, and grade shall not be changed to allow collection of surface drainage at the base of any shrub or tree.

E. Minimal disturbance to the natural setting is to occur during trenching and installation of pipe lines. The mainlines are to be set 18" below grade.

. Trenches shall be the minimum width possible to accomodate the specified diameter of pipe.

G. Existing foliage shall be preserved wherever possible. When it becomes necessary to remove any limbs from remaining trees the following guidelines shall be followed:

1. No branches shall be damaged or broken. 2. Prior to installation of lines it shall be determined what foliage needs to be removed and pruning shall be done using a sharp saw. 3. Limbs shall be removed back to the nearest lateral branch or trunk, using a flush cut.

4. All cuts shall be painted with a commercial asphaltic compound designed specifically for covering pruning wounds.

H. No roots over 2" in diameter shall be torn or damaged. When it becomes necessary to remove any major roots over 2" in diameter, a sharp saw shall be used and the wound treated as described in G-4 above.

. Following the installation of the pipelines all soil from the trenches shall be brought back to the original grade. No soil shall be allowed to remain at the base of any tree or shrub, and grade shall not be changed to allow collection of surface drainage at the base of any tree or shrub.

J. All pruning and plant debris associated with the installation shall be removed from the site and disposed of in an appropriate manner.

4.02 IMPACT OF GRADING :Protection of all existing trees within the construction zone is to be given the highest priority. As described in the following section, the trees within the project area will be protected by a temporary construction fence during all construction phases, including rough and final grading. Grade changes will be prevented around the base of these trees by this fence, and the impact of grading will be negligible as it will occur outside the dripline of all trees.

4.03 MEASURES TO PROTECT VEGETATION FROM CONSTRUCTION ACTIVITIES: A minimum six foot cyclone fence shall be erected aound the dripline of all trees located within the project area prior to the beginning of any construction activities, including grading. General Contractor shall direct all equipment, subcontractors and personnel to remain outside the fenced area. Warning signs shall be posted on the tence indicating a protected area

As shown on the irrigation plan the cyclone fence will be placed around all existing trees to be saved. The purpose of this fence is to discourage the parking of vehicles under the trees and prevent grading or storage of material too close to the tree trunks.

END OF SECTION 02800





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