

MWELO CALCULATIONS

ETWU (Estimated Total Water Use) Annual Gallons Required

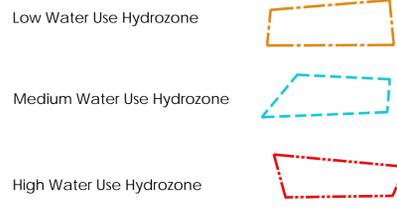
Valve #	Plant Type (Hydrozone)	Plant Factor	Irrigation Method	Irrigation Efficiency	ETAF (PF/IE)	Area (ft²)	ETAF x Area (Eto)(0.42)(ETAF)(Area)	ETWU
1	Low	0.30	In-line Drip (2)	0.81	0.37	440	163	5,001
2	Tree-M	0.50	Tree Bubbler	0.81	0.62	234	144	4,433
3	Low	0.30	In-line Drip	0.81	0.37	3,984	1,476	45,285
4	Low	0.30	In-line Drip	0.81	0.37	900	333	10,230
5	Low	0.30	In-line Drip	0.81	0.37	1,850	685	21,028
6	Low	0.30	In-line Drip (2)	0.81	0.37	1,200	444	13,640
7	Low	0.30	In-line Drip	0.81	0.37	1,100	407	12,503
8	Low	0.30	In-line Drip	0.81	0.37	1,000	370	11,367
9	Low	0.30	In-line Drip (2)	0.81	0.37	1,400	519	15,913
10	Tree-M	0.50	Tree Bubbler	0.81	0.62	126	78	2,387
11	Low	0.30	In-line Drip	0.81	0.37	3,600	1,333	40,920
12	Tree-M	0.50	Tree Bubbler	0.81	0.62	252	156	4,774
13	Low	0.30	In-line Drip	0.81	0.37	1,550	574	17,618
14	Low	0.30	In-line Drip (2)	0.81	0.37	2,700	1,000	30,690
					0.38	20,336	7,683	235,790

MAWA (Maximum Applied Water Allowance) Annual Gallons Allowed

Eto	0.62	ETAF	Area (ft²)	MAWA (Eto)(0.42)(ETAF)(Area)
49.5	0.62	0.45	20,336	280,850

The ETWU (235,790 gallons) is less than the MAWA (280,850 gallons), therefore this design complies with the California Code of Regulations Title 23, Waters - Model Water Efficient Landscape Ordinance.

HYDROZONE LEGEND



HYDROZONE SUMMARY

Summary Hydrozone Table		
Hydrozone	Area (Sq. Ft.)	% of Landscape Area
High Water Use	0	0
Med. Water Use	612	3%
Low Water Use	19,724	98%
Total	20,336	100%

WATERING SCHEDULE

Location:		Greenfield		Eto:		49.5		Soil Type:		Sandy Loam		Cycles per Week:		2 days per week		Total In/Yr						
Station	GPM	Soil Type	Plant Type	Area SF	Irrigation Type	Kc (PF)	IE	Precip Rate	No. of Cycles	JAN	FEB	MAR	APR	MAY	JUN		JUL	AUG	SEP	OCT	NOV	DEC
MINUTES PER CYCLE AT 100% ET																						
1.0	3.0	0.8	Low	440	In-line Drip (2)	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
2.0	21.9	0.8	Tree-M	234	Tree Bubbler	0.5	0.81	2.06	1	2.0	3.6	6.4	9.9	13.0	14.8	15.7	13.8	10.6	7.1	3.4	1.9	30.56
3.0	17.0	0.8	Low	3,984	In-line Drip	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
4.0	4.0	0.8	Low	900	In-line Drip	0.3	0.81	2.06	1	1.2	2.1	3.9	6.0	7.8	8.9	9.4	8.3	6.4	4.2	2.0	1.2	18.33
5.0	8.0	0.8	Low	1,850	In-line Drip	0.3	0.81	0.42	1	6.1	10.6	19.1	29.5	38.6	44.0	46.5	41.0	31.6	20.9	10.0	5.8	18.33
6.0	8.0	0.8	Low	1,200	In-line Drip (2)	0.3	0.81	0.64	1	3.9	6.9	12.4	19.1	25.0	28.6	30.1	26.6	20.5	13.6	6.5	3.7	18.33
7.0	11.4	0.8	Low	1,100	In-line Drip	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
8.0	4.0	0.8	Low	1,000	In-line Drip	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
9.0	9.0	0.8	Low	1,400	In-line Drip (2)	0.3	0.81	2.06	1	1.2	2.1	3.9	6.0	7.8	8.9	9.4	8.3	6.4	4.2	2.0	1.2	18.33
10.0	7.0	0.8	Tree-M	126	Tree Bubbler	0.5	0.81	0.56	1	7.5	13.2	23.7	36.5	47.8	54.6	57.6	50.8	39.1	26.0	12.4	7.1	30.56
11.0	15.0	0.8	Low	3,600	In-line Drip	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
12.0	14.0	0.8	Tree-M	252	Tree Bubbler	0.5	0.81	0.56	1	7.5	13.2	23.7	36.5	47.8	54.6	57.6	50.8	39.1	26.0	12.4	7.1	30.56
13.0	6.0	0.8	Low	1,550	In-line Drip	0.3	0.81	0.56	1	4.5	7.9	14.2	21.9	28.7	32.7	34.5	30.5	23.5	15.6	7.5	4.3	18.33
14.0	17.5	0.8	Low	2,700	In-line Drip (2)	0.3	0.81	2.06	1	1.2	2.1	3.9	6.0	7.8	8.9	9.4	8.3	6.4	4.2	2.0	1.2	18.33

Note: During Maintenance Period irrigation times may be increased by 20% to allow for establishment of newly planted material

IRRIGATION NOTES

- The Landscape Contractor shall inspect the site and verify conditions and dimensions prior to construction.
- Install irrigation system in accordance with all local codes and ordinances.
- See details and specifications for procedures, material and installation requirements.
- Prior to cutting into soil, locate all cables, conduits, sewers, and other utilities or architectural features that are commonly encountered underground and take proper precautions not to damage or disturb such improvements. Any damage made during the installation of the irrigation system of the aforementioned items shall be repaired and/or replaced to the satisfaction of the Owner at the Contractor's own expense.
- Contractor to minimize disturbance to existing tree roots on site. Cut minor roots (less than 2" in diameter) of trees indicated to remain in a clean and careful manner where such roots obstruct installation of new construction. If any roots greater than 2" are encountered stop work and contact the Owner's representative immediately.
- The irrigation design is diagrammatic. All piping, valves, etc., shown within paved areas are for design clarification only and shall be installed in planting areas. Main and valves shall be installed in shrub/ground cover areas only. Avoid conflicts with utilities, new planting, new site or architectural elements.
- All valves shall be placed in a rectangular box with a locking cover by NDS Pro Series or approved equal, green valve box. All valve boxes shall be located in groundcover areas whenever possible, and shall be bolted.
- Station operation times shall not exceed the soil's infiltration rate as determined by the soils report.
- All lateral end runs shall be 3/4" size unless otherwise noted.
- Where pipe sizes have been omitted or there is a conflict, refer to the lateral pipe sizing chart for sizes.
- Install one spare common and two spare control wires from each controller in a continuous loop through each valve box connected to that controller for future use.
- Contractor shall coordinate sleeving for irrigation piping with Paving Contractor prior to paving installation. It is the contractor's responsibility for providing appropriate sleeving under hardscape. At each mainline sleeve, provide a separate, appropriate-size sleeve for control/common wiring.
- The landscape Contractor shall coordinate his work with other trades involved (I.E. Grading, Plumbing and Electrical Contractors).
- The irrigation systems are designed to operate at 50 psi at point of connection to domestic water supply, downstream of the water meter and backflow preventer. Landscape Contractor shall test pressure at point of connection prior to installation of the irrigation backflow prevention device, or any other irrigation equipment. Notify Landscape Architect immediately if pressure is below 50 psi (55 psi upstream of the water meter and backflow preventer) or over 50 psi (55 psi upstream of the water meter and backflow preventer), to determine needed pressure regulation devices. (i.e. boost pump or regulating valve.)

LATERAL SIZING GUIDE

CIRCUIT GPM	PIPE SIZE	PIPE CLASS
0-7 GPM	3/4"	SCH. 40 PVC
8-12 GPM	1"	SCH. 40 PVC
13-22 GPM	1-1/4"	SCH. 40 PVC
23-30 GPM	1-1/2"	SCH. 40 PVC
31-50 GPM	2"	SCH. 40 PVC
51-70 GPM	2-1/2"	SCH. 40 PVC
71-110 GPM	3"	SCH. 40 PVC

DRIP SUPPLY/EXHAUST HEADER SIZING GUIDE

ZONE FLOW	HEADER SIZE	HEADER TYPE
0-4 GPM	1/2"	SCH. 40 PVC
5-7 GPM	3/4"	SCH. 40 PVC
8-12 GPM	1"	SCH. 40 PVC
13-22 GPM	1-1/4"	SCH. 40 PVC

CONTROL WIRE SIZING GUIDE

Control/ Common Wire	No. 14	No. 12	No. 10	No. 8
No. 14	1700'	2000'	2400'	2700'
No. 12		2700'	3300'	3800'
No. 10			4800'	5200'
No. 8				6700'

STATEMENT OF COMPLIANCE

I have complied with the criteria of the California Department of Water Resources Model Water Efficient Landscape Ordinance as established by Chapter 2.7, Title 23 of the 2019 California Building Code and have applied them for the efficient use of water in the landscape design plan.

PREPARED BY: John Suesens
 PREPARED SIGNATURE:
 PROFESSIONAL LICENSE: PLA CA #5344

Note:

The irrigation design is diagrammatic. All piping, valves, etc., shown within paved areas are for design clarification only and shall be installed in planting areas. No elbows or 45° elbows may be placed under paving, these are to be located in planting areas only. Mainline and valves shall be installed in shrub/ground cover areas only. Where valves MUST fall within paved areas, Contractor must install in concrete valve boxes. Avoid conflicts with utilities, new planting, new site or architectural elements.

Note:

Tree bubbler locations are diagrammatic. Contractor to locate tree bubblers based on tree locations shown on Planting Plans. Lateral lines to tree bubblers are shown diagrammatically and shall be routed to tee into the bubblers from outside the roof zone. No lateral lines are permitted under trees.

Note:

The Contractor is to take a water pressure reading at the irrigation point of connection prior to installation of irrigation equipment. Contractor to immediately notify Owner's Representative and Landscape Architect if any discrepancies are found between plans and existing irrigation conditions.

Stamp



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Issuances & Revisions

No.	Description	Date

Key Plan/Consultant Stamp

IRRIGATION PLAN

Date: 2023/01/24
 Project Number: 19-2634
 Scale: 1"=20'-0"

Stamp



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Issuances & Revisions

No.	Description	Date

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IRRIGATION PLAN

Date: 2023/01/24
Project Number: 19-2634
Scale: 1"=20'-0"

L1.1

IRRIGATION_SCHEDULE

SYMBOL	MANUFACTURER/MODEL	ARC	GPM
	Hunter PCB	360	0.50
	Hunter RZWS-36-50-CV	360	0.50

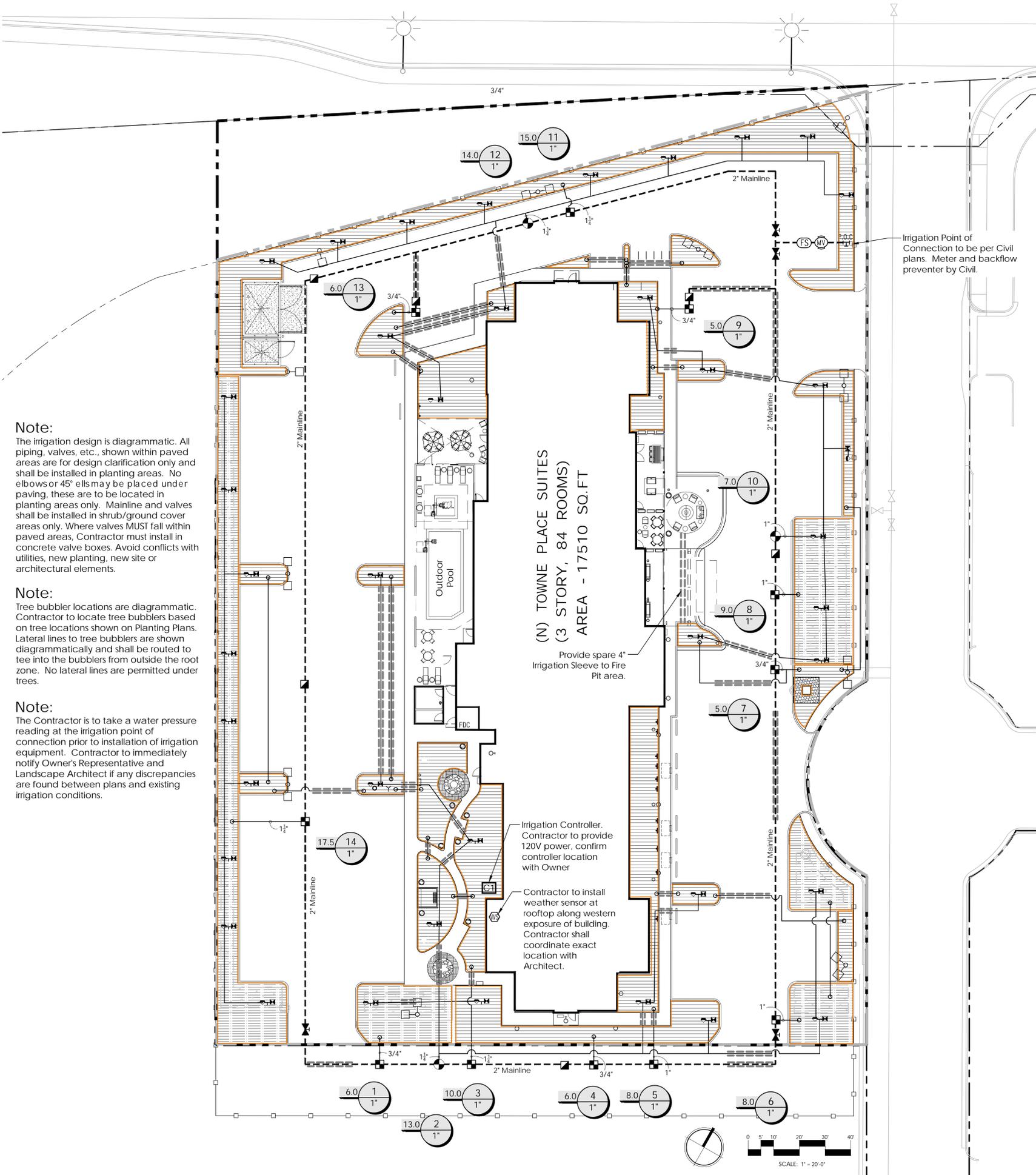
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Hunter ICZ-101 Pre-Assembled Control Zone Kit, with 1" ICV Control Valve, Filter, and Pressure Regulator. 2.0 GPM to 20.0 GPM.

- Area to Receive Dripline (at Infiltration Planters)
Netafim TLHCVXR-053-12 - Low Water Use Techline HCVR Pressure Compensating Landscape Dripline with Check Valve and Anti-Siphon feature. 0.53 GPH emitters at 12" O.C. Dripline laterals spaced at 18" apart, with emitters offset for triangular pattern. 17mm.
- Area to Receive Dripline
Netafim TLHCVXR-053-18 - Low Water Use Techline HCVR Pressure Compensating Landscape Dripline with Check Valve and Anti-Siphon feature. 0.53 GPH emitters at 18" O.C. Dripline laterals spaced at 18" apart, with emitters offset for triangular pattern. 17mm.

- Hunter ICV-G
Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. Size per plan.
- Hunter HQ-44LRC
Quick coupler valve, locking cover, red brass and stainless steel, with 1" NPT inlet, 2-piece body.
- Nibco T-113-K
Class 125 bronze gate shut off valve. Line size.
- Buckner-Superior 3100 1"
Normally Open Brass Master Valve that Provides Dirty Water Protection. Available in 3/4", 1", 1-1/4", 1-1/2", 2", 2-1/2" and 3".
- Hunter ACC-2400
24 Station Outdoor Modular Controller. With two (2) ACM-600 modules. High-End Commercial Use. Metal Stainless Steel Pedestal.
- Hunter WSS
Wireless Solar, rain freeze sensor with outdoor interface, connects to Hunter ACC controllers. Includes 10 year lithium battery and rubber module cover, and gutter mount bracket. Contractor to coordinate with Architect and install at edge of roof per manufacturer's installation recommendations.
- Flow Sensor
Badger 1" Brass Flow Sensor; 220 series, 4 gpm min. submit for approval
- Point of Connection 1" Meter & RPBP, see Civil
- Irrigation Lateral Line: PVC Schedule 40
- Irrigation Mainline: PVC Schedule 40
- Pipe Sleeve: PVC Schedule 40
- Valve Callout
Valve Number
Valve Flow
Valve Size

System Operating Flow & Pressure
Maximum flow: 25 GPM
Static Design Pressure: 50 psi*
Normal Operating Pressure: 20 psi

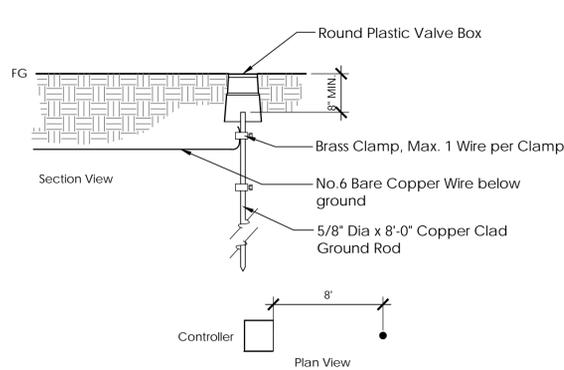
*Design pressure is contingent upon verification of static pressure available on-site. Contractor shall perform a pressure test upon award of contract and notify landscape architect if pressure is below or above 40 psi, downstream of the water meter and backflow preventer, or 55 psi upstream.



Note:
The irrigation design is diagrammatic. All piping, valves, etc., shown within paved areas are for design clarification only and shall be installed in planting areas. No elbows or 45° ells may be placed under paving, these are to be located in planting areas only. Mainline and valves shall be installed in shrub/ground cover areas only. Where valves MUST fall within paved areas, Contractor must install in concrete valve boxes. Avoid conflicts with utilities, new planting, new site or architectural elements.

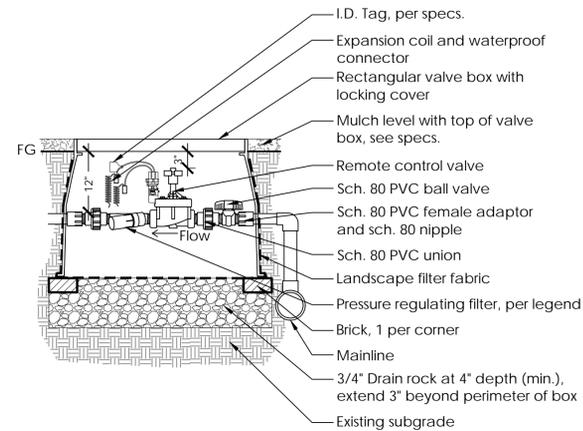
Note:
Tree bubbler locations are diagrammatic. Contractor to locate tree bubblers based on tree locations shown on Planting Plans. Lateral lines to tree bubblers are shown diagrammatically and shall be routed to tee into the bubblers from outside the root zone. No lateral lines are permitted under trees.

Note:
The Contractor is to take a water pressure reading at the irrigation point of connection prior to installation of irrigation equipment. Contractor to immediately notify Owner's Representative and Landscape Architect if any discrepancies are found between plans and existing irrigation conditions.



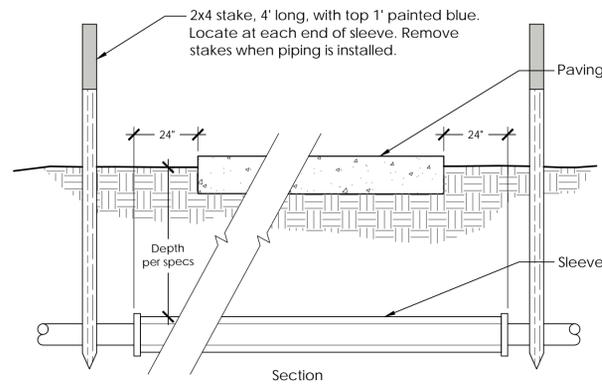
- NOTES:**
1. The grounding grid shall be tested for earth resistance, using a vibra ground, megar, or other approved instrument.
 2. The test shall not be run until the grounding grid has been installed for a few weeks and the earth has had an opportunity to "settle" around the rods.
 3. The resistance of the grounding grid shall not be greater than 15ohms.
 4. If necessary, the grounding grid may need to be treated with salt or other chemicals in order to improve its efficacy, anything over 15ohms renders the surge arrester of almost no value in protecting the equipment.
 5. Grounding should meet minimum standards and guidelines established by the American society of irrigation consultants.

11 CONTROLLER GROUNDING NOT TO SCALE P-CO-FAI-37



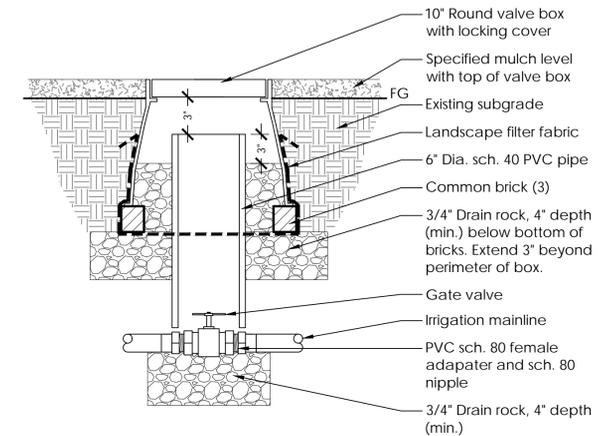
- NOTES:**
1. Filter position as shown preferred to minimize debris in housing when servicing. Filter may be mounted horizontally or upside-down if needed due to space constraints.
 2. Supply PVC Sch. 80 nipples as required.
 3. Supply jumbo valve box and/or housing extensions as required to fit equipment.
 4. Each RCV to receive a permanent metal tag with controller and station number.

8 REMOTE CONTROL VALVE - DRIP - PR FILTER NOT TO SCALE P-CO-FAI-33

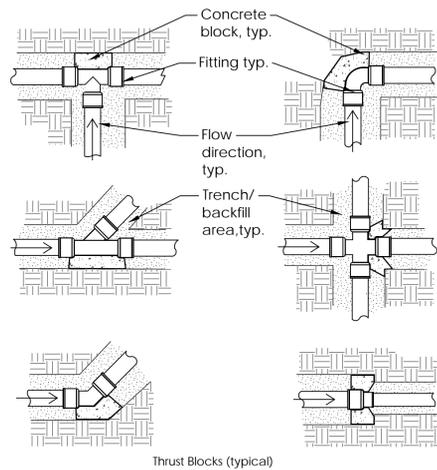


- Notes:**
1. All pipe and fittings to be sch. 40 PVC, see plan for location.
 2. Sleeves to be large enough to accept the pipe and fittings to be encased.
 3. Provide a separate sleeve for each lateral or main control.
 4. Provide a separate sleeve for control wire.
 5. Tape all ends with duct tape to prevent entry of soil.

5 SLEEVE DETAIL NOT TO SCALE P-CO-FAI-30

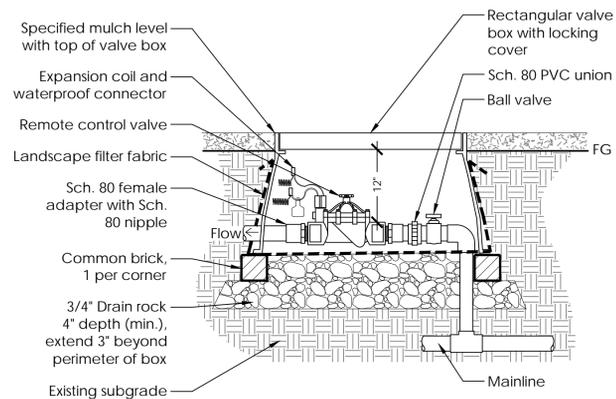


3 GATE VALVE NOT TO SCALE P-CO-FAI-19



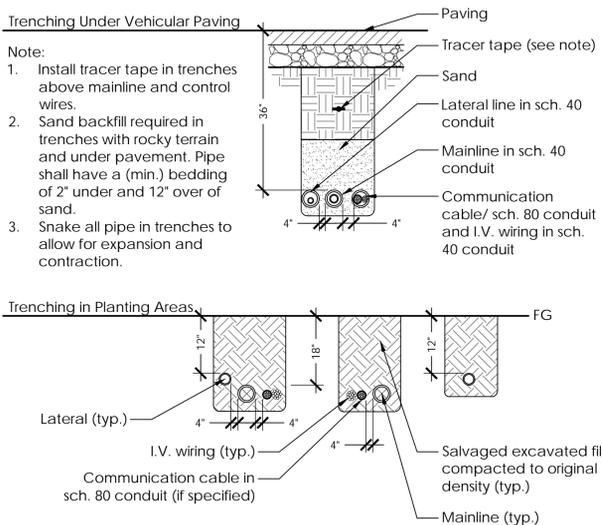
- NOTE:** Install concrete thrust blocks on mainline fittings, and where change of flow direction occurs for mainline sized 3" or larger.

10 THRUST BLOCKS, TYP. NOT TO SCALE P-CO-FAI-23

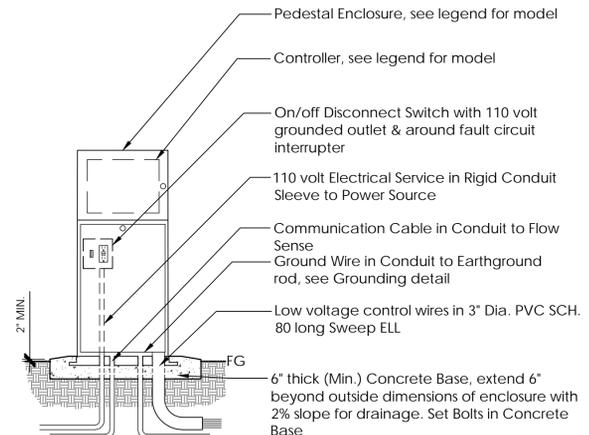


- NOTE:** Each RCV to receive a permanent metal tag with controller and station number.

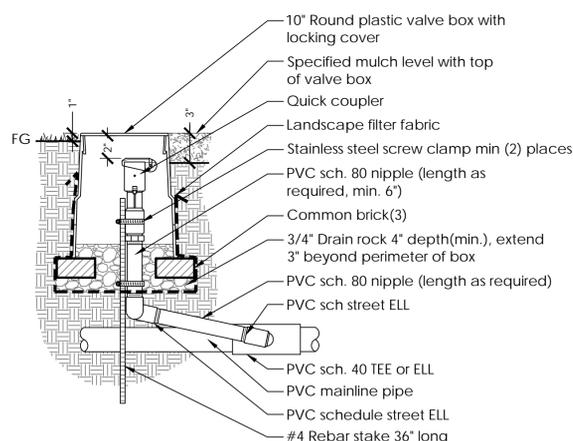
7 REMOTE CONTROL VALVE NOT TO SCALE P-CO-FAI-16



4 PIPE AND TRENCHING NOT TO SCALE P-CO-FAI-20

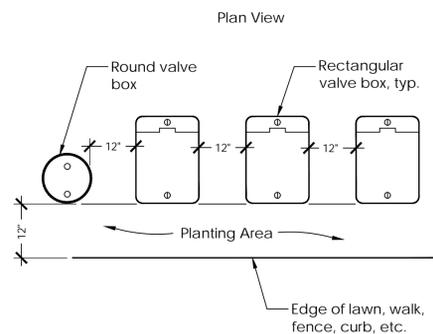


2 CONTROLLER AND PEDESTAL NOT TO SCALE P-CO-FAI-14



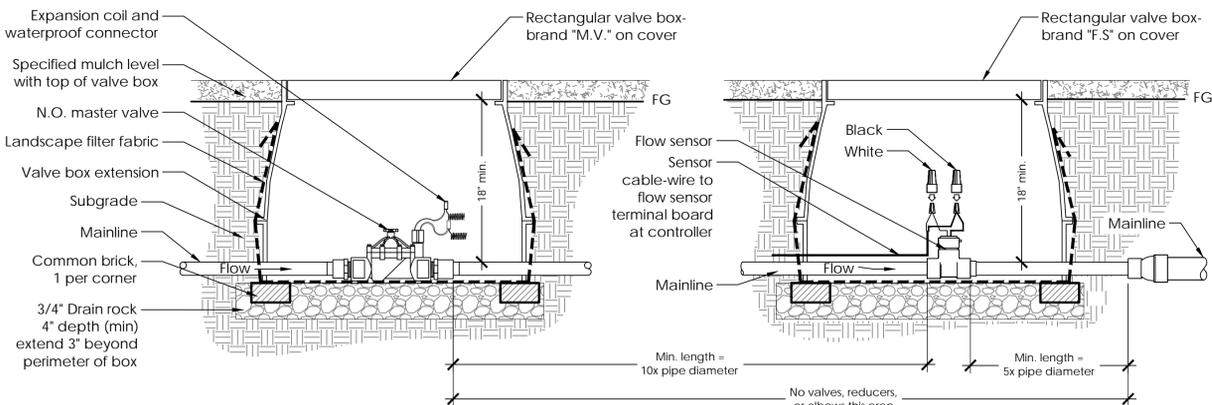
- NOTES:**
1. Furnish fittings and piping nominally sized identical to nominal quick coupling valve inlet size.
 2. All PVC threads shall have Teflon tape, except at ELL to ELL or ELL to TEE connections.

9 QUICK-COUPLING VALVE - REBAR NOT TO SCALE P-CO-FAI-18



- Notes:**
1. Center boxes over valves.
 2. Set boxes in ground cover/shrub area where possible.
 3. Set boxes parallel to each other and perpendicular to edge of hardscape.
 4. Valve box shall be Pantone 512 for reclaimed water.

6 VALVE BOX DETAIL NOT TO SCALE P-CO-FAI-17



- Note:**
1. Connect master valve to the last station in the controller.
 2. Route flow sensor cable in 1" PVC conduit from flow sensor to controller enclosure.

1 MASTER VALVE AND FLOW SENSOR NOT TO SCALE P-CO-FAI-24

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Issuances & Revisions

No.	Description	Date

Key Plan/Consultant Stamp

IRRIGATION DETAILS

Date: 2023/01/24
Project Number: 19-2634
Scale: N.T.S.

SECTION 328000 - IRRIGATION

PART 1 - GENERAL

- 1.1 SUMMARY
- A. Work included: All services, labor, materials, transportation and equipment necessary to perform the work indicated on the drawings and as specified.
- 1.2 RELATED DOCUMENTS
- A. Drawings and general provisions of contract, including general and supplementary conditions and project specifications sections, apply to these instructions.
- 1.3 SCOPE OF WORK
- A. The Contractor shall furnish all service, labor, materials, transportation and equipment necessary to perform the work indicated on the drawings as specified and shall perform other incidental work necessary to meet the intent of this specification and the approved plans including the following:
 1. Submittals of materials lists, as-builts, controller charts, manuals and guarantee.
 2. Furnishing, delivery, storage, handling, assembly and installation of materials described in this specification and as indicated on the drawings.
 3. System adjustment and testing.
 4. Notification of the Landscape Architect in advance of scheduled observations.
 5. Construction-site clean up.
 6. Maintenance period.
 7. One-year guarantee.
 8. Protection of work and materials.
- B. All work called for in the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specification.
- C. The Contractor shall coordinate his work with other trades involved: i.e. Grading, plumbing and electrical contractors.
- D. Physical layout:
 1. Due to the scale of drawings, it is not possible to indicate all offsets, fittings, sleeves, etc. which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishing such fittings, etc. As may be required to meet such conditions.
 2. The irrigation design is diagrammatic. All piping, valves, etc., shown within paved areas are for design clarification only and shall be installed in planting areas to the greatest extent possible. Avoid conflict with utilities, new planting, new site or architectural elements, and existing trees.
 3. Paving, walls, landscape headers and mowing strips shall be in place before installation of sprinkler system.
 4. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that unknown obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Landscape Architect. In the event this notification is not performed, the irrigation contractor shall assume full responsibility for any revision necessary and shall perform such revisions at his own expense.
- E. Contractor shall acquaint himself with all site conditions prior to submitting bid proposal.
- 1.4 SUBMITTALS REQUIRED
- A. Comply with submittal procedures, unless otherwise indicated.
- B. Material list:
 1. The Contractor shall furnish the articles, equipment, materials, or processes specified by name in the drawings and specifications. No substitution will be allowed without prior written approval by the Landscape Architect.
 2. Complete material list shall be submitted prior to performing any work. Material list shall include the manufacturer, model number and description of all materials and equipment to be used.
 3. Equipment or materials installed or furnished without prior approval of the Landscape Architect may be rejected and the Contractor required to remove such materials from the site at his own expense.
 4. Approval of any item, alternate or substitute indicates only that the product or products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.
 5. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- C. Record and as-built drawings:
 1. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
 2. The Contractor shall provide and keep up to date a complete "as built" record set of plans which shall be corrected daily and show every change from the original drawings and specifications and the exact "as built" locations, sizes, and kinds of equipment. This set of drawings shall be kept on the site and shall be used only as a record set.
 3. These drawings shall also serve as work progress sheets, and the Contractor shall make neat and legible annotations therein daily as the work proceeds, showing the work as actually installed. These drawings shall be available at all times for review.
 4. Contractor shall provide Landscape Architect and owner with a record set of drawings before final acceptance of work.
 5. Contractor shall dimension from two (2) permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following items:
 - a. Connection to existing water lines
 - b. Connection to existing electrical power
 - c. Ball valves
 - d. Routing of sprinkler pressure lines (dimension max 100' along routing)
 - e. Remote control valves
 - f. Routing of control wiring
 - g. Quick coupling valves
 - h. Other related equipment as directed by Landscape Architect significant changes in routing of lateral lines from those indicated on the plans.
 6. On or before the date of the final observation, the Contractor shall deliver the corrected and completed "as-built" plans to the Landscape Architect. Delivery of the "as-built" plans will not relieve the Contractor of the responsibility of furnishing required information that may be omitted from the prints.
- D. Controller charts:
 1. As-built drawings shall be approved by the Landscape Architect before controller charts are prepared.
 2. Provide one controller chart for each controller supplied.
 3. The chart shall show the area controlled by the automatic controller and shall be the maximum size which the controller door will allow.
 4. The chart is to be a reduced drawing of the actual as-built system. However, in the event the controlled sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.
 5. The chart shall be a photocopy print and a different color shall be used to indicate the area of coverage for each station.
 6. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 10 mils. thick.
 7. These charts shall be completed and approved prior to final observation of the irrigation system.
- E. Operation and maintenance manuals:
 1. Prepare and deliver to the owner within ten calendar days prior to completion of construction, two hard cover binders with three rings containing the following information:
 - a. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representatives.

- b. Catalog and parts sheets on every material and equipment installed under this contract.
- c. Guarantee statement.
- d. Complete operating and maintenance instructions on all major equipment.
- e. In addition to the above mentioned maintenance manuals, provide the owner's maintenance personnel with instructions for major equipment and show evidence in writing to the owner at the conclusion of the project that this service has been rendered.

- F. Equipment to be furnished:
 1. Supply as part of this contract the following tools:
 - Two (2) sets of special tools required for removing, disassembling and adjusting each type of valve supplied on this project.
 - Two (2) keys for each automatic controller.
 - One (1) quick coupler key and matching hose swivel for every five (5) of each type of quick coupling valve installed.
 - Two (2) sets of special tools required for adjusting each type of sprinkler supplied on this project.
 - The above mentioned equipment shall be turned over to the owner at the conclusion of the project. Before final observation can occur, evidence that the owner has received material must be shown to the Landscape Architect.
 2. Guarantee: the irrigation system guarantee shall be made in accordance with the form below.
 1. A copy of the guarantee form shall be included in the operations and maintenance manual. The guarantee form shall be re-typed onto the Contractor's letterhead as follows:

GUARANTEE FOR SPRINKLER IRRIGATION SYSTEM

We hereby guarantee that the sprinkler irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted. We agree to repair or replace any defects in material or workmanship, including settling of backfilled areas below grade which may develop during the period of one year from date of acceptance and also to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the owner. We shall make such repairs or replacements within 72 hours after receipt of written notice. In the event of our failure to make such repairs or replacements within a reasonable time after receipt. A written notice from the owner, we authorize the owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

Project: _____
 Location: _____
 Signed: _____
 Contractor _____
 Address: _____
 Phone: _____
 Date of acceptance: _____

- 1.5 PROTECTION OF WORK AND MATERIALS
- A. Packing and shipping: deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and protection: comply with manufacturer's recommendations.
 1. Store in a cool, dry place out of direct sunlight.
 2. Protect from damage by the elements and construction procedures.
 3. Store at temperature above 40 degrees f.
- C. Contractor shall protect his work and the work of others for the duration of this contract.
- D. Contractor shall protect pipes and fittings from direct sunlight and avoid undue bending and any concentrated external loading. Beds on which pipe is stored shall be full length of pipe. Pipe or fittings that have been damaged shall not be used.
- E. Extreme care shall be exercised in excavating and working in the area due to existing utilities. Contractor shall be responsible for damages caused by his operations.
- F. Contractor shall take necessary precautions to protect site conditions and plant material that is to remain. Should damage be incurred, contractor shall repair damage and restore to original condition or furnish and install equal replacements.
- G. All existing irrigation systems that are to remain shall be kept in operation at all times. If the existing system is damaged by contractor, he shall be responsible for immediate repair of such damage. After each repair, all heads of the repaired system shall be removed so that the lines can be cleared of all dirt and foreign matter.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- A. When using materials with non-potable water, use an appropriate model designated and manufactured for this purpose.
- B. Piping: pipe sizes shown are nominal inside diameter unless otherwise noted.
 1. Polyvinyl chloride pipe
 2. PVC plastic pressure lines: for piping upstream of remote control valves and quick couplers: all 2" pipe and larger shall be class 315: Type 1, Grade 1 (impact modified), designated as 12454, PVC 1120, conforming to commercial standards CS256-63 and ASTM D2241. All 1-1/2" pipe and smaller shall be Schedule 40: Type 1, Grade 1 (impact modified), designated as 12454, PVC 1120, conforming to commercial standards CS256-63 and ASTM D1785.
 3. PVC plastic non-pressure lines: for piping downstream of remote control valves: all pipe shall be schedule 40: Type 1, Grade 1 (impact modified), designated as 12454, PVC 1120, (SDR21), conforming to commercial standards CS256-63 and ASTM d2241.
- C. Fittings and connections:
 1. Polyvinyl chloride pipe fittings and connections: Type 1, Grade 1, Schedule 40, high impact molded fittings, manufactured from virgin compounds as specified for piping, tapered socket or molded thread type, suitable for either solvent weld or screwed connections. Machine threaded fittings and plastic saddle and flange fittings are not acceptable. Furnish fittings permanently marked with following information: nominal pipe size, type and schedule of material, and national sanitation foundation (NSF) seal of approval. PVC fitting shall conform to ASTM D2464 and D2466.
 2. ABS and PVC pipe fittings and connections (for drip irrigation): for above-ground drip piping downstream of remote control valves: all fittings shall be UV-rated unless otherwise shown on plans.
- D. Automatic control wire: electric wiring runs from the automatic controller to the electric control valves shall be solid single conductor, copper wire. Neutral (common) wires shall be a minimum size of #12 and colored white. Control wires shall be a minimum size of #14 in colors other than white. All wire shall have a PVC UF jacket with a minimum of .045" thick insulation. Wire shall be UL listed and approved for direct burial.
- E. Remote control valves: remote control valves shall be as shown on plans.
- F. Valve box: for remote control valves and ball valves, use rectangular box with locking cover by NDS Pro Series or approved equal. Valve box shall be of a size that accommodates all equipment as illustrated on the plans. All boxes used with non-potable water shall be purple with appropriate markings.
- G. Tracer wire: tracer wire shall be installed above mainline and shall be metal detectable and Tapex or equal. Include "Dymo-tape" type plastic label with the designation "Tracer wire".
- H. Drip emission devices: drip emitters, inline emitter tubing and micro spray nozzles shall be as shown on plans.
- I. Controllers: Shall be as shown on plans and installed per manufacturer's specifications.
- J. Rain Sensors: Shall be as shown on plans and installed per manufacturer's specifications.
- K. Wire connectors: wire connectors shall be Scotchlok or equal.
- L. Filter fabric: filter fabric under valve boxes shall be landscape quality, non-woven geotextile fabric with 3 oz/sy minimum weight.

- S. PVC Unions: shall be installed before each electric control valve and shall be as shown on plans.
- T. PVC Ball Valves: shall be installed before each electric control valve and shall be as shown on plans.

PART 3 - EXECUTION

- 3.1 INSTALLATION OF IRRIGATION SYSTEM
- A. Code requirements:
 1. Code requirements shall be those of state and municipal codes and regulations locally governing this work, providing that any requirements of the drawings and specifications, not conflicting therewith but exceeding the code requirements, shall govern, unless written permission to the contrary is granted by the landscape architect.
 2. Install irrigation system in accordance with all local and state codes and ordinances.
- B. Prior to construction:
 1. The Contractor shall inspect the site and verify conditions and dimensions, as scaled dimensions are approximate.
 2. The Contractor shall locate all cables, conduits, sleeves and other utilities or architectural features that are commonly encountered underground and take proper precautions not to damage or disturb such improvements. Any damage made during the installation of the irrigation system of the aforementioned items shall be prepared and/or replaced to the satisfaction of the owner at the contractor's own expense. Contact USA at 1-800-227-2600.
- C. Point of connection
 1. Contractor is responsible for making final connection between water source and irrigation system. Water source shall be provided by others unless specified otherwise on plans.
 2. Connections shall be made at approximately the locations shown on the drawings. Contractor shall be responsible for minor changes caused by actual site conditions. Connect new underground piping and valves and provide all flanges, adapters or other necessary fittings for connection.
 3. Permission to shut off any existing in-use water line must be obtained 48 hours in advance, in writing from the owner. The Contractor shall receive instructions from the owner as to the exact length of time of each shut-off.
- D. Sleeves:
 1. Contractor is responsible for installation of sleeves under all hardscape surfaces. Sleeves are diagrammatically depicted on the drawings only, and may not depict actual field conditions or quantity of sleeves.
 2. If sleeves are to be installed by others, the Contractor is responsible for coordinating installation of sleeves under paved areas with Paving Contractor.
- E. Excavation and backfilling of trenches:
 1. Do not trench in lime-treated soils.
 2. Underground trenching for utilities shall avoid major support and absorbing tree roots of protected trees.
 3. Excavate trenches, prepare subgrade, and backfill to line and grade with sufficient room for pipe fittings, testing and observation operations. Do not backfill until the pipe system has been subjected to a hydrostatic test as specified.
 4. Depth of piping: as specified unless otherwise noted on plans.

Under pedestrian paving:	
Pressure mainline	24" min.
Control wiring	24" min.
Non-pressure lateral line	24" min.
Under vehicular paving:	
Pressure mainline	36" min.
Control wiring	36" min.
Non-pressure lateral line	36" min.
Under planting areas:	
Pressure mainline	18" min.
Control wiring	18" min.
Non-pressure lateral line	12" min.
 5. When trenching through areas where topsoil has been spread, deposit topsoil on one side of trench and sub-soil on opposite side.
 6. Repair any leaks and replace all defective pipe or fittings until lines meet test requirements. Do not cover any lines until they have been inspected and approved for tightness, quality of workmanship and materials.
 7. Backfill: compact specified backfill to equal the compaction of the existing, adjacent, undisturbed soil.
 8. Sub-soil backfill shall be free of all rocks over one inch diameter, debris and litter.
 9. Sand backfill shall be used at the bottom of all trenches under paving, or in rocky terrain. Sand depth to include a minimum of 2' under and 4' over piping.
- F. Generally, piping under existing sidewalks and/or concrete may be accomplished by jacking or boring, but where any cutting or breaking of sidewalk and/or concrete is necessary, it shall be done and replaced by the contractor as part of the contract cost. Permission to cut or break sidewalks and/or concrete shall be obtained from the owner.
- H. Installation of polyvinyl chloride pipe:
 1. Because of the nature of plastic pipe and fittings, exercise caution in handling, loading and storing, to avoid damage.
 2. The pipe and fittings shall be stored under cover until using, and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point.
 3. Any pipe that has been dented or damaged shall be discarded until such dent or damaged section is cut and rejoined with a coupling.
 4. Pipe depth in trench shall be as specified above, from the finish grade to the top of the pipe. The bottom of the trench shall be free of rocks, clods, and other sharp-edged objects.
 5. Pipe ends and fittings shall be wiped with MEK, or equal, before welding solvent is applied. Welded joints shall be given a minimum of 15 minutes to set before moving or handling. All field cuts shall be beveled to remove burrs and excess before fitting and gluing together.
 6. Pipe shall be snaked from side-to-side of trench bottom to allow for expansion and contraction.
 7. Center load pipe with small amount of backfill to prevent arching and slipping under pressure. Leave joints exposed for observation(s) during testing.
 8. No water shall be permitted in the pipe until observations have been completed and a period of at least 24 hours has elapsed for solvent weld setting and curing.
 9. Plastic to metal joints shall be made with plastic male adapters, metal nipple hand tightened, plus one turn with a strap wrench.
 10. Plastic to plastic joints: solvent-weld, using solvent recommended by pipe manufacturer only.
 11. Solvent-weld joints: assemble per manufacturer's recommendations.
 12. All lateral end runs shall be 3/4" size unless otherwise specified.
- I. Installation of polyethylene (PE) pipe:
 1. Because of the nature of plastic pipe and fittings, exercise caution in handling, loading and storing, to avoid damage.
 2. The pipe and fittings shall be stored under cover until using, and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point.
 3. Any pipe that has been dented or damaged shall be discarded until such dent or damaged section is cut and rejoined with a coupling.
 4. Plastic to plastic joints: assemble with PVC or ABS compression fittings unless otherwise specified on plans.
 5. Stake pipe to ground every 3' on center.
- J. Remote control wiring:
 1. Direct burial control wire sizes: as specified herein, before.
 2. Provide one control wire and one common ground wire to service each valve in system. Provide 3 foot minimum expansion loop at each valve to permit removal and maintenance of valves. Do not

- interconnect neutral wires between controllers.
- 3. Install control wires at least 18" below finish grade and minimum of 4" from any pipe or fittings except at terminal points.
- 4. Install control wires and irrigation piping in common trenches wherever possible.
- 5. Control wire splices: allow only on runs of more than 300-feet and shall be made only in valve or pull boxes only, splices as follows:
 - a. Strip off minimum of 2-1/2" of insulation from each wire.
 - b. Twist on Scotchlok electrical spring connector, minimum four complete turns.
 - c. Seal connector in Epoxy resin.
 - d. Tape completed splice with Scotch 33 electrical tape.
- K. Numbering and tagging: identify direct burial control wires from automatic valves to terminal strips or controller at terminal strip by color coding and tagging wire with number of connected valve.
- L. Valve boxes: install valve boxes as shown on detail. Install no more than one valve per box. Install valve boxes so that the top of the valve box is flush with the adjacent finished grade for areas receiving seed, 1" above finished grade in areas receiving sod and 3" above finished grade in areas receiving mulch. See planting specifications, as actual depth of mulch may vary. Stencil valve number and controller letter on underside of valve box lid. Valve boxes shall be identified on the top surface of the covers by heat branding the box lid with the appropriate abbreviations for the irrigation facilities contained in the valve boxes as shown on the plans. Valve boxes that contain remote control valves shall be identified by the appropriate letters and numbers (controller and station numbers). Identification letters or numbers shall be 2 inches high. Heat branding shall be accomplished using branding irons specifically designed for this purpose. Heat branding shall not weaken or in any way puncture the valve box cover.
- M. Remote control valves: install remote control valves in locations as shown on the drawings, with a clearance of 4 1/2 inches minimum over top of flow control stem. Install a union type connection. Fit with valve box and cover.
- N. Tracer wires:
 1. Tracer tape shall be installed in trenches above main line and control wires.
 2. Tracer tape shall follow the main line pipe and/or branch lines and terminate in the yard box with the control valves. Provide enough length of wire or tape to make a loop and attach a "Dymo-tape" type plastic label with the designation "Tracer wire".
- O. Flushing of system:
 1. After all new sprinkler pipe lines and risers are in place and connected, all necessary work has been completed, and prior to installation of sprinkler heads, the control valves shall be opened and a full head of water used to flush out the system.
 2. Sprinkler heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Landscape Architect.
- R. Pressure test the system before covering trenches to pre-test for leaks.
- S. Pre-irrigate planting areas to ensure that the soil is hydrated to field capacity before planting begins.

- 3.2 SYSTEM ADJUSTMENT AND TESTING
- A. Adjustment of the system:
 1. If it is determined that adjustment in the irrigation equipment will provide proper and more adequate coverage, the Contractor shall make such adjustments prior to planting.
- B. Testing of the system:
 1. Test all pressure lines under hydrostatic pressure of 150 pounds per square inch, and prove watertight for 3 hours. Note: testing of pressure mainlines shall occur prior to installation of electric control valves.
 2. All piping under paved areas shall be tested under hydrostatic pressure of 150 pounds per square inch, and proved watertight, prior to paving.

- C. Watering schedules:
 1. Station operating times shall not exceed the soil's infiltration rate as determined by the soils report.
 2. Watering schedules shall be adjusted not to exceed local evapotranspiration (ET0) rate.
- 3.3 OBSERVATION SCHEDULE
- A. The Contractor shall be responsible for notifying the Landscape Architect 72 hours (or 3 working days) in advance for the following observations:
 1. Pre-construction meeting (this includes planting review also)
 2. Spot check for lateral installation
 3. Coverage tests, electrical valves
 4. Review of controller and controller connections. Approval to begin maintenance period (this includes planting review also).
 5. End of maintenance period walk-thru (this includes planting review also)
- B. The contractor will be back-charged for any time and mileage used by the Landscape Architect as a result of a prematurely scheduled site visit.

- 3.4 CLEAN-UP
- A. As project progresses, Contractor shall maintain all areas in a neat manner and remove unsightly debris as necessary. After completion of project, Contractor shall remove all debris and containers used in accomplishing work. Contractor shall sweep and clean all sidewalks, asphalt, and concrete areas adjacent to plantings.
- 3.5 MAINTENANCE
- A. The maintenance period begins on the day the Landscape Architect has given notice of substantial completion and shall continue thereafter for no less than ninety (90) continuous calendar days.
 1. Phased maintenance periods, if required, shall be negotiated prior to construction.
 2. If phased maintenance periods are not negotiated prior to construction, the maintenance period for all areas will begin after the entire project is 100% complete per contract documents. Portions completed earlier shall be maintained up to and including the specified maintenance period without additional compensation.
- B. The Contractor shall continuously maintain all involved areas of the contract during the progress of the work and during the maintenance period until the final acceptance of the work.
- C. Regular irrigation maintenance operations shall begin immediately after each system is installed.
- D. The contract completion date of the contract maintenance period will be extended, when in the opinion of the Architect, improper maintenance is evident at the termination of the scheduled maintenance period. The Contractor shall be responsible for additional maintenance of the work at no change in contract price until all of the work is completed and acceptable.
- E. The contractor shall be responsible for maintaining adequate protection of the areas. Damaged areas shall be repaired immediately at the Contractor's expense.

End of section

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Issuances & Revisions

No.	Description	Date

Key Plan/Consultant Stamp

IRRIGATION SHEET SPECIFICATIONS

Date: 2023/01/24
 Project Number: 19-2634
 Scale: N.T.S.

PLANT SCHEDULE

TREES	CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING	QTY
	ACE OGL	Acer rubrum 'October Glory' / October Glory Red Maple	24"box	Medium	Per Plan	5
	CHI LIN	Chilopsis linearis / Desert Willow	24"box	Low	Per Plan	6
	PIS CHI	Pistacia chinensis / Chinese Pistache	24"box	Low	Per Plan	13
	PLA COL	Platanus x acerifolia 'Columbia' / Columbia London Plane Tree	24"box	Medium	Per Plan	7
	ULM SEM	Ulmus parvifolia 'Sempervirens' / Chinese Evergreen Elm	24"box	Low	Per Plan	3
	VIT CHA	Vitex agnus-castus / Chaste Tree - Multi-trunked	24"box	Low	Per Plan	6
SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING	QTY
	ACA DES	Acacia redolens 'Desert Carpet' TM / Bank Catclaw	5 gal	Low	Per Plan	7
	ARC HOW	Arctostaphylos densiflora 'Howard McMinn' / Howard McMinn Manzanita	5 gal	Low	Per Plan	32
	ARC DOU	Arctostaphylos 'John Dourley' / John Dourley Manzanita	5 gal	Low	Per Plan	4
	CAL LIT	Callistemon citrinus 'Little John' / Dwarf Bottle Brush	1 gal	Low	Per Plan	62
	CEA DAR	Ceanothus x 'Dark Star' / California Lilac	5 gal	Low	Per Plan	22
	COT PIN	Cotinus coggygria 'Pink Champagne' / Pink Champagne Smoke Tree	5 gal	Low	Per Plan	16
	PRU BRI	Prunus caroliniana 'Bright 'N Tight' TM / Bright 'N Tight Carolina Laurel	5 gal	Low	Per Plan	3
	RHA MOU	Rhamnus californica 'Mound San Bruno' / California Coffeeberry	5 gal	Low	Per Plan	33
	SAL BAR	Salvia leucantha 'Santa Barbara' / Santa Barbara Mexican Bush Sage	1 gal	Low	Per Plan	92
	SAL WH5	Salvia leucantha 'White Mischief' / White Mischief Mexican Bush Sage	1 gal	Low	Per Plan	47
	TEU CHA	Teucrium chamaedrys / Germander	1 gal	Low	Per Plan	36
	TEU AZU	Teucrium fruticans 'Azureum' / Azure Bush Germander	5 gal	Low	Per Plan	30
GRASSES	CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING	QTY
	CAR DIV	Carex divulsa / Berkeley Sedge	1 gal	Low	Per Plan	405
	CHO TEC	Chondropetalum tectorum / Cape Rush	1 gal	Low	Per Plan	119
	JUN ELK	Juncus patens 'Elk Blue' / Spreading Rush	4" pot	Low	Per Plan	554
	LEY CAN	Leymus condensatus 'Canyon Prince' / Native Blue Rye	1 gal	Low	Per Plan	15
	LOM LTF	Lomandra x 'Lomon' TM / Lime Tuff Dwarf Mat Rush	1 gal	Low	Per Plan	348
	MUH RIG	Muhlenbergia rigens / Deer Grass	1 gal	Low	Per Plan	103
PERENNIALS	CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING	QTY
	ACH MIL	Achillea millefolium / Common Yarrow	1 gal	Low	Per Plan	32
	PER ATR	Perovskia atriplicifolia / Russian Sage	5 gal	Low	Per Plan	22
SUCCULENTS	CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING	QTY
	HES BR2	Hesperaloe parviflora 'Brakelights' TM / Brakelights Red Yucca	5 gal	Low	Per Plan	50

PLANTING NOTES

- The plant list is provided for the convenience of the Contractor. The Contractor shall verify all plant counts and if a discrepancy exists, the plan shall govern.
- Substitution of specified plant material shall not be made unless otherwise approved by the Landscape Architect. Same genus different species substitutions are acceptable provided the variety is similar in growth habit to the specified plant and water use is the same. Example: Escallonia "Terry" could sub for "Red Elf". Rhampholepis can not substitute for Escallonia as they have different water use requirements. Certificates of compliance will not be completed for projects which exceed the water use of specified plant materials until conformance with the water efficient landscape requirements is achieved.
- Finish grade in planter areas shall be 4" below the top of adjacent curbs, walks or paved areas. Finish grade shall be smooth and even prior to installation of 3" bark mulch. All landscape areas not covered with live material shall be covered with 3" of bark mulch or gravel mulch per plans, details, and specifications.
- Planting areas shall be kept clean and free from all waste materials such as concrete, asphaltic waste, lumber or other such materials. Waste materials shall be removed by excavation of the soil. Replace with clean native top soil.
- Any lime-treated soil is to be removed from planting areas and replaced with imported top soil and amended per specifications and soil report recommendations. See details and specifications for procedures, material, and installation requirements.
- Imported top soil (if required) shall be fertile, friable sandy loam of uniform composition. Clay particles shall not exceed 9% by volume. The soil shall be free from subsoil, refuse, roots, rocks over 1" in diameter or other deleterious material. The imported soil shall be capable of sustaining healthy plant life, native top soil shall be used where available prior to importing soil. A soils report shall be provided for all imported top soils, per specifications.
- Adjacent streets, sidewalks and other areas shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- Any damaged or destroyed landscaping shall be replaced to the satisfaction of the Owner's Representative.
- For best results, native plant materials should not have their roots disturbed. For plastic cans, remove bottom of can, place in plant pit and cut sides to remove. Cut metal cans in three places minimum and carefully slide root ball into plant pit, for large plant material, use bottom support as necessary.
- Soil sample reports and irrigation water suitability report shall be reviewed by Landscape Architect prior to amending soils, per specifications.
- Root barriers required at tree plantings within 5'-0" of curb or pavement.

STATEMENT OF COMPLIANCE

I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the planting design plan.

PREPARRER: John Suesens

PREPARRER SIGNATURE: 

PROFESSIONAL LICENSE: PLA CA #5344

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No.	Description	Date

Key Plan/Consultant Stamp

PLANT SCHEDULE AND NOTES

Date: 2023/01/24
Project Number: 19-2634
Scale: 1"=10'-0"

REFER TO SHEET L2.3 FOR PLANTING DETAILS

Towne Place Suites
Greenfield, CA

Stamp



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Issuances & Revisions

No.	Description	Date

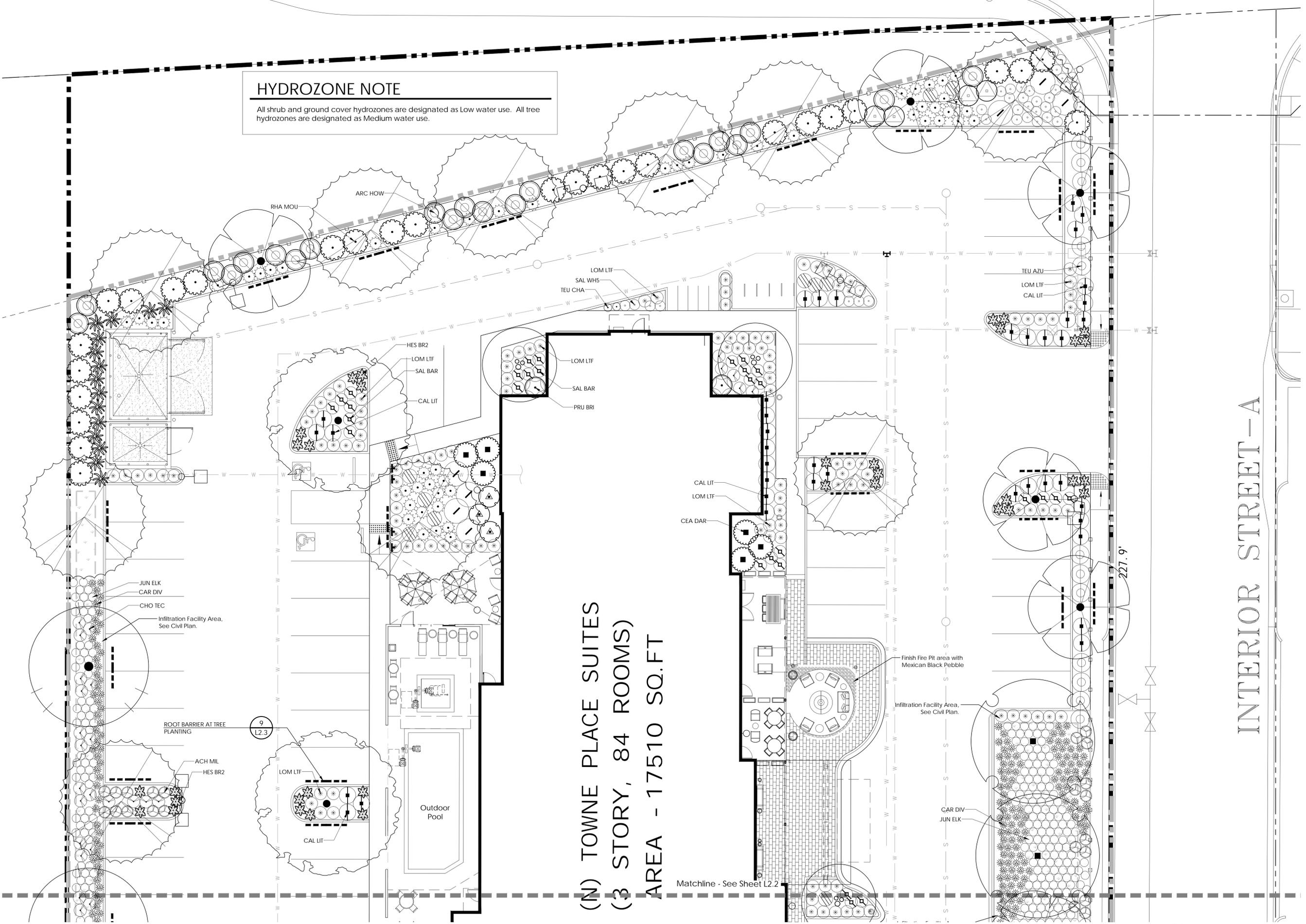
Key Plan/Consultant Stamp

PLANTING PLAN

Date: 2023/01/24
Project Number: 19-2634
Scale: 1"=10'-0"

HYDROZONE NOTE

All shrub and ground cover hydrozones are designated as Low water use. All tree hydrozones are designated as Medium water use.



(N) TOWNE PLACE SUITES
(3 STORY, 84 ROOMS)
AREA - 17510 SQ.FT

INTERIOR STREET - A

227.9'

Matchline - See Sheet L2.2

9 L2.3

Outdoor Pool

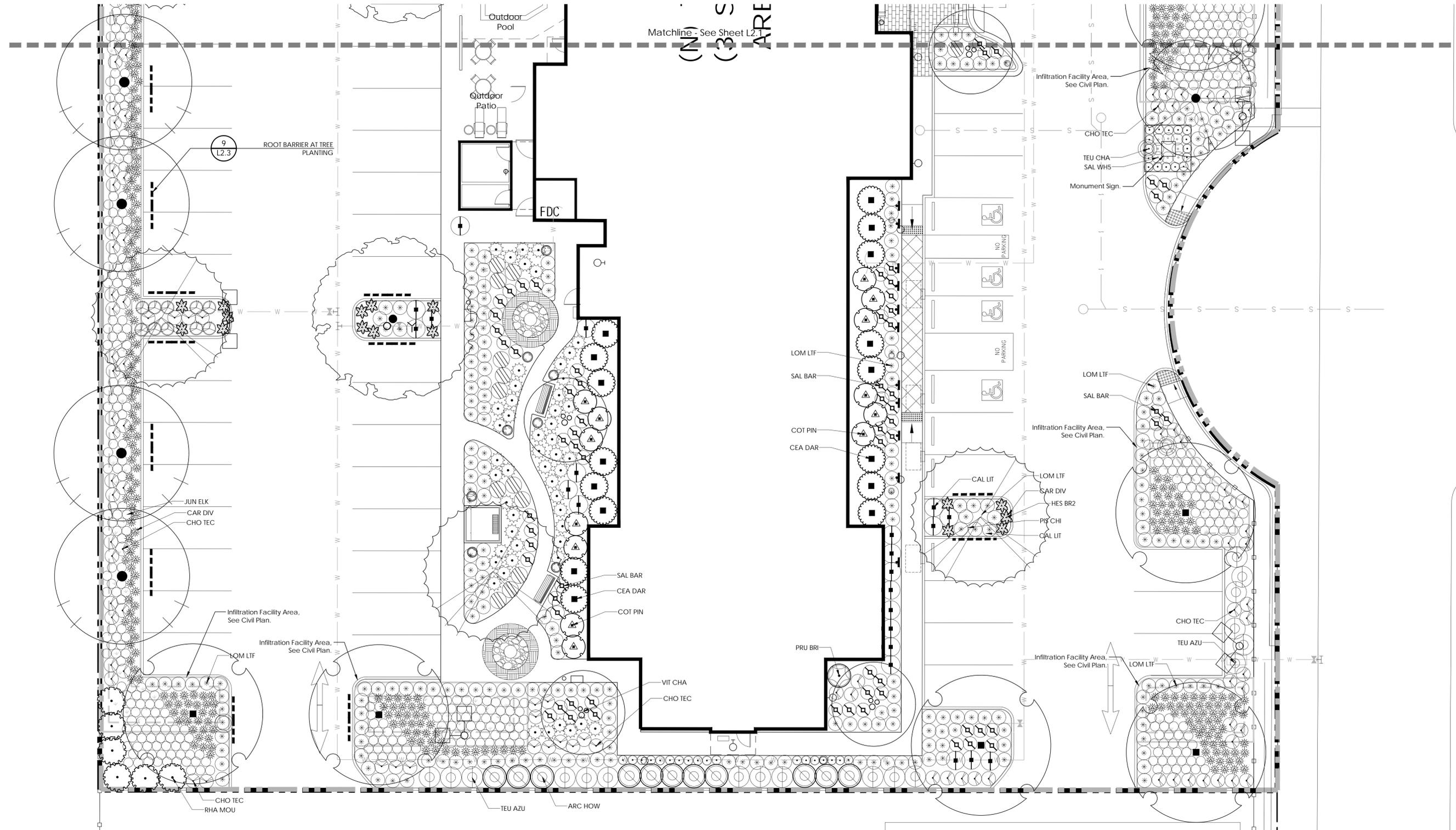
Finish Fire Pit area with Mexican Black Pebble

Infiltration Facility Area, See Civil Plan.

Infiltration Facility Area, See Civil Plan.

ROOT BARRIER AT TREE PLANTING

Towne Place Suites
 Greenfield, CA



Matchline - See Sheet L2.1
 (IN) (3) S ARE

HYDROZONE NOTE
 All shrub and ground cover hydrozones are designated as Low water use. All tree hydrozones are designated as Medium water use.

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Issuances & Revisions

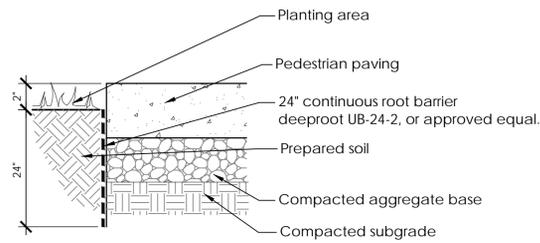
No.	Description	Date

Key Plan/Consultant Stamp

PLANTING PLAN

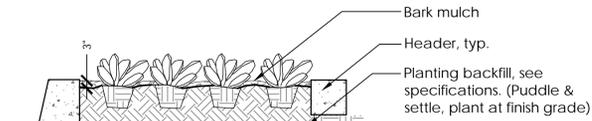
Date: 2023/01/24
 Project Number: 19-2634
 Scale: 1"=10'-0"

Tree Root Barrier. 24" depth, continuous barrier. Install at edge of paving where trees are planted closer than 5' to the edge of paving as shown per plans. Center on tree and extend 5' in each direction.

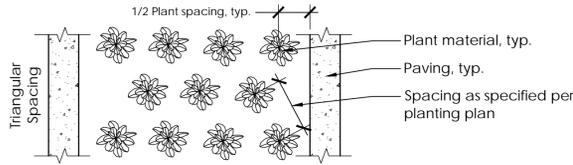


- Notes:
1. Place root barrier along back of curb or sidewalk at all locations where trees are planted within 5'-0" of pavement.
 2. Top of root barrier to be 2" below finished grade of curb or pavement.

9 ROOT BARRIER AT TREE PLANTING
NOT TO SCALE P-CO-FAI-12

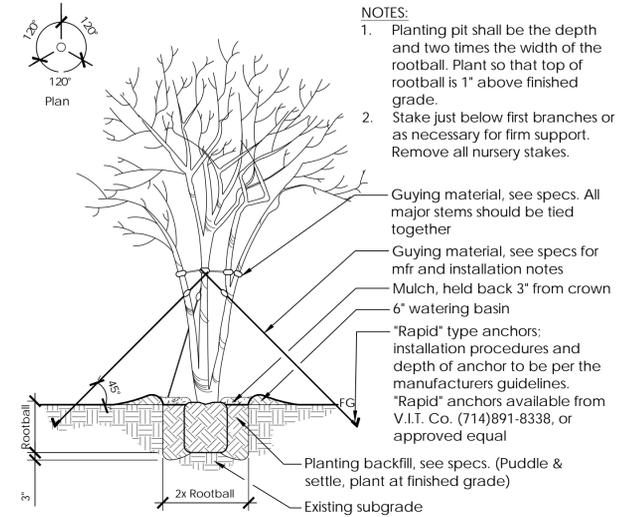


SECTION

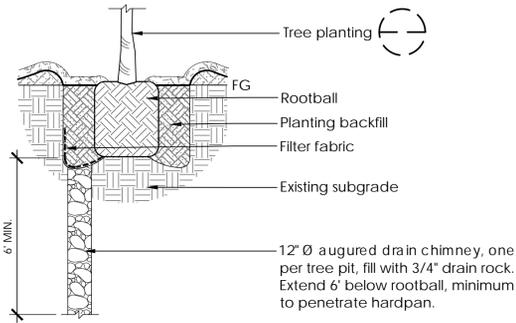


PLAN

6 GROUND COVER PLANTING
NOT TO SCALE P-CO-FAI-06

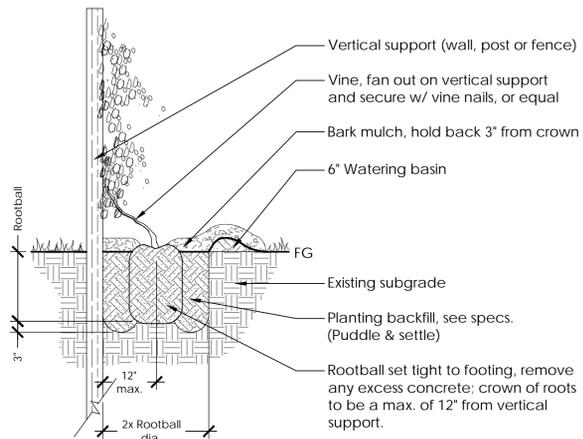


3 MULTI-TRUNK TREE GUYING
NOT TO SCALE P-CO-FAI-05



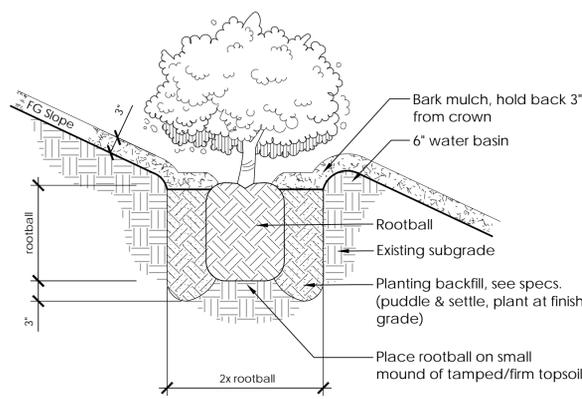
- NOTES:
1. Drainage required only for tree pits failing tree pit drainage test as described in the specifications.
 2. Contractor to repeat tree pit drainage test after installation of drain chimney to ensure proper drainage.

11 TREE PIT DRAINAGE CHIMNEY
NOT TO SCALE P-CO-FAI-13



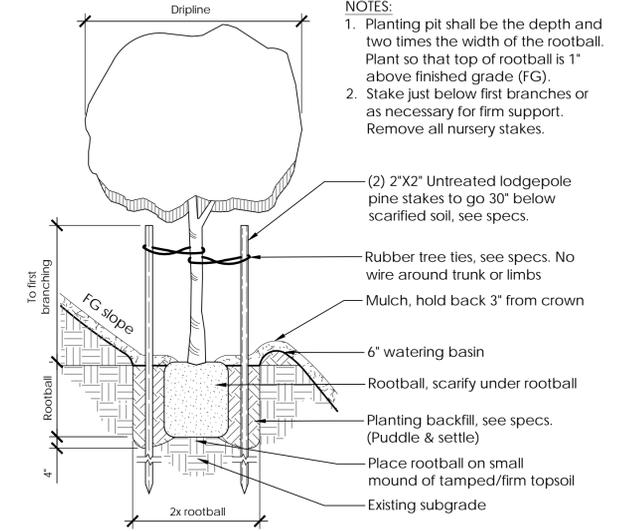
NOTE: Planting pit shall be the depth and two times the width of the rootball. Plant so that top of rootball is 1" above finished grade. Remove all nursery stakes.

8 VINE PLANTING
NOT TO SCALE P-CO-FAI-09

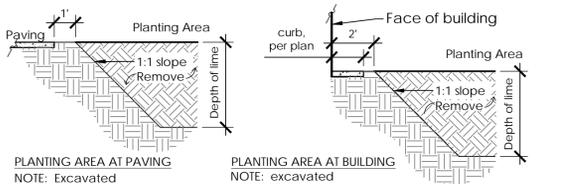


NOTE: Planting pit shall be the depth and two times the width of the rootball. Plant so that top of rootball is 1" above finished grade. Remove all nursery stakes. Finish with 3" bark mulch per specifications.

5 SHRUB PLANTING ON SLOPE
NOT TO SCALE P-CO-FAI-03

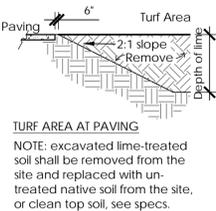


2 TREE PLANTING ON SLOPE
NOT TO SCALE P-CO-FAI-04



PLANTING AREA AT PAVING
NOTE: Excavated lime-treated soil shall be removed from the site and replaced with un-treated native soil from the site, or clean top soil, see specs.

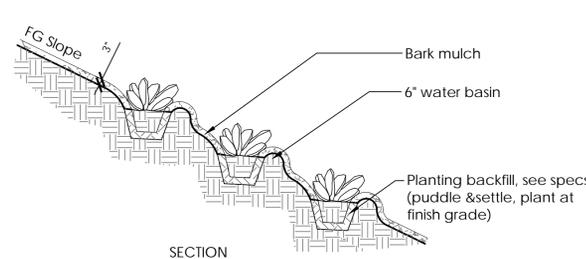
GENERAL NOTES:
1. Contractor to provide documentation indicating if site was lime treated. If lime treatment was implemented, lime treated soil in planting areas must be removed from the site and replaced with un-treated native soil or clean topsoil. Contractor to provide separate agronomy report for imported topsoil. Agronomy report requirements are outlined in specifications.



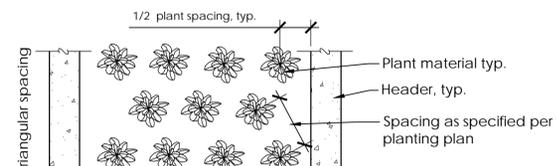
TURF AREA AT PAVING
NOTE: excavated lime-treated soil shall be removed from the site and replaced with un-treated native soil from the site, or clean top soil, see specs.

Subject to approval by geo-tech

10 REMOVAL OF LIME-TREATED SOILS
NOT TO SCALE P-CO-FAI-11

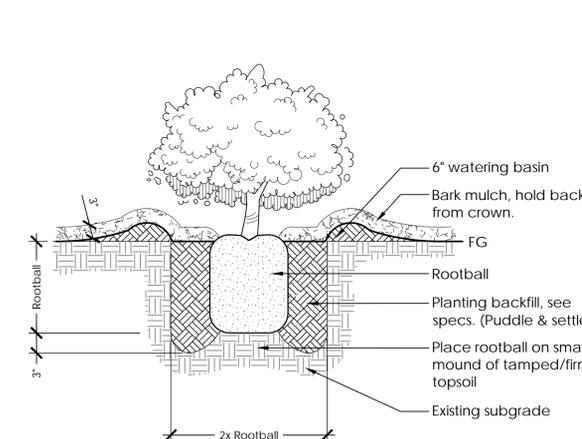


SECTION



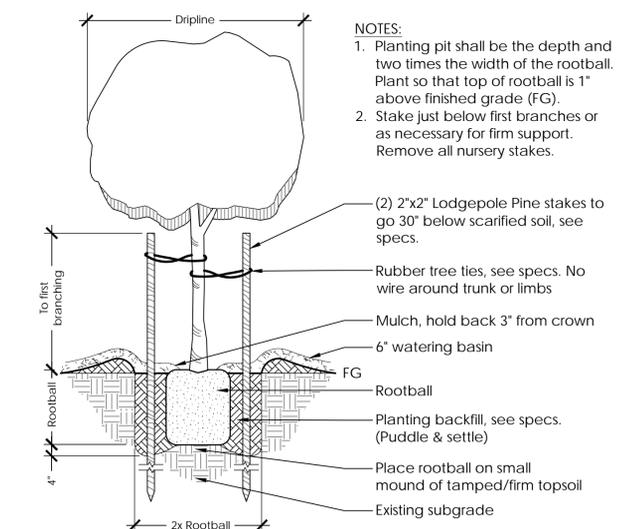
PLAN

7 GROUND COVER PLANTING ON SLOPE
NOT TO SCALE P-CO-FAI-07



NOTE: Planting pit shall be the depth and two times the width of the root ball. Plant so that top of rootball is 1" above finished grade. Remove all nursery stakes. Finish with 3" bark mulch per specifications.

4 SHRUB PLANTING
NOT TO SCALE P-CO-FAI-02



1 TREE PLANTING
NOT TO SCALE P-CO-FAI-01

Stamp



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Issuances & Revisions

No.	Description	Date

Key Plan/Consultant Stamp

PLANTING DETAILS

Date: 2023/01/24
Project Number: 19-2634
Scale: N/A

SECTION 329000 - LANDSCAPE PLANTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work Included: All services, labor, materials, transportation and equipment necessary to perform the work indicated on the Drawings and as specified.
- B. Contractor is responsible for removing and disposing of lime treated soils from planting areas, if lime treatment was used in construction of buildings and paving. Clean top soil from site is to replace lime treated soil in planting areas, or imported top soil may be used, subject to review and approval. Amend replacement soil as outlined in these specifications. Method and extent of lime treated soil removal shall be approved by project geotechnical engineer.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including general and supplementary conditions and project specifications sections, apply to these instructions.

1.3 SUBMITTALS

- A. Comply with with submittal procedures, unless otherwise indicated.
- B. Samples: Samples of soil amendments, fertilizers, mulches, binders/tackifiers, and seed mixes, shall be submitted for review and stored on site until furnishing of materials is completed. Delivery may begin upon approval of samples or as directed by the Landscape Architect.
 1. Submit mixed product samples for all specified mulches.
- C. Technical Reports: Contractor to provide and submit copies of technical reports. Work is to be performed by:
 - Soil and Plant Laboratory, Inc.
 - 352 Mathew Street
 - Santa Clara, CA 95030 408-727-0330

- 1. Agronomy Reports: A minimum of one Agronomy Report shall be prepared, which shall include basic and minor nutrients, as well as a textural analysis of the sample. The sample for reporting shall consist of a composite of three shovelfuls of soil, every shovelful location as directed by the Landscape Architect.
- 2. Post-Amendment Agronomy Reports: After soil amendments have been thoroughly mixed into the site, random samples of the mixed soil will be taken by the Landscape Architect and submitted to a soils laboratory. Results of testing will be sent to the Contractor, and cost of the above testing by the soils laboratory shall be borne by the Contractor. One Post-Amendment Agronomy Report is required. The report shall include recommendations for post planting fertilizing for the duration of the Maintenance Period.
- D. Fertilizers and Soil Conditioners: Submit product data for fertilizers and soil conditioners, and planting labels. Quantities of fertilizers and soil conditioners shall be per the Agronomy Reports, including adjustments as required based on the results of the Agricultural Suitability Test for the reclaimed water, where applicable.
 1. Cost adjustments: Contractor shall provide a line item cost for installation of the soil conditioners and fertilizers according to these specifications. Should the agronomy reports recommend a lesser degree of soil conditioning and fertilizing, Contractor shall adjust fees or provide a credit to the Client accordingly. In the event that the required soil conditioners and fertilizers are greater than these specifications, the Contractor shall not be responsible for funding the difference.
- E. Post-Planting Fertilizers: Submit product data for fertilizers for use post-planting. Quantities of fertilizers shall be per the Post-Amendment Agronomy Reports, including adjustments.
- F. Submit certificates, trip slips and invoices for soil preparation materials. See 1.5 Review of Plant Invoices and Soil Preparation Conformance Test.
- G. Protective Fencing: Fencing for use in protecting newly installed work during the Maintenance Period shall be submitted to the Landscape Architect prior to installation.
- H. Weed Eradication: Contractor to submit product data and schedules for weed eradication.
- I. Manufacturer's Instructions: Contractor to submit installation instructions for planting items not herein outlined or detailed on drawings.

1.4 GENERAL REQUIREMENTS

- A. The term "Planting Area" shall mean all areas to be planted with trees, shrubs, and groundcovers, and areas covered with organic mulch.
- B. Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practice.
- C. All rock and other growth or debris accumulated during the duration of the project shall be removed from the site.
- D. Prior to excavation for planting or placing of plant materials, locate all underground utility lines still in use and take proper precautions to avoid damage to such improvements. In the event of a conflict between such lines and plant locations, notify the Architect who shall arrange for the relocation of one or the other. The Contractor assumes all responsibility for making any and all repairs for damages resulting from work as herein specified.
- E. Grading and soil preparation work shall be performed only during the period when beneficial and optimum results may be obtained. If the moisture content of the soil should reach such a level that working it would destroy soil structure, spreading and grading operations shall be suspended until the moisture content is increased or reduced to acceptable levels and the desired results are likely to be obtained.
- F. All scaled dimensions are approximate. Before proceeding with any work carefully check and verify all dimensions and immediately inform the Landscape Architect of any discrepancy between the drawings and/or specifications and actual conditions.
- G. Quantities for plant materials are shown for convenience only, and not guaranteed. Check and verify count and supply sufficient number to fulfill intent of drawings.
- H. Adequately stake, barricade, and protect all irrigation equipment, manholes, utility lines, and other existing property during all phases of the soil amending and grading operations.
- I. Observation of Plant Material:
 1. All plant material shall be delivered to the project site for Observation by the Landscape Architect, for approval prior to installation.
 2. The Contractor shall immediately remove any plant material not approved.
 3. Approved plant material shall remain on the site and shall be maintained by the Contractor as standards of comparison for material to be furnished.
 4. The Contractor, at his option and at his expense, can retain the services of the Landscape Architect to review trees 15 gallon and larger tagged at the nursery and/or at its place of growth, or as otherwise specified on drawings.
- L. Rejection and Substitution:
 1. All plants not conforming to the requirements herein specified shall be considered defective, and such plants, whether in place or not, shall be marked as rejected and be immediately removed from the site of the work and replaced with acceptable plant materials. The plant materials shall meet all applicable observations required by law. All plants shall be of the species, variety, size, age, flower color and condition as specified herein and/or as indicated on the drawings. Under no condition will there be any substitution of plant species, variety, or reduced sizes for those listed on the accompany drawings, except with the express written consent of the Landscape Architect.
- M. Tree Drainage:
 1. It shall be the Contractor's responsibility to provide adequate drainage of all trees, sufficient to ensure healthy growth.
 2. Coordinate locations for tree pit drainage testing with Landscape Architect. At a minimum, locations shall be selected based upon known soil profiles, with concentration on areas of specific concern, high clay. Tree pit drainage testing is described in section 3 of these specifications.

1.5 REVIEW OF PLANT INVOICES AND SOIL PREPARATION CONFORMANCE TEST

- A. Upon delivery of materials and/or completion of all soil conditioning and grading but prior to initiating planting operations, the Contractor shall provide Landscape Architect with signed copies of required certificates, trip slips and invoices for soil preparation materials. The Landscape Architect shall review such material, comparing the total quantities of each material furnished against the total area to each operation. If the minimum rates of application have not been met, the Landscape Architect will require the incorporation of additional quantities of these materials to fulfill the minimum application requirements specified.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All products shall be delivered to the site in manufacturer's unopened standard containers bearing original labels showing quantity, analysis and name of manufacturer.
- B. All materials shall be stored in designated areas and in such a manner as to protect from weather or other conditions that might impair the effectiveness of the product.

1.7 OBSERVATION

- A. Observations herein specified shall be made by the Landscape Architect. The Contractor shall request observations in writing, 3 days in advance of the time observation is required.
- B. The Contractor or his authorized representative shall be on the site at the time of each observation.

C. Observation will be required for the following parts of the work:

1. Incorporation of soil conditioning and fertilizing into the soil.
 2. Upon the completion of grading prior to planting.
 3. Approval of plant materials (refer to 1.4 General Requirements).
 4. When trees and shrubs are spotted in place for planting, but before planting holes are excavated. Approval of mulch product shall be obtained prior to spreading.
 5. When all planting, except the Maintenance Period, has been completed. Acceptance and written approval shall establish beginning of the Maintenance Period.
 6. Final Observation at the completion of the Maintenance Period. This observation shall establish the beginning date for the guarantee of all trees.
- D. Acceptances: Upon completion of the Final Observation and the work of this section, the Contractor will be notified in writing (1) whether the work is acceptable, (2) of any requirements necessary for completion and acceptance.
 - E. The Contractor will be charged, and responsible for, any time and mileage used by the Landscape Architect as a result of prematurely scheduled site visit.

1.8 MAINTENANCE

- A. The Maintenance Period begins on the day the Architect has given Notice of Completion and shall continue thereafter for no less than 90 continuous calendar days.
 1. Phased Maintenance Periods, if required, shall be negotiated prior to construction.
 2. If phased Maintenance Periods are not negotiated prior to construction, the Maintenance Period for all areas will begin after the entire project is 100% complete per contract documents. Portions completed earlier shall be maintained up to and including the specified Maintenance Period without additional compensation.
 - B. The Contractor shall continuously protect and maintain all involved areas of the Contract during the progress of the work and during the Maintenance Period until the Final Acceptance of the work.
 - C. A protective temporary fence shall be installed and remain in place until final acceptance of the project. Contractor is responsible for removal of the protective temporary fence at the close of the Maintenance Period and after Final Acceptance of the project.
 - D. Regular planting maintenance operations shall begin immediately after each plant is planted. Plants shall be kept in a healthy, growing condition and in a visually pleasing appearance by watering, pruning, mowing, rolling, trimming, edging, fertilizing, restaking, pest and disease controlling, spraying, weeding, cleaning up and any other necessary operation of maintenance. Landscape areas shall be kept free of weeds, noxious grass, and all other undesired vegetative growth and debris. All plants found to be dead or in an impaired condition shall be replaced immediately. See Post-Planting Fertilizing requirements.
 - E. The Contract completion date of the Contract Maintenance Period will be extended, when in the opinion of the Landscape Architect, improper maintenance and/or possible poor or unhealthy condition of planted material are evident at the termination of the scheduled Maintenance Period. The Contractor shall be responsible for additional maintenance of the work at no change in Contract price until all of the work is completed and acceptable.
 - F. The Contractor shall be responsible for maintaining adequate protection of the areas. Damaged areas shall be repaired immediately at the Contractor's expense.
 - G. All plants (including sodded areas) found to be dead, and all plants not in a vigorous condition noted within the Maintenance Period, shall be replaced within fourteen (14) days.
- 1.9 GUARANTEES AND REPLACEMENTS
- A. All plants (except trees- see 1.09B) shall be guaranteed to remain healthy and vigorously growing for 3 months from time of final acceptance.
 - B. All trees that have been supplied and installed under this Contract shall be guaranteed to live in a healthy condition for a period of one (1) year from date of final acceptance of project. Trees are to be inspected for disease and certified by an authorized Arboriculturalist prior to planting.
 - C. All plants found to be dead, and all plants not in a vigorous condition noted within the Maintenance Period, shall be replaced within fourteen (14) days.
 - D. Plants used for replacement shall be the same kind and size as specified in the plant list. They shall be furnished, planted and fertilized as originally specified.

PART 2 - PRODUCTS

2.1 SOIL AMENDMENT AND FERTILIZER

- A. Soil Amendment and fertilizer: the following amendments and fertilizers are to be used for bidding purposes only.
 1. Organic Material (nitrolized redwood sawdust or equal and composted humus materials, 50:50 mix) PH of 5.5 to 6.5
 2. Gypsum shall be a commercially processed and packaged gypsum (CaSO4, 2 H2O @ .90%).
 3. PAM (polyacrylamide)'Complete Green'
 4. Calcium Nitrate (Ca[NO3]215/0/0)
 5. Potassium Nitrate (KNO3-- 13/0/44)
 6. SCU (urea) [NH2]2CO37/0/0)
 7. Triple Superphosphate (Ca H2PO42--0/45/0)
 8. Oyster Shell Lime (CaCO3.95%)
 9. MicroMax fertilizer
- B. Quantities shall be furnished as needed to complete work shown on drawings.

2.2 PLANTING

- A. Backfill: The following planting backfill ratios are to be used for bidding purposes only. Contractor is responsible for providing agronomy reports as described in 1.3-C, which shall outline backfill specifications. Fully amended (upper) excavation materials shall be put in one pile to go around the rootball. Any deeper un-amended materials shall be put in a separate pile. Condition this deeper soil at the following rates and use for the planting pit below the rootball: PAM (polyacrylamide)0.5 lbs / cy Gypsum16 lbs / cy. Over-excavate the planting pits so that there shall be one foot of this material between native soil and the bottom of the rootball. No OM or fertilizer shall be used below the rootball.
- B. Tree Staking:
 1. Stakes shall be untreated lodge pole stakes, with length as required to meet staking requirements per detail. Stake quantity per detail.
 2. Tree ties shall be 24" Gro-Straight Tree Ties, or approved equal.
- C. Weed Eradication:
 1. Pre-emergence herbicide shall be Surflan, Treflan, Ronstar, or equal.
 2. Post-emergent herbicide, when required, shall be a OMR1 (Organic Material Review Institute) listed herbicide. Submit herbicide for review and approval.

2.3 PLANT MATERIAL

- A. All plants shall be vigorous, of normal growth free from disease, insects, insect eggs, and meet or exceed the measurements specified.
- B. Turf sod, if applicable, shall be of uniform density, color and texture, strongly rooted, and capable for vigorous growth and development when planted.
 - C. Identify plant species or varieties correctly on legible, weatherproof labels attached securely to the plant. There shall be a minimum of one labeled plant for each 5 plants in a lot.
 - D. Substitutions will not be permitted except if proof is submitted that any plant specified is not obtainable, in which case a proposed substitution will be considered for use of the nearest equivalent size or variety and cost. All proposed substitutions shall be approved by Landscape Architect prior to ordering.

2.5 MULCH:

- A. Planting areas shall be covered with 'Arbor Mulch', or approved equal. Mulch shall be a recycled soft wood, dark color product shredded into small pieces consisting of a mix of finely shredded wood and medium shredded wood processed through an industrial tub grinder. No 'gold' color, rounded wood chips will be accepted. Available from Grab n' Grow Soil Products, 707-575-7275.
- B. Planting in bio-retention areas, to be covered with gray # washed pea gravel, or approved equal. Refer to planting detail for requirements.

PART 3 - EXECUTION

3.1 WEED ERADICATION PROGRAM

- A. Prior to planting, eradicate and physically remove all weeds dead or alive within the limits of work, in the following order:
 1. Irrigate twice each day for approximately 10 minutes each watering time for a period of 14 calendar days, until seedlings appear.
 2. Apply post emergence weed contact spray according to manufacturer's

- recommendations. Take care to protect existing plant material which is to remain as shown on the plans.
- 3. Wait the required period for the post emergent to take effect (approximately 7-14 days).
- 4. Physically remove all weeds, dead or alive, within the limits of work.

B. Post- Planting:

- 1. Planting Areas: Apply pre-emergence herbicide according to product directions.
- 2. Turf and Hydrosed Areas: Spot spray with post-emergence weed contact spray, taking care to protect existing plant material which is to remain as shown on the plans.

3.2 SOIL CONDITIONING, FERTILIZING & ROTOTILLING

- A. Grub and clean planting area, removing all weeds, debris and rocks from the site.
- B. Rip and cross-rip soil in planting areas to 12" deep. Contractor to install amendments per agronomy reports. The following soil amendment incorporation is to be used for bidding purposes only. The soil conditioning and amendment materials shall be evenly spread over all planting areas and shall be thoroughly scarified to an average depth of 12 inches by rototilling a minimum of two alternating passes.

Organic Material (nitrolized redwood sawdust or equal, and composted humus materials, 50:50 mix)	8 C.Y / 1000sf
PAM (polyacrylamide)'	20 lbs / 1000sf
Gypsum	300 lbs / acre
Oyster Shell Lime	20 lbs / 1000sf
Calcium Nitrate	20 lbs / 1000sf
Potassium Nitrate	10 lbs / 1000sf
SCU	12 lbs / 1000sf
Triple Superphosphate	10 lbs / 1000sf
MicroMax	15 lbs / 1000 sf

- *Do not allow PAM to become wet before installation
- C. The thoroughness and completeness of the rototilling and incorporation of the soil conditioners/amendments shall be acceptable to the Landscape Architect.

3.3 FINISH GRADING

- A. Finish grades shall be as indicated on the Civil Engineer's drawings.
- B. Planting surfaces shall be graded with no less than 2 percent surface slope for positive drainage, or as otherwise noted according to Civil Engineer's plans.
- C. Final finish grades shall insure positive drainage of the site with all surface drainage away from buildings, walls, and toward roadways, drains and catch basins.
- D. Finish grades shall be measured as the final water compacted and settled surface grades, and shall be acceptable to the Landscape Architect before planting operations will be allowed to begin.
- E. All undulations and irregularities in the planting surfaces resulting from tillage, rototilling and all other operations shall be leveled and floated out before planting operations are initiated.
- F. The Contractor shall take every precaution to protect and avoid damage to sprinkler heads, irrigation lines, and other underground utilities during his grading and conditioning operations.

3.4 TREE PIT DRAINAGE TESTING

- A. After tree pit is dug, but prior to backfilling or planting, Contractor shall completely fill pit with water and then allow the water to completely drain from the pit. Fill the pit with water a second time. If the amount of time necessary for the pit to drain a second time is greater than 24 hours, install supplemental drainage per plan and detail.
- B. Contractor to secure tree pit opening for safety.

3.5 PLANTING

- A. The layout of locations for plants and outlines of groundcover to be planted shall be approved on the site by the Landscape Architect, prior to their planting. All such locations shall be checked for possible interference with existing underground piping, prior to excavation of holes. If underground construction or utility lines are encountered in the excavation of planting areas, other locations for the planting may be selected by the Landscape Architect. Damage to existing utilities shall be the responsibility of the Contractor.
- B. Planting Trees, Shrubs, and Container-stock Groundcovers, Vines, and Grasses:
 1. All excavated holes shall have vertical sides with roughened surfaces and shall be of the minimum sizes indicated on detailed drawings. Holes shall be, in all cases, large enough to permit handling and planting without injury or breakage of root balls or roots.
 2. Root barriers shall be installed where indicated on plans in accordance with manufacturer's recommendations.
 3. Excavation shall include the stripping and staking of all acceptable soil encountered within the areas to be excavated for plant pits and planting beds. Protect all areas that are to be trucked over and upon which soil is to be temporarily stacked pending its use for the filling of holes, pits and beds.
 4. Plants in can containers shall have the cans opened by cutting vertically on opposite sides of each can with nursery can openers, tin snips or other approved instruments for this purpose. All used cans shall be removed to the storage areas or from the site daily.
 5. The plants shall be planted at approved locations with the heretofore specified conditioner and soil planting backfill.
 6. The plants shall be placed in the planting pits on the backfill material which has been hand tamped and water settled to the rootball-base levels prior to the placement of the plants. After setting the plants, the remaining backfill material shall be carefully tamped and settled around each rootball to fill all voids.
 7. Each plant shall be placed in the center of the hole and shall be set plumb and held rigidly in position until the planting backfill has been tamped from around each root ball.
 8. All plants shall be set at such a level that after settling they bear the same relationship to the surrounding finish grade as they bore to the soil line grade in the container, unless otherwise noted.
 9. No plant will be accepted if the rootball is broken or cracked before, during, or after the process of installation.
 10. All plants shall be thoroughly watered in to the full depth of each planting hole immediately after planting.
 11. All trees, 15 gallon and larger, shall be staked. One of the stakes shall be driven into the ground of the windward side of the tree. The stakes shall be driven in plumb and secure. Special care shall be taken that the driving in of the stake does not damage the tree roots or root ball. Tree ties shall be fastened to each tree and stake by looping figure 8's with the inside diameter of the tie at 2 or 3 times the diameter of the tree (Also see detailed drawings).
 12. The staking shall be accomplished in such a manner as to insure the proper and healthy growth and safety of the plants, property, and the public.
 13. The Contractor shall be responsible for all surface and subsurface drainage required which may affect his guarantee of the plants.
- C. Planting Groundcovers (from flats):
 1. Groundcovers shall be planted in the areas indicated on the drawings. The groundcover plants shall be rooted cuttings grown in flats, and shall remain in those flats until transplanting.
 11. All groundcover plants shall be planted with soil around roots, evenly spaced at the intervals called out on the drawings.
 12. The groundcover plants shall be planted sufficiently deep to cover all roots and planting tablets shall be placed in each planting hole and shall be immediately sprinkled after planting until the entire area is soaked to the full depth of all holes.
 13. The groundcover planting areas shall be hand smoothed after planting to provide an even, smooth final finish grade.
- D. Mulch:
 1. Apply a 3" deep layer of specified mulch throughout all planting areas, unless otherwise noted on plans. Also refer to planting details for mulch requirements.

3.6 CLEANUP

- A. As project progresses, Contractor shall maintain all areas in a neat manner and remove unsightly debris as necessary. After completion of project, Contractor shall remove all debris and containers used in accomplishing work. Contractor shall sweep and clean all sidewalks, asphalt, and concrete, and planter walls adjacent to plantings.

Stamp



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Issuances & Revisions

No.	Description	Date

Key Plan/Consultant Stamp

PLANTING SHEET SPECIFICATIONS

Date: 2023/01/24
Project Number: 19-2634
Scale: N/A