WATER SERVICE INFORMATION	WATER METER REF. NO.:	#1
TYPE OF SOURCE:		POTABLE
SERVICE LINE SIZE **:		1"
WATER METER SIZE **:		3/4"
(** PER STREET and/or WATER IMPROVEMENT PLANS)		
METER ADDRESS:		9th STREET
METER STATION POINT:		9th STREET
EXISTING WATER PRESSURE:		56 - 58 PSI.
MINIMUM OPERATING PRESSURE:		45 PSI.
PEAK IRRIGATION DEMAND:		12 GPM.

FRICTION LOSS CALCULATION	
WATER METER REF. NO.:	A
VALVE STATION NO.:	A-2
HEAD / BUBBLER / EMITTER ADV	20.00
LATERAL LINE & FITTINGS	0.21
PRESSURE REGULATOR FILTER	1.29
MIN. RCV PRV DIFFERENTIAL CONTROL VALVE	2.02
PRESSURE MAIN LINE	3.66
FLOW SENSOR	
MASTER VALVE / PRV	1.10
BACKFLOW PREVENTER	11.30
STRAINER / FILTER	0.40
WATER METER	2.20
SERVICE LINE	0.25
ELEVATION DIFFERENCE	
CONTINGENCY	2.12
MINIMUM PSI. REQ'D.	44.55
(EXISTING PSI.)	-56.00
RESIDUAL PSI.	11.45

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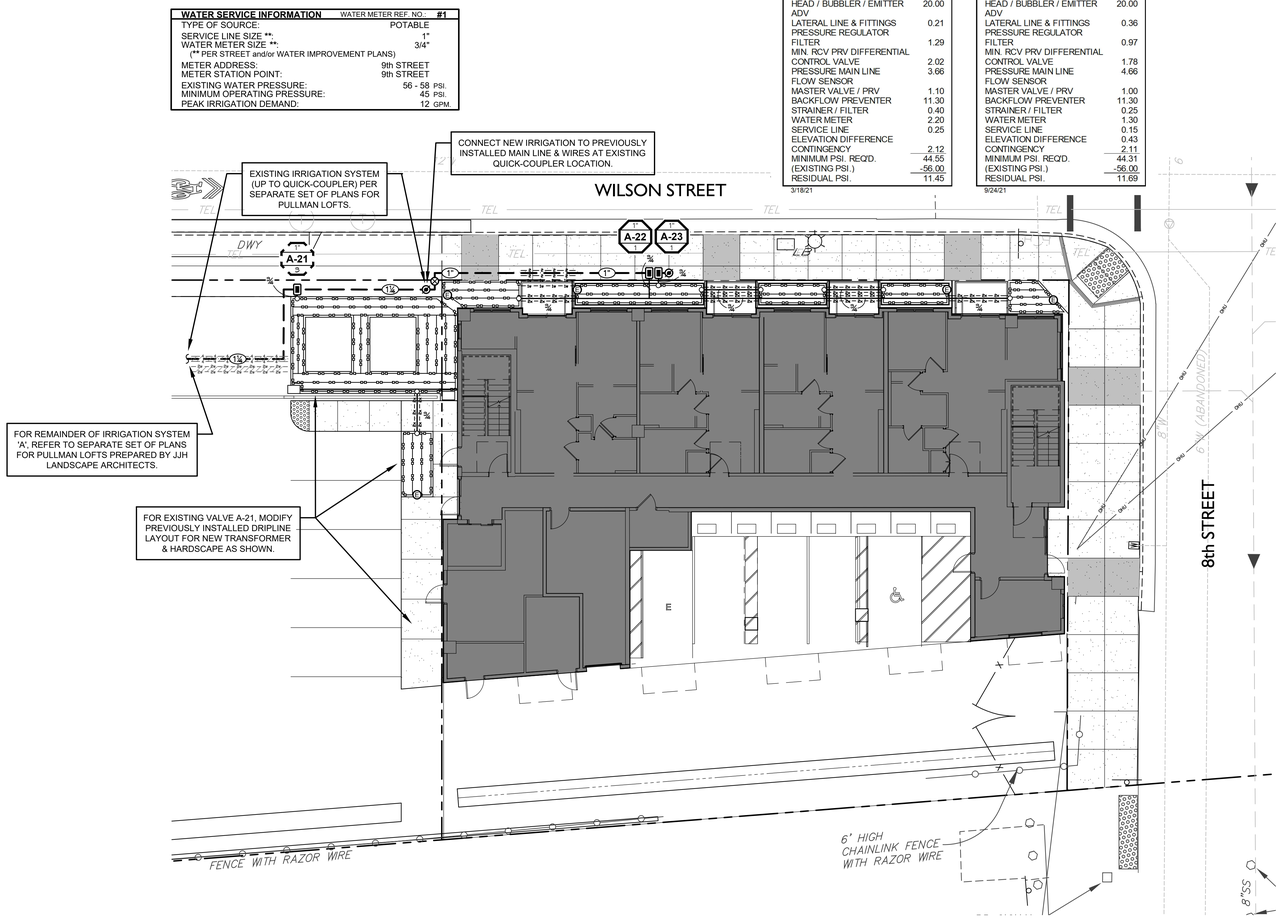
FRICTION LOSS CALCULATION	
WATER METER REF. NO.:	A
VALVE STATION NO.:	A-19
HEAD / BUBBLER / EMITTER ADV	20.00
LATERAL LINE & FITTINGS	0.36
PRESSURE REGULATOR FILTER	0.97
MIN. RCV PRV DIFFERENTIAL CONTROL VALVE	1.78
PRESSURE MAIN LINE	4.66
FLOW SENSOR	
MASTER VALVE / PRV	1.00
BACKFLOW PREVENTER	11.30
STRAINER / FILTER	0.25
WATER METER	1.30
SERVICE LINE	0.15
ELEVATION DIFFERENCE	0.43
CONTINGENCY	2.11
MINIMUM PSI. REQ'D.	44.31
(EXISTING PSI.)	-56.00
RESIDUAL PSI.	11.69

9/24/21



DRIPLINE INSTALLATION NOTES

1. ALL DRIPLINE, FITTINGS, FILTERS, PRESSURE REGULATORS, AIR VACUUM RELIEF VALVES, AND FLUSH VALVES SHALL BE FURNISHED BY THE MANUFACTURER LISTED IN THE LEGEND; AND SHALL BE INSTALLED AS PER THE LEGEND, THE DETAILS, AND THE MANUFACTURERS' RECOMMENDATIONS. NO SUBSTITUTIONS WILL BE ACCEPTED.

2. DRIPLINE SHALL GENERALLY BE LAID OUT AS FOLLOWS:
   A. DRIPLINE IS INSTALLED AROUND THE ENTIRE EDGE OF THE AREA TO BE IRRIGATED.
      (1) DISTANCES FROM THE EDGE OF THE IRRIGATED AREA ARE:
         (a) 2-4" NEXT TO ASPHALT, CONCRETE PAVING, OR "HARDSCAPE".
         (b) 2-4" OUTSIDE OF UNCONTAINED LANDSCAPES.
      (2) AT CORNERS, THE DRIPLINE MAY BE CURVED, DOWN TO A MINIMUM RADIUS OF 15 INCHES. FOR CORNERS SHARPER THAN THIS, ELBOWS (OR TEES, AS APPLICABLE) SHALL BE USED.
   B. DRIPLINE IS INSTALLED THROUGHOUT THE ENTIRE AREA TO BE IRRIGATED, AND IS CONNECTED WITH TEES TO THE DRIPLINE LAID AROUND THE EDGE.
      (1) ON FLAT GROUND (LESS THAN 3%):
         (a) DRIPLINE SHALL GENERALLY RUN PARALLEL TO THE LONGEST SIDE OF THE AREA TO BE IRRIGATED.
         (b) DRIPLINES SHALL BE EVENLY SPACED AT A DISTANCE NOT TO EXCEED THE ON-CENTER (O.C.) SPACING INDICATED IN THE LEGEND.
      (2) ON SLOPES (3% OR STEEPER):
         (a) DRIPLINE SHALL GENERALLY RUN PARALLEL TO CONTOUR LINES, NOT UP AND DOWN THE SLOPE.
         (b) DRIPLINES SHALL BE SPACED AT 125% OF ON-CENTER SPACING ON THE LOWER ONE-THIRD OF THE SLOPE.
   C. THE RESULTING GRID OF DRIPLINE SHALL BE A "CLOSED LOOP" SYSTEM, EXCEPT IN NARROW AREAS WHICH ARE ONLY WIDE ENOUGH FOR ONE DRIPLINE.

3. ON LOOPED DRIPLINE SYSTEMS WITH A SINGLE POINT OF SUPPLY, THE SUPPLY CONNECTION SHALL BE MADE ON THE PERIMETER OF THE LOOP, AND THE CONNECTION SHALL BE LOCATED ON THE OPPOSITE SIDE OF THE LOOP FROM THE FLUSH VALVE.

4. THE IRRIGATION CONTRACTOR SHALL THOROUGHLY FLUSH ALL LATERALS AND DRIPLINES PRIOR TO INSTALLATION OF FLUSH VALVES AND AIR VACUUM RELIEF VALVES.

5. LOCATION OF FLUSH VALVES ON THE PLANS IS DIAGRAMMATIC ONLY. FLUSH VALVES SHALL BE LOCATED AT THE LOWEST POINT IN ELEVATION OPPOSITE THE POINT OF SUPPLY ON LOOPED DRIPLINE SYSTEMS, AND AT THE END OF THE LINE ON SINGULAR RUNS OF DRIPLINE.

6. LOCATION OF AIR VACUUM RELIEF VALVES ON THE PLANS IS DIAGRAMMATIC ONLY. AIR VACUUM RELIEF VALVES SHALL BE LOCATED AT THE HIGHEST POINT IN ELEVATION ON LOOPED OR SINGULAR DRIPLINES.

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

IRRIGATION NOTES

1. INSTALL ALL EQUIPMENT AS SHOWN IN THE DETAILS AND/OR AS STATED IN THE WRITTEN SPECIFICATIONS PREPARED BY THE LANDSCAPE ARCHITECT AND MANUFACTURER.

2. THIS DESIGN IS DIAGRAMMATIC. ANY EQUIPMENT SHOWN IN PAVED AREAS IS FOR DESIGN CLARIFICATION ONLY, AND IS TO BE INSTALLED WITHIN PLANTED AREAS WHEREVER POSSIBLE.

3. THE IRRIGATION CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS INDICATED ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN OBSTRUCTIONS OR GRADE DIFFERENCES EXIST THAT WERE NOT KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE, OR THE LANDSCAPE ARCHITECT, OTHERWISE THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY REVISIONS.

4. THE SYSTEM DESIGN IS BASED ON THE MINIMUM OPERATING PRESSURE SHOWN AT EACH POINT OF CONNECTION. THE IRRIGATION CONTRACTOR SHALL VERIFY ALL PRESSURES ON SITE PRIOR TO COMMENCING WITH THE INSTALLATION OF THE IRRIGATION SYSTEM.

5. FINAL LOCATION OF AUTOMATIC CONTROLLER TO BE DETERMINED BY THE OWNER'S AUTHORIZED REPRESENTATIVE AND/OR THE LANDSCAPE ARCHITECT.

6. 117 VOLT 60HZ SINGLE PHASE ELECTRICAL POWER OUTLET FOR THE IRRIGATION CONTROLLER IS TO BE PROVIDED BY THE OWNER/DEVELOPER. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THE HOOK-UP FROM THE POWER OUTLET TO THE CONTROLLER.

7. ALL WIRE FROM THE CONTROLLER TO THE ELECTRIC CONTROL VALVES SHALL BE #14 AWG-UF DIRECT BURIAL COPPER WIRE. PILOT WIRES SHALL BE COLOR CODED BY CONTROLLER AND COMMON GROUND WIRES SHALL BE WHITE WITH IDENTIFYING COLOR STRIPE CODED FOR EACH CONTROLLER. CONTRACTOR SHALL INSTALL (1) EXTRA COLOR CODED COMMON AND (1) EXTRA PILOT WIRE FROM THE CONTROLLER TO THE FARTHEST VALVE(S) FOR FUTURE USE. INSTALL IN COMMON TRENCH WITH MAIN LINE PIPING WHEREVER POSSIBLE. FASTEN WIRES TO UNDERSIDE OF MAIN LINE WITH NYLON WIRE TIES AT 10 FT. INTERVALS. PROVIDE A MINIMUM OF 18" OF COVER WHEN NOT ADJACENT TO MAIN LINE.

8. ALL WIRE CONNECTIONS SHALL BE MADE IN VALVE BOXES WITH APPROVED WATERPROOF WIRE CONNECTORS. WIRE SPLICES WILL NOT BE PERMITTED UNLESS APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE, OR THE LANDSCAPE ARCHITECT. WIRE SPLICES SHALL BE LOCATED ON RECORD DRAWINGS AS PER SPECIFICATIONS.

9. PROVIDE A MINIMUM OF 24" OF COVER OVER ALL PRESSURE MAIN LINE PIPING 3" AND LARGER, 18" OF COVER OVER ALL OTHER PRESSURE MAIN LINE PIPING, AND 12" OVER ALL NON-PRESSURE LATERAL LINE PIPING. PROVIDE A MINIMUM OF 36" COVER OVER ALL SLEEVES UNDER STREETS AND VEHICULAR TRAFFIC AREAS. ALL MAIN LINE PIPING UNDER PAVED AREAS SHALL BE INSTALLED IN SCH. 40 PVC SLEEVES. ALL SLEEVES SHALL BE INSTALLED UNDER PAVED AREAS PRIOR TO PAVING.

10. THE IRRIGATION CONTRACTOR SHALL FLUSH ALL LINES AND ADJUST ALL HEADS FOR MAXIMUM PERFORMANCE AND TO PREVENT OVERSPRAY ONTO ALL WALKS, WALLS, FENCES, DRIVES, AND BUILDINGS AS MUCH AS POSSIBLE. THIS WORK SHALL INCLUDE SELECTING THE BEST DEGREE OF ARC TO FIT ANY EXISTING SITE CONDITIONS.

11. THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANTI-DRAIN VALVES AS REQUIRED BY FIELD CONDITIONS TO PREVENT DAMAGE AND EROSION DUE TO EXCESSIVE LOW HEAD RUNOFF.

12. UPON COMPLETION OF THE JOB, THE CONTRACTOR IS TO PROVIDE THE OWNER WITH A SEPIA MYLAR OF THE RECORD IRRIGATION PLANS.

13. THE SYSTEM SHALL BE FULLY GUARANTEED FOR A PERIOD OF ONE YEAR. ANY DEFECTIVE MATERIAL OR POOR WORKMANSHIP SHALL BE REPLACED OR CORRECTED BY THE IRRIGATION CONTRACTOR AT NO COST TO THE OWNER(S).

WHENEVER ANY ITEM OF "DISTRIBUTION & CONTROL EQUIPMENT" IS SIZED SMALLER THAN THE MAIN LINE OR LATERAL LINE PIPING ON WHICH IT IS PLACED, THE REDUCTION IN PIPE SIZE SHALL ONLY OCCUR AT THE THREADED FITTING WHICH ADAPTS THE PIPE TO THE PIECE OF EQUIPMENT.

IRRIGATION LEGEND

DRIP IRRIGATION

SYMBOL	MFR.	MODEL NUMBER	COLOR	DESCRIPTION	EMITTERS	GPH.	GPM.	PSI.	DETAIL
	RAIN BIRD	XFS-CV-09-18	BROWN	XFS-CV SUB-SURFACE PRESSURE COMP. DRIPLINE w/ ANTI-SIPHON EMITTERS & CHECK VALVES (.6 FT. MAX.)	18" O.C.	0.90 GPH.	1.02 / 100'	20 - 60	H-1
					INSTALL ROWS AT 18" O.C. THROUGHOUT SHRUB AREAS				
					INSTALL DRIPLINE 6" BELOW FINISH GRADE IN SHRUB AREAS				
	RAIN BIRD	XFF-TFA-075		DRIPLINE ADAPTER TEE (DRIPLINE x 3/4" FPT)	FOR AREAS <7.0 GPM., USE ONE PVC FILL RISER (EDGE FEED)				H-2
	(APPROVED)	(BRASS)		MANUAL FLUSH HOSE END CAP (3/4" FHT)	FOR "EDGE FEED" DRIPLINE AREAS				H-3
(no symbol)	RAIN BIRD	OPERIND		POP-UP OPERATION INDICATOR	INSTALL 1 ON EACH DRIPLINE ZONE, AT THE CONTROL VALVE				(MFR.)

3/16/22

DISTRIBUTION & CONTROL EQUIPMENT

SYMBOL	MFR.	MODEL NUMBER	DESCRIPTION	REMARKS	DETAIL
	(APPROVED)	SCH. 40 PVC	PRESSURE MAIN LINE (POTABLE WATER SOURCE);	FOR UNDERGROUND INSTALLATION: SIZES NOTED (1" MIN.)	A-1
	(APPROVED)	CL. 200 PVC	NON-PRESSURE LATERAL LINE (POTABLE SOURCE)	FOR UNDERGROUND INSTALLATION: SIZES NOTED (3/4" MIN.)	A-1
	(APPROVED)	SCH. 40 PVC	MAIN LINE & LATERAL LINE SLEEVE	DIAMETER AS NOTED IN THE SLEEVE SYMBOL ON THE PLAN	A-3, A-20
	(APPROVED)	SCH. 40 PVC	LOW VOLTAGE CONTROL WIRE SLEEVE	DIAMETER AS NOTED IN THE SLEEVE SYMBOL ON THE PLAN	A-3, A-20
	(APPROVED)	SCH. 40 PVC	LATERAL LINE SLEEVE	SIZE: TWO TIMES THE SIZE OF THE LINE BEING SLEEVED	A-3
	NIBCO	T-585-70	BRONZE BALL VALVE (THREADED - FULL PORT)	LINE SIZE, TO 2" MAX.	D-1
	RAIN BIRD	33 DRC	QUICK-COUPLING VALVE w/ YELLOW RUBBER COVER	FOR POTABLE WATER, 3/4"	D-10
	RAIN BIRD	PEB	ELECTRIC CONTROL VALVE w/ FILTER	1", w/ FLOW CONTROL	A-21, E-12
	RAIN BIRD	LC RBY 100D	DISC Y-FILTER	1", 120 MESH, 0 - 26 GPM.	

SYMBOL	DESCRIPTION	REMARKS
SIZE STA.# GPM	INDICATES CONTROL VALVE SIZE INDICATES CONTROLLER STATION NUMBER INDICATES FLOW IN GALLONS PER MINUTE	
SIZE STA.# GPM	INDICATES CONTROL VALVE SIZE INDICATES CONTROLLER STATION NUMBER INDICATES FLOW IN GALLONS PER MINUTE	**INDICATES ELECTRIC CONTROL VALVE & VALVE BOX PREVIOUSLY INSTALLED PER SEPARATE SET OF PLANS.**

3/16/22

NORTH

SCALE: 1" = 10'-0"

0 5' 10' 20'

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4/15/22 DATE
STATE OF CALIFORNIA

Drawn By:	WRD
Checked By:	WRD
Plan Date:	04.15.22
Scale:	

Title:

IRRIGATION PLAN

Sheet No.:

LI.1

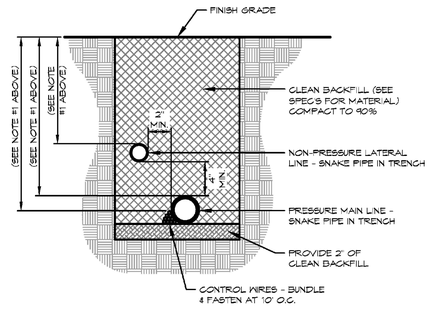
Plan Status:

1ST CITY SUBMITTAL

04.15.22

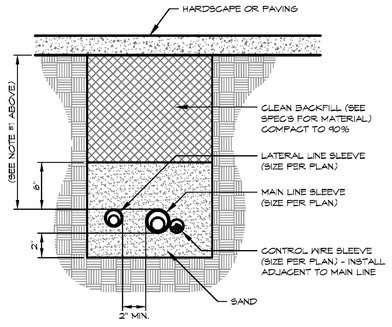
1ST CITY SUBMITTAL

NOTES:
1. PROVIDE THE FOLLOWING MINIMUM COVERAGE DEPTHS:
   12" OVER NON-PRESSURE & LATERAL LINES.
   18" OVER MAIN LINES 2½" DIAMETER & SMALLER.
   24" OVER MAIN LINES 3" DIAMETER & LARGER.
   18" OVER WIRES & CONDUITS, WHEN NOT ADJACENT TO MAIN LINES.
2. FASTEN WIRES TO MAIN LINES WITH NYLON WIRE TIES AT 10' O.C.
3. PROVIDE WIRE EXPANSION LOOPS (MIN. 12" LONG) AT ALL 90°CHANGES IN DIRECTION.



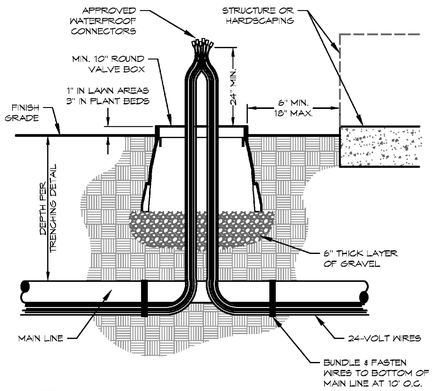
A-1 TYPICAL TRENCHING — A-1 v5, 8/5/20

NOTES:
1. PROVIDE THE FOLLOWING MINIMUM COVERAGE DEPTHS:
   12" OVER SLEEVES FOR NON-PRESSURE & LATERAL LINES.
   18" OVER SLEEVES FOR MAIN LINES 2½" DIAMETER & SMALLER.
   24" OVER SLEEVES FOR MAIN LINES 3" DIAMETER & LARGER.
   18" OVER SLEEVES FOR WIRES & CONDUITS.
   36" OVER ALL SLEEVES UNDER STREETS & VEHICULAR TRAFFIC AREAS.
2. INSTALL SLEEVES UNDER HARDSCAPE AREAS AS INDICATED ON THE IRRIGATION PLANS.
3. EXTEND ALL SLEEVES A MIN. OF 12" BEYOND EDGES OF HARDSCAPE AT BOTH ENDS.



A-3 TYPICAL SLEEVING — A-3 v3, 5/2/12

NOTES:
1. PLACE GRAVEL PRIOR TO INSTALLATION OF VALVE BOX.
2. LOOP ENOUGH WIRE TO EXTEND WIRE BUNDLE A MIN. OF 24" OUTSIDE OF THE VALVE BOX.
3. BRAND THE VALVE BOX LID WITH 'SB' IN LETTERS 2" HIGH.



A-20 SPLICE BOX FOR 24-VOLT WIRING — A-20 v2, 10/2/18

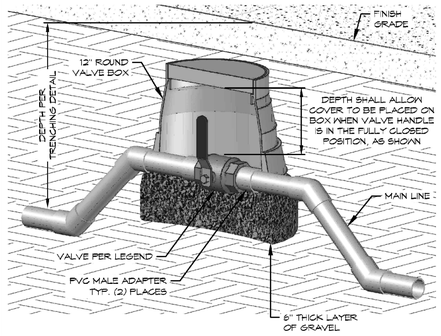
NOTE: INSTALL ALL CONNECTORS PER MANUFACTURER'S INSTRUCTIONS.

APPROVED WIRE CONNECTORS

MANUFACTURER & MODEL NO.	SIZE OF WIRES & NUMBER per CONNECTOR				
SPEARS MFR. CO.	#18 AWG	#16 AWG	#14 AWG	#12 AWG	#10 AWG
DS-100 w/ DS-300 SEALANT	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3
DS-400	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3
DS-500	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3
RAIN BIRD	#18 AWG	#16 AWG	#14 AWG	#12 AWG	#10 AWG
DBTWC	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3
3M SCOTCHLOK	#18 AWG	#16 AWG	#14 AWG	#12 AWG	#10 AWG
316-IR "IRRIGATION CONNECTOR"	2 or 3	2 or 3	(NOT APPROVED)		
DBY	2 or 3	2 or 3	2 or 3	2	(N/A)
DBO/B	2 or 3	2 or 3	2 or 3	2	(N/A)
DBR/Y	2 or 3	2 or 3	2 or 3	2 or 3	2 or 3
DBR	(NOT APPROVED)		2 or 3	2 or 3	2 or 3

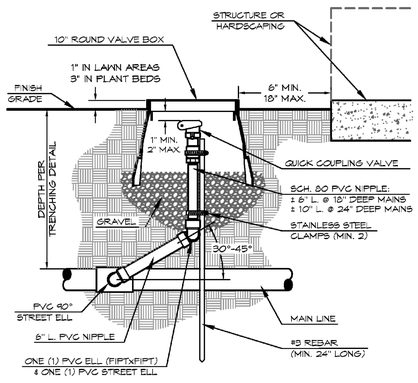
A-21 WIRE CONNECTOR FOR 24-VOLT WIRING — A-21 v3, 5/2/12

NOTES:
1. PLACE GRAVEL PRIOR TO INSTALLATION OF VALVE BOX AND VALVE.
2. ANGLE MAIN LINE FROM VALVE BOX TO SPECIFIED DEPTH WITH 45° ELLS.
3. INSTALL VALVE SO SHUT-OFF HANDLE OPERATES IN A VERTICAL PLANE IN RELATION TO THE GROUND, AS SHOWN; NOT IN A HORIZONTAL PLANE TO THE GROUND.
4. ALL THREADED CONNECTIONS SHALL BE SEALED DURING ASSEMBLY WITH "PERMATEX #51" PIPE JOINT COMPOUND, OR APPROVED EQUAL, AS RECOMMENDED BY THE MANUFACTURER OF THE SEALANT.
5. BRAND THE VALVE BOX LID WITH 'IV' IN LETTERS 2" HIGH.



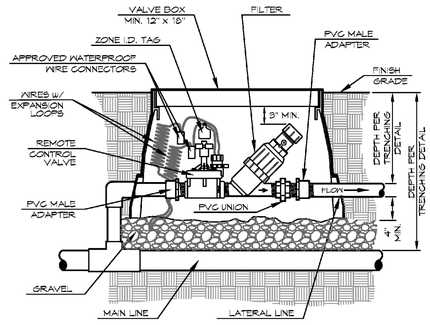
D-1 ISOLATION VALVE (BALL VALVE) — D-1 v2, 8/28/17

NOTES:
1. IN PAVED AREAS, USE AN APPROVED TRAFFIC VALVE BOX & LID. MOUNT FLUSH WITH ADJACENT PAVING.
2. PLACE GRAVEL PRIOR TO INSTALLATION OF VALVE BOX.
3. BRAND THE VALVE BOX LID WITH 'QC', IN LETTERS 2" HIGH.



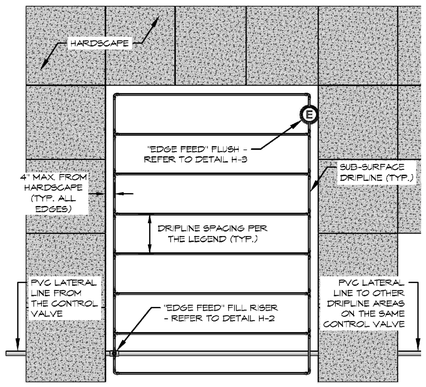
D-10 QUICK COUPLING VALVE (in valve box) — D-10 v2, 10/2/18

NOTES:
1. INSTALL VALVES IN PLANT BEDS, NEXT TO SIDEWALKS, WHEREVER POSSIBLE.
2. INSTALL VALVES A MIN. OF 12" FROM STRUCTURES OR HARDSCAPING.
3. PLACE BOX AT RIGHT ANGLES TO STRUCTURE OF HARDSCAPING.
4. PLACE GRAVEL PRIOR TO INSTALLATION OF VALVE BOX.
5. ALL THREADED CONNECTIONS SHALL BE SEALED DURING ASSEMBLY WITH "PERMATEX #51" PIPE JOINT COMPOUND, OR APPROVED EQUAL, AS RECOMMENDED BY THE MANUFACTURER OF THE SEALANT.
6. INSTALL FILTER SO IT CAN BE TAKEN APART IN PLACE FOR CLEANING.
7. BRAND THE VALVE BOX LID WITH THE CONTROLLER DESIGNATION & STATION NUMBER, IN LETTERS 2" HIGH.



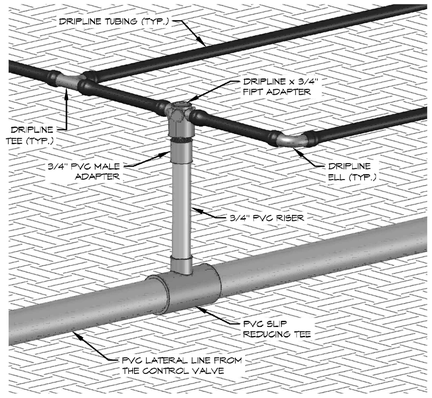
E-12 REMOTE CONTROL VALVE & FILTER (with UNION) — E-12 v2, 5/2/12

NOTES:
1. REFER TO "DRIPLINE INSTALLATION NOTES" ON THE PLANS FOR DRIPLINE LAYOUT GUIDELINES.
2. LOCATE THE FLUSH CAP HYDRAULICALLY OPPOSITE THE FILL RISER, AND AT ALL ENDS OF SINGLE DRIPLINE RUNS.



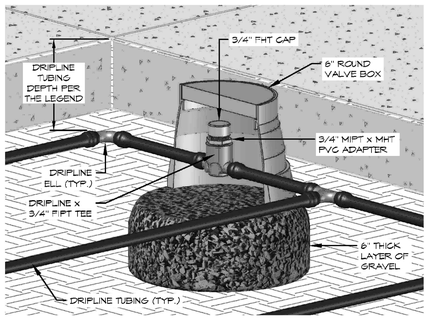
H-1 SUB-SURFACE DRIPLINE "EDGE FEED" (PLAN VIEW) — H-01 (to AKV), 4/18/19

NOTES:
1. LATERAL LINE DEPTH SHALL BE AS SPECIFIED ON THE TRENCHING DETAIL.
2. FILL RISER HEIGHT SHALL BE AS NEEDED TO ACHIEVE THE DRIPLINE TUBING DEPTH SPECIFIED IN THE LEGEND.



H-2 SUB-SURFACE DRIPLINE "EDGE FEED" FILL RISER — H-02 (0.19"), 10/12/17

NOTES:
1. LOCATE THE FLUSH CAP HYDRAULICALLY OPPOSITE THE FILL RISER, AND AT ALL ENDS OF SINGLE DRIPLINE RUNS.
2. INSTALL 1 CUBIC FOOT OF GRAVEL UNDERNEATH THE VALVE BOX AS A BED FOR THE BOX AND A SUMP FOR FLUSHED WATER.
3. INSTALL THE VALVE BOX SO THE "TOP" IS 1" ABOVE FINISH GRADE.
4. BRAND THE VALVE BOX LID WITH 'FC' IN LETTERS 2" HIGH.



H-3 SUB-SURFACE DRIPLINE "EDGE FEED" FLUSH CAP — H-03 (FHT), 4/18/19

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Scale:	

Title:
IRRIGATION DETAILS

Sheet No.:
LI.2

Plan Status:
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Hydrozone Table

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package. Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Landscape Area
LW	A-1	D	172	1.9%
LW	A-2	D	1,087	12.0%
MW	A-3	D	403	4.5%
MW	A-4	D	191	2.1%
MW	A-5	B	20	0.2%
LW	A-6	D	999	11.1%
LW	A-7	D	1,279	14.2%
MW	A-8	B	60	0.7%
LW	A-9	D	256	2.8%
MW	A-10	B	20	0.2%
LW	A-11	D	1,036	11.5%
LW	A-12	D	1,057	11.7%
LW	A-13	B	4	0.0%
MW	A-14	D	427	4.7%
MW	A-15	B	68	0.8%
LW	A-16	B	176	2.0%
LW	A-17	B	12	0.1%
LW	A-18	B	4	0.0%
MW	A-19	D	930	10.3%
MW	A-20	D	231	2.6%
MW	A-21	D	346	3.8%
MW	A-22	D	96	1.1%
MW	A-23	D	150	1.7%
	Total =		**9,024**	**100%**

Summary Hydrozone Table

Hydrozone*	Area (Sq. Ft.)	% of Landscape Area
High Water Use	0	0%
Moderate Water Use	2,942	33%
Low Water Use	6,082	67%
Total =	**9,024**	**100%**

***Hydrozone**
HW= High Water Use Plants
MW=Moderate Water Use Plants
LW=Low Water Use Plants

****Irrigation Method**
MS=Micro-spray
S=Spray
R=Rotor
B=Bubbler
D=Drip
O=Other

Maximum Applied Water Allowance

The following calculations will help you determine your site specific water budget and establish a planting mix that will allow you to meet your water budget. Your Estimated Total Water Use must be less than your Maximum Applied Water Allowance.

1.) Maximum Applied Water Allowance (MAWA) **RESIDENTIAL**

MAWA = (ETo) (0.62)[(0.55x LA) + (0.45 x SLA)]

Where:
ETo = Annual Net Reference Evapotranspiration (inches)
0.55 = ET Adjustment Factor
LA = Landscaped Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.45 = the additional ET adjustment factor for Special Landscape Area (1.0 - 0.55 = 0.45)

A.) Net Evapotranspiration Calculation

43.85 *(Annual ETo)*

27.63 *(Annual Rainfall)* x .25 = 6.91 *(Effective Rainfall)*

Net Evapotranspiration Calculation = Annual ETo - Effective Rainfall = 36.94

B.) Adjusted Landscape Area Calculation

9024 *(Landscaped Area)* x 0.55 *Adjustment Factor* = 4963.2

0 *(Special Landscaped Area)* x 0.45 *Adjustment Factor* = 0

Sum of Adjusted Landscape Area = 4963.2

MAWA = 36.94 x 0.62 x 4963.2 = 113679 gallons

2.) Estimated Total Water Use (ETWU)

A.) Net Evapotranspiration Calculation

Net Evapotranspiration Calculation = Annual ETo - Effective Rainfall = 36.94

B.) Adjusted Landscape Area Calculation

0 *(Very low water use plant sqft)* *x 0.1* = 0

6082 *(Low water use plant sqft)* x 0.3 = 1824.6

2942 *(Moderate water use plant sqft)* x 0.6 = 1765.2

0 *(High water use plant sqft)* x 1.0 = 0

Sum of Adjusted Landscape Area = 3,590

ETWU = 36.94 x 0.62 x 3,590 / 0.81 = 101813 gallons

Irrigation Efficiency Factor	
Square footage of landscape on drip	8,660
Square footage of landscape on spray	364
Total square footage of landscape	9024
Adjusted Irrigation Efficiency Factor	0.81

IRRIGATION SCHEDULES

FOR

Pullman Lofts

Santa Rosa, CA

Client
Justin Heacock Landscape Architects
Brea, CA
(949) 683-3110

Prepared by
Water Right Design
8 Whatney, suite 100
Irvine, CA 92618
(949) 440-1030

Project No.: JJH-007.1

Note These irrigation schedules are based on:

- Estimated soil infiltration rates and moisture holding capacities from USDA NRCS maps and data for the project site.
- Average ETo rates from California Department of Water Resources' CIMIS (California Irrigation Management Information System) data or "Reference Evapotranspiration Values for Selected Locations in California" (*A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California* – Appendix A).
- Estimates of plant material water needs based on species and microclimates, per WUCOLS (*Water Use Classification of Landscape Species*).
- Estimates of plant root depths.
- Estimated irrigation precipitation rates from manufacturers' catalog data.
- Estimates of irrigation system application efficiencies derived from state of California or local Water Efficient Landscape Ordinances.
- Industry-accepted formulas for calculating landscape irrigation system run time, cycles, and frequency.

These irrigation schedules are meant to be updated with site-specific agronomic soils data, after an agronomic soils report has been prepared for the project. The schedules are a guideline only, and do not take the place of proper, ongoing system management. Variances from the estimated site and climatic conditions, plant material water needs, and irrigation parameters <u>will</u> require ongoing adjustments to these calculated baseline schedules.

ETo Location: Santa Rosa (Sonoma co.) Annual ETo Rate: 42.00

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly ETo Rate	1.20	1.70	2.80	3.70	5.00	6.00	6.10	5.90	4.50	2.90	1.50	0.70

Controller A

Program 1	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days per Week	1	1	1	1	1	1	1	1	1	1	1	1
Cycles per Day	1	1	1	1	2	2	2	2	2	1	1	1

Precipitation Rate

In. / Hr.	Zone	Run Time per Cycle										(minutes + seconds)	
0.64	A-1	09:25	14:45	21:57	29:59	19:36	24:18	23:55	23:08	18:14	22:44	12:09	05:29
0.64	A-2	09:25	14:45	21:57	29:59	19:36	24:18	23:55	23:08	18:14	22:44	12:09	05:29
4.82	A-5	02:30	03:55	05:50	07:58	05:13	06:28	06:21	06:09	04:51	06:03	03:14	01:28
0.64	A-6	09:25	14:45	21:57	29:59	19:36	24:18	23:55	23:08	18:14	22:44	12:09	05:29
0.64	A-7	09:25	14:45	21:57	29:59	19:36	24:18	23:55	23:08	18:14	22:44	12:09	05:29
0.64	A-9	09:25	14:45	21:57	29:59	19:36	24:18	23:55	23:08	18:14	22:44	12:09	05:29
0.64	A-11	06:35	10:20	15:22	20:59	13:43	17:01	16:44	16:11	12:46	15:55	08:30	03:51
0.64	A-12	08:00	12:33	18:40	25:29	16:40	20:40	20:20	19:40	15:30	19:20	10:20	04:40
16.05	A-13	00:23	00:35	00:53	01:12	00:47	00:58	00:57	00:55	00:44	00:54	00:29	00:13
4.82	A-16	01:04	01:40	02:29	03:23	02:13	02:45	02:42	02:37	02:04	02:34	01:22	00:37
2.07	A-17	02:55	04:34	06:47	09:16	06:04	07:31	07:24	07:09	05:38	07:02	03:45	01:42
16.05	A-18	00:23	00:35	00:53	01:12	00:47	00:58	00:57	00:55	00:44	00:54	00:29	00:13

Total Run Time per Station per Irrigation Day (minutes + seconds)

Program 1	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
dripline A-1	09:25	14:45	21:57	29:59	39:12	48:37	47:50	46:16	36:27	22:44	12:09	05:29
dripline A-2	09:25	14:45	21:57	29:59	39:12	48:37	47:50	46:16	36:27	22:44	12:09	05:29
bubbler A-5	02:30	03:55	05:50	07:58	10:25	12:55	12:43	12:18	09:42	06:03	03:14	01:28
dripline A-6	09:25	14:45	21:57	29:59	39:12	48:37	47:50	46:16	36:27	22:44	12:09	05:29
dripline A-7	09:25	14:45	21:57	29:59	39:12	48:37	47:50	46:16	36:27	22:44	12:09	05:29
dripline A-9	09:25	14:45	21:57	29:59	39:12	48:37	47:50	46:16	36:27	22:44	12:09	05:29
dripline A-11	06:35	10:20	15:22	20:59	27:27	34:02	33:29	32:23	25:31	15:55	08:30	03:51
dripline A-12	08:00	12:33	18:40	25:29	33:19	41:19	40:39	39:19	30:59	19:20	10:20	04:40
bubbler A-13	00:23	00:35	00:53	01:12	01:34	01:56	01:54	01:51	01:27	00:54	00:29	00:13
bubbler A-16	01:04	01:40	02:29	03:23	04:26	05:30	05:24	05:14	04:07	02:34	01:22	00:37
emitter A-17	02:55	04:34	06:47	09:16	12:07	15:02	14:47	14:18	11:16	07:02	03:45	01:42
bubbler A-18	00:23	00:35	00:53	01:12	01:34	01:56	01:54	01:51	01:27	00:54	00:29	00:13

Controller A

Program 1	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Program Run Time per Day	1:08	1:47	2:40	3:39	4:46	5:55	5:49	5:38	4:26	2:46	1:28	0:40
Total Program Run Time per Week	1:08	1:47	2:40	3:39	4:46	5:55	5:49	5:38	4:26	2:46	1:28	0:40

(hours + mInutes)

Program 2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days per Week	1	1	1	1	1	2	2	2	1	1	1	1
Cycles per Day	1	1	1	1	2	1	1	1	2	1	1	1

Precipitation Rate

In. / Hr.	Zone	Run Time per Cycle										(minutes + seconds)	
0.64	A-3	18:49	29:31	43:54	59:57	39:12	48:37	47:50	46:16	36:27	45:28	24:18	10:59
0.64	A-4	18:49	29:31	43:54	59:57	39:12	48:37	47:50	46:16	36:27	45:28	24:18	10:59
0.64	A-14	18:49	29:31	43:54	59:57	39:12	48:37	47:50	46:16	36:27	45:28	24:18	10:59
0.64	A-20	18:49	29:31	43:54	59:57	39:12	48:37	47:50	46:16	36:27	45:28	24:18	10:59

Total Run Time per Station per Irrigation Day (minutes + seconds)

Program 2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
dripline A-3	18:49	29:31	43:54	59:57	78:24	48:37	47:50	46:16	72:55	45:28	24:18	10:59
dripline A-4	18:49	29:31	43:54	59:57	78:24	48:37	47:50	46:16	72:55	45:28	24:18	10:59
dripline A-14	18:49	29:31	43:54	59:57	78:24	48:37	47:50	46:16	72:55	45:28	24:18	10:59
dripline A-20	18:49	29:31	43:54	59:57	78:24	48:37	47:50	46:16	72:55	45:28	24:18	10:59

Controller A

Program 2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Program Run Time per Day	1:15	1:58	2:55	3:59	5:13	3:14	3:11	3:05	4:51	3:01	1:37	0:43
Total Program Run Time per Week	1:15	1:58	2:55	3:59	5:13	6:28	6:22	6:10	4:51	3:01	1:37	0:43

(hours + mInutes)

Program 3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days per Week	1	1	1	1	1	1	1	1	1	1	1	1
Cycles per Day	1	1	1	1	2	2	2	2	2	1	1	1

Precipitation Rate

In. / Hr.	Zone	Run Time per Cycle										(minutes + seconds)	
4.82	A-8	02:30	03:55	05:50	07:58	05:13	06:28	06:21	06:09	04:51	06:03	03:14	01:28
4.82	A-10	01:45	02:45	04:05	05:35	03:39	04:31	04:27	04:18	03:24	04:14	02:16	01:01
4.82	A-15	02:30	03:55	05:50	07:58	05:13	06:28	06:21	06:09	04:51	06:03	03:14	01:28
0.64	A-19	16:00	25:05	37:19	50:58	33:19	41:19	40:39	39:19	30:59	38:39	20:40	09:20
0.64	A-21	13:10	20:40	30:44	41:58	27:27	34:02	33:29	32:23	25:31	31:50	17:01	07:41

Total Run Time per Station per Irrigation Day (minutes + seconds)

Program 3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
bubbler A-8	02:30	03:55	05:50	07:58	10:25	12:55	12:43	12:18	09:42	06:03	03:14	01:28
bubbler A-10	01:45	02:45	04:05	05:35	07:18	09:03	08:54	08:36	06:47	04:14	02:16	01:01
bubbler A-15	02:30	03:55	05:50	07:58	10:25	12:55	12:43	12:18	09:42	06:03	03:14	01:28
dripline A-19	16:00	25:05	37:19	50:58	66:39	82:38	81:18	78:38	61:59	38:39	20:40	09:20
dripline A-21	13:10	20:40	30:44	41:58	54:53	68:03	66:57	64:46	51:02	31:50	17:01	07:41

Controller A

Program 3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Program Run Time per Day	0:35	0:56	1:23	1:54	2:29	3:05	3:02	2:56	2:19	1:26	0:46	0:20
Total Program Run Time per Week	0:35	0:56	1:23	1:54	2:29	3:05	3:02	2:56	2:19	1:26	0:46	0:20

(hours + mInutes)

Program 4	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days per Week	1	1	1	1	1	1	1	1	1	1	1	1
Cycles per Day	1	1	1	1	2	2	2	2	2	1	1	1

Precipitation Rate

In. / Hr.	Zone	Run Time per Cycle										(minutes + seconds)	
0.64	A-22	16:00	25:05	37:19	50:58	33:19	41:19	40:39	39:19	30:59	38:39	20:40	09:20
0.64	A-23	16:00	25:05	37:19	50:58	33:19	41:19	40:39	39:19	30:59	38:39	20:40	09:20

Total Run Time per Station per Irrigation Day (minutes + seconds)

Program 4	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
dripline A-22	16:00	25:05	37:19	50:58	66:39	82:38	81:18	78:38	61:59	38:39	20:40	09:20
dripline A-23	16:00	25:05	37:19	50:58	66:39	82:38	81:18	78:38	61:59	38:39	20:40	09:20

Controller A

Program 4	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Program Run Time per Day	0:31	0:50	1:14	1:41	2:13	2:45	2:42	2:37	2:03	1:17	0:41	0:18
Total Program Run Time per Week	0:31	0:50	1:14	1:41	2:13	2:45	2:42	2:37	2:03	1:17	0:41	0:18

(hours + mInutes)

ALL Programs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max. Run Time per Irrigation Day	1:15	1:58	2:55	3:59	5:13	5:55	5:49	5:38	4:51	3:01	1:37	0:43
Total Program Run Time per Week	3:32	5:32	8:14	11:15	14:43	18:15	17:57	17:22	13:41	8:32	4:33	2:03

WATER RIGHT DESIGN — "Smart" Irrigation Controller Programming Data

PROJECT: Pullman Lofts — **CLIENT:** Justin Heacock Landscape Architects — **PROJECT NO.:** JJH-007.1
LOCATION: Santa Rosa, CA — **MGMT. CO.:** n/a — **DATE:** 3/16/22
CONTROLLER: Hunter ACC2 — **# DAYS:** 7 — **# PROGRAMS:** 32 — **# START TIMES:** 10 — **NAME:** RWM
'ETo' DATA FOR: Santa Rosa (Sonoma co.) — **HRS. / DAY AVAILABLE TO IRRIGATE:** 7 — **# SKIP DAYS:** 0 — **PLAN DATE:** 3/16/22
TOTAL 'ETo': 42.00 in. / yr. — **INFILTRATION RATE:** 0.66 in. / hr. — **MOISTURE HOLDING CAPACITY:** 19% — **SHEETS:** LI.1

A STA. #	ZONE TYPE (spray, rotor, bubbler, etc.)	PROGRAM	IRRIGATION EQUIPMENT: MFR.	PRODUCT	PRECIP RATE (in./hr.)	STA. EFFI-CIEN-CY	SLOPE: FACTOR (ratio)	SLOPE: LOCATION (optional)	PLANT MATERIAL: DEEPEST ROOTED PLANTS	PLANT MATERIAL: ROOT ZONE DEPTH	PLANT MATERIAL: WATER USE (coeffic.)	SUN EXPOSURE: SW	SUN EXPOSURE: E	SUN EXPOSURE: N	TOTAL BUDGET FACTOR (includes slope)	SOILS DATA FOR: site-specific USDA NRCS maps & soils data (3/1/22) (plt z sun)	COMMENTS
1	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	●	○	○	1.00	0.30	
2	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	●	○	○	1.00	0.30	
3	dripline	2	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	●	○	○	1.00	0.60	WQB
4	dripline	2	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	●	○	○	1.00	0.60	
5	bubbler	1	Rain Bird	RWS 1401	4.82	81%			TREE	18	60% -	●	○	○	1.00	0.60	tree bubblers
6	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	●	○	○	1.00	0.30	
7	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	●	○	○	1.00	0.30	
8	bubbler	3	Rain Bird	RWS 1401	4.82	81%			TREE	18	60% -	●	○	○	1.00	0.60	tree bubblers
9	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	●	○	○	1.00	0.30	
10	bubbler	3	Rain Bird	RWS 1401	4.82	81%			TREE	18	60% -	○	○	●	0.70	0.42	tree bubblers
11	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	○	○	●	0.70	0.21	
12	dripline	1	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	30% -	○	●	○	0.85	0.26	
13	bubbler	1	Rain Bird	RWS 1401	16.05	81%			VINE	8	30% -	●	○	○	1.00	0.30	vine bubblers
14	dripline	2	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	●	○	○	1.00	0.60	
15	bubbler	3	Rain Bird	RWS 1401	4.82	81%			TREE	18	60% -	●	○	○	1.00	0.60	tree bubblers
16	bubbler	1	Rain Bird	RWS 1401	4.82	81%			TREE	18	30% -	○	●	○	0.85	0.26	tree bubblers
17	emitter	1	NDS	MFLB blue	2.07	81%			#20	12	30% -	●	○	○	1.00	0.30	planter pots
18	bubbler	1	Rain Bird	RWS 1401	16.05	81%			VINE	8	30% -	●	○	○	1.00	0.30	vine bubblers
19	dripline	3	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	○	●	○	0.85	0.51	
20	dripline	2	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	●	○	○	1.00	0.60	
21	dripline	3	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	○	○	●	0.70	0.42	
22	dripline	4	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	○	●	○	0.85	0.51	
23	dripline	4	Rain Bird	XFS-CV 09-18	0.64	81%			SHRUB	8	60% -	○	●	○	0.85	0.51	WQB
---		163										○	○	○			

Notes: **CONTROLLER** 1 **OF** 1

Issued For:

04.15.22	1st CITY SUBMITTAL

Revisions:

DESIGNER:

JJH
LANDSCAPE ARCHITECTS
BREA, CA.
949.683.3110

CONSULTANTS:

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IRVINE, CA 92618
(949) 440-1030
www.WaterRightDesign.com

PROJECT:
PULLMAN LOFTS
PH II BLDG C
701 WILSON ST.
SANTA ROSA, CA.

DEVELOPER:
PHOENIX DEVELOPMENT
30 MEYERS CT.
NOVATO, CA 94947

Stamp:

LICENSED LANDSCAPE ARCHITECT — ROBERT McHENRY #6178 — 4-30-23 RENEWAL DATE — 4/15/22 DATE — STATE OF CALIFORNIA

Drawn By: WRD
Checked By: WRD
Plan Date: 04.15.22
Scale:

Title:
IRRIGATION WATER USE CALCS & SCHEDULES

Sheet No.:
LI.3

Plan Status:
1ST CITY SUBMITTAL

04.15.22

1ST CITY SUBMITTAL

IRRIGATION SPECIFICATIONS

ARTICLE 1 - GENERAL REQUIREMENTS

1. SCOPE OF WORK

1.1. Supply all work and materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery, and installation of "Landscape Irrigation" complete, as shown on the Drawings, and/or specified herein.

1.2. The intent of the Drawings and specifications is to indicate and specify a complete and efficient irrigation system ready for use in accordance with the manufacturer's recommendations and meeting the approval of the Owner's authorized representative without further cost of labor and material to the Owner.

2. SPECIAL REQUIREMENTS

2.1. All work called for on the Drawings by notes shall be furnished and installed whether or not specifically mentioned in the specifications.

2.2. Any equipment installed by the Contractor and deemed to be for the use of the Owner in various situations (i.e. gate valves, control valves, etc.) shall be so installed as to be readily accessible and quickly operable by the Owner. Equipment deemed by the Owner to be inoperable for its intended purpose shall be reinstalled by the Contractor in an operable position before approval will be given.

2.3. Replace and/or repair to the satisfaction of the Owner all existing landscaping or paving disturbed during the course of this work. New landscaping or paving shall be the same type, strength, texture, finish, and be equal in every way to the material removed.

3. SUBMITTALS

3.1. Materials List: Prior to any installation of any work, submit a detailed list of each material proposed for use in the project, to the Owner and/or his representative for approval. Submit typewritten material list using the following format:

DESCRIPTION	MANUFACTURER	MODEL NO.
Controller	Calsense	ET2000e-24
Main line pipe	Pacific Plastics	cl. 315 PVC
Quick coupler	Rain Bird	33DLRC

3.2. Pump Equipment Data: Submit full data on all equipment for approval by the Owner.

3.3. Certificates: Submit manufacturer's certification that plastic pipe and fittings comply with specification requirements.

3.4. Record Drawings:

3.4.1. Record all changes which are made from the contract Drawings, including changes in pressure and non-pressure lines.

3.4.2. Record changes in ink on a set of black line prints of the Drawings. Maintain changes current daily. Keep drawings at the site at all times and available for review by the Owner and/or Landscape Architect. Do not use these prints for any other purpose.

3.4.3. When construction has been completed, transfer all changes to a set of reproducible plans. Make changes in permanent ink. Changes using a ball point pen are not acceptable. Remove original lines and dimensions where changes are made. Completed reproducible plans shall be equal to the original Drawings; with all line work clear and sharp, and lettering legible.

3.4.4. Locate all dimensions from two permanent reference points (buildings, monuments, sidewalks, curbs or pavements). Make dimensions accurately to same scale used on Drawings. Show dimensioned locations and depths for each of the following:

Point of connection.
Basket strainers.
Backflow preventers.
Irrigation pressure main line routing. Provide dimensions for each 100 L.F. (minimum) along each routing, and for each change in direction.
Gate valves, master valves, pressure reducing valves, irrigation control valves and quick coupler valves.
Control wire routing (if different from main line).
Main line, lateral line and control wire sleeving.
Stubs for future use.
Other related items as may be directed by the Landscape Architect or Owner.

4. CONTROLLER CHARTS

4.1. Controller charts are not required for homeowner-maintained irrigation systems.

4.2. Do not prepare charts until record drawings have been approved by the Landscape Architect and/or Owner.

4.3. Provide one controller chart(s) for each automatic controller installed. Size chart to suit controller door size. Use both sides of chart if necessary to retain full legibility.

4.4. Chart shall be a black line on white background print or photo reduction of the record drawing, showing the area covered by that controller. Identify each area of coverage, for each station, with a pastel color coding.

4.5. When charts are approved by the Landscape Architect, they shall be hermetically sealed between two layers of 20 mil thick plastic sheet.

4.6. Charts must be completed and approved prior to final review of irrigation system and/or release from maintenance period.

5. OPERATING / MAINTENANCE MANUALS

5.1. Provide one individually bound manual detailing operation and maintenance requirements for irrigation systems. Assemble material in vinyl covered 3-ring binders.

5.2. Provide the following in each manual:

Index sheet stating irrigation contractor's name, address, telephone number and name of person to contact.
Duration of guarantee period.
Equipment list (provide the following for each item:)
Manufacturer's name.
Make and model number.
Name and address of local manufacturer's representative.
Spare parts list in detail.
Manufacturer's detailed operating and maintenance instructions for major equipment such as controllers, backflow preventers, pumps, etc.
Manufacturer's warranties.

6. OPERATING AND MAINTENANCE TOOLS

Deliver the following items to the Owner when work is completed and prior to final acceptance of Work:

6.1. Two (2) keys for each automatic controller and/or enclosure.
6.2. Two (2) thirty inch (30") sprinkler valve keys, for shutting off isolation valves with cross handles, if isolation valves with cross handles are specified on the project.
6.3. One (1) sixty inch (60") operating nut wrench, for shutting off isolation valves with 2" operating nuts, if isolation valves with 2" operating nuts are specified on the project.
6.4. One (1) quick coupler key, with bronze garden valve attached, for every ten (10) quick coupling valves installed on the project. Keys shall be compatible with the quick coupling valves specified on the project.

7. MATERIAL APPROVALS

7.1. Substitution of any product, material, or equipment without the Owner's or Landscape Architect's prior written approval, will not be permitted.

7.2. Any item installed without such prior approval shall be removed from the work and from the work site.

7.3. Approval of any item, substitution or alternate is based on information or samples provided by the Contractor.

7.4. Contractor shall be responsible for the total performance of such substitution to equal or surpass the original design in every respect.

7.5. If the substitution proves to be unsatisfactory in the Owner's and/or Landscape Architect's opinion, Contractor shall remove such work and replace it with the originally specified item, including installation, at no additional cost to the Owner or Landscape Architect.

7.6. Landscape Architect may, at his option, require a manufacturer's warranty on any substitution offered for use.

8. SITE VISITS

8.1. Should they be required by the Owner, his representative, any governing agency, or the Landscape Architect, the following site reviews will be made in company with the Contractor:

Pressure supply line installation and testing: 36 hours.
System layout: 36 hours.
Coverage tests: 36 hours.
Final review: 48 hours.

8.2. Contractor's responsibilities:

8.2.1. Notify all required parties in advance of making the following reviews. Make such notification prior to the time specified.

8.2.2. Provide "walkie-talkie" equipment to facilitate communication between the review area and the system controller. Contractor may at his option provide sufficient personnel to maintain necessary communication.

8.2.3. Provide current record drawings at each required review phase.

8.3. If in the Landscape Architect's opinion, the Work scheduled for observation is not ready, the Contractor shall reimburse the Landscape Architect and/or Owner for the Landscape Architect's time.

8.4. When reviews are made by other than the Landscape Architect, show evidence including date and party making such review.

9. GUARANTEE

9.1. Guarantee the irrigation system to be free of all defects in materials and workmanship for a period of one year from date of acceptance by Landscape Architect/Owner.

9.2. If accepted in phases, provide a written guarantee for each segment of the project; state date of completion and guarantee period by dates.

9.3. Manufacturer's warranties shall not relieve Contractor of any liability under the specified guarantee. Such warranties are intended to only supplement the contractor's guarantee.

9.4. Correct all problems which develop in the system due to faulty materials or workmanship during the guarantee period.

9.5. Repair or replace such work as directed by the Landscape Architect.

9.6. Make repairs and replacements promptly when notified.

9.7. The Owner reserves the right to make temporary repairs as necessary to keep systems in operating condition without voided the contractor's guarantee, nor relieving the Contractor of his responsibilities during the guarantee period.

ARTICLE 2 - PRODUCTS

1. GENERAL

All materials shall be of first quality and of the same manufacturer and model as specified in the irrigation legend unless noted otherwise.

2. COPPER PIPE AND FITTINGS

2.1. Copper pipe shall be type "K", hard tempered ASTM B88 and fittings shall be wrought solder joint type in accordance with ANSI B16.22.

2.2. Joints shall be soldered with silver solder: 45% silver, 15% copper, 16% zinc, 24% cadmium, solidify at 1,125 F. and liquefy at 1,145 F., conforming to specifications ASTM B206-52T and Federal QQB 00655.

3. BRASS PIPE AND FITTINGS

3.1. Brass pipe shall be 85% red brass, American National Standard Institute (ANSI), Schedule 40 screwed pipe.

3.2. Fittings shall be medium brass, screwed 125 pound class.

4. GALVANIZED PIPE AND FITTINGS

4.1. Pipe shall be galvanized steel, American National Standard Institute (ANSI, Schedule 40 screwed pipe).

4.2. Fittings shall be medium galvanized, screwed beaded malleable iron, and/or #125 cast iron, flanged.

4.3. All unions 2 inches and smaller shall be ground joint pattern. Unions larger than 2 inches shall be flanged unions, fitted with required gasket(s).

5. PLASTIC PIPE AND FITTINGS

5.1. Solvent weld pipe shall be extruded of an improved PVC virgin pipe compound featuring high tensile strength, high chemical resistance, and high impact strength. In terms of the current ASTM Standard D-1784, or D-2241, this compound shall meet the requirements of cell classification 12454B for pipe. This compound must have 2,000 p.s.i. hydrostatic design stress rating.

5.2. Rubber gasket PVC pipe, couplings, and fittings shall conform to ASTM D-1784 Type I, Grade 1, 2,000 p.s.i. design stress. Standard dimensional ratio for pipe shall be SDR 21 (class 200). All pipe shall conform to commercial standard CS-256-64 (pressure rated pipe), and National Sanitation Foundation testing laboratories (NSF). Rubber gaskets shall conform to ASTM 1869. Couplings and fittings shall be furnished by the pipe manufacturer and shall accommodate the pipe with which they are to be used. Couplings shall permit 5 degrees deflection of the pipe at each coupling (2-1/2 degrees on each side), without filtration or infiltration, cracking, or breaking.

5.3. All pipe must bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating p.s.i., and NSF (National Sanitation Foundation). The manufacturer shall also mark the date of extrusion.

5.4. All fittings, unless otherwise noted, shall be injection molded of an improved PVC fitting compound featuring high tensile strength, high chemical resistance, and high impact strength. In terms of the current ASTM Standard D-1784-69, the compound must meet the requirements described in cell classification 13454B. Where threads are required in plastic fittings, these shall be injection molded also. All tees and ells shall be side gated.

5.5. All fittings shall bear the company's name or trademark, material designation, size, applicable I.P.S. schedule, and NSF seal of approval.

5.6. All fittings shall be minimum standard weight Schedule 40.

5.7. All threaded nipples, unless otherwise noted, shall be standard weight Schedule 80, with molded threads.

5.8. Solvent cement for plastic pipe and fittings shall be as recommended by the manufacturers of the pipe and fittings. The high chemical resistance of the pipe and fitting compounds specified makes it mandatory that an aggressive primer, which is a true solvent for PVC, be used in conjunction with a solvent cement designed for the fit of pipe and fittings of each size range specified.

6. ASSEMBLIES

The following equipment shall be as indicated on the Drawings, unless approval for substitution is obtained in writing prior to installation:

Controllers, pedestals and options.
Controller assembly and options.
Rain and weather sensors.
Moisture sensors.
Backflow prevention equipment:
  Reduced-pressure backflow preventer.
  Pressure vacuum breaker.
  Atmospheric vacuum breaker.
  Combination control valve with atmospheric vacuum breaker.
Basket strainers and "Y" strainers
Valves:
  Gate valves
  Ball valves
  Check valves
  Pressure-reducing and pressure-regulation valves
  Master valves
  Manual control valves
  Electric control valves
  Garden valves
  Quick coupling valves
Sprinkler heads
Low volume or "drip" irrigation equipment and accessories.

7. VALVE BOXES

7.1. Valve boxes shall be fabricated from durable, weather resistant plastic material which is resistant to sunlight and the chemical action of soils, except in traffic areas, where boxes shall be concrete with cast iron lids of a type suitable for traffic installation.

7.2. The valve box cover shall be secured with a hidden latch mechanism or stainless steel bolts.

7.3. The cover and box shall be capable of sustaining a load of 1,500 pounds.

7.4. Valve box extensions shall be by the same manufacturer as the valve box.

7.5. Gate and ball valve boxes shall be round plastic boxes with bolt-down covers marked "IRRIGATION CONTROL VALVE"; and be manufactured by AMETEK or approved equal.

7.6. Remote control valve boxes shall be rectangular plastic boxes with bolt-down covers marked "CONTROL VALVE" and with the controller and valve number marked on a tag attached to the control wire between the valve and pig tail.

8. HIGH VOLTAGE ELECTRICAL

8.1. New electrical meter if required will be provided by the Owner.

8.2. Connection to the automatic controller will be provided by the Owner.

8.3. All electrical equipment installed outside building shall be Nema 3 type, waterproofed for such installation.

9. LOW VOLTAGE WIRING

9.1. Connections between the controller and remote control valves shall be made with direct burial AWG-UF type solid copper wire.

9.2. Wire shall be #14 in size, unless noted otherwise on the plans.

9.3. All low voltage wiring shall be color coded by controller. Each controller on the project shall have three unique colors of wires: one color each for common, control, and spare wires.

10. PUMPS

10.1. Pumps shall be provided as indicated on the Drawings.

10.2. Electrical components shall include code approved breakers and starters of the proper size and electrical characteristics as recommended by the pump manufacturer and as necessary to match the electrical service provided.

10.3. Equipment for exterior locations shall meet NEMA 3, waterproof standards.

ARTICLE 3 - EXECUTION

1. GENERAL

1.1. Meter size and Available Pressure / Water Supply: The Contractor shall verify the on-site static water pressure and service line and meter size prior to proceeding with any work. Should the Contractor proceed with work and subsequently find that the water pressure is not equal to or greater than that which is stated on the Drawings, the Contractor will assume responsibility for all work which needs to be replaced or modified at no additional cost to the Owner. This includes all equipment and materials whether or not they are shown on the Drawings.

1.2. Source of Water Supply: The Contractor shall verify and be familiar with the location, size and detail of stub-outs provided as the source of water supply to the irrigation system as shown on the plans.

1.3. All plot dimensions are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and shall report any variations to the Owner's authorized representative.

1.4. Examine surfaces for conditions that will adversely affect execution, performance and quality of Work.

1.5. Verify that grading has been completed, so that the Work of this Section can proceed and that specified depths for buried materials can be maintained. Notify the Owner and Landscape Architect in writing, describing all unacceptable conditions. Do not proceed with Work until such conditions are corrected.

1.6. Prior to cutting into the soil, the Contractor shall locate all cables, conduits, sewers, septic tanks, and other such utilities as are commonly encountered underground and he shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, notify the Owner's authorized representative who will arrange for relocations. The Contractor will proceed in the same manner if rock layer or any other condition encountered underground makes changes advisable.

1.7. Permission to shut off any water lines must be obtained from the Construction Supervisor, who will make the necessary arrangements with the Owner. Disruption of existing systems shall be kept to a minimum.

1.8. Do not willfully install the irrigation system as indicated on the Drawings when it is obvious in the field that unknown obstructions or grade differences exist that were not known during design; or if discrepancies in construction details, legend, or specific notes are discovered. All such obstructions or discrepancies shall be brought to the attention of the Owner's authorized representative, or the Landscape Architect. In the event this is not done, the Contractor shall assume full responsibility for any necessary revisions.

1.9. The Contractor shall verify the correctness of all finish grades within the work area after construction in order to ensure the proper soil coverage (as specified) of the irrigation system pipes.

2. PRODUCT HANDLING

2.1. Delivery: Deliver materials in manufacturer's original unopened containers, with each container identified with manufacturer's name, brand or type.

2.2. Storage: Store materials at a location as directed by the Owner. Store materials in an orderly manner. Avoid interference with other construction activities.

2.3. Protection: Protect all materials to prevent intrusion of dirt and moisture. Protect the installed work and materials or other trades.

3. WATER SUPPLY

Connections to the existing source or meter shall be at the approximate locations shown on the Drawings. Minor changes caused by actual site conditions shall be made without additional cost to the Owner.

4. LAYOUT

4.1. Irrigation lines indicated on the Drawings are diagrammatic. Coordinate installation of all materials, including piping, with all Contract Drawings to avoid conflicts with trees, shrubs, plants, drain lines, sleeves and all underground utilities.

4.2. Layout sprinkler heads and make any minor adjustments required due to differences between actual site conditions and the Drawings. Minor adjustments will be acceptable within the parameters established by the original design intent.

5. EXCAVATIONS

5.1. Excavations shall be of open vertical construction sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and tamping.

5.2. Trenches for pipe shall be cut to required grade lines, and compacted to provide an accurate grade and uniform bearing for the full length of line.

5.3. All lines shall have a minimum clearance of four (4) inches vertically and two (2) inches horizontally from each other, and six (6) inches, in any direction, from the lines of other trades.

5.4. Parallel lines shall not be installed directly over one another.

5.5. Provide the minimum cover over all lines noted on the Drawings.

5.6. Where it is necessary to excavate adjacent to existing trees, the Contractor shall use all possible care to avoid injury to the tree and tree roots. Excavation in areas where two (2) inches and larger roots occur shall be done by hand. All roots two (2) inches and larger in diameter, except directly in the path of pipe or conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a ditching machine is run adjacent to trees having roots smaller than two (2) inches in diameter, the wall of the trench adjacent to the tree shall be hand trimmed, making clean cuts through roots one (1) inch and larger in diameter, which shall be painted with two coats of Tree Seal, or equal. Trenches adjacent to trees should be closed within twenty four (24) hours and where this is not possible the side of the trench adjacent to the tree shall be kept shaded with burlap or canvas.

6. BACKFILLING

6.1. Backfilling shall not commence until the installed irrigation system has been inspected and approved.

6.2. Initial backfill on all lines shall be of a fine granular material with no foreign matter larger than 1/2 inch in size.

6.3. Provide sand backfill a minimum of two (2) inches below and six (6) inches over all piping under paved areas, unless noted otherwise.

6.4. Backfill for trenching shall be compacted to dry density equal to the adjacent undisturbed soil and shall conform to adjacent grades without dips, sunken areas, humps or other irregularities.

6.5. Under no circumstances shall a truck and/or tractor wheel be used for compacting the soil.

7. JOINING OF PIPES

7.1. The Contractor is responsible to be familiar with any and all methods of assembling, joining and installation of the various types of pipe to be used. He will adhere in strict accordance with the manufacturer's recommended procedures. If during any phase of the Work the Owner or Owner's representative finds that the Contractor or any of his workmen are not familiar with the recommended procedures, the Contractor shall arrange with the manufacturer of the particular product for the services of a qualified manufacturer's representative to instruct workmen in the proper procedures.

7.2. Exercise care in handling, loading, unloading and storing of the plastic pipe and fittings; store plastic pipe and fittings under cover until ready to install; transport plastic pipe on a vehicle with a bed long enough to allow the pipe to lie flat; avoid undue bending and any concentrated external load.

7.3. Carefully inspect all pipe and fittings before installation, removing all dirt, scale and burrs; install the pipe with all markings up for visual inspection and verification.

7.4. Tape all open ends of pipe during installation to prevent entry of any foreign matter into the system.

7.5. In solvent welding, use only the specified primer and solvent cement and make all joints in strict accordance with the manufacturer's recommended methods; allow the solvent welds at least fifteen (15) minutes set up time before moving or handling and 24 hours curing time before filling or as recommended by manufacturer, whichever is greater.

7.6. 360 degree applicators shall be used to apply primer and solvent.

7.7. For plastic to metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded connections, except where otherwise noted.

7.8. Remove all dented and damaged pipe sections.

8. PIPING UNDER EXISTING PAVING

8.1. Piping under existing pavement may be installed by jacking, boring or hydraulic driving. However, no hydraulic driving will be permitted under asphalt paving.

8.2. Secure permission from Owner's representative before cutting or breaking existing pavement. All necessary repairs and replacements shall be approved by the Owner's representative, and shall be at no additional cost to the Owner.

9. PIPING ON SLOPES

9.1. All piping on slopes shall be secured on the surface as indicated on the detail.

9.2. Pipe which crosses concrete bench drain and/or 'V' gutters shall be placed over the drain or gutter within a galvanized steel pipe sleeve anchored on both sides of the bench with #3 rebar 'J' hooks. The sleeve shall extend a minimum of twelve (12) inches beyond each edge of the drain. Under no circumstances will pipe be placed beneath the concrete benches and/or 'V' gutters.

10. ASSEMBLIES

10.1. Install all assemblies specified herein according to the respective detail drawings and specifications.

10.2. Install backflow assemblies in shrub areas or as indicated on the Drawings and at a minimum height required by local governing codes.

10.3. Valves:

10.3.1. Gate valves and ball valves shall be the full size of the line in which they are installed unless otherwise specified.

10.3.2. Control valves shall be located as indicated on the Drawings and within a plant bed whenever possible.

10.3.3. Control valves shall be adjusted so a uniform distribution of water is applied by sprinkler heads of the planting areas for each individual valve system.

10.3.4. Quick coupler valves, unless otherwise indicated, shall be located within 6 to 18 inches of hardscape (preferably within a plant bed).

10.4. Pop-up heads shall be located and installed as indicated on the Drawings and in the details.

11. VALVE BOXES

11.1. Provide at all locations indicated. Install within plant beds, not within turf areas, wherever possible.

11.2. The top of plastic valve boxes shall be one (1) inch above the designated finish grade in lawn areas and three (3) inches above the finish grade in ground cover areas. Where dimensions permit, up to three (3) remote control valves may be installed in each box.

11.3. Valve boxes located near walks, curbs and paving shall be installed in such a way as to allow for valve boxes to abut those items with the top surface matching adjacent plans of the aforementioned items.

12. LOW VOLTAGE WIRING

12.1. All low voltage work shall be installed by the contractor.

12.2. Wiring shall occupy the same trench and shall be installed along the same route as the pressure main lines wherever possible.

12.3. Wiring shall be bundled together, tucked under the main line for protection from shovels, and fastened to the main line with nylon wire ties at intervals of 10 feet.

12.4. Use continuous copper wires between controller and remote control valves. Splice wires between the controller and remote control valves only when absolutely necessary. All splices shall be installed in an approved box and so marked on the lid.

12.5. All wire connections and splices shall be made using approved waterproof sealing connectors. An expansion loop of 12 inches shall be provided at each wire connection and/or directional turn.

13. MOISTURE SENSING EQUIPMENT

13.1. Install all equipment per manufacturer's recommendations, instructions and/or details.

13.2. Provide low voltage wire to each remote control valve controlled by a sensor.

13.3. The exact location of equipment shall be determined in the field by the Manufacturer's representative and the Landscape Architect.

13.4. If it is determined by the Landscape Architect that this equipment is not in a desirable location, the Contractor shall move this equipment as requested, within fifteen (15) feet of its original location, at no cost to the Owner.

13.5. Perform a complete review and check of the system to ensure that sensors are working correctly (minimum of four times over each 30 day period)

14. PUMPS

The exact location of the pump assembly shall be verified with the Owner and/or Owner's representative.

15. FLUSHING THE SYSTEMS

15.1. After all irrigation pipe lines and risers are in place and connected 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.

15.2. Sprinkler heads shall be installed only after flushing of the system has been completed.

16. PRESSURE TEST

16.1. All hydrostatic tests shall be made only in the presence of the Owner or other duly authorized representative of the Owner. No pipe shall be backfilled until it has been inspected and tested.

16.2. Furnish the necessary force pump and all other test equipment.

16.3. All pressure lines shall be tested for two (2) hours under hydrostatic pressure of 150 pounds per square inch, and all non-pressure lines shall be tested for two (2) hours under the existing static pressure and both proven to be water tight.

17. ADJUSTING THE SYSTEMS

17.1. Adjust valves in conjunction with the alignment and coverage of all sprinkler heads.

17.2. If it is determined that adjustments in the irrigation equipment or nozzle changes will provide proper and more adequate coverage, make all such changes or make arrangements with the manufacturer to have adjustments made prior to planting.

17.3. The entire system shall be operating properly before any lawn or ground cover planting operations commence.

17.4. These changes or adjustments shall be made without additional cost to the Owner.

17.5. The Contractor is responsible for periodic checking of the system's operation and adjustment as necessary.

18. COVERAGE TEST

When the irrigation system is completed, perform a coverage test in the presence of the Owner and/or his representative, to determine if the water coverage for planting and turf areas is complete and adequate. Furnish all materials and perform all work required to correct any inadequacies. This test shall be accomplished before any ground cover or turf is planted. (Optional at the discretion of the Owner.)

19. TEMPORARY REPAIRS

The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of his responsibilities under the terms of the warranty as herein specified.

20. OPERATING INSTRUCTIONS

20.1. Train the Owner's maintenance personnel in the proper operation of all major equipment, including the recommended winterization procedures.

20.2. Provide this training at the Owner's convenience and at no additional cost to the Owner.

END OF IRRIGATION SPECIFICATIONS

04.15.22

Issued For:

04.15.22	1st CITY SUBMITTAL

Revisions:

DESIGNER:

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4-30-23
RENEWAL DATE
4/15/22
DATE
STATE OF CALIFORNIA

Drawn By:	WRD
Checked By:	WRD
Plan Date:	04.15.22
Scale:	

Title:

IRRIGATION SPECIFICATIONS

Sheet No.:

LI.4

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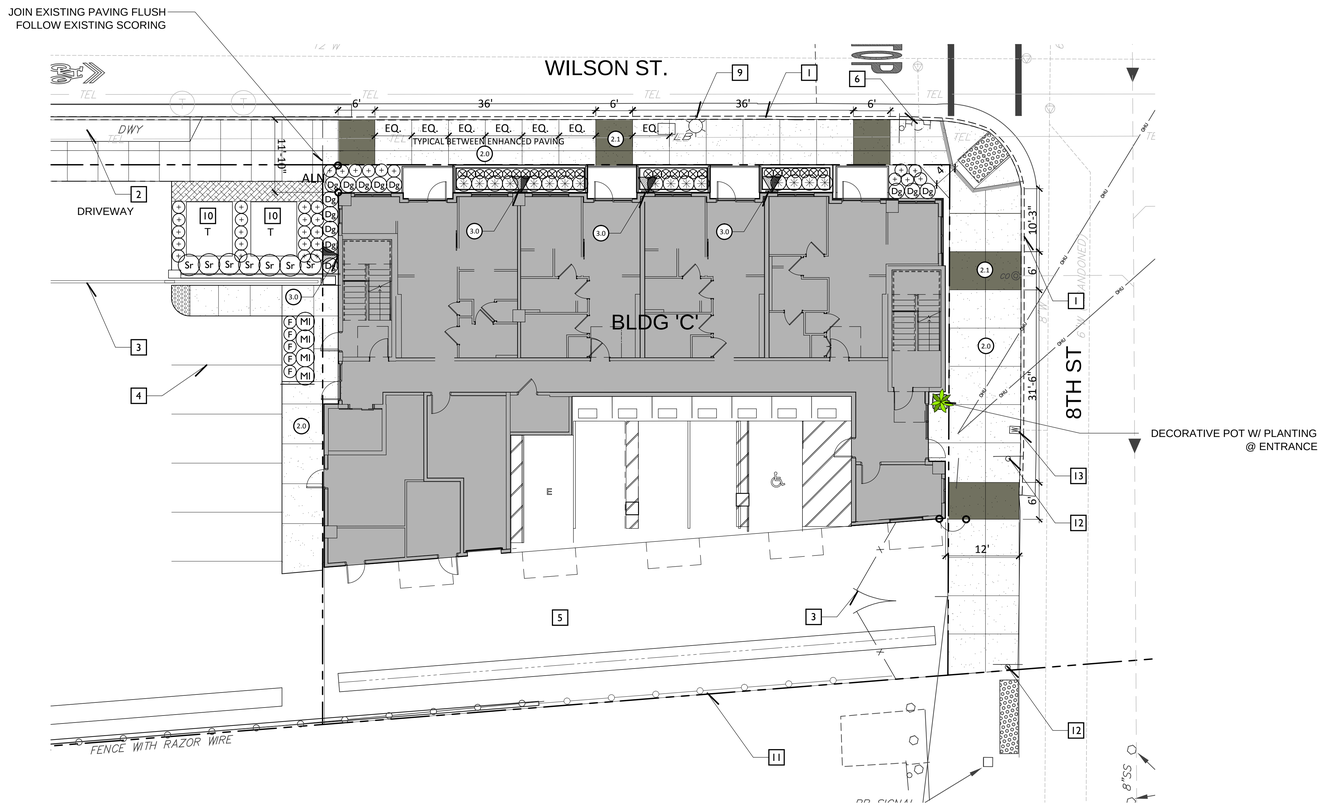
1ST CITY SUBMITTAL

1ST CITY SUBMITTAL



SHRUBS:

	NAME	SIZE		WUCOLS
⊗	CAREX DIVULSA BERKELEY SEDGE	1 GAL.	28	LOW
Dg	DIETES GRANDIFLORA BUTTERFLY IRIS	5 GAL.	13	LOW
+	DIANELLA CAERULEA CASSA BLUE BLUE FLAX LILY	1 GAL.	30	MOD.
F	FESTUCA MAIREI ATLAS GRASS	1 GAL.	5	LOW
✳	HEBE 'AUTUMN GLOW'	1 GAL.	16	MOD
MI	MUHLENBERGIA LINDHEIMERI LINDHEIMER MUHLY	1 GAL.	4	LOW
Sr	SARCOCCA RUSCIFOLIA FRAGRANT SARCOCCA	5 GAL.	7	LOW

VINES:

SYMBOL	NAME	SIZE	QTY	WUCOLS
▽	SOLANUM JASMINOIDES WHITE POTATO VINE	5 GAL	4	Low

POT SCHEDULE:

SYMBOL	NAME	SIZE	QTY	WUCOLS
✸	DRACAENA DRACO DRAGON TREE	20 GAL	1	Low
	VINCA MINOR' DWARF PERIWINKLE	4"POTS	3	Low
	ASSORTED SUCCULENTS'	4"POTS	5	Low

QUANTITIES NOTE:

CONTRACTOR TO NOTE THAT THE QUANTITIES ON LEGEND AND PLANT CALLOUTS HAVE BEEN PROVIDED FOR QUICK REFERENCE ONLY. IT IS RECOMMENDED THAT THE CONTRACTOR NOT RELY ON THE ACCURACY OF THESE QUANTITIES AND PROVIDE THEIR OWN PLANT MATERIAL COUNTS AT THE TIME OF PREPARING BID. ANY DISCREPANCY IN THE PLANT QUANTITIES AND SIZES SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE LANDSCAPE ARCHITECT.

AGRONOMIC SOILS REPORT NOTE:

CONTRACTOR SHALL BE UTILIZE AGRONOMIC SOILS TESTS PREPARED FOR PHASE I

GENERAL PLANTING NOTES:

1. ALL NON-TURF LANDSCAPE AREAS TO RECEIVE A 3" LAYER OF SHREDDED ORGANIC MULCH.
2. LANDSCAPE ARCHITECT TO APPROVE ALL PLANT MATERIAL NOT LESS THAN 1 WEEK PRIOR TO ANTICIPATED DELIVERY DATE.
3. CONTRACTOR SHALL REMOVE ALL GROWER STAKES, TAGS AND RIBBONS.
4. LANDSCAPE CONTRACTOR SHALL MAINTAIN PROPER DRAINAGE AND DIRECT ALL WATER TO DRAINAGE INLETS SO AS TO PREVENT STANDING WATER.
5. THE LANDSCAPE CONTRACTOR SHALL MAINTAIN ALL PLANTED AREAS FOR A PERIOD OF 90 DAYS AFTER "START OF MAINTENANCE" PERIOD.
6. CONTRACTOR SHALL GUARANTEE SHRUBS FOR 6 MONTHS AND TREE MATERIAL FOR 12 MONTHS (1 YEAR).
7. LANDSCAPE ARCHITECT SHALL APPROVE PLANT MATERIAL PLACEMENT PRIOR TO INSTALLATION
8. NO TREES SHALL BE PLANTED CLOSER THAN 5' TO A BUILDING OR ROOF STRUCTURE. NO TREES SHALL BE PLANTED CLOSER THAN 5' TO PAVING OR FREESTANDING WALLS UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
9. TREES SHALL NOT BE PLANTED WHERE FUTURE GROWTH WILL OBVIOUSLY CONFLICT WITH ROOF OVERHANGS.
10. NO SHRUBS OR TREES SHALL BE PLANTED THAT WILL CREATE A VISUAL OBSTRUCTION TO SIGHT LINE OF VEHICLE TRAFFIC.
11. TREES PLANTED IN LANDSCAPE AREAS OF LESS THAN 5' IN WIDTH SHALL BE INSTALLED WITH APPROVED ROOT BARRIERS.
12. ANY PLANTING SHOWN ON THE PLANS OR EXISTING IN THE FIELD THAT CONTRADICTS THESE CRITERIA IS TO BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR RESOLUTION. FAILURE TO DO SO MAY RESULT IN THE CONTRACTOR TO REMOVE OR RELOCATE PLANT MATERIAL.

CONSTRUCTION CALLOUTS:

		✻BUILDING and SAFETY PERMIT REQUIRED	DET/SHT
	FLATWORK		
2.0	CONCRETE PAVING with SCORE JOINTS as SHOWN		D, LP.2
2.1	ENHANCED CONCRETE PAVING - SHAKE ON COLOR		D, LP.2
	METAL / WOOD		
3.0	METAL VINE TRELLIS		C, LP.2

LEGEND:

ALN	ALIGN
CLR	CLEAR
℄	CENTERLINE
EQ.	EQUAL
F.O.C.	FACE OF CURB
F.O.W.	FACE OF WALL
B.O.C.	BACK OF CURB
MIN.	MINIMUM
MAX.	MAXIMUM
P.A.	PLANTING AREA
B.C.R.	BEGIN CURB RADIUS
TYP.	TYPICAL
18	CONSTRUCTION CALLOUT
	CAULKED EXPANSION JOINT (TO MATCH PAVING)

GENERAL SITE IMPROVEMENTS

1	CURB and GUTTER. PER CIVIL ENG PLANS
2	CONCRETE DRIVE APRON. PER CIVIL ENG PLANS
3	ENTRY GATES BY OTHERS
4	PARKING STRIPING BY OTHERS.
5	ASPHALT PAVING. PER CIVIL ENG PLANS
6	FIRE HYDRANT. PER CIVIL ENG PLANS
7	CITY SIDEWALK. BY OTHERS.
8	UNDERGROUND UTILITY. BY OTHERS.
9	STREET LIGHTING BY OTHERS.
10	TRANSFORMER BY OTHERS.
11	PERIMETER FENCING BY CONTRACTOR
12	STREET SIGNAGE

GENERAL NOTES:

1. REFER TO WRITTEN SPECIFICATIONS
2. CONTRACTOR TO VERIFY ALL CONSTRUCTION FEATURES HORIZONTAL CONTROL (STAKING) WITH THE CIVIL ENGINEER'S PRECISE GRADING PLANS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE OWNER OR SHALL REPORT ANY DISCREPANCIES TO THE OWNER OR LANDSCAPE ARCHITECT PRIOR TO ANY WORK. REFER TO CIVIL ENGINEER'S PLAN FOR ALL VERTICAL CONTROL.
3. ALL CALL OUTS ARE ONCE TYPICAL PER SHEET.
4. ALL DIMENSIONS ARE PERPENDICULAR OR PARALLEL TO REFERENCED FEATURE.
5. CONTRACTOR SHALL VERIFY ALL EXISTING FIN. GRADE ELEV. AND REPORT ALL DISCREPANCIES IMMEDIATELY TO THE OWNER PRIOR TO PROCEEDING WITH LANDSCAPE INSTALLATION
6. CONTRACTOR SHALL ADJUST ANY/ALL EXISTING UTILITY BOXES FLUSH WITH FINISH GRADE. REFER TO CIVIL ENGINEER'S PLANS FOR ALL FINISH GRADING ELEVATIONS
7. REFER TO CIVIL ENGINEER PRECISE GRADING AND DRAINAGE PLANS FOR AREA DRAIN INFORMATION.
8. CONTRACTOR SHALL INSTALL ALL SCORE JOINTS PER DETAIL AND PLAN
9. CONTRACTOR SHALL HAVE ALL CONCRETE WALK FORMS REVIEWED THE OWNER AND/OR LANDSCAPE ARCHITECT PRIOR TO THE POUR OF ANY CONCRETE.

LANDSCAPE COMPLIANCE STATEMENT:

I HAVE COMPLIED WITH THE CRITERIA OF THE WATER USE ORDINANCE AND APPLIED THEM ACCORDINGLY FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE DESIGN PLAN

NORTH

SCALE: 1" = 10'-0"

0 5' 10' 20'

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Revisions:

	-	-

DESIGNER:

JJH

LANDSCAPE ARCHITECTS
BREA, CA.
949.683.3110

CONSULTANTS:

PROJECT:

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PH II BLDG C

701 WILSON ST.

SANTA ROSA, CA.

DEVELOPER:

PHOENIX DEVELOPMENT

30 MEYERS CT.

NOVATO, CA 94947

Stamp:

LICENSED LANDSCAPE ARCHITECT
JOHN J. HEACOCK
02-29-24
04-15-22
STATE OF CALIFORNIA

Drawn By:	JJH
Checked By:	JJH
Plan Date:	04.15.22
Scale:	

Title:

PLANTING PLAN

Sheet No.:

LP.1

Plan Status:

1ST CITY SUBMITTAL

04.15.22

1ST CITY SUBMITTAL

CONSTRUCTION NOTES

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.

2. CONTRACTOR SHALL NOT WILFULLY PROCEED WITH CONSTRUCTION WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND / OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATIONS.

3. CONTRACTOR SHALL OBTAIN A CURRENT STRUCTURAL SOILS REPORT. THIS SOILS REPORT SHALL SUPERSEDE THE RECOMMENDATIONS AND DETAILS SHOWN ON THESE PLANS AND SPECIFICATIONS.

4. THE LOCATION OF FEATURES TO BE CONSTRUCTED, NOT SPECIFICALLY DIMENSIONED MAY BE DETERMINED BY SCALE. VERIFY ALL SUCH CONDITIONS WITH OWNER'S REPRESENTATIVE.

5. ALL CURVE-TO-CURVE AND CURVE-TO-TANGENT LINES SHALL BE NEAT, TRIM, SMOOTH, AND UNIFORM.

6. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL SLEEVES AS INDICATED ON THE IRRIGATION PLANS WITH PAVING CONTRACTOR.

7. ALL FORMS AND ALIGNMENT OF HARDSCAPE ITEMS SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO POURING. (CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT A MINIMUM OF 48 HOURS PRIOR TO THE INSPECTION.)

WOOD CONSTRUCTION NOTES

1. MAKE ALL CONNECTIONS PERMANENTLY SECURE. PROVIDE FRAMING DEVICES FOR ALL ROUGH FRAMING WHERE NECESSARY TO MAKE WORK RIGID. CONCEAL FASTENINGS IN FINISH WORK.

2. DO NOT SPLIT WOOD MEMBERS; PRE-DRILL WHEN NECESSARY. PROVIDE DRILLED HOLES FOR ALL BOLTS, WOOD SCREWS, AND THREADED FASTENERS.

3. THE CONTRACTOR SHALL PAINT ALL STRAPS, BRACKETS, HANGERS, ETC. TO MATCH WOOD FINISH UNLESS OTHERWISE NOTED.

4. ALL BOLTS SHALL BE CADMIUM-PLATED, GALVANIZED, OR PRIMERED.

5. ALL CONSTRUCTION SHALL BE PLUMB AND TRUE.

6. THE CONTRACTOR SHALL USE FINISH NAILS, INCLUDING BEAMS ON EXPOSED WOOD SURFACES AND COUNTERSINK HEADS 3MM.

PAVING NOTES

1. THE CONTRACTOR SHALL VERIFY WITH PROJECT STRUCTURAL SOILS ENGINEER THE NEED FOR REINFORCING, BASE MATERIALS, PRESATURATION, AND OTHER REQUIREMENTS FOR PAVING AREAS.

2. ALL CONCRETE PAVING SECTIONS SHALL BE A MINIMUM OF 3 ½" THICK UNLESS OTHERWISE NOTED.

3. PAVING AND CONCRETE CONTRACTOR(S) SHALL COORDINATE HIS WORK WITH ELECTRICIAN, DRAIN LINE CONTRACTOR AND IRRIGATION CONTRACTOR FOR SLEEVING, PIPING, AND CONDUIT UNDER ALL PAVING AS REQUIRED.

4. THE CONTRACTOR SHALL HOLD FINISH GRADE (1") INCH BELOW FINISH SURFACE.

5. THE CONTRACTOR SHALL SLOPE ALL FINISH SURFACE AREAS A MINIMUM OF ONE PERCENT. UNLESS NOTED OTHERWISE.

6. ALL WALKS SHALL HAVE CROSS FALL OF ONE PERCENT MINIMUM.

7. REFER TO FINISH SCHEDULE FOR CONCRETE FINISH.

8. ALL WALK INTERSECTIONS SHALL BE 90 DEGREES UNLESS NOTED OTHERWISE.

9. ALL RADII AT WALK INTERSECTIONS SHALL BE 36" UNLESS NOTED OTHERWISE.

10. FULL DEPTH EXPANSION JOINTS ARE TO BE SPACED AT MAXIMUM 20' O.C., SCORE LINES TO BE MAXIMUM 10' O.C.

11. ALL FORMS AND ALIGNMENT OF PAVING SHALL BE INSPECTED AND CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT A MINIMUM OF 48 HOURS PRIOR TO INSPECTION.

12. REFER TO PRECISE GRADING PLAN FOR FINISH GRADES AND DRAINAGE.

LIST OF INSPECTIONS

THE CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE 48 HOURS IN ADVANCE OF, AND COORDINATE, THE FOLLOWING INSPECTIONS AS NEEDED (BUT NOT LIMITED TO):

1. PRE-JOB CONFERENCE.

2. AT COMPLETION OF FINISH GRADING.

3. LAYOUT OF SHOVEL CUTS BUT PRIOR TO INSTALLATION.

4. LAYOUT OF PAVING BUT PRIOR TO INSTALLATION.

5. VERIFY LOCATION OF PERIMETER FENCING.

6. DURING ENTIRE IRRIGATION INSTALLATION TO VERIFY AND INSPECT THE FOLLOWING (BUT NOT LIMITED TO):

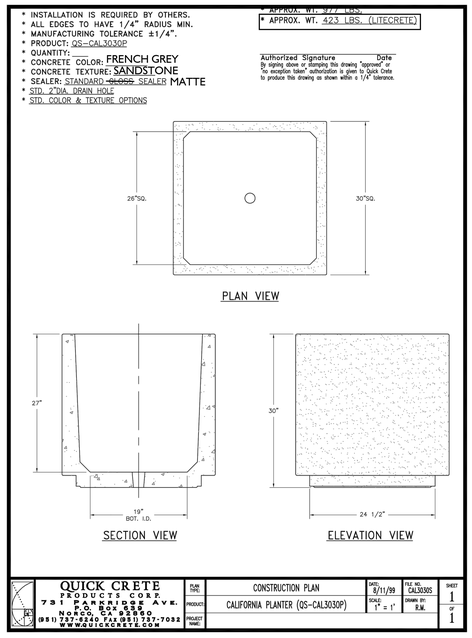
a. POINT OF CONNECTIONS
b. BACKFLOW PREVENTION DEVICES
c. TRENCHING FOR PIPES
d. ELECTRICAL CONNECTIONS
e. CONTROL VALVES
f. COVERAGE

7. AT DELIVERY OF ALL PLANT MATERIALS TO THE SITE.

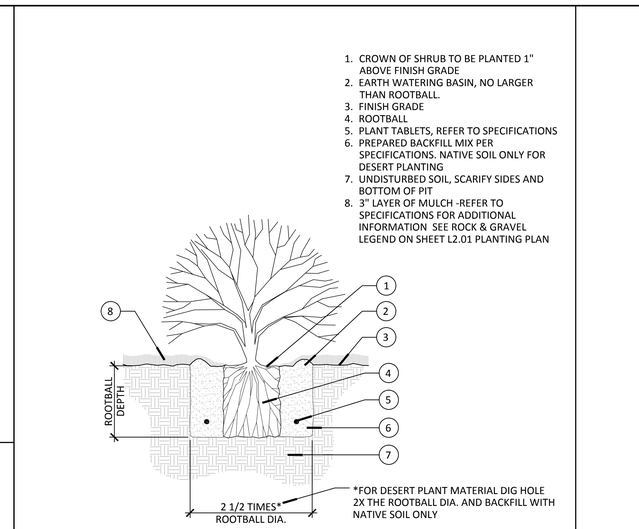
8. WHEN TREES AND SHRUBS ARE SPACED FOR PLANTING BUT BEFORE HOLES ARE EXCAVATED.

9. AT PRE-MAINTENANCE INSPECTION.

10. AT FINAL INSPECTION.



DECORATIVE POT @ ENTRANCE

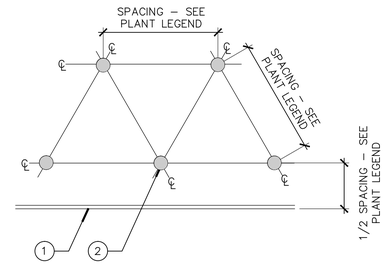


1. CROWN OF SHRUB TO BE PLANTED 1" ABOVE FINISH GRADE
2. EARTH WATERING BASIN, NO LARGER THAN ROOTBALL.
3. FINISH GRADE
4. ROOTBALL
5. PLANT TABLETS, REFER TO SPECIFICATIONS
6. PREPARED BACKFILL MIX PER SPECIFICATIONS. NATIVE SOIL ONLY FOR DESERT PLANTING
7. UNDISTURBED SOIL, SCARIFY SIDES AND BOTTOM OF PIT
8. 3" LAYER OF MULCH -REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION SEE ROCK & GRAVEL LEGEND ON SHEET L2.01 PLANTING PLAN

*FOR DESERT PLANT MATERIAL DIG HOLE 2X THE ROOTBALL DIA. AND BACKFILL WITH NATIVE SOIL ONLY

A Shrub Planting

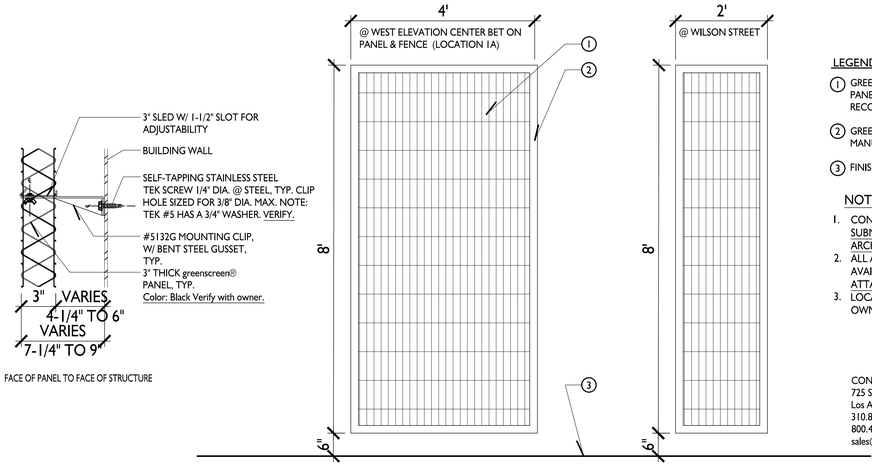
Scale: NTS



1. EDGE OF CURB/ EDGE OF PAVING/ FACE OF WALL
2. PLANT MATERIAL

B Plant Spacing (On Grade Only)

Scale: NTS



LEGEND:

1. GREEN SCREEN 3D METAL TRELLIS (3) 2' X 6' & (1) 4' X 8' PANEL INSTALL PER MANUFACTURER RECOMMENDATIONS
2. GREEN SCREEN METAL TRIM INSTALL PER MANUFACTURER RECOMMENDATIONS
3. FINISH SURFACE / FINISH GRADE

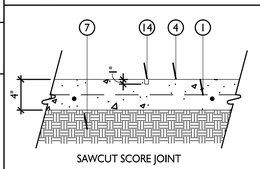
NOTES:

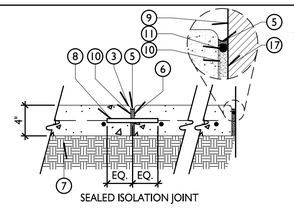
1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/ SUBMITTAL FOR REVIEW BY OWNER / LANDSCAPE ARCHITECT.
2. ALL ATTACHMENT HARDWARE AND DETAILS AVAILABLE FROM GREEN SCREEN. VERIFY ATTACHMENT WITH ARCHITECTURAL PLANS
3. LOCATION OF SCREEN SHALL BE APPROVED BY OWNER PRIOR TO INSTALLATION

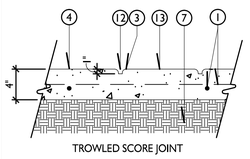
CONTACT: GREEN SCREEN
725 South Figueroa Street Suite 1825
Los Angeles, CA 90017
310.837.0526
800.450.3494
sales@greenscreen.com

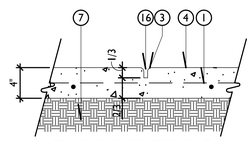
C METAL VINE TRELLIS WALL MOUNTED - GREEN SCREEN

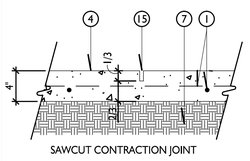
Scale: 3/4"= 1'-0" MET-FEN

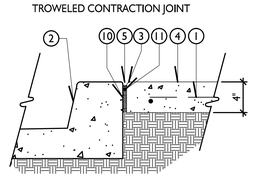












LEGEND:

1. #3 REBAR EACH WAY IN THE MIDDLE THIRD OF SECTION at 18" SPACING
2. CONCRETE CURB per CIVIL ENGINEER
3. 1/8" RADIUS EDGE (BOTH SIDES)
4. CONCRETE PAVING - SEE FINISH SCHEDULE for COLOR and FINISH - MINIMUM CONCRETE MODULUS OF RUPTURE = ___ PSI
5. POLYURETHANE TWO-PART JOINT SEALANT or APPROVED EQUAL. SET JUST BELOW FINISH SURFACE. DEPTH per MANUFACTURER'S SPECIFICATIONS. COLOR and TEXTURE to MATCH ADJACENT CONCRETE PAVING.
6. 1/2" WIDE "COLD" JOINT - ALL SECTIONS of PAVING on EITHER SIDE of THE JOINT SHALL be "STITCHED" TOGETHER by USE of 18" LONG #4 DOWELS at 18" o.c.
7. COMPACTED SUBGRADE per GEOTECHNICAL SOILS REPORT
8. 18" LONG #4 "SPEED DOWELS" (or APPROVED EQUAL) at 18" o.c.
9. VERTICAL SURFACE
10. 1/2 " WIDE ASPHALT IMPREGNATED FIBER EXPANSION BOARD (or APPROVED EQUAL) to FULL DEPTH
11. PROVIDE BACKER ROD CONTINUOUS ALONG BUILDING WALL FOUNDATIONS and SLABS - SEE ALSO ITEM #17 THIS DETAIL.
12. 3/16"± WIDE x 1/2" DEEP TROWELED SCORE JOINT. 1/8" RADIUS on BOTH EDGES. WHERE JOINT IS to ACT as a CONTRACTION JOINT - SEE ITEM #16, THIS DETAIL, FOR ADDITIONAL CONTRACTION JOINT REQUIREMENTS.
13. BAND FORMED BY and BETWEEN TWO SAWCUT or TROWELED SCORE JOINTS IF/AS APPLICABLE and SPECIFIED on PLAN
14. 1/8" to 3/16" WIDE x 1/2" DEEP SAWCUT SCORE JOINT - LOCATE WHERE INDICATED on PLAN
15. 1/8" to 3/16" WIDE SAWCUT CONTRACTION JOINT. JOINT DEPTH SHALL BE 1/3 DEPTH of CONCRETE PAVING. LOCATE CONTRACTION JOINT SO AS to FORM, AS NEAR AS POSSIBLE, 8' to 12' SQUARE PAVING SECTIONS. SAWCUT JOINTS AS SOON AS POSSIBLE, NO LATER than 8 to 24 HOURS after PAVING INSTALLATION and WHILE THE CONCRETE is STILL PLASTIC.
16. 3/16" WIDE TROWELED CONTRACTION JOINT. JOINT DEPTH SHALL BE 1/3 DEPTH of CONCRETE PAVING. LOCATE CONTRACTION JOINTS SO AS to FORM, AS NEAR AS POSSIBLE, 8' to 12' SQUARE PAVING SECTION
17. 1/2" WIDE SEALED ISOLATION JOINTS SHALL BE INSTALLED in LOCATIONS WHERE PAVING ABUTS WALLS, COLUMNS, CURBS and OTHER POINTS of RESTRAINT INCLUDING DRAINS, MANHOLES, UTILITY BOXES/COVERS, STEPS etc. JOINTS SHALL INCLUDE EXPANSION BOARD, BACKERROD, and SEALANT to MATCH CONCRETE COLOR.

GEOTECHNICAL ENGINEERING PROVIDED BY :
PJC ASSOCIATES INC. CONTACT: PATRICK CONWAY
TEL# 707.584.4804

D PEDESTRIAN CONCRETE PAVING

Scale: 1 1/2"= 1'-0" FLA-CON

GENERAL CONSTRUCTION NOTES

FINISH SCHEDULE:

SYMBOL	ITEM	MANUFTURER/SUPPLIER	COLOR	FINISH	COMMENTS
2.0	CONCRETE PAVING	N/A	NATURAL GRAY	MEDIUM BROOM FINISH - VERIFY	FINISH PER CITY STANDARD
2.1	ENHANCED CONCRETE PAVING	DAVIS COLOR	DARK GRAY (IRON OXIDE) 860 OR EQUAL. MATCH COPING	TOPCAST 03 FINISH	SHAKE ON COLOR

ALL OTHER MATERIALS & FINISHES REFER INDIVIDUAL DETAILS

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	-	-

DESIGNER:

JJH

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DEVELOPER:

PHOENIX DEVELOPMENT
30 MEYERS CT.
NOVATO, CA 94947

Stamp:

LICENSED LANDSCAPE ARCHITECT
JUSTIN J. HEACOCK 5494
02-29-24
04-15-22
RENEW
STATE OF CALIFORNIA

Drawn By:	JJH
Checked By:	JJH
Plan Date:	04.15.22
Scale:	

Title:

LANDSCAPE PLANTING DETAILS

Sheet No.:

LP.2

Plan Status:

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04.15.22

1ST CITY SUBMITTAL

LANDSCAPE PLANTING SPECIFICATIONS

Note: The general and specific conditions of these specifications are an integral part of the landscape construction documents and must be complied with.

1. GENERAL

A. SCOPE OF WORK

Furnish all labor, materials, equipment, and services necessary to provide all landscape planting as shown on the drawings and specified.

B. QUALITY ASSURANCE

1. Source Quality Control

a. Submit documentation that all plant material has been ordered to least five days prior to start of work under this Section. Arrange procedure for inspection of plant material with Architect at time of submission.

b. Plants shall be subject to inspection and approval of Architect at place of growth upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the work. Submit written request for inspection of plant material of plants to be inspected at this time if, in his judgment, a sufficient quantity of plants is not available for inspection.

c. The Landscape Architect and Owner have contractually agreed to notify the Landscape Contractor that he will be responsible for financial reimbursement to the Landscape Architect for Additional and unanticipated time and materials required to organize, re-design, re-inspect or to do whatever is required to guide a substandard installation or one which is not within substantial conformance to the Plans and Specifications back to an acceptable installation. Said reimbursement will in the form of a charge to the Contractor from the Owner.

C. SUBMITTALS

Certificate of Inspection of plant material by State or Federal Authority

D. PRODUCT DELIVERY, STORAGE AND HANDLING

1. Delivery

a. Deliver fertilizer to site in original, unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark and conformance to State Law.

b. Deliver plants with legible identification labels.

1. Label trees, evergreens, bundles of containers of like shrubs or groundcover plants.
2. State correct plant name and size indicated on plant list.
3. Use durable, waterproof labels with water-resistant ink which will remain legible for at least 60 days.

a. Protect material during delivery to prevent damage to rootball or desiccation of leaves

b. The contractor shall notify the Landscape inspector four days in advance delivery of all plant materials and shall submit an itemized list of plants in each delivery.

2. Pruning

At no time shall the tree or plant materials be pruned, trimmed or topped prior to delivery, and alteration of their shape shall be conducted only with the approval of the Landscape Architect.

3. Right of Inspection

The Landscape Architect reserves the right to approve or reject at any time upon delivery or during the work any or all plant material regarding size, variety or condition.

4. Soils Test

Two copies of soils tests performed by an approved agronomic soils testing laboratory shall be submitted with plans. All soil samples shall be taken in the field by a qualified soils technician and submitted with plans to testing labs unless prior approval for alternative procedures is given by the City Engineer Tests shall include a fertility and suitability analysis with written recommendations. Contractor shall comply with recommendations given for soil amendments, plant material selections and irrigation equipment.

5. Storage

a. Store plant material in shade and protect from weather.

b. Maintain and protect plant material not to be planted within four hours.

6. Handling

a. Do not drop plant material

b. Do not pick up container plant material by stems or trunks

E. JOB CONDITIONS

1. Planting

Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

2. Scheduling

Install trees, shrubs and liner stock plant material before hydraulic seeded lawn areas are installed.

F. SAMPLES AND TESTS

1. The 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 Landscape Architect. Rejected materials shall be immediately removed from the site and premises at Contractor's expense. Cost of testing of materials not meeting specifications shall be paid by Contractor.
2. Agricultural Suitability of the soil shall be determined by a credentialed soil science laboratory. The Laboratory shall prepare a written report on the soil testing which shall include a detailed description of test results along with recommendations for backfill and surface soil amendments. The contractor shall be responsible for the testing and for following the recommendations of the agronomic soils report.
3. Agricultural suitability analysis of soil.

a. Must include pH measurement in the Saturation Extract, Electrical Conductivity of the saturation extract and Sodium Adsorption Ratio of the saturation extract. The approved procedures are the following:

pH Method 21

Saturation Extract Method 2

Methods of the United States Salinity Laboratory as published in the Agricultural Handbook Number 60 entitled "Diagnosis and Improvement of Saline and Alkali Soils".

b. The following nutrients and elements must be determined with an American Society of Agronomy or Soil Science Society of America approved extraction method. Interpretation data must be given citing concentrations which are considered to be low, medium and high:

boron, calcium, copper, iron, magnesium, manganese, molybdenum, phosphorus, potassium, sodium, sulfur, and zinc

(1) The approved methods are those cited by the Council on Soil Testing and Plant Analysis and those methods currently published by Soil Science Society of America manuals, Communications in Soil Science and Plant Analysis, Soil Science and Soil Science Society of America Journal. Approved methods for phosphorus are Bray Pl, Bray P2, Olsen P, DTPA, ammonium acetate, and ammonium bicarbonate-DTPA. Approved methods for boron are hot water extract and ammonium bicarbonate-DTPA extract.

c. The saturation extract must be analyzed for calcium, magnesium, sodium, boron, chloride, phosphorus, nitrate and sulfate.

d. The following trace metals must be measured by the DTPA extract: aluminum, arsenic, cadmium, chromium, cobalt, lead, lithium, nickel, selenium, silver, strontium, tin and vanadium.

e. The presence of calcium carbonate and/or magnesium carbonate must be determined.

f. Soil Texture (gravel, sand, silt and clay) must be determined. Determine organic matter content by the measurement of organic carbon. The quality of the organic matter shall be determined by measuring organic carbon and total nitrogen.

g. Interpretation of nutritional deficiencies or excesses and potential toxicities must be given.

h. Determine the following by methods approved by the American Society of Agronomy as published in the Methods of Soil Analysis, methods of the United States Salinity Laboratory as published in the Agricultural Handbook Number 60 entitled "Diagnosis and Improvement of Saline and Alkali Soils, " and bulk density of clods by the method published in Soil Science, vol 155, 325-330 (1993):

Exchangeable Ammonium cation Base Saturation

Cation Exchange Capacity

Water Infiltration Rate - Method 34b of Agricultural Handbook Number 60

i. If required for more complete soil characterization, determine the following by methods approved by the American Society of Agronomy as published in the Methods of Soil Analysis, methods of the United States Salinity Laboratory as published in the Agricultural Handbook Number 60 entitled "Diagnosis and Improvement of Saline and Alkali Soils, " and bulk density of clods by the method published in Soil Science, vol 155, 325-330 (1993):

Carbonates Measurement

Soil Bulk Density (Compaction)

3. Elemental determinations to made according to methods approved by the EPA or by the American Society of Agronomy

a. Optional - Growth Test for Toxic Constituents and/or Poor Physical Properties

1. Grow a dicot plant species and a monocot species with and without activated charcoal. Measure yield and percent of germination for all treatments. Report conclusions and findings.

G. GUARANTEE AND REPLACEMENTS

1. Guarantee

All plant material installed under the Contract shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship for a period of one year (trees) or 6 months (shrubs) after date of acceptance by Owner. Any plant found to be dead or in poor condition due to faulty materials or workmanship, as determined by the Landscape Architect, shall be replaced by the Contractor at his expense.

2. Replacement Any materials found to be dead, missing or in poor ion during the establishment period shall be replaced immediately. The Landscape Architect, or his/her consultants, shall be the sole judge as to the condition of material. Material to be replaced within the guarantee period shall be replaced by the contractor within 15 days of written notification by the Owner.

II. PRODUCT

A. GENERAL

The following organic soil amendments and fertilizer are to be used for bid price basis only. Specific amendments and fertilizer specifications will be made after grading operations are complete and soil samples are tested by Contractor. All materials shall be of standard, approved and first-grade quality and shall be in prime condition when installed and accepted. Any commercially processed or packaged material shall be delivered to the site in the original, unopened container bearing the manufacturer's guaranteed analysis. Contractor shall supply Landscape Architect with a sample of all supplied materials accompanied by analytical data from an approved laboratory source illustrating compliance or bearing the manufacturer's guaranteed analysis.

B. SPECIFIC

1. Suitable Import, Borrow Topsoil or Reclaimed soil

a. *General* - Topsoil shall be free of roots, clods, stones larger than 1-inch in the greatest dimension, pockets of coarse sand, noxious weeds, sticks, lumber, brush and other litter. It shall not be infested with nematodes or other undesirable disease-causing organisms such as insects and plant pathogens.

(1) Topsoil shall be friable and have sufficient structure in order to give good health and aeration to the soil.*b.. Gradation limits* - soil shall be a sandy loam, loam, or clay loam. The definition of soil texture shall be the USDA classification scheme. Gravel over ¼-inch in diameter shall be less than 20% by weight.

c. *Permeability Rate* - Hydraulic conductivity rate shall be not less than one inch per hour nor more than 20 inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods.

d. *Fertility* - The range of the essential elemental concentration in soil shall be as follows:

Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram)

dry weight basis

phosphorus	2 - 40
potassium	40 - 220
iron	2 - 35
manganese	0.3 - 6
zinc	0.6 - 8
copper	0.1 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 2

Soil may need to be amended and conditioned to optimize plant growth. The above listed fertility is for soil selection.

Concentration of nutrients for final acceptance

Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram dry weight basis

phosphorus	10 - 40
potassium	100 - 220
iron	24- 35
manganese	0.6 - 6
zinc	1 - 8
copper	0.3 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 2

e. *Acidity* - The soil pH range measured in the saturation extract (Method 21a, USDA Handbook Number 60) shall be 6.0 - 7.9.

f. *Salinity* - The salinity range measured in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 0.5 - 2.5 dS/m.

g. *Chloride* - The maximum concentration of soluble chloride in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 150 mg/l (parts per million).

h. *Boron* - The maximum concentration of soluble boron in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 1 mg/l (parts per million).

i. *Sodium Adsorption Ratio (SAR)* - The maximum SAR shall be 3 measured per Method 20b, USDA Handbook Number 60.

j. *Aluminum* - Available aluminum measured with the Ammonium Bicarbonate/DTPA Extraction shall be less than 3 parts per million.

k. *Soil Organic Matter Content* - Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter. The desirable range is 3% to 5%. The carbon:nitrogen ratio should be about 10. A high carbon:nitrogen ratio can indicate the presence of hydrocarbons or non-humified organic matter.

l. *Calcium Carbonate Content* - Free calcium carbonate (limestone) shall not be present for acid-loving plants.

m. *Heavy Metals* - The maximum permissible elemental concentration in the soil shall not exceed the following concentrations:

Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram) dry weight basis

arsenic	1
cadmium	1
chromium	10
cobalt	2
lead	30
mercury	1
nickel	5
selenium	3
silver	0.5
vanadium	3

(1) If the soil pH is between 6 and 7, the maximum permissible elemental concentration shall be reduced 50%. If the soil pH is less than 6.0, the maximum permissible elemental concentration shall be reduced 75%. No more than three metals shall be present at 50% or more of the above values.

(2) Phytotoxic constituent, herbicides, hydrocarbons etc. - Germination and growth of monocots and dicots shall not be restricted more than 10% compared to the reference soil. Total petroleum hydrocarbons shall not exceed 50 mg/kg dry soil measured per the modified EPA Method No. 8015. Total aromatic volatile organic hydrocarbons (benzene, toluene, xylene and ethylbenzene) shall not exceed 0.5 mg/kg dry soil measured per EPA Methods No. 8020.

2. Soil Conditioners and Fertilizers

a. Soil conditioner with fertilizer included shall consist of organic ma-----terials comprised of decomposed animal and vegetable matter and composted to support bacterial cultures. Soil conditions shall be "Grow-Power Plus" or approved equal, and shall conform to the following analysis.

(1) Particle Size: 63 1/2 % through 100 Screen pH: 4.5 to 4.7

(2) Organic Content: Humus--50%; Humic Acids-15

(Note: Poultry, animal or human waste is not acceptable. See the definition of Humus in Western Fertilizer Handbook, Fifth Edition.)

(3) Chemical Analysis:

-Ammonic Nitrogen 1.00%

(derived from ammonium phosphate)

-Organic Nitrogen 4.00 %

(derived from compost, meat meal and urea)

-Total Nitrogen 5.00%

-Available phosphoric Acid 3.00%

(derived from compost, meat meal and diammonium phosphate)

-Soluble Potash 1.00%

(derived from compost and muriate of Potash)

-Iron 1.00%

(derived from iron sulfate)

-Zinc 0.05%

(derived from zinc sulfate)

-Manganese 0.05%

(derived from manganese sulfate)

(1) Soil Penetrant: Alkyl Naphthalene

-Sodium Sulfonate 2.00%

(2) Materials shall be mixed thoroughly and bagged in 50 or 80 lb. bags.

b. Organic Soil Amendments shall be derived from Redwood, Fir or Cedar wood bark, granular in nature, stabilized with nitrogen and having the following properties.

(1) Particle Size: minimum 955 passing 4 mesh screen (6.35 MM standard sieve); minimum 80% passing 8 mesh screen (2.33 MM standard sieve)

(2) Nitrogen Content: 0.5% based on dry weight for redwood sawdust; 0.7% based on dry weight for fir sawdust; 1.0% based on dry weight for fir or pine. (3) Salinity: Saturation extract conductivity shall not exceed 3.5 millimhos/ centimeter at 25 degrees centigrade.

(4) Organic Content: Minimum 90% weight

c. Minerals

(1) Soil Sulfur (S): as required from soil report

(2) Ferrous Sulfate: as metallic 20% as required from soil report

(3) Agricultural Gypsum (CaSO42HpO): as required from soil report

(4) Lime (CaO): as required from soil report

d. Redwood Shavings shall be leeched

e. Pre-Plant Commercial Fertilizer shall be nitrogen-fortified and have uniform in composition, free- flowing suitable for application with approved equipment and delivered to the project site in unopened, original container or package, each bearing the manufacturer's statement of guaranteed analysis and shall contain the minimum available percentage by weight of plant food as specified in the approved agronomic soils report.

f. Planting Tablets

(1) slow-release type, containing the following percentages of nutrients by weight: 20% nitrogen; 10% phosphoric acid; 5% potash

(2) 21 gram tablets as manufactured by Agriform or approved equal, applied per manufacturer's instructions

(3) Subsurface Root Barrier- Root barrier incorporated into street tree planting for the purpose of long-term root control shall be prefabricated, manufactured of high impact, polyethylene as manufactured by Deep Root Corporation or approved equal

4. Plant Material

a. Plants shall be in accordance with the California State Department of Agriculture's regulation for nursery inspections, rules and ratings. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous and free of insect infestations, plant diseases, sunscalds, fresh abrasions of the bark excessive abrasions or other objectionable disfigurements. Tree trunks shall be sturdy and well "hardened" off. All plants shall have normally well developed branch systems and vigorous and fiberous root systems which are not root or pot-bound. In the event of disagreement as to condition of root system, the root conditions of the plants furnished by the Contractor in containers will be determined by removal of earth from the roots of not less than two plants, or more than two percent of the total number of plants of species or variety. Where container-grown plants are from several sources, the roots of not less than two plants be inspected. In case the sample plants inspected are found to be defective, the Landscape Architect is the sole judge as to acceptability. Any plants rendered unsuitable for planting because of this inspection will be considered as samples and will be provided at the expense of the Contractor.

b. The size of the plants will correspond with that normally expected for species and variety of commercially available nursery stock or as specified in the Special Conditions, drawings or details. The minimum acceptable size of all plants, measured before pruning with the branches in normal position, shall conform with the measurements, if any, specified on the drawings in the list of plants to be furnished. Plants larger in size than specified may be used with the approval of the Landscape Architect. If the use of larger plant is approved, the ball of earth or spread of roots for each plant will be increased proportionately.

c. All Plants not to the requirements herein specified shall be considered defective and such plants, whether in place or not, shall be removed from the site of work and replaced with new plants at the Contractor's expense. The plants shall be of the species, variety, size and condition specified herein or as shown on the drawings. Under no conditions will there by any substitution of plants, except with the expressed consent of the Landscape Architect and City Landscape Inspector.

d. At no time shall trees or plant material be pruned, trimmed or topped prior to delivery, and any alteration of their shape shall be conducted only with the approval and when in the presence of the Landscape Architect and as noted on the Planting Specifications

e. Plant material shall be true to botanical and common name and variety as specified in "A Checklist of Woody Ornamental Plants in California," Manual 32 published by the University of California School of Agriculture (1963).

5. Nursery-Grown and Collected Stock

a. Grown under climatic conditions similar to those in locality of project.

b. Container-grown stock in vigorous, healthy condition; no root bound plant or plants with root system hardened off

c. Substitute plant material will not be permitted unless specifically approved in writing by the Architect.

6. Tree Staking Material

a. Stakes for Tree Support

(1) Full length, lodge pole, pine stakes, treated with copper naphthanate

(2) Minimum nominal size: 2" in diameter x 12' long and pointed at one end (adjusted length to fit tree)

b. Hose and Wire Ties

(1) Galvanized wire with cinch tie; Wire shall be zinc-coated iron, 10-gauge minimum and solid core.

(2) All guys are to be flagged. Ninety percent wire length is to be covered. White PVC 1/4 inch diameter tube covering shall be used.

7. Bark Chips

Bark chips shall be regular, ground, redwood or fir bark, consisting of 1/2" to 3/4" (acorn size) chips. Prior to delivery to the site, the Contractor shall submit samples to the City Landscape Inspector for approval.

8. Erosion Control Matting

Erosion control matting shall be of open weave, furnished in rolled strips as follows: It shall be approximately 225 feet long with a width of 48 inches plus or minus one inch and an approximate one (1) inch square mesh. Fabric shall average .4 pounds per linear foot. The erosion control matting shall be manufactured from loosely twisted jute yarn not varying in thickness by more than one-half its normal diameter, equal in quality to "Ludlow Soil Saver #48" or approved equal. Staples for erosion control shall be 11 gauge steel wire bent in a U shape six inches minimum length and one inch wide. Wetting Agent to be 95% alkyl Polyethylene glycol ether such as "Commercial Water In" or approved equal.

9. Seed

All seed used for lawn planting or erosion control planting or for any other reasons specified in the plans shall be labeled and furnished in sealed, standard containers with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered is fully-labeled in accordance with the California State Agriculture Code. Seed which has become wet, moldy or otherwise damaged in transit or storage will not be accepted.

10. Sod

Sod shall be fully mature, well-maintained, of the grass variety specified, free of all other grasses or weeds and shall be evenly cut with a conventional sod cutting machine to a thickness of 1-1/2 inches. All material shall be from the same growing ground and delivered fresh to the job site. If, after installation, any areas of sod die or become brown, these areas are to be replaced with sod immediately. Replacement sod is to match original.

11. Hydromulching

a. Wood Cellulose Mulch shall be calm, natural, wood cellulose fiber. Natural wood cellulose fiber shall be processed in such a manner that it will contain no growth or germination-inhibiting factors and shall be dyed green to facilitate metering of materials. It shall be manufactured in such a manner that after each addition and agitation in slurry tanks with fertilizer, seed water and other approved additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry and that when hydraulically sprayed on the ground cover impregnated uniformly with seed; which after application, will allow the absorption of moisture and will allow rainfall to percolate to the underlying soil.

b. Fertilizer shall consist of organic materials comprised of decomposed animal and vegetable matter and composted to support bacterial cultures. Fertilizer shall be "Gro-Power" or approved equal.

c. Soil Binder: Terra Tack III or approved equal

d. Humectant: HL-80 Humectant or approved equal

12. Equipment

Hydraulic equipment used for the application of slurry shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend and homogeneously mix above slurry. Distribution lines shall be large enough to prevent stoppage and to provide even distribution of the slurry over the ground. In order to facilitate proper coverage, the pump must be capable of exerting up to 150 psi at the nozzle. The slurry tanks shall have a minimum capacity of 1,500 gallons and shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution without waste.

13. Weed Abatement Program

The herbicide "Round-Up" or approved equal shall be used for slope/ planting areas. See Sections III-D-2 and III-D-7 for guidelines for proper application procedures.

14. Miscellaneous Materials

a. sand-washed river sand or equal

b. post emergent weed killer: "Round-Up"

c. tree wound paint-as-approved

III. EXECUTION

A. INSPECTION

Verify that final grades have been established prior to beginning planting operations. Inspect trees, shrubs, and material for injury and insect infestation, and inspect trees and shrubs for improper pruning. Do not begin planting trees until deficiencies are corrected or plants replaced.

B. PREPARATION

Stake out locations for plants and outline of planting beds on ground. Do not begin excavation until plant locations and plant beds are acceptable to Architect.

The irrigation system shall have been installed and approved prior to soil preparation.

C. INSTALLATION

1. Excavation of Planting

a. Shape

(1) Vertical sides and flat bottom

(2) Plant pits to be square for box material, circular for canned material.

b. Size

All trees shall have planted pits dug twice the diameter and to the depth of the root ball. Backfill around the rootball with prepared backfill mix. Refer to planting Details for specific method.

2. Preparation of Planting Areas

a. After approximate finished grades have been established, soil shall be conditioned and fertilized in the following manner. Nitrogen-stabilized organic amendment and ammonium phosphate shall at the following rates, be uniformly spread and cultivated thoroughly by means of mechanical tiller into top 8" of soil.

(1) Nitrogen-Stabilized Organic Amendment 6 cu. yards/1,000 sq. ft.

(2) Ammonium Phosphate 6-20-20: 15 lbs./1,000 sq. ft.

(3) 150 lbs. Agriculture Gypsum I 1,000 sq. ft.

b. All soil area shall be compacted and settled by application of heavy irrigation to a minimum depth of twelve inches.

c. At time of planting, the top two inches of turf areas to be sodded or seeded shall be free of stones, stumps or other deleterious matter 1" in diameter or larger. In groundcover areas, the top two inches shall be free of stones, stumps or other deleterious matter 2-1inch diameter or larger. All planting areas shall be free from all wire, plaster or similar objects.

3. Final Grades

a. After the foregoing specified deep watering, minimum modifications to grade may be required to establish the final grade. These areas shall not be worked until the moisture content has been reduced to a point where working it will not destroy soil structure.

b. Finish grading shall insure proper drainage of the site.

c. All areas shall be graded so that the final grades will be 1" below adjacent paved areas, sidewalks, valves boxes, headers, clean-outs, drains, manholes, etc. in turf areas, and 2" below in groundcover areas.

d. Surface drainage shall be away from all building foundations.

e. Eliminate all erosion scars.

f . Planting areas receiving sod shall sustain a finish grade of a depth that installed sod shall be flush with finish surfaces (walks, paved areas, etc.).

g. All planting areas shall have a finish grade conforming to approved plans and specifications after full settlement has occurred.

4. Dispose of unacceptable or unused excess soil off site and premises.

D. PLANTING INSTALLATION

1. General

a. Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice, as approved by the Landscape Architect.

b. Only as many plants as can be planted and watered on that same day shall be distributed in a planting area. In extreme heat, plants shall be watered immediately after planting.

c. Containers shall be opened and plants shall be removed in such a manner that the ball of earth surrounding the roots is not broken, and they shall be planted and watered as herein specified immediately after removal from the containers. Containers shall not be opened prior to placing the plants in the planting area.

2. Weed Control:

After soil preparation and establishment of final grades prior to any planting, the Contractor shall irrigate thoroughly for a period of time, two to three weeks or until the weed seeds have germinated. When there is sufficient weed seed germination, the Contractor shall apply a post emergent contact weed killer according to the directions of the manufacturer. The Contractor shall then wait an additional two weeks to allow the weed killer to dissipate, then plant as indicated in the plans and specifications. Contractor shall remove any residual foliage and/or roots.

3. Layout of Major Plantings:

Locations for plants and outlines of areas to be planted shall be marked on the ground by the contractor before any plant pits are dug. All such locations shall be approved by the landscape Architect. If an underground construction or utility line is encountered in the excavation of planting areas, other locations may be selected by the landscape Architect.

4. Planting of Trees and Shrubs

a. Excavation for planting shall include the stripping and stacking of all acceptable topsoil encountered within the areas to be excavated for trenches, tree holes, plants pits and planting beds.

b. Can Removal

(1) Cut cans on two sides with an acceptable can cutter

(2) Do not injure root ball

(3) Do not cut cans with a spade or axe.

(4) Carefully remove plants without injury or damage to root ball.

(5) After removing plant, superficially cut edge-roots with knife on three sides.

c. Box Removal

(1) Remove bottom of plant boxes before planting

(2) remove sides of box without damage to rootball after positioning plant and partially backfilling.

d. All excavated holes shall have vertical sides with roughened surfaces and shall be of a size that is at least two times the width and one and the depth of the original plant container. The holes shall be, in all cases, large enough to permit handling and planting, without injury or breakage to the roots or root ball. Refer to Standard Planting Details.

e. Excavated holes for slope plantings shall be dug two times original plant container width, providing a permanent 6 inch berm around plant pit.

f. Protect all areas from excessive compaction when trucking plants or other material to the planting site:

g. Center plant in pit or trench.

h. Face plants with fullest growth into prevailing wind.

See plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots.

Container plants shall be backfilled with:

-8 parts by volume on-site topsoil

-2 parts by volume organic amendment

-6-20-20 fertilizer mix as per chart below:

-----		
	1 gallon	1 handful
	5 gallon	2 handfuls
	15 gallon	3 handfuls
	18" box	4 handfuls
	24" box	5 handfuls
	30" box	6 handfuls
	36" box	7 handfuls
	42" box	8 handfuls
	48" box	9 handfuls
	60" box	10 handfuls

(- 1 handful approximately equals 4-6 ounces)

i. All plants which settle deeper than specified above shall be raised to the correct level. After the plant has been placed, additional backfill shall be added to the hole to cover approximately one-half of the height of the root ball. At this stage, water shall be added to the top of the partly-filled hole to thoroughly saturate the root ball and adjacent soil.

j. Excess soil generated from the planting holes may be distributed on the site and amended as specified in general soil preparation.

k. Hand place plants which are in containers less than one gallon in size

l. Hand backfill and hand tamp, leaving a slight depression around bases of plants.

m. Planting tablets shall be set with each plant on the top of the root ball while the plants are still in their containers so the required number of tablets to be used in each hole can be easily verified.

n. After the water has completely drained, planting tablets shall be placed as indicated per container size below:

1 gallon	1 tablet
5 gallon	2 tablets
15 gallon	3 tablets
18" box	4 tablets
24" box	5 tablets
30" box	6 tablets
36" box	7 tablets
42" box	8 tablets
48" box	9 tablets
60" box	10 tablets

o. The remainder of the hole shall be backfilled.

p. After backfilling, an earthen basin shall be constructed around each plant. Each basin shall be of a depth sufficient to hold at least two inches of water. Basins shall be of a size suitable for the individual plant. In no case shall the basin for a fifteen-gallon plant be less than four feet in diameter, for a five-gallon plant less than three feet in diameter and for a one-gallon plant less than less than two feet in diameter. The basins shall be constructed of amended backfill materials.

q. Pruning shall be limited to the minimum necessary to remove injured twigs and branches and to compensate for loss of roots during transplanting, but never to exceed one-third of the branching structure. Upon approval of the Landscape Architect, pruning my not be done before delivery of plant, but not before plants have been inspected and approved. Cuts over 3/4" in diameter shall be painted with tree seal.

r. Staking and Guying

(1) Staking of all trees shall conform to three staking and tree guying details.

(2) Tree stakes shall be straight-grained, lodge pole pine. Stakes shall be free from knots, checks, splits or disfigurements. Guy as indicated immediately after planting, using three guys per tree, guys placed as to five equal support to tree from any direction. Install a warning flag on each guy. Protect bark of tree by connecting wire with "Cinch-Tie". Anchor guy wires with "deadmen" buried at least 2 feet below finish grade. Tighten guylines to a firm tension. Install additional guys should tree growth be such that three guy wires do not give required equal support from all directions.

s. Vine Planting

Vines shall have wood stake support removed without damage to plant and the vine trained upon the adjacent posts and walls as directed by the plan or Landscape Architect. Vines shall be held to posts and overheads by plastic green ribbon ("heavy duty") and eye bolts, not nails, as directed by the Landscape Architect or details.

t. Where street trees occur within treewells or are adjacent to a substantial amount of pavement, a sub-surface planter box ("Deep-Root" or approved equal) shall be used. Box shall be installed per Details.

u. Location for street trees adjacent to any light standards or utility equipment shall be adjusted to maintain a suitable clearance, as approved by the City Landscape Architect.

5. Planting of Ground Covers

a. Ground cover plants shall be grown in flats or peat pots or taken as cuttings, as indicated on the plans. Flat grown plants (rooted cuttings) shall remain in those flats until transplanting. The flat's soil shall contain sufficient moisture that it will not fall apart when lifting the plants. If plants from peat pots are used, the pots shall be protected at all times prior to planting to prevent unnecessary drying of the root ball.

b. Ground cover shall be planted in straight rows and evenly spaced, unless otherwise noted, at intervals called called out in the drawings. Triangular spacing shall be used unless otherwise noted in the drawings.

c. Each rooted plant shall be planted with its proportionate amount of flat soil or in a peat pot, in a manner that will insure minimum disturbance of the root system, but in no case shall this depth be less than two nodes. To avoid drying out, plantings shall be immediately sprinklered after planting until the entire area is soaked to the full depth of each hole, unless otherwise noted on the drawings.

d. Care shall be exercised at all times to protect the plants after planting. Any damage to plants by tramping or other operations of the Contractor shall be repaired immediately.

6. Planting of Lawn

a. Lawn will be planted by hand seeding, hydroseeding, and /or sodding as indicated on the plans.

b. After preparation of soil in accordance with the section on "Grading and Soil Preparation," the areas to be planted to lawn shall be rolled, raked and floated to finish grade by any acceptable method, with the finish grade by any acceptable method, with the finish grade being smooth and even, free of rocks and clods and reasonably well-firmed. Prior to planting, the surface of the area shall be sufficiently loose and friable to receive the seeds of sod.

c. Pre-Ferilization: Just prior to the planting of turf, evenly broadcast appropriate fertilizer as specified in the approved soils report.

d. Method

(1) Seed: A satisfactory method of sowing shall be employed, using an approved, mechanical, power-drawn driller-seeder, mechanical hand-seeder or other approved equipment. The rate of application of seed will be specified on the plans and and in the specifications. The seed shall be covered by means of a wire drag, spike-toothed, harrow cultipacker or other approved device. Seeded areas shall immediately be compacted by means of a cultipacker, roller or other approved equipment weighing 60 to 90 pounds per linear foot of roller. Final rolling shall be at right angles to slopes to prevent erosion wherever possible metal staples typical for those used used on erosion control matting, if necessary.

(2) Sod: Soil preparation, finish grading and fertilization shall be as specified for seeded lawns, except that the sub-soil finish grade shall be two inches below final grade to allow for the thickness of sod. Lay sod down in one direction only, with close fitted joints. The ends of each strip shall be staggered to eliminate continuous joining. Staple sod on steep slopes with metal staples typical for those used on erosion control matting, if necessary.

e. Watering

Immediately following planting or top dressing, if applied, apply a light fine, mist spray to anchor the seed and/or dressing to to the soil, forming a protective crust to prevent wind erosion and drying of the seed. The lawn areas shall be kept moist until fully germinated. Fully germinated lawn areas shall be allowed to dry sufficiently to permit rolling with approximately two hundred to three hundred pound water-weighted roller to satisfactorily compact the soil around the grass roots and provide a firm, smooth mowing surface.

7. Erosion Control

a. Erosion control installation will be required in locations specifically delineated on the drawings or as necessary due to field conditions.

b. Surface of the slopes shall be uniformly smooth and even, with all debris and rocks raked out. The soil shall be sufficiently moist to permit the firm laying of erosion control matting and to prevent sloughing of topsoil.

c. The erosion control matting shall be laid with the direction of flow of surface drainage and in accordance with the manufacturer's directions. The matting shall be cut to provide a visually pleasing slope.

d. The matting shall be stapled in place and firmly embedded by means of tamping or rolling as approved by the Landscape Architect to insure that the matting is in contact with the soil and that no erosion can take place under the matting.

e.Planting of turf, ground covers, shrubs and/or vines may be required in area protected by erosion control matting as specified in the plans or as becomes necessary.

E. CLEAN-UP

After all planting operations have been completed remove all trash, excess soil, empty plant containers and rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. Clean-up Contractor shall pick-up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week and/or the last working day of each week. All trash shall be removed completely from the site. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition. The Contractor shall arrange for offsite disposal of surplus soil and shall, upon request, furnish the City or County's authorized representative with the disposal site Owner's written consent.

F. INSPECTIONS

Normal progress inspections shall be requested by the Contractor from the Landscape Architect at least 4 days in advance of an anticipated inspection. Inspections are required as follows:

1. upon the completion of fine grading
2. upon the completion of soil conditioning
3. prior to application of post-emergent weed killers
4. pre or post-delivery of all plant material
5. upon the completion of major plant layout
6. at the tree-staking example prior to sodding LANDSCAPE MAINTENANCE

I. GENERAL REQUIREMENTS

i. Scope of Work

Work specified in this Section furnish all labor, material, equipment and services required to maintain the landscape in an attractive condition as specified herein for a period of ninety (90) days after final acceptance by Owner.

j. Quality Assurance

The Contractor's representative shall be experienced in landscaping maintenance and shall have received an education in ornamental.

k. Maintenance Period

The Contractor shall continuously maintain all areas involved in this Contract during the progress of the work and the maintenance period until final acceptance of the work by the owner. Improper maintenance or possible poor condition of any planting at the termination of the scheduled maintenance period may cause postponement of the final completion date of the Contract.

Maintenance shall be continued by the Contractor until work is acceptable. Maintenance period shall not start until all elements of construction, planting and irrigation for the entire project are in accordance with Plans and Specifications. The Contractor shall request an inspection to begin the maintenance period after all planting and related work has been completed in accordance with the Contract documents. A prime requirement is that all lawn areas shall show an even, healthy strand of grass seedlings or sod, either of which shall have been mown twice. If such criteria is met to the satisfaction of the Landscape Architect, a field notification will be issued to the Contractor to establish the effective beginning date of the maintenance period. Any day when the Contractor fails to adequately maintain plantings, replace unsuitable plants or do weed control or other work, as determined necessary by the Landscape Architect, will not be credited as a maintenance period working days. The maintenance period will be extended if the provisions required the plans and specifications are not filled

J. EMERGENCY NUMBERS

(1) The Contractor shall provide and maintain a current list of emergency telephone numbers for 24-hour emergency response.

(2) The Contractor shall initiate remedial action within two hours from the time of notification.

K. PROTECTION OF EXISTING FACILITIES AND STRUCTURES

The Contractor shall exercise due care in protecting from damage all existing facilities, structures and utilities both above and below surface on the City/ Owner's property. Any damage to City's/ Owner's property deemed to be caused by the Contractor's responsibility to verify and locate any underground systems (i.e., utility line). This does not release the Contractor from the responsibility of taking reasonable precautions when working in these areas. Any damage or problems shall be reported immediately to the City/ Owner's representative.

L. PROJECT INSPECTIONS

Upon request the Contractor or his representative will walk the project with the City/ Owner's representative for the purpose of determining compliance with the specifications.

CITY NOTES

Compacted soils must be transformed to a "friable condition to maximize water retention.

Soils with greater than 6% organic matter in the top 6 inches of soil are exempt from adding compost and tilling.

Soil amendments must be incorporated to recommendations of the soil analysis report and what is appropriate for the plants selected.

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Revisions:

	-	-

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PHOENIX DEVELOPMENT
30 MEYERS CT.
NOVATO, CA 94947

Stamp:

LICENSED LANDSCAPE ARCHITECT
JUSTIN J HEACOCK
#5416
Signature
02-29-24
Renewal Date
04-15-22
Date
STATE OF CALIFORNIA

Drawn By: JJH
Checked By: JJH
Plan Date: 04.15.22
Scale:

Title:

PLANTING SPECIFICATIONS

Sheet No.:

LP.3

Plan Status:

1ST CITY SUBMITTAL

04.15.22

1ST CITY SUBMITTAL