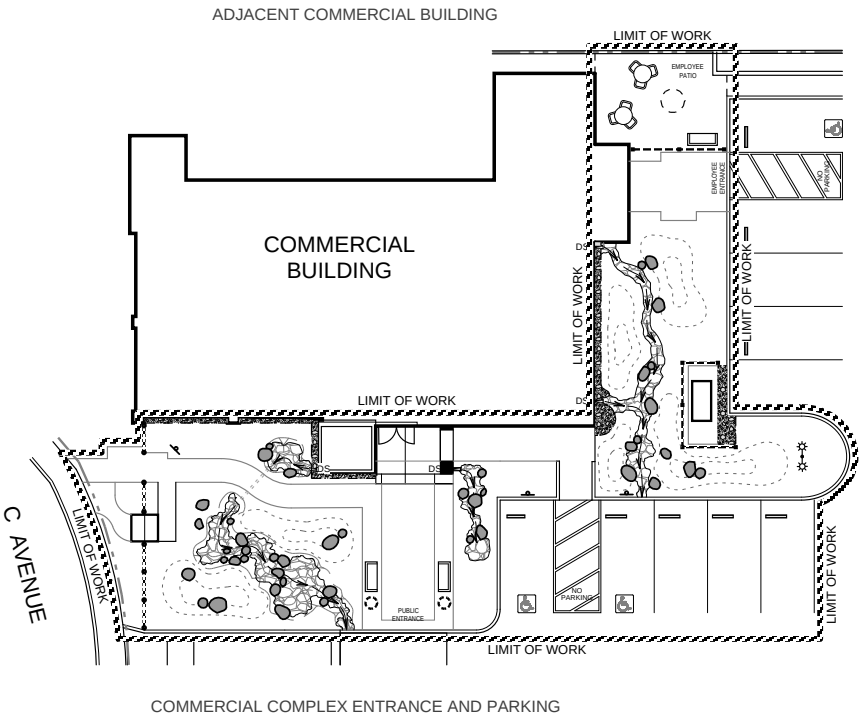


CONSTRUCTION DOCUMENTS FOR NEW LANDSCAPE IMPROVEMENTS

Attachment 8- Planning Case P18-0608
Commercial Landscape Plan - Working
Drawing Example

PROJECT NAME
1357 STREET NAME
IN THE CITY OF RIVERSIDE, CALIFORNIA

SHEET KEY MAP:



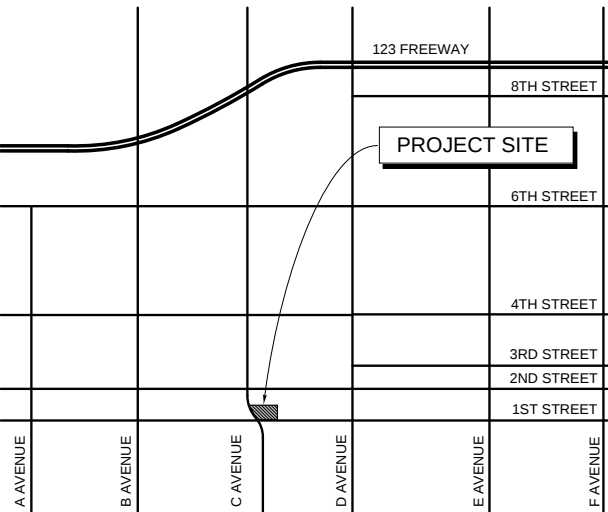
ABBREVIATIONS:

A.B.	Anchor Bolt	Int.	Integral
A.C.	Asphaltic Concrete	J. Box	Junction Box
Adj.	Adjacent	Jts.	Joints
Alt.	Alternate	L.A.	Landscape Architect
Arch.	Architect	Lic.	Licensed
Auto.	Automatic	L.P.	Low Point
Bldg.	Building	Max.	Maximum
Blk.	Block	M.S.	Machine Bolt
B.M.	Bench Mark	Mech.	Mechanical
B.S.	Bottom of Slope	Med.	Medium
C.B.	Catch Basin	Min.	Minimum
C.F.	Cubic Foot	M.H.	Manhole
C.I.	Cast Iron	Multi.	Multi-branched
C.I.P.	Cast Iron Pipe	Nat.	Natural
C.J.	Cold Joint	N.I.C.	Not in Contract
C.L.	Center Line	O.C.	On Center
Clr.	Clearance	O.D.	Outside Diameter
C.M.P.	Corrugated Metal Pipe	P.A.	Planting Area
Como.	Compacted	Perf.	Perforated
Con.	Concrete	P.O.C.	Point of Connection
Cond.	Condition	P.S.I.	Pounds Per Square
Cont.	Continuous	P.T.	Pressure Treated
C.	Center	P.V.C.	Poly Vinyl Chloride
Chr. Sink	Counter Sink	R.	Radius
D.D.	Deck Drain	R.C.P.	Reinforced Concrete
D.F.	Doubles Fit	Rebar	Reinforcing Bar
D.G.	Decomposed Granite	Rein.	Reinforcing
Dia.	Diameter	Rein'd.	Reinforced
Dim.	Dimension	Ret.	Retardant
Dtl.	Detail	Rough	Rough
E.	Each	R.S.	Rough Sawn
E.J.	Expansion Joint	R.S.R.	Rough Sawn Redwood
Elec.	Electric	Sch.	Schedule
Elev.	Elevation	S.F.	Square Foot
Eng.	Engineer	Sht.	Sheet
Exp.	Exposed	Sht. Mt.	Sheet Metal
E.W.W.M.	Electric Welded Wire Mesh	Sm.	Smelter
Ex.	Existing	S.L.	Scoreline
Exp.	Exposed	Smooth	Smooth
F.F.	Finish Floor Elevation	Specs.	Specifications
F.G.	Finish Grade	Sq.	Square
F.H.	Fire Hydrant	St.	Steel
Fin.	Finish	T.A.D.	Top of Area Drain
F.L.	Flow Line	T & B	Top and Bottom
F.S.	Finish Surface	T.B.	Top of Berm
Flt.	Footing	T.C.	Top of Curb
Ftn.	Fountain	Tex.	Textured
Ga.	Gauge	T.G.	Top of Gate
Galv.	Galvanized	T.G.D.	Top of Gate Drain
G.C.	Ground Cover	Thk.	Thick
G.I.	Galvanized Iron	T.P.	Top of Pavino
H.B.	Header Board	T.P.C.	Top of Poll Coupling
Hdr. Brd.	Header Board	T.S.	Top of Steps
Horiz.	Horizontal	T.W.	Top of Wall
H.P.	High Point	Twl.	Twelve
Hgt.	Height	Two.	Two
I.D.	Inside Diameter	Vert.	Vertical
Invt.	Invert	Wt.	Weight
		W/O	Without
		W.S.	Water Surface

SHEET INDEX:

- L-1 TITLE SHEET
- L-2 CONSTRUCTION AND GRADING PLAN
- L-3 CONSTRUCTION DETAILS
- L-4 IRRIGATION PLAN
- L-5 IRRIGATION DETAILS
- L-6 PLANTING PLAN
- L-7 PLANTING DETAILS
- L-8 CONSTRUCTION SPECIFICATIONS
- L-9 IRRIGATION AND PLANTING SPECIFICATIONS

VICINITY MAP:



DEVELOPER/OWNER:

COMPANY NAME
COMPANY ADDRESS
CONTACT NAME
CONTACT EMAIL ADDRESS
PHONE NUMBER

CONSULTANTS:

COMPANY NAME
COMPANY ADDRESS
CONTACT NAME
CONTACT EMAIL ADDRESS
PHONE NUMBER

SUBMITTALS:

- FIRST SUBMITTAL:
- SECOND SUBMITTAL:
- THIRD SUBMITTAL:
- FOURTH SUBMITTAL:
- FINAL SUBMITTAL:

PLANS PREPARED BY:

COMPANY NAME
COMPANY ADDRESS
CONTACT NAME
CONTACT EMAIL ADDRESS
PHONE NUMBER



Know what's below.
Call before you dig.

APPROVED BY: _____
Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND
ELEVATION OF ALL EXISTING UNDERGROUND
UTILITIES PRIOR TO CONSTRUCTION

LICENSE
STAMP

LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

OWNER LOGO
AND
COMPANY
INFORMATION

REV.	DATE	BY	DESCRIPTION

DRAWN:
DATE:
REVISED:
REV. DATE:
CHECKED:
APPROVED:
JOB NO:

LANDSCAPE IMPROVEMENTS FOR
PROJECT NAME,
ADDRESS, AND
APN NO.
SHEET NAME: TITLE SHEET

SHEET NO.
L1
1 OF 10

DRAWN:	LANDSCAPE IMPROVEMENTS FOR PROJECT NAME, ADDRESS, AND APN NO.	SHEET NO. L2
DATE:		
REVISED:		
REV. DATE:		
CHECKED:		
APPROVED:	SHEET NAME:	2 OF 10
JOB NO:	CONSTRUCTION AND GRADING PLAN	

LEGEND:

- 1 ALUMINUM STAKE. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
- 2 ALUMINUM EDGING, MILL FINISH. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
- 3 MULCH LAYER PER PLANTING SPECIFICATIONS.
- 4 COMPACTED NATIVE SUBGRADE.
- 5 DECOMPOSED GRANITE PAVING, D.G. TYPE AND SUPPLIER PER CONSTRUCTION LEGEND. INSTALL IN (3) EQUAL LIFTS. WATER IN AND COMPACT AFTER EACH LAYER WITH VIBRATORY PLATE COMPACTOR.

SCALE: 1 1/2" = 1'-0"

LEGEND:

- 1 BIOSWALE W/ LANDSCAPE BOULDERS, LOOSE COBBLE STONES AND GRAVEL. SEE DETAIL K, THIS SHEET.
- 2 FILTER FABRIC.
- 3 FINISH GRADE.
- 4 NATIVE SUBGRADE.
- 5 SUMP PIT. FILL W/ 1" GRAVEL.

SCALE: 3/4" = 1'-0"

LEGEND:

- 1 BOULDER PER CONSTRUCTION PLAN. RECESS AT LEAST 1/3 OF BOULDER'S DEPTH INTO SUB-GRADE AS SHOWN.
- 2 FINISH GRADE.
- 3 90% COMPACTED SUB-GRADE.

NOTES:

- A CHIPPED AND BROKEN PORTIONS OF BOULDERS SHALL BE BURIED OUT OF VIEW.
- B POWER WASH ALL EXPOSED SURFACES OF BOULDERS AT TIME OF FINAL PLACEMENT.

SCALE: 1" = 1'-0"

LEGEND:

- 1 3/4" PVC IRRIGATION LATERAL, 90° ELBOW AND SCH. 80 THREADED NIPPLE TO FINISH SURFACE AT ADJACENT PLANTER AREA.
- 2 POLY TUBING CONNECTION.
- 3 POLY TUBING. EXTEND FROM FITTING AT FINISH GRADE THROUGH SAUCER NOTCH AND UP TO POT SOIL SURFACE.
- 4 ELBOW FITTING.
- 5 DRIPLINE WITH BUG CAP. COIL DRIPLINE IN POT TO PROVIDE EVEN IRRIGATION DISTRIBUTION TO PLANT MATERIAL.
- 6 DRIPLINE TUBING STAKE.
- 7 POT SAUCER, NOTCHED TO ALLOW DRAINAGE TO ADJACENT PLANTER AND IRRIGATION TUBING.
- 8 100% POTTING SOIL.
- 9 POT SOIL SURFACE.
- 10 FINISH SURFACE.
- 11 PLANTER POT WITH WATER PROOF SEALER SEE PLANTING PLANS FOR POT MANUFACTURER AND MODEL.
- 12 DRILL HOLE IN SAUCER TO RECEIVE A 1/4" LANDSCAPE DRIPLINE TO DRAIN POT INTO PLANTER.
- 13 CONCRETE. SEE CONSTRUCTION PLAN.
- 14 MULCH LAYER, SEE PLANTING PLAN.

PLAN VIEW

SCALE: N.T.S.

LEGEND:

- 1 BOULDER AND LOOSE COBBLE CHECK DAM. LOCATIONS PER PLAN. BOULDERS SHALL BE 12" TO 30" DIA. GRANITE FROM LOCAL SOURCE. COBBLE SHALL BE 4" TO 12" DIA. GRANITE FROM LOCAL SOURCE.
- 2 LOOSE COBBLE AND GRAVEL STREAM BED PER CONSTRUCTION PLAN, FORM 6" TO 12" DEEP BOWL @ UPSTREAM SIDE OF CHECK DAM. SEE ALSO DETAIL D, THIS SHEET.
- 3 FILTER FABRIC.
- 4 COMPACTED SUBGRADE.
- 5 WATER LINE.

SECTION ACROSS POOL

SECTION THROUGH CHECK DAM

SCALE: 3/4" = 1'-0"

LEGEND:

- 1 DRAIN PIPE.
- 2 MITERED DRAIN END CAP AND DRAIN PER CONSTRUCTION PLAN. SIZE TO MATCH EXISTING PIPE SIZE.
- 3 ADJACENT FINISH GRADE.
- 4 BIOSWALE WITH COBBLE. REFER TO CONSTRUCTION PLAN.
- 5 90% COMPACTED SUBGRADE OR PER SOIL REPORT.

SCALE: N.T.S.

LEGEND:

- 1 COBBLE BIOSWALE PER DETAIL D, THIS SHEET.
- 2 LANDSCAPE BOULDER PER CONSTRUCTION PLAN. SEE DETAIL E, THIS SHEET.
- 3 FINISH GRADE.
- 4 SUBGRADE.
- 5 DRAINPIPE W/ 45° CUT @ DAYLIGHT SEE DETAIL F, THIS SHEET.

SCALE: N.T.S.

LEGEND:

- 1 FINISH GRADE/ADJACENT SHRUB PLANTING.
- 2 COLMET SPLICING STAKE/LINE STAKE. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
- 3 BLACK POWDER COATED STEEL EDGING. AVAILABLE FROM COMPANY NAME AND CONTACT INFORMATION. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
- 4 GRAVEL PAVING PER CONSTRUCTION PLAN. FLUSH WITH TOP OF EDGING.
- 5 COMPACTED NATIVE SUB-GRADE.

SCALE: N.T.S.

LEGEND:

- 1 GRANITE LANDSCAPE ACCENT BOULDERS. REFER TO CONSTRUCTION PLAN FOR SIZE AND QUANTITY.
- 2 6" DEEP LAYER MINIMUM OF RIVER ROCK COBBLE, 1" TO 3" SIZE AND 4" TO 18" SIZE. COBBLE SHALL BE "SIERRA" AVAILABLE COMPANY NAME. FILL IN AROUND 4" TO 18" COBBLE WITH THE 1" TO 3" SIZE COVERING ALL FILTER FABRIC.
- 3 6" DEEP LAYER MINIMUM 1" COARSE GRAVEL BED.
- 4 FILTER FABRIC, POLYPROPYLENE GEOTEXTILE. LAY OVER GRAVEL BASE AND EXTEND 12" INTO ADJACENT LANDSCAPE.
- 5 FINISH GRADE.
- 6 NATIVE SUBGRADE.
- 7 IRRIGATION PER IRRIGATION PLAN.
- 8 PLANT MATERIAL TO BE INSTALLED WITHIN COBBLE AREA, KEEP COBBLE CLEAR OF ROOTBALL DIAMETER.
- 9 CONCRETE HEADER, SEE CONSTRUCTION DETAILS.

NOTE: CONTRACTOR SHALL INSTALL SAMPLE 10' LONG SECTION OF SWALE FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE.

SCALE: 3/4" = 1'-0"

LEGEND:

- 1 4" W x 5'-6" H x 3" THICK GREEN SCREEN PANEL.
- 2 3" SQ 11 GA. TUBULAR STEEL FENCE POST SET IN CONCRETE FOOTING.
- 3 #5139 SQUARE POST CAP WELDED TO TUBULAR STEEL POST. AVAILABLE THROUGH GREEN SCREEN, TEL: 800-450-3494.
- 4 1/4" DIA. STAINLESS STEEL SELF-TAPPING TEK SCREW. AVAILABLE THROUGH GREEN SCREEN, TEL: 800-450-3494.
- 5 #5145 POST CLIP. MOUNTED FRONT AND BACK AT EACH LOCATION. TYP. 3" THICK GREEN SCREEN PANEL, TYP. AVAILABLE THROUGH GREEN SCREEN, TEL: 800-450-3494.
- 6 #5105 STEEL EDGE TRIM AT TOP EDGE OF PANEL, TYP. AVAILABLE THROUGH GREEN SCREEN, TEL: 800-450-3494.
- 7 36" DEEP x 15" DIA. CONCRETE FOOTING AT END POSTS, PROVIDE 30" DEEP x 12" DIA. FOOTING @ LINE POSTS. SLOPE TOP TO DRAIN.
- 8 COMPACTED SUBGRADE PER SOIL ENGINEER'S REPORT.
- 9 FINISH GRADE.

NOTES:

- ALL GREEN SCREEN PANELS TO BE WRINKLE GREEN POWDER COAT FINISH. PROVIDE SAMPLE TO OWNER FOR APPROVAL PRIOR TO ORDER AND INSTALL.
- PAINT STEEL POSTS TO MATCH PANEL POWDER COAT
- CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION.

SCALE: 1/2"=1'-0"

Know what's below.
Call before you dig.

APPROVED BY: _____

Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION

LICENSE
STAMP

LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

OWNER LOGO
AND
COMPANY
INFORMATION

REV.	DATE	BY	DESCRIPTION

DRAWN: _____

DATE: _____

REVISED: _____

REV. DATE: _____

CHECKED: _____

APPROVED: _____

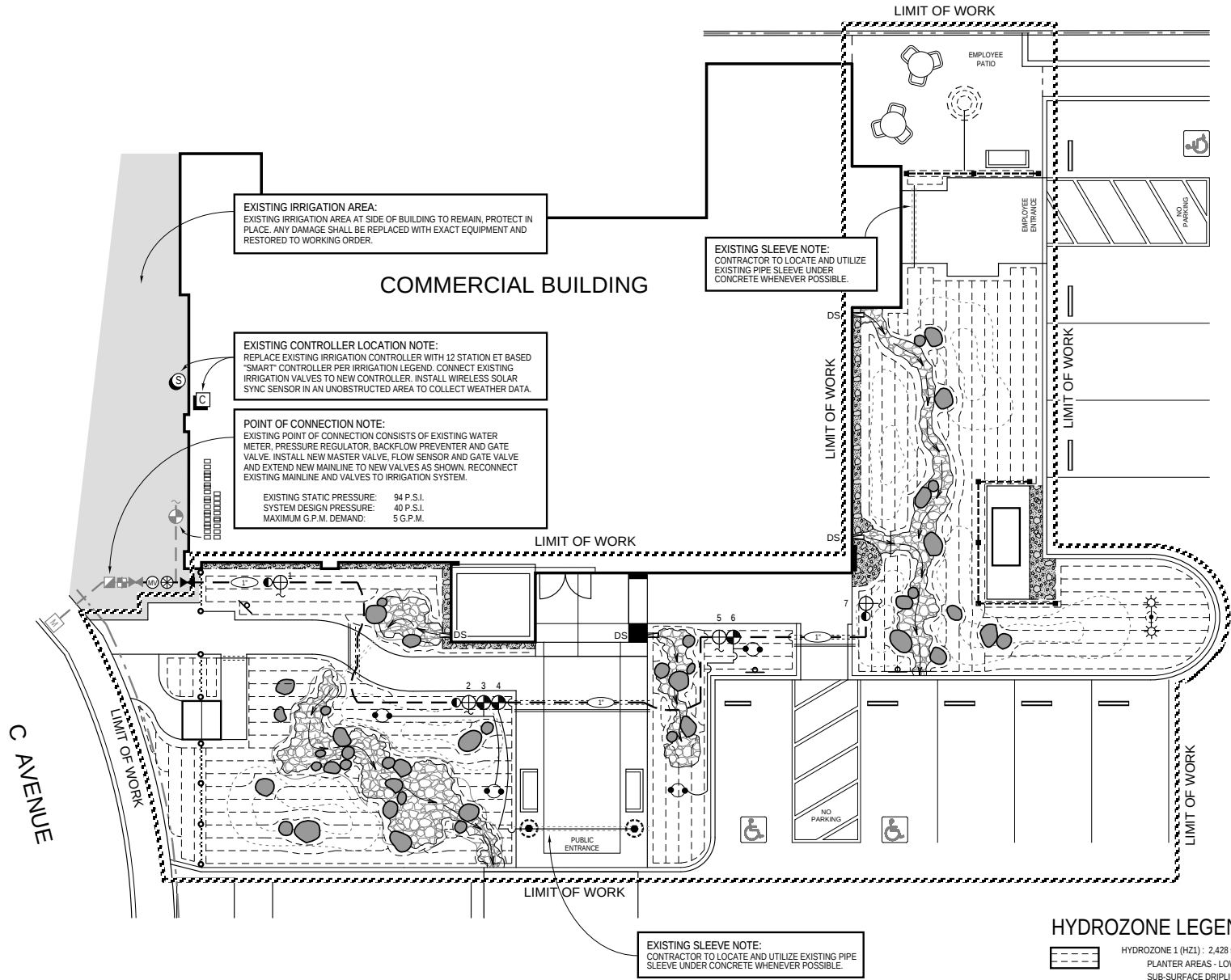
JOB NO: _____

LANDSCAPE IMPROVEMENTS FOR
PROJECT NAME,
ADDRESS, AND
APN NO.

SHEET NAME:
CONSTRUCTION DETAILS

SHEET NO.
L3

3 OF 10



IRRIGATION NOTES

- THIS SYSTEM IS DIAGRAMMATIC. ALL PIPE, VALVES, ETC. SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY AND SHALL BE INSTALLED IN PLANTING AREAS WHEREVER POSSIBLE. WHEN PASSING UNDER HARDSCAPE, ALL PIPE AND WIRING SHALL BE INSTALLED IN THE APPROPRIATE SIZE SLEEVING.
- DO NOT WILLFULLY INSTALL THE SPRINKLER SYSTEM AS INDICATED ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN OBSTRUCTIONS OR GRADE DIFFERENCES EXIST AND SHOULD BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR MUST ASSUME FULL RESPONSIBILITY FOR REVISIONS NECESSARY.
- SYSTEM DESIGN IS BASED ON MINIMUM OPERATING PRESSURE SHOWN AT EACH POINT OF CONNECTION WITH MAXIMUM GPM DEMAND SPECIFIED. IRRIGATION CONTRACTOR SHALL VERIFY ALL PRESSURES ON SITE PRIOR TO CONSTRUCTION TO OWNER'S CONSTRUCTION REPRESENTATIVE.
- IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE HIMSELF WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALLS, CURBS, ETC. HE SHALL COORDINATE ALL HIS WORK WITH THE GENERAL CONTRACTOR AND OTHER SUB-CONTRACTORS FOR LOCATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADS, PAVING AND STRUCTURES.
- MAINLINE FEEDER BETWEEN POINT OF CONNECTION, METER, AND BACKFLOW PREVENTER TO BE OF MATERIAL REQUIRED BY CURRENT WATER DISTRICT.
- FINAL LOCATION OF THE AUTOMATIC CONTROLLER ENCLOSURE AND THE BACKFLOW PREVENTION DEVICE SHALL BE APPROVED BY MVWD REPRESENTATIVE, AND/OR LANDSCAPE ARCHITECT, WHERE APPLICABLE.
- IN ADDITION TO THE SLEEVES SHOWN ON THE PLAN, THE IRRIGATION CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ADDITIONAL SLEEVES OF SUFFICIENT SIZE UNDER ALL PAVED AREAS PRIOR TO PAVING UPON APPROVAL OF THE OWNER'S REPRESENTATIVE, IF REQUIRED TO OPERATE SYSTEMS.
- IRRIGATION CONTRACTOR SHALL FLUSH ALL LINES AND ADJUST ALL HEADS FOR MAXIMUM PERFORMANCE AND TO PREVENT OVERSPRAY ONTO WALKS, STREETS, AND BUILDINGS AS MUCH AS POSSIBLE. THIS SHALL INCLUDE SELECTING THE BEST NOZZLE RADIUS TO FIT UNUSUAL SITE CONDITIONS FOR APPROVAL PURPOSES AT NO EXTRA CHARGE. CALL LANDSCAPE ARCHITECT 48 HOURS IN ADVANCE FOR ANY COVERAGE TESTS.
- QUALITY CONTROL OBSERVATION SEQUENCES ARE FOUND IN THE SPECIFICATIONS.
- CLEAN-UP ON A DAILY BASIS PER OWNER'S REPRESENTATIVE'S APPROVAL.
- CONTRACTOR TO PROVIDE 5 ADDITIONAL CONTROL WIRES TO EACH END OF ALL MAINLINES.
- THE MINIMUM LATERAL PIPE SIZE SHALL BE 3/4" SCHEDULE 40 PVC.

IRRIGATION LEGEND:

SYM.	MANUFACTURER	MODEL NUMBER	DESCRIPTION	RADIUS	G.P.M.	P.S.I.	COMMENTS
	RAINBIRD	RWS-B-C-1402	ROOT WATERING SYSTEM	BUBBLER	0.50	30	5' MINIMUM FROM TREE TRUNK SEE DETAIL F, SHEET L-5
	NETAFIM	TLCV6-18	CV TECHLINE DRIPLINE	DRIPLINE	0.01	30	INSTALL LINES 18" APART SEE DETAIL K, SHEET L-5
	RAINBIRD	XFD-06-12	ON-SURFACE DRIPLINE	DRIPLINE	0.01	30	COIL IN POT SEE DETAIL G, SHEET L-5
	FEBCO	825-YA-BV	EXISTING IRRIGATION WATER METER, POTABLE WATER SOURCE				
	WILKENS	500 SERIES	EXISTING 1" REDUCED PRESSURE BACKFLOW ASSEMBLY WITH GC-1 LIFT-OFF GUARD SHACK BACKFLOW ENCLOSURE				
	NIBCO	T-580	EXISTING 1" PRESSURE REGULATOR				
	NIBCO	T-580	EXISTING LINE-SIZE BALL VALVE IN VALVE BOX				
	HUNTER	IC-600-M ICM-600	LINE-SIZE BALL VALVE IN VALVE BOX				
	HUNTER	WSS-SEN	12 STATION IRRIGATION CONTROLLER				
	RAINBIRD	100-PESB	WIRELESS SOLAR SYNC AND RECEIVER				
	RAINBIRD	XCZ-PRB-100-COM	1" ELECTRIC REMOTE CONTROL VALVE IN VALVE BOX, SIZE AS SHOWN				
	ANTELCO	GREENBACK	1" PESB VALVE DRIP KIT WITH BASKET FILTER, 30 PSI PRESSURE REGULATOR AND BALL VALVE IN VALVE BOX. SEE DETAIL C, SHEET L-5				
	RAINBIRD	33DRC	1/2" MANUAL FLUSH VALVE AT EACH PLANTER IN 6" VALVE BOX, SEE DETAIL E, SHEET L-5				
	RAINBIRD	100-EFB-CP	3/4" QUICK COUPLER VALVE IN 10" ROUND VALVE BOX				
	HUNTER	HFS-FCT-100	1" MASTER VALVE IN VALVE BOX				
	APPROVED	SCH. 40 PVC	FLOW-SYNC, FLOW SENSOR AND RECEPTACLE TEE				
	APPROVED	SCH. 40 PVC	1" MAINLINE, SIZE AS SHOWN, MINIMUM COVER 12"				
	APPROVED	SCH. 40 PVC	1 1/2" EXISTING MAINLINE TO REMAIN, PROTECT IN PLACE				
	APPROVED	SCH. 40 PVC	3/4" LATERAL LINE, MINIMUM COVER 12"				
	EXISTING		PIPE SLEEVE, SIZED 2X LARGER THAN PIPE TO BE INSERTED UNLESS OTHERWISE NOTED				
	APPROVED	SCH. 40 PVC	EXISTING PIPE SLEEVE TO BE LOCATED AND UTILIZED AS NOTED ON PLAN				
	APPROVED	SCH. 40 PVC	WIRE SLEEVE, SIZE AS REQUIRED UNLESS OTHERWISE NOTED				

HYDROZONE LEGEND:

	HYDROZONE 1 (HZ1): 2,428 s.f. PLANTER AREAS - LOW WATER USE SHRUBS WITH SUB-SURFACE DRIPLINE IRRIGATION
	HYDROZONE 2 (HZ2): 125 s.f. TREES - LOW WATER USE, RWS BUBBLER IRRIGATION
	HYDROZONE 3 (HZ3): 6 s.f. POTS - MODERATE WATER USE, WITH ON-SURFACE DRIPLINE COILED IN POTS

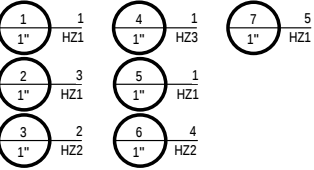
PLAN CROSS REFERENCES

FOR NOTES AND LEGENDS, SEE THIS SHEET
FOR IRRIGATION DETAILS, SEE SHEET L-5
FOR IRRIGATION SPECIFICATIONS, SEE SHEET L-9
FOR CORRESPONDING CONSTRUCTION PLAN SEE SHEET L-2
FOR CORRESPONDING PLANTING PLAN SEE SHEET L-6

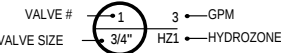
ALL IMPROVEMENTS SHALL BE MAINTAINED BY THE PROPERTY OWNER.

THIS SYSTEM IS DESIGNED TO USE WATER FROM A POTABLE WATER SOURCE.

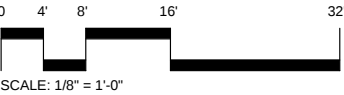
CONTROL VALVES



VALVE SIZING KEY



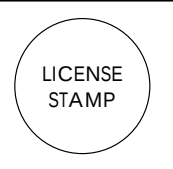
PIPE SIZING CHART:
A 3/4" 0-8 GPM
B 1" 8-12 GPM
C 1 1/4" 13-22 GPM
D 1 1/2" 23-30 GPM
E 2" 31-50 GPM



Know what's below.
Call before you dig.

APPROVED BY: _____

Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION



LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

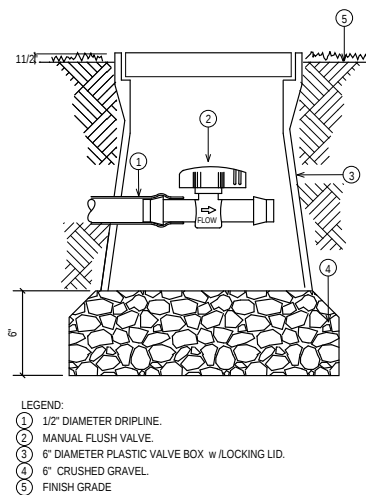
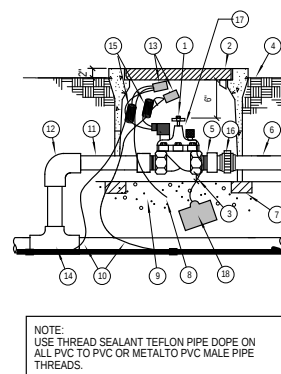
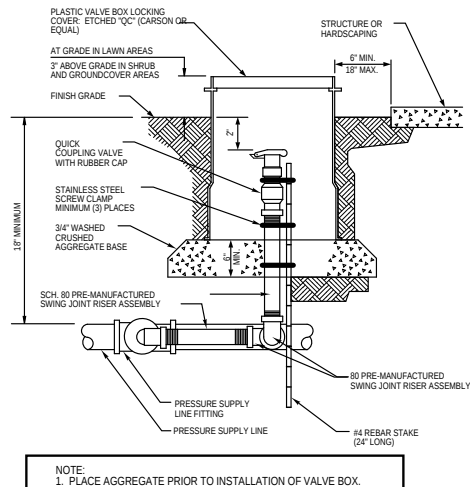
OWNER LOGO
AND
COMPANY
INFORMATION

REV.	DATE	BY	DESCRIPTION

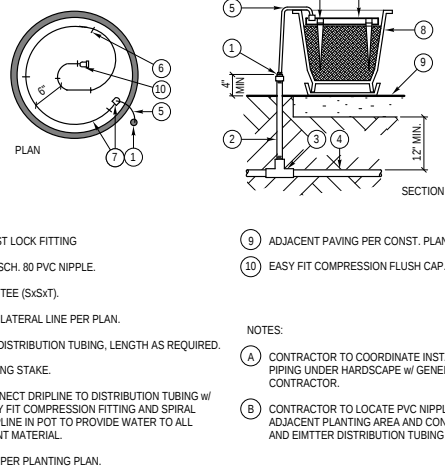
DRAWN: _____
DATE: _____
REVISED: _____
REV. DATE: _____
CHECKED: _____
APPROVED: _____
JOB NO: _____

LANDSCAPE IMPROVEMENTS FOR
PROJECT NAME,
ADDRESS, AND
APN NO.
SHEET NAME: IRRIGATION PLAN

SHEET NO.
L4
4 OF 10



SCALE: N.T.S.



SCALE: N.T.S.

Existing Mainline: _____ Size: 1 1/2"
 Static Pressure: _____ High: 96 _____ Low: 94 _____
 Source of Information: _____ Contact _____
 Phone Number: _____ XXX-XXX-XXXX _____
 Date of Information: _____ XXX/XXX/XX _____

H.G.L. Mean Elevation: _____ (Required if static pressure unknown)
 Water Meter Elevation: _____
 Elevation Difference: _____ x 433 = _____

Remote Control Valve Number: _____ Size: 1"
 Maximum Demand: 5 _____ GPM
 Elevation of Highest Head: _____

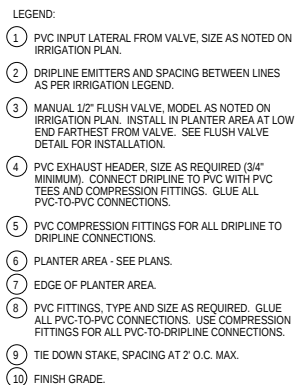
Qty.	Size	Item	PSI Loss
	1"	Water Meter	0.30
15'	1"	Mainline	0.10
	1"	Backflow Assembly	11.00
	1"	Pressure Regulator	5.00
2	1"	Gate Valve (s)	0.20
105'	1 1/2"	Main Line	0.70
	1"	Automatic Valve	1.70
20'	3/4"	Lateral Line	0.50
		Subtotal	19.50
		Fittings Loss (10%)	2.00
		Elevation Change (+ -)	
Total Static Losses:			21.50
Pressure to Operate Head:			30.00
Total Pressure Required:			51.50
Lowest Static Pressure Available:			94.00
Pre-Set Regulated Pressure (if required):			67.00
Pressure from Pump (if required):			
Residual Water Pressure:			15.50

SCALE: N.T.S.

[illegible]

SCALE: N.T.S.

SCALE: N.T.S.



SCALE: N.T.S.

SCALE: N.T.S.

CONTROLLER SCHEDULING CHART - PLANT ESTABLISHMENT PERIOD																														
					AVERAGE DAILY RUN TIMES (MINUTES)																									
Valve	Equipment	I.E.	Plant Material	K.I.	P.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Valve	Total Annual Minutes	Valve G.P.M.	Total Annual Gallons	Valve Area Sq.Ft.								
1	Dripline	0.81	Low Shrub	0.20	0.45	6	7	10	12	14	15	17	16	13	10	7	6	1	3,703	1	3,703	213								
2	Dripline	0.81	Low Shrub	0.20	0.36	7	8	12	15	17	19	21	20	16	12	8	8	2	4,613	3	13,838	796								
3	Bubblers	0.75	Low Trees	0.20	3.85	1	1	1	2	2	2	2	2	2	1	1	1	3	469	2	939	50								
4	Bubblers	0.81	Moderate Pots	0.40	10.05	0	1	1	1	1	1	1	1	1	1	1	0	0	4	299	1	299	6							
5	Dripline	0.81	Low Shrub	0.20	0.36	7	8	12	15	17	19	21	20	16	12	8	8	5	4,607	1	4,607	265								
6	Bubblers	0.75	Low Trees	0.20	2.57	1	1	2	2	3	3	3	3	2	2	1	1	6	704	2	1,408	75								
7	Dripline	0.81	Low Shrub	0.20	0.42	6	7	11	13	15	17	18	17	14	10	7	7	7	4,012	5	20,061	1,154								
Monthly Evapotranspiration Rate																		2.5	2.9	4.2	5.3	5.9	6.6	7.2	6.9	5.4	4.1	2.9	2.6	
Total																		7	18,116	15	44,764	2,559								

RUN TIME FORMULA = 2(60°F-T)(P.R.÷28 DAYS)×K.I.(I.E.)

NOTE:
1. The plant establishment water schedules are shown for guideline use only and are to be modified according to plant needs and as the weather changes.
2. It is based on the monthly evapotranspiration rates for City of Riverside, CA.

56.4 Annual Evapotranspiration Rate

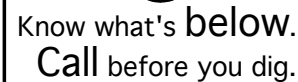
CONTROLLER SCHEDULING CHART - ESTABLISHED LANDSCAPE																						
					AVERAGE DAILY RUN TIMES (MINUTES)																	
Valve	Equipment	I.E.	Plant Material	K.I.	P.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Valve	Total Annual Minutes	Valve G.P.M.	Total Annual Gallons	Valve Area Sq.Ft.
1	DripLine	0.81	Low Shrub	0.20	0.45	3	3	5	6	7	8	8	8	6	5	3	3	1	1,851	1	1,851	213
2	DripLine	0.81	Low Shrub	0.20	0.36	4	4	6	8	9	10	10	10	8	6	4	4	2	2,306	3	6,919	796
3	Bubblers	0.81	Low Trees	0.20	3.85	0	0	1	1	1	1	1	1	1	1	0	0	3	217	2	435	50
4	DripLine	0.40	Moderate Pots	0.40	16.05	0	0	0	0	0	0	0	0	0	0	0	0	4	104	1	104	6
5	DripLine	0.81	Low Shrub	0.20	0.36	4	4	6	8	9	10	10	10	8	6	4	4	5	2,303	1	2,303	265
6	Bubblers	0.81	Low Trees	0.20	2.57	1	1	1	1	1	1	1	1	1	1	1	1	6	326	2	652	75
7	DripLine	0.81	Low Shrub	0.20	0.42	3	4	5	7	7	8	9	9	7	5	4	3	7	2,006	5	10,031	1,154
Monthly Evapotranspiration Rate						2.5	2.9	4.2	5.3	5.9	6.6	7.2	6.9	5.4	4.1	2.9	2.3	Totals	9,115	15	22,295	2,559
RUN TIME FORMULA = (60°E.T.)/(P.R.28 DAYS)*K.I.(L.I.E.)																						
NOTE: 1. The water schedules are shown for guideline use only and are to be modified accordingly as the weather changes with the assistance of a programmed smart controller. 2. It is based on the monthly evapotranspiration rate for City of Riverside, CA.																						
56.4 Annual Evapotranspiration Rate																						

SCALE: N.T.S.

SCALE: N.T.S.

J CONTROL

SCALE: N.T.S.



APPROVED BY: _____

Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND
ELEVATION OF ALL EXISTING UNDERGROUND
UTILITIES PRIOR TO CONSTRUCTION

LICENSE
STAMP

LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

OWNER LOGO
AND
COMPANY
INFORMATION

[illegible]

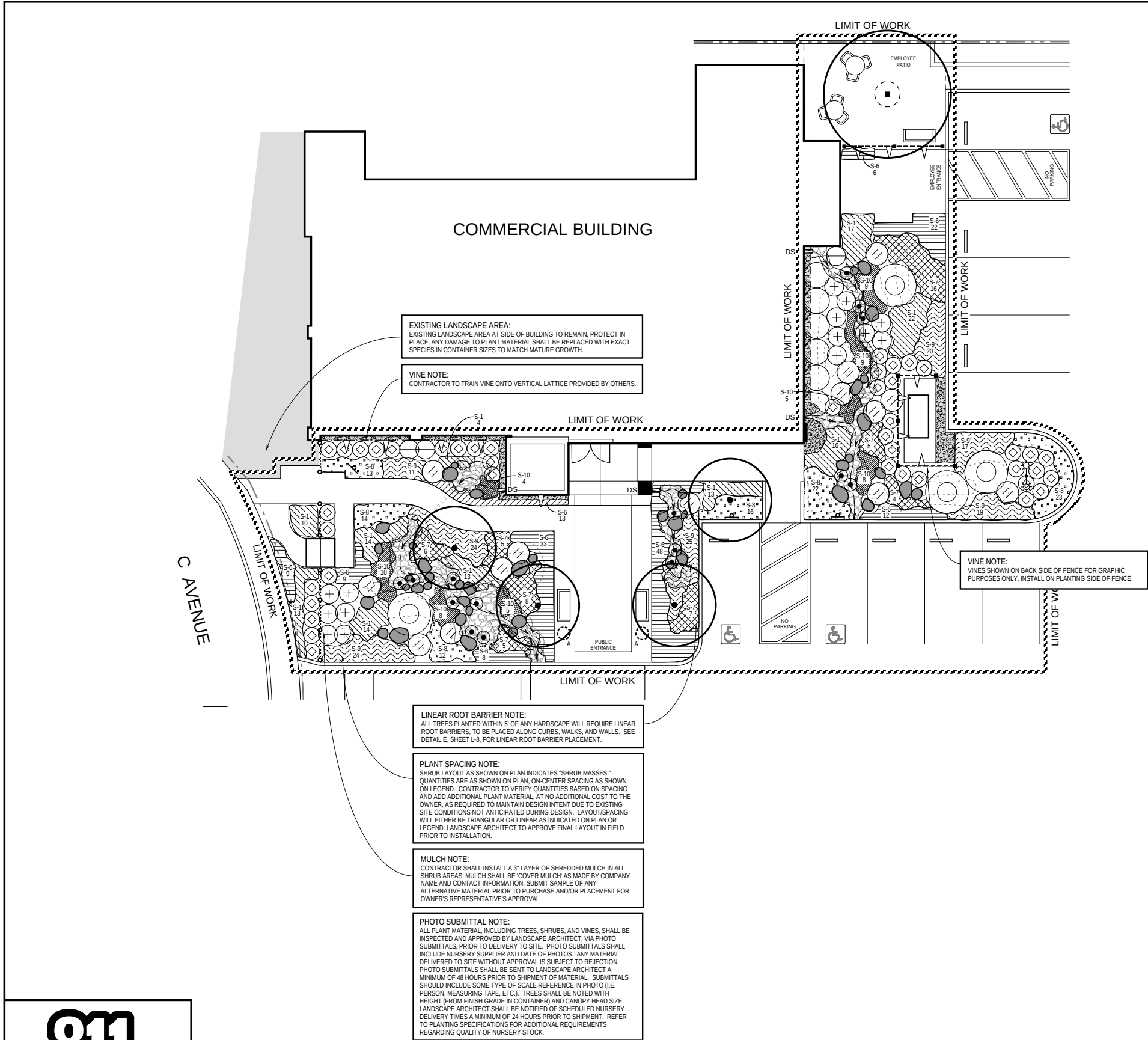
DRAWN:
DATE:
REVISED:
REV. DATE:
CHECKED:
APPROVED:
JOB NO:

LANDSCAPE IMPROVEMENTS FOR PROJECT NAME, ADDRESS, AND APN NO.	
SHEET NAME:	IRRIGATION DETAILS

SHEET NO.

L5

5 OF 10



PLANTING NOTES

- SHRUB LAYOUT AS SHOWN ON PLAN INDICATES "SHRUB MASSES." QUANTITIES ARE AS SHOWN ON PLAN, ON-CENTER SPACING AS SHOWN ON LEGEND. CONTRACTOR TO VERIFY QUANTITIES BASED ON SPACING AND ADD ADDITIONAL PLANT MATERIAL (AT NO ADDITIONAL COST TO THE OWNER) REQUIRED TO MAINTAIN DESIGN INTENT DUE TO EXISTING SITE CONDITIONS NOT ANTICIPATED DURING DESIGN. LAYOUT/SPACING WILL EITHER BE TRIANGULAR OR LINEAR AS SHOWN ON PLAN OR LEGEND. LANDSCAPE ARCHITECT TO APPROVE FINAL LAYOUT IN FIELD PRIOR TO INSTALLATION.
- CONTRACTORS SHALL NOTIFY THE LANDSCAPE ARCHITECT OF SITE CONDITIONS WHICH PREVENT INSTALLATION PER PLANS AND SPECIFICATIONS.
- CONTRACTOR SHALL BE LIABLE FOR REMOVING AND RE-INSTALLING IRRIGATION EQUIPMENT, AND REPLANTING AREAS WHICH ARE NOT INSTALLED PER PLAN AND SPECIFICATIONS.
- REFER TO PLANTING SPECIFICATIONS FOR INSPECTION/CERTIFICATION SCHEDULE.
- IRRIGATION SYSTEM SHALL BE INSTALLED AND OPERATIONAL PRIOR TO INSTALLATION OF PLANT MATERIALS.
- TREES AND SHRUBS SHALL BE PLANTED AFTER CONCRETE PLACEMENT, BUT NOT BEFORE IRRIGATION COVERAGE TEST NO. 1 HAS BEEN APPROVED. (SEE SPECIFICATIONS).
- PLACE TREES BETWEEN IRRIGATION HEADS WHEREVER POSSIBLE.
- SHREDDED MULCH INSTALLATION: INSTALL SHREDDED MULCH IN ALL SHRUB AND GROUNDCOVER AREAS PER SPECIFICATIONS UNLESS OTHERWISE INDICATED ON PLANS
- CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS AND/OR REPLACEMENT OF ANY DAMAGED LANDSCAPE AREAS BEYOND THE LIMIT OF WORK, INCLUDING REPAIRING ANY IRRIGATION LINES/SPRINKLER HEADS, THAT IS A DIRECT RESULT OF THE LANDSCAPE CONSTRUCTION AND/OR HIS SUB-CONTRACTOR. REPLACEMENT ITEMS SHALL BE EXACT DUPLICATION OF ORIGINAL WORK OR PLANTS, UNLESS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT.
- WHEREVER GROUNDCOVER AREAS ARE ADJACENT TO TURF INSTALL CONCRETE MOWSTRIP OR HEADERBOARD AS INDICATED ON DRAWINGS.
- CLEAN-UP SHALL TAKE PLACE ON A DAILY BASIS UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL GRADES AND FLOW LINES AS SHOWN ON THE GRADING PLAN. WHERE SOD IS TO BE INSTALLED ON A SWALE, THE FINISH GRADE MUST BE ADJUSTED SO THE SOD DOES NOT RESTRICT THE FLOW.
- SOIL AMENDMENTS SHALL BE APPLIED PER THE SOIL REPORT RECOMMENDATIONS.

PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	COMMENTS	QTY.	WATER USE
TREES							
T-1	Cercis occidentalis	Western Redbud	24" Box	Per Plan	Low branching	4	L
T-2	Chitalpa tashkentensis 'Pink Dawn'	Pink Dawn Chitalpa	36" Box	Per Plan		1	L
SHRUBS							
S-1	Dianella revoluta 'Little Rev'	Little Rev Flax Lily	1 Gal.	18" o.c.		136	L
S-2	Arctostaphylos 'Howard McMinn'	Howard McMinn Manzanita	5 Gal.	Per Plan		4	L
S-3	Pennisetum s. 'Rubrum'	Purple Fountain Grass	1 Gal.	42" o.c.		14	L
S-4	Cistus x purpureus	Rockrose	5 Gal.	Per Plan		14	L
S-5	Rosmarinus 'Tuscan Blue'	Tuscan Blue Rosemary	15 Gal.	Per Plan		3	L
S-6	Achillea 'Moonshine'	Yarrow	1 Gal.	18" o.c.		160	L
S-7	Penstemon heterophyllus	Foothill Penstemon	1 Gal.	24" o.c.		56	L
S-8	Teucrium cossonii	Germander	1 Gal.	18" o.c.		100	L
S-9	Senecio serpens	Blue Chalksticks	1 Gal.	18" o.c.		140	L
S-10	Zauschneria c. 'Waynes Select'	California Fuschia	1 Gal.	18" o.c.		58	L
S-11	Juncus patens	Common Rush	1 Gal.	Per Plan		15	L
S-12	Anigozanthus 'Big Red'	Big Red Kangaroo Paw	5 Gal.	30" o.c.		42	L
S-13	Rhamnus californica 'Eve Case'	Coffeeberry	5 Gal.	Per Plan		6	L
VINES							
V-1	Macfadyena unguis-cati	Cat's Claw	5 Gal.	Per Plan		12	L

POT SCHEDULE

Contractor to provide and plant ceramic pots indicated on plan. All pots are to be pre-drilled from factory, available from Company and contact information. Contractor to allow sufficient lead time to order and have pots/saucers delivered to jobsite prior to completion of landscape construction.

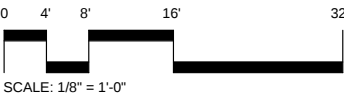
SYM.	QTY	DESCRIPTION	MODEL#	COLOR	FINISH	PLANT WITH:
A	(2)	24" ROUND POT w/ SAUCER	24HW w/18SAUCER	Charcoal Gray	Matte	(1) 5 gal. Cordyline 'Festival Burgundy' (4) 1 gal. Sedum 'r. 'Angelina'

NOTE:
Contractor to use sealant on all pot interiors. Landscape Architect to specify plant species and location at time of installation based on pot location and exposure. Contact Landscape Architect at least 10 days prior to time of installation to specify plant species.

Contractor to extend saucer 1/2" from adjacent edge of concrete and cut 1/2" wide notch edge of saucer for drain flow. Coordinate with owner's representative prior to application.

PLAN CROSS REFERENCES

FOR NOTES AND LEGENDS, SEE THIS SHEET
FOR PLANTING DETAILS, SEE SHEET L-7
FOR PLANTING SPECIFICATIONS, SEE SHEET L-9
FOR CORRESPONDING CONSTRUCTION PLAN SEE SHEET L-2
FOR CORRESPONDING IRRIGATION PLAN SEE SHEET L-4



811

Know what's below.
Call before you dig.

APPROVED BY: _____	LICENSE STAMP	LICENSED PROFESSIONAL LOGO AND COMPANY INFORMATION	OWNER LOGO AND COMPANY INFORMATION	REV.	DATE	BY	DESCRIPTION	DRAWN:	LANDSCAPE IMPROVEMENTS FOR PROJECT NAME, ADDRESS, AND APN NO.	SHEET NO. L6 6 OF 10
Underground Utility Note: CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION										
							REVISED:			
							REV. DATE:			
							CHECKED:			
							APPROVED:	SHEET NAME:	PLANTING PLAN	
							JOB NO:			

SHEET NO.

L7

7 OF 10

CONCRETE

PART 1 - SCOPE OF WORK

1.01 WORK INCLUDED

Work includes, but is not limited to the following: Furnish all labor and materials, assemblies, tools, equipment, facilities, transportation, and services necessary for installing all concrete work complete as indicated on the drawings and specifications including, but not limited to:

- A. Furnish and set all reinforcing steel, bolts and anchors.
- B. Install all items required by other trades which are to be cast into concrete.
- C. Concrete mow curbs, banding, poured in place walls, other flatwork, footings, piers and slabs for: walls, fencing, benches, controllers, decks, etc., where applicable.

PART 2 - GENERAL

All requirements of subsection 3.31, standard specifications for Public Works Construction, shall apply except as specified herein.

2.1 INSPECTION OF SITE

Examine related work and surfaces before starting work in this section. Report to the Landscape Architect in writing, site conditions which will prevent the proper provision of this work. Expedite the work in this section without resorting to unstable conditions to the Landscape Architect constitutes acceptance of site conditions by the Contractor. Any required removal, repair, or replacement of this work caused by unstable conditions shall be done at no additional cost to Owner.

2.2 PROTECTION OF EXISTING CONDITIONS

Contractor shall acquaint himself with all site conditions. He shall take necessary precautions to protect existing site conditions. Should damage be incurred, the Contractor shall repair damage to its original condition or furnish and install equal replacement at his own expense, to the satisfaction of the Owner.

2.4 COORDINATION

- A. Cooperation On-Site: Coordinate and cooperate with other contractors to enable the work to proceed as rapidly and as efficiently as possible.
- B. Work With Other Trades: Coordinate with General Contractor items of other trades to be furnished and set in place. Such portions of their work as all or in part embedded, built-in, attached to, or supported by the work shall be executed by them in ample time that progress of the work is not delayed. Any cutting or patching made necessary to comply with this injunction shall be done at the Contractor's expense.

2.5 APPROVAL

Whenever the terms "approve," "approved," or "approval" are used in the Specifications, they mean approval of the Landscape Architect, the Owner's Representative or their field representatives, or in writing.

2.6 SUBMITTALS

At least 10 days after award of contract, Contractor shall submit for approval samples and/or manufacturers' latest catalog cuts and specifications of the following prior to beginning work. Approved samples shall be standards for completing work.

- A. One 2-ft. x 2-ft. x 2-in. sample for each type of concrete finish and color at the job site.
- B. Color samples for expansion joint compounds.
- C. All submittal data shall be forwarded in a single package to the Landscape Architect within 15 days after award of the General Contract unless otherwise approved by the Landscape Architect and/or Owner's Construction Representative.

2.7 SUBSTITUTIONS

- A. Standards: Specific reference to manufacturers' names and products specified in this section are used as standards; this includes no right to substitute other material or methods without written approval of the Landscape Architect.
- B. Approval: Installation of any approved substitutions is Contractor's responsibility. Any changes required for installation of any approved substitution must be made to the satisfaction of Landscape Architect and without additional cost to Owner. Approval by Landscape Architect of substituted materials and/or dimensional drawings do not waive these requirements.

PART 3 - MATERIALS

Materials shall be of first quality and of domestic manufacture as noted below:

- A. Portland cement shall conform to ASTM-C150, Type I or Type II.
- B. Concrete aggregate shall conform to ASTM-C33.
- C. Water shall be clean, free from strong acid, alkali, oil or organic matter.
- D. Admixtures for all formed concrete shall be Sika Chemical Corp.'s "Sistiment", or approved equal, applied in strict accordance with manufacturer's directions.
- E. Reinforcement: reinforcing steel ASTM-A15 and ASTM-A305 Wire fabric: ASTM-A185
- F. Forms:
 - 1. Lumber shall be "construction grade" Douglas fir.
 - 2. Plywood for forming of concrete which is exposed shall be Plyform. All plywood used for forming shall be at least 5/8 inch thick and edge sealed.
 - 3. Expansion joint filler shall conform with ASTM-D1751 (premoiled).

PART 4 - EXECUTION

4.01 CONCRETE DESIGN MIX

- A. Contractor assumes responsibility for the design mix and guarantees the specified ultimate strength as indicated or specified herein.
- B. Concrete, minimum 28-day ultimate strength shall be 2000 PSI.
- C. Ready-mixed concrete shall conform to ASTM-C94.

4.02 CONCRETE PROPORTIONS & CONSISTENCY

- A. The proportions of aggregate to cement shall provide a dense mixture which will readily work into all corners of the forms and around all reinforcements without any segregation of the materials, cause excess free water to collect on the surface or cause excessive bleeding of the forms.
- B. The recommended practices of the American Concrete Institute shall be followed in all applicable procedures. The maximum slump shall not exceed (4") four inches for footings, slabs on grade, and mass concrete 6 inches for foundation walls.

4.03 CONCRETE APPROVAL

The concrete quality, proportions, consistency, etc., is subject to the approval of Owner, and no changes shall be made without prior written approval.

4.04 FORMWORK

- A. Forms for concrete work shall be either metal or wood. Forms that are warped or that do not have a smooth straight upper edge shall not be used. Forms shall be set with the lower edge of the board true to line and grade and shall be staked evenly in place with stakes set not more than four feet (4') apart so as to remain immovable throughout the construction. All forms shall be approved by Owner within a tolerance of one percent (1%). All materials shall be accurately and separately weighed and mixing shall continue until the distribution of material is uniform and the mass of concrete is homogeneous.
- B. Two and one-half (2 1/2) gallons of water per cubic yard, shall be withheld from the mix at the plant, and all or a portion may be added to the mix at the job site as directed by the inspector. The concrete shall be mixed at least 5 minutes after such water is added and not less than 3 minutes of this time shall be immediately prior to the discharge of the batch. Total mixing time after adding original water shall be at least 15 minutes.
- C. Concrete which is not placed within 90 minutes after the introduction of cement and water, and concrete which has stood for 30 minutes after leaving the mixer, shall not be used.

4.05 REBAR

Reinforcing bar shall be spliced with 40 bar diameters minimum overlap.

4.06 CONVEYING AND PLACING

- A. Before pouring, all forms shall be thoroughly cleaned and made tight. The bottom of trenches shall be wet (even before previous footings) so that they will not be muddy at the time of pouring. Concrete shall not be placed until reinforcements, rough hardware, and forms are approved by Owner.
- B. Before depositing new concrete against old concrete, all surfaces shall be removed, and the surfaces roughened to expose the embedded aggregate. The surfaces shall then be covered with cement grout, using the specified mix with 1/2 of the coarse aggregate omitted, 1-1/2 inches thick.
- C. Conveying and placing of concrete shall be done so as to prevent separation of ingredients, and in no case shall the free fall exceed 6 feet. Tremies shall be used as required. Surfaces of concrete shall be kept reasonably level, with a minimum amount of concrete being allowed to flow after being placed. Placing shall be performed as a continuous operation until each section is completed.
- D. Concrete shall be loaded and vibrated with mechanical vibrators to a maximum subgrade, without separation of ingredients. The moving of concrete by vibration will not be permitted.

4.07 COLORED CONCRETE

Integral color and Dust-On color hardener shall be as specified on plans and details.

4.08 GROUTING

- A. Grout shall be composed of one part Portland Cement and two parts of fine aggregate by volume. Materials shall be mixed dry and water added just sufficient to make the mix flow under its own weight.
- B. For dry lump cement grout, a minimum of water shall be added to the mix so that when wet sample is squeezed hard in the hand, surface moisture, but no free water, shall appear on the sample. Do not mix more than can be used in 10 minutes.

4.09 CURING AND PROTECTION

- A. All exposed surfaces of concrete shall be protected from damage due to temperature, elements, and construction operations.
- B. Curing shall be as follows:
 - 1. All exposed surfaces of concrete shall be protected from premature drying and fresh placed concrete shall be protected against wash by rain. All concrete shall be kept wet for a period of ten days after placing. In order that curing water may reach both surfaces of walls, the forms shall be loosened and water shall be poured over the tops of the walls and allowed to run down between the concrete and the forms.
 - 2. All liquid curing compounds shall be used in accordance with the manufacturer's recommendations and shall not be used on surfaces receiving concrete hardener.

4.10 DEFECTIVE CONCRETE

- A. Concrete which is not in accordance with these specifications, out of line, level, or slump; showing structural cracks, rock sockets, voids, spalls, honeycombing, exposed reinforcing or other damaged surfaces shall be considered as defective.
- B. All lines and irregularities shall be removed from exposed concrete surfaces while the concrete is still green. Where patching is required, all loose and uniform concrete shall be removed prior to patching.

4.11 CONCRETE FINISHES

Flat surfaces shall be screeded to the required levels and slopes and then any excess water or balance removed. Concrete shall be finished with a steel trowel and then floated to a true and level surface within the tolerance of 1/8-inch along a 10-inch straight edge. Contractor shall ensure positive drainage on all flatwork. See Plans for concrete finish in landscape areas.

4.12 EXPANSION JOINTS

Placement of expansion joints shall be as directed and determined by layouts of slab markings noted on drawings. Expansion joint material shall be Poly Flash or as noted on Plans. Expansion joints shall be placed in concrete after it has been finished and sealed with a bead of grey thicked sealant or equal. Silica sand to match concrete color shall then be tamped into thick bed.

4.13 CONTROL JOINTS

Control joints and other edges shall be formed in fresh concrete using a clean edging or jointing tool to provide a smooth uniform finish.

4.14 PROTECTION

All finished concrete work shall be barricaded to pedestrian traffic for three (3) days. Barricades shall be placed immediately after concrete finishing. Contractor shall furnish, place and remove all of his own barricades. Contractor shall be responsible for any damage to new construction and replacement of repair of the work shall be made without added cost to Owner.

4.15 PATCHING

If patching is necessary and permissible, a bonding agent such as Weld-Crete, or equal, shall be used.

4.16 CONCRETE CURBS

Construct concrete curbs at locations shown on Plans as detailed, true to line and grade, as approved by the local County or City. Use natural grey Portland cement concrete, 2000 PSI compressive strength. Locate expansion joints as detailed or shown, and as directed, at intervals not to exceed fifteen feet (15'). Finish with steel trowel, then brush with bristle brush parallel to face or edge.

4.17 CLEAN-UP

Upon completion of all concrete work and before final acceptance, Contractor shall remove all tools, surplus materials, apparatus, debris, etc., from the site and the site shall be left in a clean, neat condition acceptable to Owner.

PART 5 - WARRANTIES

In addition to manufacturers' warranties or warranties, all work shall be warranted for one year from the date of final acceptance against all defects in materials and workmanship by contractor. Warranty shall also cover repair of damage to any part of the premises resulting from defects in materials and workmanship to the satisfaction of the Owner.

END OF SECTION

TUBULAR STEEL

PART 1 - SCOPE OF WORK

1.01 WORK INCLUDED

- A. Furnish and install tubular steel per plans, details and specifications.

1.02 RELATED WORK IN OTHER SECTIONS

The following items of associated work are included in other sections of these Specifications:

- A. Painting

PART 2 - GENERAL

2.01 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Perform shop welding on the premises of a fabricator licensed by the City Building and Safety Department.
 - 2. Perform welding by welders approved and certified in accordance with requirements of AWS.
 - B. Reference Standards:
 - 1. "AISC Steel Construction Manual".
 - 2. "Code for Arc and Gas Welding in Building Construction". AWS D1.0 of the American Welding Society.
 - 3. "Metal Finished Manual", of the National Association of Architectural Metal Manufacturers (NAAMM).
- 2.02 SUBMITTALS
- A. Submit complete shop drawings to the Landscape Architect and/or Owner's Representative for review in advance of fabrication. Show the following on the shop drawings:
 - 1. Show dimensions, sizes, thicknesses, gauges, finishes, joining, attachments and relationship to adjacent work.
 - 2. Where welded connections, concrete inserts, and other items are required to receive other work, show exact locations required.
 - 3. For standard manufactured items, submit work sheets showing illustrates cuts of items to be furnished, scale, details and dimensions.
- 2.03 COORDINATION WITH OTHER WORK

- A. Examine drawings and specifications, and include all miscellaneous metal work which is not distinctly specified in other sections.
- B. Provide all connections, anchors, bolts, welding, cutting, punching, drilling, tapping or other connecting required to fit miscellaneous metal with other work.
- C. Provide items to be installed by other trades well in advance, to permit proper sequencing and scheduling of other work.

PART 3 - MATERIALS

Materials shall be of first quality and of domestic manufacture as noted below:

- A. Rolled steel shapes and steel plates: ASTM A36.
- B. Steel tubing: ASTM A500 Grade A, or ASTM A501 seamless - G.A. per details.
- C. Steel pipe: ASTM A53, Type E or S, Grade A or A120, galvanized 6" diameter.
- D. Steel bolts: ASTM A307, Grade A.
- E. Welding rods: Conform to AWS requirements for intended use.
- F. Concrete inserts: As indicated on the plans.
- G. Shop prime-coat paint: Conform to either FS TT-P-86 Type II for red lead/alkyd type paint or to FS TT-P-45 for zinc chromate type paint (2 applications - shop & site).
- H. Touch-up for galvanized surfaces: Al State #221 Galvanizing Powder (20% lin. 30% zinc, 40% lead and flux) as manufactured by Al State Welding Alloys Co., or Speed Galvanized by W.D.L. Co. or equal.
- I. Non-shrink grout: Mini Wax Construction Products Division Por-Rock, or approved equal.
- J. Metal enamel: FS TT-P-37C - (2 coats).

PART 4 - EXECUTION

4.01 FABRICATION

- A. Conform to the requirements of the referenced standards.
 - 1. For manual welding, use low hydrogen type E7015 and E7016 electrodes.
 - 2. Weld crevass shall be determined from MIL Reports showing the chemical composition of the reinforcement.
- B. Show remove all ferrous items to 1 mill dry coat thickness after fabrication, deburr and remove smooth welds and rough spots. Touch-up after installation. Leave in proper condition to receive finish painting.
 - 1. Do not paint rebar and steel surfaces to be embedded in or bonded to concrete.
- C. Welds shall be ground smoothly, all weld spatter removed and work shall comply with the specifications of the "American Welding Society."
- D. Subcontractor to perform all the above work in accordance with the governing plans and specifications.

4.02 INSTALLATION

- A. Miscellaneous metalwork shall be free from defects which would impair strength, durability and appearance.
- B. Erect plumb, straight, true and accurately fit in place. Brace, reinforce, and anchor in place. Grind all field welds.
- C. Provide non-shrink grouting of all frames, plates, sills, bolts and other items not designated to be done by others.
- D. Conceal all connections in the finished work, where possible. Exposed screw connections shall be Allenhead screws matching the material they fasten.

- E. Set base plate for support posts, true and plumb in concrete footing per details.
- F. Protect all dissimilar metals from galvanic corrosion by pressure tapes, coatings, or isolators.
- G. After erection, clean off all rust, scale and oil. Clean field welds, bolts, and abraded areas. Touch-up all areas with the same material as used for the shop coat, leaving all surfaces ready to receive final coats. Apply second coat of primer on site.
- H. Apply new primer coat and two finish coats of exterior metal enamel to metal surfaces, color as selected by Owner's Representative.

4.03 REPAIR OF DEFECTS

- A. All defective or damaged work shall be replaced, removed and replaced as directed by the Landscape Architect or Owner's Representative at no cost to the owner.

4.04 CLEAN-UP

- A. Clean-up and remove from the site all unused materials and debris resulting from the performance of this work not less than once a week or the last working day each week. All trash shall be removed completely from the project site.
- B. Touch-up: Contractor shall clean and retouch Contractor's work as necessary, or as required for final approval by the Landscape Architect within 24 hours notice.
- C. Unfinished Surfaces: Contractor shall leave all surfaces not to be painted, plastered, hardware, or slant materials free from any paint, stain, splatters, smears or smudges which are the result of his operation.
- D. Location: Contractor shall not clean equipment and brushes or dispose of thinners, paint or other chemicals in areas to be planted or in the vicinity of existing plants.

PART 5 - WARRANTIES

In addition to manufacturers' warranties or warranties, all work shall be warranted for one year from the date of Final Acceptance against defects in materials and workmanship by Contractor. Warranty shall also cover repair of damage to any part of the premises resulting from defects in materials and workmanship to the satisfaction of the Owner.

END OF SECTION



Know what's below.
Call before you dig.

APPROVED BY: _____

Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND
ELEVATION OF ALL EXISTING UNDERGROUND
UTILITIES PRIOR TO CONSTRUCTION

LICENSE
STAMP

LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

OWNER LOGO
AND
COMPANY
INFORMATION

REV.	DATE	BY	DESCRIPTION	DRAWN:	LANDSCAPE IMPROVEMENTS FOR PROJECT NAME, ADDRESS, AND APN NO.	SHEET NO. L8
				DATE:		
				REVISED:		
				REV. DATE:		
				CHECKED:		
				APPROVED:	SHEET NAME: CONSTRUCTION SPECIFICATIONS	8 OF 10
				JOB NO:		

LANDSCAPE IRRIGATION SYSTEM

PART 1 - GENERAL

1.01 Refer to standard contract documents for non-technical contractual requirements and conditions.

1.02 SCOPE OF WORK:

Furnish labor, materials, equipment, appliances and services necessary for the execution and completion of "Landscape Irrigation" as indicated on the drawings and/or herein specified.

PART 2 - MATERIALS

Materials shall be of first quality and of domestic manufacture unless otherwise noted.

2.01 SUBMISSION FOR APPROVAL:

Furnish the articles, equipment, materials, or processes specified by name on the drawings and in specifications. No substitutions will be allowed without prior written approval of the Owner's Representative.

A. A complete material list shall be submitted to the Owner's Representative prior to performing any work. Catalog data and full descriptive literature must be submitted whenever the use of items different than those specified is requested. Notarized certificates must be submitted by plastic pipe and fitting manufacturer indicating that material complies with specifications, unless material has been previously approved by the Owner's Representative.

B. The material list shall be submitted using the following layout (double space between each item):

Item No.	Description	Manufacturer	Model#
1.	Pressure Supply Lines	Lasco	Schedule 40
2.	Lawn Head	Bucher	4404
3.	Etc.	Etc.	Etc.

C. Equipment or materials installed or furnished without the prior approval of the Owner's Representative may be rejected and such material removed from the site at no expense to the Owner.

D. Approval of any items, alternatives, or substitutes indicates only that product(s) apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.

E. Manufacturer's warranties shall not relieve liability under the guarantee. Such warranties shall only supplement the guarantee. The Owner's Representative may, at his option, require a manufacturer's warranty on any product offered for use.

2.02 GENERAL PIPING

A. Pressure supply line from point of connection through backflow prevention unit shall be per local code. Pressure supply lines downstream of backflow prevention unit shall be per the legend.

B. Non-pressure lines shall be Class 200 PVC pipe.

2.03 PLASTIC PIPE AND FITTINGS

A. All pipe shall be extruded or 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-1789 or D-2241, this compound shall meet the requirements of cell classification 13454B for pipe and 13454B for fittings. This compound must have a 2,000 psi hydrostatic design stress rating.

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

C. Solvent cement joints for plastic pipe and fittings shall be made as prescribed by the manufacturer. The high chemical resistance of the pipe and fitting compounds, specified in the foregoing sections 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 the pipe and the fittings of each size range specified.

D. Each pipe installer equipped to make solvent joints shall receive instructions in the proper assembly of such joints from the representative of either pipe, cement, or fitting manufacturer before starting the job, unless he has been previously instructed on recommended solvent cementing procedures by a competent representative of the manufacturer.

E. All fittings shall be standard weight schedule 40. All at the purchaser's discretion, contract preference may be given those suppliers able to furnish all types of fittings required under this contract from a single manufacturer, in order that responsibility will not be divided in warranty claim situations.

F. All fittings shall be injection molded of an improved PVC fittings compound featuring high tensile strength, high chemical resistance, and high impact strength. In terms of the current ASTM Standard D-1789-69, 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 fits and ends shall be side galled.

G. Apply primer and solvent on all pipe sizes and fittings. Primer solvent on both female and male ends.

H. All threaded nipples shall be standard weight Schedule 80, with molded threads.

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

2.04 PVC CONDUIT/SLEEVING

Pipe that is used for control wires sleeving shall be PVC conduit Schedule 40, Type 1220. All wires under paving shall be installed in PVC conduit, or sleeves as indicated in details and legend.

2.05 RING-TITE PVC PIPE

A. All pipe indicated on the working drawings, shall be Class 160 PSI Johns-Manville PVC pipe with ring-tite joints.

B. All ring-tite joints shall be sealed with rubber rings as provided by the manufacturer.

C. Thrust blocks shall be provided as required for proper anchorage and durability of the ring tie pipe. (Refer to Details)

2.06 BRASS PIPE AND FITTINGS (if required)

A. Brass pipe shall be stamped in 4-inch brass, American National Standard Institute (ANSI) Schedule 40 screwed pipe. Fittings shall be medium brass, screwed 125 pound class.

2.07 BACKFLOW PREVENTION UNIT:

See plan for type, manufacturer, and size.

2.08 QUICK COUPLING VALVES

A. The body of the valve shall be red brass with a wall thickness guaranteeing to withstand normal working pressure of 150 pounds per square inch without leakage. Valve shall have a 3/4-inch female threaded operating at base.

B. Hinge cover shall be red brass with a rubber-like vinyl cover bonded to it in such a manner that it become a permanent-type cover, yellow in color. Hinge shall be locking type.

C. Quick couplers shall be installed as indicated on Plan and Details.

2.09 AUTOMATIC CONTROL VALVES, ELECTRICAL

A. Valve shall be per legend.

B. Valve shall be capable of being operated in the field without electricity at the controller, by a bleeding valve.

C. Valve shall be completely serviceable in the field without removing valve body from the line.

D. Valve shall be installed in a shrub area wherever possible and installed according to construction detail.

2.10 GATE VALVES

Approved gate valves shall be Nibco T-113 or Hammond 606-32 with bronze turning handles. Size and location shall be as indicated on Plan.

2.11 VALVE BOXES

All remote control valves, gate valves, and pressure relief valves shall be installed in suitable valve boxes as shown in detail, complete with locking covers. All shall be Christco, or an approved equal, inset tag.

2.12 AUTOMATIC CONTROLLER

A. The Automatic Sprinkler Controller shall be as noted in the legend.

B. All wiring to and from the controller shall be through color-coded plugs and sockets. The controller shall be locking, weather-proof type, constructed of heavy gauge steel with corrosion resistant enamel finish inside and out.

2.13 ELECTRICAL - HIGH VOLTAGE

A. Power to and connection to the automatic controller shall be provided by the Owner.

B. All electrical equipment outside of buildings shall be Nema 3 type, waterproof for such installation.

C. Sprinkler heads and risers shall be installed according to detail for final approval. Sizing of heads shall not exceed the maximum indicated on the drawings. In no case shall the spacing exceed the maximum recommendation by the manufacturer.

2.14 VALVES

A. Quick coupling valves shall be set approximately 12" from walks, curbs, header boards, or paved areas where designed. Refer to installation detail. Place quick couplers in valve boxes.

B. Remote control valves shall be adjusted in order that a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve location.

2.15 VALVE BOXES

A. Valve boxes shall be set one inch (1") above the designated finish grade in lawn areas and three inches (3") above finish grade in ground cover areas.

B. Valve boxes installed near walks, curbs, header boards, and paving shall not abut those items. Top surfaces shall be flush with, and perpendicular to, items listed above.

C. Valve boxes shall be installed in shrub plantings, not in turf areas whenever possible, unless otherwise approved.

2.14 WIRING, LOW VOLTAGE

A. Connections between the controller and remote control valves shall be made with direct burial AWG-14 type wire, installed in accordance with valve manufacturer's specifications. Wire color: black or color coded for control, white for ground.

B. Sizing of wire shall be according to manufacturer recommendations, in no case less than #14 in size.

2.15 SMALL SHRUBBERY SPRINKLER HEADS

See irrigation plan layout for manufacturer and model numbers.

PART 3 - EXECUTION

3.01. GENERAL

A. Materials shall be of first quality and of domestic manufacture unless otherwise noted.

B. Coordinate the installation of all sprinkler materials, including pipe, with the landscape drawings. To avoid interfering with the trees, shrubs, or other planting.

C. For purposes of legibility, sprinkler lines are essentially diagrammatic. Although size and location of sprinkler equipment are drawn to scale whenever possible, make use of all data in all of the contract documents and verify this information at construction site.

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

E. Do not willfully install the sprinkler system as indicated on the drawings when it is obvious in the field that unusual obstructions or grade differences exist, that might not have been considered in the engineering or if discrepancies in construction details, regions, or specific items are discovered. All such discrepancies or discrepancies shall be brought to the attention of the Owner's Representative. In no case shall the Contractor assume any liability for such discrepancies or discrepancies necessary. Before any work commences, confer with the Owner's Representative regarding general details of work of this contract.

3.02 OBSERVATION SCHEDULE

A. Contractor will be responsible for notifying the Landscape Architect and Owner's Representative in advance for the following observations according to the time indicated:

- *Pre-job Conference - 7 days
- *Pressure supply line installation and testing - 36 hours
- *System layout - 36 hours Coverage tests - 36 hours
- *Final Inspection - 48 hours

B. When observations have been conducted by both the regular Owner's Representative, show evidence of when and by whom these observations were made.

C. No observation will commence without as-built drawings.

3.03 WATER SUPPLY

Connections to the existing points of connection 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.

3.04 LAYOUT

Layout sprinkler heads and make any minor adjustments required due to differences between site and drawings. Any such deviations in layout shall be within the intent of the original drawings, and without additional cost to the Owner. Layout shall be approved by the Owner's Representative before installation.

3.05 GRADES:

Before starting layout on the sprinkler system, carefully check all grades to determine that work may safely proceed, keeping within the specified material grades.

3.06 ASSEMBLIES

A. Install the backflow assembly at the height required by local codes.

B. Routing of pressure supply lines as indicated on drawings is diagrammatic. Install lines (and various assemblies) to conform with details on plans.

C. No multiple assemblies on plastic lines. Provide each assembly with its own outlet. When called for, the pressure relief valve shall be supplied from the main line.

D. Brass pipe and fittings shall be assembled using Teflon tape, or equivalent, applied to the male threads only. This is also true of plastic pipe and threaded fittings.

3.07 LINE CLEARANCE:

All lines shall have a minimum clearance of 4 inches from each other, and 6 inches from lines of other trades. Parallel lines shall not be installed directly over one another.

3.08 TRENCHING

A. Dig trench and support excavation soil continuously on bottom of ditch. Lay pipe to an even grade. Trenching operation shall follow layout indicated on drawings and as noted. Where lines occur under paved areas, these dimensions shall be considered below subgrade.

B. Provide minimum cover of 18 inches on all pressure supply lines.

C. Provide minimum cover of 18 inches for all control wires. Provide minimum cover of 12 inches for non-pressure lines.

D. Provide minimum cover of 24 inches for all lines under paving.

3.09 BACKFILLING

A. Install backfill on all lines shall be of a fine granular material with no foreign matter larger than 1/2-inch in size. Backfill material shall be approved soil.

B. Backfill material shall be tamped in 4-inch layers, under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Materials shall be sufficiently damp to permit thorough compaction under and on each side of pipe, to provide support for the pipe. Backfilling shall be done in a uniform, dry density equal to the adjacent undisturbed soil, and shall conform to adjacent undisturbed soil, compacted to the same density.

C. Under no circumstances shall truck wheels be used for compacting soil.

3.10 PVC PIPE

A. The pipe shall be allowed to set at least twenty-four (24) hours before pressure is applied to the PVC pipe system.

B. Main lines shall be tested in place before backfilling for a period of not less than four (4) hours and shall show no leakage or loss of fluid during the test period. Minimum test pressure, at the highest point of the section being tested, shall be 150 pounds per square inch. Center fitting of pipe lengths is allowed.

E. After all new sprinkler piping and risers are in place and connected, all necessary work has been completed and prior to the installation of sprinkler heads, control valves shall be opened and a full head of water used to flush out the system for a minimum of five (5) minutes.

F. At the conclusion of a system flushing, the heads shall be installed and tested for operation in accordance with design requirements under normal operating pressure. Contractor shall verify head pressures with pitot tube and adjust valve to correspond with design pressure.

3.11 INSTALLATION OF RING-TITE PVC PIPE

A. Except as may be noted in other parts of the Specifications or on the drawings, installation of Ring-Tite pipe and connecting fittings shall be outlined in manual as furnished by pipe manufacturer, or as set forth by the Johns-Manville Company Manual #77-624. This shall include, but not be limited to the installation of the pipe at the proper depth and the correct method of assembly of the joints. The manufacturer's instructions shall make available the services of the manufacturer's representative at the start of the installation and during construction.

B. Each line shall be tested at a pressure 50 PSI greater than the manufacturer's recommended working pressure for a period of four (4) hours, with the couplings and connections exposed and with the center of pipe section sufficiently supported and filled to hold pipe in place.

3.12 SPRINKLERS

A. All nozzles on sprinklers shall be tightened after installation. All sprinklers having an adjustment stem shall be adjusted on a lateral line for the proper radius, and/or for coverage per the manufacturer's instructions.

B. Sprinkler heads and risers shall be installed according to detail for final approval. Sizing of heads shall not exceed the maximum indicated on the drawings. In no case shall the spacing exceed the maximum recommendation by the manufacturer.

3.13 VALVES

A. Quick coupling valves shall be set approximately 12" from walks, curbs, header boards, or paved areas where designed. Refer to installation detail. Place quick couplers in valve boxes.

B. Remote control valves shall be adjusted in order that a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve location.

3.14 VALVE BOXES

A. Valve boxes shall be set one inch (1") above the designated finish grade in lawn areas and three inches (3") above finish grade in ground cover areas.

B. Valve boxes installed near walks, curbs, header boards, and paving shall not abut those items. Top surfaces shall be flush with, and perpendicular to, items listed above.

C. Valve boxes shall be installed in shrub plantings, not in turf areas whenever possible, unless otherwise approved.

3.15 AUTOMATIC CONTROLLER LOCATION AND INSTALLATION

A. The automatic controller shall be installed at the approximate location shown on the Plan, unless otherwise instructed by the Owner's Representative.

B. All local and other applicable codes shall take precedence in connecting the 100 volt electrical service to the controller. Owner shall provide power to controller. Irrigation Contractor shall complete hook-up to controller.

C. There shall be adequate coverage of earth (18" minimum) over the 24-volt control wire. Bundle and tape wires at 15 O.C., and install adjacent to mainline.

3.16 CONTROL WIRE

A. All electrical equipment and wiring shall comply with local and state codes and be installed by those skilled and licensed in the trade.

B. Connecting and splicing of wire at the valves or in the field shall be made using Rain Bird Pin-Tie connectors.

C. Three (3) feet long Pig-Tail wire splices shall be allowed only at 1500 ft. intervals. The wire splices shall be enclosed in an RCV Box with ground stenched E8 in yellow.

3.17 BACKFLOW PREVENTION UNITS

A. The backflow prevention units shall be installed as shown on Plans and Details. Backflow prevention units shall be installed per local codes including certification.

3.18 FLUSHING THE SYSTEM:

After all new sprinkler pipe lines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of sprinkler heads, the control valves shall be opened and a full head of water used to flush out the system for a minimum of 5 minutes. Sprinkler heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Owner's Representative.

3.19 ADJUSTING THE SYSTEM

A. Adjust the valves and alignment and coverage of all sprinkler heads. If it is determined that adjustments in the irrigation engineer or nozzle engineer will be required, make all necessary changes or make adjustments with the manufacturer to have adjustments made, prior to any planting. These changes or adjustments shall be made without additional cost to the Owner's Representative.

B. The entire system shall be operating properly before any planting operations commence.

3.20 COVERAGE TEST:

When the sprinkler system is completed, perform a coverage test in the presence of the Owner's Representative to determine if the water coverage for planting areas is complete and adequate. Furnish all materials to the irrigation engineer or nozzle engineer. If inadequacies of coverage due to deviations from plans, or where the system has been installed in such a manner that it is not possible to correct any deficiencies without bringing this to the attention of the Owner's Representative. This test shall be accomplished before planting begins.

3.21 HYDROSTATIC TEST:

All Hydrostatic tests shall be made only in the presence of the Owner's Representative, or other duly authorized representative of the Owner. No pipe shall be backfilled until it has been inspected, tested, and approved in writing. Pressure supply lines shall be tested under a hydrostatic pressure of 150 pounds per square inch for a period of four hours.

3.22 COMPLETION

A. Upon completion of the work, make ground surface level, remove excess materials, rubbish, debris, etc., and remove construction and installation equipment from the premises.

B. Supply as part of this contract the following tools:

- *Two wrenches for disassembling and adjusting each type of sprinkler head supplied.
- *Two keys for each automatic controller.
- *Four quick coupler keys with attached hose nozzles.
- *Four (4) of each of all types of sprinkler heads and nozzles.
- *Two cover fitting tools for valve boxes.

C. The above equipment shall be turned over to the Owner at the conclusion of the project. Before final acceptance, furnish evidence that the Owner has received materials must be shown to the Owner's Representative.

PART 4 - RECORD DRAWINGS, CHARTS & MANUALS

4.01 RECORD DRAWINGS

A. Record accurately on one set of black and white prints of the drawings, all changes in the work constituting departures from the original contract drawings, including changes in both pressure and non-pressure lines.

B. Upon completion of each increment of work, transfer all such information and dimensions to the prints. The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the Owner's Representative. When the drawings are approved, transfer all information to a set of reproducible drawings at cost by the Owner's Representative.

C. Dimensions from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavement, etc.). Locations shown on as-built drawings shall be legible day to day in the project as being installed. All dimensions noted on drawings shall be 3/8-inch in size.

D. Show locations and depths of the following items:

- *Point of connection.
- *Routing of sprinkler pressure lines (dimension maximum 100 feet along routing).
- *Sprinkler control valves (buried only).
- *Routing of control valves.
- *Other related equipment (as may be directed by the Owner's Representative).

E. Quick coupling valves.

F. Maintain as-built drawings on site at all times.

G. Make all changes to reproducible drawings in ink. If necessary, use eradicating fluid when redrawing drawings.

4.02 CONTROLLER CHARTS

A. As-built drawings must be approved by the Owner's Representative before charts are prepared.

B. Provide one controller chart for each controller supplied, of the maximum size the controller door will allow, showing the area covered by the automatic controller. The chart to be a reduced drawing of the actual as-built system. However, in the event the controller requires less than the full area of the drawing, it shall be enlarged to a size that will be readable when reduced. The chart shall be a blackline print and a different color shall be used to show the area of coverage for each station.

C. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick. The chart shall be mounted using yellow or approved equal type of tape.

D. These charts must be completed and approved prior to final inspection of the irrigation system.

4.03 OPERATION AND MAINTENANCE MANUALS

A. Prepare and deliver to the Owner's Representative within ten days by calendar prior to completion of construction, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in individual bound copies of the operation and maintenance manual. The manual shall describe the material installed and shall be in sufficient detail to permit the operating personnel to understand, operate, and maintain all equipment. Spare parts lists and related manufacturer information shall be included for each equipment item installed. Each complete, bound manual shall include the following information:

- 1. Index sheet listing Contractor's address and telephone number, duration of guarantee period, list of equipment with names and addresses of local manufacturers.
- 2. Complete operating and maintenance instructions on all major equipment.

B. In addition to the above maintenance manuals, provide the maintenance personnel with instructions for major equipment and show written evidence to the Owner's Representative at the conclusion of the project that this service has been rendered.

PART 5 - GUARANTEES

A. The entire sprinkler system shall be unconditionally guaranteed by Contractor as to material and workmanship, including settling of backfilled areas below grade for a period of one (1) year following the date of final acceptance of the work, and for any other cause of failure. The Contractor shall be responsible for the one year production/warranty guarantee has elapsed from date of final acceptance.

B. If within one year from the date of completion, settlement occurs, and adjustments in pipes, valves and sprinkler heads or paving is necessary to bring the system or paving to the proper level of the permanent grades, contractor, at his own expense, shall make all adjustments without extra cost to the Owner, including the restoration of all damaged planting, paving or other improvements of any kind. Should any difficulties develop within the specified guarantee period which Owner feels may be due to inferior material and/or workmanship, these difficulties shall be immediately corrected by Contractor to the satisfaction of Owner at no additional cost to Owner, within 48 hours of notification of such deficiencies to the satisfaction of the Owner's Representative. Failure of Contractor to respond in a timely manner to repair damaged conditions, shall prompt Owner to hire a third party to correct such conditions of labor, material and equipment used from Contractor's final payment.

C. The Owner reserves the privilege of making any emergency repair without relieving Contractor's warranty obligation.

D. Written guarantee shall be supplied in the completion of the project, showing date of completion.

LANDSCAPING

PART 1 - GENERAL

1.01 Refer to standard contract documents for non-technical contractual requirements and conditions.

1.02 SCOPE

A. Work included: All labor and materials, appliances, tools, equipment, facilities, transportation, and services necessary for and installation of all plants, trees, shrubs, and perennials to performing all operations in connection with furnishing, delivery, and installation of "Landscaping" complete, as shown on the drawings and/or specified herein. Work includes, but is not limited to the following:

- Underground Obstructions to Planting:

1. Underground utilities, construction or solid rock ledges are encountered, other locations for planting may be selected by the Owner's Representative. Damage to utility lines shall be repaired at the Contractor's expense at no additional cost to the Owner or Tenant.

2. Protection of Existing Vegetation:

- If it leaves have been established prior to planting operations, the surrounding turf shall be covered in a manner that will protect turf areas before excavations begin.
- If it leaves have been established prior to planting operations, the surrounding turf shall be covered in a manner that will protect turf areas before excavations begin.

3. Storage: Store plants and materials on the project site, and ensure that they are protected from damage by sun, rain, wind, theft, vandalism, and construction work. Water plants regularly.

3.02 INSPECTION OF WORK IN PROGRESS

A. Installations and operations in progress must be approved at various stages by the Owner's authorized representative.

B. In no event shall the Contractor proceed from one state to another of the work, without prior approval of the Owner's authorized Representative.

C. The Contractor must notify the Owner's authorized Representative for inspections of the following stages of work:

- 1. When all grading within planting areas has been completed.
- 2. When all plants are ready to be delivered at the nursery or when plants have been delivered to the site and prior to any planting.
- 3. When all trees and shrubs have been spotted on the site where shown on the drawings.
- 4. When all trees and shrub pits have been excavated after water has leached out of the pits.
- 5. When weed germination and removal is complete, and seedbed is prepared but prior to installation of seed.

3.07 TURF GRASS SOIL

A. Roll subgrade when soil is reasonably dry, using a 125 pound water ballast roller. If rolling will not firm the soil bed underneath, it shall be permitted to settle until the Owner's Representative determines a satisfactory condition has developed. Re-raise or scarify all irregularities and cut or fill as required to establish uniform grade. Roll areas again to obtain a uniform grade. Areas to be planted in lawn, shall be finished smooth, satisfactory to the Owner's Representative before any seed is placed. Soil is to be freshly cut and placed in sections not smaller than one square foot. Stagger the joints between rolls. Set soil (use soil waste that has fallen off soil) into all the soil prior to installation and shall then be repacked as originally specified at no cost to the Owner.

B. The lawn edges shall be maintained in a neat condition until acceptance of the work.

C. Sufficient measures shall be taken to the Contractor to ensure the lawn is against damage resulting from pedestrian traffic. If any type of barrier is used, it must meet with the approval of the Owner's Representative. Any damage to the lawn shall be repaired by the Contractor before acceptance will be made.

D. Repair: When any portion of the sod area becomes decomposed, waterlogged, or otherwise damaged or unfairly following sodding within the period of Contractor's responsibility, the affected portion shall be repaired to re-establish the condition and appearance of the lawn and shall then be repacked as originally specified at no cost to the Owner.

3.08 HYDROSEEDING

A. Slope areas: Refer to planting plan and slope mix designs for types and amount of seeds to be used. Alternate seed mixes may be used only upon approval of the Landscape Architect or the Owner's Representative. The designed slurry mixes shall be applied by an approved hydromulch company. Designed slurry mixes will be either broadcast or non-broadcast type conditions. (Refer to plans and seed mix design). Each container of slurry mix shall be applied within a 2 hour time limit, or be rejected and removed at Contractor's expense.

B. Turf Areas: The designed seed and slurry mix shall be applied in designated areas by an approved hydromulch company within a 2 hour time limit per container mix. (Refer to Planting Plan and Legend). Where applicable, a substitute seed mix may be used only upon approval of the Landscape Architect or Owner's Representative.

C. Daily Work Sheets: Daily work sheets shall be signed by the Nozzlemen and sent to the Owner's Representative for payment approval. The following information shall be recorded:

- 1. Seed - types, amounts.
- 2. Fertilizer - analysis, amount.
- 3. Multi- type, amount.
- 4. Seeding additive - type, amount.
- 5. Number of loads - amount of water.
- 6. Area covered - in acres.
- 7. Equipment used - capacity and license number.

D. Protection/Clean-up: Prevent and/or discard overspray onto concrete reservoirs, drainage ditches, channels, structures, roads and walkways. Overspray and spillage onto restricted areas shall be removed the same day at Contractor's expense to the satisfaction of the Owner's Representative.

3.09 STAKING (See Staking Details)

A. Stakes shall be driven into the ground in such a way as to minimize damage to the ball of the tree, and the stake shall be placed so that the tree will blow away in the wind. (Refer to Detail)

B. Form loose around trunk with twine, and securely attach to stake(s). Attach loose enough so that tree can sway freely in the wind. (Refer to Detail)

3.10 GUYING

Plants 36" or less in size, shall be immediately guyed after planting with four guys per tree. (Refer to Detail)

3.11 PRUNING:

Pruning of nursery stock shall not be done prior to delivery. Plants and trees shall only be pruned for health or structural reasons, including the need to eliminate diseased, damaged, or structurally unsound limbs. Pruning shall be performed according to ANSI A-300 or International Society of Arboriculture under supervision of a qualified arborist approved by the Landscape Architect. LEAVE OPEN WOUNDS TO AIR-DRY - DO NOT USE ANY FORM OF TREE PAINT OR WOUND SEALER.

3.12 MULCHING:

A. All planting areas (except as noted) shall be mulched (top dressed) with a minimum of 2" depth layer of wood fiber mulch material. Remove mulch pressing on hard-surface areas.

3.13 CLEAN-UP

A. During the course of the work and at its conclusion, remove surface material from the site and leave the premises in a neat and clean condition.

B. Remove all tags, labels, nursery stakes and ties from all plants.

3.14 PROTECTION

Contractor shall carefully and continuously protect all areas included in the Contract, including adjacent areas, structures, utilities, supports, public safety, etc., until final acceptance of the work by the Owner's Representative.

3.15 MAINTENANCE

A. Maintenance operations shall begin immediately after each plant is delivered and shall be continued until satisfactory for a period of 90 days after the time all plants of work have been completed as specified herein and to the satisfaction of the Owner's Representative.

B. During the maintenance period specified in paragraph A. above, all plants and trees are guaranteed for a period of 90 days after delivery. Herbicide shall be applied by an individual with appropriate license, refer to MFG specifications for application. The use of time application to time of implementing planting. After complete weed kill, remove all weed residue and top growth and dispose of in a legal manner. Alternative methods of weed kill for use may be Vapen or Methyl Bromide applied per licensed herbicide agency and specifications.

C. Shrub and hardy perennial ground cover areas:

- a. Apply pre-emergent weed control chemicals to hard planted groundcover areas. Do not apply to areas to be seeded.
- b. Proceed with installation of shrubs and groundcover after removal of any weeds by cultivation.

D. The Contractor shall be responsible for control of weeds in all landscape areas through the final acceptance of the work. Any selective weed control spray or physical weed removal shall be the Contractor's responsibility and the Contractor shall repair any damage resulting from weed control activity.

E. All herbicides shall be applied only by a licensed herbicide application agency. No herbicides shall be applied without first obtaining written approval from the city inspector.

3.06 PLANTING SHALL BE DONE AS FOLLOWS:

A. Planting of Trees

- 1. Position plants in plant locations indicated on drawings and secure approval before excavating pits, making necessary adjustments as length of sides equal to three times the width and 2" less than the depth of the tree root ball. Compacted soils at sides and bottoms shall be loosened by scarifying or other approved method. Once the tree is positioned in the pit, the pit shall be filled with soil as per specs, thoroughly settled by water application. (Refer to planting details and spacing details).
- 2. Prepare a depressed water basin as wide as plant rootballs at each plant. Water thoroughly, backfilling any voids with additional soil.

B. Planting Vines, Shrubs and Groundcovers

- 1. Vines and shrubs shall be planted in pits at least one and one-half times greater than the diameter of the rootball and 6" below the bottom of the ball. Herbicide control shall be applied to the soil surface of the pit. When the plant has been properly set, the pit shall be filled with soil as per specs, thoroughly settled by water location, and the entire project shall be set to grade to final finish grade, or other surface next to which they are planted. (Refer to planting details).

C. Planting a depressed water basin as wide as plant root balls at each plant. Water thoroughly, backfilling any voids with additional prepared planting mix.

D. Ground Covers

- (a) Pits for flat sized plants to be at least 4" x 4" x 4". Ground cover areas shall be maintained prior to planting. No flattened iron, or potter plants shall be planted in dry soil.
- (b) Set plants in center of pits so that crown of plant will be level with finished grade after setting of soil, then backfill, and water. (Refer to spacing detail).
- (c) Flatted plants shall be well-rooted with runners at least 4" but not more than 6" in length.

END OF SECTION

PART 2 - EXECUTION

3.01. GENERAL PREPARATION

A. Commence work as directed by the Owner's Representative and conduct operations continually to completion unless weather conditions are unfavorable. All work shall conform to high standards of practice within the trade.

B. Clean up and remove from planting areas all existing plant material not removed under the general site construction contract including roots and any accumulated debris and rubbish before commencing work. Legally dispose of such materials off the site.

C. Underground Obstructions to Planting:

1. Underground utilities, construction or solid rock ledges are encountered, other locations for planting may be selected by the Owner's Representative. Damage to utility lines shall be repaired at the Contractor's expense at no additional cost to the Owner or Tenant.

2. Protection of Existing Vegetation:

- If it leaves have been established prior to planting operations, the surrounding turf shall be covered in a manner that will protect turf areas before excavations begin.
- If it leaves have been established prior to planting operations, the surrounding turf shall be covered in a manner that will protect turf areas before excavations begin.

3. Storage: Store plants and materials on the project site, and ensure that they are protected from damage by sun, rain, wind, theft, vandalism, and construction work. Water plants regularly.

3.02 INSPECTION OF WORK IN PROGRESS

A. Installations and operations in progress must be approved at various stages by the Owner's authorized representative.

B. In no event shall the Contractor proceed from one state to another of the work, without prior approval of the Owner's authorized Representative.

C. The Contractor must notify the Owner's authorized Representative for inspections of the following stages of work:

- 1. When all grading within planting areas has been completed.
- 2. When all plants are ready to be delivered at the nursery or when plants have been delivered to the site and prior to any planting.
- 3. When all trees and shrubs have been spotted on the site where shown on the drawings.
- 4. When all trees and shrub pits have been excavated after water has leached out of the pits.
- 5. When weed germination and removal is complete, and seedbed is prepared but prior to installation of seed.

3.03 FINE GRADING

A. The Contractor shall inspect as required. The Contractor's bid shall indicate the total in-place cost of required import. No additional charges will be allowed.

B. The soil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form, or cobs can readily break up.

C. The Contractor shall be responsible for dust control in areas within the scope of this contract.

D. Rip in two directions to the depth of 12" on all areas upon which fill will be placed.

E. Rough grade requirements shall allow for soil settlements. Coordinate with General Contractor.

F. Bring to the attention of the Owner's authorized Representative all soil in planting areas that contain any deleterious substances such as oil, plaster, concrete, etc.

G. Use of plants, shrubs, trees, and other vegetation in the planting area shall be the responsibility of the Contractor and shall be removed to the level of the subgrade so that no water, conditions and plantings, the finish grade in shrub and in groundcover areas shall be 2" below the top of the subgrade and the top of all walks.

H. Finish grade all planting areas to a smooth and even condition, making certain that no water pockets or irregularities remain. Remove and dispose of all foreign soil of heavy clods and debris and replace with topsoil to a depth of 2" below the top of all walks.

I. Omit rootballing on slopes 2 to 1 or greater in ratio. Instead, lightly hand scarify the soil. Refer to Drawings for sloped areas, if any.

J. Patch all areas having damage from erosion and so related earth wear to create a smooth and regular surface for planting. Final grade to be approved by the Owner's Representative.

3.04 SOIL CONDITIONING (also see Fine Grading Section)

A. Broadcast the recommended soil additives per 1,000 square feet and cultivate to a depth of 2" based upon required soil test results. It is the Contractor's responsibility to obtain soil tests. Soil analysis shall be done by Soils & Plant Laboratory, Inc. 442 S. Lyon Santa Ana, CA 92704-1563. Copies of the report shall be sent to the Owner's Representative.

B. For bedding purposes, when no soils report is available in all planting areas the following application shall be made to the entire test area of the area: (Refer to spacing details in two directions into the top 9" of soil, and the area watered down:

- 2 cu. yds. rippled wood shavings
- 20 LBS. iron sulfate

C. Planting pits shall be excavated three times the diameter and 2" shallower than the rootball call for trees, twice as wide and 6" deeper than the rootball for shrubs. (Refer to planting details).

D. For plants other than azaleas, camellias, and ferns, backfill plant pits with soil excavated from the site. Do not use any additional materials to backfill pits.

E. Prepare soil mix for back fill in pits for azaleas, camellias, ferns and other plants (as specified) as follows:

- 1/3 Washed Plaster sand
- 1/3 Canadian Peat Moss
- 1/3 Loamite or Forest Humus

F. Backfill mix for Palms shall be concrete sand. (Refer to details)

G. The prepared soil shall be uniformly blended in an area adjacent to the planting work and shall cover accurately proportioned using a suitable measuring container. Unused excavated soil shall be removed from site. Protect the mix from water until it has been

3.05 WEED CONTROL/ABATEMENT

A. Weed abatement: After earthwork, installation of irrigation system, and soil preparation, but prior to planting, perform weed abatement program to all planting areas as follows:

- 1. Hydroseeded or hand seeded planting areas:
- a. Apply sulfate of ammonia at the rate of 5 lbs. per 1,000 sq. ft. All areas to be planted.
- b. Keep areas moist by regular irrigations for a period of two (2) weeks to germinate existing weed seeds.
- c. At the end of two weeks, apply "Round-Up" or equal systemic herbicide. Do not irrigate within six (6) hours after application. Herbicide shall be applied by an individual with appropriate license, refer to MFG specifications for application. The use of time application to time of implementing planting. After complete weed kill, remove all weed residue and top growth and dispose of in a legal manner. Alternative methods of weed kill for use may be Vapen or Methyl Bromide applied per licensed herbicide agency and specifications.

B. Tree support materials shall be as follows:

- (a) Ground anchors for plying shall be redwood per detail.
- (b) Guying wire shall be 12 gauge annealed galvanized steel.
- (c) Guying cable shall be a minimum of two strands, making a 3/16" diameter steel cable.
- (d) Hose chaffing guards shall be new or used 2" poly, one half inch (1/2") reinforced rubber of 16 mil thickness or less than the depth of the tree root ball. Compacted soils at sides and bottoms shall be loosened by scarifying or other approved method. Once the tree is positioned in the pit, the pit shall be filled with soil as per specs, thoroughly settled by water application. (Refer to planting details and spacing details).

C. Tree support materials shall be as follows:

- (a) Hose chaffing guards shall be new or used 2" poly, one half inch (1/2") reinforced rubber of 16 mil thickness or less than the depth of the tree root ball. Compacted soils at sides and bottoms shall be loosened by scarifying or other approved method. Once the tree is positioned in the pit, the pit shall be filled with soil as per specs, thoroughly settled by water application. (Refer to planting details and spacing details).

D. Prepare a depressed water basin as wide as plant rootballs at each plant. Water thoroughly, backfilling any voids with additional soil.

E. Shrub and hardy perennial ground cover areas:

- a. Apply pre-emergent weed control chemicals to hard planted groundcover areas. Do not apply to areas to be seeded.
- b. Proceed with installation of shrubs and groundcover after removal of any weeds by cultivation.

F. The Contractor shall be responsible for control of weeds in all landscape areas through the final acceptance of the work. Any selective weed control spray or physical weed removal shall be the Contractor's responsibility and the Contractor shall repair any damage resulting from weed control activity.

G. All herbicides shall be applied only by a licensed herbicide application agency. No herbicides shall be



Know what's below.
Call before you dig.

APPROVED BY: _____

Underground Utility Note:
CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION

LICENSE
STAMP

LICENSED PROFESSIONAL
LOGO
AND
COMPANY
INFORMATION

OWNER LOGO
AND
COMPANY
INFORMATION

REV.	DATE	BY	DESCRIPTION	DRAWN:	DATE:	REVISED:	REV. DATE:	CHECKED:	APPROVED:	JOB NO:	SHEET NAME:	LANDSCAPE IMPROVEMENTS FOR	SHEET NO.
												PROJECT NAME, ADDRESS, AND APN NO.	L9
												IRRIGATION & PLANTING SPECS	9 OF 10