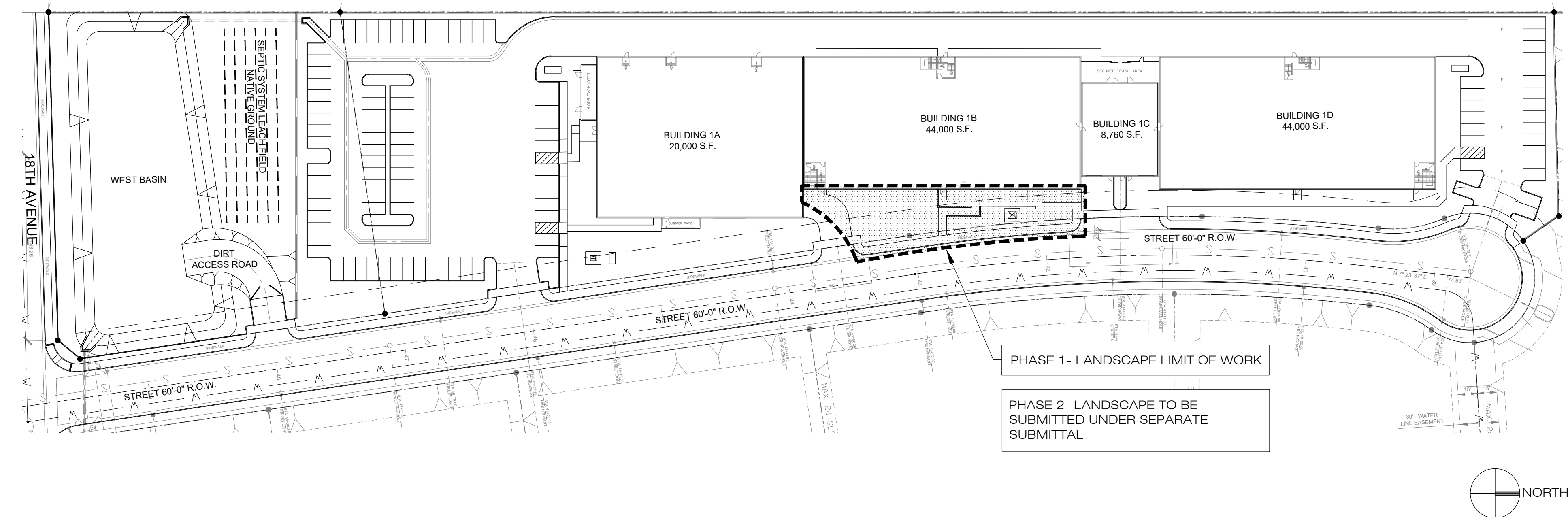


18TH AVENUE INDUSTRIAL BUILDINGS

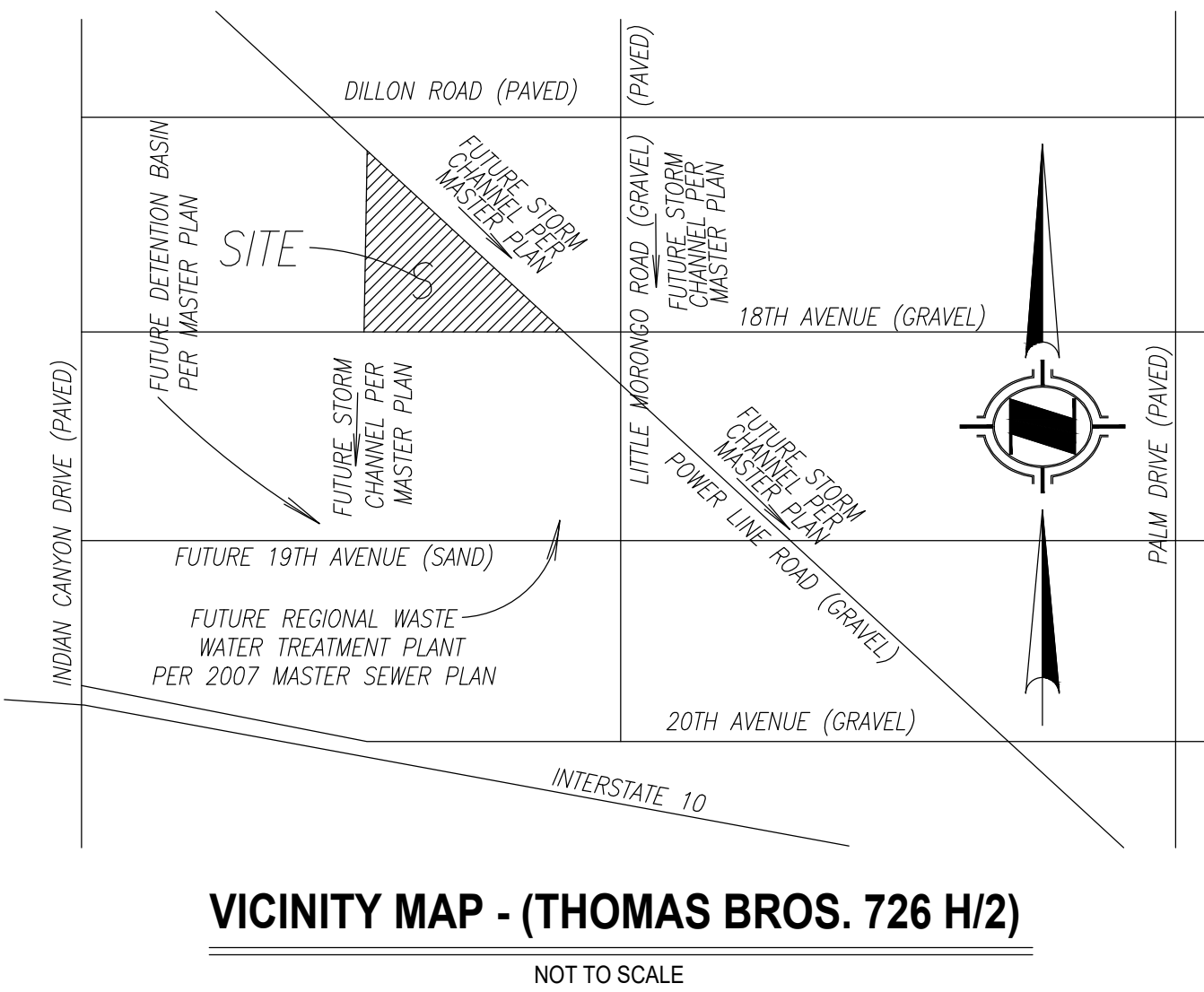
PHASE 1

LANDSCAPE IMPROVEMENT PLANS

KEY MAP



VICINITY MAP



GENERAL NOTES

- All work shall be performed by a licensed landscape contractor.
- Landscape contractor shall obtain a Landscape Permit from the City prior to commencement of work.
- All required landscaping and irrigation shall conform to the City of Desert Hot Springs and the Mission Springs Water District Landscaping standards.
- All planting and irrigation shall be installed to the satisfaction of the Landscape Architect prior to acceptance of final grading. Contact the Landscape Architect for inspection with a minimum of 24 hours notice.
- All work shall conform to Standard Specifications for Public Works Construction (SSPWC), latest edition, (published by Building News, 3055 Overland Avenue, Los Angeles, CA) for all work performed and not specifically mentioned herein.
- All work shall be done in accordance with the plans, specifications, and any special requirements of the permit. Any violation will result in the stoppage of all work until the violation is corrected.
- No work shall commence on the project until a pre-construction conference has been held with the Landscape Architect or an authorized representative.
- The contractor shall be responsible for notifying the Landscape Architect for all required site visits as follows:

Pre-construction conference.	48 hrs. notice
Mainline inspection and plant material	48 hrs. notice
Final walk through for completion of improvements	7 day notice
Final walk through for acceptance.	7 day notice
- Contractor shall make themselves familiar with all underground utilities, pipes and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities. Prior to the commencement of work the contractor shall contact Underground Service Alert (800)422-6848 for location of underground utilities.
- Do not willfully proceed with Construction as designed when it is obvious that unknown obstructions, area discrepancies and/or grade differences exist that may not have been known during design. Such conditions shall immediately be brought to the attention of the owner. The contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
- PERMANENT EROSION CONTROL
 - Slopes required to be planted shall be provided with an approved system of irrigation.

SITE/PLAN INFORMATION

ADDRESS
18TH AVENUE
DESERT HOT SPRINGS, CA 92240
COUNTY OF RIVERSIDE

APN: 666-310-009

TRACT: 37129

BENCHMARK
BENCHMARK NO. 893-64-68 LOCATED AT POST OFFICE IN DESERT HOT SPRINGS, 13 FEET SOUTH OF CURB, 47 FEET SOUTH OF CENTERLINE OF PIERSON BLVD. 2 FEET WEST OF FLAG POLE. SET A STANDARD BRASS DISC IN CONCRETE POST, FLUSH
ELEVATION: 1070.785 (FT)

PREPARED FOR

OWNER/DEVELOPER
MAGDI HANNA, PLAZA D.H.S.
3345 NEWPORT BOULEVARD, SUITE 203
NEWPORT BEACH, CALIFORNIA 92663

SHEET INDEX

DRAWING NAME	SHEET NUMBER
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LANDSCAPE ARCHITECT CERTIFIES COMPLIANCE WITH THE SPECIFIC PLAN & OCPW 2010 LANDSCAPE IRRIGATION CODE & IMPLEMENTATION GUIDELINES

Magdi Hanna 2-18-19
LANDSCAPE ARCHITECT SIGNATURE DATE



terrain
INTEGRATION

Landscape Architecture CA#5231
Planning + Design + Sustainability

191 S. Orange St. | Orange | CA | 92866
714-724-9814
www.terrainintegration.com



OWNER / PROJECT:

18TH AVE INDUSTRIAL
BUILDINGS

PHASE 1

18th Avenue
Desert Hot Springs, CA
92240
APN: 666-310-009

Scale:

Date: 2/26/19

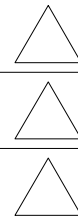
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Drawn By: MM/SS

Checked By: SS

Revisions:



Sheet Title:

TITLE SHEET

Sheet Number:

LA-0.0

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Irrigation Legend

SYMBOL	MFG/MODEL NO.	DESCRIPTION	PATTERN	PSI	GPM
■	RAIN BIRD RWS-1401-C-GRATE-P	ROOT WATERING SYSTEM (2) PER TREE	FLOOD	30	0.25
—	RECYCLED PRESSURE MAINLINE IN PLANTER AREA, 3/4" TO 1-1/2", PVC SCH 40, 2" AND LARGER USE PVC CLASS 315; BURY SLEEVED PVC MIN. 18" BELOW GRADE FOR PEDESTRIAN, 30" FOR VEHICULAR PAVING. BURY UNSLEEVED PVC MIN. 18" BELOW GRADE - PURPLE				
—	RECYCLED NON-PRESSURE LATERAL PURPLE PVC SCH 40 WITH PVC SCH 40 FITTINGS. BURY SLEEVED PVC MIN. 12" BELOW GRADE FOR PEDESTRIAN, 30" FOR VEHICULAR PAVING. BURY UNSLEEVED PVC 12" BELOW GRADE. SIZE NOTED.				
—	RAINBIRD XBS-940-P500 BLANK TUBING W/ PURPLE STRIPING TO XQ 1/4" DISTRIBUTION TUBING AND XERI-BUG EMITTER ON 1/4" TUBING STAKE - SEE EMITTER SCHEDULE FOR EMITTER MODEL				
—	TRANSITION FROM PVC TO DRIP TUBING				
—	PIPE SLEEVING PVC SCH 80 FOR MAINLINE AND WIRES UNDER VEHICULAR PAVING, SCH 40 FOR MAINLINE, WIRES AND LATERALS UNDER PEDESTRIAN PAVING. EXTEND 12" BEYOND PAVING.				
—	WIRE SLEEVING PVC SCH 40. BURY MIN. 24" BELOW GRADE, EXTEND MIN. 12" BEYOND EDGE.				
—	HUNTER PLD-CAP - FLUSH VALVE CAP IN COMPRESSION FITTING COUPLER - INSTALL IN EMITTER BOX.				
NO SYMBOL	HUNTER PLDAVR - 1/2" AIR/VACUUM RELIEF VALVE - (1) RELIEF VALVE PER REMOTE CONTROL ZONE - INSTALL IN EMITTER BOX.				
●	HUNTER ICV-FS-R SERIES REMOTE CONTROL VALVE - SIZES NOTED ON PLAN PER VALVE.				
⊕	HUNTER ICZ-101-25 SERIES MEDIUM FLOW DRIP CONTROL ZONE KIT WITH PRESSURE REGULATOR AND FILTER- RECLAIMED WATER ID HANDLE (P/N561205)				
●	RAIN BIRD 44-NP QUICK COUPLER VALVE FOR NON-POTABLE W/ 2 PIECE BODY AND PURPLE LOCKING RUBBER COVER				
⌵	NIBCO SI-8 LINE SIZED GATE VALVE.				
⊠	EZ FLOW HC-25 FERTIGATION SYSTEM - 25 GALLON CAPACITY.				
⌚	GRISWOLD #2230 PRESSURE REGULATING MASTER VALVE (NORMALLY CLOSED). SET AT 65 PSI.				
⊙	DATA INDUSTRIAL IR SERIES FLOW SENSOR. PROVIDE SEPARATE WIRE CONDUIT FOR FLOW SENSOR WIRES FROM FLOW SENSOR TO CONTROLLER.				
⬆	FEBCO 825Y REDUCED PRESSURE BACKFLOW PREVENTION DEVICE. SIZE 1-1/2". NOTE: BACKFLOW DEVICE TO BE REMOVED AT THE TIME IRRIGATION SYSTEM IS PERMANENTLY CONNECTED TO RECYCLED WATER LINE.				
Ⓜ	PROPOSED 1-1/2" IRRIGATION WATER METER (INSTALLED BY OTHERS).				
Ⓐ	CONTROLLER 'A' - ESP12LXMEF 12 STATION OUTDOOR PEDESTAL MOUNT AUTOMATIC IRRIGATION CONTROLLER WITH (1) ADDITIONAL 12-STATION MODULE (FOR A TOTAL OF 24 STATIONS. ENCLOSURE TO BE RAIN BIRD LXMMSS STAINLESS STEEL PEDESTAL (PAINT TAN). INCLUDE WR2-RFC WIRELESS RAIN SENSOR INSTALL PER MANUFACTURER'S RECOMMENDATIONS. FINAL LOCATION TO BE APPROVED BY LANDSCAPE ARCHITECT. CONTRACTOR IS RESPONSIBLE FOR PROGRAMMING WEATHER-BASED FUNCTIONS TO INSURE PROPER OPERATION.				
⬆	STATION				
⬆	GPM				
⬆	PLANT MATERIAL				
⬆	VALVE SIZE				

DRIP EMITTER SCHEDULE

- CONTRACTOR SHALL INSTALL RAIN BIRD XB EMITTERS TO MEET THE FOLLOWING SCHEDULE:
ALL 1 GALLON - (1) XB-10 (1 GPH EACH)
ALL 5 GALLON - (2) XB-10 (1 GPH EACH)
15 GALLON - (3) XB-10 (1 GPH EACH)
 - NUMBER OF EMITTERS INDICATED ON THESE PLANS ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD BASED ON PLANTING INSTALLATION. CONTRACTOR SHALL REFER TO PLANTING PLAN AND DETERMINE EXACT NUMBER OF EMITTERS REQUIRED BASED ON EMITTER SCHEDULE ABOVE.
 - THE DISTRIBUTION TUBING SHALL NOT BE VISIBLE AT THE BASE OF SHRUB.
- NOTES: CONTRACTOR TO INSTALL ALL IRRIGATION EQUIPMENT WITHIN LIMIT OF SITE WORK. SHOWN FOR CLARITY ONLY - IRRIGATION IS SCHEMATIC.

THE PIPING IN PLANTER AREAS IS DIAGRAMMATIC. CONTRACTOR CAN ROUTE PIPING IN A FREE-FORM MANNER, AVOIDING OBJECTS LIKE LIGHT STANDARDS, TRANSFORMER PADS, EQUIPMENT VAULTS, SUB-SURFACE ROCK TOO LARGE TO REMOVE, ETC. AS LONG AS ALL PLANTS RECEIVE THE PROPER NUMBER OF EMITTERS PER SCHEDULE.

Point of Connection/Irrigation Information

Water Meter Information

PLEASE NOTE: PROJECT HAS BEEN DESIGNED FOR FUTURE RECYCLED WATER. RECYCLED WATER IS CURRENTLY NOT AVAILABLE FOR THIS SITE. AT TIME OF RECYCLED WATER AVAILABILITY, THE BACKFLOW PREVENTER SHALL BE REMOVED AND SYSTEM CONNECTED TO RECYCLED WATER.	
PROPOSED SUPPLY LINE	2"
PROPOSED WATER METER	1-1/2"
IRRIGATED PLANTED AREA (PHASE 1 ONLY)	4,610 S.F.
EXISTING STATIC PRESSURE	80 PSI

Pressure Calculation

VALVE A-2

1-1/2" WATER METER	0.00
BACKFLOW PREVENTER	11.00
2" MAINLINE (@.02- 70 L.F.)	0.02
LATERALS	3.00
FITTINGS	0.30
1" REMOTE CONTROL VALVE	2.80
PRESSURE AT VALVE	30.00
ELEVATION	0.00
MISCELLANEOUS	4.00
TOTAL PRESSURE LOSS	51.12
AVAILABLE PRESSURE	80.00 PSI
RESIDUAL PRESSURE	28.88 PSI
SET PRESSURE REGULATOR @ ADJUST IN FIELD AS NEEDED	70.00 PSI

Dripline Notes

- CONTRACTOR TO INSTALL ALL IRRIGATION EQUIPMENT WITHIN LIMIT OF SITE WORK. SHOWN FOR CLARITY ONLY - IRRIGATION IS SCHEMATIC.
- THE XERITUBE PIPING IN PLANTER AREAS IS DIAGRAMMATIC. CONTRACTOR CAN ROUTE PIPING IN A FREE FORM MANNER, AVOIDING OBJECTS LIKE LIGHT STANDARDS, TRANSFORMER PADS, EQUIPMENT VAULTS, SUB-SURFACE ROCK TOO LARGE TO REMOVE, ETC. AS LONG AS ALL PLANTS RECEIVE THE THE PROPER NUMBER OF EMITTERS PER SCHEDULE AND THAT THE VINYL DISTRIBUTION TUBING DOES NOT EXCEED THE MAXIMUM DESIGN LENGTHS (APPROX. 6').

Lateral Pipe Sizing

FLOW (GPM)	PIPE SIZE
0-8	3/4"
8.1-12	1"
12.1-22	1-1/4"
22.1-28	1-1/2"
28.1-45	2"
45.1 +	2-1/2"

Recycled Water Notes

THERE ARE NO LOOPED MAIN LINE PIPES DESIGNED INTO THIS SYSTEM.

Recycled & Domestic Water Separation Guidelines:

- Horizontal Separation
- State Health Department regulations require a 10-foot minimum horizontal separation between domestic water and recycled water or sewer lines.
- Vertical Separation
- Water, sewer and recycled water lines are typically located vertically from the street surface down in order of decreasing quality. Water will be the shallowest and sewer mains will be the deepest. See L-2.3/L
- On-Site Recycled Water Facilities
- Recycled water systems shall be separate and independent of any potable water system. Cross-connections between potable water facilities and on-site recycled water facilities are prohibited.
 - Hose bibs on recycled water are prohibited.
 - Overspray and runoff shall be limited or prevented.
 - Potable and recycled water lines are not to be installed in the same trench.

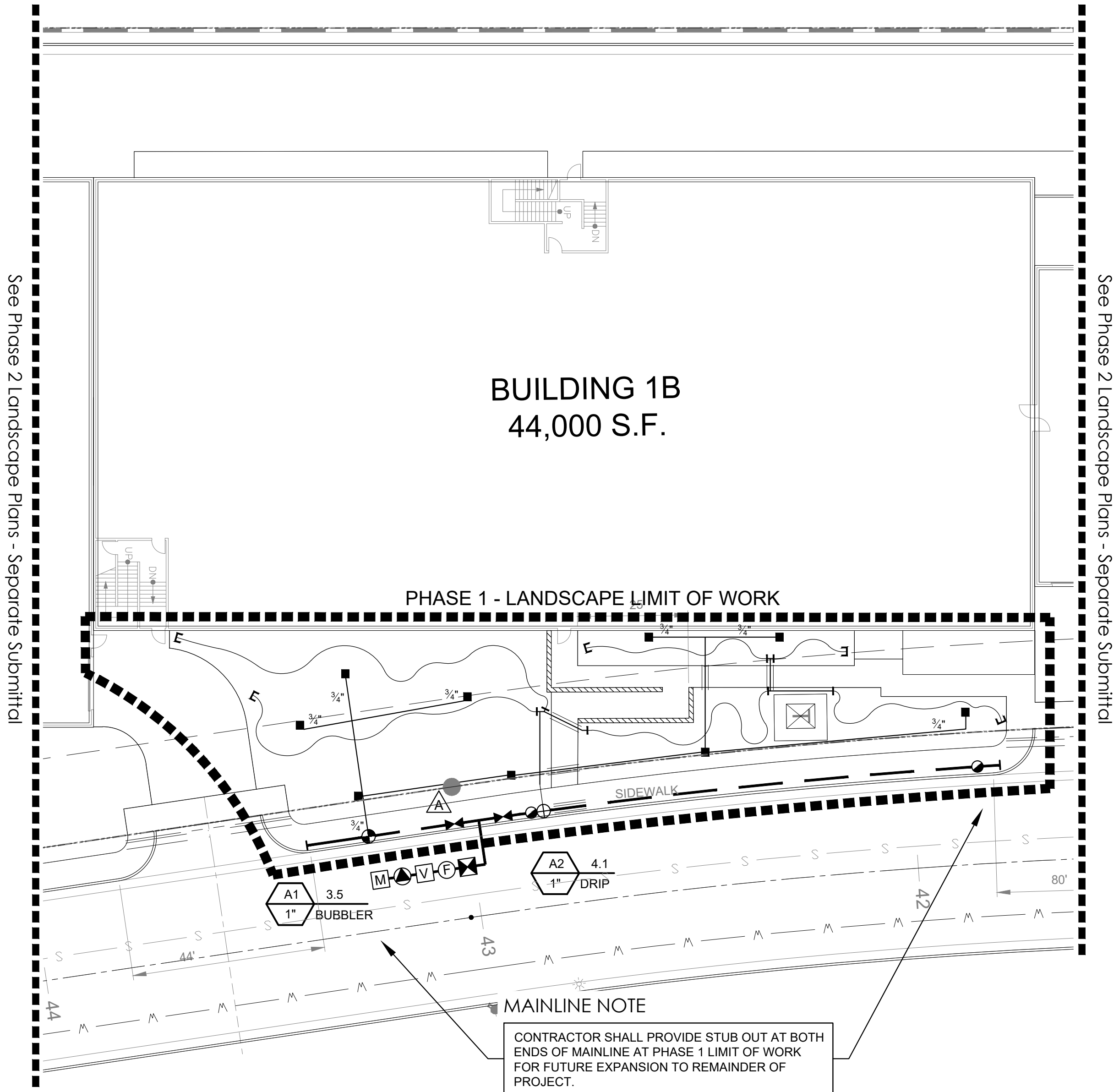
THERE ARE NO POOLS, SPAS, WATER FEATURES OR OUTDOOR DINING AREAS ON THIS PROJECT.

BUILDING 1B
44,000 S.F.

See Phase 2 Landscape Plans - Separate Submittal

See Phase 2 Landscape Plans - Separate Submittal

PHASE 1 - LANDSCAPE LIMIT OF WORK

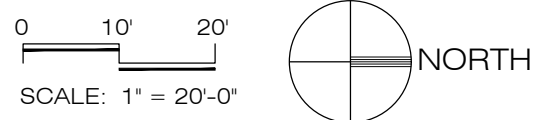


POINT OF CONNECTION

1-1/2" WATER METER TO BE PROVIDED BY OTHERS. CONNECT BACKFLOW PREVENTION DEVICE, MASTER VALVE, FLOW SENSOR, FERTIGATION SYSTEM AND GATE VALVES AS SHOWN. REFER TO LEGEND. CONTRACTOR SHALL CONTACT LANDSCAPE ARCHITECT/ OWNER IF DISCREPANCIES OCCUR.

AUTOMATIC CONTROLLER 'A'

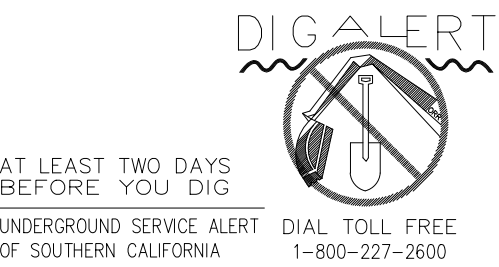
110 VOLT 2 AMP 60 CYCLE POWER AVAILABLE. CONTRACTOR TO MAKE FINAL HOOK-UP. VERIFY LOCATION WITH LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE. PEDESTAL MOUNT ENCLOSURE LOCATED IN PLANTER AREA AS SHOWN ON PLAN.



MAINLINE NOTE
CONTRACTOR SHALL PROVIDE STUB OUT AT BOTH ENDS OF MAINLINE AT PHASE 1 LIMIT OF WORK FOR FUTURE EXPANSION TO REMAINDER OF PROJECT.

Water Conservation Notes

- THE FOLLOWING ARE GUIDELINES TO WHICH THIS PLAN SHALL ADHERE IN ORDER TO CONSERVE WATER AND GENERALLY CONFORM TO THE REQUIREMENTS OF THE DROUGHT RESPONSIVE LANDSCAPE SECTION AND OTHER APPLICABLE CITY AND AGENCY REQUIREMENTS.
- NO TURF SHALL BE USED.
 - LOW TO MODERATE DROUGHT TOLERANT TREES, LOW DROUGHT TOLERANT SHRUBS AND GROUND COVERS ARE TO BE USED.
 - AN AUTOMATIC 'SMART' IRRIGATION CONTROLLER CONNECTED TO A RAIN SENSOR SHALL BE PROVIDED.
 - NOTE INDICATING WATERING TIMES BETWEEN 9:00 PM AND 6:00 AM INDICATED ON PLANS.
 - DIFFERENT PLANTING HYDROZONES SHALL BE IRRIGATED ON SEPARATE VALVES AND BASED ON SOLAR ORIENTATION, SLOPE GRADIENTS AND WATERING REQUIREMENTS.



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

LANDSCAPE ARCHITECT SIGNATURE
2-18-19
DATE

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Landscape Architecture CA#5231
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191 S. Orange St. | Orange | CA | 92866
714-724-9814
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OWNER / PROJECT:

18TH AVE INDUSTRIAL
BUILDINGS

PHASE 1

18th Avenue
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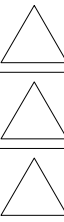
TII Project #: 1019

File:

Drawn By: MM/SS

Checked By: SS

Revisions:



Sheet Title:

IRRIGATION
PLAN

Sheet Number:

LA-1.0

LA-2.1

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GENERAL LANDSCAPE NOTES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STANDARD SPECIFICATIONS OF THE FOR PUBLIC WORKS CONSTRUCTION, THE CITY OF DESERT HOT SPRINGS LANDSCAPE MANUAL AND STANDARD PLANS, THE CITY OF DESERT HOT SPRINGS STREET DESIGN MANUAL, STANDARD ENCROACHMENT CONDITIONS, AND SPECIAL REQUIREMENTS OF THE CONSTRUCTION PERMIT. WHENEVER SPECIAL REQUIREMENTS CONFLICT ON ANY SUBJECT MATTER, THE CITY ENGINEER OR HIS REPRESENTATIVE SHALL DETERMINE WHICH SPECIAL REQUIREMENT OR CODE SHALL GOVERN.
- THE CITY OF DESERT HOT SPRINGS INSPECTION SERVICES DEPARTMENT MUST BE NOTIFIED BEFORE STARTING ANY WORK. THE CONTRACTOR SHALL REQUEST A PRE-JOB MEETING AND SUBMIT REQUIRED ITEMS AT LEAST 48 HOURS IN ADVANCE OF THE MEETING. THE CITY INSPECTOR, CONTRACTOR, LANDSCAPE ARCHITECT, ENGINEER AND DEVELOPER'S REPRESENTATIVE SHALL BE PRESENT TO REVIEW GRADING, IRRIGATION, PLANTING AND RELATED ITEMS.
- ALL INSPECTIONS SHALL BE MADE BY THE CITY INSPECTIONS SERVICES DIVISION. THE CONTRACTOR SHALL REQUEST INSPECTION AND DELIVER REQUIRED SUBMITTALS AT LEAST 48 HOURS IN ADVANCE OF THE INSPECTION IS REQUIRED. NOT ITEM SHALL BE COVERED OR ENCLOSED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE CITY INSPECTOR. EACH ITEM SHALL BE INSPECTED FOR CONFORMANCE TO THE PLANS AND SPECIFICATIONS. ANY SUBSTITUTIONS AND ALL PUMP DATA SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION. INSTALLATION AND WARRANTY OF ANY APPROVED SUBSTITUTION SHALL BE CONTRACTOR'S RESPONSIBILITY. ANY CHANGES REQUIRED FOR INSTALLATION OF ANY APPROVED SUBSTITUTION MUST BE MADE TO THE SATISFACTION OF THE CITY.
- THE CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS ON THE JOB SITE AT ALL TIMES. HE SHALL RECORD ACCURATELY ON ONE SET OF RECORD DRAWINGS ALL CHANGES IN THE WORK CONSISTING OF DEPARTURES FROM THE ORIGINAL RECORD DRAWINGS. THE CHANGES AND DIMENSIONS SHALL BE RECORDED IN A LEGIBLE AND WORKMANLIKE MANNER TO THE SATISFACTION OF THE CITY INSPECTOR. DIMENSIONS SHALL BE FROM TWO PERMANENT POINTS OF REFERENCE (BUILDINGS, MONUMENTS, SIDEWALKS, CURBS, PAVEMENTS, ETC.). DATA TO BE SHOWN ON RECORD DRAWINGS SHALL BE RECORDED DAY TO DAY AS THE PROJECT IS BEING INSTALLED.
- THE LOCATION AND PROTECTION OF ALL UTILITIES, STRUCTURES AND LANDSCAPING IS THE RESPONSIBILITY OF THE PERMITTEE.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY O.S.H.A. PERMITS.
- REVISIONS MADE ON THE PLANS AFTER APPROVAL BY THE CITY ENGINEER SHALL BE APPROVED BY THE CITY ENGINEER AND SO NOTED ON THE TITLE SHEET PRIOR TO IMPLEMENTATION IN THE FIELD.
- NOTIFICATION OF NONCOMPLIANCE: IF, IN THE COURSE OF FULFILLING THEIR RESPONSIBILITY, THE DESIGN LANDSCAPE ARCHITECT FINDS THAT THE WORK IS NOT BEING DONE IN CONFORMANCE WITH THE APPROVED PLANS, THE DISCREPANCIES SHALL BE REPORTED IMMEDIATELY IN WRITING TO THE PERSON IN CHARGE OF THE WORK AND TO THE CITY LANDSCAPE ARCHITECT. RECOMMENDATIONS FOR CORRECTIVE MEASURES, IF NECESSARY, SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
- THE DESIGN LANDSCAPE ARCHITECT SHALL PROVIDE A CERTIFICATE OF COMPLIANCE TO THE CITY INSPECTION SERVICES DIVISION PRIOR TO BEGINNING THE MAINTENANCE PERIOD.
- PRIOR TO APPROVAL FROM INSPECTION SERVICES, THE LANDSCAPE ARCHITECT SHALL SUBMIT ON MYLAR SET AND ONE SET OF 35MM MICROFILM OF THE AS-BUILT PLAN MOUNTED IN A 4" X 6" JACKET AND ONE DUPLICATE COPY. THE PERMIT NUMBER SHALL BE SHOWN IN THE HEADING (COLOR BACKING) OF ALL MICROFILM JACKETS AND THE WORDS "FINAL RECORD DRAWINGS" SHALL APPEAR ON ALL OF THE ORIGINAL DRAWINGS PRIOR TO MICROFILMING.
- SUBSURFACE DRAINS SHALL CONNECT INTO THE STORM DRAIN SYSTEM. A SECONDARY DRAINAGE PATH MUST BE PROVIDED WHERE GRATE INLET-TYPE BASINS ARE USED FOR DRAINAGE. GRATE INLET-TYPE BASINS SHALL NOT BE USED WHERE LEAVES OR OTHER DEBRIS MAY CLOG THE GRATES. STEEL DRAIN LINES SHALL NOT BE USED.
- TURF AREAS SHALL HAVE A MINIMUM SLOPE OF 2% AND A MAXIMUM SLOPE OF 20%.
- CUT SLOPES 2:1 AND STEEPER, 5 FEET OR MORE IN HEIGHT AND FILL SLOPES 2:1 AND STEEPER, 3 FEET OR MORE IN HEIGHT, SHALL REQUIRE FULL HEIGHT CURBS, AND SHALL COMPLY WITH CITY STANDARDS.
- HANDICAP RAMPS SHALL BE PERMITTED AS REQUIRED AT STREET INTERSECTIONS AND AT OTHER LOCATIONS WHERE SIDEWALKS TERMINATE AT FULL HEIGHT CURBS, AND SHALL COMPLY WITH CITY STANDARDS.
- ALL CONCRETE SHALL BE CONSTRUCTED WITH TYPE 5, SIX (6) SACK CEMENT UNLESS DEEMED UNNECESSARY BY THE SULFATE CONTENT TESTS CONDUCTED BY THE SOILS ENGINEER AND REPORTED IN THE PRELIMINARY SOILS REPORT.
- A 6-INCH CONCRETE HEADER IS REQUIRED BETWEEN TURF AND GROUND COVER AREAS.
- THE CONTRACTOR SHALL PROVIDE FULL MAINTENANCE OF ALL LANDSCAPE AREAS FOR A MINIMUM OF 120 DAYS FROM FINAL ACCEPTANCE OF OWNER. THE MAINTENANCE PERIOD SHALL COMMENCE WHEN ALL ELEMENTS OF THE PROJECT ARE COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND WRITTEN APPROVAL FROM THE CITY INSPECTION SERVICES DIVISION HAS BEEN OBTAINED. PARTIAL ACCEPTANCE OF IMPROVEMENTS WITHIN THE SCOPE OF WORK OF APPROVED PLANS WILL NOT BE AUTHORIZED WITHOUT APPROVAL BY THE CITY ENGINEER.
- PERMANENT POWER TO THE AUTOMATIC CONTROLLER SHALL BE CONTINUOUS AND ESTABLISHED PRIOR TO THE BEGINNING OF THE MAINTENANCE PERIOD.
- FOR THE LAST 30 DAYS OF THE MAINTENANCE PERIOD, IRRIGATION SHALL BE CONTROLLED SO THAT THE QUANTITY OF WATER SUPPLIED WILL NOT EXCEED THAT REQUIRED BY IRWD GUIDELINES, ACCEPTED ON THE 1ST OF 15TH DAY OF THE MONTH FOLLOWING COMPLETION OF THE MAINTENANCE PERIOD. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTION SERVICES DIVISION AND SUBMIT TURNOVER ITEMS 10 DAYS PRIOR TO COMPLETION OF THE 120 DAY MAINTENANCE PERIOD. DEFICIENCIES NOTED DURING INSPECTION SHALL EXTEND THE MAINTENANCE PERIOD UNTIL NOTED DEFICIENCIES ARE CORRECTED.
- DURING THE MAINTENANCE PERIOD, THE ENTIRE PROJECT SHALL BE INSPECTED WEEKLY. THE IRRIGATION TIMING AND COVERAGE SHALL BE CHECKED AND ADJUSTED IF NECESSARY DURING THE GERMINATION PERIOD. ALL PLANTED AREAS SHALL BE KEPT NEAT AND CLEAN AND FREE OF ALL CLIPPINGS, DEBRIS AND TRASH. ALL SUBSURFACE DRAINS SHALL BE PERIODICALLY FLUSHED WITH CLEAN WATER TO AVOID BUILD-UP OF SILT AND DEBRIS. KEEP ALL DRAIN INLETS CLEAR OF LEAVES, TRASH AND OTHER DEBRIS. ALL PAVED AREAS SHALL BE KEPT FREE OF TRASH, DEBRIS AND SILT.
- BEFORE FINAL ACCEPTANCE, ALL FILTERS AND IRRIGATION HEADS SHALL BE CLEANED. VALVE BOXES AND SPRINKLERS SHALL BE ADJUSTED TO HEIGHTS REQUIRED IN RELATION IN FINISH GRADE. TURF SHALL BE MOWED, EDGED AND WEEDED, AND CLIPPED AROUND SPRINKLERS, VALVE BOXES AND TREES (IF APPLICABLE). ALL PLANT MATERIAL NOT SHOWING VIGOR OR THAT HAVE BEEN DAMAGED SHALL BE REPLACED. REDUCED PRESSURE BACKFLOW PREVENTERS SHALL BE TESTED AND APPROVED BY THE CITY.
- ALL UTILITY COSTS INCURRED DURING THE MAINTENANCE PERIOD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- IRRIGATION SYSTEM SHALL BE OPERATED TO ELIMINATE FOGGING AND MINIMIZE OVERSPRAY AND DISCHARGE ONTO NON-LANDSCAPED AREAS.
- IRRIGATION SYSTEM SHALL PROVIDE UNIFORM COVERAGE THROUGHOUT EACH SYSTEM.
- SPRINKLER HEADS USED IN TURFED PLAY AREAS SHALL BE EQUIPPED WITH PROTECTIVE COVERS.
- ANTI-DRAIN VALVES (IN LINE OR UNDER SPRINKLER HEADS) SHALL BE INSTALLED ON ALL SLOPES GREATER THAN 5%.
- AFTER COMPLETION OF ROUGH GRADING AND PRIOR TO SOIL PREPARATION, THE DEVELOPER SHALL PROVIDE THE TESTING OF PLANTING SOILS AT (3) SEPARATE LOCATIONS BY AN INDEPENDENT AGRONOMIC SOILS TESTING LABORATORY (MEMBER OF THE CALIFORNIA ASSOCIATION OF AGRICULTURAL LABS). REPRESENTATIVE SOIL SAMPLES SHALL BE TAKEN IN THE FIELD AND A WRITTEN REPORT SHALL BE PREPARED BY THE AGRONOMIST AND SHALL INCLUDE RECOMMENDATIONS FOR SOIL AMENDMENTS AND APPLICATION RATES FOR SOIL PREPARATION PREPLANT FERTILIZATION, PLANTING BACKFILL MIX, HYDROMULCH SLURRY, AND AUGER HOLE REQUIREMENTS, AND POST MAINTENANCE FERTILIZATION PROGRAM. TEST RESULTS AND RECOMMENDATIONS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO SOIL PREPARATION.
- CONTRACTOR SHALL NOT STORE MATERIALS OR EQUIPMENT, PERMIT BURNING, OPERATE OR PARK EQUIPMENT UNDER THE BRANCHES OF ANY EXISTING PLANT TO REMAIN EXCEPT AS ACTUALLY REQUIRED FOR CONSTRUCTION IN THOSE AREAS. CONTRACTOR SHALL PROVIDE FENCES OR OTHER BARRIERS AS NECESSARY AT THE DRIP LINE OR AROUND TREE TRUNKS TO PROTECT EXISTING PLANTS FROM DAMAGE DURING CONSTRUCTION CALLED FOR BY THE PLANS BY DAMAGE EXISTING PLANTS.

RECYCLED AND POTABLE WATER NOTES (MSWD)

- THE INSTALLATION OF THE IRRIGATION WATER SYSTEM SHALL CONFORM TO THE REGULATIONS FOR THE CONSTRUCTION OF IRRIGATION WATER SYSTEMS WITHIN THE MISSION SPRINGS WATER DISTRICT (MSWD) AND THE ACCOMPANYING PLANS AND SPECIFICATIONS.
- ALL ON-SITE RECYCLED AND POTABLE WATER PIPING INSTALLED ON THIS PROJECT SHALL BE IDENTIFIED IN ACCORDANCE WITH THE MSWD'S REGULATIONS AND THE IRRIGATION SPECIFICATIONS.
- RECYCLED WATER PIPING SHALL BE PURPLE PVC MANUFACTURED FOR RECYCLED (RECLAIMED) WATER SYSTEMS.
- MARKING ON THE PURPLE PVC SHALL INCLUDE THE FOLLOWING:

CAUTION RECYCLED (OR RECLAIMED) WATER; NOMINAL PIPE SIZE; PVC-1120, PRESSURE RATING IN POUNDS PER SQUARE INCH AT 73 DEGREES, ASTM DESIGNATIONS SUCH AS 1785, 2241, 2672, 3139. PRINTING SHALL BE PLACED CONTINUOUSLY ON TWO SIDES OF THE PIPE.
- ALL RECYCLED WATER SPRINKLER BOX COVERS AND CONTROL VALVES SHALL BE IDENTIFIED.
 - TAGS SHALL BE WEATHERPROOF PLASTIC, 3" x 4", PURPLE IN COLOR WITH THE WORDS "WARNING RECYCLED (OR RECLAIMED) WATER - DO NOT DRINK" IMPRINTED ON ONE SIDE, AND "AVISA AGUA IMPURA - NO TOMAR" ON THE OTHER SIDE. IMPRINTING SHALL BE PERMANENT AND BLACK IN COLOR. USE TAGS AS MANUFACTURED BY T. CHRISTY ENTERPRISES OR APPROVED EQUAL.
 - ONE TAG SHALL BE ATTACHED TO EACH APPURTENANCE AS FOLLOWS, OR:

IDENTIFICATION SHALL BE AFFIXED TO EACH IRRIGATION VALVE LID COVER AND VALVE AS FOLLOWS:
(a) IDENTIFY VALVE COVER WITH LABEL OR BRANDED HOT STAMP THAT READS "RECYCLED" (OR RECLAIMED) WATER DO NOT DRINK" OR USE PURPLE COVER WITH SAME IDENTIFICATION.
(b) ATTACH TAG TO CONTROL VALVE STEM DIRECTLY OR WITH PLASTIC TIE-WRAP.
(c) ATTACH TAG TO CONTROL VALVE SOLENOID WIRE DIRECTLY OR WITH PLASTIC TIE-WRAP.
(d) ATTACH TO BODY OF THE RELATIVE APPURTENANCE WITH A PLASTIC TIE - WRAP.
- WARNING TAPES SHALL BE USED ON ALL CONSTANT PRESSURE MAINLINE PIPING CARRYING POTABLE WATER.
- WARNING TAPES SHALL BE A MINIMUM OF 3-INCHES WIDE AND SHALL RUN CONTINUOUSLY FOR THE ENTIRE LENGTH OF ALL CONSTANT PRESSURE MAIN LINE PIPING. THE TAPE SHALL BE ATTACHED TO THE TOP OF THE PIPE WITH PLASTIC TAPE Banded AROUND THE WARNING TAPE AND THE PIPE EVERY 5 FEET ON CENTER.
- WARNING TAPE FOR THE CONSTANT PRESSURE POTABLE WATER PIPING SHALL BE BLUE IN COLOR WITH WORDS "CAUTION BURIED WATERLINE BELOW" IMPRINTED IN MINIMUM 1-INCH-HIGH LETTERS BLACK IN COLOR. IMPRINTING SHALL BE CONTINUOUS AND PERMANENT.
- MSWD SHALL BE NOTIFIED TWO DAYS PRIOR TO THE START OF IRRIGATION CONSTRUCTION AT (949) 453-5300 AND EACH WORKDAY THEREAFTER UNTIL COMPLETION OF PROJECT.
- ALL PRESSURE MAIN LINE PIPING FROM THE RECYCLED WATER SYSTEM SHALL BE INSTALLED TO MAINTAIN 10 FEET MINIMUM HORIZONTAL SEPARATION FROM ALL POTABLE WATER PIPING. WHERE RECYCLED AND POTABLE WATER PRESSURE MAINLINE PIPING CROSS, THE RECYCLED WATER PIPING SHALL BE INSTALLED BELOW THE POTABLE WATER PIPING IN A CLASS 200 PURPLE PVC SLEEVE WHICH EXTENDS A MINIMUM OF 5 FEET ON EITHER SIDE OF THE POTABLE WATER PIPING. PROVIDE A MINIMUM VERTICAL CLEARANCE OF 6 INCHES. CONVENTIONAL (WHITE) PVC PIPE MAY BE USED FOR SLEEVING MATERIAL IF IT IS TAPED WITH 3-INCH WIDE PURPLE WARNING TAPE WHICH READS "CAUTION RECYCLED (OR RECLAIMED) WATER".
- THE IRRIGATION SYSTEM HAS BEEN DESIGNED TO OPERATE BETWEEN THE HOURS OF 9:00 P.M. AND 6:00 A.M. UNLESS OTHERWISE DIRECTED BY THE DISTRICT ENGINEER.
- ALL NEW COMMON AREAS WHERE RECYCLED WATER IS USED AND THAT ARE ACCESSIBLE TO THE GENERAL PUBLIC SHALL BE POSTED WITH CONSPICUOUS SIGNS THAT INCLUDE THE FOLLOWING WORDING IN A SIZE NO LESS THAN 4 INCHES HIGH BY 8 INCHES WIDE: "RECYCLED WATER - DO NOT DRINK" OR "RECLAIMED WATER - DO NOT DRINK". EACH SIGN SHALL ALSO DISPLAY AN INTERNATIONAL SYMBOL CONVEYING THE SAME WARNING.
- ADJUST SPRAY HEADS TO ELIMINATE OVERSPRAY ONTO AREAS NOT UNDER THE CONTROL OF THE CUSTOMER. FOR EXAMPLE: POOL DECKS, PRIVATE PATIOS, STREETS, AND SIDEWALKS.
- CONTACT THE MSWD OFFICE TWO DAYS PRIOR TO THE IRRIGATION SYSTEM COVERAGE TEST AT (760) 329-6448 AND ARRANGE A WALK THROUGH OF THE SYSTEM.
- FAILURE TO COMPLY WITH ANY OR ALL OF THE ABOVE GUIDELINES WILL PLACE THE SYSTEM IN VIOLATION OF MSWD RULES AND REGULATIONS, AND WILL RESULT IN TERMINATION OF SERVICE UNTIL THE APPROPRIATE CORRECTIVE MEASURES HAVE BEEN TAKEN.
 - WARNING TAPE SHALL BE USED ON ALL CONSTANT PRESSURE MAINS.
 - WARNING TAPE SHALL BE A MINIMUM OF 3-INCHES WIDE AND SHALL RUN CONTINUOUSLY FOR THE ENTIRE LENGTH OF ALL CONSTANT PRESSURE MAIN LINE PIPING. THE TAPE SHALL BE ATTACHED TO THE TOP OF THE PIPE WITH PLASTIC TAPE Banded AROUND THE WARNING TAPE AND THE PIPE EVERY 5 FEET ON CENTER.
 - WARNING TAPE FOR THE CONSTANT PRESSURE RECLAIMED WATER PIPING SHALL BE PURPLE IN COLOR WITH THE WORDS "CAUTION - RECYCLED (OR RECLAIMED) WATER" IMPRINTED A MINIMUM OF 1-INCH HIGH AND BLACK IN COLOR. IMPRINTING SHALL BE CONTINUOUS AND PERMANENT.
- ON-SITE MAINTENANCE -ALL REPAIRS AND MODIFICATIONS MUST BE REVIEWED AND APPROVED BY THE DISTRICT'S ON-SITE WATER SYSTEMS GROUP IN A MANNER CONSISTENT WITH THE REQUIREMENTS HEREIN.
- ALL POTABLE WATER PIPING OUTSIDE OF THE STRUCTURE SHALL BE COPPER. SEE NOTES F, G AND H.
- ALL RECLAIMED WATER PIPING SHALL BE PURPLE COLORED PVC PIPE WHICH SHALL BE MARKED IN ACCORDANCE WITH NO. "D" ABOVE.
- AN APPROVED BACKFLOW PREVENTION DEVICE CONFORMING TO THE MSWD RULES AND REGULATIONS SHALL BE INSTALLED ON THE DOWNSTREAM SIDE OF THE POTABLE WATER METER.

GENERAL IRRIGATION NOTES

- INSTALL POP-UP SPRINKLER HEADS POSITIONED WITHIN SHRUB OR GROUND COVER AREAS WITH THE TOP OF SPRINKLER ABOVE FINISH GRADE AS SHOWN IN THE DETAILS.
- SET SPRINKLER HEADS PERPENDICULAR TO FINISH GRADE OF AREA TO BE IRRIGATED UNLESS INDICATED OTHERWISE ON DRAWINGS.
- WHEN VERTICAL OBSTRUCTIONS (FIRE HYDRANTS, TREES, LIGHT POLES, ETC.) INTERFERE WITH THE SPRINKLER HEAD PATTERN OF COVERAGE, ADJUST SPRINKLER SYSTEM LAYOUT BY INSTALLING A QUARTER CIRCLE, HALF CIRCLE, OR ADJUSTABLE CIRCLE SPRINKLER HEAD ON EACH OF OBSTRUCTION IN ORDER TO PROVIDE PROPER COVERAGE. PERFORM SPRINKLER LAYOUT ADJUSTMENT AT NO COST TO THE OWNER.
- SPRINKLER SYSTEM IS BASED ON MINIMUM PRESSURE AND MAXIMUM FLOW DEMAND SHOWN ON IRRIGATION DRAWINGS. REFER TO POINT OF CONNECTION NOTES. VERIFY PERMANENT WATER PRESSURE PRIOR TO COMMENCEMENT OF CONSTRUCTION. REPORT DIFFERENCES BETWEEN WATER PRESSURE INDICATED ON DRAWINGS AND ACTUAL SITE PRESSURE READING AT IRRIGATION POINT OF CONNECTION TO OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. IN THE EVENT PRESSURE DIFFERENCES ARE NOT REPORTED PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR REVISIONS.
- THE 120 VOLT ELECTRICAL POWER SUPPLY TO THE AUTOMATIC CONTROLLER WILL BE PROVIDED BY GENERAL CONTRACTOR. CONNECT FINAL HOOK-UP FROM THE ELECTRICAL POWER OUTLET TO THE AUTOMATIC CONTROLLER.
- THIS DESIGN IS DIAGRAMMATIC. PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY. INSTALL PIPING AND IRRIGATION FACILITIES WITHIN PLANTING AREAS WHERE POSSIBLE. AVOID CONFLICTS BETWEEN SPRINKLER SYSTEM, LANDSCAPE PLANTING AND ARCHITECTURAL FEATURES.
- FLUSH AND ADJUST SPRINKLER HEADS FOR OPTIMUM PERFORMANCE. PREVENT OVERSPRAY ONTO WALKS, ROADWAYS, WALLS, FENCES AND BUILDINGS. SELECT THE MOST APPROPRIATE PART CIRCLE PATTERN NOZZLE TO FIT THE SITE CONDITIONS AND THROTTLE THE FLOW CONTROL ADJUSTMENT AT EACH CONTROL VALVE TO OBTAIN OPTIMUM SPRINKLER HEAD PRESSURE.
- DO NOT WILLFULLY INSTALL SPRINKLER SYSTEM AS INDICATED ON DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT EXISTING OBSTRUCTIONS, GRADE DIFFERENCES, AREA DIMENSIONS, AND OTHER SITE SPECIFIC INFORMATION THAT MIGHT NOT HAVE BEEN CONSIDERED DURING DESIGN. NOTIFY THE OWNER'S AUTHORIZED REPRESENTATIVE OF SUCH OBSTRUCTIONS OR DIFFERENCES FOR RESOLUTION. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR REVISIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH GRADE DIFFERENCES, WALL LOCATIONS, ETC. COORDINATE WORK WITH GENERAL CONTRACTOR AND OTHER SUB-CONTRACTORS FOR THE INSTALLATION OF IRRIGATION PIPE SLEEVES THROUGH WALLS, UNDER PAVEMENT AND STRUCTURES, ETC.
- CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF SUFFICIENTLY SIZED CONTROL WIRE SLEEVES UNDER PAVED AREAS, IN ADDITION TO CONTROL WIRE SLEEVES ON THE DRAWINGS.
- INSTALL PIPING, RELATED MATERIALS AND EQUIPMENT AS SHOWN ON THE DRAWINGS. USE TEFLON TAPE ON PVC MALE PIPE THREADS, INCLUDING SPRINKLER SWING JOINT AND VALVE ASSEMBLIES. USE NO PIPE DOPE.
- PROVIDE RECLAIMED WATER SYSTEM IDENTIFICATION AS REQUIRED BY MSWD AND THE CITY OF IRVINE. RECLAIMED WATER SYSTEM IDENTIFICATION INCLUDES, BUT IS NOT LIMITED TO, POSTED CAUTION SIGNS, WRITTEN WARNING TAGGING, LABELS ON VALVE BOXES AND HEAT BRANDING. REFER TO RECLAIMED WATER NOTES ON DRAWINGS. REFER TO THE MSWD PUBLISHED "RULES AND REGULATIONS FOR USERS OF RECLAIMED WATER" MANUAL.

GUIDELINES FOR RECYCLED WATER USE (MSWD)

- THE FOLLOWING GUIDELINES HAVE BEEN ESTABLISHED BY THE MISSION SPRINGS WATER DISTRICT IN CONJUNCTION WITH THE ORANGE COUNTY HEALTH DEPARTMENT AND THE SANTANA REGIONAL WATER QUALITY CONTROL BOARD. THEY ARE TO PROVIDE THE BASIC PARAMETERS FOR THE USE OF RECLAIMED WATER IN LANDSCAPE IRRIGATION. TO OPERATE YOUR SYSTEM IN COMPLIANCE WITH THESE GUIDELINES YOU MUST:
- IRRIGATION BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM ONLY. WATERING OUTSIDE THIS TIME FRAME MUST BE DONE MANUALLY WITH QUALIFIED SUPERVISORY PERSONNEL ON-SITE. NO SYSTEM SHALL AT ANY TIME BE LEFT UNATTENDED DURING USE OUTSIDE THE NORMAL SCHEDULE.
 - IRRIGATE IN A MANNER THAT WILL MINIMIZE RUNOFF, POOLING AND PONDING. THE APPLICATION RATE SHALL NOT EXCEED THE INFILTRATION RATE OF THE SOIL. TIMERS MUST BE ADJUSTED SO AS TO BE COMPATIBLE WITH THE LOWEST SOIL INFILTRATION RATE PRESENT. THIS PROCEDURE MAY BE FACILITATED BY THE EFFICIENT SCHEDULING OF THE AUTOMATIC CONTROL CLOCKS, (IE. EMPLOYING THE REPEAT FUNCTION TO BREAK UP THE TOTAL IRRIGATION TIME INTO CYCLES THAT WILL PROMOTE MAXIMUM SOIL ABSORPTION).
 - ADJUST SPRAY HEADS TO ELIMINATE OVERSPRAY ONTO AREAS NOT UNDER THE CONTROL OF THE CUSTOMER. FOR EXAMPLE, POOL DECKS, PRIVATE PATIOS, STREETS, AND SIDEWALKS.
 - MONITOR AND MAINTAIN THE SYSTEM TO MINIMIZE EQUIPMENT AND MATERIAL FAILURE. BROKEN SPRINKLER HEADS, LEAKS, UNRELIABLE VALVES, ETC. SHOULD BE REPAIRED AS SOON AS THEY BECOME APPARENT.
 - EDUCATE ALL MAINTENANCE PERSONNEL, ON A CONTINUOUS BASIS, OF THE PRESENCE OF RECLAIMED WATER, AND THE FACT THAT IT IS NOT APPROVED FOR DRINKING PURPOSES. GIVEN THE HIGH TURNOVER RATE OF THE EMPLOYEES IN THE LANDSCAPE INDUSTRY, IT IS IMPORTANT THAT THIS INFORMATION BE DISSEMINATED ON AN ALMOST DAILY BASIS. IT IS YOU, THE LANDSCAPE CONTRACTOR, WHO IS RESPONSIBLE FOR EDUCATING EACH AND EVERY ONE OF YOUR EMPLOYEES.
 - OBTAIN PRIOR APPROVAL FOR ALL PROPOSED CHANGES AND MODIFICATIONS TO ANY ON-SITE FACILITIES. SUCH CHANGES MUST BE SUBMITTED TO, AND APPROVED BY, THE DISTRICT ENGINEERING OFFICE AND DESIGNED IN ACCORDANCE WITH DISTRICT STANDARDS.

FAILURE TO COMPLY WITH ANY OR ALL OF THE ABOVE GUIDELINES PUTS YOUR SYSTEM IN VIOLATION TO THE DISTRICT'S RULES AND REGULATIONS, AND WILL RESULT IN TERMINATION OF SERVICE UNTIL THE APPROPRIATE CORRECTIVE STEPS HAVE BEEN TAKEN.

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OWNER / PROJECT:

18TH AVE INDUSTRIAL BUILDINGS

PHASE 1

18th Avenue
Desert Hot Springs, CA
92240
APN: 666-310-009

Scale:

Date: 2/26/19

Til Project #: 1019

File:

Drawn By: MM/SS

Checked By: SS

Revisions:

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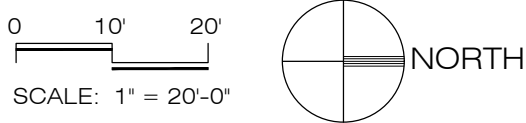
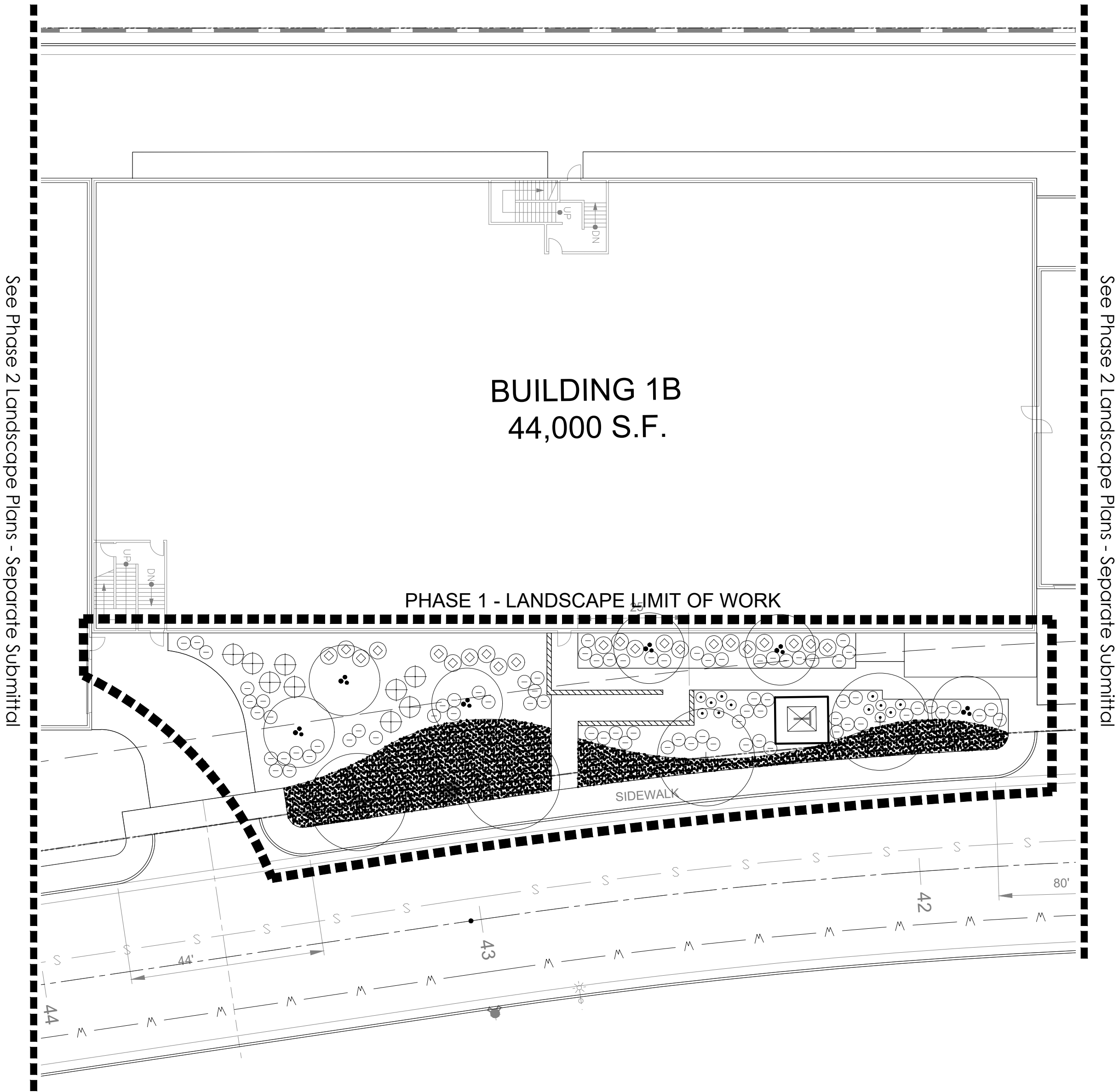
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IRRIGATION NOTES

Sheet Number:

LA-2.2

ALL IDEAS, DESIGN AND ARRANGEMENTS INDICATED ON THESE DRAWINGS ARE THE PROPERTY OF THE LANDSCAPE ARCHITECTS AND ARE INTENDED TO BE USED IN CONNECTION WITH THIS SPECIFIC PROJECT ONLY, AND SHALL NOT OTHERWISE BE REPRODUCED FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT.



Planting Legend

TREES							
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	REMARKS	WUCOLS	FUNCTION
	CERCIDIUM 'DESERT MUSEUM' MULTI-TRUNK	DESERT MUSEUM PALO VERDE	24" BOX	6	DOUBLE STAKE	LOW	ACCENT TREE
	QUERCUS ILEX	HOLLY OAK	24" BOX	4	DOUBLE STAKE	LOW	STREET TREE
SHRUBS							
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	REMARKS	WUCOLS	FUNCTION
	CAESALPINIA PULCHERRIMA	DESERT BIRD OF PARADISE	5 GAL	9	LOW	PER PLAN	LARGE ACCENT
	HESPERALOE PARVIFLORA	RED YUCCA	5 GAL	12	LOW	PER PLAN	SMALL ACCENT
	LEUCOPHYLLUM 'GREEN CLOUD'	GREEN CLOUD TEXAS RANGER	5 GAL	22	LOW	PER PLAN	MEDIUM SCREEN
GROUND COVER							
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	REMARKS	WUCOLS	FUNCTION
	DALEA GREGGII	TRAILING INDIGO BUSH	5 GAL	79	LOW	3'-0" O.C. TRIANGULAR SPACING	MEDIUM GROUND COVER
	TAN DECOMPOSED GRANITE		N/A	4,610 S.F.	NONE	2" MIN. THICK LAYER	NON LIVING GROUND COVER

LANDSCAPE NOTES

- QUANTITIES ARE FOR OWNER USE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACT TO VERIFY ALL QUANTITIES.
- LANDSCAPING IS TO CONFORM TO ALL APPLICABLE CODES & ORDINANCES.
- PROPERTY OWNER SHALL BE RESPONSIBLE FOR ALL ON-SITE LANDSCAPING AS SHOWN.
- PROVIDE 2" LAYER MIN. BARK MULCH IN ALL PLANTING BEDS NOT IDENTIFIED WITH DECOMPOSED GRANITE PER LEGEND.

Tree Placement Notes

- MINIMUM TREE SEPERATION DISTANCE:
- 10'-0" FROM ABOVE GROUND UTILITIES
 - 5'-0" FROM UNDERGROUND UTILITIES (10'-0" FROM SEWER)
 - 20'-0" FROM TRAFFIC SIGNALS/ STOP SIGNS
 - 10'-0" FROM DRIVEWAY ENTRIES
 - 25'-0" FROM INTERSECTIONS (INTERSECTING CURB LINES OF TWO STREETS)

CONTRACTOR TO VERIFY EXISTING AND PROPOSED SITE CONDITIONS PRIOR TO PLANTING TREES.

IF DISCREPANCIES OCCUR, LANDSCAPE ARCHITECT IS TO BE NOTIFIED AND TREE PLACEMENTS SHALL BE ADJUSTED ACCORDINGLY.

FAILURE TO DO SO THAT RESULT IN CHANGES TO THE PLAN, THERE SHALL BE NO COST TO OWNER OR LANDSCAPE ARCHITECT.

ROOTBARRIERS SHALL BE PLACED AT TREES THAT ARE WITHIN 5'-0" OF ANY HARDSCAPE SURFACE, BUILDING, OR UTILITY, ETC. SEE DETAIL.

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

2-18-19
LANDSCAPE ARCHITECT SIGNATURE DATE

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TII Project #: 1019

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Drawn By: MM/SS

Checked By: SS

Revisions:

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2

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Sheet Title:

PLANTING PLAN

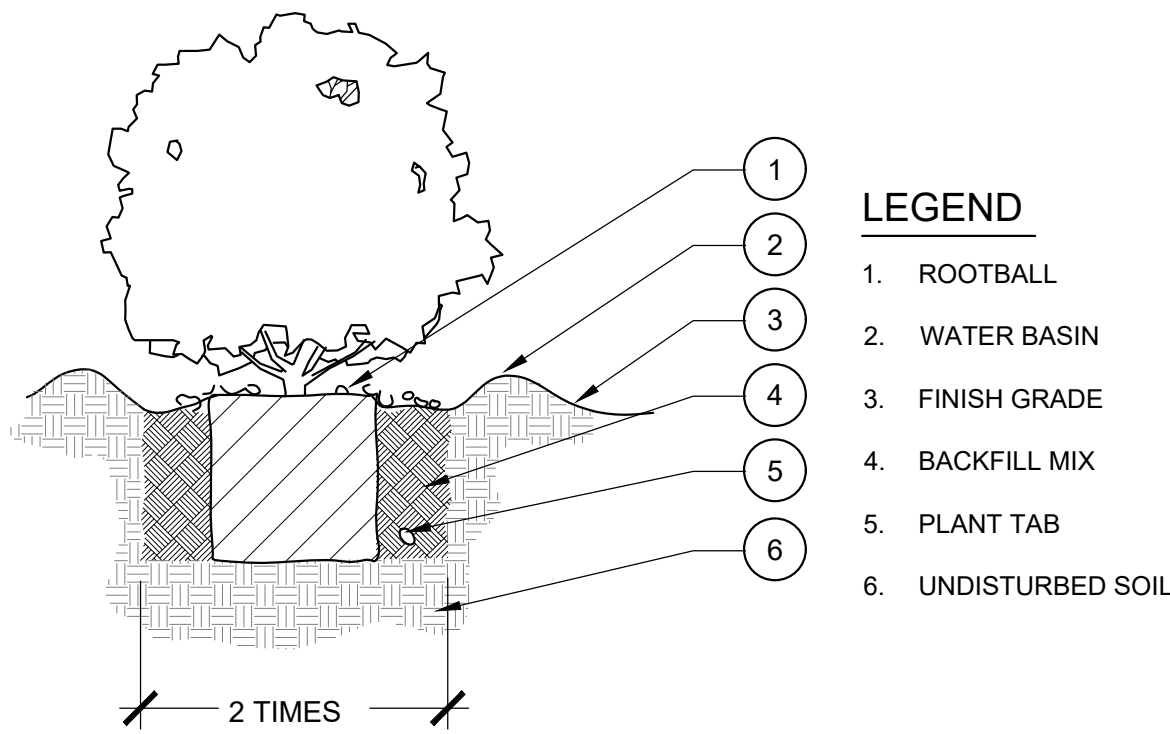
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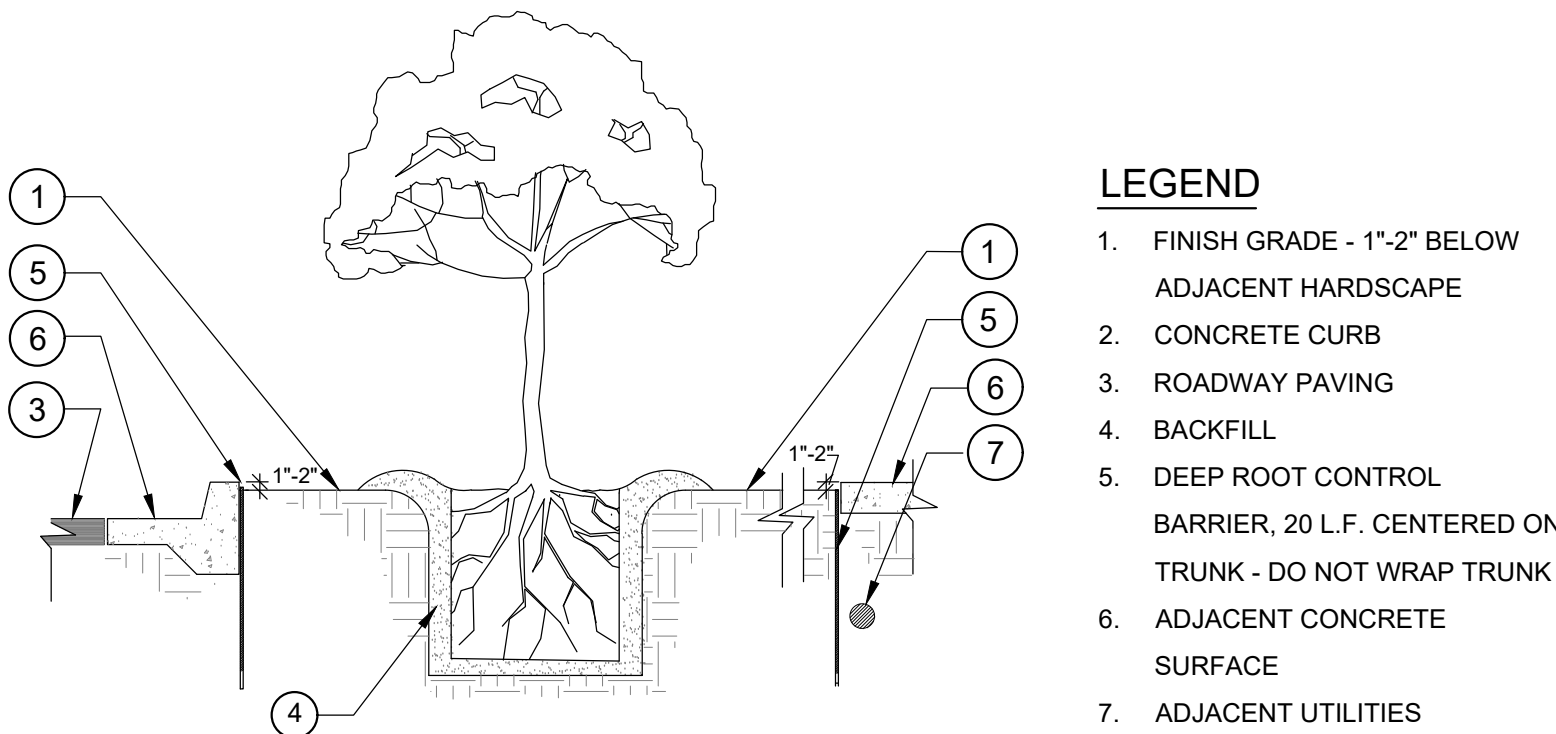
PLANTING NOTES

- The contractor shall maintain a qualified supervisor on the site at all times during construction and through completion of maintenance work.
- Prior to the purchase of trees, the developer shall submit to the City a plan showing the proposed tree species, size and planting locations. This plan shall be approved by the City before any work may progress.
- The contractor shall verify all plant material quantities and provide the owner or owner's representative with invoices prior to installation. Plant material quantities on the plan are listed for the convenience of the contractor. Actual number of symbols shall have priority over quantity enumerated.
- All trees shall be erect, vigorous and in a healthy condition, free from disease and insect pests or previous infestations. The root ball of all material shall be developed so that the ball will maintain its size and shape and not crumble when the plant is removed from its container. The root ball will be developed so that its growth or ability to grow in the future is not impaired.
- 15 gallon and 24" box trees to be double staked at windward angle.
- 15 gallon trees shall have a trunk diameter of 1 1/4 to 1 1/2 inches measured at a five inch height above the top of the undisturbed root ball. The head spread shall be approximately two feet to three feet. The height of the tree shall be from eight to ten feet, measured from the top of the root ball to the top of the head or foliage.
- Trees on level or gentle sloping shall be placed in a hole large enough to allow 12 inches of planting mix to be placed on all sides of the root ball. The top of the root ball and six inches at bottom of root ball. The top of the root ball shall be placed at ground level. For trees located on slopes, the tree hole shall be big enough to allow a level shelf to be built and a water basin collar be constructed with backfill.
- Trees shall be staked immediately after planting. Wires shall be encased in hose to prevent direct contact with bark of tree and shall be placed around trunk in single loop. Wires shall be tightened and kept taut. Stakes shall be equally spaced about each tree placed in direction of prevailing summer and winter winds. Trees shall be fastened to each stake at a height of about 5 feet with three single strands of wire. Stakes shall be uniform in height and placed according to diameter of tree trunk.
- All plant material shall be approved at the site by the landscape architect or Owner's representative prior to installation. All plant material which is rejected shall be returned at no cost to the Owner.
- After all soil has been imported to the site and rough grading complete, but before soil preparation, the contractor shall furnish a copy of soil tests for agricultural suitability and fertility (prepared by a California association of agricultural laboratories certified technician) to the owner, landscape architect and City landscape architect. This shall be completed prior to final signatures of the plans.
- Areas with slopes less than 4:1 shall be tilled to a depth of 8" and work to finish grade. Areas with slopes greater than 3:1 shall not be tilled. Holes, depressions and rivulets shall be filled in and brought to a smooth grade. All sticks, branches, stones or debris on surface, which will interfere with sodding or seeding, shall be removed. Plant mulch shall be processed wood shavings and chips not more than 1/4" to 1/2" square, or equivalent.
- Fertilizer shall be a commercial grade of the inorganic or organic type, produced in pelletized, granular or slurry form. Additional additives are recommended depending on soil conditions, e.g. soil sulfur, iron sulfate, calcium/magnesium sulfate. Fertilizer shall conform to City Standards
- Where extreme soil conditions exist, enlarged planting pits, excavation of native soil, drainage sumps, special soil amendments, protective lining of plant pit, and deeper staking with the use of 10 foot stakes may be required.
- Contractor will be responsible to review the plans on file at the city for drainage location, drainage swales, and contour grade.
- Contractor will be held responsible for any damages due to modifications of the field conditions and any discrepancies must be brought to the attention of the owner or owner's and City representative prior to construction.
- Contractor shall not allow or cause any drainage course or swale to be blocked from conveyance of water from site. Positive drainage away from all structures shall be maintained. Contractor shall grade any and all dirt swales as directed by the owner and City's representative to allow for site drainage.
- A 21-day weed abatement period will be required. During 120 day maintenance period prior to turn over to city the contractor shall apply a pre emergent to the site.
- Contractor shall guarantee shrubs 6 months from date of final acceptance. Trees one year from date of acceptance.
- Contractor shall maintain and protect in place existing plant material. Contractor is responsible for replacement of any damaged plant materials at his cost.
- Backfill mix is as follows:
 - seven parts excavated soil
 - three parts nitrolized redwood sawdust
 - five to ten pounds of finely ground gypsum or equivalent per cubic yard of mix.
- Soil excavated from planting pits may be allowed as part of the back fill mix on the condition rocks 1" or larger are removed.
- Plant trees and shrubs with fertilizer tablets. Planting tablets shall be 21 gram Agriform or equal.quantities as follows:
 - 3 tablets 5 gallon shrub
 - 4 tablets 15 gallon trees
 - 6 tablets 24" tree box
- Place tablets at half the depth of the root ball.
- The planting hole shall be dusted with Gypsum or equivalent on all sides and bottom. Gypsum shall be blended thoroughly with the backfill soil and amendments utilized completely in the backfill and planting process. A shallow drainage sump/tree well shall be required around all three and shrub planting.
- Contractor to install tree root barriers on all trees planted within 5' of any hardscape or building structures or major utilities.
- Verify all existing conditions, dimensions and elevations before proceeding with the work. Notify landscape architect immediately should field conditions vary from those shown on plan.
- Report any discrepancies in the drawings or between the drawings and actual field conditions to the landscape architect. Corrected drawings or instruction shall be issued prior to the continuation of this work.
- Location of construction elements that are not in contract such as lights, signs, vents, hydrants, transformers, etc. Are approximate. Notify the landscape architect immediately should the location of these items interfere with the proper execution of work.
- Assure positive drainage in all planting areas, 2% minimum.



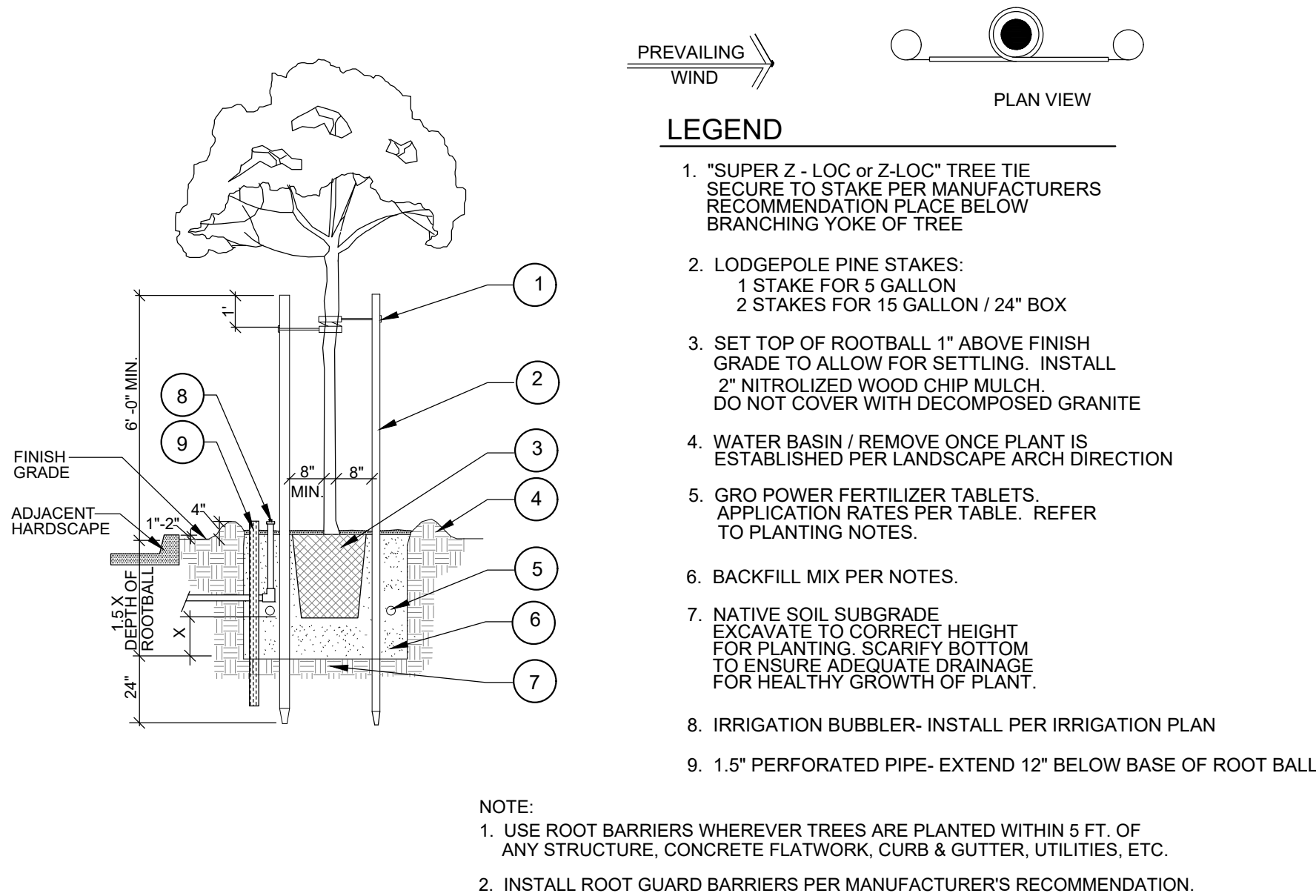
A SHRUB PLANTING

N.T.S.



B ROOT BARRIER

N.T.S.



C TREE PLANTING

N.T.S.

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Revisions:



Sheet Title:

PLANTING
DETAILS

Sheet Number:

LA-4.0

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LANDSCAPE SPECIFICATIONS

NOTE: IF DISCREPANCIES OCCUR BETWEEN NOTES AND SPECIFICATIONS, THE STRICTER GUIDELINE SHALL BE FOLLOWED

PART 1 – GENERAL

1.1 SUMMARY

- A. Irrigation system required for this project includes but is not limited to the furnishing of all labor, tools, materials, appliances, tests, permits, taxes, etc., necessary for the installation of a landscape irrigation system as herein specified and shown on the drawings, and the removal of all debris from the site.
1. Locate, purchase, deliver and install piping, conduit, sleeves, 120 volt and low voltage electrical and water connections, valves, backflow preventer devices, controllers, rain sensors, spray and bubbler heads, drip irrigation lines, and associated accessories for a fully operational automatic irrigation system.
 2. Trenching and water setting of backfill material.
 3. Trenching and startup of the irrigation system.
 4. Prepare an as built record set of drawings.
 5. Training of the Owner's maintenance personnel in the operational requirements of the Irrigation system.
 6. Clean up and disposal of all excess and surplus material.
 7. Maintenance of the irrigation system during the proscribed maintenance period.
- B. The system shall efficiently and evenly irrigate all areas and be complete in every respect and shall be left ready for operation to the satisfaction of the Owner's Representative.
- C. Coordinate with other trades, as needed to complete work, including but not limited to Water Meter, Point of Connection (POC) and Backflow Preventer Device (BFPD) location and electrical hookups.

1.5 PERMITS AND REGULATIONS

- A. The Contractor shall obtain and pay for all permits related to this section of the work unless previously excluded under provision of the contract or general conditions. The Contractor shall comply with all laws and ordinances bearing on the operation or conduct of the work as drawn and specified. If the Contractor observes that a conflict exists between permit requirements and the work outlined in the contract documents, the Contractor shall promptly notify the Owner's Representative in writing including a description of any necessary changes and changes to the contract price resulting from changes in the work.
- B. Wherever references are made to standards or codes in accordance with which work is to be performed or tested, the edition or revision of the standards and codes current on the effective date of this contract shall apply, unless otherwise expressly set forth.

1.6 PROTECTION OF WORK, PROPERTY AND PERSON

- A. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to the Contractor's actions.

1.8 CORRECTION OF WORK

- A. The Contractor shall re-execute any work that fails to conform to the requirements of the contract and shall remedy defects due to faulty materials or workmanship upon written notice from the Owner's Representative, at the soonest as possible time that can be coordinated with other work, and seasonal weather demands, but not more than 90 (ninety) days after notification.

1.11 OBSERVATION OF THE WORK

- A. The Owner's Representative may inspect the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.
- B. The Owner's Representative shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The Owner's Representative shall be afforded sufficient time to schedule visit to the site. Failure of the Owner's Representative to make field observations shall not relieve the Contractor from meeting all the requirements of this specification.
1. Trenching, directional boring, and sleeving review.
 2. Hydrostatic pressure testing.
 3. Adjustment and coverage test.
 4. Pre-maintenance observation.
 5. Final acceptance / system malfunction corrections.

1.13 QUALITY ASSURANCE

- A. It is the intention of this specification to accomplish the work of installing an automatic irrigation system, which will operate in an efficient and satisfactory manner. The irrigation system shall be installed and made operational according to the workmanlike standards established for landscape installation and sprinkler irrigation operation as set forth by the most recent Best Management Practices (BMP) of the Irrigation Association.
- B. The specification can only indicate the intent of the work to be performed rather than a detailed description of the performance of the work. It shall be the responsibility of the Contractor to install said materials and equipment in such a manner that they shall operate efficiently and evenly and support optimum plant growth and health.
- C. The Owner's Representative shall be the sole judge of the true intent of the drawings and specifications and of the quality of all materials furnished in performance of the contract.
- D. The Contractor shall keep one copy of all drawings and specifications on the work site, in good order. The Contractor shall make these documents available to the Owner's Representative when requested.
- E. In the event of any discrepancies between the drawings and the specification, the final decision as to which shall be followed, shall be made by the Owner's Representative.
- F. In the event the installation is contradictory to the direction of the Owner's Representative, the installation shall be rectified by the Contractor at no additional cost to the Owner. The Contractor shall immediately bring any such discrepancies to the attention of the Owner's Representative.
- G. It shall be distinctly understood that no oral statement of any person shall be allowed in any manner to modify any of the contract provisions. Changes shall be made only on written authorization of the Owner's Representative.
- H. Installer Qualifications. The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the work.
- a. Installer Field Supervision: The installer shall maintain on site an experienced full-time supervisor who can communicate in English with the Owner's Representative.
 - b. Submit the installer's qualifications for approval.

1.14 Irrigation System Warranty:

- A. The Contractor shall Warrantee all workmanship and materials for a period of 120 days following the acceptance of the work.
1. Any parts of the irrigation work that fails or is defective shall be replaced or reconstructed at no expense to the Owner including but not limited to: restoring grades that have settled in trenches and excavations related to the work. Reconstruction shall include any plantings, soil, mulch or other parts of the constructed landscape that may be damaged during the repair or that results from soil settlement.
- B. The date of acceptance of the work and start of the Guarantee period shall be determined by the Owner's Representative, upon the finding that the entire irrigation system is installed as designed and specified, and found to be operating correctly, supplying water evenly to all planting and/or lawn areas.
- C. Neither the final acceptance nor any provision in the contract documents shall relieve the Contractor's responsibility for faulty materials or workmanship. The Contractor shall remedy any defects within a period of 7 days (a) from the date of notification of a defect.

1.15 SITE CONDITIONS

- A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Owner's Representative, in writing, of any circumstances that would negatively impact the installation of the work. Do not proceed with work until unsatisfactory conditions have been corrected.

1.17 PROTECTION

- A. The Contractor shall continuously maintain adequate protection of all their work from damage, destruction, or loss, and shall protect the owner's property from damage arising in connection with this contract. Contractor shall make good any such damage, destruction, loss or injury. Contractor shall adequately protect adjacent property as provided by law and the contract documents.
- B. The Contractor shall maintain sufficient safeguards, such as railings, temporary walks, lights, etc., against the occurrence of accidents, injuries or damage to any person or property resulting from their work, and shall alone be responsible for the same if such occurs.
- C. All existing paving, structures, equipment or plant material shall be protected at all times, including the irrigation system related to plants, from damage by workers and equipment. The Contractor shall follow all protection requirements including plant protection provision of the general contract documents. All damages shall be repaired or replaced at the Contractor's expense. Repairs and/or replacement shall be to the satisfaction of the Owner's Representative including the selection of a Contractor to undertake the repair or maintenance. Repairs shall be at no cost to the owner.
1. For trees damaged to the point where they will not be expected to survive or which are severely disfigured and that are too large to replace, the cost of damages shall be as determined by the Owner's arborist using accepted tree value evaluation methods.
- D. The Contractor shall refrain from trenching within the drip line of any existing tree to remain. The Owner's Representative may require the Contractor to relocate proposed irrigation work, bore lines beneath roots or use air spade technology to dig trenches through and under the root system to avoid damage to existing tree root areas.

1.18 EXCAVATING AROUND UTILITIES

- A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
1. Do not begin any excavation until all underground utilities have been located and marked.
- Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain stakes and/or markings set by others until parties concerned mutually agree to their removal.
- B. Notification of DIG ALERT 1-800-227-2600, is required for all excavation around utilities. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the Local Utility Locator Service.
- C. Section 4216/4217 of the government code requires a dig-alert identification number be issued before a "permit to excavate" will be valid. For your dig-alert identification number call underground service alert toll free 1-800-422-4133 two working days before beginning construction.

1.19 POINT OF CONNECTION

- A. The point of connection of the irrigation system to its electrical power sources shall be provided by the irrigation installer. All connections shall be made by a licensed electrical Contractor per governing codes at the location shown on the drawings.
- B. The point of connection of the irrigation system to its non-potable water sources, including the main shut-off valve and backflow preventer shall be provided by the irrigation installer. All connections shall be made by a licensed Contractor per governing codes, at the location shown on the drawings.

1.21 CUTTING, PATCHING, TRENCHING AND DIGGING

- A. The Contractor shall do all cutting, fitting, trenching or patching of their work that may be required to make its several parts come together as shown upon, or implied by, the drawings and specifications for the completed project.
- B. Digging and trenching operations shall be suspended when the soil moisture is above field capacity.

1.22 USE OF PREMISES

- A. The Contractor shall confine their apparatus, the storage of materials, and the operations of their workers to limits indicated by the law, ordinances, or permits and shall not unreasonably encumber the premises with their materials.
- B. Contractor parking, and material and equipment storage shall in areas approved by the Owner's Representative.

1.23 As built RECORD set of DRAWINGS

- A. Immediately upon the installation of any buried pipe or equipment, the Contractor shall indicate on the progress record drawings the locations of said pipe or equipment. The progress record drawings shall be made available at any time for review by the Owner's Representative.
- B. Before final acceptance of work, the Contractor shall provide an as built record set of drawings showing the Irrigation system work as built. The drawings shall be transmitted to the Owner's Representative in paper format and as a pdf file of each document on compact disk or flash drive. The drawings shall include all information shown on the original contract document and revised to reflect all changes in the work. The drawings shall include the following additional information

1.26 OPERATION AND MAINTENANCE MANUALS AND GUARANTEES

- A. Prepare and deliver to the Owner's Representative within ten calendar days prior to completion of construction, two 3-ring hard cover binders containing the following information:
1. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representatives.
 2. Catalog and parts sheets on all material and equipment.
 3. Guarantee statement. The start of the guarantee period shall be the date the irrigation system is accepted by the Owner.
 4. Complete operating and maintenance instruction for all major equipment.
 5. Irrigation product manufacturers warranties.
 - 6.

PART 2 – PRODUCTS

2.1 Materials general

- B. All materials shall be of standard, approved and first grade quality and shall be new and in perfect condition when installed and accepted.

2.3 PIPING MATERIAL

- A. Individual types of pipe and fittings supplied are to be of compatible manufacturer unless otherwise approved. Pipe sizes shown are nominal inside diameter unless otherwise noted.
- B. Plastic pipe:
1. All pipe shall be free of blisters, internal striations, cracks, or any other defects or imperfections. The pipe shall be continuously and permanently marked with the following information: manufacturer's name or trade mark, size, class and type of pipe pressure rating, quality control identifications, date of extrusion, and National Sanitation Foundation (NSF) rating.
 2. Pressure main line for piping upstream of remote control valves and quick coupling valves:
 - a. Pipe smaller than 2 inch diameter shall be plastic pipe for use with solvent weld or threaded fittings. Shall be manufactured rigid virgin polyvinyl chloride (PVC) 1220, Type 1, Grade 2 conforming to ASTM D 1785, designated as Schedule 40.
 - b. Pipe 2 - 3 inch diameter shall be manufactured rigid virgin polyvinyl chloride (PVC), Type 1, Grade 2 conforming to ASTM D 1785, designated as bell gasket Class 315.
 - c. Pipe larger than 3 inch diameter shall be manufactured rigid virgin polyvinyl chloride (PVC), Type 1, Grade 2 conforming to ASTM D 1785, designated as bell gasket Class 200 PVC.
 3. Non-pressure lateral line for piping downstream of remote control valves: plastic pipe for use with solvent weld or threaded fittings. Shall be manufactured rigid virgin polyvinyl chloride PVC 1220 (Type 1, Grade 2) conforming to ASTM d 1785, designated as Class 200, 3/4 minimum size.
- C. Galvanized pipe shall be used for above ground connections to, backflow prevention device assemblies, hose bibs, and booster pumps and as shown on the plans and details.
1. Pipe shall be hot dip galvanized continuous welded, seamless, Schedule 40 conforming to applicable current ASTM standards.

2.4 FITTINGS AND CONNECTIONS:

- A. Polyvinyl chloride pipe fittings and connections: Type II, Grade 1, Schedule 40, high impact molded fittings, manufactured from virgin compounds as specified for piping tapered socket or molded thread type, suitable for either solvent weld or screwed connections. Machine threaded fittings and plastic saddle and flange fittings are not acceptable. Furnish fittings permanently marked with following information: nominal pipe size, type and schedule of material, and National Sanitation Foundation (NSF) seal of approval. PVC fittings shall conform to ASTM D2464 and D2466.
- B. Brass pipe fittings, unions and connections: standard 125 pound class 85% red brass fittings and connections, IPS threaded.
- C. PVC Schedule 80 threaded risers and nipples: Type I, Grade 1, Schedule 80, high impact molded, manufactured from virgin compounds as specified for risers and conforming to ASTM D-2464. Threaded ends shall be molded threads only. Machined threads are not acceptable.
- D. Galvanized pipe fittings shall be galvanized malleable iron ground joint Schedule 40 conforming to applicable current ASTM standards.

2.5 SOLVENT CEMENTS AND THREAD LUBRICANT

- A. Solvent cements shall comply with ASTM D2564. Socket joints shall be made per recommended procedures for joining PVC plastic pipe and fittings with PVC solvent cement and primer by the pipe and fitting manufacturer and procedures outlined in the appendix of ASTM D2564.
- B. Thread lubricant shall be Teflon ribbon-type, or approved equal, suitable for threaded installations as per manufacturer's recommendations.
- C. Pipe Joint Compound (Pipe dope) shall be used on all galvanized threaded connections. Pipe Joint Compound is a white colored, non-separating thread sealant compound designed to seal threaded connections against leakage due to internal pressure. It shall contain PTFE (Polytetrafluoroethylene) to permit a tighter assembly with lower torque, secure permanent sealing of all threaded connections and allow for easy disassembly without stripping or damaging threads.

2.10 BALL/GATE VALVES

- A. Ball/Gate valves for 3/4 inch through 2 1/2 inch shall be of PVC, block, tri-union design with EPDM seals and o-ring.
- B. Ball/Gate valves for 3 inch and larger shall be gate design and shall be iron body, brass or bronze mounted AWWA gate valves, and shall have a clear waterway equal to the full nominal diameter of the valve, and shall be rubber gasket, flanged or mechanical joint only, and shall be able to withstand a continuous working pressure of 150 PSI. Valve shall be equipped with a square-operating nut.
- C. All ball/Gate valves located in a valve manifold shall be the same size as the main line (1-1/2 inch size minimum). Provide pipe-reducing adapters down stream of valves, as required. All ball valves in line shall be the same size as the pipe.
- D. Ball/Gate valves shall be as indicated on the drawings.

2.11 CHECK VALVES

- A. Swing check valves 2 inch and smaller shall be 200 lbs., W.O.G., bronze construction with replaceable composition, neoprene or rubber disc and shall meet or exceed federal specification WW-V, 9d, class a, type IV.
- B. Anti-drain valves shall be of heavy, duty virgin PVC construction with female iron pipe thread inlet and outlet. Internal parts shall be stainless steel and neoprene. Anti-drain valves shall be field adjustable against draw out from 5 to 40 feet of head.
- C. Check valves shall be as indicated on the drawings.

2.12 REMOTE CONTROL VALVES

- A. Remote control valves shall be electrically operated, single seat, normally closed configuration, equipped with flow control adjustment and capability for manual operation.
- B. Valves shall be actuated by a normally closed low wattage solenoid using 24 volts, 50/60 cycle solenoid power requirement. Solenoid shall be epoxy encased. A union shall be installed on the discharge side.
- C. Remote control valves shall be wired to controller in same numerical sequence as indicated on drawings.
- D. Remote control valves shall be as indicated on the drawings.

2.16 QUICK COUPLER VALVES

- A. Quick coupler valves shall be a one or two piece, heavy-duty brass construction with a working pressure of 150 PSI with a built in flow control and a self-closing valve.
- B. Quick coupler shall be equipped with locking red brass cap covered with durable yellow thermo-plastic rubber cover. Key size shall be compatible with quick coupler and of same manufacturer.
- C. Quick coupler valves shall be as indicated on the drawings.

2.17 SPRINKLER HEADS

- A. All sprinkler heads shall have check valves installed.
- B. All sprinkler heads shall be as indicated on the drawings.
- C. Riser nipples for all sprinkler heads shall be the same size as the riser opening in the sprinkler body and fabricated as shown on the drawings.

2.20 ELECTRICAL CONTROL WIRING

- A. Low voltage
1. The electrical control wire shall be direct burial type UF, no. 14 AWG, solid, single conductor, copper wire UL approved or larger, if required to operate system as designed.
 2. For 2-Wire controllers all irrigation wire for the controller, flow sensor, master valve, hydrometer, remote control valves and moisture sensors shall be per the controller manufacturer's specifications and recommendations.
 3. Color code wires to each valve. Common wire shall be white.
 4. If multiple controllers are being utilized, and wire paths of different controllers cross each other, both common and control wires from each controller to be of different colors.
 5. Control wire splices: Splices are when required shall be placed in splice boxes.
 6. Wire connections shall be per the controller manufacturer's specifications and recommendations.

2.21 VALVE BOXES AND MATERIALS

- B. Valve boxes: valve boxes shall be constructed of ABS (acrylonitrile butadiene styrene) plastic, green in color (unless otherwise noted on plan or in details), with rigid base and sides and shall be supplied with bolt top cover secured with stainless steel bolts. Cover shall be identified as shown on drawings. Provide box extensions as required.
1. Master valves, flow sensors, remote control irrigation valves, gate valves, and ball valves 3 inch or less in size shall use a 14 inch x 19 inch x 12 inch rectangular box.
 2. Quick coupler valves, wire splices, and grounding rods shall use a 10 inch circular box.

2.24 EQUIPMENT TO BE FURNISHED TO OWNER

- A. Two (2) 48 inch tee wrenches for operating the gate valves.
- B. Five (5) Extra sprinkler heads, nozzles, shrub adapters, nozzle filter screens, for each type used on the project.
- C. Two (2) quick coupler keys to match manufacturer type of quick coupler.

2.27 MAIN LINE AND LATERAL LINE BEDDING SAND

- A. Sand shall consist of natural or manufactured granular material, free of organic material, mica, loam, clay or other substances not suitable for the intended purpose.
- B. Sand shall be masonry sand ASTM C 144 or coarse concrete sand, ASTM C 33.

PART 3 – EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Code requirements shall be those of state and municipal codes and regulations locally governing this work, providing that any requirements of the drawings and specifications, not conflicting therewith, but exceeding the code requirements, shall govern unless written permission to the contrary is granted by the Owner's Representative.
- B. Extreme care shall be exercised at all times by the Contractor in excavating and working in the project area due to existing utilities and irrigation systems to remain. Contractor shall be fully responsible for expenses incurred in the repair of damages caused by their operation.
1. The Contractor is responsible for identifying and maintaining existing irrigation main lines that supply water to areas on the site as noted on the drawings and outside of the proposed limit of work. The Contractor shall relocate or replace existing irrigation main line piping as required to provide a continuous supply of water to all areas of existing irrigation on site.
 - a. Providing continuous water supply shall include hand watering and or the use of watering trucks to provide adequate water.
 2. Plan locations of backflow preventers, valves, controllers, irrigation lines, sleeves, spray heads and other equipment are diagrammatic and indicate the spacing and relative locations of all installations. Final site conditions and existing and proposed plantings shall determine final locations and adjusted as necessary and as directed to meet existing and proposed conditions and obtain complete water coverage. Minor changes in locations of the above from locations shown shall be made as necessary to avoid existing and proposed trees, piping, utilities, structures, etc. at the Contractor's expense or when directed by the Owner's Representative.
 3. The Contractor shall be held responsible for relocation of any items without first obtaining the Owner's Representative's approval. The Contractor shall remove and relocate such items at their expense if so directed by the Owner's Representative.
 4. Prior to any work the Contractor shall stake out locations of all pipe, valves, equipment and irrigation heads and emitters using an approved staking method and maintain the staking of the approved layout in accordance with the drawings and any required modifications. Verify all horizontal and vertical site dimensions prior to staking of heads. Do not exceed spacing shown on drawings for any given area. If such modified spacing demand additional or less material than shown on the drawings, notify the Owner's Representative before beginning any work in the adjacent area.
 5. Stub out main line at all end runs and as shown on drawings. Stub out wires for future connection where indicated on plan and as directed.
 6. Point of connection shall be approximately as shown on drawings. Connect new underground piping and valves and provide all flanges, adapters or other necessary fittings for connection.
 7. Permission to shut off any existing in-use water line must be obtained 48 hours in advance, in writing from the Owner. The Contractor shall receive instructions from the Owner's Representative as to the exact length of time of each shut-off.
 8. No fittings shall be installed on pipe underneath pavement or walks.
 9. Prior to starting any work, Contractor shall obtain a reading of existing static water pressure (no flow condition) at the designated point of connection and immediately submit written verification of pressure with date and time of recording to Owner's Representative.
- E. Trenching, directional boring and sleeving
- F. Trenching, directional boring and sleeving
- G. Trenching, directional boring and sleeving
- H. No fittings shall be installed on pipe underneath pavement or walks.

- I. Prior to starting any work, Contractor shall obtain a reading of existing static water pressure (no flow condition) at the designated point of connection and immediately submit written verification of pressure with date and time of recording to Owner's Representative.
- J. Trenching, directional boring and sleeving
- K. Trenching, directional boring and sleeving
- L. Trenching, directional boring and sleeving
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- V. Trenching, directional boring and sleeving
- W. Trenching, directional boring and sleeving
- X. Trenching, directional boring and sleeving
- Y. Trenching, directional boring and sleeving
- Z. Trenching, directional boring and sleeving

3.2 TRENCHING, DIRECTIONAL BORING AND SLEEVING

- A. The Contractor may directional bore lines where it is practical or where required on the plans.
1. Extend the bore 1' past the edge of pavement unless noted differently on the plans
 2. Cap ends of both bore and locate ends at finished grade using metal stakes.
 3. All boring and sleeving shall have detectable location tape placed at the ends of the pipe.
- C. Make trenches for mains, laterals and control wiring straight and true to grade and free of protruding stones, roots or other material that would prevent proper bedding of pipe or wire.
- D. Excavate trenches wide enough to allow a minimum of 4 - inch between parallel pipelines and 8 inch from lines of other trades. Maintain 3 - inch vertical clearance between irrigation lines. Minimum transverse angle is 45 degrees. All pipes shall be able to be serviced or replaced without disturbing the other pipes.
- E. When trenching through areas of imported or modified soil, deposit imported or modified soils on one side of trench and subsoil on opposite side.

3.3 PIPE INSTALLATION

- A. General Pipe Installation
1. Exercise caution in handling, loading and storing, of plastic pipe and fittings to avoid damage.
 - a. The pipe and fittings shall be stored under cover until using, and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point.
 - b. All pipe that has been dented or damaged shall be discarded unless such dent or damaged section is cut out and pipe rejoined with a coupling.
 2. Trench depth shall be as specified above from the finish grade to the top of the pipe.
- B. Polyvinyl Chloride Pipe (PVC) Installation
1. Under no circumstance is pipe to rest on concrete, rock, wood blocks, construction debris or similar items.
 2. No water shall be permitted in the pipe until a period of at least 24 hours has elapsed for solvent weld setting and curing.
- C. Install assemblies and pipe to conform to respective details and where shown diagrammatically on drawings, using first class workmanship and best standard practices as approved. All fittings that are necessary for proper connections such as swing joints, offsets, and reducing bushings that are not shown on details shall be installed as necessary and directed as part of the work.
- D. Gasketed plastic pipe: pipe-to-pipe joints or pipe to fittings shall be made in accordance with manufacturer's specifications.
- E. Solvent weld or threaded plastic pipe:
- a. Installation of all pipe and fittings shall be in strict accordance with manufacturer's specifications.
 - b. Pipe shall be cut using approved PVC pipe cutters only. Sawn joints are disallowed. All field cuts shall be beveled to remove burrs and excess before gluing.
 - c. Welded joints shall be given a minimum of 15 minutes to set before moving or handling. Excess solvent on the exterior of the joint shall be wiped clean immediately after assembly.
 - d. Plastic to metal connections shall be made with plastic adapters, and if necessary, short (close) brass threaded nipples. Connection shall be made with two (2) wraps of Teflon tape and hand tightened plus one turn with a strap wrench.
 - e. Snake pipe horizontally in trench to allow one (1) foot of expansion and contraction per 100 feet of straight run.
 - f. Threaded pipe joints shall be made using Teflon tape. Solvent shall not be used with threaded joints. Pipe shall be protected from tool damage during assembly. All damaged pipe shall be removed and replaced. Take up threaded joints with light wrench pressure.
 - g. No close nipples or risers are allowed. Cross connections in piping is disallowed.
 - h. Center load pipe at 10 feet on center intervals with small amount of backfill to prevent arching and slipping under pressure. After this preliminary backfill all pipe joints, fittings and connections are to remain uncovered until successful completion of hydrostatic testing and written approval of the testing report.
 - i. Concrete thrust blocks shall be constructed behind all pipe fittings 1-1/2 inch diameter and larger at all changes of direction of 45 degrees or more.

3.4 TRENCHING, DIRECTIONAL BORING, AND SLEEVING REVIEW:

- A. Upon completion and installation of all trenching, directional boring, and sleeving, all installed irrigation control wiring, lines and fittings shall be visually observed by the Owner's Representative unless otherwise authorized. Do not cover any wires, lines or fittings until they have been tested and observed by the Owner's Representative.

3.5 Flushing

- A. Openings in piping system during installation are to be capped or plugged to prevent dirt and debris from entering pipe and equipment. Remove trash and debris in containers from the site no less than once a week.
- B. After completion and prior to the installation of any terminal fittings, the entire pipeline system shall be thoroughly flushed to remove dirt, debris or other material.
- C. Hydrostatic pressure testing - after flushing and installation of valves- tests to be observed by Owner's Representative
- a. Water pressure tests shall be performed on all pressure main lines before any couplings, fittings, valves and the like are concealed.
 - b. Immediately prior to testing, all irrigation lines shall be purged of all entrapped air or debris by adjusting control valves and installing temporary caps forcing water and debris to be discharged from a single outlet.
 - c. Test all pressure main line at 150 PSI. For a minimum of four (4) hours with an allowable loss of 5 PSI. Pressure and gauges shall be read in PSI, and calibrated such that accurate determination of potential pressure loss can be ascertained.
 - d. Re test as required until the system meets the requirements. Any leaks, which occur during test period, will be repaired immediately following the test. All pipe shall be re-tested until final written acceptance.
- E. The Contractor is responsible for proving documentation stating the weather conditions, date, the start time and initial water pressure readings, the fire fresh time and initial water pressure readings and the type of equipment used to perform the test. The documentation must be signed by a witness acceptable to the Owner, verifying all of the above-mentioned conditions.

3.9 BACKFILLING AND COMPACTING

- A. Irrigation trenches shall be carefully backfilled with material approved for backfilling and free of rocks and debris one

- (1) inch in diameter and larger. When back filling trenches in areas of imported or modified planting soil, replace any excavated subsoil at the bottom and the imported soil or modified planting soil at the top of the trench.
- B. Backfill shall be compacted with approved equipment to the following densities
6. Backfill under pavement and within 2 feet of the edge of pavement: Compact to 95% or greater of maximum dry density standard proctor.
 7. Backfill of subsoil under imported planting mixes or modified existing planting soil: Between 85 and 90% of maximum dry density standard proctor.
 8. Backfill of imported planting mixes or modified existing planting soil: Compact to the requirements of the adjacent planting mix or planting soil as specified in section "Planting Soil".
 9. Finish grade of all trenches shall conform to adjacent grades without dips or other irregularities. Dispose of excess soil or debris off site at Contractor's expense.
 - D. Any settling of backfill material during the maintenance or warranty period shall be repaired at the Contractor's expense, including any replacement or repair of soil, lawn, and plant material or paving surface.

3.11 INSTALLATION OF EQUIPMENT

- A. General:
1. All equipment shall be installed to meet all installation requirements of the product manufacturer. In the event that the manufacturer's requirements cannot be implemented due to particular condition at the site or with other parts of the design, obtain the Owner's Representative's written authorization and approval for any modifications.
 2. Install all equipment at the approximately at the location(s) and as designated and detailed on the drawings. Verify all locations with the Owner's Representative.
 3. Install all valves within a valve box of sufficient size to accommodate the installation and servicing of the equipment. Group valves together where practical and locate in shrub planting areas.
 4. All sprinkler irrigation systems that are using water from potable water systems shall require backflow prevention. All backflow prevention devices shall meet and be installed in accordance with requirements set forth by local codes and the health department.
- B. Pressure regulator:
1. Set regulator for required PSI per manufacturer's specifications.
- C. Check Valve:
1. Install check valves approximately at the locations necessary to prevent low head run off.
- D. Remote control valves:
1. Install one remote control valve per valve box.
 2. Remote control valve manifolds and quick coupler valves shall be separate allowing use of a quick coupler with all remote control valves shut off.
 3. Install boxes no farther than 12 inches from edge of paving and perpendicular to edge of paving and parallel to each other. Allow 12 inches clearance between adjacent valve boxes.
- E. Quick coupler valve:
1. Install each quick coupler valve in its own valve box.
 2. Install thrust blocks on quick couplers.
 3. Place no closer than 12 inches to adjacent paving.
 4. Install 18 inches off set from main line.
- F. Sprinkler heads:
1. All main lines and lateral lines, including risers, shall be flushed and pressure tested before installing sprinkler heads.
 2. Install specified sprinkler heads as shown in details at locations shown on the drawings. Adjust layout for full coverage, spacing of heads shall not exceed the maximum spacing recommended by the manufacturer.
 3. All sprinkler heads shall be set perpendicular to finish grade unless otherwise designated on the drawings or details.

- G. Wiring:
1. Install Control wiring per manufacturers specifications
 - a. An expansion loop shall be provided every 500 feet in a box and inside each valve box. Expansion loop shall be formed by wrapping wire at least eight (8) times around a ¾ inch pipe and withdrawing pipe.
 - b. All control wire splices not occurring at control valve shall be installed in a separate splice valve box.
 2. Wire markers (sealed, 1 inch to 3 inch square) are to identify control wires at valves and at terminal strips of controller. At the terminal strip mark each wire clearly indicating valve circuit number.
- H. High Voltage
- a. All electrical work shall conform to local codes, ordinances and any authorities having jurisdiction. All high voltage electrical work to be performed by licensed electrician.
 - b. The Contractor shall provide 120-volt power connection to the automatic controller unless noted otherwise on drawings.
- I. Valve boxes:
1. Install one valve box for each type of valve installed as per the details.
 2. Gravel sump shall be installed after compaction of all trenches. Final portion of gravel shall be placed inside valve box after valve is backfilled and compacted.
 3. Permanently label valve number and or controller letter on top of valve box lid using a method approved by the Owners Representative.
- J. Tracer wire:
1. Tracer wire shall be installed with non-metallic plastic irrigation main lines where controller wires are not buried in the same trench as the main line.
 2. The tracer wire shall be placed on the bottom of the trench under the vertical projection of the pipe with spliced joints soldered and covered with insulation type tape.
 3. Tracer wire shall be of a color not used for valve wiring. Terminate wire in a valve box. Provide enough length of wire to make a loop and attach wire marker with the designation "tracer wire".
- K. Drip Installation:
1. Clamp fittings with Oeliker clamps or approved equal when operating pressure exceeds specific drip tubing fitting requirements.
 2. When installing drip tubing, install soil staples as listed below:
 - a. Sandy Soil - One staple every three (3) feet and two (2) staples on each change of direction (tee, elbow, or cross)
 - b. Loam Soil - One staple every four (4)' feet and two (2) staples on each change of direction (tee, elbow, or cross).
 - c. Clay Soil - One staple every five (5)' feet and two (2) staples on each change of direction (tee, elbow, or cross).
 3. Cap or plug all openings as soon as lines have been installed to prevent the intrusion of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.
 4. Thoroughly flush all water lines before installing valves and other hydrants.

3.12 ADJUSTMENT AND COVERAGE TEST

- A. Adjustment:
1. The Contractor shall flush and adjust all sprinkler heads, valves and all other equipment to ascertain that they function according to the manufacturer's data.
 2. Adjust all sprinkler heads not to overspray onto walks, roadways and buildings when under maximum operating pressure and during times of normal prevailing winds.
- B. Coverage test:
1. The Contractor shall perform the coverage test in the presence of the Owner's Representative after all sprinkler heads have been installed, flushed and adjusted. Each section is tested to demonstrate uniform and adequate coverage of the planting areas served.
 2. Any systems that require adjustments for full and even coverage shall be done by the Contractor prior to final acceptance at the direction of the Owner's Representative at no additional cost. Adjustments may also include realignment of pipes, addition of extra heads, and changes in nozzle type or size.
 3. The Contractor at no additional cost shall immediately correct all unauthorized changes or improper installation practices.
 4. The entire irrigation system shall be operating properly with written approval of the installation by the Owner's representative prior to beginning any planting operations.

3.14 CLEAN-UP

- A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.
- a. Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.
- B. Once installation is complete, wash all soil from pav

ALL IDEAS, CONCEPTS AND ARRANGEMENTS INDICATED ON THESE DRAWINGS ARE THE PROPERTY OF THE LANDSCAPE ARCHITECTS AND ARE INTENDED TO BE USED IN CONNECTION WITH THE SPECIFIC PROJECT ONLY, AND SHALL NOT BE REPRODUCED OR USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT. THERE SHALL BE NO CHANGES OR DEVIATIONS OR ACCOMMODATIONS SPECIFICATIONS WITHOUT THE WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT.

LANDSCAPE SPECIFICATIONS

NOTE: IF DISCREPANCIES OCCUR BETWEEN NOTES AND SPECIFICATIONS, THE STRICTER GUIDELINE SHALL BE FOLLOWED

IRRIGATION CONT'D

3.17 GENERAL MAINTENANCE AND THE MAINTENANCE PERIOD

A. General maintenance shall begin immediately after installation of irrigation system. The general maintenance and the maintenance period shall include the following:

- On a weekly basis the Contractor shall keep the irrigation system in good running order and make observations on the entire system for proper operation and coverage. Repair and cleaning shall be done to keep the system in full operation.
- Records of all timing changes to control valves from initial installation to time of final acceptance shall be kept and turned over to the Owner's Representative at the time of final acceptance.
- During the last week of the maintenance period, provide equipment familiarization and instruction on the total operations of the system to the personnel who will assume responsibility for running the irrigation system.
- At the end of the maintenance period, turn over all operations logs, manuals, instructions, schedules, keys and any other equipment necessary for operation of the irrigation system to the Owner's Representative who will assume responsibility for the operations and maintenance of the irrigation system.

3.19 FINAL ACCEPTANCE / SYSTEM MALFUNCTION CORRECTIONS

- A. At the end of the Plant Warranty and Maintenance period, (See specification section "Planting") the Owner's Representative shall inspect the irrigation work and establish that all provisions of the irrigation system are complete and the system is working correctly.
- Restore any soil settlement over trenches and other parts of the irrigation system.
 - Replace, repair or reset any malfunctioning parts of the irrigation system.
- B. The Contractor shall show all corrections made from punch list. Any items deemed not acceptable shall be reworked and the maintenance period will be extended.
- C. The Contractor shall show evidence that the Owner's Representative has received all charts, records, drawings, and extra equipment as required before final acceptance.
- D. Failure to pass review: If the work fails to pass final review, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the reviewer.

PLANTING

PART 1 - GENERAL

1.1 SUMMARY

- A. The scope of work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of plant (also known as "landscaping") complete as shown on the drawings and as specified herein.
- B. The scope of work in this section includes, but is not limited to, the following:
- Locate, purchase, deliver and install all specified plants.
 - Water all specified plants.
 - Mulch, fertilize, stake, and prune all specified plants.
 - Maintenance of all specified plants until the beginning of the warranty period.
 - Plant warranty.
 - Clean up and disposal of all excess and surplus material.
 - Maintenance of all specified plants during the warranty period.

1.2 Contract documents

- A. Shall consist of specifications and general conditions and the construction drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any parts shall be as binding as if called for in all parts.

1.11 Observation of the work

- A. The Owner's Representative may observe the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.
- B. The Owner's Representative shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The Owner's Representative shall be afforded sufficient time to schedule visit to the site. Failure of the Owner's Representative to make field observations shall not relieve the Contractor from meeting all the requirements of this specification.
- SITE CONDITIONS PRIOR TO THE START OF PLANTING: review the soil and drainage conditions.
 - COMPLETION OF THE PLANT LAYOUT STAKING: Review of the plant layout.
 - PLANT QUALITY: Review of plant quality at the time of delivery and prior to installation. Review tree quality prior to unloading where possible, but in all cases prior to planting.
 - COMPLETION OF THE PLANTING: Review the completed planting.

1.13 QUALITY ASSURANCE

- A. Substantial Completion Acceptance - Acceptance of the work prior to the start of the warranty period:
- Once the Contractor completes the installation of all items in this section, the Owner's Representative will observe all work for Substantial Completion Acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of the observation.
 - Substantial Completion Acceptance by the Owner's Representative shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
 - Any plants that are deemed defective as defined under the provisions below shall not be accepted.
 - The Owner's Representative will provide the Contractor with written acknowledgment of the date of Substantial Completion Acceptance and the beginning of the warranty period and plant maintenance period (if plant maintenance is included).
 - Contractor's Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the work.
 - Installer Qualifications: The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the work, including the handling and planting of large specimen trees in urban areas. The same firm shall install planting soil (where applicable) and plant materials.
 - The bidders list for work under this section shall be approved by the Owner's Representative.
 - Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, a full-time supervisor who can communicate in English with the Owner's Representative.
 - Installer's field supervisor shall have a minimum of five years experience as a field supervisor installing plants and trees of the quality and scale of the proposed project, and can communicate in English with the Owner's Representative.
 - The installer's crew shall have a minimum of 3 years experienced in the installation of Planting Soil, Plantings, and Irrigation (where applicable) and interpretation of soil plans, planting plans and irrigation plans.
 - Submit references of past projects, employee training certifications that support that the Contractors meets all of the above installer qualifications and applicable licenses.

1.14 Plant Warranty

- A. Plant Warranty:
- The Contractor agrees to replace defective work and defective plants. The Owner's Representative shall make the final determination if plants meet these specifications or that plants are defective. Plants warranty shall begin on the date of Substantial Completion Acceptance and continue for the following periods, classed by plant type:
Note to specifier: Modify below to state the number of years of the warranty.
 - Trees - 1 Year(s).
 - Shrubs - 6 Months.
 - Ground cover and perennial flower plants - 6 Months.
 - Bulbs, annual flower and seasonal color plants - for the period of expected bloom or primary display.
 - When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial Completion Acceptances to the term date of the last warranty period. Thus, all warranty periods for each class of plant warranty, shall terminate at one time.
 - All plants shall be warranted to meet all the requirements for plant quality at installation in this specification. Defective plants shall be defined as plants not meeting these requirements. The Owner's representative shall make the final determination that plants are defective.
 - Plants determined to be defective shall be removed immediately upon notification by the Owner's Representative and replaced without cost to the Owner, as soon as weather conditions permit and within the specified planting period.
 - Any work required by this specification or the Owner's Representative during the progress of the work, to correct plant defects including the removal of roots or branches, or planting plants that have been bare rooted during installation to observe for or correct root defects shall not be considered as grounds to void any conditions of the warranty. In the event that the Contractor decides that such remediation work may compromise the future health of the plant, the plant or plants in question shall be rejected and replaced with plants that do not contain defects that require remediation or correction.
 - The Contractor is exempt from replacing plants, after Substantial Completion Acceptance and during the warranty period, that are removed by others, lost or damaged due to occupancy of project, lost or damaged by a third party, vandalism, or any natural disaster.
 - Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification. Make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Owner.
 - The warranty of all replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended warranty period, the Owner's Representative may elect one more replacement items or credit for each item. These tertiary replacement items are not protected under a warranty period.
 - During and by the end of the warranty period, remove all tree wrap, ties, and guying unless agreed by the Owner's Representative to remain in place. All trees that do not have sufficient calliper to remain upright, or those requiring additional anchorage in windy locations, shall be staked or remain staked, if required by the Owner's Representative.
- B. End of Warranty Final Acceptance - Acceptance of plants at the end of the warranty period.
- At the end of the warranty period, the Owner's Representative shall observe all warranted work, upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date for

final observation.

- End of Warranty Final Acceptance will be given only when all the requirements of the work under this specification and in specification sections Planting Soil and Irrigation have been met.

1.15 SELECTION and observation of PLANTS

- A. Trees shall be purchased from the growing nursery. Re-wholesale plant suppliers shall not be used as sources unless the Contractor can certify that the required trees are not directly available from a growing nursery. When the re-wholesale supplier is utilized, the Contractor shall submit the name and location of the growing nursery from where the trees were obtained by the re-wholesale seller. The re-wholesale nursery shall be responsible for any required plant quality certifications.
- I. Where requested by the Owner's Representative, submit photographs of plants or representative samples of plants. Photographs shall be legible and clearly depict the plant specimen. Each submitted image shall contain a height reference, such as a measuring stick. The approval of plants by the Owner's Representative via photograph does not preclude the Owner's Representative's right to reject material while on site.

1.16 PLANT SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

- A. Submit all requests for substitutions of plant species, or size to the Owner's Representative, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution.

1.17 SITE CONDITIONS

- A. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Owner's Representative, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.
- I. Should subsurface drainage or soil conditions be encountered which would be detrimental to growth or survival of plant material, the Contractor shall notify the Owner's Representative in writing, stating the conditions and submit a proposal covering cost of corrections. If the Contractor fails to notify the Owner's Representative of such conditions, he/she shall remain responsible for plant material under the warranty clause of the specifications.
- B. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to the Owner's Representative.
- C. This specification requires that all Planting Soil and Irrigation (if applicable) work be completed and accepted prior to the installation of any plants.

- Planting operations shall not begin until such time that the irrigation system is completely operational for the area(s) to be planted, and the irrigation system for that area has been preliminarily observed and approved by the Owner's Representative.
- Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practices.

- Do not install plants into saturated or frozen soils. Do not install plants during inclement weather, such as rain or snow or during extremely hot, cold or windy conditions.

1.18 PLANTING AROUND UTILITIES

- A. Contractor shall carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging.
- B. Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification of **DIG ALERT 1-800-227-2600**, is required for all planting areas: The Contractor is responsible for knowing the location and avoiding utilities that are not covered by the *Local Utility Locator Service*.

PART 2 - PRODUCTS

2.1 PLANTS: GENERAL

- A. Standards and measurement: Provide plants of quantity, size, genus, species, and variety or cultivars as shown and scheduled in contract documents.
- All plants including the root ball dimensions or container size to trunk caliper ratio shall conform to ANSI Z60.1 "American Standard for Nursery Stock" latest edition, unless modified by provisions in this specification. When there is a conflict between this specification and ANSI Z60.1, this specification section shall be considered correct.
 - Plants larger than specified may be used if acceptable to the Owner's Representative. Use of such plants shall not increase the contract price. If larger plants are accepted the root ball size shall be in accordance with ANSI Z-60.1. Larger plants may not be acceptable if the resulting root ball cannot be fit into the required planting space.
 - If a range of size is given, no plant shall be less than the minimum size and not less than 50 percent of the plants shall be as large as the maximum size specified. The measurements specified are the minimum and maximum size acceptable and are the measurements after pruning, where pruning is required.
- B. Proper identification: All trees shall be true to name as ordered or shown on planting plans and shall be labeled individually or in groups by genus, species, variety and cultivar.
- C. Compliance: All trees shall comply with federal and state laws and regulations requiring observation for plant disease, pests, and weeds. Observation certifications required by law shall accompany each shipment of plants.
- D. Plant Quality:
- General:** Provide healthy stock, grown in a nursery and reasonably free of die-back, disease, insects, eggs, borers, and larvae. At the time of planting all plants shall have a root system, stem, and branch form that will not restrict normal growth, stability and health for the expected life of the plant.
- The root system shall be reasonably free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Wounds resulting from root pruning used to produce a high quality root system are not considered injuries.
 - A minimum of three structural roots reasonably distributed around the trunk (not clustered on one side) shall be found in each plant. Root distribution shall be uniform throughout the root ball, and growth shall be appropriate for the species.
 - Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
 - The root collar shall be within the upper 2 inches of the substrate/soil. Two structural roots shall reach the side of the root ball near the top surface of the root ball. The grower may request a modification to this requirement for special root collar treatments that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball.
 - The root system shall be reasonably free of stem girdling roots over the root collar or kninked roots from nursery production practices.
- E. Submittals: Submit for approval the required plant quality certifications from the grower where plants are to be purchased, for each plant type. The certification must state that each plant meets all the above plant quality requirements.
- F. The grower's certification of plant quality does not prohibit the Owner's Representative from observing any plant or rejecting the plant if it is found to not meet the specification requirements.

2.5 Planting Soil

- A. Planting Soil as used in this specification means the soil at the planting site, or imported as modified and defined in specification Section Planting Soil. If there is no Planting Soil specification, the term Planting Soil shall mean the soil at the planting site within the planting hole.

2.6 MULCH

- A. Mulch shall be "Walk on" grade, coarse, ground, from tree and woody brush sources. The size range shall be a minimum (less than 25% or less of volume) fine particles 3/8 inch or less in size, and a maximum size of individual pieces (largest 20% or less of volume) shall be approximately 1 to 1-1/2 inch in diameter and maximum length approximately 4 to 8". Pieces larger than 8 inch long that are visible on the surface of the mulch after installation shall be removed.
- It is understood that mulch quality will vary significantly from supplier to supplier and region to region. The above requirements may be modified to conform to the source material from locally reliable suppliers as approved by the Owner's Representative.
 - Submit supplier's product specification data sheet and a one gallon sample for approval.
- B. SUBMIT STAKING AND GUYING MATERIAL
- Tree guying to be flat woven polypropylene material, 3/4 inch wide, and 900 lb. break strength. Color to be Green. Product to be Arbor Tie manufactured by Deep Root Partners, L.P., or approved equal.
 - Stakes shall be lodge pole stakes free of knots and of diameters and lengths appropriate to the size of plant as required to adequately support the plant.
 - Below ground anchorage systems to be constructed of 2 x 2 dimensional untreated wood securing (using 3 inch long screws) horizontal portions to 4 feet long vertical stakes driven straight into the ground outside the root ball.
 - Submit manufacturer's product data for approval.

PART 3 - EXECUTION

3.1 SITE EXAMINATION

- A. Examine the surface grades and soil conditions to confirm that the requirements of the Specification Section - Planting Soil - and the soil and drainage modifications indicated on the Planting Soil Plan and Details (if applicable) have been completed. Notify the Owner's Representative in writing of any unsatisfactory conditions.

3.2 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from deterioration during delivery and storage. Adequately protect plants from drying out, exposure of roots to sun, wind or extremes of heat and cold temperatures. If planting is delayed more than 24 hours after delivery, set plants in a location protected from sun and wind. Provide adequate water to the root ball package during the shipping and storage period.
- All plant materials must be available for observation prior to planting.
 - Using a soil moisture meter, periodically check the soil moisture in the root balls of all plants to assure that the plants are being adequately watered. Volumetric soil moisture shall be maintained above wilting point and below field capacity for the root ball substrate or soil.
 - Do not deliver more plants to the site than there is space with adequate storage conditions. Provide a suitable remote staging area for plants and other supplies.
- B. The Owner's Representative or Contractor shall approve the duration, method and location of storage of plants.
- C. Provide protective covering over all plants during transporting.

3.3 PLANTING SEASON

- A. No planting shall take place during extremely hot, dry, windy or freezing weather.

3.9 INSTALLATION OF plants: General

- A. Observe each plant after delivery and prior to installation for damage of other characteristics that may cause rejection of the plant. Notify the Owner's Representative of any condition observed.
- B. No more plants shall be distributed about the planting bed area than can be planted and watered on the same day.
- C. The root system of each plant, regardless of root ball package type, shall be observed by the Contractor, at the time of planting to confirm that the roots meet the requirements for plant root quality in Part 2 Products: Plants General: Plant Quality. The Contractor shall undertake at the time of planting, all modifications to the root system required by the Owner's Representative to meet these quality standards.
- Modifications, at the time of planting, to meet the specifications for the depth of the root collar and removal of stem girdling roots and circling roots may make the plant unstable or stress the plant to the point that the Owner's Representative may choose to reject the plant rather than permitting the modification.
 - Any modifications required by the Owner's Representative to make the root system conform to the plant quality standards outlined in Part 2 Products: Plants General: Plant Quality, or other requirements related to the permitted root ball package, shall not be considered as grounds to modify or void the plant warranty.
 - The resulting root ball may need additional staking and water after planting. The Owner's Representative may reject the plant if the root modification process makes the tree unstable or if the tree is not healthy at the end of the warranty period. Such plants shall still be covered under the warranty.
 - The Contractor remains responsible to confirm that the grower has made all required root modifications noted during any nursery observations.

- D. Container and Bored Root Ball Shaving: The outer surfaces of ALL plants in containers and bodes, including the top, sides and bottom of the root ball shall be shaved to remove all circling, descending, and matted roots. Shaving shall be performed using saws, knives, sharp shovels or other suitable equipment that is capable of making clean cuts on the roots. Shaving shall remove a minimum of one inch of root mat or up to 2 inches as required to remove all root segments that are not growing reasonably radial to the trunk.
- E. Exposed Stem Tissue after Modification: The required root ball modifications may result in stem tissue that has not formed trunk bark being exposed above the soil line. If such condition occurs, wrap the exposed portion of the stem in a protective wrapping with a white filter fabric. Secure the fabric with biodegradable masking tape. DO NOT USE string, twine, green nursery ties or any other material that may girdle the trunk if not removed.

- F. Excavation of the Planting Space: Using hand tools or tracked mini-excavator, excavate the planting hole into the Planting Soil to the depth of the root ball measured after any root modification to correct root problems, and wide enough for working room around the root ball or to the site indicated on the drawing or as noted below.
- For trees and shrubs planted in soil areas that are NOT tilled or otherwise modified to a depth of at least 12 inches over a distance of more than 10 feet radius from each tree, or 5 feet radius from each shrub, the soil around the root ball shall be loosened as defined below or as indicated on the drawings.
 - The area of loosening shall be a minimum of 3 times the diameter of the root ball at the surface sloping to 2 times the diameter of the root ball at the depth of the root ball.
 - Loosening is defined as digging into the soil and turning the soil to reduce the compaction. The soil does not have to be removed from the hole, just dug, lifted and turned. Lifting and turning may be accomplished with a tracked mini excavator, or hand shovels.
 - If an auger is used to dig the initial planting hole, the soil around the auger hole shall be loosened as defined above for trees and shrubs planted in soil areas that are NOT tilled or otherwise modified.
 - The measuring point for root ball depth shall be the average height of the outer edge of the root ball after any required root ball modification.
 - If motorized equipment is used to deliver plants to the planting area over exposed planting beds, or used to loosen the soil or dig the planting holes, all soil that has been driven over shall be tilled to a depth of 6 inches.

- H. For trees to be planted in prepared Planting Soil that is deeper than the root ball depth, compact the soil under the root ball using a mechanical tamper to assure a firm bedding for the root ball. If there is more than 12 inches of planting soil under the root ball excavate and tamp the planting soil in lifts to exceed 12 inches.
- Set top outer edge of the root ball at the average elevation of the proposed finish. Set the plant plumb and upright in the center of the planting hole. The tree graft, if applicable, shall be visible above the grade. Do not place soil on top of the root ball.

- J. The Owner's Representative may request that plant orientation be rotated when planted based on the form of the plant.
- K. Backfill the space around the root ball with the same planting soil or existing soil that was excavated for the planting space. See Specification Section Planting Soil, for requirements to modify the soil within the planting bed.
- L. Brace root ball by bamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of ball in six-inch (6") lifts. Lightly tamp each lift using foot pressure or hand tools to settle backfill, support the tree and eliminate voids. Do NOT over compact the backfill or use mechanical or pneumatic tamping equipment. Over compaction shall be defined as greater than 85% of maximum dry density, standard proctor or greater than 250 psi as measured by a cone penetrometer when the volumetric soil moisture is lower than field capacity.

- When the planting hole has been backfilled to three quarters of its depth, water shall be poured around the root ball and allowed to soak into the soil to settle the soil. Do not flood the planting space. If the soil is above field capacity, allow the soil to drain to below field capacity before finishing the planting. Air pockets shall be eliminated and backfill consoaked until the planting soil is brought to grade level.
- M. Where indicated on the drawings, build a 4 inch high, level berm of Planting Soil around the outside of the root ball to retain water. Tamp the berm to reduce leaking and erosion of the sealer.
- N. Thoroughly water the Planting Soil and root ball immediately after planting.
- O. Remove all nursery plant identification tags and ribbons as per Owner's Representative instructions. The Owner's Representative's seals are to remain on plants until the end of the warranty period.

- P. Remove corrugated cardboard for protection after planting.
- Q. Follow additional requirements for the permitted root ball packages.
- 3.11 ground cover, perennial and annual plants
- Assure that soil moisture is within the required levels prior to planting. Irrigation, if required, shall be applied at least 12 hours prior to planting to avoid planting in muddy soils.
 - Assure that soil grades in the beds are smooth and as shown on the plans.
 - Plants shall be planted in even, triangularly spaced rows, at the intervals called out for on the drawings, unless otherwise noted. The first row of Annual flower plants shall be 6 inches from the bed edge unless otherwise directed.
 - Dig planting holes sufficiently large enough to insert the root system without deforming the roots. Set the top of the root system at the grade of the soil.
 - Schedule the planting to occur prior to application of the mulch. If the bed is already mulched, pull the mulch from around the hole and plant into the soil. Do not plant the root system in the mulch. Pull mulch back so it is not on the root ball surface.
 - Press soil to bring the root system in contact with the soil.
 - Spread any excess soil around in the spaces between plants.
 - Apply mulch to the bed being sure not to cover the tops of the plants with or the tops of the root ball with mulch.

- Water each planting area as soon as the planting is completed. Apply additional water to keep the soil moisture at the required levels. Do not over water.
- 3.13 STAKING AND GUYING
- A. Do not stake or guy trees unless specifically required by the Contract Documents, or in the event that the Contractor feels that staking is the only alternative way to keep particular trees plumb.
- The Owner's Representative shall have the authority to reject plants that trees are staked or to reject staking as an alternative way to stabilize the tree.
 - Trees that required heavily modified root balls to meet the root quality standards may become unstable. The Owner's Representative may choose to reject these trees rather than utilize staking to temporarily support the tree.
- B. Trees that are guyed shall have their guys and stakes removed after one full growing season or at other times as required by the Owner's Representative.
- C. Tree guying shall utilize the tree staking and guying materials specified. Guying to be tied in such a manner as to create a minimum 12-inch loop to prevent girdling. Refer to manufacturer's recommendations and the planting detail for installation.
- Plants shall stand plumb after staking or guying.
 - Stakes shall be driven to sufficient depth to hold the tree rigid.
- D. For trees planted in planting mix over waterproofed membrane, use dead men buried 24 inches to the top of the dead man in the soil. Tie the guy to the dead man with a double wrap of line around the dead man followed by a double half hitch. When guys are removed, leave the dead men in place and cut the guy tape 12 inches above the ground, leaving the tape end covered in mulch.

3.15 STRAIGHTENING PLANTS

- A. Maintain all plants in a plumb position throughout the warranty period. Straighten all trees that move out of plumb including those not staked. Plants to be straightened shall be excavated and the root ball moved to a plumb position, and then re-backfilled.
- B. Do not straighten plants by pulling the trunk with guys.
- 3.16 INSTALLATION OF FERTILIZER AND OTHER CHEMICAL ADDITIVES
- A. Do not apply any soluble fertilizer to plantings during the first year after transplanting unless soil test determines that fertilizer or other chemical additives is required. Apply chemical additives only upon the approval of the Owner's Representative.
- B. Controlled release fertilizers shall be applied according to the manufacturer's instructions and standard horticultural practices.

3.17 PRUNING OF TREES AND SHRUBS

- A. Pruning trees shall be limited to addressing structural defects as shown in details; follow recommendations in "Structural Pruning: A Guide For The Green Industry" published by Urban Tree Foundation, Visalia CA.
- B. All pruning shall be performed by a person experienced in structural tree pruning.
- C. Except for plants specified as multi-stemmed or as otherwise instructed by the Owner's Representative, preserve or create a central leader.
- D. Remove and replace excessively pruned or malformed stock resulting from improper pruning that occurred in the nursery or after.
- E. Pruning shall be done with clean, sharp tools.
- F. No tree paint or sealants shall be used.

3.18 MULCHING OF PLANTS

- A. Apply 3 inches of mulch before settlement, covering the entire planting bed area. Install no more than 1 inch of mulch over the top of the root balls of all plants. Taper to 2 inches when abutting pavement.
- B. For trees planted in lawn areas the mulch shall extend to a 5 foot radius around the tree or to the extent indicated on the plans.
- C. Lift all leaves, low hanging stems and other green portions of small plants out of the mulch if covered.

3.19 Planting bed finishing

- A. After planting, smooth out all grades between plants before mulching.
- B. Separate the edges of planting beds and lawn areas with a smooth, formed edge cut into the turf with the bed mulch level slightly lower, 1 and 2 inches, than the adjacent turf soil or as directed by the Owner's Representative. Bed edge lines shall be depicted on the drawings.

3.20 WATERING

- A. The Contractor shall be fully responsible to ensure that adequate water is provided to all plants from the point of installation until the date of Substantial Completion Acceptance. The Contractor shall adjust the automatic irrigation system, if available, and apply additional or adjust for less water using hoses as required.
- B. Hand water root balls of all plants to assure that the root balls have moisture above wilt point and below field capacity. Test the moisture content in each root ball and the soil outside the root ball to determine the water content.

3.21 CLEAN-UP

- A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.
- Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the Contractor from all surfaces within the project or on public right of ways and neighboring property.
- B. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site. The Owner's Representative's seals are to remain on the trees and removed at the end of the warranty period.
- C. Make all repairs to grades, ruts, and damage by the plant installer to the work or other work at the site.
- D. Remove and dispose of all excess planting soil, subsoil, mulch, plants, packaging, and other material brought to the site by the Contractor.

3.22 PROTECTION DURING CONSTRUCTION

- A. The Contractor shall protect planting and related work and other site work from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Substantial Completion Acceptance. Treat, repair or replace damaged work immediately.
- B. Damage done by the Contractor, or any of their sub-contractors to existing or installed plants, or any other parts of the work or existing facilities, such as trees, trunk or branches of large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfaces including those on adjacent property, shall be cleaned, repaired or replaced by the Contractor at no expense to the Owner. The Owner's Representative shall determine when such cleaning, replacement or repair is satisfactory.

3.23 PLANT MAINTENANCE PRIOR TO SUBSTANTIAL COMPLETION ACCEPTANCE

- A. During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.
- B. Maintenance during the period prior to Substantial Completion Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of damaging insects and disease, and in healthy condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.

3.24 Substantial Completion Acceptance

- A. Upon written notice from the Contractor, the Owners Representative shall review the work and make a determination if the work is substantially complete.
- Notification shall be at least 7 days prior to the date the contractor is requesting the review.
 - The date of substantial completion of the planting shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.
 - The Plant Warranty period begins at the time of written notification of substantial completion from the Owner's Representative. The date of substantial completion may be different than the date of substantial completion for the other sections of the project.

3.25 MAINTENANCE DURING THE WARRANTY PERIOD by others

- A. After Substantial Completion Acceptance, the Contractor shall make sufficient site visits to observe the Owner's maintenance and become aware of problems with the maintenance in time to request changes, until the date of End of Warranty Final Acceptance.

- Notify the Owner's Representative in writing if maintenance, including watering, is not sufficient to maintain plants in a healthy condition. Such notification must be made in a timely period so that the Owner's Representative may take corrective action.
 - Notification must define the maintenance needs and describe any corrective action required.
- In the event that the Contractor fails to visit the site and/or notify, in writing, the Owner's Representative of maintenance needs, lack of maintenance shall not be used as grounds for voiding or modifying the provisions of maintenance.

3.26 MAINTENANCE DURING THE WARRANTY PERIOD by the plant installer

- A. During the warranty period, provide all maintenance for all plantings to keep the plants in a healthy state and the planting areas clean and neat.
- B. General requirements:
- All work shall be undertaken by trained planting crews under the supervision of a foreman with a minimum of 5 years experience supervising commercial plant maintenance crews.
 - All chemical and fertilizer applications shall be made by licensed applicators for the type of chemicals to be used. All use shall comply with all applicable local, state and federal requirements.
 - Assure that hoses and watering equipment and other maintenance equipment does not block paths or be placed in a manner that may create tripping hazards. Use standard safety warning barriers and other procedures to maintain the site in a safe manner for visitors at all times.
 - All workers shall wear required safety equipment and apparel appropriate for the tasks being undertaken.
 - The Contractor shall not store maintenance equipment at the site at times when they are not in use unless authorized in writing by the Owner's Representative.
 - Maintenance vehicles shall not park on the site including walks and lawn areas at any time without the Owner's Representative's written permission.
 - Maintain a detailed log of all maintenance activities including types of tasks, date of task, types and quantities of materials and products used, watering times and amounts, and number of each work. Periodically review the logs with the Owner's Representative, and submit a copy of the logs at the end of each year of the maintenance agreement.
 - Meet with the Owner's Representative a minimum of three times a year to review the progress and discuss any changes that are needed in the maintenance program. At the end of the warranty period attend a hand over meeting to formally transfer the responsibilities of maintenance to the Owner's Representative. Provide all information on past maintenance activities and provide a list of critical tasks that will be needed over the next 12 months. Provide all maintenance logs and soil test data. Make the Contractor's supervisor available for a minimum of one year after the end of the warranty period to answer questions about past maintenance.

C. Provide the following maintenance tasks:

- Watering: Provide all water required to keep soil within and around the root balls at optimum moisture content for plant growth.
 - Maintain all watering systems and equipment and keep them operational.
 - Monitor soil moisture to provide sufficient water. Check soil moisture and root ball moisture with a soil moisture meter on a regular basis and record moisture readings. Do not over water.
- Plant pruning: Remove cross over branching, shorten or remove developing co dominant leaders, dead wood and winter-damaged branches. Unless directed by the Owner's Representative, do not shear plants or make heading cuts.
- Restore plants: Reset any plants that have settled or are leaning as soon as the condition is noticed.
- Guying and staking: Maintain plant guys in a taught position. Remove tree guys and staking after the first full growing season unless directed by Owner's Representative.
- Weed control: Keep all beds free of weeds. Hand-remove all weeds and any plants that do not appear on the planting plan. Chemical weed control is permitted only with the approval of the Owner's Representative. Schedule weeding as needed but not less 12 times per year.
- Trash removal: Remove all trash and debris from all planting beds and maintain the beds in a neat and tidy appearance. The number of trash and debris removal visits shall be no less than 12 times per year and may coincide with maintenance visits.
- Plant pest control: Maintain disease, insects and other pests at manageable levels. Manageable levels shall be defined as damage to plants that may be noticeable to a professional but not to the average person. Use least invasive methods to control plant disease and insect outbreaks.
 - The Owner's Representative must approve in advance the use of all chemical pesticide applications.
- Plant replacement: Replace all plants that are defective as defined in the warranty provisions, as soon as the plant decline is obvious and in suitable weather and season for planting as outlined in above sections. Plants that become defective during the maintenance period shall be covered and replaced under the warranty provisions.
- Mulch: Refresh mulch once a year to maintain complete coverage but do not over mulch. At no time shall the overall mulch thickness be greater than 4 inches. Do not apply mulch within 6 inches of the trunks or stems of any plants. Replacement mulch shall meet the requirements of the original approved material. Mulch shall be no more than one inch on top of the root ball surface.
- Bed edging: Check and maintain edges between mulch and lawn areas in smooth neat lines as originally shown on the drawings.
- Leaf, fruit and other plant debris removal: Remove fall leaf, spent flowers, fruit and plant part accumulations from beds and paved surfaces. Maintain all surface water drains free of debris. Debris removal shall be undertaken at each visit to weed or repair up trash in beds.
- Damage from site use: Repair of damage by site visitors and events, beyond normal wear, are not part of this maintenance. The Owner's Representative may request that the Contractor repair damage to beds