

## **Texas Roadhouse**

### **Site Plan Review - Project Description**

**1605 S. Stapley Drive  
Mesa, AZ**

**Project Summary:** Texas Roadhouse would like to build a new +/- 9,040-SF restaurant at 1605 S. Stapley Drive. The existing Texas Roadhouse restaurant, constructed in 2003, is only +/- 7,489-SF. The estimated interior dining seating capacity for the new restaurant will be 350-seats. Proposed elevations are attached with a site plan for review and feedback.

**Business:** Texas Roadhouse is a casual dining restaurant offering a moderately priced, full-service, casual dining concept serving an assortment of Texas themed entrées and made-from-scratch sides. Typically, 40-employees are required for the peak shift.

Operation hours are 3:00 pm – 10:00 pm, Monday through Thursday, 11:00 am – 10:00 pm Fridays and Saturdays, and 11:00 am to 9:00pm on Sundays. Hours are subject to change.

**Surrounding Properties:** The parcel is adjacent to commercial uses on all sides.

**Project Phasing:** Construction of the new Texas Roadhouse restaurant is to commence while the existing restaurant remains open and operational. Once the new restaurant has completed construction and is open for business the existing restaurant is to be demolished. After the existing restaurant has been demolished the area will be turned into additional parking.

**Loading:** All deliveries are to take place outside of business hours.

end



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# Texas Roadhouse

1605 South Stapley Drive  
Mesa, AZ



SITE VICINITY MAP

N.T.S.

CONTACT INFO

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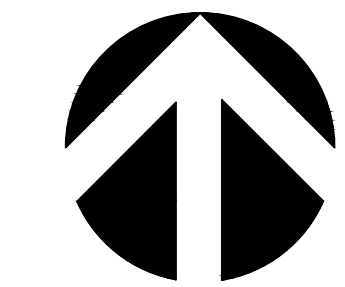
NOT FOR CONSTRUCTION



Date Drawing Description

Title Sheet

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



NORTH  
T-1

Sheet 1 of 14



1512 W. Mineral King Ave.  
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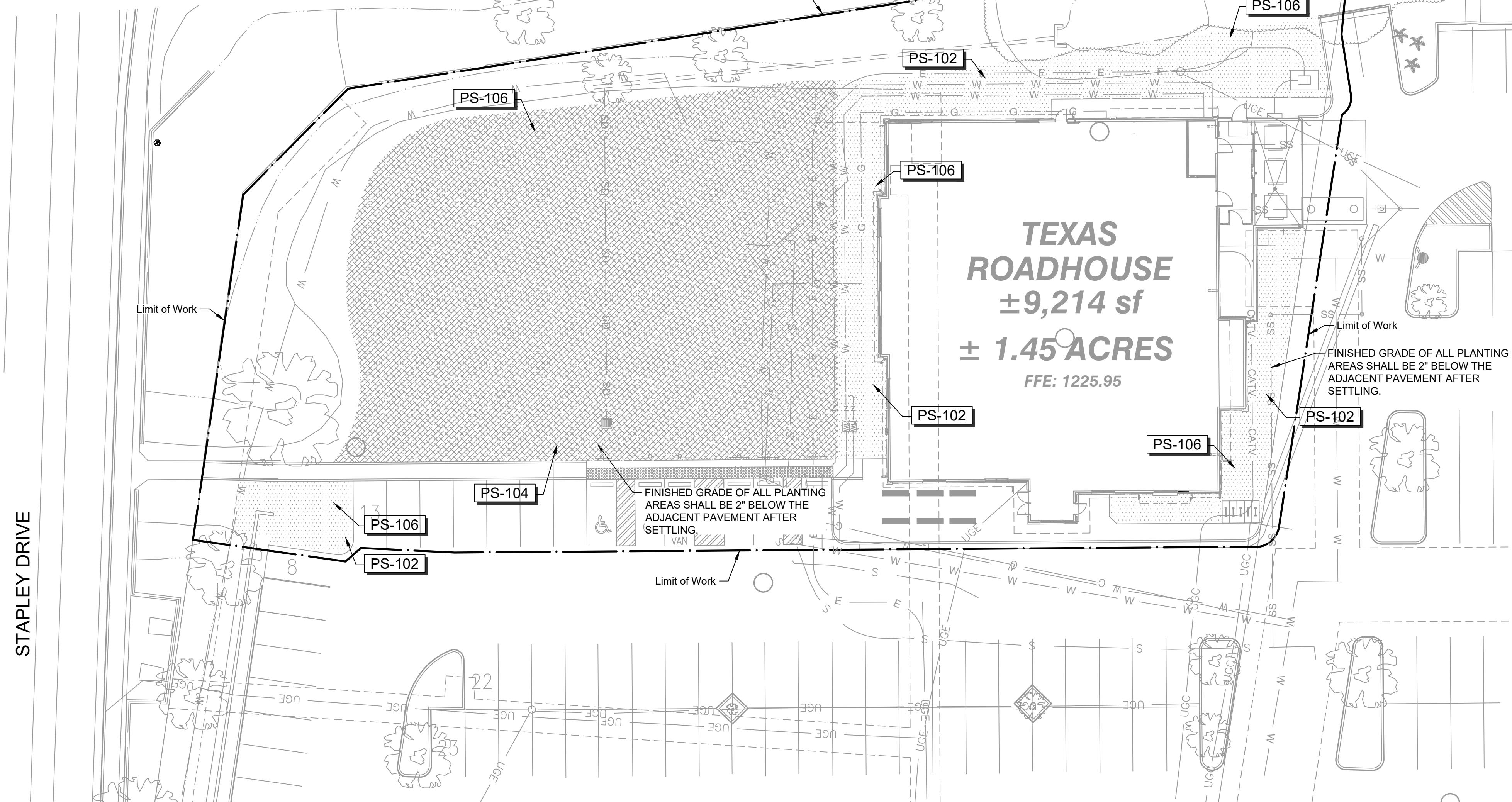
Texas Roadhouse  
Mesa, AZ



Planting Soils Legend

SYMBOL	DESCRIPTION	QTY
PS-102	Modified Existing Soil - Compacted sub soil: Fracturing For planting areas less than eight feet with soil compaction greater than 85% of Standard Proctor Method. See detail and specifications for further information.	4,790 sf
PS-104	Modified Existing Soil - Compacted sub soil: Trenching For planting areas greater than eight feet with soil compaction greater than 85% of Standard Proctor Method. See detail and specifications for further information.	12,399 sf
PS-106	Certified Compost: 2" thick layer of compost shall be applied in all planting areas. Compost shall be certified by the U.S. Composting Council's STA Program. See specifications for further information.	106.11 cy

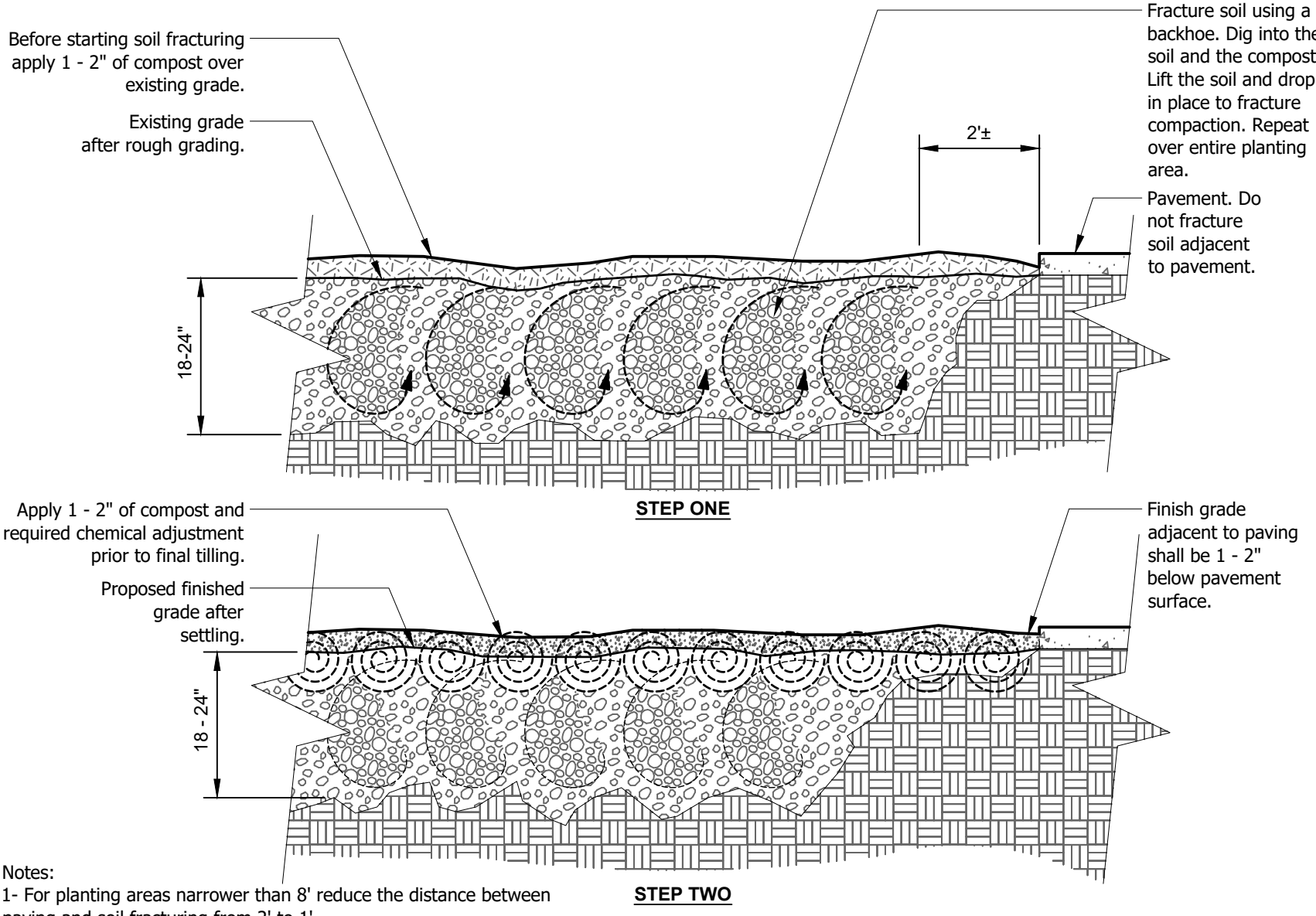
Notes:  
1 - All quantities and amounts shown on the plans are best estimates for the benefit of the contractor. In field conditions may vary compared to what is shown on the plans. Therefore, it is the contractor's responsibility to verify all lengths, square footages, and amounts prior to bidding the project.



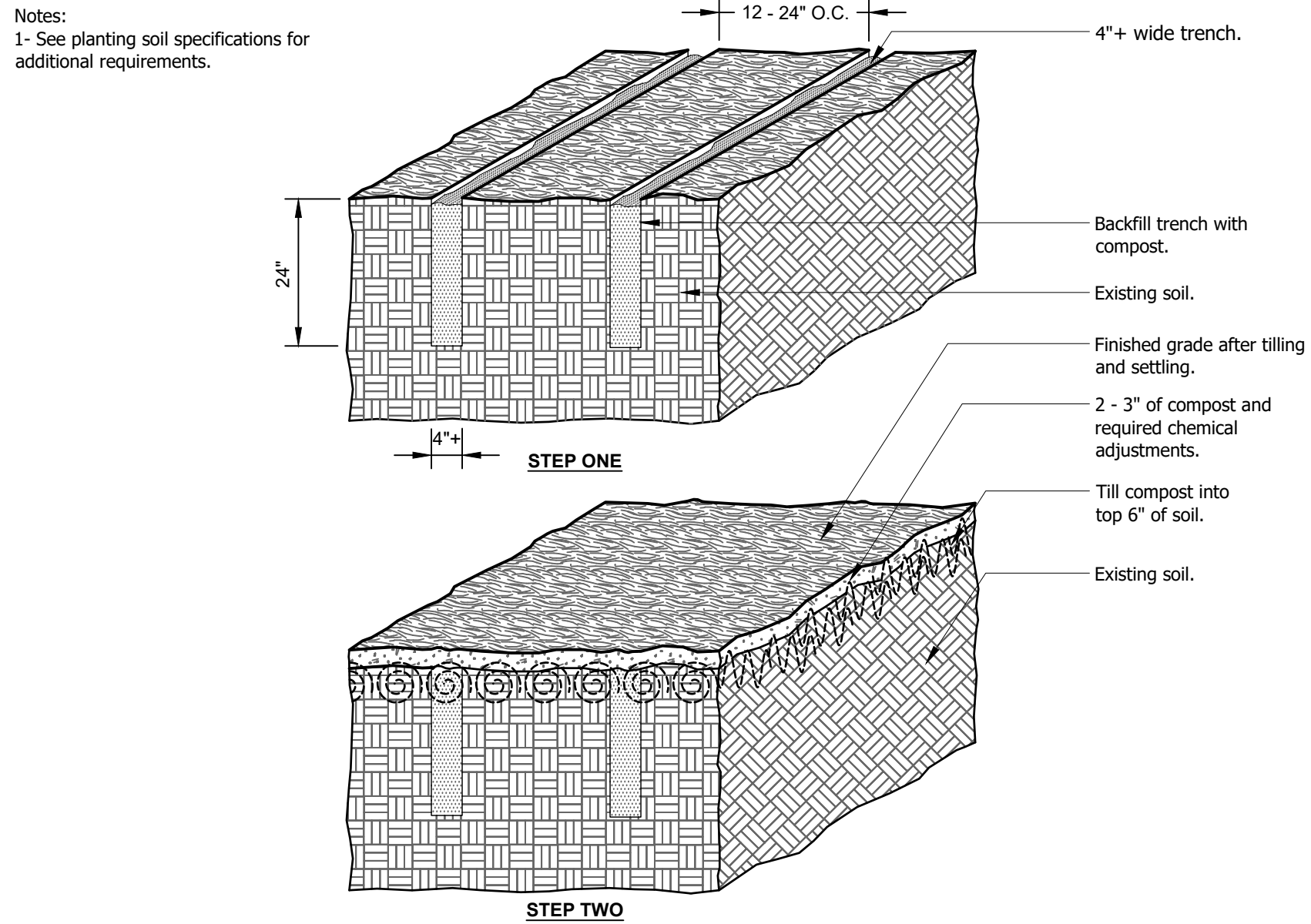
GENERAL PLANTING SOIL NOTES

- Existing utilities- information on the drawings relating to existing utility lines and services from the best sources available. All such information is furnished only for information and is not guaranteed. The Contractor shall excavate test pits as required to determine the exact location of existing utilities.  
  
Call utility locating service for precise utility locations before beginning of any work. Arizona, 811.
- Utility Requirements- The Contractor shall notify the following agencies at least 48 hours in advance of excavating around any of their structures. The utility companies listed below shall be contacted.
  - Gas Company
  - Telephone Company
  - Electrical Power Company
  - Cable Television Company
  - Water Supply Company
- Contractor shall be responsible for making himself familiar with all underground utilities, pipes, and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities.
- All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities, and shall immediately inform the Owner's Representative of any discrepancies between the information on the drawings and the actual conditions refraining from doing any work in said areas until given approval to do so by the Owner's Representative.
- 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 of conduct of the work as drawn and specified. If the contractor observes that a conflict exist 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.
- Wherever references are made to standards or coded in accordance with which works 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 expressly set forth.
- In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.
- 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.
- The Contractor shall be responsible for any coordination with subcontractors as requiring to accomplish the soil preparation operations.
- Top soil, existing site soil and Planting Soil Mix testing; Submit soil test analysis report for each sample of Topsoil, existing site soil and Planting Soil from an approved soil testing laboratory.
- Soil testing shall be at the expense of the Contractor. Copies of the soil test analysis along with receipts and delivery slips of recommended amendments shall be provided to the Owner's Representative.
- Contractor shall be aware of all surface and subsurface conditions, and to notify the Owner's Representative, in writing of any circumstances that would negatively impact the health of plantings. Contractor shall not proceed with work until corrected.
  - 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 the cost of corrections. If the contractor fails to notify the Owner's Representative of such conditions, he/she shall remain responsible for the plant material under the warrantee clause of the specifications.

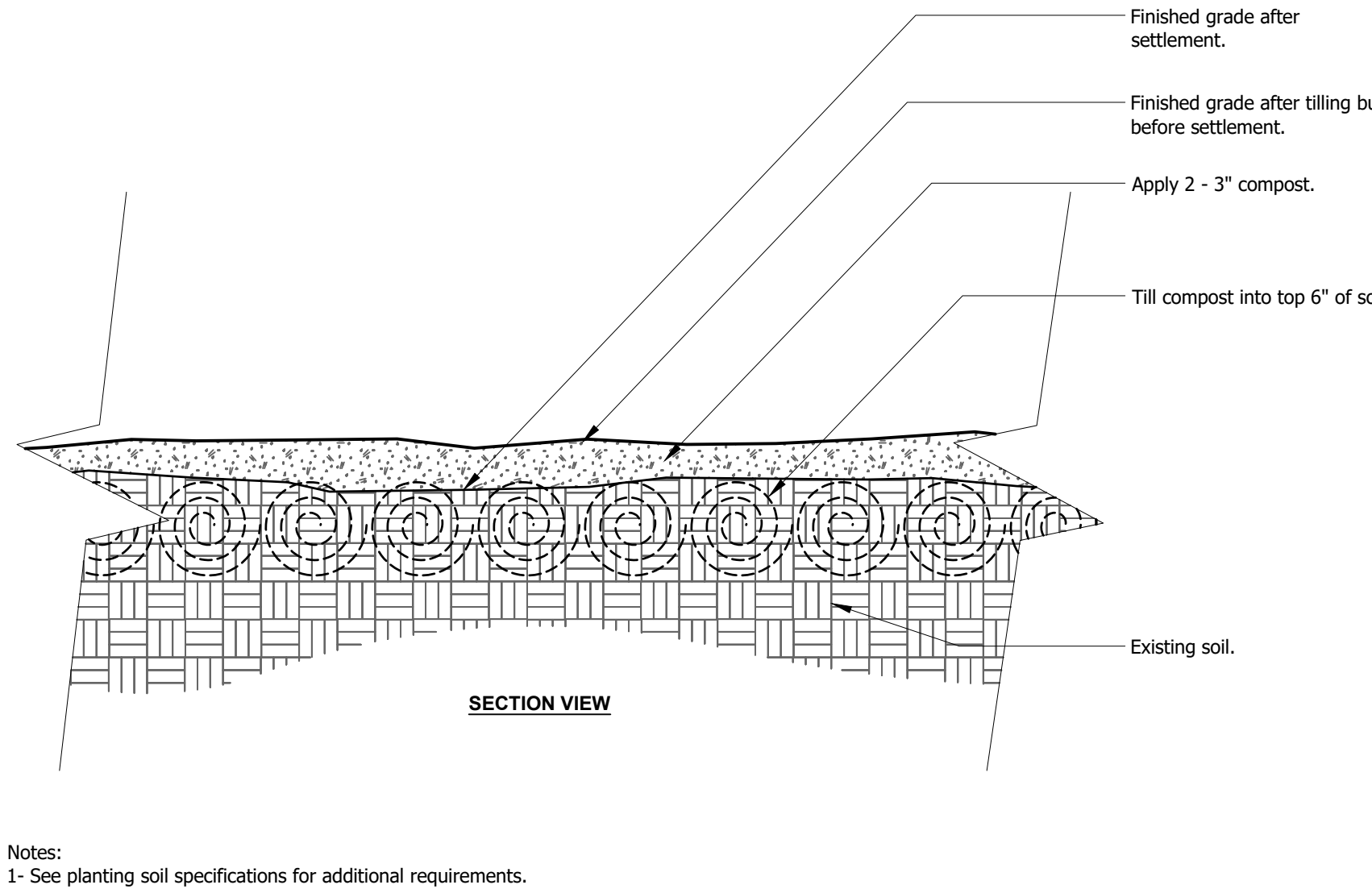
- Imported top soil shall be fertile, friable soil containing less than 5% total volume of the combination of subsoil, refuse, roots larger than 1" diameter, heavy or stiff clay, stones larger than 2 inches in diameter, noxious seeds, sticks, brush, litter, or any substances deleterious to planter growth. The % of the above objects shall be controlled by source selection not by screening the soil. Topsoil shall be suitable for the germination of seeds and the support of vegetative growth. Imported Topsoil shall not contain weed seeds in quantities that cause noticeable weed infestation in the final planting beds.
  - Organic matter shall be commercially prepared compost and meet US Composting Council STA/TMECC.
- Existing trees shall be protected and cared for as required in the details and specifications.
- The Owner's Representative shall approve all rough grading prior to the installation of organic matter, fine grading, and mulching.
- 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 in the plans, details and specifications.
  - Pre - Construction meeting
  - Existing soil conditions review
  - Completion of site preparation review
  - Completion of finished grading and surface soil modification review.
- If the work fails to pass inspection, any subsequent inspections must be rescheduled as required in the specifications. The cost to the Owner for additional inspections will be charged to the Contractor at the prevailing hourly rate of the inspector.
- Contractor shall include in the bid continued maintenance (warranty) period of 180 days after completion of construction and acceptance of the project by the Owner's Representative.



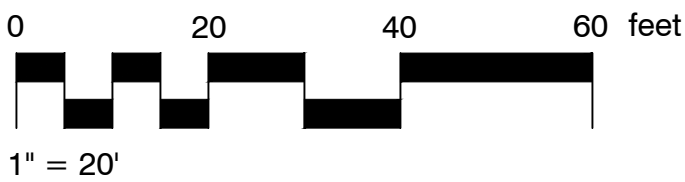
1 SOIL MODIFICATION - FRACTURING



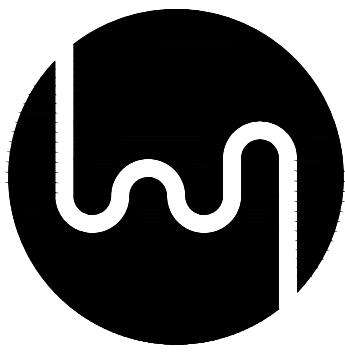
2 SOIL MODIFICATION - TRENCHING



3 SOIL MODIFICATION - COMPACTED SURFACE SOIL



Know what's below.  
Call before you dig.



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Drawing Description

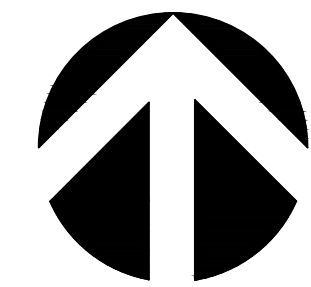
Date

Planting Soils Plan

Texas Roadhouse

Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



NORTH

L-1

Sheet 2 of 14

NOT FOR CONSTRUCTION

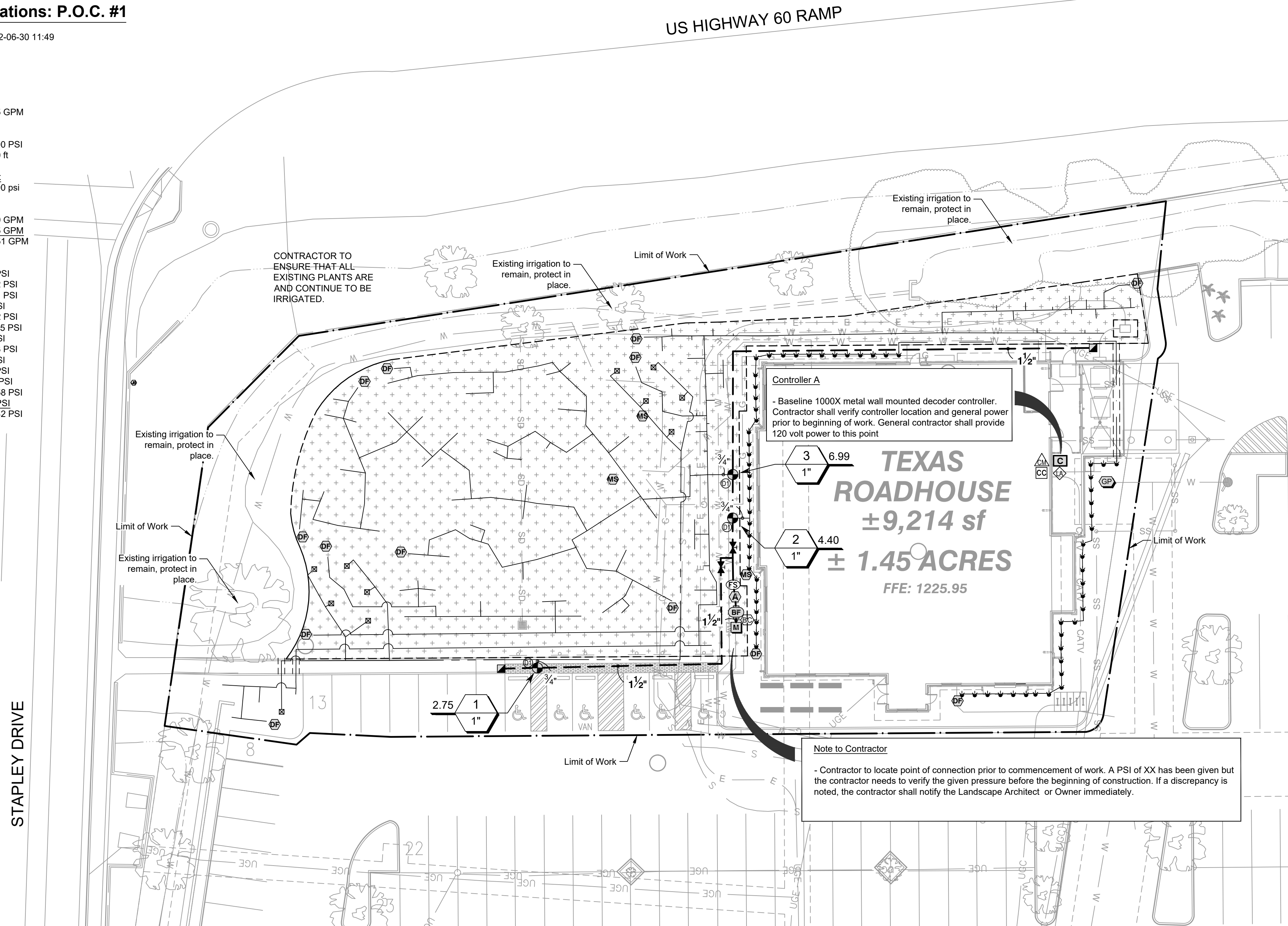


Generated:	2022-06-30 11:49
P.O.C. NUMBER: 01	
Water Source Information:	
FLOW AVAILABLE	
Water Meter Size:	1"
Flow Available	37.5 GPM

<b>PRESSURE AVAILABLE</b>	
Static Pressure at POC:	73.00 PSI
Elevation Change:	5.00 ft
Service Line Size:	2"
Length of Service Line:	20 ft
Pressure Available:	71.00 psi

DESIGN ANALYSIS	
Maximum Station Flow:	6.99 GPM
Flow Available at POC:	37.5 GPM
Residual Flow Available:	30.51 GPM

Critical Station:	1
Design Pressure:	15 PSI
Friction Loss:	0.12 PSI
Fittings Loss:	0.01 PSI
Elevation Loss:	0 PSI
Loss through Valve:	2.22 PSI
Pressure Req. at Critical Station:	17.35 PSI
Loss for Fittings:	0 PSI
Loss for Main Line:	0.03 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	14 PSI
Loss for Water Meter:	0.2 PSI
Critical Station Pressure at POC:	31.58 PSI
Pressure Available:	71 PSI
Residual Pressure Available:	39.42 PSI



NUMBER	MODEL	SIZE	TYPE	GPM	HEADS	PIPE	WIRE	DESIGN PSI	FRICTION LOSS	VALVE LOSS	PSI	PSI @ POC	PRECIP
1	Hunter ICV-G	1"	Bubbler	2.75	11	369.4	307.5	15	0.13	2.22	17.35	31.58	0.85 in/h
2	Hunter ICV-G	1"	Drip Emitter	4.40	66	369.0	200.8	10	0.82	2.42	13.25	27.47	2.04 in/h
3	Hunter ICV-G	1"	Area for Drip Emitters	6.99		1,588	187.2	10	0.46	2.7	13.16	27.65	0.19 in/h
	Common Wire						304.2						

NUMBER	MODEL	TYPE	PRECIP	SUN	MON	TUE	WED	THU	FRI	SAT	IN/WEEK	MIN/WEEK	GAL/WEEK	GAL/DAY
1	Hunter ICV-G	Bubbler	0.85 in/h		24 min		24 min		24 min		1	71	195.3	65.1
2	Hunter ICV-G	Drip Emitter	2.04 in/h		62 min		62 min		62 min		6.25	184	808.8	269.6
3	Hunter ICV-G	Area for Drip Emitters	0.19 in/h		64 min		64 min		64 min		0.6	192	1,343	447.6
		TOTALS:			150		150		150			447	2,347	782.2

1- The following irrigation schedule is intended to be used as a reference only. Site specific conditions should be considered that will require the reference irrigation schedule to be adjusted by the Contractor. Such conditions may include, but are not limited to, microclimates, soil conditions, irrigation system types, slopes, varying maturity of plant material and month of installation. The irrigation schedule is for the benefit of the Contractor based upon state historical evapotranspiration, manufacturer standards, along with the Landscape Architects qualifications and experience. Landscape Architect makes no warranty, expressed or implied, as to the accuracy of these schedules.

1- The system indicated on the drawing is diagrammatic. All equipment shown in paved areas is diagrammatic. All equipment shall be located in planting areas. Avoid any conflicts between the irrigation system, planting, or architectural features.

2- All quantities and amounts shown on the plans are best estimates for the benefit of the Contractor. In field conditions may vary compared to what is shown on the plans. Therefore, it is the Contractor's responsibility to verify all lengths, square footages, and amounts prior to bidding the project.

3- Contractor shall verify point of connection and minimum static pressure prior to commencing of work. Any discrepancies shall be brought to the attention of the Owner and Landscape Architect prior to starting work.

4- All irrigation wire shall be installed in a minimum 1.5" Sch. 40 electrical conduit.

a. Certificate of Installation (Certified Start Up) shall be required for the irrigation controller system. It is the responsibility of the Contractor to coordinate the 3rd party certification and inspections (Contact Lisa Rienstra @ 480.278.3966 or lrienstra@hydropoint.com). Contractor is responsible for any and all fees necessary to receive a 3rd party Certificate of Installation. Copies of the Certificate of Installation shall be necessary to the Owner's Representative and the Owner.

b. Contractor shall provide as a part of the project five (5) years of cell service to be purchased by the Contractor prior to the beginning of the maintenance period.

c. Contractor shall provide as a part of the project five (5) years of Base Manager Mobile Plus Access to be purchased by the Contractor prior to the beginning of the maintenance period.

d. The Contractor shall program the irrigation schedule to run off of the moisture sensors prior to the ending of the maintenance period and receiving the Notice of Completion by the Owner. Each valve shall be assigned to the respective moisture sensor. For example, tree valves shall be assigned to the tree moisture sensor, shrub valves shall be assigned to the shrub moisture sensor, and turf valves shall be assigned to the turf moisture sensor. Irrigation scheduling for valves shall occur before the moisture level in the soil reaches wilting point at the lower limit and stop prior to the soil reaching field capacity.

e. The Contractor shall be responsible for gpsing each remote control irrigation valve, ball valve, controller quick coupler valve, mainline sleeving under pavement, irrigation controller, backflow prevention device, booster pump and moisture sensors.

f. The Contractor shall label each valve in Base Manager indicating the valve type, emitter type and location on the site. For instance a tree valve in parkway would be labeled as Tree Bubbler Valve in Parkway (Bubblers).

g. The Contractor shall label each program in Base Manager indicating the specific program and zone. For instance the vine valves on drip emitters would be labeled as Vine Drip Program.

h. The Contractor shall label each moisture sensor in Base Manager indicating the valve it is connected to and what that valve is responsible for watering. For instance, the moisture sensor that is connected to the turf valve in the middle of a park would be labeled Turf Moisture Sensor (Valve 33).

6- Irrigation plans were designed in accordance with CA AB 1881; the Model Water Efficient Landscape Ordinance. It is the responsibility of the Irrigation Contractor to adhere to that ordinance. Any portion of the irrigation systems installation that comes into conflict with the state ordinance shall be immediately brought to the attention of the Owner and Landscape Architect. In the event that notification does not occur, the Irrigation Contractor assumes any and all responsibility for changes to the work which must be done in order to meet compliance.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
	Hunter PCB 10 Flood Bubbler, 1/2" FIPT.	11	15
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	
	GPH Irrigation GDFN Rain Bird style female threads, Orange.	13	
	Salco Irrigation SLV-PSTD-CV-4 Threaded Drip Emitters Threaded pressure compensating drip emitter with 1/2" (1.27cm) FIPT inlet and Diffuser Cap Outlet in Desert Camo Color. TruCheck Valve Technology. Brown=0.5gph; Black=1.0gph; Green=2.0gph; Yellow=4.0gph. See irrigation detail.	66	
	Area to Receive Drip Emitters Salco Irrigation SLV-PSTD-CV Threaded pressure compensating drip emitter with 1/2" (1.27cm) FIPT inlet and Diffuser Cap Outlet in Desert Camo Color. TruCheck Valve Technology. Brown=0.5gph; Black=1.0gph; Green=2.0gph; Red=4.0gph. See irrigation detail. Emitter Notes: 2.0 GPH emitters (1 assigned to each 5 gal plant)	15,017 s.f.	
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	
	Hunter ICV-G 1" 1", 1-1/2", 2", and 3" Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. Install each remote control irrigation valve with a Rainbird PRB-QKCHK-100; 1" Basket Filter with built-in Pressure Regulator (40 psi) and 200 mesh (75 micron) stainless steel screen. See irrigation detail.	3	
	Hunter HQ-SLRC 1" Quick coupler valve, yellow locking rubber cover, red brass and stainless steel, with 1" NPT inlet, 1-piece body. Install a minimum of 18" off of the mainline. See irrigation detail.	2	
	LASCO Fittings TUBV 101 N Series 1", 1-1/2", 2", and 3" Plastic Full Block True Union Ball Valve. Shut Off/Isolation Valve to Eliminate Water Hammer. Install same size as mainline. See irrigation detail.	2	
	Watts Water Hammer Arrestor Watts 1" lead free water hammer arrestor model # LF15M2-F Install per manufacturer's specifications and recommendations. See irrigation detail.	1	
	Zurn 375 XLB 1" Reduced Pressure Principle Assembly. Sizes 1/2", 3/4", 1", 1-1/4", 1-1/2", 2". Install per manufacturer's specifications and recommendations. See irrigation detail.	1	
	Baseline BL-1000X Two-wire controller in large 16 gauge powder-coated wall mount cabinet, base model 50 stations, expandable to 75 or 100 stations. Install per manufacturer's specifications and recommendations. See irrigation detail.	1	
	Baseline BL-5201 Single station direct burial biCoder. Install per manufacturer's specifications and recommendations. See irrigation detail.	3	
	Baseline BL-5315 biSensor Soil Moisture Sensor. Install per manufacturer's specifications and recommendations. See irrigation detail.	3	
	Baseline BL-CM4G Cell module. Contractor shall include a five (5) years of cell service prior to the end of construction and beginning of the maintenance period.	1	
	Baseline BL-LA01 Baseline two-wire surge arrestor. Install per manufacturer's specifications and recommendations. See irrigation detail.	1	
	Baseline BL-BMW2-PLUS-5Y BaseManager, LiveView & Mobile Access Advanced Contractor shall provide a five (5) year subscription prior to the end of construction and beginning of the maintenance period.	1	
	Baseline BL-BHM150-NO 1-1/2" Baseline 1-1/2" Metal Hydrometer with with Integrated Flow and Master Valve Decoder, Normally Open, Male Threaded. Contractor shall verify the K factor and Offset is per the controller manufacturer's specifications prior to learning flow. See irrigation detail.	1	
	V.I.T. Products SBBC-30SS Low profile, tube and wire construction smooth touch surface, stainless steel backflow enclosure. 31.5"L, 28"H, 17.75"W (80.01cm L, 71.12cm H, 45.085cm W). See irrigation detail.	1	
	Grounding Plate Paige Electric 4" x 36" copper grounding plate. Install per controller manufacturer's specifications and recommendations. See irrigation detail.	1	
	Water Meter 1"	1	
	Irrigation Lateral Line: PVC Class 200 SDR 21 (Shrubs) 3/4" See irrigation detail.	1,588 l.f.	
	Irrigation Lateral Line: PVC Class 200 SDR 21 (Trees) 3/4" See irrigation detail.	369.4 l.f.	
	Irrigation Lateral Line: PVC Class 200 SDR 21 (Shrubs) 3/4" See irrigation detail.	369.0 l.f.	
	Irrigation Mainline: PVC Schedule 40 (Mainline) 1 1/2" See irrigation detail.	304.2 l.f.	
	Pipe Sleeve: PVC Schedule 40 Standard pipe sleeve for irrigation pipe. Pipe sleeve shall be two times the diameter of pipe being sleeved. Irrigation mainline, lateral lines, and wire shall all be in separate sleeves.	45.2 l.f.	
1" = 20'			



# Texas Roadhouse

Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039 W



L-2

Sheet 3 of 14



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

**NOT FOR CONSTRUCTION**



GENERAL IRRIGATION NOTES

1. Existing utilities- information on the drawings relating to existing utility lines and services from the best sources available. All such information is furnished only for information and is not guaranteed. The Contractor shall excavate test pits as required to determine the exact location of existing utilities.

Call utility locating service for precise utility locations before beginning of any work. Arizona, 811.

2. Utility Requirements- The Contractor shall notify the following agencies at least 48 hours in advance of excavating around any of their structures. The utility companies listed below shall be contacted.

- Gas Company
- Telephone Company
- Electrical Power Company
- Cable Television Company
- Water Supply Company

3. Contractor shall be responsible for making himself familiar with all underground utilities, pipes, and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities.

4. Irrigation piping and related equipment are drawn diagrammatically. Scaled dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions and immediately notify the Owner's Representative of discrepancies between the drawings or specifications and the actual conditions. Although sites and locations of plants and or irrigation equipment are drawn to scale wherever possible, it is not within the scope of the drawings to show all necessary offsets, obstructions, or site conditions. The Contractor shall be responsible to install the work in such a manner that it will be in conformance to site conditions, complete, and in good working order.

5. 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 of conduct of the work as drawn and specified. If the contractor observes that a conflict exist 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.

6. Wherever references are made to standards or coded in accordance with which works 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 expressly set forth.

7. In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.

8. 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.

9. The Contractor shall be responsible for any coordination with subcontractors as requiring to accomplish the irrigation installation operations.

10. 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.

11. Before final acceptance of work, the Contractor shall provide a record set of drawing showing the irrigation system works 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 drawing shall include all of the information on the original document and revised to reflect all changes in the work. See specification section Irrigation for further information.

12. Contractor shall prepare and deliver to the Owner's Representative within ten calendar days prior to completion of construction, two 3 - ring binders, of Operation & Maintenance manuals. See specification section Irrigation for further information.

13. Existing trees shall be protected and cared for as required in the details and specifications.

14. 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 in the plans, details and specifications.

- Pre - Construction meeting.
- Trenching and sleeving review.
- Pressure mainline test.
- Adjustment and coverage test.
- Pre - maintenance observation.
- Final site observation and acceptance.

15. If the work fails to pass inspection, any subsequent inspections must be rescheduled as required in the specifications. The cost to the Owner for additional inspections will be charged to the Contractor at the prevailing hourly rate of the inspector.

16. Contractor shall include in the bid continued maintenance (warranty) period of 180 days after completion of construction and acceptance of the project by the Owner's Representative.

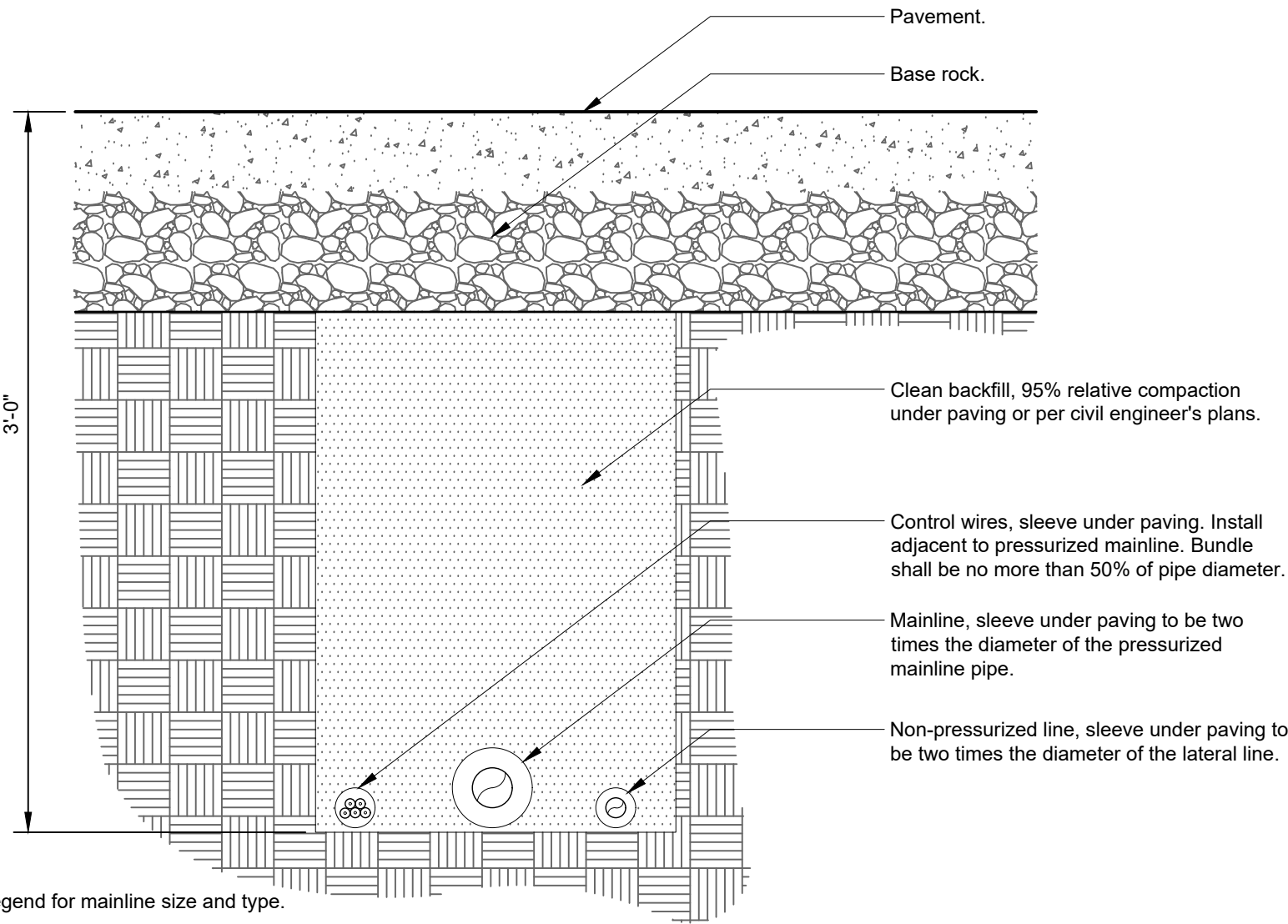
17. Pipe sizes shall conform to those shown on the plans with no smaller substitutions. Larger size pipe substitutions may be approved.

18. After completion and prior to the installation of any terminal fittings, the entire pipeline system shall be thoroughly flushed to remove dirt, debris, and other material.

19. The irrigation design is based on a minimum operating pressure of 73 PSI and a maximum demand of 6.99 GPM on valve # 3 for the point of connection on the west side of the building. The Contractor shall verify water pressure prior to installation. Any difference between the pressure indicated on the plans and that at the actual point of connection shall be brought to the attention of the Owner's Representative immediately.

20. A 120 volt electrical power outlet at the irrigation controller location shall be provided by the Contractor. It shall be the responsibility of the Contractor to make the final hook up from the electrical outlet to the irrigation controller.

21. Irrigation between the hours of 10:00 pm and 6:00 am only. Watering outside this time frame must be done manually with qualified supervisory personnel on-site. No system shall be left unattended during use outside the normal schedule.

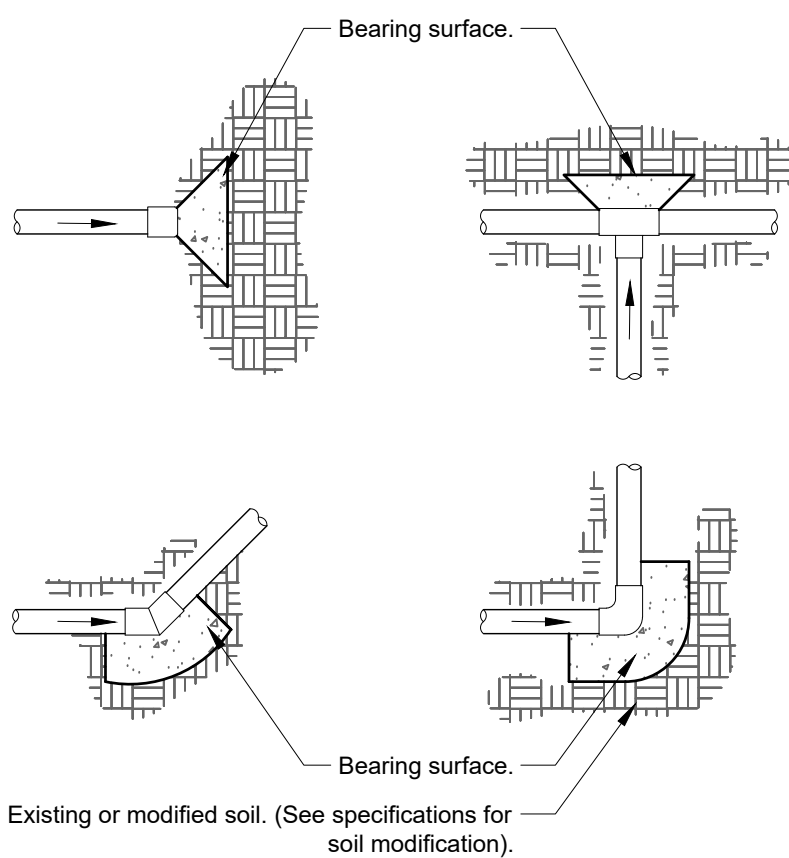


Notes:

- See irrigation legend for mainline size and type.
- All sleeves shall be Sch. 40 PVC pipe.
- All sleeves shall extend 12" beyond the edge of pavement.
- End of sleeves shall be located with a wooden stake or PVC pipe. Locators shall run continuously from the end of the sleeve to finished grade.

PIPE AT PAVEMENT

P-CO-21039\_WA-06



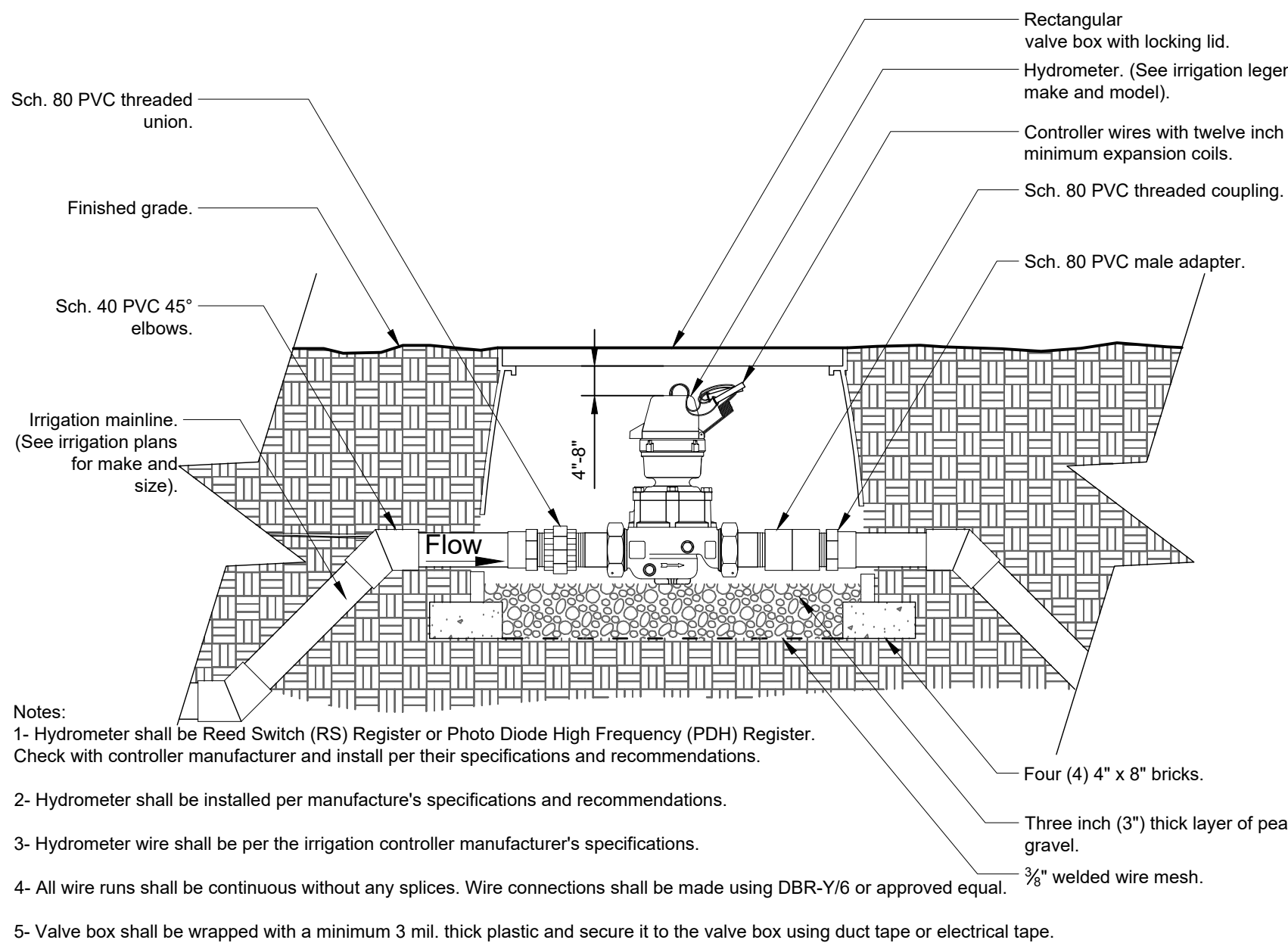
Notes:

- Size thrust blocks shall be specified as show in the table above.
- Control wires shall not be encased in concrete.
- All fittings shall be wrapped with polyethylene to prevent concrete from adhering to pipe, fittings or bolts.
- Joints and bolts shall be accessible for repairs.
- Thrust blocks shall be a minimum of 6" thick.
- One 80 lbs. sack of concrete shall cover .6 ft.<sup>3</sup>

MINIMUM BEARING SURFACE AREA				
PIPE SIZE	TEE AND PLUG	90° BEND	45° BEND	
1-1/2"	0.45 FEET <sup>2</sup>	0.63 FEET <sup>2</sup>	0.34 FEET <sup>2</sup>	
2"	0.69 FEET <sup>2</sup>	0.97 FEET <sup>2</sup>	0.53 FEET <sup>2</sup>	
2-1/2"	1.0 FEET <sup>2</sup>	1.41 FEET <sup>2</sup>	0.77 FEET <sup>2</sup>	
3"	1.48 FEET <sup>2</sup>	2.10 FEET <sup>2</sup>	1.14 FEET <sup>2</sup>	
4"	2.43 FEET <sup>2</sup>	3.45 FEET <sup>2</sup>	1.87 FEET <sup>2</sup>	
6"	5.25 FEET <sup>2</sup>	7.41 FEET <sup>2</sup>	4.02 FEET <sup>2</sup>	
8"	9.08 FEET <sup>2</sup>	12.83 FEET <sup>2</sup>	6.96 FEET <sup>2</sup>	
10"	14.93 FEET <sup>2</sup>	21.07 FEET <sup>2</sup>	11.44 FEET <sup>2</sup>	

THRUST BLOCKS

P-CO-21039\_WA-07

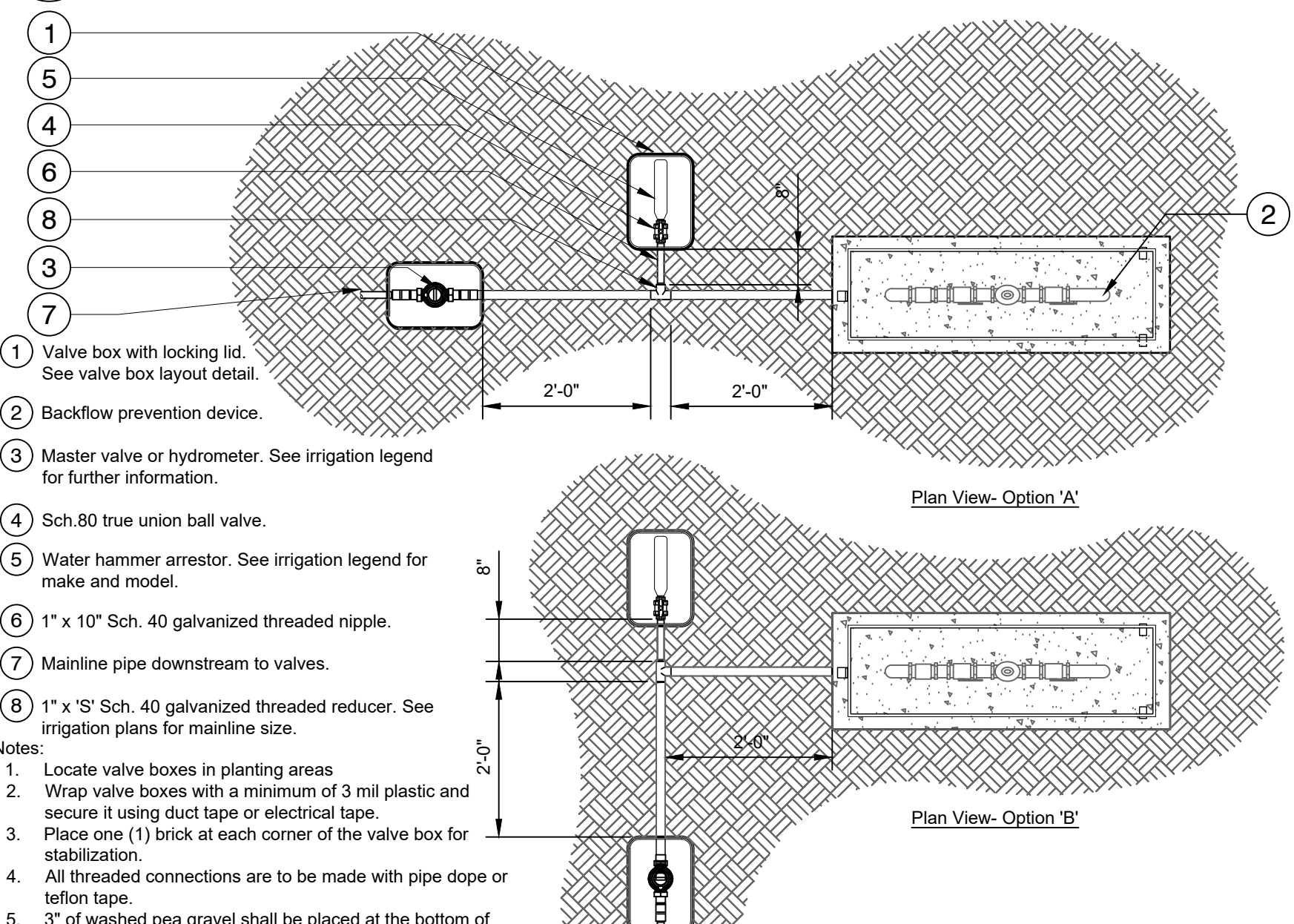


Notes:

- Hydrometer shall be Reed Switch (RS) Register or Photo Diode High Frequency (PDH) Register. Check with controller manufacturer and install per their specifications and recommendations.
- Hydrometer shall be installed per manufacture's specifications and recommendations.
- Hydrometer wire shall be per the irrigation controller manufacturer's specifications.
- All wire runs shall be continuous without any splices. Wire connections shall be made using DBR-Y/6 or approved equal.
- Valve box shall be wrapped with a minimum 3 mil. thick plastic and secure it to the valve box using duct tape or electrical tape.
- Valve box shall be located in planting area.

HYDROMETER

P-CO-21039\_WA-08

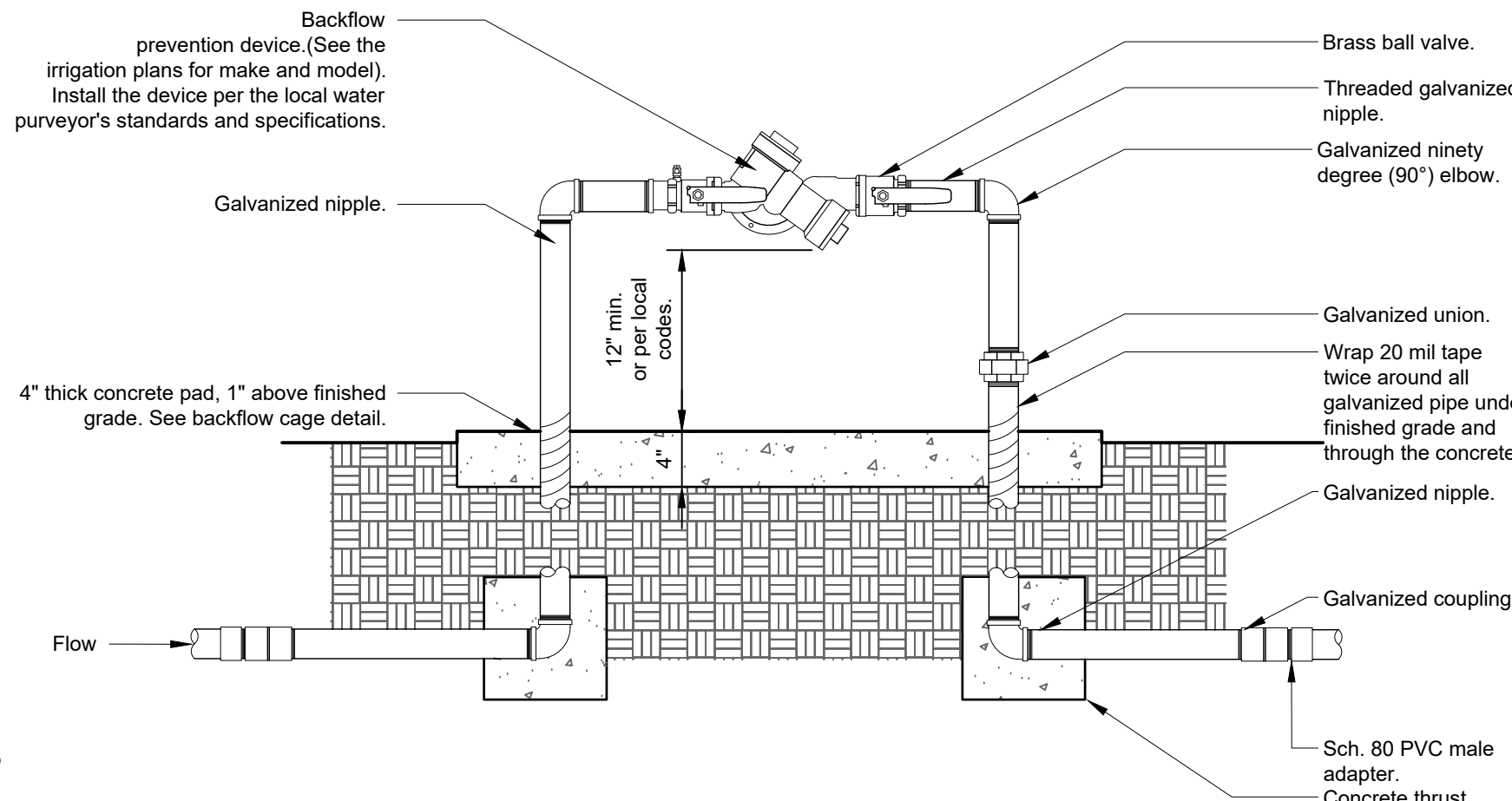


Notes:

- Locate valve boxes in planting areas
- Wrap valve boxes with a minimum of 3 mil plastic and secure it using duct tape or electrical tape.
- Place one (1) brick at each corner of the valve box for stabilization.
- All threaded connections are to be made with pipe dope or teflon tape.
- 3" of washed pea gravel shall be placed at the bottom of the valve box

WATER HAMMER ARRESTOR

P-CO-21039\_WA-12

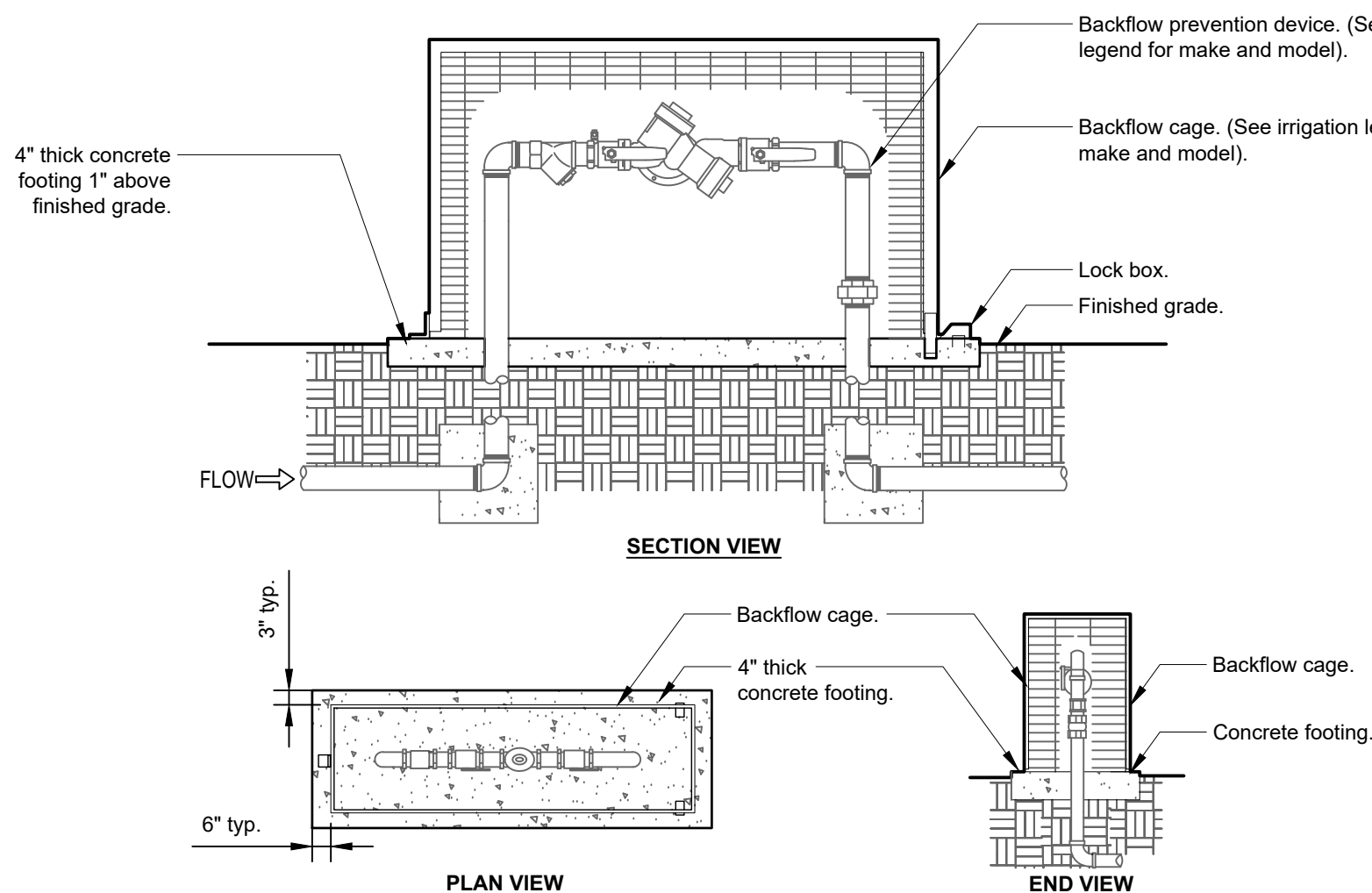


Note:

- Install per the City of Mesa standard details and specifications.
- All assembly parts (threaded nipples, fittings, etc.) shall be galvanized or brass per local codes and requirements.
- Galvanized nipple shall extend 12" past the edge of the concrete footing.
- Sch. 80 PVC male adapter shall be used in connection from galvanize to the mainline.
- Backflow prevention device shall be located in planting area unless approved by Owner's Representative.
- See detail for backflow cage installation.
- All backflow prevention devices shall have freeze blanket included upon installation.
- All galvanized connections shall to be made using pipe thread sealant. All Sch. 80 PVC to galvanized connections to be made using teflon tape.

BACKFLOW PREVENTION DEVICE

P-CO-21039\_WA-01

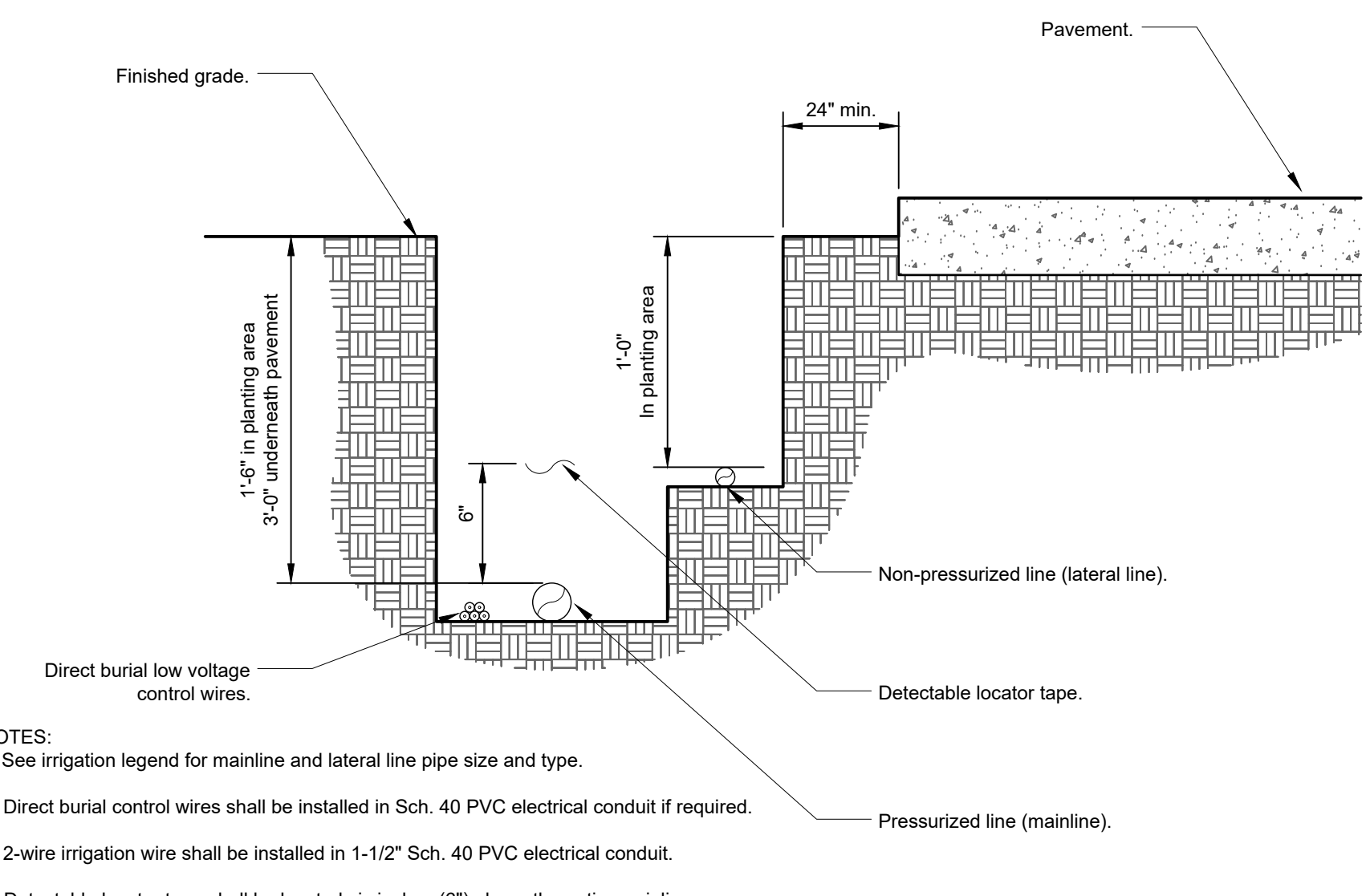


Notes:

- Install backflow cage per manufacturer's specifications and recommendations.
- See backflow prevention device detail for reference.
- Lock box shall be located above concrete footing
- Contractor shall provide a lock as approved by the Owner's Representative.

BACKFLOW CAGE

P-CO-21039\_WA-04

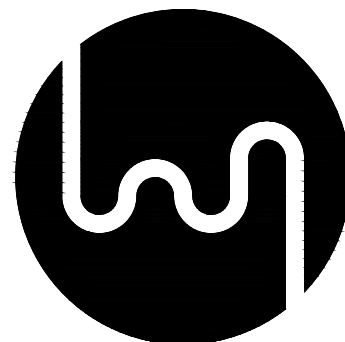


NOTES:

- See irrigation legend for mainline and lateral line pipe size and type.
- Direct burial control wires shall be installed in Sch. 40 PVC electrical conduit if required.
- 2-wire irrigation wire shall be installed in 1-1/2" Sch. 40 PVC electrical conduit.
- Detectable locator tape shall be located six inches (6") above the entire mainline run.

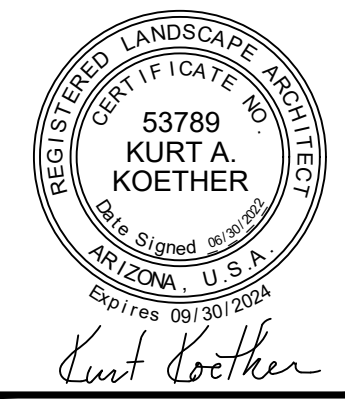
IRRIGATION TRENCHING

P-CO-21039\_WA-05



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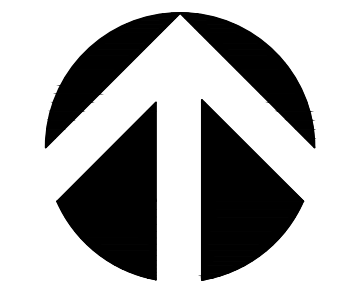
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Drawing Description  
Date

Irrigation Details & Notes  
**Texas Roadhouse**  
Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



NORTH

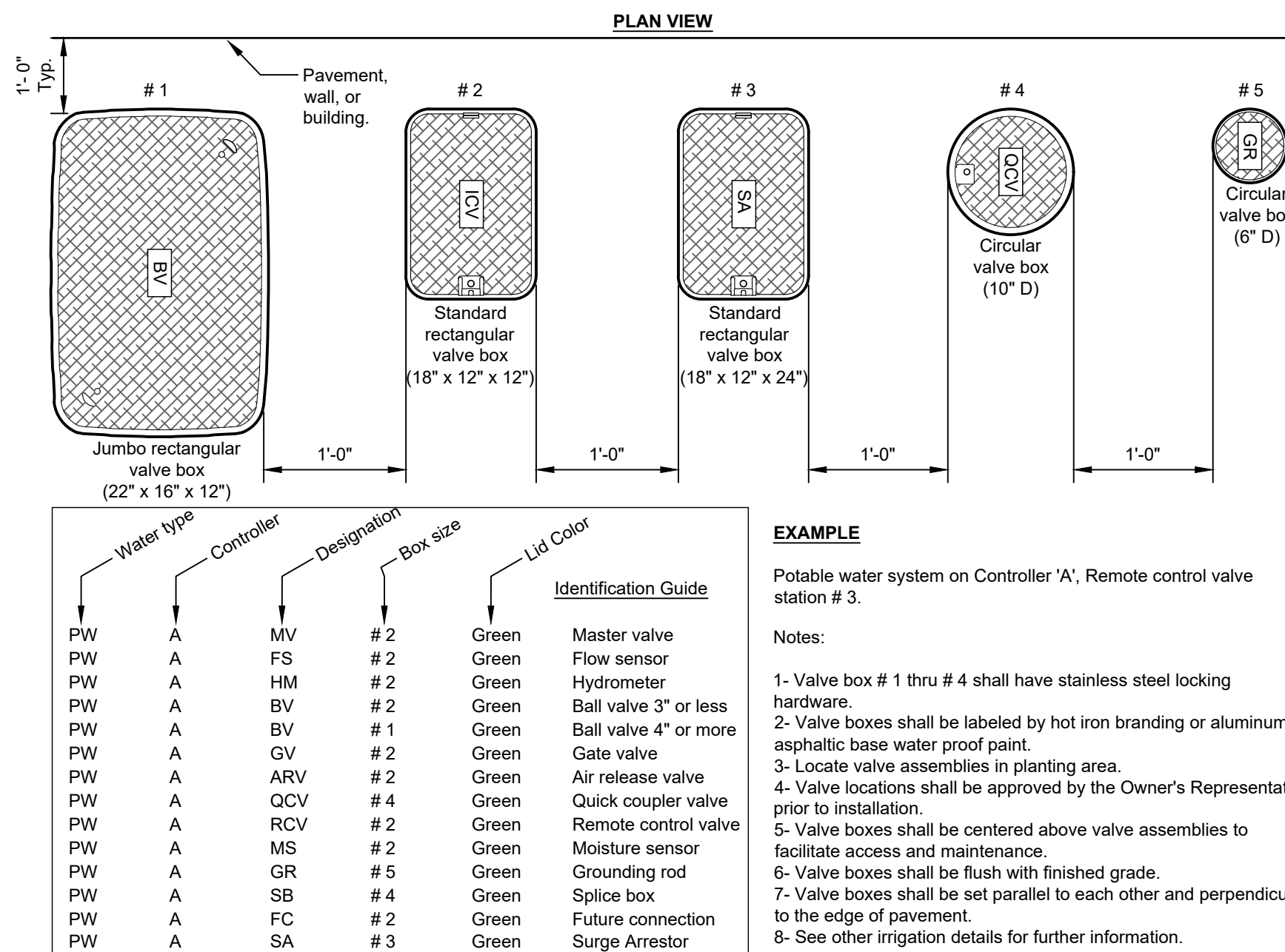
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Sheet 4 of 14

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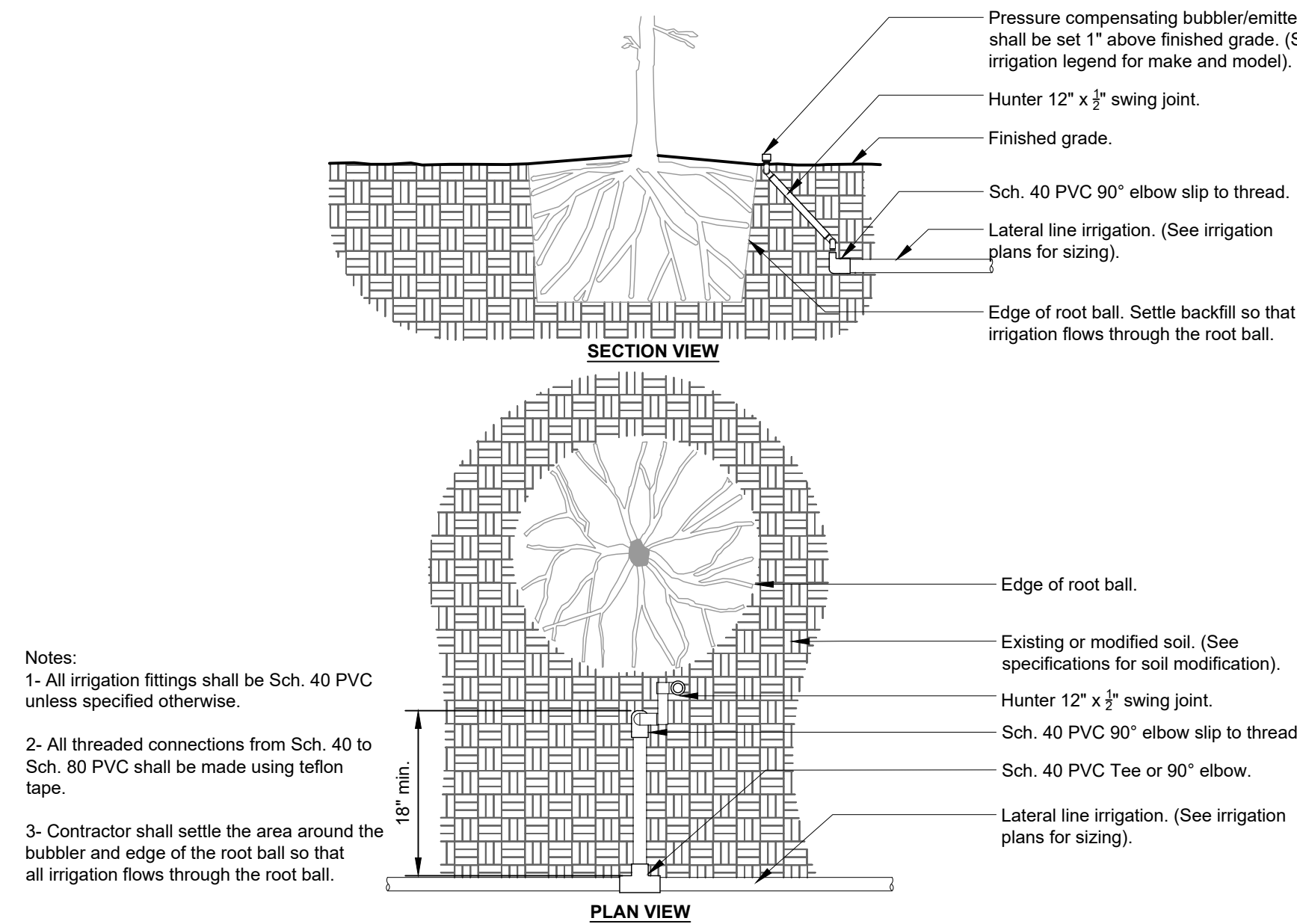


\\MichHome\Drawings\Wood\Architecture\2121039\_VA-Texas Roadhouse- 1605 S Stapley Drive, Mesa, AZ (GFI)\Land\CD's\CD\_04121039\_VA-1.dwg30.08.202229\kurtkoether



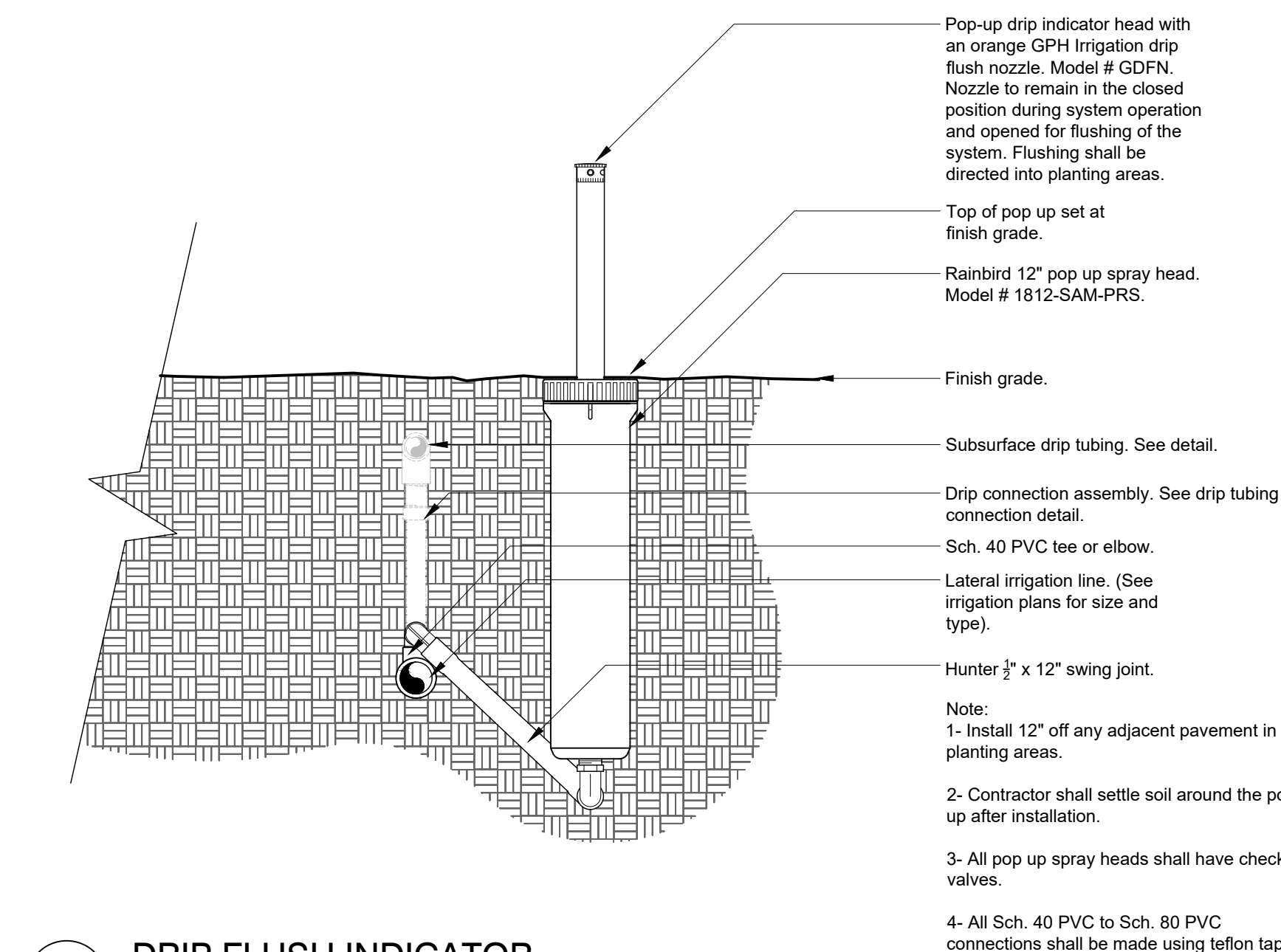
## 7 VALVE BOX LAYOUT

P-CO-21039\_WA-15



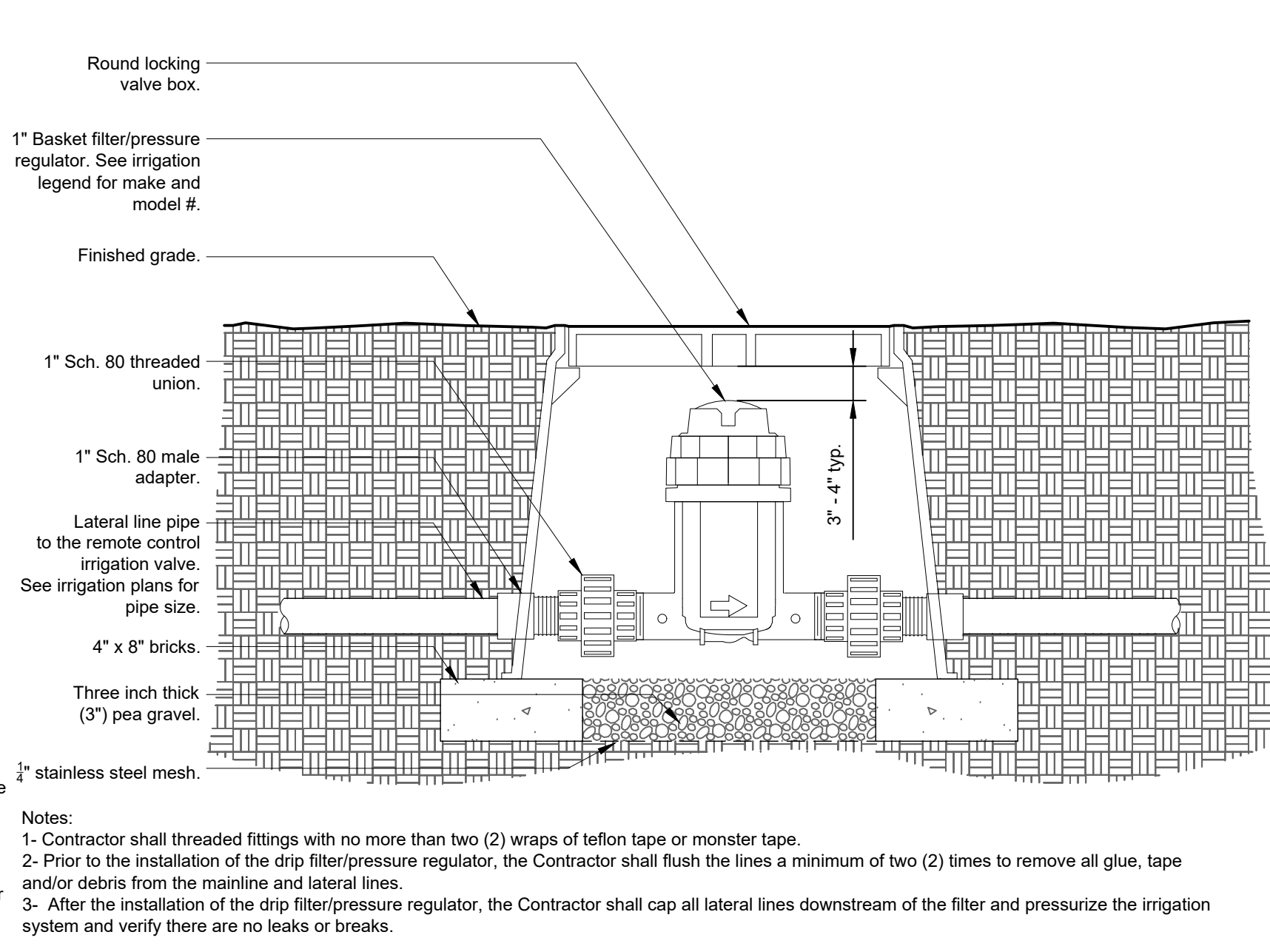
## 8 BUBBLER/EMITTER ON ROOT BALL LAYOUT

P-CO-21039\_WA-16



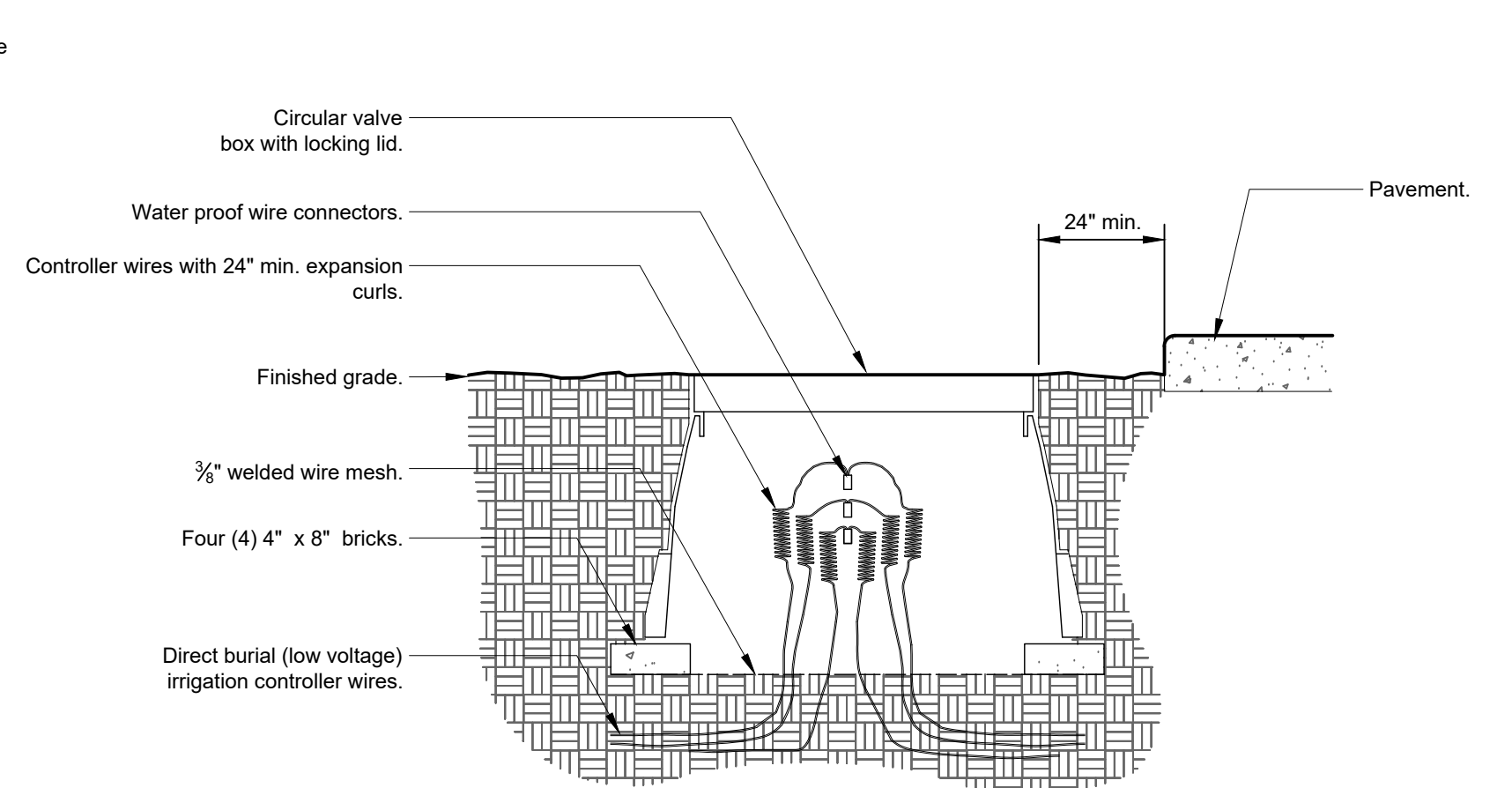
## 9 DRIP FLUSH INDICATOR

P-CO-21039\_WA-17



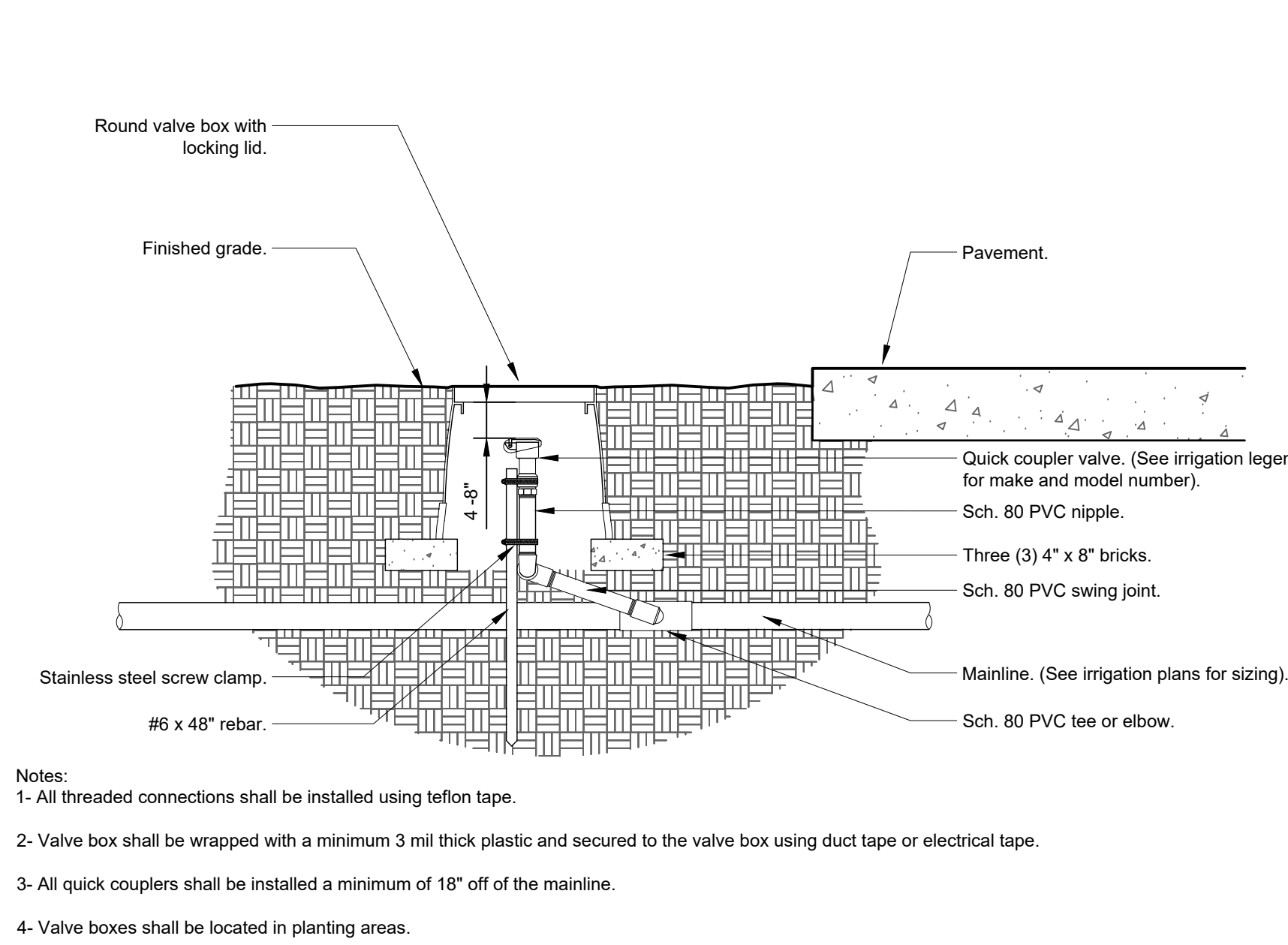
## 4 1" BASKET DRIP FILTER/PRESSURE REGULATOR

P-CO-21039\_WA-13



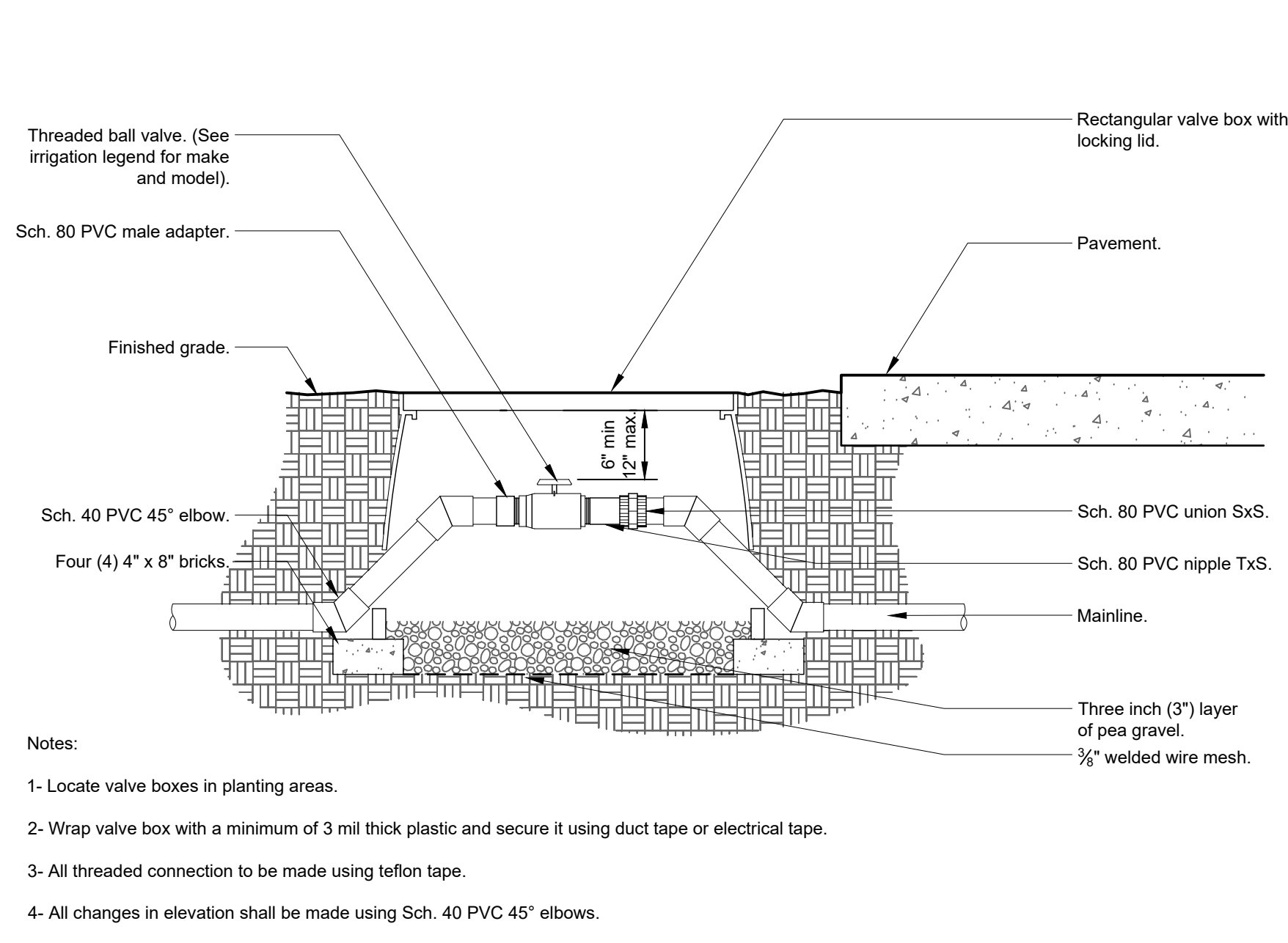
## 5 SPLICE BOX

P-CO-21039\_WA-14



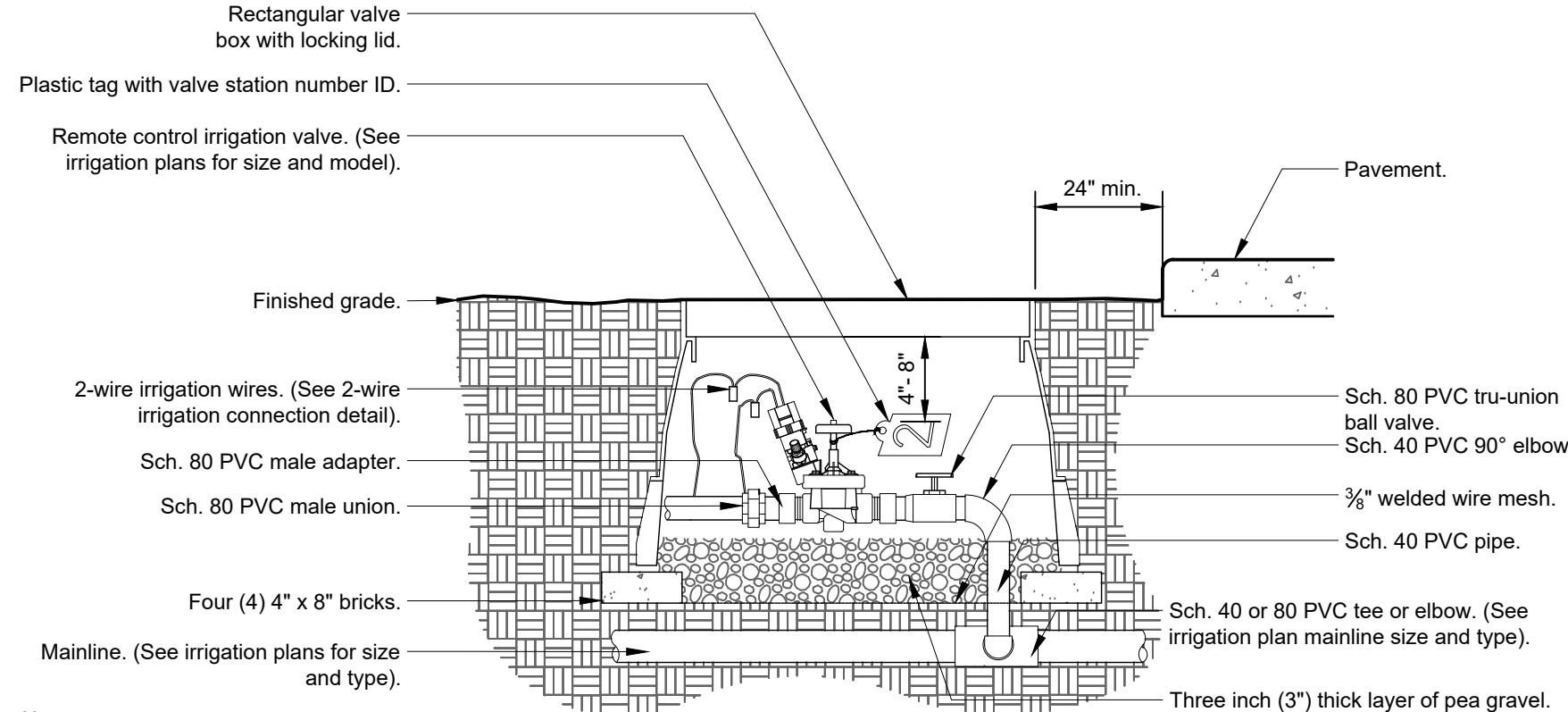
## 6 QUICK COUPLER VALVE

P-CO-21039\_WA-33



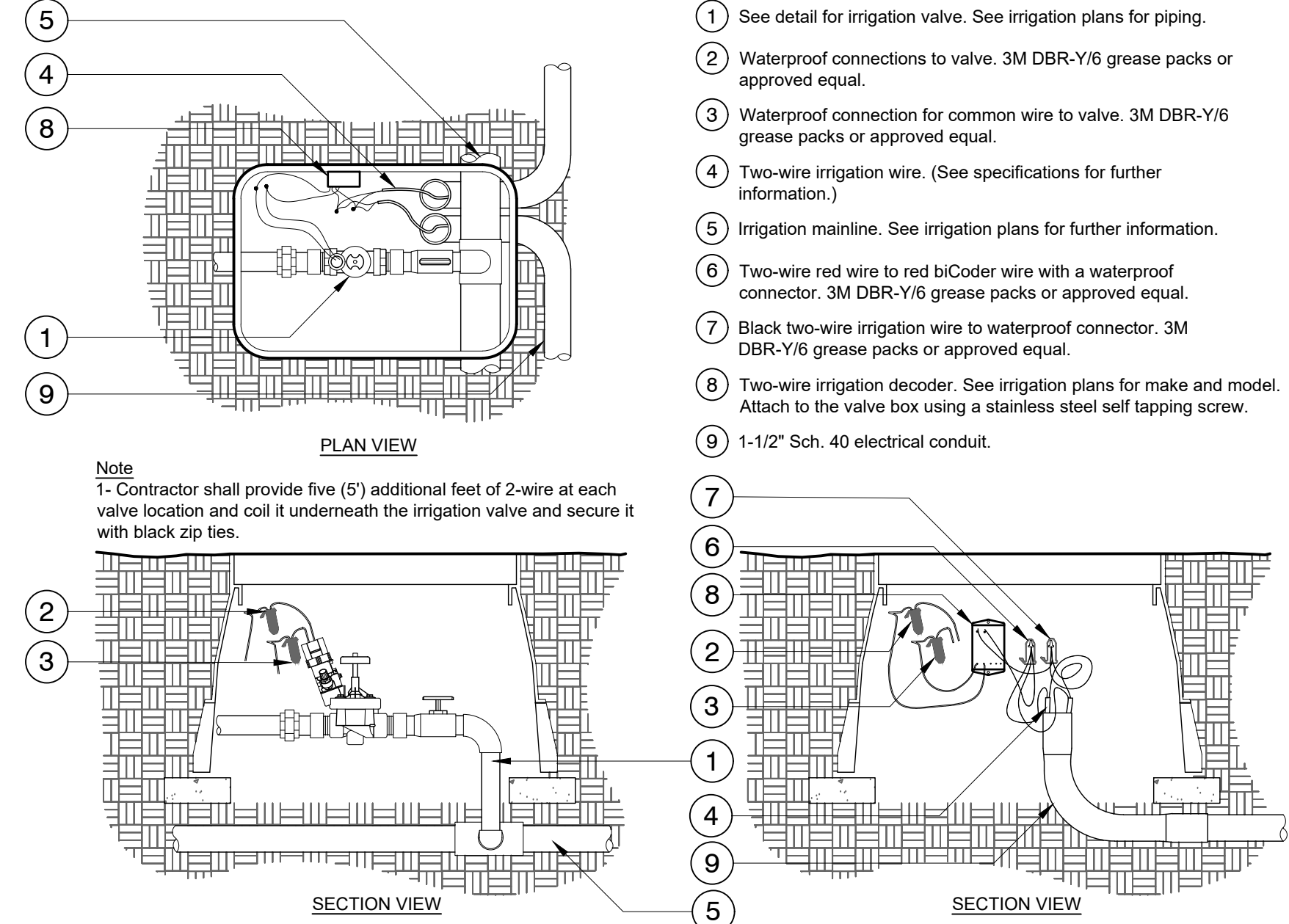
## 1 BALL VALVE 3" OR SMALLER

P-CO-21039\_WA-09



## 2 2- WIRE REMOTE CONTROL VALVE

P-CO-21039\_WA-10

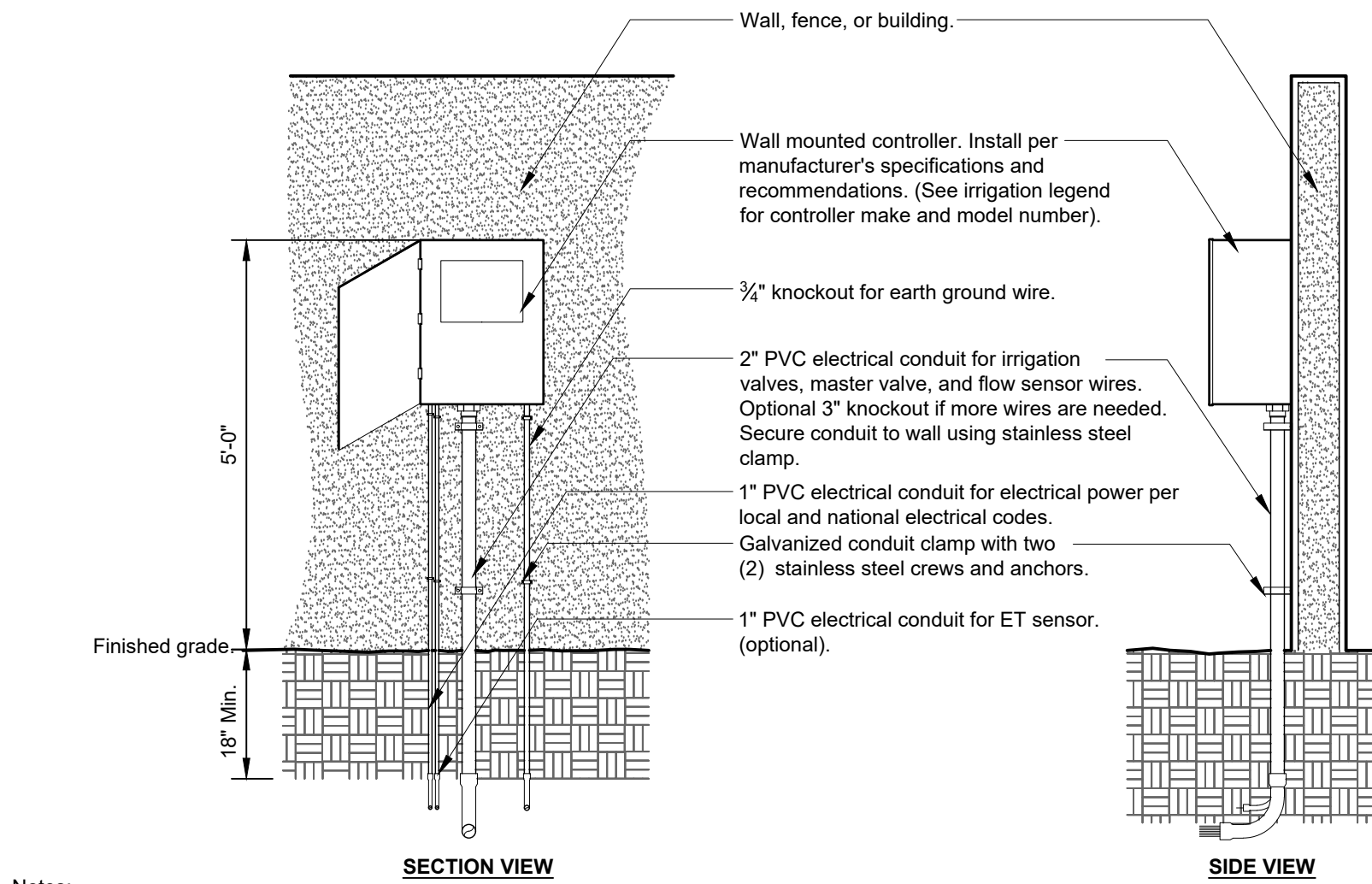


## 3 2-WIRE IRRIGATION CONNECTIONS

P-CO-21039\_WA-11



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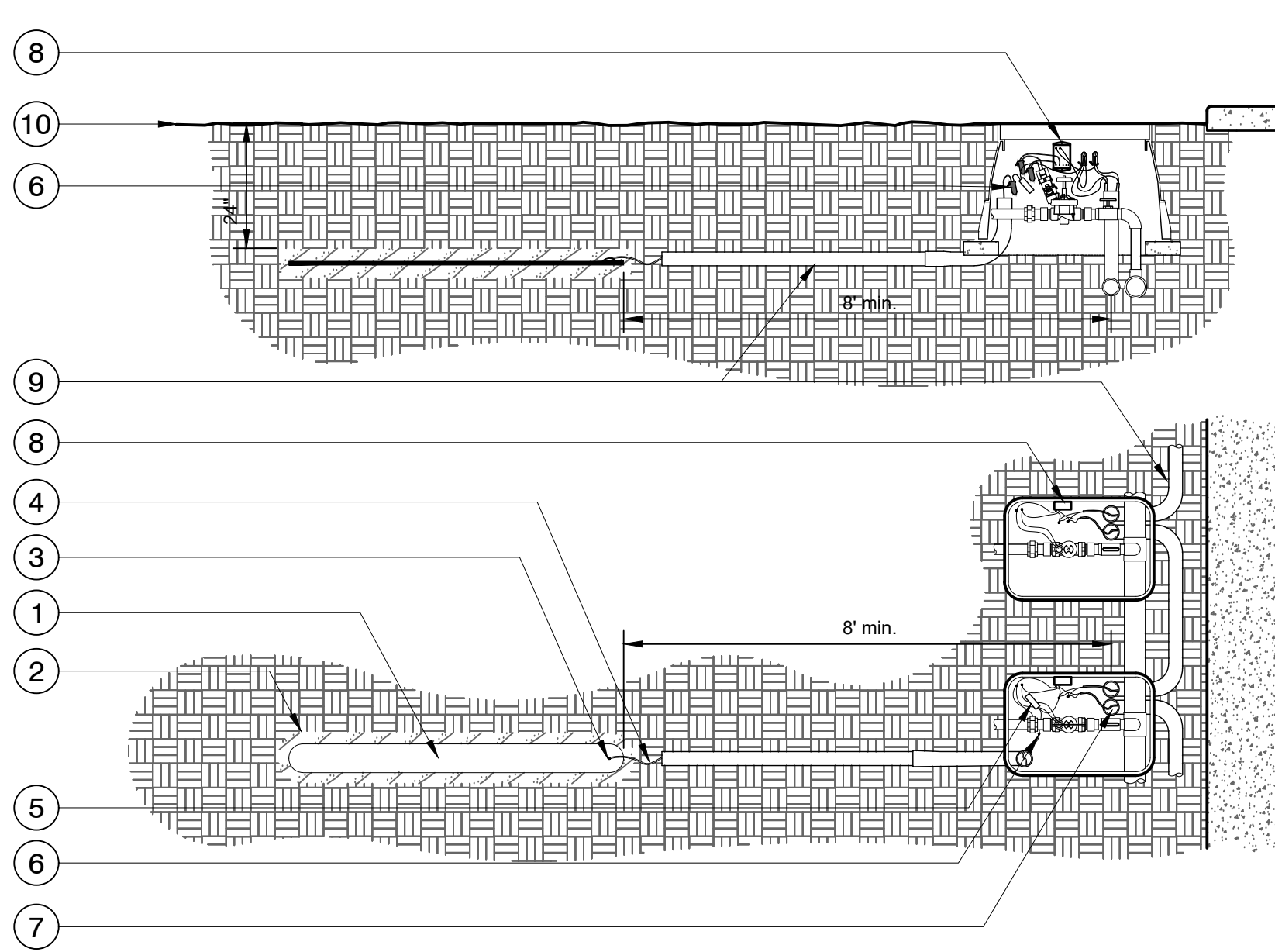


Notes:

- 1- Common and controller wire to be bundled using electrical tape at 10'-0" on center.
- 2- Grounding rods shall be located between 8'-0" to 12'-0" away from the controller. Grounding rods shall be 3/4" in diameter x 8' in length. Connect the grounding rod to the controller using 6 gauge bare copper wire or per the manufacturer's specifications. See grounding rod detail.
- 3- Grounding rod shall not be located within the same trench as the irrigation wire.
- 4- ET Station shall be installed no further than 90' away from the controller and a minimum of 15' off of the ground, out from under any overhead obstructions such as, but not limited to, building overhangs, trees, or utilities.

1 WALL MOUNTED CONTROLLER

P-CO-21039\_WA-18



2 GROUNDING PLATE AND LIGHTNING ARRESTOR

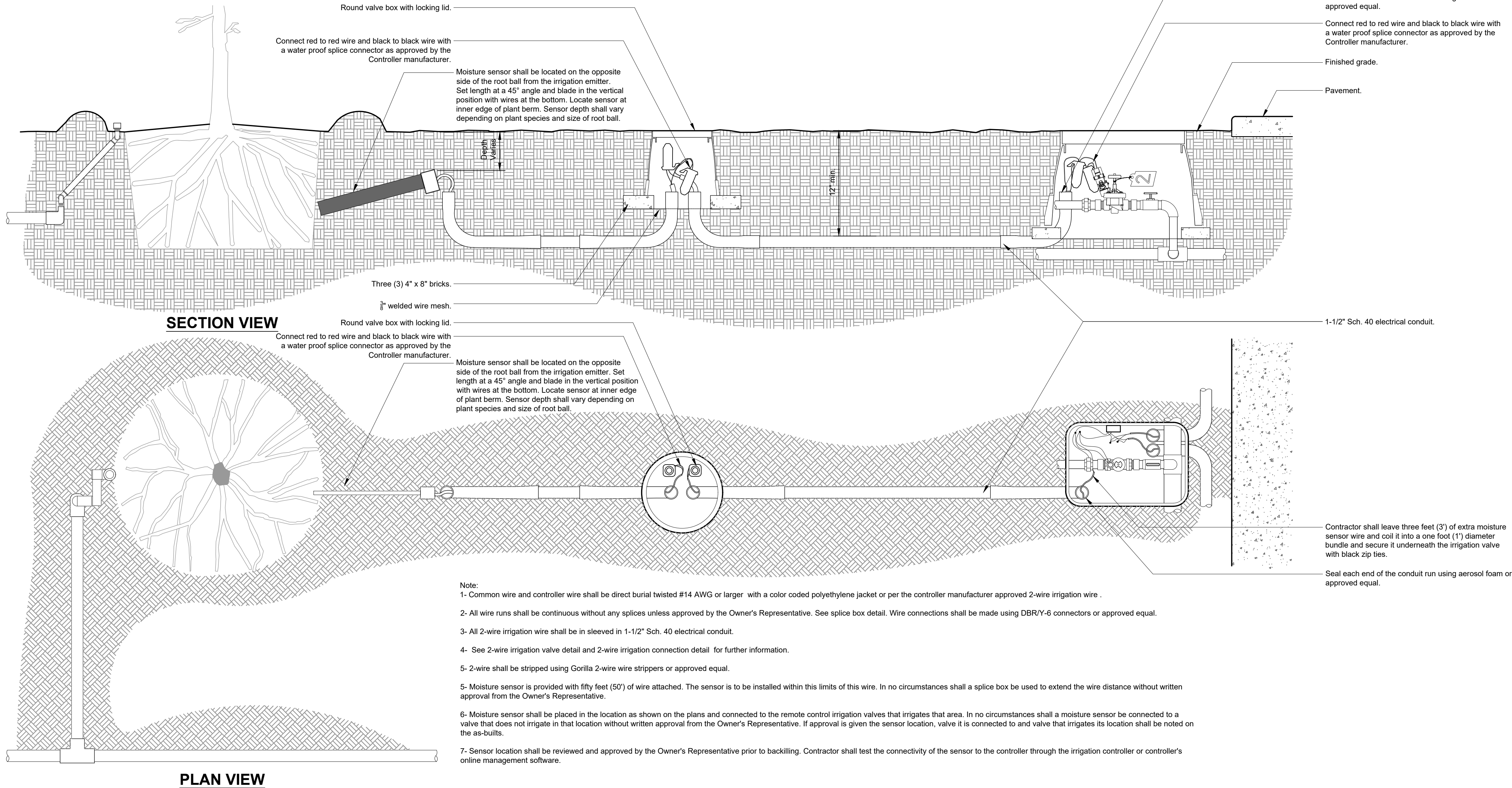
3/4" = 1'-0"

P-CO-21039\_WA-19

- 1 Paige Electric 4" x 36" copper grounding plate, pre-connected to ten feet (10') of #6 AWG bare copper wire. Install grounding plate perpendicular to the wire run and a minimum of eight (8') from the wire path.
- 2 Paige electric 'Power Set' contact enhancement material. Apply fifty pounds (50 lbs.) to the immediate area surrounding all sides of the grounding plate.
- 3 Groundwire pre-connected to the grounding plate or use CAD WELD to connect to the plate.
- 4 #6 AWG bare copper wire.
- 5 Lightning arrestor.
- 6 DBR/Y-6 waterproof greas packs.
- 7 2-wire irrigation path.
- 8 Controller decoder.
- 9 1-1/2" Sch. 40 electrical conduit.
- 10 Finished grade.

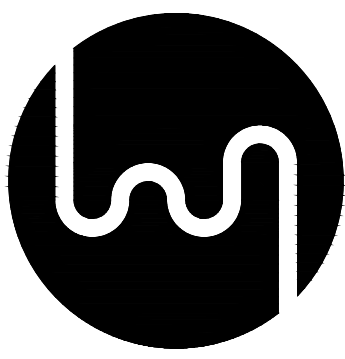
Notes:

- Decoder system grounding shall be per the controller manufacturer's specifications and recommendations or at a minimum of every five hundred feet (500') of the irrigation 2-wire path run and irrigation 2-wire path spurs of fifty feet (50') or greater.
- All Sch. 40 electrical conduit openings shall be filled with a foam sealant after grounding installation prior to backfilling.
- Acceptable earth ground shall not exceed 10 ohms.
- Grounding testing shall be performed by a certified 3rd party and documentation of grounding certification shall be provided to the Owner and Owner's Representative prior to project acceptance and beginning of the maintenance period.
- See 2-wire irrigation connection detail for further information.
- See 2-wire remote control irrigation valve detail for further information.
- Contractor shall include in their bid the addition of one (1) copper grounding plate and #6 AWG bare copper wire for controller grounding as necessary.



3 MOISTURE SENSOR WITH SINGLE EMITTER

P-CO-21039\_WA-20



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Drawing Description

Date

Irrigation Details

Texas Roadhouse  
Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



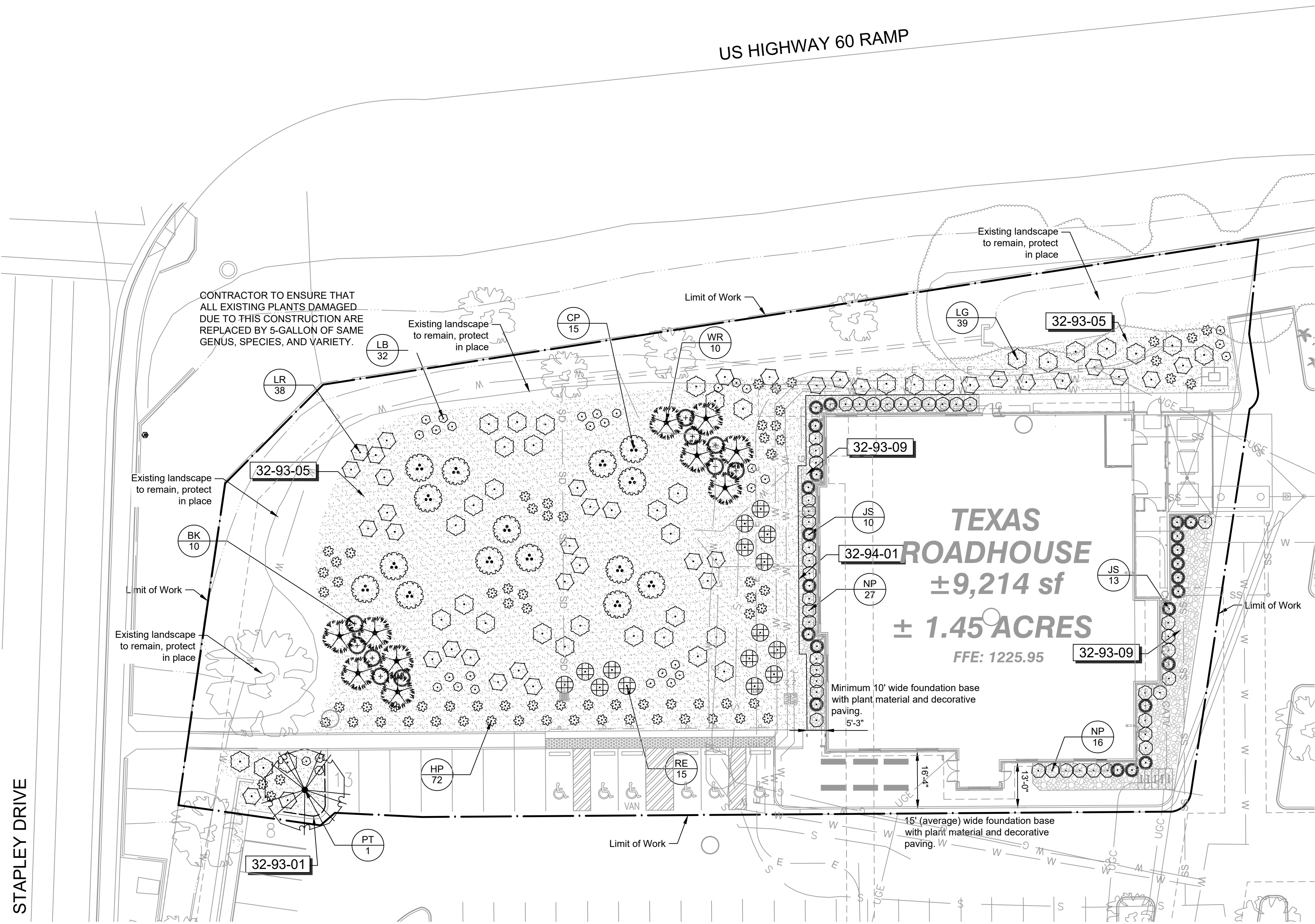
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Sheet 6 of 14

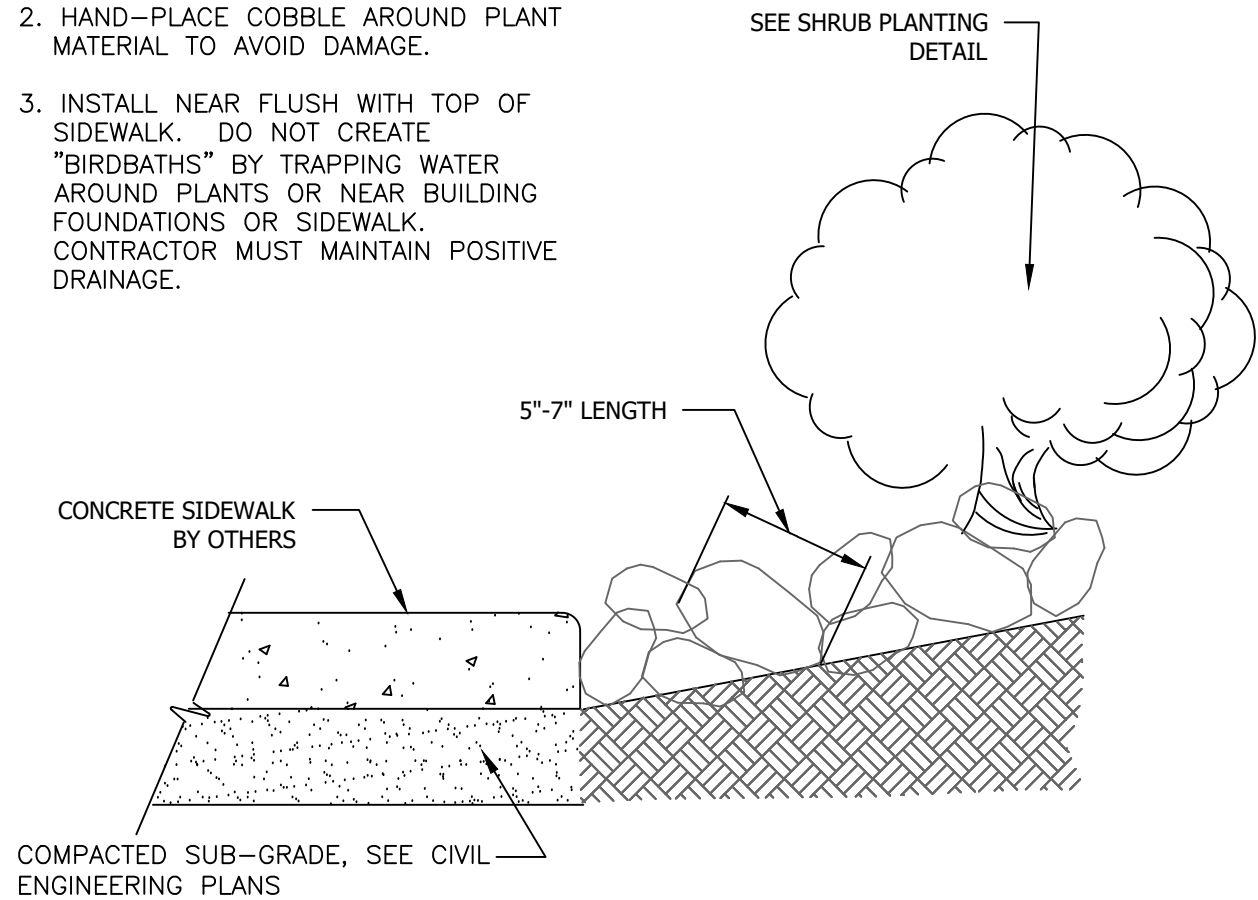
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1. INSTALL 5"-7" LENGTH RIVER ROCK COBBLE, ON Micro 'MSCAPE' WEED BARRIER, CONFIRM EXACT TYPE WITH OWNER PRIOR TO BID.
2. HAND-PLACE COBBLE AROUND PLANT MATERIAL TO AVOID DAMAGE.
3. INSTALL NEAR FLUSH WITH TOP OF SIDEWALK. DO NOT CREATE "BIRDBATHS" BY TRAPPING WATER AROUND PLANTS OR NEAR BUILDING FOUNDATIONS OR SIDEWALK. CONTRACTOR MUST MAINTAIN POSITIVE DRAINAGE.



1 5"-7" LENGTH RIVER ROCK COBBLE DETAIL  
1 1/2" = 1'-0"

DETAIL-FILE

#### Plant Legend

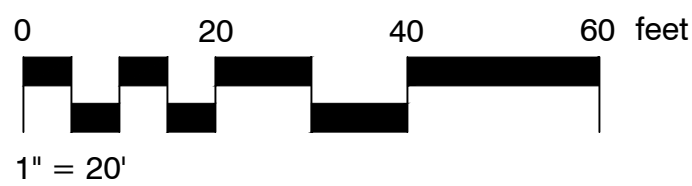
TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	USE	STYLE	QTY
	PT	Prosopis chilensis 'Thornless'	Thornless Chilean Mesquite	24"box	Deciduous	Parking Lot Tree	Standard	1
	WR	Washingtonia robusta	Mexican Fan Palm	20' BTH				10
SHRUBS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	WUCOLS		
	BK	Bougainvillea x 'Barbara Karst'	Barbara Karst Bougainvillea	5 gal	Evergreen			10
	CP	Caesalpinia pulcherrima	Red Bird Of Paradise	5 gal	Deciduous			15
	HP	Hesperaloe parviflora	Red Yucca	5 gal	Evergreen			72
	JS	Juniperus chinensis 'Spartan'	Spartan Juniper	7' min. ht.	Evergreen			23
	LG	Leucophyllum frutescens 'Green Cloud' TM	Green Cloud Texas Ranger	5 gal	Evergreen			39
	LR	Leucophyllum langmaniae 'Rio Bravo' TM	Rio Bravo Langman's Sage	5 gal	Evergreen			38
	LB	Leucophyllum zygophyllum 'Blue Ranger'	Cimieron	5 gal	Evergreen			32
	NP	Nerium oleander 'Petite Pink'	Petite Pink Oleander	36" min. ht.	Evergreen			43
	RE	Russelia equisetiformis	Firecracker Plant	5 gal	Evergreen			15

#### Groundcover Legend

SYMBOL	PLANTING DESCRIPTION	QTY
32-93-01	18" linear root barriers shall be installed within eight feet (8') of any pavement. Linear root barriers shall be by Deep Root model number 18-2. Install per manufacturer's specifications and recommendations. See planting detail.	26 lf
32-93-05	3" thick layer of 1/2" minus screened decomposed granite. Color: Madison Gold. Contractor shall provide a sample to the Owner/Owner's Representative prior to ordering. See specifications for further information.	15,240 sf
32-93-09	Install river rock mulch 5"-7" length on weed barrier in plant bed adjacent to building foundation and where indicated on plan. River rock mulch to be installed flush with top of sidewalk. See detail.	1,874 sf
SYMBOL	PLANTING ACCESSORIES DESCRIPTION	QTY
32-94-01	Permaloc aluminum landscape edging. 1/8" x 4" ProSlide; color- black. Install per manufacturer's specifications and recommendations. See planting detail.	151 lf

#### Notes:

- 1- Graphic symbols take precedence over written quantities. Contractor to verify total quantities.
- 2- Plant quality shall be as prescribed in the details and specifications. Any plant not meeting such requirement shall be removed from the site and replaced at no cost to the Owner or Landscape Architect.
- 3- All quantities and amounts shown on the plans are best estimates for the benefit of the Contractor. In field conditions may vary compared to what is shown on the plans. Therefore, it is the Contractor's responsibility to verify all lengths, square footages, and amounts prior to bidding the project.



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Planting Plan

**Texas Roadhouse**  
Mesa, AZ

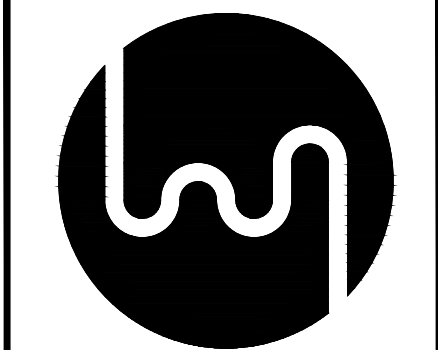
Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA

**811**  
NORTH  
L-6  
Sheet 7 of 14



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1. Existing utilities- information on the drawings relating to existing utility lines and services from the best sources available. All such information is furnished only for information and is not guaranteed. The Contractor shall excavate test pits as required to determine the exact location of existing utilities.

2. Utility Requirements- The Contractor shall notify the following agencies at least 48 hours in advance of excavating around any of their structures. The utility companies listed below shall be contacted.

3. Contractor shall be responsible for making himself familiar with all underground utilities, pipes, and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities.

5. 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 exist between permit requirements and the work outlined in the contract documents, the Contractor shall promptly inform 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.

7. In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.

9. The Contractor shall be responsible for any coordination with subcontractors as requiring to accomplish the planting operations.

a. 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 the cost of corrections. If the contractor fails to notify the Owner's Representative of such conditions, he/she shall remain responsible for the plant material under the warrantee clause of the specifications.

a. Planting operations shall not begin until such time that the irrigation system is completely operational for the areas to be planted, and the irrigation system for that area has been preliminarily inspected and approved by the Owner's Representative.

- Pre - Construction meeting.
- Site conditions prior to the start of planting
- Plant quality.
- Completion of planting.

14. Contractor shall include in the bid continued maintenance (warranty) period of 180 days after completion of construction and acceptance of the project by the Owner's Representative.

Central leader. (See crown observations detail).

Trunk caliper shall meet ANSI Z60 current edition for root ball size.

Root ball modified as required.

Round-topped soil berm 4" high x 8" wide above root ball surface shall be constructed around the root ball. Berm shall begin at root ball periphery.

Finished grade.

Modified soil. Depth varies. (See soil preparation plan).

Existing soil.

Bottom of root ball rests on

Top of root ball shall be flush with finished grade.

Prior to mulching, lightly tamp soil around the root ball in 6" lifts to brace tree. Do not over compact. When the planting hole has been backfilled, pour water around the root ball to settle the soil.

4" layer of mulch.

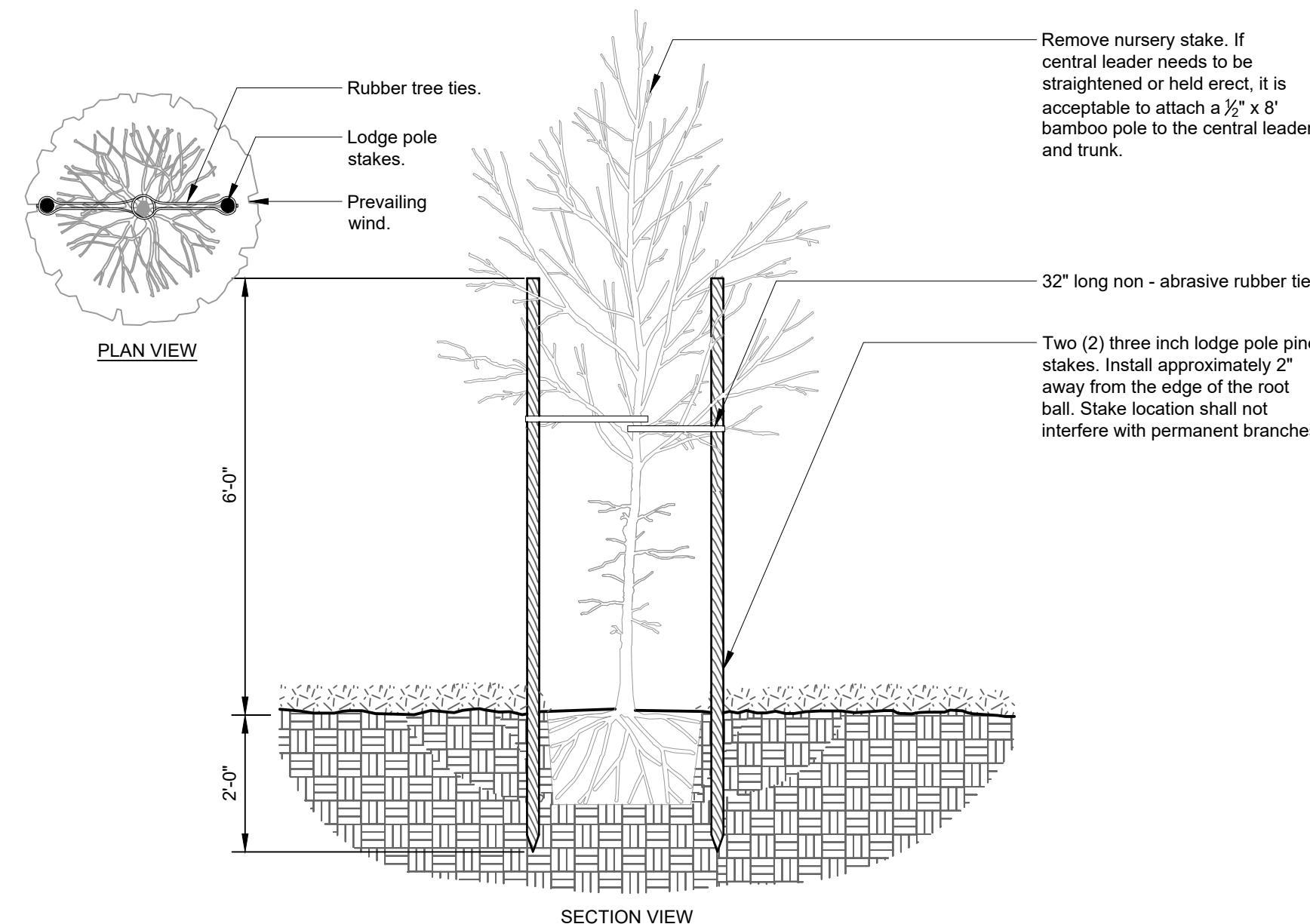
No more than 1" of mulch on top of root ball. (See specifications for mulch).

Notes:

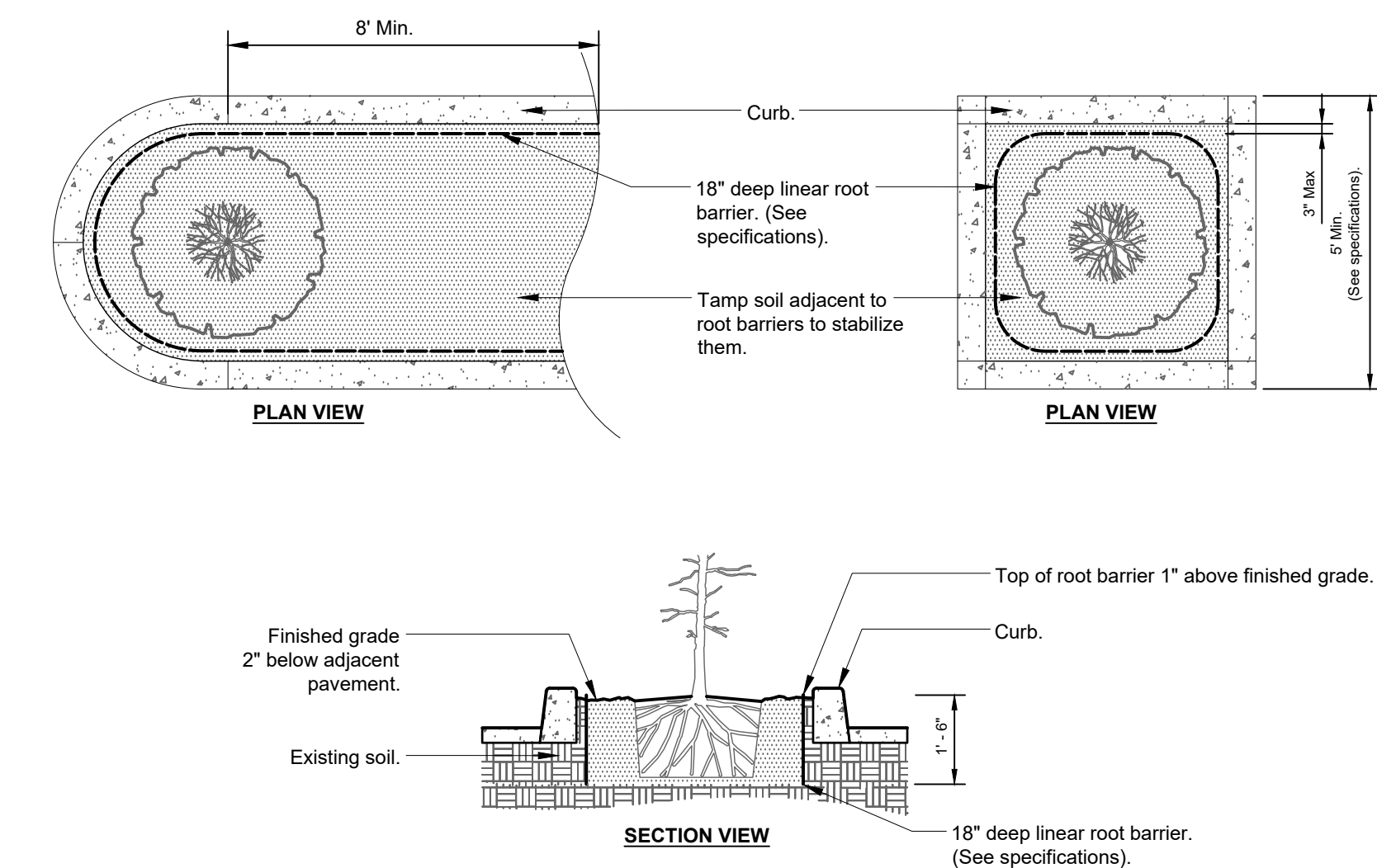
- 1- Trees shall be of quality prescribed in crown observations and root observations details and specifications.
- 2- See specifications for further requirements related to

**SECTION VIEW**

## P-CO-21039 WA-24

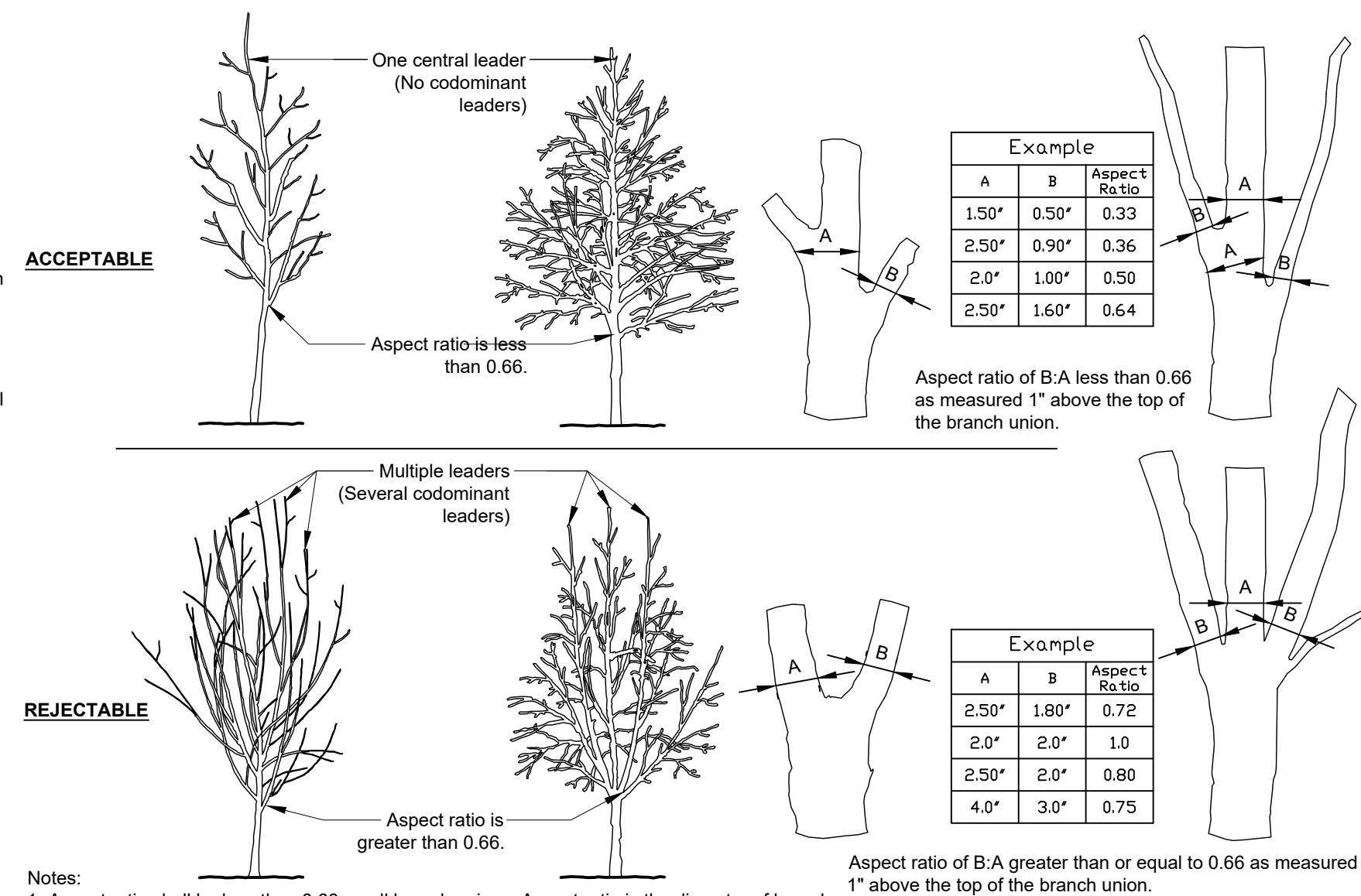


## P-CO-21039\_WA-25

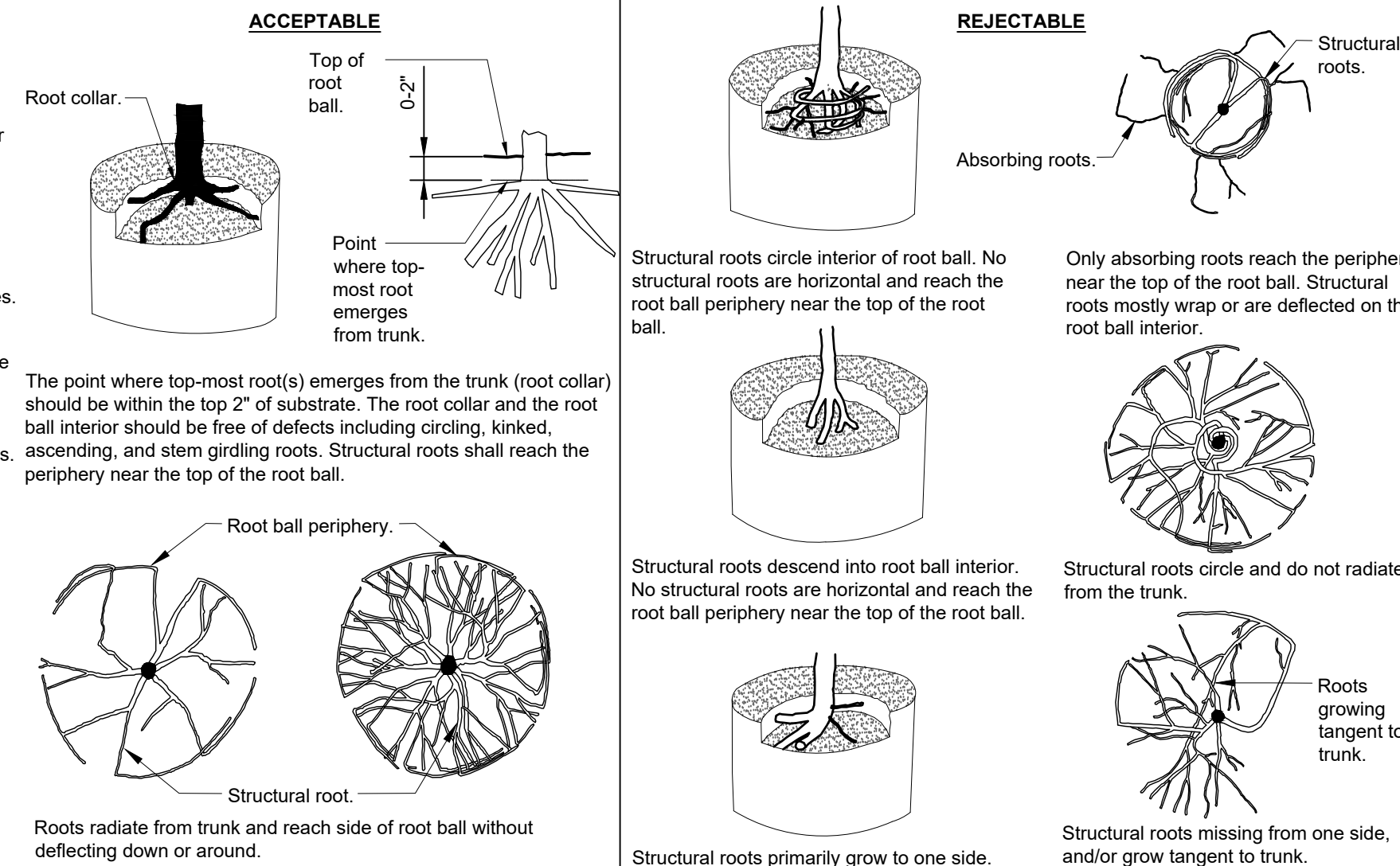


2- Root barriers shall be installed when root ball is located within 8' of pavement.

## P-CO-21039\_WA-26



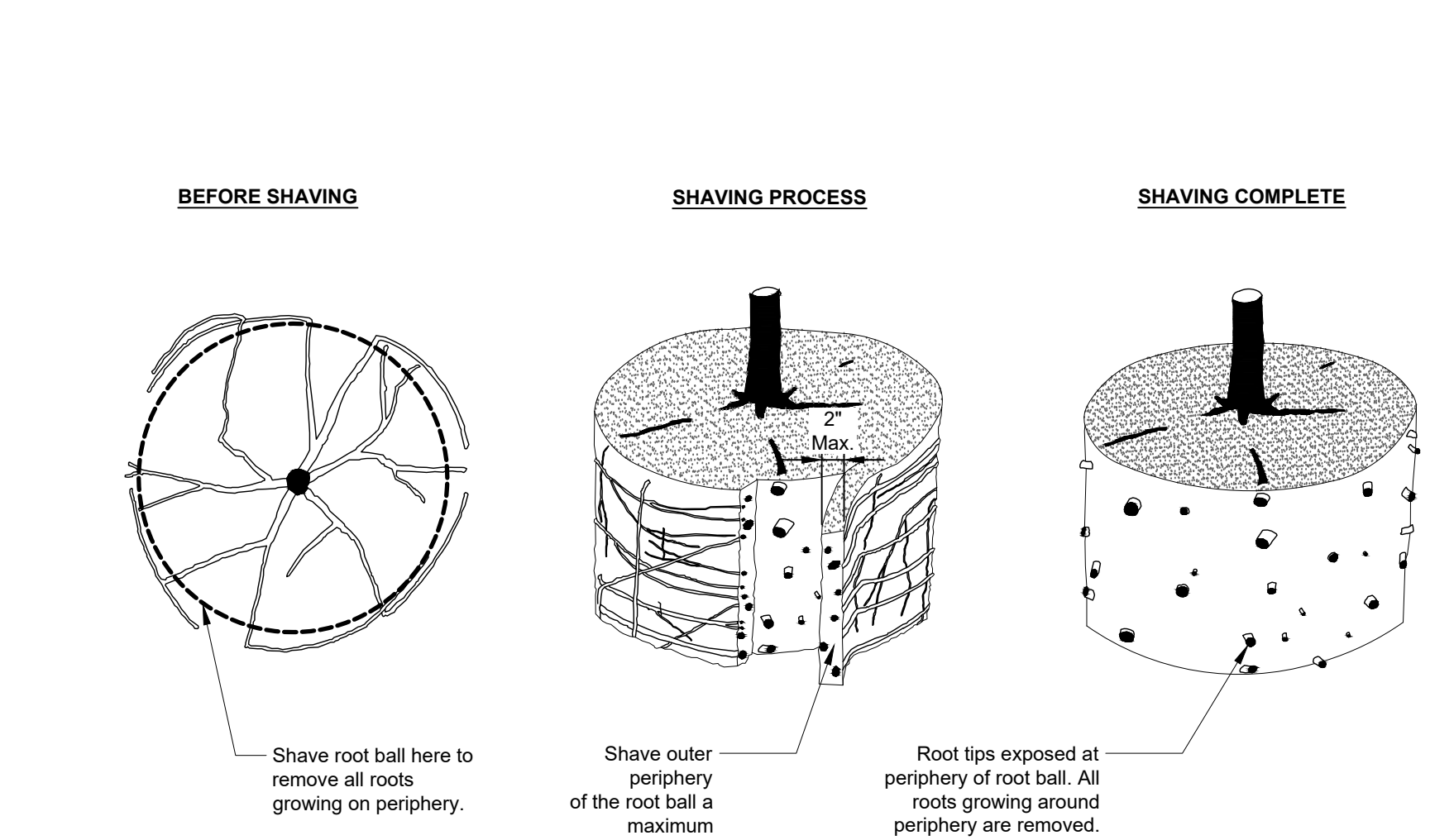
## P-CO-21039 WA-21



Notes:

- 1- Observations of roots shall occur prior to acceptance. Roots and substrate may be removed during the observation process; substrate/soil shall be replaced after observation has been completed.
- 2- Small roots ( $\frac{1}{4}$ " or less) that grow around, up, or down the root ball periphery are considered a normal condition in container production and are acceptable however they should be eliminated at the time of planting. Roots on the periphery can be removed at the time of planting. (See root ball shaving container detail).

## P-CO-21039\_WA-22



2- Shaving can be performed just prior to planting or after placing in the hole.

## P-CO-21039\_WA-23



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4 PALM WITH VERTICAL SUMP

1/4" = 1'-0"

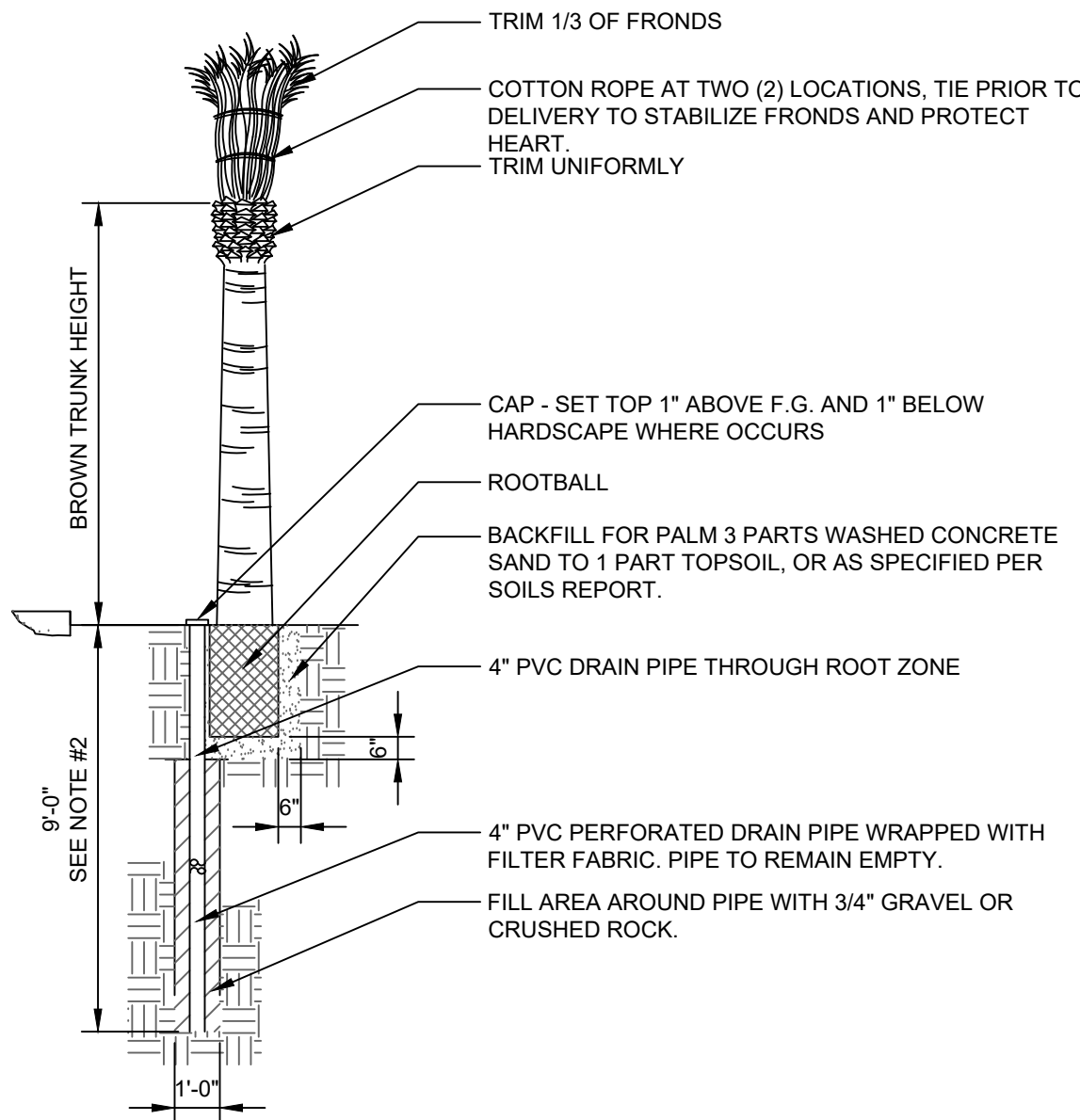
P1-PL-PAL-01

NOTES:

1. CONTRACTOR TO UTILIZE SUMP DRAIN ALTERNATIVE IF IT IS DETERMINED TO BE NEEDED BASED ON THE RESULTS OF A PERCOLATION TEST. SEE PLANTING NOTES.

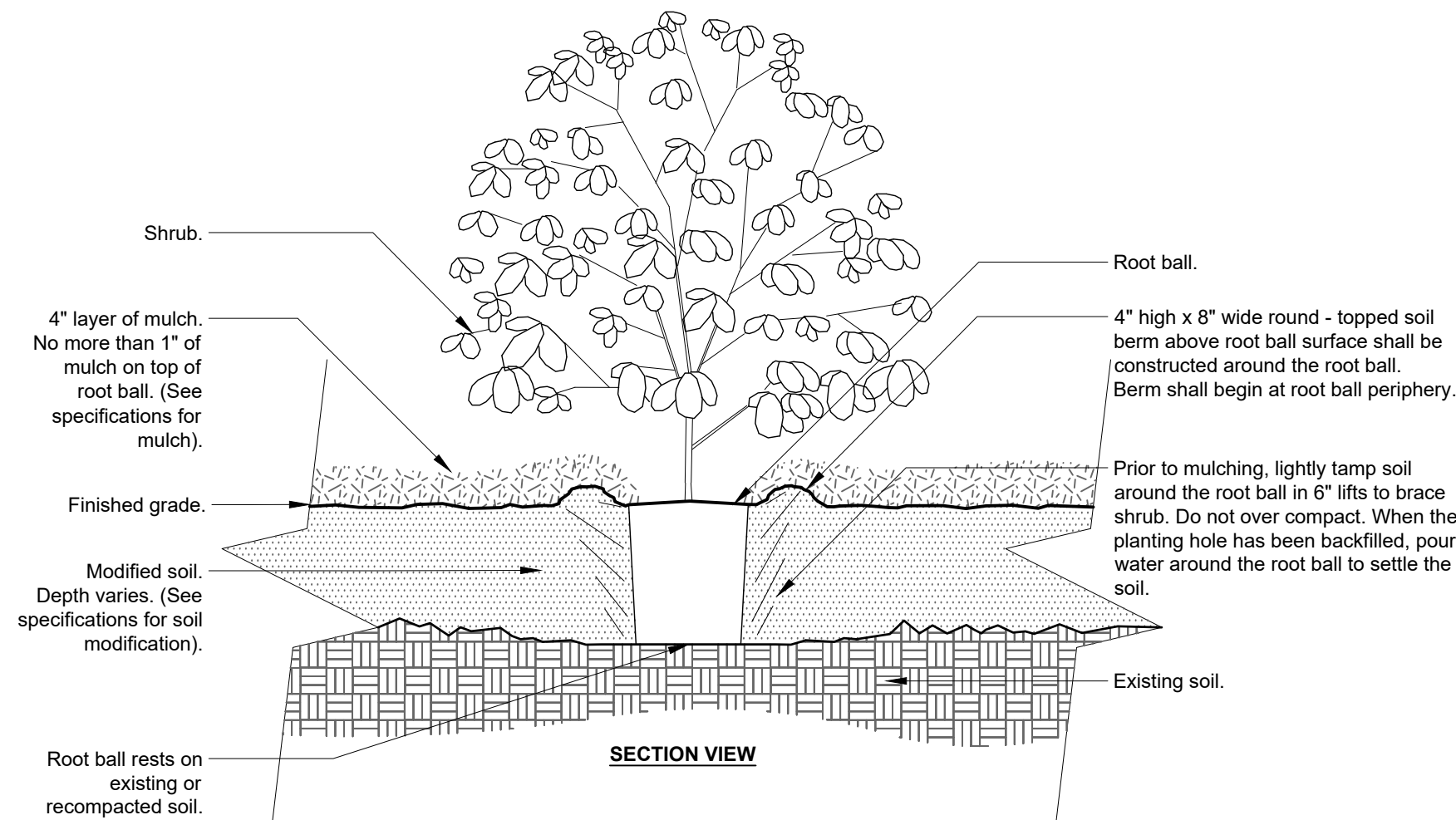
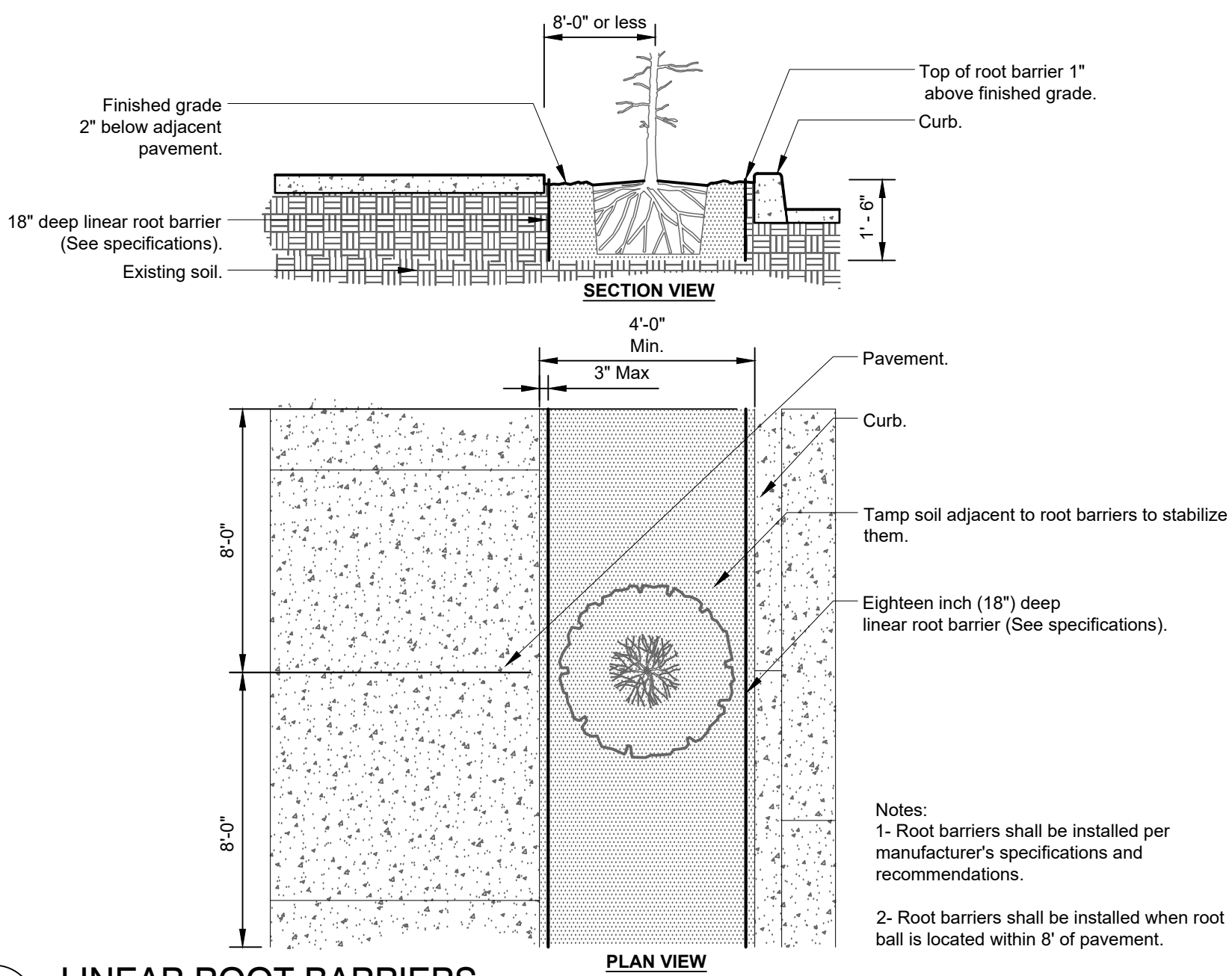
2. IN HIGH WATER TABLE / PERCHED WATER SITUATION, THE DEPTH OF AUGURED SUMP SHALL BE 2 FEET OVER WATER TABLE. REFER TO GEOLOGICAL SOILS TEST FOR WATER TABLE LEVEL.

3. PALM SHALL BE TRIMMED, CLEANED, AND TIED AT ORIGINAL LOCATION PRIOR TO RELOCATING AND TRANSPLANTING.



1 LINEAR ROOT BARRIERS

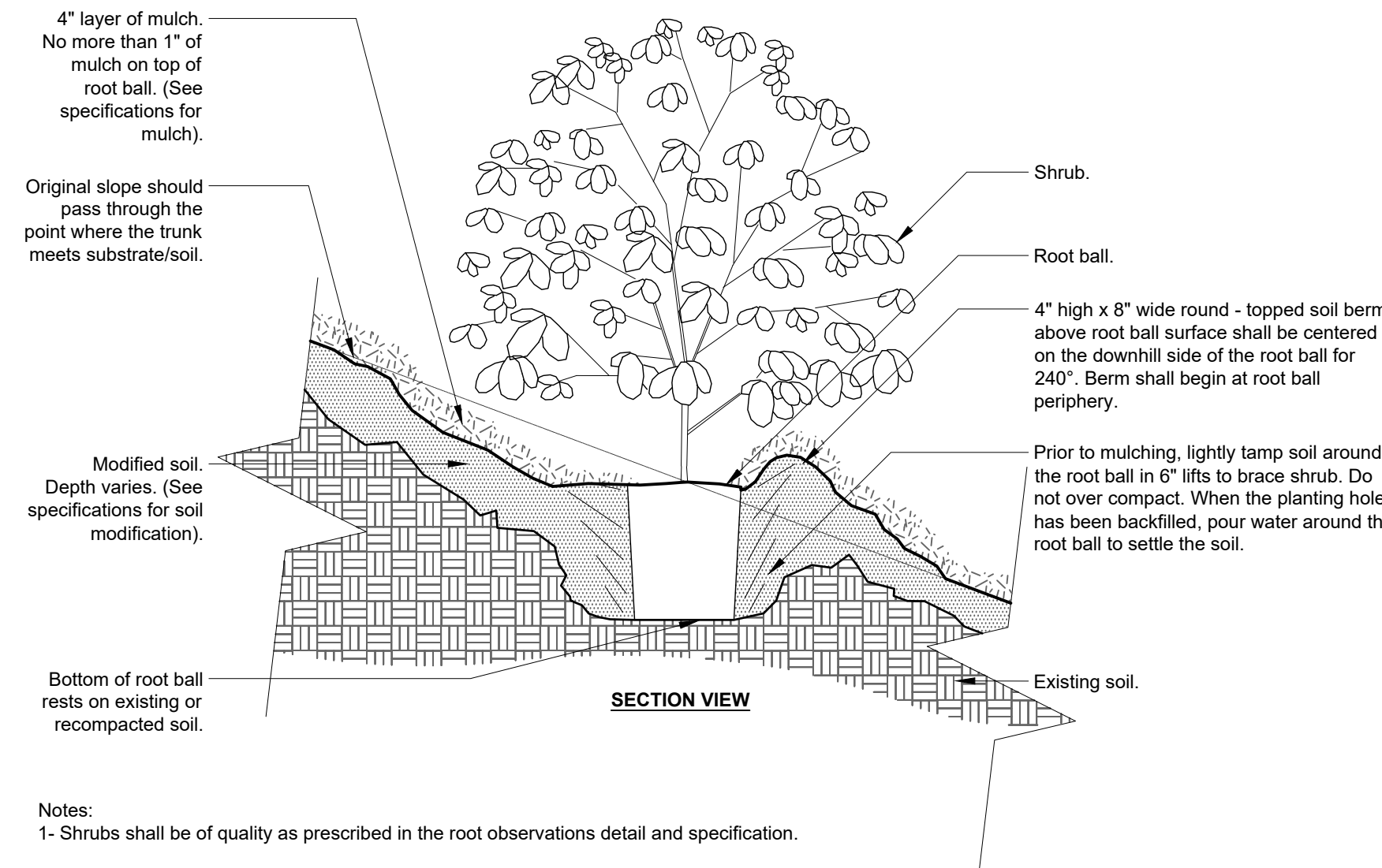
P-CO-21039\_WA-27



Notes:  
1- Shrubs shall be of quality prescribed in the root observations detail and specifications.  
2- See specifications for further requirements related to this detail.

2 SHRUB - MODIFIED SOIL

P-CO-21039\_WA-28



Notes:  
1- Shrubs shall be of quality as prescribed in the root observations detail and specification.  
2- See specifications for further requirements related to this detail.

3 SHRUB ON SLOPE (5% TO 50%) - MODIFIED SOIL

P-CO-21039\_WA-29



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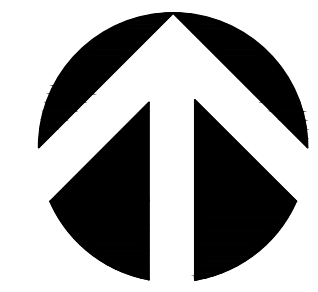
Date

Planting Details

Texas Roadhouse

Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



NORTH

L-8

Sheet 9 of 14

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GENERAL CONDITIONS

- A. CONTRACT DOCUMENTS: Shall consist of specifications and its general conditions and the 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.
- B. VERIFICATION: The Contractor shall verify measurements on the drawings before beginning work. In case of error or discrepancy in the drawings or specifications or in the work of others affecting his/her work, he/she shall notify the Owner's Representative immediately. The Contractor shall be held responsible for any damages or loss due to his/her failure to observe these instructions.
- C. MATERIALS, MACHINERY, EMPLOYEES: Except as otherwise noted, the Contractor shall provide and pay for all materials, labor, tools, and other items necessary and incidental to the completion of his/her work.
- D. SURVEYS, PERMITS, REGULATIONS: The Owner shall furnish an adequate survey of the property. The Contractor shall obtain and pay for all permits and 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 variance exists therewith he/she shall promptly notify the Owner's Representative in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work.
- E. PROTECTION OF WORK, PROPERTY AND PERSON: The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to his/her actions.
- F. CHANGES IN THE WORK: The owner may order changes in the work, and the contract sum being adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extras must be made in writing before executing the work involved.
- G. CORRECTION OF WORK: 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 for a period of ninety (90) days from the date of completion of the contract.
- H. Owner's Authorized Representative: The Owner's authorized representative acts as the authorized representative of the Owner in conjunction with the project manager, and has authority to accept or reject materials or workmanship and to make minor changes in the work not involving extra cost. He will also interpret the meaning of the contract documents and may stop the work if necessary to ensure its proper execution.
- I. CLARIFICATION OF DRAWINGS BEFORE BIDDING: After reviewing the drawings thoroughly it is the Contractor's responsibility to clarify with the Owner's Representative any questions the Contractor may have regarding the method of construction, quantities, or quality of materials included or called out. If the Contractor cannot contact the Owner's Representative, the Contractor must qualify his/her bid or accept the interpretation of the Owner's Representative on the questionable areas as they develop during construction.
- J. SAMPLES: The Owner's Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. The Contractor shall furnish samples upon request by the Owner's Representative. 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.
- K. PRE-CONSTRUCTION CONFERENCE: Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work. The purpose of this conference is to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

SECTION 32 91 00  
PLANTING SOIL

PART 1 GENERAL

1. SUMMARY
- A. The scope of work includes all labor, materials, tools, supplies, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of Planting Soil and/or the modification of existing site soil for use as Planting Soil, 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:
1. Locate, purchase, deliver and install Imported Planting Soil and soil amendments.
  2. Modify existing stockpiled site soil.
    - a. Modify existing site soil in place for use as Planting Soil.
    - b. Install existing or modified existing soil for use as Planting Soil.
  4. Fine grade Planting Soil.
  5. Install Compost into Planting Soil.
  6. Clean up and disposal of all excess and surplus material.
- 1.2 CONTRACT DOCUMENTS
- A. Shall consist of specifications, general conditions, and the 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.
- 1.3 RELATED DOCUMENTS AND REFERENCES
- A. Related Documents
1. Drawings and general provisions of contract, including general and supplementary conditions and Division I specifications, apply to work of this section.
  2. Related Specification Section
    - a. Section - Planting
    - b. Section - Irrigation
  - B. References: The following specifications and standards of the organizations and documents listed in this paragraph form a part of the Specification to the extent required by the references thereof. In the event that the requirements of the following referenced standards and specification conflict with this specification section the requirements of this specification shall prevail. In the event that the requirements of any of the following referenced standards and specifications conflict with each other the more stringent requirement shall prevail.
    1. ASTM: American Society of Testing Materials cited section numbers.
    2. U.S. Department of Agriculture, Natural Resources Conservation Service, 2003. National Soil Survey Handbook, title 430-VI. Available Online.
    3. US Composting Council [www.compostingcouncil.org](http://www.compostingcouncil.org/admin/wp-content/plugins/wp-pdfupload/pdf/191/LandscapeArch_Specs.pdf)
    4. *Methods of Soil Analysis*, as published by the Soil Science Society of America (<http://www.soiils.org/>)
    5. Up by Roots: healthy soils and trees in the built environment. 2008. J. Urban, International Society of Arboriculture, Champaign, IL.
- 1.4 VERIFICATION
- A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities, and shall immediately inform the Owner's Representative of any discrepancies between the information on the drawings and the actual conditions, refraining from doing any work in said areas until given approval to do so by the Owner's Representative.
- 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 editions or revision of the standards and codes current on the effective date of this contract shall apply, unless otherwise expressly set forth.
- C. In case of conflict among any referenced standards or codes or among any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.
- 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.
- 1.7 CHANGES IN WORK
- A. The Owner's Representative may order changes in the work, and the contract sum adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before executing the work involved.
- B. All changes in the work, notifications and contractor's request for information (RFI) shall conform to the contract general condition requirements.
- 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 possible time that can be coordinated with other work and seasonal weather demands but not more than 180 (one hundred and eighty) days after notification.

1.9 DEFINITIONS

- A. Acceptable drainage: Drainage rate is sufficient for the plants to be grown. Not too fast and not too slow. Typical rates for installed Planting Soil are between 1 - 5 inches per hour. Turf soils are often higher, but drainage rates above 2 - 3 inches per hour will dry out very fast. In natural undisturbed soil a much lower drainage rate, as low as 1/8" inch per hour can still support good plant growth. Wetland plants can grow on top of perched water layers or even within seasonal perched water layers, but could become unstable in high wind events.
- B. Amendment: material added to Topsoil to produce Planting Soil Mix. Amendments are classified as general soil amendments, fertilizers, biological, and pH amendments.
- C. Biological Amendment: Amendments such as Mycorrhizal additives, compost tea or other products intended to change the soil biology.
- D. Compacted soil: soil where the density of the soil is greater than the threshold for root limiting, and further defined in this specification.
- E. Compost: well decomposed stable organic material as defined by the US Composting Council and further defined in this specification.
- F. Drainage: The rate at which soil water moves through the soil transitioning the soil from saturated condition to field capacity. Most often expressed as saturated hydraulic conductivity (Ksat, units are inches per hour).
- G. End of Warranty Acceptance: The date when the Owner's Representative accepts that the plants and work in this section meet all the requirements of the warranty. It is intended that the materials and workmanship warranty for Planting Soil, and Irrigation (if applicable) work run concurrent with each other, and further defined in this specification.
- H. Existing Soil: Mineral soil existing at the locations of proposed planting and the majority of the construction within and around the planting site is completed and just prior to the start of work to prepare the planting area for soil modification and/or planting, and further defined in this specification.
- I. Fertilizer: amendment used for the purpose of adjusting soil nutrient composition and balance.
- J. Fine grading: The final grading of the soil to achieve exact contours and positive drainage, often accomplished by hand rakes or drag rakes other surface devices, and further defined in this specification, and further defined in this specification.
- K. Finished grade: surface or elevation of Planting Soil after final grading and 12 months of settlement of the soil, and further defined in this specification.
- L. Graded soil: Soil where the A horizon has been stripped and relocated or re-spread; cuts and fills deeper than 12 inches, and further defined in this specification.
- M. Installed soil: Planting soil and existing site soil that is spread and or graded to form a planting soil, and further defined in this specification.
- N. Minor disturbance: Minor grading as part of agricultural work that only adjusts the A horizon soil, minor surface compaction in the top 6 inches of the soil, applications of fertilizers, installation of utility pipes smaller than 18 inches in diameter through the soil zones.
- O. Owner's Representative: The person or entity, appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative may appoint other persons to review and approve any aspects of the work.
- P. Ped: a clump or clod of soil held together by a combination of clay, organic matter, and fungal hyphae, retaining the original structure of the harvested soil.
- Q. Planting Soil: Topsoil, or Planting Soil Mixes which are imported or existing at the site, or made from components that exist at the site, or are imported to the site, and further defined in this specification.
- R. Poor drainage: Soil drainage that is slower than that to which the plants can adapt. This is a wide range of metrics, but generally if the soil is turning grey in color it is reasonable preferable to either to plant moisture adaptive plants at smaller sizes that are young in age with shallow root balls or look at options to improve the drainage.
- S. Scarify: Loosening and roughening the surface of soil and sub soil prior to adding additional soil on top, and further defined in this specification.
- T. Soil Fracturing: Deep loosening of the soil to the depths specified by using a back hoe, and further defined in this specification.
- U. Soil Horizons: as defined in the USDA National Soil Survey Handbook [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists?cid=nrcs142q2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists?cid=nrcs142q2_054242).
- V. Soil Ripping: Loosening the soil by dragging a ripping shank or chisel thru the soil to the depths and spacing specified, and further defined in this specification.
- W. Soil Tilling: Loosening the surface of the soil to the depths specified with a **rotary line tilling machine, rototiller, (or spade tiller)**, and further defined in this specification.
- X. Soil trenching: Cutting narrow trenches thru the soil at the depths and spacing specified to loosen the soil profile, and further defined in this specification.
- Y. Subgrade: surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing Planting Soil.
- Z. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation (if applicable) where the Owner's Representative accepts that all work in these sections is complete and the Warranty period has begun. This date may be different than the date of substantial completion for the other sections of the project, and further defined in this specification.

- AA. Topsoil: naturally produced and harvested soil from the A horizon or upper layers or the soil as further defined in this specification.
- BB. Undisturbed soil: Soils with the original A horizon intact that have not been graded or compacted. Soils that have been farmed, subjected to fire or logged but not graded, and natural forested land will be considered as undisturbed.
- 1.10 SUBMITTALS
- A. See the contract General Conditions for policy and procedures related to submittals.
- B. Submit all product submittals eight weeks prior to the start of the soil to the start of the soil.
- C. Product data and certificates: For each type of manufactured product, submit data and certificates that the product meets the specification requirements, signed by the product manufacturer, and complying with the following:
1. Submit manufacturers or supplier's product data and literature certified analysis for standard products and bulk materials, complying with testing requirements and referenced standards and specific requested testing.
    - a. For each Compost product submit the following analysis by a recognized laboratory:
      1. pH
      2. Salt concentration (electrical conductivity)
      3. Moisture content (% wet weight basis)
      4. Particle size % passing a selected mesh size, dry weight basis
      5. Stability carbon dioxide evolution rate mg CO2-C per g OM per day
      6. Solvita maturity test
      7. Physical contaminants (nerts) % dry weight basis
      8. US EPA Class A standard, 40CFR § 503.13, Tables 1 and 3 levels Chemical Contaminants mg/kg (ppm)
    - b. For Coarse Sand product submit the following analysis by a recognized laboratory:
      1. pH
      2. Particle size distribution (percent passing the following sieve sizes):

3/8 inch (9.5 mm)	100
No 4 (4.75 mm)	95-100
No 8 (2.36 mm)	90-100
No 16(1.18 mm)	50-85
No 30 (.60 mm)	10-30
No 50 (.30 mm)	2-5
No 100 (.15 mm)	
No 200 (.075 mm)	

- D. Samples: Submit samples of each product and material, where required by Part 2 of the specification, to the Owner's Representative for approval. Label samples to indicate product, characteristics, and locations in the work. Samples will be reviewed for acceptance only.
1. Submit samples a minimum of 8 weeks prior to the anticipated date of the start of soil installation.
  2. Samples of all Topsoil, Coarse Sand, Compost and Planting Soil shall be submitted at the same time as the particle size and physical analysis of that material.
  - E. Soil testing for Imported and Existing Topsoil, existing site soil to be modified as Planting Soil and Planting Soil Mixes.
    1. Topsoil, existing site soil and Planting Soil Mix testing: Submit soil test analysis report for each sample of Topsoil, existing site soil and Planting Soil from an approved soil-testing laboratory and where indicated in Part 2 of the specification as follows:
      - a. Submit Topsoil, Planting Soil, Compost, and Coarse Sand for testing at least 8 weeks before scheduled installation of Planting Soil Mixes. Submit Planting Soil Mix test no more than 2 weeks after the approval of the Topsoil, Compost and Coarse Sand. Do not submit to the testing laboratory, Planting Soil Mixes, for testing until all Topsoil, Compost and Coarse Sand have been approved.
      - b. If tests fail to meet the specifications, obtain other sources of material, reset and resubmit until accepted by the Owner's Representative.
      - c. All soil testing will be at the expense of the Contractor.
    2. Provide a particle size analysis (% dry weight) and USDA soil texture analysis. Soil testing of Planting Soil Mixes shall also include USDA gradation (percentage) of gravel, coarse sand, medium sand, and fine sand in addition to silt and clay.
    3. Provide the following soil properties:
      - a. pH and buffer pH.
      - b. Percent organic matter by oven dried weight.
      - c. Nutrient levels by parts per million including phosphorus, potassium, magnesium, manganese, iron, zinc and calcium. Nutrient levels shall include the testing laboratory recommendations for supplemental additions to the soil for optimum growth of the plantings specified.
      - d. Soluble salt by electrical conductivity of a 1:2 soil water sample measured in Millimohm per cm.
      - e. Cation Exchange Capacity (CEC).

- 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.
1. The Owner's Representative will utilize the Contractor's penetrometer and moisture meter at any time to check soil compaction and moisture.
  - 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. EXISTING SOIL CONDITIONS REVIEW: Prior to the start of any soil modification that will utilize or modify the existing soil.
  2. EXCAVATION REVIEW: Observe each area of excavation prior to the installation of any Planting Soil.

3. COMPLETION OF SOIL MODIFICATIONS REVIEW: Upon completion of all soil modification and installation of planting soil.
4. COMPLETION OF FINE GRADING AND SURFACE SOIL MODIFICATIONS REVIEW: Upon completion of all surface soil modifications and fine grading but prior to the installation of shrubs, ground covers, or lawns.
- 1.12 PRE-CONSTRUCTION CONFERENCE
- A. Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.
- 1.13 QUALITY ASSURANCE
- A. Installer Qualifications: The installer shall be a firm having at least 5 years of experience of a scope similar to that required for the work, including the preparation, mixing and installation of soil mixes to support planting. The installer of the work in Section: Planting, shall be the same firm installing the work in this section.
1. The bidders list for work under this section shall be approved by the Owner's Representative.
  2. Installer Field Supervision: When any Planting Soil work is in progress, installer shall maintain, on site, an experienced full-time supervisor who can communicate in English with the Owner's Representative.
  3. Installer's field supervisor shall have a minimum of five years experience as a field supervisor installing soil, shall be trained and proficient in the use of field surveying equipment to establish grades and can communicate in English with the Owner's Representative.
  4. The installer's crew shall be experienced in the installation of Planting Soil, plantings, and irrigation (where applicable) and interpretation of planting plans, soil installation plans, and irrigation plans (where applicable).
  5. Submit references of past projects and employee training certifications that support that the Contractors meet all of the above installer qualifications and applicable licensures.
  - B. Soil testing laboratory qualifications: an independent laboratory, with the experience and capability to conduct the testing indicated and that specializes in USDA agricultural soil testing, Planting Soil Mixes, and the types of tests to be performed. Geotechnical engineering testing labs shall not be used.
  - C. All delivered and installed Planting Soil shall conform to the approved submittals sample color, texture and approved test analysis.
  1. The Owner's Representative may request samples of the delivered or installed soil to be tested for analysis to confirm the Planting Soil conforms to the approved material.
  2. All testing shall be performed by the same soil lab that performed the original Planting Soil testing.
  3. Testing results shall be within 10% plus or minus of the values measured in the approved Planting Soil Mixes.
  4. Any Planting Soil that fails to meet the above criteria, if requested by the Owner's Representative, shall be removed and new soil installed.
  - D. Soil compaction testing: following installation or modification of soil, test soil compaction with a penetrometer.
  1. Maintain at the site at all times a soil cone penetrometer with pressure dial and a soil moisture meter to check soil compaction and soil moisture.
    - a. Penetrometer shall be the Agria/Torinix Soil Compaction Meter distributed by Forestry Suppliers, [www.forestry-suppliers.com](http://www.forestry-suppliers.com) or approved equal.
    - b. Moisture meter shall be "general digital soil moisture meter" distributed by Forestry Suppliers, [www.forestry-suppliers.com](http://www.forestry-suppliers.com) or approved equal.
  2. Prior to testing the soil with the penetrometer check the soil moisture and penetrometer readings in the mockup soils. Penetrometer readings are impacted by soil moisture and excessively wet or dry soils will read significantly lower or higher than soils at optimum moisture.
  3. The penetrometer readings shall be within 20% plus or minus of the readings in the approved mockup when at similar moisture levels.
- 1.14 SITE CONDITIONS
- A. It is the responsibility of the Contractor to be aware of all surface and subsurface 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.
  1. 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, they shall remain responsible for plant material under the warranty clause of the specifications.
  2. This specification requires that all Planting Soil and Irrigation (if applicable) work be completed and accepted prior to the installation of any plants.

- 1.15 SOIL COMPACTION - GENERAL REQUIREMENTS
- A. Except where more stringent requirements are defined in this specification. The following parameters shall define the general description of the threshold quality of soil compaction in existing, modified or installed soil and subsoil.
- B. The following are threshold levels of compaction as determined by each method.
1. Acceptable Compaction: Good rooting anticipated, but increasing settlement expected as compaction is reduced and/or in soil with a high organic matter content.
    - a. Bulk Density Method - Varies by soil type see Chart on page 32 in Up By Roots.
    - b. Standard Proctor Method - 75-85%; soil below 75% is unstable and will settle excessively.
    - c. Penetration Resistance Method - about 75-250 psi, below 75 psi soil becomes increasingly unstable and will settle excessively.
  2. Root limiting Compaction: Root growth is limited with fewer, shorter and slower growing roots.
    - a. Bulk Density Method - Varies by soil type see Chart on page 32 in Up By Roots.
    - b. Standard Proctor Method - above approximately 85%.
    - c. Penetration Resistance Method - about 300 psi.
  3. Excessive Compaction: Roots not likely to grow but can penetrate soil when soil is above field capacity.
    - a. Bulk Density Method - Varies by soil type see Chart on page 32 in Up By Roots.
    - b. Standard Proctor Method - Above 90%.
    - c. Penetration Resistance Method - Approximately above 400 psi

- 1.16 DELIVERY, STORAGE, AND HANDLING
- A. Weather: Do not mix, deliver, place or grade soils when frozen or with moisture above field capacity.
- B. Protect soil and soil stockpiles, including the stockpiles at the soil blender's yard, from wind, rain and washing that can erode soil or separate fines and coarse material, and contamination by chemicals, dust and debris that may be detrimental to plants or soil drainage. Cover stockpiles with plastic sheeting or fabric at the end of each workday.
- C. All manufactured packaged products and material shall be delivered to the site in unopened containers and stored in a dry enclosed space suitable for the material and meeting all environmental regulations. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used.
- D. Deliver all chemical amendments in original, unopened containers with original labels intact and legible, which state the guaranteed chemical analysis. Store all chemicals in a weather protected enclosure.
- E. Bulk material: Coordinate delivery and storage with Owner's Representative and confine materials to neat piles in areas acceptable to Owner's Representative.
- 1.17 EXCAVATING AND GRADING 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 damage. Hand excavate as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.
- C. Notification of Arizona 871, is required for all planting areas. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by Arizona 871.

- PART 2 PRODUCTS
- 2.1 IMPORTED TOPSOIL
- A. Imported Topsoil definition: Fertile, friable soil containing less than 5% total volume of the combination of subsoil, refuse, roots larger than 1 inch diameter, heavy, sticky or stiff clay, stones larger than 2 inches in diameter, noxious seeds, sticks, brush, litter, or any substances deleterious to plant growth. The percent (%) of the above objects shall be controlled by source selection not by screening the soil. Topsoil shall be suitable for the germination of seeds and the support of vegetative growth. Imported Topsoil shall not contain weed seeds in quantities that cause noticeable weed infestations in the final planting bed. Imported Topsoil shall meet the following physical and chemical criteria:
1. Soil texture: USDA loam, sandy clay loam or sandy loam with clay content between 15 and 25%. And a combined clay/silt content of no more than 55%.
  2. pH value shall be between 5.5 and 7.0.
  3. Percent organic matter (OM): 2.0-5.0%, by dry weight.
  4. Soluble salt level: Less than 2 mmho/cm.
  5. Soil chemistry suitable for growing the plants specified.
  - B. Imported Topsoil shall be a harvested soil from fields or development sites. The organic content and particle size distribution shall be the result of natural soil formation. Manufactured soils where Coarse Sand, Composted organic material or chemical additives has been added to the soil to meet the requirements of this specification section shall not be acceptable. Retained soil pHs shall be the same color on the inside as is visible on the outside.
  - C. Imported Topsoil for Planting Soil shall NOT have been screened and shall retain soil pores or clods larger than 2 inches in diameter throughout the stockpile after harvesting.
  - D. Stockpiled Existing Topsoil at the site meeting the above criteria may be acceptable.
  - E. Provide a two gallon sample from each Imported Topsoil source with required soil testing results. The sample shall be a mixture of the random samples taken around the source stockpile or field. The soil sample shall be delivered with soil pits cut that represent the size and quantity of expected pits in the final delivered soil.

- 2.2 COMPOST
- A. Compost: Blended and ground leaf, wood and other plant based material, composted for a minimum of 9 months and at temperatures sufficient to break down all woody fibers, seeds and leaf structures, free of toxic material at levels that are harmful to plants or humans. Source material shall be yard waste trimmings blended with plant or manure based material designed to produce Compost high in fungal material.

- h. Chemical contaminants, mg/kg (ppm): meet or exceed US EPA Class A standard, 40CFR § 503.13, Tables 1 and 3 levels.
- i. Biological contaminants select pathogens fecal coliform bacteria, or salmonella, meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) level requirements.
- B. Provide a two gallon sample with manufacturer's literature and material certification that the product meets the requirements.
- 2.3 COARSE SAND
1. Clean, washed, sand, free of toxic materials
  2. Coarse concrete sand, ASTM C-33 Fine Aggregate, with a Fines Modulus Index of 2.8 and 3.2.
  3. Coarse Sands shall be clean, sharp, natural Coarse Sands free of limestone, shale and slate particles. Manufactured Coarse Sand shall not be permitted.
  3. pH shall be lower than 7.0.
  4. Provide Coarse Sand with the following particle size distribution:

Sieve	Percent passing
3/8 inch (9.5 mm)	100
No 4 (4.75 mm)	95-100
No 8 (2.36 mm)	90-100
No 16 (1.18 mm)	50-85
No 30 (.60 mm)	25-60
No 50 (.30 mm)	10-30
No 100 (.15 mm)	2-10
No 200 (.075 mm)	2-5
  - B. Provide a two gallon sample with manufacturer's literature and material certification that the product meets the requirements.
- 2.4 FERTILIZER, BIOLOGICAL AND OTHER AMENDMENTS
- 2.5 LIME
- A. ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
  1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
  2. Provide lime in form of dolomitic limestone.
  - B. Provide manufacturer's literature and material certification that the product meets the requirements.
- 2.6 EXISTING SOIL (Acceptable for planting with minimum modifications)
- A. General definition of existing soil: Surface soil in the areas designated on the soils plan as existing soil, that is not altered, compacted to root limiting density, graded or contaminated before or during the construction process and considered acceptable for planting and long term health of the plants specified either as it exists or with only minor modification.
  1. The Owner's Representative shall verify that the soil in the designated areas is suitable at the beginning of planting bed preparation work in that area. In the event that the work of this project construction has damaged the existing soil in areas designated for use as Planting Soil to the point where the soil is no longer suitable to support the plants specified, the Owner's Representative may require modification of the damaged soil up to and including removal and replacement with soil of equal quality to the soil that existed prior to construction. Examples of damage include further compaction, contamination, grading, creation of hard pan or drainage problems, and loss of the O, and/or A horizon.
    - a. Do not begin work on additional modifications until changes to the contract price are approved by the Owner's Representative.
  - B. Protect existing soil from compaction, contamination, and degradation during the construction process.
  - C. Unless otherwise instructed, remove all existing plants, root thatch, and non-soil debris from the surface of the soil using equipment that does not increase compaction of soil to root limiting levels.
  - D. Modifications:
    1. When results of soil tests recommend chemical adjustments, till surface soil to six inches or greater after chemical adjustments have been applied.
    2. Remove existing turf thatch, ground cover plants and weeds.
    3. Provide pre-emergent weed control if indicated.
    4. Make chemical adjustment as recommended by the soil test.
  - 2.7 MODIFIED EXISTING SOIL (SOIL SUITABLE FOR PLANTING WITH INDICATED MODIFICATION)
  - A. General definition: Surface soil in the areas designated on the soils plan as Modified Existing Soil has been altered and/or graded before or during the construction process but is still considered acceptable for planting and long term health of the plants specified with the proposed modifications. Modifications respond to the soil problems expected or encountered. The Owner's Representative shall verify that the soil in the designated areas is suitable for modification at the beginning of planting bed preparation work in that area.
    1. The Owner's Representative shall verify that the soil in the designated areas is suitable for the specified modification at the beginning of planting bed preparation work in that area. In the event that the work of this project construction has damaged the existing soil in areas designated for modification to the point where the soil is no longer suitable to support the plants specified with the specified modification, the Owner's Representative may require further modification of the damaged soil up to an including removal and replacement with soil of equal quality to the soil that would have resulted from the modification. Damage may include further compaction, contamination, grading, creation of hard pan or drainage problem, and loss of the O, and/or A horizon.
    2. General requirements for all soil modifications:
      - a. Take soil samples, test for chemical properties, and make appropriate adjustments.
      - b. Unless otherwise instructed, remove all existing plants, root thatch, and non-soil debris from the surface of the soil using equipment that does not add to the compaction in the soil.
      - C. All soil grading, tilling and loosening must be completed at times when the soil moisture is below field capacity. Allow soil to drain for at least two days after any rain event where more than 1 inch in 24 hours, or long enough so that the soil does not make the hand muddy when squeezed.
      - d. Provide pre-emergent weed control after the soil work is complete and plants planted but prior to adding mulch to the surface, if indicated by weed type and degree of threat.
    - B. Modified existing soil - compacted surface soil (Tilling Option)
      1. Description of condition to be modified: Surface soil compaction to a maximum of 6 inches deep from traffic or light grading. Original A horizon may be previously removed or graded but lower profile intact with acceptable compaction levels and limited grading. The soil organic matter, pH and chemistry in the A horizon may not be suitable for the proposed plants and may be modified as required.
      2. Modifications:
        - a. Till top 6 inches or deeper of the soil surface, with a **rototiller, spade tiller, ripper or agricultural plow**.
        - Spread 2 - 3 inches of Compost on the surface of the tilled soil and make any chemical adjustment as recommended by the soil test.
        - b. Till or disk the Compost into the loosened soil. Smooth out grades with a drag rake or drag slip.
    - C. Modified existing soil - compacted subsoil
      1. Description of condition to be modified: Deep soil compaction the result of previous grading, filling and dynamic or static compaction forces. Original A horizon likely removed or buried. The soil organic matter, pH and chemistry in the A horizon is likely not suitable for the proposed plants and shall be modified as required.
      2. Soil Fracturing:
        - a. Step one: After grading and removing all plants and debris from the surface, spread 2 - 3 inches of Compost over the surface of the soil. Loosen the soil to depth of 18 - 24 inches, using a backhoe to dig into the soil through the Compaction. Lift and then drop the loosened soil immediately back into the hole. The bucket then moves to the adjacent soil and repeats the process until the entire area indicated has been loosened.
        - b. Step 2: Spread 3-4 inches of Compost over the ripped area and till into the top 6 inches of the soil surface.
      3. Following soil ripping or fracturing the average penetration resistance should be less than 250 psi to the depth of the ripping or fracturing.
      4. Do not start planting into ripped or fractured soil until soil has been settled or leave grades sufficiently high to anticipate settlement of 10 - 15% of rippled soil depth.
      - F. Modified existing soil - low organic matter
        1. Description of condition to be modified: Low soil organic matter and/or missing A horizon but soil is not compacted except for some minor surface compaction. The soil organic matter, pH and/or chemistry are likely not suitable for the proposed plants and should be modified as required.
        2. Modifications:
          - a. Spread 3 - 4 inches of Compost over the surface of the soil and make chemical adjustment as recommended by the soil test.
          - b. Till Compaction into the top 6 inches of the soil.
      - D. Modified existing soil - soil within the root zone of existing established trees
        1. Description of condition to be modified: Surface compaction near or above root limited levels in the upper soil horizon the result of traffic or other mechanical compaction.
        2. Modifications:
          - a. Remove the tops of all plants to be removed from the root zone. Remove sod with a walk behind sod cutter. Do not grub out the roots of plants to be removed.
          - b. Use a pneumatic air knife to loosen the top 9 - 12 inches of the soil. Surface roots may with a mark and separate from soil during this process but the bark on roots should not be broken
          1. Pneumatic air knife shall be as manufactured by:  
Concept Engineering Group, Inc., Verona, PA (412) 828-8800  
or Supersonic Air Knife, Inc., Allison Park, PA (866) 328 5723
          - c. Make chemical adjustment as recommended by the soil test and add 2 - 3 inches of Compost over the soil.
          - d. Using the pneumatic air knife, mix the Compost into the top 6 - 8 inches of the loosened soil.
        - e. Work in sections such that the entire process - including irrigation - can be completed in one day. Apply approximately one inch of water over the loosened soil at the completion of each day's work. Apply mulch or turf as indicated on the drawings within one week of the completion of work.

- 2.8 PLANTING SOIL MIXES
- A. General definition: Mixes of Existing Soil or Imported Topsoil, Coarse Sand, and/or Compost to make a new soil that meets the project goals for the installed planting areas. These may be mixed off site or onsite, and will vary in Mix components and proportions as indicated.
- B. Planting Mix - moderately slow draining soil for trees and shrub beds
1. A Mix of Imported Topsoil, Coarse Sand and Compost. The approximate Mix ratio shall be:

Mix component	% by moist volume
Imported Topsoil unscreened	45-50%
Coarse sand	40-45%
Compost	10%

2. Final tested organic matter between 2.75 and 4% (by dry weight).

3. Mix the Coarse Sand and Compost together first and then add to the Topsoil. Mix with a loader bucket to loosely incorporate the Topsoil into the Coarse Sand/compost Mix. DO NOT OVER MIX! Do not mix with a soil blending machine. Do not screen the soil. Clumps of Soil, Compost and Coarse Sand will be permitted in the overall Mix.

4. At the time of final grading, add fertilizer if required to the Planting Soil at rates recommended by the testing results for the plants to be grown.

5. Provide a two gallon sample with testing data that includes recommendations for chemical additives for the types of plants to be grown. Samples and testing data shall be submitted at the same time.

2.9 PRE-EMERGENT HERBICIDES

A. Chemical herbicides are designed to prevent seeds of selective plants from germinating. Exact type of herbicide shall be based on the specific plants to be controlled and the most effective date of application.

B. Submit report of expected weed problems and the recommendations of the most effective control for approval by Owner's Representative. Provide manufacturer's literature and material certification that the product meets the requirements.

PART 3 EXECUTION

- 3.1 SITE EXAMINATION
- A. Prior to installation of Planting Soil, examine site to confirm that existing conditions are satisfactory for the work of this section to proceed.
1. Confirm that the subgrade is at the proper elevation and compacted as required. Subgrade elevations shall slope toward the under drain lines as shown on the drawings.
  2. Confirm that surface all areas to be filled with Planting Soil are free of construction debris, refuse, compressible or biodegradable material, stones greater than 2 inches diameter, soil crusting, times of salt or other that reduce or stops drainage from the Planting Soil into the subsoil, and/or standing water. Remove unsuitable material from the site.
  3. Confirm that no adverse drainage conditions are present.
  4. Confirm that no conditions are present which are detrimental to plant growth.
  5. Confirm that utility work has been completed per the drawings.
  6. Confirm that irrigation work, which is shown to be installed below prepared soil levels, has been completed.
  - B. If unsatisfactory conditions are encountered, notify the Owner's Representative immediately to determine corrective action before proceeding.
- 3.2 COORDINATION WITH PROJECT WORK
- A. The Contractor shall coordinate with all other work that may impact the completion of the work.
- B. Prior to the start of work, prepare a detailed schedule of the work for coordination with other trades.
- C. Coordinate the relocation of any irrigation lines, heads or the conduits of other utility lines that are in conflict with tree locations. Root balls shall not be altered to fit around lines. Notify the Owner's Representative of any conflicts encountered.
- 3.3 GRADE AND ELEVATION CONTROL
- A. Provide grade and elevation control during installation of Planting Soil. Utilize grade stakes, surveying equipment, and other means and methods to assure that grades and contours conform to the grades indicated on the plans.
- 3.4 SITE PREPARATION
- A. Excavate to the proposed subgrade. Maintain all required angles of repose of the adjacent materials as shown on the drawings or as required by this specification. Do not over excavate compacted subgrades of adjacent pavement or structures. Maintain a construction 1:1 side slope of compacted subgrade material along the edges of all paving and structures where the bottom of the excavation is above the bottom elevation of the excavated planting area.
- B. Remove all construction debris and material including any construction materials from the subgrade.
- C. Confirm that the subgrade is at the proper elevation and compacted as required. Subgrade elevations shall slope approximately parallel to the finished grade and/or toward the subsurface drain lines as shown on the drawings.
- D. In areas where Planting Soil is to be spread, confirm subgrade has been scarified.
- E. Protect adjacent walls, walks and utilities from erosion or staining by the soil. Use 1/2 inch plywood and or plastic sheeting as directed to cover existing concrete, metal and masonry work and other items as directed during the progress of the work.
1. At the end of each working day, clean up any soil or dirt spilled on any paved surface.
  2. Any damage to the paving or site features or work shall be repaired at the Contractor's expense.

3.5 SOIL MOISTURE

- A. Determine the moisture level, in both the Planting Soil and the root balls of all plants, prior to, during and after installation to assure permanent wilt point and below field capacity for each type of soil texture within the following ranges.
- | Soil texture                      | Permanent wilting point | Field capacity |
|-----------------------------------|-------------------------|----------------|
| Sand, Loamy sand, Sandy loam      | 5 - 8%                  | 12 - 18%       |
| Loam, Sandy clay, Sandy clay loam | 14 - 25%                | 27 - 36%       |
| Clay loam, Silt loam              | 11 - 22%                | 31 - 36%       |
| Silty clay, Silty clay loam       | 22 - 27%                | 38 - 41%       |
- B. The Contractor shall confirm the soil moisture levels with a moisture meter (Digital Soil Moisture Meter, D5MM50 by General Specialty Tools and Instruments, or approved equivalent). If moisture is found to be too low, the planting holes shall be filled with water and allowed to drain before starting any planting operations. If the moisture is too high, suspend planting operations until the soil moisture drains to below field capacity.

3.6 EXISTING SOIL MODIFICATION

- A. Follow the requirements for modifying existing soil as indicated in Part 2 for the different types of soil modifications. The extent of the areas of different soil modification types are indicated on the Soils Plan or as directed by the Owner's Representative.
- 3.7 PLANTING SOIL AND PLANTING SOIL MIX INSTALLATION
- A. Prior to installing any Planting Soil from stockpiles or Planting Soil Mixes blended off site, the Owner's Representative shall approve the condition



3.9 OVER COMPACTION REDUCTION

- A. Any soil that becomes compacted to a density greater than the specified density and/or the density in the approved mockup shall be dug up and reinstalled. This requirement includes compaction caused by other sub-contractors after the Planting Soil is installed and approved.
- B. Surface roto tilling shall not be considered adequate to reduce over compaction at levels 6 inches or greater below finished grade.

3.10 INSTALLATION OF CHEMICAL ADITIVES

- A. Following the installation of each soil and prior to fine grading and installation of the Compost till layer, apply chemical additives as recommended by the soil test, and appropriate to the soil and specific plants to be installed.
- B. Types, application rates and methods of application shall be approved by the Owner's Representative prior to any applications.

3.11 FINE GRADING

- A. The Owner's Representative shall approve all rough grading prior to the installation of Compost, fine grading, planting, and mulching.
- B. Grade the finish surface of all planted areas to meet the grades shown on the drawings, allowing the finished grades to remain higher (10% - 15% of depth of soil modification) than the grades on the grading plan, as defined in paragraph Planting Soil Installation, to anticipate settlement over the first year.
- C. Utilize hand equipment, small garden tractors with rakes, or small garden tractors with buckets with teeth for fine grading to keep surface rough without further compaction. Do not use the flat bottom of a loader bucket to fine grade, as it will cause the finished grade to become overly smooth and or slightly compressed.
- D. Provide for positive drainage from all areas toward the existing inlets, drainage structures and or the edges of planting beds. Adjust grades as directed to reflect actual constructed field conditions of paving, wall and inlet elevations. Notify the Owner's Representative in the event that conditions make it impossible to achieve positive drainage.
- E. Provide smooth, rounded transitions between slopes of different grades and direction. Modify the grade so that the finish grade before adding mulch and after settlement is one or two inches below all paving surfaces or as directed by the drawings.
- F. Fill all dips and remove any bumps in the overall plane of the slope. The tolerance for dips and bumps in shrub and ground cover planting areas shall be a 2 inch deviation from the plane in 10 feet. The tolerance for dips and bumps in lawn areas shall be a 1 inch deviation from the plane in 10 feet.

3.12 INSTALLATION OF COMPOST TILL LAYER

- A. After Planting Soil Mixes are installed in planting bed areas and just prior to the installation of shrub or groundcover plantings, spread 3 - 4 inches of Compost over the beds and roto till into the top 4 - 6 inches of the Planting Soil. This step will raise grades slightly above the grades required in paragraph "Fine Grading". This specification anticipates that the raise in grade due to this tilling will settle within a few months after installation as Compost breaks down. Additional settlement as defined in paragraph "Planting Soil and Planting Soil Mix installation" must still be accounted for in the setting of final grades.

3.13 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.
1. 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 seals are to remain on the trees and removed at the end of the warranty period.
1. Make all repairs to grades, ruts, and damage to the work or other work at the site.
2. Remove and dispose of all excess Planting Soil, subsoil, mulch, plants, packaging, and other material brought to the site by the Contractor.

3.14 PLANTING SOIL AND MODIFIED EXISTING SOIL PROTECTION

- A. The Contractor shall protect installed and/or modified Planting Soil from damage including contamination and over compaction due to other soil installation, planting operations, and operations by other Contractors or trespassers. Maintain protection during installation until acceptance. Utilize fencing and matting as required or directed to protect the finished soil work. Treat, repair or replace damaged Planting Soil immediately.
- B. Loosen compacted Planting Soil and replace Planting Soil that has become contaminated as determined by the Owner's Representative. Planting Soil shall be loosened or replaced at an expense to the Owner.
- a. Till and restore grades to all soil that has been driven over or compacted during the installation of plants.
- b. Where modified existing soil has become contaminated and needs to be replaced, provide imported soil that is of similar composition, depth and density as the soil that was removed.

3.15 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.
1. Maintain protection during installation until the date of plant acceptance (see specifications section - Planting). Treat, repair or replace damaged work immediately.
2. Provide temporary erosion control as needed to stop soil erosion until the site is stabilized with mulch, plantings or turf.
- 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 features to remain, including large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfacing 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. Damage to existing trees shall be assessed by a certified arborist.

3.16 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.
- B. The date of substantial completion of the planting soil shall be the date when the Owner's Representative accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.

3.17 FINAL ACCEPTANCE / SOIL SETTLEMENT

- A. At the end of the plant warrantee and maintenance period, (see Specification section - Planting) the Owner's Representative shall observe the soil installation work and establish that all provisions of the contract are complete and the work is satisfactory.
1. Restore any soil settlement and or erosion areas to the grades shown on the drawings. When restoring soil grades remove plants and mulch and add soil before restoring the planting. Do not add soil over the root balls of plants or on top of mulch.
- B. Failure to pass acceptance: If the work fails to pass final acceptance, any subsequent observations must be rescheduled as above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the Owner's Representative.

END OF SECTION 32 01 00

SECTION 32 84 00

IRRIGATION

PART 1 GENERAL

1.1 SUMMARY

- A. Irrigation system required for this work 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 controllers, 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. Testing 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.

1.2 CONTRACT DOCUMENTS

- A. Shall consist of specifications and its general conditions and the 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 part shall be as binding as if called for in all parts.

1.3 RELATED DOCUMENTS AND REFERENCES

- A. Related Documents:
1. Drawings and general provisions of contract, including general and supplementary conditions and Division I specifications, apply to work of this section.
2. Related Specification Sections
- a. Section - Planting
- b. Section - Planting Soil
- c. Sections - Mechanical/Plumbing
- d. Sections - Electrical
- B. References:
1. American Society of Testing Materials (ASTM): cited section numbers.
2. National Sanitation Foundation (NSF): rating system.
3. Irrigation Association: Turf & Landscape Irrigation Best Management Practices

1.4 VERIFICATION

- A. Irrigation piping and related equipment are drawn diagrammatically. Scaled dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions and immediately notify the Owner's Representative of discrepancies between the drawings or specifications and the actual conditions. Although sizes and locations of plants and or irrigation equipment wherever possible, it is not within the scope of the drawings to show all necessary offsets, obstructions, or site conditions. The Contractor shall be responsible to install the work in such a

manner that it will be in conformance to site conditions, complete, and in good working order.

- B. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstruction, grade offset or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstruction or differences should be brought to the attention of the Owner's Representative as soon as detected. In the event that notification to the Owner and Owner's Representative does not occur, the Contractor shall assume full responsibility for any revision necessary.

- C. Piping and equipment is to be located within the designated planting areas wherever possible unless specifically defined or dimensioned otherwise.

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 documents 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.
- C. In case of conflict among any referenced standards or codes or between any referenced standards and codes and the specifications, the more restrictive standard shall apply or Owner's Representative shall determine which shall govern.

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.

1.7 CHANGES IN THE WORK

- A. The Owner's Representative may order changes in the work, and the contract sum being adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before changing the work involved.
- B. All changes in the work, notifications and Contractor's request for information (RFI) shall conform to the contract general condition requirements.

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.

1.9 DEFINITIONS

- A. Owner's Representative: The person appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative may appoint other persons to review and approve any aspects of the work.
- B. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Owner's Representative accepts that all work in these sections is complete and the Warranty period has begun. This date may be different that the date of substantial completion for the other sections of the project.
- C. Final Acceptance: The date when the Owner's Representative accepts that the plants and work in this section meet all the requirements of specification. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation work run concurrently.

1.10 SUBMITTALS

- A. See the contract General Conditions for policy and procedures related to submittals.
- B. Product data
1. Submit a minimum of (3) complete lists of all irrigation equipment to be used, manufacturer's brochures, maintenance manuals, warranties and operating instructions, within 15 days after the notice to proceed.
- a. This submission may be done digitally and all documents shall be submitted in one PDF document.
2. The submittals shall be packaged and presented in an organized manner, in the quantity described in Division 1 of the specifications. Provide a table of contents of all submitted items.
3. Clearly identify on each submitted sheet by underlining or highlighting (on each copy) the specific product being submitted for approval. Failure to clearly identify the specific product being submitted will result in a rejection for the entire submittal. No substitutions of material or procedures shall be made concerning these documents without the written consent of an accepted equivalent by the Owner's Representative.
4. Equipment or materials installed or furnished without prior approval of the Owner's Representative, may be rejected by the Owner's Representative and the Contractor shall be required to remove such materials from the site at their own expense.
5. Approval of substitution of material and/or products, other than those specified shall not relieve the Contractor from complying with the requirements of the contract documents and specifications. The Contractor shall be responsible, at their own expense, for all changes that may result from the approved substitutions, which affect the installation or operations other items of their own work and/or the work of other Contractors.
- C. Samples: Samples of the equipment may be required at the request of the Owner's Representative if the equipment is other than that specified.
- D. Other Submittals: Submit for approval:
1. Documentation of the installer's qualifications.
- a. Contractor's License
- b. Certified Installer from Controller Manufacturer
2. As built record set of drawings.
3. Wiring diagram.
4. Controller charts.
5. Colored zoning charts: Show each irrigation zone and the valve it is controlled by.
6. Controller irrigation schedule: Indicate zone run times, zones for each program, program run times, times and days of operation, flow management information and soil moisture sensor settings, if applicable.
7. Testing data from all required pressure testing.
8. Backflow prevention device certification: Certification from the manufacturer or their representative that the back flow prevention device has been installed correctly according to the manufacturers requirements.
9. Booster pump certification: Certification from the manufacturer or their representative that the booster pump has been installed correctly according to the manufacturer's requirements.
10. Irrigation controller certification: Certification from the manufacturer or an authorized distributor that the Controller has been installed correctly according to the manufacturers requirements.

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. Valve manifolds, lateral lines and emitters.
4. Sensor installation and controller operation.
5. Adjustment and coverage test.
6. Pre-maintenance observation.
7. Final acceptance / system malfunction corrections.

1.12 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.
- 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. Internal 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 Warranty all workmanship and materials for a period of 180 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. The system controller shall be warranted by the equipment manufacturer against equipment malfunction and defects for a period of 10 years, following the acceptance of the work.
- D. Neither the final acceptance nor any provision in the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship. The Contractor shall remedy any defects within 7 days (s) 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 satisfactory conditions have been corrected.

1.16 DELIVERY, STORAGE, AND HANDLING

- A. All materials and equipment shall be stored properly and protected as required by the Contractor. The Contractor shall be entirely responsible for damages or loss by weather or other cause to work under the contract. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of the work.
- B. Deliver the products to the job site in their original unopened container with labels intact and legible at time of use.
- C. Store in accordance with the manufacturers' recommendations.

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 Arizona, 811, is required for all excavation around utilities. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by Arizona 811.

1.19 POINT OF CONNECTION

- A. The point of connection of the irrigation system to its electrical power sources shall be provided by the General Contractor's licensed electrical Contractor per governing codes at the location shown on the drawings. The Irrigation Contractor will connect the power to provided junction box or grounded plug receptacle.
- B. The point of connection of the irrigation system to its potable and or non-potable water sources, including the main shut-off valve and backflow preventer shall be provided by the General Contractor's licensed plumbing Contractor per governing codes at the location shown on the drawings. The minimum size and water pressure of the pressurized line will be as noted on the irrigation drawing.

1.20 TEMPORARY UTILITIES

- A. All temporary piping, wiring, meters, panels and other related apparatuses required between source of supply and point of use shall be provided by the Contractor and coordinated with the Owner's Representative. Existing utilities may be used with the written permission of the owner.

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 disc 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. All valves shall be numbered by station and corresponding numbers shall be shown on the as built record set of drawings.
2. All main line pipe or irrigation equipment including sleeves, valves, controllers, irrigation wire runs which deviate from the mainline location, backflow preventers, remote control valves, grounding rods, shut-off valves, rain sensors, wire splice locations, and quick coupling valves shall be located by two (2) measured dimensions, to the nearest one-half foot. Dimensions shall be given from permanent objects such as buildings, sidewalks, curbs, walls, structures and driveways. All changes in direction and depth of main line pipe shall be noted exactly as installed. Dimensions for pipes shall be shown at no greater than a 50 ft. maximum interval.
3. As built record set of drawings shall be signed and dated by the Contractor attesting to and certifying the accuracy of the as built record set of drawings. As built record set of drawings shall have "As Built Record Set of Drawings", company name, address, phone number and the name of the person who created the drawing and the contact name (if different).
- C. The Owner shall make the original contract drawings files available to the Contractor.
- D. The Contractor shall GPS all points of connection, controllers, flow sensors, master valves, hydrometers, backflow prevention devices, remote control irrigation valves and moisture sensors prior to receiving a notice of completion from the Owner's Representative.

- a. Contractor shall provide an updated aerial of the site location after project completion to the controller manufacturer to be updated onto the online irrigation management system.

1.24 CONTROLLER CHARTS:

- A. Provide one controller chart for each automatic controller installed.
1. On the inside surface of the cover of each automatic controller, prepare and mount a color-coded chart showing the valves, main line, and systems serviced by that particular controller. All valves shall be numbered to match the operation schedule and the drawings. Only those areas controlled by that controller shall be shown. This chart shall be a plot plan, entire or partial, showing building, walks, roads and walls. The plan, reduced as necessary and legible in all details, shall be made to a size that will fit into the controller cover. This print shall be approved by the Owner's Representative and shall be protected in laminated in a plastic cover and be secured to the inside back of the controller cabinet door.
2. Programming chart shall be 8.5" x 11" letter size and laminated. Programming chart shall include but is not limited to:
- a. Valve numbers and brief description of the valve along with program associated to each valve.
- b. Program numbers and brief description of its use.
- c. Moisture sensor associated to each valve and program, if applicable.
- d. Decoder model numbers associated with each valve, pump relay, and hydrometers, if applicable.
- e. Utility numbers such as the irrigation and electrical meter.
- f. Model numbers for cell phone module or WIFI module, if applicable.
- g. Controller model number, if applicable.

- h. Booster pump make and model number, if applicable.
3. The controller chart shall be completed and approved prior to acceptance of the work.

1.25 TESTING

- A. Provide all required system testing with written reports as described in part 3.

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

PART 2 PRODUCTS

2.1 MATERIALS GENERAL

- A. All materials shall be of standard, approved and first grade quality and shall be new and in perfect condition when installed and accepted.
- B. See the parts schedule on the drawings for specific components and manufacturers.
- C. Approval of any items or substitutions indicates only that the product(s) apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted. The Contractor shall be responsible for the performance of substituted items. If the substitution proves to be unsatisfactory or not compatible with other parts of the system, the Contractor shall replace said items with the originally specified items, including all necessary work and modifications to replace the items, at no cost to the owner.

2.2 RECLAIMED WATER SYSTEM DESIGNATION

- A. Where irrigation systems use reclaimed water, all products including valve boxes, lateral and main line pipe, etc. where applicable and/or required by local code shall have the reclaimed water purple color designation.

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 "Ring Tight".
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, 34 minimum size.
4. Sleeve carrying pipes and conduits under paving 2 inches in diameter and larger shall be Sch. 40 solvent weld PVC conforming to ASTM D 1785.
5. Low voltage irrigation control wire conduit, direct burial, 1.5" in diameter and larger shall be Sch. 40 PVC solvent weld, grey in color and conforming to NEMA-TC2
- 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 piping and conforming to ASTM D-2464. Threaded ends shall be molded threads only. Machine threads are not acceptable.
- D. Galvanized pipe fittings shall be galvanized malleable iron round joint Schedule 40 conforming to applicable current ASTM standards.
- E. Ductile iron push on fittings shall be manufactured for ASTM A536, Grade 65-45-12 ductile iron with a tensile strength of 65,000 psi. Fittings shall conform to or exceed AWWA C-11 for joints, ASTM F-477 for gaskets and AWWA C-153 for coatings. Fittings shall be pressure rated to 350 psi.
- F. Joint restraints shall consist of two (2) clamps, bolt sets and two (2) restraint rod with nuts. Restraints shall conform to the ASTM A-536 for materials, UNI-B-13-84 for the rings, ASTM A-536 or AWWA/ANSI C111/A21.11 for the rods, bolts and nuts and AWWA C-153 for the coatings.

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. Color of PVC solvent cement shall be light blue.
- 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.

2.6 BACKFLOW PREVENTION DEVICES

- A. The backflow prevention device shall be certified to NSF/ANSI 372 shall be ASSE Listed 1013, rated to 180 degree F, and supplied with full port ball valves.
- B. The main body and access covers shall be low lead bronze (ASTM B 584)
- C. The seat ring and all internal polymers shall be NSF Listed Noryl and the seat disc elastomers shall be silicone.
- D. Backflow Preventer shall be as indicated on the drawings.

2.7 PRESSURE REGULATOR

- A. Pressure regulator shall certified to NSF/ANSI 372, consisting of low lead bronze body bell housing, a separate access cap shall be threaded to the body and shall not require the use of ferrous screws.
- B. The main valve body shall be cast bronze (ASTM B 584).
- C. The access covers shall be bronze (ASTM B 584 or Brass ASTM B 16)
- D. The assembly shall be of the balanced piston design and shall reduce the pressure in both flow and no flow conditions.
- E. Pressure regulator shall be as indicated on the drawings.

2.8 BACKFLOW PREVENTER CAGE

- A. A heavy-duty steel mesh cage with rust proof finish. The caging shall be sized to allow space for the entire piping assembly including the Backflow Preventer unit, and all associated equipment.
- B. The cage shall include the manufacturers' standard tamper proof locking mechanism.
- C. Provide a concrete base as detailed on the drawings.
- D. Backflow Preventer Cage type, manufacturer and color shall be as indicated on the plans.

2.9 WATER HAMMER ARRESTOR

- A. Water hammer arrestor shall be a single copper pipe with a one -inch (1") threaded lead free brass connection.
- B. Water hammer arrestor shall have a polypropylene piston, EPDM o-ring seal and brass NPT threaded connection.
- C. Water Hammer arrestor shall be designed to operate on all domestic and commercial lines with a minimum 150 PSI working pressure.
- D. Water hammer arrestor shall be the manufacturer, model and size as indicated on the drawings.

2.10 BALL VALVES

- A. Ball valves for 3/4 inch through 2 - 1/2 inch shall be of Sch. 80 PVC, block, tri-union design with EPDM seals and o-rings.
- B. Ball 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 and shall be able to withstand a continuous working pressure of 150 PSI. Valve shall be equipped with a square-operating nut.



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Drawing Description	Date

Specifications	NOT FOR CONSTRUCTION

Date:	6.30.2022
Scale:	1" = 20'
Project:	21039_WA

NORTH  
L-11

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2.22 VALVE BOXES AND MATERIALS A. Valve boxes: valve boxes shall be constructed of ABS (acrylonitrile butadiene styrene) plastic, green in color, with rigid base and sides and shall be supplied with hot lock cover secured with stainless steel bolts. Cover shall be identified as shown on drawings. Provide box extensions as required. 1. Water hammer arrestor, hydrometers 2" and smaller, master valves, flow sensors, remote control irrigation valves, gates, valves, and ball valves 3 inch or less in size shall use a 14 inch x 19 inch x 12 inch rectangular box. 2. Hydrometers 3" and larger, master valves 3" and larger, and ball valves 4" and larger shall use a 33 inch x 24 inch x 15" rectangular valve box. 3. Quick coupler valves, wire splices, and grounding rods shall use a 10 inch circular box. 4. Grounding rods shall be in a 8 inch circular box. 2.23 CONCRETE THRUST BLOCKS A. Concrete thrust blocks shall be sized per the pipe manufactures requirement or as indicated on the drawings. 2.24 VALVE IDENTIFICATION TAGS A. Valve Identification Tags shall be 2.25 inch x 2.65 inch polyurethane. Color: potable water: yellow / Non-potable water: purple. Tags shall be permanently attached to each remote control valve with tamper proof seals as indicated on the drawings. 2.25 EQUIPMENT TO BE FURNISHED TO OWNER A. Two (2) sets of keys for each automatic controller. B. Two (2) 48 inch wrenches for operating the gate valves. C. Three (3) sets of special tools required for removing, disassembling and adjusting each type of sprinkler and valve supplied on this project. D. Five (5) Extra sprinkler heads, nozzles, shrub adapters, nozzle filter screens, for each type used on the project. E. Two (2) controller decoders of each type used on the project. F. One (1) sensor for each type used on the project. 2.26 INCIDENTAL MATERIALS AND EQUIPMENT A. Furnish all materials and equipment not specified above, but which are necessary for completion of the work as intended. 2.27 MAIN LINE LOCATOR TAPE A. 3 - inch wide plastic detectable locator tape. 2.28 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. 2.29 DRIP IRRIGATION A. Drip irrigation equipment shall be of the manufacturer, model, size and flow rate as indicated on the drawings. B. Single outlet drip emitters shall be pressure compensating, 1/2" threaded inlet. 1. Body material: PVC or vinyl. 2. Flow rate: 1 gallon per hour. 3. Pressure regulator: Yes, at the remote control irrigation valve. 4. Cap Color: Desert Camo 5. Drip emitters shall be of the manufacturer, model, size and type indicated on the drawings. 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. C. 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. 1. 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. D. 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 location 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. E. 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. F. 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. G. 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. H. No fittings shall be installed on pipe underneath pavement or walls. 1. 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. 3.2 TRENCHING, DIRECTIONAL BORING AND SLEEVING A. Perform all trenching, directional boring, sleeving and excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave-ins. B. 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 each bore and locate ends at finished grade using metal stakes. 3. All boring and sleeving shall have detectable locator 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. Trenches for pipelines shall be made of sufficient depth to provide the minimum cover from finished grade as follows: 1. Pressure main line: 18 inches below finish grade and 24 - 30 inches below paved areas in Schedule 40 PVC sleeves. 2. Reclaimed water constant pressure main lines shall cross at least twelve (12) inches below potable water lines. a. If a constant pressure reclaimed water main line must be installed above a potable water line or less than twelve (12) inches below a potable water line, then reclaimed water line shall be installed within an approved protective sleeve. The sleeve shall extend ten (10) feet from each side of the center of the potable line, for a total of twenty (20) feet. The sleeve shall be color-coded (purple) for use with reclaimed water. 3. Lateral lines: 12 inches below finish grade and 18 inches below paved areas in Schedule 40 PVC sleeves. 4. Control wiring: to the side of pressure main line and 24 inches below paved areas in Schedule 40 PVC sleeves. F. On new on-site systems (post-meter), the required horizontal separation between potable water lines, reclaimed water constant pressure main lines and sewer lines shall be a minimum of four (4) feet apart as directed by the project engineer and/or regulatory agency. Measurements shall be between facing surfaces, not pipe centerlines. G. When trenching through areas of imported or modified soil, deposit imported or modified soils on one side of trench and subsoil on opposite side. H. Backfill the trench per the requirements in paragraphs "Backfilling and Compacting" below. 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. 3. Install a detectable pipe locator tape 6 to 8 inches above all main line pipes. 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. 3. 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. 4. Dielectric bushings shall be used in any connections of dissimilar metals. 5. Gasketed plastic pipe: pipe-to-pipe joints or pipe to fittings shall be made in accordance with manufacturer's specifications. 6. 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 (not 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. Other than 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. C. Galvanized Pipe Installation 1. All joints shall be threaded with pipe joint compound used on all threads. 2. Dielectric bushings shall be used in any connections of dissimilar metals. D. Ductile Iron Fittings 1. Ductile iron fittings shall be installed at every change in the mainline direction. 2. Cut the pipe squarely and bevel plain end of the pipe. Bevel should be approximately fifteen (15") and 3/4" long. Remove any burrs and mark the pipe for reference. In cold weather allow 1/2" clearance between the end of the pipe and bell stop to allow for lateral pipe expansion. 3. Clean all debris from the bell areas of the fitting. Verify the position of the gasket so it is completely sealed in the groove with no raised areas. 4. Lubricate the gasket and the plain end of the pipe with the lubricant supplied by the pipe manufacturer. 5. Align the pipe with the fitting and push together by hand or with pry bars on the end of the fitting with two (2) pry bars using the lugs on the fitting. Insert the pipe until the reference line mark is even with the edge of the fitting bell. 6. Provide poured concrete thrust blocks at all changes in size and/or direction. Bends, reducers plugs, and the opposite side of free branches shall all require thrust blocks. E. Pipe Restraints 1. One (1) pipe restraints shall be installed before and after each ductile iron fitting. Two (2) pipe restraints shall be installed before and after any shut off valve, master valve and/or air relief valve. 2. Assemble plain end PVC pipe into the bell according to the pipe manufacturer's specifications and recommendations. 3. Assemble the grip rings on the spigot pipe approximately two inches (2") behind the insertion mark on the pipe and immediately behind the pipe bell end making sure the restrain rod holes are aligned. Tighten the side clamping bolts to one-hundred (100) foot-pounds torque (pad to pad). 4. Insert the threaded rods and snug the nuts against the grip rings. Do not over tighten the retaining nuts against the grip rings. Tighten nuts evenly to five (5) foot-pounds of torque. 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 plugs when necessary to flush or complete system. 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. 3.6 HYDROSTATIC PRESSURE TESTING A. After flushing, and the installation of valves the following tests shall be conducted in the sequence listed below. The Contractor shall furnish all equipment; materials and labor necessary to perform the tests and all tests shall be conducted in the presence of the Owner's Representative. B. Water pressure tests shall be performed on all pressure main lines before any couplings, fittings, valves and the like are concealed. C. 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. D. 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. E. 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. F. The Contractor is responsible for proving documentation stating the weather conditions, date, the start time and initial water pressure readings, the finish time and final 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. G. Submit a written report of the pressure testing results with the other above required information to the Owner's Representative for approval. 3.7 BACKFLOW PREVENTER TESTING A. The backflow preventer shall be tested according to procedures and results per the requirements of the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California or American Water Works Association whichever is more stringent. B. Testing shall be performed by a Backflow Prevention Assembly Tester with a current certification from the American Backflow Preventer Association. 3.8 CONTROLLER TESTING AND CERTIFICATION A. Controller shall have 3rd party certification; Ewing, Horizon, or Site One. 1. Certification shall include the following: a. Programming by plant type, emitter type or both. 1.) Program starts shall be enabled before the moisture level in the soil reaches maximum allowed depletion (MAD). 2.) Program stops are enabled before the moisture within the soil reaches field capacity. b. All flows for remote control irrigation valves have been learned. c. All lightning arrestors and grounding rods have been tested and meet the controller manufacturer's specification for conventional or 2-wire systems. d. K factor and offset are correct based upon the flow sensor model type and size. e. Flow management has been enabled so in the event of a mainline or lateral line break the system will shut off and notify the Owner, Owner's Representative and Contractor of the issue. f. Certifier shall simulate a high flow of an irrigation valve and an unexpected flow and verify the system shuts down. 1.) A high flow of an irrigation valve shall be created by removing one nozzle, bubbler or drip connection. 2.) An unexpected flow shall be created by manually turning on a remote control irrigation valve. 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 1. Backfill under pavement and within 2 feet of the edge of pavement: Compact to 95% or greater of maximum dry density standard proctor. 2. Backfill of subsoil under imported planting mixes or modified existing planting soil: Between 85 and 90% of maximum dry density standard proctor. 3. Backfill of imported planting mixes or modified existing planting soil: Conform to the requirements of the adjacent planting mix or planting soil as specified in section "Planting Soil". C. 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. 3.10 RESURFACING PAVING OVER TRENCHES A. Restore all surfaces and repair existing underground installations damaged or cut as a result of the excavation to their original condition, satisfactory to the Owner's Representative. B. Trenches through paved areas shall be resurfaced with same materials quality and thickness as existing material. Paving restoration shall be performed by the project paving Sub-contractor or an approved Contractor skilled in paving work. C. The cost of all paving restoration work shall be the responsibility of the irrigation Contractor unless the trenching thru the paving was, by previous agreement, part of the general project related construction. 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 manufacturers 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. Water Hammer Arrestor: 1. Arrestor shall be located halfway between the master valve/hydrometer and the backflow prevention device in a planing area. The minimum distance between arrestor can be located between both pieces of equipment is two (2) feet on either side. 2. All threaded connections shall be made with Monster Tape. 3. All connections to and from the arrestor and pipe shall be Sch. 80. 4. Lines shall be flushed thoroughly prior to the installation of the arrestor. 5. Arrestor may be installed either parallel or perpendicular to the mainline pipe. C. Hydrometer: 1. Hydrometer shall be installed after the backflow prevention device and water hammer arrestor. 2. Hydrometer shall have a minimum of two feet (2') straight mainline before and after before any change in direction. 3. Prior to installation the mainline shall be thoroughly flushed. 4. Mainline connections shall be the same size as the hydrometer. 5. All threaded connections shall be made using Monster Tape. 6. Hydrometer decoders shall be installed in the valve box with the serial number facing up 3-4" below the top of the valve box. 7. Hydrometer decoders shall be secured to the valve box using two (2) stainless self tapping screws. 8. Decoder wires and register wires shall be connected using the approved wire nuts. 9. Contractor shall position the three-way selector into the 'Auto' position. 10. Prior to installing the approved grease packs, Contractor shall secure and assign the master valve and flow sensor decoder at the irrigation controller flow set up and within each applicable program. 11. Contractor shall then test each decoder at the irrigation controller. 12. Contractor shall install the approved grease packs after each decoder has past the communication test. D. Pressure regulator: 1. Set regulator for required PSI per manufacturer's specifications. E. Remote control valves: 1. Install one remote control valve per valve box. 2. A Sch. 80 male adapter and sch. 80 unions shall be installed upstream of the remote control irrigation valve. 3. A Sch. 80 union shall be installed downstream of the remote control irrigation valve. 4. Solenoid wires shall be connected to the valve wire and common wire using the controller manufacturer approved connectors. a. For 2-wire systems solenoid wires shall be connected to the 2-wire path and controller decoder. 5. Prior to the installation of the controller approved grease packs, irrigation connections shall be tested at the controller for each valve. 6. Remote control valve manifolds and quick coupler valves shall be separate allowing use of a quick coupler with all remote control valves shut off. 7. 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. F. Pressure regulator & basket filter: 1. Install one (1) pressure regulator/filter per valve box. 2. A Sch. 80 male adapter and sch. 80 unions shall be installed upstream and downstream of the pressure regulator & basket filter as indicating in the drawings. 3. The pressure regulator shall be install a minimum of one foot (1') and a maximum of three feet (3') away from the remote control irrigation valve. 4. The Contractor shall remove the top of the pressure regulator & basket filter after all remote control irrigation valves, mainline and equipment have been installed and glue joints cured and flush any debris from the basket filter & pressure regulator. G. 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. 5. All threaded connections for quick couplers shall be Sch. 80 PVC. 6. All threaded connection to quick couplers shall be made using Monster Tape. H. Bubbles: 1. All main lines and lateral lines, including swing joints, shall be flushed and pressure tested before installing bubbler heads. 2. Install bubblers as shown in details at locations shown on the drawings. 3. All bubblers shall be set perpendicular to finish grade unless otherwise designated on the drawings or details. 4. All bubblers installed on slopes shall have a check valve installed between the riser and emitter. 5. Soil around the bubbler and swing joint shall be water settled to remove air pockets so that irrigation water runs through the plant root ball. I. Decoders: 1. Valve decoders shall be installed as shown in the details as shown on the drawings. 2. Valve decoders shall be secured to the valve box with the decoder model number facing up using two (2) stainless steel self tapping screws. 3. Valve decoder tags shall secured in the controller box and shall indicate valve number in the irrigation sequence, irrigation emitter type and physical location within the project as shown on the plans. 4. Electrical connections from the irrigation valve and decoder shall be made using controller manufacturer approved connectors. 5. Prior to grease packing the irrigation wire connections, the irrigation system shall be tested at the controller. J. Moisture Sensors: 1. Moisture sensors shall be installed as shown in the details at locations shown on the drawings. 2. The Landscape Architect shall approve moisture sensor locations in the field prior to installation. 3. Moisture sensors shall be tested for operation at the controller prior to backfilling. a. Contractor shall attach the sensor to the remote control irrigation valve and wire to the solenoid and decoder and secure the wires with the controller manufacturer approved wire nuts. b. After connecting the moisture sensors the Contractor shall fill the soil around the moisture sensor to a depth of 6" below finished grade. c. Contractor shall then test the moisture sensor through the irrigation controller to determine current moisture level conditions. d. The Contractor shall then pour a five (5) gallon bucket of water at the moisture sensor location, then test the moisture sensor through the controller. If the moisture level increases by more than 200% the Contractor shall continue backfilling the soil to the top of finish grade. If the sensor does not increase by more than 200% the Contractor shall repeat the process. 4. One moisture sensor shall be installed for each emitter and plant type. 5. Moisture sensors for turf shall be installed 5" below finished grade at location that is an equal distance between two overhead emitters. 6. Moisture sensors for point source irrigation emitters to trees shall be installed 12" below finished grade at the berm inner edge and angled down 45". 7. Moisture sensors for point source irrigation emitters to all other plants shall be installed 8" below finished grade at the berm inner edge and angled down 45". 8. 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. 9. After moisture sensors have been tested and backfilled the irrigation system shall run until moisture levels in the soil reach field capacity to establish the moisture sensor baseline. K. Lightning Arrestors: 1. Lightning arrestors shall be installed every six hundred feet (600') along the irrigation mainline or mainline spurs longer than one hundred feet (100'). 2. The primary location for lightning arrestors shall be in the same valve box as remote control irrigation valves. 3. Lightning arrestors not installed in the same location as a remote control irrigation valve shall be installed along the mainline in a ten inch (10") green round looking valve box. L. Grounding Rod or Plates: 1. Grounding devices shall be installed as shown in the details at locations shown on the drawings. 2. Grounding devices shall be located eight feet (8') to ten feet (10') away from the lightning arrestor. 3. Grounding devices cannot be located in the same trench as the irrigation mainline. 4. For bidding purposes, at any other lightning arrestor shall have two grounding devices installed. Grounding rods shall be secured to one another using #6 bare copper wire and grounding rod clamps. 5. After the grounding rods have been installed the soil around the grounding rods stamped with the end of a spade shovel followed by pouring a five gallon bucket of water around the grounding rod to increase settling M. Irrigation Controllers: 1. Remote control valves shall be connected to controller in numerical sequence as shown on the drawings. 2. Controller shall be tested with complete electrical connections. The Contractor shall be responsible for temporary power to the controller for operation and testing purposes. 3. Connections to control wiring shall be made within the pedestal of the controller. All wire shall follow the pressure main insofar as possible. 4. Electrical wiring shall be in a rigid gray PVC plastic conduit from controller to electrical outlet. The electrical Contractor shall be responsible for installing all wiring to the controller, in order to complete this installation. A disconnect switch shall be included. N. Wiring: 1. Low Voltage a. Control wiring between controller and electrical valves shall be installed in the same trench as the main line where practical. The wire shall be bundled and secured to the lower quadrant of the trench at 10 foot intervals with plastic electrical tape. 1.) 2 - wire controller wiring shall be installed in Sch 40 electrical conduit. Conduit shall be a minimum 1" inch in size. b. When the control wiring cannot be installed in the same main line trench it shall be installed a minimum of 18 inches below finish grade and a bright colored plastic ribbon with suitable markings shall be installed in the trench 6 inches below grade directly over the wire. c. An expansion loop shall be provided inside each valve box. Expansion loop shall be formed by coiling five feet (5') of wire and coiling it into a eighteen inch (18") circle and placing it underneath the irrigation valve and securing it with black zip ties. 1.) 2-wire controller wire shall be stripped using a Gorilla UV stripper or approved equal. d. Provide one control wire to service each valve in system. e. Provide 1 common wire(s) per controller. f. Run two (2) spare #14 - 1 wires from controller along entire main line to last electric remote control valve on each and every leg of main line. Label spare wires at controller and wire stub to be located in a box. g. All control wire splices not occurring at control valve shall be installed in a separate splice valve box. h. 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. 2. 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. O. 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. P. 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 tape wire. 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". Q. Drip Installation: 1. Install single outlet emitters onto drip tubing as indicating on the drawings. 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 serviced. 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 any unauthorized changes or improper installation practices. 4. The entire irrigation system shall be operating properly with written approval of the installation by the Owner
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- 1.9 DEFINITIONS
- All items in this specification shall be as defined in the "Glossary of Arboricultural Terms" or as modified below.
- A. Boxed trees: A container root ball package made of wood in the shape of a four-sided box.
- B. Container plant: Plants that are grown in and/or are currently in a container including boxed trees.
- C. Defective plant: Any plant that fails to meet the plant quality requirement of this specification.
- D. End of Warranty Final Acceptance: The date when the Owner's Representative accepts that the plants and work in this section meet all the requirements of the warranty. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation work run concurrent with each other.
- E. Field grown trees (B&B): Trees growing in field soil for at least 12 months prior to harvest.
- F. Healthy: Plants that are growing in a condition that expresses leaf size, crown density, color, and with annual growth rates typical of the species and cultivar's horticultural description, adjusted for the planting site soil and drainage and weather conditions.
- G. Killed root: A root within the root package that bends more than 90 degrees.
- H. Maintenance: Actions that preserve the health of plants after installation and as defined in this specification.
- I. Maintenance period: The time period, as defined in this specification, which the Contractor is to provide maintenance.
- J. Normal: the prevailing protocol of industry standard(s).
- K. Owner's Representative: The person appointed by the Owner to represent their interest in the review and approval of the work and to serve as the contracting authority with the Contractor. The Owner's Representative may appoint other persons to review and approve any aspects of the work.

L. Reasonable and reasonably: When used in this specification relative to plant quality, it is intended to mean that the conditions cited will not affect the establishment or long term stability, health or growth of the plant. This specification recognizes that it is not possible to produce plants free of all defects, but that some accepted industry protocols and standards result in plants unacceptable to this project.

When reasonable or reasonably is used in relation to other issues such as weeds, diseases, insects, it should mean at levels low enough that no treatment would be required when applying recognized Integrated Plant Management practices.

This specification recognizes that some decisions cannot be totally based on measured findings and that professional judgment is required. In cases of differing opinion, the Owner's Representative's expert shall determine when conditions are judged as reasonable.

- M. Root ball: The mass of roots including any soil or substrate that is shipped with the tree within the root ball package.
- N. Root ball package: The material that surrounds the root ball during shipping. The root package may include the material in which the plant was grown, or new packaging placed around the root ball for shipping.
- O. Root collar (root crown, root flare, trunk flare): The region at the base of the trunk where the majority of the structural roots join the plant stem, usually at or near ground level.
- P. Shrub: Woody plants with mature height approximately less than 15 feet.
- Q. Spade harvested and transplanted: Field grown trees that are mechanically harvested and immediately transplanted to the final growing site without being removed from the digging machine.
- R. Stem: The trunk of the tree.
- S. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Owner's Representative accepts that the work in this section meets all the requirements of the warranty period has begun. This date may be different than the date of substantial completion for the other sections of the project.
- T. Stem girdling root: Any root more than ¼ inch diameter currently touching the trunk, or with the potential to touch the trunk, above the root collar approximately tangent to the trunk circumference or circling the trunk. Roots shall be considered as Stem Girdling that have, or are likely to have in the future, root to trunk bark contact.
- U. Structural root: One of the largest roots emerging from the root collar.
- V. Tree: Single and multi-stemmed plants with mature height approximately greater than 15 feet.

- 1.10 SUBMITTALS
- A. See contract general conditions for policy and procedure related to submittals.
- B. Submit all product submittals 8 weeks prior to installation of plantings.
- C. Product data: Submit manufacturer product data and literature describing all products required by this section to the Owner's Representative for approval. Provide submittal eight weeks before the installation of plants.
- D. Plant growers' certificates: Submit plant growers' certificates for all plants indicating that each meets the requirements of the specification, including the requirements of tree quality, to the Owner's Representative for approval. Provide submittal eight weeks before the installation of plants.
- E. Samples: Submit samples of each product and material where required by the specification to the Owner's Representative for approval. Label samples to indicate product, characteristics, and locations in the work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the Contractor.
- F. Plant sources: Submit sources of all plants as required by Article - "Selection of Plants" to the Owner's Representative for approval.
- G. Close out submittals: Submit to the Owner's Representative for approval.

- 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.

1. SITE CONDITIONS PRIOR TO THE START OF PLANTING: review the soil and drainage conditions.
2. COMPLETION OF THE PLANT LAYOUT STAKING: Review of the plant layout.
3. 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.
4. COMPLETION OF THE PLANTING: Review the completed planting.

- 1.12 PRE-CONSTRUCTION CONFERENCE
- A. Schedule a pre-construction meeting with the Owner's Representative at least seven (7) days before beginning work to review any questions the Contractor may have regarding the work, administrative procedures during construction and project work schedule.

- 1.13 QUALITY ASSURANCE
- A. Substantial Completion Acceptance - Acceptance of the work prior to the start of the warranty period:
1. 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.
2. 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.
3. Any plants that are deemed defective as defined under the provisions below shall not be accepted.
- B. 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).
- C. Contractor's Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the work.
- D. 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 material.

1. The bidders list for work under this section shall be approved by the Owner's Representative.
2. 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.
3. 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.
4. 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.
5. Submit references of past projects, employee training certifications that support that the Contractors meets all of the above installer qualifications and applicable licensures.

- 1.14 PLANT WARRANTY
- A. Plant Warranty:
1. 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:
- a. Trees - 180 days.
- b. Shrubs - 180 days.
- c. Ground cover and perennial flower plants - 180 days.
2. When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial Completion Acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of plant warranty shall terminate at one time.
3. 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 that do not meet these requirements. The Owner's representative shall make the final determination that plants are defective.
4. 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.
5. 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.

6. 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.
7. 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.
8. 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.
9. During and by the end of the warranty period, remove all tree wrap, ties, and guying unless agreed to by the Owner's Representative to remain in place. All trees that do not have sufficient caliper 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.
1. 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.
2. 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. The Owner's Representative may review all plants subject to approval of size, health, quality, character, etc. Review or approval of any plant during the process of selection, delivery, installation and establishment period shall not prevent that plant from later rejection in the event that the plant quality changes or previously existing defects become apparent that were not observed.
- B. Plant Selection: The Owner's Representative reserves the right to select and observe all plants at the nursery prior to delivery and to reject plants that do not meet specifications as set forth in this specification. If a particular defect or substantial element can be corrected at the nursery, as determined by the Owner's Representative, the agreed upon remedy may be applied by the nursery or the Contractor provided that the correction allows the plant to meet the requirements set forth in this specification. Any work to correct plant defects shall be at the contractor's expense.

1. The Owner's Representative may make invasive observation of the plants' root system in the area of the root collar and the top of the root ball in general in order to determine that the plant meets the quality requirements for depth of the root collar and presence of roots above the root collar. Such observations will not harm the plant.
2. Corrections are to be undertaken at the nursery prior to shipping.
- C. The Contractor shall bear all cost related to plant corrections.
- D. All plants that are rejected shall be immediately removed from the site and acceptable replacement plants provided at no cost to the Owner.
- E. Submit to the Owner's Representative, for approval, plant sources including the names and locations of nurseries proposed as sources of acceptable plants, and a list of the plants they will provide. The plant list shall include the botanical and common name and the size at the time of selection. Observe all nursery materials to determine that the materials meet the requirements of this section.
- F. 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 Re-wholesale suppliers are used for substitution, the Contractor shall provide a 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.
- G. The Contractor shall require the grower or re-wholesale supplier to permit the Owner's Representative to observe the root system of all plants at the nursery or job site prior to planting including random removal of soil or substrate around the base of the plant. Observation may be as frequent and as extensive as needed to verify that the plants meet the requirements of the specifications and conform to requirements.
- H. Each tree shall have a numbered seal applied by the Contractor. The seal shall be placed on a lateral branch on the north side of the tree. The seal shall be a tamper proof plastic seal bearing the Contractors name and a unique seven-digit number embossed on the seal.
- I. Do not place seals on branches that are so large that there is not sufficient room for the branch growth over the period of the warranty.
- J. The Owner's Representative may choose to attach their seal to each plant, or a representative sample. Viewing and/or sealing of plants by the Owner's Representative at the nursery does not preclude the Owner's Representative's right to reject material while on site. The Contractor is responsible for paying any up charge for the Owner's Representative to attach their seal to specific plants.
- J. 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 plant substitution. Request that the Contractor provide 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 cultural 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.
1. 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.

1. 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.
- D. Actual planting shall be performed during those periods when weather and soil conditions are suitable in accordance with locally accepted horticultural practices.
2. 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 Arizona 811, is required for all planting areas. The Contractor is responsible for knowing the location and avoiding utilities that are not covered by Arizona 811.

- 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.

1. 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.
2. 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.
3. 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 certificates required by law shall accompany each shipment of plants.
1. Clearance from the local county agricultural commissioner, if required, shall be obtained before planting trees originating outside the county in which they are to be planted.
- D. Plant Quality:
2. General: Provide healthy stock, grown in a nursery and reasonably free of die-back, disease, insects, eggs, bores, 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
3. Plant quality above the soil line:
- a. Plants shall be healthy with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified. Tree quality above the soil line shall comply with the project Crown Acceptance details (or Florida Grades and Standards, tree grade Florida Spray or Florida #1) and the following:
- 1.) Crown: The form and density of the crown shall be typical for a young specimen of the species or cultivar pruned to a central and dominant leader.
- a.) Crown specifications do not apply to plants that have been specifically trained in the nursery as topiary, espalier, multi-stem, clump, or unique selections such as contorted or weeping cultivars.
- 2.) Leaves: The size, color, and appearance of leaves shall be typical for the time of year and stage of

- growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress or over watering as indicated by wilting, shriveled, or dead leaves.
- 3.) Branches: Shoot growth (length and diameter) throughout the crown should be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.
- a.) Main branches shall be distributed along the central leader not clustered together. They shall form a balanced crown appropriate for the cultivar/species.
- b.) Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader measured 1 inch above the branch union.
- c.) The attachment of the largest branches (scaffold branches) shall be free of included bark.
- 4.) Trunk: The tree trunk shall be relatively straight, vertical, and free of wounds that penetrate to the wood (properly made pruning cuts, closed or not, are acceptable and are not considered wounds), sunburned areas, conks (fungal fruiting bodies), wood cracks, sap leakage, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury).
- 5.) Temporary branches, unless otherwise specified, can be present along the lower trunk below the lowest main (scaffold) branch, particularly for trees less than 1 inch in caliper. These branches should be no greater than 3/8-inch diameter. Clear trunk should be no more than 40% of the total height of the tree.
- a. Trees shall have one central leader. If the leader was headed, a new leader (with a live terminal bud) at least one-half the diameter of the pruning cut shall be present.
- 1.) All trees are assumed to have one central leader trees unless a different form is specified in the plant list or drawings.
- B. All graft unions, where applicable, shall be completely closed without visible sign of graft rejection. All grafts shall be visible above the soil line.
- C. Trunk caliper and taper shall be sufficient so that the lower five feet of the trunk remains vertical without a stake. Auxiliary stake may be used to maintain a straight leader in the upper half of the tree.

3. Plant quality at or below the soil line:
- a. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting tree health. Root quality at or below the soil line shall comply with the project Root Acceptance details in the following:
- 1.) The roots shall be reasonably free of scrapes, broken or split wood.
- 2.) 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.
- 3.) 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.
- a.) Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
- 4.) 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 species with roots that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball.
- 5.) The root system shall be reasonably free of stem girdling roots over the root collar or kninked roots from nursery production practices.
- a.) Plant Grower Certification: The final plant grower shall be responsible to have determined that the plants have been not pruned at each step in the plant production process to remove stem girdling roots and kninked roots, or that the previous production system uses practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage, if needed, to produce the required plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kninked roots as defined in this specification, and that the tree has been grown and harvested to produce a plant that meets these specifications.
- 6.) At time of observations and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.
- 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.

1. 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. ROOT BALL PACKAGE OPTIONS: The following root ball packages are permitted. Specific root ball packages shall be required where indicated on the plant list or in this specification. Any type of root ball packages that is not specifically defined in this specification shall not be permitted.
- A. CONTAINER (INCLUDING ABOVE-GROUND FABRIC CONTAINERS AND BOXES) PLANTS
1. Container plants may be permitted only when indicated on the drawing, in this specification, or approved by the Owner's Representative.
2. Provide plants shall be established and well rooted in removable containers.
3. Container class size shall conform to ANSI Z60.1 for container plants for each size and type of plant.

- 2.3 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.

- 2.4 MULCH
- A. Mulch shall 1/2" minus screened decomposed granite. It shall match the existing decomposed granite in color and size.
1. 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.
- B. Submit supplier's product specification data sheet and a one gallon sample for approval.
- 2.5 TREE STAKING AND GUYING MATERIAL
- A. Tree guying to be flat woven polypropylene material, 3/4 inch wide, and 500 lb. break strength. Color to be Green. Product to be ArborTie manufactured by Deep Root Partners, L.P. or approved equal.
- B. Stakes shall be lodge pole stakes free of knots and diameters and lengths appropriate to the size of plant as required to adequately support the plant.
- C. Below ground anchorage systems to be constructed of 2 x 2 dimensional untreated wood securing (using 3 inch long screws) horizontal portions 4 to 4 feet long vertical stakes driven straight into the ground outside the root ball.
- D. 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.
1. All plant materials must be available for observation prior to planting.
2. 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.
- B. 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.
1. 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 transportation.
- 3.3 PLANTING SEASON
- A. Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Install plants during the planting time as described below unless otherwise approved in writing by the Owner's Representative. In the event that the Contractor request planting outside the dates of the planting season, approval of the request does not change the requirements of the warranty.
1. Deciduous trees and shrubs: January to May and September to December.
2. Evergreen trees and shrubs: January to May and September to December.

- 3.4 ADVERSE WEATHER CONDITIONS
- A. No planting shall take place during extremely hot, dry, windy or freezing weather.
- 3.5 COORDINATION WITH PROJECT WORK
- A. The Contractor shall coordinate with all other work that may impact the completion of the work.
- B. Prior to the start of work, prepare a detailed schedule of the work for coordination with other trades.
- C. Coordinate the relocation of any irrigation lines, heads or the conduits of other utility lines that are in conflict with tree locations. Root balls shall not be allowed to fit around lines. Notify the Owner's Representative of any conflicts encountered.

- 3.6 LAYOUT AND PLANTING SEQUENCE
- A. Relative positions of all plants and trees are subject to approval of the Owner's Representative.
- B. Notify the Owner's Representative, one (1) week prior to layout. Layout all individual tree and shrub locations. Place plants above surface at planting location or place a labeled stake at planting location. Layout bed lines with paint for the Owner's Representative's approval. Secure the Owner's Representative's acceptance before digging and start of planting work.
- C. When applicable, plant trees before other plants are installed.
- D. It is understood that plants are not precise objects and that minor adjustments in the layout will be required as the planting plan is constructed. These adjustments may not be apparent until some of the plants are installed. Make adjustments as required by the Owner's Representative including relocating previously installed plants.

- 3.7 SOIL PROTECTION DURING PLANT DELIVERY AND INSTALLATION

- A. Protect soil from compaction during the delivery of plants to the planting locations, digging of planting holes and installing plants.
1. Where possible deliver and plant trees that require the use of heavy mechanized equipment prior to final soil preparation and filling. Where possible, restrict the driving lanes to one area instead of driving over and compacting a large area of soil.
2. Till to a depth of 6 inches, all soil that has been driven over during the installation of plants.
- 3.8 SOIL MOISTURE
1. Volumetric soil moisture level, in both the planting soil and the root balls of all plants, prior to, during and after planting, shall be above permanent wilting point and below field capacity for each type of soil texture within the following ranges.

Soil type	Permanent wilting point	Field capacity
Sand, Loamy sand, Sandy loam	5 - 8%	12 - 18%
Loam, Sandy clay, Sandy clay loam	14 - 25%	27 - 36%
Clay loam, Silt loam	11 - 22%	31 - 36%
Silty clay, Silty clay loam	22 - 27%	38 - 41%

Moisture meter, DSSM500 by General Specialty Tools and Instruments, or approved equivalent.

- B. The Contractor shall confirm the soil moisture levels with a moisture meter. If the moisture is too high, suspend planting operations until the soil moisture drains to below field capacity.
- 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 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.

1. 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.
2. 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: Quality, or other requirements related to the permitted root ball package, shall not be considered as grounds to modify or void the plant warranty.
3. 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.
4. The Contractor remains responsible to confirm that the grower has made all required root modifications noted during any nursery observations.

- D. Container and Boxed Root Ball Shaving: The outer surfaces of ALL plants in containers and boxes, 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 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 fiber fabric. Secure the fabric with biodegradable masking tape. DO NOT USE string, wire, 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 ball modification to correct root problems, and wide enough for working room around the root ball or to the size indicated on the drawing or as noted below.

1. For trees and shrubs planted in soil areas that are NOT tilted 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.
- a. 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.
- b. 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 dig, lift and turned. Lifting and turning may be accomplished with a tracked mini excavator, or hand shovels.
2. If an auger is used to dig the final 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 tilted or otherwise modified.
3. 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.
4. 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 tilted 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 by 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 tamper the planting soil in fits to not exceed 12 inches.
- I. 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 plants 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 tamping Planting Soil around the lower portion of the root ball. Place additional Planting Soil around base and sides of root 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.

1. 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 continued 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 sauer.
- 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 trunk protection after planting.
- Q. Follow additional requirements for the permitted root ball packages.

- 3.10 PERMITTED ROOT BALL PACKAGES AND SPECIAL PLANTING REQUIREMENTS

- A. The following are permitted root ball packages and special planting requirements that shall be followed during the planting process in addition to the above General planting requirements.
- B. CONTAINER (INCLUDES BOXED AND ABOVE-GROUND FABRIC CONTAINERS) PLANTS
1. This specification assumes that most container plants have significant stem girdling and circling roots, and that the root collar is too low in the root ball.
2. Remove the container.
3. Perform root ball shaving as defined in installation of Plants: General above.
4. Remove all roots and substrate above the root collar and the main structural roots according to root correction details so root system conforms to root observations details.
5. Remove all substrate at the bottom of the root ball that does not contain roots.
6. Using a hose, power washer or air excavation device, wash out the substrate from around the trunk and top of the remaining root ball and find and remove all stem girdling roots within the root ball above the top of the structural roots.

- 3.11 GROUND COVER, PERENNIAL AND ANNUAL PLANTS
- A. 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.
- B. Assure that soil grades in the beds are smooth and as shown on the plans.
- C. Plants shall be planted in even, triangular 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.
- D. 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.
- E. 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.
- F. Press soil to bring the root system in contact with the soil.
- G. Spread any excess soil around in the spaces between plants.
- H. 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.
- I. 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.
- 3.12 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.
4. The Owner's Representative shall have the authority to require that trees are staked or to reject staking as an alternative way to stabilize the tree.
5. 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.
1. Plants shall stand plumb after staking or guying.
2. 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.

- 3.13 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.
- 3.14 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.

- 3.15 PRUNING OF TREES AND SHRUBS
- A. Pruning cuts as directed by the Owner's Representative. 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. Pruning of large trees shall be done using pole pruners or if needed, from a ladder or hydraulic lift to gain access to the top of the tree. Do not climb in newly planted trees. Small trees can be structurally pruned by laying them over before planting. Pruning may also be performed at the nursery prior to shipping.
- E. Remove and replace excessively pruned or malformed stock resulting from improper pruning that occurred in the nursery or after.
- F. Pruning shall be done with clean, sharp tools.
- G. No tree paint or sealants shall be used.

- 3.16 MULCHING OF PLANTS
- A. Apply 4 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.

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3.23 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 work and chemical use shall comply with all applicable local, provincial 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 crew. 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.
- Soil nutrient levels: Take a minimum of 4 soil samples from around the site in the spring and fall and have them tested by an accredited agricultural soil testing lab for chemical composition of plant required nutrients, pH, salt and % organic matter. Test results shall include laboratory recommendations for nutrient applications. Apply fertilizers at rates recommended by the soil test.
  - Make any other soil test and/or plant tissue test that may be indicated by plant conditions that may not be related to soil nutrient levels such as soil contaminated by other chemicals or lack of chemical uptake by the plant.
- 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 other 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 pick 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 beds or plantings for an additional cost. All additional work shall be approved in advance by the Owner's Representative.

3.24 END OF WARRANTY FINAL ACCEPTANCE / MAINTENANCE OBSERVATION

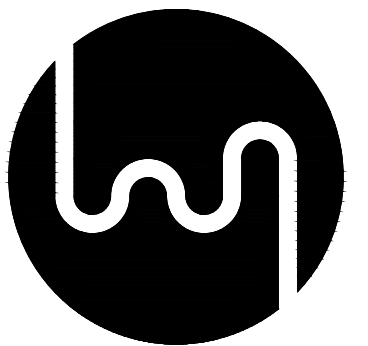
A. At the end of the Warranty and Maintenance period the Owner's Representative shall observe the work and establish that all provisions of the contract are complete and the work is satisfactory.

- If the work is satisfactory, the maintenance period will end on the date of the final observation.
- If the work is deemed unsatisfactory, the maintenance period will continue at no additional expense to the Owner until the work has been completed, observed, and approved by the Owner's Representative.

B. FAILURE TO PASS OBSERVATION: If the work fails to pass final observation, 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 Owners Representative.

END OF SECTION 32 93 00

\\mitch\home\Desktop\Wood Architecture\2121039\_WA-Texas Roadhouse\_1605 S Stapley Drive, Mesa, AZ (GF)\Land\CD's\CD\_04121039\_WA-specifications 24x36.dwg,30.06.2022\kurtkoether



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1512 W. Mineral King Ave.  
Visalia, Ca 93291  
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559. 636. 3277 (f)  
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Kurt Koether

Drawing Description

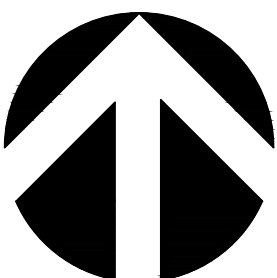
Date

Specifications

Texas Roadhouse

Mesa, AZ

Date: 6.30.2022  
Scale: 1" = 20'  
Project: 21039\_WA



NORTH

L-13

Sheet 14 of 14

NOT FOR CONSTRUCTION





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### ISSUE/REVISION RECORD

[illegible]**PROFESSIONAL SEAL****PROFESSIONAL IN CHARGE**

## PROJECT MANAGER

**QUALITY CONTROL**  
JT

**DRAWN BY**  
SK

**PROJECT NAME**

## TEXAS ROADHOUSE

**MESA**  
**ARIZONA**

**1605 S. STAPLEY DR.  
MESA, ARIZONA 85204**



20191336.0

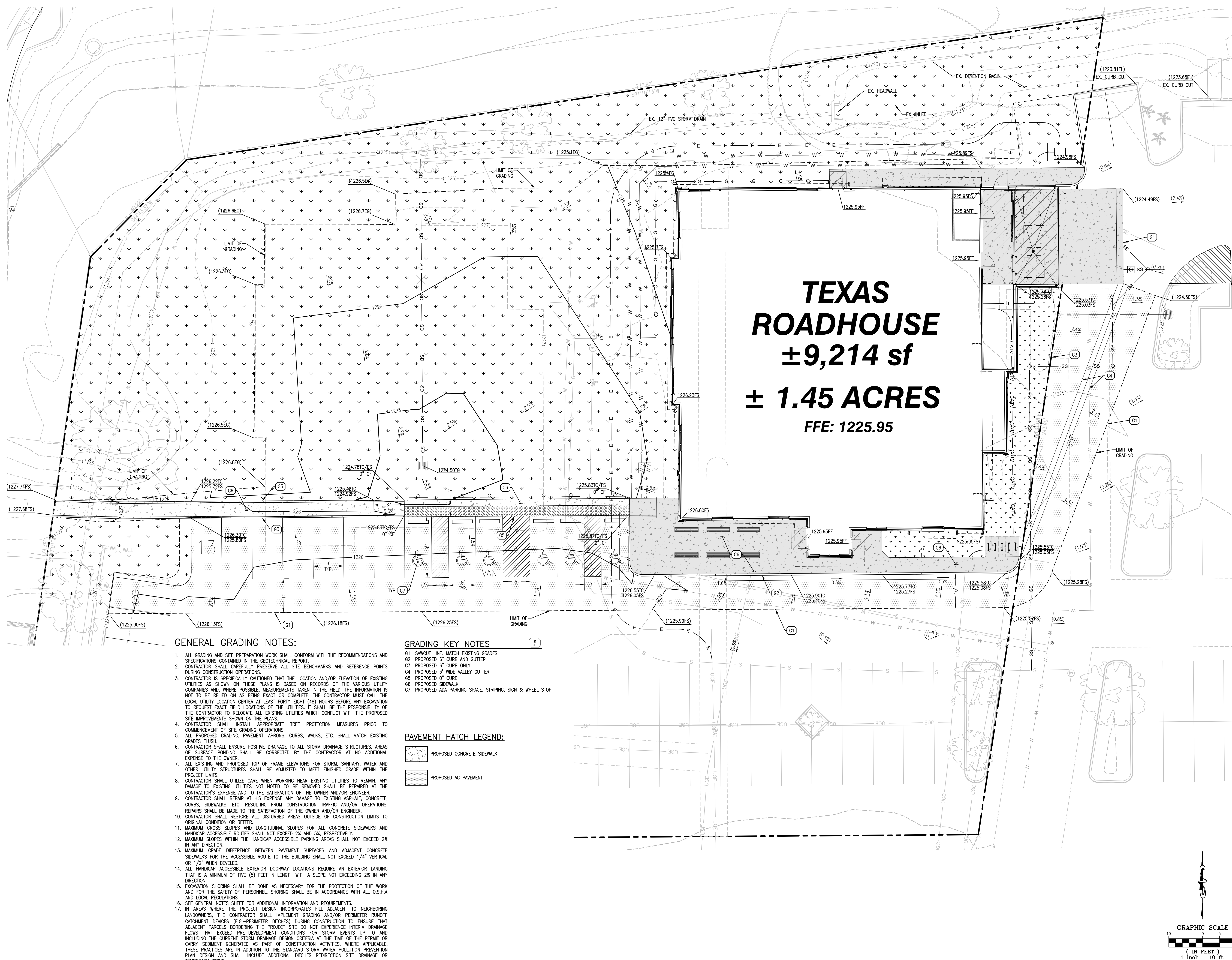
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## GRADING PLAN

**SHEET NUMBER**

C-04

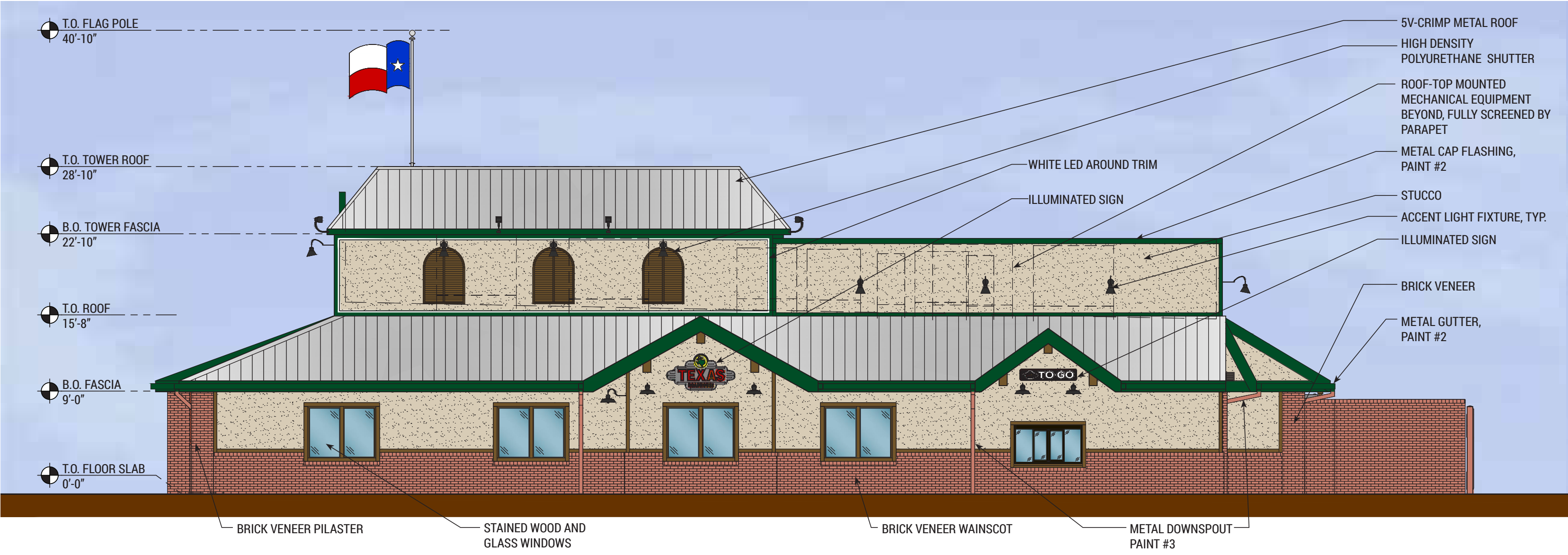
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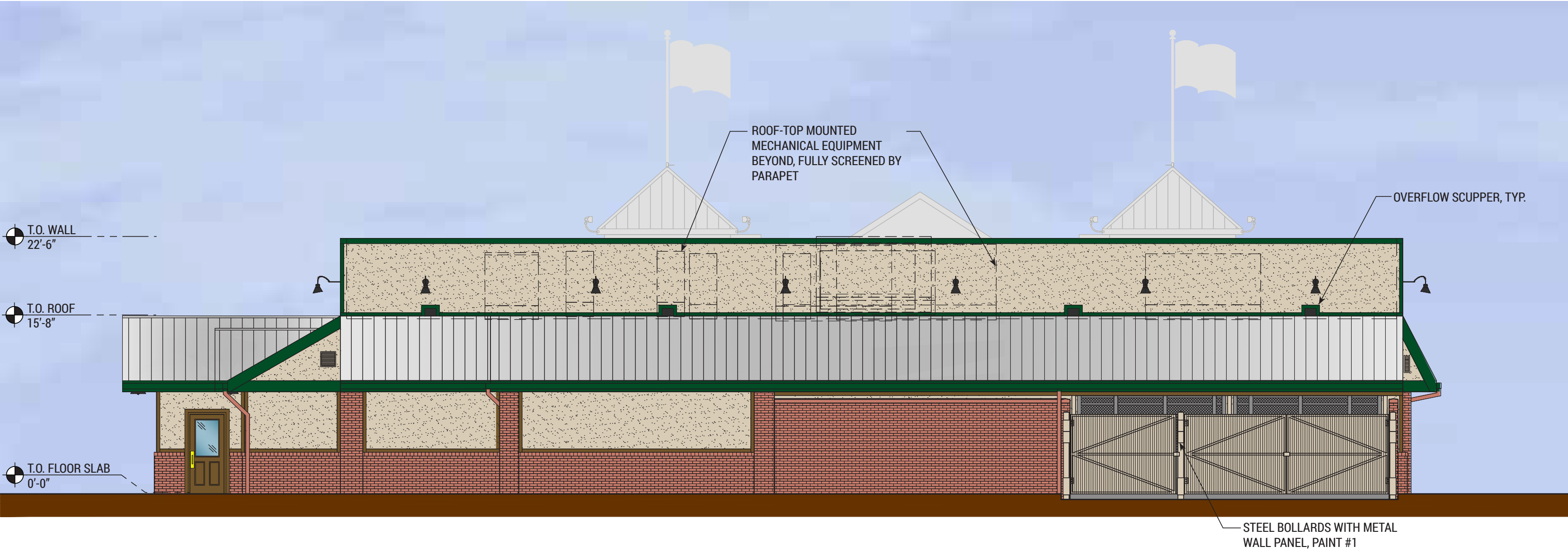








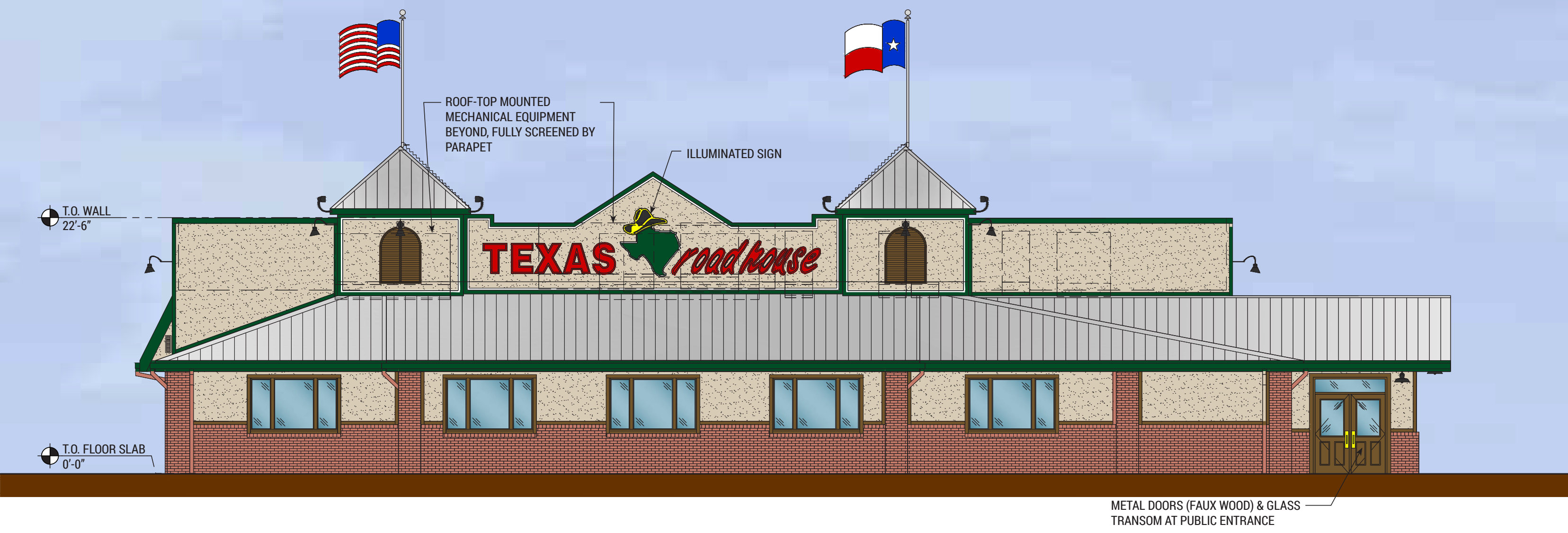
RIGHT ELEVATION (SOUTH)



REAR ELEVATION (EAST)



LEFT ELEVATION (NORTH)



FRONT ELEVATION (WEST)

EXTERIOR FINISH SCHEDULE	
FIBER CEMENT BOARD DOOR & WINDOW TRIM	ALLURA, TEXTURED WOODGRAIN, COLOR: "SUMMER WHEAT"
STUCCO, DUMPSTER GATES & BOLLARDS	PAINT #1: SHERWIN WILLIAMS PAINTS, CREAMY SW 7012
FRONT ENTRANCE DOORS	METAL DOORS (FAUX WOOD) CECO DOORS, "MADERA" (CS-6 "NUTMEG" FINISH)
FASCIA, TRIM, METAL FLASHING, & GUTTERS	PAINT #2: SHERWIN WILLIAMS PAINTS, GREEN CUSTOM COLOR
SHUTTERS	WHOLESALE MILLWORK, HIGH DENSITY POLYURETHANE, PAINT TO MATCH FIBER CEMENT COLOR, CUSTOM COLOR
DOWNSPOUTS, METAL DOORS & FRAMES	PAINT #3: SHERWIN WILLIAMS PAINTS, ROJO DUST SW 9006
BRICK VENEER	GENERAL SHALE, BAYSTONE VELOUR
METAL ROOF	METAL SALES, 5V-CRIMP, GALVALUME

DISCLAIMER NOTE:  
THE COLORS DEPICTED ON THESE ELEVATIONS ARE FOR GRAPHIC REPRESENTATION PURPOSES ONLY.  
PLEASE REFER TO MATERIAL BOARD FOR ACTUAL SAMPLE OF COLORS AND TEXTURES

MATERIAL AREAS AND PERCENTAGES															
ELEVATION	TOTAL AREA	BRICK AREA	BRICK PERCENTAGE	STUCCO AREA	STUCCO PERCENTAGE	FIBER CEMENT TRIM & FASCIA AREA	FIBER CEMENT TRIM & FASCIA PERCENTAGE	WINDOW AREA	WINDOW PERCENTAGE	DOOR & DUMPSTER GATE AREA	DOOR & DUMPSTER GATE PERCENTAGE	METAL FLASHING & GUTTERS AREA	METAL FLASHING & GUTTERS PERCENTAGE	METAL ROOF VERTICAL AREA	METAL ROOF VERTICAL PERCENTAGE
LEFT ELEVATION	2400.73 SF	502.14 SF	20.92 %	857.14 SF	35.70 %	255.71 SF	10.65 %	54.25 SF	2.26 %	55.67 SF	2.32 %	49.86 SF	2.08 %	625.96 SF	26.07 %
REAR ELEVATION	2410.75 SF	420.66 SF	17.45 %	858.24 SF	35.60 %	215.01 SF	8.92 %	0 SF	0 %	243.04 SF	10.08 %	59.84 SF	2.48 %	613.96 SF	25.47 %
RIGHT ELEVATION	2404.82 SF	485.52 SF	20.19 %	839.55 SF	34.91 %	250.81 SF	10.43 %	132.28 SF	5.50 %	55.67 SF	2.31 %	43.66 SF	1.82 %	597.33 SF	24.84 %
FRONT ELEVATION	2500.01 SF	455.99 SF	18.24 %	783.00 SF	31.32 %	274.08 SF	10.96 %	186.87 SF	7.47 %	55.25 SF	2.21 %	67.11 SF	2.68 %	677.71 SF	27.11 %





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## Memorandum

January 17, 2022

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To: City of Mesa Development Services	Project	Texas Roadhouse Relocation
Attn: Sean Pesek	Project #	Pre-Submittal Record ID: PRS21-00287
55 North Center Street	From	Yelena Fiester – Site Development Coordinator, Danielle Benedict – Due Diligence Coordinator
Mesa, AZ 85201	Re	Citizen Participation Plan
480.644.6716		
<a href="mailto:Sean.Pesek@mesaaz.gov">Sean.Pesek@mesaaz.gov</a>		

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### Citizen Participation Plan for Texas Roadhouse

**Date:** January 17, 2022

**Purpose:** The purpose of this Citizen Participation Plan is to inform citizens, property owners, neighbor associations, agencies, schools, and businesses within 1,000 FT of the proposed Texas Roadhouse restaurant relocation project. This site is located at 1605 S Stapley Drive on the southeast corner of S Stapley Drive and Interstate 60. This submission is for a Major Site Plan Modification through the Planning and Zoning Board at the City of Mesa, AZ. This plan will ensure that those impacted by this development have an opportunity to learn about and comment on the proposal.

#### Contact (for citizen outreach):

Dave Stolberg, Real Estate Manager, Texas Roadhouse  
502.426.9984 | [sites@TexasRoadhouse.com](mailto:sites@TexasRoadhouse.com)  
6040 Dutchmans Lane  
Louisville, KY 40205

#### Contact (for application/submittal): Yelena

Yelena Fiester, Site Development Coordinator, GreenbergFarrow  
682.552.1572 | [yfiester@greenbergfarrow.com](mailto:yfiester@greenbergfarrow.com)  
7700 Windrose Avenue, Suite G300  
Plano, Texas 75024

**Pre-Submittal Meeting:** The pre-submittal meeting with the City of Mesa planning staff was held on April 13, 2021. Staff reviewed the application and recommended the following:

- All property owners within 1,000-feet of the proposed development be notified
- All registered neighborhood associations within 1-mile of the proposed development be notified
- All HOAs within ½-mile of the proposed development be notified





- Early outreach by Texas Roadhouse to the above parties

**Action Plan:** In order to provide effective citizen participation, the following actions will be taken to provide the community with opportunities to understand and address any real or perceived impacts from the proposed development.

1. A contact list will be developed for citizens and agencies in this area, including:
  - a. All property owners within 1,000-feet of the proposed development
  - b. All registered neighborhood associations within 1-mile of the proposed development
  - c. All HOAs within ½-mile of the proposed development
2. All persons on the above lists will receive a letter including the following:
  - a. Project Description
  - b. Site Plan
  - c. Building Elevations
  - d. Contact Information (as listed above for citizen outreach)
  - e. Invitation to the citizen participation online meeting will be sent out Wednesday, 01/26/2022. A proposed MS Teams audio meeting will be held Wednesday February 9<sup>th</sup>, 2022 at 10:00AM CST/ 9:00 AM MST. Details to log in to the meeting will be included in the notification letters: call in (audio only) +1 469-998-0888, code 799978630# United States, Dallas, Phone Conference ID:799 978 630#
3. The citizen participation meeting will provide an opportunity for citizens and agencies to learn about the proposed project, ask questions, raise concerns, and receive feedback. A sign-in list will be used and comment forms will be provided. A copy of the sign-in list and comments will be submitted to the City of Mesa (Attn: Sean Pesek, Planner II).

**Proposed Schedule:**

Pre-Submittal Meeting: Tuesday, April 13, 2021.

Mailings to applicable citizens and agencies: Wednesday January 26<sup>th</sup>, 2022.

Citizen Participation Meeting: Wednesday February 9<sup>th</sup>, 2022.

Submittal of Citizen Participation Report and Notification Materials: Will be mailed to City of Mesa, assigned Planner on Monday, February 14<sup>th</sup>, 2022.

Public Mailing Notices for Design Review Board Meeting: Will be mailed to City of Mesa to arrive on Monday, February 21<sup>st</sup>, 2022.

Design Review Board Meeting: Tuesday, March 8<sup>th</sup>, 2022.

Planning & Zoning Board Hearing: Wednesday, April 13<sup>th</sup>, 2022.

End of Memorandum





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## Memorandum

August 9, 2022

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To: City of Mesa Development Services Attn: Evan Balmer 55 North Center Street Mesa, AZ 85201 480.644.6713 <a href="mailto:Evan.balmer@mesaaz.gov">Evan.balmer@mesaaz.gov</a>	Project Texas Roadhouse Relocation Project # ZON22-00051 From Yelena Fiester – Site Development Coordinator, Danielle Benedict – Due Diligence Coordinator Re Citizen Participation Report Pre-Submittal Record ID: PRS21-00287 Site Plan Review ID: ZON22-00051 Design Review ID: DRB22-00044
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### Citizen Participation Report for Texas Roadhouse

Date: August 9<sup>th</sup>, 2022

Purpose: The purpose of this Citizen Participation Report is to inform the City of Mesa of the actions made on behalf of and by Texas Roadhouse to inform the property owners within 1,000 feet of the proposed re-development of the existing Texas Roadhouse restaurant.

This site is located at 1605 S Stapley Drive on the southeast corner of S Stapley Drive and Interstate 60. This submission was made for a Major Site Plan Modification through the Planning and Zoning Board and City Council as well as Design Review Board (Architectural design and landscape architecture design. The Citizen Participation Plan, provided to the City of Mesa on January 28<sup>th</sup>, 2022, outlined Texas Roadhouse strategy to ensure those impacted by this development have an opportunity to learn about and comment on the proposal.

#### Contact (for citizen outreach):

Dave Stolberg, Real Estate Manager, Texas Roadhouse  
502.426.9984 | [sites@TexasRoadhouse.com](mailto:sites@TexasRoadhouse.com)  
6040 Dutchmans Lane  
Louisville, KY 40205

#### Contact (for application/submittal): Yelena

Yelena Fiester, Site Development Coordinator, GreenbergFarrow  
682.552.1572 | [yfiester@greenbergfarrow.com](mailto:yfiester@greenbergfarrow.com)  
7700 Windrose Avenue, Suite G300  
Plano, Texas 75024





**Pre-Submittal Meeting:** The pre-submittal meeting with the City of Mesa planning staff was held on April 13, 2021. Staff reviewed the application and recommended the following:

- All property owners within 1,000-feet of the proposed development be notified
- All registered neighborhood associations within 1-mile of the proposed development be notified
- All HOAs within ½-mile of the proposed development be notified
- Early outreach by Texas Roadhouse to the above parties

**Action Plan:** In order to provide effective citizen participation, the following actions were taken to provide the community with opportunities to understand and address any real or perceived impacts from the proposed development.

1. A contact list was developed for citizens and agencies in this area, including:
  - a. All property owners within 1,000-feet of the proposed development
  - b. All registered neighborhood associations within 1-mile of the proposed development
  - c. All HOAs within ½-mile of the proposed development

**Result:** Notification letters were sent out to 99 adjacent owners within 1,000 feet on January 28<sup>th</sup>, 2022. Attached is the List of Owners within 1,00 feet. Only one (1) letter came back as undeliverable:



Notification letters have been re-sent to the owners within 1,000 feet on August 5<sup>th</sup>, 2022 due to the revised site plan and a new date for the P&Z and public hearing meeting.

2. All persons on the above list received a letter including the following:
  - a. Project Description
  - b. Site Plan
  - c. Building Elevations
  - d. Contact Information (as listed above for citizen outreach)
  - e. Invitation to the citizen participation online meeting was sent out Wednesday, 01/26/2022. A proposed MS Teams audio meeting was held Wednesday February 9<sup>th</sup>, 2022 at 10:00AM CST/ 9:00 AM MST. Details to log in to the meeting were included in the notification letters: call in (audio only) +1 469-998-0888, code 799978630# United States, Dallas, Phone Conference ID:799 978 630#

**Result:** The citizen participation meeting provided an opportunity for citizens and agencies to learn about the proposed project, ask questions, raise concerns, and receive feedback. We had only one (1) participant



who provided his questions regarding this project: Ryan Bird with Gilbert/Bird Law Firm that represents the Owner of the parcel to the South of the proposed development, 139-10-008, Wasatch Equity Advisers, LLC. Mr. Bird requested the information regarding the next schedule Public Hearing and obtained additional information regarding the impacted parking during the construction. All required plans and Parking Agreement have been provided to Mr. Bird 02/15/2022 via e-mail. We also provided a confirmation of upcoming public hearing via e-mail 03/27/2022.

No other questions/concerns/requests for information from the adjacent owners have been received after re-sending the notification letters on August 5<sup>th</sup>, 2022.

**Proposed Schedule:**

Pre-Submittal Meeting: Tuesday, April 13, 2021.

**Action: 100% complete**

Mailings to applicable citizens and agencies: Wednesday January 26<sup>th</sup>, 2022.

**Action: 100% complete**

Mailings to applicable citizens and agencies: Friday August 5<sup>th</sup>, 2022.

**Action: 100% complete**

Citizen Participation Meeting: Wednesday February 9<sup>th</sup>, 2022.

**Action: 100% complete**

Submittal of Citizen Participation Report and Notification Materials: notifications letters have been mailed 08/05/2022 and Citizen Participation Report with supporting documents were provided to the City (attn. Evan Balmer) 08/09/2022.

**Action: 100% complete**

The 4'x4' Zoning hearing sign was posted on the property 08/08/2022. The photos of the sign and affidavit of posting were submitted to the City of Mesa 08/09/2022.





Planning & Zoning Board Hearing: August 24<sup>th</sup> , 2022 at 4:00 p.m.

**Attachments:**

- Public Hearing Notification Letters:
  - o List of property owners within 500' of the subject property
  - o Proof of letters were mailed
  - o Copy of the notification letter with site plan and color elevations
- Citizen Participation Plan:
  - o Ownership map and list of owners within 1000' of the subject property
  - o Proof of letters were mailed
  - o Copy of the notification letter that was sent out as a part of the Citizen Participation Plan process
- Notification of sign posting and Affidavit
- Owner's signed & notarized Prop 207 Waiver

End of Memorandum