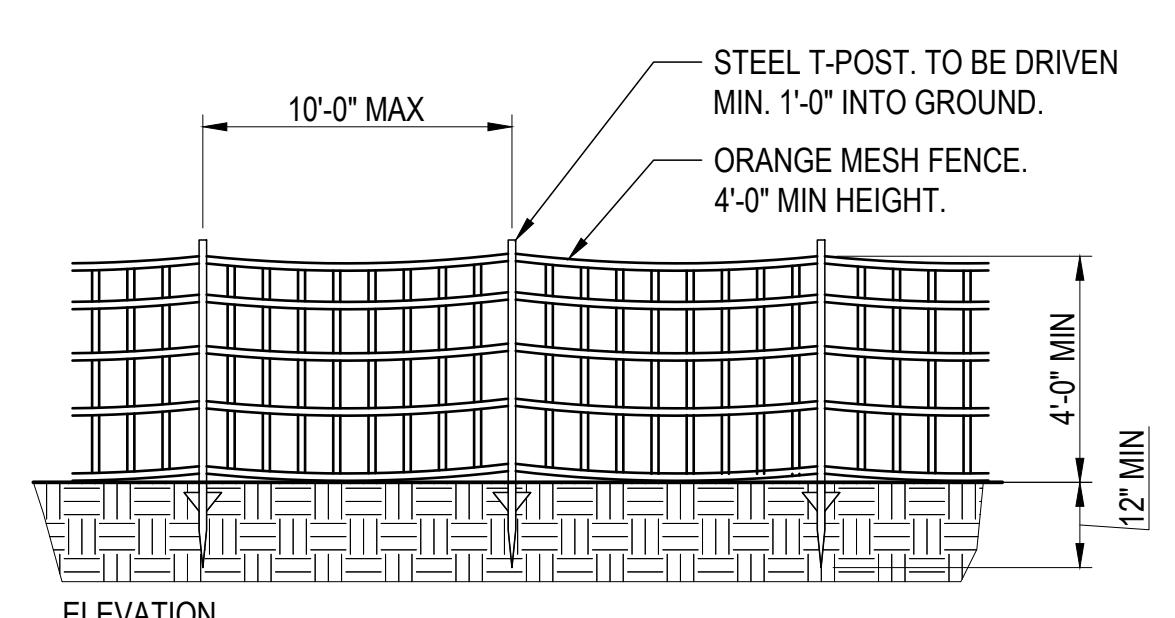
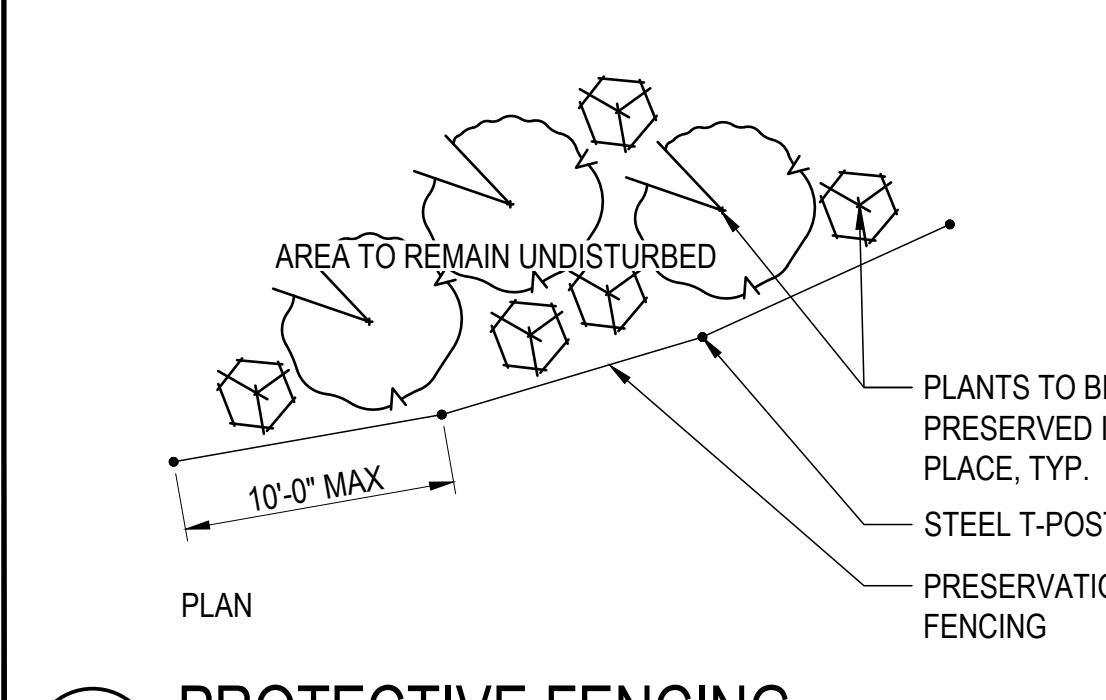
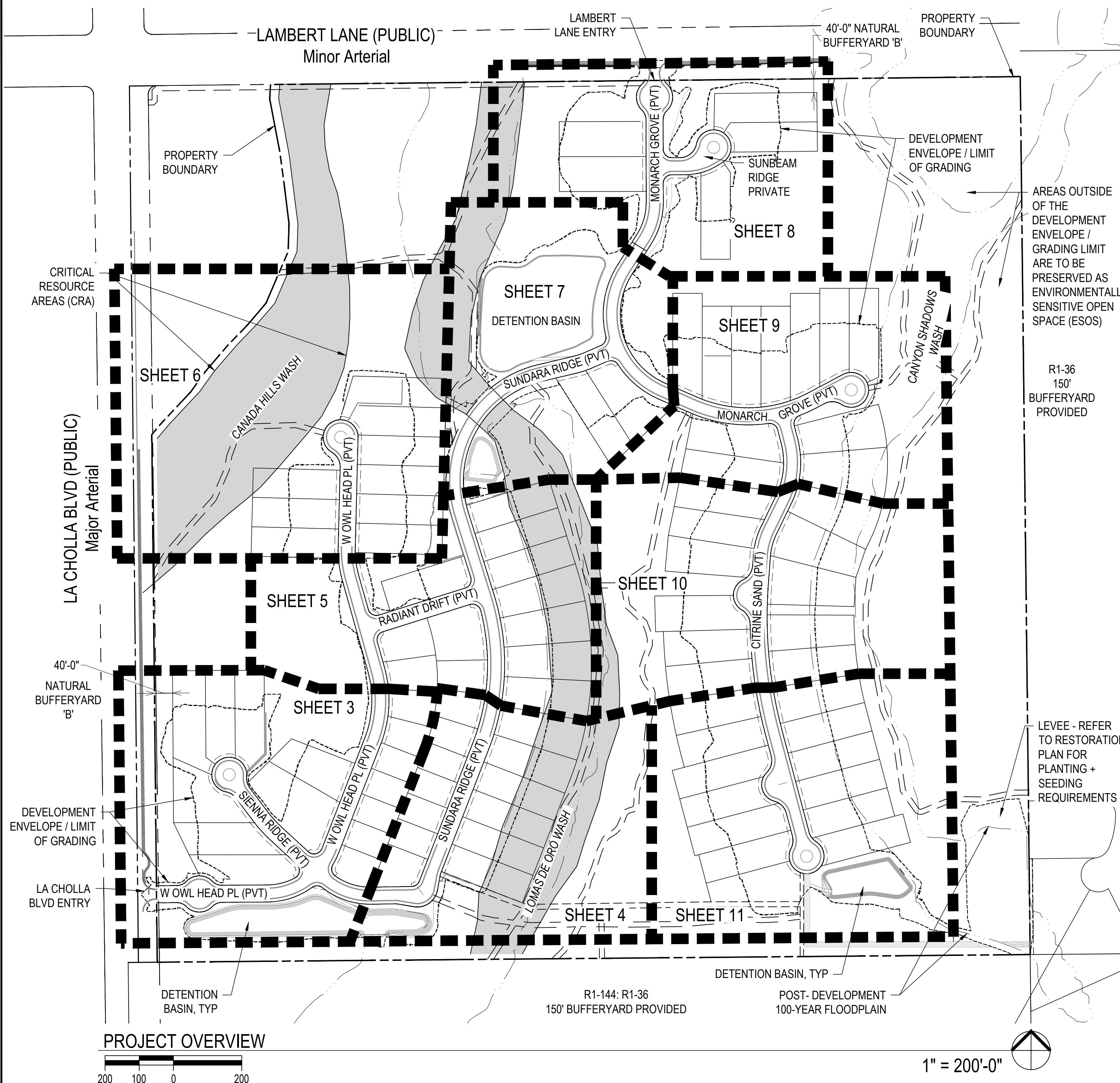


FINAL LANDSCAPE AND IRRIGATION PLAN

SUNDARA RIDGE LOTS 1 THROUGH 91

2101153

FINAL SITE PLAN CASE #2201777
GRADING PERMIT #2500131



NOTES:

- When excavating within 4'-0" from dripline of plants to be preserved in place, hand clear to minimize damage to root systems.
- If roots are encountered during excavation, redirect roots into existing soil areas where possible. If redirection is not possible, cut roots cleanly with sharp pruning instruments.
- Do not allow exposed and/or pruned roots to dry out. Provide temporary cover with peat moss, wrap with burlap, and maintain in a moist condition. Support and protect roots from further damage until they are permanently covered with soil.
- Existing Utilities: Utilities may exist which are not known and not shown on Plans. The Contractor shall take precautionary measures to protect all utilities on site. Prior to excavating, the Contractor shall verify the location of underground utilities. A minimum of two days prior to excavating, the Contractor shall request identification of underground utilities by calling Blue Stake at 811.

NTS

LANDSCAPE GENERAL NOTES

1. Gross area of development is 145.20 acres.

2. Total acres of graded area: 52.10 acres (2,269,657.76 SF).

3. Total undisturbed area: 93.10 acres (an additional 15.8 acres of temporary graded area will be restored, resulting in 108.90 acres of Open Space, or 75% of Site). This shall be preserved as Environmentally Sensitive Open Space (ESOS).

4. The project has been administratively exempted by the Town of Oro Valley from the native vegetation preservation requirements due to the amount of ESOS to be preserved on site. The project disturbance limits have been surveyed and no distinct vegetation designated as a core resource area, nor native plants that are considered threatened or endangered under the Endangered Species Act or highly safeguarded by the Arizona Department of Agriculture were observed. No mitigation of plant material within the Limit of Grading is required. Transplanting of native plant material within the project disturbance limits is encouraged.

5. Landscape Bufferyards:

North and West: 40' Natural Desert Bufferyard

East and South: 150' Bufferyards provided per FSP Planning General Note 7.

6. Assurances for landscaping and re-vegetation bonds must be posted prior to issuance of grading permits. A landscape bond in the amount of 10% of the original landscape bond shall remain in place for a period of one year from the complete installation of landscape materials and any replacement materials.

7. Property owner shall maintain buffer yard plantings to ensure unobstructed visibility to motorists. All shrubs, accents, and groundcovers shall not exceed thirty (30") inches in height within site visibility triangles. Trees within site visibility triangles will be maintained to ensure that branches/foliation is not below a height of six (6') feet.

8. Property owners, lessees, and occupants shall maintain required landscape, irrigation, buffering, screening and rainwater harvesting system improvements per the approved plans.

9. In the event of abandonment of the site after grading/disturbance of natural areas, disturbed areas shall be re-vegetated with a non-irrigated hydro seed mix from OVZCR Addendum D: Approved re-vegetation seed mix.

10. All plant material shall meet the minimum standards contained in the current editions of the Arizona Nursery Association's Growers Committee Recommended Tree Specifications and the American Association of Nurserymen as to size, condition and appearance.

11. Property owner is responsible for maintaining the temporary irrigation system as long as necessary in order to transition plants over to natural sources. Any plant materials that dies in transition, for any reason, shall be replaced in accordance with Sec. 27.6.E.4., Maintenance.

12. Any spaded or boxed tree transplanted on site that dies due to neglect or lack of maintenance shall be replaced with the same size and species of the original salvaged tree, as required by the approved salvage and mitigation plan.

13. The limits of grading shall be staked in the field, in accordance with Section 27.6.B.7.c.i of the Zoning Code. Disturbance outside the approved grading limits shall not be permitted.

14. Property owner is responsible for maintaining the temporary irrigation system as long as necessary in order to transition plants over to natural sources. Irrigation shall be reduced three years after issuance of the first certificate of occupancy. Metered water use for landscape irrigation shall be reduced by fifty percent, five years from the date of the issuance of the certificate of occupancy.

15. Protection of plants to be Preserved-in-Place: All areas designated to remain undisturbed shall be fenced prior to the start of site disturbance with a highly visible fence (refer to Fencing Detail). Fencing shall remain in place for the duration of construction.

16. No salvage of plants regulated by the Endangered Species Act and/or the Arizona Native Plant Law may occur without the issuance of the appropriate permit by the State Department of Agriculture.

17. Landscape materials shall not obstruct sight distances or vehicle turning movements.

18. Landscaped areas that are susceptible to damage by pedestrian or auto traffic shall be protected by appropriate curbs, tree guards or other devices.

19. Landscape shall be designed to minimize sediment, sand and gravel being carried into the streets from storm water or other runoff.

20. Landscape plan enables adequate plant spacing to ensure survivability at plant maturity.

21. Deep rooted vegetation and trees shall not be planted closer than 7.5' from a public water line. Exceptions for alternative design solutions such as root barriers shall be considered on a case by case basis.

22. Curb-way consisting of inorganic groundcover or plants not to exceed type 2 water use shall be provided between curb and all sidewalks.

23. All landscaped areas to be finished with either seed mix or a 2" minimum depth inorganic groundcover.

24. The Contractor shall obtain all necessary and or required permits required to install the work on the approved Plans.

25. Work shall be in accordance with the requirements of the Town of Oro Valley Code.

26. The Contractor shall be appropriately licensed as required by the State of Arizona.

27. Existing Utilities: Utilities may exist which are not known and not shown on Plans. The Contractor shall take precautionary measures to protect all utilities on site. Prior to excavating, the Contractor shall verify the location of underground utilities. A minimum of two days prior to excavating, the Contractor shall request identification of underground utilities by calling Blue Stake at 811.

REZONING CONDITIONS

- The roadway crossing over the Lomas de Oro Wash shall be designed to be a wildlife permeable bridge that does not impede wildlife movement within the wash.
- The following general notes listed on the Tentative Development Plan are conditions of approval:

a. Maximum number of lots: 91

b. Minimum lot size: 10,000 sq. ft.

c. Maximum number of 10,000 sq. ft. minimum lot size lots: 18

d. Minimum number of 1/4-acre minimum lot size lots: 73

e. Internal building setbacks

i. Front: 10 feet (minimum 20 feet for vehicle parking)

ii. Side: 7.5 feet

iii. Rear: 20 feet

f. Maximum building height

i. 1-story: 20 feet

ii. 2-story: 28 feet

g. Minimum percent of open space/common area: 75%

h. Minimum percent of environmentally sensitive open space: 71%

i. Corner lots restricted to single-story

j. No more than two 2-story homes shall be located side-by-side on the same street

k. Oro Valley Trail #161 will be protected as a non-motorized public access trail easement

l. No roadway connections will be allowed between this development and the Rancho Feliz neighborhood to the east

3. All proposed drainage basins to be landscaped to reduce the visibility of the disturbed areas.

4. The off-line drainage basin adjacent to the critical resource area, must be thoroughly landscaped around the perimeter and internally, to reduce the visibility of the disturbed area.

5. Lots restricted to single-story are depicted on the tentative development plan dated 5.10.2016

6. In accordance with section 11.13.11 of the Town of Oro Valley Drainage Criteria Manual, the applicant shall reduce the post-development outflow of drainage from the Lomas de Oro and Canyon Shadows Washes, or provide other means as approved by the Town Engineer to improve the existing drainage within the downstream area. The reduction shall be to an amount that has the effect of making existing residential structures located on immediately adjacent downstream properties, as shown on the Tentative Development Plan, eligible to be removed from the Town and FEMA floodplain.

a. The regional on-site detention depicted on the Tentative Development Plan and discussed in the site analysis shall be designed and constructed so that the existing 100-year Lomas de Oro Wash peak flow is reduced by 10% where it exits the project's southern boundary. Furthermore, the basin shall be dedicated by the developer to the Town of Oro Valley upon successful inspection and acceptance by the Town Engineer and prior to the release of building permits.

b. If the applicant is unable to construct the proposed off-site improvements depicted on the Tentative Development Plan and discussed in the site analysis, an on-site solution must be established and approved by the Town Engineer.

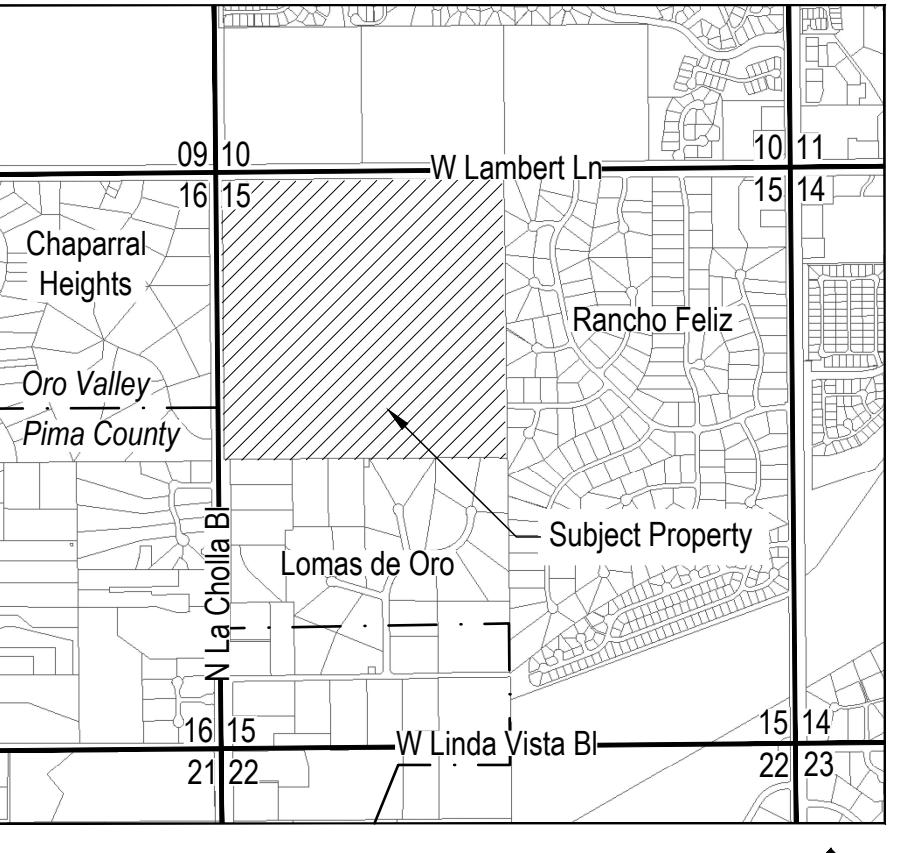
7. All critical drainage elements designed to protect downstream property owners must be in place by the onset of grading activities, as approved by the Town Engineer. The basins are to be in place and functional at the beginning of project construction to capture runoff and improve downstream conditions.

8. The applicant shall dedicate 55' of new right-of-way along the property's La Cholla Boulevard frontage.

9. The applicant shall provide a 30' easement along a portion of the new La Cholla Boulevard right-of-way for drainage improvements.

10. The applicant shall construct a controlled access intersection (e.g. right-in/right-out) or make other necessary improvements for safe sight visibility at the La Cholla access drive location as approved by the Town Engineer if this project is constructed prior to the La Cholla Boulevard widening project.

11. The applicant shall construct a multi-use path the length of the property's frontage along the south side of Lambert Lane.



LOCATION MAP
Most of the northwest quarter of Section 15, Township 12 South, Range 13 East, G. & S.R.M., Oro Valley, Pima County, Arizona

LANDSCAPE BUFFERYARDS

Location	Adjacent Zoning	Provided Buffer	Buffer Dimension
NORTH	Lambert Lane (Minor Arterial)	Bufferyard 'B'	40' x 2636'
EAST	R1-36	150' Wide Natural Desert	150' x 2644'
SOUTH	R1-144	150' Wide Natural Desert	150' x 2638'
WEST	La Cholla Blvd (Major Arterial)	Bufferyard 'B'	40' Wide Natural Desert

SHEET INDEX

- LANDSCAPE COVER
- LANDSCAPE SCHEDULES + DETAILS
- LANDSCAPE PLANS
- LANDSCAPE DETAILS
- IRRIGATION COVER + SCHEDULES
- IRRIGATION PLANS
- IRRIGATION DETAILS
- SEEDING SPECIAL PROVISIONS + SEED MIXES
- IRRIGATION + PLANTING SPECIAL PROVISIONS
- TRAILS

OWNER

FUTURE ARIZONA INC.
1555 N. ASTOR STREET, APT 28W
CHICAGO, IL 60610
ATTENTION: ALEXIS FASSEAS
EMAIL: ALXS@ME.COM
PHONE: 312-961-2750

DEVELOPER

FUTURE ARIZONA INC.
1555 N. ASTOR STREET, APT 28W
CHICAGO, IL 60610
ATTENTION: ALEXIS FASSEAS
EMAIL: ALXS@ME.COM
PHONE: 312-961-2750

ENGINEER

LJA ENGINEERING, INC.
1860 E RIVER RD SUITE 325
TUCSON, AZ 85718
PHONE: 520-257-3400
ATTENTION: ROB SCHLICHER, PE
RSCHLICHER@LJA.COM

LANDSCAPE ARCHITECT

WILDER LANDSCAPE ARCHITECTS
2738 E. ADAMS STREET
TUCSON, AZ 85716
PHONE: 520-320-3936
ATTENTION: JENNIFER PATTON, PLA
JENNIFER@WILDERLA.COM

DATE	DESCRIPTION
TEAM DESIGN	TEAM DRAWN
SCALE: H: V:	JP CHKD
JOB No.	
DATE: 6/19/2024	
Digitally signed by Bayer Vella DN: S-US-E-bvella@orovalleyaz.gov, O: Town of Oro Valley, OU:Planning Division, CN:Bayer Vella Reason: Emmasue Date: 2025.01.30 14:35:12-07'00'	
TOV CASE # 2101153	
RELATED CASE # OV914-009 OV210731 OV114-018	
Contact Arizona 811 at least two full working days before you begin excavation	
ARIZONA 811 Call 811 or click Arizona811.com	

LJA Engineering, Inc.
1860 E River Rd Suite 325
Tucson, AZ 85718
Phone: 520.257.3400

PLANTING - SALVAGE AND NURSERY STOCK

- There is no required plant salvage on this project due to the amount of open space being preserved. However, plant salvage and transplant is encouraged by the Town of Oro Valley.
- The tree and cacti / succulent species, as well as several shrubs, included on the plant list are local to the site. There are numerous plants on site of an age and size that are conducive to salvage and transplanting.
- Site-salvaged plants are encouraged to be used in addition to / instead of the the nursery stock sizes specified in the plant schedule.

PLANT MATERIAL SCHEDULE

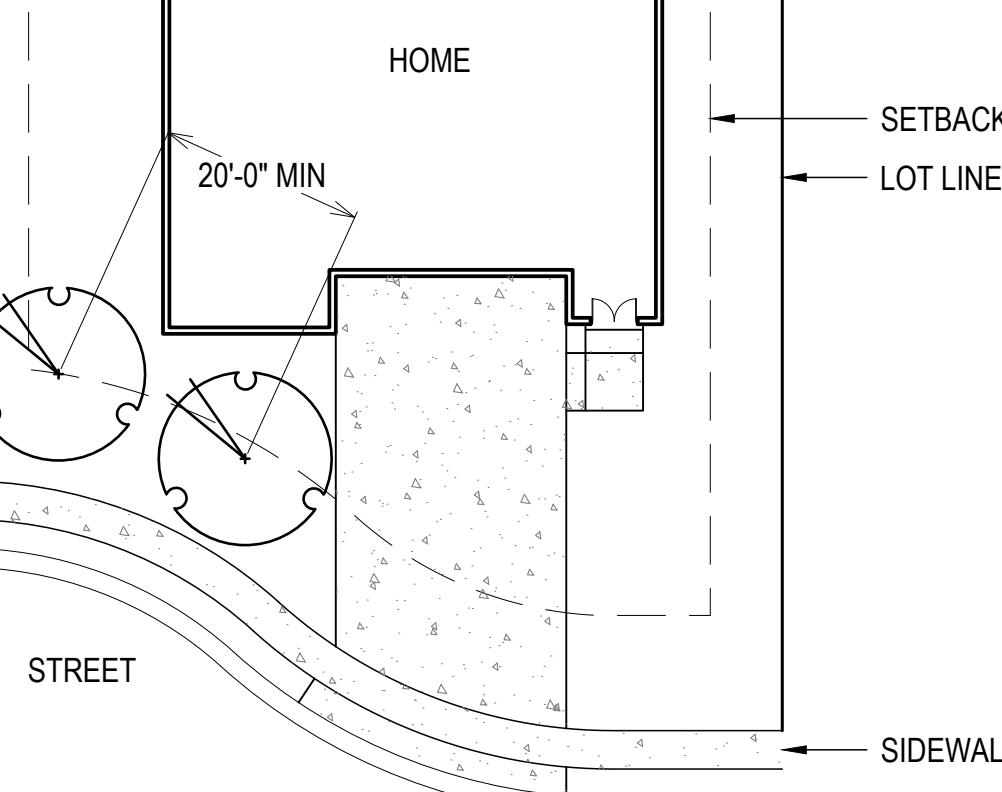
SYMBOL	BOTANICAL NAME COMMON NAME	SIZE	QTY	MIN. H / CALIPER	WATER NEED	ANNUAL MATURE USE (GAL) PER PLANT	ANNUAL WATER USE (GAL) TOTAL	MONTHLY WATER USE (GAL) TOTAL
Trees								
	Oineya tesota Ironwood	15 Gal	37		1	2,741	101,417	8,451
		24" Box	11		1	2,741	30,151	2,513
		36" Box	1		1	2,741	2,741	228
	Parkinsonia florida Blue Palo Verde	15 Gal	21		2	5,702	119,742	9,979
		15 Gal	79		1	1,754	138,566	11,547
		24" Box	6		1	1,754	10,524	877
	Prosopis velutina Native Velvet Mesquite	15 Gal	10		2	5,702	57,020	4,752
		15 Gal	35		1	1,754	61,390	5,116
		36" Box	6		1	1,754	105,240	8,770
Shrubs								
	Abutilon palmeri Palmer's Abutilon	5 Gal	30		2	57	1,710	143
	Ambrosia deltoidea Triangle-leaf Bursage	5 Gal	45		1	39	1,755	146
	Calliandra eriophylla Native Fairy Duster	5 Gal	198		1	70	13,860	1,155
	Celtis pallida Desert Hackberry	5 Gal	69		2	634	43,746	3,646
	Dalea pulchra Indigo Bush	5 Gal	55		2	158	8,690	724
	Larrea tridentata Creosote	5 Gal	56		1	632	35,392	2,949
	Lycium berlandieri Berlandier's Wolfberry	5 Gal	19		1	281	5,339	445
	Lycium fremontii Fremont's Wolfberry	5 Gal	88		1	281	24,728	2,061
	Sphaeralcea ambigua Globe Mallow	5 Gal	92		1	39	3,588	299
	Viguiera deltoidea Goldeneye	5 Gal	100		2	57	5,700	475
	Ziziphus obtusifolia Graythorn	5 Gal	110		1	281	30,910	2,576
Succulents								
	Carnegiea gigantea Saguaro	5 Gal	20		1	2,741	54,820	4,568
	Cylindropuntia fulgida Chain Fruit Cholla	5 Gal	12		1	158	1,896	158
	Cylindropuntia leptocaulis Christmas Cholla	5 Gal	31		1	158	4,898	408
	Cylindropuntia versicolor Staghorn Cholla	5 Gal	23		1	158	3,634	303
	Ferocactus wislizeni Fishhook Barrel	5 Gal	65		1	10	650	54
	Opuntia engelmannii Prickly Pear	5 Gal	43		1	158	6,794	566
	Opuntia santa-rita Purple Prickly Pear	5 Gal	4		1	158	632	53
	Yucca elata Soaptree Yucca	15 Gal	3		1	281	843	70
Total Water Use at Maturity						886,900	73,908	

GROUNDCOVER AND BOULDER SCHEDULE

SYMBOL	ITEM	QTY	SIZE / COLOR / SUPPLIER	APPLICATION AREA	NOTES / DETAIL
Not Shown	Seed Mix 1: Basin + Back of Sidewalk	PER PLAN	Per Seed Mix 1, Sheet 20 Seed & Hydroseed Applicator: Jim Lochner, Grasslands Reclamation & Seeding, 520-869-1697	Back of Sidewalk to Limits of Grading, Detention Basins, and all other disturbed site areas noted on Plan.	Detail 4, Sheet 2 and Seeding Special Provisions, Sheet 20.
Not Shown	Desert Carpet (Rock Mulch with Seed Mix 2) 40% rock coverage; 60% open soil	PER PLAN	Rock Mulch: 1" - 4" Rip Rap, Apache Gold Kalamazoo Materials, 520-575-9601 Seeding: per Seed Mix 2, Sheet 20. To be applied via hydroseeding. Seed & Hydroseed Applicator: Jim Lochner, Grasslands Reclamation & Seeding, 520-869-1697	Curbways (back of curb to sidewalk) and planting islands within roadways.	Details 3-5, Sheet 2 and Seeding Special Provisions, Sheet 21. Rock to be applied at 40% coverage (there will be 60% open soil). Hydroseed to be applied after soil preparation (furrows perpendicular to flow of water) and placement of rock mulch.
	Boulder, Surface Select	2: 3 EA 3: 23 EA 4: 18 EA	Surface Select Kalamazoo Materials 520-631-3775	N/A	Detail 6, Sheet 2

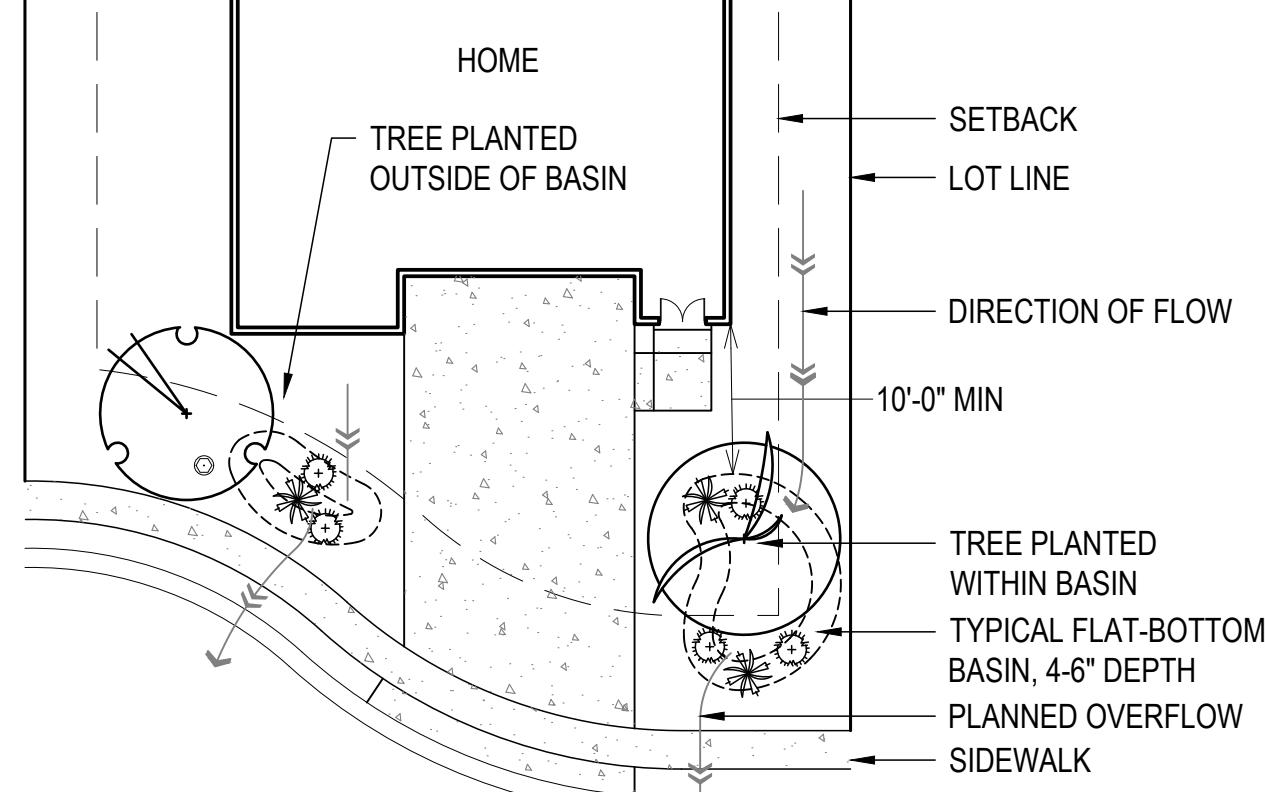
HYDROSEEDING

- Hydroseed shall be applied to all disturbed site areas that are not otherwise improved.
- The hydroseeding is a three-step process - refer to the Seeding Special Provisions on Sheet 20. Step 1: Soil is prepared as described above, and amended per the Seeding Specials. Step 2: Hydroseed is applied per the Seeding Specials. Step 3: Mulch is applied on top of the seed. When seeding is combined with Rock Mulch (Desert Carpet), the rock is applied after soil has been prepared, and BEFORE seed is applied.
- Prior to hydroseeding, all areas to be seeded shall be scarified to a minimum depth of 3" (part of Step 1, above). Furrows shall be parallel to site contours. Refer to Soil Furrowing detail, this Sheet. Soil shall be left in a roughened condition. Exposed rocks / clumps of soil less than 4" in diameter may be left in place.



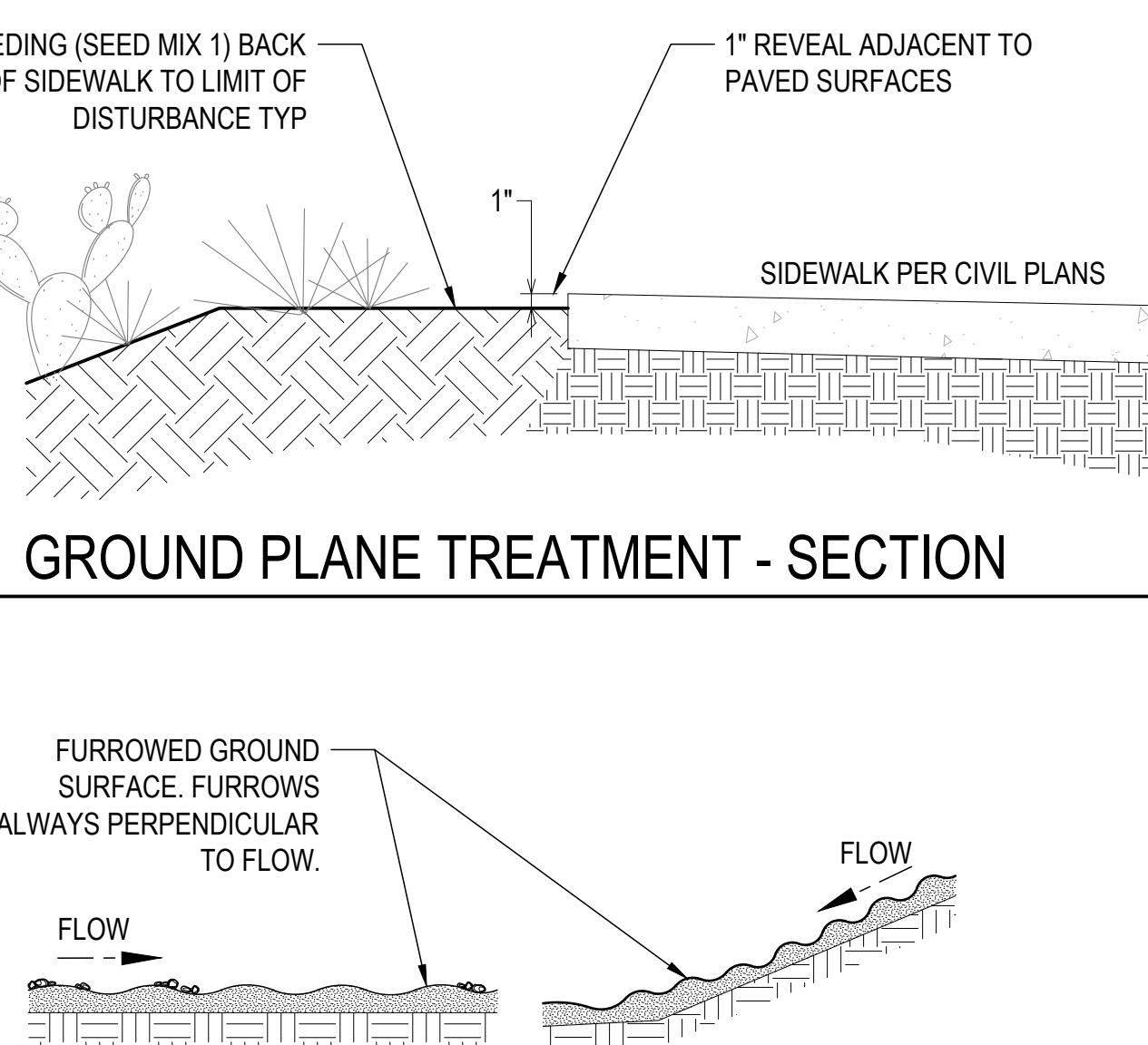
NOTES:
1. Front yard landscape shall comply with the Town of Oro Valley Zoning Code, 27.6.C.2.c Landscape Standards. Two nursery trees, Type 1 or 2 water use and a minimum of 24" box size, shall be planted in the front yard.
2. Minimum spacing for mesquites and palo verdes (trunk to trunk) is 20' on center.
3. Location and species of trees to be determined by the homeowner or developer.
4. This detail is illustrative, with elements shown for context - actual site conditions will vary.

1 FRONT YARD PLANTING, CODE MINIMUM

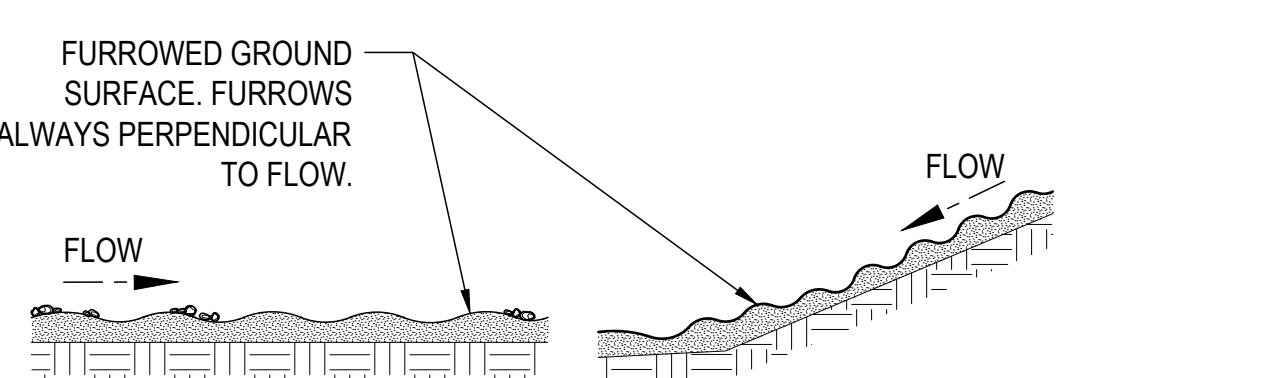


NOTES:
1. Passive water harvesting (basins) shall be incorporated into front yard landscape to supplement irrigation and encourage infiltration of rainwater (Town of Oro Valley Zoning Code, 27.6.D.4.c.ii).
2. Basins will be a minimum of 10' from building foundation, and a minimum of 1' from the edge of walkways and driveways.
3. Tree species will determine placement in relation to basin - either in or outside of basin.
4. All basins will have planned overflow away from structures.

2 WATER HARVESTING, REQUIRED

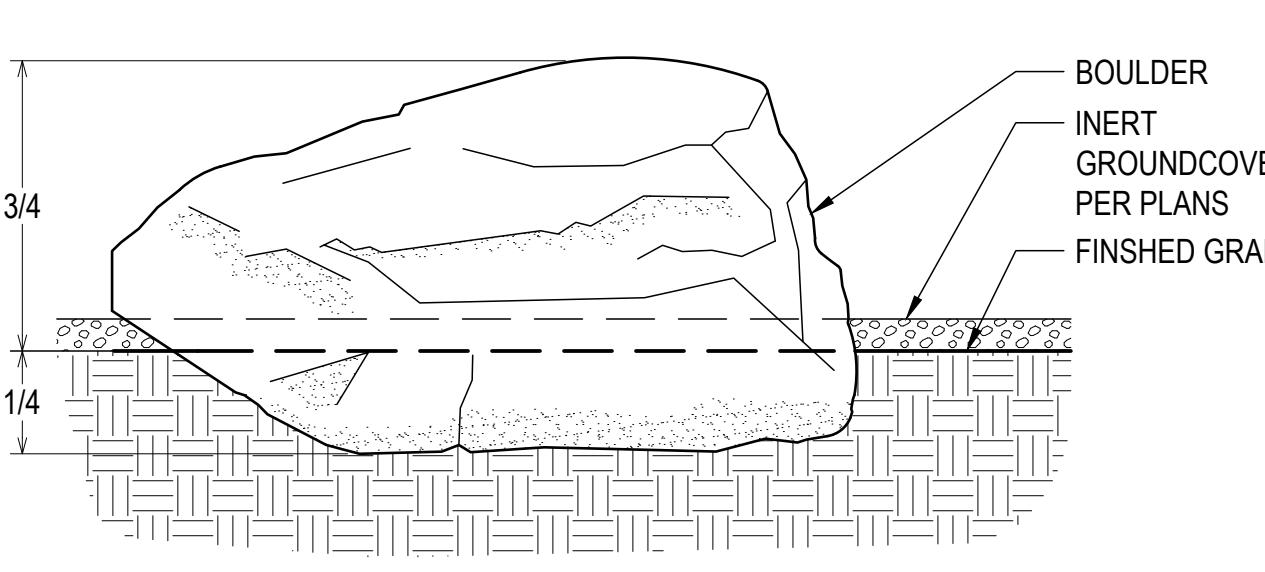


3 GROUND PLANE TREATMENT - SECTION



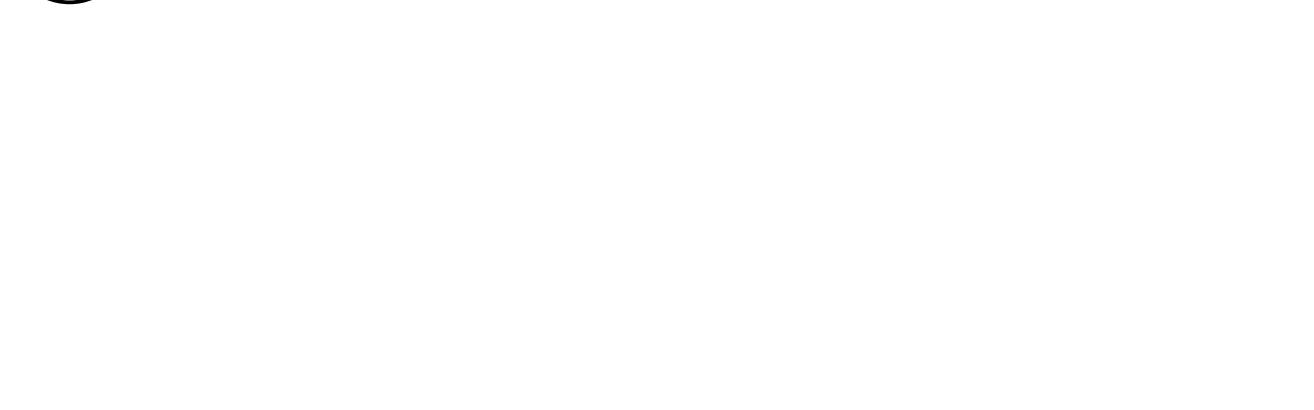
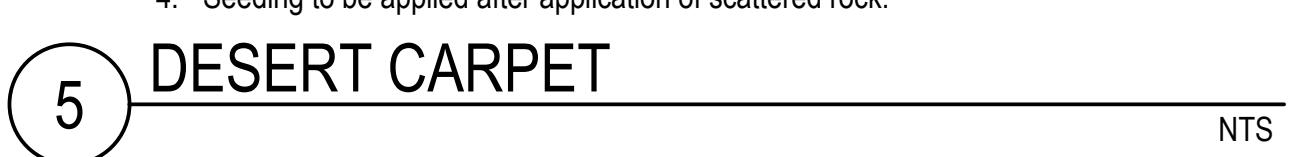
NOTES:
1. Ground surface to be furrowed along contour prior to seeding and after completion of all work in the area.
2. Depth and spacing of furrows per Specifications.
3. Intent of furrows is to slow stormwater runoff, and aid in seed germination.
4. Seeding to be applied after planting and irrigation is complete.

4 SOIL FURROWING (TO BE USED WITH SEEDING)

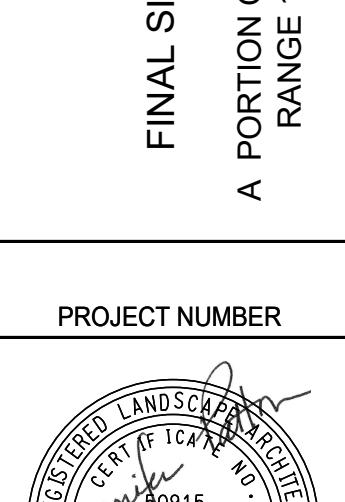
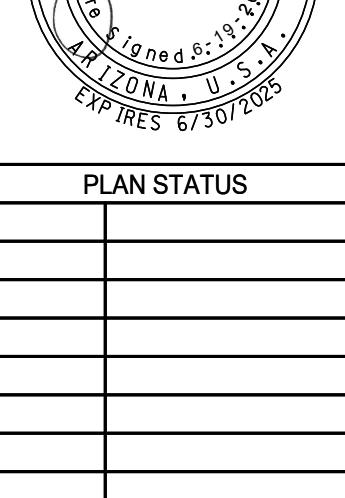


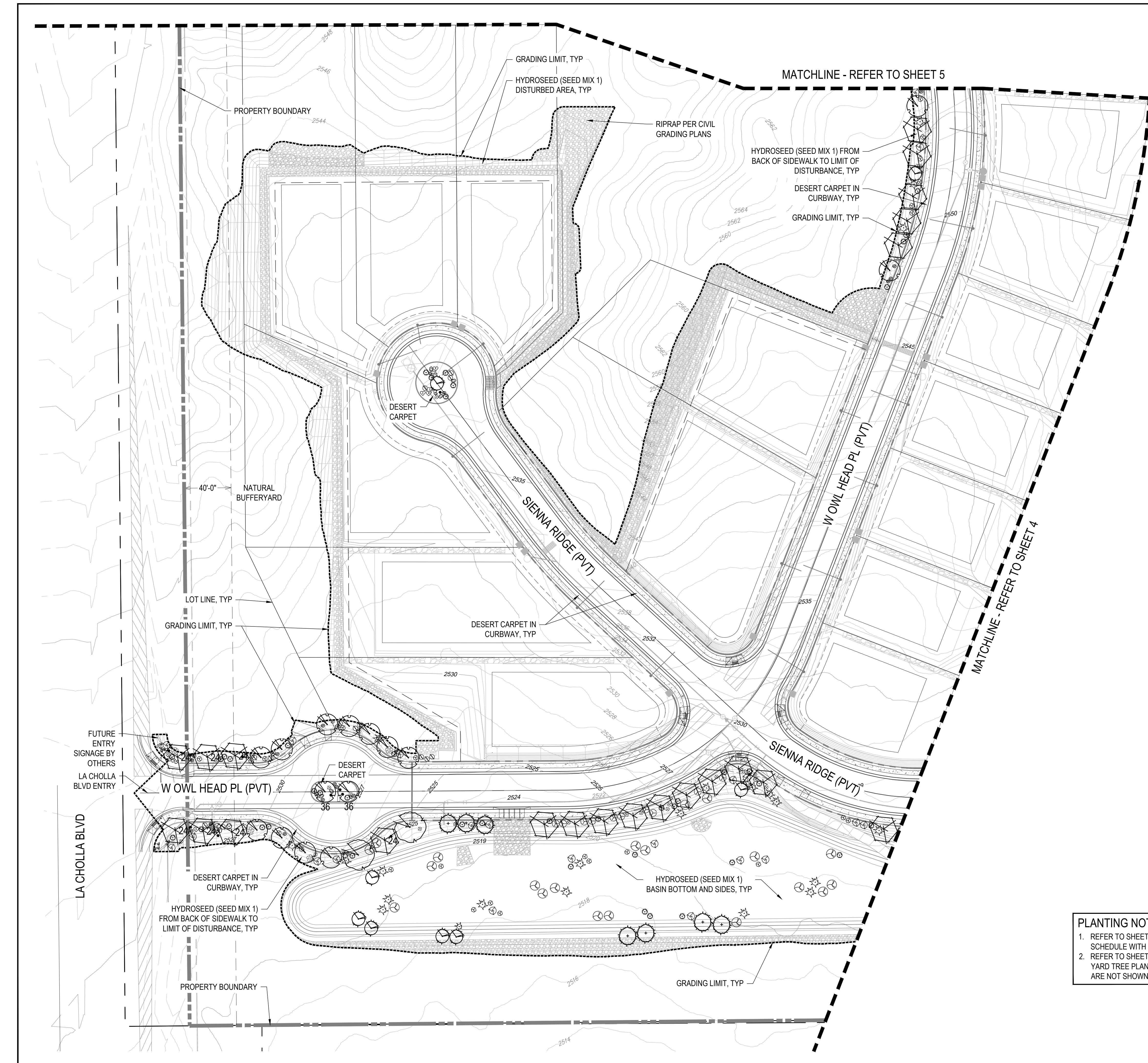
NOTES:
1. Set boulder with 1/4 of boulder below finished grade.
2. Set boulder firmly to prevent rocking. Hand compact soil around edge of boulder.
3. Place inert groundcover (per Plans and Specifications) after setting boulder.
4. Boulders with weathered surface shall be placed with weathered surface exposed.

6 BOULDER PLACEMENT



NOTES:
1. Set boulder with 1/4 of boulder below finished grade.
2. Set boulder firmly to prevent rocking. Hand compact soil around edge of boulder.
3. Place inert groundcover (per Plans and Specifications) after setting boulder.
4. Boulders with weathered surface shall be placed with weathered surface exposed.





LANDSCAPE PLAN

SCALE: 1" = 40'-0"

40 20 0 40

SYMBOL / LINETYPE LEGEND

PROPERTY BOUNDARY
LIMIT OF GRADING
DRAINAGE EASEMENT
EXISTING CONTOUR
PROPOSED CONTOUR
POST- DEVELOPMENT 100-YEAR FLOODPLAIN
TRAIL PER CIVIL PLAN
CRITICAL RESOURCE AREA
PROPOSED RIP RAP, REFER TO CIVIL PLANS
SITE VISIBILITY TRIANGLE

LJA Engineering, Inc.

1880 E River Rd Suite 325,
Tucson, AZ 85718
Phone 520.257.3400



LJA
Engineering, Inc.
1880 E River Rd Suite 325,
Tucson, AZ 85718
Phone 520.257.3400
© Wilder Landscape Architects LLC

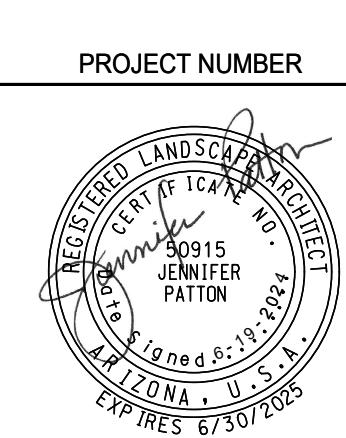
LANDSCAPE PLANS

SUNDARA RIDGE

FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN

A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH, RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA

2101153



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JENNIFER PATTON

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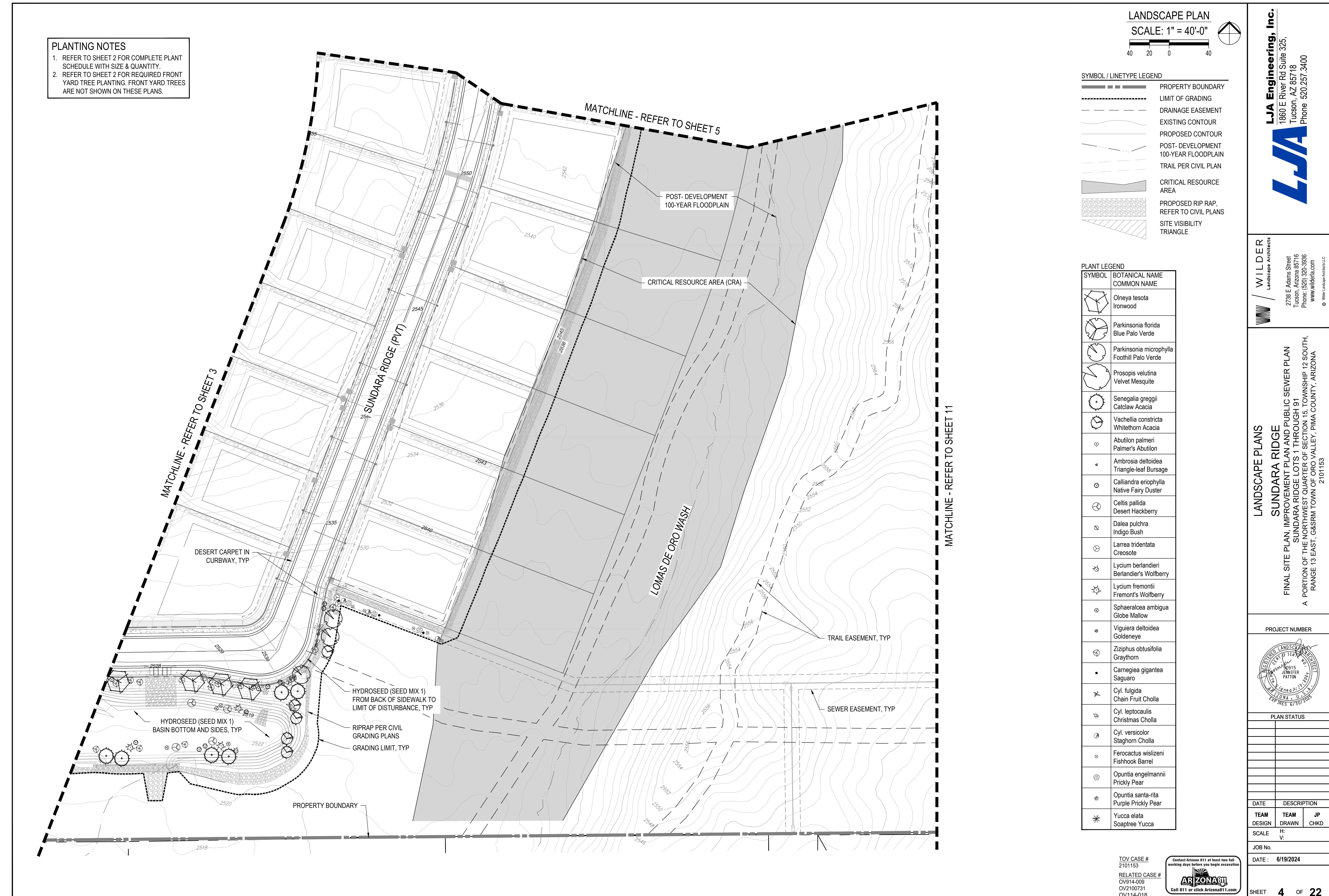
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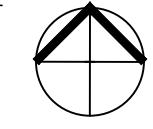
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LANDSCAPE PLAN

SCALE: 1" = 40'-0"

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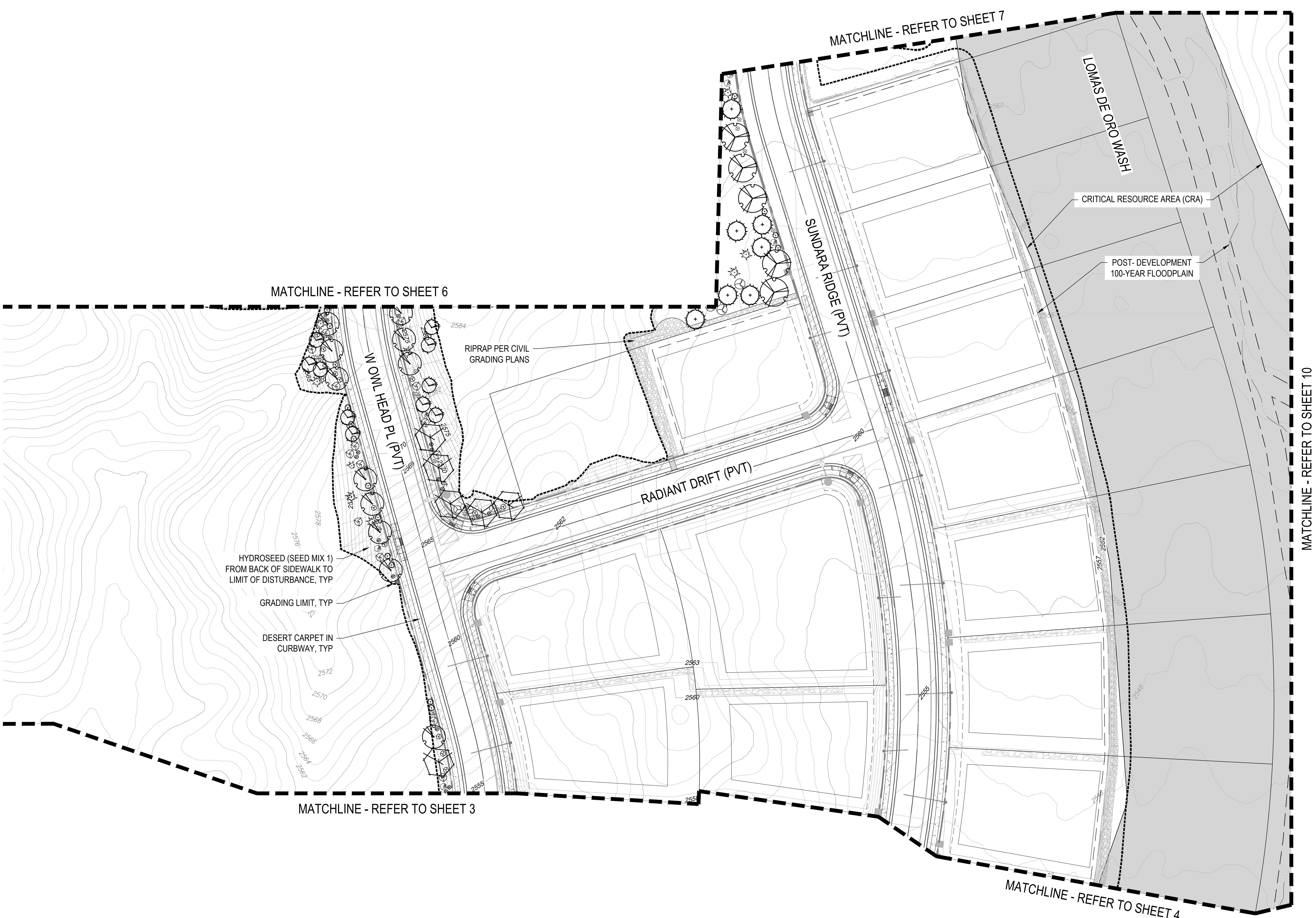
SYMBOL / LINETYPE LEGEND

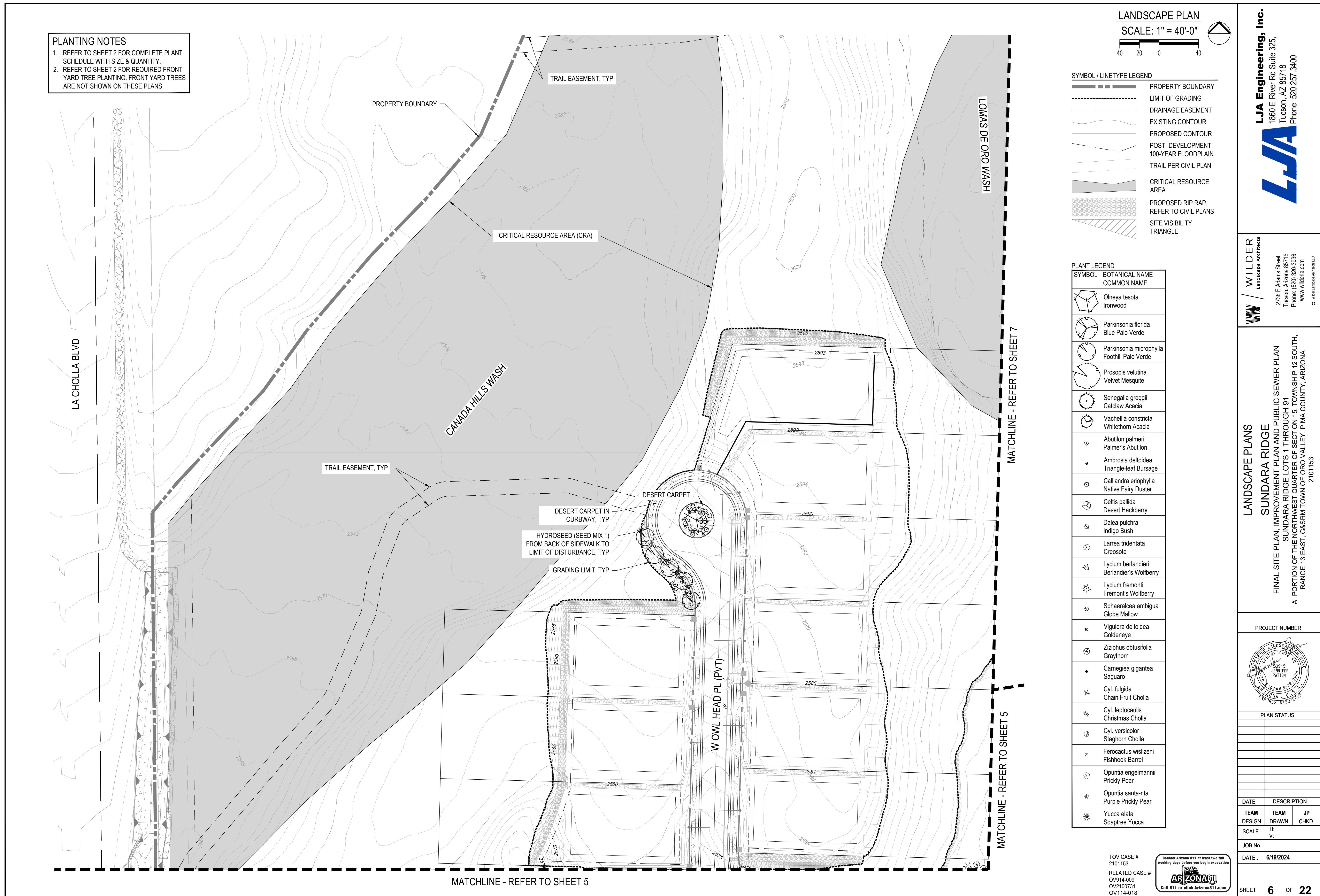
	PROPERTY BOUNDARY
	LIMIT OF GRADING
	DRAINAGE EASEMENT
	EXISTING CONTOUR
	PROPOSED CONTOUR
	POST- DEVELOPMENT 100-YEAR FLOODPLAIN
	TRAIL PER CIVIL PLAN
	CRITICAL RESOURCE AREA
	PROPOSED RIP RAP, REFER TO CIVIL PLANS
	SITE VISIBILITY TRIANGLE

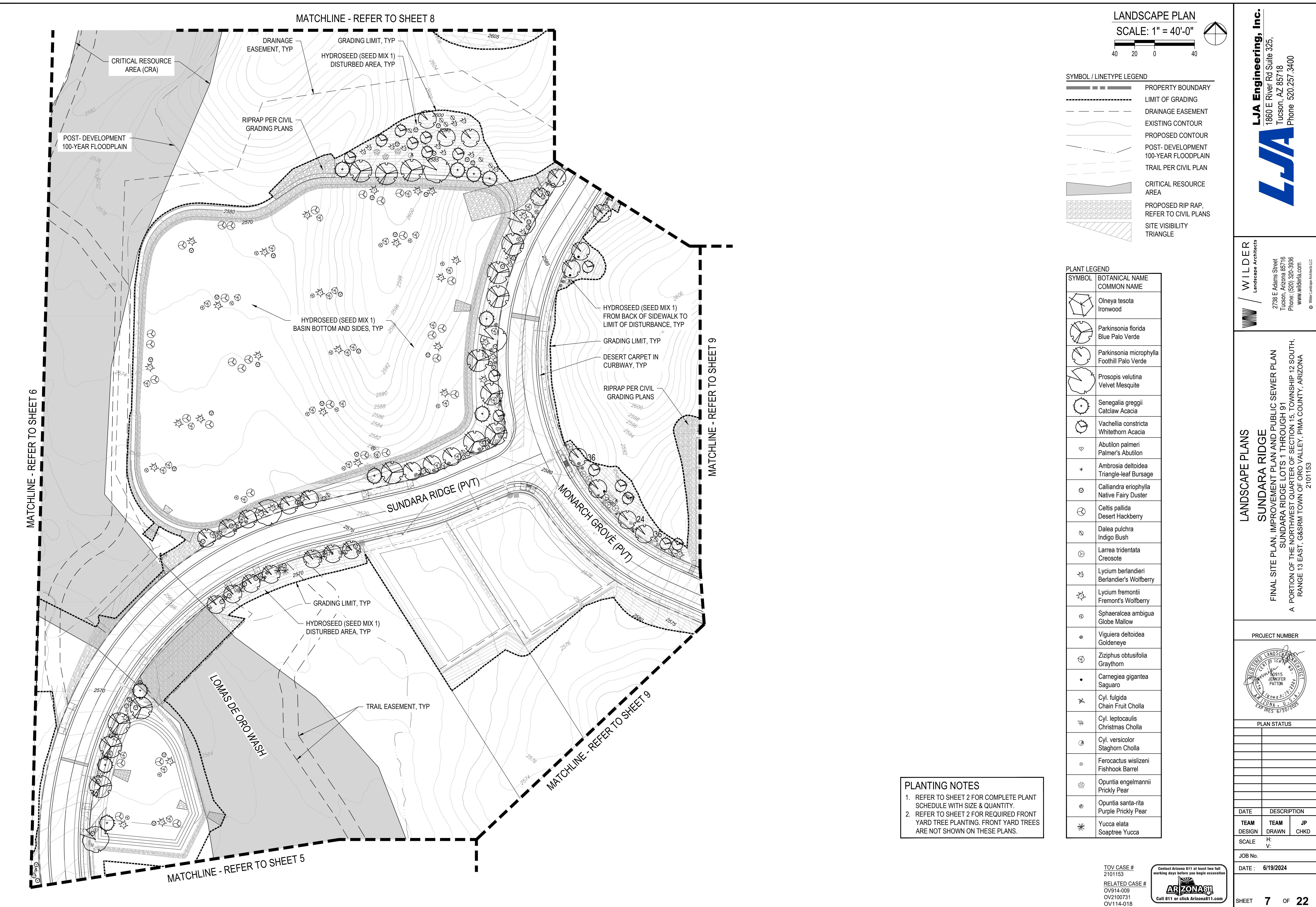
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 1880 E River Rd Suite 325,
 Tucson, AZ 85718
 Phone 520.257.3400


SYMBOL	BOTANICAL NAME	COMMON NAME
	Olneya tesota	Ironwood
	Parkinsonia florida	Blue Palo Verde
	Parkinsonia microphylla	Foothill Palo Verde
	Prosopis velutina	Velvet Mesquite
	Senegalia greggii	Catclaw Acacia
	Vachellia constricta	Whitethorn Acacia
	Abutilon palmeri	Palmer's Abutilon
	Ambrosia deltoidea	Triangle-leaf Bursage
	Calliandra eriophylla	Native Fairy Duster
	Celtis pallida	Desert Hackberry
	Dalea pulchra	Indigo Bush
	Larrea tridentata	Creosote
	Lycium berlandieri	Berlandier's Wolfberry
	Lycium fremontii	Fremont's Wolfberry
	Sphaeralcea ambigua	Globe Mallow
	Viguiera deltoidea	Goldeneye
	Ziziphus obtusifolia	Graythorn
•	Carnegiea gigantea	Saguaro
	Cyl. fulgida	Chain Fruit Cholla
	Cyl. leptacaulis	Christmas Cholla
	Cyl. versicolor	Staghorn Cholla
	Ferocactus wislizeni	Fishhook Barrel
	Opuntia engelmannii	Prickly Pear
	Opuntia santa-rita	Purple Prickly Pear
	Yucca elata	Soaptree Yucca

LANDSCAPE PLANS		
SUNDARA RIDGE		
FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN		
A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH, RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA		
2101153		
PROJECT NUMBER		
 2101153 JENNIFER PATTON EXP. 6/30/2025		
PLAN STATUS		
DATE DESCRIPTION		
TEAM DESIGN	TEAM DRAWN	JP CHKD
SCALE H: V:		
JOB No.		
DATE 6/19/2024		
TOV CASE # 2101153		
RELATED CASE # OV914-009		
OV2100731		
OV114-018		
Contact Arizona 811 at least two full working days before you begin excavation		
 Call 811 or click Arizona811.com		
SHEET 5 OF 22		



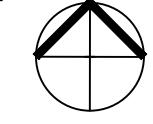




LANDSCAPE PLAN

SCALE: 1" = 40'-0"

40 20 0 40



SYMBOL / LINETYPE LEGEND

	PROPERTY BOUNDARY
	LIMIT OF GRADING
	DRAINAGE EASEMENT
	EXISTING CONTOUR
	PROPOSED CONTOUR
	POST- DEVELOPMENT 100-YEAR FLOODPLAIN
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	CRITICAL RESOURCE AREA
	PROPOSED RIP RAP, REFER TO CIVIL PLANS
	SITE VISIBILITY TRIANGLE

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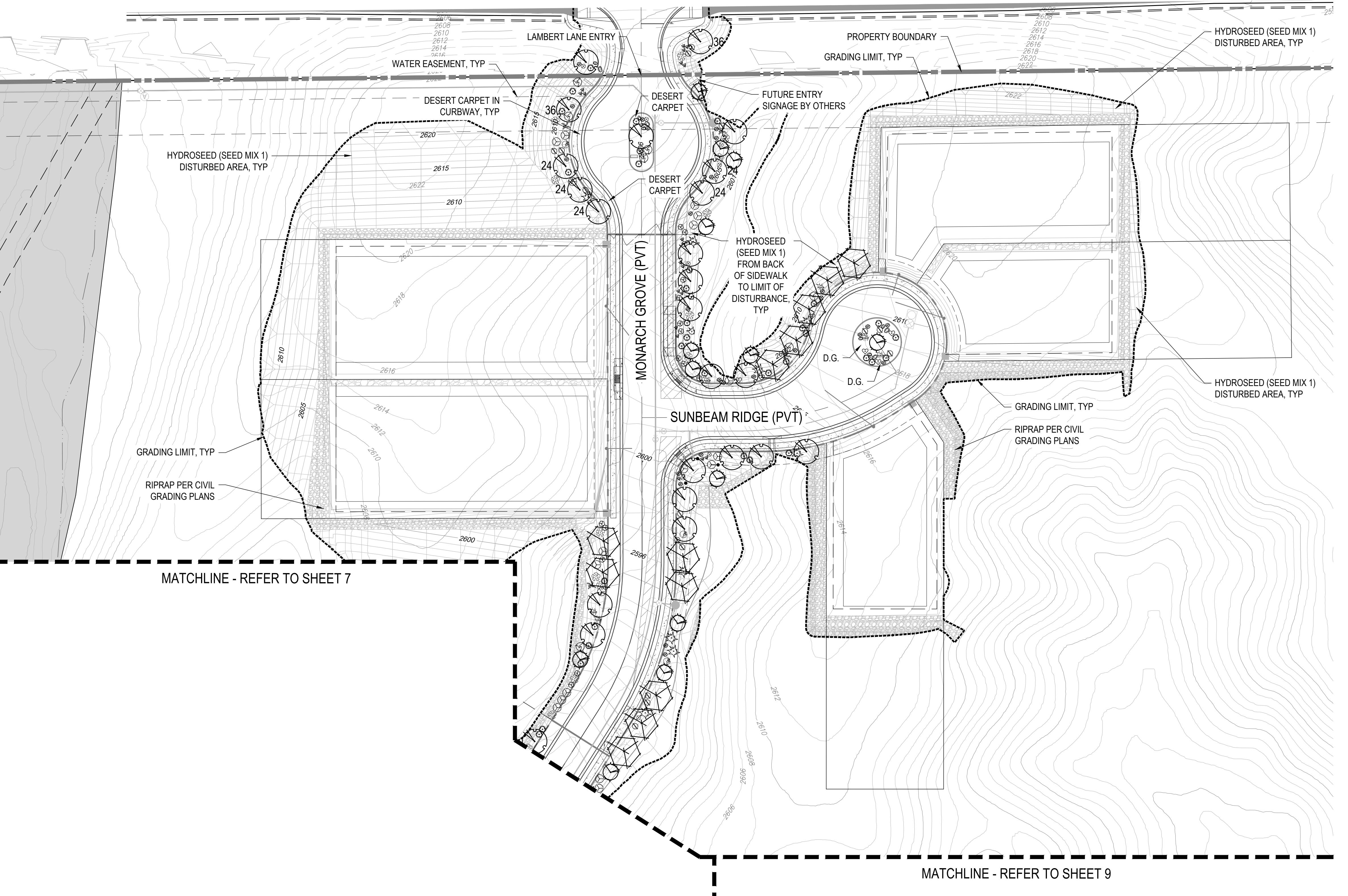
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LANDSCAPE PLANS

SUNDARA RIDGE
FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN

A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH, RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA

2101153



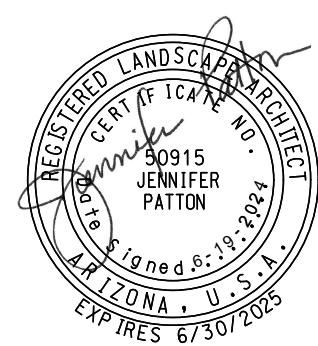
PLANTING NOTES

1. REFER TO SHEET 2 FOR COMPLETE PLANT SCHEDULE WITH SIZE & QUANTITY.
2. REFER TO SHEET 2 FOR REQUIRED FRONT YARD TREE PLANTING. FRONT YARD TREES ARE NOT SHOWN ON THESE PLANS.

TOV CASE # 2101153
RELATED CASE # OV914-009
OV2100731
OV114-018

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Call 811 or click Arizona811.com

SHEET 8 OF 22



PLAN STATUS

PROJECT NUMBER

DATE

DESCRIPTION

TEAM

DESIGN

TEAM

DRAWN

JP

CHKD

SCALE

H:

V:

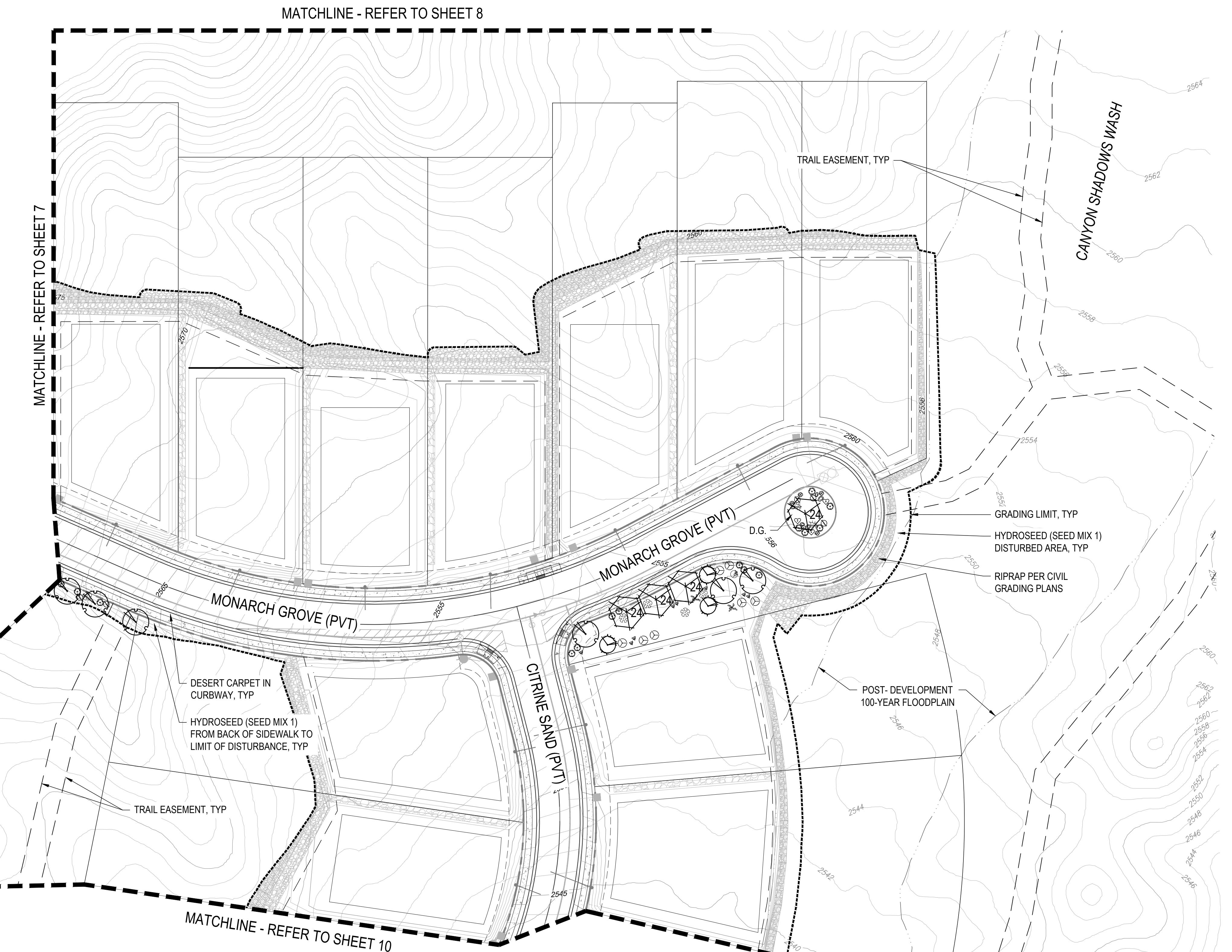
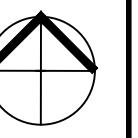
JOB No.

DATE: 6/19/2024

LANDSCAPE PLAN

SCALE: 1" = 40'-0"

40 20 0 40



PLANTING NOTES

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SYMBOL / LINETYPE LEGEND	
	PROPERTY BOUNDARY
	LIMIT OF GRADING
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	TRAIL PER CIVIL PLAN
	CRITICAL RESOURCE AREA
	PROPOSED RIP RAP, REFER TO CIVIL PLANS
	SITE VISIBILITY TRIANGLE

PLANT LEGEND	
	BOTANICAL NAME COMMON NAME
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	Parkinsonia florida Blue Palo Verde
	Parkinsonia microphylla Foothill Palo Verde
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	Senegalia greggii Catclaw Acacia
	Vachellia constricta Whitethorn Acacia
	Abutilon palmeri Palmer's Abutilon
	Ambrosia deltoidea Triangle-leaf Bursage
	Calliandra eriophylla Native Fairy Duster
	Celtis pallida Desert Hackberry
	Dalea pulchra Indigo Bush
	Larrea tridentata Creosote
	Lippia ligustrina Berlandier's Wolfberry
	Lycium berlandieri Wolfberry
	Lycium fremontii Fremont's Wolfberry
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	Opuntia santa-rita Purple Prickly Pear
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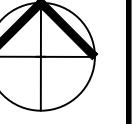
LANDSCAPE PLANS
SUNDARA RIDGEFINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN
A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH,
RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
2101153
LJA Engineering, Inc.

1880 E River Rd Suite 325,
Tucson, AZ 85718
Phone 520.257.3400GRADING PERMIT #2500131
TOV CASE # 2101153
RELATED CASE # OV914-009
OV2100731
OV114-018
Contact Arizona 811 at least two full working days before you begin excavation
 Call 811 or click Arizona811.comDATE: 6/19/2024
SHEET 9 OF 22DATE DESCRIPTION
TEAM DESIGN TEAM DRAWN JP CHKD
SCALE H: V:
JOB No.

LANDSCAPE PLAN

SCALE: 1" = 40'-0"

40 20 0 40



SYMBOL / LINETYPE LEGEND

	PROPERTY BOUNDARY
	LIMIT OF GRADING
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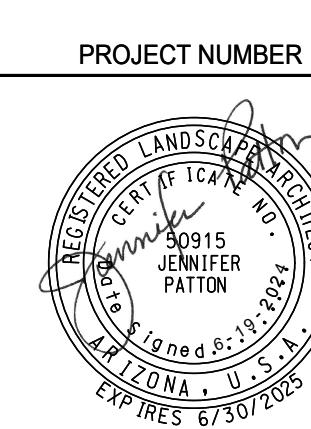
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Landscape Architects
2738 Adams Street
Tucson, Arizona 85716
Phone: (520) 320-3936
www.wildera.com
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PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME
	<i>Olneya tesota</i>	Ironwood
	<i>Parkinsonia florida</i>	Blue Palo Verde
	<i>Parkinsonia microphylla</i>	Foothill Palo Verde
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	<i>Opuntia santa-rita</i>	Purple Prickly Pear
*	<i>Yucca elata</i>	Soaptree Yucca

LANDSCAPE PLANS
SUNDARA RIDGE

FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN
A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH,
RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
2101153



PLAN STATUS

DATE: 6/19/2024
TEAM DESIGN: TEAM DRAWN: JP CHKD:
SCALE: H: V:
JOB No.:
DATE: 6/19/2024

SHEET 10 OF 22

PLANTING NOTES

1. REFER TO SHEET 2 FOR COMPLETE PLANT SCHEDULE WITH SIZE & QUANTITY.
2. REFER TO SHEET 2 FOR REQUIRED FRONT YARD TREE PLANTING. FRONT YARD TREES ARE NOT SHOWN ON THESE PLANS.





PLANTING NOTES

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LANDSCAPE PLAN
SCALE: 1" = 40'-0"

40 20 0 40

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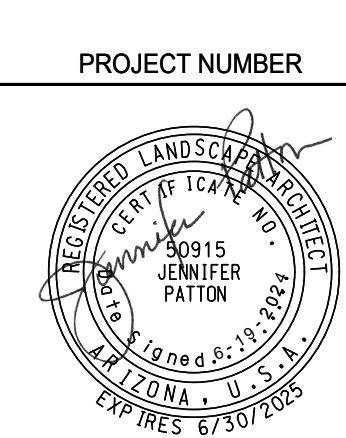
LJA Engineering, Inc.
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LANDSCAPE PLANS
SUNDARA RIDGE

FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN
A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH,
RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
2101153



PLAN STATUS

PROJECT NUMBER

DATE

DESCRIPTION

TEAM

TEAM

JP

CHKD

SCALE

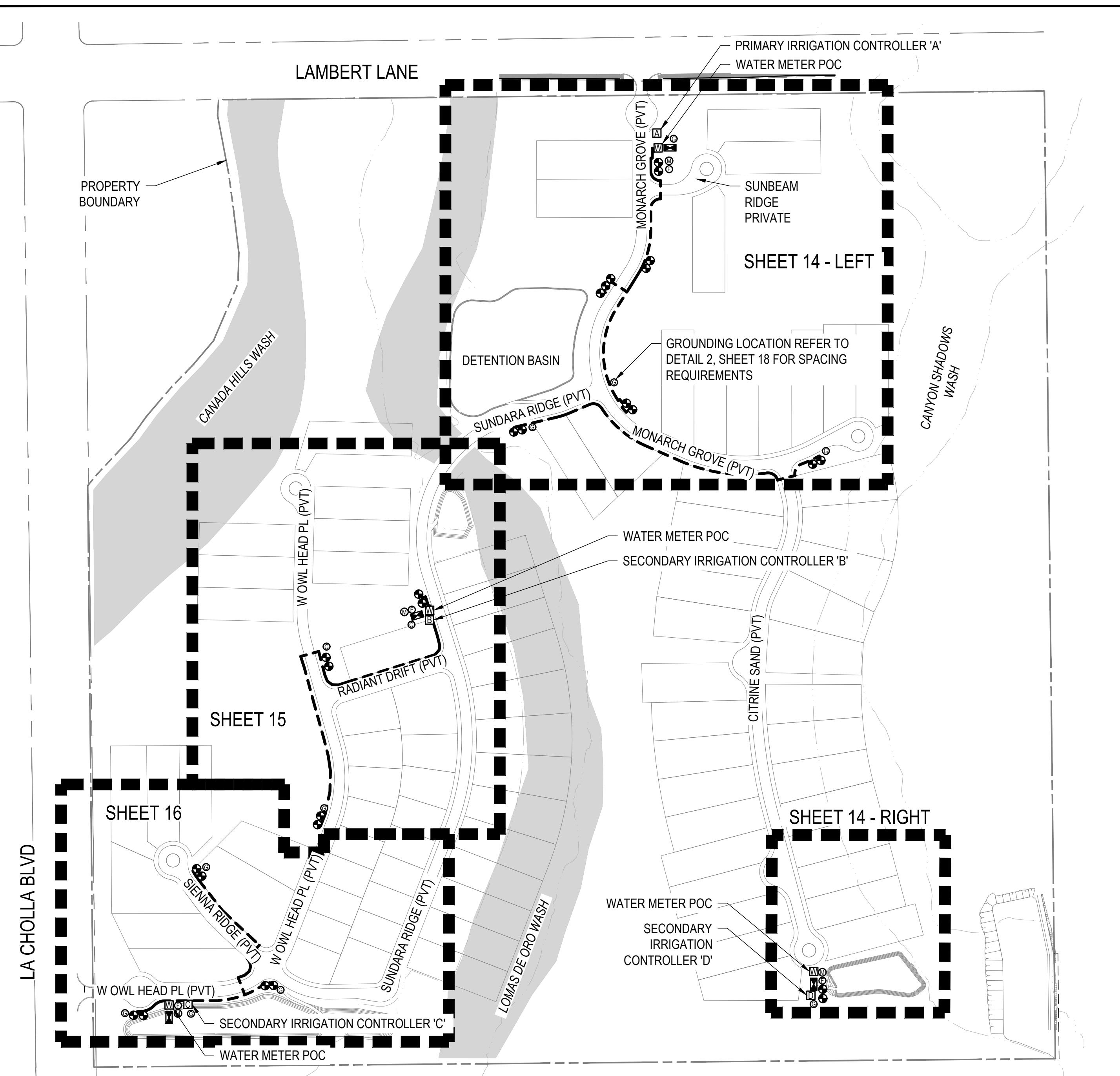
H:
V:

JOB No.

DATE:

6/19/2024

SHEET 11 OF 22



PROJECT OVERVIEW - IRRIGATION

200 100 0 200

1" = 200'-0"

IRRIGATION CONTROL SCHEDULE

Year	Month	Day Schedule	Frequency	Run Time (Minutes)	Total (Gal)
3	Dec, Jan	M	1	60	67,940
	Feb, Nov	M, Th	1	60	81,917
	Mar, Oct	M, W, F	1	60	128,814
	Apr, Aug, Sep	M, W, F, S	1	60	269,915
	May, Jun, Jul	M, W, Th, F, S	1	60	338,315
Year 3 Total					886,900
4	Dec, Jan, Feb	M	1	60	82,595
	Mar, Oct, Nov	M, Th	1	60	126,407
	Apr, May, Jul - Sep	M, W, F	1	60	365,783
	Jun	M, W, F, S	1	60	90,390
	Year 4 Total				
5	Nov, Dec, Jan, Feb	M	1	60	74,928
	Mar, Apr, Aug - Oct	M, Th	1	60	199,364
	May, Jun, Jul	M, W, F	1	60	169,158
	Year 5 Total				

LANDSCAPE WATER PLAN

YEAR 3 : 100% ADWR. Continue to increase irrigation water use as needed as plants mature up to, but not exceeding, 100% ADWR value by end of year.											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
35122	42187	65533	85142	114837	120520	102959	98351	86422	63281	39730	32818
Average monthly water use = 73908 Total (100% ADWR) = 886,900											
YEAR 4 : 75% ADWR. Begin gradually decreasing irrigation to buffer, median, and ROW areas in order to reach zero irrigation in those areas by end of year 5.											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
26341	31640	49150	63856	86128	90390	77219	73763	64816	47460	29797	24613
Average monthly water use = 55431 Total (75% ADWR) = 665,175											
YEAR 5 : 50% ADWR. Continue decreasing irrigation to buffer, median, and ROW areas. By end of year 5, irrigation to buffer, median, and ROW areas must be zero, and total amount of water used at site must meet 50% of ADWR maturity value.											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
17561	21094	32767	42571	57418	60260	51479	49176	43211	31640	19865	16409
Average monthly water use = 36954 Total (50% ADWR) = 443,450											

IRRIGATION GENERAL NOTES

- Irrigation and/or watering plans shall meet the minimum standards of the American Society of Irrigation Consultants.
- Irrigation systems connected to potable water mains (public or private) shall be equipped with backflow preventers.
- The annual water use for a project shall not exceed the annual landscape water plan.
- Irrigation meter readings shall be used to determine compliance with the landscape water plan. Non-compliance is subject to penalties under Oro Valley Town Code.
- Meter readings shall be taken, at a minimum, on an annual basis. Monthly readings may be required, at the discretion of the Planning and Zoning Administrator, in order to address non-compliance with the Water Plan.
- An initial meter reading shall be taken prior to the issuance of the certificate of occupancy and recorded for reference as part of the water plan.
- Irrigation water shall not leave the landscaped areas and flow onto roads, parking areas or sidewalks.

IRRIGATION SYSTEM DESCRIPTION

A new, two-wire PVC / HDPE drip irrigation system will be installed in association with the project. The control system will be one Baseline 3200 Primary controller and three Baseline Substations. All four controllers will be linked together using Verizon Cell service. All system components are new and as specified.

The water provider is Metro Water. The water source will be potable municipal water. Reclaimed water is not available at the site. Four new water meters will serve as the points of connection (POC) for the control zones. The water pressures (provided by Metro Water, April 2021) are: 35 PSI at controller 'A', 53 PSI at controller 'B', 70 PSI at controller 'C' and 80 PSI at controller 'D'. The irrigation system is designed to operate at these various pressures including the loss after the backflow preventer. The system is designed for 15 GPM total flow in each control zone. The system can be programmed to run zones concurrently up to max 15 GPM flow in each control zone.

The project site has low available water pressure in the north, significant changes in topography (as great as 30 vertical feet within a single irrigation zone) and sandy soils, all of which have been taken into account in the irrigation design.

- Valves are located to minimize water surge at downhill lateral ends.
- One gallon-per-hour emitters are specified for all plants to reduce zone flows (friction pressure loss) as well as to minimize runoff / erosion on slopes.
- The Baseline controllers and moisture sensors are specified to allow for the irrigation scheduling to respond to site soil conditions. The controller adjusts irrigation scheduling based on frequency (days between watering) rather than run time. This is critical as plants need to be irrigated to the proper depth for their root zone.

The irrigation system uses PVC for mainline; HDPE tubing is specified for laterals. HDPE has a longer life than traditional poly, while still allowing for ease of installation (HDPE tubing is flexible and uses compression fittings). A Master Valve and Flow Sensor are specified for each point of connection. The master valve provides redundant closure of valves to protect against leaking zone valves. Alerts can be provided from the flow sensor. Two-wire shall be placed in conduit the length of the wire run.

The Irrigation Plan is schematic. For clarity of Plans, irrigation lines / components may be shown within hardscape areas or in areas with existing plant material. All irrigation lines / components are to be located within non-paved areas and are to be inside the limits of grading.

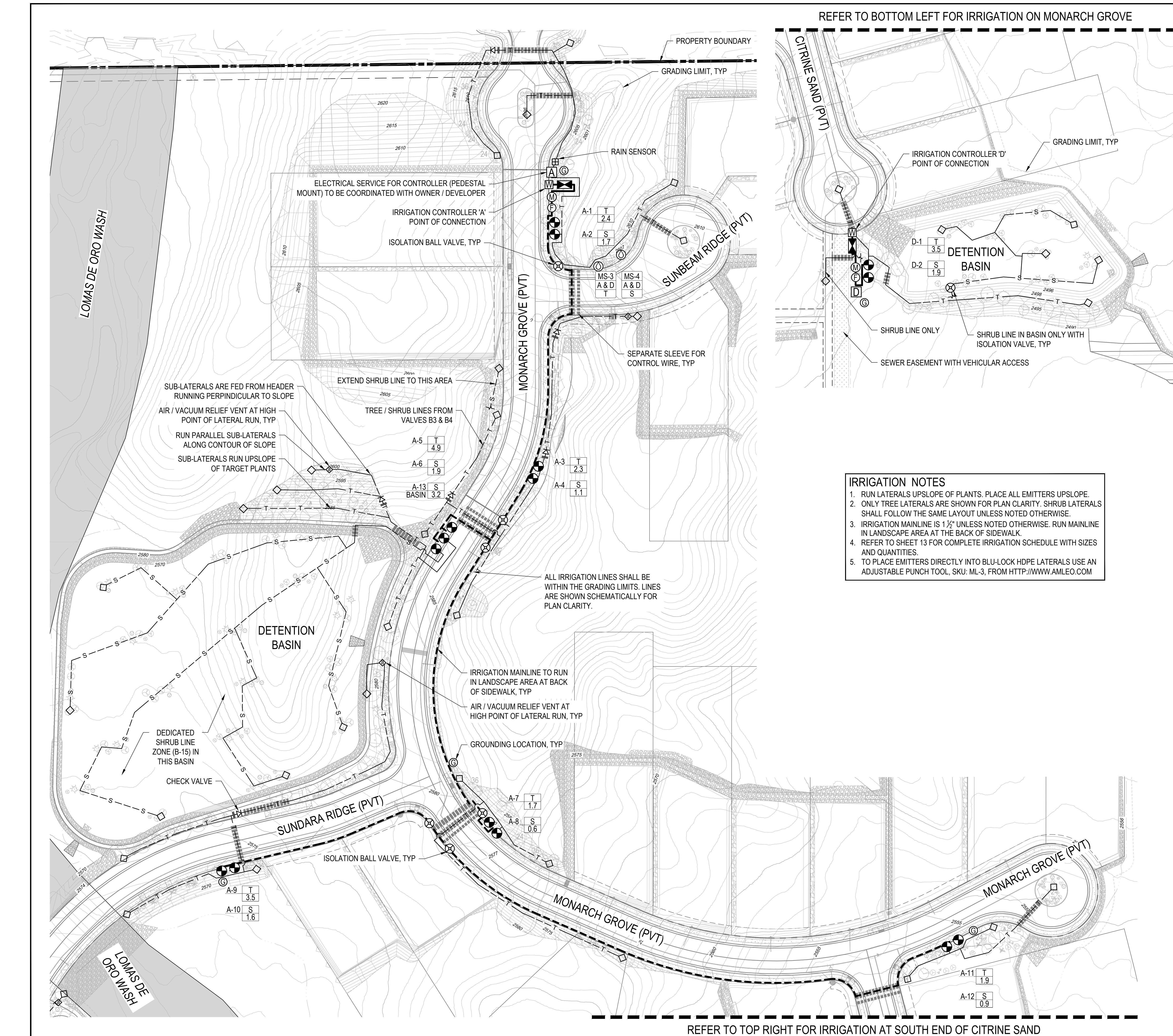
IRRIGATION SCHEDULE

SYMBOL	ITEM	MANUFACTURER / MODEL	SIZE	QTY	NOTES
W	Water Meter	Per Civil Plans	1"	4 EA	Water Service and Meter by Others. Refer to Civil Plans.
■	Reduced Pressure Backflow Prevention Assembly	Febco 825Y	1 1/2"	4 EA	Guardshack COR-1. Tan insulating blanket FG-1. Refer to Detail 1, Sheet 17
○	Isolation Ball Valve	Nibco brass	Line Size	13 EA	Refer to Detail 5, Sheet 17
A	Irrigation Controller 'A' Cell Modem	Baseline: BL-3200P-CM Baseline: BL-CLOUD-LTE-VZ-P	N/A	1 EA	Refer to Detail 9, Sheet 17 & Detail 2, Sheet 18. Pedestal mount with cell connection.
B C D	Irrigation Controllers 'B', 'C', 'D' Cell Modem	Baseline: BL-SUBSTN-P Baseline: BL-CLOUD-LTE-VZ-P	N/A	3 EA	Refer to Detail 9, Sheet 17 & Detail 2, Sheet 18. Pedestal mount with cell connection.
Not Shown	2-wire Cable	Paige: P7072D Maxi-Wire	#14	3800 LF	All 2-wire to be installed in 1-1/2" conduit.
◎	Grounding Location 2-wire Path Lightning Arrestor	Baseline: BL-LA01	N/A	12 EA	Refer to Detail 9, Sheet 17 & Detail 2, Sheet 18
■	Rain Sensor	Baseline: BL-5407-KIT	N/A	1 EA	
Ⓜ	Master Valve, Brass 2-wire Decoder	Hunter: IBV-151G-FS-R Baseline: BL-5201	1 1/2" N/A	4 EA	Refer to Detail 2, Sheet 17
Ⓕ	Flow Sensor	Baseline BL-PFS100	1"	4 EA	Refer to Detail 2, Sheet 17
○	Soil Moisture Sensor	Baseline BL-5315B biSensor	N/A	4 EA	Refer to Detail 1, Sheet 18
●	Zone Control Valve Combo End Cap, Pressure Regulator 2-wire Decoder	Hunter: ICV-101G-FS-R Rain Bird Filter: PRB-QKCHK-100 Baseline: BL-5202	1" 1" N/A	27 EA 27 EA 14 EA	Refer to Detail 4, Sheet 17
Not Shown	Valve Boxes: Flush End Cap, Air Vent Ball Valve, Check Valve Master & Zone Valve, Flow Sensor	Model: Carson 708, Tan, Twist-on Cover Carson 910, Tan Carson 1220, Tan, Lockable Cover		106 EA 33 EA 30 EA	All valve boxes to have 4" layer of screened rock below valves and be wrapped with geotextile. Refer to Detail 3, Sheet 18
◇	Lateral End Cap Assembly		N/A	98 EA	Refer to Detail 3, Sheet 17
◊	Air Vacuum Vent	Netafim Guardian / 65ARIA100	3/4"	12 EA	Refer to Detail 6, Sheet 17
☒	PVC Swing Check Valve	Spears	1"	20 EA	Install in 10" round valve box with unions.
—	Unconnected Pipe Crossing		N/A	N/A	
— — —	Mainline Pipe Sch 40 PVC		1 1/2"	3720 LF	Refer to Detail 7, Sheet 17
— — — T —	Lateral Line (Tree), HDPE	Blu-Lock SDR 15 / BLP-100-CL-3X	1"	7600 LF	Refer to Detail 7, Sheet 17
Not Shown	Lateral Line (Shrub), HDPE	Blu-Lock SDR 15 / BLP-100-CL-3X	1"	11,125 LF	Refer to Detail 7, Sheet 17
	Sleeve, Sch 40 PVC (Piping) Sleeve, Sch 40 PVC (Wiring)		4" 4"	1220 LF 365 LF	Refer to Civil Plans and Detail 8, Sheet 17
Not Shown	Emitter Assembly (Multi-Outlet) Individual Emitter	Rain Bird Xeri-bug / XB-10-6 Rain Bird Xeri-bug / XB-10PC	N/A	400 EA 1125 EA	Refer to Details 1 - 6, Sheet 19
Not Shown	Diffuser Bug Cap	RainBird DBC-025	N/A	3350 EA	Install bug cap to ends of all 1/4" distribution tubing.

NOTE: Quantities shown are for reference only. Contractor is responsible for calculating actual quantities as depicted on plan.

EMITTER SCHEDULE

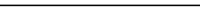
PLANT TYPE	# OF OUTLETS	GPH PER OUTLET	SPECIES
#45 Trees	6 EA	1	Ironwood Foothill Palo Verde
#25 Trees	4 EA	1	Ironwood Foothill Palo Verde
15 Gal Trees	3 EA	1	Ironwood Blue Palo Verde Foothill Palo Verde Velvet Mesquite Catclaw Acacia Whitethorn Acacia
Small + Medium Shrubs	1 EA	1	Abutilon Brittlebush Bursage Creosote Dalea Fairy Duster Globemallow Goldeneye Graythorn Wolfberry
Large Shrubs	2 EA	1	Desert Hackberry
Cacti Succulents	0 EA 1 EA	0 1	No cacti are to receive irrigation. Thoroughly soak at install. Soaptree Yucca on Shrub line.



SYMBOL	ITEM
	Water Meter
	Reduced Pressure Backflow Prevention Assembly
	Isolation Ball Valve
	Irrigation Controller 'A' Cell Modem
	Irrigation Controllers 'B', 'C', 'D' Cell Modem
Not Shown	2-wire Cable
	Grounding Location 2-wire Path Lightning Arrestor
	Rain Sensor
	Master Valve, Brass 2-wire Decoder
	Flow Sensor
	Soil Moisture Sensor
	Zone Control Valve Combo Filter & Pressure Regulator 2-wire Decoder
Not Shown	Valve Boxes: Flush End Cap, Air Vent Ball Valve, Check Valve Master & Zone Valve, Flow Sensor
	Lateral End Cap Assembly
	Air Vacuum Vent
	PVC Swing Check Valve
	Unconnected Pipe Crossing
	Mainline Pipe Sch 40 PVC
	Lateral Line (Tree), HDPE
Not Shown	Lateral Line (Shrub), HDPE
	Sleeve, Sch 40 PVC (Piping) Sleeve, Sch 40 PVC (Wiring)
Not Shown	Emitter Assembly (Multi-Outlet) Individual Emitter
Not Shown	Diffuser Bug Cap

IRRIGATION PLAN

SCALE: 1" = 50'-0"



A scale bar and a north arrow are located at the bottom of the page. The scale bar is a horizontal line with tick marks at 50, 25, 0, and 50. The north arrow is a circle with a crosshair and a north arrowhead pointing upwards.

LJA Engineering, Inc.
1860 E River Rd Suite 325,
Tucson, AZ 85718
Phone 520.257.3400

14

Landscape Architects

2738 E Adams Street
Tucson, Arizona 85716
Phone: (520) 320-3936
www.wilderla.com

IRRIGATION PLANS SUNDARA RIDGE IMPROVEMENT PLAN AND PU

IRRIGATION PLANS

SUNDARA RIDGE

FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN
SUNDARA RIDGE LOTS 1 THROUGH 91
A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH
RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
2101452

MOISTURE SENSOR SCHEDULE				
SENSOR #	PLACEMENT	Plant Type	VALVE(S)	DEPTH
MS-1	S of POC at corner	Tree	A-T, D-T	24"
MS-2	E of POC across road	Shrub	A-S, D-S	12"
MS-3	S of POC	Tree	B-T, C-T	24"
MS-4	S of POC	Shrub	B-S, C-S	12"

SENSOR #	PLACEMENT	Plant Type
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NOTES:

1. Moisture sensors shall not be placed near emitters from other zones, nor within 12" of any drip emitter.
2. Refer to Soil Moisture Sensor Placement and Surge Protection Details, Details 1-6-2, Sheet 1-2, and Project Specifications for more information.

MOISTURE SENSOR CALL OUT

MS-1 Sensor Number
Valve Number(s) for Sensor Connection
Plant Type

PLAN STATUS

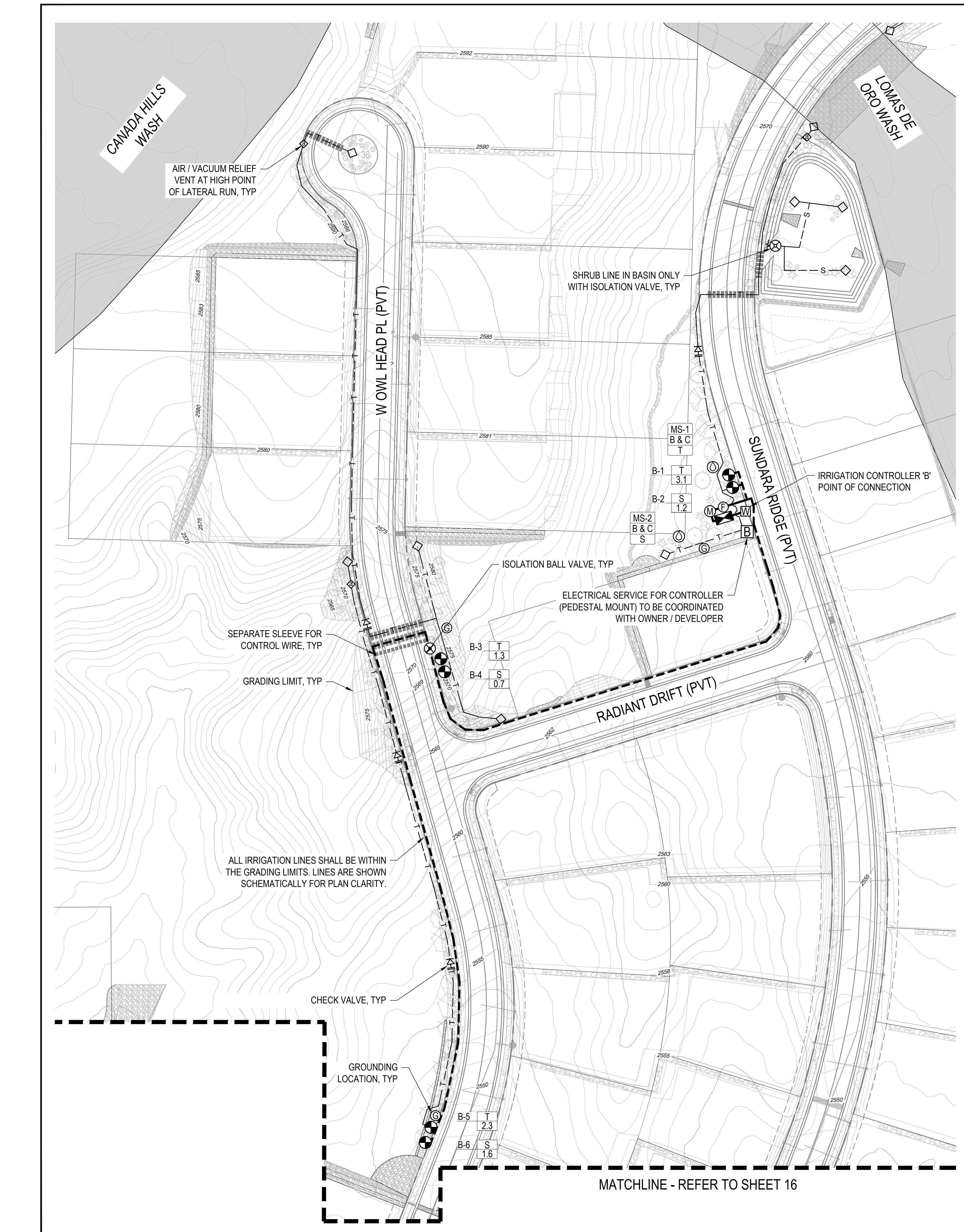
DATE	DESCRIPTION	
TEAM DESIGN	TEAM DRAWN	JP CHK
SCALE	H: V:	
JOB No.		
DATE : 6/19/2024		
SHEET	14	OF 22

/ CASE #
1153
LATED CASE #
14-009
1100731
114-018

Contact Arizona 811 at least two full
ng days before you begin excavation

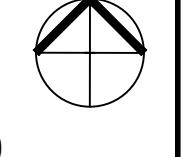
ARIZONA 811
BLUE STAKE, INC.

811 or click Arizona811.com



IRRIGATION PLAN

SCALE: 1" = 50'-0"





IRRIGATION SCHEDULE

SYMBOL	ITEM
W	Water Meter
☒	Reduced Pressure Backflow Prevention Assembly
⊗	Isolation Ball Valve
A	Irrigation Controller 'A' Cell Modem
B C D	Irrigation Controllers 'B', 'C', 'D' Cell Modem
Not Shown	2-wire Cable
Ⓐ	Grounding Location 2-wire Path Lightning Arrestor
田	Rain Sensor
Ⓜ	Master Valve, Brass 2-wire Decoder
Ⓕ	Flow Sensor
滴	Soil Moisture Sensor
●	Zone Control Valve Combo Filter & Pressure Regulator 2-wire Decoder
Not Shown	Valve Boxes: Flush End Cap, Air Vent Ball Valve, Check Valve Master & Zone Valve, Flow Sensor
◇—	Lateral End Cap Assembly
◊	Air Vacuum Vent
☰	PVC Swing Check Valve
—+—	Unconnected Pipe Crossing
—·—·—·—	Mainline Pipe Sch 40 PVC
— — — T —	Lateral Line (Tree), HDPE
Not Shown	Lateral Line (Shrub), HDPE
	Sleeve, Sch 40 PVC (Piping) Sleeve, Sch 40 PVC (Wiring)
Not Shown	Emitter Assembly (Multi-Outlet) Individual Emitter
Not Shown	Diffuser Bug Cap

VALVE CALLOUT

Controller → A-1 **T** ← Valve Description
Station ID **GPM** ← Valve Flow (GPM)

MOISTURE SENSOR SCHEDULE

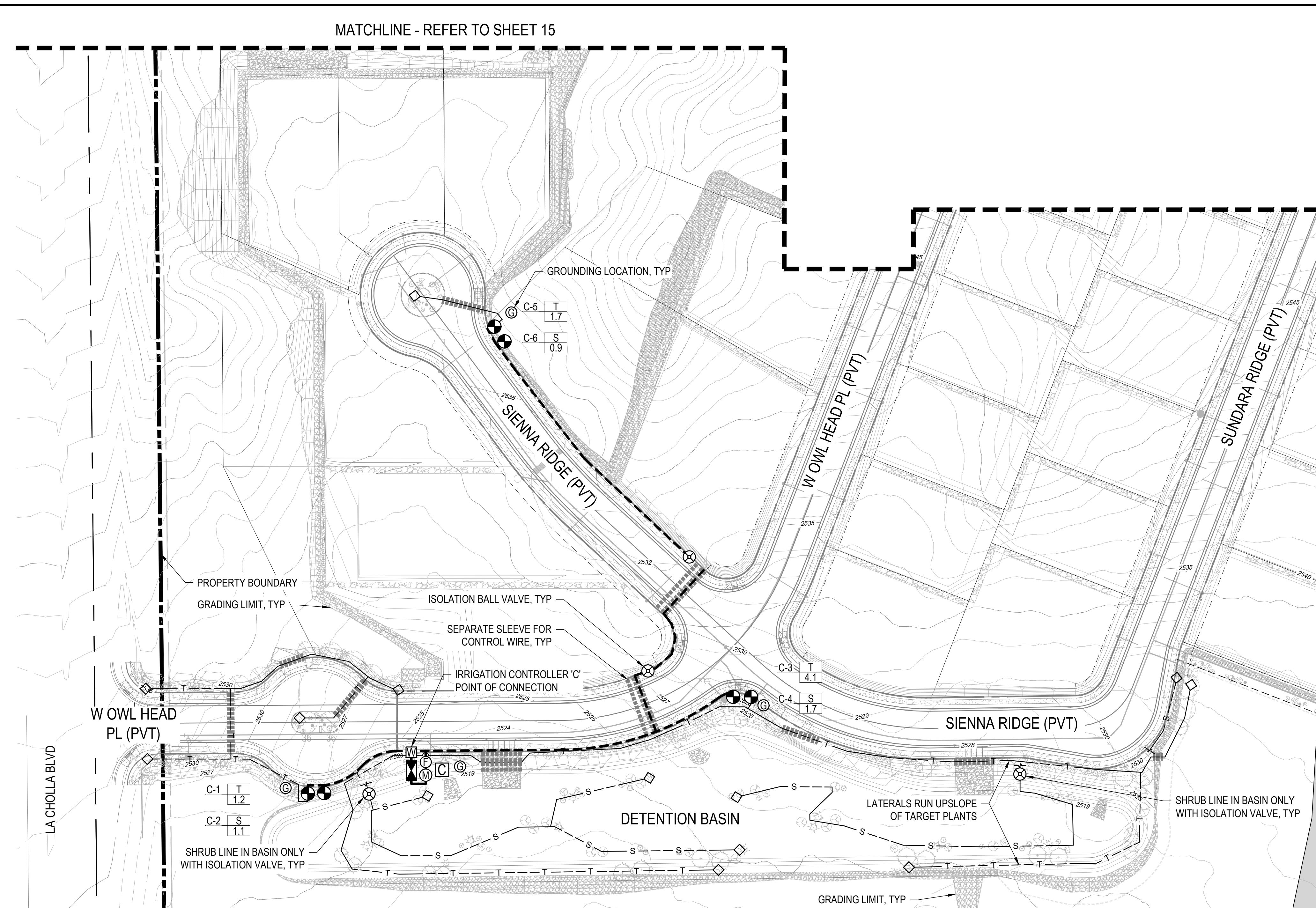
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2. Refer to Soil Moisture Sensor Placement and Surge Protection Details, Details 1 & 2, Sheet 18, and Project Specifications for requirements.

MOISTURE SENSOR CALLOUT

MS-1 Sensor Number
Valve Number(s) for Sensor Connection
Plant Type



IRRIGATION NOTES

1. RUN LATERALS UPSLOPE OF PLANTS. PLACE ALL EMMITTERS UPSLOPE.
2. ONLY TREE LATERALS ARE SHOWN FOR PLAN CLARITY. SHRUB LATERALS SHALL FOLLOW THE SAME LAYOUT UNLESS NOTED OTHERWISE.
3. IRRIGATION MAINLINE IS 1 1/2" UNLESS NOTED OTHERWISE. RUN MAINLINE IN LANDSCAPE AREA AT THE BACK OF SIDEWALK.
4. REFER TO SHEET 13 FOR COMPLETE IRRIGATION SCHEDULE WITH SIZES AND QUANTITIES.
5. TO PLACE EMMITTERS DIRECTLY INTO BLU-LOCK HDPE LATERALS USE AN ADJUSTABLE PUNCH TOOL, SKU: ML-3, FROM [HTTP://WWW.AMLEO.COM](http://WWW.AMLEO.COM)

IRRIGATION PLAN
SCALE: 1" = 50'-0"
50 25 0 50

LJA Engineering, Inc.
1880 E River Rd Suite 325,
Tucson, AZ 85718
Phone 520.257.3400

IRRIGATION PLANS
SUNDARA RIDGE
FINAL SITE PLAN, IMPROVEMENT PLAN AND PUBLIC SEWER PLAN

A PORTION OF THE NORTHWEST QUARTER OF SECTION 15, TOWNSHIP 12 SOUTH,
RANGE 13 EAST, G&SRM TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
2101153

IRRIGATION SCHEDULE

SYMBOL	ITEM
W	Water Meter
■	Reduced Pressure Backflow Prevention Assembly
○	Isolation Ball Valve
A	Irrigation Controller 'A' Cell Modem
B C D	Irrigation Controllers 'B', 'C', 'D' Cell Modem
Not Shown	2-wire Cable
◎	Grounding Location 2-wire Path Lightning Arrestor
■	Rain Sensor
M	Master Valve, Brass 2-wire Decoder
F	Flow Sensor
○	Soil Moisture Sensor
●	Zone Control Valve Combo Filter & Pressure Regulator 2-wire Decoder
	Valve Boxes: Flush End Cap, Air Vent Ball Valve, Check Valve Master & Zone Valve, Flow Sensor
◇	Lateral End Cap Assembly
◆	Air Vacuum Vent
H	PVC Swing Check Valve
—	Unconnected Pipe Crossing
—	Mainline Pipe Sch 40 PVC
— T —	Lateral Line (Tree), HDPE
—	Lateral Line (Shrub), HDPE
■■■■■	Sleeve, Sch 40 PVC (Piping)
■■■■■	Sleeve, Sch 40 PVC (Wiring)
Not Shown	Emitter Assembly (Multi-Outlet) Individual Emitter
Not Shown	Diffuser Bug Cap

VALVE CALLOUT

Controller → A-1 T Valve Description
Station ID GPM Valve Flow (GPM)

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MOISTURE SENSOR CALLOUT

MS-1 Sensor Number
Valve Number(s) for Sensor Connection
Plant Type

PLAN STATUS

DATE DESCRIPTION

TEAM TEAM JP

DESIGN DRAWN CHKD

SCALE H:

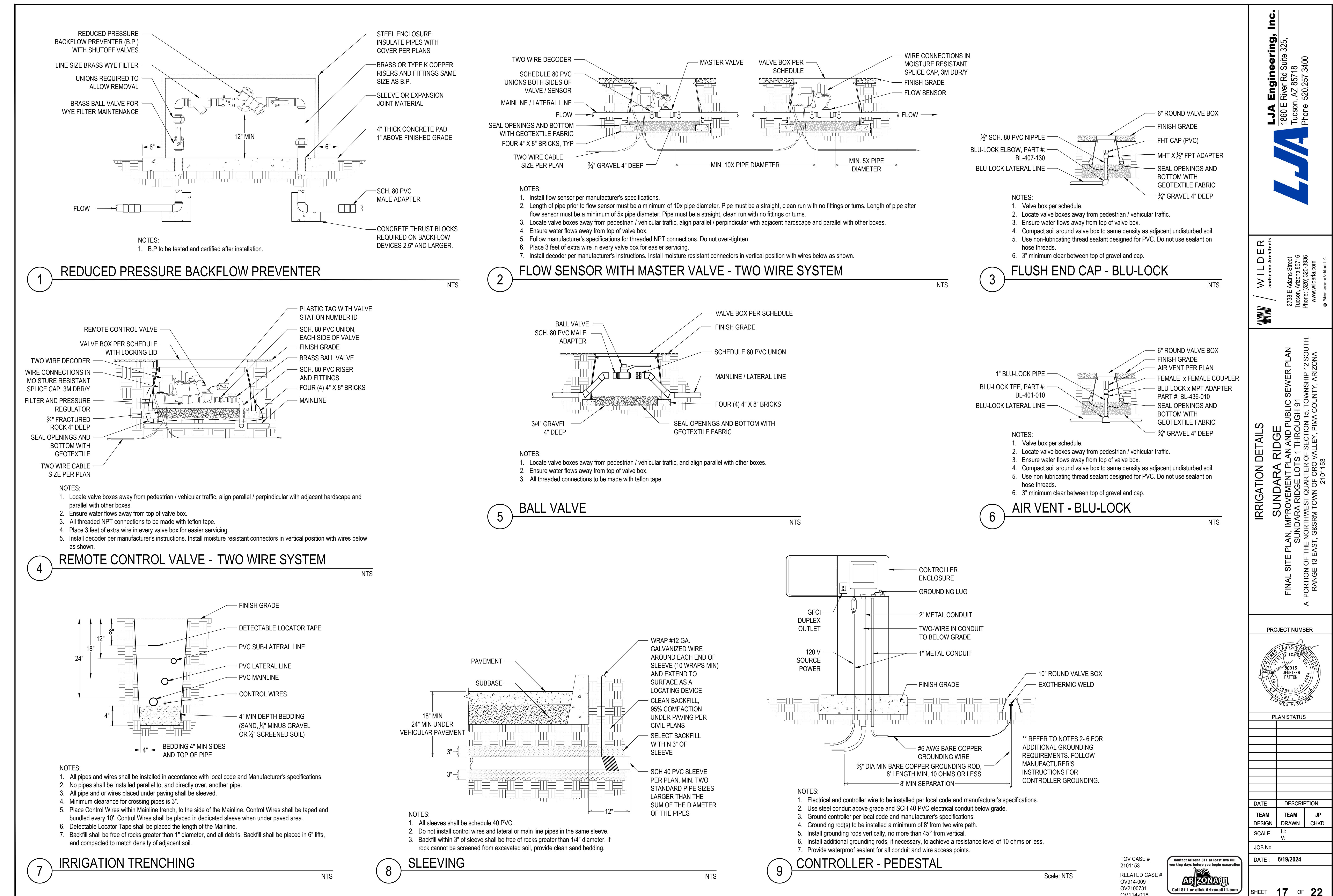
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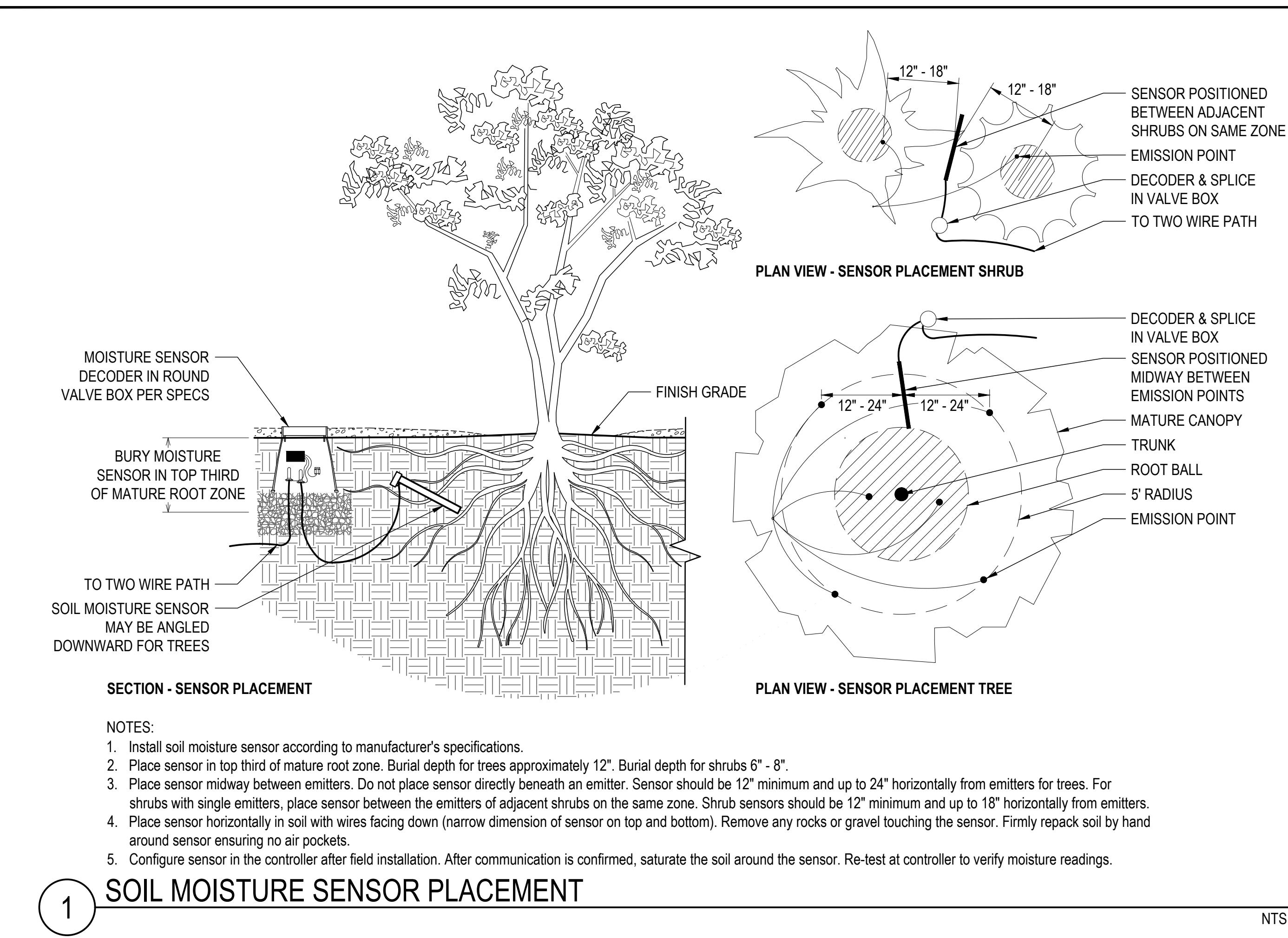
JOB No.

DATE: 6/19/2024

SHEET 16 OF 22

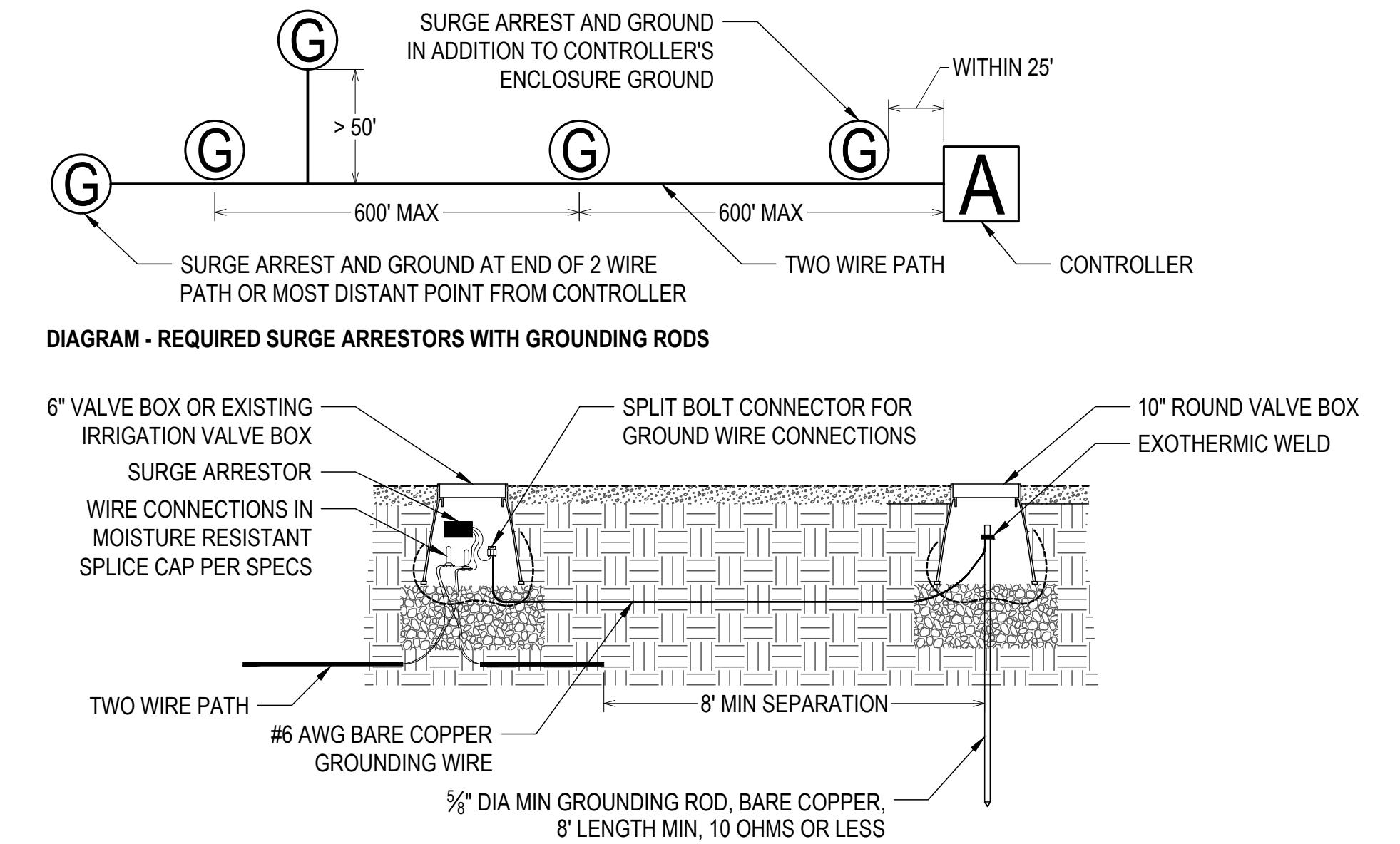






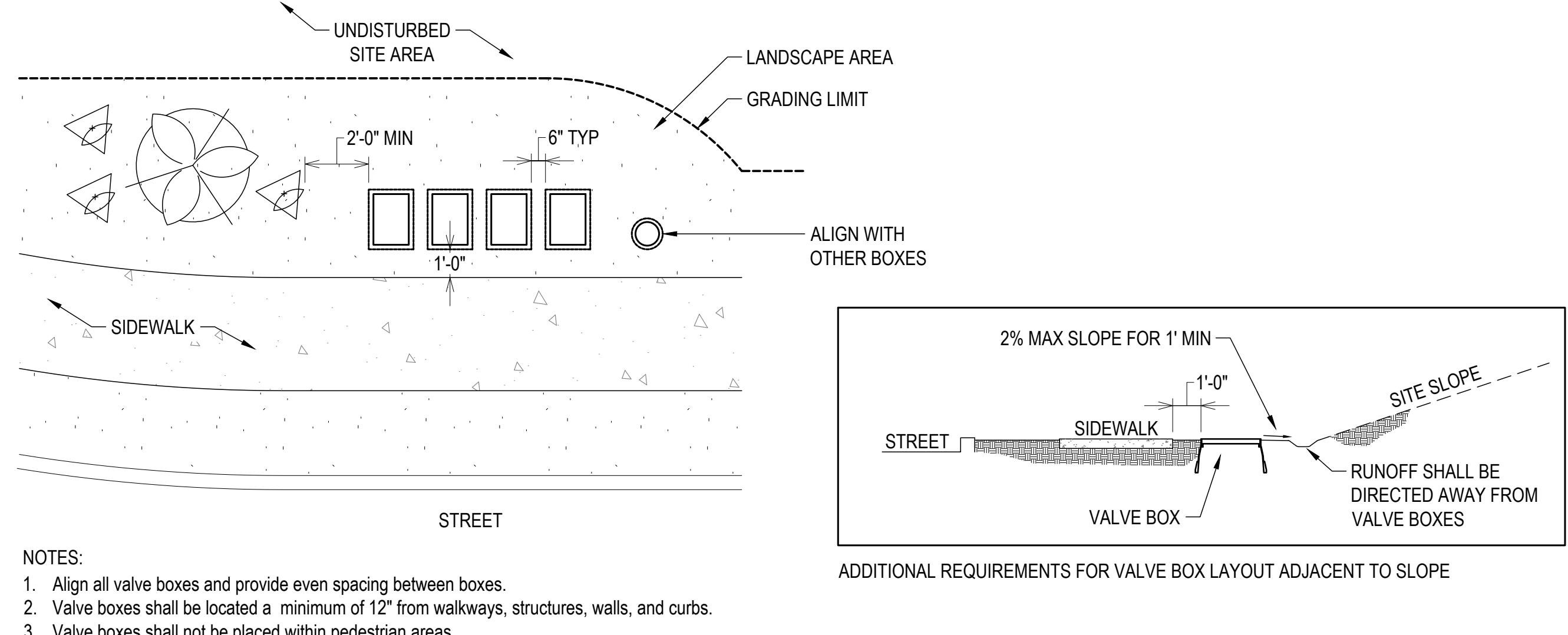
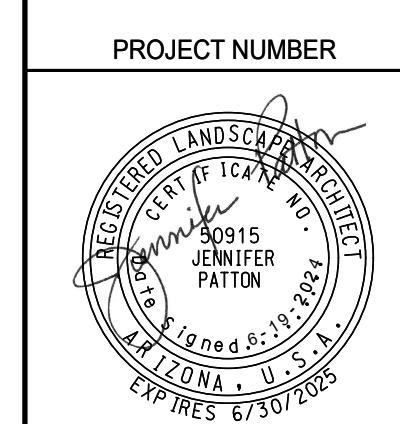
1 SOIL MOISTURE SENSOR PLACEMENT

NTS



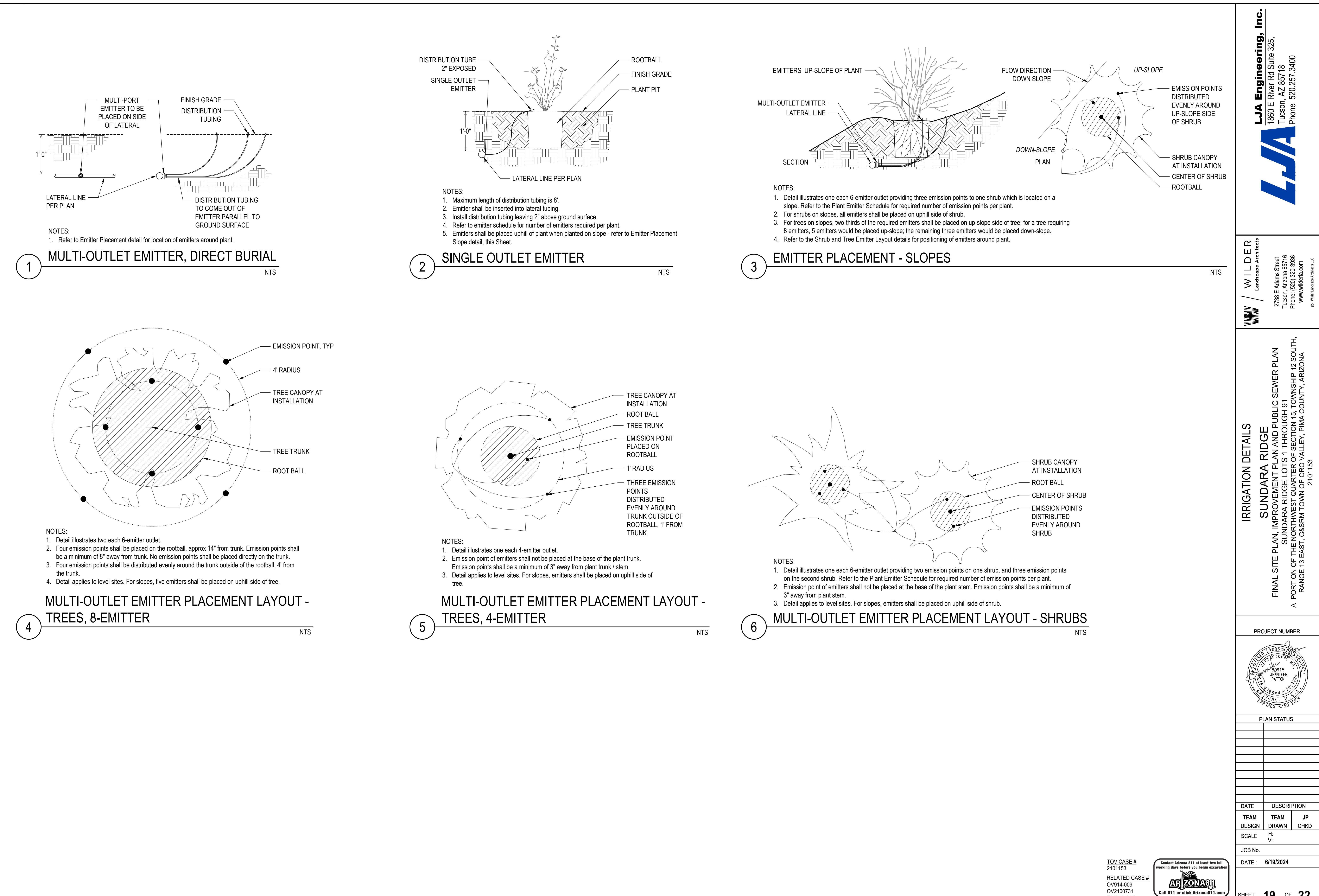
2 SURGE PROTECTION - TWO WIRE SYSTEM

NTS



3 VALVE BOX LAYOUT

TOV CASE # 2101153



SEED MIX 1: BASINS + BACK OF SIDEWALK

To be used within basins, back of sidewalk, and back of lots. Contains large shrubs not appropriate for areas within SVT.		
Scientific Name	Common Name	PLS / Acre
Shrubs		7.00
Ambrosia deltoidea	Triangle-leaf bursage	1.00
Atriplex canescens	Four wing saltbush	1.00
Calliandra eriophylla	Fairy Duster	1.00
Celtis pallida	Desert Hackberry	1.00
Encelia farinosa	Brittlebush	1.00
Ericameria laricifolia	Turpentine bush	1.00
Larrea tridentata	Creosote	1.00
Small Perennials		5.00
Bahia absinthifolia	Desert Bahia	0.50
Baileya multiradiata	Desert marigold	0.50
Glandularia gooddingii	Goodding's verbena	0.50
Isocoma tenuisecta	Burroweed	0.50
Psilostrophe cooperi	Paper Flower	0.50
Sphaeralcea ambigua	Globemallow	1.00
Sphaeralcea ambigua	Globemallow	1.00
Senna covesii	Desert senna	0.50
Zinnia acerosa	Desert zinnia	1.00
Zinnia acerosa	Desert zinnia	0.50
Perennial Grasses		5.50
Aristida purpurea	Purple Three-Awn	1.00
Aristida ternipes	Spidergrass	0.50
Bothriochloa barbinodis	Cane Beardgrass	0.25
Bouteloua curtipendula	Sideoats grama	0.50
Bouteloua rothrockii	Rothrock grama	0.25
Dasyochloa pulchella	Fluffgrass	0.25
Digitaria californica	Arizona Cottontop	1.00
Heteropogon contortus	Tanglehead	0.50
Leptochloa dubia	Green Sprangle Top	0.50
Muhlenbergia porteri	Bush Muhy	0.25
Sporobolus airoides	Alkali Sacaton	0.25
Sporobolus cryptandrus	Sand dropseed	0.25
Annual Herbs and Grasses		7.35
Bouteloua aristidoides	Needle Grama	0.50
Bouteloua barbata	Six Weeks Grama	0.25
Datura discolor	Sacred Datura	0.50
Eriogon divergens	Spreading Fleabane	0.50
Kallstroemia grandiflora	Arizona poppy	0.50
Lesquerella gordonii	Bladderpod	0.50
Lupinus sparsiflorus	Lupine	1.00
Pectis papposa	Chinchweed	0.50
Penstemon parryi	Penstemon, Parry	1.00
Plantago insularis	Indian Wheat	2.00
Proboscidea parviflora	Devil's Claw	0.50
TOTAL		24.85

SEED MIX 2: CURBWAY

To be used within the curbway (back of curb to sidewalk) as well as planting islands within roadway. This is a low-growing mix appropriate for SVT areas.		
Scientific Name	Common Name	PLS/ Acre
Shrubs		5.00
Ambrosia deltoidea	Triangle-leaf Bursage	1.50
Calliandra eriophylla	Fairy Duster	1.50
Encelia farinosa	Brittlebush	1.00
Ericameria laricifolia	Turpentine bush	1.00
Small Perennials		6.00
Bahia absinthifolia	Desert Bahia	0.50
Baileya multiradiata	Desert marigold	0.50
Glandularia gooddingii	Goodding's verbena	1.00
Isocoma tenuisecta	Burroweed	1.00
Psilostrophe cooperi	Paper Flower	0.50
Sphaeralcea ambigua	Globemallow	1.00
Senna covesii	Desert senna	0.50
Zinnia acerosa	Desert zinnia	0.50
Perennial Grasses		4.00
Aristida purpurea	Purple Three-Awn	1.00
Bouteloua rothrockii	Rothrock grama	1.00
Dasyochloa pulchella	Fluffgrass	1.00
Eragrostis intermedia	Plains Love Grass	1.00
Annual Herbs and Grasses		7.50
Bouteloua barbata	Six Weeks Grama	0.50
Eschscholtzia mexicana	Mexican Poppy	0.50
Erigeron divergens	Spreading Fleabane	0.50
Kallstroemia grandiflora	Arizona poppy	0.50
Lesquerella gordonii	Bladderpod	0.50
Lupinus sparsiflorus	Lupine	1.00
Pectis papposa	Chinchweed	0.50
Penstemon parryi	Penstemon, Parry	1.00
Plantago insularis	Indian Wheat	2.00
Proboscidea parviflora	Devil's Claw	0.50
TOTAL		22.50

SEEDING SPECIAL PROVISIONS (FOR SEED MIX 1 - SEPARATE APPLICATIONS OF SEED AND MULCH)

The work under this item shall consist of furnishing all materials, preparing the soil (tilling and nutrient enhancement), applying specified seed, and applying the final mulch cover. This seeding process separates the seed application from the mulch cover, helping to ensure that the seed has contact with the ground surface. The seeding process is adapted from ADOT seeding specifications.

GENERAL

Within 30 days of award of contract, the Contractor shall provide the Project Manager /Engineer with written notification of the selected seed supplier, as well as confirmation from the seed supplier that the contract-specified seed has been secured and will be available in the quantity required for the project.

Spec Sheets / Certificates of Compliance will be provided for all materials including tacking agent, wood fiber, mulch, and compost.

The Contractor shall provide all seed tag labels to the Engineer. No payment will be made for seed unless tag labels from all seed to be used on the project have been submitted as specified.

SEEDING PROCESS

1. Soil Ripping / Tilling

Proper soil preparation is essential for seeding success and is required prior to nutrient and seed application. Tillage (typically requiring ripping) improves infiltration of stormwater and can improve capacity for water storage / absorption. Soil shall not be tilled or ripped when the soils are wet and the moisture content would cause compaction. Soil may be prepared with a ripper bar, chisel plow, or other methods (including hand tillage) to produce the prescribed results. Equipment for soil tillage shall be provided by the Contractor as part of the seeding cost.

Prior to soil ripping / tilling, the contractor is responsible for:

- Determining buried utility depths to ensure that there is no conflict with soil work.
- Removal of invasive and non-native plant species.

All areas to be seeded shall be tilled to a minimum depth of 6" excluding the following areas:

- Within 3' of edge of asphalt pavement / concrete curb: Tillage at a depth between 4" - 6" will be provided.
- Within dripline of existing plant material: no tillage shall occur within the dripline of existing plant material. For trees and shrubs, this is the outer edge of canopy. For cacti tillage will occur no closer than 5' to plant. For saguaros over 8' in height no deep tillage will occur within 10' of trunk.
- Fill slopes flatter than 3:1 - till to minimum 6" depth.

2. Amendment of Soil with Compost and Chemical Fertilizer

Compost and chemical fertilizer are installed after tilling and prior to planting and irrigation. The goal is for all amendments to be worked into the top 4-6" of the soil prior to the seeding application.

The following amendments will be applied:

- Chemical fertilizer and sulfur shall be applied at the rate of 200 pounds each per acre.
- Compost shall be applied at the rate of 15 cubic yards per acre for broadcast, or 3,000 pounds per acre for hydraulic application.

Refer to the Materials section for additional information and requirements.

3. Irrigation and Planting Installation

Irrigation and planting (including setting of boulders) are now installed (post tilling and nutrient application). These items are done prior to seeding in order to minimize soil compaction after seeding, and to prevent seed from getting buried. Contractor shall leave the soil in a roughened condition and create furrows (minimum 3" deep, 12" minimum spacing between furrows) in areas where there are no conflicts with irrigation lines.

4. Seeding

Seed shall be applied by either hydroseeding or manual broadcast. Seeding shall not begin until all areas have been tilled and approved by the Engineer. Refer to the Materials section of this Special for requirements for all materials listed here.

The seeding process is accomplished with separate applications of (1) seed and (2) straw mulch cover. It is NOT acceptable to combine the seed and mulch in a single slurry. Regardless of the seeding method, the contractor shall obtain seed to soil contact. Seed application on top of straw mulch cover or hydraulically applied straw mulch cover shall be rejected.

Seeding shall not be performed when wind exceeds 10mph or if there are other conditions that prevent the uniform application of materials.

Seeding Application - Hydroseed: The specified seed shall be applied in a slurry containing 200 pounds of thermally-refined wood fiber and a minimum of 40 pounds tacking agent per acre. Seed shall not be in the slurry for more than 30 minutes. Hydroseeded areas shall have 100% coverage. Hydroseeded areas shall be mulched within 24 hours of seed application.

Seeding Application - Manual: The specified seed shall be broadcast manually to produce uniform distribution of seed. Seeded areas shall be mulched within 24 hours of seed application.

Straw Mulch Application (required for either method of seeding): Within 24 hours of seeding, hydraulically applied straw mulch with tacking agent and wood fiber shall be applied to all areas that were seeded.

The straw mulch slurry shall consist of:

- Hydraulically applied straw mulch (pounds per acre - dry weight): 2,500
- Tacking Agent (pounds pure mulilage per acre - dry weight): 150
- Thermally-refined Wood Fiber (pounds per acre - dry weight): 500

MATERIALS

Seed

Provide seed as specified on Plans. No substitution of species will be allowed unless evidence, showing that the specified materials are not reasonably available during the contract period, is submitted, in writing, by the contractor to the Engineer. The substitution of species shall be made only with the written approval of the Engineer, prior to making said substitution.

The seed shall be delivered to the project site in standard, sealed, undamaged containers. Each container shall be labeled in conformance with Arizona Revised Statutes and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Labels shall indicate the variety of strain of seed, the percentage of germination, purity and weed content, and the date of analysis which shall not be more than nine months prior to the delivery date.

Weed content of the seed mix shall not exceed 0.5%. If the sample contains any amount of a plant species listed as noxious, restricted or invasive, the seed mix will be rejected.

Tacking Agent: Tacking agent shall be a naturally occurring organic compound and shall be non-toxic. The tacking agent shall be a product typically used for binding soil and mulch in seeding or erosion control operations. Active ingredient shall consist of mucilage or gum obtained from guar or plantago. The tacking agent shall be labeled indicating the type and mucilage purity.

Thermally-Refined Wood Fiber: Wood cellulose fiber mulch shall be from thermo-mechanically processed wood, processed to contain no growth germination inhibiting factors. The mulch shall be from virgin wood manufactured and processed so the fibers will remain in uniform suspension in water under agitation to form homogenous slurry. Paper products will not be considered as virgin wood. The thermally-refined wood fiber mulch shall have the properties shown in Table 1 below:

TABLE 1: Thermally-Refined Wood Fiber

Virgin Wood Cellulose Fiber:	90% min.
Recycled Cellulose Fiber:	10% max.
Ash Content:	0.8% +/-0.3%
pH:	4.5 +/-1.0
Water Holding Capacity:	10 : 1 (water : fiber) Min.

Water: Water shall be free of oil, acid, salts or other substances which are harmful to plants. All non-potable water shall be tested for its suitability for seeding/planting with the water quality-related concerns of salinity, pathogens and contaminants.

Weed Free Straw Mulch for Hydraulic Application: Hydraulically applied straw mulch shall be wheat, barley, or rice straw (rye straw and oat straw are not be acceptable) processed to various particle sizes. A minimum of 70 percent (70%) of the wheat, barley, or rice straw in the mix shall be not less than 1/2 inch ± 1/4 inch in length. Straw particles may be longer provided that the particles can be used with the selected hydroseeder without clogging. Hydraulically applied straw mulch, as furnished by the manufacturer, may contain up to ten (10) percent paper or cotton materials in dry weight.

Straw shall be free from noxious weeds in compliance with the standards and procedures of the North American Weed Management Association (NAWMA) or the Arizona Crop Improvement Association (ACIA). The contractor shall provide documentation, including a transit certificate, and appropriate labels and/or marking twine, from the ACIA or NAWMA that straw materials to be used for mulch are free of noxious weeds. The straw shall be accompanied by the certification, labels and/or marking twine at the time of delivery to the project site. Straw delivered to the project without such information will be rejected, and promptly removed from the project.

The date of installation of hydraulically applied straw mulch cover shall be less than twelve (12) months from the date of production. The date of production of hydraulically applied straw mulch material shall be presented for verification by the Engineer.

Chemical Fertilizer and Sulfur: Chemical fertilizer shall be composed of a mixture of one part sulfur-coated urea 25-4-8, one part monammonium phosphate 11-52-0, and one part methylene urea 38-0-0. The sulfur-coated urea, a blended fertilizer 25-4-8, shall have approximately 80 percent of the nitrogen defined as slow release, and contain 5 percent iron, 10 percent sulfur and trace amounts of zinc and manganese. The result shall be a 24-18-2 chemical blended fertilizer, as specified herein. Application rate is 200 pounds per acre.

In addition to the fertilizer mixture, agricultural sulfur compounds, comprised of between 80 percent and 96 percent sulfur, shall be applied at the rate of 200 pounds per acre.

Compost: Compost may be applied manually or hydraulically. Compost shall consist of composted organic vegetative materials and may contain worm castings. No animal manures or biosolids shall be used in the compost or added to the compost. Compost shall be dark brown in color with the parent material composted and no longer visible. The structure shall be a mixture of fine and medium size particles and humus crumbs. The odor shall be that of rich humus with no ammonia or anaerobic odors.

Application Rate (Manual application): 15 cubic yards per acre, to be applied prior to final tilling so that compost can be incorporated into the soil.

Application Rate (Hydraulic application): 3,000 pounds per acre, to be applied after final tilling. Hydraulically applied compost may be combined with soil amendments and fertilizer in the same slurry. Seeding will be applied separately, after the application of compost and amendments - these will NOT be combined in a slurry.

ROUTINE CARE

- All machines used for hydroseeding shall be capable of continuous agitation of the slurry mixture during the seeding operation. Pump pressure shall maintain a continuous non-fluctuating spray. The sprayer shall deliver a uniform application of hydroseed.
- Hydroseed deposited on adjacent trees and shrubs, walkways, on structures and on any areas where seeding is not specified shall be removed.
- Care shall be taken during the seeding operations to prevent damage to existing trees and shrubs in the seeding area.
- Preservation of Seeded Areas. The contractor shall protect seeded areas from damage by traffic or construction equipment. Surfaces eroded or otherwise damaged following seeding shall be repaired by re-grading and reseeding as directed by the Owner.

IRRIGATION SPECIFICATIONS

SECTION 1: GENERAL

- Contractor shall furnish and install material and equipment pertaining to the irrigation system herein specified or shown on the drawings. This shall include all items of a minor nature necessary to complete the installation.
- Examinations of Drawings and Premises: Prior to submitting a bid, the Contractor shall carefully study the drawings and shall make a careful examination of the premises and any existing work. He/She shall determine in advance the methods of installing and connecting the system, the means to be provided for getting the equipment into place, and shall make himself/herself thoroughly familiar with all of the requirements of the contract. By the act of submitting a proposal for the work required and included in the contract, the Contractor shall be deemed to have made such study and examination, and to be familiar with and accept all conditions of the site.
- Contractor's superintendent: The Contractor's superintendent shall be satisfactory to the General Contractor. The Contractor's superintendent shall not be changed, except with the consent of the General Contractor. The Contractor's superintendent shall be authorized to represent the Contractor.
- The Contractor shall give all necessary notices, obtain all permits and pay all costs in connection with his work, file with all governmental departments having jurisdiction, obtain all required certificates of inspection for his work and deliver to the Owner's Representative before request of acceptance and final payment for the work. The Contractor shall comply with all laws, rules and regulations of all authorities having jurisdiction over premises.
- Warranty & Maintenance: The irrigation system shall be guaranteed by the contractor to be free of defects in workmanship and materials for a period of one year from acceptance by owner.
- Damage: The contractor shall be responsible for damages to the grounds, hardscape, traffic curbs, roadways, piping systems, utilities, electrical systems and their equipment and contents caused by leaks in the piping systems being installed or having been installed by him, or caused by negligence. The Contractor shall repair, at his own expense, all damage so caused. All repair work shall be done in a manner satisfactory to the Owner's Representative.
- Record Drawings:
 - Prior to Final Acceptance of work, Contractor shall provide a "Redline" record set of drawings showing dimensioned locations and depths for irrigation system.
 - Record all changes which are made from the Contract Drawings, including changes in the pressure and non-pressure lines.
 - Locate all dimensions from two permanent points (buildings, monuments, sidewalks, curbs or pavements).
- Operating and Maintenance Instructions: At completion of the work, prepare complete operating and maintenance instructions for the irrigation system. Data shall be typewritten and enclosed in a suitable folder and submitted to the owner for approval. All information needed to properly operate and maintain all items, including scheduling information, parts lists, etc., will be part of the instructions.

SECTION 2: PRODUCTS

- Submittals: The Contractor shall submit to the General Contractor two (2) copies of shop drawings or manufacturer's "cut sheet" for each type of pipe, controller, valves, valve boxes, wire, conduit, fittings and all other types of fixtures and equipment that are specified on the Project Plans. The submittal shall include the manufacturer's name, model number, equipment capacity and manufacturer's installation recommendation, if applicable, for each proposed item.
- Substitution of Materials: This irrigation system has been designed around the irrigation components herein stated and as shown on the plans. Any substitutions will be allowed only by written order signed by the Owner's Representative.
- Protection: Protect all materials from damage during construction and storage. PVC pipe and fittings shall be protected from direct sunlight.
- Emitters: The emitter system is shown in a schematic manner. Specific emitters and locations are not shown on the plan and are subject to field adjustment. The ends of all laterals shall have a hose end flush cap.
- Sleeving: Provide sleeves as shown and as required. All lateral line, emitter line, and control wire shall be in sleeves under all paved surfaces. Minimum size shall be pipe sizes larger than the pipe being sleeved. Additionally, all main line piping under vehicular paving, and under structural walls shall be placed in sleeves. Sleeves under roadways shall be provided by others. Contractor shall field verify their location.
- Pipe Installation & Crossings: No pipes shall be installed parallel and directly over another line. Minimum clearance for pipes crossing to be 3".

SECTION 3: EXECUTION

- Site Conditions:
 - Design Pressure: This irrigation system has been designed to operate with a minimum static inlet water pressure as shown on the drawings. Irrigation contractor shall verify water pressure on-site prior to beginning work. If discrepancy exists between water pressure tested on-site and that noted on plan, contractor shall immediately notify Owner's Representative.
 - Existing Conditions: The Contractor shall not install the irrigation system per plans when it is evident that site conditions (such as obstructions, grade differences, or differences in location / shape of planted areas) may not have been accounted for in the original design. In such instances, the Contractor shall notify the Owner's Representative when the discrepancy is discovered. If notification is not performed, the Contractor shall assume responsibility for the installation and resultant need of any subsequent revisions.

PLANTING SPECIFICATIONS

SECTION 1: GENERAL

- Existing Utilities - Location and Elevations: The Contractor shall examine the site and verify to his/her own satisfaction the locations and elevations of all utilities and availability of utilities and services required. The Contractor shall inform him/her self as to their relation to the work and the submission of bids shall be deemed as evidence thereof. At least two working days prior to excavation, Contractor shall request markout of underground utilities by calling BlueStake at 811. The Contractor shall repair at his/her own expense, and to the satisfaction of the General Contractor, any damage to any utility shown or not shown on the plans.
- Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify General Contractor for instructions as to further action. Contractor shall make necessary adjustments in the layout as may be required to connect to existing stubouts, should any such stubouts not be located exactly as shown and as may be required to work around existing work, at an increase in cost to the Owner. All such work will be recorded on record drawings and turned over to the General Contractor prior to final acceptance.
- Layout: Prior to installation, the Contractor shall stake out the location of valves, controllers, main line routing, pressure regulators and backflow preventer. All layout shall be approved by Owner's Representative prior to installation. Relocation of irrigation equipment as a result of the Contractor's failure to stake location and receive Owner's Representative's approval shall be at the Contractor's expense.
- Excavation & Backfill:
 - Refer to Details for required burial depth of pipe and sleeving.
 - Trenches shall be dug straight, and pipe shall be supported continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on drawings and as noted. If the bottom of a pipe trench excavation is found to consist of rock, caliche, or any other material that, by reason of its hardness, cannot be excavated to give a uniform bearing surface, said rock or other material shall be removed for at least 3 inches below the specified trench depth, and be refilled to specified trench depth with sand or similar material thoroughly tamped into place.
 - Trenches shall not be backfilled until all required tests are performed. Trenches shall be carefully backfilled in 6" lifts with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from clods of earth or stones larger than one inch (1") in diameter. Backfill shall be compacted in landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps or other surface irregularities. Backfilling shall not be performed while trenches or backfill material is in a wet or muddy condition.
 - Flooding of trenches will be permitted only with approval of the Owner's Representative.
 - If settlement occurs and subsequent adjustments in pipe, valves, planting, or other construction are necessary, the Contractor shall make all required adjustments without cost to the Owner.
 - Trenching and Backfilling Under Paving: Trenches located under areas where paving, asphaltic concrete or concrete will be installed shall be backfilled with sand (a layer 6 inches below the pipe and 3 inches above the pipe) and compacted in layers to 90% compaction, using manual or mechanical tamping devices. All trenches shall be left flush with the adjoining grade. The irrigation Contractor shall set in place, cap, and pressure test all piping under paving prior to the paving work.
 - Flushing of System: All lines to be completely flushed prior to installation of emitters and prior to backfill. After all new lateral pipe lines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of emitters, the control valves shall be opened and a full head of water used to flush out the system. Emitters shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Owner's Representative.
 - Testing of Irrigation System: The Contractor shall request the presence of the Owner's Representative at least 48 hours in advance of testing. Test all pressure lines under hydrostatic pressure of 100 lbs per square inch and prove water tight. All HDPE lateral line pipe shall be tested prior to insertion of emitters at working line pressures with couplings exposed and swing joints and other outlets capped. Sustain pressure in lines for not less than two hours. All hydrostatic tests shall be made only in the presence of Owner's Representative. No pipe shall be backfilled until it has been inspected, tested and approved in writing. Contractor shall furnish necessary test equipment.
 - Maintenance: Contractor shall provide job maintenance of all irrigation and shall continue until job acceptance by the Owner. Maintain all system components and assure proper watering of all plants. Repair any leaks and replace any defective components. After all landscape and irrigation operations are complete and in conformance with the contract documents, the owner shall grant final job acceptance.
 - Cleanup & Disposal: Cleanup shall be made as each portion of work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be swept or washed down, and any damage sustained to the work of others shall be repaired to the original conditions acceptable to the Owner's Representative.

SECTION 2: PRODUCTS

1. Plant Material

- Provide quality, size, genus, species, and variety of exterior plants indicated on the project plans, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock." Provide healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of complete botanical and common names. Tags shall remain attached to plants until reviewed and accepted by Owner's Representative.
- Prepared Soil
 - Prepared soil material for backfill shall consist of existing soil (trash and weed-free native site soil, with all rocks over 2" in diameter removed).

SECTION 3: EXECUTION

1. Examination & Preparation:

- Fine-grading of all basins / recessed planting areas shown on plans, as well as irrigation system, per plan, shall be complete and approved by Owner's Representative prior to planting.
- Basin grading and planting shall be performed only when moisture content of soil is conducive to such work. Saturated / wet soil shall not be worked.
- Stake locations of all plant material for acceptance by Owner's Representative prior to planting.
- Prior to planting, remove any trash/debris from planting pits. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area. If contamination is present in soil within a planting area, remove the soil and contamination as directed by Owner's Representative and replace with new planting soil.

2. Plant Pit Excavation:

- Prepare planting pits as shown on Project Details.
- Fill planting pit with water and allow to drain. Pit must drain at a rate of 6" per hour or faster. Notify Owner's Representative if pits do not drain as required.

3. Plant Delivery:

- Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than 3 hours after delivery, set plants in shade, protect from weather and mechanical damage, and keep roots moist.
- Do not remove container-grown stock from containers or cut sides of containers before time of planting.
- Irrigate plants stored on-site to maintain root systems in a moist condition.

4. Plant Installation:

- Do not use plants if root ball is cracked or broken before or during installation operations.
- Place backfill around root ball in 6-inch layers, tamping to settle and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of prepared soil. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of prepared soil.
- No plants shall be staked or guyed except at the direction of the Owner's Representative.

- Maintenance: Contractor shall provide maintenance of all plant material until job acceptance by the Owner.

- Cleanup & Disposal: Cleanup shall be made as each portion of work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be swept or washed down, and any damage sustained to the work of others shall be repaired to the original conditions acceptable to the Owner's Representative.

SPECIAL PROVISIONS - DESERT CARPET (ROCK MULCH WITH SEED MIX 2)

The following steps occur after all major site grading and hardscape work have been completed. The goal is to compact the soil as little as possible after soil tillage is completed. The rock mulch ('scattered rock') with hydroseed is a Pima County DOT practice, and has been adapted for this project. The rock improves germination of seed by providing 'footholds' and increased moisture retention. When rock mulch is used, it is allowable for the hydroseed mix to contain both seed and mulch (rather than separate applications of seed and mulch cover).

SEEDING PROCESS

- Soil Ripping / Tilling

Deep tillage typically requires ripping. Tillage improves infiltration of stormwater and can improve capacity for water storage / absorption. Soil shall not be tilled or ripped when the soils are wet and the moisture content would cause compaction. Soil may be prepared with a ripper bar, chisel plow, or other methods (including hand tillage) to produce the prescribed results. Equipment for soil tillage shall be provided by the Contractor as part of the seeding cost.

Prior to soil ripping / tilling, the contractor is responsible for:

- Determining buried utility depths to ensure that there is no conflict with soil work.
- Removal of invasive and non-native plant species.

All areas shall be tilled to a depth of 12" excluding the following areas:

- Within 3' of edge of asphalt pavement / concrete curb: Tillage at a depth between 4" - 6" will be provided. 12" deep tilling will be provided starting 3' away from edge of asphalt / curb.
- Within dripline of existing plant material: no tillage shall occur within the dripline of existing plant material. For trees and shrubs, this is the outer edge of canopy. For cacti tillage will occur no closer than 5' to plant. For saguaros over 8' in height no deep tillage will occur within 10' of trunk.
- Fill slopes flatter than 3:1 - till to minimum 6" depth

2. Amendment of Soil with Compost and Chemical Fertilizer

Compost and chemical fertilizer are installed after tilling and prior to planting and irrigation. This allows for the amendments to be worked into the soil through irrigation trenching / planting, etc. The goal is for all amendments to be worked into the top 4-6" of the soil prior to the seeding application.

The following amendments will be applied:

- Chemical fertilizer and sulfur shall be applied at the rate of 200 pounds each per acre.
- Compost shall be applied at the rate of 15 cubic yards per acre for broadcast, or 3,000 pounds per acre for hydraulic application.

Refer to the Materials section for additional information and requirements.

3. Irrigation and Planting Installation

Irrigation and planting (including setting of boulders) are now installed (post tilling and nutrient application). These items are done prior to seeding in order to minimize soil compaction after seeding, and to prevent seed from getting buried. Contractor shall leave the soil in a roughened condition and create furrows (minimum 3" deep, 12" minimum spacing between furrows) in areas where there are no conflicts with irrigation lines.

4. Application of Rock Mulch

Rock mulch per the Project Plans is now applied. Rock is to be applied at 40% coverage - there will be 60% open soil.

5. Seeding

Hydroseed, per the Project Plans and Specifications, shall be applied after the application of rock mulch. No chemical fertilizer will be applied with the hydroseed slurry. Refer to Materials Section for requirements for all materials listed here.

Seeding shall not be performed when wind exceeds 10mph or if there are other conditions that prevent the uniform application of materials.

Seeding Application - Hydroseed: The specified seed shall be applied in a slurry. Seed shall not be in the slurry for more than 30 minutes. Hydroseeded areas shall have 100% coverage.

The slurry shall consist of:

- Seed, per Project Plans (Seed Mix 2)
- Tacking Agent (pounds pure mucilage per acre - dry weight): 120
- Thermally-refined Wood Fiber (pounds per acre - dry weight): 1500

MATERIALS

Seed

Provide seed as specified on Plans. No substitution of species will be allowed unless evidence, showing that the specified materials are not reasonably available during the contract period, is submitted, in writing, by the contractor to the Engineer. The substitution of species shall be made only with the written approval of the Project Landscape Architect, prior to making said substitution.

The seed shall be delivered to the project site in standard, undamaged containers. Each container shall be labeled in conformance with Arizona Revised Statutes and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act. Labels shall indicate the variety of strain of seed, the percentage of germination, purity and weed content, and the date of analysis which shall not be more than nine months prior to the delivery date.

Weed content of the seed mix shall not exceed 0.5%. If the sample contains any amount of a plant species listed as noxious, restricted or invasive, the seed mix will be rejected.

Tacking Agent: Tacking agent shall be a naturally occurring organic compound and shall be non-toxic. The tacking agent shall be a product typically used for binding soil and mulch in seeding or erosion control operations. Active ingredient shall consist of mucilage or gum obtained from guar or plantago. The tacking agent shall be labeled indicating the type and mucilage purity.

Thermally-Refined Wood Fiber: Wood cellulose fiber mulch shall be from thermo-mechanically processed wood, processed to contain no growth germination inhibiting factors. The mulch shall be from virgin wood manufactured and processed so the fibers will remain in uniform suspension in water under agitation to form homogenous slurry. Paper products will not be considered as virgin wood. The thermally-refined wood fiber mulch shall have the properties shown in Table 1 below:

TABLE 1: Thermally-Refined Wood Fiber

Virgin Wood Cellulose Fiber:	90% min.
Recycled Cellulose Fiber:	10% max.
Ash Content:	0.8% +/-0.3%
pH:	4.5 +/-1.0
Water Holding Capacity:	10 : 1 (water : fiber) Min.

Water: Water shall be free of oil, acid, salts or other substances which are harmful to plants. All non-potable water shall be tested for its suitability for seeding/planting with the water quality-related concerns of salinity, pathogens and contaminants.

Chemical Fertilizer and Sulfur: Chemical fertilizer shall be composed of a mixture of one part sulfur-coated urea 25-4-8, one part monammonium phosphate 11-52-0, and one part methylene urea 38-0-0. The sulfur-coated urea, a blended fertilizer 25-4-8, shall have approximately 80 percent of the nitrogen defined as slow release, and contain 5 percent iron, 10 percent sulfur and trace amounts of zinc and manganese. The result shall be a 24-18-2 chemical blended fertilizer, as specified herein. Application rate is 200 pounds per acre.

In addition to the fertilizer mixture, agricultural sulfur compounds, comprised of between 80 percent and 96 percent sulfur, shall be applied at the rate of 200 pounds per acre.

Compost: Compost may be applied manually or hydraulically. Compost shall consist of composted organic vegetative materials and may contain worm castings. No animal manures or biosolids shall be used in the compost or added to the compost. Compost shall be dark brown in color with the parent material composted and no longer visible. The structure shall be a mixture of fine and medium size particles and humus crumbs. The odor shall be that of rich humus with no ammonia or anaerobic odors.

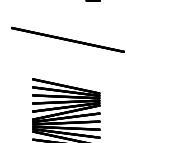
Application Rate (Manual application): 15 cubic yards per acre, to be applied prior to final tilling so that compost can be incorporated into the soil.

Application Rate (Hydraulic application): 3,000 pounds per acre, to be applied after final tilling. Hydraulically applied compost may be combined with soil amendments and fertilizer in the same slurry. Seeding will be applied separately, after the application of compost and amendments - these will NOT be combined in a slurry.

ROUTINE CARE

- All machines used for hydroseeding shall be capable of continuous agitation of the slurry mixture during the seeding operation. Pump pressure shall maintain a continuous non-fluctuating spray. The sprayer shall deliver a uniform application of hydroseed.
- Hydroseed deposited on adjacent trees and shrubs, walkways, on structures and on any areas where seeding is not specified shall be removed.
- Care shall be taken during the seeding operations to prevent damage to existing trees and shrubs in the seeding area.
- Preservation of Seeded Areas. The contractor shall protect seeded areas from damage by traffic or construction equipment. Surfaces eroded or otherwise damaged following seeding shall be repaired by re-grading and reseeding as directed by the Owner.

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