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No.	Revision	By	Date

**E-20: WURZBACH PARKWAY—SEGMENT 1**  
 SHEET  
**TREE PRESERVATION OVERALL LAYOUT**

**SAN ANTONIO WATER SYSTEM**

DATE: MARCH 2019	SAWS PROJECT NO. 16-4507	SHEET NO. TP12
DESIGN: VRS	KHA PROJECT NO. 06865025	
DRAWN: GAM		
CHECKED: GAG		

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 1/13/2019 4:51 PM

# Tree Protection Notes

## TREE PRESERVATION PLAN

THE PURPOSE OF THIS PLAN IS TO DEVELOP GUIDELINES TO BE FOLLOWED BY THE CONTRACTOR WHICH OUTLINE ALLOWABLE CONSTRUCTION ACTIVITIES AS THEY RELATE TO TREE PROTECTION, TREE REMOVAL, AND TREE PRUNING WITH AN EMPHASIS ON TREE AND UNDERSTORY PRESERVATION. PRESERVATION AND MITIGATION REQUIREMENTS WILL BE APPLIED TO THE ENTIRE PROJECT. THE CONSTRUCTION OR MOBILIZATION SHALL OCCUR PRIOR TO ACCEPTANCE OF THE PRESERVATION PLAN.

## DEFINITIONS:

**DIAMETER BREAST HEIGHT (DBH) OR DIAMETER INCHES:** THE AVERAGE CROSS-SECTIONAL MEASUREMENT OF THE TRUNK OF AN EXISTING TREE AT FOUR AND ONE-HALF (4 1/2) FEET ABOVE GRADE. IF THE TREE IS ON A SLOPE, IT SHALL BE MEASURED FROM FROM THE HIGH SIDE OF THE SLOPE. NEWLY PLANTED TREES SHALL BE MEASURED SIX (6) INCHES ABOVE GRADE FOR MULTI-TRUNK SPECIES. THIS MEASUREMENT WILL BE BASED ON THE MEASURED DIAMETER OF THE MAIN TRUNK TAKEN FOUR AND ONE-HALF (4 1/2) FEET ABOVE GRADE TOGETHER WITH ONE-HALF (1/2) OF THE DIAMETER OF THE REMAINING TRUNKS MEASURED AT THE SAME HEIGHT.

**PROTECTED TREE:** TREE DESIGNATED ON PLAN SHEET WITH NOTED LEGEND.

**ROOT PROTECTION ZONE (RPZ):** AN AREA WITH A RADIUS OF ONE FOOT FOR EACH INCH DBH OF TRUNK, OR IF BRANCHING OCCURS AT FOUR AND ONE-HALF (4 1/2) INCHES, THE DIAMETER IS MEASURED AT THE POINT WHERE THE SMALLEST DIAMETER CLOSEST TO THE BRANCHING OCCURS. THE ZONE DOES NOT NEED TO BE EXACTLY CENTERED AROUND THE TREE OR CIRCULAR IN SHAPE, BUT IT SHOULD BE POSITIONED SO THAT NO DISTURBANCE OCCURS CLOSER TO THE TREE THAN ONE-HALF (1/2) OF THE RADIUS OF THE ZONE OR WITHIN FIVE (5) FEET OF THE TREE WHICHEVER IS LESS FOR ANY TREE OR GROUPS OF TREES. THE ZONED DOES NOT NEED TO EXCEED ONE THOUSAND (1,000) SQUARE FEET IN SIZE. THE RADIAL ROOT PROTECTION ZONES OF TREES MAY OVERLAP ONE ANOTHER SO THAT THE AREA OF PROTECTION REQUIRED FOR ONE (1) TREE MAY BE SHARED BY THE AREA OF PROTECTION REQUIRED FOR ANOTHER TREE TO MINIMIZE THE TOTAL SQUARE FOOTAGE OF PROTECTED AREA WHERE POSSIBLE.

**TREE:** A PERENNIAL WOODY PLANT, SINGLE OR MULTIPLE TRUNK WITH FEW IF ANY BRANCHES ON ITS LOWER PART WHICH AT MATURITY WILL OBTAIN A MINIMUM SIX-INCH CALIPER.

## TREE SURVEY

A TREE SURVEY OF TREES 6" DBH AND LARGER 20 FEET EITHER SIDE OF CENTERLINE HAS BEEN PERFORMED FOR THE PROJECT ROUTE PRESENTED HEREIN. TREE PRESERVATION SHALL BE APPLICABLE TO THE ENTIRE PROJECT. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS PRIOR TO BID SUBMISSION.

## TREE REMOVAL

1. THE CONTRACTOR WILL BE ALLOWED TO CLEAR SITE AREA UNLESS A PARTICULAR TREE OR TREES IS DESIGNATED TO REMAIN.
2. ALL DEBRIS FROM TREE REMOVAL (TRUNKS, BRANCHES, ROOTS, ETC.) SHALL BE REMOVED AND DISPOSED OF OFF-SITE BY THE CONTRACTOR.
3. THE SAWS CONSTRUCTION INSPECTOR WILL BE REQUIRED TO KEEP AN INVENTORY OF ALL PROTECTED TREES REMOVED. THE CONTRACTOR SHALL NOT REMOVE ANY TREES WITHOUT SAWS INSPECTOR AUTHORIZATION PENDING IDENTIFICATION, MEASUREMENT, AND DOCUMENTATION.
4. TREES LOCATED WITHIN CITY, COUNTY, OR STATE RIGHT-OF-WAYS SHALL NOT BE REMOVED WITHOUT APPROVAL FROM THE CITY ARBORIST'S OFFICE.
5. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL SCHEDULE A PROJECT SITE WALK-THROUGH WITH THE CITY ARBORIST INSPECTOR.

## TREE PRUNING

1. ALL TREES WITH A DIAMETER GREATER THAN 3 INCHES AFFECTED BY CONSTRUCTION SHALL HAVE THE LIMBS AND ROOTS TRIMMED AND PRUNED ACCORDING TO CITY OF SAN ANTONIO ITEM NO. 802 TREE PRUNING, SOIL AMENDING AND FERTILIZATION AND STANDARD PRACTICES DESCRIBED BY THE AMERICAN NATIONAL STANDARD INSTITUTE ANSI A300-1995 OR MOST CURRENT VERSION.
2. PRUNING WILL BE ALLOWED WITHIN THE PERMANENT CONSTRUCTION AND/OR ACCESS EASEMENTS AS REQUIRED FOR CLEARANCE WITHIN THE CONSTRUCTION WORK ZONE, CLEARANCE FOR ACCESS OR JOBSITE SAFETY. NO OTHER PRUNING WILL BE ALLOWED WITHOUT AUTHORIZATION FROM THE SAWS CONSTRUCTION INSPECTOR.
3. PRUNING SHALL CONSIST OF MINOR BRANCH OR ROOT REMOVAL.
4. BRANCHES STUBS 6" IN DIAMETER OR GREATER SHALL NOT BE PRUNED WITHOUT PRIOR APPROVAL OF THE SAWS CONSTRUCTION INSPECTOR.
5. BRANCHES OR ROOTS 6" IN DIAMETER OR GREATER SHALL NOT BE PRUNED WITHOUT PRIOR APPROVAL OF THE SAWS CONSTRUCTION INSPECTOR.
6. REPAIR PRESERVED TREES WHEN DAMAGED BY CONSTRUCTION OPERATIONS IN A MANNER ACCEPTABLE TO THE OWNER. REPAIR DAMAGED TREES PROMPTLY TO PREVENT PROGRESSIVE DETERIORATION CAUSED BY DAMAGE. ALL BROKEN BRANCHES AND EXPOSED ROOTS OF MITIGATION, PROTECTED, OR HERITAGE TREES SHALL BE CUT CLEANLY. IN CASE OF OAK SPECIES, IN ORDER TO PREVENT INFECTION BY OAK WILT SPORES, WOUNDS MUST BE PAINTED WITH AN ACCEPTABLE WOUND DRESSING WITHIN 30 MINUTES.
7. REPLACE TREES SCHEDULED TO REMAIN AND DAMAGED BEYOND REPAIR BY CONSTRUCTION OPERATIONS, AS DETERMINED BY THE OWNER, WITH TREES OF SIMILAR SIZE AND SPECIES.

## TREE MITIGATION

1. MITIGATION FOR AUTHORIZED TREE REMOVAL WILL BE PERFORMED BY SAWS UNDER A SEPARATE CONTRACT. NO EXPENSE TO THE CONTRACTOR.
2. MITIGATION FOR UNAUTHORIZED TREE REMOVAL BY THE CONTRACTOR SHALL BE PAID BY THE CONTRACTOR IN AN AMOUNT EQUAL TO \$140.00 PER TREE INCH DIAMETER REMOVED OUTSIDE THE CONSERVATION EASEMENT AND \$250.00 PER TREE INCH DIAMETER REMOVED INSIDE THE CONSERVATION EASEMENT. PAYMENT OF CONTRACT OR MITIGATION WILL BE INVENTORIED BY THE SAWS CONSTRUCTION INSPECTOR AND SHALL BE WITHHELD FROM THE CONSTRUCTION CONTRACT PAYMENT.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PENALTIES OR FINES OR EACH UNAUTHORIZED TREE REMOVAL IN ACCORDANCE WITH THE CITY OF SAN ANTONIO VERIFIED DEVELOPMENT CODE SECTION 35-493.

## TREE PROTECTION NOTES

1. CONTRACTOR SHALL BE LICENSED WITH THE CITY OF SAN ANTONIO FOR TREE MAINTENANCE, PRUNING AND/OR REMOVAL OR SHALL RETAIN A LICENSED SUBCONTRACTOR TO PERFORM TREE MAINTENANCE, PRUNING AND/OR REMOVAL.
2. PROTECT DESIGNATED EXISTING TREES AS SHOWN ON PLANS AND WITHIN ROW OR PROPOSED EASEMENT. ALL TREES TO BE PRESERVED AS PART OF THE PROJECT SHALL BE PROTECTED AGAINST INJURY OR DAMAGE, INCLUDING CUTTING, SOIL COMPACTION, BREAKING OR SKINNING OF ROOTS, TRUNKS, OR BRANCHES DURING CONSTRUCTION OPERATIONS BY FENCING AS DESCRIBED BELOW. THE TREE PROTECTION SHALL BE PLACED BEFORE ANY EXCAVATION OR GRADING BEGINS AND MAINTAINED FOR THE DURATION OF THE CONSTRUCTION WORK. PROTECTION WILL ENCOMPASS THE ROOT PROTECTION ZONE WHICH WILL BE AT MINIMUM, ONE FOOT RADIUS PER INCH DIAMETER OF THE TREE TRUNK AT 4 1/2 FEET ABOVE GROUND. NO MATERIAL SHALL BE STORED OR CONSTRUCTION OPERATION SHALL BE CARRIED ON WITHIN THE TREE PROTECTION FENCING, UNLESS AUTHORIZED BY THE OWNER. THE PROTECTION SHALL REMAIN UNTIL ALL WORK IS COMPLETED.
3. PROTECT DESIGNATED TREES WITH A TEMPORARY MINIMUM 4 FEET HIGH ENCLOSURE. (SEE TREE PROTECTION DETAILS TP2)
4. ERECT TEMPORARY FENCING BEFORE COMMENCING SITE PREPARATION WORK. MAINTAIN FENCING DURING FULL CONSTRUCTION PERIOD. REMOVE TEMPORARY FENCING WHEN NO LONGER NEEDED OR WHEN ACCEPTABLE TO THE OWNER.
5. PROTECT ALL EXISTING LANDSCAPE AND TREES FROM CHANGES OF SOIL PH FACTOR BY PREVENTING DISPOSAL OF LIME BASED MATERIALS SUCH AS CONCRETE, PLASTER, LIME TREATMENT AT PAVEMENT SUBGRADE, AND APPURTENANCES IN OR IN PROXIMITY TO PRESERVED AREAS.
6. PROTECT ALL EXISTING TREES NEAR AREAS TO BE STABILIZED FROM UNDERGROUND CONTAMINANTS BY PLACING A 6 mil (0.15 mm) PLASTIC FILM BARRIER ALONG EXPOSED VERTICAL CUT EXTENDING A MINIMUM OF 12 INCHES (305 mm) INTO UNDISTURBED SUBGRADE BELOW DEPTH OF STABILIZATION.
7. CONTRACTOR SHALL MEET WITH COSA TREE INSPECTOR PRIOR TO THE START OF CONSTRUCTION TO GO OVER THE METHODS OF MAXIMIZING TREE PRESERVATION WITHIN THE ALLOWABLE CONTRACTOR STAGING/WORK AREA.
8. NO SOIL SHALL BE SPREAD, SPOILED, OR OTHERWISE DISPOSED OF, NOR SHALL ANY SOIL BE REMOVED FROM UNDER ANY TREE WITHIN THE DRIP LINE.
9. PROTECT ALL EXISTING TREES FROM STRANGLING BY NOT TYING ROPES OR GUY WIRES TO TRUNKS OR LARGE BRANCHES.
10. INTERFERING BRANCHES OF PRESERVED TREE MUST REMAIN PEROUS.
11. BORE UNDER DESIGNATED SIGNIFICANT TREES AS SHOWN ON THE PLANS.
12. THE PROPOSED FINISHED GRADE AND ELEVATION OF LAND WITHIN THE ROOT PROTECTION ZONE OF ANY TREE TO BE PRESERVED SHALL NOT BE RAISED OR LOWERED MORE THAN THREE (3) INCHES UNLESS WELLING AND RETAINING METHODS ARE ALLOWED IN THE ROOT PROTECTION ZONE.
13. THE ROOT PROTECTION ZONE FOR EACH PRESERVED TREE MUST REMAIN PEROUS.
14. REPAIR AND REPLACEMENT OF PRESERVED TREES DAMAGED BY CONSTRUCTION OPERATIONS LACK OF ADEQUATE PROTECTION DURING CONSTRUCTION SHALL BE AT THE CONTRACTOR'S EXPENSE.
15. TREES SPECIALLY DESIGNATED TO REMAIN SHALL BE PRESERVED BY THE CONTRACTOR EVEN IF ALTERNATE CONSTRUCTION TECHNIQUES MUST BE UTILIZED. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR THIS INSTALLATION.
16. VEHICULAR AND EQUIPMENT PARKING AND MATERIAL STORAGE SHALL NOT BE LOCATED WITHIN THE RPZ OF PROTECTED TREES.
17. THE CONSTRUCTION EASEMENT IS PROVIDED TO THE CONTRACTOR FOR STAGING, ACCESS, ADDITIONAL OPERATING ROOM, AND SPOIL/MATERIAL STORAGE. TREE REMOVAL OF PROTECTED TREES WITHIN THE CONSTRUCTION EASEMENT WILL NOT BE ALLOWED UNLESS ACCESS IS NOT OTHERWISE ACHIEVABLE AS DETERMINED BY THE SAWS CONSTRUCTION INSPECTOR. A MEANDERING ACCESS ROUTE WILL BE PROMOTED TO AVOID TREE REMOVAL.
18. CONTRACTOR SHALL PROTECT ALL TREES WHENEVER POSSIBLE. DAMAGE TO TREES SHOWN ON PLANS TO BE SAVED WILL BE MITIGATED AT THE CONTRACTOR'S EXPENSE PER MOST CURRENT CITY OF SAN ANTONIO TREE ORDINANCE.
19. ALL OAK CUTS AND WOUNDS ARE TO BE PAINTED WITHIN 30 MINUTES.
20. TREES, SHRUBS, OR BUSHES TO BE CLEARED FROM PROTECTED ROOT ZONE AREAS SHALL BE REMOVED BY HAND AS DIRECTED BY THE CITY ARBORIST INSPECTOR.
21. EXPOSED ROOTS SHALL BE COVERED AT THE END OF EACH DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
22. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN THREE INCHES IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. CONTRACTOR SHALL CONTACT THE CITY ARBORIST AT 207-0278 FOR GUIDANCE. THE SAWS INSPECTOR SHALL ALSO BE NOTIFIED. TRIMMING AND ANY OTHER ADJUSTMENTS TO EXISTING TREES SHALL BE PERFORMED TO THE SATISFACTION OF THE CITY ARBORIST AND SAWS AT NO ADDITIONAL COST. (NSPI).

TREE PRESERVATION SUMMARY									
	SMALL DIAMETER***		SIGNIFICANT TREE***		HERITAGE 3:1		HERITAGE 1:1		
	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	
UPLANDS	TOTAL (INCHES)	42	269	253	1634	0	256	54	103
	PRESERVATION %	86.5%		86.6%		100.0%		65.6%	
	ALLOWED %	0.0%		25.0%		100.0%		100.0%	
	MITIGATION REQUIRED (INCHES)	0		0		0		54	
	MITIGATION PROVIDED (INCHES)								
	TOTAL REQUIRED MITIGATION (INCHES)	54							
FLOODPLAIN	TOTAL (INCHES)	121	335	420	1652	36	849	33	130
	PRESERVATION %	73.5%		79.7%		95.9%		79.8%	
	ALLOWED %	0.0%		80.0%		100.0%		100.0%	
	MITIGATION REQUIRED (INCHES)	0		5.6		108		33	
	MITIGATION PROVIDED (INCHES)								
	TOTAL REQUIRED MITIGATION (INCHES)	146.6							
RIPARIAN	TOTAL (INCHES)	0	0	0	130	0	0	0	26
	PRESERVATION %	100.0%		100.0%		100.0%		100.0%	
	ALLOWED %	0.0%		80.0%		100.0%		100.0%	
	MITIGATION REQUIRED (INCHES)	0		0		0		0	
	MITIGATION PROVIDED (INCHES)								
	TOTAL REQUIRED MITIGATION (INCHES)	0							
<b>TOTAL REQUIRED MITIGATION (INCHES)</b>									
<b>200.6</b>									
NO CATEGORY TO FALL BELOW 20%									
PRESERVED- TREE TO REMAIN THAT MEETS ROOT PROTECTION ZONE REQUIREMENTS									
MITIGATION- 1:1 FOR SIGNIFICANT TREES BELOW MINIMUM PRESERVATION REQUIREMENTS									
*ENVIRONMENTAL BUFFER IS A 30 FEET BUFFER FROM THE 100 YEAR FLOODPLAIN THAT SHALL BE CALCULATED SEPARATELY FROM THE FLOODPLAIN AND UPLANDS AREAS									
***SMALL SPECIES: CORDALIA, REBUD, TX. MOUNTAIN LAUREL, TX. PERSIMON, HAWTHORN, POSSOMHAW PROTECTED AT 5" DBH, HERITAGE AT 12" AND MITIGATED AT 1:1 HERITAGE									
***ASHE JUNIPER, HUISACHE, AIZONA ASH, HACKBERRY PROTECTED AT 10" AND MITIGATED AT 1:1 HERITAGE									
***NON-NATIVE: CHINESE, PISTACHE, CHINABERRY, CHINESE TALLOW, TREE OF HEAVE, SALT CEDAR, JAPANESE LINGUSTRUM ARE NOT PROTECTED AND NOT COUNTED IN PRESERVATION OR MITIGATION CALCULATIONS									

## LEGEND

• NO SEPARATE PAY ITEM (NSPI)

TREE PRESERVED



TREE REMOVED



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No.	Revision	By	Date



**E-20: WURZBACH PARKWAY-SEGMENT 1**  
SHEET

**TREE PROTECTION NOTES AND PRESERVATION SUMMARY TABLE**

DATE: MARCH 2019	SAWS PROJECT NO.	SHEET NO.
DESIGN: VRS	16-4507	TP1
DRAWN: GAM	KHA PROJECT NO.	
CHECKED: GAG	068665025	