# WATER RESOURCES INTEGRATION PROGRAM, PHASE 1 PIPELINE SEGMENT 2A

Solicitation No. B-14-045-DD

SAWS Job No. 14-8605

## ADDENDUM NO. 2

SEPTEMBER 8, 2014

To Respondent of Record:

This addendum, applicable to work referenced above, is an amendment to the proposal and plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the proposal.

### MODIFICATIONS TO THE SPECIFICATIONS

1. CONTRACT DOCUMENTS, TECHNICAL SPECIFICATIONS INDEX, Page TS-1, Delete the entry for Specification "01700 PROJECT CLOSEOUT" beginning on page "01700 – 1".

### MODIFICATIONS TO THE PLANS

1. Sheet GN02: Modify the last line of the second INDEX OF DRAWINGS table to read as follows:

   "TR03-10 TREE PROTECTION AND PRESERVATION PLAN SET".

2. CP and TR Sheets: Add the attached plan sheets after sheet DT12 in accordance with the index on sheet GNO2 of the plans. Sheets being added are cathodic protection design related sheets designated CP1 through CP5 and Tree Protection and Preservation plan sheets designated TR1 though TR10.

Terry L. Conn, P.E.
Civil Engineering Consultants


**ACKNOWLEDGEMENT BY RESPONDENT**

Each Respondent is requested to acknowledge receipt of this Addendum No. X on the Price Proposal and by his/her signature affixed hereto and to file same as an attachment to his/her proposal.

This undersigned acknowledges receipt of this Addendum No. 1 and the proposal submitted herewith is in accordance with the information and stipulations set forth.

Date

Signature of Respondent

**END OF ADDENDUM**

SCHEDULE OF CATHODIC PROTECTION STRUCTURES

| Station | Type | Notes |
|---|---|---|
| 10+00 | IJTS | |
| 16+50 | MTS | |
| 27+55 | CTS | |
| 36+00 | MTS | |
| 44+50 | MTS | |
| 53+10 | IJTS | 6" AIR VALVE |
| 58+00 | MTS | |
| 70+25 | MTS | |
| 77+26 | IJTS | 6" AIR VALVE |
| 84+25 | MTS | |
| 91+25 | MTS | |
| 98+66 | CTS | |
| 104+60 | IJTS | 6" AIR VALVE |
| 109+90 | CTS | |
| 119+20 | MTS | |
| 128+50 | MTS | |
| 137+50 | IJTS | 6" AIR VALVE |
| 147+07 | CTS | |
| 147+88 | IJTS | 12" DRAIN |
| 156+00 | IJTS | 6" AIR VALVE |
| 162+42 | FPTS | NATURAL GAS |
| 169+94 | CTS | |
| 177+05 | CTS | |
| 179+25 | CTS | |
| 179+32 | IJTS | 24" WATER |
| 180+36 | CTS | |
| 188+20 | IJTS | 6" AIR VALVE |
| 195+10 | CTS | |
| 198+62 | CTS | |
| 206+52 | CTS | |
| 210+70 | IJTS | 6" AIR VALVE |
| 211+61 | CTS | |

SCHEDULE OF CATHODIC PROTECTION STRUCTURES

| Station | Type | Notes |
|---|---|---|
| 220+96 | FPTS | OIL FLOWLINE |
| 221+00 | FPTS | SALT WATER LINE |
| 228+00 | MTS | |
| 235+12 | FPTS | NATURAL GAS |
| 242+35 | FPTS | SALT WATER LINE |
| 244+00 | IJTS | 10" AIR VALVE |
| 244+64 | FPTS | NATURAL GAS |
| 251+82 | FPTS | SALT WATER LINE |
| 258+84 | CTS | |
| 261+36 | FPTS | NATURAL GAS |
| 268+50 | MTS | |
| 275+25 | MTS | |
| 282+00 | IJTS | 12" DRAIN |
| 282+10 | CTS | |
| 284+90 | CTS | |
| 287+94 | IJTS | 8" AIR VALVE |
| 288+00 | CTS | |
| 296+75 | MTS | |
| 305+50 | MTS | |
| 314+30 | IJTS | 4" AIR VALVE |
| 322+75 | MTS | |
| 331+35 | IJTS | 12" DRAIN |
| 336+72 | CTS | |
| 343+58 | IJTS | 6" AIR VALVE |
| 345+92 | FPTS | OIL FLOWLINE |
| 348+24 | FPTS | OIL FLOWLINE |
| 353+23 | FPTS | OIL FLOWLINE |
| 359+69 | FPTS | OIL FLOWLINE |
| 361+32 | FPTS | OIL FLOWLINE |
| 366+71 | FPTS | OIL FLOWLINE |
| 369+50 | IJTS | |

RECTIFIER SCHEDULE OF CATHODIC PROTECTION

| PIPE MATERIAL | RECTIFIER NUM. | STATION | SIZE | | ANODES | | ANODE WELL DEPTH (FEET) | STRUCTURE | DETAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | | VOLTS | AMPS | NUM. | TYPE | | | |
| STEEL DIELECTRIC | 1 | 180+00 | 24 | 18 | 6 | TA3 | 160 | 60-INCH WATERLINE | 2/CP2 |

GENERAL NOTES:

1. THE LOCATIONS FOR RECTIFIERS, ANODES AND TEST STATIONS INDICATED ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD LOCATE AND MARK THE FINAL LOCATIONS WITH OWNER'S REPRESENTATIVE. FINAL LOCATIONS SHALL AVOID AREAS SUBJECT TO FLOODING OR DRAINAGE.
2. THE CONTRACTOR SHALL PROTECT EXISTING TEST STATIONS AND EXISTING ANODE WIRES. DAMAGE TO EXISTING WIRES, ANODES, TEST STATIONS OR STRUCTURES SHALL BE REPLACED BY THE CONTRACTOR. UNAPPROVED CABLE SPLICES ARE NOT ALLOWED.
3. CONTRACTOR SHALL VERIFY POWER AVAILABILITY TO EACH RECTIFIER WITHIN 30 DAYS OF NOTICE TO PROCEED.
4. SEE DETAIL 1 SHEET CP2 FOR DEPTH OF DEEP ANODE WELL.

ABBREVIATIONS:

| | |
|---|---|
| IJTS | INSULATING JOINT TEST STATION, SEE DETAIL 1, SHEET CP4 |
| CTS | CASING TEST STATION, SEE DETAIL 5, SHEET CP3 |
| MTS | MONITORING TEST STATION, SEE DETAIL 3, SHEET CP3 |
| FPTS | FOREIGN PIPE TEST STATION, SEE DETAIL 4, SHEET CP4 |

| No. | Date | Revisions | App. |
|---|---|---|---|

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Designed By: AC
Drawn By: AC
Checked By: GG
SCALE:

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-8605 (WATER)
WRIP - PROJECT 1, SEGMENT 2A

CATHODIC PROTECTION TEST STATION SCHEDULE

Sheet CP1
of

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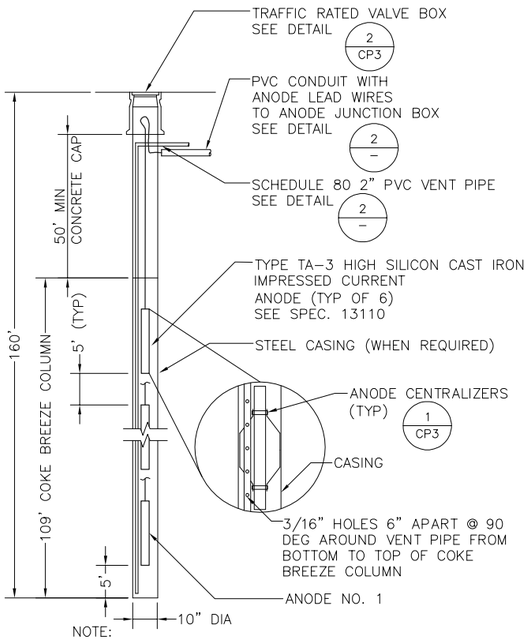
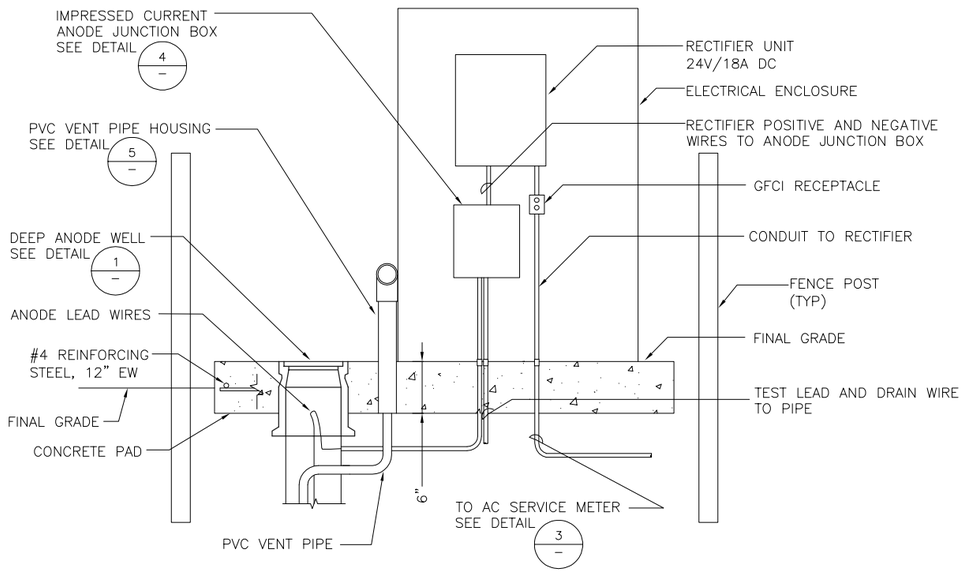
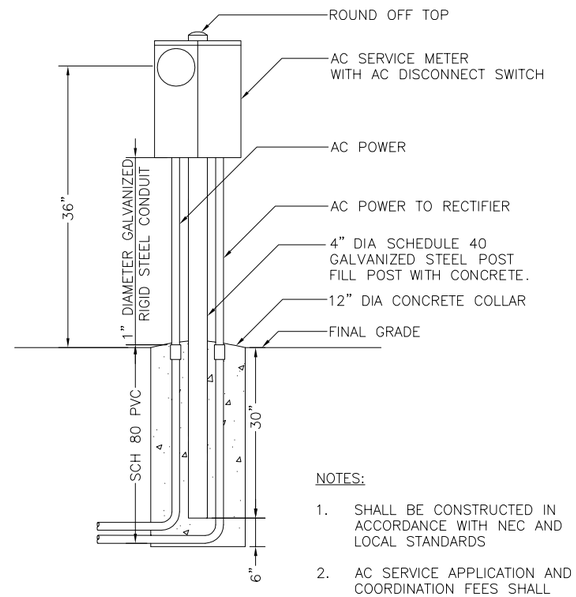



NOTE:
1. VALVE BOX COVER TO BE LABELED "ANODE"
2. NO TEST BOARD IN ANODE WELL TRAFFIC BOX
3. ONLY 3 OUT OF 6 ANODES SHOWN FOR CLARITY

DEEP ANODE WELL DETAIL 1/– NTS

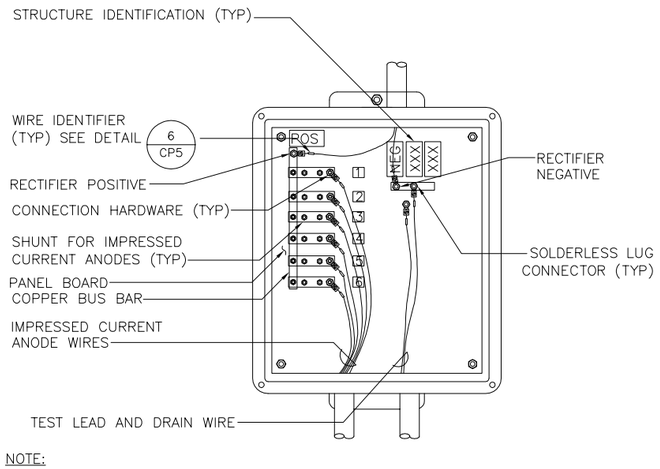



RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE SECTION 2/– NTS




NOTES:
1. SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEC AND LOCAL STANDARDS
2. AC SERVICE APPLICATION AND COORDINATION FEES SHALL BE PROVIDED BY THE CONTRACTOR.

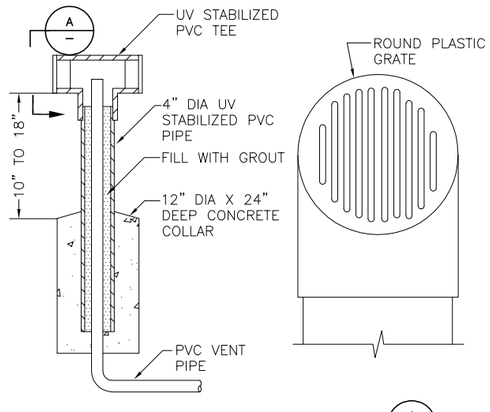
AC SERVICE METER DETAIL 3/– NTS



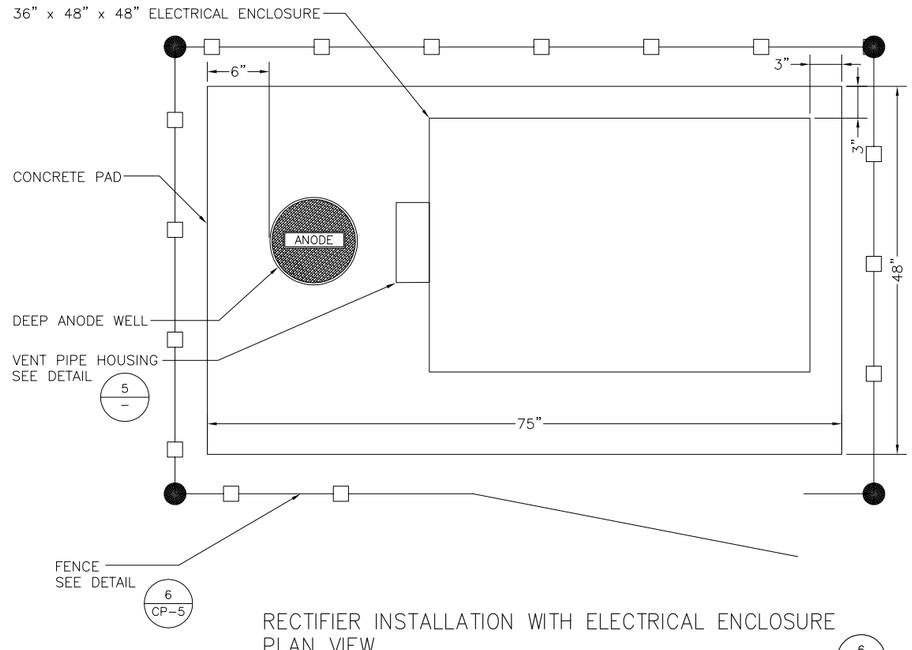

NOTE:

COVER, LATCH, HINGES, AND NEOPRENE GASKET NOT SHOWN FOR CLARITY

IMPRESSED CURRENT ANODE JUNCTION BOX DETAIL 4/– NTS




VENT PIPE HOUSING DETAIL 5/– NTS




RECTIFIER INSTALLATION WITH ELECTRICAL ENCLOSURE PLAN VIEW 6/– NTS

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|---|---|---|---|
| | | | |

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SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-8605 (WATER)
WRIP - PROJECT 1, SEGMENT 2A

CATHODIC PROTECTION DETAILS

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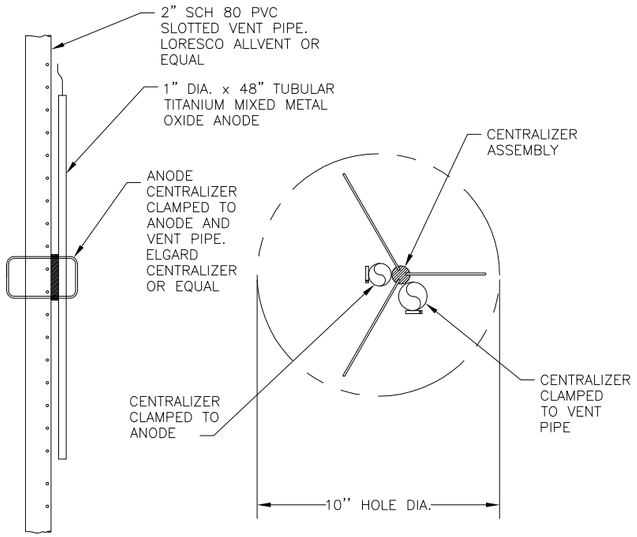
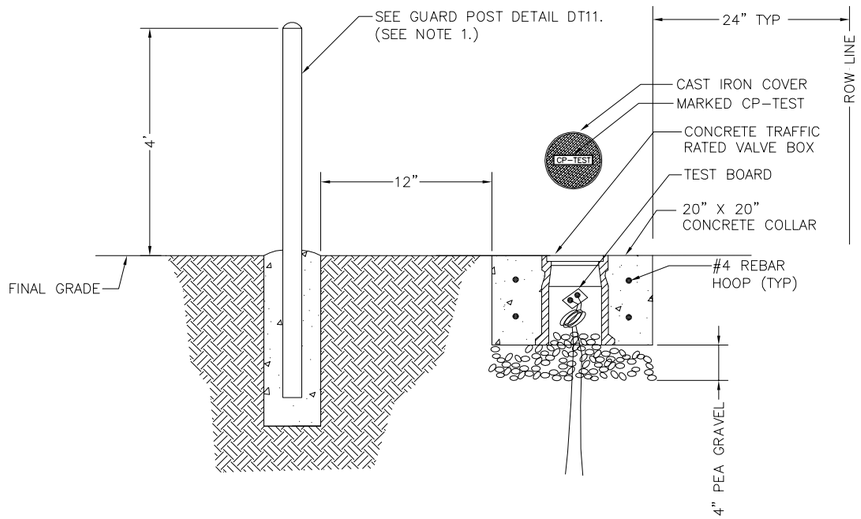
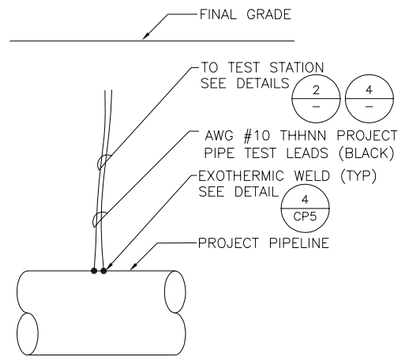



ANODE CENTRALIZER INSTALLATION DETAIL 1/–
NTS

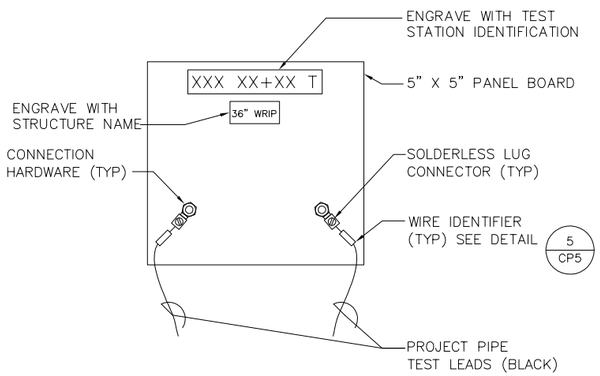



NOTE:
1. GUARD POST SHALL NOT BE INSTALLED IN DRAINAGE CHANNELS, OR WITHIN ROAD RIGHT-OF-WAY.

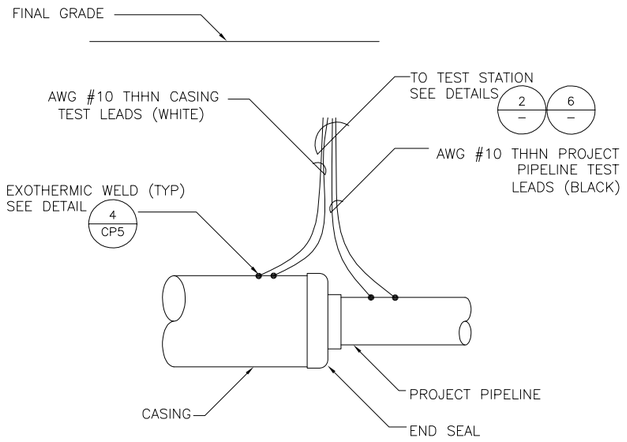
FLUSH MOUNTED TEST STATION DETAIL 2/–
NTS



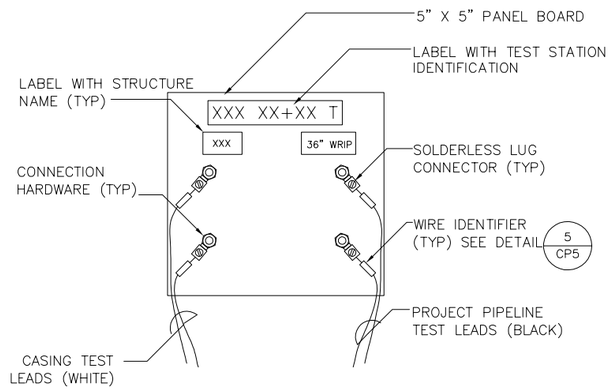

MONITORING TEST STATION DETAIL (MTS) 3/–
NTS




MONITORING TEST STATION TEST BOARD DETAIL 4/–
NTS




CASING TEST STATION DETAIL (CTS) 5/–
NTS




CASING TEST STATION TEST BOARD DETAIL 6/–
NTS

| No. | Revisions | Date | App. |
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CATHODIC PROTECTION DETAILS

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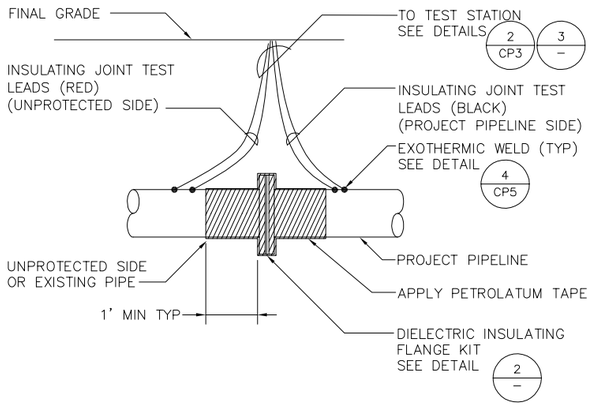
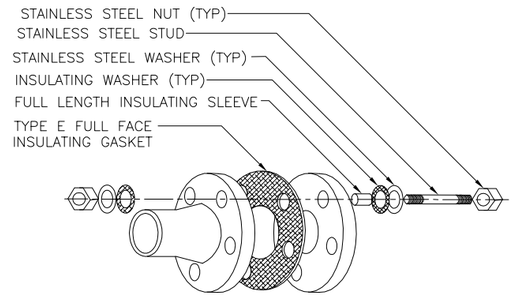


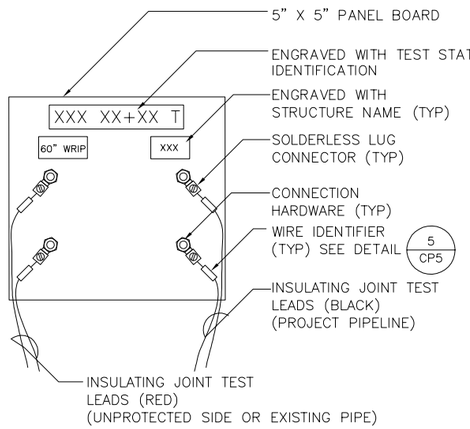

NOTE:

DO NOT APPLY PETROLATUM TAPE IF FLANGE IS LOCATED ABOVE GRADE OR IN A VAULT.

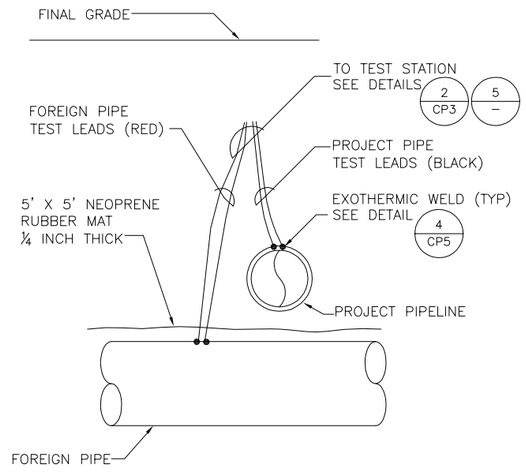
## INSULATING JOINT TEST STATION (FLANGE) DETAIL (IJTS) 1/–
NTS




## DIELECTRIC INSULATING FLANGE KIT DETAIL 2/–
NTS



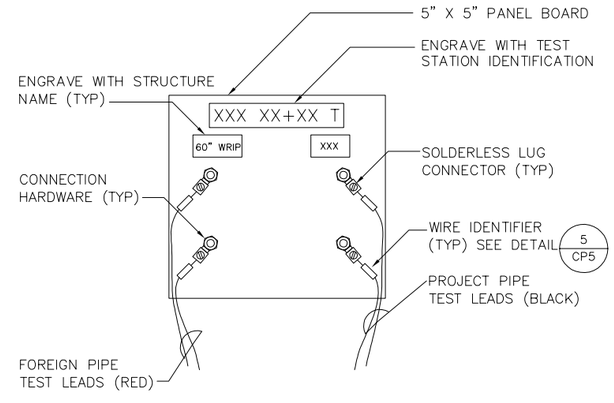

## INSULATING JOINT (IJTS) TEST BOARD DETAIL 3/–
NTS




NOTES:

1. CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY THE FOREIGN PIPE OWNER'S REPRESENTATIVE

## FOREIGN PIPE TEST STATION (FPTS) DETAIL 4/–
NTS




## FOREIGN PIPE TEST STATION TEST BOARD DETAIL 5/–
NTS

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SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-8605 (WATER)
WRIP - PROJECT 1, SEGMENT 2A

CATHODIC PROTECTION DETAILS

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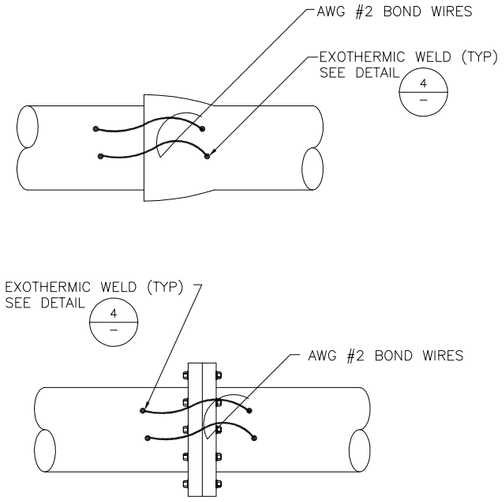
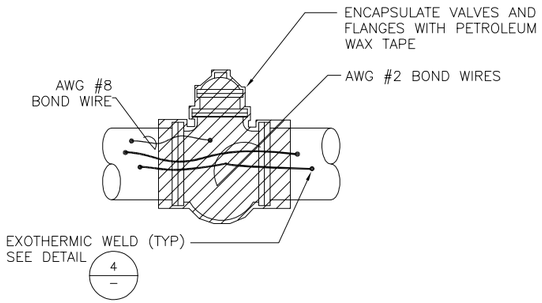
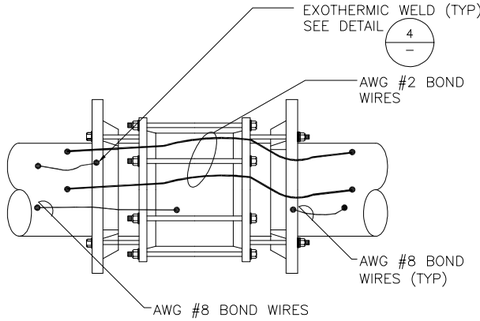



BELL AND SPIGOT JOINT BOND DETAIL
FLANGE JOINT BOND DETAIL (1)
NTS

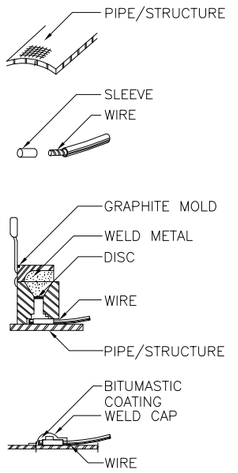



NOTE:
IF VALVE MATERIAL DIFFERS FROM PIPELINE MATERIAL CONTRACTOR SHALL PETROLATUM TAPE VALVE TO 1–FT MIN OUTSIDE OF FLANGE AS SPECIFIED IN CATHODIC PROTECTION SPECIFICATIONS

FLANGE JOINT AND VALVE BOND DETAIL (2)
NTS

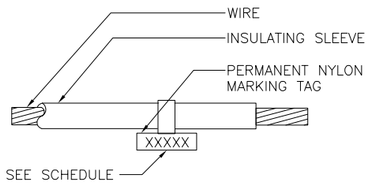



FLEX COUPLING JOINT BOND DETAIL (3)
NTS



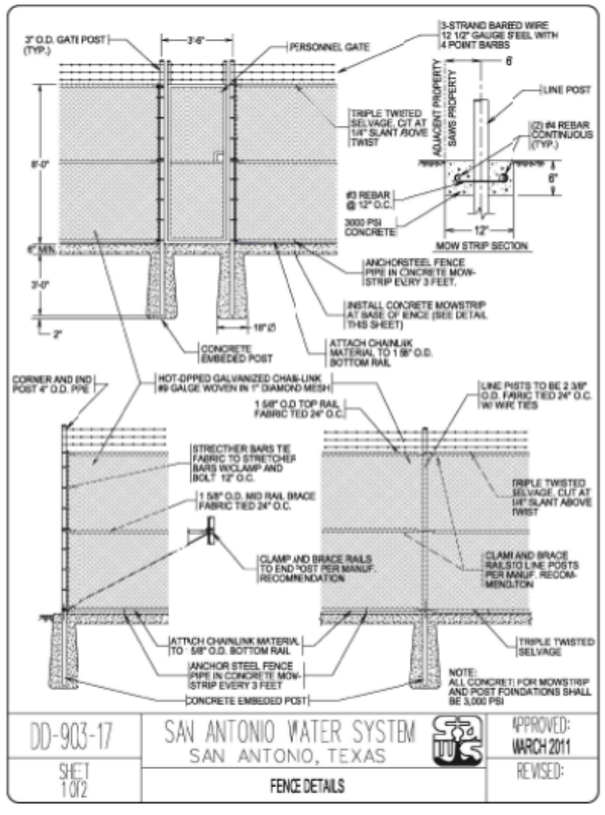

1. FILE PIPE/STRUCTURE TO BARE METAL AND CLEAN SURFACE.
2. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER.
4. COVER CONNECTION WITH BITUMASTIC COATING OVER ALL EXPOSED METAL, PLACE WELD CAP OVER CONNECTION. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH MFG RECOMMENDATIONS.

EXOTHERMIC WELD DETAIL (4)
NTS

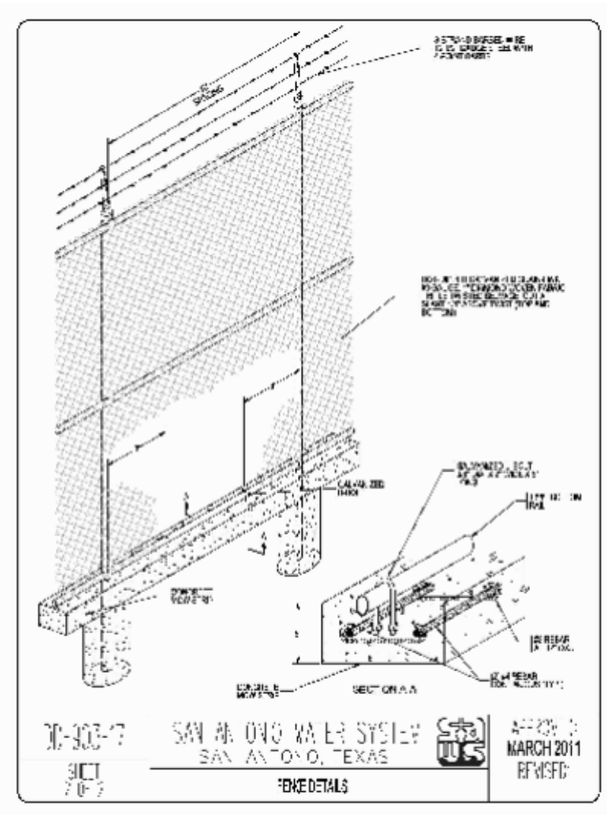



| STRUCTURE | LABEL |
|---|---|
| 60" STEEL WATER LINE | 60" |
| X" STEEL GAS LINE | X" G |
| IJ UNPROTECTED SIDE WATER | XX" W |
| ANODE HEADER CABLE | #XX ANODE |

WIRE IDENTIFIER DETAIL (5)
NTS




FENCE DETAIL (6)
NTS




FENCE SECTION (7)
NTS

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SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 14-8605 (WATER)
WRIP - PROJECT 1, SEGMENT 2A

CATHODIC PROTECTION DETAILS

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13-0087

# PLANS FOR
# TREE PROTECTION AND PRESERVATION

**JOB NO. 09-8613-220**

# WATER RESOURCES INTEGRATION PIPELINE
# PROJECT 1, SEGMENT II

**TABLE OF CONTENTS**



| Heritage Tree Summary in Flood Plain | | | | | |
|---|---|---|---|---|---|
| Point No. | Tree Type | Trunk Dia. (in) | Canopy Dia. (ft) | Canopy Area (sf) | Preserved |
| 1 | Oak | 45 | 70 | 3848 | x |
| 2 | Mesquite | 25 | 35 | 962 | x |
| 3 | Mesquite | 24 | 30 | 707 | x |
| 4 | Mesquite | 26 | 40 | 1257 | x |
| 6 | Hackberry | 24 | 45 | 1590 | x |
| 12 | Mesquite | 24 | 40 | 1257 | x |
| 13 | Mesquite | 28 | 45 | 1590 | x |
| 14 | Mesquite | 30 | 50 | 1963 | x |
| 15 | Mesquite | 38 | 50 | 1963 | x |
| 16 | Mesquite | 24 | 45 | 1590 | x |
| 18 | Mesquite | 26 | 35 | 962 | x |
| 19 | Hackberry | 31 | 50 | 1963 | x |
| 20 | Oak | 57 | 70 | 3848 | x |
| 21 | Mesquite | 30 | 55 | 2376 | x |
| 23 | Oak | 34 | 50 | 1963 | x |
| 24 | Hackberry | 28 | 50 | 1963 | x |
| 25 | Oak | 30 | 60 | 2827 | x |
| 26 | Hackberry | 28 | 50 | 1963 | x |
| 27 | Oak | 35 | 75 | 4418 | x |
| 28 | Oak | 27 | 35 | 962 | x |
| 62 | Hackberry | 27 | 35 | 962 | |
| 63 | Mesquite | 40 | 35 | 962 | x |
| 64 | Mesquite | 30 | 35 | 962 | x |
| 65 | Oak | 30 | 45 | 1590 | x |
| 80 | Oak | 32 | 80 | 5027 | |
| 81 | Elm | 28 | 50 | 1963 | x |
| 82 | Hackberry | 24 | 50 | 1963 | x |
| 83 | Elm | 26 | 60 | 2827 | x |
| 84 | Oak | 36 | 60 | 2827 | x |
| 85 | Cypress | 33 | 30 | 707 | x |
| 86 | Cypress | 24 | 25 | 491 | x |
| 87 | Cypress | 40 | 45 | 1590 | x |
| 88 | Cypress | 35 | 45 | 1590 | x |
| 89 | Cypress | 54 | 60 | 2827 | x |
| 90 | Cypress | 36 | 50 | 1963 | x |
| 91 | Cypress | 44 | 60 | 2827 | x |
| 92 | Cypress | 32 | 40 | 1257 | x |
| 93 | Cypress | 36 | 60 | 2827 | x |
| 94 | Cypress | 30 | 30 | 707 | x |
| 95 | Cypress | 38 | 40 | 1257 | x |
| 96 | Cypress | 24 | 30 | 707 | x |
| 97 | Cypress | 27 | 30 | 707 | x |
| 98 | Pecan | 27 | 65 | 3318 | x |
| 99 | Pecan | 24 | 50 | 1963 | x |
| 104 | Elm | 24 | 70 | 3848 | x |
| 109 | Mesquite | 28 | 40 | 1257 | x |
| 113 | Elm | 28 | 50 | 1963 | x |
| 127 | Mesquite | 25 | 45 | 1590 | x |
| 128 | Elm | 25 | 30 | 707 | x |
| 129 | Mesquite | 29 | 45 | 1590 | |
| 130 | Elm | 24 | 45 | 1590 | x |
| 156 | Hackberry | 24 | 50 | 1963 | x |

x - DENOTES TREES TO BE PRESERVED

**Tree Preservation Table**

| | Total Canopy Area (acre) | Heritage Tree Canopy Area (acre) | Total Canopy Area w/o Heritage Trees (acre) | % Required to be Preserved Excluding Heritage Trees | Area Required to be Preserved Excluding Heritage Trees (acre) | Area to be Preserved (Acre) | Area Required to be Mitigated (acre) | Native Seeding Credit | Area to be Mitigated | Diameter to be Mitigated |
|---|---|---|---|---|---|---|---|---|---|---|
| General Canopy | 33.19 | | 33.19 | 25% | 8.30 | 2.47 | 5.83 | 50% | 2.92 | 4322 |
| Floodplain Canopy | 10.86 | 2.08 | 8.78 | 80% | 7.02 | 0.55 | 6.47 | 50% | 3.24 | 2296 |

**Heritage Tree Table**

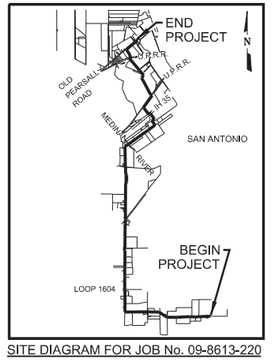
| Total Diameter (in) | Diameter Removed | Percent Retained | Diameter to be Mitigated (in) |
|---|---|---|---|
| 1598 | 88 | 94% | 206 |

SEGMENT 2A SHEETS TR03 THRU TR10
SEGMENT 2B SHEETS TR10 THRU TR15

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ERNEST T. MAESTAS, P.E. 52938 ON 7/17/2014 .

STATE OF TEXAS — ERNEST T. MAESTAS — 52938 — REGISTERED PROFESSIONAL ENGINEER

7-17-14

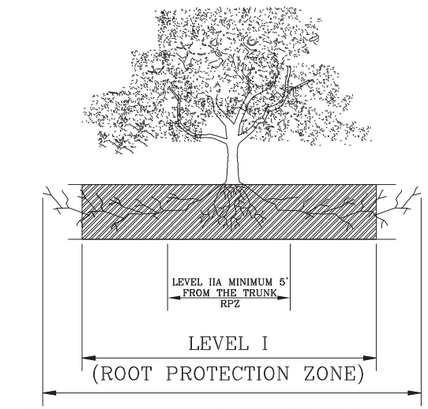



SITE DIAGRAM FOR JOB No. 09-8613-220

JOB TITLE: WATER RESOURCES INTEGRATION PIPELINE PROJECT 1, SEGMENT II

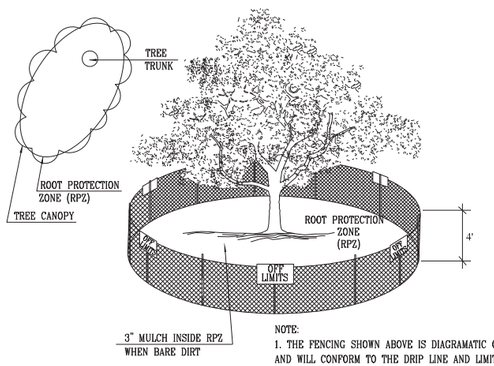

MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 366-1988 (210) 366-1980 fax TBPE No.: F-333

DON DURDEN, INC.,
d.b.a. CIVIL ENGINEERING CONSULTANTS
11550 IH 10 WEST, SUITE 395
SAN ANTONIO, TEXAS 78230-1037
TEL: (210) 641-9999
FAX: (210) 641-6440
REGISTRATION #F-2214



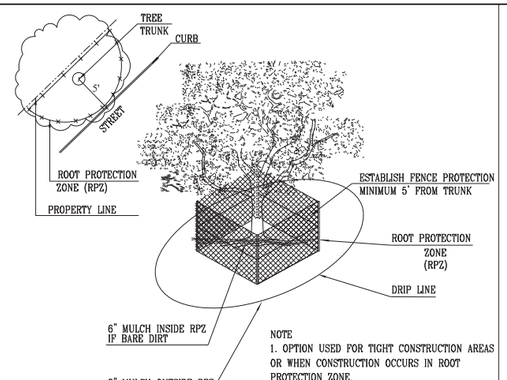

1.1.1 ELEVATION
N. T. S.

ROOT PROTECTION ZONE–THE ROOT PROTECTION ZONE IS A CIRCULAR AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE. EACH 1 INCH DIAMETER OF THE TREE EQUALS 1 FOOT RADIUS FOR ROOT PROTECTION ZONE.



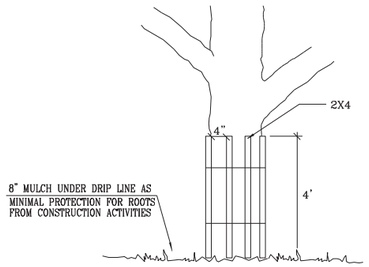

NOTE:
1. THE FENCING SHOWN ABOVE IS DIAGRAMATIC ONLY AND WILL CONFORM TO THE DRIP LINE AND LIMITED TO PROJECT BOUNDARY.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.2 LEVEL I & FENCE PROTECTION
N. T. S.




NOTE
1. OPTION USED FOR TIGHT CONSTRUCTION AREAS OR WHEN CONSTRUCTION OCCURS IN ROOT PROTECTION ZONE.
2. FOR ACCEPTABLE FENCING MATERIALS SEE SPECIFICATIONS.

1.1.3 LEVEL II A FENCE PROTECTION
N. T. S.

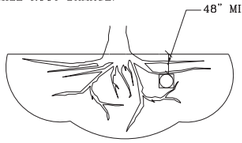



NOTE
WRAP TREE TRUNK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

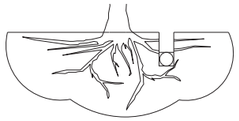
1.1.4 LEVEL II B FENCE PROTECTION
N. T. S.

TREES THAT ARE MARKED TO BE PRESERVED ON A SITE PLAN AND FOR WHICH UTILITIES MUST PASS TROUGH THEIR ROOT PROTECTION ZONES MAY REQUIRE TUNNELING AS OPPOSED TO OPEN TRENCHES. THE DECISION TO TUNNEL WILL BE DETERMINED ON A CASE BY CASE BASIS BY THE ENGINEER.

TUNNELS SHALL BE DUG THROUGH THE ROOT PROTECTION ZONE IN ORDER TO MINIMIZE ROOT DAMAGE.

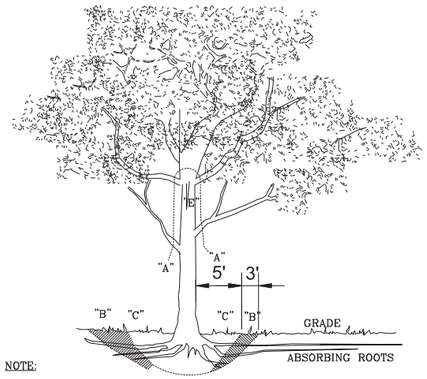



TUNNEL TO MINIMIZE ROOT DAMAGE (TOP) AS OPPOSED TO SURFACE–DUG TRENCHES IN ROOT PROTECTION ZONE WHEN THE 5' MINIMUM DISTANCE FROM TRUNK CAN NOT BE ACHIEVED.



OPEN TRENCHING MAY BE USED IF EXPOSED TREE ROOTS DO NOT EXCEED 3" OR ROOTS CAN BE BENT BACK.

1.2 BORING THRU TREE ROOT ZONE
N. T. S.




NOTE:

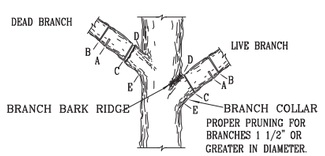
A" REMOVE BULKY TREE PARTS "SHRED" AND/OR HAUL SEPARATELY.

"B" BEGIN EXCAVATION APPROX. 8' FROM THE TRUNK – CUT THRU ANCHOR ROOTS AT AN ANGLE – 3' TO 4' DEEP

"C" USING TREE TRUNK AS A LEVER PUSH AT POINT "E" TO REMOVE TREE BOLE AND LARGE FEEDER ROOTS (4" TO 10" IN DIAM.)

"D" BACKFILL HOLE AND CLEAN UP.

1.3 TREE REMOVAL DIAGRAM
N. T. S.

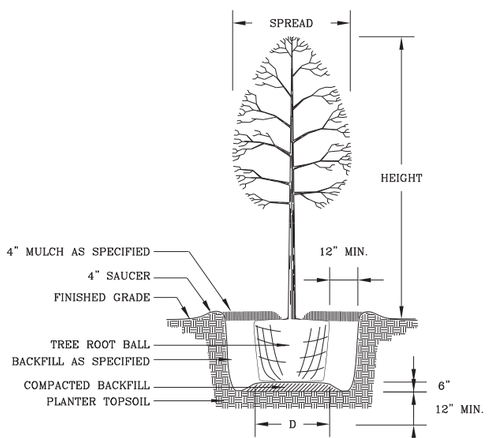



NOTE: DO NOT CUT FROM D to E.

A. FIRST CUT – TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT – TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT – ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES – INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 20 MIN TO PREVENT THE SPREAD OF OAK WILT.

1.4 BRANCH PRUNING DETAIL
N. T. S.




1.6 NEW TREE PLANTING DETAIL
N. T. S.

## TREE PROTECTION NOTES (ALSO SEE GENERAL NOTES)

1. ALL TREE PRESERVATION AND TREATMENT MEASURES TO INCLUDE, BUT NOT LIMITED TO, PRUNING, PROTECTING, FENCING, AND REMOVING SHALL BE PAID UNDER PREPARING RIGHT OF WAY; NO SEPARATE PAY ITEM.
2. NO SITE PREPARATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES OUTLINED BELOW HAVE NOT BEEN COMPLETED AND APPROVED BY THE ENGINEER.
3. CONTRACTOR WILL NOT BE ALLOWED TO CLEAR CUT EASEMENTS AND WILL BE REQUIRED TO PROTECT AND PRESERVE AS MANY TREES AND TREE GROUPS AS POSSIBLE. A SUBMITTAL IS REQUIRED TO INDICATE TREE PROTECTION PLAN, TREE MARKING, AND HOW PERSONNEL ARE TO BE INSTRUCTED TO SAVE SAID TREES THROUGHOUT THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO REPLACE TREES THAT ARE APPROVED FOR PROTECTION AND PRESERVATION AT NO COST TO THE OWNER.
4. ALL TREES TO BE PRESERVED AS PART OF THE PROJECT SHALL BE PROTECTID AGAINST INJURY OR DAMAGE, WHETHER BY CUTTING, SOIL COMPACTION, BREAKING, OR SKINNING OF ROOTS, TRUNKS, OR BRANCHES DURING CONSTRUCTION OPERATION. CONTRACTOR SHALL, AT HIS EXPENSE, REPAIR AND REPLACE TREES DAMAGED BY CONSTRUCTION OPERATIONS OR LACK OF ADEQUATE PROTECTION DURING CONSTRUCTION, REPLACE TREES SCHEDULED TO REMAIN AND DAMAGES BEYOND REPAIR BY CONSTRUCTION OPERATIONS, AS DETERMINED BY THE OWNER, WITH TREES OF SIMILAR SIZE AND SPECIES.
5. PROTECT DESIGNATED TREES WITH A TEMPORARY 4 FOOT HIGH (MINIMUM) ENCLOSURE FENCE PER THE PROTECTIVE FENCE AND SIGN PLACEMENT DETAIL. FENCE MAY BE CONSTRUCTED OF CHAIN LINK, ORANGE MESH, OR A DOUBLE-RAIL WOOD FENCE. FENCING SHALL BE PLACED BEFORE ANY EXCAVATING OR GRADING IS BEGUN AND SHALL BE MAINTAINED FOR THE DURATION OF THE CONSTRUCTION WORK. FENCING SHALL ENCOMPASS (AT A MINIMUM) THE ROOT PROTECTION ZONE (RPZ), WHICH IS DEFINED AS THE AREA AROUND THE TREE WITH A DIAMETER IN FEET EQUAL TO THE TREE DIAMETER IN INCHES, OR THE TREE DRIP LINE, WHICHEVER IS GREATER. TREE DIAMETER IS MEASURED 4.5 FEET ABOVE THE GROUND. RPZ OF CLOSE TREES AND CLUSTERS OF TREES MAY OVERLAP.
6. ALL TREES TO BE PROTECTED MUST ALSO BE PROTECTED FROM POSSIBLE DAMAGE DUE TO CONSTRUCTION EQUIPMENT EXHAUST. TEMPORARY REDIRECTION OF EQUIPMENT EXHAUST IS REQUIRED IF NECESSARY.
7. WITHIN THE TREE PROTECTION FENCING AND RPZ, THE CONTRACTOR MUST NOT ALTER THE PERMEABILITY OF THE AREA. HE SHALL NOT STORE ANY MATERIALS, CONDUCT ANY CONSTRUCTION OR MAINTENANCE OPERATIONS, AND SHALL NOT SPREAD, PLACE OR DISPOSE OF ANY SOIL, OR STORE OR DISPOSE OF ANY OTHER MATERIALS (LIQUID OR SOLID) IN THIS AREA.
8. IF TREES ARE DAMAGED BY CONSTRUCTION OPERATIONS, CONTRACTOR SHALL REPAIR DAMAGED TREES PROMPTLY TO PREVENT FURTHER DETERIORATION. ALL BROKEN BRANCHES AND EXPOSED ROOTS OF PROTECTED TREES SHALL BE CUT CLEANLY. FOR OAKS SPECIES, WOUNDS MUST BE PAINTED WITH AN ACCEPTABLE WOUND DRESSING WITH 30 MINUTES IN ORDER TO PREVENT INFECTION BY OAK WILT SPORES.
9. CONTRACTOR SHALL NOT TIE ROPES, GUY WIRES, CHAINS, CABLES OR CLAMP ONTO ANY PROTECTED
10. CONTRACTOR SHALL PROTECT ALL EXISTING TREES FROM CHANGES TO SOIL CHEMISTRY AND pH FACTOR BY PREVENTING DISPOSAL IN THE PROJECT AREA OF ANY CHEMICAL AGENTS OR pH ALTERING MATERIALS, SUCH AS LIME BASED MATERIALS IN CEMENT, PLASTER, OR SIMILAR MATERIALS.
11. WHEN APPROVED TO WORK WITHIN THE RPZ, CONTRACTOR MAY TRIM INTERFERING BRANCHES OF PRESERVED TREES IN A METHOD ACCEPTABLE TO THE CITY OF SAN ANTONIO.
12. WHEN APPROVED TO WORK WITHIN THE RPZ, CONTRACTOR SHALL BE LIMITED TO A 3 INCH CUT OR FILL. IF MORE THAN 3 INCHES OF GRADING IS REQUIRED, WELLING AND RETAINING METHODS ARE ALLOWED OUTSIDE OF THE ROOT PROTECTION ZONE AND MUST BE APPROVED BY THE CITY OF SAN ANTONIO.
13. NO TREES SHALL BE REMOVED WITHOUT THE PRIOR APPROVAL OF THE CITY OF SAN ANTONIO.
14. ALL TREES, BRUSH AND DEBRIS APPROVED FOR REMOVAL SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN APPROVED OFF SITE LOCATION. NO BURNING WILL BE PERMITED.
15. WHEN MAKING REQUESTS TO REMOVE TREES, THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST. CONTRACTOR'S REQUEST SHALL INCLUDE THE FOLLOWING INFORMATION.

A. REASON FOR REMOVAL OF TREE(S).
B. SIZE(S) AND TYPE(S) OF TREE(S) TO BE REMOVED
C. LOCATION BY STATION AND OFFSET OF THE TREE(S) TO BE REMOVED.

PREPARED BY: MAESTAS & ASSOCIATES, INC.

SHEET TR02

CITY OF SAN ANTONIO

DEPARTMENT OF PUBLIC WORKS

CITY OF SAN ANTONIO
TREE PROTECTION DETAILS

TREE PRESERVATION

| | | | | | | |
|---|---|---|---|---|---|---|
| DESIGNED: | FED. RD. DIV. NO. | STATE | | | | SHT. NO. |
| CHECKED: | | TEXAS | | | | 1 OF 4 |
| DRAWN: | STATE DIST. NO. | COUNTY | CONTROL NO. | SECT. NO. | JOB NO. | HIGHWAY NO. |
| CHECKED: | | BEXAR | | | | |

| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 1 | Oak | 45 | 70 | 3848 | x |
| 2 | Mesquite | 25 | 35 | 962 | x |
| 3 | Mesquite | 24 | 30 | 707 | x |
| 4 | Mesquite | 26 | 40 | 1257 | x |
| 5 | Mesquite | 27 | 35 | 962 | x |
| 6 | Hackberry | 24 | 45 | 1590 | x |
| 7 | Mesquite | 24 | 45 | 1590 | x |
| 101 | Mesquite | 27 | 35 | 962 | x |
| 102 | Mesquite | 27 | 35 | 962 | x |
| 103 | Mesquite | 35 | 55 | 2376 | x |
| 104 | Elm | 24 | 70 | 3848 | x |

0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

| No. | Date | Revisions | App. |
|---|---|---|---|

MAI Job No. M002

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ERNEST T. MAESTAS, P.E. 52938 ON 7/17/2014

Date: 7/17/2014
Designed by: MJM
Drawn by: MJM & KRG
Checked by: ETM & JPS
Scale: FULL SIZE: 22"x34" 1" = 100'

MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 349-9559 (210) 349-9559 FAX TBPE Reg. # 4320

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN SHEET 01 OF 13

Legend
- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- 5 Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

Sheet TR03 of ___

Z:\Projects\WRIP\ENVIRONMENTAL\M002-TREE-PLN-01.dgn 7/17/2014 4:35:43 PM

| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 9 | Mesquite | 24 | 45 | 69279187 | x |
| 10 | Mesquite | 24 | 45 | 69279187 | x |
| 12 | Mesquite | 24 | 40 | 707 | x |
| 13 | Mesquite | 28 | 45 | 1257 | x |
| 14 | Mesquite | 30 | 50 | 1590 | x |
| 15 | Mesquite | 38 | 50 | 1963 | x |
| 16 | Mesquite | 24 | 45 | 1963 | x |
| 17 | Mesquite | 24 | 40 | 1590 | x |
| 18 | Mesquite | 26 | 35 | 1257 | x |
| 19 | Hackberry | 31 | 50 | 962 | x |
| 20 | Oak | 57 | 70 | 1963 | x |
| 21 | Mesquite | 30 | 55 | 3848 | x |
| 22 | Mesquite | 25 | 30 | 2376 | x |
| 108 | Mesquite | 31 | 30 | 707 | x |
| 109 | Mesquite | 28 | 40 | 1257 | x |
| 156 | Hackberry | 24 | 50 | 1963 | x |







0 100 200 300

SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend

- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- 5 Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

| No. | Date | Revisions | App. |
|---|---|---|---|

MAI Job No. M002

STATE OF TEXAS ERNEST T. MAESTAS 52938 REGISTERED PROFESSIONAL ENGINEER 7-17-14

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Checked by: ETM & JPS
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MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 349-9366 (210) 349-9366 FAX TBPE Reg. F-3320

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN SHEET 02 OF 13

Sheet TR04
___ of ___

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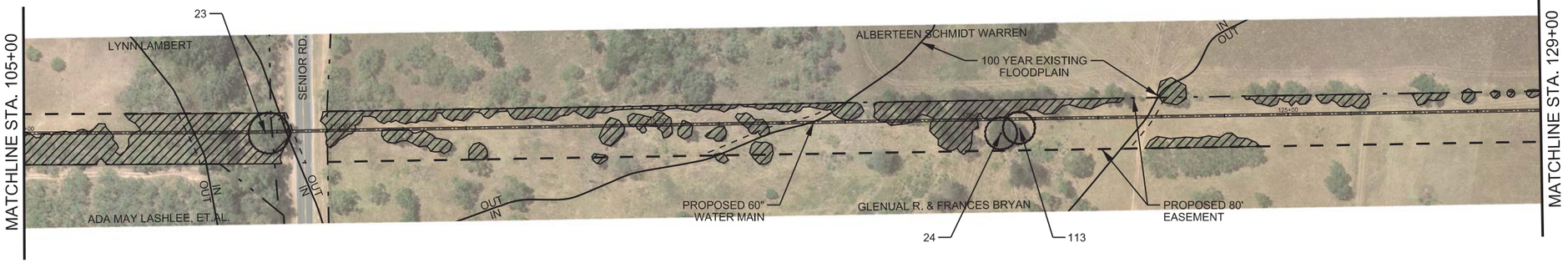
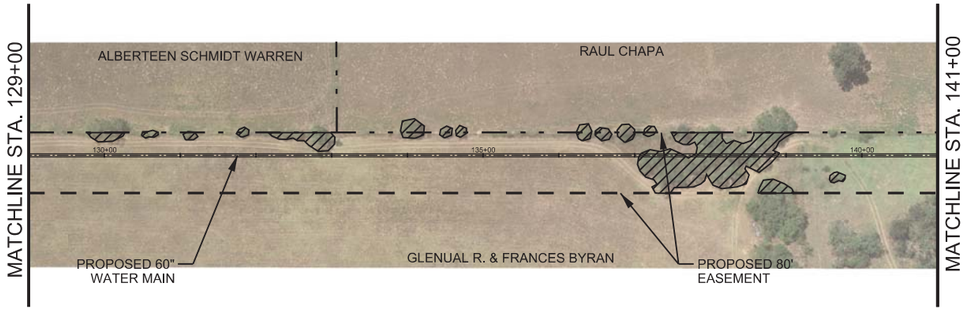
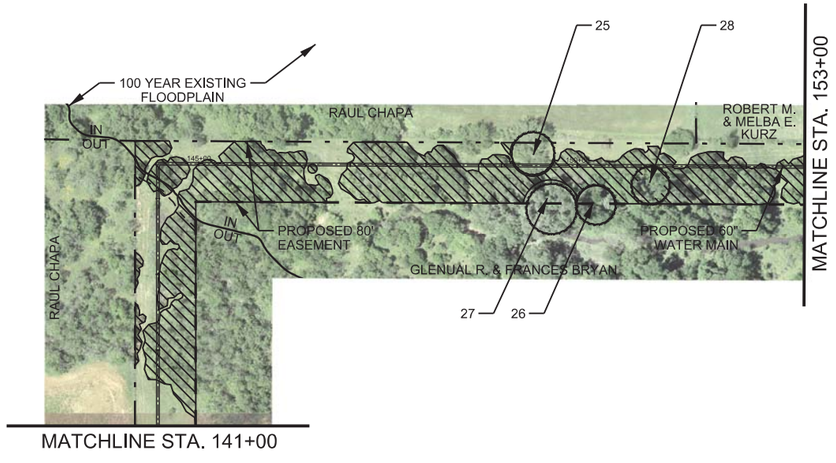
| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 23 | Oak | 34 | 50 | 1963 | x |
| 24 | Hackberry | 28 | 50 | 1963 | x |
| 25 | Oak | 30 | 60 | 2827 | x |
| 26 | Hackberry | 28 | 50 | 1963 | x |
| 27 | Oak | 35 | 75 | 4418 | x |
| 28 | Oak | 27 | 35 | 962 | x |
| 80 | Oak | 32 | 80 | 5027 | x |
| 113 | Elm | 28 | 50 | 1963 | x |




0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend
- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- (5) Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

| No. | Date | Revisions | App. |
|---|---|---|---|

MAI Job No. M002

STATE OF TEXAS ERNEST T. MAESTAS 52938 REGISTERED PROFESSIONAL ENGINEER 7-17-14

THE SEAL APPEARING ON THIS PLAN WAS AUTHORIZED BY ERNEST T. MAESTAS, P.E. 52938 ON 7/17/2014

Date: 7/17/2014
Designed by: MJM
Drawn by: MJM & KRG
Checked by: ETM & JPS
Scale: FULL SIZE: 22"x34" 1" = 100'

MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 349-9366 (210) 349-9366 FAX TBPE Reg. # 4320

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN
SHEET 03 OF 13

Sheet TR05
___ of ___

Z:\Projects\WRIP\ENVIRONMENTAL\M002-TREE-PLN-03.dgn 7/17/2014 4:40:50 PM

| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 30 | Mesquite | 27 | 35 | 962 | x |
| 31 | Oak | 36 | 60 | 2827 | x |
| 32 | Mesquite | 24 | 50 | 1963 | x |
| 33 | Oak | 36 | 40 | 1257 | x |
| 34 | Oak | 40 | 40 | 1257 | x |
| 35 | Oak | 50 | 70 | 3848 | x |
| 36 | Mesquite | 38 | 30 | 707 | x |
| 157 | Mesquite | 24 | 30 | 707 | x |







0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend
- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- (5) Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

| No. | Date | Revisions | App. |
|---|---|---|---|

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Date: 7/17/2014
Designed by: MJM
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Scale: FULL SIZE: 22"x34" 1" = 100'

MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 349-9366 (210) 349-9366 FAX TBPE Reg. F-3320

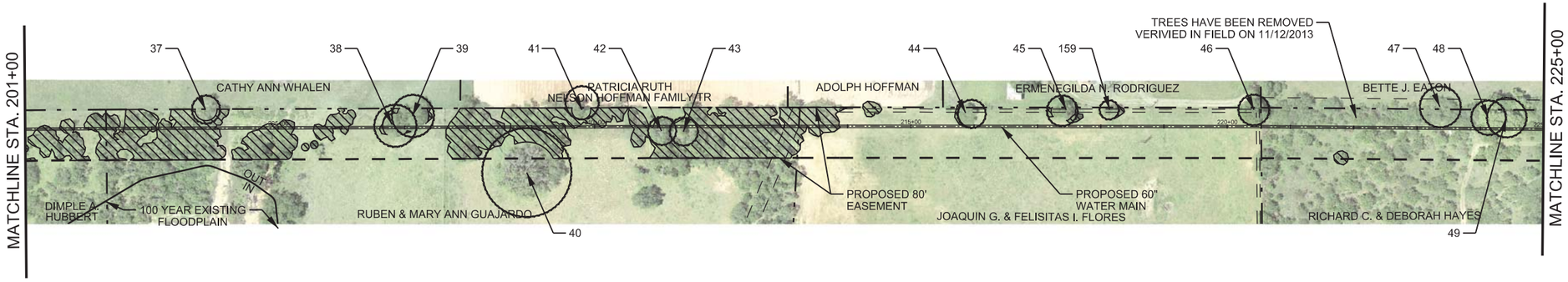
SAN ANTONIO WATER SYSTEM

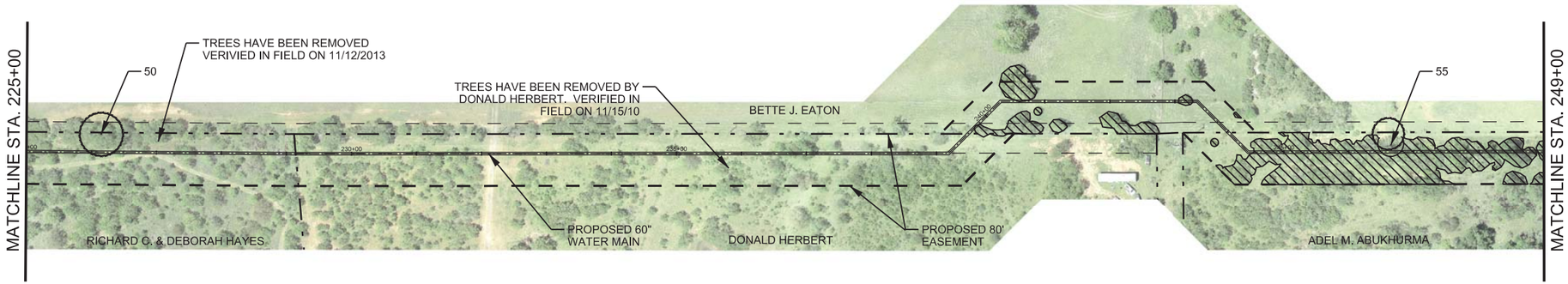
SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN
SHEET 04 OF 13

Sheet TR06
___ of ___

| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 37 | Mesquite | 24 | 35 | 962 | x |
| 38 | Mesquite | 35 | 40 | 1257 | x |
| 39 | Mesquite | 38 | 40 | 1257 | x |
| 40 | Mesquite | 71 | 70 | 3848 | x |
| 41 | Mesquite | 28 | 30 | 707 | x |
| 42 | Mesquite | 24 | 30 | 707 | x |
| 43 | Mesquite | 24 | 30 | 707 | x |
| 44 | Mesquite | 24 | 40 | 1257 | x |
| 45 | Mesquite | 26 | 40 | 1257 | x |
| 46 | Elm | 26 | 40 | 1257 | x |
| 47 | Mesquite | 34 | 40 | 1257 | x |
| 48 | Oak | 34 | 50 | 1963 | x |
| 49 | Oak | 38 | 50 | 1963 | x |
| 50 | Oak | 33 | 40 | 1257 | x |
| 55 | Mesquite | 26 | 40 | 1257 | x |
| 159 | Mesquite | 24 | 30 | 707 | x |




0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend
- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- (5) Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

| No. | Date | Revisions | App. |
|---|---|---|---|

MAI Job No. M002

STATE OF TEXAS ERNEST T. MAESTAS 52938 REGISTERED PROFESSIONAL ENGINEER 7-17-14

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY ERNEST T. MAESTAS, P.E. 52938 ON 7/17/2014

Date: 7/17/2014
Designed by: MJM
Drawn by: MJM & KRG
Checked by: ETM & JPS
Scale: FULL SIZE: 22"x34" 1" = 100'

MAESTAS & ASSOCIATES, INC.
11550 IH 10 WEST, STE. 320 SAN ANTONIO, TX 78230
(210) 349-9366 (210) 349-9366 FAX TBPE Reg. # 4320

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II
TREE PROTECTION PLAN
SHEET 05 OF 13

Sheet TR07
___ of ___

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| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 57 | Mesquite | 24 | 50 | 1963 | x |
| 58 | Mesquite | 30 | 40 | 1257 | x |
| 59 | Mesquite | 26 | 40 | 1257 | x |
| 60 | Mesquite | 24 | 40 | 1257 | x |
| 61 | Mesquite | 30 | 35 | 962 | x |
| 62 | Hackberry | 27 | 35 | 962 | |
| 63 | Mesquite | 40 | 35 | 962 | x |
| 64 | Mesquite | 30 | 35 | 962 | x |
| 81 | Elm | 28 | 50 | 1963 | x |
| 82 | Hackberry | 24 | 50 | 1963 | x |
| 83 | Elm | 26 | 60 | 2827 | x |
| 84 | Oak | 36 | 60 | 2827 | x |
| 116 | Mesquite | 35 | 50 | 1963 | x |
| 117 | Mesquite | 36 | 40 | 1257 | x |
| 118 | Mesquite | 28 | 40 | 1257 | x |
| 119 | Pine | 34 | 50 | 1963 | x |
| 120 | Pine | 45 | 45 | 1590 | x |
| 122 | Mesquite | 25 | 40 | 1257 | x |
| 123 | Mesquite | 25 | 50 | 1963 | x |
| 127 | Mesquite | 25 | 45 | 1590 | x |
| 128 | Elm | 25 | 30 | 707 | x |
| 129 | Mesquite | 29 | 45 | 1590 | |
| 130 | Elm | 24 | 45 | 1590 | x |




0 100 200 300

SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

| No. | Date | Revisions | App. |
|---|---|---|---|

MAI Job No. M002

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MAESTAS & ASSOCIATES, INC.
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(210) priv 6500 (210) priv 6501 TBPE No. F-2320

SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN
## SHEET 06 OF 13

Legend

- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- 5 Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

Sheet TR08 of ___

| Tree No. | Species | Trunk Diameter (in) | Canopy Span (ft) | Canopy Area (sf) | Preserved |
|---|---|---|---|---|---|
| 65 | Oak | 30 | 45 | 1590 | x |







0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend
- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- (5) Heritage Tree
- Tree Canopy Line

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|---|---|---|---|

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SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN
SHEET 07 OF 13

Sheet TR09
___ of ___

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0 100 200 300
SCALE IN FEET

NOTE: ALL HERITAGE TREES TO BE PRESERVED

Legend

- Property Line
- Proposed Easement
- Existing Easement
- Flood Plain Boundaries
- Proposed Water
- Flood Plain Buffer Boundaries
- (5) Heritage Tree
- Tree Canopy Line

100% SUBMITTAL

| No. | Date | Revisions | App. |
|---|---|---|---|

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SAN ANTONIO WATER SYSTEM

SAWS JOB NO. 09-8613-220 (WATER)
WRIP - PROJECT 1, SEGMENT II

# TREE PROTECTION PLAN SHEET 08 OF 13

Sheet TR10
___ of ___

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