FOREST OAKS MHC (PUD)

BEXAR COUNTY, TEXAS

STREET, DRAINAGE, WATER, AND UTILITY IMPROVEMENTS

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2008, OR LATEST.
2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.
3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE. 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS. (NO SEPARATE PAY ITEM).
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.
5. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
6. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
7. CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES TO SCHEDULE FOR DENSITY TEST AS REQUIRED.
8. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
9. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

SAN ANTONIO WATER SYSTEM (SAWS)	233-2010
BEXAR METROPOLITAN WATER DISTRICT (BEXAR MET)	354-6538 / 357-5741
COSA DRAINAGE	207-8048
COSA SIGNAL OPERATIONS	207-7720 / 207-7765
TEXAS STATE WIDE ONE CALL LOCATOR	1-800-344-8377
CITY PUBLIC SERVICE ENERGY - TIME WARNER - AT&T - MCI	

10. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND HE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME DURING CONSTRUCTION.
11. ALL WASTE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HIS SOLE RESPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE PROJECT. NO WASTE MATE- RIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING ARTIFICIAL OR NATURAL DRAINAGE.
12. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.
13. THE CONTRACTOR SHALL MAINTAIN ALL ADJOINING STREETS AND TRAVELED ROUTES FREE FROM SPILLED AND / OR TRACKED CONSTRUCTION MATERIALS AND / OR DEBRIS.
14. IF THE CONTRACTOR ENCOUNTERS ANY ARCHAEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR MUST STOP EXCAVATION IMMEDIATELY, CONTACT THE CITY INSPECTOR, AND CALL THE CITY HISTORIC PRESERVATION OFFICE AT 207-7306 OR 207-3327 FOR AN ARCHAEOLOGICAL INVESTIGATION. THE CONTRACTOR CANNOT BEGIN EXCAVATION AGAIN WITHOUT WRITTEN PERMISSION FROM THE CITY. IF MORE THAN THREE (3) DAYS ARE REQUIRED FOR INVESTIGATION (NOT INCLUDING HOLIDAY AND WEEKENDS) AND IF THE CONTRACTOR IS UNABLE TO WORK IN OTHER AREAS, THEN THE CONTRACTOR WILL BE ALLOWED TO NEGOTIATE FOR ADDITIONAL CONSTRUCTION TIME UPON WRITTEN REQUEST WITHIN TEN (10) DAYS AFTER THE FIRST NOTICE TO THE CITY OF ARCHAEOLOGICAL INVESTIGATION FOR EACH EVENT. IF THE TIME REQUIRED FOR INVESTIGATION IS LESS THAN OR EQUAL TO THREE (3) DAYS FOR EACH EVENT, CONTRACT DURATION WILL NOT BE EXTENDED.
15. IF SUSPECTED CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, C.O.S.A. SHALL BE NOTIFIED IMMEDIATELY WHEN CONTAMINATED SOILS AND / OR GROUNDWATER ARE ENCOUNTERED AT LOCATIONS NOT IDENTIFIED IN THE PLANS. THE NOTIFICATION SHOULD INCLUDE THE STATION NUMBER, TYPE OF CONTAMINATED MEDIA, EVIDENCE OF CONTAMINATION AND MEASURES TAKEN TO CONTAIN THE CONTAMINATED MEDIA AND PREVENT PUBLIC ACCESS. THE CONTAMINATED SOIL AND / OR GROUNDWATER SHALL NOT BE REMOVED FROM THE LOCATION WITHOUT PRIOR C.O.S.A. APPROVAL. THE CONTRACTOR MUST STOP THE EXCAVATION IMMEDIATELY AND CONTACT THE C.O.S.A. INSPECTOR. THE CONTRACTOR CANNOT BEGIN EXCAVATION ACTIVITIES WITHOUT WRITTEN PERMISSION FROM THE CITY.
16. CONTRACTOR IS TO INCLUDE A MAILBOX POST BLOCKOUT FOR VACANT LOTS AND ALL RESIDENCES WHICH DO NOT HAVE MAILBOXES AT THE CURB. BLOCKOUTS ARE PROVIDED FOR FUTURE USE BY THE POST OFFICE.
17. CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA FACILITIES. THE CONTRACTOR MUST CONTACT VIA FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES OR ANY OTHER VIA FACILITIES THAT MAY BE PRESENT. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL (TELEPHONE NOS: (210) 362-2155 OR (210) 362-2096). THE CONTRACT- OR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CON- TRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

TREE PROTECTION AND PRESERVATION GENERAL NOTES

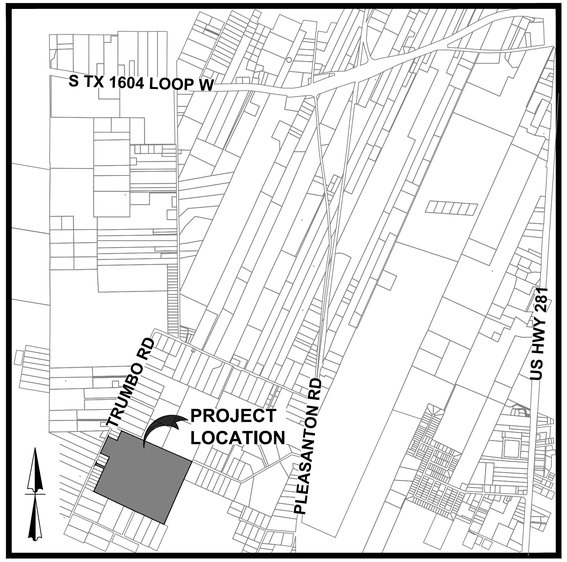
1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES (REFER TO DETAILS).
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND / OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (207-0278).
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

ACCESSIBILITY REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES TO LOCAL RESIDENCES AND BUSINESSES.
2. WHEN THE WORK REQUIRES THE EXCAVATION OF THE STREET AND THE REMOVAL OF THE EXISTING DRIVEWAY APPROACHES AND SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ALL-WEATHER ACCESS TO THE BUSINESSES AND RESIDENCES. THE TEMPORARY DRIVEWAY APPROACHES SHALL BE CONSTRUCTED WITH FLEXIBLE BASE OR GRAVEL MATERIAL AT NO SEPARATE COST TO THE CITY.
3. PRIOR TO INITIATING THE CONSTRUCTION OF NEW DRIVEWAY APPROACHES, THE CONTRACTOR SHALL GIVE ADVANCE WARNING IN PERSON, OR IN WRITING, OF AT LEAST 48 HOURS TO EACH RESIDENCE THAT WILL BE IMMEDIATELY AFFECTED, SO THAT ALTERNATE PLANS MAY BE MADE BY THE RESIDENTS.
4. FOR BUSINESSES WITH MORE THAN ONE DRIVEWAY, AT LEAST ONE DRIVEWAY SHALL REMAIN OPEN WHILE THE OTHER NEW DRIVEWAY APPROACHES ARE CONSTRUCTED. FOR BUSINESSES WITH ONLY ONE DRIVEWAY, THE NEW DRIVEWAY APPROACH SHALL BE CONSTRUCTED IN HALF WIDTHS, UNLESS A TEMPORARY ASPHALT DRIVEWAY IS FIRST INSTALLED AT NO SEPARATE COST TO THE CITY.

DECEMBER 2009

CITY OF SAN ANTONIO CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
CITY OF SAN ANTONIO GENERAL NOTES
% SUBMITTAL PROJECT NO.: DATE:
DRWN. BY:_____ DSGN. BY:_____ CHKD. BY:_____ SHEET NO.____OF____



LOCATION MAP
NOT TO SCALE

OWNER INFORMATION
JAY PARKER
TRUMBO PROPERTY, LLC
2822 WINTER GORGE
SAN ANTONIO, TX 78259

RESIDENTIAL LOTS = 153

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3.0	GRADING PLAN (SHEET 1 OF 2)
3.1	GRADING PLAN (SHEET 2 OF 2)
4.0	OVERALL DRAINAGE
4.1	CULVERT "A" PLAN & PROFILE
4.2	CULVERT "B" PLAN & PROFILE
4.3	CULVERT "C" PLAN & PROFILE
4.4	CULVERT "E" PLAN & PROFILE
4.5	CULVERT "F" PLAN & PROFILE
4.6	CULVERT "H" PLAN & PROFILE
4.7	CULVERT "L" PLAN & PROFILE
4.8	CULVERT "M" PLAN & PROFILE
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6.8	WATER DISTRIBUTION PLAN (SHEET 8 OF 12)
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6.10	WATER DISTRIBUTION PLAN (SHEET 10 OF 12)
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6.12	WATER DISTRIBUTION PLAN (SHEET 12 OF 12)
7.0	STORMWATER POLLUTION PREVENTION PLAN NARRATIVE & NOTES
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7.5	STORMWATER POLLUTION PREVENTION DETAILS

PLAT NO.25-11800029

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#:F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: CV8770201

SHEET TITLE: COVER

SHEET NUMBER: 0.0

JOB NO.: 877-02-01

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\CV877001.DWG, By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

COMPACTION NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

DRY UTILITY CONDUIT NOTE:

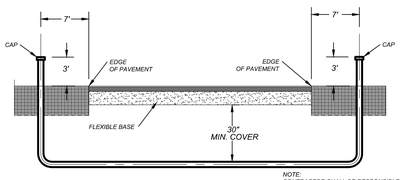
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

NOTE:

ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (SAWS) STANDARD SPECIFICATIONS.

LEGEND

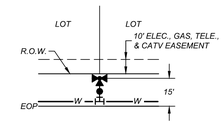
PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	3/4"IRR
PROPOSED WATER 1" IRRIGATION SERVICE & METER BOX	=	1"IRR
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE



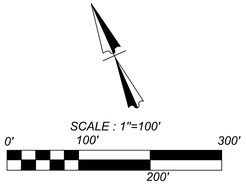
TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

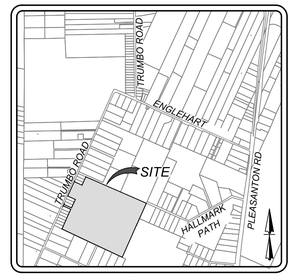
NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH CPS FACILITY AT ALL STREETS AND DRAIN CROSSING IF BUILT AHEAD OF CPS CONSTRUCTION. SLEEVES MUST ALSO BE LOCATED FOR CPS CREWS DURING CONSTRUCTION. (SEPERATE ITEM) SEE THIS SHEET FOR CONDUIT CROSSING DETAIL AND SCHEDULE.

BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

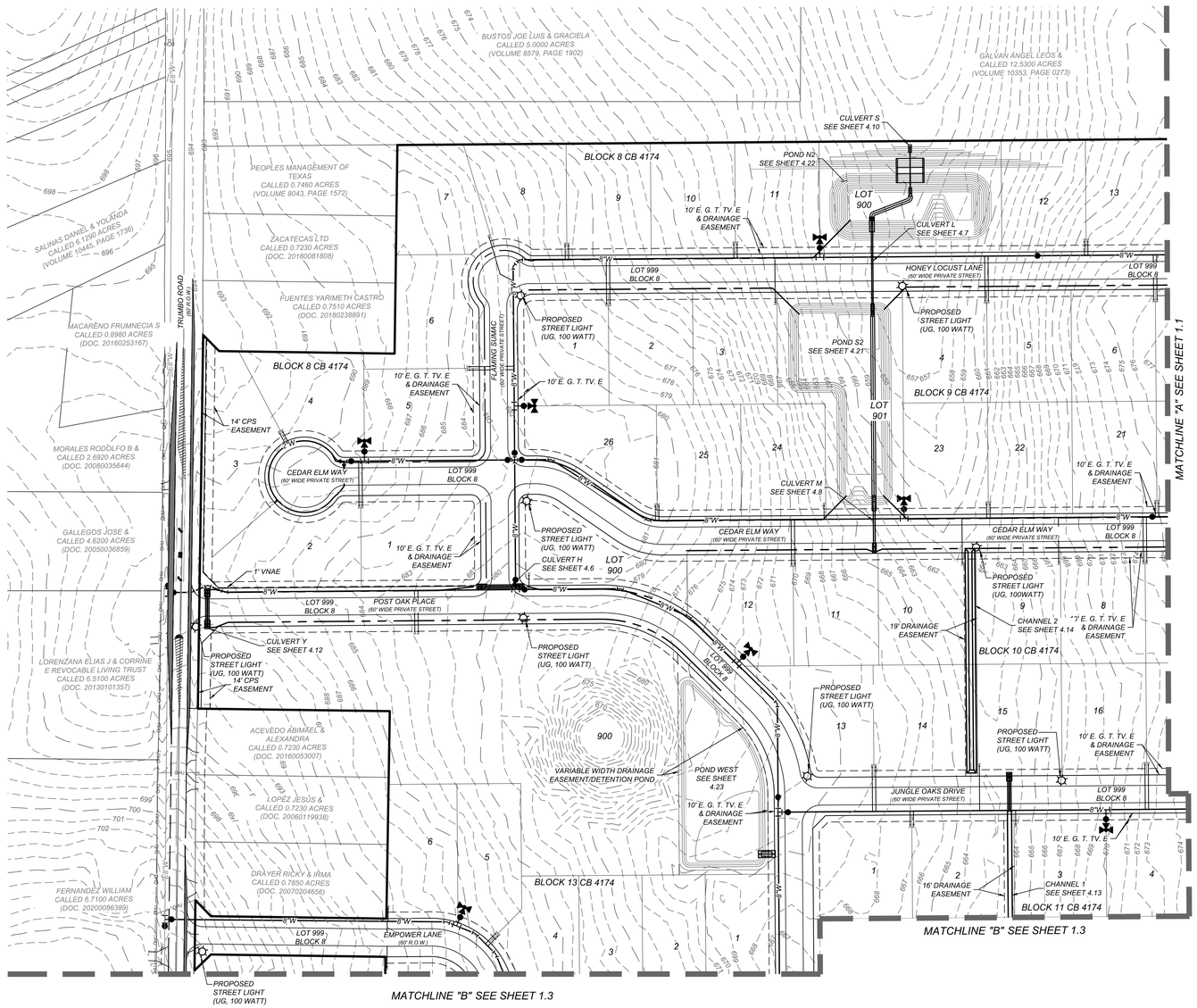


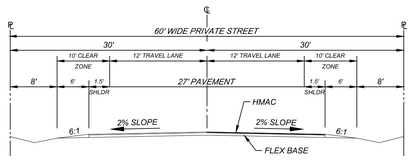
TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.





TYPICAL 60' STREET SECTION
N.T.S.

EXISTING UTILITY NOTE:
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

CONTRACTOR NOTE:
CONTRACTOR TO REPAIR ALL CURBS AND PAVING FROM DAMAGE OCCURRING DURING CONSTRUCTION TO ALL COMMON/PRIVATE AREAS.

TREE NOTE:
REFER TO LANDSCAPE ARCHITECT PLANS FOR TREE INVENTORY, TREES TO REMAIN AND TREES TO BE REMOVED. TREES ARE SHOWN ON THIS PLAN FOR ILLUSTRATIVE PURPOSES ONLY.

RESIDENTIAL LOTS = 153

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
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BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: OU8770201

SHEET TITLE:
OVERALL UTILITY PLAN
(SHEET 1 OF 4)

SHEET NUMBER:
1.0

L:\877\2021\05\SHOVEL\PHASE 1\OU8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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DRY UTILITY CONDUIT NOTE:

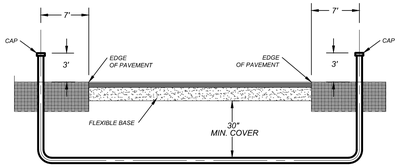
CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

NOTE:

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LEGEND

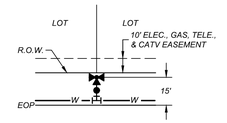
PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	3/4" IRR
PROPOSED WATER 1" IRRIGATION SERVICE & METER BOX	=	1" IRR
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
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EXISTING WATER VALVE	=	
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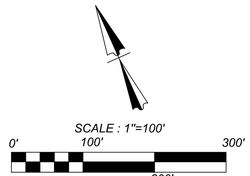
TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

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BEXAR COUNTY R.O.W. NOTE
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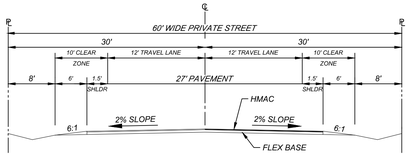


TYPICAL FIRE HYDRANT DETAIL
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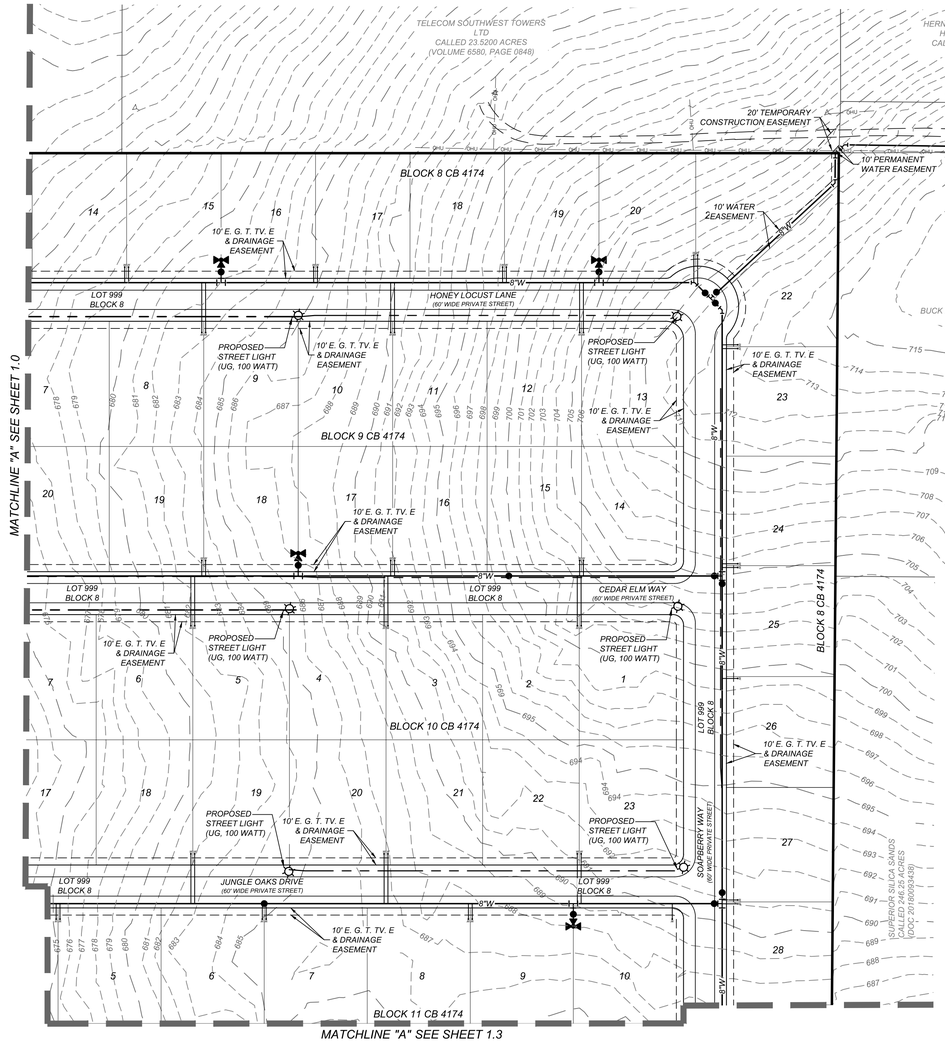




LOCATION MAP
N.T.S.



TYPICAL 60' STREET SECTION
N.T.S.



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RESIDENTIAL LOTS = 153

L:\877\02\01\DESIGN\CIVIL\PHASE 1\OU8770201.DWG By ECORONA

Colliers Engineering & Design

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD) PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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PROJECT NUMBER: 877-02-01
DRAWING NAME: OU8770201

SHEET TITLE:
OVERALL UTILITY PLAN (SHEET 2 OF 4)

SHEET NUMBER:
1.1

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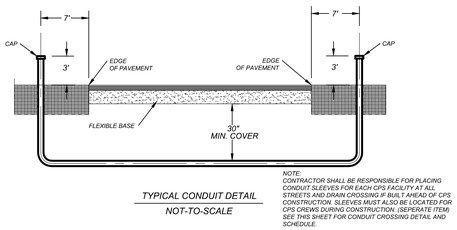
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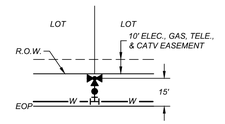
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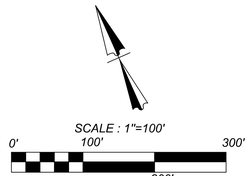
TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

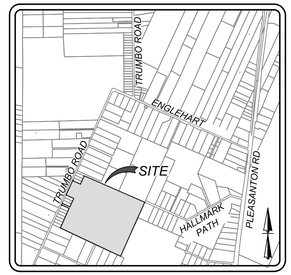
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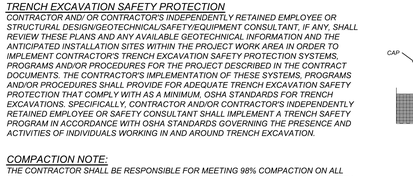


TYPICAL FIRE HYDRANT DETAIL
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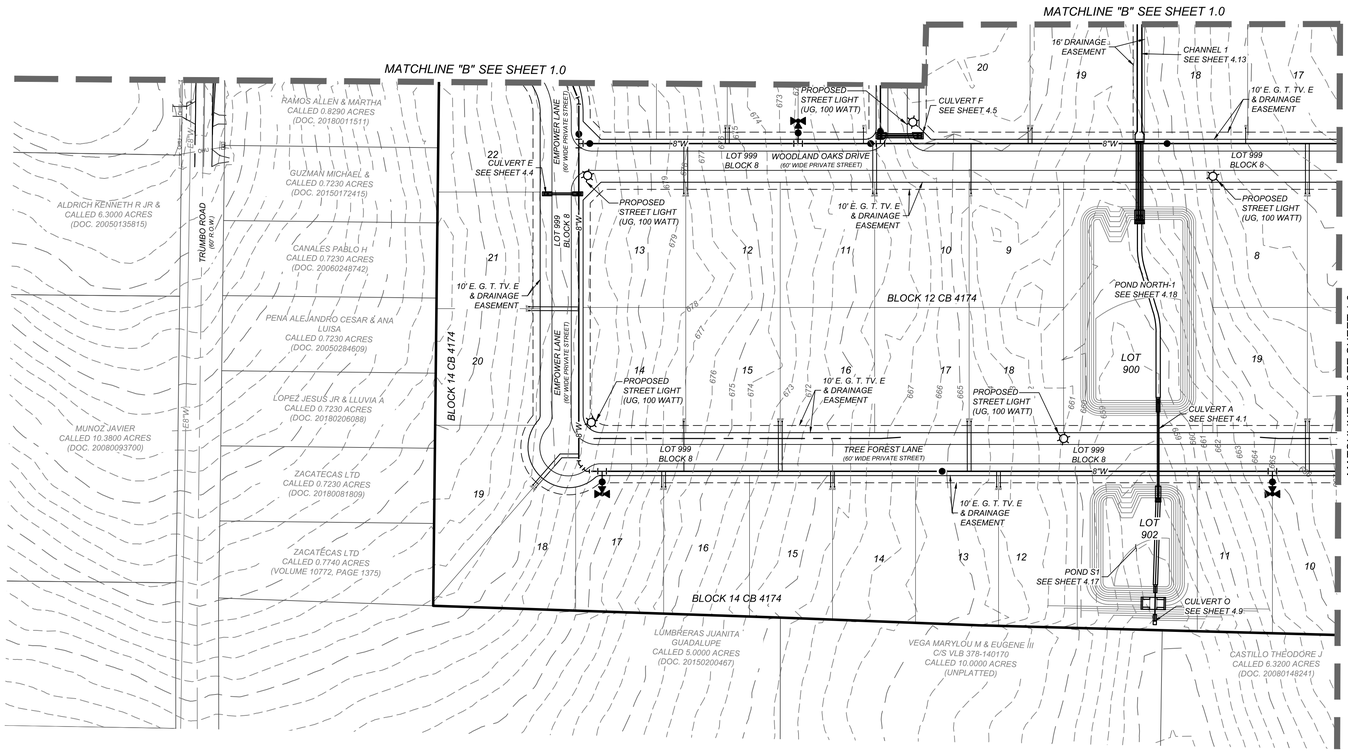




LOCATION MAP
N.T.S.



TYPICAL 60' STREET SECTION
N.T.S.



RESIDENTIAL LOTS = 153

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L:\877\02\01\DESIGN\CIVIL\PHASE 1\OU8770201.DWG, By: ECORONA

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

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TEXAS

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PROJECT NUMBER:	DRAWING NAME:
877-02-01	OU8770201

SHEET TITLE:
OVERALL UTILITY PLAN
(SHEET 3 OF 4)

SHEET NUMBER:
1.2

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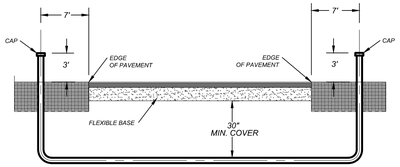
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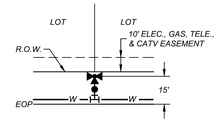
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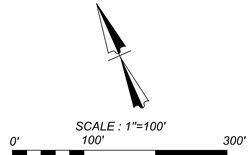
TYPICAL CONDUIT DETAIL
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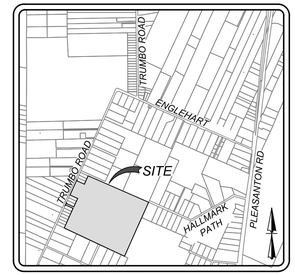
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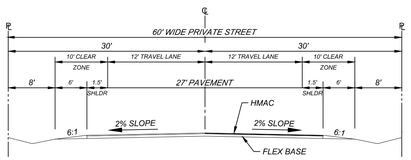


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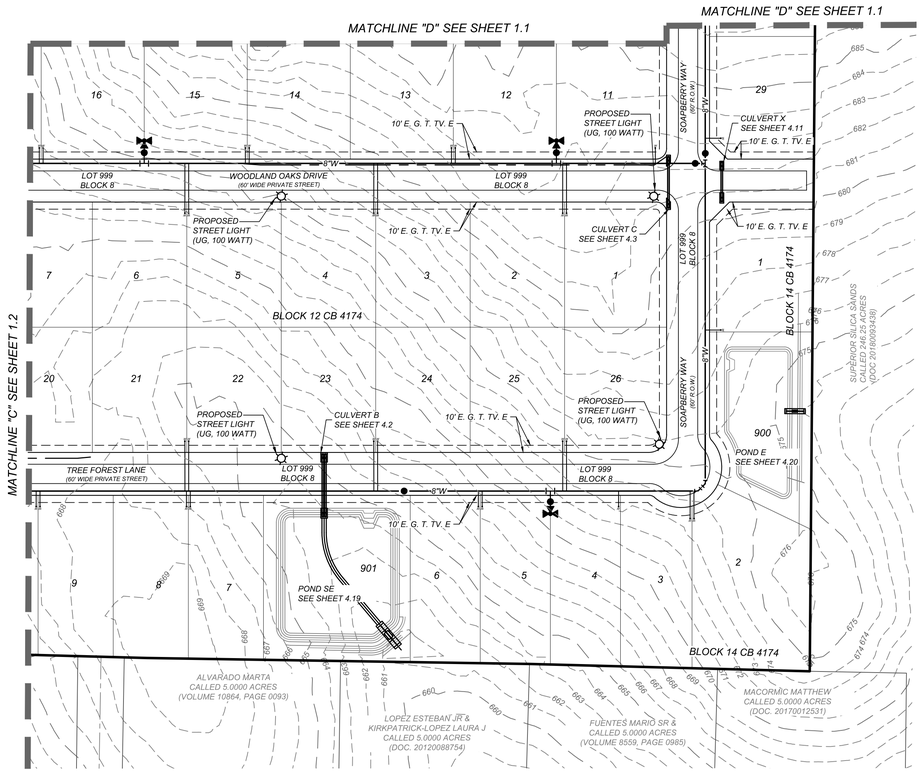




LOCATION MAP
N.T.S.



TYPICAL 60' STREET SECTION
N.T.S.



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BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: OUB770201

SHEET TITLE:
OVERALL UTILITY PLAN
(SHEET 4 OF 4)

SHEET NUMBER:
1.3

L:\877\02\01\DESIGN\CIVIL\PHASE 1\OUB770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

POST PROJECT CONDITIONS SCS TR-55 Method										
Study Point	Area (Ac)	Area (sq. mi)	T_c	T_{lag}	CN	Imp. Cover (%)	Q_1 (cfs)	Q_5 (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
DA1.1	6.07	0.009484375	39	23.3	30	30.84%	4.3	6.2	8.7	12.5
DA1.2	5.83	0.009109375	18	11.1	30	29.12%	5.6	8.1	11.1	16.5
DA1.2A	2.01	0.003140625	12	7.2	31	30.26%	2.4	3.4	4.7	7
DA1.3	5.29	0.008265625	19	11.5	30	31.20%	5.3	7.7	10.7	15.5
DA1.4	13.11	0.020484375	17	10.0	30	30.10%	13.5	19.6	27	39.8
DA1.5	9.69	0.015140625	26	15.5	30	27.95%	7.6	11.1	15.3	22.8
DA1.5A	2.34	0.00365625	15	9.0	30	40.51%	3.4	4.9	6.8	9.4
DA2.1	1.76	0.00275	16	9.4	30	29.74%	1.8	2.7	3.7	5.4
DA2.1A	0.4	0.000625	2	1.2	30	54.63%	1.2	1.7	2.4	3.3
DA2.2	3.52	0.0055	9	5.4	30	28.68%	4.3	6.2	8.7	13.1
DA2.2A	0.94	0.00146875	15	9.0	30	49.79%	1.7	2.4	3.3	4.5
DA2.3	9.94	0.01553125	29	17.2	30	18.40%	4.9	7.1	9.9	16.4
DA2.4	8.19	0.012796875	24	14.4	30	30.92%	7.4	10.7	14.8	21.5
DA2.4A	2.94	0.00459375	18	11.1	30	32.47%	3.1	4.5	6.3	9.1
DA2.5	10.25	0.016015625	14	8.6	30	30.51%	11.4	16.5	22.8	33.4
DA2.6	1.4	0.0021875	21	12.6	30	25.00%	1.1	1.6	2.2	3.3
DA2.6A	1.08	0.0016875	11	6.5	30	33.27%	1.4	2.1	2.9	4.2
DA2.7	6.6	0.0103125	19	11.6	30	30.18%	6.4	9.3	12.8	18.8
DA2.7A	0.69	0.001078125	15	9.1	30	25.00%	0.6	0.9	1.2	1.9
DA3.1	8.62	0.01346875	14	8.4	30	30.47%	9.6	13.9	19.3	28.4
DA3.2	4.36	0.0068125	25	14.8	30	28.77%	3.6	5.2	7.3	10.7
DA3.2A	1.26	0.00196875	7	4.1	30	25.00%	1.5	2.1	2.9	4.6
DA4.1	2.39	0.003734375	20	11.8	30	28.91%	2.2	3.2	4.4	6.5
DA4.2	4.5	0.00703125	20	11.9	30	30.00%	4.3	6.2	8.6	12.6
DA4.2A	1.55	0.002421875	4	2.4	30	31.60%	2.5	3.6	5.1	7.6
DA4.3	0.48	0.00075	5	3.2	30	34.81%	0.8	1.2	1.6	2.4
DA5.1	19.82	0.03096875	27	16.2	30	21.48%	11.7	17	23.7	37.6
DA5.1B	0.13	0.000203125	1	0.6	30	55.08%	0.4	0.6	0.8	1.1
DA5.2	0.99	0.001546875	17	9.9	30	24.79%	0.8	1.2	1.7	2.6
DA5.3	3.58	0.00559375	23	13.7	30	26.44%	2.8	4.1	5.7	8.6
DA5.3A	0.43	0.000671875	2	1.2	30	44.86%	1	1.5	2.1	3
DA5.4	1.73	0.002703125	23	14.0	30	25.13%	1.3	1.9	2.6	3.9
DA5.4A	2.41	0.003765625	22	13.4	30	28.66%	2.1	3	4.2	6.2

POST PROJECT CONDITIONS *HEC-HMS Study Point Summary*					
Study Pt	Drainage Areas	Q1 (ft^3/s)	Q5 (ft^3/s)	Q25 (ft^3/s)	Q100 (ft^3/s)
1	DA1.5 + DA2.2	4.3	14.5	19.9	29.4
2	PT 1 + DA1.3 + DA1.4	5.6	41.7	57.5	84.3
3	DA 1.2 + POND 2N OUTFALL	2.4	10.0	17.7	39.2
4	PT 19 + DA2.1	5.3	19.1	26.5	41.6
5	PT 4 + DA1.5A + DA2.2A	13.5	25.8	35.7	53.2
6	PT 5 + PT 7 + DA2.4 + DA2.4A	7.6	43.5	59.9	87.7
7	DA5.3A+ POND W OUTFALL	3.4	3.3	4.4	5.9
8	PT 6. + PT. 17 + DA2.5	1.8	63.4	87.1	126.7
9	DA2.6 + DA2.7A + POND 1S OUTFALL	1.2	25.8	36.4	49.9
10	DA4.1	4.3	3.2	4.4	6.5
11	PT 10. + DA3.1	1.7	16.6	23.0	33.8
12	DA3.2A + POND SE OUTFALL	4.9	3.0	4.2	13.7
13	DA4.3 + POND EAST OUTFALL	7.4	1.9	3.2	5.9
17	DA2.6A + DA 5.4A	3.1	4.7	6.4	9.3
19	DA5.1	11.4	17.0	23.7	37.6
20	DA4.2	1.1	6.2	8.6	12.6
POND 1N	PT 8	16.6	20.8	25.7	32.2
POND 1S	POND 1N OUTFALL + DA2.7 + DA5.4	15.4	24.9	34.2	45.9
POND 2N	POND 2S OUTFALL + DA1.1 + DA1.2A + DA5.1B + DA5.2	3.8	9.4	16.9	34.9
POND 2S	PT 2	13.2	16.7	20.5	25.6
POND E	PT 20 + DA4.2A	0.8	1.5	3.0	5.5
POND SE	PT 11 + DA3.2	1	1.3	3.9	12.9
POND W	DA2.3+ DA 5.3	2.5	3.2	3.8	5.0

LEGEND

= *STUDY POINT*

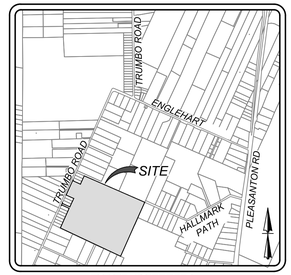
= *DRAINAGE AREA*

= *TIME OF CONCENTRATION PATH*

= *1' CONTOURS*

= *FLOW ARROWS*

= *PROPOSED SITE*

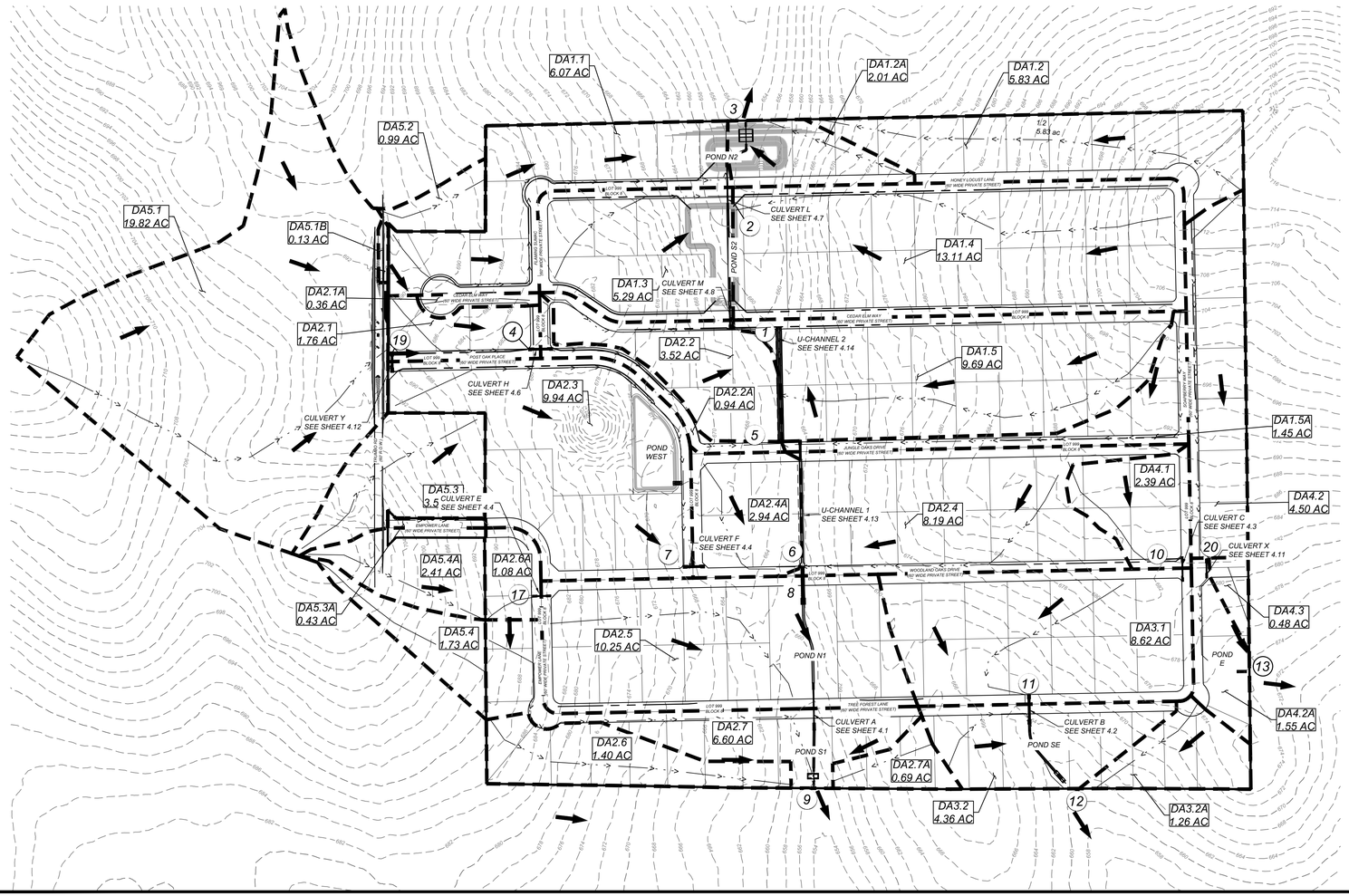


LOCATION MAP
N.T.S.

SCALE : 1"=200'

0' 200' 600'

400'



L:\877\02\01\DESIGN\CIVIL\PHASE 1\HYDROLOGY\CAD\PROPOSED DAS_CG VERSION.DWG By: ECORONA

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Colliers
Engineering & Design

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Formerly Known as KFW

811 PROTECT YOURSELF
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR
CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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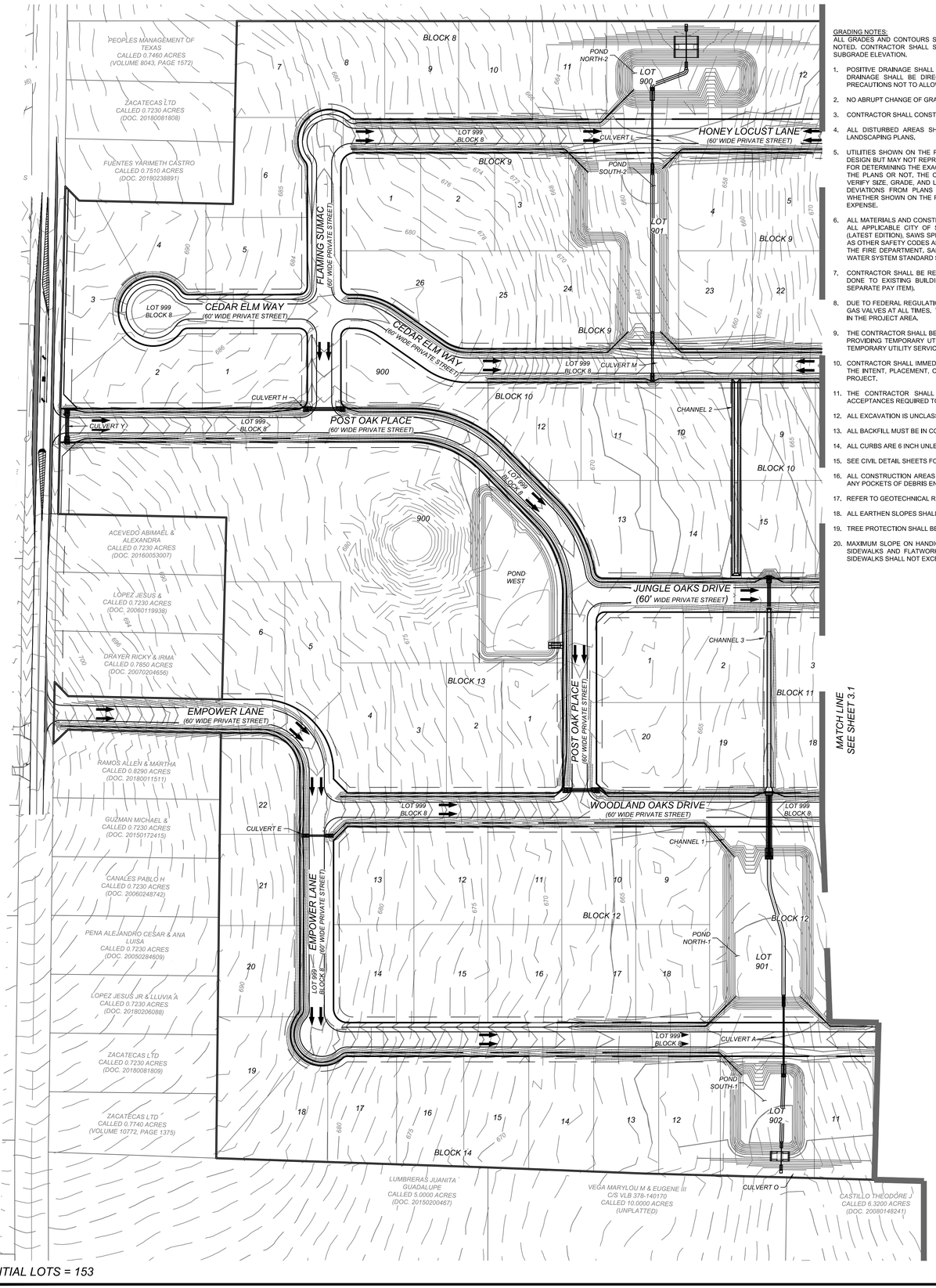
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: PROPOSED DAS_CG VERSION

SHEET TITLE:
MASTER PROPOSED DRAINAGE PLAN

SHEET NUMBER:
2.1



RESIDENTIAL LOTS = 153

GRADING NOTES:
ALL GRADES AND CONTOURS SHOWN ARE FINAL, TOP OF FINISHED SURFACE ELEVATIONS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL SUBTRACT THICKNESS OF PAVEMENT, BASE, TOP SOIL, SOD, ETC. TO ACHIEVE SUBGRADE ELEVATION.

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. NO ABRUPT CHANGE OF GRADE SHALL OCCUR IN THE ROADWAYS, PARKING AREAS, OR SIDEWALKS.
3. CONTRACTOR SHALL CONSTRUCT TO OBTAIN GRADES SHOWN HEREON ± ONE-TENTH (0.10) FOOT.
4. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND LANDSCAPING PLANS.
5. UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
6. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL CONFORM TO ALL APPLICABLE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), SAWS SPECIFICATIONS (LATEST EDITION), CITY BUILDING CODE AND REGULATIONS AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THE PROJECT AND REQUIREMENTS OF THE FIRE DEPARTMENT. SANITARY SEWER SYSTEM CONSTRUCTION SHALL COMPLY WITH THE SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS AS WELL AS TCEQ RULES (TAC 210 AND TAC 317).
7. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL OR BETTER CONDITION ANY DAMAGES DONE TO EXISTING BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, SIDEWALKS, OR DRIVEWAYS (NO SEPARATE PAY ITEM).
8. DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CITY PUBLIC SERVICE (CPS) MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL NECESSARY UTILITY COMPANIES FOR PROVIDING TEMPORARY UTILITY SERVICES DURING CONSTRUCTION. THE CONTRACTOR SHALL PAY FOR ALL TEMPORARY UTILITY SERVICES.
10. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS, AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
12. ALL EXCAVATION IS UNCLASSIFIED.
13. ALL BACKFILL MUST BE IN COMPACTED 12 - INCH LIFTS MAXIMUM, AND NO WATER JETTING IS ALLOWED.
14. ALL CURBS ARE 6 INCH UNLESS OTHERWISE SPECIFIED.
15. SEE CIVIL DETAIL SHEETS FOR APPLICABLE DETAILS.
16. ALL CONSTRUCTION AREAS WITHIN THE SITE SHALL BE STRIPPED OF ALL VEGETATION AND LOOSE TOPSOIL. ANY POCKETS OF DEBRIS ENCOUNTERED SHOULD ALSO BE REMOVED.
17. REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE INFORMATION AND CONSTRUCTION GUIDELINES.
18. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 2% UNLESS OTHERWISE SHOWN.
19. TREE PROTECTION SHALL BE PERFORMED IN ACCORDANCE WITH LANDSCAPE PLANS AND SPECIFICATIONS.
20. MAXIMUM SLOPE ON HANDICAP ACCESSIBLE PARKING SPACES IS 2% IN ANY DIRECTION. CROSS SLOPES ON SIDEWALKS AND FLATWORK AROUND BUILDINGS SHALL NOT EXCEED 2%. SLOPE ALONG THE LENGTH OF SIDEWALKS SHALL NOT EXCEED 5%.

EXISTING UTILITY NOTE:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

BEXAR COUNTY R.O.W. NOTE:
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

CONTRACTOR NOTE:
CONTRACTOR TO REPAIR ALL CURBS AND PAVING FROM DAMAGE OCCURRING DURING CONSTRUCTION TO ALL COMMON/PRIVATE AREAS.

TREE NOTE:
REFER TO LANDSCAPE ARCHITECT PLANS FOR TREE INVENTORY. TREES TO REMAIN AND TREES TO BE REMOVED, TREES ARE SHOWN ON THIS PLAN FOR ILLUSTRATIVE PURPOSES ONLY.

LEGEND

PROPERTY LINE	
ADJACENT PROPERTY LINE	
EXISTING CONCRETE	
EXISTING CURB	
EXISTING STORM MANHOLE	ST
EXISTING ELECTRIC METER PEDESTAL	EM
EXISTING GAS METER	GM
EXISTING WATER METER	WM
EXISTING LIGHT POLE	LP
EXISTING ELECTRICAL BOX	EBOX
EXISTING SIGN	
EXISTING POWER POLE WITH TRANSFORMER	PPX
EXISTING OVERHEAD UTILITY AND POWER POLE	PP
EXISTING FIBER OPTIC LINE	
EXISTING WATER LINE	
EXISTING SANITARY SEWER LINE	
EXISTING CHAIN-LINK FENCE	
EXISTING HANDRAIL	
SITE BENCHMARK SEE DESCRIPTION THIS SHEET	
EXISTING FIRE HYDRANT	FH
EXISTING GATE	
EXISTING GAS VALVE	GV
EXISTING IRRIGATION VALVE	IRV
PROPOSED BUILDING DOORS	
EXISTING SPOT ELEVATION	+664.13
EXISTING CONTOURS	664
PROPOSED CONTOURS	664
FLOW ARROW	
PROPOSED FINISH FLOOR ELEVATION	FFE= XXXX.XX
PROPOSED DRAINAGE SWALE	
PROPOSED HIGH POINT	HP
PROPOSED SPOT GRADE (TOP OF CURB AND GUTTER)	TC XX.XX / G XX.XX
PROPOSED SPOT GRADE	FG XX.XX
PROPOSED SPOT GRADE (TOP OF WALL)	TW XX.XX
PROPOSED SPOT GRADE (BOTTOM OF WALL)	BW XX.XX
MATCH EXISTING GRADE	
LIMITS OF CONSTRUCTION	

SCALE : 1"=100'
0' 100' 200' 300'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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Formerly Known as KFW ENGINEERS & SURVEYING

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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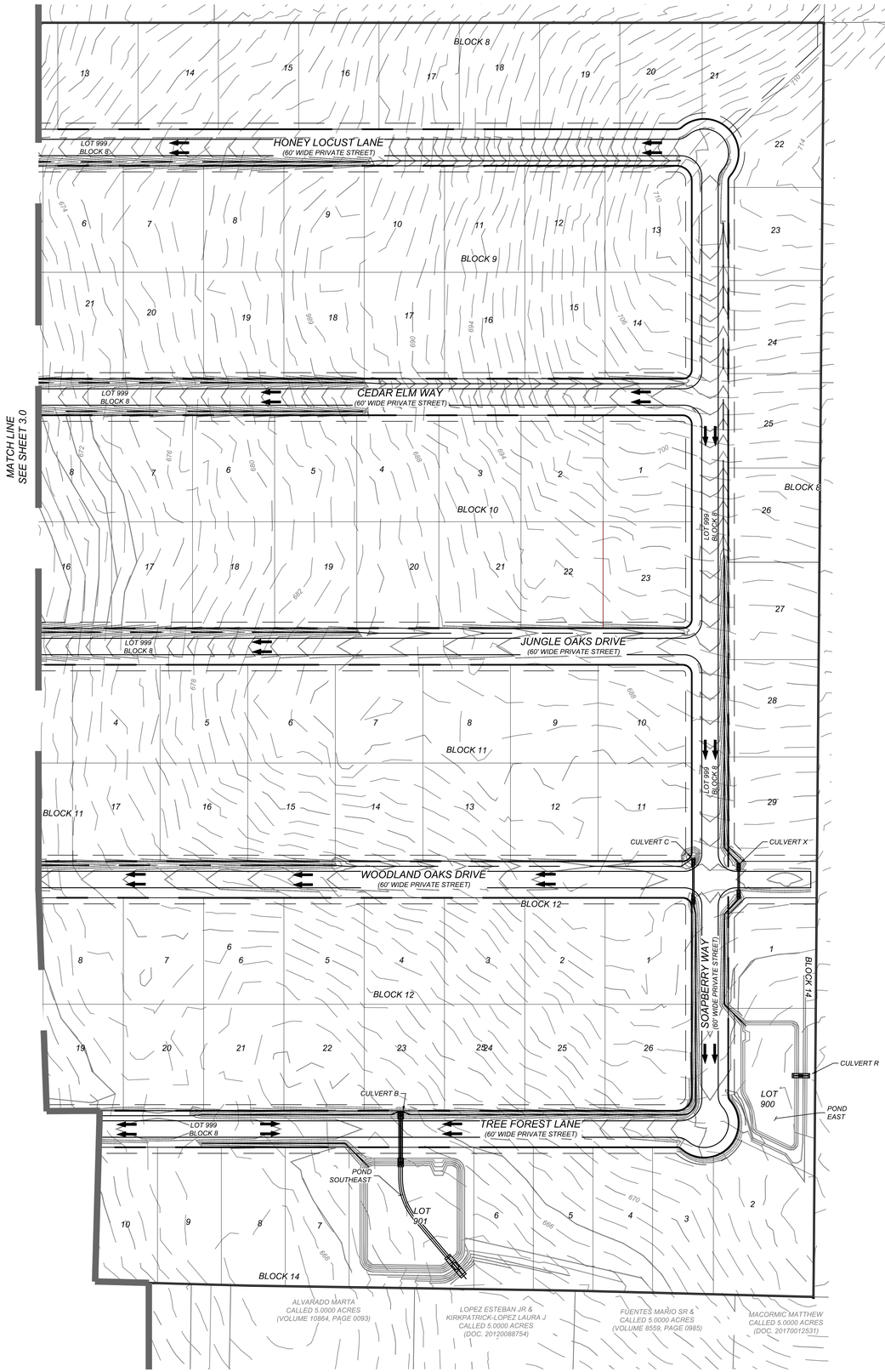
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	221109 - GRADING PLAN

SHEET TITLE:
GRADING PLAN (SHEET 1 OF 2)

SHEET NUMBER:
3.0

L:\877\02\01\DESIGN\EXHIBITS\CAD\221109 - GRADING PLAN.DWG By: ECORONA



RESIDENTIAL LOTS = 153

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LEGEND

PROPERTY LINE	
ADJACENT PROPERTY LINE	
EXISTING CONCRETE	
EXISTING CURB	
EXISTING STORM MANHOLE	SD
EXISTING ELECTRIC METER PEDESTAL	EM
EXISTING GAS METER	GM
EXISTING WATER METER	WM
EXISTING LIGHT POLE	LP
EXISTING ELECTRICAL BOX	EBOX
EXISTING SIGN	
EXISTING POWER POLE WITH TRANSFORMER	PPX
EXISTING OVERHEAD UTILITY AND POWER POLE	PP
EXISTING FIBER OPTIC LINE	
EXISTING WATER LINE	
EXISTING SANITARY SEWER LINE	
EXISTING CHAIN-LINK FENCE	
EXISTING HANDRAIL	
SITE BENCHMARK SEE DESCRIPTION THIS SHEET	
EXISTING FIRE HYDRANT	FH
EXISTING GATE	
EXISTING GAS VALVE	GV
EXISTING IRRIGATION VALVE	IRV
PROPOSED BUILDING DOORS	
EXISTING SPOT ELEVATION	+664.13
EXISTING CONTOURS	664
PROPOSED CONTOURS	664
FLOW ARROW	
PROPOSED FINISH FLOOR ELEVATION	FFE= XXXX.XX
PROPOSED DRAINAGE SWALE	
PROPOSED HIGH POINT	HP
PROPOSED SPOT GRADE (TOP OF CURB AND GUTTER)	TC XX.XX / G XX.XX
PROPOSED SPOT GRADE	FG XX.XX
PROPOSED SPOT GRADE (TOP OF WALL)	TW XX.XX
PROPOSED SPOT GRADE (BOTTOM OF WALL)	BW XX.XX
MATCH EXISTING GRADE	
LIMITS OF CONSTRUCTION	

SCALE : 1"=100'
0' 100' 300'
200'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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REV	DATE	DRAWN BY	DESCRIPTION

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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194500

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: 221109 - GRADING PLAN

SHEET TITLE: GRADING PLAN (SHEET 2 OF 2)

SHEET NUMBER: 3.1

L:\877\02\01\DESIGN\EXHIBITS\CAD\221109 - GRADING PLAN.DWG By: ECORONA

POND NORTH-2 - SEE SHEET ####

CULVERT S - SEE SHEET ####

CULVERT L - SEE SHEET ###

POND SOUTH-2 - SEE SHEET ####

HONEY LOCUST LANE
(60' WIDE PRIVATE STREET)

FLAMING SUMAC
(60' WIDE PRIVATE STREET)

CEDAR ELM WAY
(60' WIDE PRIVATE STREET)

CULVERT H - SEE SHEET 4.6

POST OAK PLACE
(60' WIDE PRIVATE STREET)

CULVERT Y - SEE SHEET 4.12

CULVERT M - SEE SHEET ###

CHANNEL 2 - SEE SHEET ####

JUNGLE OAKS DRIVE
(60' WIDE PRIVATE STREET)

POND WEST - SEE SHEET 4.23

EMPOWER LANE
(60' WIDE PRIVATE STREET)

CHANNEL 3 - SEE SHEET ####

CULVERT E - SEE SHEET 4.4

CULVERT F - SEE SHEET 4.5

CHANNEL 1 - SEE SHEET ####

WOODLAND OAKS DRIVE
(60' WIDE PRIVATE STREET)

CULVERT C - SEE SHEET 4.3

CULVERT X - SEE SHEET 4.11

SOAPBERRY WAY
(60' WIDE PRIVATE STREET)

CULVERT R SEE SHEET ####

POND NORTH-1 - SEE SHEET ####

CULVERT A - SEE SHEET ###

CULVERT B - SEE SHEET ###

TREE FOREST LANE
(60' WIDE PRIVATE STREET)

POND SOUTH-1 - SEE SHEET ####

POND SOUTHEAST - SEE SHEET ####

POND EAST - SEE SHEET ####

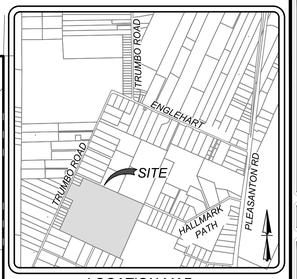
CULVERT O - SEE SHEET ###

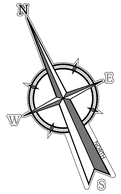
TRUMBO ROAD
(60' R.O.W.)

BLOCK 8 · BLOCK 9 · BLOCK 10 · BLOCK 11 · BLOCK 12 · BLOCK 13 · BLOCK 14

LOT 999 BLOCK 8

LOCATION MAP
N.T.S.





100 0 100 200
SCALE : 1" = 100'
Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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PLAT# 25-11800029

BEXAR COUNTY
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#:F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: ST_8770201

SHEET TITLE: OVERALL DRAINAGE

SHEET NUMBER: 4.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\ST_8770201.DWG By: ECORONA

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

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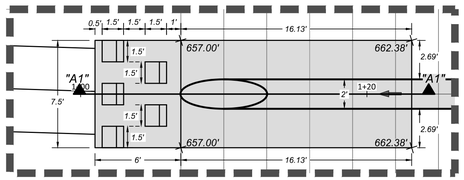
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TRENCH EXCAVATION SAFETY PROTECTION

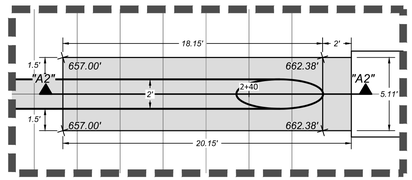
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CAUTION!!:

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DETAIL "A-1"
SCALE 1" = 5'



DETAIL "A-2"
SCALE 1" = 5'

BAFFLE BLOCK CALCULATIONS
(ST. ANTHONY FALLS METHOD)

Q(25) = 25.70 CFS
BOTTOM WIDTH UPSTREAM = 2.00 FT
BOTTOM WIDTH DOWNSTREAM = 7.50 FT
Y1 = 1.89' (DEPTH BEFORE JUMP)
Y2 = 1.35' (DEPTH AFTER JUMP)

WIDTH OF BLOCKS = 0.75(Y1) = 1.42 FT. (USE 1.5 FT.)
SPACE BETWEEN BLOCKS = 0.75(Y1) = 1.42 FT. (USE 1.5 FT.)
HEIGHT OF BLOCKS = Y1 = 1.89 FT. (USE 2.0 FT.)
OF BLOCKS ACROSS BOTTOM = 2

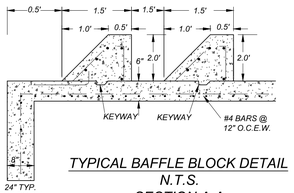
% OF FLOOR COVERED WITH BLOCKS = 2 (1.5 FT) /7.5 FT = 40.0%
(% MUST BE BETWEEN 40% AND 55%)

DEPTH OF TAILWATER (Y2) = 1.35'
FROUDE NUMBER BEFORE JUMP = F1 = 0.87
FROUDE NUMBER AFTER JUMP = F2 = 0.39
LENGTH OF BASIN = LB = 4.5(Y2)/F1^0.76 = 9.44 FT. (USE 6.0 FT.)

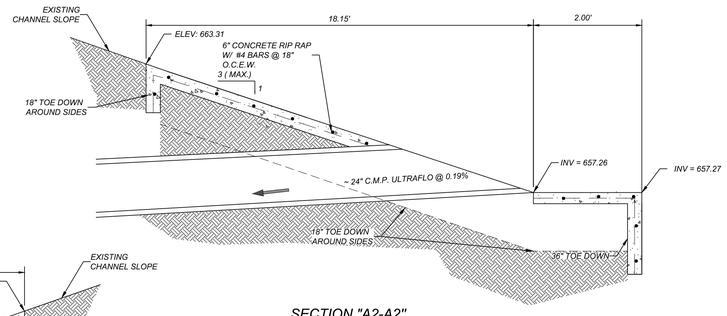
DISTANCE TO FLOOR BLOCKS = LB/3 = 3.15 FT. (USE 1.0 FT.)

HEIGHT OF MAX TAILWATER DEPTH:
Z = Y2/3 = 0.45 FT.
Y2' = 0.85 * Y2 ; H = Z + Y2' = 1.60 FT.

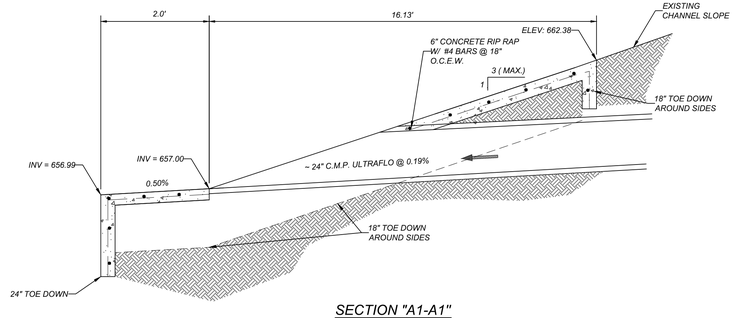
VELOCITY AFTER JUMP:
V = Q/A
A = Y2 * [(B + T) / 2]
A = 1.35' * [(2 + 7.5 / 2] = 6.41 SQ. FT.
V = 25.70 / 6.41 = 4.01 F.P.S.



TYPICAL BAFFLE BLOCK DETAIL
N.T.S.
SECTION A-A



SECTION "A2-A2"
N.T.S.

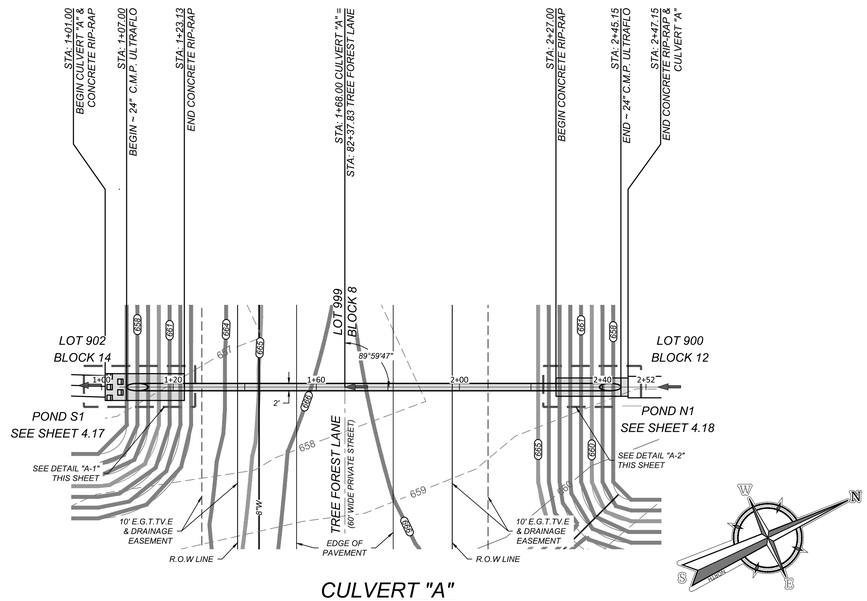


SECTION "A1-A1"
N.T.S.

RESIDENTIAL LOTS = 153

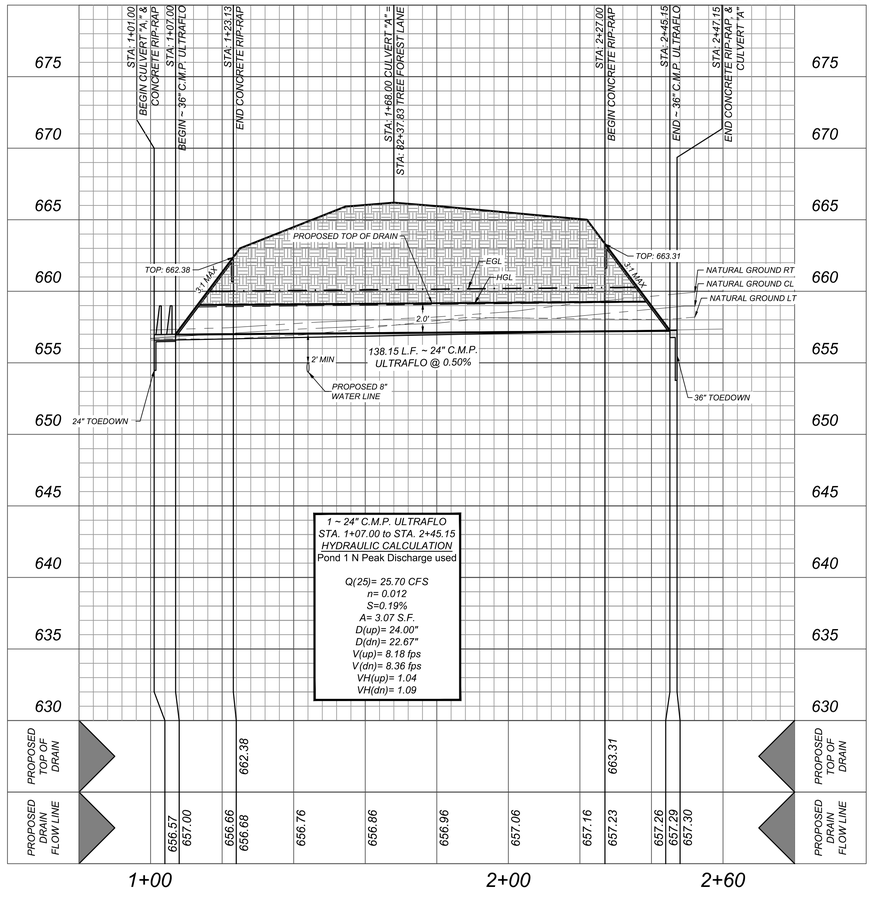
LEGEND

= EXISTING CONTOUR
= PROPOSED CONTOUR
= FLOW ARROW



CULVERT "A"
STA: 1+05.00 - STA: 2+47.15

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



1 ~ 24" C.M.P. ULTRAFLO
STA. 1+07.00 to STA. 2+45.15
HYDRAULIC CALCULATION
Pond 1 N Peak Discharge used

Q(25)= 25.70 CFS
n= 0.012
S=0.19%
A= 3.07 S.F.
D(up)= 24.00"
D(dn)= 22.67"
V(up)= 8.18 fps
V(dn)= 8.36 fps
VH(up)= 1.04
VH(dn)= 1.09

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PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201_NEW

SHEET TITLE: CULVERT "A" PLAN & PROFILE

SHEET NUMBER: 4.1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWS\DR8770201_NEW.DWG By: ECCHRONA

NOTE:

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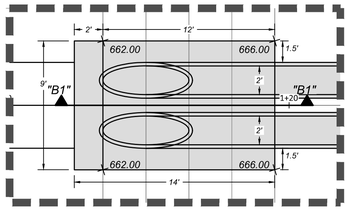
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TRENCH EXCAVATION SAFETY PROTECTION

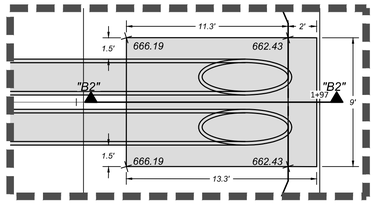
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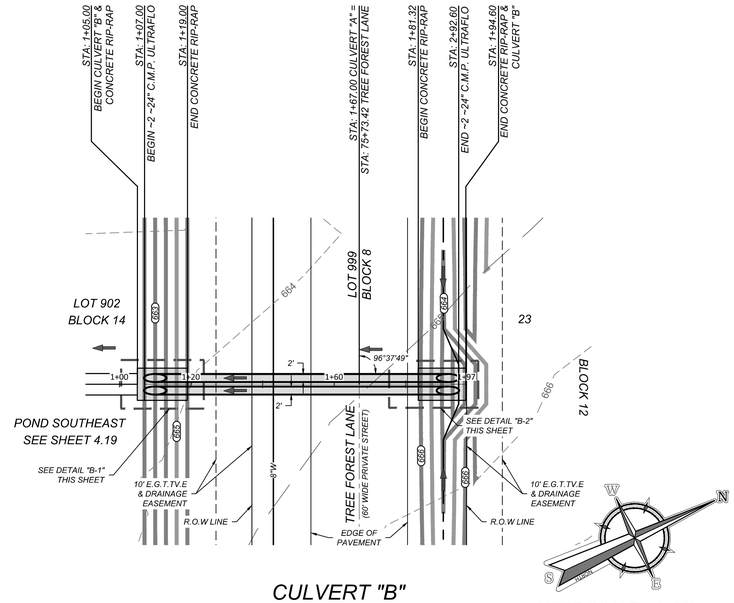
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DETAIL "B-1"
SCALE 1" = 5'



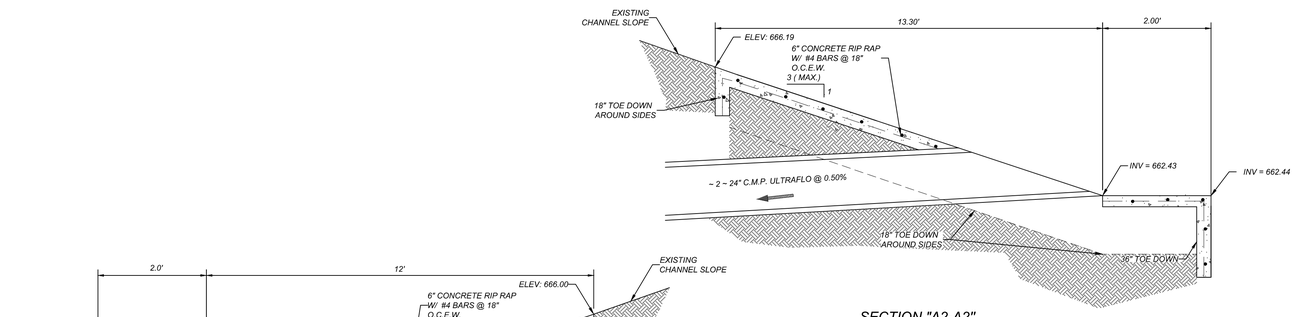
DETAIL "B-2"
SCALE 1" = 5'



CULVERT "B"

STA: 1+05.00 - STA: 1+94.60

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



SECTION "A2-A2"
N.T.S.

SECTION "A1-A1"
N.T.S.

RESIDENTIAL LOTS = 153

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TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201_NEW

SHEET TITLE: CULVERT "B" PLAN & PROFILE

SHEET NUMBER: 4.2

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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TRENCH EXCAVATION SAFETY PROTECTION

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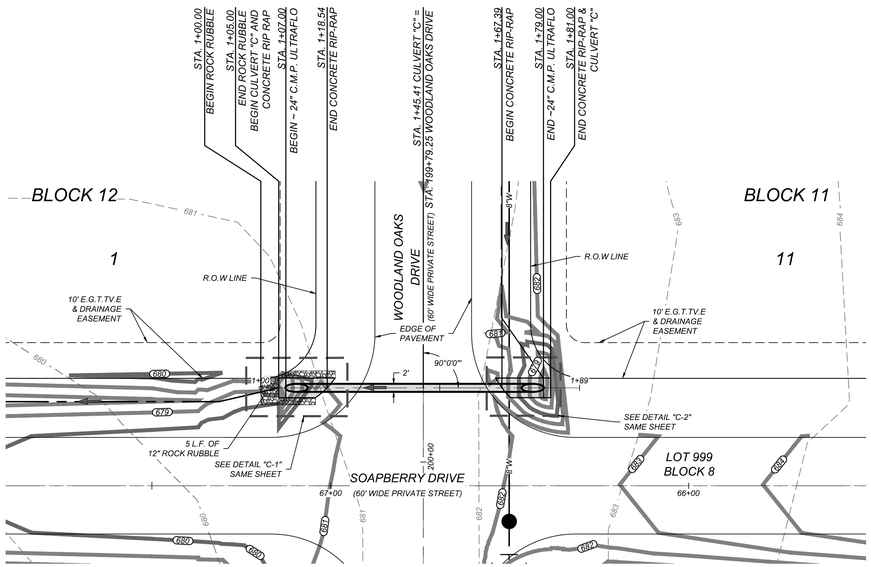
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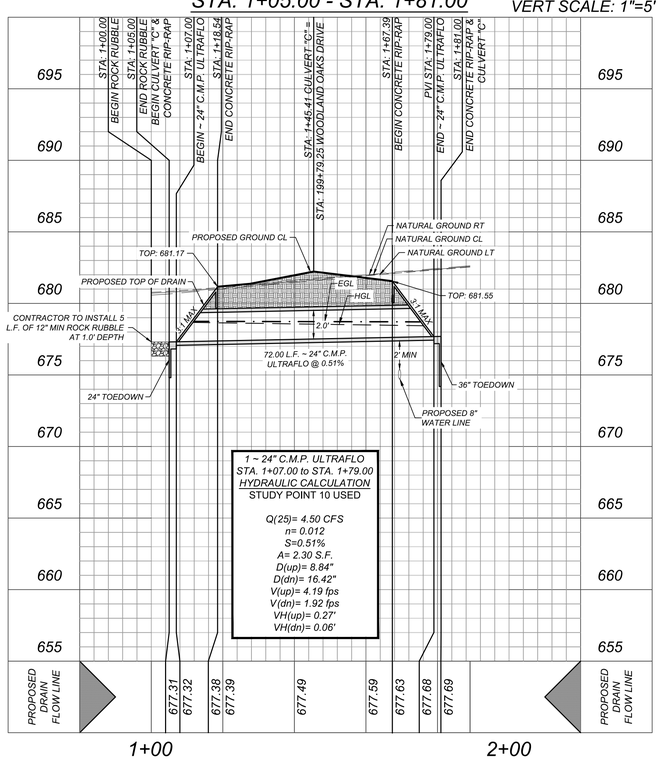
2. ALL CONCRETE SAFETY END TREATMENTS SHALL HAVE A CONCRETE OF 6" THICKNESS WITH #4 Bars @ 12" OCEW

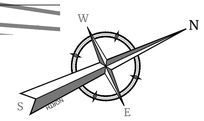


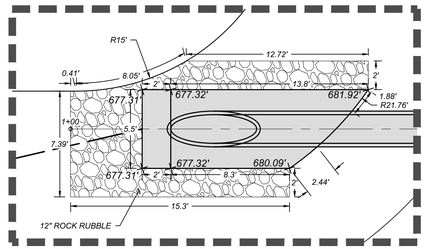
CULVERT "C"

STA: 1+05.00 - STA: 1+81.00

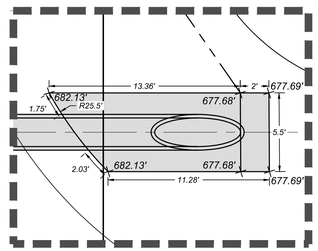
HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



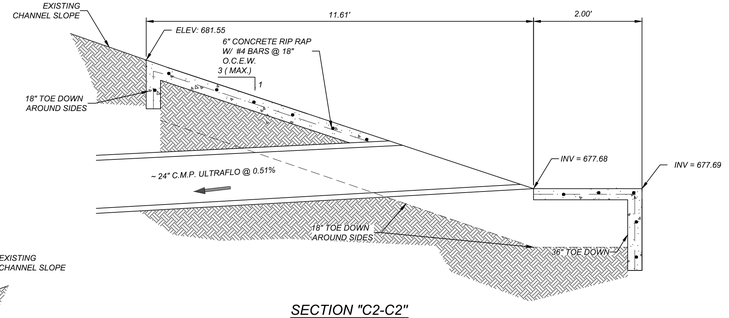




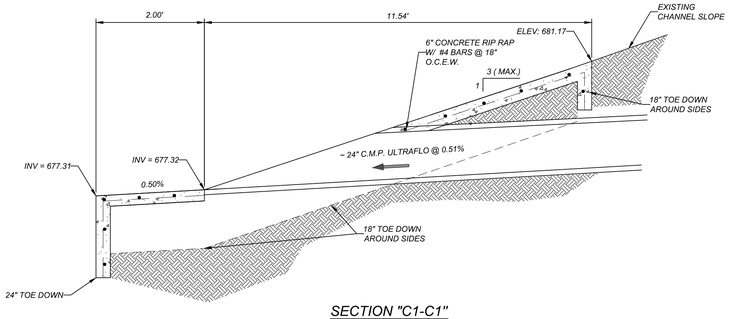
DETAIL "C-1"
SCALE 1" = 5'



DETAIL "C-2"
SCALE 1" = 5'



SECTION "C2-C2"
N.T.S.



SECTION "C1-C1"
N.T.S.

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MHC (PUD)
PLAT# 25-11800029

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SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201

SHEET TITLE:
CULVERT "C" PLAN & PROFILE

SHEET NUMBER:
4.3

L:\877\02\01\DESIGN\DWG\PHASE 1\DRAINS\DR8770201.DWG By, ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

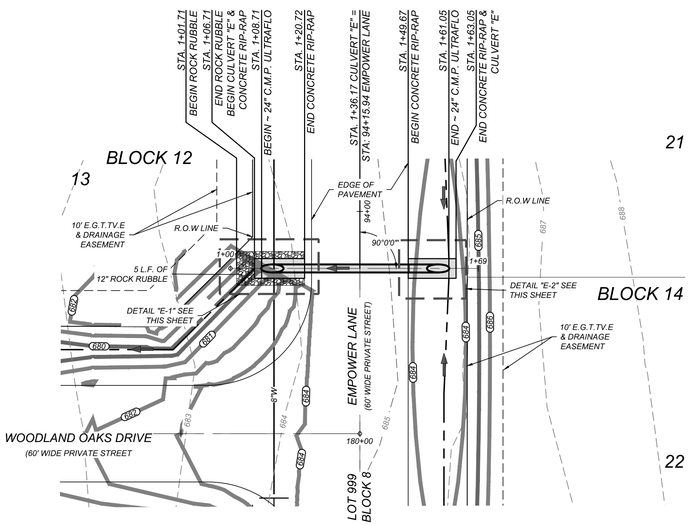
CAUTION!!:

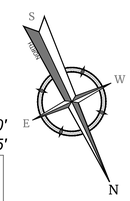
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ALL CONCRETE SAFETY END TREATMENTS SHALL HAVE A CONCRETE OF 6" THICKNESS WITH #4 Bars @ 12" OCEW

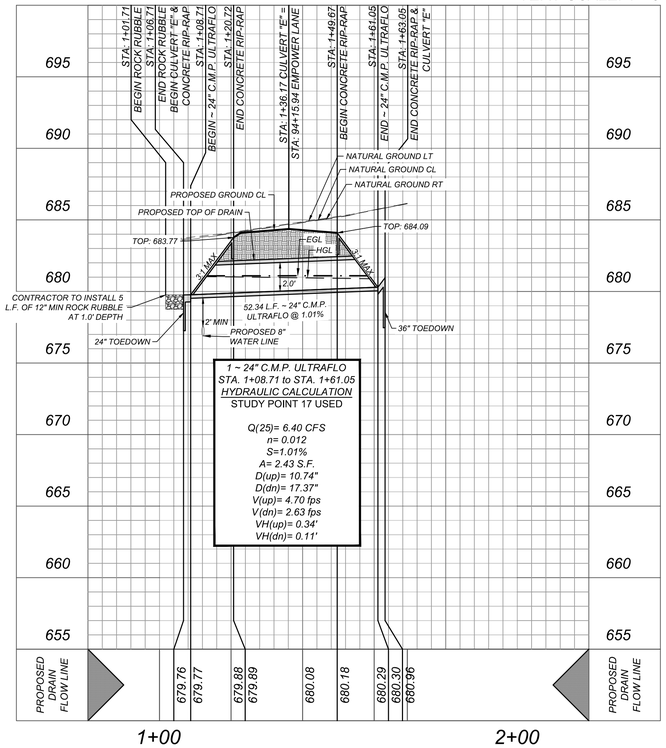


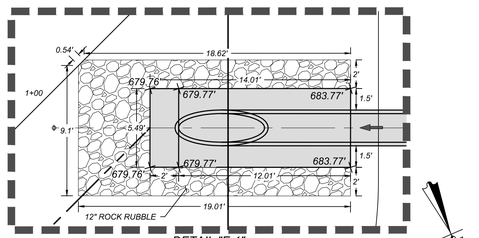


CULVERT "E"

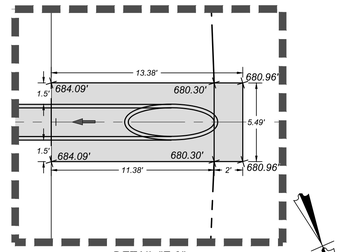
STA: 1+06.71 - STA: 1+63.05

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'

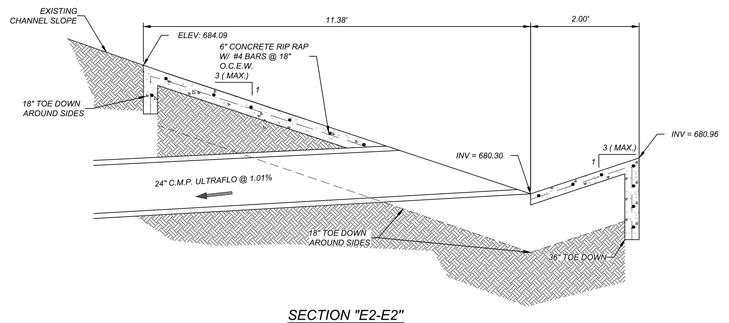




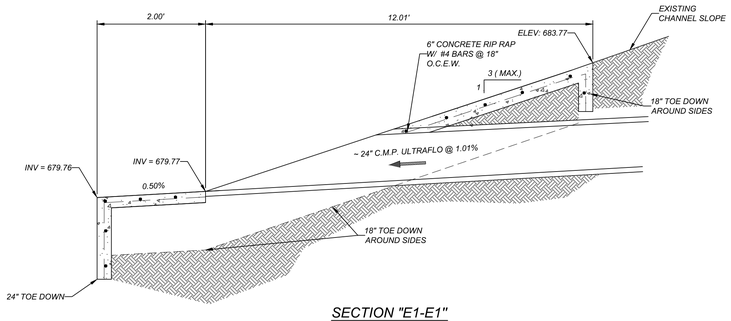
DETAIL "E-1"
SCALE 1" = 5'



DETAIL "E-2"
SCALE 1" = 5'



SECTION "E2-E2"
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SECTION "E1-E1"
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Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201

SHEET TITLE: CULVERT "E" PLAN & PROFILE

SHEET NUMBER: 4.4

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\DR8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

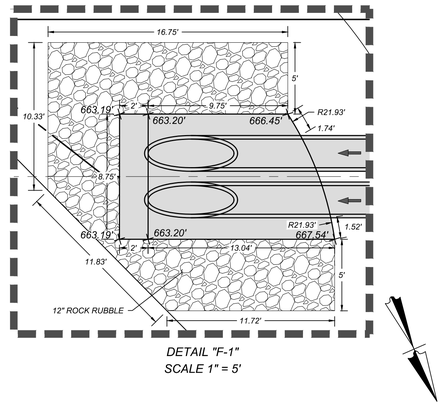
CAUTION!!:

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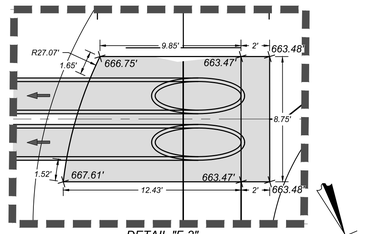
NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

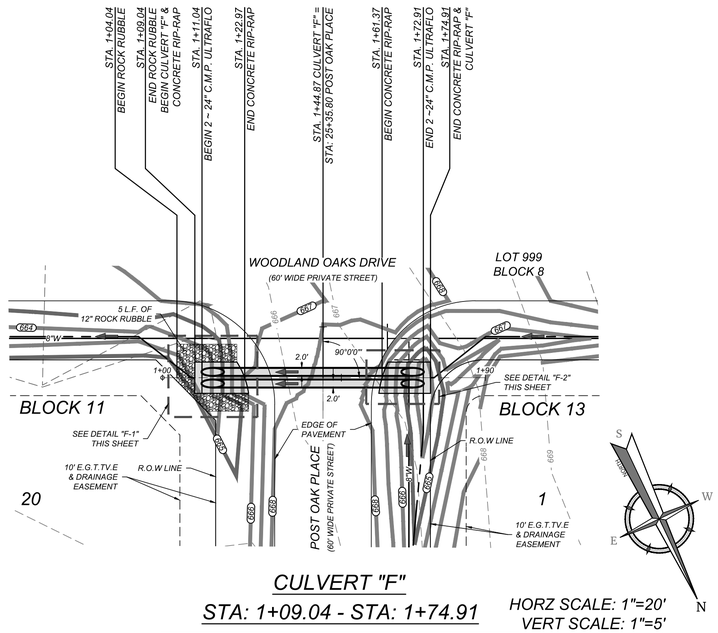
2. ALL CONCRETE SAFETY END TREATMENTS SHALL HAVE A CONCRETE OF 5" THICKNESS WITH #4 Bars @ 12" OCEW



DETAIL "F-1"
SCALE 1" = 5'



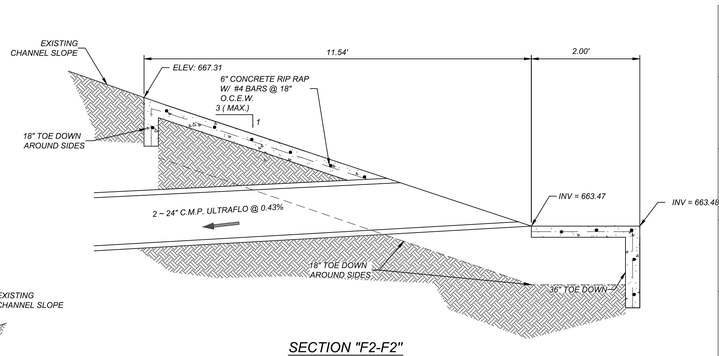
DETAIL "F-2"
SCALE 1" = 5'



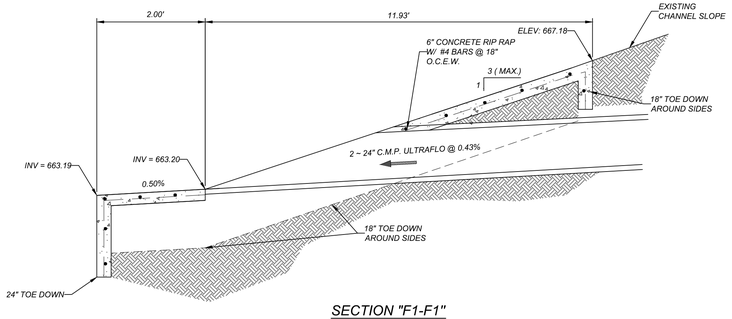
CULVERT "F"

STA: 1+09.04 - STA: 1+74.91

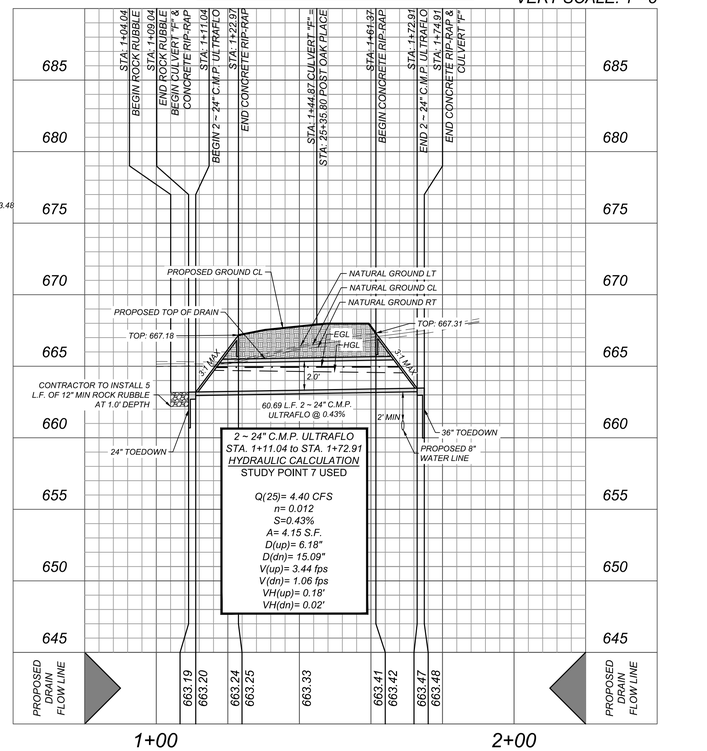
HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



SECTION "F2-F2"
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SECTION "F1-F1"
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194500

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		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201

SHEET TITLE:
CULVERT "F" PLAN & PROFILE

SHEET NUMBER:
4.5

L:\877\02\01\DSG\CIVIL\PHASE 1\DRAWINGS\DR8770201.DWG By: CCISCHONA

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TRENCH EXCAVATION SAFETY PROTECTION

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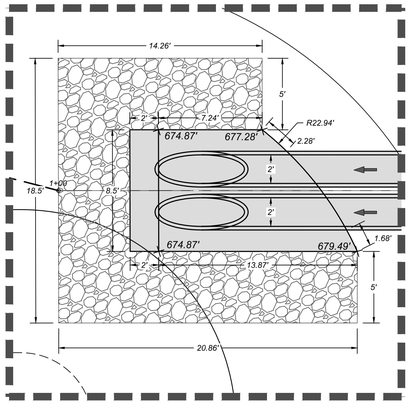
CAUTION!!:

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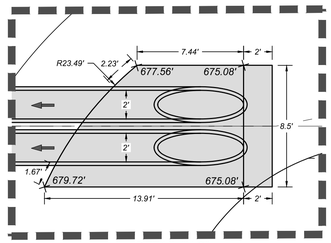
NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

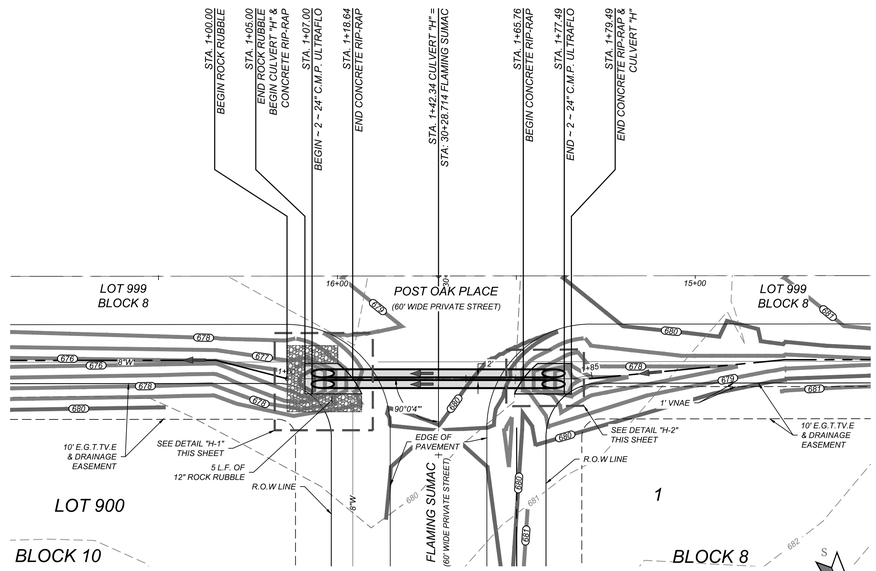
2. ALL CONCRETE SAFETY END TREATMENTS SHALL HAVE A CONCRETE OF 6" THICKNESS WITH #4 Bars @ 12" OCEW



DETAIL "H-1"
SCALE 1" = 5'



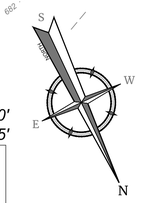
DETAIL "H-2"
SCALE 1" = 5'

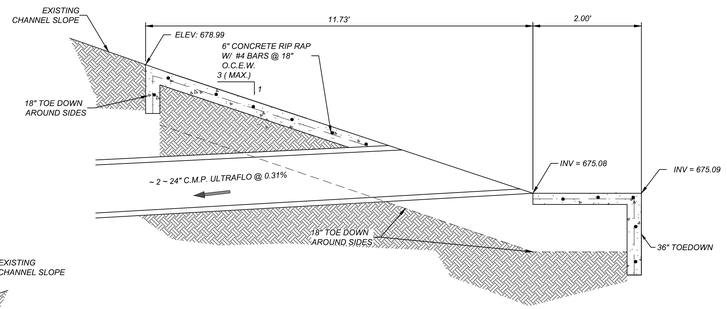


CULVERT "H"

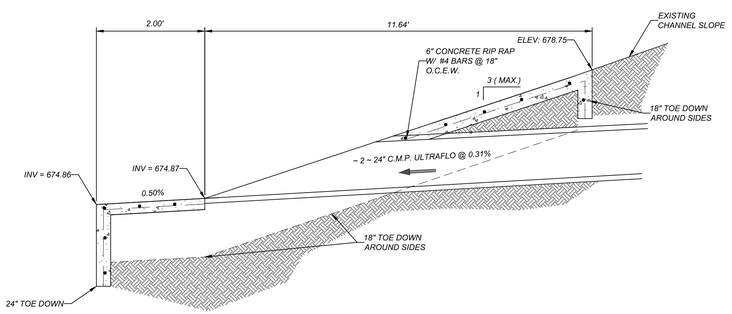
STA: 1+05.00 - STA: 1+79.49

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'





SECTION "H2-H2"
N.T.S.



SECTION "H1-H1"
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
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PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201

SHEET TITLE: CULVERT "H" PLAN & PROFILE

SHEET NUMBER: 4.6

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\8770201\105\ENGR\DWG\PHASE 1\GRADING\DR8770201.DWG By: ECORONA

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

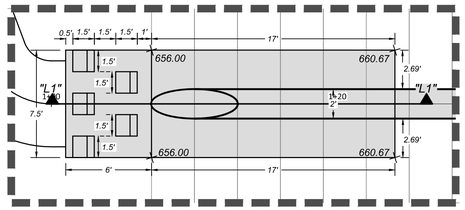
3. AT THE PRE-FINAL INSPECTION: THE ENGINEER MUST ISSUE CERTIFICATION TO THE CITY INSPECTOR THAT THE TURF REINFORCEMENT MAT (TRM) WAS INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE CERTIFICATION MUST ALSO NOTE THAT THE MATERIAL AND INSTALLATION HAS MET CITY AND MANUFACTURER SPECIFICATIONS.

TRENCH EXCAVATION SAFETY PROTECTION

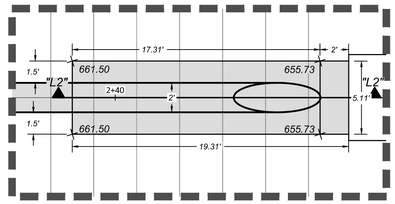
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

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DETAIL "L-1"
SCALE 1" = 5'



DETAIL "L-2"
SCALE 1" = 5'

BAFFLE BLOCK CALCULATIONS
(ST. ANTHONY FALLS METHOD)

Q(25) = 20.50 CFS
BOTTOM WIDTH UPSTREAM = 2.00 FT
BOTTOM WIDTH DOWNSTREAM = 7.50 FT
Y1 = 1.81' (DEPTH BEFORE JUMP)
Y2 = 1.19' (DEPTH AFTER JUMP)

WIDTH OF BLOCKS = 0.75(Y1) = 1.36 FT. (USE 1.5 FT.)
SPACE BETWEEN BLOCKS = 0.75(Y1) = 1.36 FT. (USE 1.5 FT.)
HEIGHT OF BLOCKS = Y1 = 1.81 FT. (USE 2.0 FT.)
OF BLOCKS ACROSS BOTTOM = 2

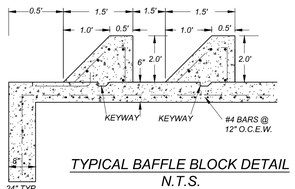
% OF FLOOR COVERED WITH BLOCKS = 2 (1.5 FT) /7.5 FT = 40.0%
(% MUST BE BETWEEN 40% AND 55%)

DEPTH OF TAILWATER (Y2) = 1.19'
FROUDE NUMBER BEFORE JUMP = F1 = 0.74
FROUDE NUMBER AFTER JUMP = F2 = 0.37
LENGTH OF BASIN = LB = 4.5(Y2)/F1*0.76 = 10.22 FT. (USE 6.0 FT.)

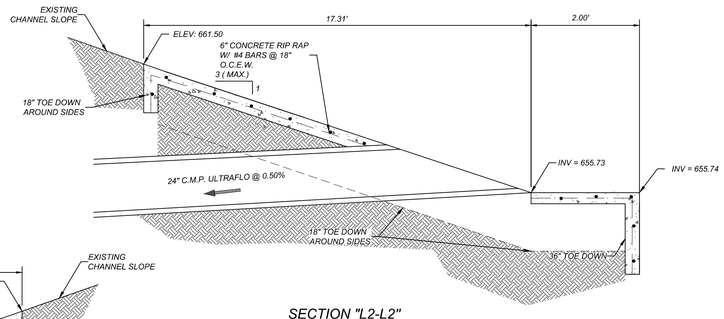
DISTANCE TO FLOOR BLOCKS = LB/3 = 3.41 FT. (USE 1.0 FT.)

HEIGHT OF MAX TAILWATER DEPTH:
Z = Y2/3 = 0.40 FT.
Y2' = 0.85 * Y2 ; H = Z + Y2' = 1.40 FT.

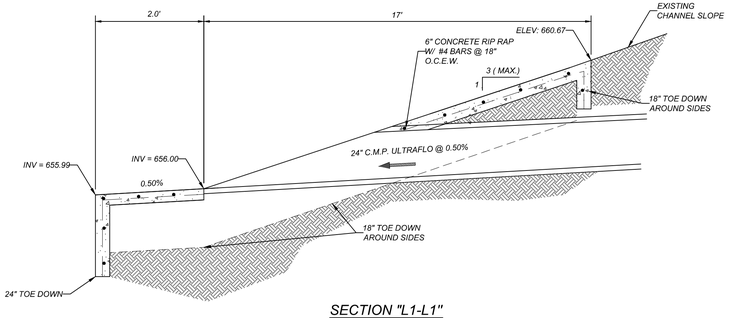
VELOCITY AFTER JUMP:
V = Q/A
A = Y2 * [(B + T) / 2]
A = 1.19' * [(2 + 7.5 / 2] = 5.63 SQ. FT.
V = 20.50 / 5.63 = 3.64 F.P.S.



TYPICAL BAFFLE BLOCK DETAIL
N.T.S.
SECTION L-L

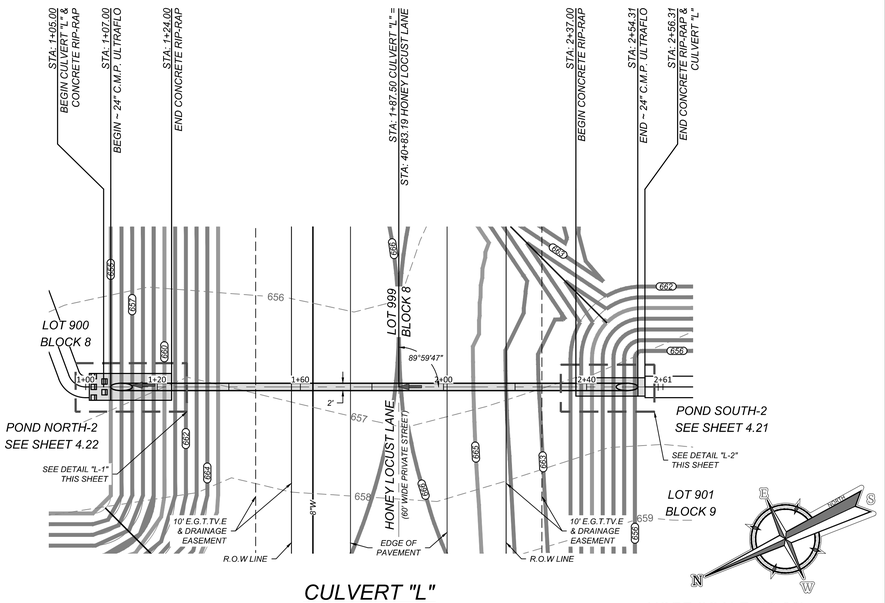


SECTION "L2-L2"
N.T.S.



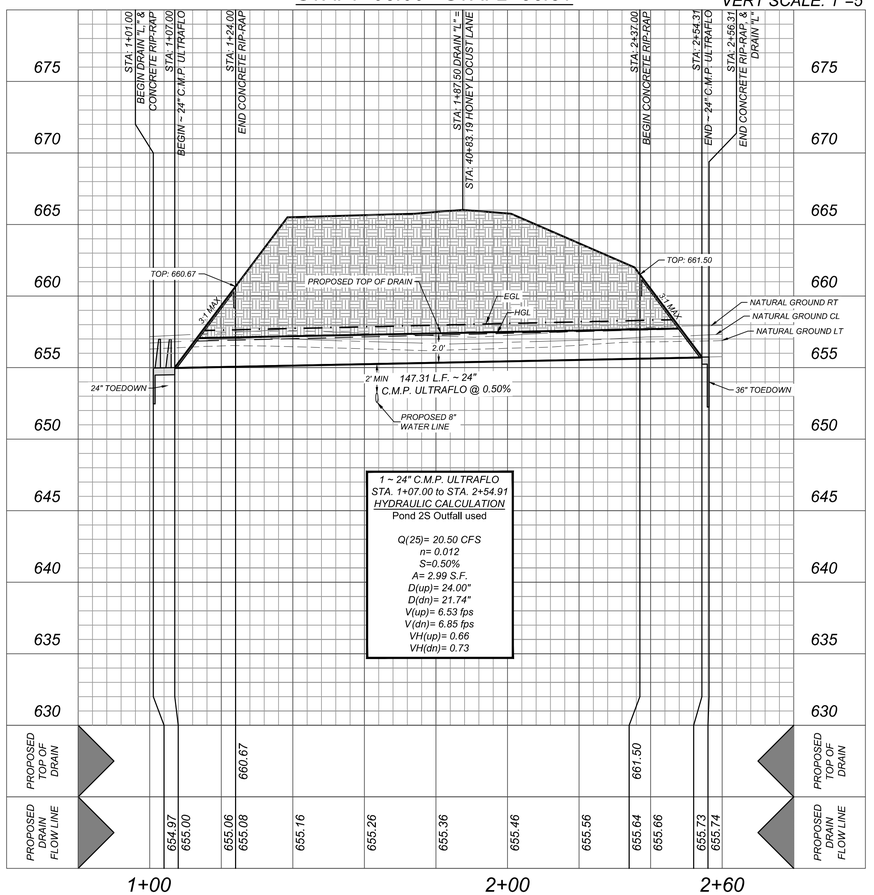
SECTION "L1-L1"
N.T.S.

RESIDENTIAL LOTS = 153



CULVERT "L"
STA: 1+05.00 - STA: 2+56.31

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



1 ~ 24" C.M.P. ULTRAFLO
STA. 1+07.00 to STA. 2+54.91
HYDRAULIC CALCULATION
Pond 2S Outfall used

Q(25)= 20.50 CFS
n= 0.012
S=0.50%
A= 2.99 S.F.
D(up)= 24.00"
D(dn)= 21.74"
V(up)= 6.53 fps
V(dn)= 6.85 fps
VH(up)= 0.66
VH(dn)= 0.73

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201_NEW

SHEET TITLE:
CULVERT "L" PLAN & PROFILE

SHEET NUMBER:
4.7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DSN\CIVIL\PHASE 1\DRAWS\DR8770201_NEW.DWG By: ECONDNA

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

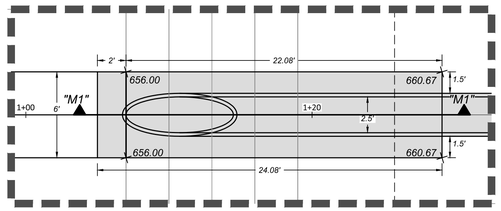
3. AT THE PRE-FINAL INSPECTION: THE ENGINEER MUST ISSUE CERTIFICATION TO THE CITY INSPECTOR THAT THE TURF REINFORCEMENT MAT (TRM) WAS INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE CERTIFICATION MUST ALSO NOTE THAT THE MATERIAL AND INSTALLATION HAS MET CITY AND MANUFACTURER SPECIFICATIONS.

TRENCH EXCAVATION SAFETY PROTECTION

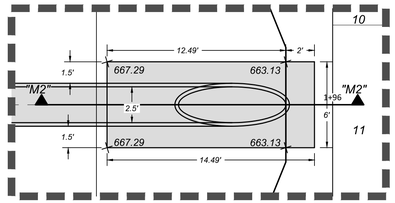
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CAUTION!!:

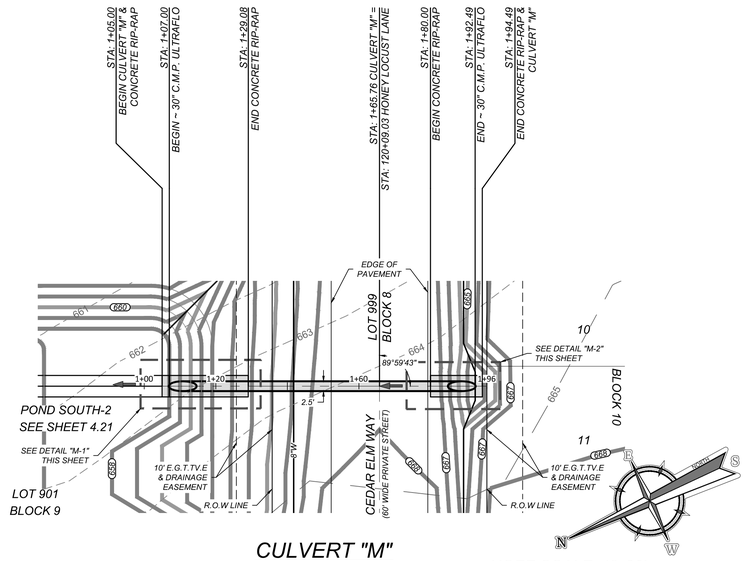
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DETAIL "M-1"
SCALE 1" = 5'



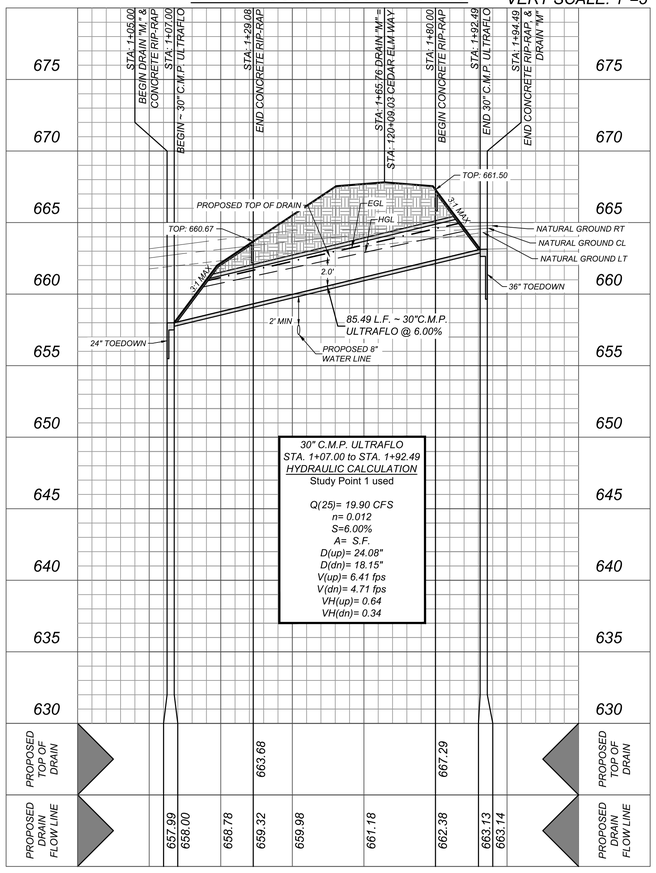
DETAIL "M-2"
SCALE 1" = 5'



CULVERT "M"

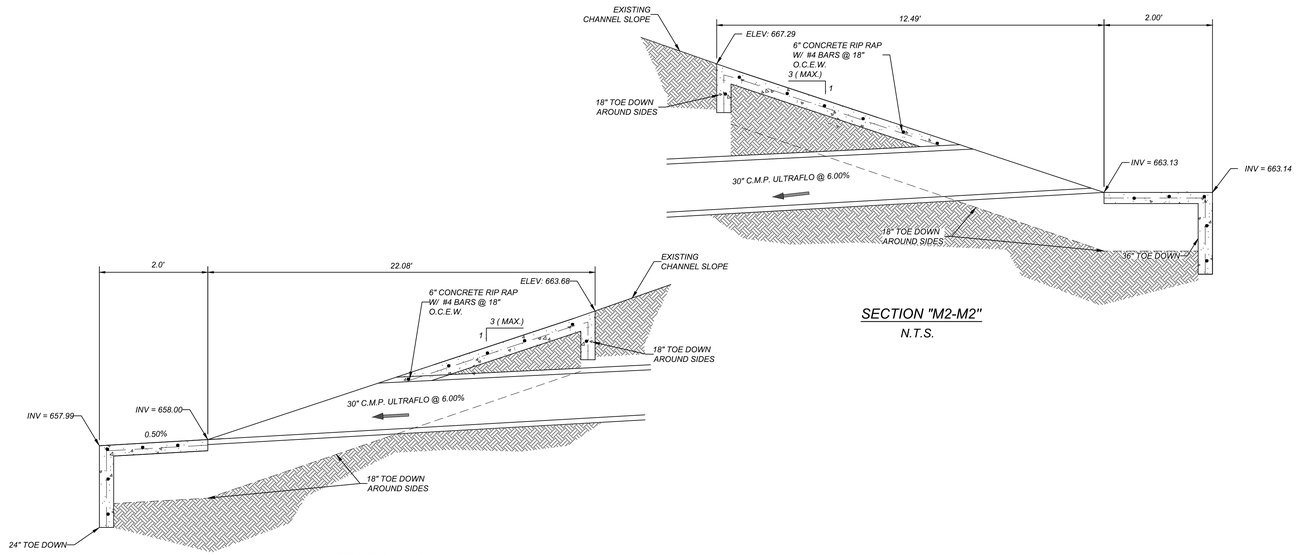
STA: 1+05.00 - STA: 1+94.49

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



30" C.M.P. ULTRAFLO
STA. 1+07.00 to STA. 1+92.49
HYDRAULIC CALCULATION
Study Point 1 used

Q(25)= 19.90 CFS
n= 0.012
S=6.00%
A= S.F.
D(up)= 24.08"
D(dn)= 18.15"
V(up)= 6.41 fps
V(dn)= 4.71 fps
VH(up)= 0.64
VH(dn)= 0.34



SECTION "M2-M2"
N.T.S.

SECTION "M1-M1"
N.T.S.

RESIDENTIAL LOTS = 153

LEGEND

= EXISTING CONTOUR
= PROPOSED CONTOUR
= FLOW ARROW

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

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TEXAS

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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR877020I_NEW

SHEET TITLE: CULVERT "M" PLAN & PROFILE

SHEET NUMBER: 4.8

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\877020I_NEW.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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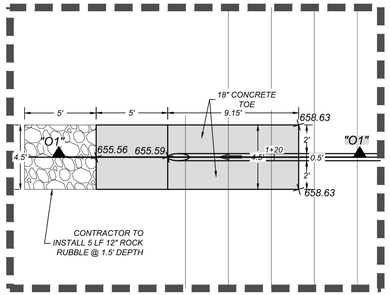
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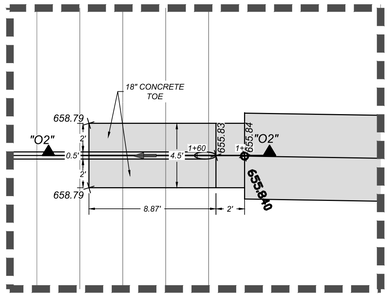
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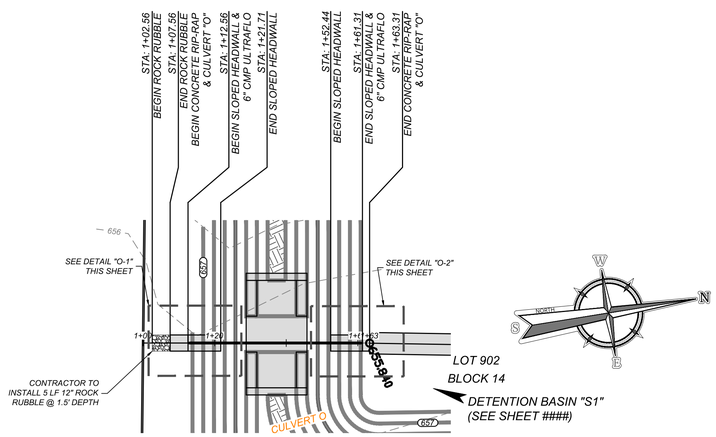
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DETAIL "O-1"
SCALE 1" = 5'



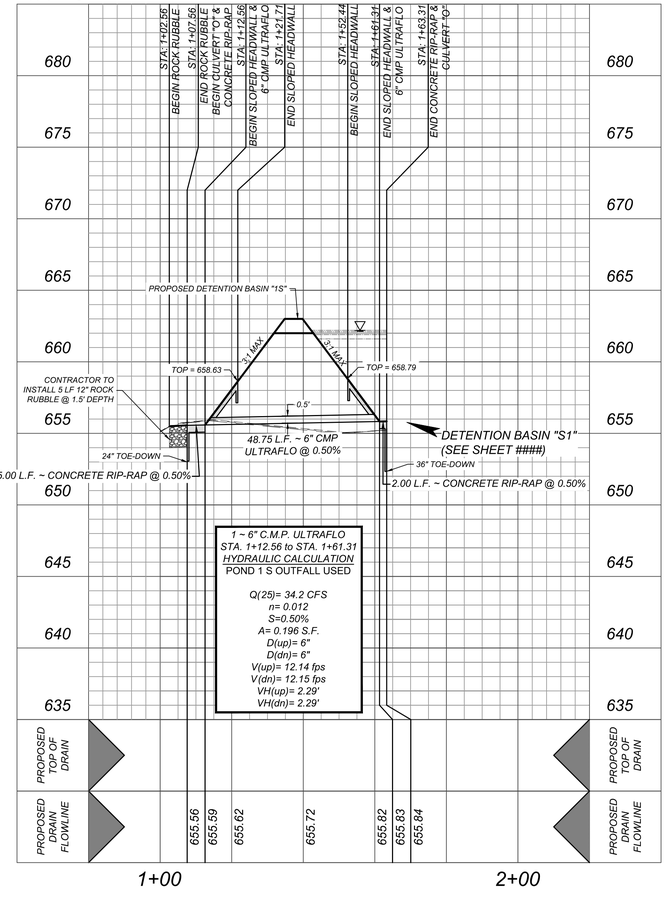
DETAIL "O-2"
SCALE 1" = 5'



PROFILE VIEW SCALE
H: 1" = 20'
V: 1" = 5'

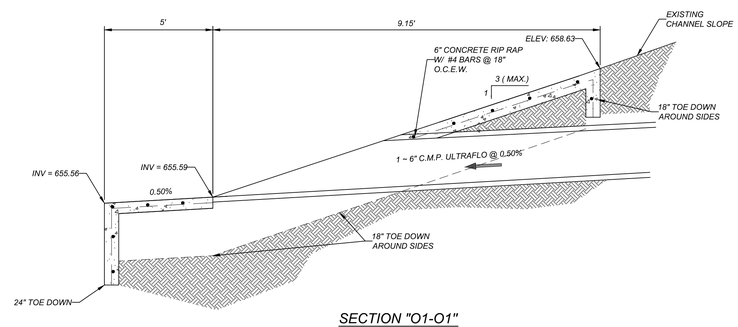
CULVERT "O"
STA: 1+02.56 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'

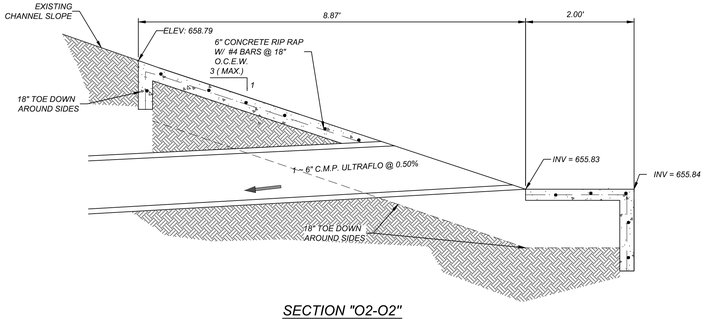


1 ~ 6" C.M.P. ULTRAFLO
STA. 1+12.56 to STA. 1+61.31
HYDRAULIC CALCULATION
POND 1 S OUTFALL USED

Q(25)= 34.2 CFS
n= 0.012
S=0.50%
A= 0.196 S.F.
D(up)= 6"
D(dn)= 6"
V(up)= 12.14 fps
V(dn)= 12.15 fps
VH(up)= 2.29'
VH(dn)= 2.29'



SECTION "O1-O1"
N.T.S.



SECTION "O2-O2"
N.T.S.

RESIDENTIAL LOTS = 153

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP8770201_CG

SHEET TITLE:
CULVERT "O" PLAN & PROFILE

SHEET NUMBER:
4.9

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\PP8770201_CG.DWG By:ECORONA

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TRENCH EXCAVATION SAFETY PROTECTION

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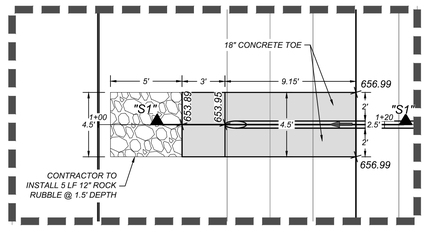
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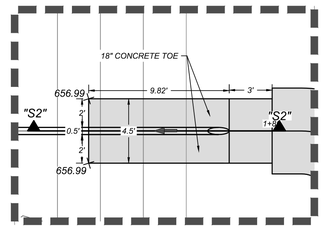
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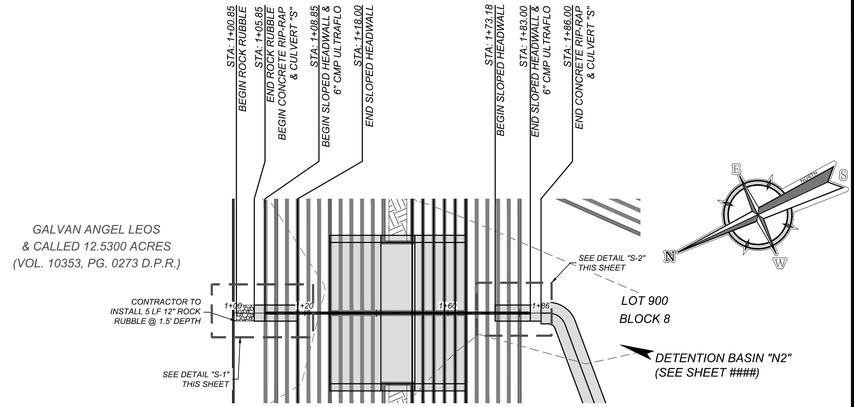
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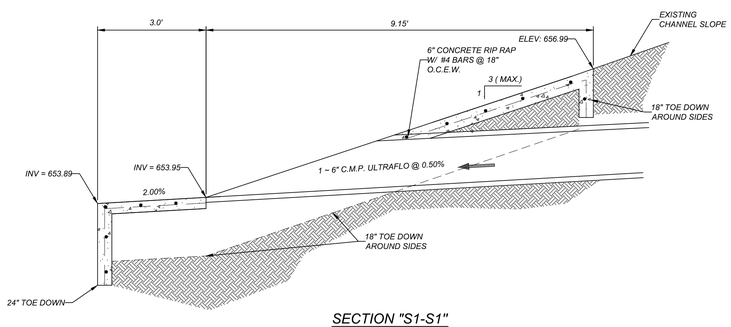


DETAIL "S-1"
SCALE 1" = 5'

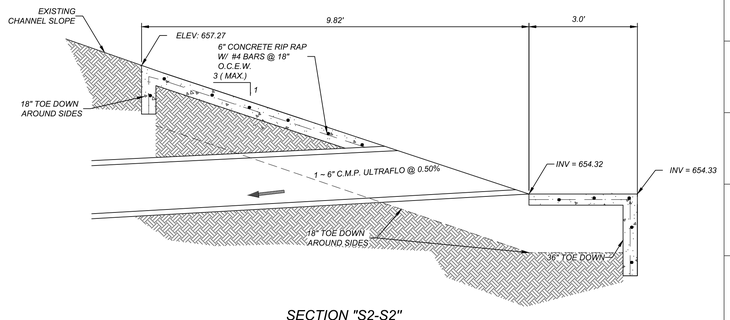


DETAIL "S-2"
SCALE 1" = 5'





SECTION "S1-S1"
N.T.S.

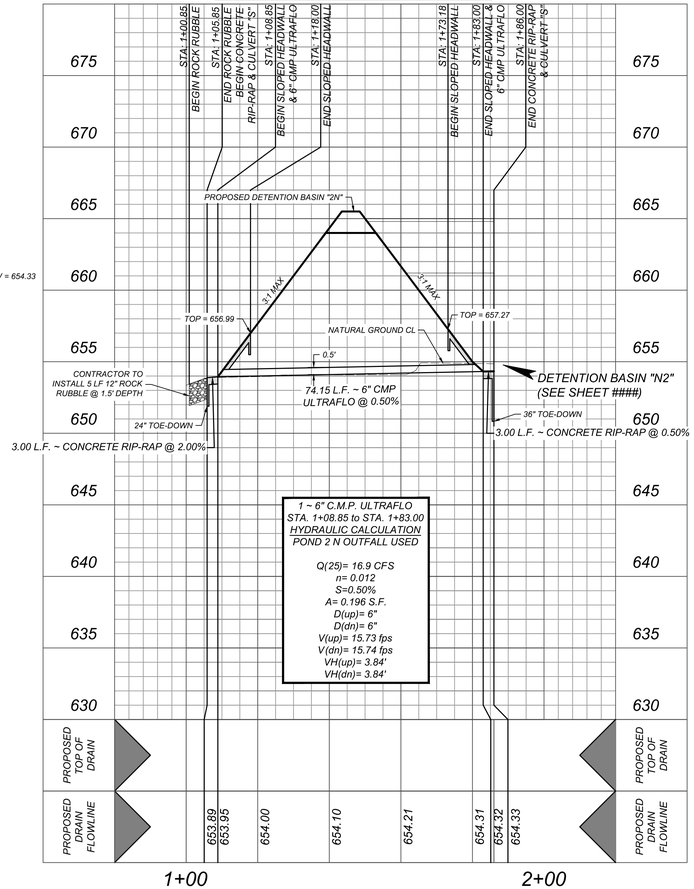


SECTION "S2-S2"
N.T.S.

PROFILE VIEW SCALE
H: 1" = 20'
V: 1" = 5'

CULVERT S
STA: 1+00.85 - STA: 1+86.00

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



RESIDENTIAL LOTS = 153

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR
CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP870201_CG

SHEET TITLE:
CULVERT "S" PLAN & PROFILE

SHEET NUMBER:
4.10

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAINS\SDPP877020I1_CG.DWG By ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

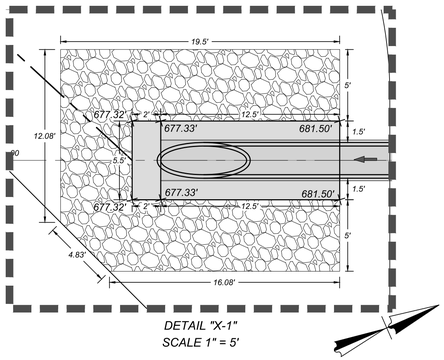
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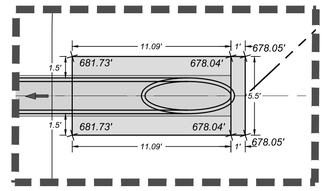
NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

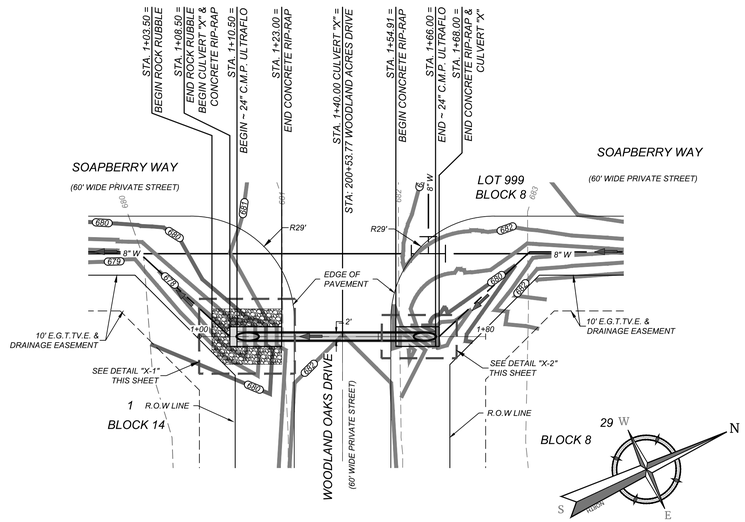
2. ALL CONCRETE SAFETY END TREATMENTS SHALL HAVE A CONCRETE OF 5" THICKNESS WITH #4 Bars @ 12" OCEW



DETAIL "X-1"
SCALE 1" = 5'



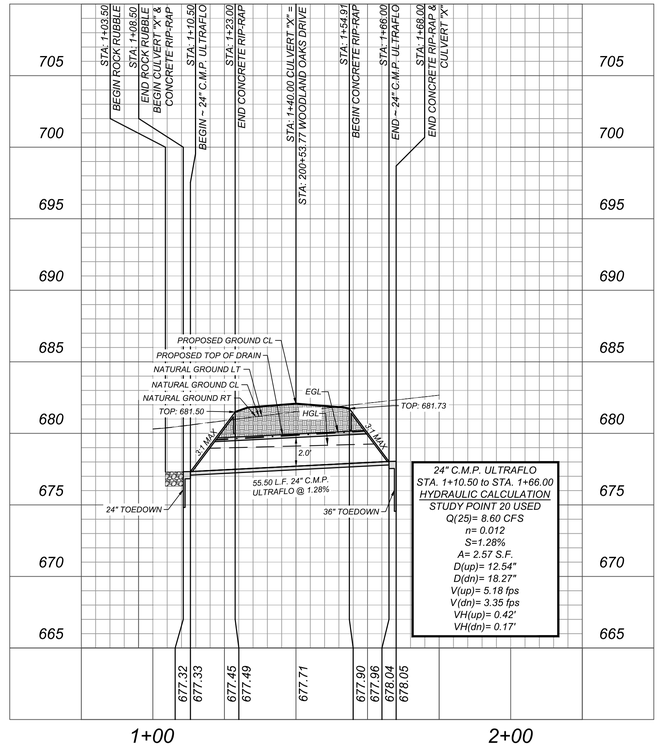
DETAIL "X-2"
SCALE 1" = 5'



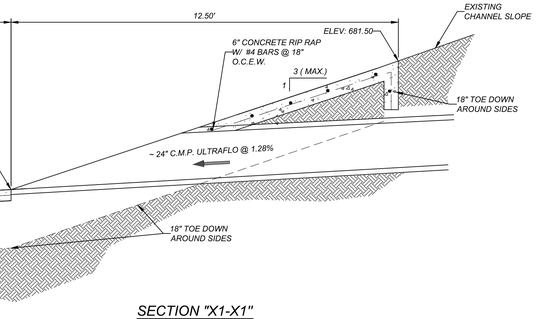
CULVERT X

STA: 1+08.50 - STA: 1+68.00

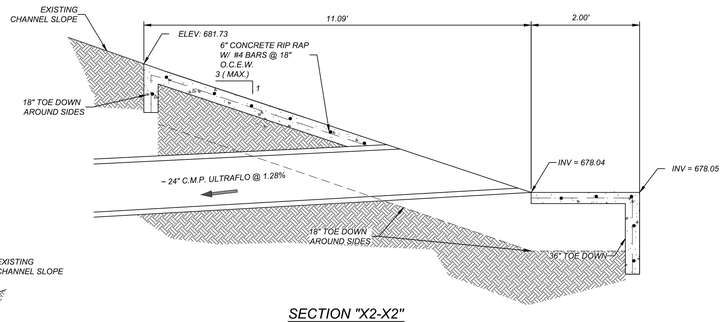
HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



24" C.M.P. ULTRAFLO
STA. 1+10.50 to STA. 1+66.00
HYDRAULIC CALCULATION
STUDY POINT 20 USED
Q(25)= 8.60 CFS
n= 0.012
S=1.28%
A= 2.57 S.F.
D(up)= 12.54"
D(dn)= 18.27"
V(up)= 5.18 fps
V(dn)= 3.35 fps
VH(up)= 0.42'
VH(dn)= 0.17'



SECTION "X1-X1"
N.T.S.



SECTION "X2-X2"
N.T.S.

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REV	DATE	DRAWN BY	DESCRIPTION

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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201

SHEET TITLE:
CULVERT "X" PLAN & PROFILE

SHEET NUMBER:
4.11

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWGS\DR8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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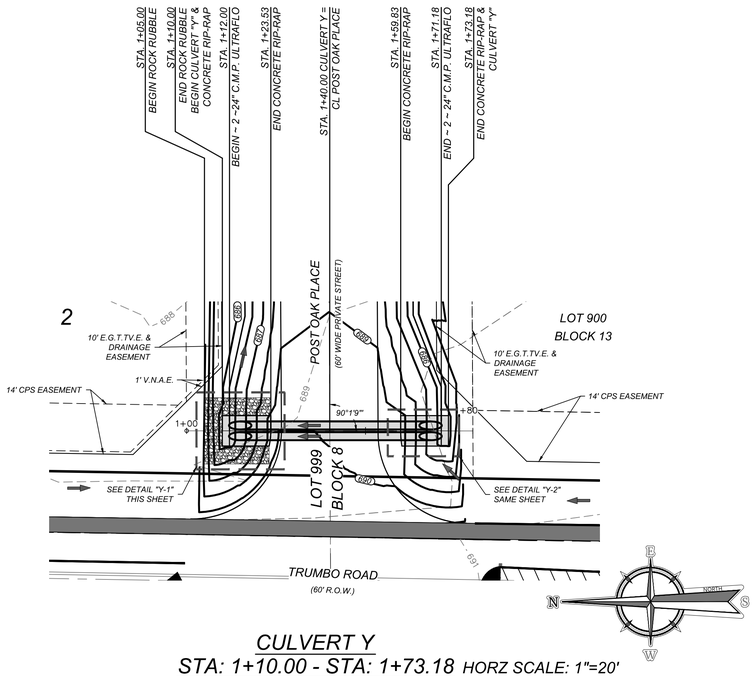
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NOTE:

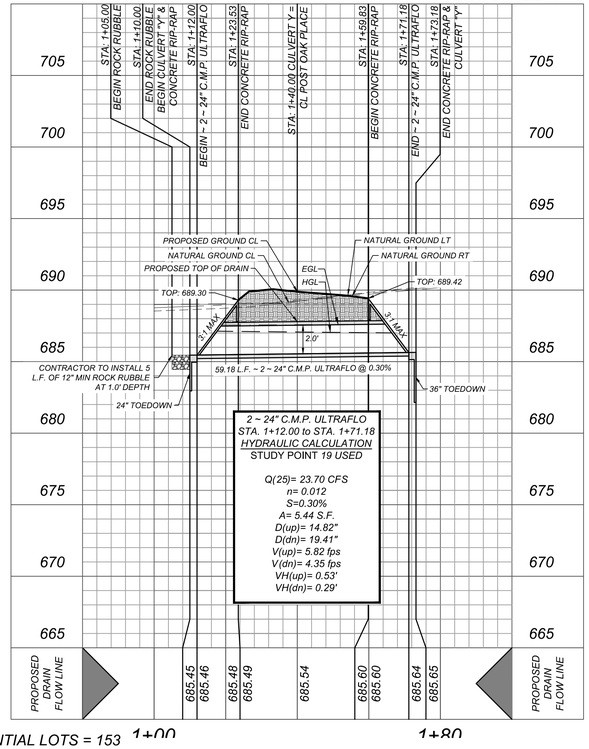
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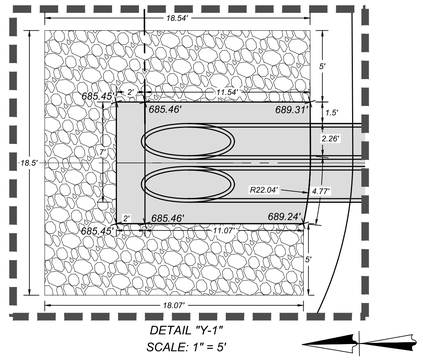


CULVERT Y

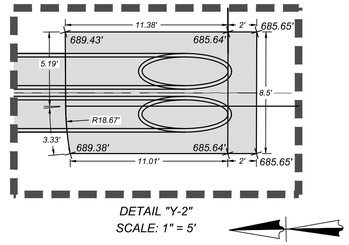
STA: 1+10.00 - STA: 1+73.18 HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



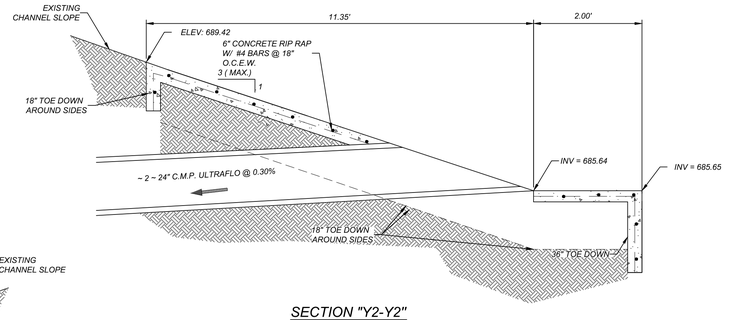
RESIDENTIAL LOTS = 153



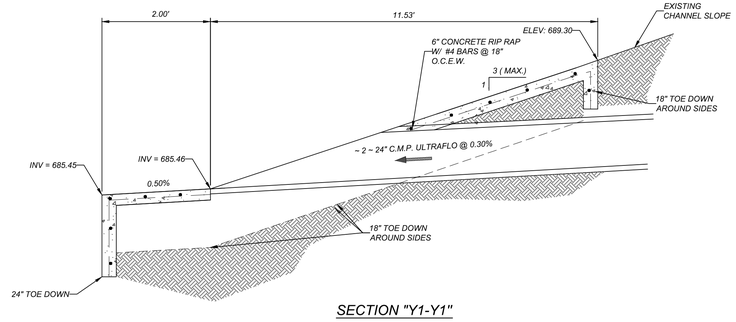
DETAIL "Y-1"
SCALE: 1" = 5'



DETAIL "Y-2"
SCALE: 1" = 5'



SECTION "Y2-Y2"
N.T.S.



SECTION "Y1-Y1"
N.T.S.

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: 8770201_CULVERT Y

SHEET TITLE:
CULVERT "Y" PLAN & PROFILE

SHEET NUMBER:
4.10

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SHEETS\8770201_CULVERT Y.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

NOTE:

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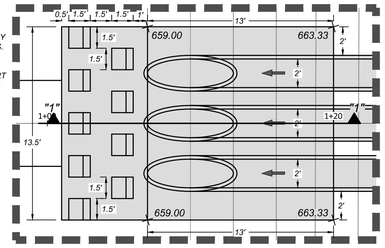
3. AT THE PRE-FINAL INSPECTION: THE ENGINEER MUST ISSUE CERTIFICATION TO THE CITY INSPECTOR THAT THE TURF REINFORCEMENT MAT (TRM) WAS INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE CERTIFICATION MUST ALSO NOTE THAT THE MATERIAL AND INSTALLATION HAS MET CITY AND MANUFACTURER SPECIFICATIONS.

TRENCH EXCAVATION SAFETY PROTECTION

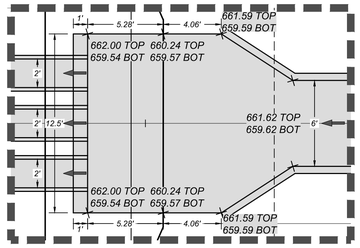
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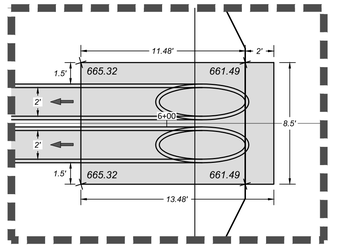
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DETAIL "1-1"
SCALE 1" = 5'



DETAIL "1-2"
SCALE 1" = 5'



DETAIL "1-3"
SCALE 1" = 5'

BAFFLE BLOCK CALCULATIONS
(ST. ANTHONY FALLS METHOD)

Q(25) = 20.50 CFS
BOTTOM WIDTH UPSTREAM = 6.00 FT
BOTTOM WIDTH DOWNSTREAM = 13.50 FT
Y1 = 1.92' (DEPTH BEFORE JUMP)
Y2 = 1.79' (DEPTH AFTER JUMP)

WIDTH OF BLOCKS = 0.75(Y1) = 1.44 FT. (USE 1.5 FT.)
SPACE BETWEEN BLOCKS = 0.75(Y1) = 1.44 FT. (USE 1.5 FT.)
HEIGHT OF BLOCKS = Y1 = 1.92 FT. (USE 2.0 FT.)
 # OF BLOCKS ACROSS BOTTOM = 4

% OF FLOOR COVERED WITH BLOCKS = 4 (1.5 FT) /13.5 FT = 40.0%
(% MUST BE BETWEEN 40% AND 55%)

DEPTH OF TAILWATER (Y2) = 1.79'
FROUDE NUMBER BEFORE JUMP = F1 = 0.96
FROUDE NUMBER AFTER JUMP = F2 = 0.48
*LENGTH OF BASIN = LB = 4.5(Y2)(F1*0.76 = 8.90 FT. (USE 6.0 FT.)*

DISTANCE TO FLOOR BLOCKS = LB/3 = 2.97 FT. (USE 1.0 FT.)

HEIGHT OF MAX TAILWATER DEPTH:
Z = Y2/3 = 0.60 FT.
*Y2' = 0.85 * Y2 , H = Z + Y2' = 2.12 FT.*

VELOCITY AFTER JUMP:
V = Q/A
*A = Y2 * [(B + T) / 2]*
*A = 1.79' * [(6 + 13.5 / 2] = 17.45 SQ. FT.*
V = 87.10 / 17.45 = 4.99 F.P.S.

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201_NEW

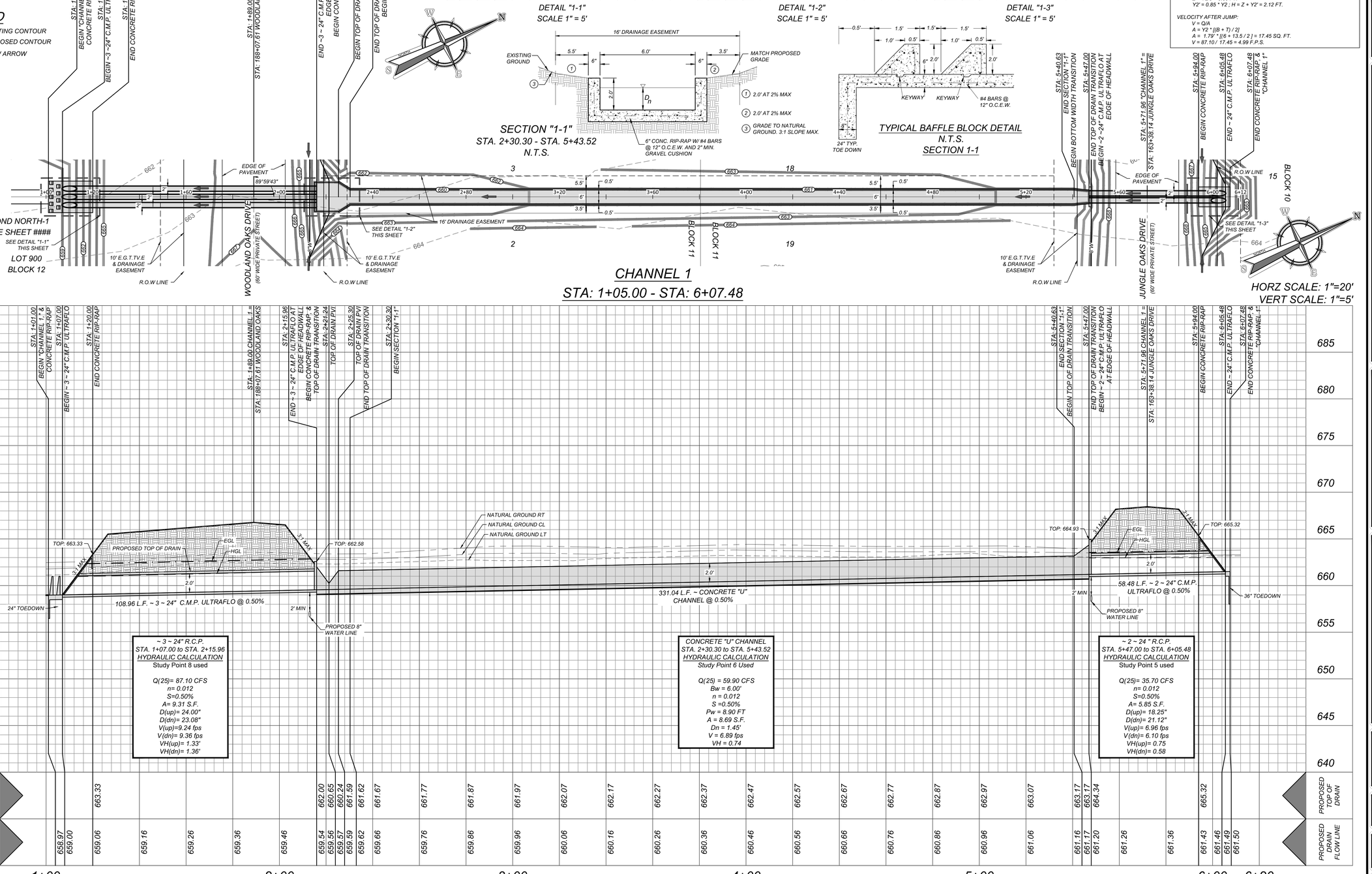
SHEET TITLE: CHANNEL 1 PLAN & PROFILE

SHEET NUMBER: 4.13

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

LEGEND

735 = EXISTING CONTOUR
735 = PROPOSED CONTOUR
= FLOW ARROW



CHANNEL 1
STA: 1+05.00 - STA: 6+07.48

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'

SECTION "1-1"
STA. 2+30.30 - STA. 5+43.52
N.T.S.

TYPICAL BAFFLE BLOCK DETAIL
N.T.S.
SECTION 1-1

~ 3 ~ 24" R.C.P.
STA. 1+07.00 to STA. 2+15.96
HYDRAULIC CALCULATION
Study Point 8 used

Q(25)= 87.10 CFS
n= 0.012
S=0.50%
A= 9.31 S.F.
D(up)= 24.00"
D(dn)= 23.08"
V(up)=9.24 fps
V(dn)= 9.36 fps
VH(up)= 1.33'
VH(dn)= 1.36'

CONCRETE "U" CHANNEL
STA. 2+30.30 to STA. 5+43.52
HYDRAULIC CALCULATION
Study Point 6 Used

Q(25) = 59.90 CFS
Bw = 6.00'
n = 0.012
S =0.50%
Pw = 8.90 FT
A = 8.69 S.F.
Dn = 1.45'
V = 6.89 fps
VH = 0.74

~ 2 ~ 24 " R.C.P.
STA. 5+47.00 to STA. 6+05.48
HYDRAULIC CALCULATION
Study Point 5 used

Q(25)= 35.70 CFS
n= 0.012
S=0.50%
A= 5.85 S.F.
D(up)= 18.25"
D(dn)= 21.12"
V(up)= 6.96 fps
V(dn)= 6.10 fps
VH(up)= 0.75
VH(dn)= 0.58

	1+00				2+00								3+00								4+00								5+00								6+00	6+20
PROPOSED TOP OF DRAIN			663.33						662.00	660.65	660.24	661.59	661.62	661.67	661.77	661.87	661.97	662.07	662.17	662.27	662.37	662.47	662.57	662.67	662.77	662.87	662.97	663.07	663.17	663.17	664.34		665.32						
PROPOSED DRAIN FLOW LINE	656.97	659.00	659.06	659.16	659.26	659.36	659.46	659.54	659.56	659.57	659.59	659.62	659.66	659.76	659.86	659.96	660.06	660.16	660.26	660.36	660.46	660.56	660.66	660.76	660.86	660.96	661.06	661.16	661.17	661.20	661.26	661.36	661.43	661.46	661.49	661.50		

RESIDENTIAL LOTS = 153

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NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

3. AT THE PRE-FINAL INSPECTION: THE ENGINEER MUST ISSUE CERTIFICATION TO THE CITY INSPECTOR THAT THE TURF REINFORCEMENT MAT (TRM) WAS INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE CERTIFICATION MUST ALSO NOTE THAT THE MATERIAL AND INSTALLATION HAS MET CITY AND MANUFACTURER SPECIFICATIONS.

TRENCH EXCAVATION SAFETY PROTECTION

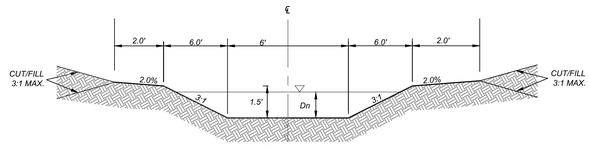
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

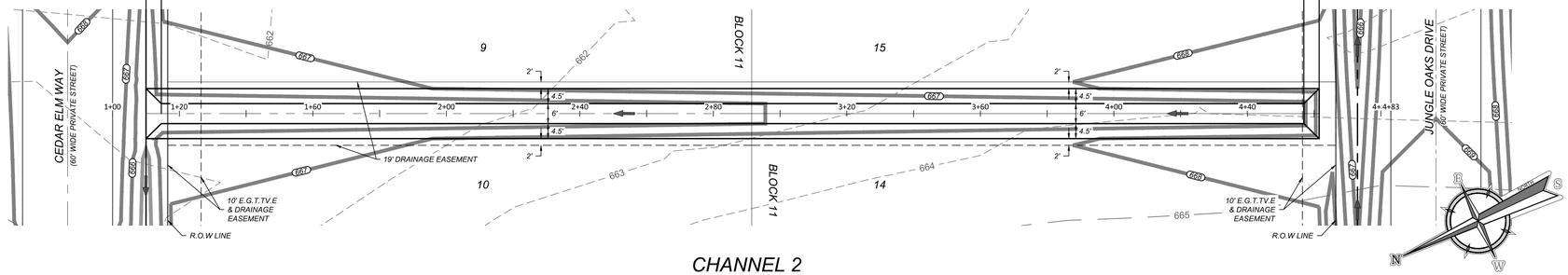
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

LEGEND

- 735 — = EXISTING CONTOUR
- 735 = PROPOSED CONTOUR
- = FLOW ARROW

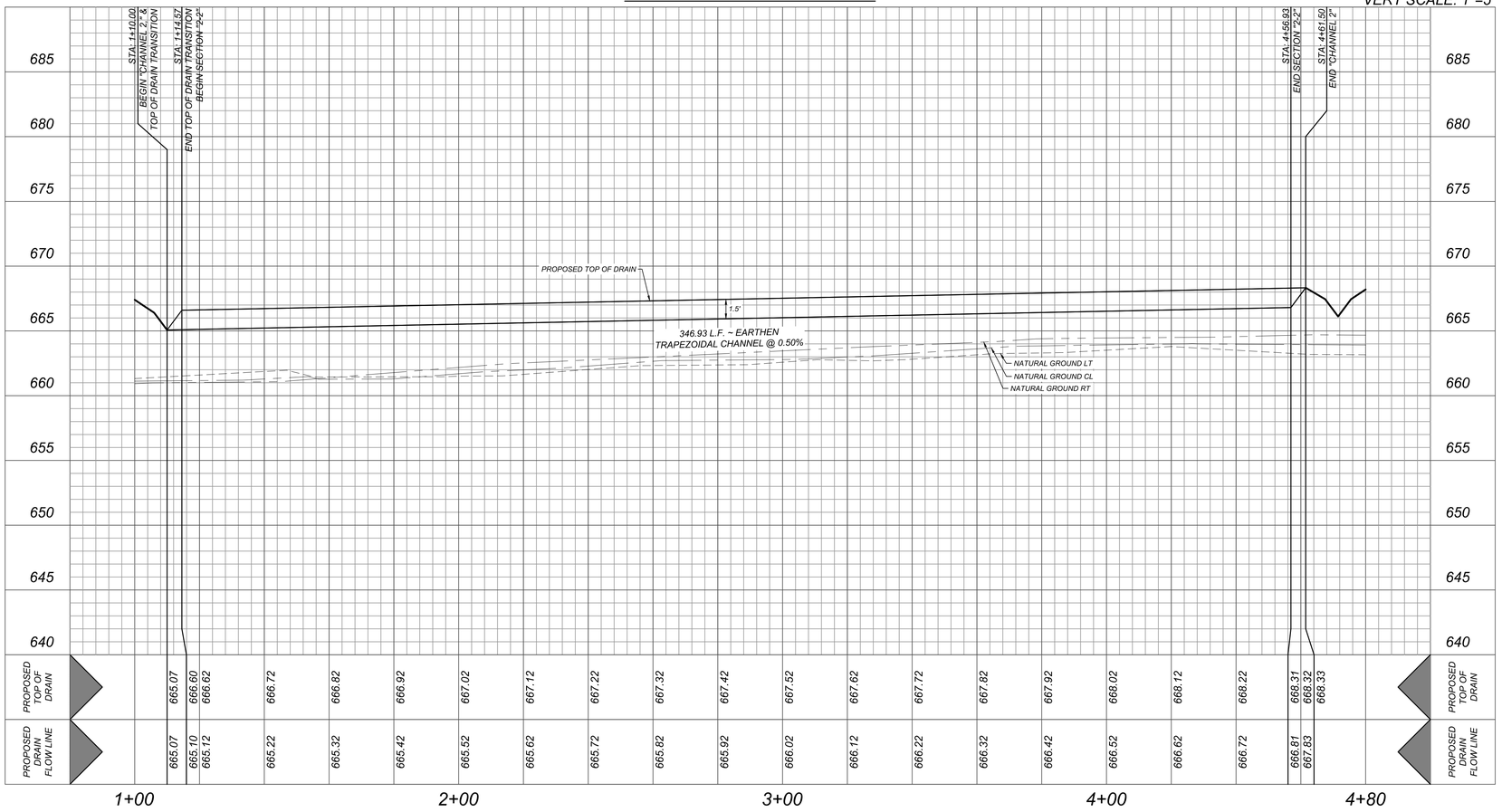


SECTION "2-2"
STA. 1+14.57 - STA. 4+56.93
N.T.S.



HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'

CHANNEL 2
STA: 1+10.00 - STA: 4+61.50



RESIDENTIAL LOTS = 153

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: DR8770201_NEW

SHEET TITLE: CHANNEL 2 PLAN & PROFILE

SHEET NUMBER: 4.14

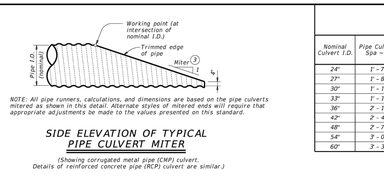
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)



NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS (1) (2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length 3:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew	4:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew	6:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew
24"	1' – 7"	3' – 5"	N/A	N/A	N/A	5' – 10"	N/A	N/A	N/A	8' – 1"	N/A	N/A	N/A	12' – 9"
27"	1' – 8"	3' – 8"	N/A	N/A	5' – 5"	6' – 11"	N/A	N/A	7' – 7"	9' – 7"	N/A	N/A	11' – 11"	14' – 11"
30"	1' – 10"	3' – 11"	N/A	N/A	6' – 4"	8' – 0"	N/A	N/A	8' – 9"	11' – 0"	N/A	N/A	13' – 8"	17' – 0"
33"	1' – 11"	4' – 2"	6' – 2"	6' – 5"	7' – 3"	9' – 1"	8' – 6"	8' – 10"	10' – 0"	12' – 5"	13' – 3"	13' – 9"	15' – 5"	19' – 2"
36"	2' – 1"	4' – 5"	6' – 11"	7' – 3"	8' – 2"	10' – 2"	9' – 6"	9' – 11"	11' – 2"	13' – 10"	14' – 9"	15' – 3"	17' – 2"	21' – 3"
42"	2' – 4"	4' – 11"	8' – 0"	8' – 10"	9' – 11"	12' – 4"	11' – 7"	12' – 0"	13' – 6"	16' – 8"	17' – 9"	18' – 5"	20' – 8"	25' – 7"
48"	2' – 7"	5' – 5"	10' – 1"	10' – 5"	11' – 9"	N/A	13' – 7"	14' – 2"	15' – 10"	N/A	20' – 9"	21' – 6"	24' – 2"	N/A
54"	3' – 0"	5' – 11"	11' – 8"	12' – 1"	N/A	N/A	15' – 8"	16' – 3"	N/A	N/A	23' – 10"	24' – 8"	N/A	N/A
60"	3' – 3"	6' – 5"	13' – 3"	N/A	N/A	N/A	17' – 9"	N/A	N/A	N/A	26' – 10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (2)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

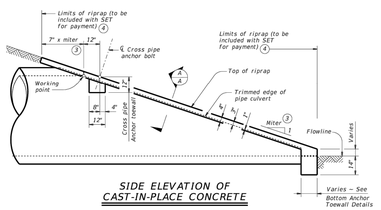
Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS (2)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' – 0"
4" STD	4.500"	4.026"	19' – 8"
5" STD	5.563"	5.047"	34' – 2"

SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)

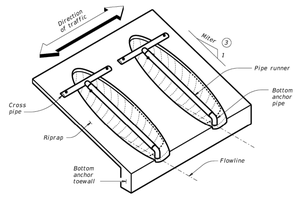


ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew	4:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew	6:1 Side Slope 0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)



(1) Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the size of opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

(3) Miter = slope of mitered end of pipe culvert.

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

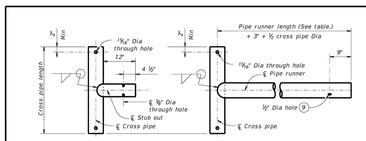
SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II – CROSS DRAINAGE

SETP-CD

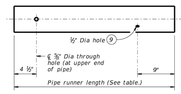
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©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

DATE:
DATE:



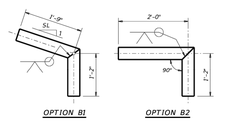
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS



OPTION B1 OPTION B2 OPTION B1 OPTION B2

BOTTOM ANCHOR PIPE DETAILS (10) BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, and 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of pipe runner may vary slightly from side slope of riprap and trimmed culvert pipe edge.

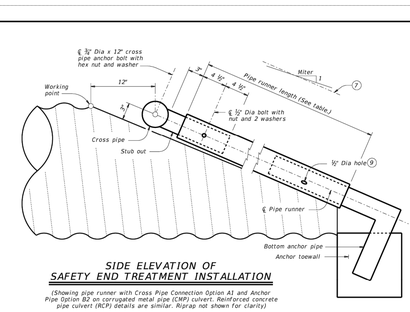
(8) Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, inspect the ½" hole to ensure that the lap of the pipe runner with the bottom anchor pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5° radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

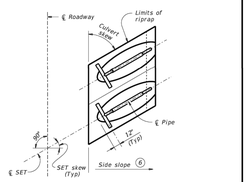
MATERIAL NOTES:
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5L X52.
Provide ASTM A307 bolts and nuts.
Galvanize all steel components, except concrete reinforcing, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:
Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.
Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.
Payment for riprap and toewall is included in the price bid for each safety end treatment.
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

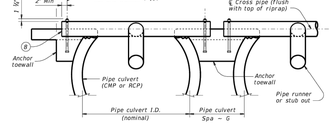


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

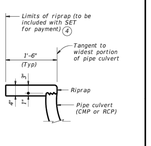
(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)



PLAN OF SKEWED INSTALLATION



SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II – CROSS DRAINAGE

SETP-CD

FILE:	setpctxx-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
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REVISIONS		DIST	COUNTY		SHEET NO.

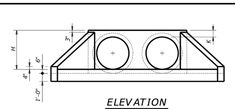
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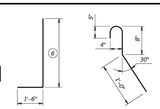
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (3)

Slope	Dia (D) Pipe	Values for One Pipe W	X	Y	L	Reinf (Lbs)	Conc (CY) (1)	Values to be Added for Each Add'l Pipe X and W	Reinf (Lbs)	Conc (CY) (1)
3:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ½"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ½"	2' - 9 ½"	3' - 4"	3' - 10 ½"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ½"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ½"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ¾"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ¾"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ¾"	4' - 11 ½"	6' - 10"	7' - 10 ¾"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ¾"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 ½"	9' - 4"	10' - 9 ¼"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ¾"	6' - 8 ½"	10' - 4"	11' - 11 ¾"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ¾"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ¾"	601	7.1	9' - 4"	213	3.3
4:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ¼"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ¾"	3' - 1"	5' - 9"	6' - 7 ¾"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ¾"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ¾"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ¾"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ¾"	4' - 8"	9' - 6"	10' - 11 ¾"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ¾"	4' - 11 ½"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ¾"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ¾"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ¾"	6' - 8 ½"	15' - 6"	17' - 10 ¾"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ¾"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ¼"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ¾"	8' - 5 ½"	20' - 0"	23' - 1 ¼"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ¾"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ¼"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ¾"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ¾"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ¾"	4' - 4 ½"	11' - 8"	13' - 5 ¾"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ¾"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ¼"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ¾"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ¾"	6' - 1 ½"	18' - 8"	21' - 6 ¾"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ¼"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ¾"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ¾"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ¾"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ¾"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ¼"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ¼"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ¾"	3' - 4 ½"	13' - 0"	15' - 0 ¼"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ¾"	4' - 1"	16' - 0"	18' - 5 ¾"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 ¾"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ¼"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ½"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ¼"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ½"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ¾"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0

ELEVATION

(Showing dimensions.)





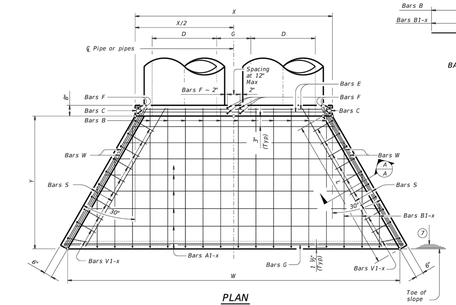
BARS V BARS CL (Length = 2'-3")

TABLE OF (4) REINFORCING STEEL

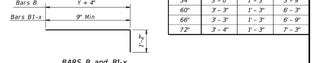
Bar	Size	Spa	No.
A	#4	1' – 0"	–
B	#3	1' – 6"	–
C	#4	1' – 0"	–
D	#3	1' – 0"	–
E	#5	–	4
F	#5	–	–
G	#3	–	2
S	#4	–	6
V	#4	1' – 0"	–
W	#5	–	4

TABLE OF CONSTANT DIMENSIONS

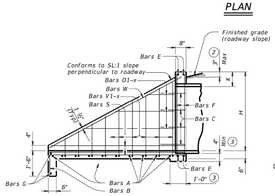
Dia of Pipe (D)	G	K (4)	H
12"	0' – 9"	1' – 0"	2' – 0"
15"	0' – 11"	1' – 0"	2' – 3"
18"	1' – 2"	1' – 0"	2' – 6"
21"	1' – 4"	1' – 0"	2' – 9"
24"	1' – 7"	1' – 0"	3' – 0"
27"	1' – 8"	1' – 0"	3' – 3"
30"	1' – 10"	1' – 0"	3' – 6"
33"	1' – 11"	1' – 0"	3' – 9"
36"	2' – 1"	1' – 0"	4' – 0"
42"	2' – 4"	1' – 0"	4' – 6"
48"	2' – 7"	1' – 3"	5' – 3"
54"	3' – 0"	1' – 3"	5' – 9"
60"	3' – 3"	1' – 3"	6' – 3"
66"	3' – 3"	1' – 3"	6' – 9"
72"	3' – 4"	1' – 3"	7' – 3"



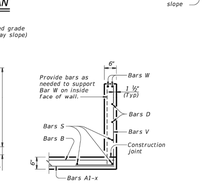
PLAN



BARS B and B1-x



TYPICAL WING ELEVATION



SECTION A-A

(1) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(2) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

(4) Dimensions shown are usual and maximum.

(5) Quantities shown are for one structure end only (one headwall).

(6) Min Length = 6" + 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$

Max Length = 12 x H – 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$ - 1"

(7) Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 0° SKEW PIPE CULVERTS

CH-FW-0

FILE:	ch1w00xx-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

RESIDENTIAL LOTS = 153

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAINAGE\DRAIN DETAILS_877020 1.DWG By: ECORONA

Colliers
Engineering & Design
www.colliersengineering.com

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Formerly Known as KFW

811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DESCRIPTION	DRAWN BY	DATE

STATE OF TEXAS
BIDSET
NOT FOR CONSTRUCTION
117643
PROFESSIONAL ENGINEER

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

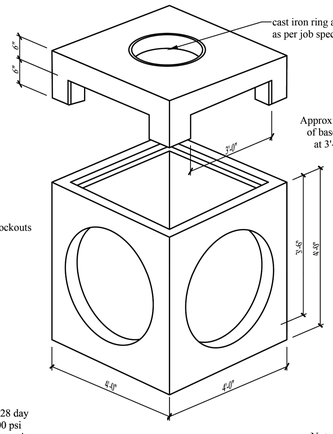
PROJECT NUMBER: 877-02-01
DRAWING NAME: DRAIN DETAILS_8770201

SHEET TITLE: DRAIN DETAILS (SHEET 1 OF 2)

SHEET NUMBER: 4.15

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

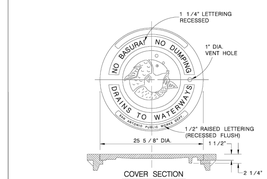
3' x 3' x var 4-Way Inlet



Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20

Notes:
- Consult manufacturer before handling

Capital Precast	CAPITAL PRECAST, INC. 6905 SOUTH OLD BASTROP HWY SAN MARCOS, TEXAS 78666 PH. (830) 606-6200	FOR	3' x 3' x var 4-Way Inlet		
		JOB			
		DRAWN RW	DATE 12/1/2015	Rev. No.	SHEET 1 OF 1
		FILE	catalog\areainlets\3x3 area inlet		



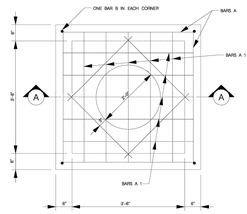
COVER SECTION

MANHOLE LID & RING DETAIL

SCALE: 1 : 16

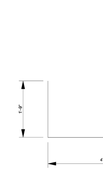
NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



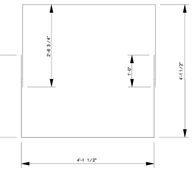
TOP SLAB PLAN VIEW

SCALE: 1" = 2'-0"



BARS A

SCALE: 1" = 2'-0"

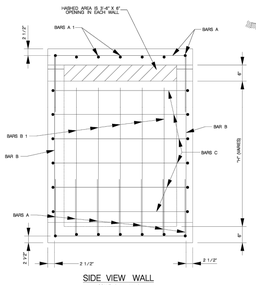


BARS C

SCALE: 1" = 2'-0"

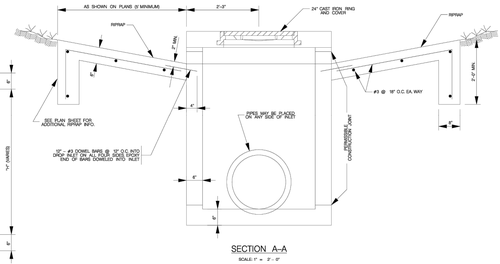
ESTIMATED QUANTITIES FOR "H" = 4'-6"					
REINFORCING STEEL					
BAR	NO.	SIZE	SPACE	LENGTH	WEIGHT
A	18	4	8" +/-	7'-6 1/2"	79
A 1	10	4	8" +/-	4'-0 1/2"	27
B	4	4	AS SHOWN	5'-7"	15
B 1	20	4	8" +/-	4'-7"	61
C	12	4	9" +/-	18'-6"	148
J	4	4	AS SHOWN	2'-8"	6
TOTAL REINFORCING STEEL					336 Lbs. *
CLASS A CONCRETE					2.10 CY *

* FOR CONTRACTOR'S INFORMATION ONLY. QUANTITIES VARY WITH "H". SEE INLET & MANHOLE SUMMARY SHEETS FOR "H".



SIDE VIEW WALL

SCALE: 1" = 2'-0"



SECTION A–A

SCALE: 1" = 2'-0"

GENERAL NOTES:

1. ALL BARS INTERCEPTING THE RING AND COVER OPENING AND PIPE OPENINGS SHALL BE FIELD CUT.
2. CONCRETE SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
4. ALL EXPOSED CORNERS SHALL HAVE 3/4" CHAMFER.
5. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, RING, AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

JANUARY 2005

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4–WAY INLET STANDARDS

_N SUBMITTAL / PROJECT NO.:		DATE:
DRWN. BY: M. BARRERA, P.E.	DSGN. BY:	CHKD. BY:
		SHEET NO.: ____OF____

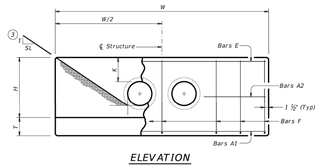
NOTE: APPLICABLE TO RCP PIPE

TABLE OF VARIABLE DIMENSIONS ⑤ AND QUANTITIES FOR ONE HEADWALL

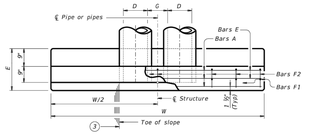
Slope	Dia of Pipe (D)	Values for One Pipe W	Values for One Pipe Reinf (Lbs) ①	Values for One Pipe Conc (CY) ②	Values To Be Added For Each Add'l Pipe W	Values To Be Added For Each Add'l Pipe Reinf (Lbs) ①	Values To Be Added For Each Add'l Pipe Conc (CY) ②
2:1	12"	9'-0"	122	1.1	1'-9"	15	0.2
	15"	10'-3"	136	1.3	2'-2"	16	0.2
	18"	11'-6"	163	1.5	2'-8"	19	0.3
	21"	12'-9"	200	1.8	3'-1"	31	0.4
	24"	14'-0"	217	2.1	3'-7"	34	0.4
	27"	15'-3"	254	2.4	3'-11"	37	0.5
	30"	16'-6"	272	2.7	4'-4"	40	0.6
	33"	17'-9"	314	3.1	4'-8"	43	0.6
	36"	19'-0"	371	3.9	5'-1"	46	0.8
	42"	21'-6"	442	4.9	5'-10"	52	1.0
	48"	23'-0"	569	6.4	6'-7"	59	1.3
	54"	27'-6"	701	7.5	7'-6"	82	1.6
	60"	30'-0"	794	8.8	8'-3"	90	1.8
	66"	32'-6"	894	10.2	8'-9"	96	2.0
	72"	35'-0"	1,055	11.7	9'-4"	103	2.3
3:1	12"	13'-0"	175	1.6	1'-9"	14	0.2
	15"	14'-9"	193	1.9	2'-2"	17	0.2
	18"	16'-6"	228	2.2	2'-8"	19	0.3
	21"	18'-3"	299	2.6	3'-1"	31	0.4
	24"	20'-0"	323	3.0	3'-7"	33	0.4
	27"	21'-9"	371	3.5	3'-11"	37	0.5
	30"	23'-6"	415	4.0	4'-4"	40	0.5
	33"	25'-3"	469	4.6	4'-8"	43	0.6
	36"	27'-0"	536	5.7	5'-1"	46	0.8
	42"	30'-6"	675	7.1	5'-10"	52	1.0
	48"	35'-6"	837	9.2	6'-7"	59	1.3
	54"	39'-0"	1,015	11.0	7'-6"	84	1.6
	60"	42'-6"	1,171	12.9	8'-3"	91	1.8
	66"	46'-0"	1,298	14.9	8'-9"	98	2.0
	72"	49'-6"	1,561	17.1	9'-4"	103	2.3
4:1	12"	17'-0"	229	2.0	1'-9"	15	0.2
	15"	19'-3"	266	2.4	2'-2"	17	0.2
	18"	21'-6"	308	2.9	2'-8"	19	0.3
	21"	23'-9"	382	3.5	3'-1"	31	0.3
	24"	26'-0"	430	3.9	3'-7"	34	0.4
	27"	28'-3"	486	4.7	3'-11"	37	0.5
	30"	30'-6"	539	5.2	4'-4"	40	0.6
	33"	32'-9"	603	6.0	4'-8"	42	0.6
	36"	35'-0"	738	7.5	5'-1"	47	0.8
	42"	39'-6"	881	9.3	5'-10"	52	1.0
	48"	46'-0"	1,102	12.1	6'-7"	61	1.3
	54"	50'-6"	1,364	14.4	7'-6"	84	1.6
	60"	55'-0"	1,547	16.9	8'-3"	91	1.8
	66"	59'-6"	1,741	19.5	8'-9"	98	2.0
	72"	64'-0"	2,017	22.4	9'-4"	102	2.3
6:1	12"	25'-0"	336	3.0	1'-9"	14	0.2
	15"	28'-3"	384	3.6	2'-2"	17	0.2
	18"	31'-6"	452	4.2	2'-8"	19	0.3
	21"	34'-9"	581	5.1	3'-1"	31	0.4
	24"	38'-0"	644	5.8	3'-7"	34	0.4
	27"	41'-3"	737	6.9	3'-11"	37	0.5
	30"	44'-6"	807	7.7	4'-4"	39	0.6
	33"	47'-9"	912	8.9	4'-8"	44	0.6
	36"	51'-0"	1,108	11.0	5'-1"	48	0.8
	42"	57'-6"	1,318	13.7	5'-10"	54	1.0
	48"	67'-0"	1,682	17.9	6'-7"	59	1.3
	54"	73'-6"	2,072	21.3	7'-6"	83	1.6
	60"	80'-0"	2,351	24.9	8'-3"	89	1.8
	66"	86'-6"	2,643	28.9	8'-9"	96	2.0
	72"	93'-0"	3,121	33.1	9'-4"	101	2.3

DISCLAIMER:
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT or any employee thereof for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use or misinterpretation.

DATE ISSUED:



ELEVATION



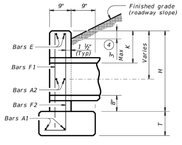
PLAN OF NON-SKEWED PIPES

TABLE OF CONSTANT DIMENSIONS

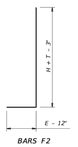
Dia of Pipe (D)	G	K ⑤	H	T	E
12"	0'-9"	1'-0"	2'-8"	0'-9"	1'-9"
15"	0'-11"	1'-0"	2'-11"	0'-9"	1'-9"
18"	1'-2"	1'-0"	3'-2"	0'-9"	1'-9"
21"	1'-4"	1'-0"	3'-5"	0'-9"	2'-0"
24"	1'-7"	1'-0"	3'-8"	0'-9"	2'-0"
27"	1'-8"	1'-0"	3'-11"	0'-9"	2'-3"
30"	1'-10"	1'-0"	4'-2"	0'-9"	2'-3"
33"	1'-11"	1'-0"	4'-5"	0'-9"	2'-6"
36"	2'-1"	1'-0"	4'-8"	1'-0"	2'-6"
42"	2'-4"	1'-0"	5'-2"	1'-0"	2'-9"
48"	2'-7"	1'-3"	5'-11"	1'-0"	3'-0"
54"	3'-0"	1'-3"	6'-5"	1'-0"	3'-3"
60"	3'-3"	1'-3"	6'-11"	1'-0"	3'-6"
66"	3'-3"	1'-3"	7'-5"	1'-0"	3'-9"
72"	3'-4"	1'-3"	7'-11"	1'-0"	4'-0"

TABLE OF REINFORCING STEEL ⑥

Bar	Size	Spa	No.
A1	#5	–	2
A2	#5	1'-6"	–
E	#5	–	2
F	#5	1'-0"	–



SECTION AT CENTER OF PIPE



BARS F2

1. Total quantities include one 3'-1" lap for bars over 60' in length.
2. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
3. Indicated slope is perpendicular to centerline pipe or pipes.
4. For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
5. Dimensions shown are usual and maximum.
6. Quantities shown are for one structure end only (one headwall).

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

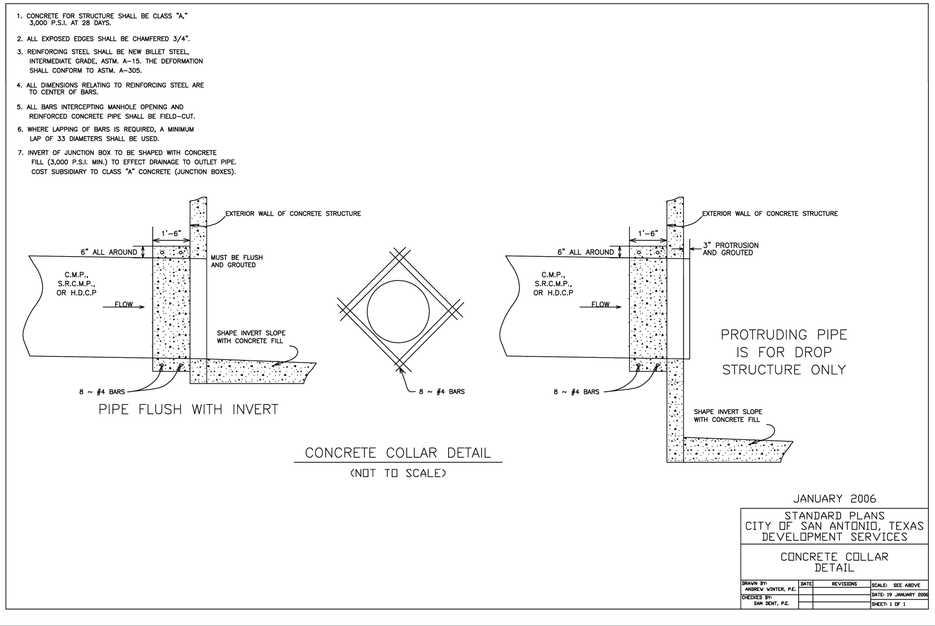
GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation	Bridge Division Standard
CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS	
CH-PW-0	
FILE: ch-pw0-20.dgn	DN: TxDOT CK: TxDOT DW: TxDOT CK: TxDOT
©TxDOT February 2020	CONT SECT JOB HIGHWAY
REVISIONS	DIST COUNTY SHEET NO.

RESIDENTIAL LOTS = 153

L:\877\2021\DESIGN\CIVIL\PHASE 1\DRAINAGE\DRAIN DETAILS_877021.DWG By: ECORONA



CONCRETE COLLAR DETAIL

(NOT TO SCALE)

JANUARY 2006

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEVELOPMENT SERVICES

CONCRETE COLLAR DETAIL

DRAWN BY: ANDREW WINTER, P.E.	DATE	REVISIONS	SCALE: SEE ABOVE
CHECKED BY: SAM SENT, P.E.			DATE: 19 JANUARY 2006
			SHEET: 1 OF 1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Colliers Engineering & Design

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Formerly Known as KFW

811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
BRIDGET
115643
LICENSED
PROFESSIONAL ENGINEER
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: DRAIN DETAILS_8770201

SHEET TITLE: DRAIN DETAILS (SHEET 2 OF 2)

SHEET NUMBER: 4.16

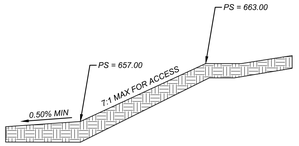
TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

BEXAR COUNTY NOTE:
COMMERCIAL DRIVEWAY TO MEET BEXAR COUNTY R.O.W SPECIFICATIONS.
BASIN DRIVEWAY TO BE CONSTRUCTED BY THE DEVELOPER.

STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0.80	0	655.80	0.00
1.00	0	656.0	0.00
2.00	8,711.98	657.0	0.80
3.00	17,423.96	658.0	1.10
4.00	34,847.92	659.0	1.40
5.00	47,915.89	660.0	1.60
6.00	65,339.85	661.0	2.1
7.00	82,763.81	662.0	31.5
7.20	87,119.8	662.2	45.9

PROPOSED DISCHARGE									
Q1	=	15.4		VEL1	=	5.88		ELEV1	=	661.6
Q5	=	24.9		VEL5	=	8.12		ELEV5	=	661.9
Q25	=	34.2		VEL25	=	4.52		ELEV25	=	662.1
Q100	=	45.9		VEL100	=	3.66		ELEV100	=	662.2



SECTION "B-B"
NOT-TO-SCALE

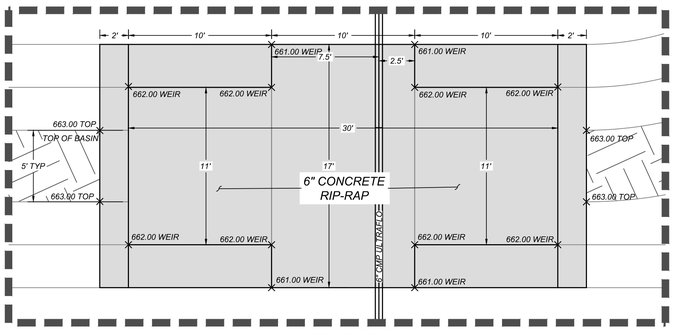
CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE:

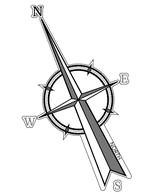
1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

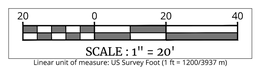
2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.



DETAIL "S1-1"
SCALE 1" = 5'

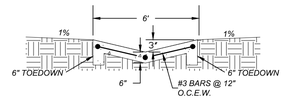
Point Table			
Point #	*Elevation*	*Northing*	*Easting*
3000	656.00	13615240.90	2122153.10
3001	656.00	13615243.44	2122159.76
3002	656.00	13615300.67	2122184.84
3003	656.00	13615270.70	2122087.83
3004	657.00	13615271.30	2122079.31
3005	657.00	13615281.79	2122075.30
3006	657.00	13615382.68	2122119.52
3007	657.00	13615386.79	2122130.06
3008	657.00	13615384.74	2122134.75
3009	657.00	13615354.10	2122134.90
3010	657.00	13615347.84	2122149.22
3011	657.00	13615368.51	2122171.77
3012	657.00	13615354.78	2122203.10
3013	657.00	13615344.24	2122207.21
3014	655.83	13615247.39	2122140.12
3015	656.57	13615353.65	2122190.72



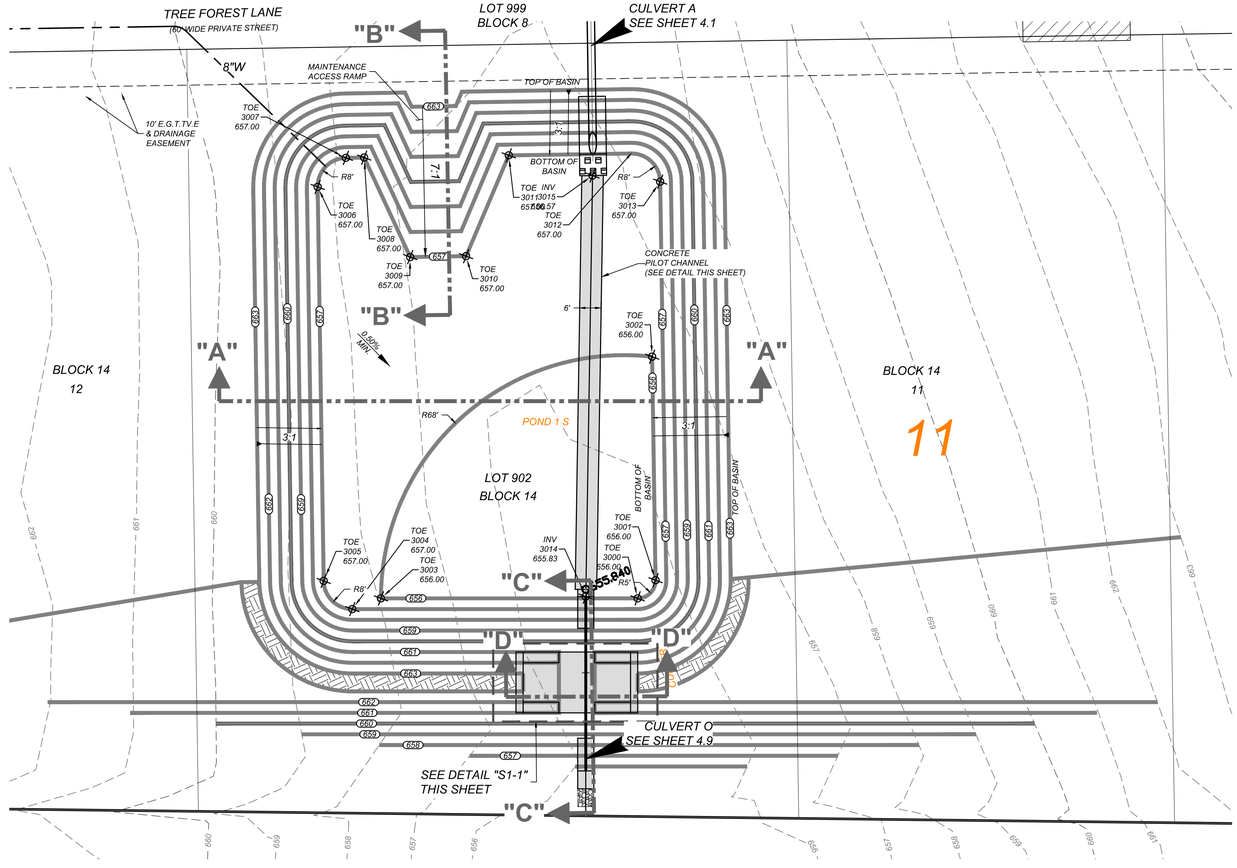


LEGEND

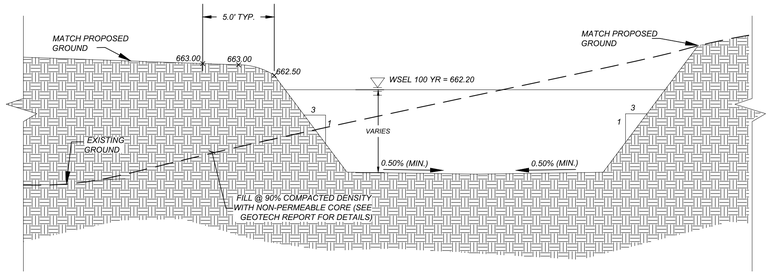
- *FLOW ARROW*
- *706 — EXISTING CONTOURS*
- *707 — PROPOSED CONTOURS*
- *PROPERTY LINE*
- *POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)*



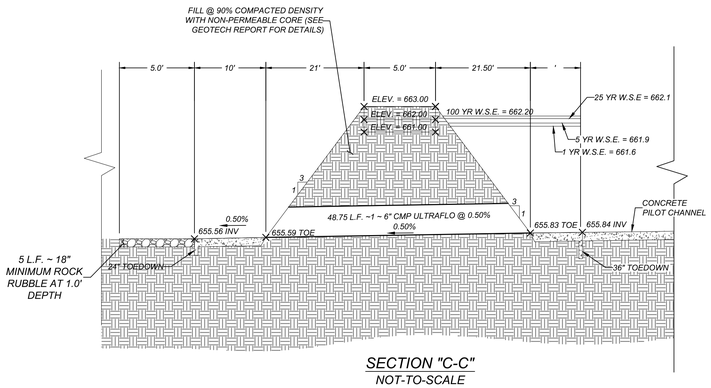
TYPICAL PILOT CHANNEL
NOT-TO-SCALE



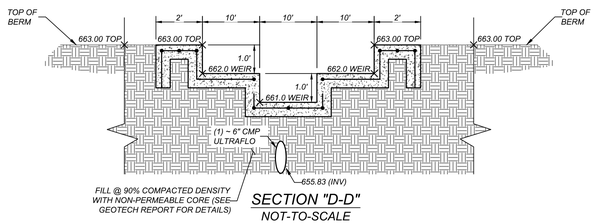
RESIDENTIAL LOTS = 153



SECTION "A-A"
NOT-TO-SCALE



SECTION "C-C"
NOT-TO-SCALE



SECTION "D-D"
NOT-TO-SCALE

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP8770201_CG

SHEET TITLE:
POND "S1" PLAN & PROFILE

SHEET NUMBER:
4.17

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\PP8770201_CG.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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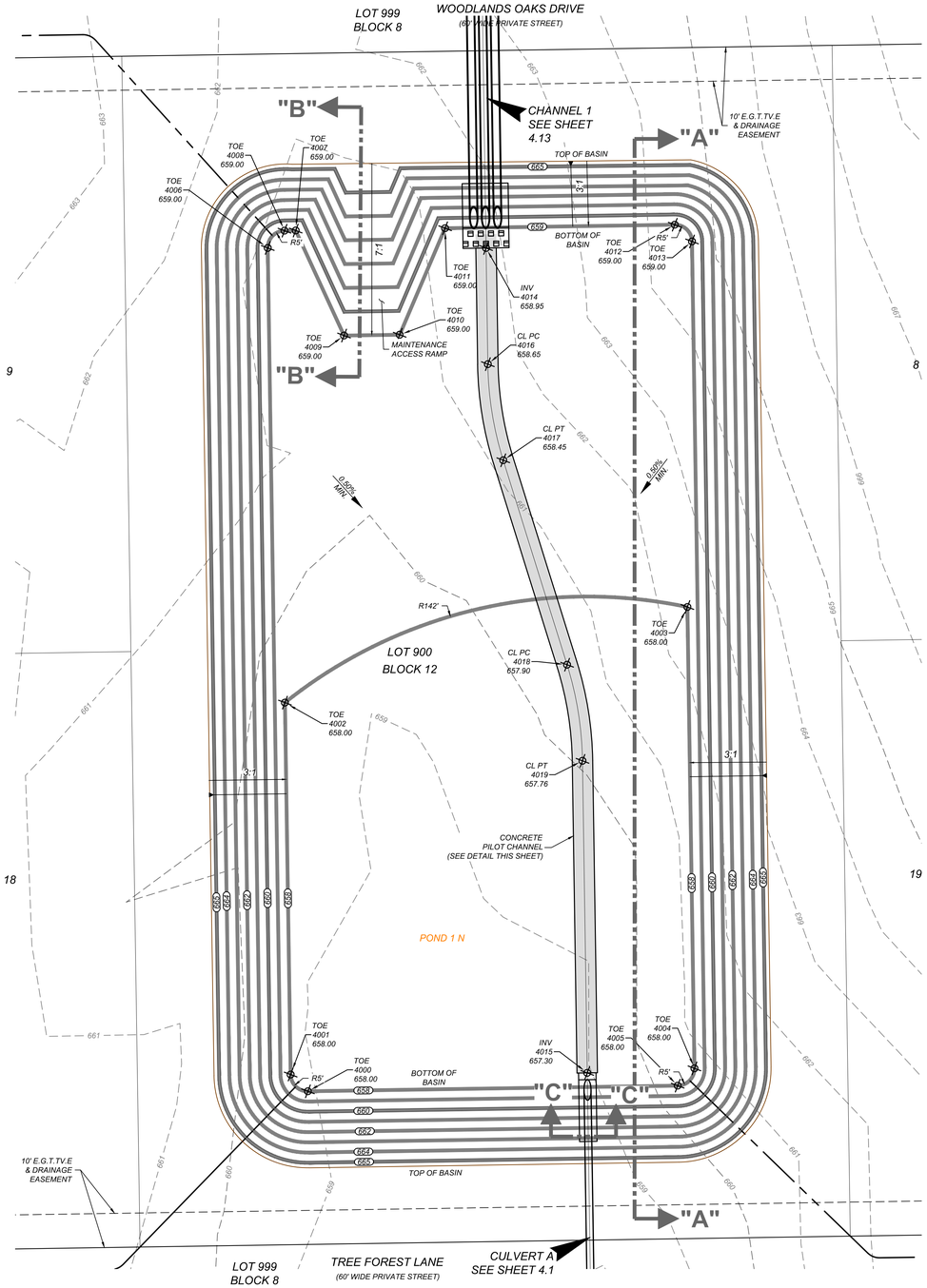
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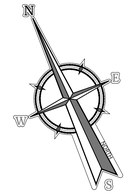
RESIDENTIAL LOTS = 153

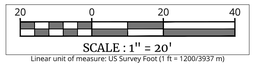
STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0.29	0	657.29	0
1.00	4,355.99	658.0	0
2.00	30,491.93	659.0	11
3.00	60,983,86	660.0	16.7
4.00	95,831.78	661.0	20.9
5.00	130,679.7	662.0	24.4
6.00	174,239.6	663.0	27.5
7.00	213,443.5	664.0	30.1
7.8	248,291.4	664.8	32.2

PROPOSED DISCHARGE									
Q1	=	16.6		VEL1	=	3.48		ELEV1	=	660.0
Q5	=	20.8		VEL5	=	4.25		ELEV5	=	661.0
Q25	=	25.7		VEL25	=	6.20		ELEV25	=	662.4
Q100	=	32.2		VEL100	=	15.73		ELEV100	=	664.8

Point Table

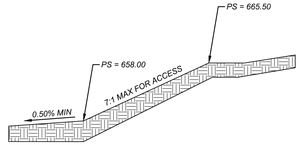
Point #	Elevation	Northing	Easting
4000	658.00	13615516.59	2122172.70
4001	658.00	13615523.18	2122170.13
4002	658.00	13615623.30	2122214.01
4003	658.00	13615599.77	2122333.19
4004	658.00	13615475.57	2122278.76
4005	658.00	13615473.00	2122272.17
4006	659.00	13615746.95	2122264.93
4007	659.00	13615748.20	2122274.52
4008	659.00	13615749.52	2122271.51
4009	659.00	13615714.22	2122274.61
4010	659.00	13615707.65	2122289.57
4011	659.00	13615730.58	2122314.71
4012	659.00	13615703.51	2122376.48
4013	659.00	13615696.92	2122379.05
4014	658.95	13615720.30	2122323.24
4015	657.30	13615487.43	2122249.57
4016	658.65	13615689.03	2122309.54
4017	658.45	13615661.46	2122301.92
4018	657.90	13615599.02	2122294.00
4019	657.76	13615571.45	2122286.39



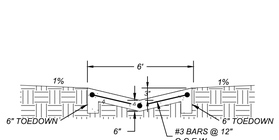


LEGEND

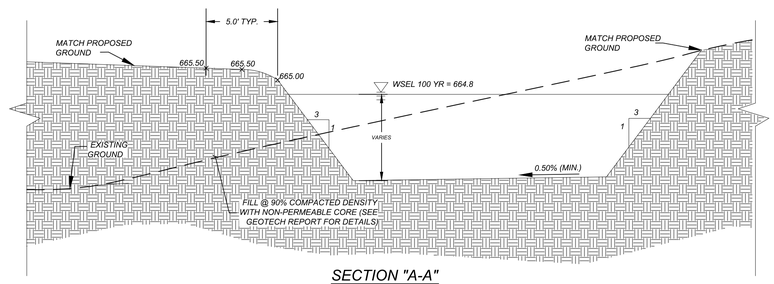
- *FLOW ARROW*
- *706 — EXISTING CONTOURS*
- *707 — PROPOSED CONTOURS*
- *PROPERTY LINE*
- *POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)*



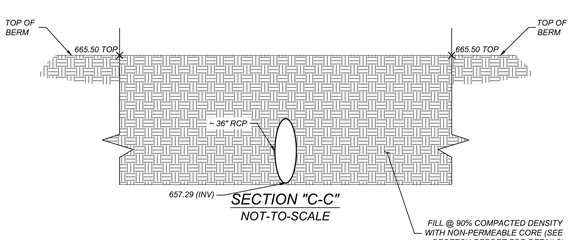
SECTION "B-B"
NOT-TO-SCALE



TYPICAL PILOT CHANNEL
NOT-TO-SCALE



SECTION "A-A"
NOT-TO-SCALE



SECTION "C-C"
NOT-TO-SCALE

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REV	DATE	DESCRIPTION	DRAWN BY

BID SET
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP877020I_CG

SHEET TITLE:
POND "N1" PLAN & PROFILE

SHEET NUMBER:
4.18

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SHMW\SDPP877020I_CG.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

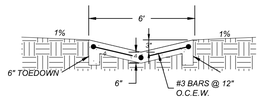
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

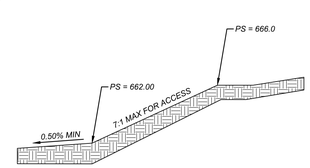
BEXAR COUNTY NOTE:
COMMERCIAL DRIVEWAY TO MEET BEXAR COUNTY R.O.W SPECIFICATIONS. BASIN DRIVEWAY TO BE CONSTRUCTED BY THE DEVELOPER.



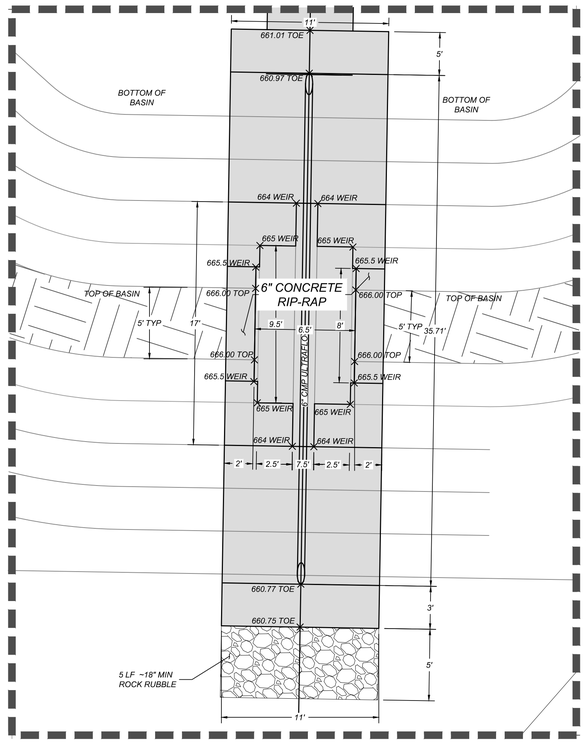
TYPICAL PILOT CHANNEL
NOT-TO-SCALE

STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0.96	0	660.96	0
1.00	0	661.0	0
2.00	8,711.98	662.0	0.7
3.00	34,847.92	663.0	1.1
4.00	60,983.86	664.0	1.4
5.00	87,119.8	665.0	6.0
5.50	100,187.8	665.5	12.9

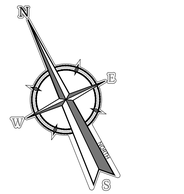
PROPOSED DISCHARGE										
Q1	=	1.0		VEL1	=	1.28		ELEV1	=	662.9
Q5	=	1.3		VEL5	=	1.69		ELEV5	=	663.8
Q25	=	3.9		VEL25	=	1.61		ELEV25	=	664.7
Q100	=	12.9		VEL100	=	1.92		ELEV100	=	665.5

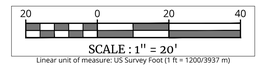


SECTION "B-B"
NOT-TO-SCALE



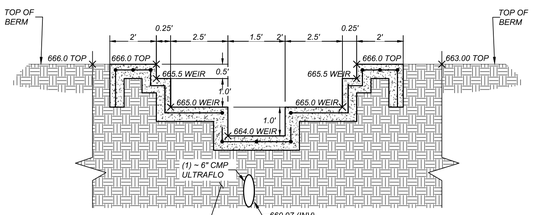
DETAIL "SE-1"
SCALE 1" = 5'



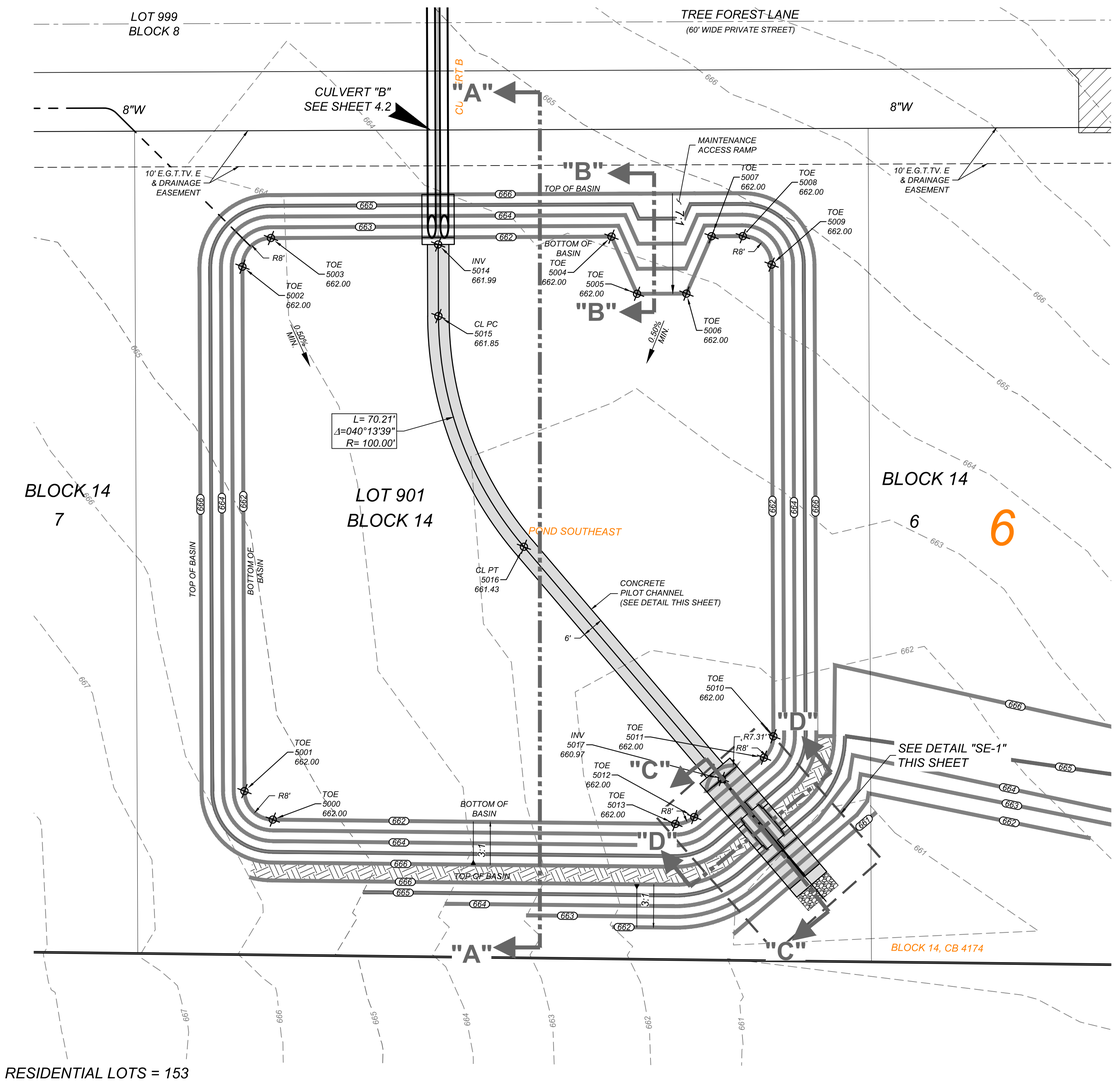


LEGEND

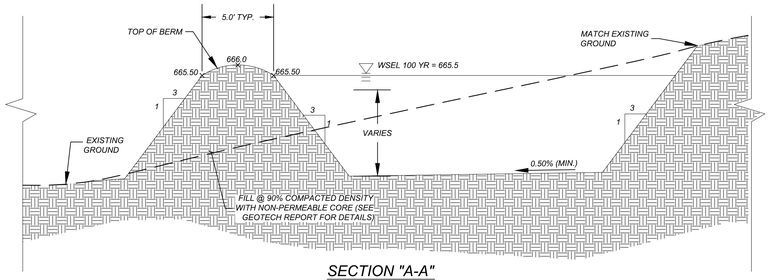
- FLOW ARROW
- 706 — EXISTING CONTOURS
- 707 — PROPOSED CONTOURS
- PROPERTY LINE
- POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)



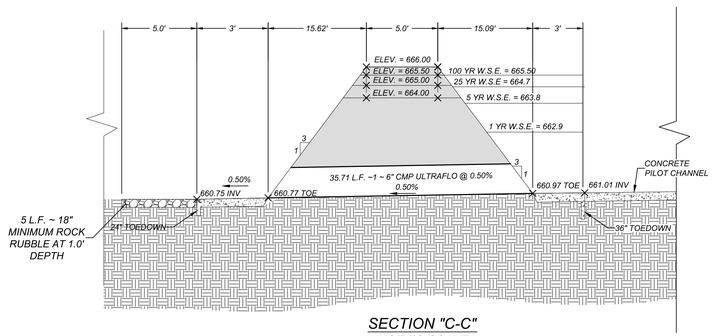
SECTION "D-D"
NOT-TO-SCALE



Point Table			
Point #	Elevation	Northing	Easting
5000	662.00	13614963.15	2122694.06
5001	662.00	13614973.64	2122690.05
5002	662.00	13615107.91	2122748.90
5003	662.00	13615112.03	2122759.44
5004	662.00	13615073.83	2122846.60
5005	662.00	13615056.33	2122846.67
5006	662.00	13615050.79	2122859.31
5007	662.00	13615062.60	2122872.23
5008	662.00	13615059.09	2122880.23
5009	662.00	13615048.55	2122884.35
5010	662.00	13614927.78	2122831.41
5011	662.00	13614923.39	2122826.58
5012	662.00	13614916.10	2122802.05
5013	662.00	13614916.49	2122796.45
5014	661.99	13615091.44	2122801.43
5015	661.85	13615073.10	2122793.39
5016	661.43	13615004.46	2122789.12
5017	660.97	13614922.70	2122813.41



SECTION "A-A"
NOT-TO-SCALE



SECTION "C-C"
NOT-TO-SCALE

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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP8770201_CG

SHEET TITLE: POND "SE" PLAN & PROFILE

SHEET NUMBER: 4.19

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\PP8770201_CG.DWG By: ECORONA

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TRENCH EXCAVATION SAFETY PROTECTION

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BASIN DRIVEWAY TO BE CONSTRUCTED BY THE DEVELOPER.

NOTE:

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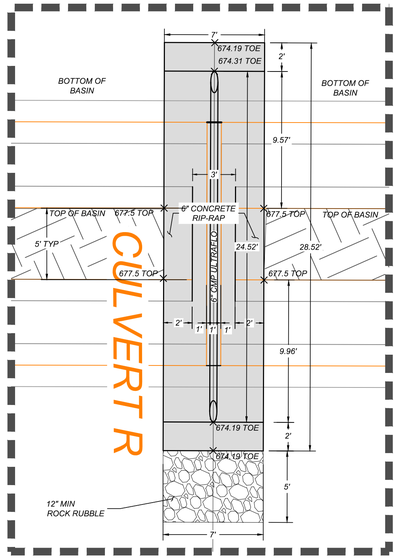
STAGE(FT)	STORAGE (SQFT)	ELEVATION	DISCHARGE (CFS)
0.43	0.00	674.43	0.00
1.00	4,355.99	675.0	0.6
2.00	17,423.96	676.0	2.1
2.90	30,491.93	676.9	5.5

PROPOSED DISCHARGE									
Q1	=	0.8		VEL1	=	2.00		ELEV1	=	675.5
Q5	=	1.5		VEL5	=	2.48		ELEV5	=	675.9
Q25	=	3.0		VEL25	=	3.50		ELEV25	=	676.3
Q100	=	5.5		VEL100	=	4.90		ELEV100	=	676.9

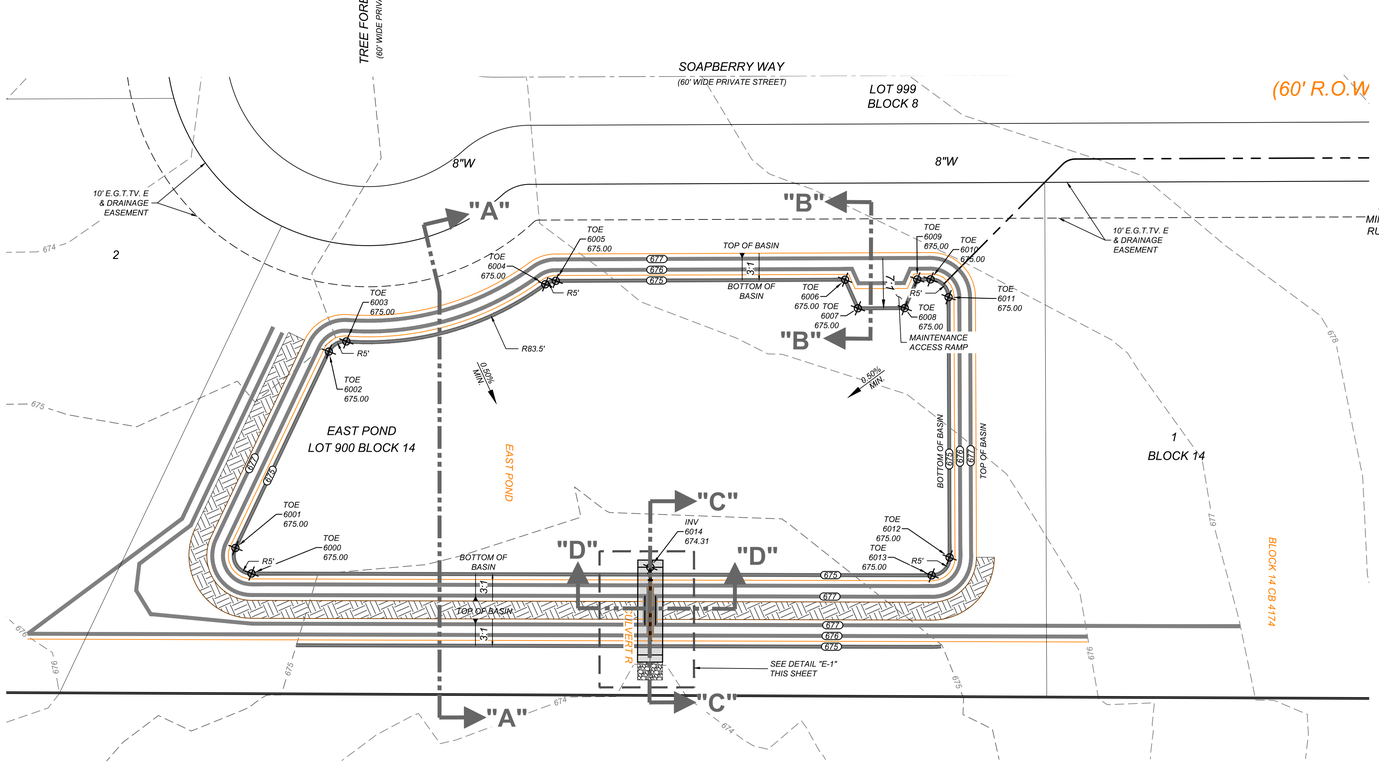
CAUTION!!:

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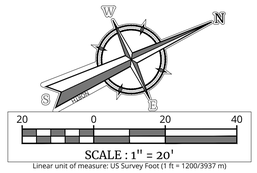
Point Table			
Point #	*Elevation*	*Northing*	*Easting*
6000	*675.00*	*13614866.76*	*2123409.46*
6001	*675.00*	*13614865.54*	*2123401.10*
6002	*675.00*	*13614911.66*	*2123361.47*
6003	*675.00*	*13614917.27*	*2123360.86*
6004	*675.00*	*13614974.56*	*2123368.77*
6005	*675.00*	*13614977.64*	*2123369.08*
6006	*675.00*	*13615051.71*	*2123401.54*
6007	*675.00*	*13615051.74*	*2123410.29*
6008	*675.00*	*13615063.72*	*2123415.54*
6009	*675.00*	*13615070.18*	*2123409.64*
6010	*675.00*	*13615073.60*	*2123411.14*
6011	*675.00*	*13615076.17*	*2123417.72*
6012	*675.00*	*13615046.97*	*2123484.35*
6013	*675.00*	*13615040.35*	*2123486.91*
6014	*674.31*	*13614969.39*	*2123452.98*



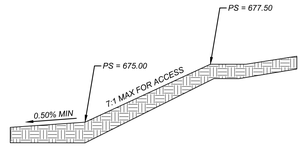
DETAIL "E-1"
SCALE 1" = 5'



RESIDENTIAL LOTS = 153



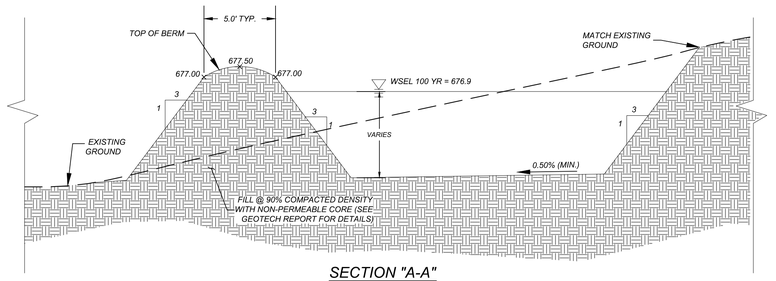
Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)



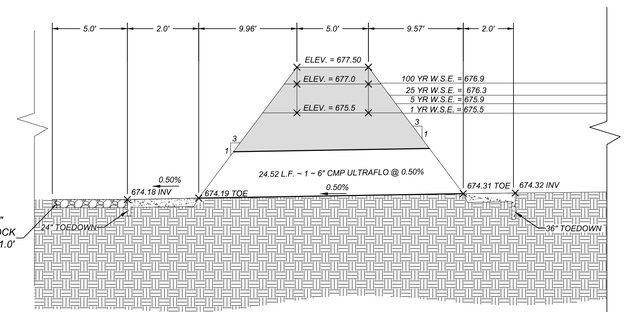
SECTION "B-B"
NOT-TO-SCALE

LEGEND

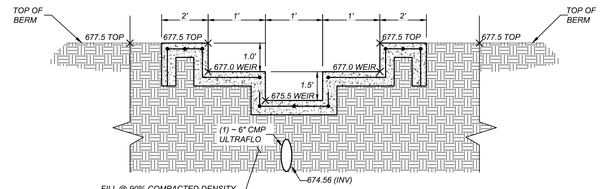
- *FLOW ARROW*
- *706* — *EXISTING CONTOURS*
- *707* — *PROPOSED CONTOURS*
- *PROPERTY LINE*
- *POINT # 707.00 TOE* — *PROPOSED SPOT ELEVATION (TOE OF SLOPE)*



SECTION "A-A"
NOT-TO-SCALE



SECTION "C-C"
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SECTION "D-D"
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

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TEXAS

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COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14959
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	SDPP8770201_CG

SHEET TITLE:
POND "E" PLAN & PROFILE

SHEET NUMBER:
4.20

L:\877\02\01\05\SDN\DWL\PHASE 1\DRAWS\SDPP8770201_CG.DWG By: ECONDA

TRENCH EXCAVATION SAFETY PROTECTION

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BEXAR COUNTY NOTE:
COMMERCIAL DRIVEWAY TO MEET BEXAR COUNTY R.O.W SPECIFICATIONS.
BASIN DRIVEWAY TO BE CONSTRUCTED BY THE DEVELOPER.

STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0	0	655.73	0.00
1.00	0	656.0	0
2.00	13,067.97	657.0	7.1
3.00	34,847.92	658.0	14.4
4.00	60,983.86	659.0	19.0
5.00	95,831.78	660.0	22.9
5.90	121,967.7	660.9	25.6

PROPOSED DISCHARGE									
Q1	=	13.2		VEL1	=	6.08		ELEV1	=	657.8
Q5	=	16.7		VEL5	=	6.08		ELEV5	=	658.5
Q25	=	20.5		VEL25	=	7.58		ELEV25	=	659.4
Q100	=	25.6		VEL100	=	9.39		ELEV100	=	660.9

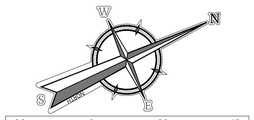
CAUTION!!:

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NOTE:

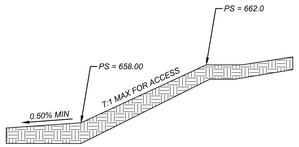
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2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

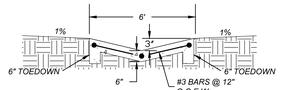


LEGEND

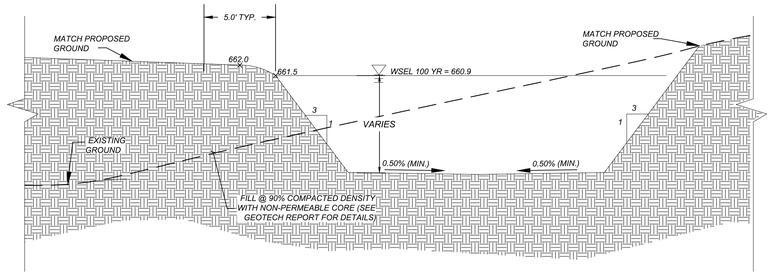
- FLOW ARROW
- 706 — EXISTING CONTOURS
- 707 — PROPOSED CONTOURS
- PROPERTY LINE
- POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)



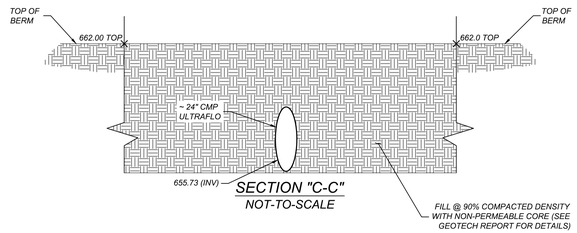
SECTION "B-B"
NOT-TO-SCALE



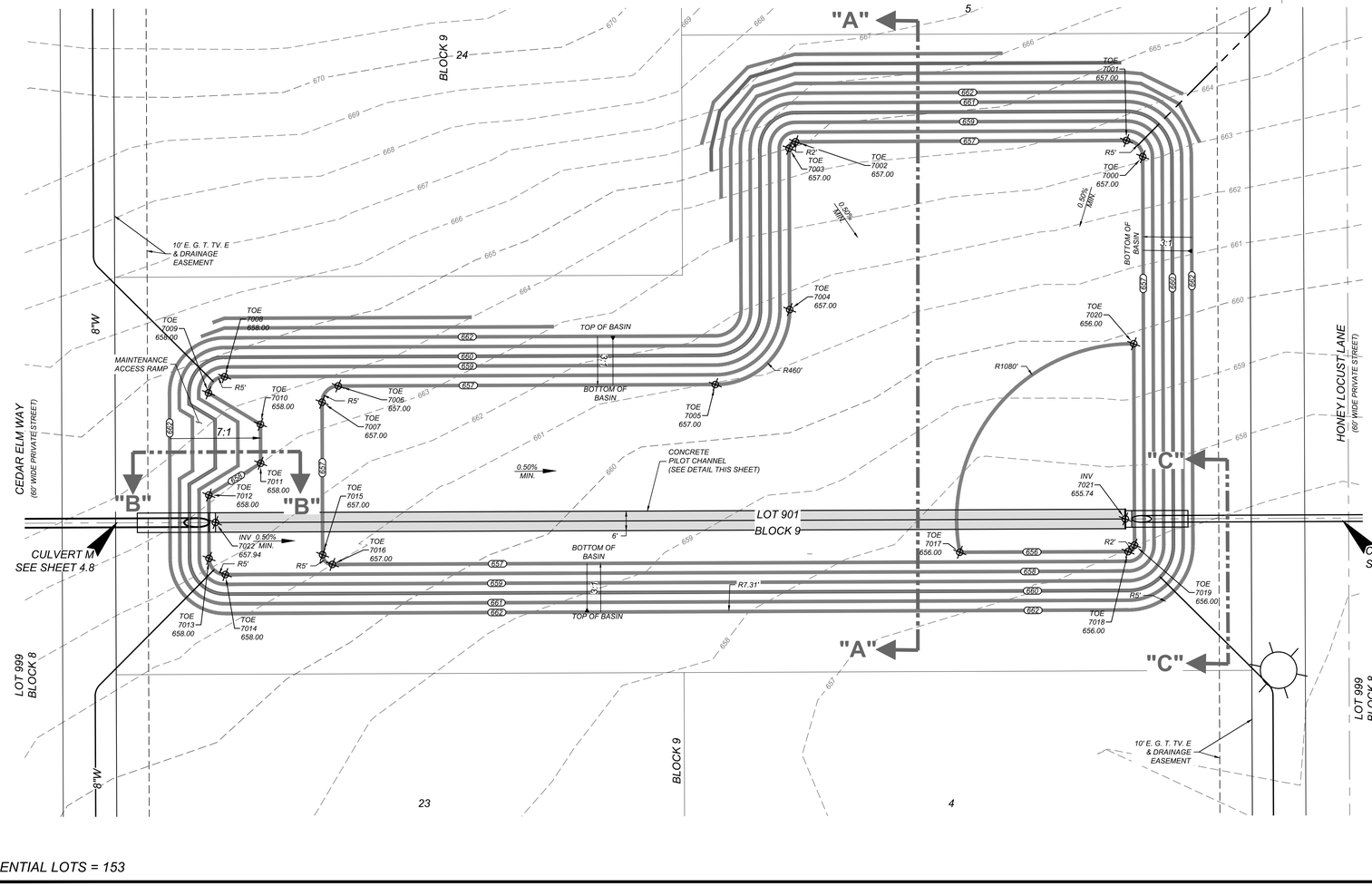
TYPICAL PILOT CHANNEL
NOT-TO-SCALE



SECTION "A-A"
NOT-TO-SCALE



SECTION "C-C"
NOT-TO-SCALE



Point Table			
Point #	Elevation	Northing	Easting
7000	657.00	13616973.42	2122523.11
7001	657.00	13616970.85	2122516.52
7002	657.00	13616877.43	2122475.58
7003	657.00	13616874.79	2122476.61
7004	657.00	13616854.83	2122522.15
7005	657.00	13616824.53	2122533.99
7006	657.00	13616718.07	2122487.33
7007	657.00	13616711.49	2122489.90
7008	658.00	13616687.22	2122470.53
7009	658.00	13616680.63	2122473.10
7010	658.00	13616691.38	2122488.44
7011	658.00	13616686.56	2122499.43
7012	658.00	13616667.99	2122501.92
7013	658.00	13616660.15	2122519.81
7014	658.00	13616662.73	2122526.39
7015	657.00	13616692.61	2122532.94
7016	657.00	13616694.15	2122536.89
7017	656.00	13616872.48	2122611.78
7018	656.00	13616919.98	2122632.59
7019	656.00	13616922.61	2122631.57
7020	656.00	13616947.52	2122574.73
7021	655.74	13616923.28	2122623.05
7022	657.94	13616666.43	2122510.48

RESIDENTIAL LOTS = 153

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REV	DATE	DESCRIPTION	DRAWN BY

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	SDPP8770201_CG

SHEET TITLE:
POND "S2" PLAN & PROFILE

SHEET NUMBER:
4.21

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SDMP\SDPP8770201_CG1.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

PROPOSED DISCHARGE									
Q1	=	3.8		VEL1	=	9.49		ELEV1	=	661.2
Q5	=	9.4		VEL5	=	8.42		ELEV5	=	663.0
Q25	=	16.9		VEL25	=	3.02		ELEV25	=	664.8
Q100	=	34.9		VEL100	=	1.60		ELEV100	=	665.0

STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0.32	0	654.32	0
1.00	0	655.0	0
2.00	8,711.98	656.0	1.00
3.00	21,779.95	657.0	1.2
4.00	30,491.93	658.0	1.5
5.00	43,559.9	659.0	1.7
6.00	60,983.86	660.0	1.9
7.00	74,051.83	661.0	3.5
8.00	95,831.78	662.0	6.1
9.00	113,255.7	663.0	9.5
10.00	139,391.7	664.0	13.4
11.00	161,171.6	665.0	34.9

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NOTE:

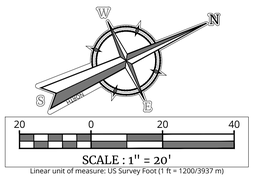
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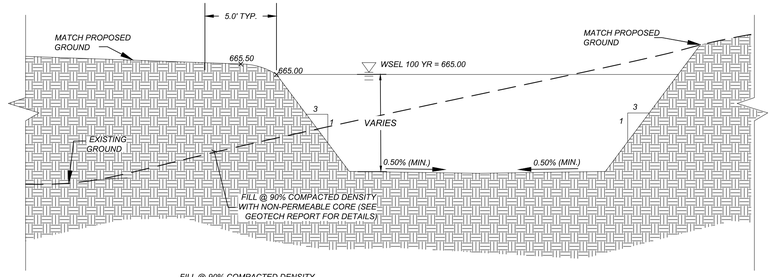
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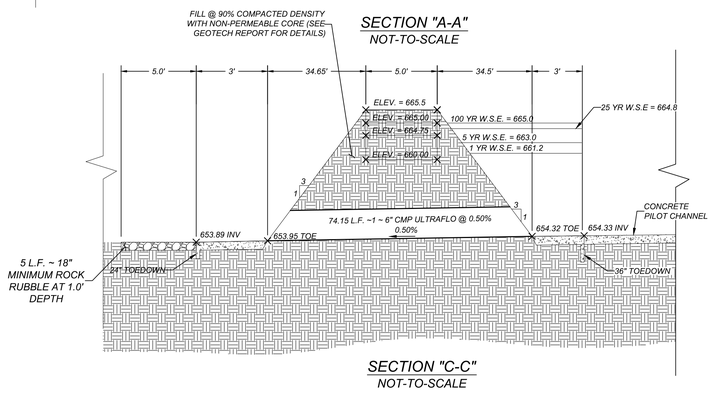
TRENCH EXCAVATION SAFETY PROTECTION

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BEXAR COUNTY NOTE:
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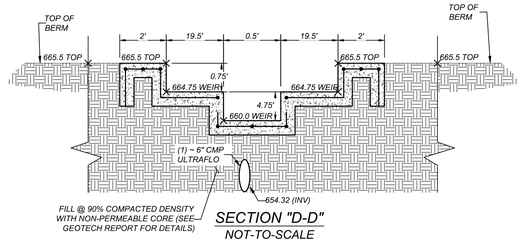




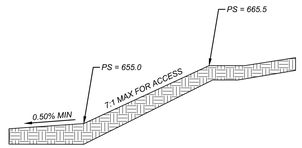
SECTION "A-A"
NOT-TO-SCALE

SECTION "C-C"
NOT-TO-SCALE

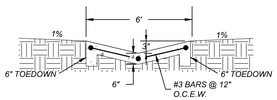
Point Table			
Point #	*Elevation*	*Northing*	*Easting*
8000	655.00	13617039.92	2122839.72
8001	655.00	13617033.33	2122842.29
8002	655.00	13617001.73	2122828.45
8003	655.00	13616999.16	2122821.86
8004	655.00	13617007.88	2122801.97
8005	655.00	13617051.63	2122801.80
8006	655.00	13617058.33	2122786.50
8007	655.00	13617028.81	2122754.22
8008	655.00	13617072.22	2122655.17
8009	655.00	13617078.81	2122652.59
8010	655.00	13617110.41	2122666.44
8011	655.00	13617112.98	2122673.03
8012	654.32	13617073.75	2122755.05
8013	654.37	13617069.13	2122753.03
8014	654.45	13617066.14	2122748.16
8015	654.81	13617069.42	2122690.66
8016	654.89	13617066.44	2122685.80



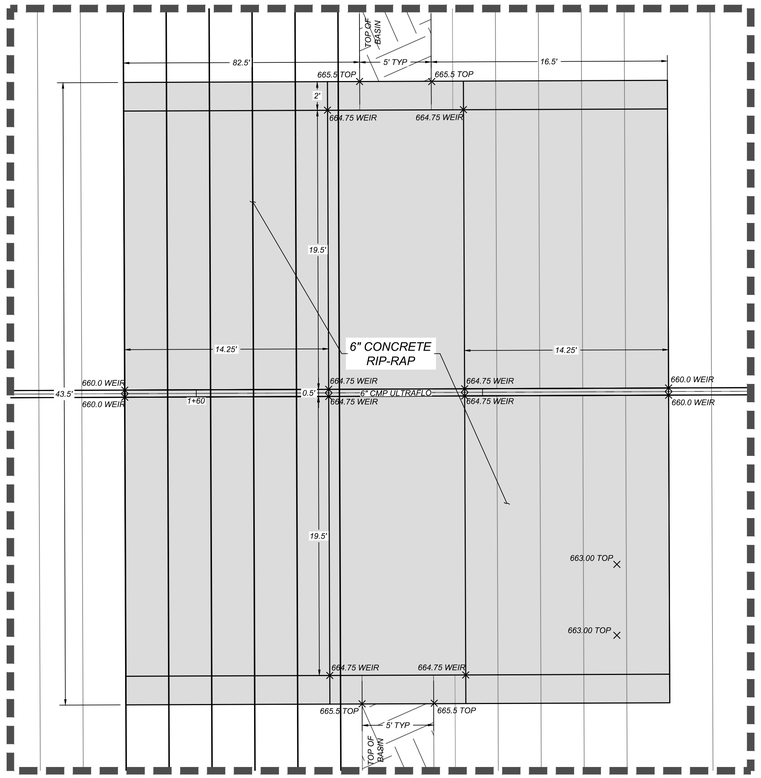
SECTION "D-D"
NOT-TO-SCALE



SECTION "B-B"
NOT-TO-SCALE

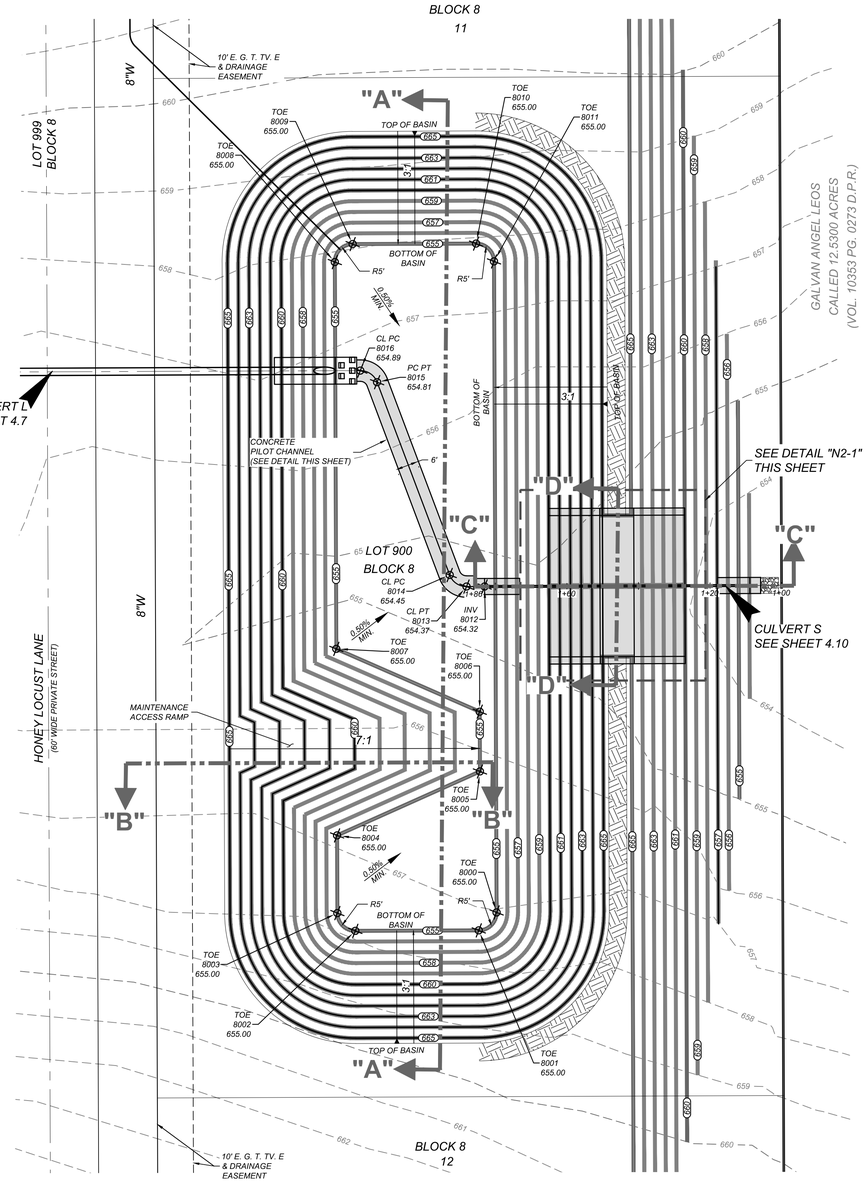


TYPICAL PILOT CHANNEL
NOT-TO-SCALE



DETAIL "N2-1"
SCALE 1" = 5'

RESIDENTIAL LOTS = 153



LEGEND

- FLOW ARROW
- 706 — EXISTING CONTOURS
- 707 — PROPOSED CONTOURS
- PROPERTY LINE
- POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG
PROJECT NUMBER: 877-02-01		DRAWING NAME: SDPP8770201_CG	

SHEET TITLE:
POND "N2" PLAN & PROFILE

SHEET NUMBER:
4.22

L:\877\02\01\DESIGN\CIVIL\PHASE 1\DRAWINGS\PP8770201_CG.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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BASIN DRIVEWAY TO BE CONSTRUCTED BY THE DEVELOPER.

STAGE(FT)	STORAGE (CUFT)	ELEVATION	DISCHARGE (CFS)
0.50	0	668.5	0.00
1.00	6,325.56	669.0	0.2
2.00	11,638.11	670.0	1.0
3.00	13,759.40	671.0	9.0
3.20	15,934.58	671.2	11.2

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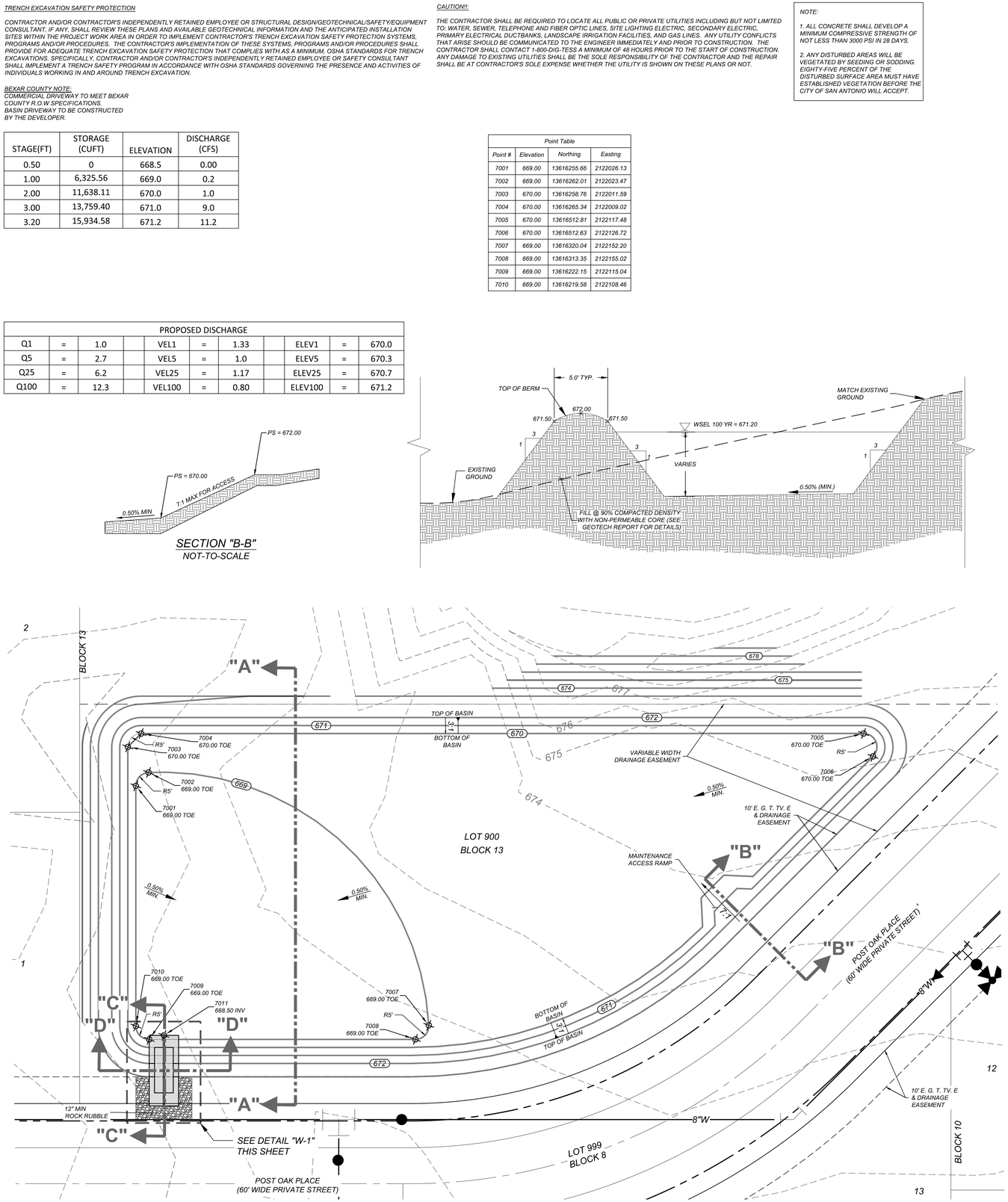
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Point Table

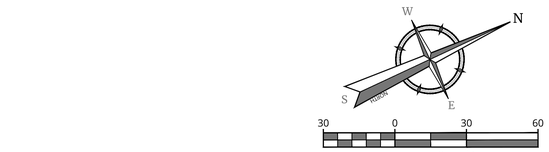
Point #	Elevation	Northing	Easting
7001	669.00	13616255.66	2122026.13
7002	669.00	13616262.01	2122023.47
7003	670.00	13616258.76	2122011.59
7004	670.00	13616265.34	2122009.02
7005	670.00	13616512.81	2122117.48
7006	670.00	13616512.63	2122126.72
7007	669.00	13616320.04	2122152.20
7008	669.00	13616313.35	2122155.02
7009	669.00	13616222.15	2122115.04
7010	669.00	13616219.58	2122108.46

PROPOSED DISCHARGE									
Q1	=	1.0		VEL1	=	1.33		ELEV1	=	670.0
Q5	=	2.7		VEL5	=	1.0		ELEV5	=	670.3
Q25	=	6.2		VEL25	=	1.17		ELEV25	=	670.7
Q100	=	12.3		VEL100	=	0.80		ELEV100	=	671.2

SECTION "B-B"
NOT-TO-SCALE



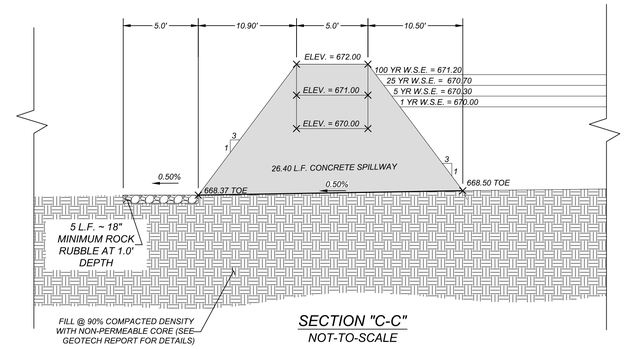
RESIDENTIAL LOTS = 153



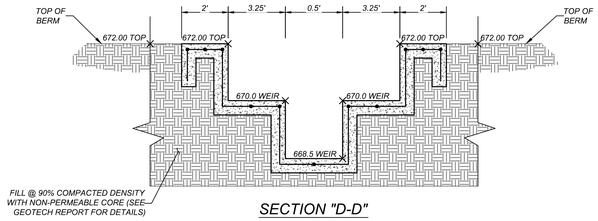
SCALE : 1'' = 30'
Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

LEGEND

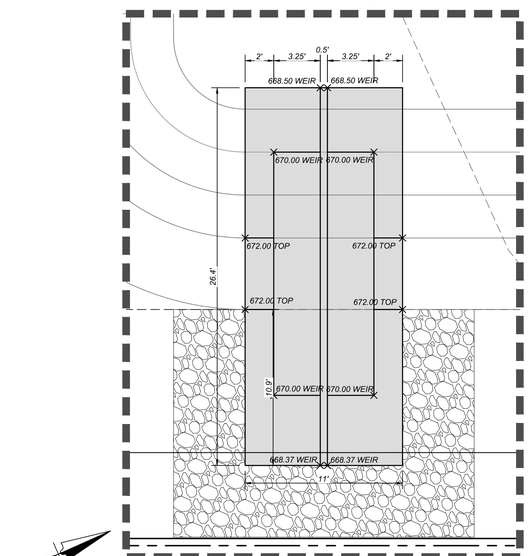
- *FLOW ARROW*
- *706 — EXISTING CONTOURS*
- *707 — PROPOSED CONTOURS*
- *PROPERTY LINE*
- *POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)*



SECTION "C-C"
NOT-TO-SCALE



SECTION "D-D"
NOT-TO-SCALE



DETAIL "W-1"
SCALE 1" = 5'

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

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TEXAS

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TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SDPP8770201

SHEET TITLE: POND WEST PLAN & PROFILE

SHEET NUMBER: 4.23

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SHEETS\SDPP8770201.DWG By: ECORONA

HONEY LOCUST LANE - SEE SHEETS 5.4 - 5.5

CEDAR ELM WAY - SEE SHEETS 5.13 - 5.14

JUNGLE OAKS DRIVE - SEE SHEETS 5.15 - 5.16

WOODLAND OAKS DRIVE - SEE SHEETS 5.17 - 5.18

TREE FOREST LANE - SEE SHEETS 5.8 - 5.9

CEDAR ELM WAY - SEE SHEET 5.12

FLAMING SUMAC - SEE SHEET 5.3

POST OAK PLACE - SEE SHEET 5.1 - 5.2

EMPOWER LANE - SEE SHEET 5.11

EMPOWER LANE - SEE SHEET 5.10

SOAPBERRY WAY - SEE SHEETS 5.6 - 5.7

TRUMBO ROAD (60' R.O.W.)

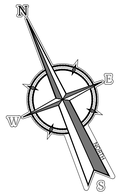
TRUMBO OAKS (60' R.O.W.)

BLOCK 8 · BLOCK 9 · BLOCK 10 · BLOCK 11 · BLOCK 12 · BLOCK 13 · BLOCK 14

LOT 999 BLOCK 8 · LOT 900 · LOT 901 · LOT 902

LOCATION MAP
N.T.S.





100 0 100 200

SCALE : 1" = 100'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD) PLAT# 25-11800029

BEXAR COUNTY TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: ST_8770201

SHEET TITLE: OVERALL STREETS

SHEET NUMBER: 5.0

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\ST_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

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BEXAR COUNTY R.O.W. NOTE

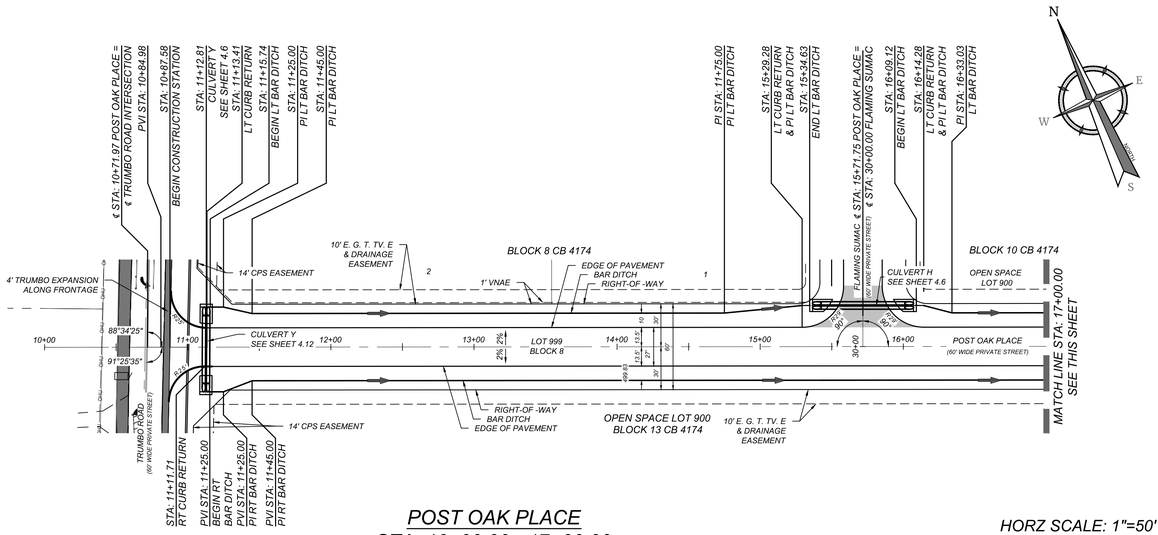
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

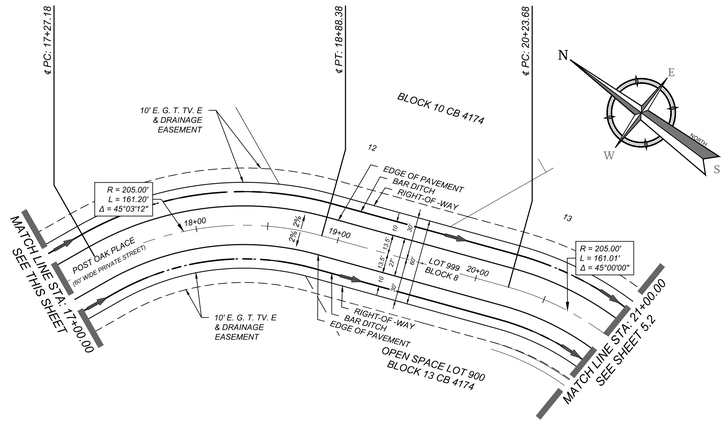
BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

LEGEND

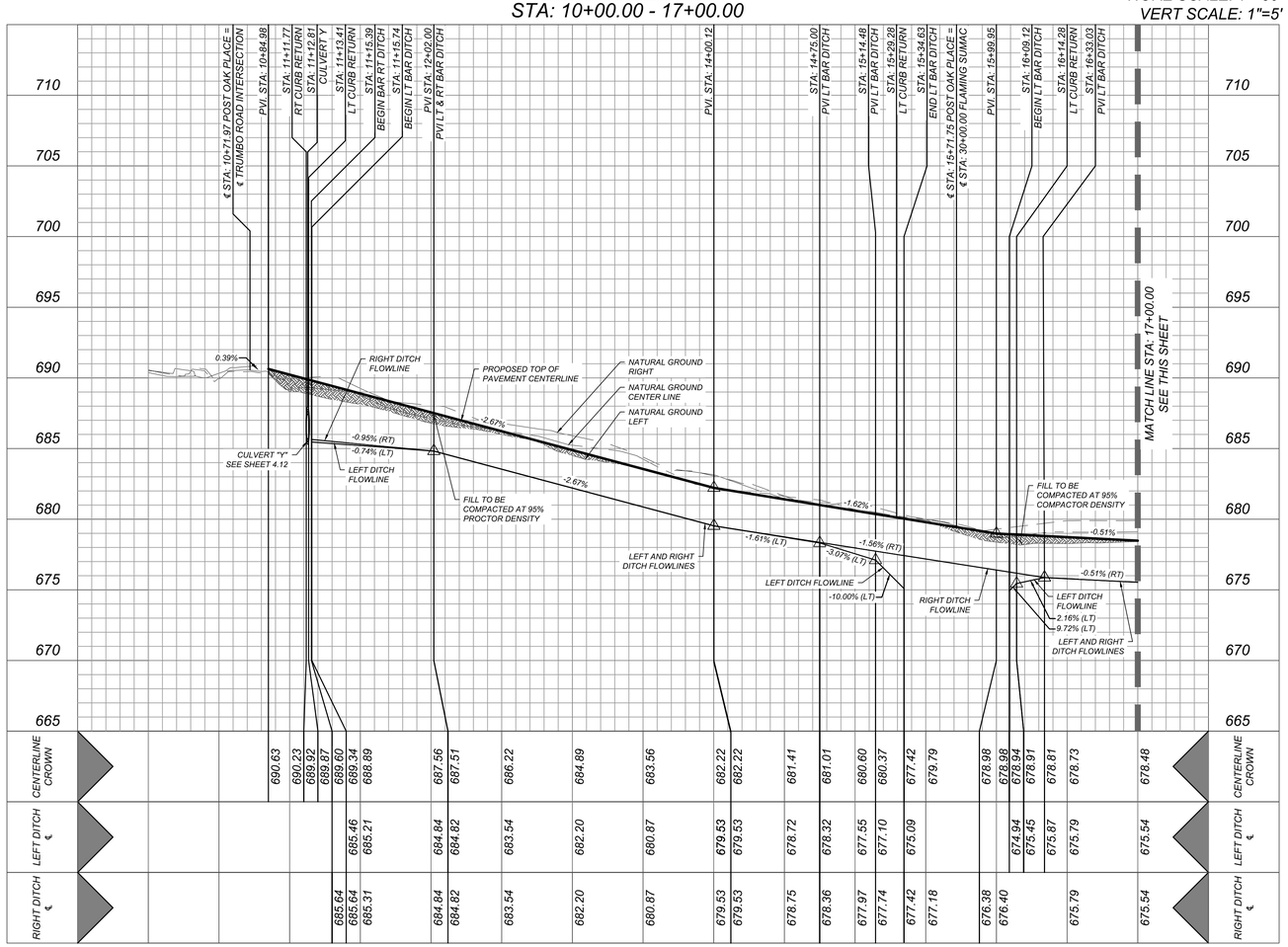
R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT





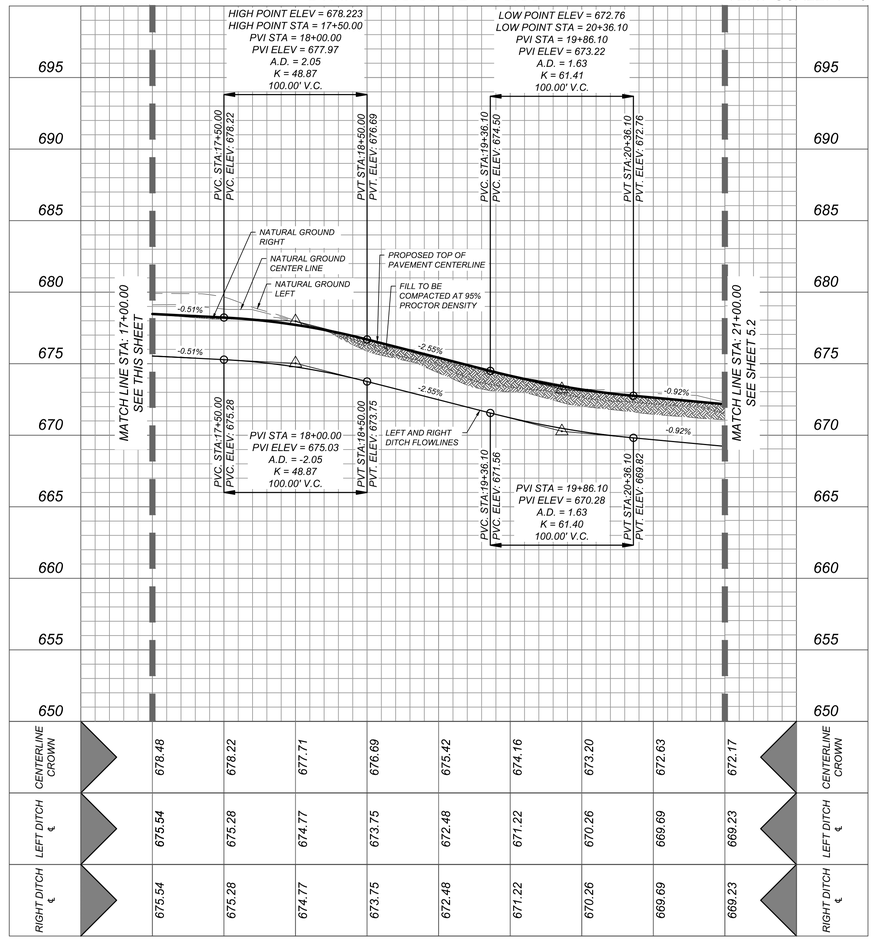
POST OAK PLACE
STA: 10+00.00 - 17+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



POST OAK PLACE
STA: 17+00.00 - 21+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER GARCIA
LICENSED
PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14309
TBPLS Firm#: 10194350

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201

SHEET TITLE: POST OAK PLACE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

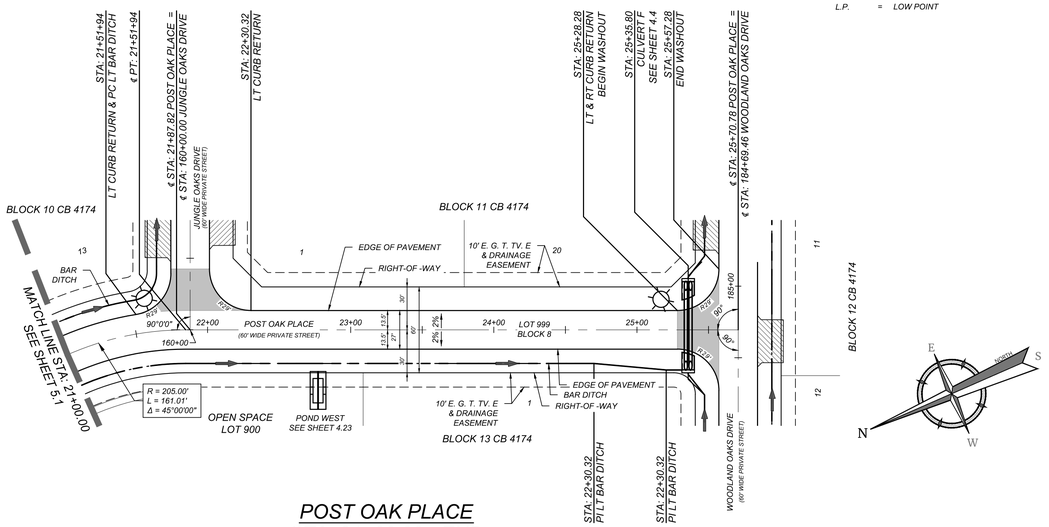
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BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

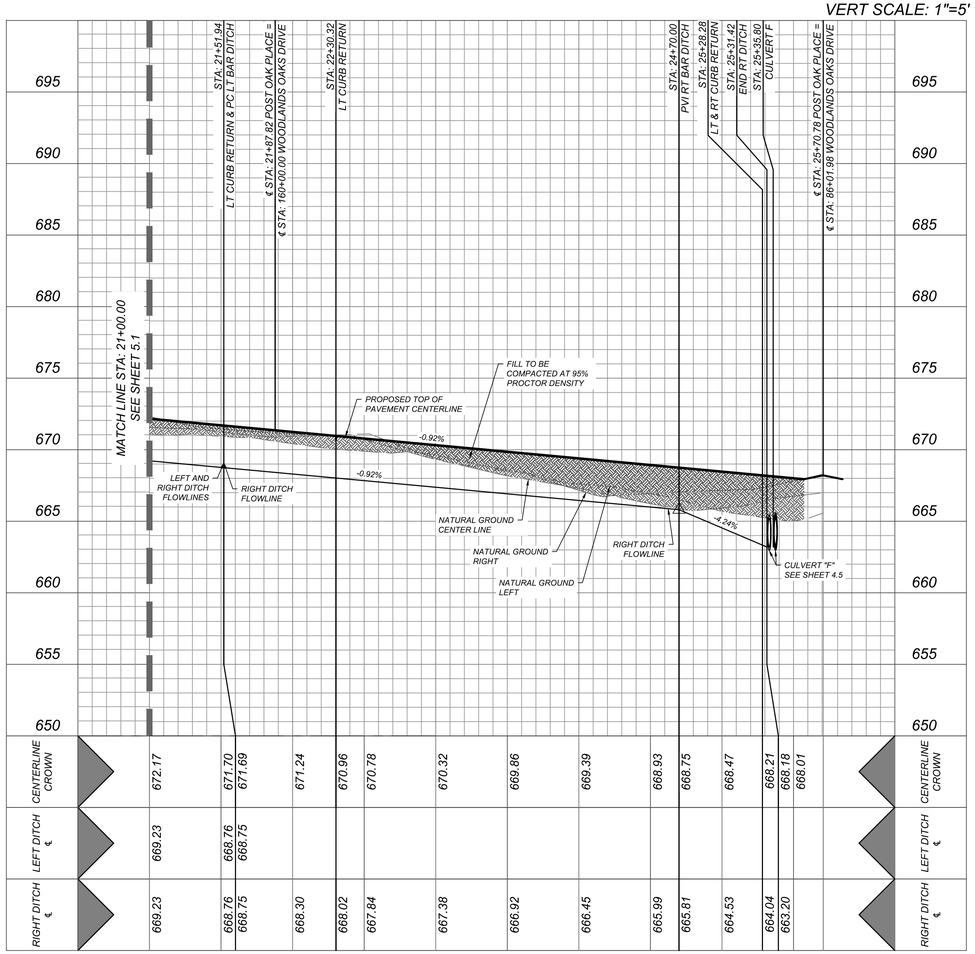
LEGEND

R.O.W. = RIGHT OF WAY
E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



POST OAK PLACE
STA: 21+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER GARCIA
103911
LICENSED PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201

SHEET TITLE: POST OAK PLACE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER: 5.2

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

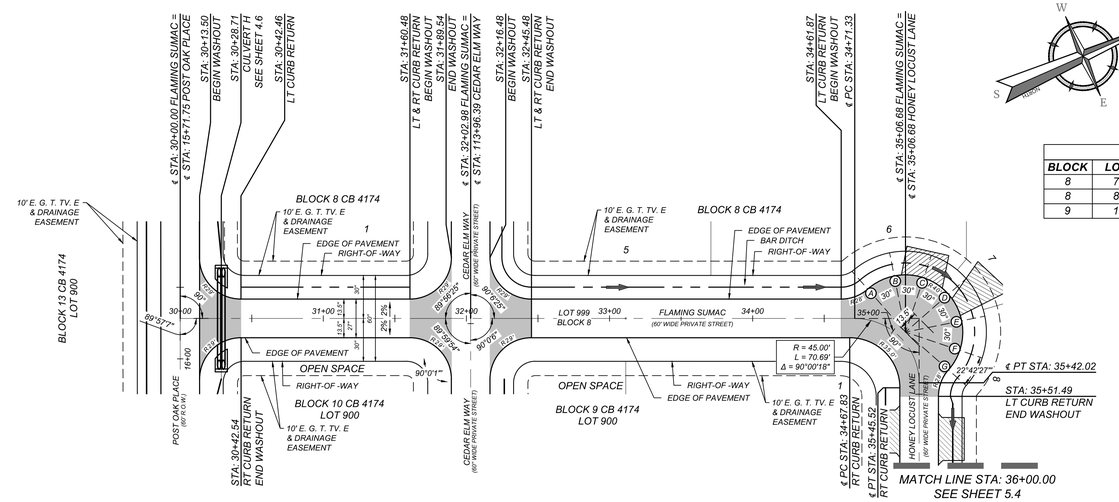
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BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

LEGEND

R.O.W. = RIGHT OF WAY
E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



DRWY CULVERTS

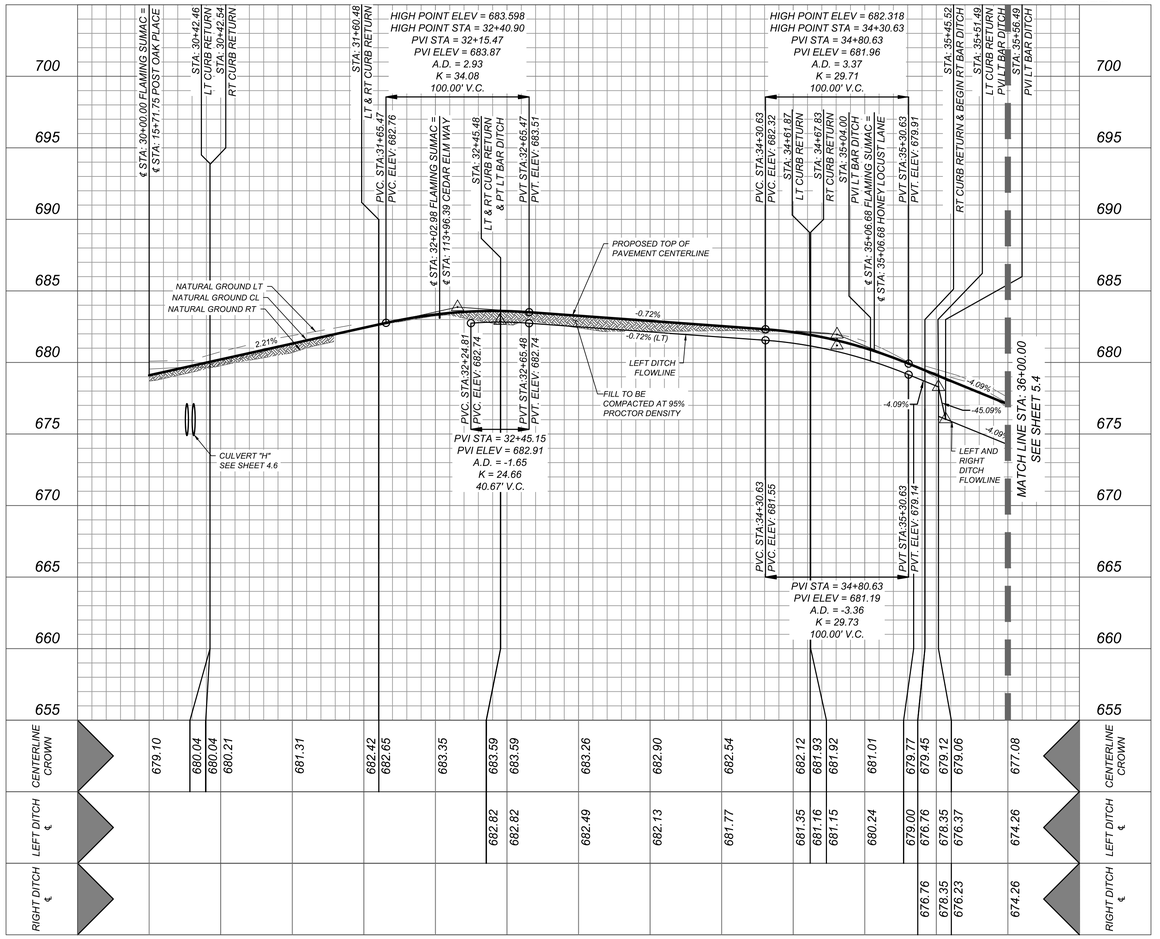
BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
8	7	1.1+1.1a+5.2	10	18
8	8	1.1+1.1a+5.2	10	18
9	1	1.3	8.4	18

CULDESAC ELEVATIONS

STATION	EDGE OF PAVEMENT	BAR DITCH INVERT
A	681.31	680.93
B	680.93	680.52
C	680.56	680.10
D	680.18	677.99
E	679.80	677.41
F	679.43	676.61
G	679.15	676.34

FLAMING SUMAC - HONEY LOCUST LANE
STA: 30+00.00 - 36+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14309
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - STREET 2

SHEET TITLE: FLAMING SUMAC, HONEY LOCUST LANE PLAN & PROFILE

SHEET NUMBER: 5.3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

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BEXAR COUNTY R.O.W. NOTE

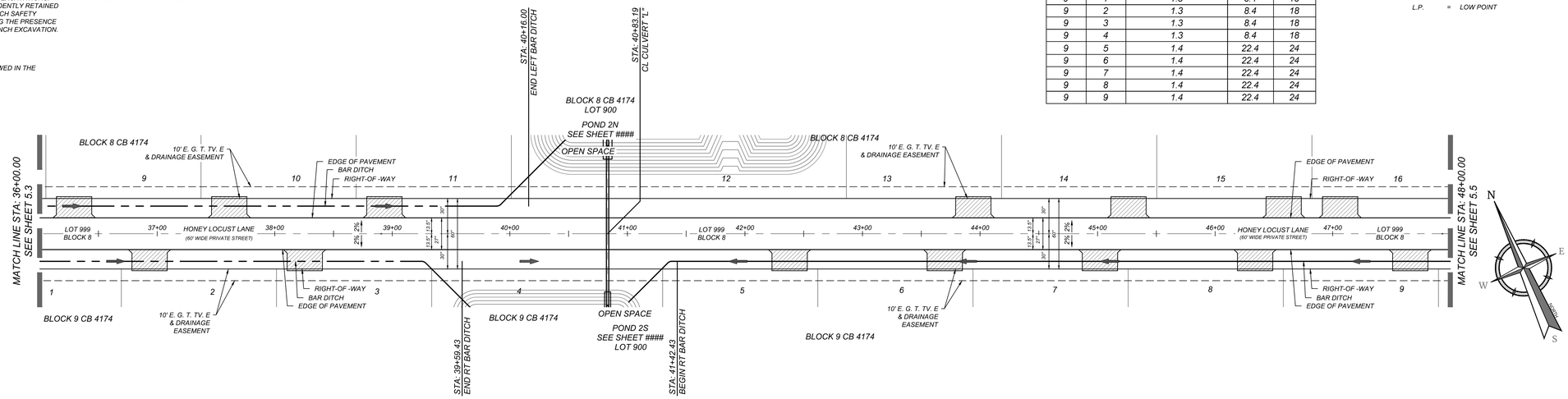
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS

BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
8	9	1.1+1.1a+5.2	10	18
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8	11	1.1+1.1a+5.2	10	18
9	1	1.3	8.4	18
9	2	1.3	8.4	18
9	3	1.3	8.4	18
9	4	1.3	8.4	18
9	5	1.4	22.4	24
9	6	1.4	22.4	24
9	7	1.4	22.4	24
9	8	1.4	22.4	24
9	9	1.4	22.4	24

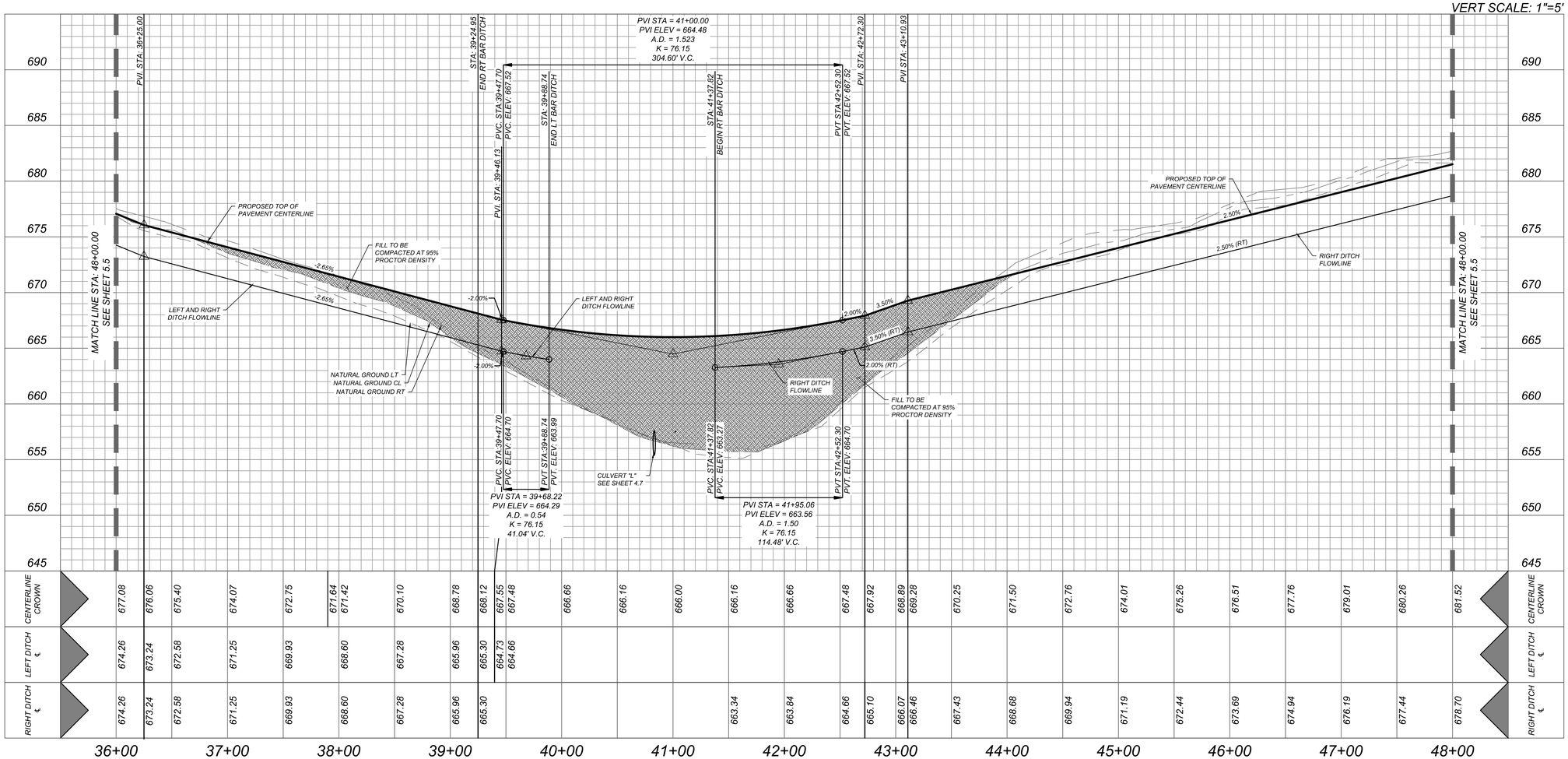
LEGEND

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= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



HONEY LOCUST LANE
STA: 36+00.00 - 48+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

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NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14955
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP877O201 - STREET 2

SHEET TITLE:
HONEY LOCUST LANE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER:
5.4

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP877O201 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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CAUTION!!:

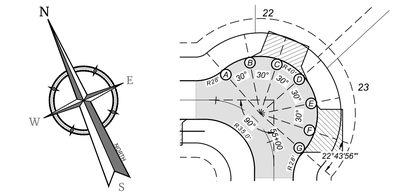
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BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS

BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
9	10	1.4	22.4	24

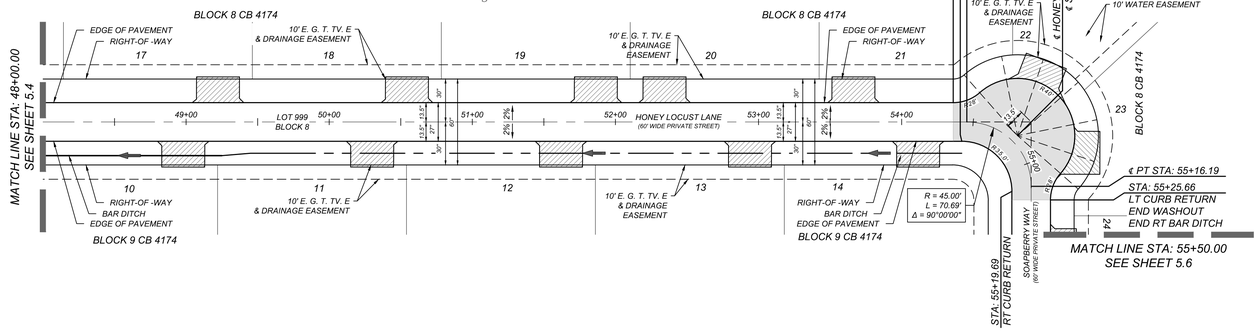


CULDESAC ELEVATIONS

STATION	EDGE OF PAVEMENT
A	709.15
B	709.39
C	709.64
D	709.89
E	710.13
F	710.38
G	710.55

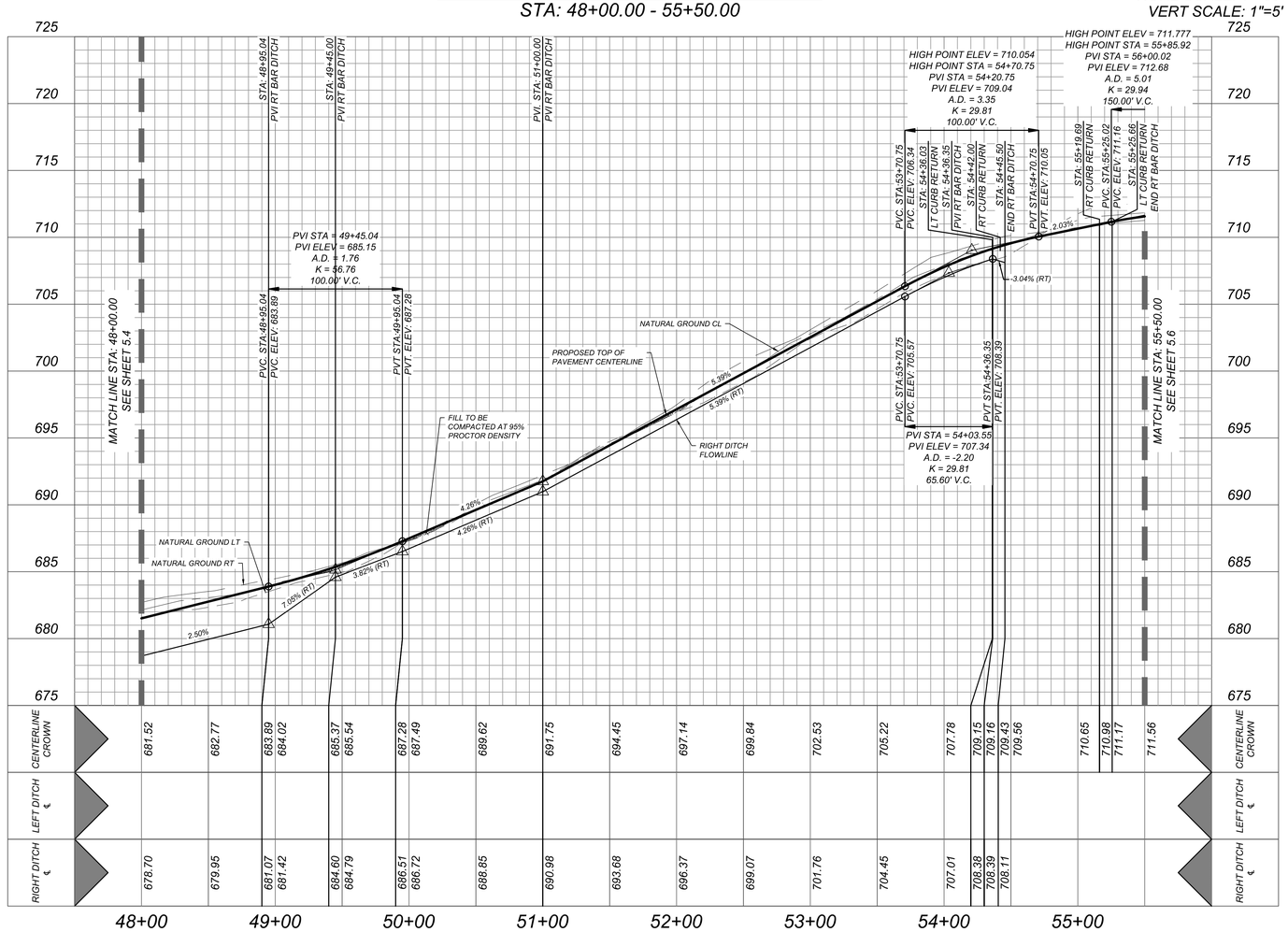
LEGEND

R.O.W. = RIGHT OF WAY
E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



HONEY LOCUST LANE - SOAPBERRY WAY
STA: 48+00.00 - 55+50.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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TEXAS

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3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - STREET 2

SHEET TITLE: HONEY LOCUST LANE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER: 5.5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\DWG\PHASE 1\STREETS\STPP8770201 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

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BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

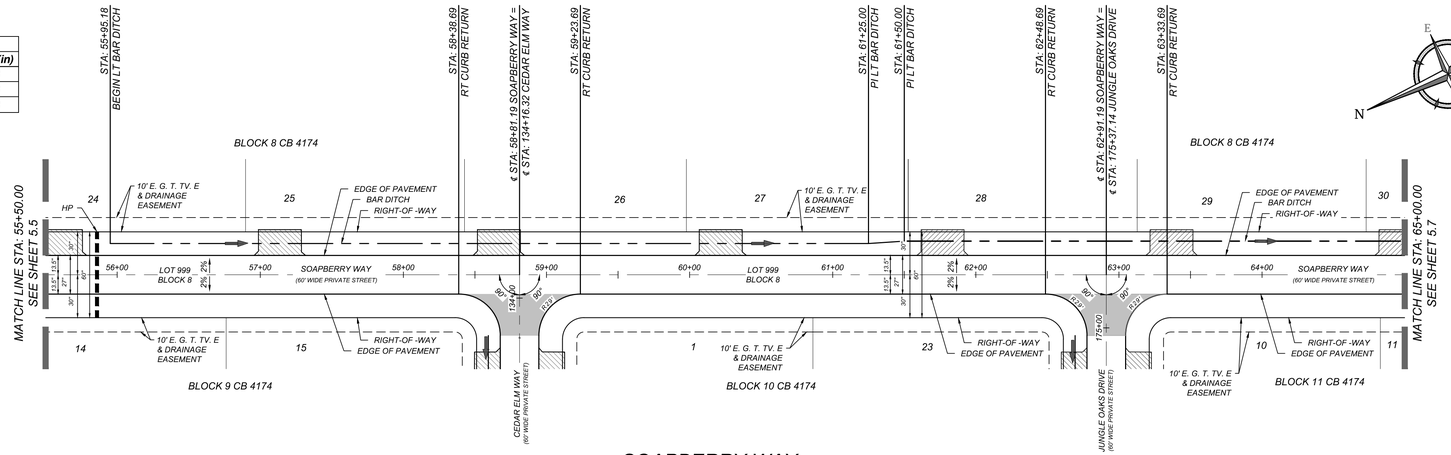
BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

DRWY CULVERTS				
BLOCK	**LOT**	**DA**	**Q25 (cfs)**	**Pipe (in)**
8	28	PT.20	10.9	18
8	29	PT.20	10.9	18
8	30	PT.20	10.9	18

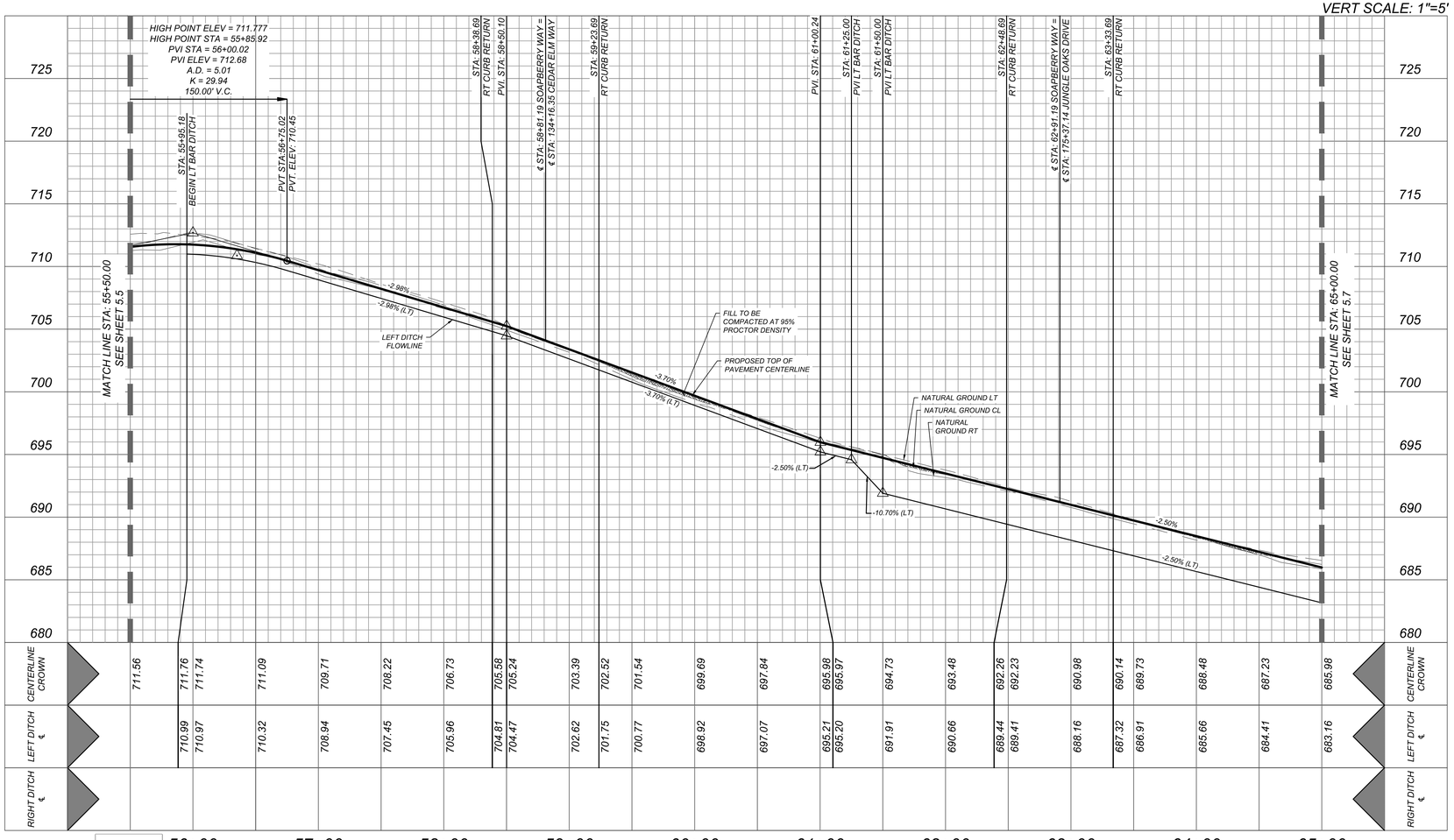
LEGEND

R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT



SOAPBERRY WAY
STA: 55+50.00 - 65+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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TBPE Firm#: F-14909
TBPLS Firm#: 10194550

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		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: STPP8770201 - STREET 2

SHEET TITLE: SOAPBERRY WAY PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.6

L:\877\2021\05\36\CIVIL\PHASE 1\STREETS\STPP8770201 - STREET 2.DWG By: ECORONA

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BAR DITCH NOTE

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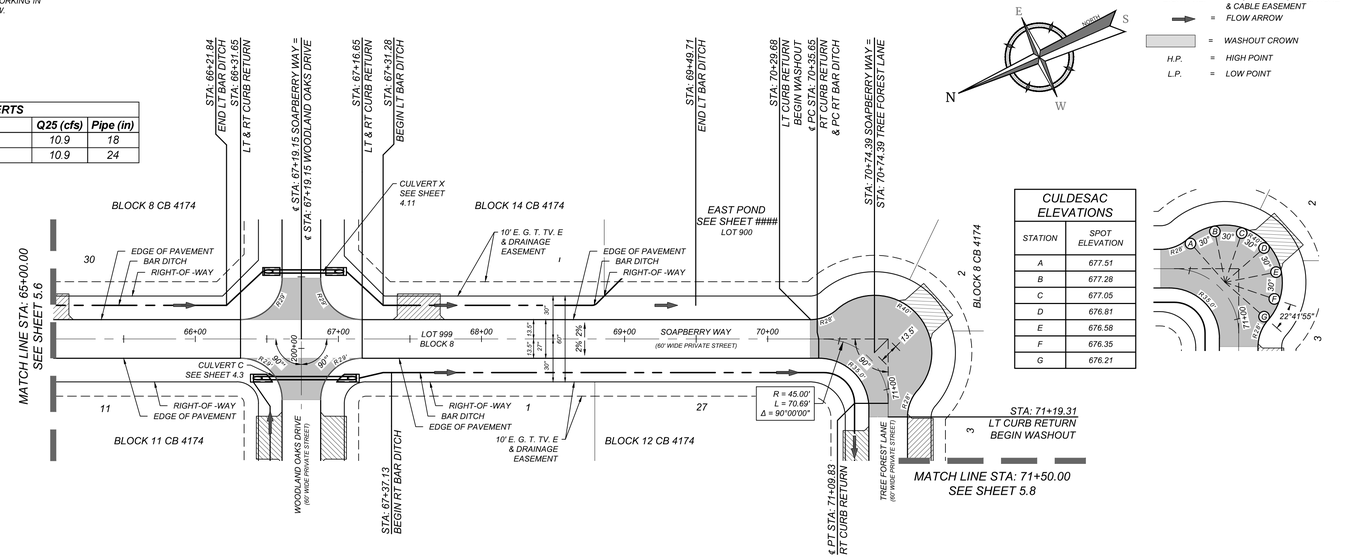
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS				
BLOCK	**LOT**	**DA**	**Q25 (cfs)**	**Pipe (in)**
8	30	PT.20	10.9	18
14	1	4.2	10.9	24

LEGEND

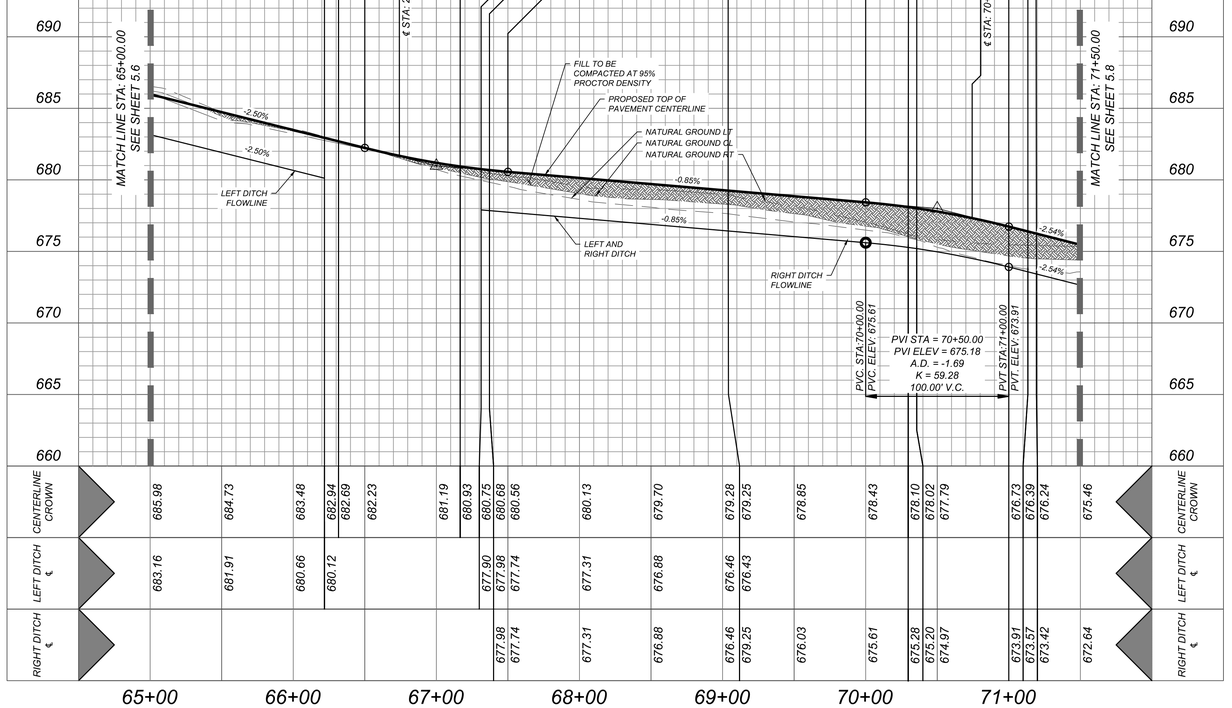
R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT



CULDESAC ELEVATIONS	
STATION	**SPOT ELEVATION**
A	677.51
B	677.28
C	677.05
D	676.81
E	676.58
F	676.35
G	676.21

SOAPBERRY WAY - TREE FOREST LANE
STA: 65+00.00 - 71+50.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP877020 1 - STREET 2

SHEET TITLE:
SOAPBERRY WAY PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER:
5.7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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TRENCH EXCAVATION SAFETY PROTECTION

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BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

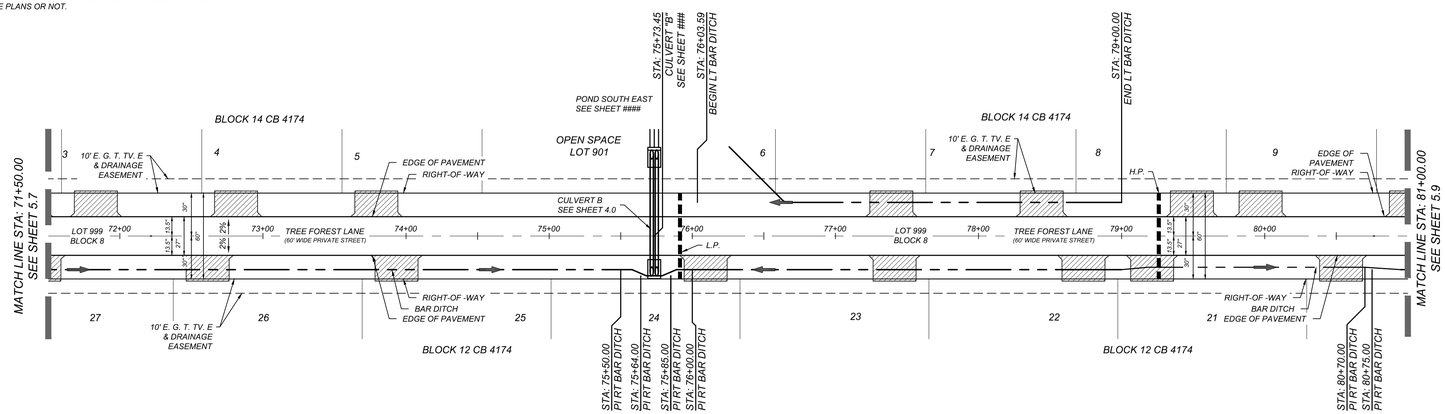
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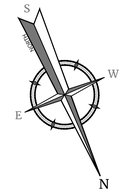
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

LEGEND

R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT

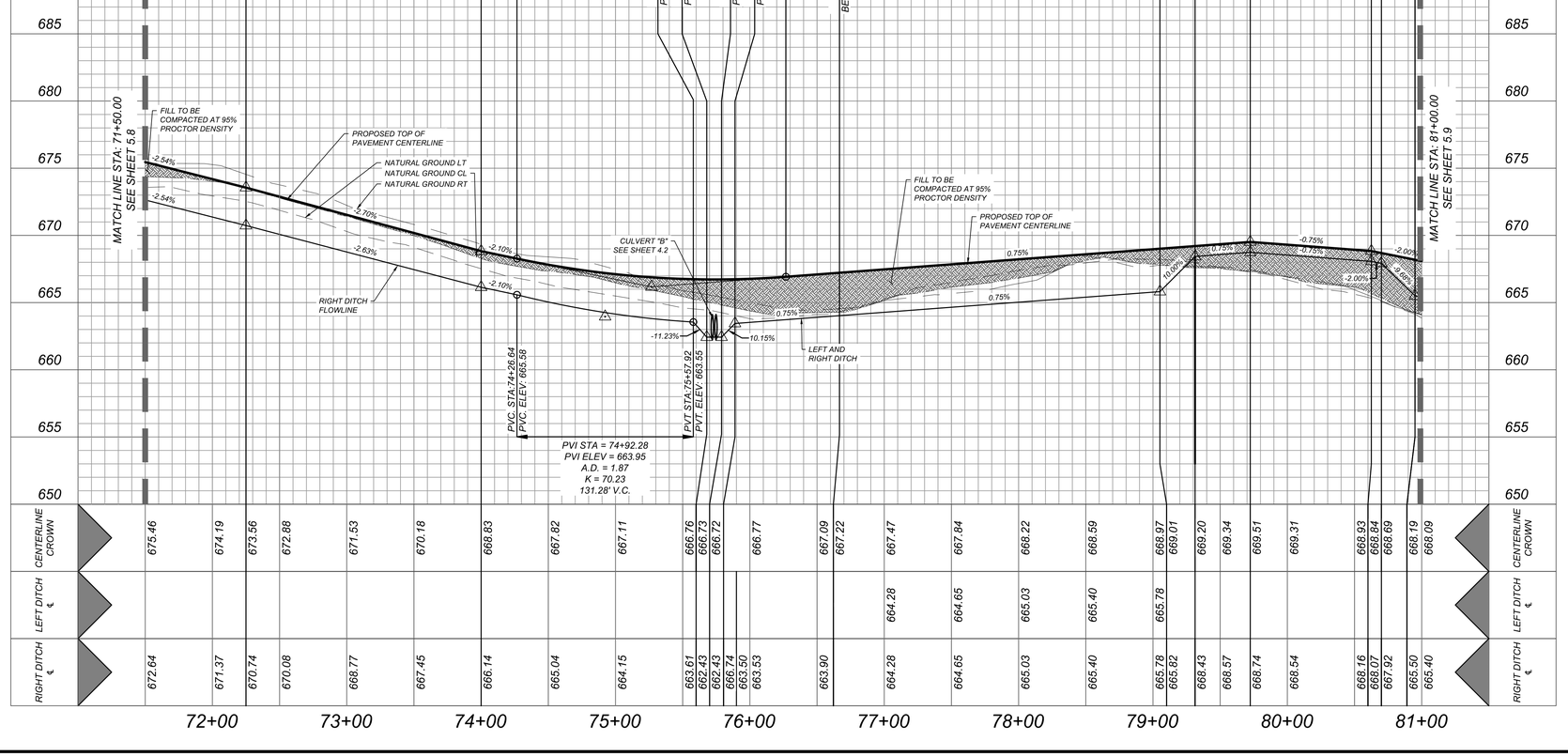




DRWY CULVERTS				
BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
14	6	3.2	10	18
14	7	3.2	10	18
12	22	3.1+4.1	18.8	24
12	23	3.1+4.1	18.8	24
12	24	3.1+4.1	18.8	24
12	25	3.1+4.1	18.8	24
12	26	3.1+4.1	18.8	24
12	27	3.1+4.1	18.8	24

TREE FOREST LANE
STA: 71+50.00 - 81+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: f-14909
TBPLS Firm#: 10194550

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		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - STREET 2

SHEET TITLE: TREE FOREST LANE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.8

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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TRENCH EXCAVATION SAFETY PROTECTION

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BAR DITCH NOTE

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BEXAR COUNTY R.O.W. NOTE

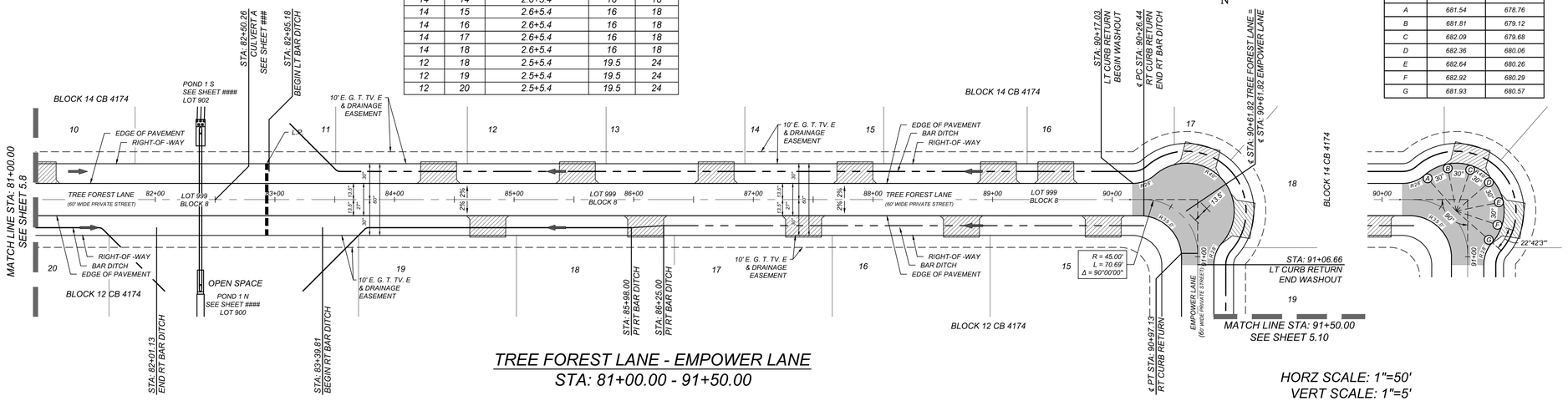
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS				
BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
14	11	2.6+5.4	16	24
14	12	2.6+5.4	16	24
14	13	2.6+5.4	16	18
14	14	2.6+5.4	16	18
14	15	2.6+5.4	16	18
14	16	2.6+5.4	16	18
14	17	2.6+5.4	16	18
14	18	2.6+5.4	16	18
12	18	2.5+5.4	19.5	24
12	19	2.5+5.4	19.5	24
12	20	2.5+5.4	19.5	24

LEGEND

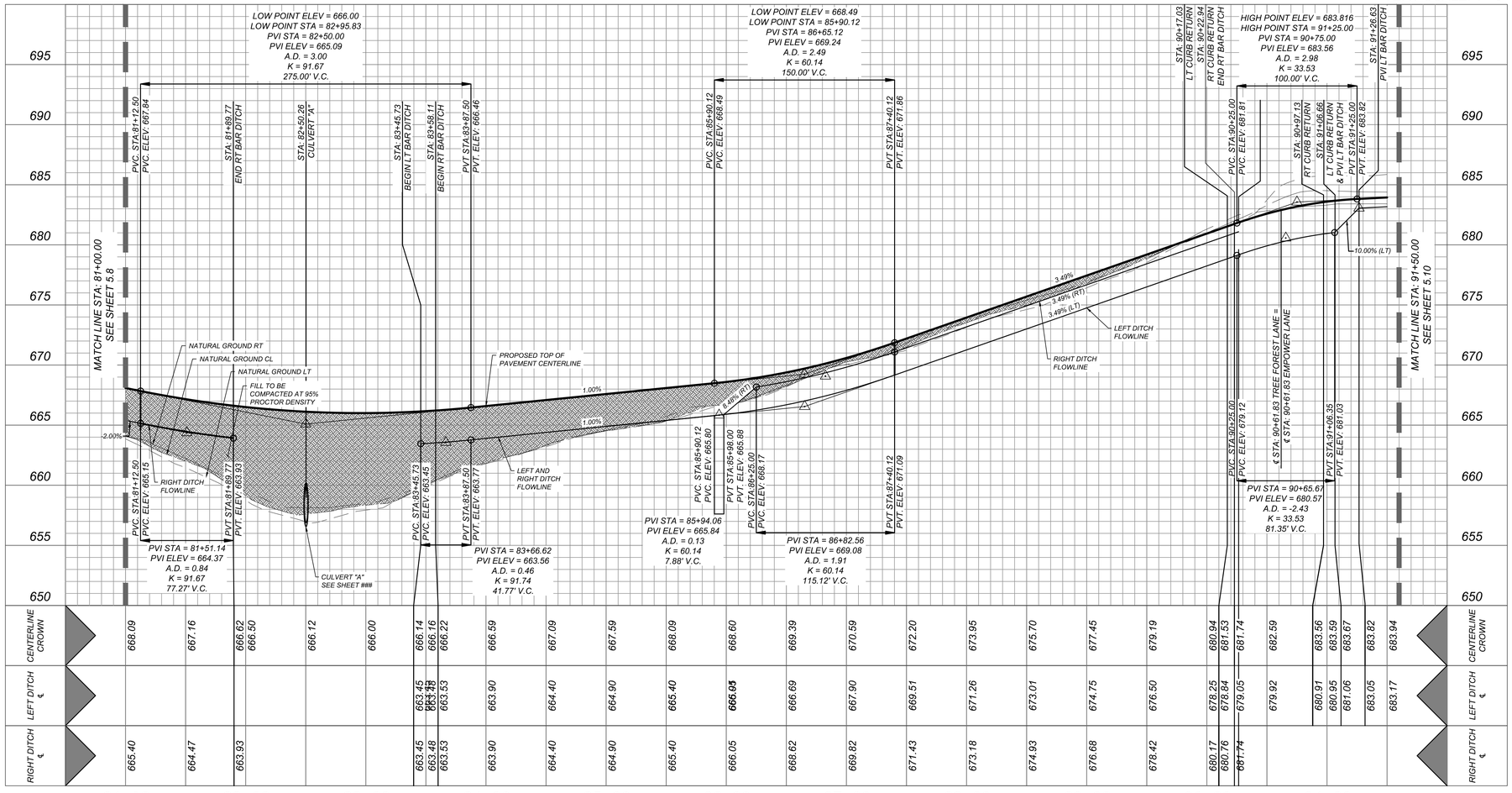
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= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT

CULDESAC ELEVATIONS		
STATION	EDGE OF PAVEMENT	BAR DITCH INVERT
A	681.54	678.76
B	681.81	679.12
C	682.09	679.68
D	682.36	680.06
E	682.64	680.26
F	682.92	680.29
G	681.93	680.57



TREE FOREST LANE - EMPOWER LANE
STA: 81+00.00 - 91+50.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP877020I1 - STREET 2

SHEET TITLE: TREE FOREST LANE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER: 5.9

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\05\ENGN\DWG\PHASE 1\STREETS\STPP877020I1 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

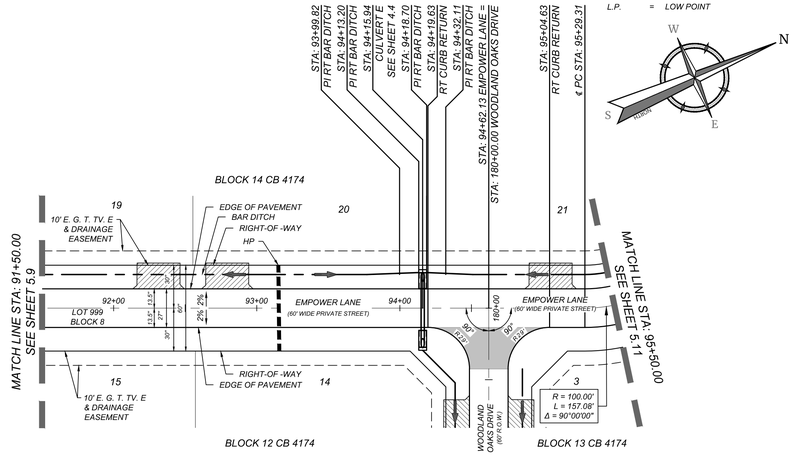
THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

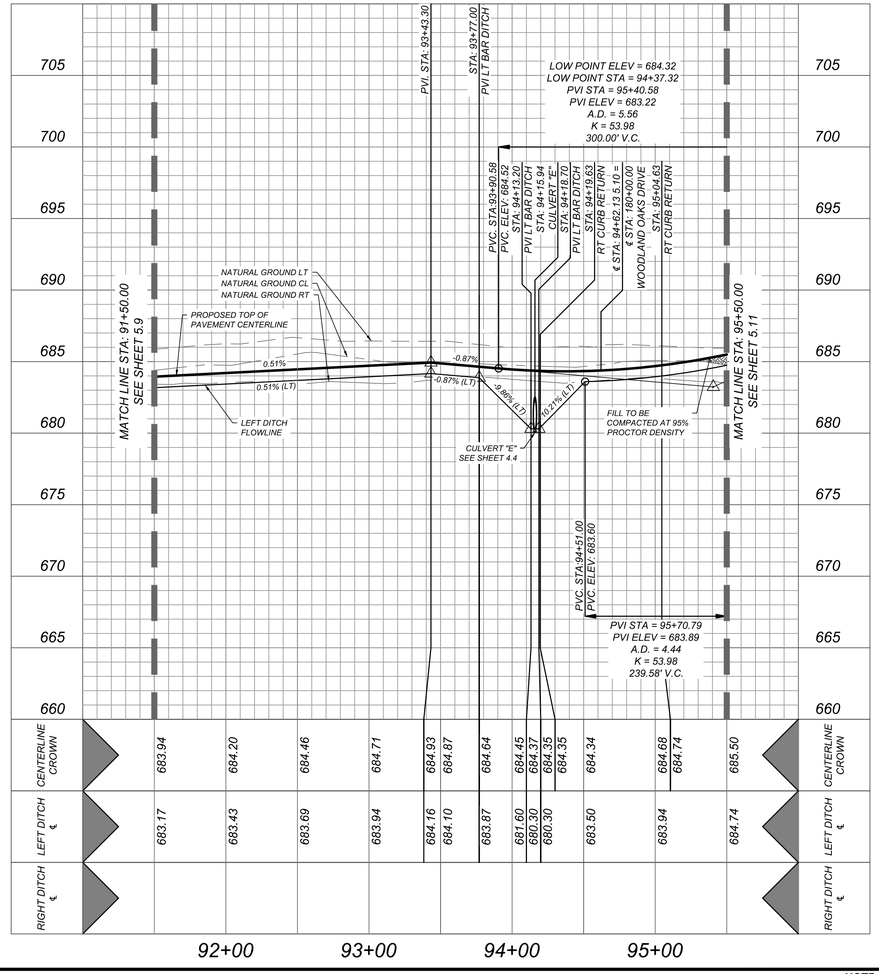
LEGEND

R.O.W. = RIGHT OF WAY
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= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



EMPOWER LANE
STA: 91+50.00 - 95+50.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194500

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPPB770201 - STREET 2

SHEET TITLE: EMPOWER LANE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.10

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877-02\01\05\SIGN\CIVIL\PHASE 1\STREETS\STPPB770201 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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DEMOLITION NOTES

1. LOCATION OF EXISTING UTILITIES AND DRAINAGE SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
2. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR CLEARING THE SITE OF ALL OBSTRUCTIONS THAT EXIST ON THIS SITE PRIOR TO THE START OF CONSTRUCTION OR DURING THE CONSTRUCTION SO AS TO NOT IMPEDE THE CONSTRUCTION PROCESS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL UTILITY COMPANIES REGARDING REMOVAL OF EXISTING SERVICES, POWER POLES TO BE REMOVED, VERIFYING UTILITIES ARE SHUT OFF OR DISCONNECTED, AND ALL POSSIBLE SAFETY PRECAUTIONS HAVE BEEN ENACTED TO ENSURE THE SAFEST ENVIRONMENT FOR ALL PERSONNEL.
4. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY ANY MATERIAL OR EQUIPMENT SCHEDULED FOR REMOVAL TO BE SALVAGED AND REUSED. CONTRACTOR SHALL REPLACE AT HIS EXPENSE ANY DESTROYED MATERIAL OR EQUIPMENT THAT WAS MARKED FOR SALVAGE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS/APPROVALS BEFORE BEGINNING DEMOLITION OR CONSTRUCTION.
6. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, CPS ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT THE WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
7. ALL EXISTING ELECTRIC SERVICES TO BE REMOVED ARE TO BE BY CPS ENERGY AT OWNER'S EXPENSE, CONTRACTOR SHALL COORDINATE WITH CPS ENERGY AND OWNER AS REQUIRED BEFORE REMOVAL OF ANY ELECTRIC FACILITIES.
8. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT AND OWNER FOR ANY TREE REMOVAL AND/ OR REPLACEMENT OF EXISTING ON SITE IRRIGATION PIPING PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL NOT START DEMOLITION OF ANY FEATURE SHOWN ON THIS DRAWING UNTIL A STORM WATER POLLUTION PREVENTION PLAN IS INSTALLED AND COMPLETED.
10. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH ALL REGULATIONS GOVERNING THE DEMOLITION, REMOVAL, TRANSPORTATION, AND DISPOSAL, OF ALL DEMOLISHED OR UNWANTED MATERIAL.
11. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS FOR DEMOLITION.
12. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL PROPERTY CORNERS AND SHALL HAVE AT HIS EXPENSE, ALL CORNERS REPLACED WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES.
13. CONTRACTOR SHALL NOT DEMOLISH ANY SAWS WATER OR SANITARY SEWER LINE WITHOUT SAWS APPROVAL.
14. CONTRACTOR SHALL INSTALL A MINIMUM 2-FOOT HIGH SILT FENCE ALONG THE PERIMETER OF THE CONSTRUCTION/DEMOLITION LIMITS. PROTECTIVE FENCE SHALL BE IN PLACE BEFORE ANY DEMOLITION OR CONSTRUCTION BEGINS AND SHALL REMAIN IN PLACE AND IN GOOD REPAIR THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL TAKE SPECIAL CARE TO INSTALL VEHICULAR BARRIERS AND FENCING TO PROHIBIT VEHICULAR AND PEDESTRIAN ACCESS-TO THAT AREA. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO ENSURE THAT FENCING AND BARRIERS INSTALLED ARE ADEQUATE.

EXISTING UTILITY NOTES:

1. *THIS UTILITY PLAN HAS BEEN PREPARED TO THE BEST OF OUR ABILITY USING THE DATA AVAILABLE. EXISTING UTILITY DATA SHOWN ON THIS LAYOUT WAS OBTAINED FROM A SURVEY OF THE VISIBLE FEATURES AT THE SITE AND PUBLIC RECORD MAPS OBTAINED FROM UTILITY COMPANIES.*
2. *IT IS ESSENTIAL THAT 48 HOURS PRIOR TO CONSTRUCTION ALL UTILITY COMPANIES BE NOTIFIED TO LOCATE AND TAG THEIR UNDERGROUND FACILITIES PRIOR TO EXCAVATION. (SEE COORDINATION NOTES ON THIS SHEET)*
3. *THE CONTRACTOR NEEDS TO ALLOW FOR THE POSSIBILITY OF UNDETECTED UNDERGROUND UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. ALSO, THE CONTRACTOR MUST ALLOW FOR CHANGES DUE TO UTILITIES BEING IN LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE UTILITY RECORD DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND EXPOSING CONFLICTS PRIOR TO CONSTRUCTION.*
4. *LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF SAME DURING CONSTRUCTION WHETHER SHOWN ON THE PLANS OR NOT.*

GRADING NOTES:

1. *ALL GRADES AND CONTOURS SHOWN ARE FINAL, TOP OF FINISHED SURFACE ELEVATIONS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL SUBTRACT THICKNESS OF PAVEMENT, BASE, TOP SOIL, SOD, ETC. TO ACHIEVE SUBGRADE ELEVATIONS.*
2. *POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.*
3. *NO ABRUPT CHANGE OF GRADE SHALL OCCUR IN THE ROADWAYS.*
4. *CONTRACTOR SHALL CONSTRUCT TO OBTAIN GRADES SHOWN HEREON ± ONE-TENTH (0.10) FOOT.*
5. *ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND LANDSCAPING PLANS.*
6. *UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.*
7. *ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL APPLICABLE BEXAR COUNTY PUBLIC WORKS STANDARD SPECIFICATIONS (LATEST EDITION) AND CPS ELECTRIC SERVICE STANDARDS (LATEST EDITION).*
8. *CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL OR BETTER CONDITION ANY DAMAGES DONE TO EXISTING BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, SIDEWALKS, OR DRIVEWAYS (NO SEPARATE PAY ITEM).*
9. *DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.*
10. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL NECESSARY UTILITY COMPANIES FOR PROVIDING TEMPORARY UTILITY SERVICES DURING CONSTRUCTION. THE CONTRACTOR SHALL PAY FOR ALL TEMPORARY UTILITY SERVICES.*
11. *CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.*
12. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS, AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.*
13. *ALL EXCAVATION IS UNCLASSIFIED.*
14. *ALL EXCAVATIONS AND BACKFILLING OF UTILITY TRENCHES SHALL BE AS PER CONTRACT SPECIFICATIONS NO. 02221 -- EARTHWORK. ALL BACKFILL MUST BE IN COMPACTED 12 - INCH LIFTS MAXIMUM, AND NO WATER JETTING IS ALLOWED.*
15. *SEE CIVIL DETAIL SHEETS AND TxDOT DETAIL SHEETS FOR APPLICABLE DETAILS.*
16. *ALL CONSTRUCTION AREAS WITHIN THE SITE SHALL BE STRIPPED OF ALL VEGETATION AND LOOSE TOPSOIL. ANY POCKETS OF DEBRIS ENCOUNTERED SHOULD ALSO BE REMOVED.*
17. *CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO DEVELOP THE CONTRACTOR'S PLANS TO IMPLEMENT THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S PLANS SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.*
18. *REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIFICATIONS AND CONTRACT INFORMATION.*
19. *REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE INFORMATION AND CONSTRUCTION GUIDELINES.*
20. *ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 2% UNLESS OTHERWISE SHOWN.*
21. *TREE PROTECTION SHALL BE PERFORMED IN ACCORDANCE WITH TREE PROTECTION PLAN AND SPECIFICATIONS.*

CAUTION!!:

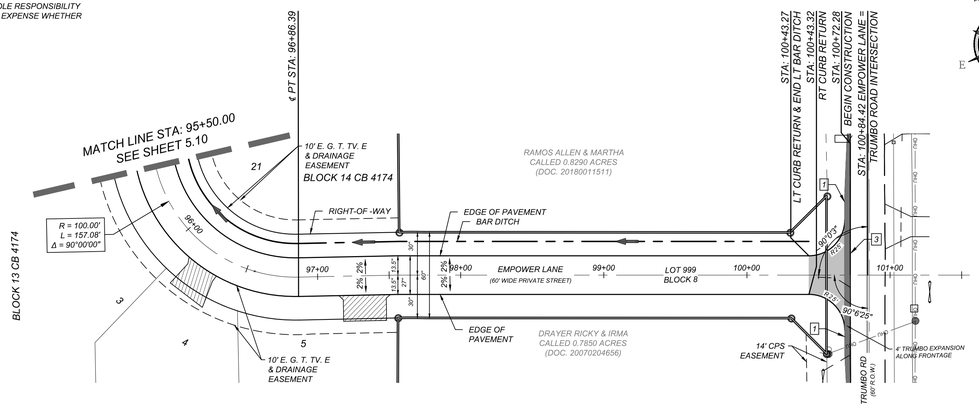
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LEGEND

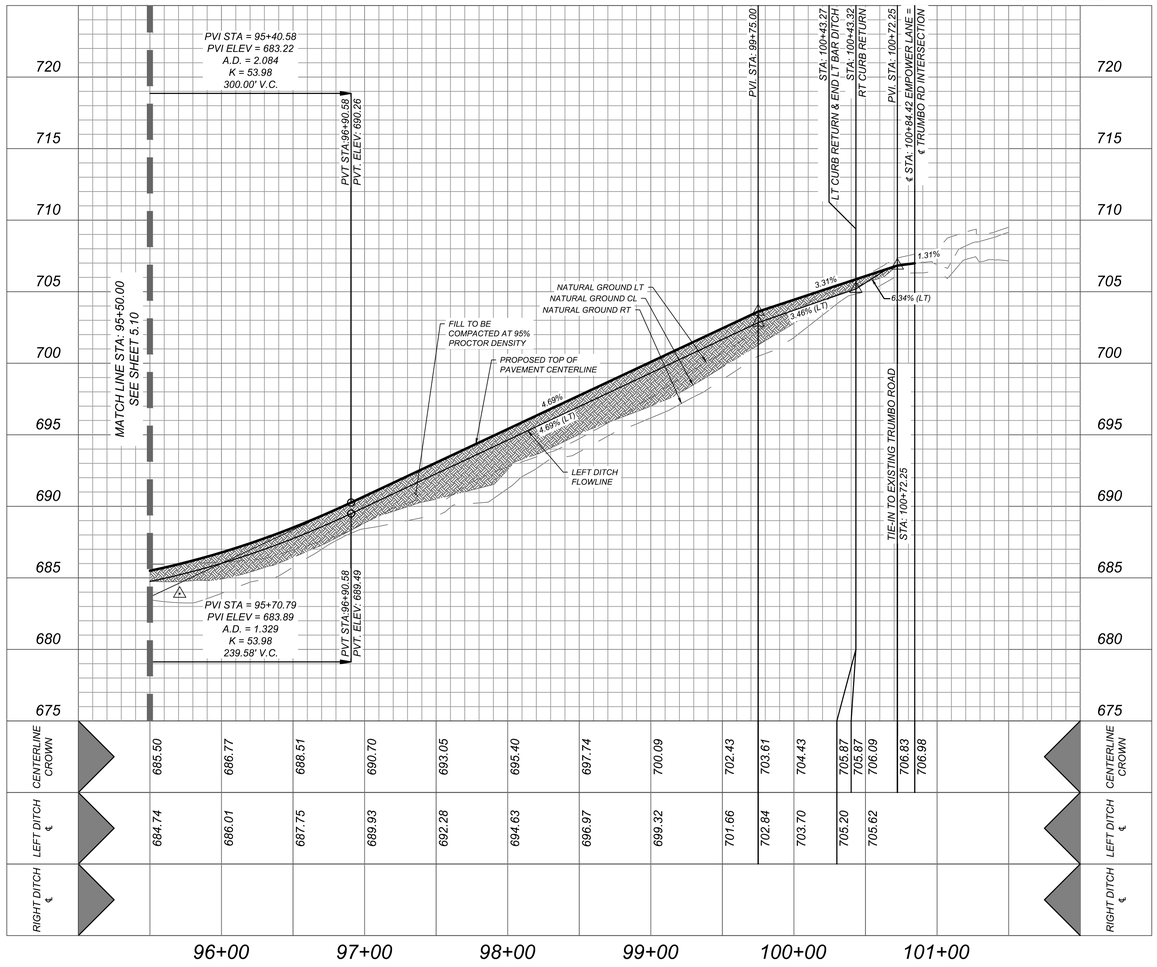
R.O.W. E.G.T.V.E.	=	RIGHT OF WAY GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
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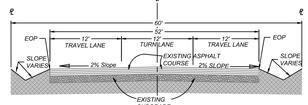
PROPOSED KEY NOTES

1. 4" SOLID YELLOW LINE (TYPICAL PER TxDOT)
3. PAVEMENT JUNCTION (SEE DETAIL 4/C5.0)

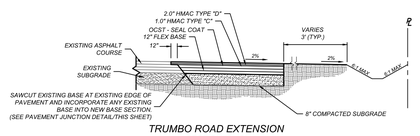
EMPOWER LANE
STA: 95+50.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

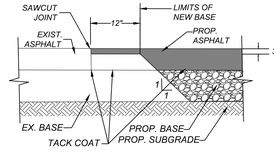




EXISTING STREET
SECTION "A-A"
(NOT TO SCALE)



TRUMBO ROAD EXTENSION
SECTION "B - B"
(NOT TO SCALE)



PAVEMENT JUNCTION
(NOT-TO-SCALE)

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REV	DESCRIPTION	DRAWN BY	DATE

BID SET
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FOREST OAKS
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BEXAR COUNTY
TEXAS

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP877020 1 - STREET 2

SHEET TITLE:
EMPOWER LANE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER:
5.11

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP877020 1 - STREET 2.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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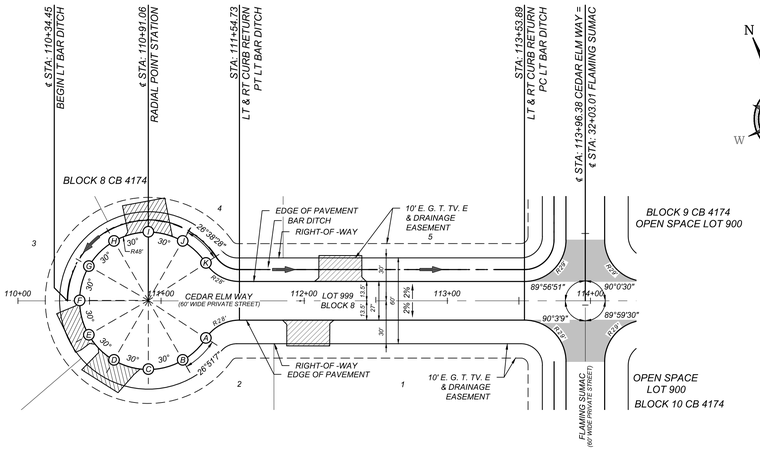
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LEGEND

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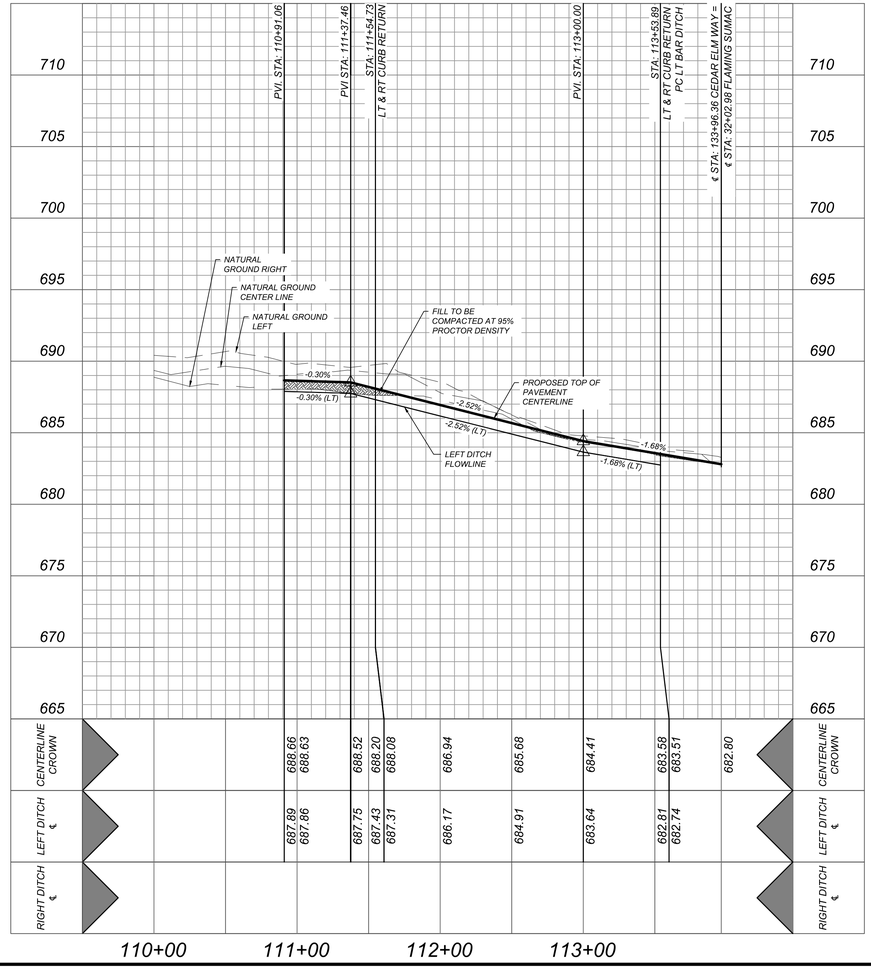
CULDESAC ELEVATIONS		
STATION	EDGE OF PAVEMENT	BAR DITCH INVERT
A	687.85	
B	687.84	
C	687.84	
D	687.84	
E	687.83	
F	687.83	687.44
G	687.83	687.45
H	687.84	687.45
I	687.84	687.46
J	687.85	687.46
K	687.85	687.46



CEDAR ELM WAY

STA: 110+00.00 - 113+96.39

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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STATE OF TEXAS
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103777
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PROFESSIONAL ENGINEER

BID SET
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FOREST OAKS
MHC (PUD)
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201

SHEET TITLE:
CEDAR ELM WAY PLAN & PROFILE SHEET (SHEET 1 OF 3)

SHEET NUMBER:
5.12

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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CAUTION!!:

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BEXAR COUNTY R.O.W. NOTE

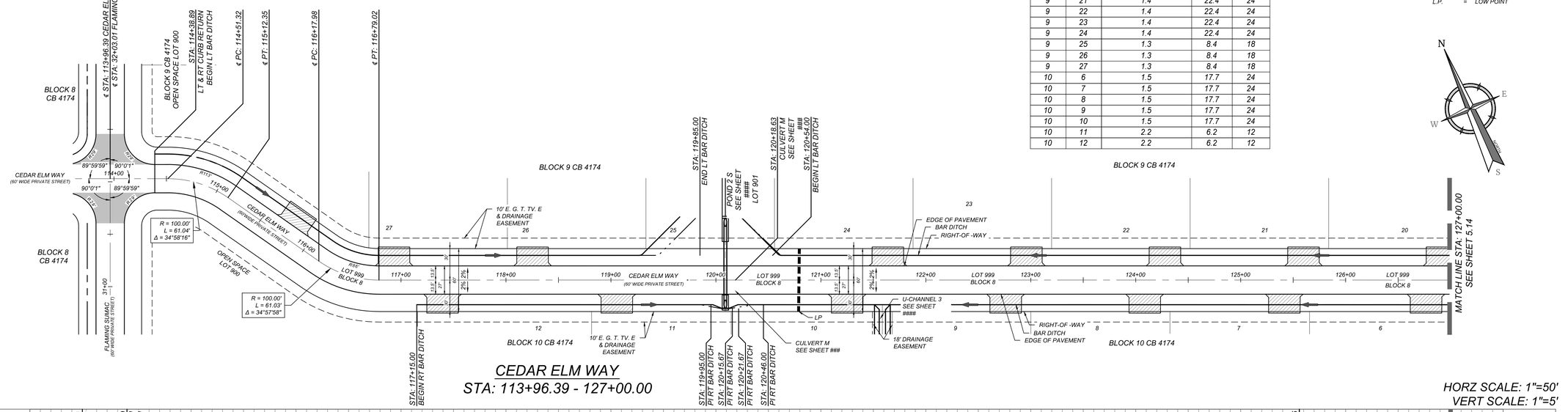
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

LEGEND

R.O.W.	=	RIGHT OF WAY,
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT

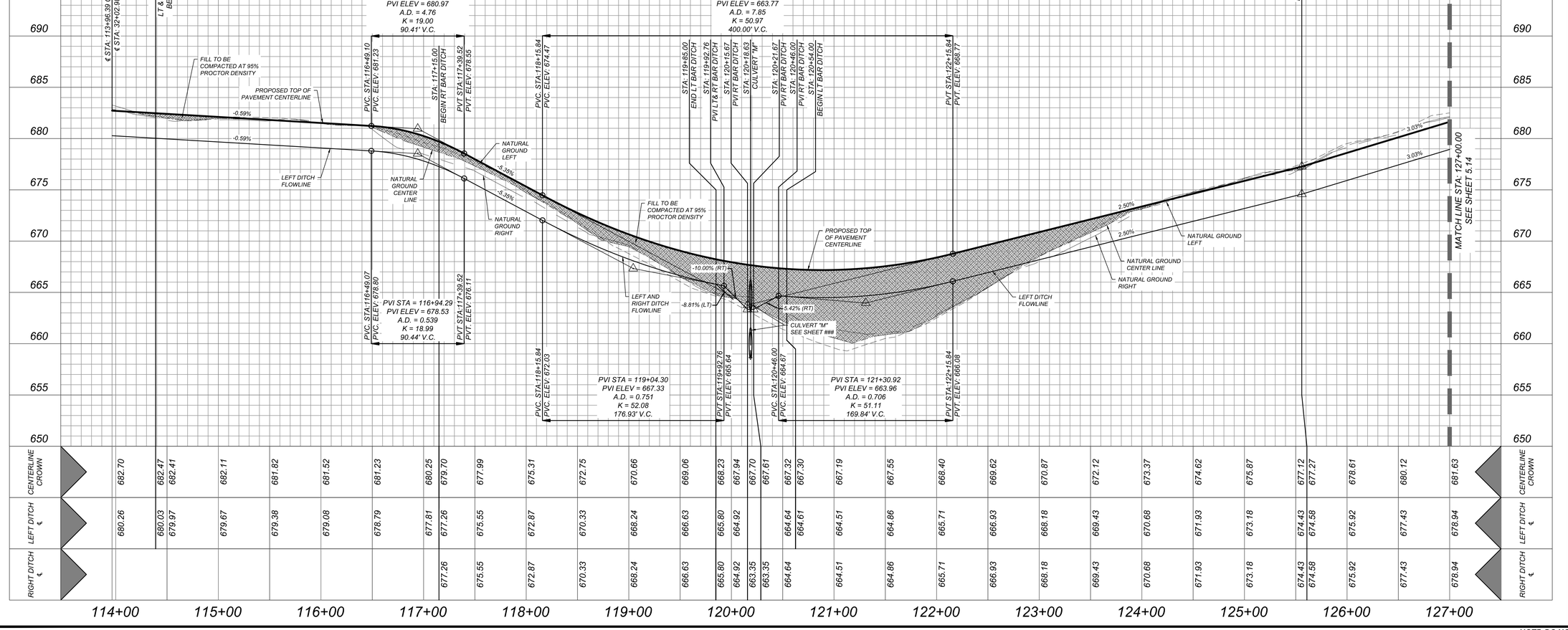
DRWY CULVERTS

BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
9	20	1.4	22.4	24
9	21	1.4	22.4	24
9	22	1.4	22.4	24
9	23	1.4	22.4	24
9	24	1.4	22.4	24
9	25	1.3	8.4	18
9	26	1.3	8.4	18
9	27	1.3	8.4	18
10	6	1.5	17.7	24
10	7	1.5	17.7	24
10	8	1.5	17.7	24
10	9	1.5	17.7	24
10	10	1.5	17.7	24
10	11	2.2	6.2	12
10	12	2.2	6.2	12



CEDAR ELM WAY
STA: 113+96.39 - 127+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER M. GARZA
103911
LICENSED PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14959
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201

SHEET TITLE:
CEDAR ELM WAY PLAN & PROFILE (SHEET 2 OF 3)

SHEET NUMBER:
5.13

L:\877\02\01\05\SIGN\DWL\PHASE 1\STREETS\STPP8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

CAUTION!!:

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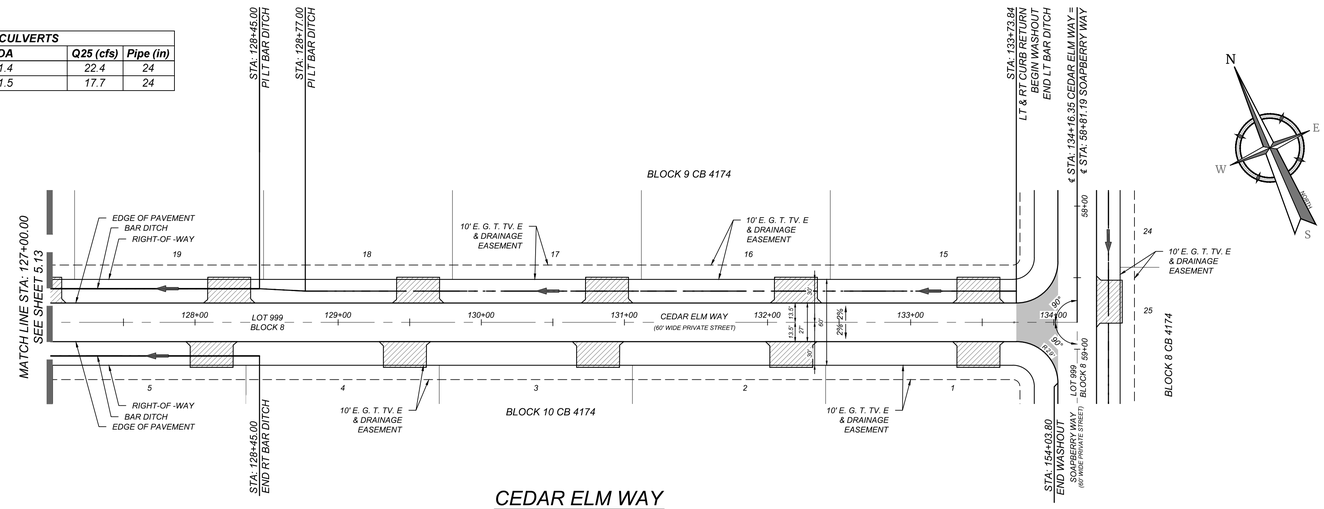
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS				
BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
9	19	1.4	22.4	24
10	5	1.5	17.7	24

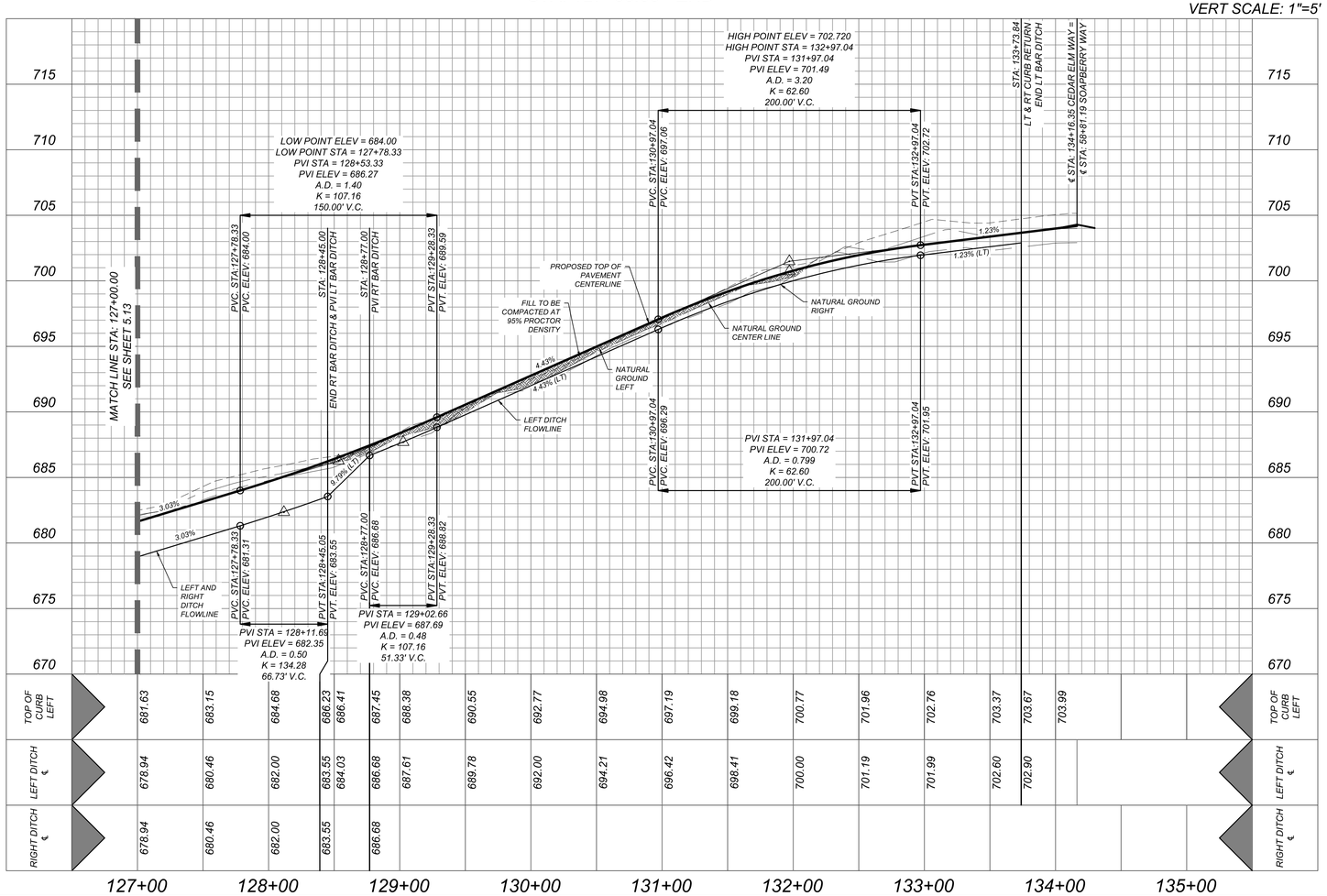
LEGEND

R.O.W. = RIGHT OF WAY
E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



CEDAR ELM WAY
STA: 127+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS 114643 LICENSED PROFESSIONAL ENGINEER
BIDSET NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194350

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP87702D1

SHEET TITLE: CEDAR ELM WAY PLAN & PROFILE (SHEET 3 OF 3)

SHEET NUMBER: 5.14

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP87702D1.DWG, By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

BAR DITCH NOTE

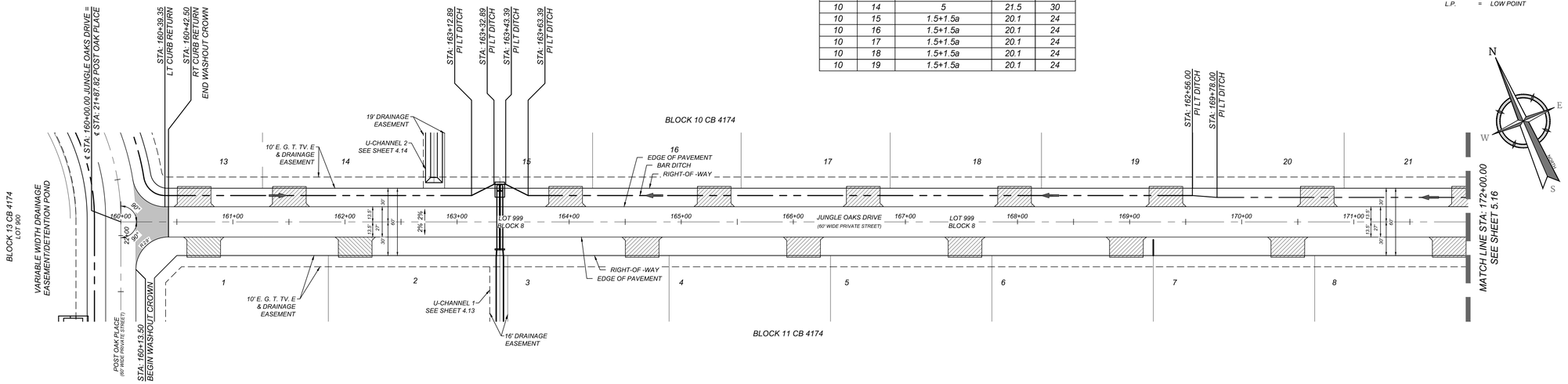
THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

DRWY CULVERTS

BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
10	13	5	21.5	30
10	14	5	21.5	30
10	15	1.5+1.5a	20.1	24
10	16	1.5+1.5a	20.1	24
10	17	1.5+1.5a	20.1	24
10	18	1.5+1.5a	20.1	24
10	19	1.5+1.5a	20.1	24

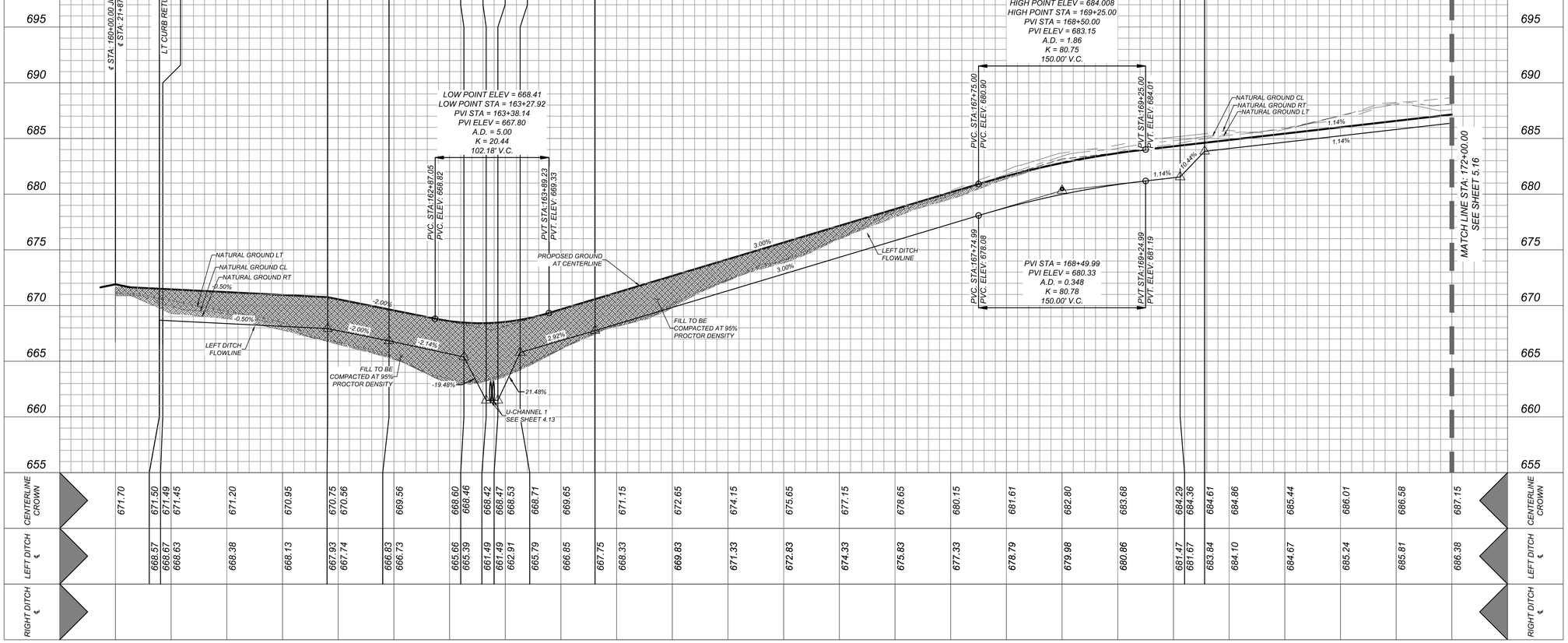
LEGEND

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= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



JUNGLE OAKS DRIVE
STA: 160+00.00 - 172+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - STREET 3 & 5

SHEET TITLE: JUNGLE OAKS DRIVE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.15

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201 - STREET 3 & 5.DWG|By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

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BAR DITCH NOTE

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CAUTION!!:

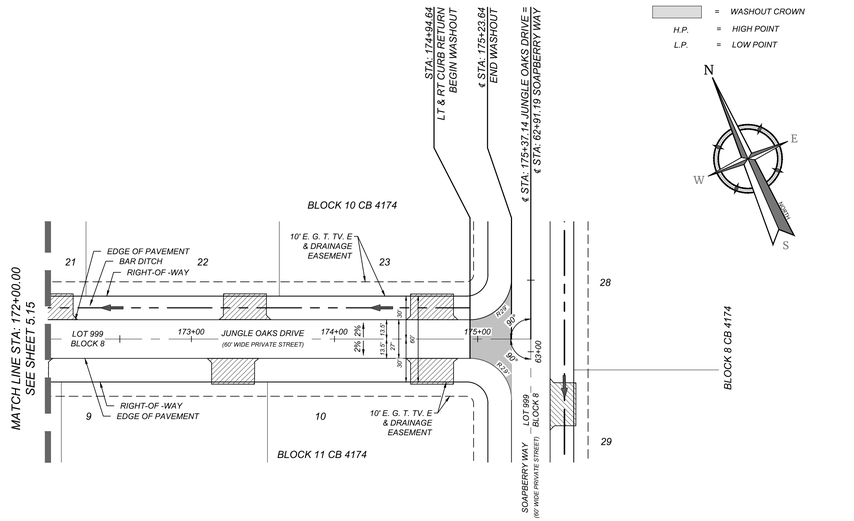
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BEXAR COUNTY R.O.W. NOTE

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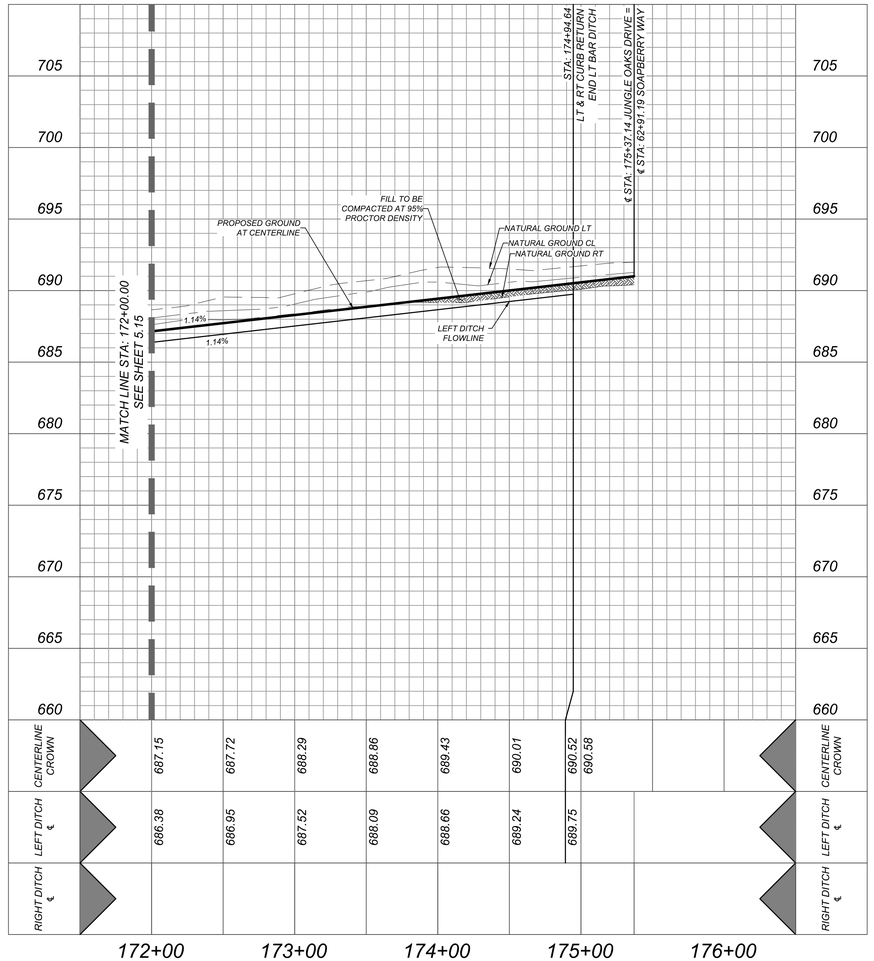
LEGEND

R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT



JUNGLE OAKS DRIVE
STA: 172+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR
CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design

SAN ANTONIO (KFW)
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Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14959
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: STPP870201 - STREET 3 & 5

SHEET TITLE: JUNGLE OAKS DRIVE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER: 5.16

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP870201 - STREET 3 & 5.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

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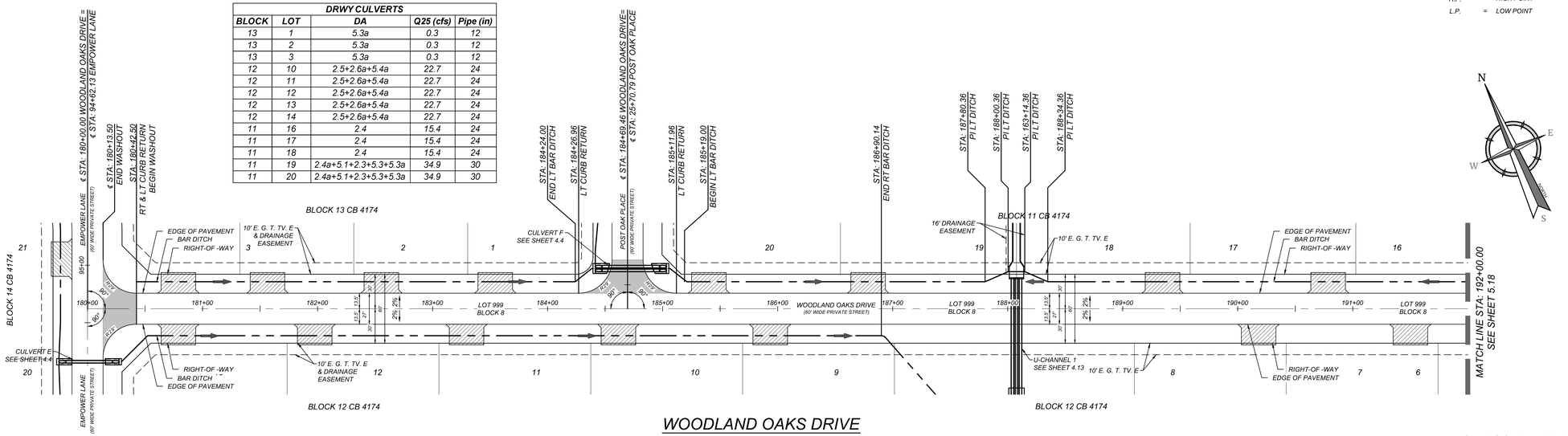
BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

LEGEND

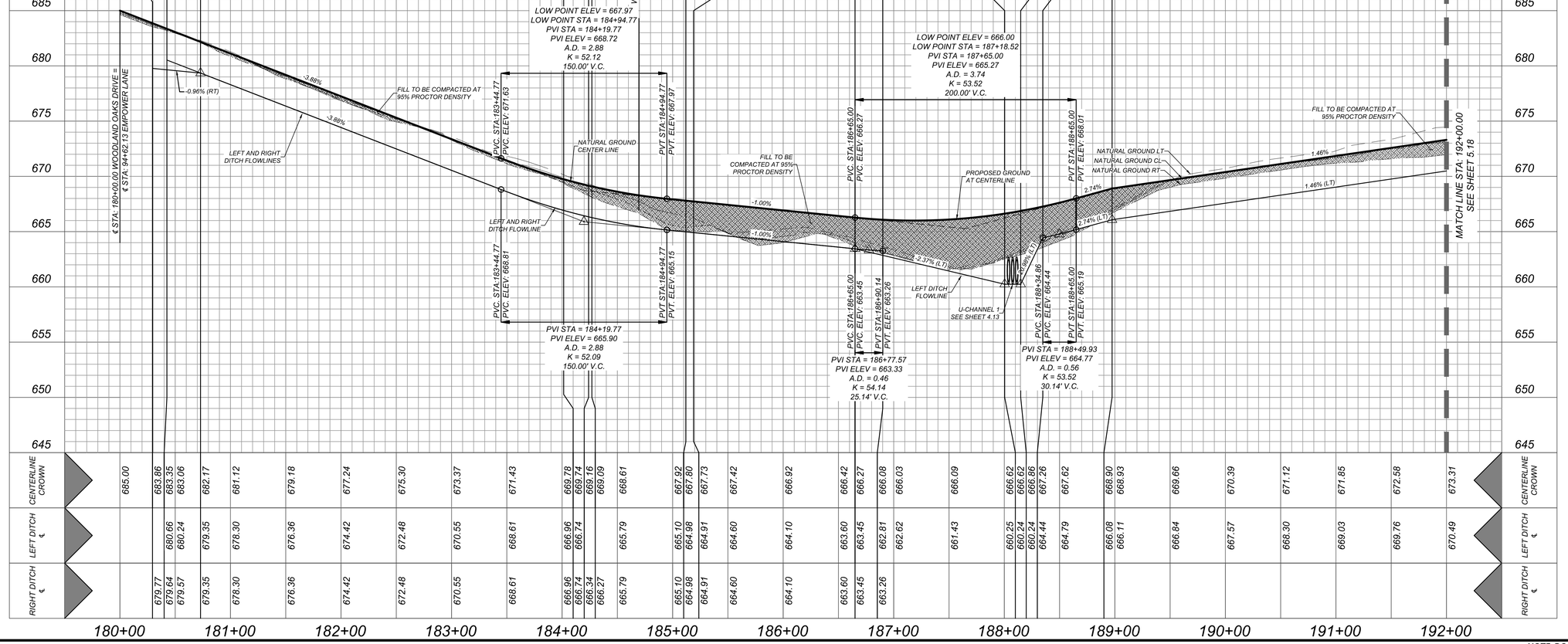
- R.O.W. = RIGHT OF WAY
- E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
- = FLOW ARROW
- = WASHOUT CROWN
- H.P. = HIGH POINT
- L.P. = LOW POINT

DRWY CULVERTS				
BLOCK	LOT	DA	Q25 (cfs)	Pipe (in)
13	1	5.3a	0.3	12
13	2	5.3a	0.3	12
13	3	5.3a	0.3	12
12	10	2.5+2.6a+5.4a	22.7	24
12	11	2.5+2.6a+5.4a	22.7	24
12	12	2.5+2.6a+5.4a	22.7	24
12	13	2.5+2.6a+5.4a	22.7	24
12	14	2.5+2.6a+5.4a	22.7	24
11	16	2.4	15.4	24
11	17	2.4	15.4	24
11	18	2.4	15.4	24
11	19	2.4a+5.1+2.3+5.3+5.3a	34.9	30
11	20	2.4a+5.1+2.3+5.3+5.3a	34.9	30



WOODLAND OAKS DRIVE
STA: 180+00.00 - 192+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



	180+00	180+13.50	180+29.46	180+42.50	180+72.94	181+00	181+12	182+00	183+00	183+44.77	184+00	184+01.40	184+19.77	184+24.00	184+26.96	184+69.46	184+94.77	185+00	185+11.96	185+19.00	186+00	186+65.00	186+90.14	187+00	188+00	188+00.36	188+14.86	188+34.86	188+49.93	188+65.00	189+00	190+00	191+00	192+00
CENTERLINE CROWN	685.00	683.86	683.35	683.06	682.17	681.12	679.18	677.24	675.30	673.37	671.43	669.78	669.74	669.16	669.09	668.61	667.92	667.80	667.73	667.42	666.92	666.42	666.27	666.08	666.03	666.09	666.62	666.62	666.86	667.26	667.62	668.90	668.93	669.66	670.39	671.12	671.85	672.58	673.31
LEFT DITCH ℄		680.66	680.24	679.35	678.30	676.36	674.42	672.48	670.55	668.61	666.96	666.74				665.79	665.10	664.98	664.91	664.60	664.10	663.60	663.45	662.81	662.62	661.43	660.25	660.24	660.24	664.44	664.79	666.08	666.11	666.84	667.57	668.30	669.03	669.76	670.49	
RIGHT DITCH ℄		679.77	679.64	679.57	679.35	678.30	676.36	674.42	672.48	670.55	668.61	666.96	666.74	666.34	666.27	665.79	665.10	664.98	664.91	664.60	664.10	663.60	663.45	663.26																

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - STREET 3 & 5

SHEET TITLE: WOODLAND OAKS DRIVE PLAN & PROFILE (SHEET 1 OF 2)

SHEET NUMBER: 5.17

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP8770201 - STREET 3 & 5.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

BAR DITCH NOTE

THE VERTICAL CURVE PROFILE OF THE STREET IS TO BE FOLLOWED IN THE CONSTRUCTION OF THE BAR-DITCH

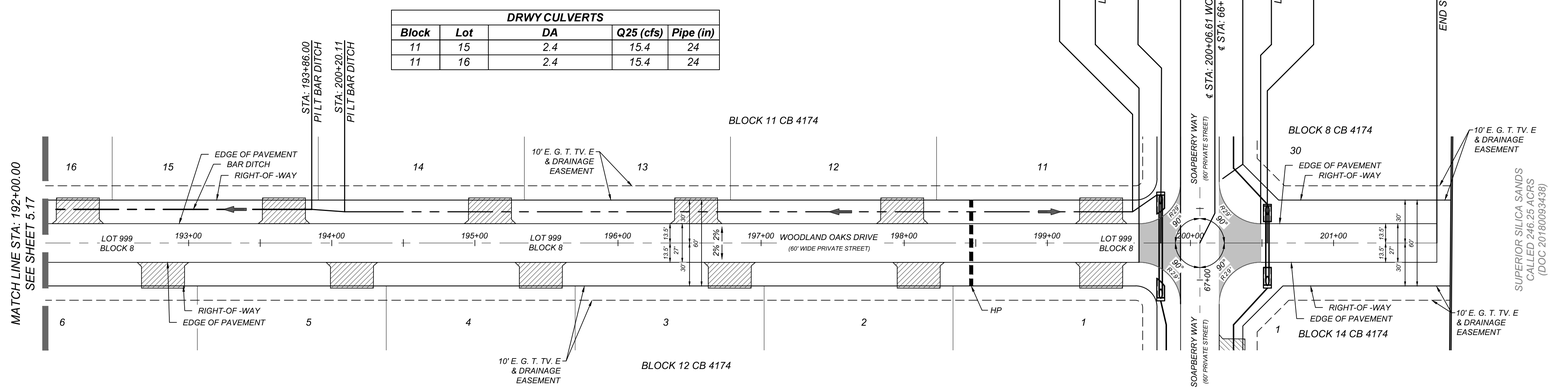
CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

BEXAR COUNTY R.O.W. NOTE

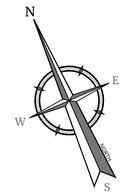
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

DRWY CULVERTS				
Block	**Lot**	**DA**	**Q25 (cfs)**	**Pipe (in)**
11	15	2.4	15.4	24
11	16	2.4	15.4	24



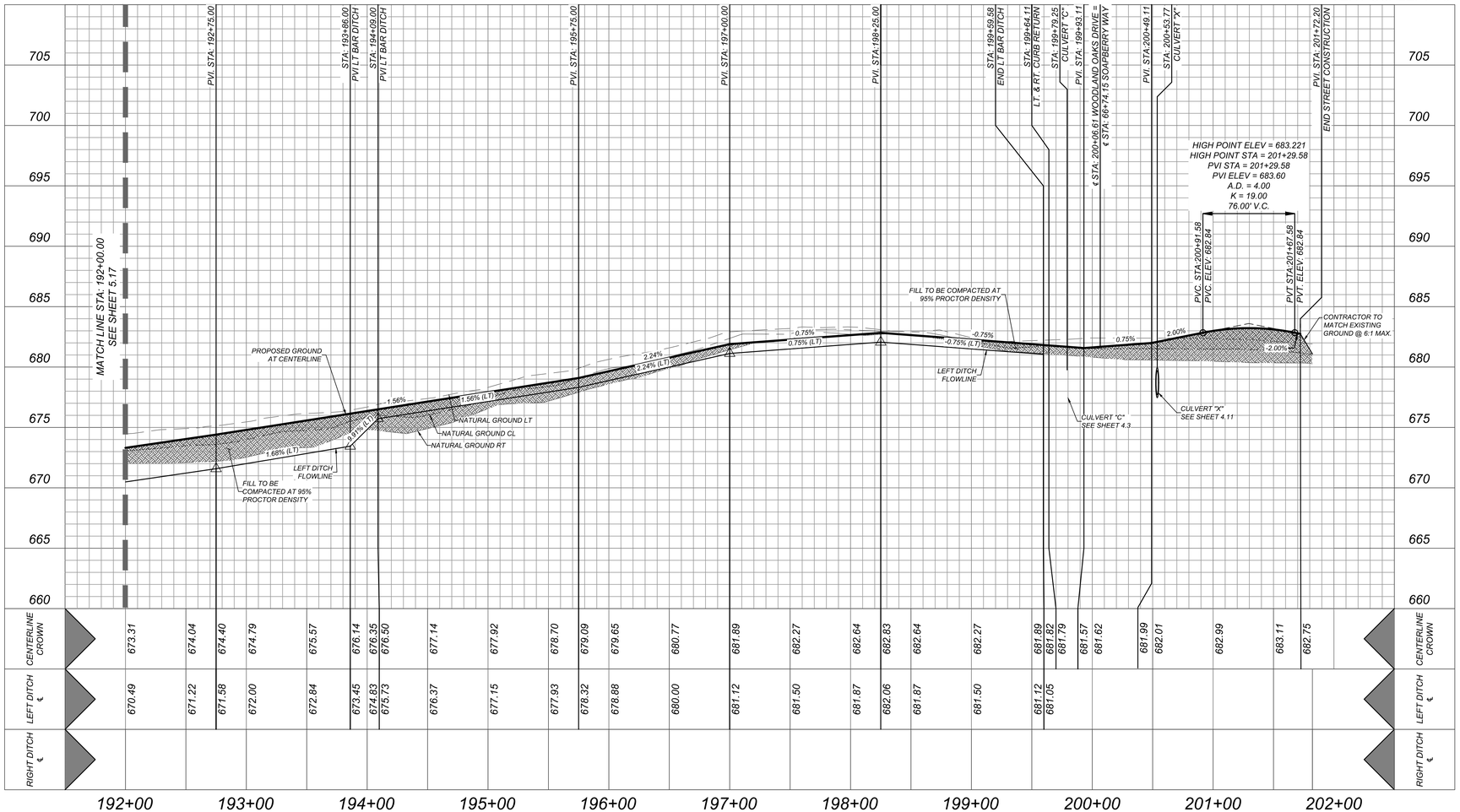
LEGEND

R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT



WOODLAND OAKS DRIVE
STA: 192+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP877020I1 - STREET 3 & 5

SHEET TITLE: WOODLAND OAKS DRIVE PLAN & PROFILE (SHEET 2 OF 2)

SHEET NUMBER: 5.18

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPP877020I1 - STREET 3 & 5.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

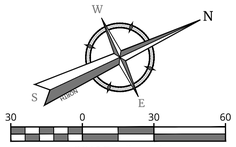
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

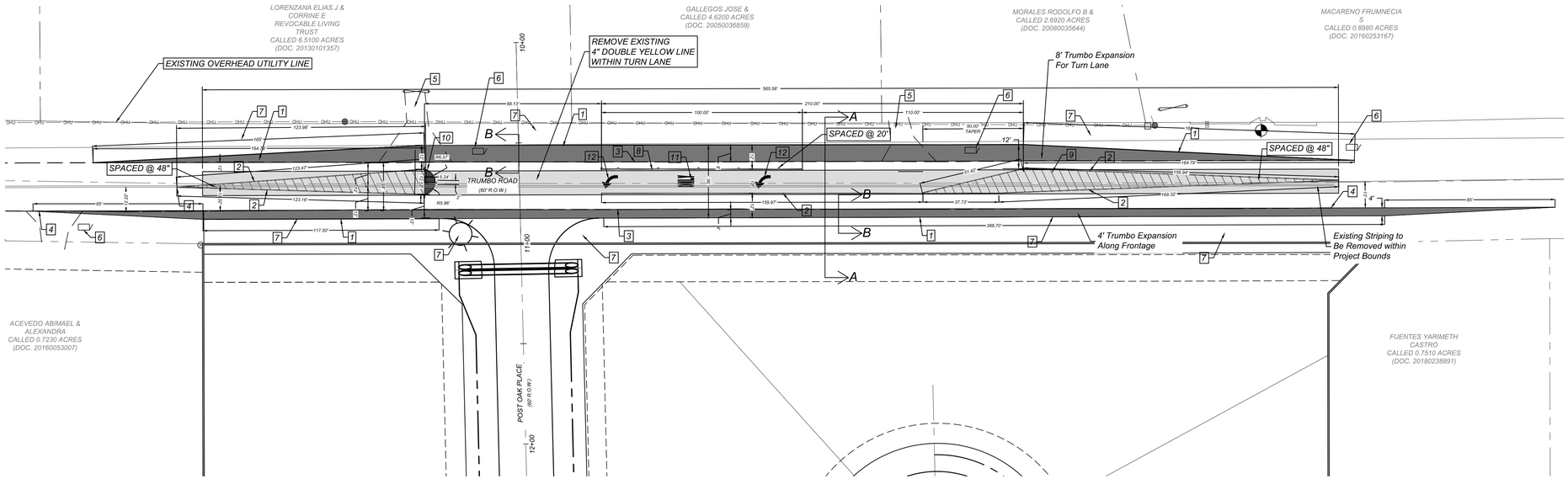
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.



LEGEND

R.O.W. = RIGHT OF WAY
E.G.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= FLOW ARROW
= WASHOUT CROWN
H.P. = HIGH POINT
L.P. = LOW POINT



DEMOLITION NOTES

1. LOCATION OF EXISTING UTILITIES AND DRAINAGE SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
2. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR CLEARING THE SITE OF ALL OBSTRUCTIONS THAT EXIST ON THIS SITE PRIOR TO THE START OF CONSTRUCTION OR DURING THE CONSTRUCTION SO AS TO NOT IMPEDE THE CONSTRUCTION PROCESS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL UTILITY COMPANIES REGARDING REMOVAL OF EXISTING SERVICES, POWER POLES TO BE REMOVED, VERIFYING UTILITIES ARE SHUT OFF OR DISCONNECTED, AND ALL POSSIBLE SAFETY PRECAUTIONS HAVE BEEN ENACTED TO ENSURE THE SAFEST ENVIRONMENT FOR ALL PERSONNEL.
4. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY ANY MATERIAL OR EQUIPMENT SCHEDULED FOR REMOVAL TO BE SALVAGED AND REUSED. CONTRACTOR SHALL REPLACE AT HIS EXPENSE ANY DESTROYED MATERIAL OR EQUIPMENT THAT WAS MARKED FOR SALVAGE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS/APPROVALS BEFORE BEGINNING DEMOLITION OR CONSTRUCTION.
6. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192,181, CPS ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT THE WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
7. ALL EXISTING ELECTRIC SERVICES TO BE REMOVED ARE TO BE BY CPS ENERGY AT OWNER'S EXPENSE. CONTRACTOR SHALL COORDINATE WITH CPS ENERGY AND OWNER AS REQUIRED BEFORE REMOVAL OF ANY ELECTRIC FACILITIES.
8. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT AND OWNER FOR ANY TREE REMOVAL AND/ OR REPLACEMENT OF EXISTING ON SITE IRRIGATION PIPING PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL NOT START DEMOLITION OF ANY FEATURE SHOWN ON THIS DRAWING UNTIL A STORM WATER POLLUTION PREVENTION PLAN IS INSTALLED AND COMPLETED.
10. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH ALL REGULATIONS GOVERNING THE DEMOLITION, REMOVAL, TRANSPORTATION, AND DISPOSAL, OF ALL DEMOLISHED OR UNWANTED MATERIAL.
11. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS FOR DEMOLITION.
12. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL PROPERTY CORNERS AND SHALL HAVE AT HIS EXPENSE, ALL CORNERS REPLACED WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES.
13. CONTRACTOR SHALL NOT DEMOLISH ANY SAWS WATER OR SANITARY SEWER LINE WITHOUT SAWS APPROVAL.
14. CONTRACTOR SHALL INSTALL A MINIMUM 2-FOOT HIGH SILT FENCE ALONG THE PERIMETER OF THE CONSTRUCTION/DEMOLITION LIMITS. PROTECTIVE FENCE SHALL BE IN PLACE BEFORE ANY DEMOLITION OR CONSTRUCTION BEGINS AND SHALL REMAIN IN PLACE AND IN GOOD REPAIR THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL TAKE SPECIAL CARE TO INSTALL VEHICULAR BARRIERS AND FENCING TO PROHIBIT VEHICULAR AND PEDESTRIAN ACCESS-TO THAT AREA. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO ENSURE THAT FENCING AND BARRIERS INSTALLED ARE ADEQUATE.

EXISTING UTILITY NOTES:

1. *THIS UTILITY PLAN HAS BEEN PREPARED TO THE BEST OF OUR ABILITY USING THE DATA AVAILABLE. EXISTING UTILITY DATA SHOWN ON THIS LAYOUT WAS OBTAINED FROM A SURVEY OF THE VISIBLE FEATURES AT THE SITE AND PUBLIC RECORD MAPS OBTAINED FROM UTILITY COMPANIES.*
2. *IT IS ESSENTIAL THAT 48 HOURS PRIOR TO CONSTRUCTION ALL UTILITY COMPANIES BE NOTIFIED TO LOCATE AND TAG THEIR UNDERGROUND FACILITIES PRIOR TO EXCAVATION. (SEE COORDINATION NOTES ON THIS SHEET)*
3. *THE CONTRACTOR NEEDS TO ALLOW FOR THE POSSIBILITY OF UNDETECTED UNDERGROUND UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. ALSO, THE CONTRACTOR MUST ALLOW FOR CHANGES DUE TO UTILITIES BEING IN LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE UTILITY RECORD DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND EXPOSING CONFLICTS PRIOR TO CONSTRUCTION.*
4. *LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF SAME DURING CONSTRUCTION WHETHER SHOWN ON THE PLANS OR NOT.*

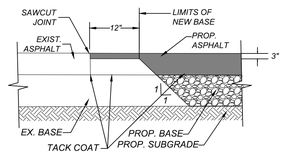
COORDINATION NOTES:

1. *CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.*
2. *CONTACT AT&T TO COORDINATE CABLE TV SERVICE. 1-800-225-5288.*
3. *CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-225-5288.*
4. *CONTACT CITY PUBLIC SERVICE TO PLAN ELECTRICAL SERVICES. (210) 353-2222.*
5. *CONTACT SAN ANTONIO WATER SYSTEMS TO PLAN WATER SERVICES. (210) 704-7297.*

L = ws²/60
L = (4*35^2/60) = 85'

GRADING NOTES:

1. *ALL GRADES AND CONTOURS SHOWN ARE FINAL, TOP OF FINISHED SURFACE ELEVATIONS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL SUBTRACT THICKNESS OF PAVEMENT, BASE, TOP SOIL, SOD, ETC. TO ACHIEVE SUBGRADE ELEVATION.*
2. *POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.*
3. *NO ABRUPT CHANGE OF GRADE SHALL OCCUR IN THE ROADWAYS.*
4. *CONTRACTOR SHALL CONSTRUCT TO OBTAIN GRADES SHOWN HEREON ± ONE-TENTH (0.10) FOOT.*
5. *ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND LANDSCAPING PLANS.*
6. *UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.*
7. *ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL APPLICABLE BEXAR COUNTY PUBLIC WORKS STANDARD SPECIFICATIONS (LATEST EDITION) AND CPS ELECTRIC SERVICE STANDARDS (LATEST EDITION).*
8. *CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL OR BETTER CONDITION ANY DAMAGES DONE TO EXISTING BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, SIDEWALKS, OR DRIVEWAYS (NO SEPARATE PAY ITEM).*
9. *DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.*
10. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL NECESSARY UTILITY COMPANIES FOR PROVIDING TEMPORARY UTILITY SERVICES DURING CONSTRUCTION. THE CONTRACTOR SHALL PAY FOR ALL TEMPORARY UTILITY SERVICES.*
11. *CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.*
12. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS, AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.*
13. *ALL EXCAVATION IS UNCLASSIFIED.*
14. *ALL EXCAVATIONS AND BACKFILLING OF UTILITY TRENCHES SHALL BE AS PER CONTRACT SPECIFICATIONS NO. 02221 -- EARTHWORK. ALL BACKFILL MUST BE IN COMPACTED 12 - INCH LIFTS MAXIMUM, AND NO WATER JETTING IS ALLOWED.*
15. *SEE CIVIL DETAIL SHEETS AND TxDOT DETAIL SHEETS FOR APPLICABLE DETAILS.*
16. *ALL CONSTRUCTION AREAS WITHIN THE SITE SHALL BE STRIPPED OF ALL VEGETATION AND LOOSE TOPSOIL. ANY POCKETS OF DEBRIS ENCOUNTERED SHOULD ALSO BE REMOVED.*
17. *CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO DEVELOP THE CONTRACTOR'S PLANS TO IMPLEMENT THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S PLANS SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.*
18. *REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIFICATIONS AND CONTRACT INFORMATION.*
19. *REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE INFORMATION AND CONSTRUCTION GUIDELINES.*
20. *ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 2% UNLESS OTHERWISE SHOWN.*
21. *TREE PROTECTION SHALL BE PERFORMED IN ACCORDANCE WITH TREE PROTECTION PLAN AND SPECIFICATIONS.*

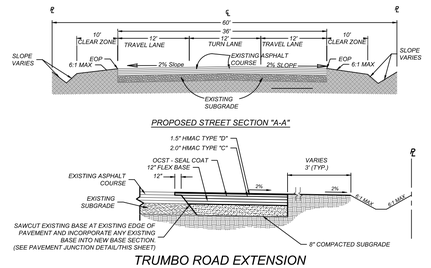


PAVEMENT JUNCTION
NOT-TO-SCALE

SURVEY CONTACT NOTE:
CONTACT TERESA SEIDEL, RPLS WITH KFW SURVEYING AT (210) 979-8444 FOR CONSTRUCTION STAKING SERVICES ON THIS PROJECT.

PROPOSED KEY NOTES

1. 4" THERMOPLASTIC SOLID WHITE LINE (THERMOPLASTIC W. TYPE II RPMS) 1' FROM EOP
2. 4" SOLID DOUBLE YELLOW LINE (THERMOPLASTIC W. TYPE II RPMS)
3. PAVEMENT JUNCTION (SEE DETAIL 4/C5.0)
4. EDGE OF EXISTING PAVEMENT
5. REGRADE EX. DRIVEWAY TO TIE IN
6. COORDINATE USPS - NON-BREAKAWAY OBJECTS NEED TO BE RELOCATED OUTSIDE HORIZONTAL CLEAR ZONE
7. TIE INTO EXISTING GRADE AT 6:1
8. 8" SOLID WHITE THERMOPLASTIC LINE WITH TYPE I C RPMs
9. 24" SOLID YELLOW DIAGONAL THERMOPLASTIC LINES
10. SOLID YELLOW THERMOPLASTIC NOSE WITH TYPE II AA RPMs 2' O.C.
11. THERMOPLASTIC SOLID WHITE "ONLY" PAVEMENT MARKING
12. WHITE ARROW STANDARD (THERMOPLASTIC) PAVEMENT MARKER



TRUMBO ROAD EXTENSION
SECTION "B - B"
(NOT TO SCALE)

4.

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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
BRIAN E. SEIDEL
115643
LICENSED PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPR877020I1 - TRUMBO TIE IN

SHEET TITLE: TRUMBO ROAD EXPANSION

SHEET NUMBER: 5.19

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STPR877020I1 - TRUMBO TIE IN.DWG - By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

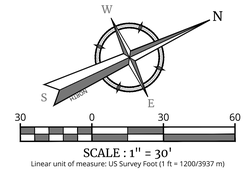
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

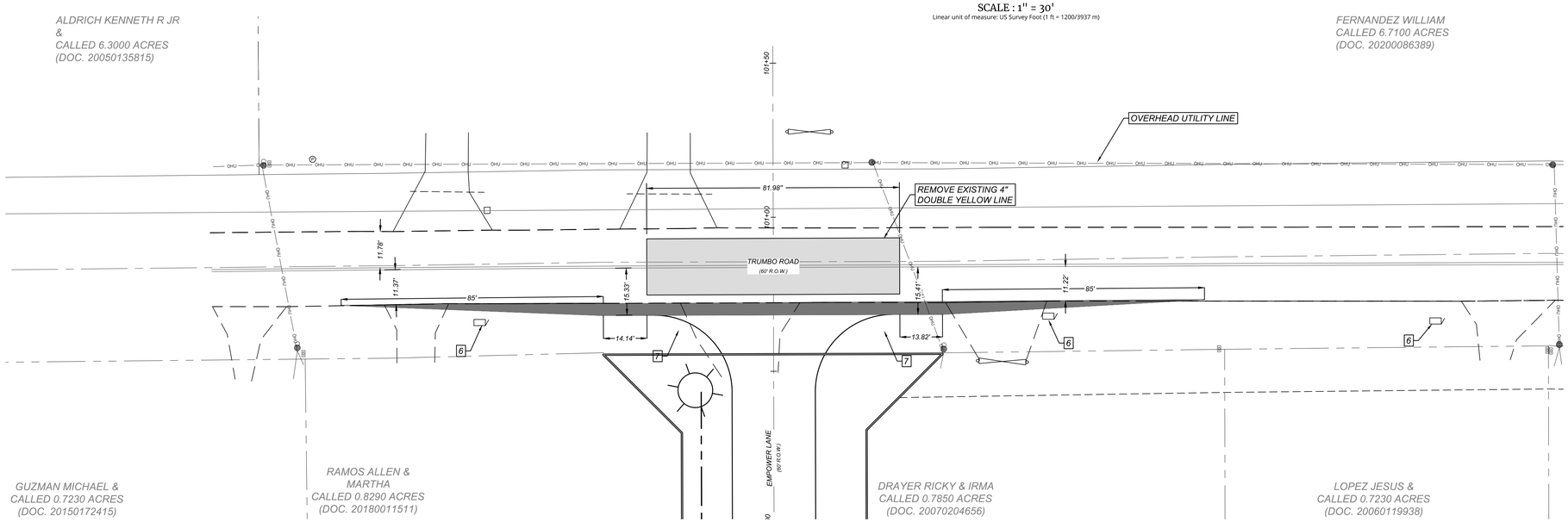


SCALE : 1" = 30'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)

LEGEND

R.O.W.	=	RIGHT OF WAY
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
	=	FLOW ARROW
	=	WASHOUT CROWN
H.P.	=	HIGH POINT
L.P.	=	LOW POINT



DEMOLITION NOTES

1. LOCATION OF EXISTING UTILITIES AND DRAINAGE SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING CONSTRUCTION.
2. DEMOLITION CONTRACTOR IS RESPONSIBLE FOR CLEARING THE SITE OF ALL OBSTRUCTIONS THAT EXIST ON THIS SITE PRIOR TO THE START OF CONSTRUCTION OR DURING THE CONSTRUCTION SO AS TO NOT IMPEDE THE CONSTRUCTION PROCESS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH ALL UTILITY COMPANIES REGARDING REMOVAL OF EXISTING SERVICES, POWER POLES TO BE REMOVED, VERIFYING UTILITIES ARE SHUT OFF OR DISCONNECTED, AND ALL POSSIBLE SAFETY PRECAUTIONS HAVE BEEN ENACTED TO ENSURE THE SAFEST ENVIRONMENT FOR ALL PERSONNEL.
4. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY ANY MATERIAL OR EQUIPMENT SCHEDULED FOR REMOVAL TO BE SALVAGED AND REUSED. CONTRACTOR SHALL REPLACE AT HIS EXPENSE ANY DESTROYED MATERIAL OR EQUIPMENT THAT WAS MARKED FOR SALVAGE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL NECESSARY PERMITS/APPROVALS BEFORE BEGINNING DEMOLITION OR CONSTRUCTION.
6. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192,181, CPS ENERGY MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT THE WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
7. ALL EXISTING ELECTRIC SERVICES TO BE REMOVED ARE TO BE BY CPS ENERGY AT OWNER'S EXPENSE. CONTRACTOR SHALL COORDINATE WITH CPS ENERGY AND OWNER AS REQUIRED BEFORE REMOVAL OF ANY ELECTRIC FACILITIES.
8. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT AND OWNER FOR ANY TREE REMOVAL AND/ OR REPLACEMENT OF EXISTING ON SITE IRRIGATION PIPING PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL NOT START DEMOLITION OF ANY FEATURE SHOWN ON THIS DRAWING UNTIL A STORM WATER POLLUTION PREVENTION PLAN IS INSTALLED AND COMPLETED.
10. THE CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH ALL REGULATIONS GOVERNING THE DEMOLITION, REMOVAL, TRANSPORTATION, AND DISPOSAL, OF ALL DEMOLISHED OR UNVANTED MATERIAL.
11. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS FOR DEMOLITION.
12. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL PROPERTY CORNERS AND SHALL HAVE AT HIS EXPENSE, ALL CORNERS REPLACED WHICH ARE DISTURBED BY CONSTRUCTION ACTIVITIES.
13. CONTRACTOR SHALL NOT DEMOLISH ANY SAWS WATER OR SANITARY SEWER LINE WITHOUT SAWS APPROVAL.
14. CONTRACTOR SHALL INSTALL A MINIMUM 2-FOOT HIGH SILT FENCE ALONG THE PERIMETER OF THE CONSTRUCTION/DEMOLITION LIMITS. PROTECTIVE FENCE SHALL BE IN PLACE BEFORE ANY DEMOLITION OR CONSTRUCTION BEGINS AND SHALL REMAIN IN PLACE AND IN GOOD REPAIR THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL TAKE SPECIAL CARE TO INSTALL VEHICULAR BARRIERS AND FENCING TO PROHIBIT VEHICULAR AND PEDESTRIAN ACCESS-TO THAT AREA CONTRACTOR SHALL COORDINATE WITH THE OWNER TO ENSURE THAT FENCING AND BARRIERS INSTALLED ARE ADEQUATE.

EXISTING UTILITY NOTES:

1. *THIS UTILITY PLAN HAS BEEN PREPARED TO THE BEST OF OUR ABILITY USING THE DATA AVAILABLE. EXISTING UTILITY DATA SHOWN ON THIS LAYOUT WAS OBTAINED FROM A SURVEY OF THE VISIBLE FEATURES AT THE SITE AND PUBLIC RECORD MAPS OBTAINED FROM UTILITY COMPANIES.*
2. *IT IS ESSENTIAL THAT 48 HOURS PRIOR TO CONSTRUCTION ALL UTILITY COMPANIES BE NOTIFIED TO LOCATE AND TAG THEIR UNDERGROUND FACILITIES PRIOR TO EXCAVATION. (SEE COORDINATION NOTES ON THIS SHEET)*
3. *THE CONTRACTOR NEEDS TO ALLOW FOR THE POSSIBILITY OF UNDETECTED UNDERGROUND UTILITIES WHETHER SHOWN ON THE PLANS OR NOT. ALSO, THE CONTRACTOR MUST ALLOW FOR CHANGES DUE TO UTILITIES BEING IN LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE UTILITY RECORD DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND EXPOSING CONFLICTS PRIOR TO CONSTRUCTION.*
4. *LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF SAME DURING CONSTRUCTION WHETHER SHOWN ON THE PLANS OR NOT.*

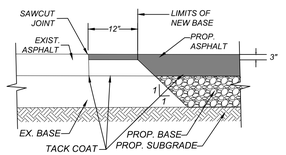
GRADING NOTES:

1. *ALL GRADES AND CONTOURS SHOWN ARE FINAL, TOP OF FINISHED SURFACE ELEVATIONS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL SUBTRACT THICKNESS OF PAVEMENT, BASE, TOP SOIL, SOD, ETC. TO ACHIEVE SUBGRADE ELEVATION.*
2. *POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.*
3. *NO ABRUPT CHANGE OF GRADE SHALL OCCUR IN THE ROADWAYS.*
4. *CONTRACTOR SHALL CONSTRUCT TO OBTAIN GRADES SHOWN HEREON ± ONE-TENTH (0.10) FOOT.*
5. *ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND LANDSCAPING PLANS.*
6. *UTILITIES SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION SOURCES AVAILABLE AT THE TIME OF DESIGN BUT MAY NOT REPRESENT ALL EXISTING UTILITIES ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.*
7. *ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL APPLICABLE BEXAR COUNTY PUBLIC WORKS STANDARD SPECIFICATIONS (LATEST EDITION) AND CPS ELECTRIC SERVICE STANDARDS (LATEST EDITION).*
8. *CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL OR BETTER CONDITION ANY DAMAGES DONE TO EXISTING BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, SIDEWALKS, OR DRIVEWAYS (NO SEPARATE PAY ITEM).*
9. *DUE TO FEDERAL REGULATION TITLE 49, PART 192.181, CPS MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.*
10. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL NECESSARY UTILITY COMPANIES FOR PROVIDING TEMPORARY UTILITY SERVICES DURING CONSTRUCTION. THE CONTRACTOR SHALL PAY FOR ALL TEMPORARY UTILITY SERVICES.*
11. *CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.*
12. *THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS, AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.*
13. *ALL EXCAVATION IS UNCLASSIFIED.*
14. *ALL EXCAVATIONS AND BACKFILLING OF UTILITY TRENCHES SHALL BE AS PER CONTRACT SPECIFICATIONS NO. 02221 -- EARTHWORK. ALL BACKFILL MUST BE IN COMPACTED 12 - INCH LIFTS MAXIMUM, AND NO WATER JETTING IS ALLOWED.*
15. *SEE CIVIL DETAIL SHEETS AND TxDOT DETAIL SHEETS FOR APPLICABLE DETAILS.*
16. *ALL CONSTRUCTION AREAS WITHIN THE SITE SHALL BE STRIPPED OF ALL VEGETATION AND LOOSE TOPSOIL, ANY POCKETS OF DEBRIS ENCOUNTERED SHOULD ALSO BE REMOVED.*
17. *CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO DEVELOP THE CONTRACTOR'S PLANS TO IMPLEMENT THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S PLANS SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.*
18. *REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIFICATIONS AND CONTRACT INFORMATION.*
19. *REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE INFORMATION AND CONSTRUCTION GUIDELINES.*
20. *ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 2% UNLESS OTHERWISE SHOWN.*
21. *TREE PROTECTION SHALL BE PERFORMED IN ACCORDANCE WITH TREE PROTECTION PLAN AND SPECIFICATIONS.*

COORDINATION NOTES:

1. *CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.*
2. *CONTACT AT&T TO COORDINATE CABLE TV SERVICE. 1-800-225-5288.*
3. *CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-225-5288.*
4. *CONTACT CITY PUBLIC SERVICE TO PLAN ELECTRICAL SERVICES. (210) 353-2222.*
5. *CONTACT SAN ANTONIO WATER SYSTEMS TO PLAN WATER SERVICES. (210) 704-7297.*

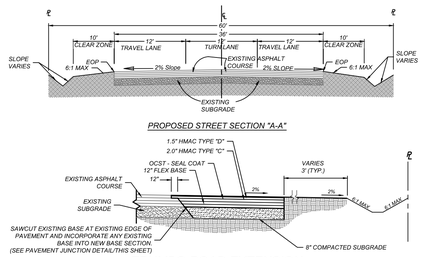
L = ws²/60
L = (4*35*2/60) = 85'



PAVEMENT JUNCTION

NOT-TO-SCALE

4.



PROPOSED STREET SECTION "A-A"

TRUMBO ROAD EXTENSION

SECTION "B - B"

(NOT TO SCALE)

SURVEY CONTACT NOTE:

CONTACT TERESA SEIDEL, RPLS WITH KFW SURVEYING AT (210) 979-9444 FOR CONSTRUCTION STAKING SERVICES ON THIS PROJECT.

PROPOSED KEY NOTES

1. 4" THERMOPLASTIC SOLID WHITE LINE (THERMOPLASTIC W. TYPE II RPMS) 1' FROM EOP
2. 4" SOLID DOUBLE YELLOW LINE (THERMOPLASTIC W. TYPE II RPMS)
3. PAVEMENT JUNCTION (SEE DETAIL 4/C5.0)
4. EDGE OF EXISTING PAVEMENT
5. REGRADE EX. DRIVEWAY TO TIE IN
6. COORDINATE USPS - NON-BREAKAWAY OBJECTS NEED TO BE RELOCATED OUTSIDE HORIZONTAL CLEAR ZONE
7. TIE INTO EXISTING GRADE AT 6:1
8. 8" SOLID WHITE THERMOPLASTIC LINE WITH TYPE I C RPMs
9. 24" SOLID YELLOW DIAGONAL THERMOPLASTIC LINES

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS — BIDSET — 117642 — LICENSED PROFESSIONAL ENGINEER — NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design

SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#:F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	STPPB770201 - TRUMBO TIE IN

SHEET TITLE:

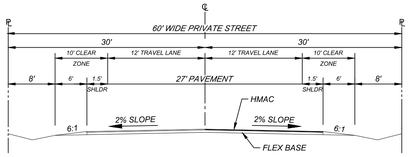
TRUMBO ROAD EXPANSION

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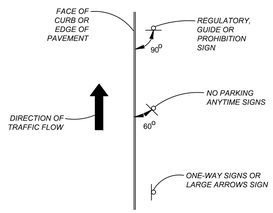
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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

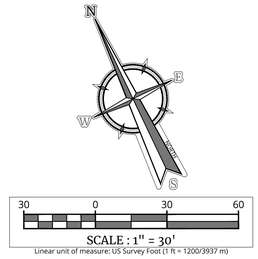


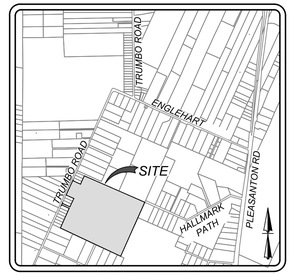
TYPICAL 60' STREET SECTION
N.T.S.

BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

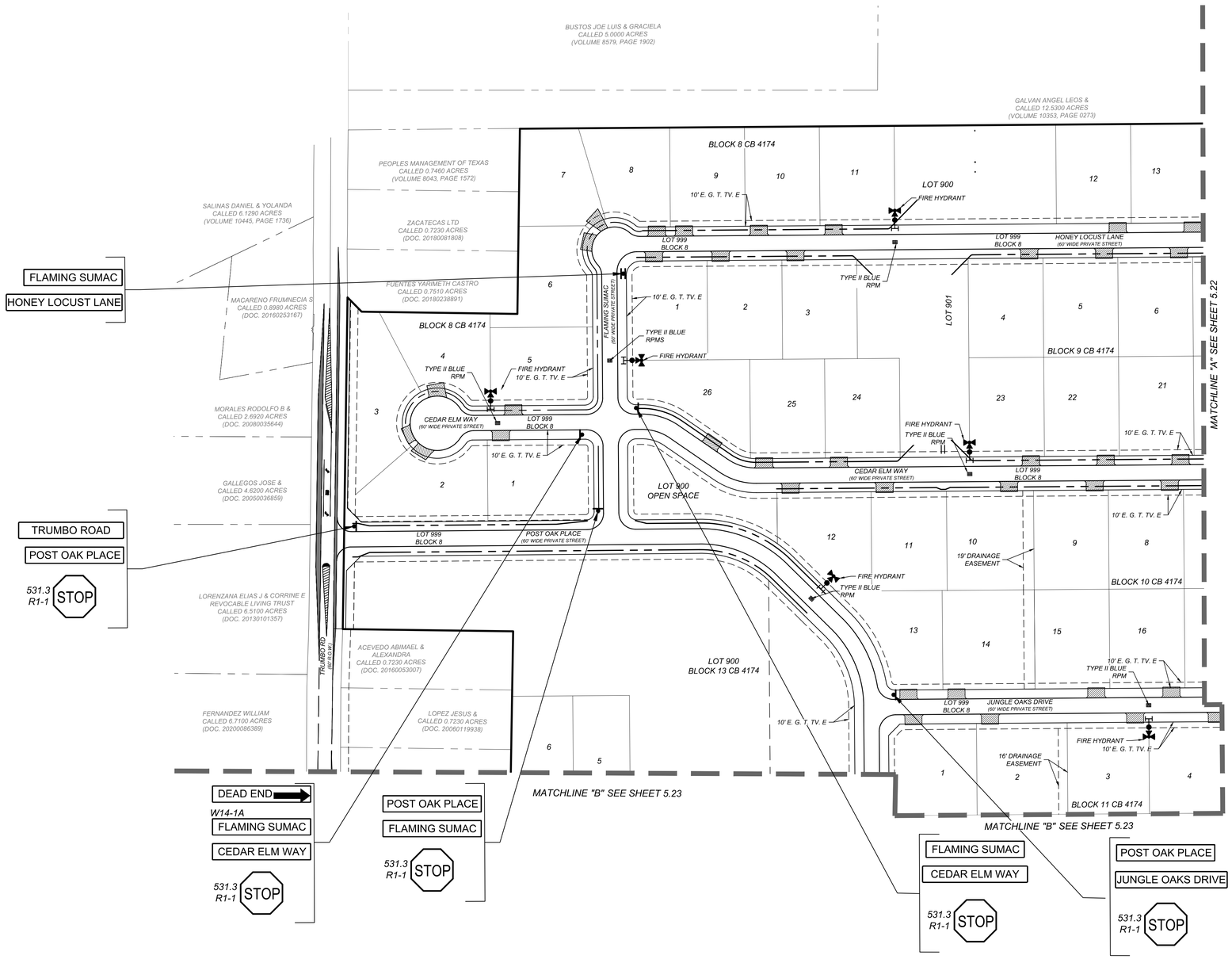


TYPICAL GROUND MOUNTED SIGN PLACEMENT





LOCATION MAP
N.T.S.



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER GORMAN
103911
LICENSED
PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
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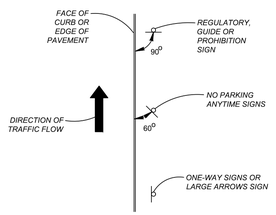
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DRAWING NAME: STTS_8770201

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(SHEET 1 OF 4)

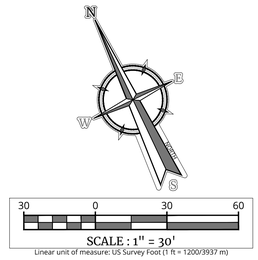
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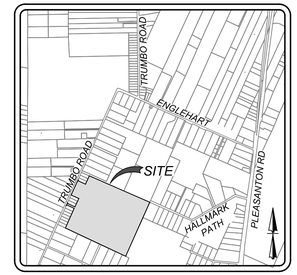
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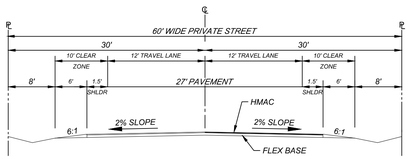


TYPICAL GROUND MOUNTED SIGN PLACEMENT

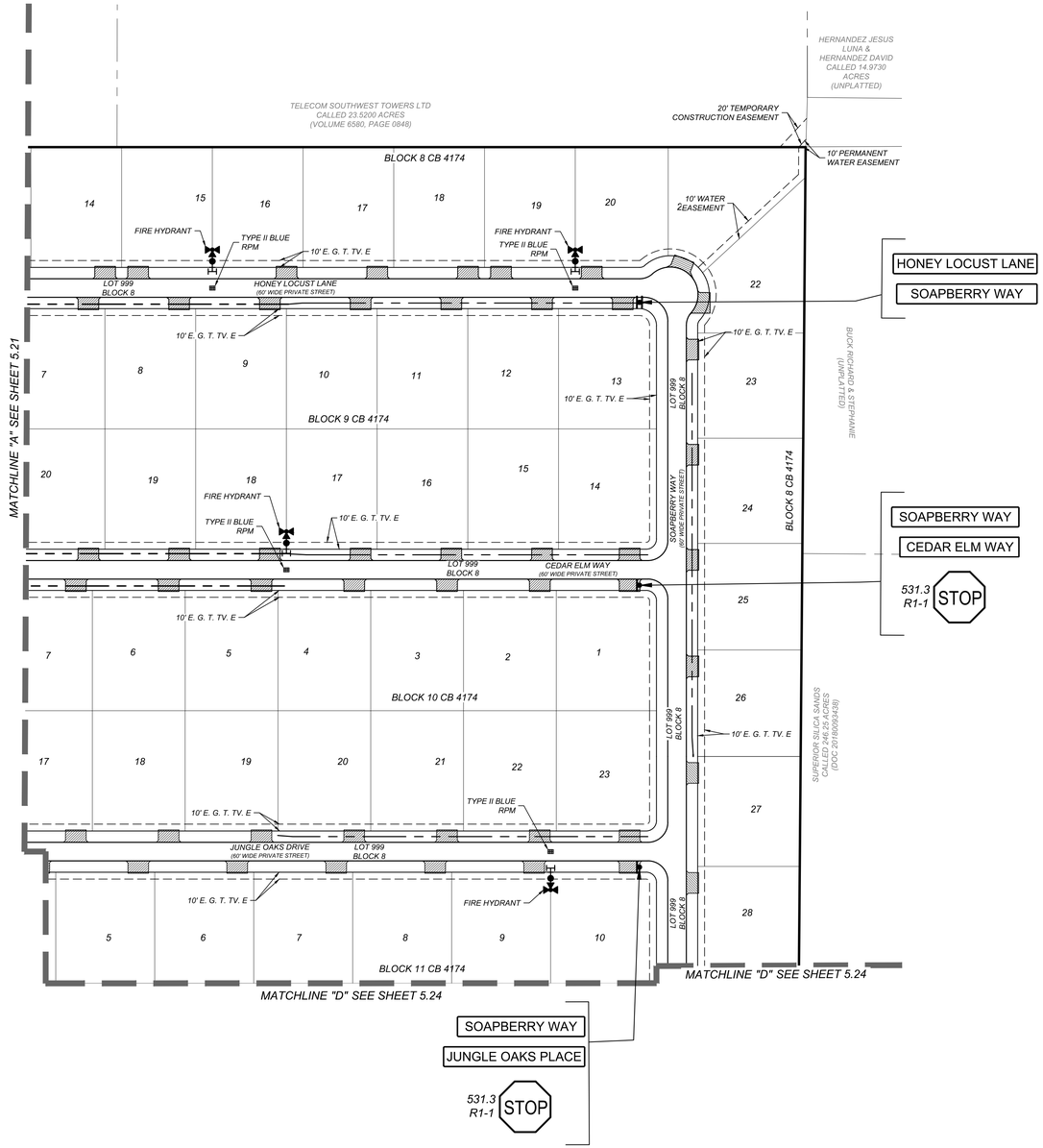




LOCATION MAP
N.T.S.



TYPICAL 60' STREET SECTION
N.T.S.



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REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
BIDDET
#117643
LICENSED
PROFESSIONAL ENGINEER
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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		MS	CG

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DRAWING NAME: STTS_8770201

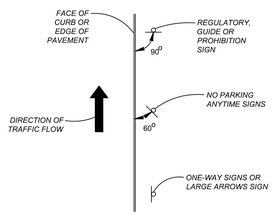
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STREET SIGNAGE PLAN
(SHEET 2 OF 4)

SHEET NUMBER:
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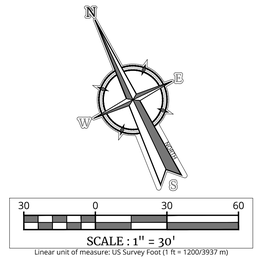
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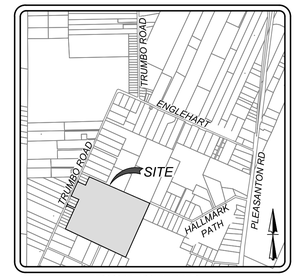
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BEXAR COUNTY R.O.W. NOTE
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

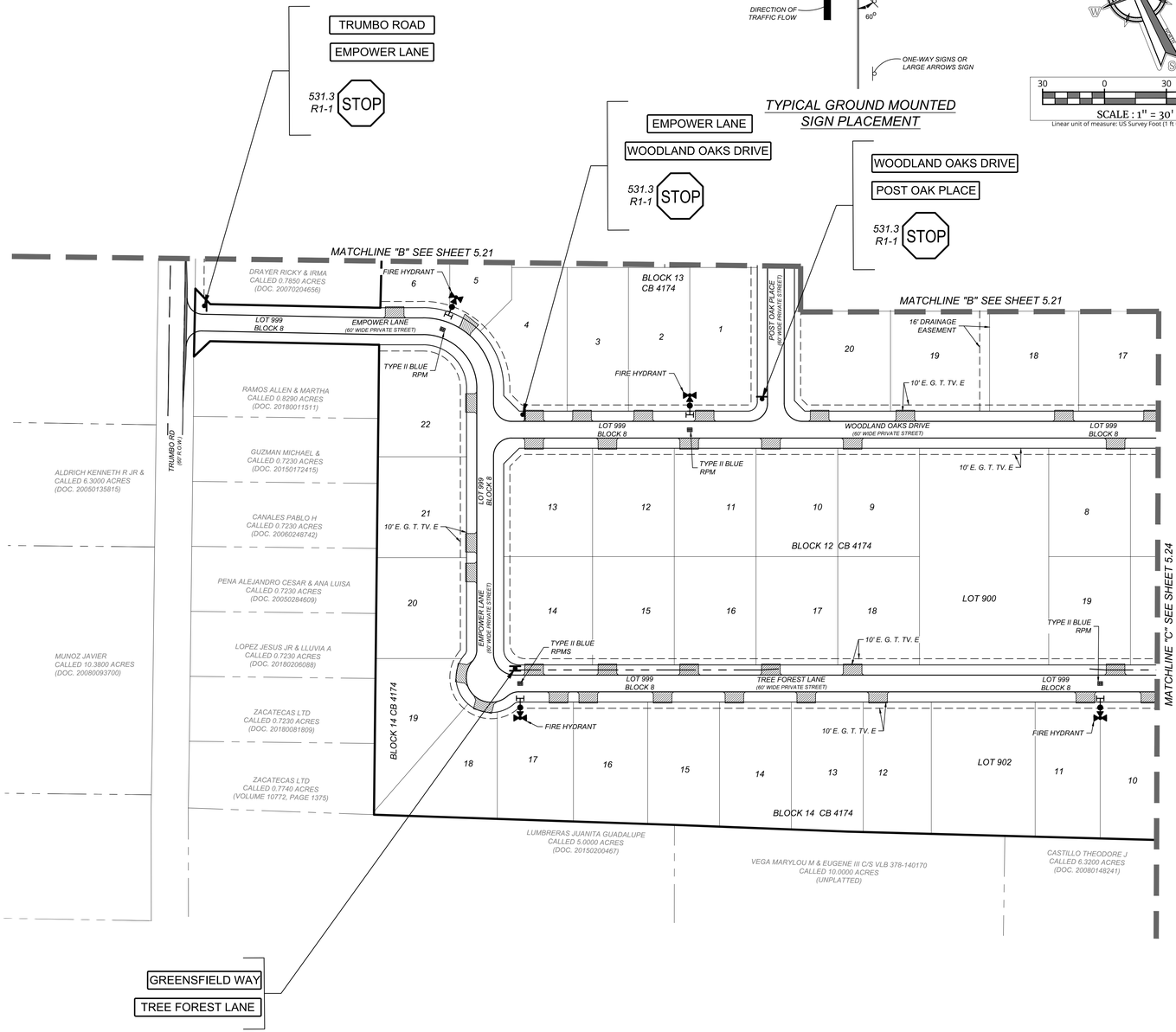


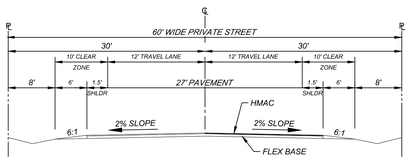
TYPICAL GROUND MOUNTED SIGN PLACEMENT





LOCATION MAP
N.T.S.





TYPICAL 60' STREET SECTION
N.T.S.

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Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER GARCIA
103777
LICENSED
PROFESSIONAL ENGINEER
BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STTS_8770201

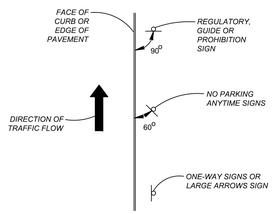
SHEET TITLE: STREET SIGNAGE PLAN (SHEET 3 OF 4)

SHEET NUMBER: 5.23

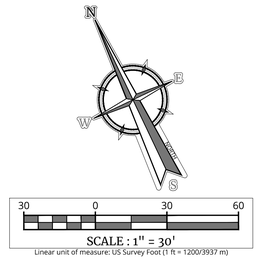
L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\STTS_8770201.DWG By: ECORONA

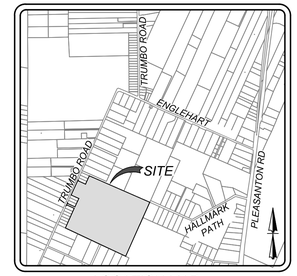
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BEXAR COUNTY R.O.W. NOTE
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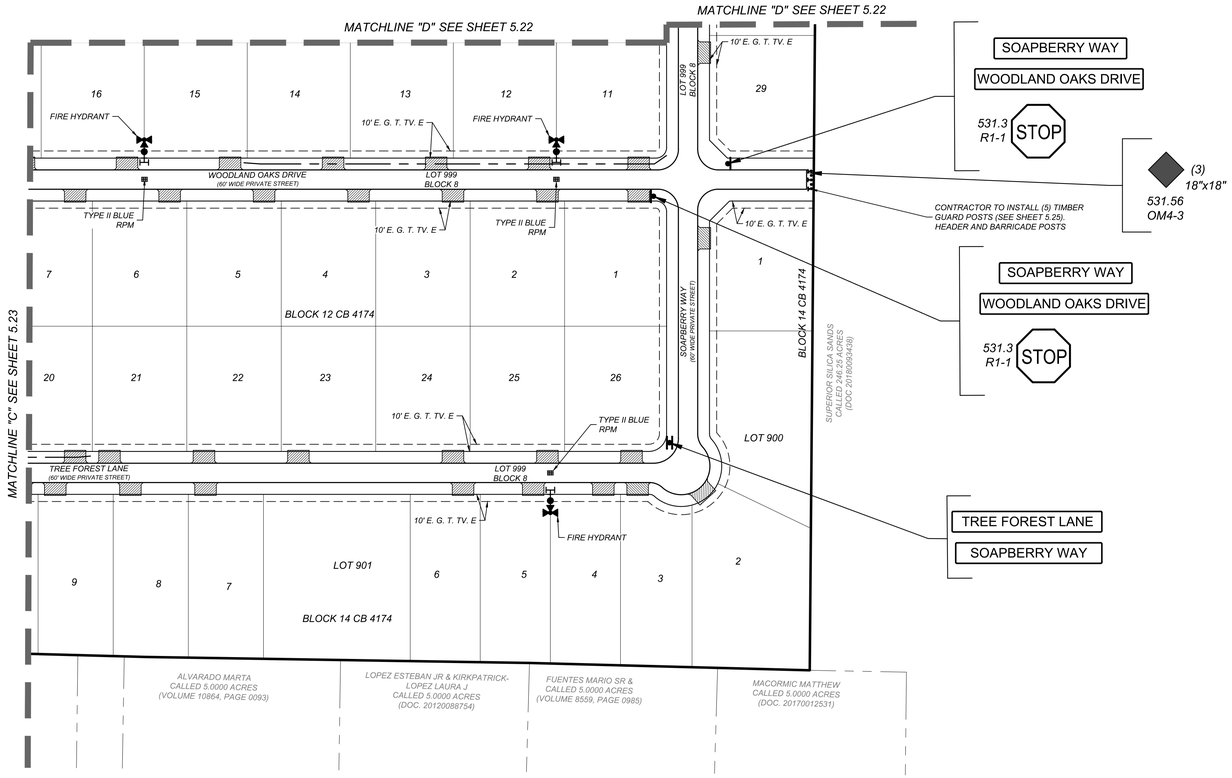


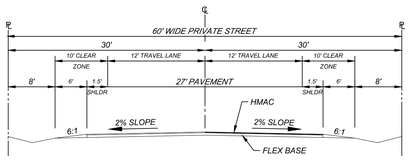
TYPICAL GROUND MOUNTED SIGN PLACEMENT





LOCATION MAP
N.T.S.





TYPICAL 60' STREET SECTION
N.T.S.

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

STATE OF TEXAS
CHRISTOPHER GARCIA
114643
LICENSED
PROFESSIONAL ENGINEER
BIDSET
NOT FOR CONSTRUCTION

FOREST OAKS
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TEXAS

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TBPE Firm#: F-14909
TBPLS Firm#: 10194350

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	STTS_8770201

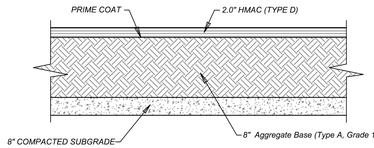
SHEET TITLE:
STREET SIGNAGE PLAN
(SHEET 4 OF 4)

SHEET NUMBER:
5.24

L:\877\02\01\DESIGN\CIVIL\PHASE 1\STREETS\TTS_8770201.DWG, By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

Pavement Section Local A
2.0" HMAC Type "D"
8" Aggregate Base (Type A, Grade 1-2)
8.0" Compacted Subgrade (41.0 LB/SY)
Total: 18"
Structural No: 4.2CBR: 8.0



ASPHALT PAVEMENT DETAIL
NOT-TO-SCALE

NOTES:
1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT BY PROFESSIONAL SERVICE INDUSTRIES, INC. PROJECT NO. 0312-2311 DATED AUGUST 6, 2021.

2. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATION FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

4. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.

FLAMING SUMAC STA: 30+45.03 - 35+06.68
POST OAK PLACE STA: 10+71.97 - 25+70.78
CEDAR ELM WAY STA: 110+91.06 - 131+16.35
JUNGLE OAKS DRIVE STA: 160+00.00 - 175+37.14
HONEY LOCUST LANE STA: 35+06.68 - 54+80.84
SOAPBERRY WAY STA: 54+80.84 - 70+74.39
WOODLAND OAKS DRIVE STA: 180+00.00 - 201+72.20
TREE FOREST LANE STA: 70+74.39 - 90+61.83
EMPOWER LANE STA: 90+61.83 - 100+84.42

GENERAL NOTES:

1. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOLUBLE SULPHATE CONTENT PRIOR TO INSTALLATION OF THE LIME OR CEMENT.

2. THE APPLICATION RATE OF LIME SHALL BE DETERMINED BASED ON LABORATORY TESTING AND SHALL BE THE LOWEST PERCENTAGE OF LIME THAT PROVIDES AN UNCONFINED COMPRESSIVE STRENGTH (UCS) AT 7-DAYS OF AT LEAST 160 PSI IN ACCORDANCE WITH ASTM D5102 STANDARD TEST METHODS FOR UNCONFINED COMPRESSIVE STRENGTH OF COMPACTED SOIL-LIME MIXTURES (PROCEDURE B) (IN ADDITION, CURING SHOULD OCCUR FOR 7 DAYS AT 40° AND SPECIMENS SHOULD BE SUBJECT TO 24-HR CAPILLARY SOAK PRIOR TO TESTING.

FOR CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED IN THE FIELD:

1. AFTER INITIAL MIXING THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2 - 3) DAYS. MAINTAIN MOISTURE DURING MELLOWING;

2. AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FROM THE SAMPLE):

MINIMUM PASSING 1 ½" SIEVE	100
MINIMUM PASSING ¾" SIEVE	85
MINIMUM PASSING NO. 4 SIEVE	60

3. SAMPLE SOIL-LIME MIXTURE FOR DETERMINATION OF MAXIMUM DRY DENSITY (MDD). IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED ABOVE FOR MIXTURE DESIGN.

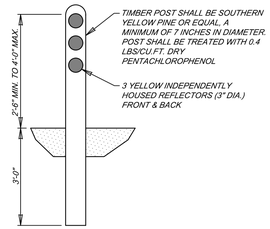
4. COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% OF MDD REQUIRED)

5. CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).

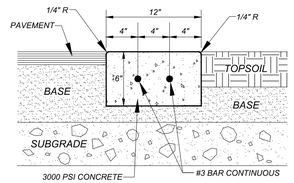
NOTES:

ANY FILL USED TO RAISE THE SUBGRADE:
- SHOULD NOT CONTAIN ANY DELETERIOUS MATERIAL.
- SHOULD HAVE A CBR VALUE OF 8.0 OR GREATER
- SHOULD HAVE THE "LIME PERCENTAGE/APPLICATION RATE" RE-EVALUATED AND TESTED PRIOR TO INSTALLATION
- PI SHOULD BE A MAXIMUM OF 20

TIMBER POST SHALL BE SOUTHERN YELLOW PINE OR EQUAL, A MINIMUM OF 7 INCHES IN DIAMETER. POST SHALL BE TREATED WITH 0.4 LBS/CU.FT. DRY PENTACHLOROPHENOL

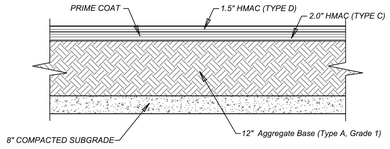


TIMBER GUARD POST DETAIL
NOT-TO-SCALE



FLUSH CURB
(NOT TO SCALE)

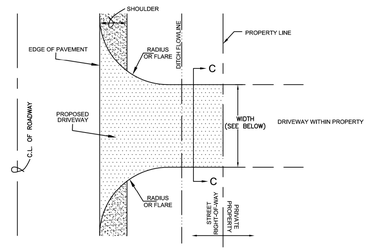
Pavement Section Local B
1.5" HMAC Type "D"
2.0" HMAC Type "C"
12" Aggregate Base (Type A, Grade 1-2)
8.0" Compacted Subgrade (41.0 LB/SY)
Total: 21"
Structural No: 4.2CBR: 8.0



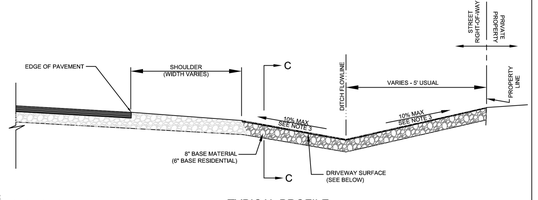
ASPHALT PAVEMENT DETAIL
NOT-TO-SCALE

POST OAK PLACE STA: 10+84.98 - 25+70.78

TYPICAL RURAL DRIVEWAY WITHOUT CULVERT
N.T.S.



DRIVEWAY INTERSECTION - PLAN
N.T.S.



TYPICAL PROFILE
N.T.S.

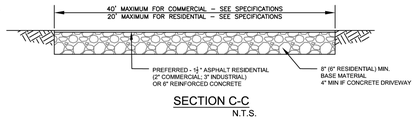
NOTES:
1. SEE SPECIFICATION FOR ACCEPTABLE MATERIALS AND OTHER INFORMATION.

2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I AT 28 DAYS.

3. PROFILE TO CONFORM TO BAR DITCH (ROAD SIDE DITCH, IF PRESENT) WITHIN RIGHT-OF-WAY

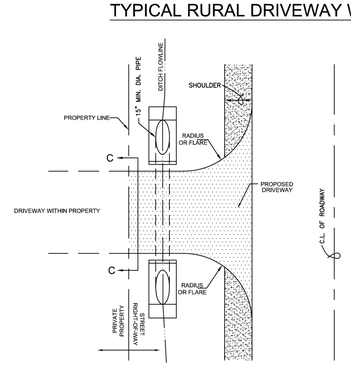
4. BROOM FINISH ONLY FOR CONCRETE

5. MAXIMUM GRADE CHANGE OF THE SLOPES ADJACENT TO THE DITCH CENTERLINE IS NOT TO EXCEED 12%



SECTION C-C
N.T.S.

TYPICAL RURAL DRIVEWAY WITH CULVERT
N.T.S.



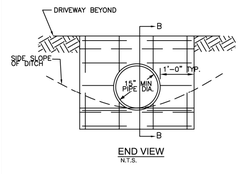
NOTES:
1. SEE SPECIFICATION FOR ACCEPTABLE MATERIALS AND OTHER INFORMATION.

2. ALL CONCRETE (DRIVEWAY SURFACE OR RIP RAP) SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I AT 28 DAYS.

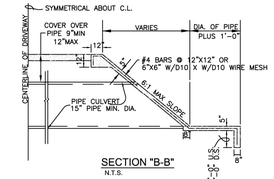
3. BROOM FINISH ONLY FOR CONCRETE

4. IF PIPE LOCATION IS 12' OR GREATER FROM TRAVEL LANE, 4:1 SLOPE IS ALLOWED. 6:1 MAX OTHERWISE.

DRIVEWAY INTERSECTION WITH CULVERT - PLAN
N.T.S.

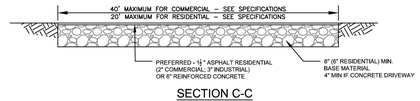


END VIEW
N.T.S.



SECTION "B-B"
N.T.S.

RIP RAP HEADWALL @ DRAINAGE PIPE
N.T.S.



SECTION C-C
N.T.S.

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REV	DATE	DRAWN BY	DESCRIPTION

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TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPP8770201 - TRUMBO TIE IN

SHEET TITLE: PAVEMENT SECTIONS & DRIVEWAY DETAILS

SHEET NUMBER: 5.25

L:\877\02\01\DSI\CAD\LDP\01 PHASE 1 ISTREET'S\STPP8770201 - TRUMBO TIE IN.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

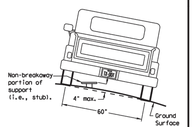
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- SBD = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

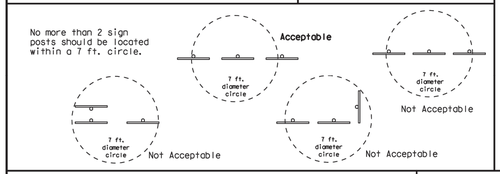
Anchor Type
- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation
- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- (EXT or 2EXT) = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BW = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- BC = 1.12 ft²/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

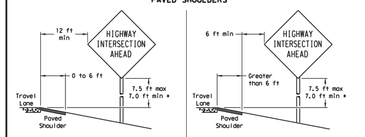


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel pathal.



SIGN LOCATION

PAVED SHOULDERS



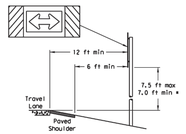
LESS THAN 6 FT. WIDE

When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

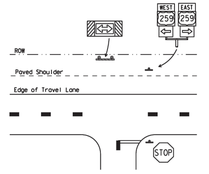
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

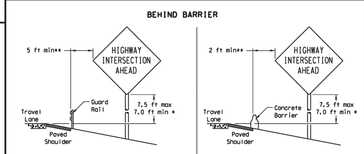
T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

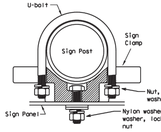
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is: http://www.txdot.gov/publications/trafftc.htm

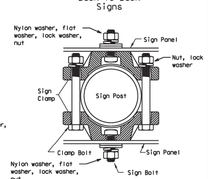
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TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



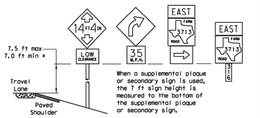
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

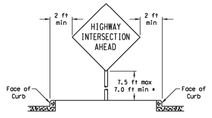
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

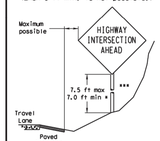


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

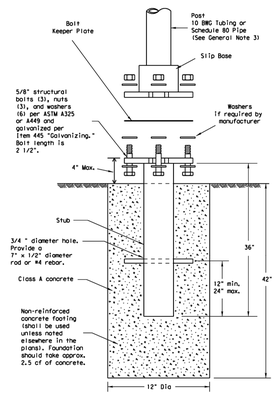
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

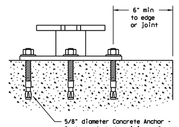
1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   - 10 BWG Tubing (2.875" outside diameter)
     - 0.134" nominal wall thickness
     - Seamless or electric-resistance welded steel tubing or pipe
     - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 55,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 20% minimum elongation in 2"
     - Bolt thickness (uncoated) shall be within the range of 0.122" to 0.138"
     - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
     - Galvanization per ASTM A123 or ASTM A653 C210, For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   - Schedule 80 Pipe (2.875" outside diameter)
     - 0.276" nominal wall thickness
     - Steel tubing per ASTM A500 Gr C
     - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
       - 46,000 PSI minimum yield strength
       - 62,000 PSI minimum tensile strength
       - 21% minimum elongation in 2"
     - Bolt thickness (uncoated) shall be within the range of 0.248" to 0.304"
     - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
     - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/trafftc.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end, heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per SMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

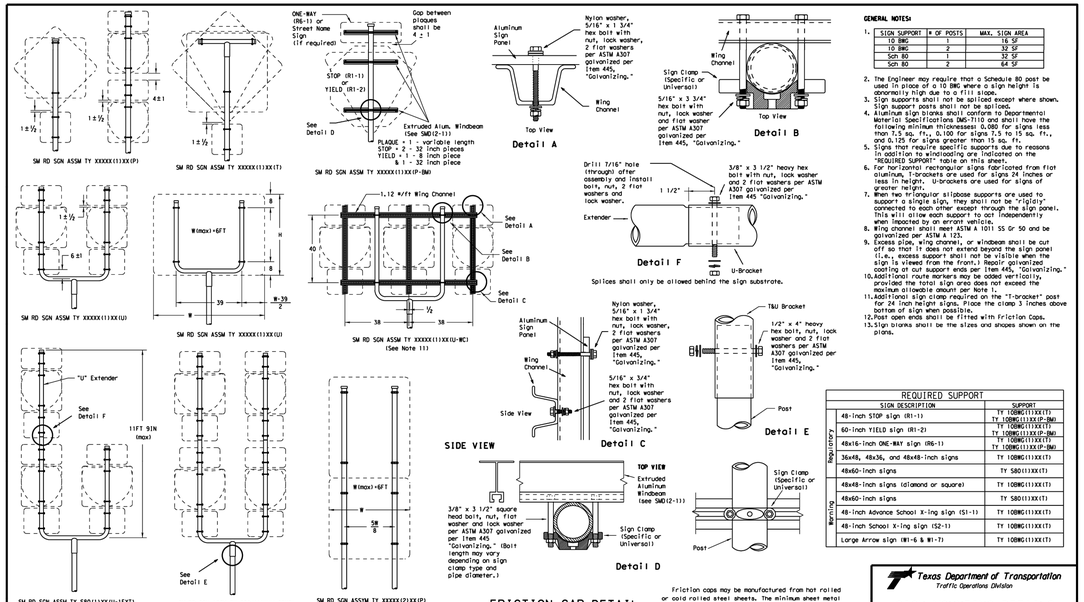
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

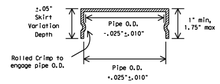
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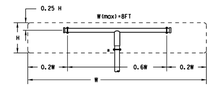
FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.



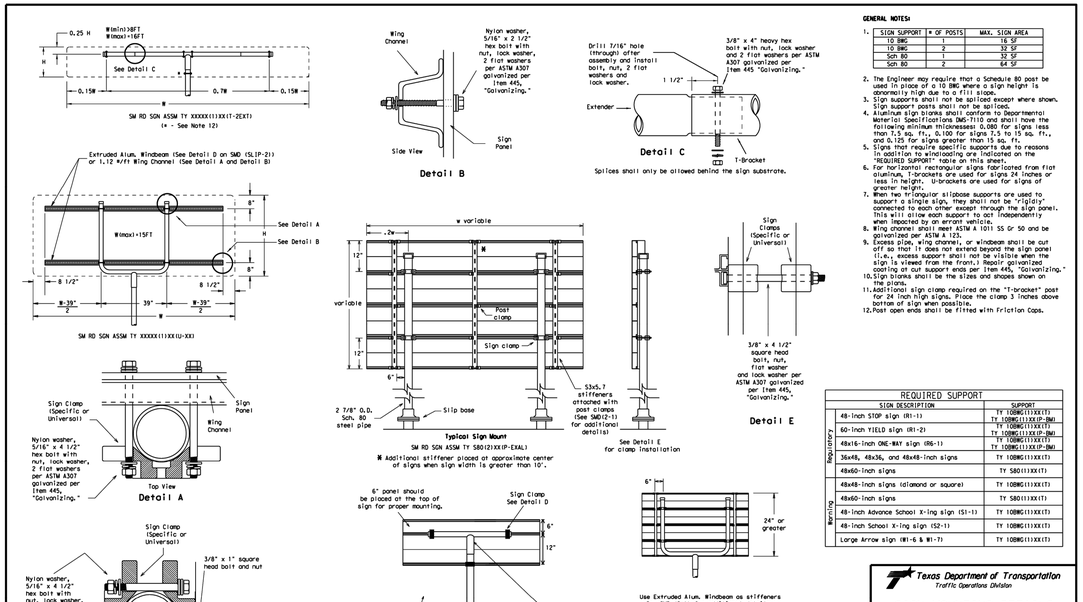
All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T) (+ - See Note 12)

GENERAL NOTES:

1. | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
   |---|---|---|
   | 10 BWG | 1 | 16 SF |
   | 10 BWG | 2 | 32 SF |
   | Sch 80 | 1 | 32 SF |
   | Sch 80 | 2 | 64 SF |
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. That is, they shall support the sign independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



GENERAL NOTES:

1. | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
   |---|---|---|
   | 10 BWG | 1 | 16 SF |
   | 10 BWG | 2 | 32 SF |
   | Sch 80 | 1 | 32 SF |
   | Sch 80 | 2 | 64 SF |
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. That is, they shall support the sign independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BW)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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PROJECT NUMBER: 877-02-01
DRAWING NAME: STP9870202I - TRUMBO TIE IN

SHEET TITLE: SIGNAGE DETAILS (SHEET 1 OF 2)

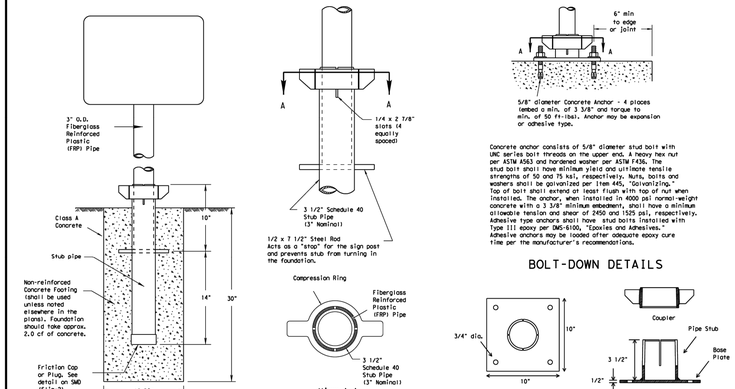
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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

SM RD SGN ASSM TY FRP(X1)UB(P)

GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" - 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division.
   Prequalification procedures are contained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

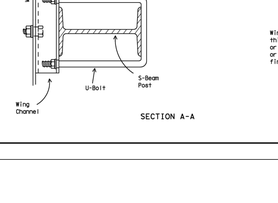
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground.
3. Attach sign to FRP post.
4. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

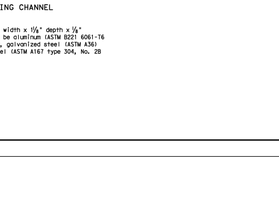
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

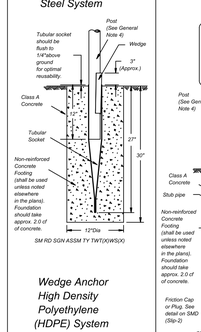
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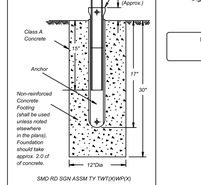
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Wedge Anchor Steel System



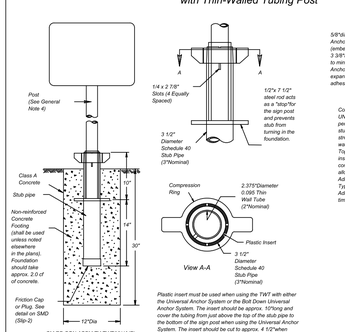
SM RD SGN ASSM TY TWT(WS)(X)

Wedge Anchor High Density Polyethylene (HDPE) System

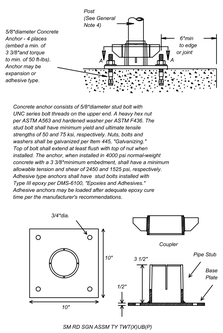


SMD RD SGN ASSM TY TWT(WP)(X)

Universal Anchor System with Thin-Walled Tubing Post

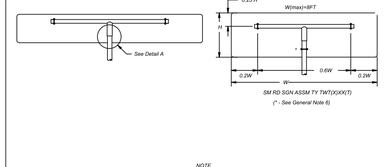


Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10"long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2"when used with the Bolt Down Universal Anchor System.



SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)(X)(T)
(* - See General Note 6)

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375"outside diameter) (TWT)
   0.095"nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083"to .099"
   Outside diameter (uncoated) shall be within the range of 2.369"to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For prevcoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-socket"post for 24"high signs. Place clamp at least 3"above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18"or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground.
3. Attach sign to FRP post.
4. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
5. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
6. Attach the sign to the sign post.
7. Insert the sign post into socket and align sign face with roadway.
8. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18"or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. See compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

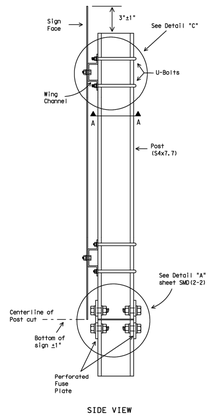
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

©TxDOT July 2002	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

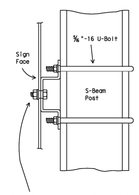
256

WING CHANNEL CLAMP DETAIL FOR TYPE G MOUNT



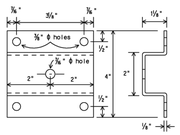
SIDE VIEW

SECTION A-A



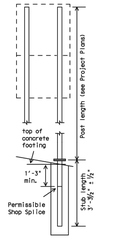
Galvanized steel or aluminum self-locking hex. head nut, 3/8 " - 16 x 3/4 " hex. head bolt for sheet metal. 3/8 " - 16 x 1 1/4 " hex. head bolt for plywood. 3/8 " galvanized medium washer.

DETAIL "C"

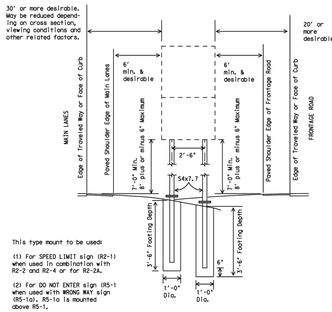


WING CHANNEL

Wing channel, 4" width x 1½" depth x ¼" thickness, shall be aluminum (ASTM B221 6061-T6 or B308 6061-T6), galvanized steel (ASTM A36) or stainless steel (ASTM A167 type 304, No. 2B finish).



The weight of one 5x7.7 post is equal to 112.2 lbs. plus 7.7 lbs./ft x (post length in feet minus 10 ft). The weight of 112.2 lbs. includes 10 feet of post length, post foundation stub, related connection plates, friction fuse plate, and all high strength bolts, nuts and washers.



This type mount to be used:

(1) For SPEED LIMIT sign (R2-1) when used in combination with R2-2 and R2-4 or for R2-2A.

(2) For DO NOT ENTER sign (R5-1 when used with WRONG WAY sign (R5-1a). R5-1a is mounted above R5-1.

DEPARTMENTAL MATERIAL SPECIFICATIONS
SIGN HARDWARE — DMS-7120

GENERAL NOTES:

1. Design conforms with AASHTO Specifications for the design and construction of structural supports for highway signs.
2. Materials and fabrication shall conform to the requirements of the Department material specifications.
3. Structural steel shall be "Low-Alloy Steel" for non-bridge structures per Item 442, "Metal For Structures."
4. Parts shall be saw cut either before galvanizing and the galvanized cut cleaned of zinc build-up, or saw cut after galvanizing and the cut surface repaired per Item 445, "Galvanizing." (Cut surface will not be treated until plate is installed and all bolts fully tightened.)

Texas Department of Transportation
Traffic Operations Division

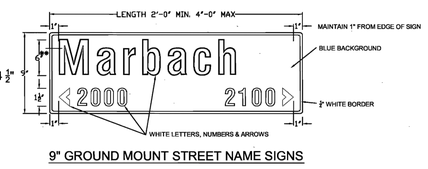
SIGN MOUNTING DETAILS, TYPE G SUPPORT

SMD(TY G)-08

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1-97 REVISIONS 9-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET No.

28

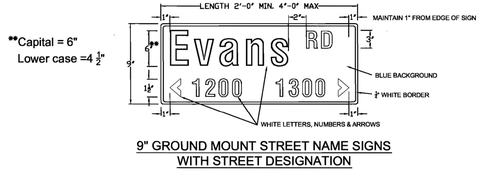
9" GROUND MOUNT STREET NAME SIGNS



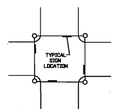
	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM

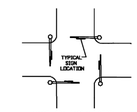
9" GROUND MOUNT STREET NAME SIGNS WITH STREET DESIGNATION



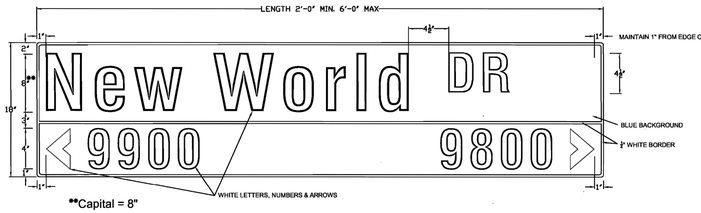
SPAN WIRE INSTALLATION



MAST ARM INSTALLATION



18" OVERHEAD STREET NAME SIGNS



SIGN FACE MATERIALS SHALL CONFORM TO:

1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 09e1

STATE OF TEXAS
MARY FRANCES TENORIO
79802
REGISTERED
PROFESSIONAL ENGINEER
4-6-11

INFRASTRUCTURE SERVICES DEPARTMENT
PUBLIC WORKS DIVISION

STREET NAME SIGNING DETAILS

REVISION

DESIGN BY:	DRAWN BY:
MT	MS
CHECKED BY:	DATE:
MT	04/05/11

SHEET 1

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STATE OF TEXAS
BID SET
NON FOR CONSTRUCTION
MARY FRANCES TENORIO
79802
REGISTERED
PROFESSIONAL ENGINEER

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STPR877020(1 - TRUMBO TIE IN

SHEET TITLE: SIGNAGE DETAILS (SHEET 2 OF 2)

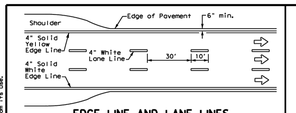
SHEET NUMBER: 5.27

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

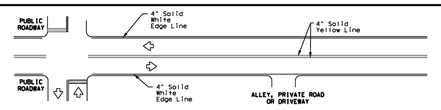
L:\877\02\01\DESIGN\CIVIL\PHASE 1\STRETS\STPR877020(1 - TRUMBO TIE IN).DWG - By: ECORONA

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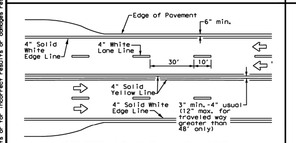
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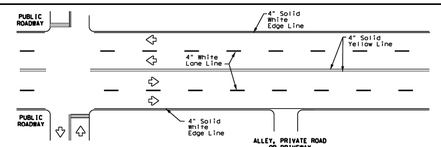
EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



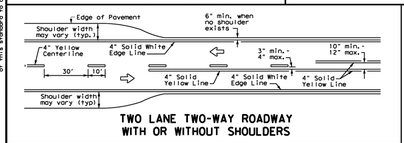
TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



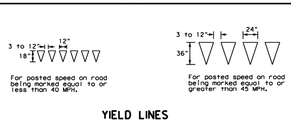
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



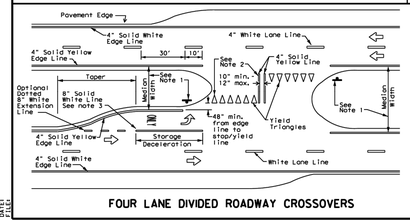
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



YIELD LINES



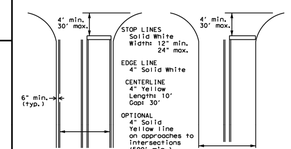
FOUR LANE DIVIDED ROADWAY CROSSOVERS

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths
for Undivided Highways

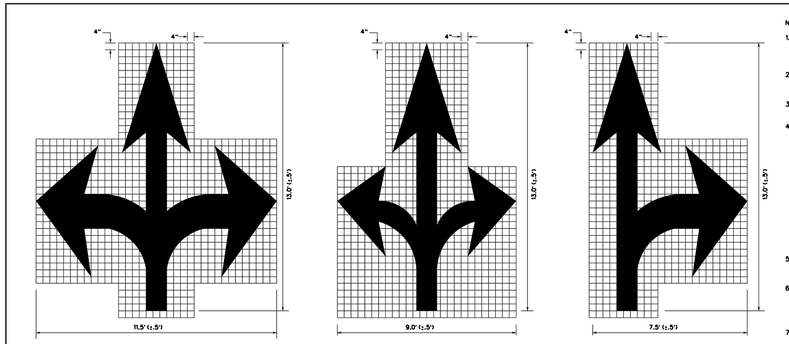
Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD
PAVEMENT MARKINGS

PM(1)-20

FILE:	pm1-20.dgn	DN:	CK:	DW:	CK:
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9-95	3-98 REVISIONS				
8-00	2-12	DIST	COUNTY		SHEET NO.
8-00	6-20				

1 of 1



NOTES:

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION. SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED, INCLUDE THE FOLLOWING:
   A. REGULATORY
      STOP
      RIGHT (LEFT) TURN ONLY
      25 MPH
      SYMBOL ARROWS
   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R R (SEE RCPM DETAIL)
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS
5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.

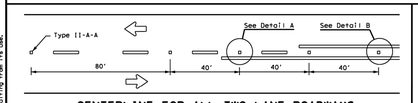
SEPTEMBER 2009
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS
STANDARD PAVEMENT MARKINGS (ARROWS)
SHEET 3 OF 18

ENGR. SUBMITTAL	PROJECT NO.	DATE:
APPR. BY:	DESN. BY:	DRAD. BY:	CHKD. BY:	SHEET NO.:

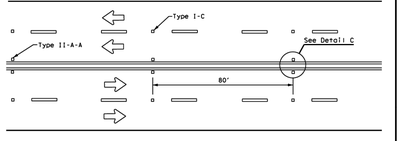
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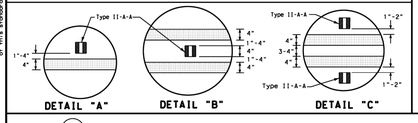
REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE
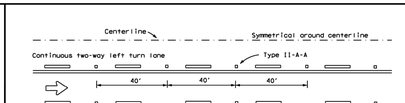


CENTERLINE FOR ALL TWO LANE ROADWAYS

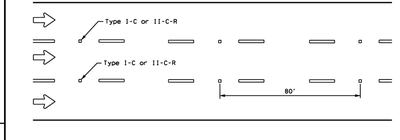


CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS





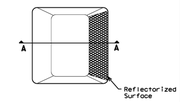
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



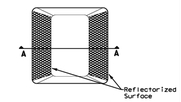
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

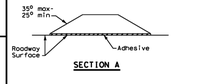
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

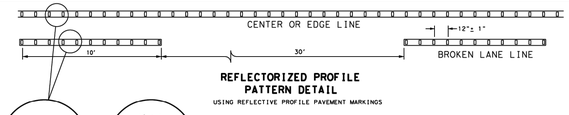


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE
PATTERN DETAIL
USING REFLECTIVE PROFILE PAVEMENT MARKINGS

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

NOTE
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

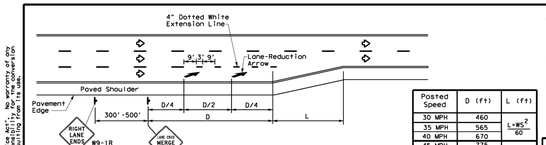
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING
RAISED MARKERS
RELECTORIZED PROFILE
MARKINGS
PM(2)-20

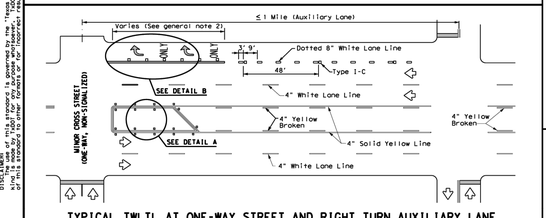
FILE:	pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	April 1977	CONT	SECT	JOB	HIGHWAY
4-92	2-98 REVISIONS				
8-00	2-12	DIST	COUNTY		SHEET NO.
8-00	6-20				

1 of 1

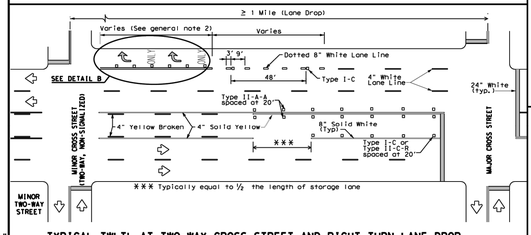


LANE REDUCTION

Posted Speed	D (ft)	L (ft)
30 MPH	460	L=WS²/60
35 MPH	565	
40 MPH	670	
45 MPH	775	
50 MPH	885	L=WS
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



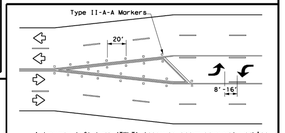
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgment. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking at mid-block locations is not required. Turn bay is not required unless stated elsewhere in the plans.

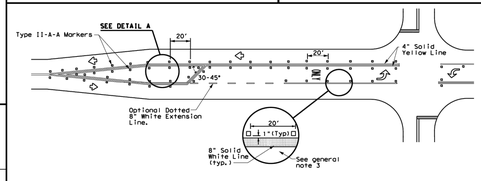
TYPICAL TRANSITION FOR TWLTL
AND DIVIDED HIGHWAY

GENERAL NOTES

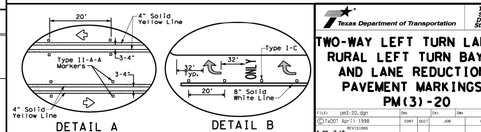
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow word and arrow marking is used for a mandatory turn lane, it should be placed near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES,
RURAL LEFT TURN BAYS,
AND LANE REDUCTION
PAVEMENT MARKINGS
PM(3)-20

FILE:	pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	April 1998	CONT	SECT	JOB	HIGHWAY
5-00	2-10 REVISIONS				
8-00	2-12	DIST	COUNTY		SHEET NO.
3-03	6-20				

1 of 1

L:\877\02\01\DESIGN\DWG\PHASE 1\STRIPE\ST7P877201 - TRUMBO TIE IN.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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Engineering & Design
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DESCRIPTION	DRAWN BY	DATE

STATE OF TEXAS
BID SET
NOT FOR CONSTRUCTION
LICENSED PROFESSIONAL ENGINEER

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194500

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: STP877202(1 - TRUMBO TIE IN

SHEET TITLE:
PAVEMENT STRIPING DETAILS

SHEET NUMBER:
5.28

FOREST OAKS MHC (PUD)

BEXAR COUNTY, TEXAS

WATER SYSTEM IMPROVEMENTS

GENERAL WATER NOTES (JULY 2017)

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:

- *A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Waste water System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.*
- *B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".*
- *C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".*
- *D. Current City of San Antonio "Standard Specifications for Public Works Construction".*
- *E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).*

2. The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction I nspection Division to proceed with the work and has arranged a meeting with the inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.

3. The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within the design plans.

4. The Contractor is to make arrangements with the SAWS Construction Inspection Division at (210) 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.

5. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

6. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:

SAWS Utility Locates: http://www.saws.org/Service/Locates
COSA Drainage (210) 207-0724 or (210) 207-6026
COSA Traffic Signal Operations (210) 206-8480
COSA Traffic Signal Damages (210) 207-3951
Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.

8. All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.

9. The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.

10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

11. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org. Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org. Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.

13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division.

Water Section
1. Prior to tie-ins, any shutdowns of existing mains of any size must be coordinated with the SAWS Construction Inspection Division at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.

- *For water mains 12" or higher: SAWS Emergency Operations Center (210) 233-2014*

2. Asbestos Cement (AC) pipe, also known as transite pipe which is known to contain asbestos containing material (ACM), may be located within the project limits. Special waste management procedures and health and safety requirements will be applicable when removal and/or disturbance of this pipe occurs. Such work is to be made under Special Specification Item No. 3000, "Special Specification for Handling Asbestos Cement Pipe".

3. Valve removal: Where the contractor is to abandon a water main, the control valve located on the abandoning branch will be removed and replaced with a cap/plug. (NSPI)

4. Suitable anchorage/thrust blocking or joint restraint shall be provided at all of the following main locations: dead ends, plugs, caps, tees, crosses, valves, and bends, in accordance with the Standard Drawings DD-839 Series and Item No. 839, in the SAWS Standard Specifications for Construction.

5. All valves shall read "open right".

*6. PRVs Required: Contractor to verify that no portion of the tract is below ground elevation of ____645____ feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below ____645____ feet, the Developer or Builder shall install at each lot, on the customer's side of the meter, an approved type pressure regulator in conformance with the Plumbing Code of the City of San Antonio. No dual services allowed for any lot(s) if "PRV is/are required for such lot(s), only single service connections shall be allowed. *Note: A pressure regulator is also known as a pressure reducing valve (PRV).*

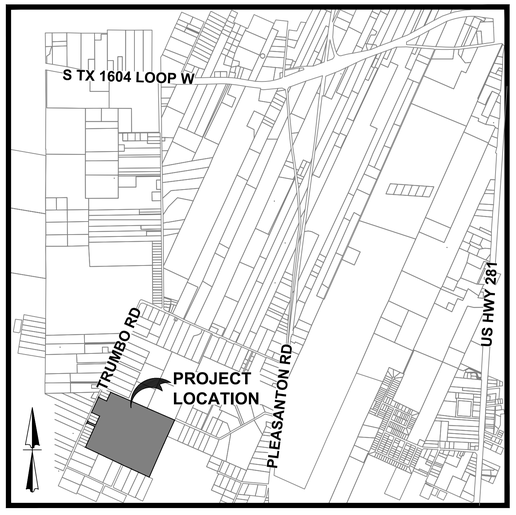
7. Pipe Disinfection with Dry HTH for Projects less than 800 linear feet. (Item No. 847.3): Mains shall be disinfected with dry HTH where shown in the contract documents or as directed by the Inspector, and shall not exceed a total length of 800 feet. This method of disinfection will also be followed for main repairs. The Contractor shall utilize all appropriate safety measure to protect his personnel during disinfection operations.

8. Backflow Prevention Devices:

- *All irrigation services within residential areas are required to have backflow prevention devices.*
- *All commercial backflow prevention devices must be approved by SAWS prior to installation.*

9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.

10. Division Valves shown on plans or not shown on plans but found in the field shall only be operated by SAWS Distribution and Collection staff and only with prior written approval of the SAWS Director of Production and Operations and proper coordination with all SAWS departments. Contractor shall provide written notification to the inspector a minimum of two weeks in advance to start the coordination process and will be informed by the Inspector when the division valve will be operated by the SAWS Distribution and Collection staff. The Division Valve can only be operated by SAWS Distribution and Collection staff member not the inspector or the contractor. Operation of a Division Valve without the express prior written approval of the SAWS Distribution and Collection staff will constitute a material breach of any written SAWS contract or permit in addition to subjecting the Contractor to liability for any and all fines, fees, or other damages, direct or consequential, that may arise from or be caused by the operation of the valve without prior written permission. Please be informed that the approval of the operation or opening or closing of a division valve can take several weeks for approval. Division Valves will also have a valve lid labeled Division Valve and a locking mechanism installed with a key. The lock and key mechanism will be paid for by the contractor but will be installed by SAWS Distribution and Collection staff.



LOCATION MAP
NOT TO SCALE

OWNER INFORMATION
JAY PARKER
TRUMBO PROPERTY, LLC
2822 WINTER GORGE
SAN ANTONIO, TX 78259

RESIDENTIAL LOTS = 153

Sheet List Table

DESCRIPTION	SHEET NO.
WATER DISTRIBUTION COVER	6.0
WATER DISTRIBUTION PLAN (SHEET 1 OF 12)	6.1
WATER DISTRIBUTION PLAN (SHEET 2 OF 12)	6.2
WATER DISTRIBUTION PLAN (SHEET 3 OF 12)	6.3
WATER DISTRIBUTION PLAN (SHEET 4 OF 12)	6.4
WATER DISTRIBUTION PLAN (SHEET 5 OF 12)	6.5
WATER DISTRIBUTION PLAN (SHEET 6 OF 12)	6.6
WATER DISTRIBUTION PLAN (SHEET 7 OF 12)	6.7
WATER DISTRIBUTION PLAN (SHEET 8 OF 12)	6.8
WATER DISTRIBUTION PLAN (SHEET 9 OF 12)	6.9
WATER DISTRIBUTION PLAN (SHEET 10 OF 12)	6.10
WATER DISTRIBUTION PLAN (SHEET 11 OF 12)	6.11
WATER DISTRIBUTION PLAN (SHEET 12 OF 12)	6.12

SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC
DEVELOPER'S ADDRESS: 2822 WINTER GORGE
CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*
PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*
SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*
TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*
NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

PLAT NO.25-11800029

JOB NO.: 877-02-01

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR
CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14955
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: CVOW8770201

SHEET TITLE: WATER DISTRIBUTION COVER

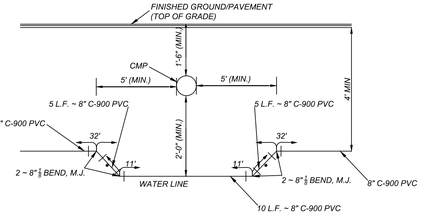
SHEET NUMBER: 6.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

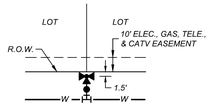
L:\877\02\01\DESIGN\DWL\PHASE 1\WATER\CVOW8770201.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

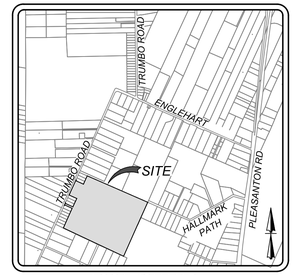


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE

SCALE : 1"=50'
0' 50' 150'
100'



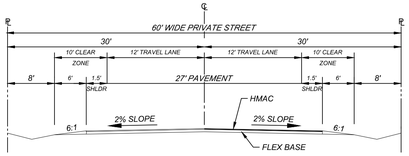
LOCATION MAP
N.T.S.

NOTE:

ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (SAWS) STANDARD SPECIFICATIONS.

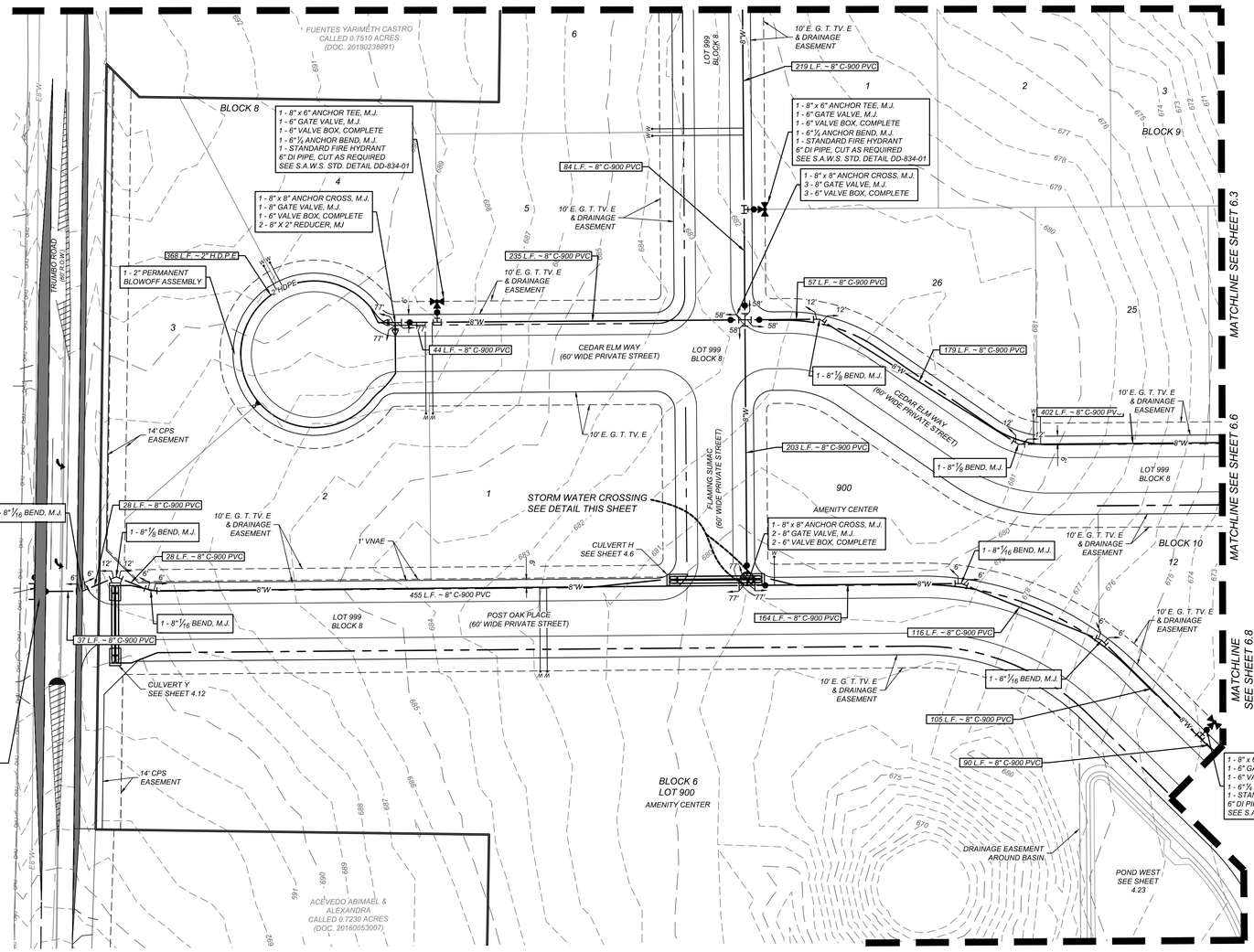
LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE
PROPOSED JOINT RESTRAINT	=	12' 12'



TYPICAL 60' STREET SECTION
N.T.S.

MATCHLINE SEE SHEET 6.2



MATCHLINE SEE SHEET 6.8

CONTRACTOR SHALL TIE NEW 8" PVC PIPE TO EXISTING 8" PVC PIPE WITH 8"x8" ANCHOR TEE. CONTRACTOR TO CUT IN 1-8"X8" ANCHOR TEE, M.J. 2-8" GATE VALVE M.J. 2 - 6" VALVE BOX COMPLETE

8" GATE VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY S.A.W.S.

INSTALL FOR CHLORINATION INJECTION
2 ~ 1" CORP STOP C.C. x I.P.
2 ~ 1" COMP x 1 ½ CPL. CURB STOP
2 ~ 1" COPPER TUBING, CUT AS REQUIRED
2 ~ 1 ½ " THD. SOLID CAPS, THR.
CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

1~ 8"X2" ECCENTRIC REDUCER, M.J.
1~ 2" BLOWOFF ASSEMBLY (TEMP.)

RESIDENTIAL LOTS = 153

PRESSURE REDUCING VALVE (PRV) NOTE:

*CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 645 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 645 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF "PRV IS / ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. WATER SERVICES WHERE PRV'S REQUIRED ARE DESIGNATED BY AN ASTERISK (*).*

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WATER PLAN NOTES:

1. *ALL PVC PIPE 8" TO BE A MINIMUM OF C-900 DR 18 CLASS 235.*
2. *FOR TYPICAL STREET SECTIONS SEE DETAIL THIS SHEET.*
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SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC
DEVELOPER'S ADDRESS: 2822 WINTER GORGE
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78259
PHONE#: FAX#: TOTAL ACREAGE: 51.78 AC.
SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 TOTAL EDU'S: 69.5
TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE PLAT NO.: 25-11800029
NUMBER OF LOTS: 66 SAWS JOB#: 25-XXXX

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

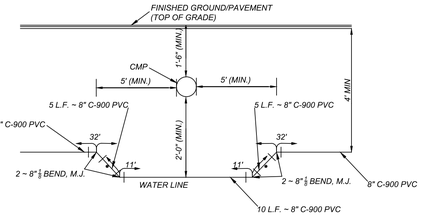
SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 1 OF 12)

SHEET NUMBER:
6.1

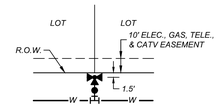
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TRENCH EXCAVATION SAFETY PROTECTION

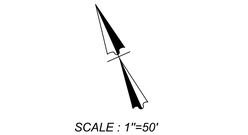
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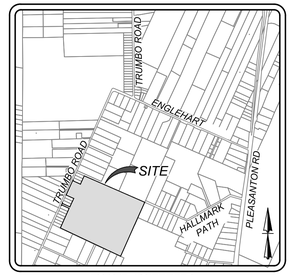


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





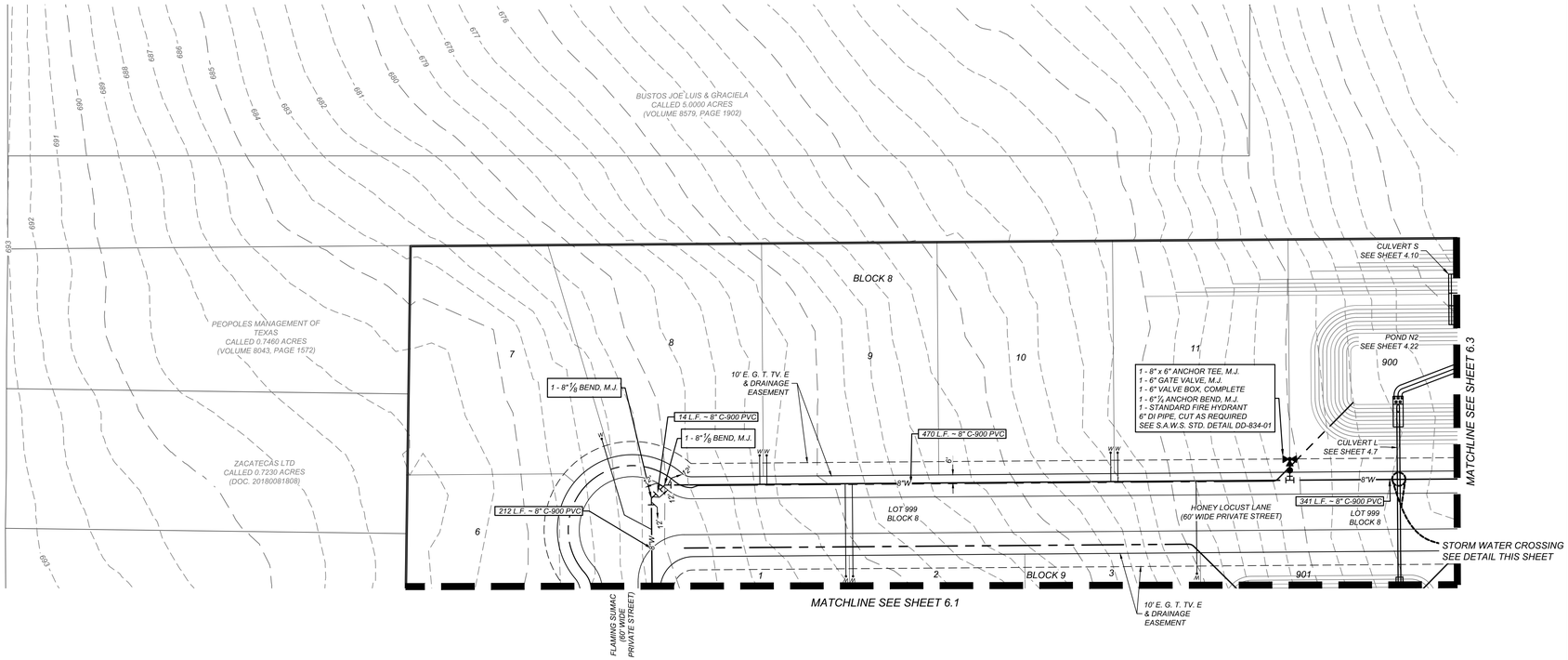
LOCATION MAP
N.T.S.

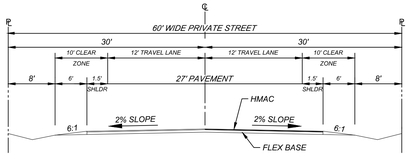
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LEGEND

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PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
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TYPICAL 60' STREET SECTION
N.T.S.

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SERVICE AREA: 830 HGL

RESIDENTIAL LOTS = 153

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers
Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 2 OF 12)

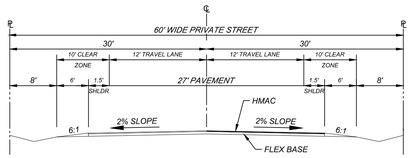
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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

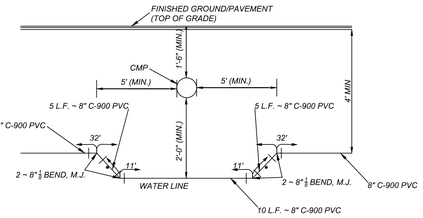
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TRENCH EXCAVATION SAFETY PROTECTION

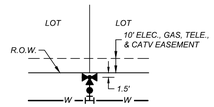
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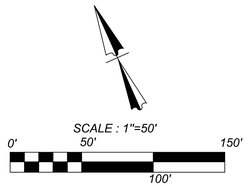
TYPICAL 60' STREET SECTION
N.T.S.

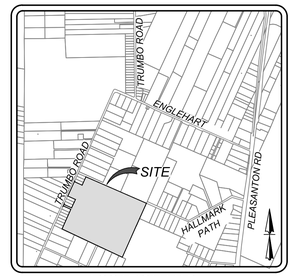


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





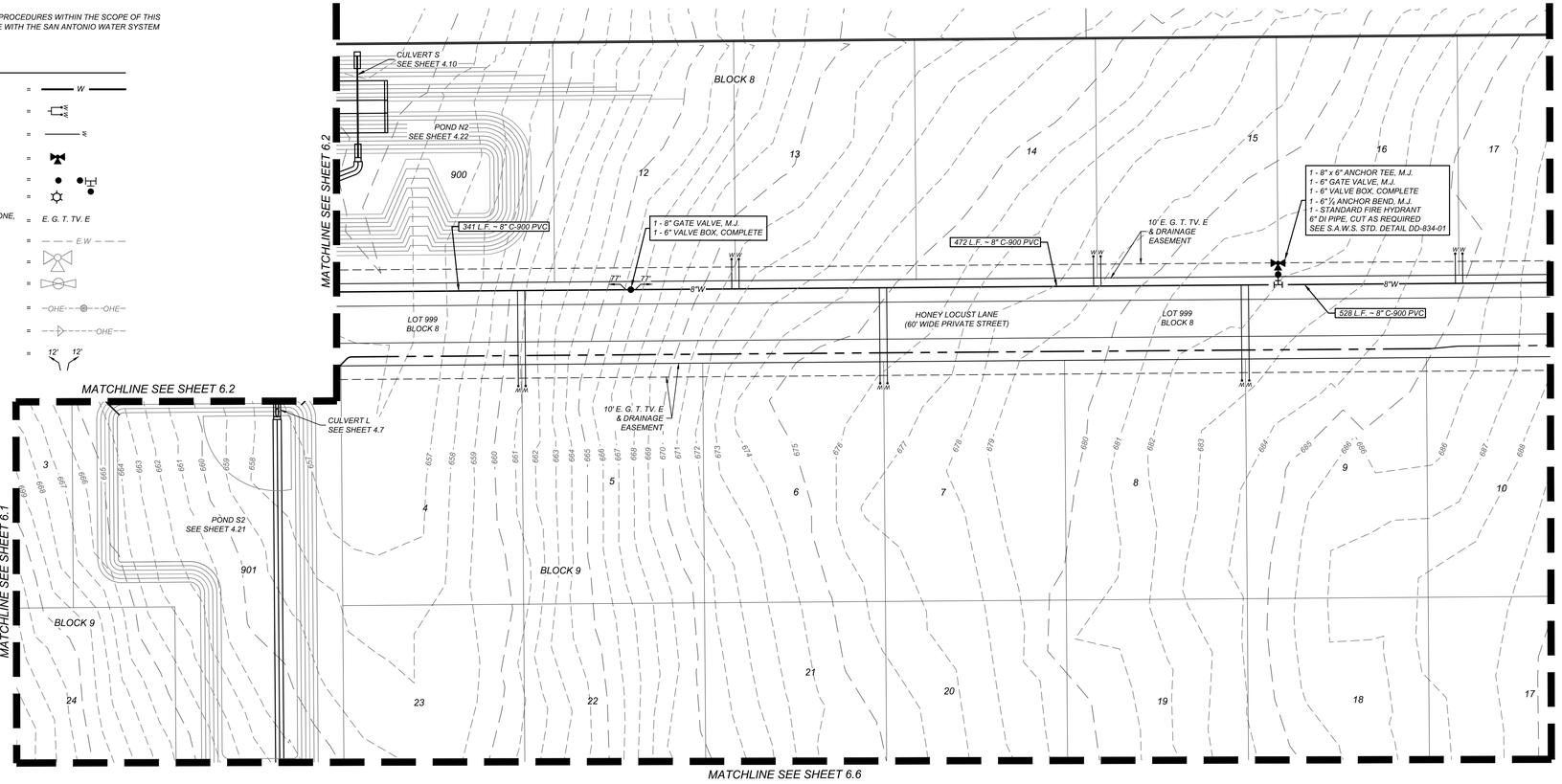
LOCATION MAP
N.T.S.

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DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design

SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194500

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 3 OF 12)

SHEET NUMBER:
6.3

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

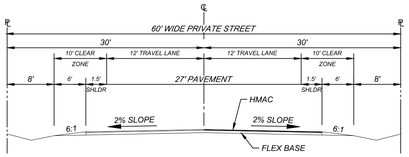
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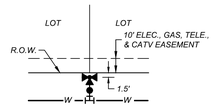
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LEGEND

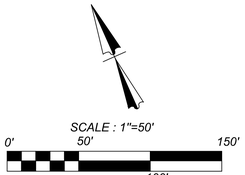
- PROPOSED WATER MAIN = W
- PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX = DW
- PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX = W
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED STREETLIGHT
- PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT = E. G. T. TV. E
- EXISTING WATER MAIN = E.W
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING OVERHEAD ELECTRIC W/POWER POLE = OHE
- EXISTING GUY WIRE/OVERHEAD ELECTRIC = OHE
- PROPOSED JOINT RESTRAINT = 12' 12'

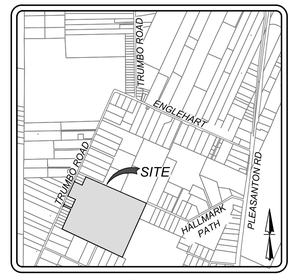


TYPICAL 60' STREET SECTION
N.T.S.

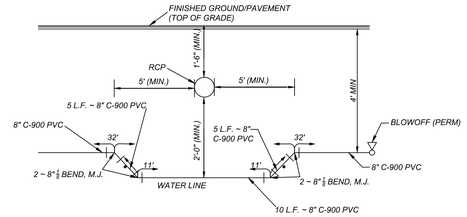


TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.



TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE

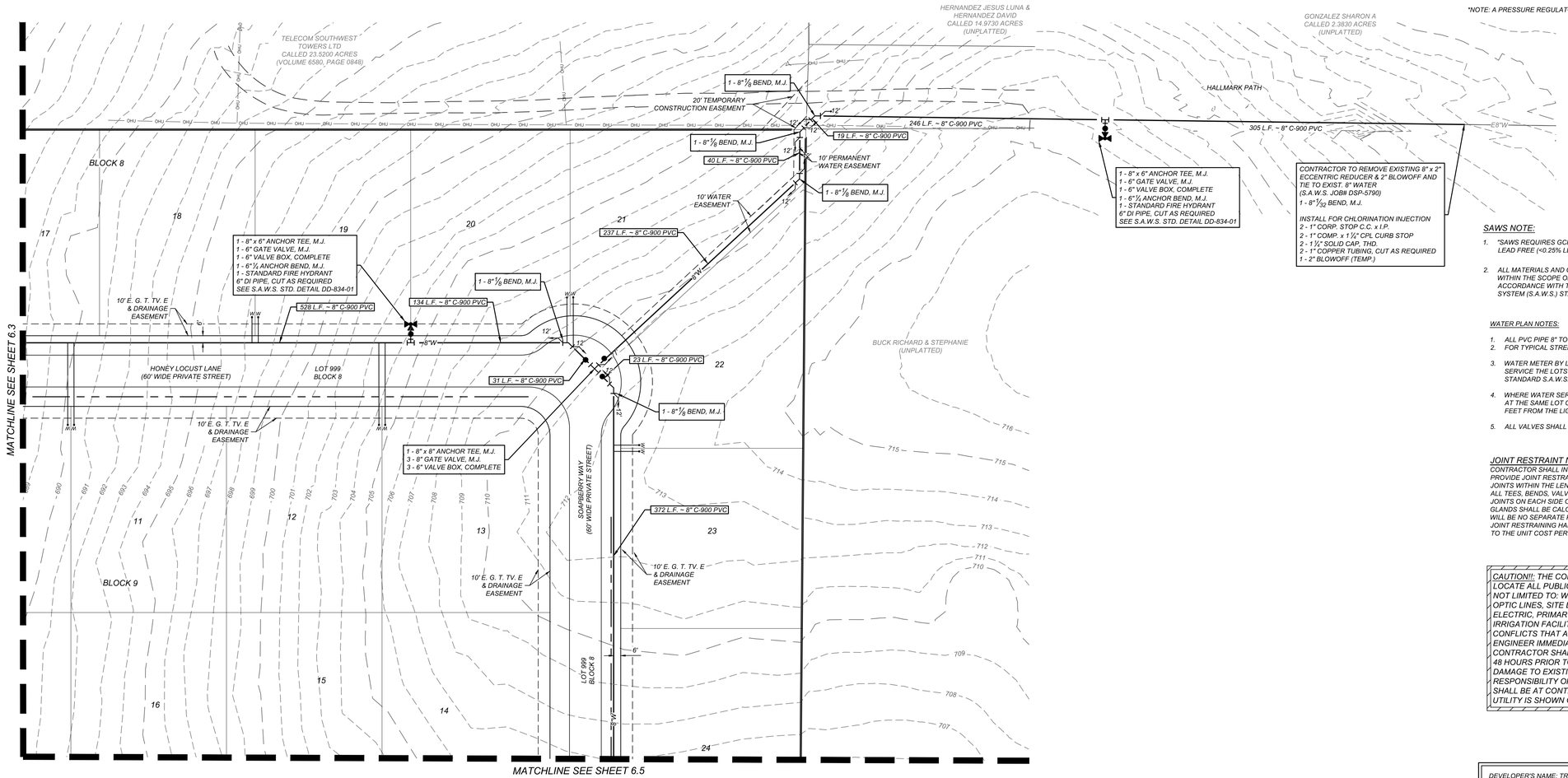
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PRESSURE REDUCING VALVE (PRV) NOTE:

CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 645 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 645 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF "PRV IS / ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. WATER SERVICES WHERE PRV'S REQUIRED ARE DESIGNATED BY AN ASTERISK (*).

*NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE(PRV)



RESIDENTIAL LOTS = 153

SAWS NOTE:

1. "SAWS REQUIRES GCPs AND COUNTER PERMIT TO USE LEAD FREE (<0.25% LEAD) FIRE HYDRANTS."
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WATER PLAN NOTES:

1. ALL PVC PIPE 8" TO BE A MINIMUM OF C-900 DR 18 CLASS 235.
2. FOR TYPICAL STREET SECTIONS SEE DETAIL THIS SHEET.
3. WATER METER BY LOCATIONS BY LOCATIONS ARE SHOWN SYMBOLICALLY TO SERVICE THE LOTS BUT SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD S.A.W.S. WATER DETAILS & SPECIFICATIONS.
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5. ALL VALVES SHALL READ "OPEN RIGHT"

JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESS OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY SAWS APPROVED PROGRAMS. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

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SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC
DEVELOPER'S ADDRESS: 2822 WINTER GORGE
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78259
PHONE#: FAX#: TOTAL ACREAGE: 51.78 AC.
SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 TOTAL EDU'S: 69.5
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NUMBER OF LOTS: 66 SAWS JOB#: 25-XXXX

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
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COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14309
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 4 OF 12)

SHEET NUMBER:
6.4

L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

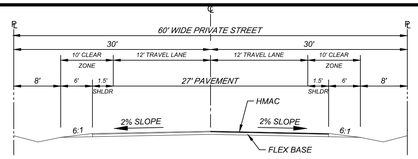
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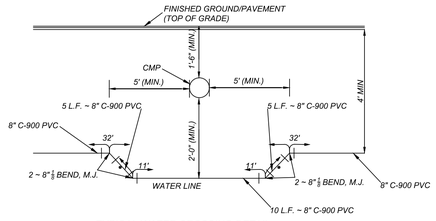
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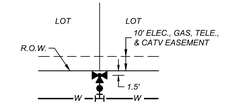
PROPOSED WATER MAIN	=	*W*
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	*E. G. T. TV. E*
EXISTING WATER MAIN	=	*E.W*
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	*OHE*
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TYPICAL 60' STREET SECTION
N.T.S.

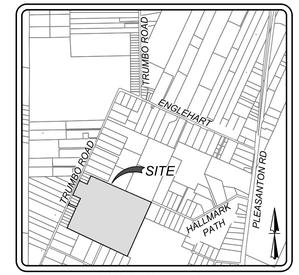


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE

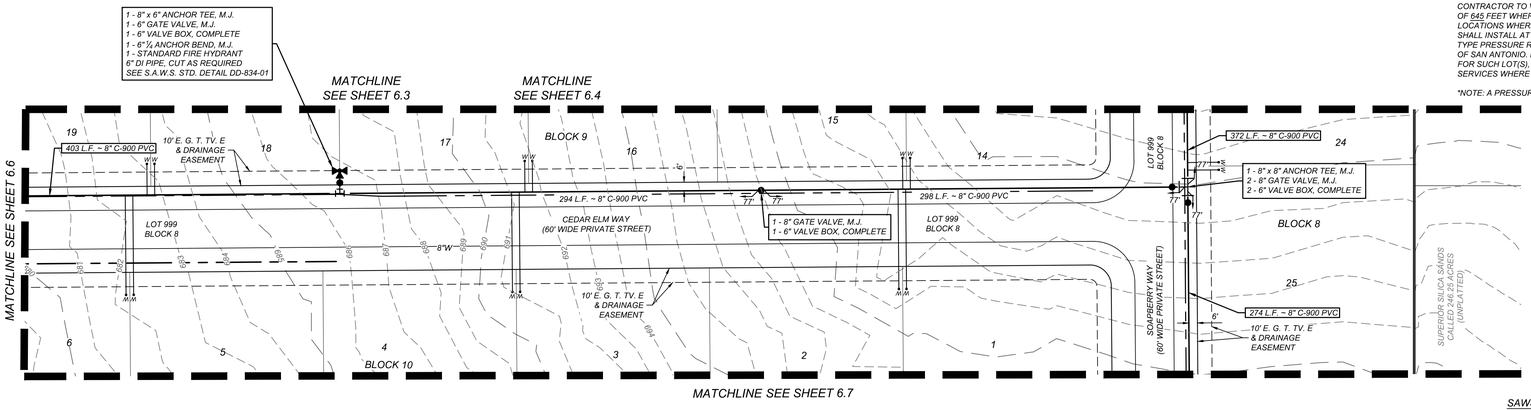


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LOCATION MAP
N.T.S.



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REV	DATE	DRAWN BY	DESCRIPTION

BID SET NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 5 OF 12)

SHEET NUMBER:
6.5

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L:\877\2025\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

TRENCH EXCAVATION SAFETY PROTECTION

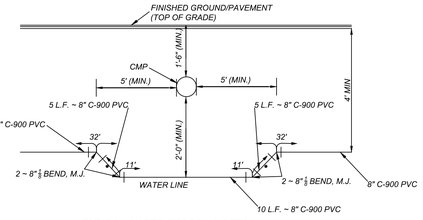
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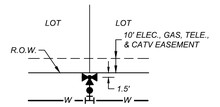
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LEGEND

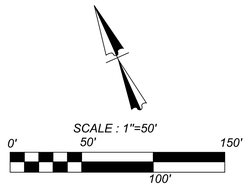
PROPOSED WATER MAIN	=	W
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE
PROPOSED JOINT RESTRAINT	=	12' 12'

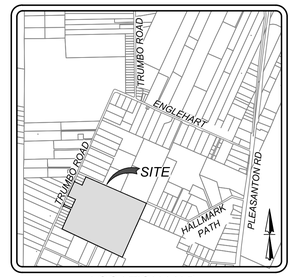


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE

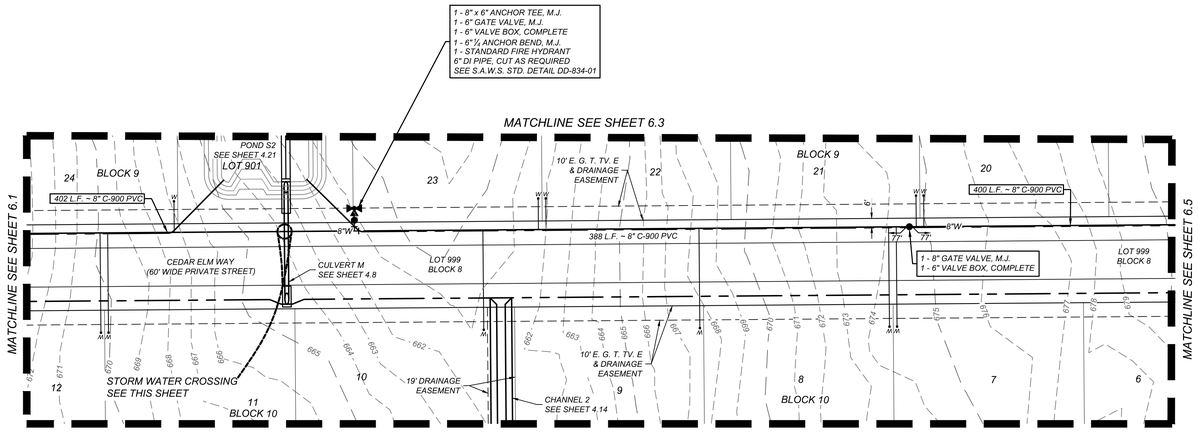


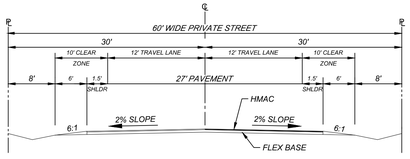
TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.





TYPICAL 60' STREET SECTION
N.T.S.

RESIDENTIAL LOTS = 153

FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1,000 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

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SAWS NOTE:

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SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER:	DRAWING NAME:
877-02-01	WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 6 OF 12)

SHEET NUMBER:
6.6

L:\877\02\01\DESIGN\CIVIL\PHASE 1 WATER\WATER_8770201.DWG By: CCISNONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

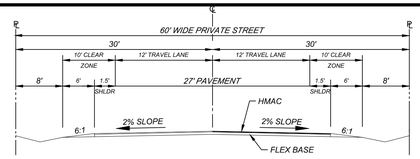
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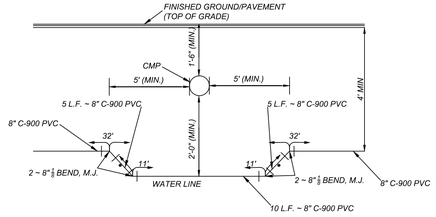
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LEGEND

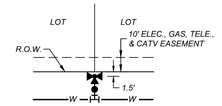
PROPOSED WATER MAIN	=	W
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
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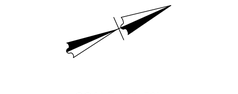
TYPICAL 60' STREET SECTION
N.T.S.



TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.

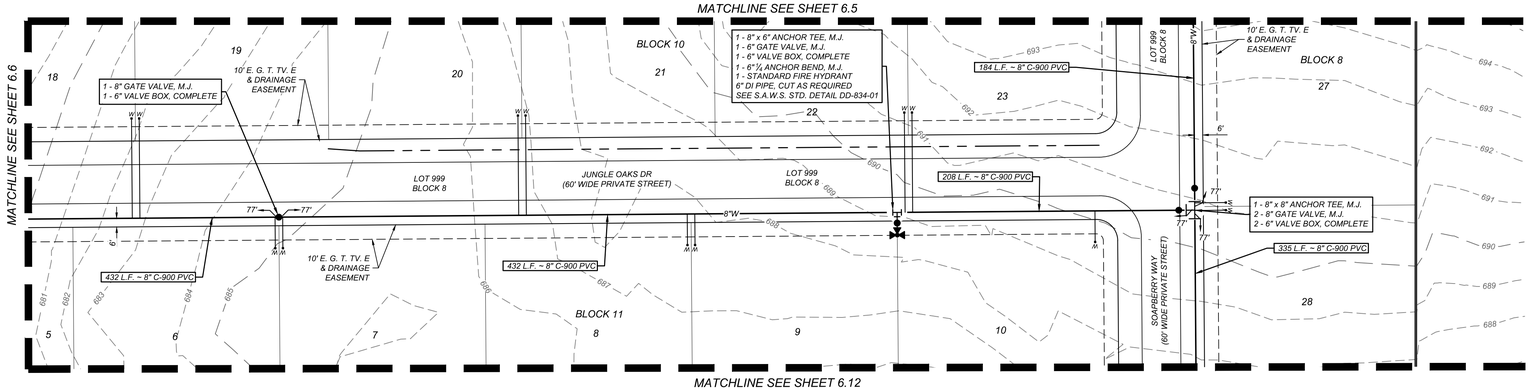
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CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*
PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*
SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*
TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*
NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

RESIDENTIAL LOTS = 153

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: FI-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 7 OF 12)

SHEET NUMBER:
6.7

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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TRENCH EXCAVATION SAFETY PROTECTION

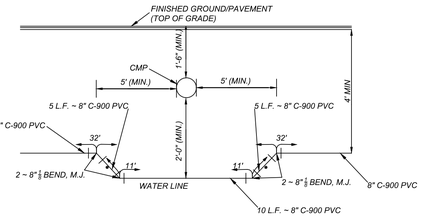
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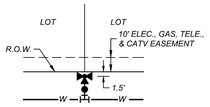
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LEGEND

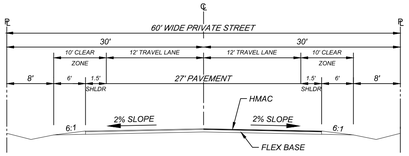
PROPOSED WATER MAIN	=	W
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EXISTING WATER VALVE	=	
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TYPICAL WATER CROSSING DETAIL
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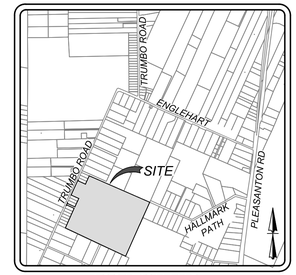


TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE



TYPICAL 60' STREET SECTION
N.T.S.





LOCATION MAP
N.T.S.

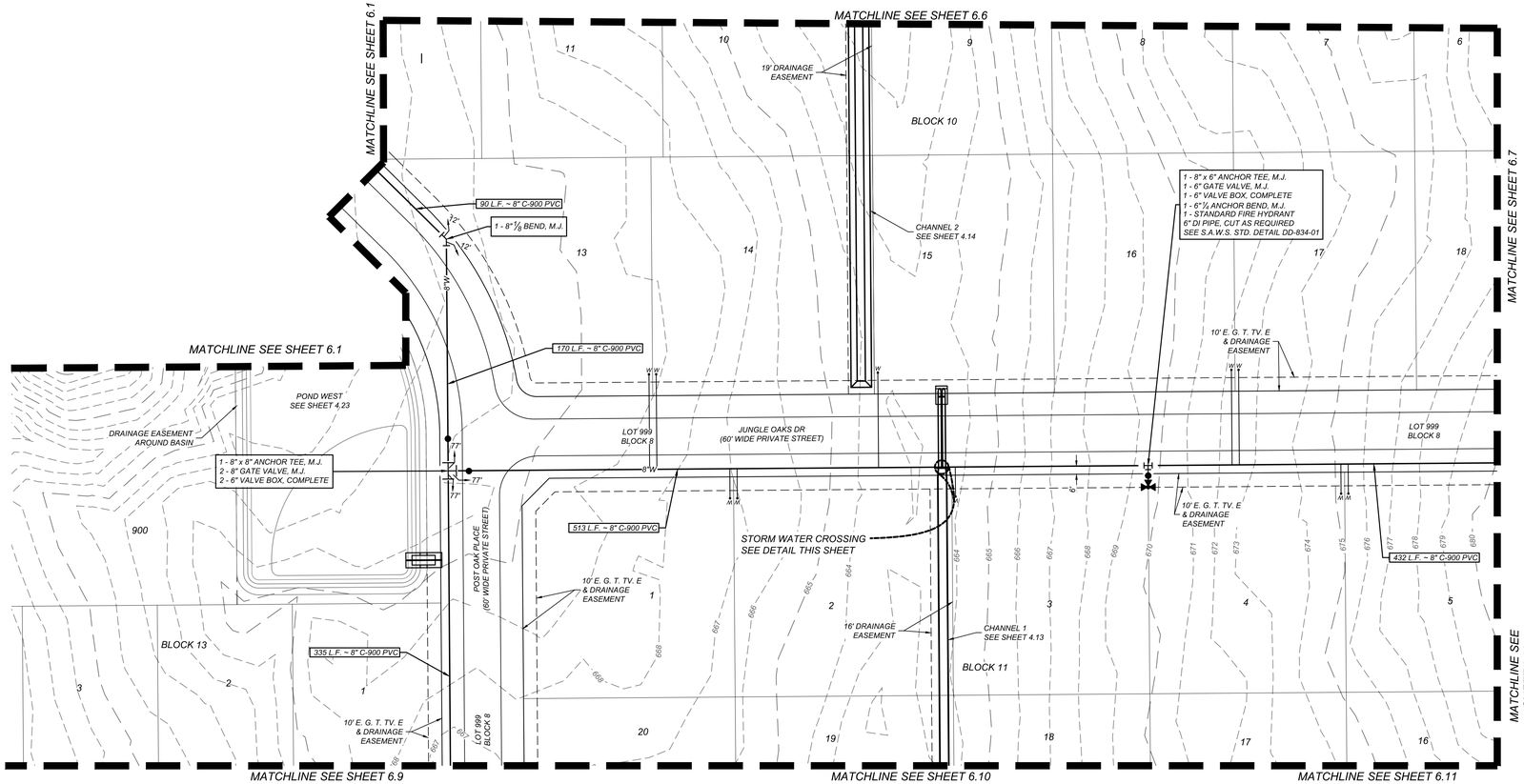
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DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

RESIDENTIAL LOTS = 153

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Engineering & Design
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Formerly Known as KFW ENGINEERS & SURVEYING

811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD) PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14955
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 8 OF 12)

SHEET NUMBER:
6.8

L:\877\02\01\SIGN\DWL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

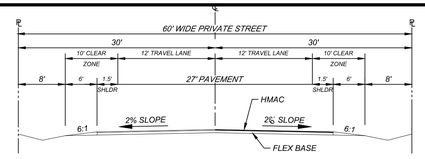
CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NOTE:

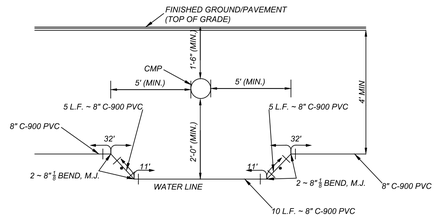
ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (SAWS) STANDARD SPECIFICATIONS.

LEGEND

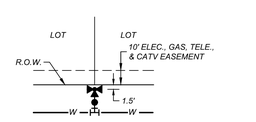
- PROPOSED WATER MAIN = W
- PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX = DW
- PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX = W
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED STREETLIGHT
- PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT = E. G. T. TV. E
- EXISTING WATER MAIN = E.W
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING OVERHEAD ELECTRIC W/POWER POLE = OHE
- EXISTING GUY WIRE/OVERHEAD ELECTRIC = OHE
- PROPOSED JOINT RESTRAINT = 12' 12'



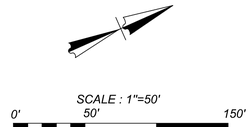
TYPICAL 60' STREET SECTION
N.T.S.



TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.

MATCHLINE SEE SHEET 6.1

MATCHLINE SEE SHEET 6.8

MATCHLINE SEE SHEET 6.10

MATCHLINE SEE SHEET 6.8

MATCHLINE SEE SHEET 6.10

LOPEZ JESUS & CALLED 0.7230 ACRES (DOC. 20060119938)

DRAYER RICKY & IRMA CALLED 0.7850 ACRES (DOC. 20070204656)

RAMOS ALLEN & MARTHA CALLED 0.8290 ACRES (DOC. 20180011511)

GUZMAN MICHAEL & CALLED 0.7230 ACRES (DOC. 20150172415)

BLOCK 13 — 6, 5, 4

BLOCK 14 — 22, 21

BLOCK 11 — 1, 2, 3, 20

BLOCK 12 — 13, 12, 11, 10

LOT 999 BLOCK 8

EMPOWER LANE (60' WIDE PRIVATE STREET)

WOODLAND OAKS DR. (60' WIDE PRIVATE STREET)

POST OAK PLACE (60' WIDE PRIVATE STREET)

TRUMBO ROAD (60' WIDE PRIVATE STREET)

1 - 8" x 6" ANCHOR TEE, M.J.
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 6"½ ANCHOR BEND, M.J.
1 - STANDARD FIRE HYDRANT
6" DI PIPE, CUT AS REQUIRED
SEE S.A.W.S. STD. DETAIL DD-834-01

17 L.F. ~ 8" C-900 PVC
441 L.F. ~ 8" C-900 PVC
32 L.F. ~ 8" C-900 PVC
45 L.F. ~ 8" C-900 PVC
61 L.F. ~ 8" C-900 PVC
60 L.F. ~ 8" C-900 PVC
306 L.F. ~ 8" C-900 PVC
335 L.F. ~ 8" C-900 PVC
115 L.F. ~ 8" C-900 PVC

10' E. G. T. TV. E & DRAINAGE EASEMENT

1 - 8"x⅛ BEND, M.J.
1 - 8"x⅛ BEND, M.J.
1 - 8"x⅛ BEND, M.J.
1 - 8"x1/32 BEND, M.J.

1 - 8" x 8" ANCHOR TEE, M.J.
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE

1 - 8" x 8" ANCHOR TEE, M.J.
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE

STORM WATER CROSSING SEE DETAIL THIS SHEET

CULVERT E SEE SHEET 4.4

CULVERT F SEE SHEET 4.5

LOT 999 BLOCK 8

8"W

6"W

CONTRACTOR SHALL TIE NEW 8" PVC PIPE TO EXISTING 8" PVC PIPE WITH 8"x8" ANCHOR TEE. CONTRACTOR TO CUT IN
1-8"X8" ANCHOR TEE, M.J.
2-8" GATE VALVE, M.J.
2-6" VALVE BOX, COMPLETE

8" GATE VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION BY CONTRACTOR AND ACCEPTANCE BY S.A.W.S.

INSTALL FOR CHLORINATION INJECTION
2 ~ 1" CORP STOP C.C. x I.P.
2 ~ 1" COMP x 1½ CPL. CURB STOP
2 ~ 1" COPPER TUBING, CUT AS REQUIRED
2 ~ 1½ " THD. SOLID CAPS, THR.
CONTRACTOR SHALL PROVIDE A 2" JUMPER CONNECTION TO LOAD NEW MAIN

1~ 8"X2" ECCENTRIC REDUCER, M.J.
1~ 2" BLOWOFF ASSEMBLY (TEMP.)

RESIDENTIAL LOTS = 153

SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1,000 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

PRESSURE REDUCING VALVE (PRV) NOTE:

*CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 645 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 645 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS / ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. WATER SERVICES WHERE PRV'S REQUIRED ARE DESIGNATED BY AN ASTERISK (*).*

**NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE(PRV)*

SAWS NOTE:

1. *"SAWS REQUIRES GCPs AND COUNTER PERMIT TO USE LEAD FREE (<0.25% LEAD) FIRE HYDRANTS."*
2. *ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (S.A.W.S.) STANDARD SPECIFICATIONS.*

WATER PLAN NOTES:

1. *ALL PVC PIPE 8" TO BE A MINIMUM OF C-900 DR 18 CLASS 235.*
2. *FOR TYPICAL STREET SECTIONS SEE DETAIL THIS SHEET.*
3. *WATER METER BY LOCATIONS BY LOCATIONS ARE SHOWN SYMBOLICALLY TO SERVICE THE LOTS BUT SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD S.A.W.S. WATER DETAILS & SPECIFICATIONS.*
4. *WHERE WATER SERVICES AND LIGHT POLE FOUNDATIONS ARE PROPOSED TO BE AT THE SAME LOT CORNERS, SERVICE TAPS AND LEADS SHOULD BE AT LEAST 3 FEET FROM THE LIGHT POLE FOUNDATION.*
5. *ALL VALVES SHALL READ "OPEN RIGHT"*

JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESS OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY SAWS APPROVED PROGRAMS. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESS AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

***CAUTION!!:** THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO; WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.*

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14809
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

SHEET TITLE: WATER DISTRIBUTION PLAN (SHEET 9 OF 12)

SHEET NUMBER: 6.9

L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

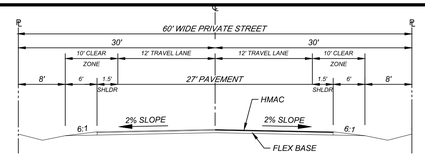
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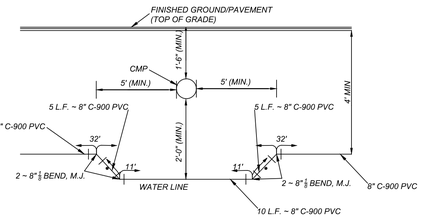
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LEGEND

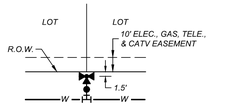
- PROPOSED WATER MAIN = W
- PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX =
- PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX =
- PROPOSED FIRE HYDRANT =
- PROPOSED WATER VALVE =
- PROPOSED STREETLIGHT =
- PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT = E. G. T. TV. E
- EXISTING WATER MAIN = E.W
- EXISTING FIRE HYDRANT =
- EXISTING WATER VALVE =
- EXISTING OVERHEAD ELECTRIC W/POWER POLE = OHE
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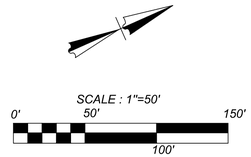
TYPICAL 60' STREET SECTION
N.T.S.

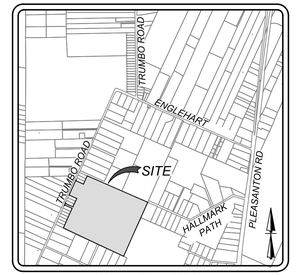


TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.

SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO STATE: TEXAS ZIP: 78259

PHONE#: FAX#: TOTAL ACREAGE: 51.78 AC.

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 TOTAL EDU'S: 69.5

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NUMBER OF LOTS: 66 SAWS JOB#: 25-XXXX

MATCHLINE SEE SHEET 6.8

MATCHLINE SEE SHEET 6.9

MATCHLINE SEE SHEET 6.12

MATCHLINE SEE SHEET 6.11

CANALES PABLO H CALLED 0.7230 ACRES (DOC. 20060248742)

PENA ALEJANDRO CESAR & ANA LUISA CALLED 0.7230 ACRES (DOC. 20050284609)

LOPEZ JESUS JR & LLUVIA A CALLED 0.7230 ACRES (DOC. 20180206088)

ZACATECAS LTD CALLED 0.7230 ACRES (DOC. 20180081809)

ZACATECAS LTD CALLED 0.7230 ACRES (DOC. 20180081809)

ZACATECAS LTD CALLED 0.7140 ACRES (VOLUME 10772, PAGE 1975)

LUMBRERAS JUANITA GUADALUPE CALLED 5.0000 ACRES (DOC. 20150200467)

VEGA MARYLOU M & EUGENE III C/S VLB 378-140170 CALLED 10.0000 ACRES (UNPLATTED)

CASTILLO THEODORE J CALLED 6.3200 ACRES (DOC. 20080148241)

BLOCK 14

BLOCK 11

BLOCK 12

EMPOWER LANE (60' WIDE PRIVATE STREET)

WOODLAND OAKS DR. (60' WIDE PRIVATE STREET)

TREE FOREST LANE (60' WIDE PRIVATE STREET)

LOT 999 BLOCK 8

448 L.F. ~ 8" C-900 PVC

23 L.F. ~ 8" C-900 PVC

1 - 8" x 6" ANCHOR TEE, M.J.
1 - 6" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 6"¼ ANCHOR BEND, M.J.
1 - STANDARD FIRE HYDRANT
6" DI PIPE, CUT AS REQUIRED
SEE S.A.W.S. STD. DETAIL DD-834-01

1 - 8"⅛ BEND, M.J.

1 - 8"⅛ BEND, M.J.

14 L.F. ~ 8" C-900 PVC

10' E. G. T. TV. E & DRAINAGE EASEMENT

1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE

462 L.F. ~ 8" C-900 PVC

616 L.F. ~ 8" C-900 PVC

401 L.F. ~ 8" C-900 PVC

401 L.F. ~ 8" C-900 PVC

16' DRAINAGE EASEMENT

CHANNEL 1 SEE SHEET 4.13

10' E. G. T. TV. E & DRAINAGE EASEMENT

1 - 8" GATE VALVE, M.J.
1 - 6" GATE VALVE BOX, COMPLETE

10' E. G. T. TV. E

STORM WATER CROSSING SEE DETAIL THIS SHEET

STORM WATER CROSSING SEE DETAIL THIS SHEET

1 - 8" x 6" ANCHOR TEE, M.J.
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SEE S.A.W.S. STD. DETAIL DD-834-01

POND NORTH-1 SEE SHEET 4.18

POND S1 SEE SHEET 4,17

CULVERT A SEE SHEET 4.1

CULVERT O SEE SHEET 4.9

RESIDENTIAL LOTS = 153

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR
CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design

SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01

DRAWING NAME: WATER_8770201

SHEET TITLE: WATER DISTRIBUTION PLAN (SHEET 10 OF 12)

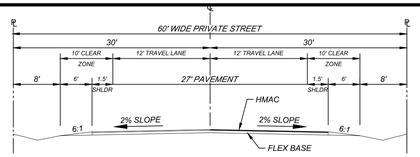
SHEET NUMBER: 6.10

L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION

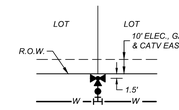
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TYPICAL 60' STREET SECTION
N.T.S.

LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E, G, T, TV, E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE
PROPOSED JOINT RESTRAINT	=	12' 12'



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.

SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC

DEVELOPER'S ADDRESS: 2822 WINTER GORGE

CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*

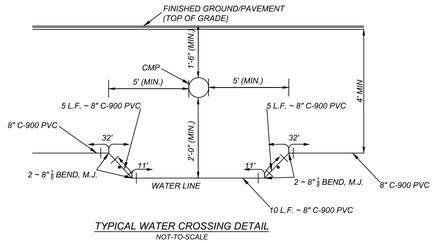
PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*

SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*

TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*

NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

NOTE:
ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (SAWS) STANDARD SPECIFICATIONS.



TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE

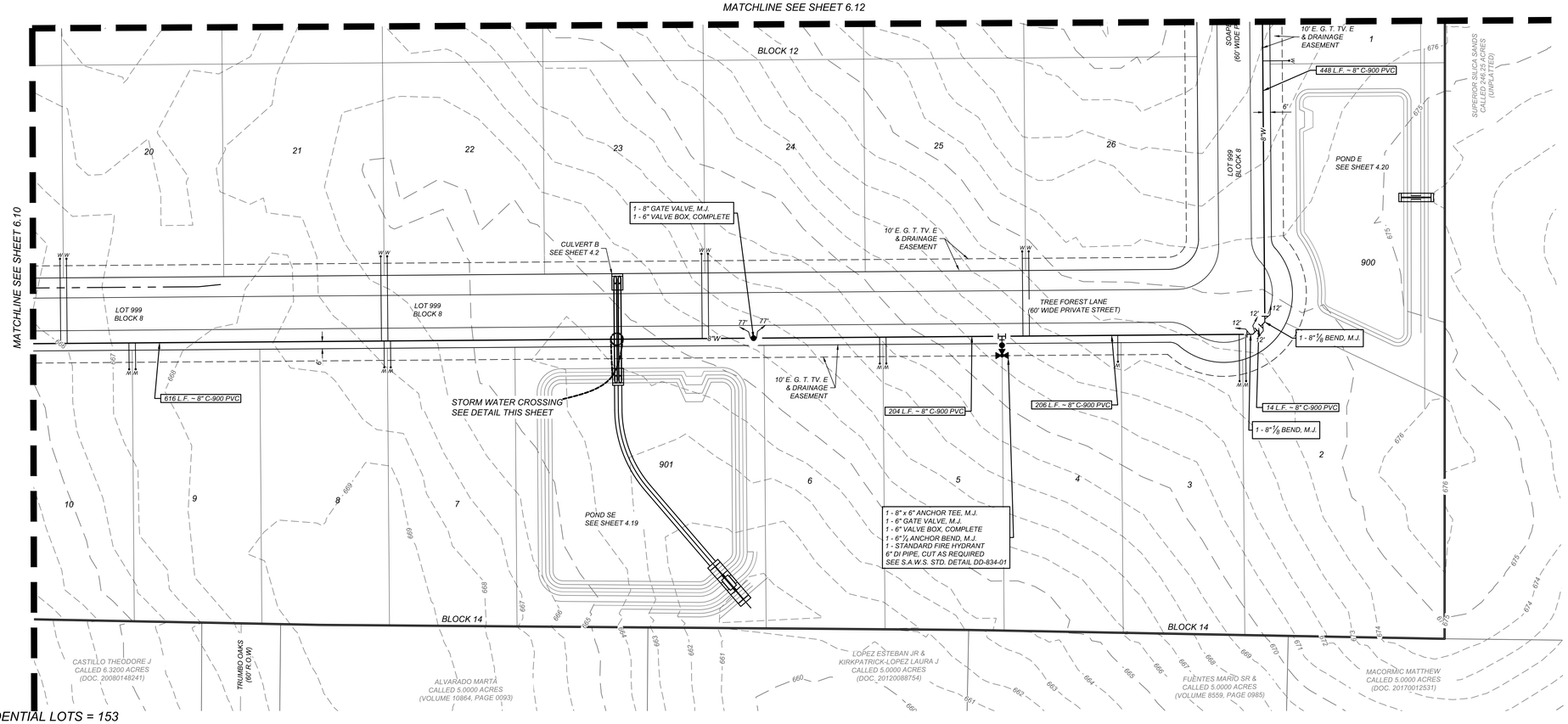
FIRE FLOW NOTE:

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PRESSURE REDUCING VALVE (PRV) NOTE:

*CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 645 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 645 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS / ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. WATER SERVICES WHERE PRV'S REQUIRED ARE DESIGNATED BY AN ASTERISK (*).*

**NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE(PRV)*



RESIDENTIAL LOTS = 153

SAWS NOTE:

1. *"SAWS REQUIRES GCPs AND COUNTER PERMIT TO USE LEAD FREE (<0.25% LEAD) FIRE HYDRANTS."*
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WATER PLAN NOTES:

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2. *FOR TYPICAL STREET SECTIONS SEE DETAIL THIS SHEET.*
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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: P-1-6909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 11 OF 12)

SHEET NUMBER:
6.11

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

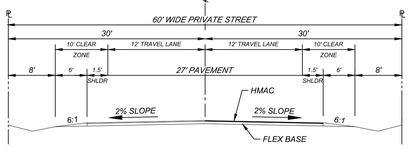
L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

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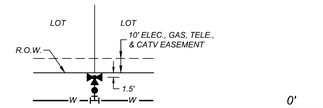
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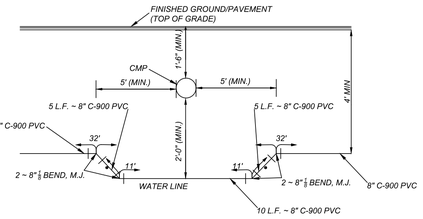
TYPICAL 60' STREET SECTION
N.T.S.

LEGEND

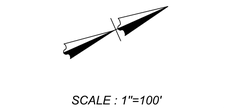
PROPOSED WATER MAIN	=	W
PROPOSED 1" DUAL WATER SERVICE W/ 5/8" METERS AND BOX	=	DW
PROPOSED WATER 3/4" SINGLE SERVICE W/ 5/8" METERS AND BOX	=	W
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED STREETLIGHT	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T, TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE
PROPOSED JOINT RESTRAINT	=	12" 12"



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE



TYPICAL WATER CROSSING DETAIL
NOT-TO-SCALE





LOCATION MAP
N.T.S.

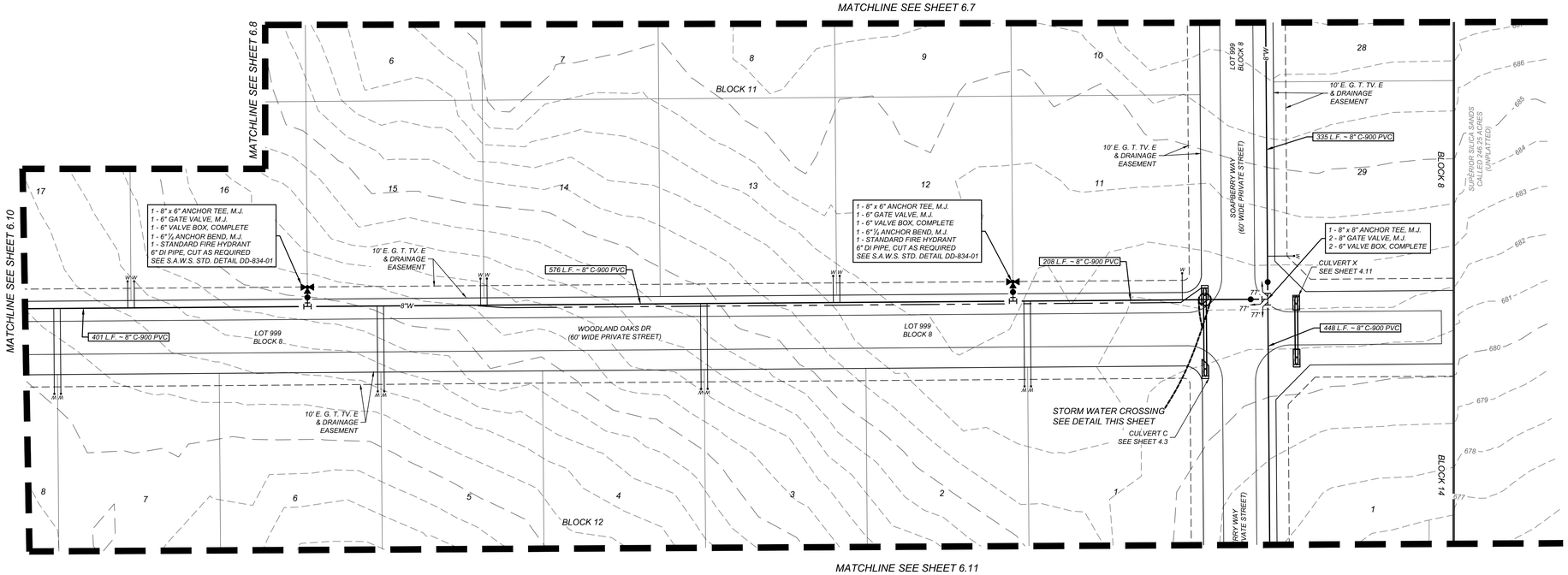
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SERVICE AREA: 830 HGL

DEVELOPER'S NAME: TRUMBO PROPERTY, LLC
DEVELOPER'S ADDRESS: 2822 WINTER GORGE
CITY: SAN ANTONIO *STATE: TEXAS* *ZIP: 78259*
PHONE#: *FAX#:* *TOTAL ACREAGE: 51.78 AC.*
SAWS BLOCK MAP#: 152490, 154490, 152488, 154488 *TOTAL EDU'S: 69.5*
TOTAL LINEAR FOOTAGE OF PIPE: 6,513 L.F. ~ 8" PVC, 368 L.F. ~ 2" HDPE *PLAT NO.: 25-11800029*
NUMBER OF LOTS: 66 *SAWS JOB#: 25-XXXX*

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: WATER_8770201

SHEET TITLE:
WATER DISTRIBUTION PLAN (SHEET 12 OF 12)

SHEET NUMBER:
6.12

L:\877\02\01\DESIGN\CIVIL\PHASE 1\WATER\WATER_8770201.DWG By: ECORONA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

SITE DESCRIPTION

PROJECT NAME AND LOCATION: _____

CONTACT AND PHONE NO.: _____

PROJECT DESCRIPTION: _____

MAJOR SOIL DISTURBING ACTIVITIES: _____

TOTAL PROJECT AREA (ACRES): _____

TOTAL AREA TO BE DISTURBED: _____

WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): _____

EXISTING CONDITION OF SOIL VEGETATIVE COVER AND % OF VEGETATIVE COVER: _____

DESCRIPTION OF WATER DISCHARGED NOT ASSOCIATED WITH CONSTRUCTION: _____

NAME OF RECEIVING WATERS: _____

IDENTIFY STORMWATER DISCHARGE POINTS: _____

A DESCRIPTION AND TIME FRAME FOR INSTALLATION OF STABILIZATION PRACTICES IN COALIANCTION WITH CONSTRUCTION: _____

EROSION AND SEDIMENTATION CONTROLS

SOIL STABILIZATION PRACTICES:

_____ HYDROMULCHING

_____ TEMPORARY SEEDING

_____ PERMANENT PLANTING, SODDING OR SEEDING

_____ MULCHING

_____ SOIL RETENTION BLANKET

_____ BUFFER ZONES

_____ PRESERVATION OF NATURAL RESOURSES

OTHER: _____

DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED TEMPORARILY OR PERMANENTLY, SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME AND DONE WITHIN 21 DAYS.

STRUCTURAL PRACTICES:

_____ SILT FENCES
_____ HAY BALES
_____ GRAVEL FILTRATION BAGS
_____ ROCK BERMS
_____ DIVERSION, INTERCEPTOR OR PERIMETER DIKES
_____ DIVERSION, INTERCEPTOR OR PERIMETER SWALES
_____ DIVERSION, DIKE AND SWALE COMBINATIONS
_____ PAVED FLUMES
_____ ROCK BEDDING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
_____ TIMBER MATTING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
_____ CHANNEL LINERS
_____ SEDIMENT TRAPS
_____ SEDIMENT BASINS
_____ STORM INLET SEDIMENT TRAP
_____ STONE OUTLET SEDIMENT STRUCTURES
_____ CURBS AND GUTTERS
_____ STORM SEWERS
_____ VELOCITY CONTROL STRUCTURES
_____ GEOTEXTILES

OTHER: _____

NARRATIVE – SEQUENCE OF CONSTRUCTION (STORMWATER MANAGEMENT) ACTIVITIES:

THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS: _____

A DESCRIPTION OF MAINTENANCE PROCEDURES OF CONTROL MEASURES USED: _____

STORMWATER MANAGEMENT:

A DESCRIPTION OF PERMANENT STORM WATER MANAGEMENT CONTROLS:

OTHER EROSION AND SEDIMENTATION CONTROLS

MAINTENANCE:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY IT WILL BE DONE AT THE EARLIEST DATE POSSIBLE BUT NO LATER THAN 7 CALENDAR DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED FROM THE RAIN EVENT. ALL REPAIRS MUST BE REPORTED IN THE MAINTENANCE REPORTS ADJACENT TO CREEKS AND DRAINAGEWAYS SHALL HAVE PRIORITY FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS.

INSPECTION:

AN INSPECTION WILL BE PERFORMED BY THE CONTRACTOR EVERY 14 DAYS AS WELL AS AFTER EVERY 1/2" OR MORE RAINFALL WITHIN 24 HOURS. A MAINTENANCE REPORT SHALL BE KEPT SUMMARIZING THE INSPECTION AND MAINTENANCE. REPORT WILL BE MADE FOR INSPECTION, BASED ON THE INSPECTION RESULTS, THE CONTROLS SHALL BE CORRECTED BEFORE THE NEXT SCHEDULED INSPECTION.

WASTE MATERIALS:

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LOCKED METAL DUMPSTER. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION AND THE TRASH WILL BE HAULED TO A LOCAL DUMP. NO CONSTRUCTION MATERIALS WILL BE BURIED ON SITE.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):

AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS PAINTS, ACIDS FOR CLEANING, MASONRY SURFACES, GASOLINE, MOTOR OIL, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL, OR KNOWLEDGE AND WASTE REPORTING REQUIREMENTS, THE NATIONAL RESPONSE CENTER (1-800-424-8802) WILL BE NOTIFIED IMMEDIATELY. IN ADDITION, ANY REQUIRED DUPAGES NEAR TO THOSE LISTED. IN THE EVENT OF A LIFE THREATENING SPILL THE SAN ANTONIO FIRE DEPARTMENT SHOULD BE NOTIFIED AS WELL AS THE APPROPRIATE CITY INSPECTORS.

SANITARY WASTE: _____

OFFSITE EXCAVATION SOURCE LOCATION: _____

OFFSITE FILL SOURCE LOCATION: _____

OFFSITE VEHICLE TRACKING: _____

_____ HAUL ROADS DAMPENED FOR DUST CONTROL
_____ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
_____ EXCESS DIRT ON ROAD TO BE REMOVED DAILY
_____ STABILIZED CONSTRUCTION ENTRANCE.

OTHER:

CERTIFICATION THAT SITE DISTURBANCE AND / OR DISCHARGES WILL NOT EFFECT USTED ENDANGERED SPECIES AND THEIR HABITAT: _____
WHAT METHOD IS USED TO SATISFY THE ENDANGERED SPECIES REQUIREMENTS? _____

REMARKS:

DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT ENTERS RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, BODY OF WATER, STREAMBED OR FLOODPLAIN. CONSTRUCTION STAGING AREAS SHALL BE LOCATED AWAY FROM WATERWAYS TO THE MAXIMUM EXTENT PRACTICABLE. DURING CONSTRUCTION, THE RUNOFF OF POLLUTANTS, ALL WATERWAYS SHALL BE CLEARED AS SOON AS POSSIBLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING, DEBRIS, OR OTHER OBSTRUCTION PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT PART OF THE FINISHED WORK.

JANUARY 2005
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

STORM WATER POLLUTION PREVENTION PLAN (SWP3) NARRATIVE

% SUBMITTAL/PROJECT NO.: _____ DATE: _____
DRAWN BY: V. VASQUEZ DSGN BY: _____ CHKD. BY: _____ SHEET NO.: ____ OF ____

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ): _____

1.2 PROJECT LIMITS:

From: _____

To: _____

1.3 PROJECT COORDINATES:

BEGIN: (Lat)_____,(Long)_____

END: (Lat)_____,(Long)_____

1.4 TOTAL PROJECT AREA (Acres): _____

1.5 TOTAL AREA TO BE DISTURBED (Acres): _____

1.6 NATURE OF CONSTRUCTION ACTIVITY:

_____

_____

_____

1.7 MAJOR SOIL TYPES:

Soil Type	Description

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

☐ PSLs determined during preconstruction meeting
☐ PSLs determined during construction
☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

☐ Mobilization
☐ Install sediment and erosion controls
☐ Blade existing topsoil into windrows, prep ROW, clear and grub
☐ Remove existing pavement
☐ Grading operations, excavation, and embankment
☐ Excavate and prepare subgrade for proposed pavement widening
☐ Remove existing culverts, safety end treatments (SETs)
☐ Remove existing metal beam guard fence (MBGF), bridge rail
☐ Install proposed pavement per plans
☐ Install culverts, culvert extensions, SETs
☐ Install mow strip, MBGF, bridge rail
☐ Place flex base
☐ Rework slopes, grade ditches
☐ Blade windrowed material back across slopes
☐ Revegetation of unpaved areas
☐ Achieve site stabilization and remove sediment and erosion control measures
☐ Other: _____
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

☐ Sediment laden stormwater from stormwater conveyance over disturbed area
☐ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
☐ Solvents, paints, adhesives, etc. from various construction activities
☐ Transported soils from offsite vehicle tracking
☐ Construction debris and waste from various construction activities
☐ Contaminated water from excavation or dewatering pump-out water
☐ Sanitary waste from onsite restroom facilities
☐ Trash from various construction activities/receptacles
☐ Long-term stockpiles of material and waste
☐ Other: _____
☐ Other: _____
☐ Other: _____
☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

X Development of plans and specifications
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Perform SWP3 inspections
X Maintain SWP3 records and update to reflect daily operations
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

X Day To Day Operational Control
X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
X Post Construction Site Notice
X Submit NOI/CSN to local MS4
X Maintain schedule of major construction activities
X Install, maintain and modify BMPs
X Complete and submit Notice of Termination to TCEQ
X Maintain SWP3 records for 3 years
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

SAN ANTONIO PUBLIC WORKS

Sheet 1 of 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
STATE	STATE DIST.	COUNTY	
TEXAS			
CONT.	SECT.	JOB	HIGHWAY NO.

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

☐ ☐ Protection of Existing Vegetation
☐ ☐ Vegetated Buffer Zones
☐ ☐ Soil Retention Blankets
☐ ☐ Geotextiles
☐ ☐ Mulching/ Hydromulching
☐ ☐ Soil Surface Treatments
☐ ☐ Temporary Seeding
☐ ☐ Permanent Planting, Sodding or Seeding
☐ ☐ Biodegradable Erosion Control Logs
☐ ☐ Rock Filter Dams/ Rock Check Dams
☐ ☐ Vertical Tracking
☐ ☐ Interceptor Swale
☐ ☐ Riprap
☐ ☐ Diversion Dike
☐ ☐ Temporary Pipe Slope Drain
☐ ☐ Embankment for Erosion Control
☐ ☐ Paved Flumes
☐ ☐ Other: _____
☐ ☐ Other: _____
☐ ☐ Other: _____
☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

☐ ☐ Biodegradable Erosion Control Logs
☐ ☐ Dewatering Controls
☐ ☐ Inlet Protection
☐ ☐ Rock Filter Dams/ Rock Check Dams
☐ ☐ Sandbag Berms
☐ ☐ Sediment Control Fence
☐ ☐ Stabilized Construction Exit
☐ ☐ Floating Turbidity Barrier
☐ ☐ Vegetated Buffer Zones
☐ ☐ Vegetated Filter Strips
☐ ☐ Other: _____
☐ ☐ Other: _____
☐ ☐ Other: _____
☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

☐ ☐ Sediment Trap
☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
☐ 3,600 cubic feet of storage per acre drained

☐ ☐ Sedimentation Basin
☐ Not required (<10 acres disturbed)
☐ Required (>10 acres) and implemented.
☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
☐ 3,600 cubic feet of storage per acre drained
☐ Required (>10 acres), but not feasible due to:
☐ Available area/Site geometry
☐ Site slope/Drainage patterns
☐ Site soils/Geotechnical factors
☐ Public safety
☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing From	Stationing To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

☐ Excess dirt/mud on road removed daily
☐ Haul roads dampened for dust control
☐ Loaded haul trucks to be covered with tarpaulin
☐ Stabilized construction exit
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____

2.5 POLLUTION PREVENTION MEASURES:

☐ Chemical Management
☐ Concrete and Materials Waste Management
☐ Debris and Trash Management
☐ Dust Control
☐ Sanitary Facilities
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____
☐ Other: _____
_____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing From	Stationing To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

X Fire hydrant flushings
X Irrigation drainage
X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
X Potable water sources
X Springs
X Uncontaminated groundwater
X Water used to wash vehicles or control dust
X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

SAN ANTONIO PUBLIC WORKS

Sheet 2 of 2

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
STATE	STATE DIST.	COUNTY	
TEXAS			
CONT.	SECT.	JOB	HIGHWAY NO.

EPA & TCEQ Construction General Permit - Checklist of Record Keeping Responsibilities
City of San Antonio (COSA) - January-2015

ENGINEER

Pre Construction

- Design of structural controls
- Development of SWP3
- Development of SWP3 site diagram(s) including grading plans/contours anticipated at initial, interim and final grade
- Development of project phasing schedule
- Water Pollution Abatement Plan (WPAP) (Edwards Aquifer)
- AST Plan (Edwards Aquifer)
- Environmental Preconstruction Meeting

During Construction

- Evaluation of BMP effectiveness
- Review of SWP3 Modifications

Post Construction

- Close Out Inspection
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Assess final stabilization achieved to allow Notice of Termination

COSA CONSTRUCTION PROJECT MANAGER

Pre Construction

- Review SWP3 Plans
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)

Construction

- Ensure inspection are performed and document every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
  - Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
    - Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - Construction Manager would be responsible for notifying COSA Environmental of a Reportable Quantity Release (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
  - Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to COSA Environmental.
- Ensure completing of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Contractor, COSA, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Assess final stabilization achieved to allow Notice of Termination

COSA ENVIRONMENTAL GROUP

Pre Construction

Review SWP3 Plans
- File Notice of Intent
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- Post Construction Site Notice

Construction

- Ensure inspection are performed and document every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
  - Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - Conduct TCEQ notification as required for spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
- Ensure completion of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Construction Project Manager, Contractor, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - Ensure removal of temporary BMPs,
  - Verify correct installation of permanent BMPs,
  - Assess final stabilization achieved to allow Notice of Termination
- Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years
- File Notice of Termination, when appropriate

CONTRACTOR

Pre Construction

- **Review SWP3 Plans**
- **File Notice of Intent**
- **Environmental Preconstruction Meeting**
- **Conduct SWP3 Training (EPA only)**
- **Post Construction Site Notice**

Construction

- **Conduct inspections every 7 days and maintain records of inspections and corrective actions**
- **Maintain up to date copies of SWP3 and associated records**
  - **Corrective Action Documentation- within 7 days of time of discovery (EPA)**
  - **Maintenance- document if unable to fix/install item within 7 days. (EPA)**
- **Record rainfall events and maintain documentation with the SWP3**
  - **Rainfall during normal business hours that measures 0.25 inches or greater (EPA)**
  - **Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)**
- **Conduct and record environmental monitoring-**
  - **Retain all related records including: TSS (Once per week), Turbidity (Twice per day upstream and downstream) (EPA)**
  - **Sampling-(onsite batch plant) document if sampling is not completed within the first 30 minutes of discharge (TCEQ).**
- **Follow Up on incidents and spill reports to ensure proper corrective actions**
  - **Notify Construction Site Project Manager immediately of spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)**
  - **Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to the Project Manager, as necessary.**
- **Complete the Grading Log (dates when activities start and end) and Construction Activities Log (daily)**
  - **Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated**
- **Maintain an on-site Material Inventory**
- **Update SWP3 to depict actual locations and types of BMPs, potential pollutant sources, etc., as the project proceeds.**
- **Coordinate between Construction Project Manager, COSA Environmental, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair**
- **Ensure SWP3 is being noted accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)**

CONTRACTOR (Cont'd)

Post Construction

- **Close Out Inspection**
  - **Ensure removal of temporary BMPs,**
  - **Verify correct installation of permanent BMPs,**
  - **Assess final stabilization achieved to allow Notice of Termination**
- **Provide COSA Environmental with copies of all records associated with the TPDES/NPDES Permit**
- **Maintain a copy of these records for Contractor Permit compliance for 3 years following submittal of the Notice of Termination**
- **File Notice of Termination, when appropriate**

Close Out Inspection

- **Ensure removal of temporary BMPs,**
- **Verify correct installation of permanent BMPs,**
- **Assess final stabilization achieved to allow Notice of Termination**
- **Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years**
- **File Notice of Termination, when appropriate**

JANUARY 2015
CITY OF SAN ANTONIO
TRANSPORTATION AND CAPITOL IMPROVEMENTS

STORM WATER POLLUTION GENERAL NOTES

•••• SUBMITTAL/PROJECT NO.• ••••••••••••••••••• DATE•••••••••
DRWN. BY•••••• DSGN. BY•••••• CHKD. BY•••••••• SHEET NO.•

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Formerly Known as KFW

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN NARRATIVE & NOTES

SHEET NUMBER: 7.0

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DSGN\CIVIL\PHASE 1\SW3P_8770201.DWG By: ECORONA

GENERAL NOTES:

1. *THIS EXHIBIT IS TO BE USED FOR THE PURPOSES OF STORMWATER POLLUTION PREVENTION ONLY. ALL OTHER CIVIL ENGINEERING INFORMATION SHOULD BE OBTAINED FROM THE APPROPRIATE CONSTRUCTION DOCUMENTS.*
2. *THE PURPOSE OF THE SIGNATURE AND SEAL OF THE ENGINEER ON THIS DOCUMENT IS TO DEMONSTRATE COMPLIANCE WITH THE TPDES STORM WATER POLLUTION PREVENTION PLAN REGULATIONS ONLY.*
3. *ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.*

INSTALLATION:

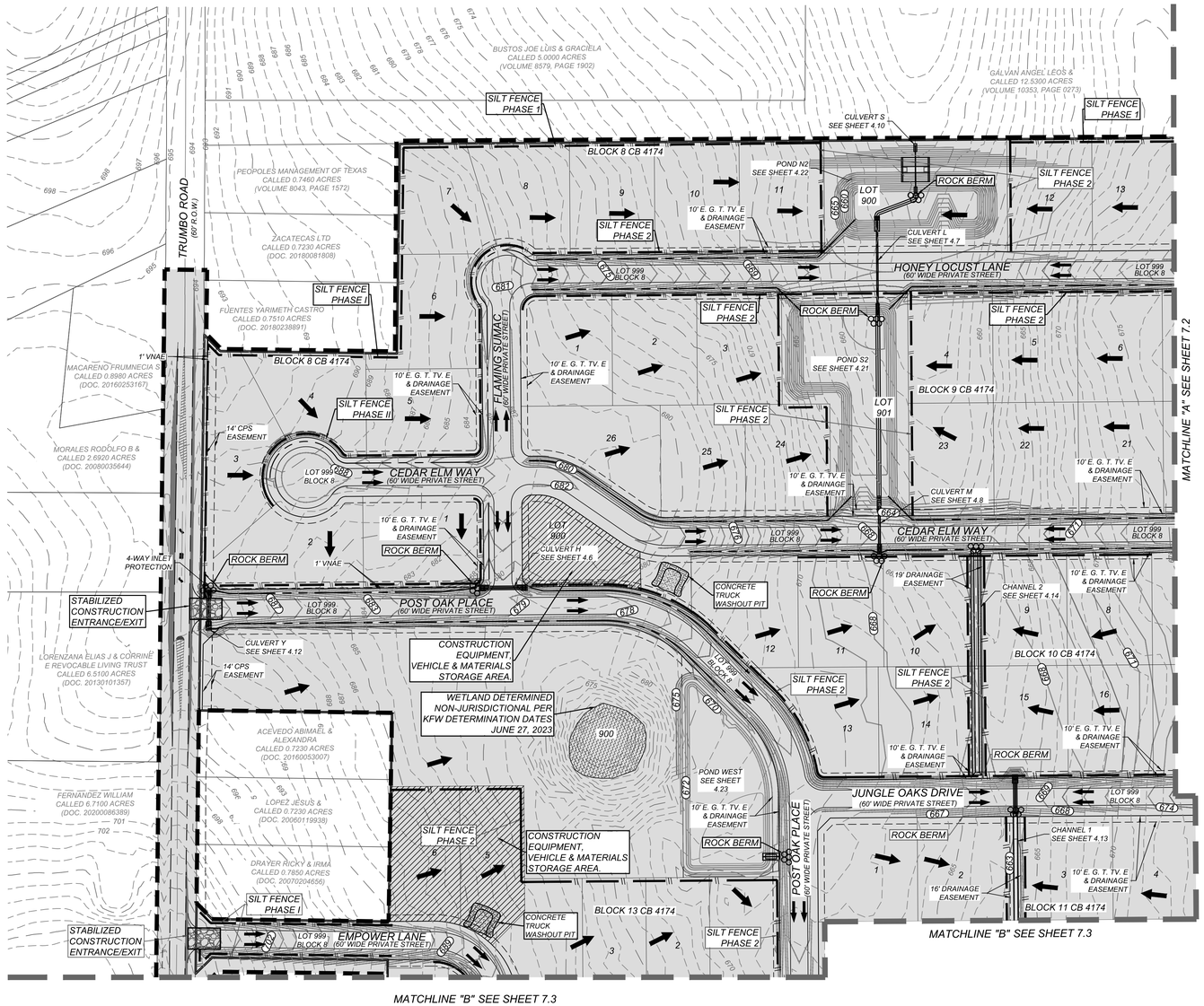
1. *ALL OPERATORS SHALL SUBMIT A CONSTRUCTION SITE NOTICE (CSN) AT LEAST 48 HOURS IN ADVANCE AND ALL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE IN PLACE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.*
2. *CONTRACTOR TO ENSURE THAT STRUCTURAL BMP'S ARE INSTALLED WITHIN THE LIMITS OF THE SITE BOUNDARY.*
3. *CONTRACTOR MAY INSTALL THE BEST MANAGEMENT PRACTICES IN PHASES THAT COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREA. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.*
4. *CONTRACTOR TO VERIFY SUFFICIENT VEGETATION IN AREA DENOTED AS VEGETATED FILTER STRIP. IF INSUFFICIENT VEGETATION EXISTS, CONTRACTOR SHALL IMPLEMENT A DIFFERENT BEST MANAGEMENT PRACTICE AND WILL SHOW IT ON THIS PLAN WITH NOTATION IN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.*

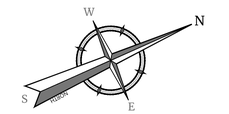
MAINTENANCE AND INSPECTION:

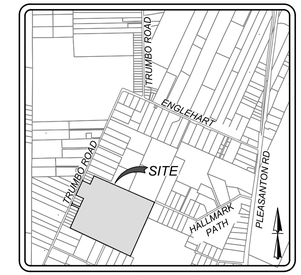
1. *CONTRACTOR SHOULD LIMIT CONSTRUCTION ACTIVITIES TO ONLY THOSE AREAS SHOWN TO BE DISTURBED ON THIS PLAN. IF ADDITIONAL VEGETATED AREAS ARE DISTURBED, THEY SHOULD BE PROTECTED WITH APPROPRIATE BEST MANAGEMENT PRACTICES UNTIL THE AREAS HAVE BEEN STABILIZED AS PER THE SPECIFICATIONS OF THE SWPPP. THE AREAS OF THIS ADDITIONAL SOIL DISTURBANCE, AND THE MEASURES USED SHOULD BE SHOWN ON THE SITE PLAN AND NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.*
2. *CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF BMP'S AS PER THE SPECIFICATIONS OF THE SWPPP. THE CONTRACTOR MAY MODIFY THE CONTROLS AS NECESSARY TO PREVENT SEDIMENT RUNOFF. THESE MODIFICATIONS SHOULD BE SHOWN IN THE SITE PLAN AND NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.*
3. *LOCATION OF CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND EQUIPMENT AND STORAGE AREA ARE TO BE FIELD DETERMINED. LOCATIONS SHALL BE UPDATED ON THIS PLAN.*

PROJECT COMPLETION:

1. *ALL DISTURBED AREAS THAT ARE NOT COVERED BY IMPERVIOUS COVER ARE TO BE STABILIZED PER THE SWPPP AND PROJECT SPECIFICATIONS PRIOR TO REMOVAL OF ANY BMP'S AND/OR PRIOR TO FILING A NOTICE OF TERMINATION (NOT).*
2. *BEST MANAGEMENT PRACTICES MAY BE REMOVED IN PHASES IF ALL UPGRADIENT AREA HAVE BEEN STABILIZED PER SWPPP AND PROJECT SPECIFICATIONS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.*
3. *CONTRACTOR TO ENSURE THEY HAVE MET ALL REQUIREMENTS OF THE SWPPP BEFORE FILING A NOTICE OF TERMINATION (NOT).*







LOCATION MAP
N.T.S.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- LIMITS OF CONSTRUCTION
- EXISTING FIRE HYDRANT
- SITE BENCHMARK SEE DESCRIPTION THIS SHEET
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING GATE
- FLOW ARROW
- PROPOSED CONTOURS (870)
- EXISTING CONTOURS (880)
- PROPOSED DRAINAGE SWALE
- PROPOSED HIGH POINT (HP)
- PROPOSED INLET PROTECTION (IP)
- PROPOSED SILT FENCE (PHASE 2 TO BE INSTALLED AFTER STREET CONSTRUCTION)
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA.
- PROPOSED CONCRETE TRUCK WASHOUT PIT
- PROPOSED ROCK BERM
- PROPOSED DISTURBED AREA

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CONTRACTOR NOTE:

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TREE NOTE:

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14909
TBPLS Firm#: 10194350

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE:
STORMWATER POLLUTION PREVENTION PLAN (SHEET 1 OF 4)

SHEET NUMBER:
7.1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CPA\PHASE 1\SW3P_8770201.DWG By: ECORONA

GENERAL NOTES:

1. THIS EXHIBIT IS TO BE USED FOR THE PURPOSES OF STORMWATER POLLUTION PREVENTION ONLY. ALL OTHER CIVIL ENGINEERING INFORMATION SHOULD BE OBTAINED FROM THE APPROPRIATE CONSTRUCTION DOCUMENTS.
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3. ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.

INSTALLATION:

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2. CONTRACTOR TO ENSURE THAT STRUCTURAL BMP'S ARE INSTALLED WITHIN THE LIMITS OF THE SITE BOUNDARY.
3. CONTRACTOR MAY INSTALL THE BEST MANAGEMENT PRACTICES IN PHASES THAT COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREA. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
4. CONTRACTOR TO VERIFY SUFFICIENT VEGETATION IN AREA DENOTED AS VEGETATED FILTER STRIP. IF INSUFFICIENT VEGETATION EXISTS, CONTRACTOR SHALL IMPLEMENT A DIFFERENT BEST MANAGEMENT PRACTICE AND WILL SHOW IT ON THIS PLAN WITH NOTATION IN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.

MAINTENANCE AND INSPECTION:

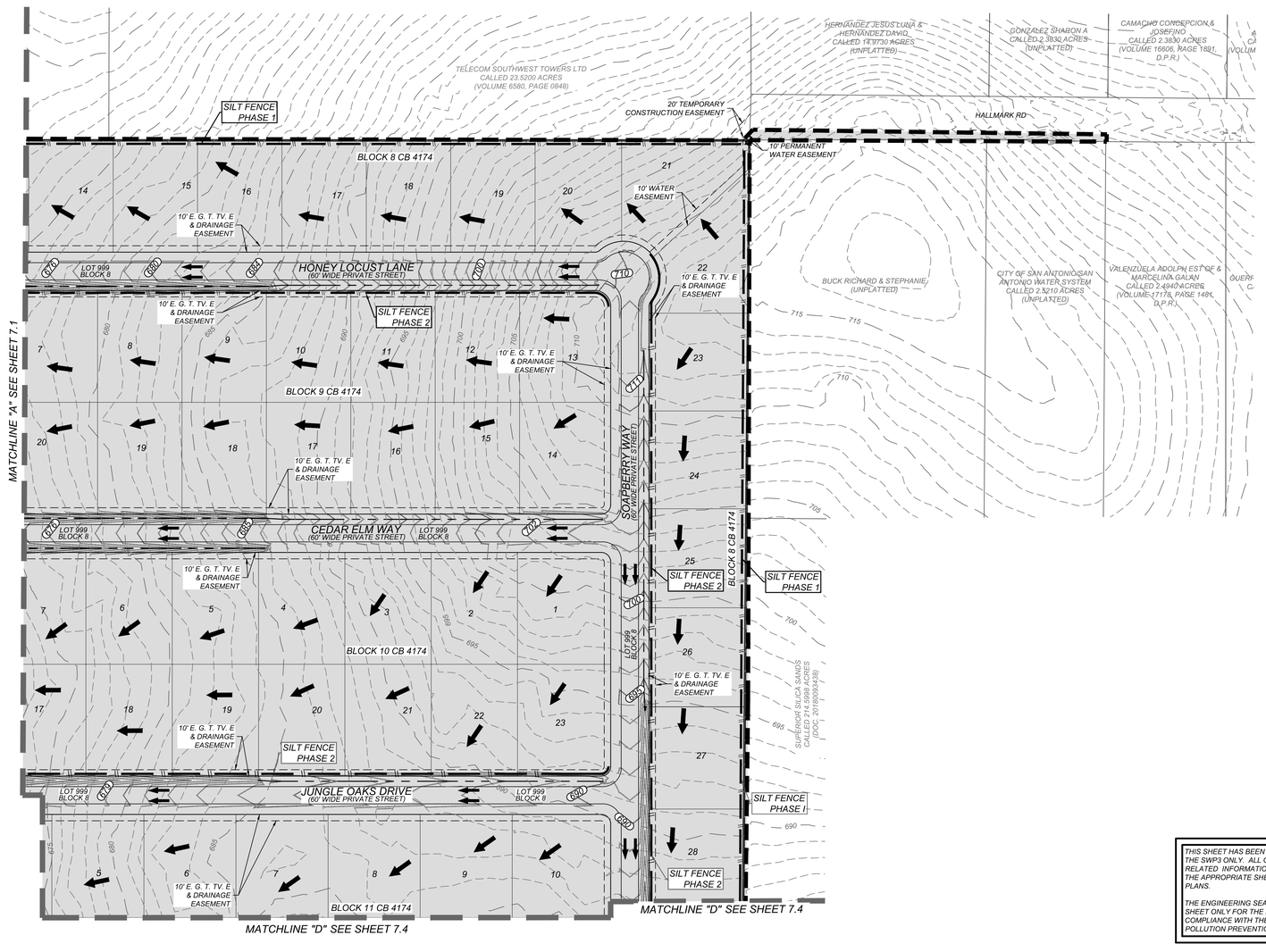
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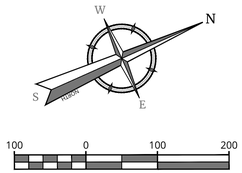
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- SITE BENCHMARK SEE DESCRIPTION THIS SHEET
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING GATE
- FLOW ARROW
- PROPOSED CONTOURS (870)
- EXISTING CONTOURS (690)
- PROPOSED DRAINAGE SWALE
- PROPOSED HIGH POINT (HP)
- PROPOSED INLET PROTECTION
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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

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Colliers Engineering & Design
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TBPE Firm#: F-14909
TBPLS Firm#: 10194550

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN (SHEET 2 OF 4)

SHEET NUMBER: 7.2

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SW3P_8770201.DWG By: ECORONA

GENERAL NOTES:

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INSTALLATION:

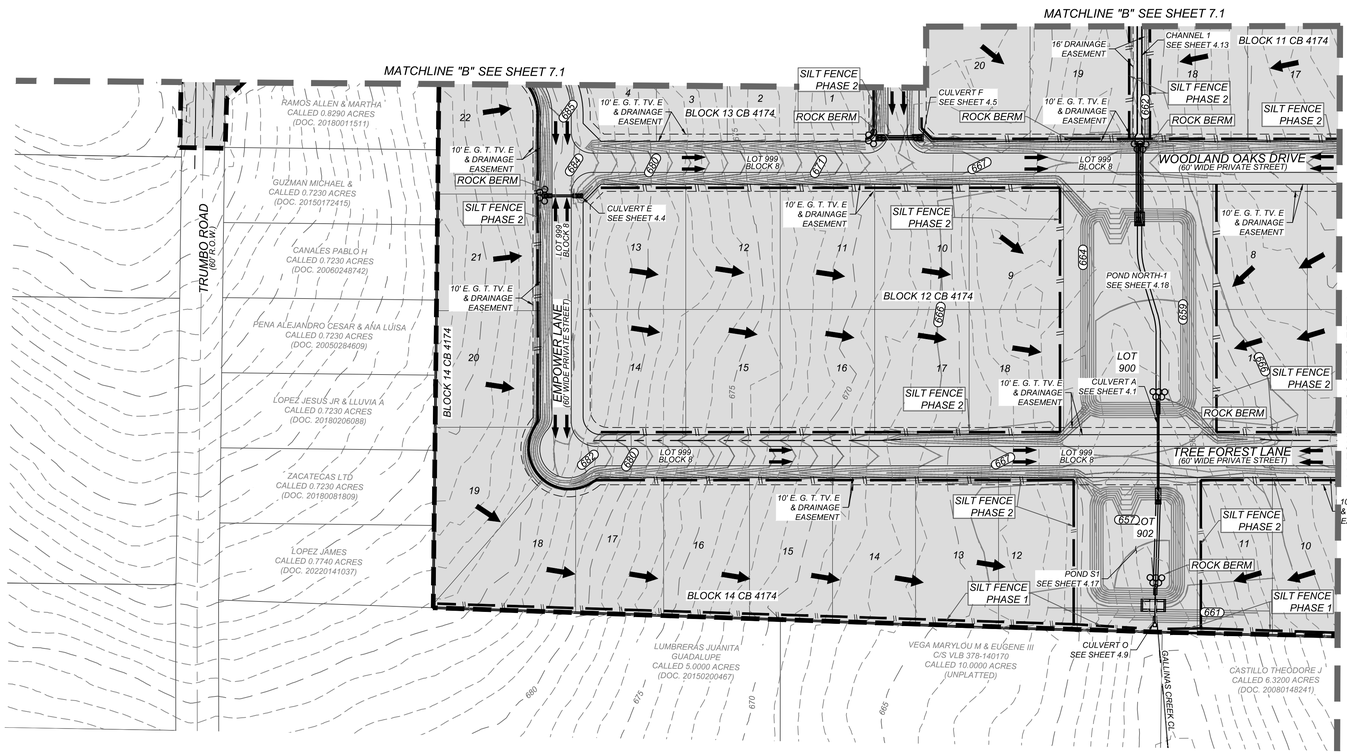
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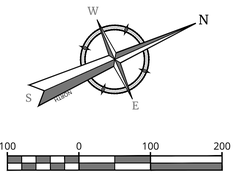
MAINTENANCE AND INSPECTION:

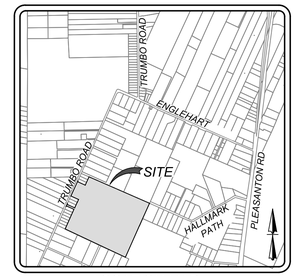
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LOCATION MAP
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LEGEND

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- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING GATE
- FLOW ARROW
- PROPOSED CONTOURS 870
- EXISTING CONTOURS (870)
- PROPOSED DRAINAGE SWALE
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
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PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN (SHEET 3 OF 4)

SHEET NUMBER: 7.3

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SW3P_8770201.DWG By, ECOBONA

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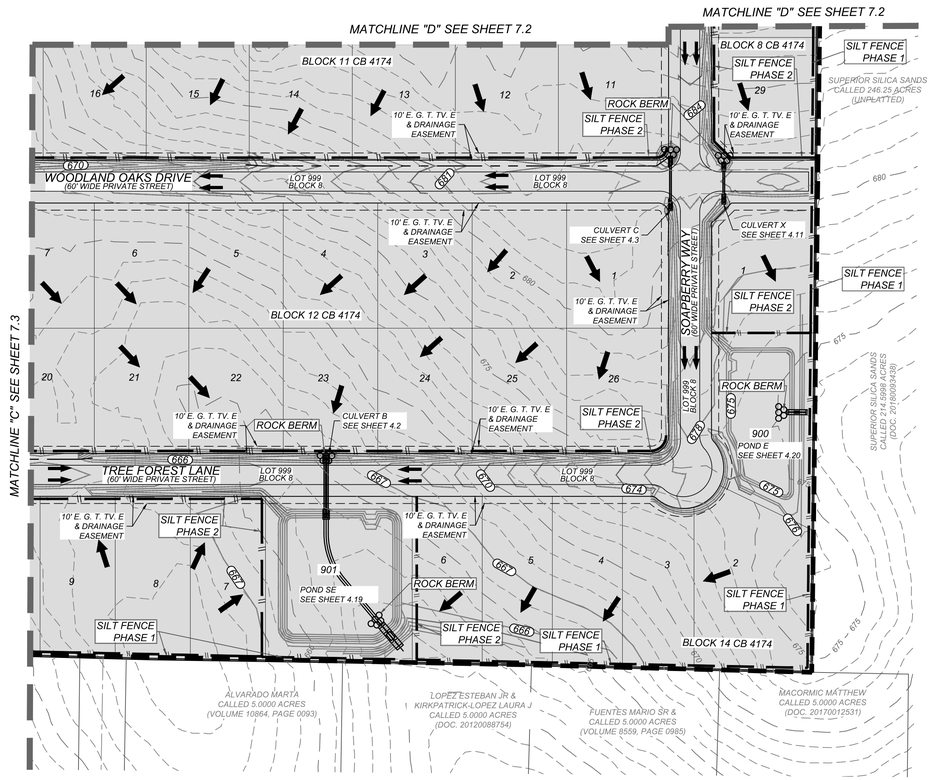
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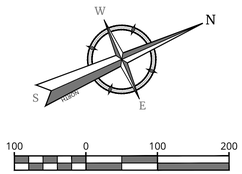
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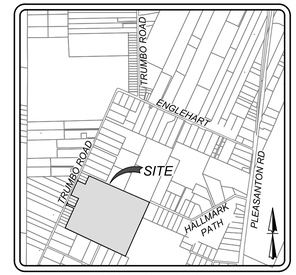




100 0 100 200

SCALE : 1'' = 100'

Linear unit of measure: US Survey Foot (1 ft = 1200/3937 m)



LOCATION MAP
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- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING GATE
- FLOW ARROW
- PROPOSED CONTOURS (870)
- EXISTING CONTOURS (870)
- PROPOSED DRAINAGE SWALE
- PROPOSED HIGH POINT (HP)
- PROPOSED INLET PROTECTION
- PROPOSED SILT FENCE (PHASE 2 TO BE INSTALLED AFTER STREET CONSTRUCTION)
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA.
- PROPOSED CONCRETE TRUCK WASHOUT PIT (CONCRETE WASHOUT)
- PROPOSED ROCK BERM
- PROPOSED DISTURBED AREA

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

EXISTING UTILITY NOTE:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

CONTRACTOR NOTE:

CONTRACTOR TO REPAIR ALL CURBS AND PAVING FROM DAMAGE OCCURRING DURING CONSTRUCTION TO ALL COMMON/PRIVATE AREAS.

TREE NOTE:

REFER TO LANDSCAPE ARCHITECT PLANS FOR TREE INVENTORY. TREES TO REMAIN AND TREES TO BE REMOVED. TREES ARE SHOWN ON THIS PLAN FOR ILLUSTRATIVE PURPOSES ONLY.

Colliers Engineering & Design

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REV	DATE	DRAWN BY	DESCRIPTION

BID SET
NOT FOR CONSTRUCTION

FOREST OAKS
MHC (PUD)
PLAT# 25-11800029

BEXAR COUNTY
TEXAS

Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC.
TBPE Firm#: F-14305
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
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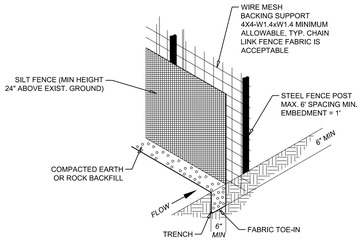
PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE:
STORMWATER POLLUTION PREVENTION PLAN (SHEET 4 OF 4)

SHEET NUMBER:
7.4

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

L:\877\02\01\DESIGN\CIVIL\PHASE 1\SWP3_8770201.DWG By: ECORONA



ISOMETRIC PLAN VIEW

MATERIALS:

(1) SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.

(2) FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FL2, AND BRINDELL HARDNESS EXCEEDING 140.

(3) WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION:

(1) STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 1.- FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

(2) LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE(I 00 FEET OF FENCE.

(3) THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN- SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

(4) THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

(5) SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

(6) SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STONE FLOW OR DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL.

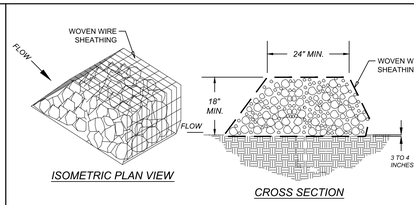
(2) REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

(3) REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

(4) REPLACE OR REPAIR ANY SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

(5) WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE



ISOMETRIC PLAN VIEW

CROSS SECTION

MATERIALS:

(1) THE BERM STRUCTURE SHOULD BE. SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

(2) CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION:

(1) LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

(2) BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

(3) PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM FIGURE 1-28), TO A HEIGHT NOT LESS THAN 18'.

(4) WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES. AIRL THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

(5) BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

(6) THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

(2) REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

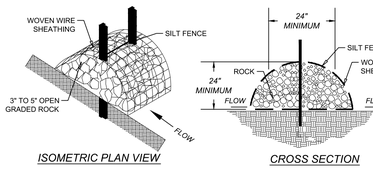
(3) REPAIR ANY LOOSE WIRE SHEATHING.

(4) THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

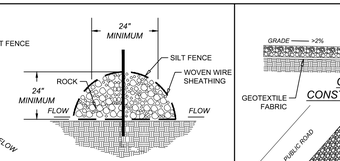
(5) THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

(6) THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

ROCK BERM



ISOMETRIC PLAN VIEW



CROSS SECTION

MATERIALS:

(1) SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC WIDTH SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NO. 30.

(2) FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR YBAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM NOMINAL WEIGHT 1.25 LB/FL2, AND BRINDELL HARDNESS EXCEEDING 140. REBAR (EITHER #5 OR #6) MAY ALSO BE USED TO ANCHOR THE BERM.

(3) WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

(4) THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH. AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

(5) CLEAN, OPEN GRADED 3- TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION:

(1) LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1-INCH OPENINGS.

(2) INSTALL THE SILT FENCE ALONG THE CENTER OF THE PROPOSED BERM PLACEMENT, AS WITH A NORMAL SILT FENCE DESCRIBED IN SECTION 2.4.3.

(3) PLACE THE ROCK ALONG THE SHEATHING ON BOTH SIDES OF THE SILT FENCE AS SHOWN IN THE DIAGRAM (FIGURE 1-29), TO A HEIGHT, NOT LESS THAN 24 INCHES. CLEAN, OPEN GRADED 3- 5" DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5- TO 8-INCH DIAMETER ROCK MAY BE USED.

(4) WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

(5) THE HIGH SERVICE ROCK BERM SHOULD BE REMOVED WHEN THE SITE IS REVEGETATED OR OTHERWISE STABILIZED OR IT MAY REMAIN IN PLACE AS A PERMANENT BMP IF DRAINAGE IS ADEQUATE.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE ON ROCK BERM.

(2) REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT OF IN AN APPROVED MANNER.

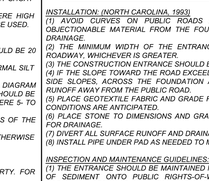
(3) REPAIR ANY LOOSE WIRE SHEATHING

(4) THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

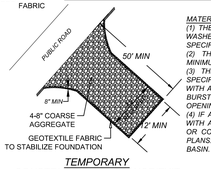
(5) THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

(6) THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

HIGH SERVICE
ROCK BERM



CROSS-SECTION OF A
CONSTRUCTION ENTRANCE/EXIT



TEMPORARY
CONSTRUCTION ENTRANCE/EXIT

MATERIALS:

(1) THE AGGREGATE SHOULD CONSIST OF 4 TO 8 INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

(2) THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8 INCHES.

(3) THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD2. A MULLEN BURST RATING OF 140 LB/IN2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

(4) IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4 INCH DIAMETER WASHED STONE OR COMMERCIAL RACK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION: (NORTH CAROLINA, 1993)

(1) AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

(2) THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

(3) THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

(4) IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6 TO 8 INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

(5) PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

(6) PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

(7) DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

(8) INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES:

(1) THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR ANDLOR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

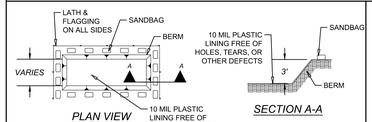
(2) ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

(3) WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

(4) WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

(5) ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

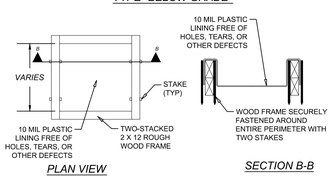
STABILIZED CONSTRUCTION ENTRANCE / EXIT



PLAN VIEW

SECTION A-A

TYPE "BELOW GRADE"



PLAN VIEW

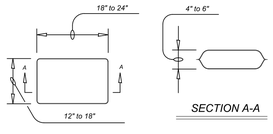
SECTION B-B

TYPE "ABOVE GRADE"

GENERAL NOTES:

- *DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.*
- *WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.*
- *WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF AND AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.*

CONCRETE TRUCK WASHOUT PIT

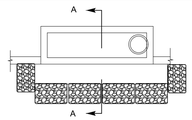


SECTION A-A

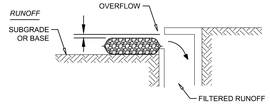
GENERAL NOTES:

- *THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN UNIT WEIGHT OF 4 OUNCES/SY, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.*
- *THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).*

GRAVEL FILTER BAG DETAIL



PLAN VIEW

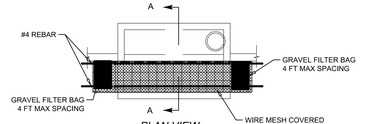


SECTION A-A

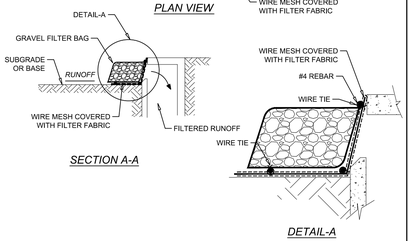
GENERAL NOTES:

- *ALL STORM DRAINAGE SYSTEMS INLETS SHOULD FILTER RUNOFF BEFORE THE WATER IS DISCHARGED INTO STREAMS OR ONTO ADJACENT PROPERTIES, UNLESS TREATMENT IS PROVIDED ELSEWHERE.*
- *IF NO ADDITIONAL DOWNSTREAM TREATMENT EXISTS, THE MAXIMUM DRAINAGE AREA TRIBUTARY TO AN AREA DRAIN INSTALLED WITH A GRAVEL FILTER SHOULD BE ONE ACRE.*
- *ALL CURB INLET GRAVEL FILTERS SHOULD BE INSPECTED AND REPAIRED AFTER EACH RUNOFF EVENT. SEDIMENT SHOULD BE REMOVED WHEN MATERIAL IS WITHIN THREE INCHES OF THE TOP OF THE CONCRETE BLOCKS. PERIODICALLY, THE GRAVEL SHOULD BE RAKED TO INCREASE INFILTRATION AND FILTERING OF RUNOFF WATERS.*

CURB INLET PROTECTION GRAVEL FILTER BAGS



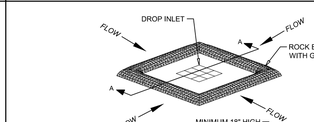
PLAN VIEW



SECTION A-A

DETAIL-A

CURB INLET PROTECTION (ALTERNATE)

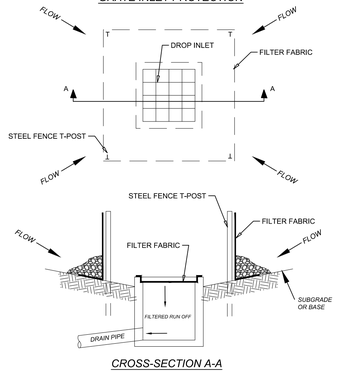


CROSS-SECTION A-A

GENERAL NOTES:

- *USE OPEN GRADED CLEAN STONE.*
- *THE ROCK SHOULD BE ENCLOSED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE AND WRAPPED IN GEOTEXTILE WITH 300 PSI BURST STRENGTH FILTER FABRIC.*
- *INSPECTION SHOULD BE MADE FREQUENTLY ON SEVERE SERVICE ROCK BERMS; SILT SHOULD BE REMOVED WHEN ACCUMULATION REACHES 4 INCHES OR MORE.*
- *WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SILT SHOULD BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.*

GRATE INLET PROTECTION

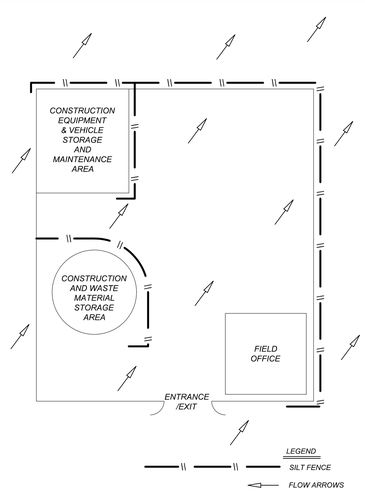


CROSS-SECTION A-A

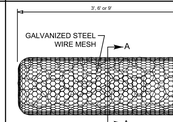
GENERAL NOTES:

- *ALL MATERIALS AND ERECTION PROCEDURES WILL BE THE SAME AS DESCRIBED IN THE STANDARD SILT FENCE REQUIREMENTS.*

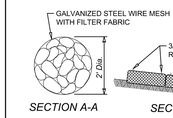
GRATE INLET PROTECTION (ALTERNATE)



TYPICAL CONSTRUCTION STAGING AREA

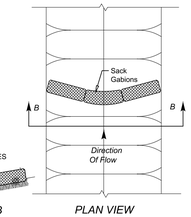


TYPE 4 SACK GABIONS



SECTION A-A

SECTION B-B

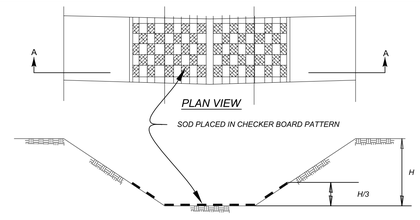


PLAN VIEW

GENERAL NOTES:

- *THE TOP OF THE SACK GABIONS SHOULD BE LEVEL AND ORIENTED PERPENDICULAR TO THE DIRECTION OF FLOW.*
- *FILTER FABRIC MATERIAL SHALL BE FASTENED TO WOVEN WIRE SUPPORT.*
- *FILTER FABRIC MATERIAL SHOULD MEET THE FOLLOWING SPECIFICATIONS: RESISTANT TO ULTRAVIOLET LIGHT, FABRIC SHOULD BE NON-WOVEN GEOTEXTILE WITH MINIMUM WEIGHT OF 3.5 OUNCES PER SQUARE YARD, MINIMUM MULLEN BURST STRENGTH OF 200 POUNDS PER SQUARE INCH AND A FLOW THRU RATE OF 120 GALLONS PER MINUTE PER SQUARE FOOT OF FRONTAL AREA.*
- *STONE SIZE: ±4"-8" OPEN GRADED CRUSHED LIMESTONE.*
- *INSPECT WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACE AS NEEDED.*
- *WHEN SILT REACHES A DEPTH OF 6 INCHES OR MORE ABOVE NATURAL GROUND, SILT SHALL BE REMOVED AND DISPOSED IN AN APPROVED MANNER THAT WILL NOT CONTRIBUTE TO RESILTATION. CONTAMINATED SEDIMENT MUST BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.*

TYPE 4 SACK GABIONS



PLAN VIEW

SECTION A-A

- *CHANNEL TO BE STABILIZED WITH SOD PLACED IN A CHECKER BOARD PATTERN TON THE CHANNEL BOTTOM AND ON THE SIDES UP TO 1/3 THE DEPTH OF CHANNEL.*

CHANNEL LINING

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Colliers Engineering & Design
SAN ANTONIO (KFW)
3421 Paesanos Parkway
San Antonio, TX 78231
Phone: 210.979.8444
COLLIERS ENGINEERING & DESIGN, INC
TBPE Firm#: F-14955
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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
		MS	CG

PROJECT NUMBER: 877-02-01
DRAWING NAME: SW3P_8770201

SHEET TITLE: STORMWATER POLLUTION PREVENTION DETAILS

SHEET NUMBER: 7.5

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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