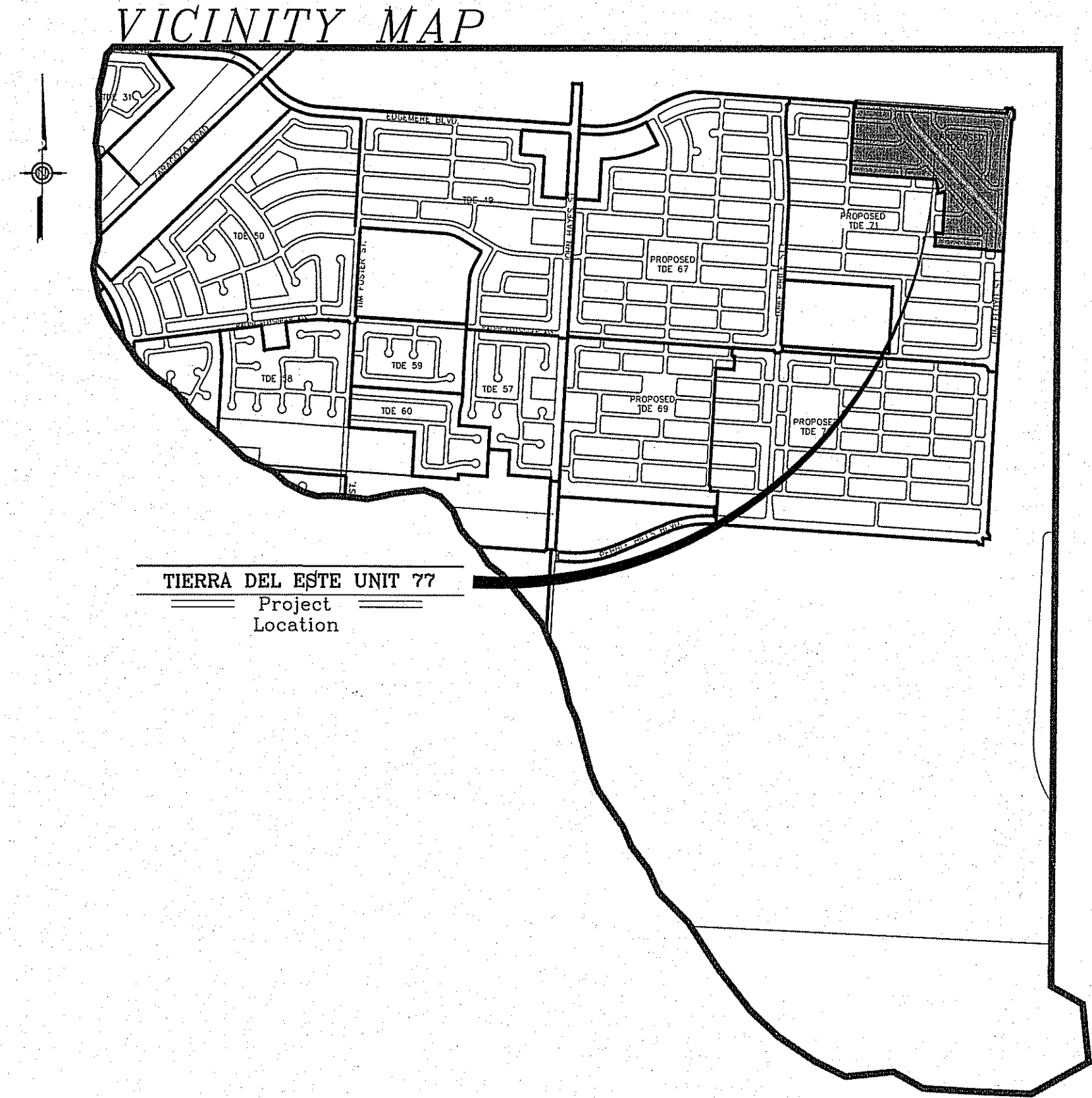
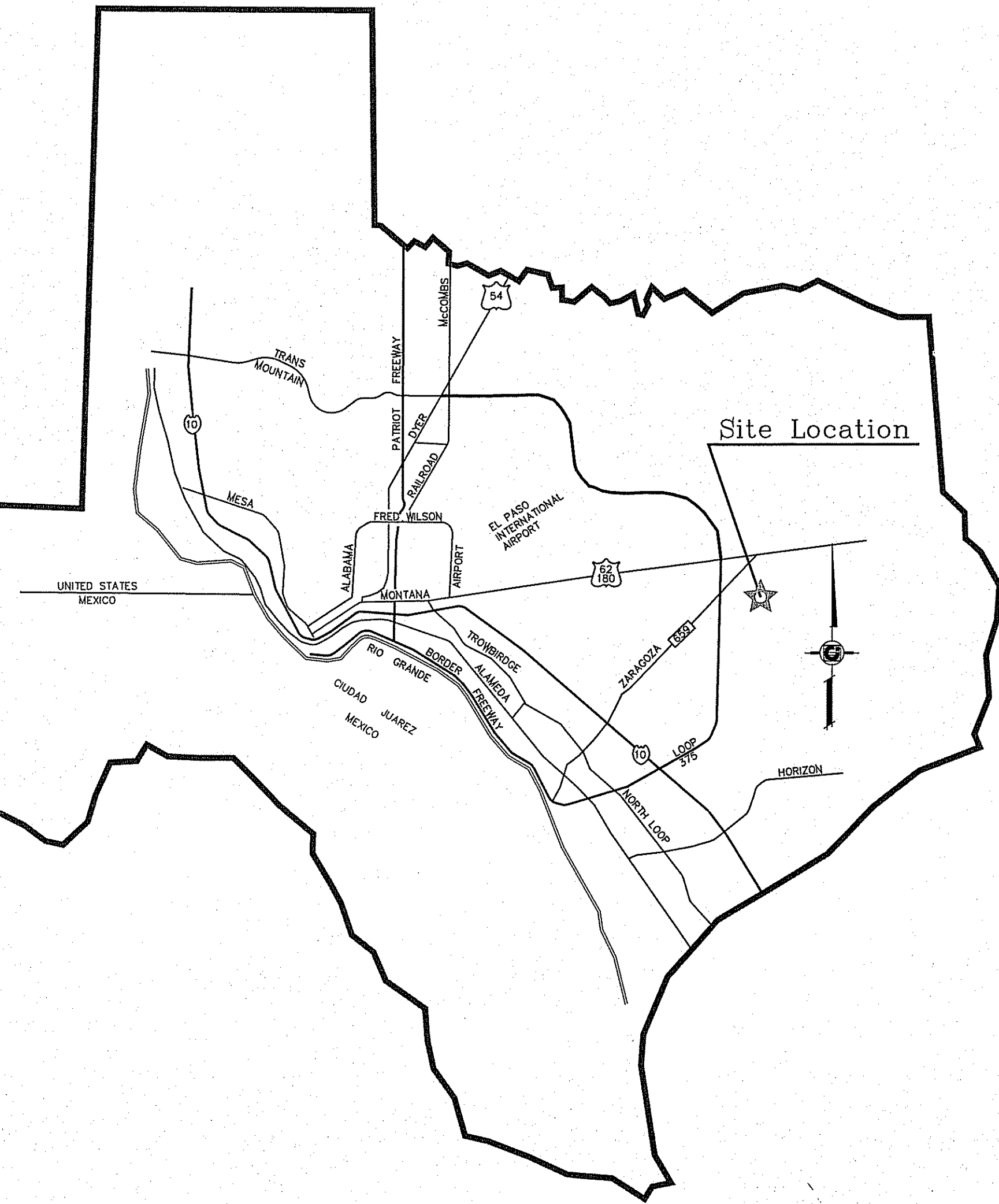


*El Paso*

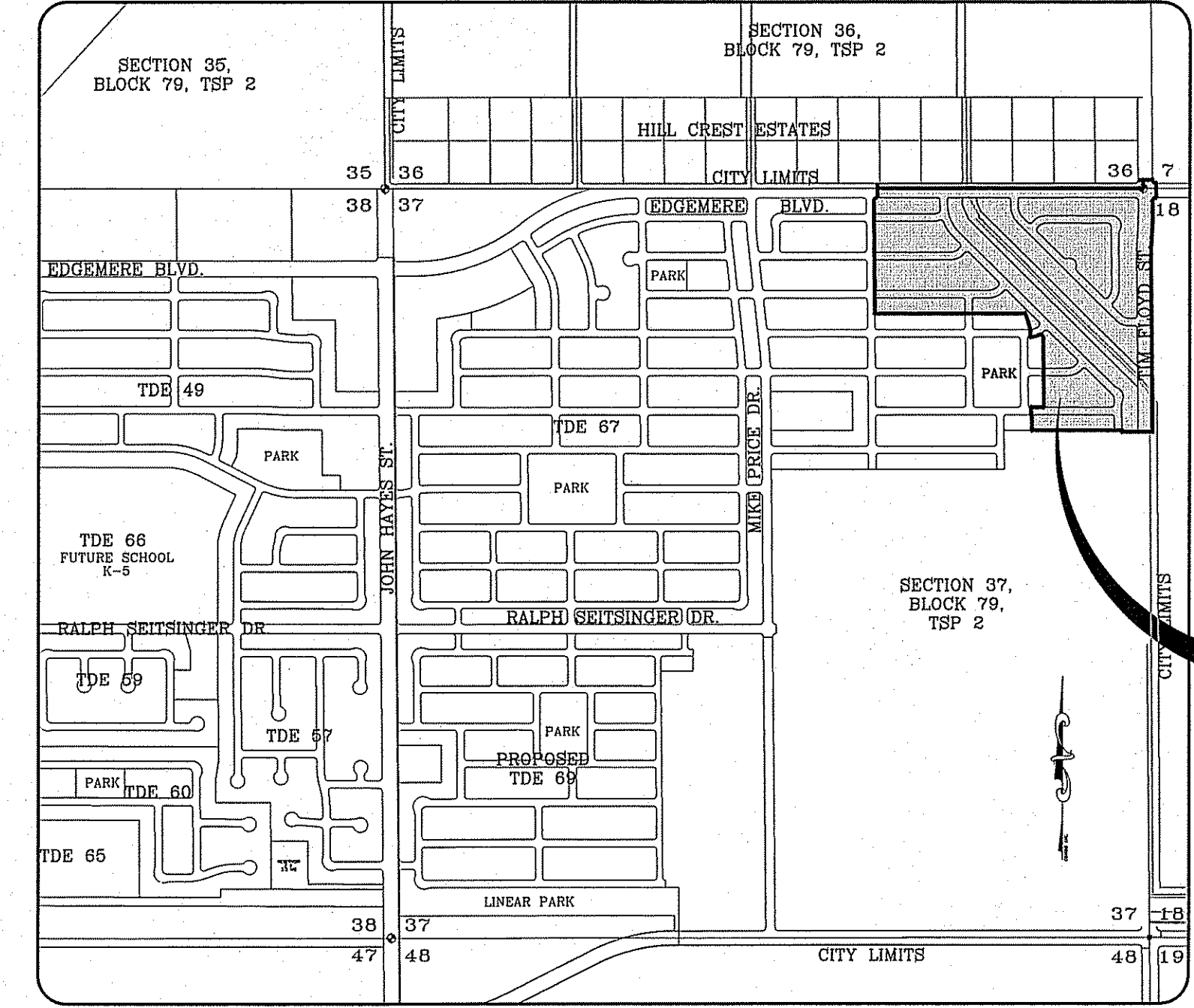


# STREET IMPROVEMENTS

I N D E X

TITLE	SHEET No.	TITLE	SHEET No.
COVER SHEET	1 of 40	WILLIE WORSLEY AVE.	28 of 40
PLAT	2 of 40	PROPOSED STRUCTURE 1	29 of 40
GRADING PLAN	3 of 40	TRAFFIC CONTROL AND ILLUMINATION PLAN	30 of 40
GRADING SECTIONS	4 of 40	STANDARD DETAILS	31-32 of 40
GRADING SECTIONS	5 of 40	WATER DISTRIBUTION PLAN	33 of 40
DRAINAGE PLAN	6 of 40	SEWER DISTRIBUTION PLAN	34 of 40
GSPD STORM WATER POLLUTION PREVENTION PLAN & NOTES	7-8 of 40	SEWER DISTRIBUTION PROFILE	35-36 of 40
BOBBY JOE HILL DR.	9 of 40	WATER DETAILS	37-38 of 40
DANA GREY DR.	10-11 of 40	SEWER DETAILS	39 of 40
DAVID LATIN AVE.	12 of 40	WATER & SEWER NOTES	40 of 40
DAVID PALACIO DR.	13-16 of 40	ARTERIAL LIGHTING	E1-E5 of 5
EDDIE MULLENS CT. & BRANDON WOLFRAM PL.	16-17 of 40	ELECTRICAL DETAILS	ED1-ED10 of 10
EDGEMERE BLVD.	18-20 of 40	LANDSCAPE AND IRRIGATION	L1-L9 of 9
FRED REYNOLDS PL. & ORSTEN ARTIS AVE.	21 of 40		
OLDENBERG CT.	22-23 of 40		
QUINTAN GATES CT.	24 of 40		
TIM FLOYD ST.	25-27 of 40		

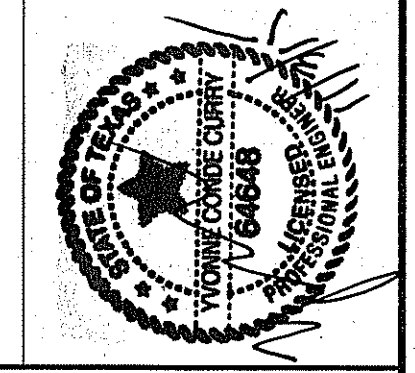
LOCATION MAP SCALE: 1"=1000'



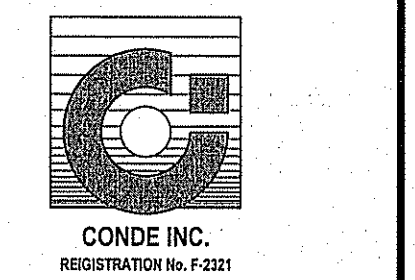
PROPOSED TIERRA DEL ESTE UNIT SEVENTY SEVEN

**CITY DEVELOPMENT DEPARTMENT**  
 Reviewed For Conformance For Condition Related To:  
 - Sidewalks - Stormwater  
 - Curbs & Drainage - Retaining Rock Walls  
 - Firehydrant Ranges - On Site Flooding of Storm Water  
 - On Site Parking Layout  
 Contractor Must Call 24 Hours Prior To Construction for Inspections  
 By *[Signature]* - **NOV. 5, 2015**  
 Date

PROJECT NAME  
**TIERRA DEL ESTE UNIT 77**  
 BEING PORTION OF SECTION 18, BLOCK 78,  
 AND PORTION OF SECTIONS 37,  
 BLOCK 79, TOWNSHIP 2, TEXAS  
 AND PACIFIC RAILWAY Co. SURVEYS,  
 CITY OF EL PASO, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6090 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



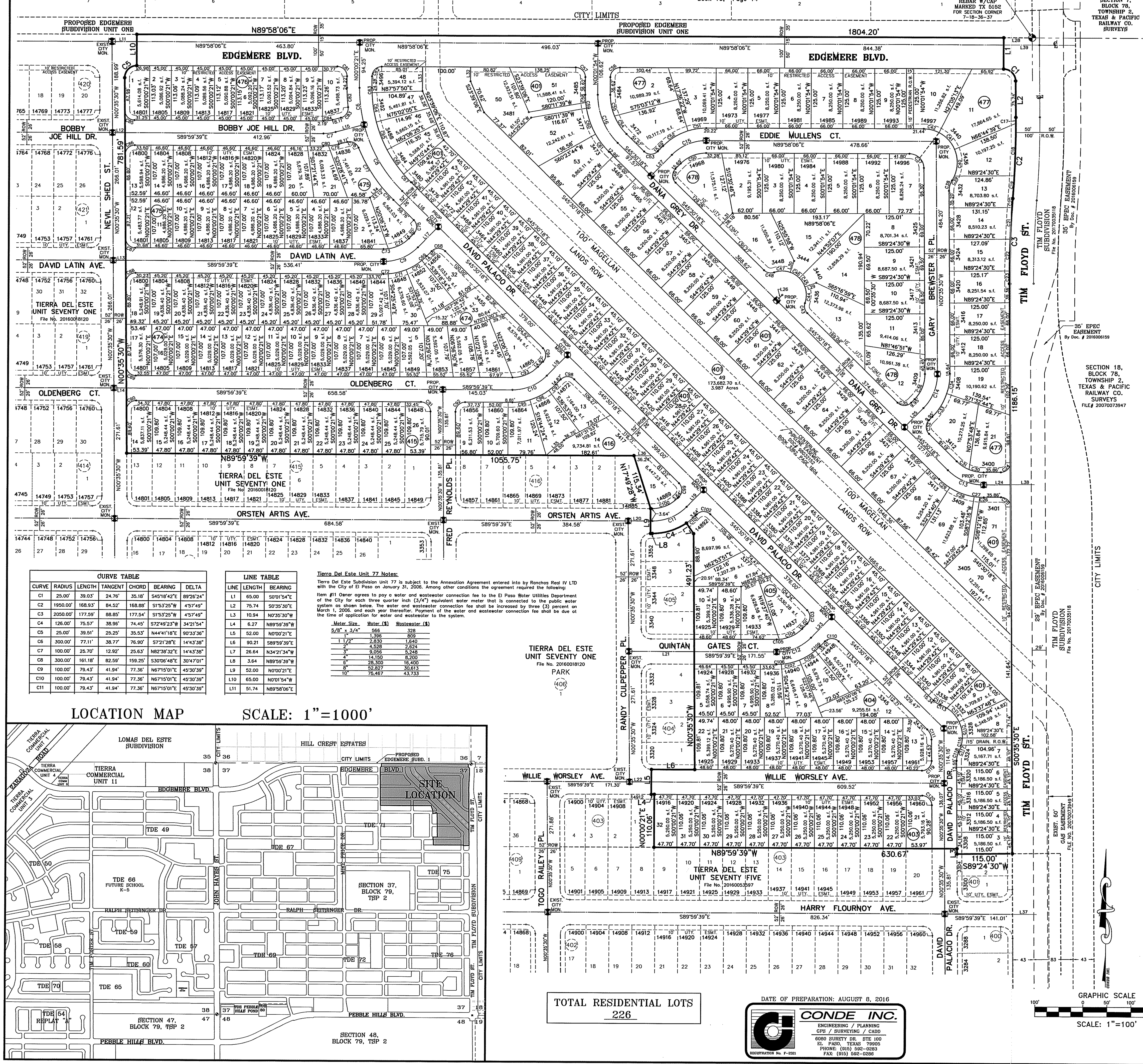
**COVER SHEET**

SHT 1 OF 40



# TIERRA DEL ESTE UNIT SEVENTY SEVEN

BEING PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, CITY OF EL PASO, EL PASO COUNTY, TEXAS CONTAINING: 49.93± ACRES



**CURVE TABLE**

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C12	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"
C13	100.00'	82.63'	43.59'	80.51'	S80°02'54"	45°05'11"
C14	100.00'	78.69'	41.51'	76.68'	N21°57'06"	45°05'11"
C15	100.00'	79.37'	41.91'	77.30'	S67°15'54"	45°28'24"
C16	140.00'	111.11'	58.67'	108.22'	S22°46'08"	45°28'24"
C17	195.00'	12.29'	6.14'	12.29'	N02°44'50"	02°14'00"
C18	195.00'	109.24'	54.64'	109.23'	N12°28'28"	31°32'35"
C19	195.00'	47.40'	23.70'	47.40'	N34°03'32"	1°23'34"
C20	205.00'	18.79'	9.40'	18.79'	S40°34'36"	03°31'31"
C21	205.00'	66.13'	33.07'	66.12'	S10°25'22"	1°50'54"
C22	205.00'	66.03'	33.02'	66.03'	S10°14'33"	1°50'44"
C23	205.00'	26.64'	13.32'	26.64'	S01°30'39"	04°41'41"
C24	205.00'	31.42'	20.00'	28.28'	N44°30'30"	90°00'00"
C25	205.00'	31.42'	20.00'	28.28'	N45°30'30"	90°00'00"
C26	131.00'	8.09'	4.05'	8.09'	S88°49'17"	33°24'24"
C27	131.00'	12.02'	6.01'	12.01'	S84°20'25"	51°21'21"
C28	131.00'	54.58'	27.69'	54.19'	S89°51'32"	235°24'24"
C29	131.00'	28.39'	14.25'	28.34'	S91°42'49"	122°50'24"
C30	79.00'	31.08'	15.75'	30.88'	S96°46'36"	223°32'36"
C31	79.00'	31.08'	15.75'	30.88'	S96°46'36"	223°32'36"
C32	205.00'	31.42'	20.00'	28.28'	S03°30'36"	90°00'00"
C33	126.00'	57.27'	29.14'	56.77'	N31°28'29"	262°28'24"
C34	126.00'	41.88'	21.14'	41.69'	N85°55'32"	192°46'36"
C35	205.00'	31.42'	20.00'	28.28'	N89°29'42"	90°00'00"
C36	74.00'	58.23'	30.72'	56.74'	N21°57'06"	45°28'24"
C37	30.00'	46.83'	29.71'	42.22'	S41°48'12"	89°28'24"
C38	40.00'	22.91'	11.78'	22.60'	S104°11'18"	32°49'21"
C39	70.00'	10.40'	5.21'	10.30'	N27°58'36"	83°33'33"
C40	70.00'	57.39'	30.42'	56.80'	N01°59'58"	45°28'24"
C41	70.00'	48.45'	25.24'	47.49'	N43°05'04"	89°29'24"
C42	70.00'	33.13'	16.88'	32.82'	N76°28'12"	277°07'00"
C43	20.00'	22.60'	12.68'	21.41'	S13°08'01"	64°44'34"
C44	50.00'	34.17'	17.78'	33.51'	N02°25'28"	39°59'21"
C45	50.00'	22.09'	11.18'	21.83'	N32°31'20"	261°24'24"
C46	50.00'	22.65'	11.53'	22.46'	N80°06'42"	265°37'36"
C47	50.00'	34.17'	17.78'	33.51'	S89°18'40"	39°59'21"
C48	20.00'	22.60'	12.68'	21.42'	S77°52'35"	64°44'34"
C49	20.00'	31.42'	20.00'	28.28'	S03°30'36"	90°00'00"
C50	74.00'	58.23'	30.72'	56.80'	S03°30'36"	90°00'00"
C51	126.00'	38.69'	19.48'	38.50'	S81°05'52"	173°42'28"
C52	126.00'	61.35'	31.30'	60.75'	S82°26'40"	273°55'58"
C53	20.00'	31.42'	20.00'	28.28'	N89°29'42"	90°00'00"
C54	114.00'	45.24'	22.92'	44.84'	S34°08'12"	224°12'12"
C55	114.00'	45.24'	22.92'	44.84'	S11°24'00"	224°12'12"
C56	20.00'	31.42'	20.00'	28.28'	S44°58'06"	90°00'00"
C57	20.00'	31.42'	20.00'	28.28'	N45°01'54"	90°00'00"
C58	166.00'	16.31'	8.16'	16.30'	S25°04'46"	53°44'44"
C59	166.00'	12.01'	6.01'	12.01'	S74°35'59"	4°08'44"
C60	166.00'	57.30'	28.97'	57.08'	S19°42'19"	194°57'50"
C61	166.00'	46.07'	23.18'	45.82'	S37°33'17"	195°10'02"
C62	20.00'	31.42'	19.99'	28.28'	S44°59'13"	89°57'48"
C63	274.00'	9.76'	4.88'	9.76'	S10°05'58"	210°21'31"
C64	274.00'	61.83'	31.04'	61.70'	S83°03'38"	129°45'44"
C65	274.00'	61.82'	31.04'	61.69'	S21°29'48"	129°45'44"
C66	274.00'	61.82'	31.04'	61.69'	S34°21'28"	129°45'44"
C67	274.00'	22.40'	11.21'	22.39'	S43°09'47"	41°10'03"
C68	20.00'	31.42'	20.00'	28.28'	S89°29'42"	90°00'00"
C69	126.00'	13.83'	6.82'	13.62'	N47°35'34"	61°14'44"
C70	126.00'	38.30'	19.33'	38.20'	N69°24'37"	172°28'24"
C71	126.00'	38.30'	19.33'	38.20'	N76°51'33"	172°28'24"
C72	126.00'	9.76'	4.88'	9.75'	N87°41'16"	42°10'12"
C73	74.00'	9.76'	4.88'	9.75'	N86°09'26"	74°15'50"
C74	74.00'	48.84'	25.35'	47.96'	N63°24'08"	374°49'49"
C75	20.00'	31.42'	20.00'	28.28'	N03°30'36"	90°00'00"
C76	328.00'	34.63'	17.33'	34.62'	S42°27'42"	67°01'13"
C77	328.00'	97.05'	48.89'	96.69'	S30°53'23"	170°32'24"
C78	20.00'	28.75'	17.50'	26.34'	N63°32'29"	82°21'36"
C79	126.00'	21.90'	10.87'	21.87'	N80°15'25"	85°25'25"
C80	126.00'	10.49'	5.25'	10.49'	N87°31'14"	44°13'13"
C81	20.00'	31.43'	20.01'	28.29'	N45°01'47"	90°02'14"
C82	326.00'	40.32'	20.19'	40.30'	S32°16'76"	70°51'14"
C83	20.00'	28.75'	17.50'	26.34'	N34°05'05"	82°21'36"
C84	74.00'	19.02'	9.56'	18.97'	N82°38'32"	143°38'38"
C85	20.00'	31.21'	19.79'	28.14'	S45°17'35"	89°24'10"
C86	20.00'	31.21'	19.79'	28.14'	S44°42'26"	90°35'50"
C87	20.00'	31.21'	19.79'	28.14'	S45°17'35"	89°24'10"
C88	20.00'	31.21'	19.79'	28.14'	S44°42'26"	90°35'50"
C89	20.00'	31.21'	19.79'	28.14'	S45°17'35"	89°24'10"
C90	20.00'	31.21'	19.79'	28.14'	S44°42'26"	90°35'50"

**CURVE TABLE**

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C91	20.00'	31.21'	19.79'	28.14'	N45°17'35"	89°24'10"
C92	20.00'	31.21'	19.79'	28.14'	S44°42'26"	90°35'50"
C93	74.00'	58.78'	31.04'	57.25'	N67°15'01"	45°30'39"
C94	20.00'	31.42'	20.00'	28.28'	N03°30'36"	90°00'00"
C95	126.00'	36.83'	18.55'	36.69'	N81°37'58"	164°45'45"
C96	126.00'	44.30'	22.38'	44.07'	N63°11'16"	209°39'39"
C97	126.00'	18.96'	9.60'	18.94'	N48°48'19"	83°15'15"
C98	20.00'	31.42'	20.00'	28.28'	S89°29'42"	90°00'00"
C99	20.00'	31.42'	20.00'	28.28'	N03°30'36"	90°00'00"
C100	74.00'	58.78'	31.04'	57.25'	N67°15'01"	45°30'39"
C101	126.00'	24.51'	12.29'	24.47'	N12°28'28"	31°32'35"
C102	20.00'	31.42'	20.00'	28.28'	S89°29'42"	90°00'00"
C103	20.00'	31.42'	20.00'	28.28'	N03°30'36"	90°00'00"
C104	74.00'	53.36'	27.90'	52.21'	N69°09'02"	418°40'40"
C105	74.00'	54.42'	27.91'	54.40'	N81°37'58"	418°40'40"
C106	126.00'	10.07'	5.04'	10.07'	N87°42'57"	43°44'48"
C107	126.00'	38.61'	19.46'	38.46'	N76°38'53"	173°19'19"
C108	126.00'	38.61'	19.46'	38.46'	N59°24'18"	173°19'19"
C109	126.00'	12.00'	6.01'	12.00'	N47°24'18"	54°13'13"
C110	20.00'	31.42'	20.00'	28.28'	S89°29'42"	90°00'00"
C111	30.00'	23.92'	12.40'	23.82'	N03°02'54"	44°54'49"
C112	40.00'	17.19'	8.73'	17.07'	S57°48'54"	243°12'12"
C113	70.00'	14.90'	7.48'	14.86'	N64°01'41"	121°19'19"
C114	70.00'	36.96'	19.78'	36.82'	N43°09'02"	313°39'39"
C115	70.00'	34.88'	17.81'	34.52'	N12°05'48"	283°33'33"
C116	70.00'	15.22'	7.61'	15.19'	N84°28'12"	122°17'17"
C117	70.00'	15.09'	7.58'	15.07'	N02°48'18"	122°17'17"
C118	40.00'	19.25'	9.82'	19.07'	S11°15'57"	273°45'45"
C119	20.00'	31.21'	19.79'	28.14'	S45°17'35"	89°24'10"
C120	20.00'	31.21'	19.79'	28.14'	N45°17'35"	89°24'10"

**NOTES:**  
 WATER AND SEWER SERVICES WILL BE EXTENDED TO THIS SUBDIVISION (TIERRA DEL ESTE UNIT 77) FROM EXISTING EL PASO WATER UTILITIES/PUBLIC SERVICE BOARD FACILITIES AND WILL BE CONSTRUCTED AND OPERABLE AS OF JULY 2017.  
 THE INSTRUMENT ASSURING THE CERTIFICATION THAT WATER AND SEWER SERVICES FACILITIES DESCRIBED BY THIS PLAN ARE IN COMPLIANCE WITH THE MODEL RULES ADOPTED UNDER SECTION 16.343, TEXAS WATER CODE IS FILED IN THE OFFICE OF THE COUNTY CLERK, DEED AND RECORDS SECTION.  
 INSTRUMENT NO. 20170047568-49 DATE 4/29/17  
 TAX CERTIFICATE FOR THIS SUBDIVISION ARE FILED IN THE OFFICE OF THE COUNTY CLERK, DEED AND RECORDS SECTION.  
 INSTRUMENT NO. 20170047570 DATE 4/29/17  
 RESTRICTIVE COVENANTS FOR THIS SUBDIVISION ARE FILED IN THE OFFICE OF THE COUNTY CLERK, DEED AND RECORDS SECTION.  
 INSTRUMENT NO. 20170047570 DATE 4/29/17  
 LOT CORNERS BEING 1/2" REBAR WITH CAP MARKED TX 5152 WILL BE SET UPON COMPLETION OF CONSTRUCTION OF ROADWAYS AND UTILITIES.  
 "U.S. POSTAL SERVICE DELIVERY WILL BE PROVIDED THROUGH NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNITS".  
 ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO. 4802120758, DATED SEPTEMBER 4, 1991 THIS PROPERTY IS IN FLOOD HAZARD ZONE X OUTSIDE THE 500 YEAR FLOOD-PLAIN.

**DEDICATION**  
 RANCHO REAL XV, L.L.C., property owner of this land hereby presents this plat and dedicates to the use of the public, the streets, drives, drainage R.O.W., pedestrian R.O.W., restricted access easements, gas easements and utility easements as hereon laid down and designated, including easements for overhead service wires for power, gas, telephone, and utility lines, conduits and pipes for underground utilities, and the right to ingress and egress for service and construction and the right to trim interfering trees and shrubs.  
 Witness our signature this 29<sup>th</sup> day of May, 2017.  
 By: Douglas A. Schwartz, MANAGER

**CURVE TABLE**

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	25.00'	39.03'	24.76'	35.18'	S45°18'42"	89°20'24"
C2	195.00'	168.93'	84.58'	168.84'	S15°33'25"	45°37'49"
C3	205.00'	177.59'	88.80'	177.54'	S15°33'25"	45°37'49"
C4	126.00'	75.57'	38.96'	74.45'	S72°49'23"	34°21'54"
C5	20.00'	39.61'	25.25'	35.53'	N44°41'16"	90°33'36"
C6	300.00'	77.11'	38.77'	76.90'	S72°12'28"	144°33'38"
C7	100.00'	25.70'	12.92'	25.63'	N82°38'32"	144°33'38"
C8	300.00'	161.18'	82.59'	159.25'	S30°06'48"	304°70'01"
C9	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"
C10	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"
C11	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"

**CURVE TABLE**

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	25.00'	39.03'	24.76'	35.18'	S45°18'42"	89°20'24"
C2	195.00'	168.93'	84.58'	168.84'	S15°33'25"	45°37'49"
C3	205.00'	177.59'	88.80'	177.54'	S15°33'25"	45°37'49"
C4	126.00'	75.57'	38.96'	74.45'	S72°49'23"	34°21'54"
C5	20.00'	39.61'	25.25'	35.53'	N44°41'16"	90°33'36"
C6	300.00'	77.11'	38.77'	76.90'	S72°12'28"	144°33'38"
C7	100.00'	25.70'	12.92'	25.63'	N82°38'32"	144°33'38"
C8	300.00'	161.18'	82.59'	159.25'	S30°06'48"	304°70'01"
C9	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"
C10	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"
C11	100.00'	79.43'	41.94'	77.36'	N67°15'01"	45°30'39"

**LINE TABLE**

LINE	LENGTH	BEARING
L1	65.00'	S00°15'42"E
L2	76.74'	S03°30'36"W
L3	10.94'	S15°33'25"W
L4	6.27'	N89°59'39"W
L5	52.00'	N00°01'21"E
L6	90.21'	S89°59'39"E
L7	26.64'	N34°21'34"W
L8	3.64'	N89°59'39"W
L9	32.00'	N00°02'12"E
L10	65.00'	N00°54'30"E
L11	51.74'	N89°59'06"E

**Tierra Del Este Unit 77 Notes:**  
 Tierra Del Este Subdivision Unit 7



**GENERAL NOTES:**

- IMPROVEMENT WITHIN CITY R.O.W. SHALL COMPLY WITH TITLE 19--SUBDIVISION ORDINANCE--"SUBDIVISION IMPROVEMENT DESIGN STANDARDS".
- CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES FOR THE MANAGEMENT OF STORM WATER RUNOFF ENTERING, EXITING AND ON SITE DURING THE COURSE OF THE CONSTRUCTION. TEMPORARY BERMS, DESILTING BASIN, CHECK DAMS, PIPING ETC. SHALL BE PROVIDED AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND NOTIFICATION WITH ALL APPURTENANT UTILITY COMPANIES WHOSE LINES ARE WITHIN THE CONSTRUCTION CONTRACT AREA. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES 48 HOURS PRIOR TO ANY CONSTRUCTION ON SITE. THE CONTRACTOR WILL BE RESPONSIBLE PHYSICALLY AND FINANCIALLY FOR ANY DISRUPTION TO SERVICE EITHER ON SITE OR OFF SITE DUE TO BREAKAGE OF UTILITY LINES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DATA SHOWN ON THE PLANS. IF DISCREPANCIES ARE FOUND THE CONTRACTOR SHALL NOTIFY THE OWNER OR ENGINEER IMMEDIATELY SO THAT PROPER CORRECTIONS CAN BE MADE.
- EQUIPMENT OF A CONDITION AND DESIGN SUFFICIENT TO ENSURE A THOROUGH AND WORKMANLIKE PROSECUTION OF THE PROJECT SHALL BE USED AT ALL TIMES.
- ALL ELEVATIONS ARE TO CITY DATUM UNLESS OTHERWISE NOTED.
- ALL WASTE MATERIALS INCLUDING EXCAVATION, CURBING, PAVEMENT, ETC. SHALL BE DISPOSED OF AS DESIGNATED BY THE OWNER OR HIS REPRESENTATIVE.
- THE CONTRACTOR SHALL NOTIFY THE OWNER, OR HIS REPRESENTATIVE, IN SUFFICIENT TIME IN ADVANCE OF DELIVERY OF MATERIALS TO BE SUPPLIED BY HIM UNDER THIS PROJECT, IN ORDER THAT THE OWNER MAY ARRANGE, IF DESIRED, INSPECTION AND TESTING FOR SAME.
- SAFE AND REASONABLE ACCESS FOR THIS SITE MUST BE MAINTAINED AT ALL TIMES DURING THE LIFE OF THE PROJECT.
- ANY CAVITY REMAINING OPEN DURING NONWORKING HOURS MUST BE GUARDED BY FLASHER TYPE BARRICADES WITH STRINGERS PLACED BETWEEN THE TOPS OF THE BARRICADES.
- DEVELOPER SHALL COMPLY WITH SECTION 13.08.170 "EXCESSIVE PAVING CUTS" AS PER EL PASO MUNICIPAL CODE.

**GENERAL EARTHWORK NOTES:**

- ALL GRADING SHALL CONFORM TO THE CITY OF EL PASO GRADING ORDINANCE SECTION 18.44.
- THE CONTRACTOR SHALL CARRY ON HIS WORK WITH SPECIAL CARE AT ALL TIMES TO MAINTAIN THE NATURAL SURROUNDINGS AND EXISTING STRUCTURES IN AN UNDAMAGED CONDITION.
- NATURAL SUBGRADES TO SUPPORT STRUCTURAL FILL OR PAVEMENTS SHOULD BE STRIPPED OF ALL VEGETATION OR ORGANIC TOPSOIL. THE EXPOSED SUBGRADE SHOULD BE SCARIFIED JUST PRIOR TO FILL PLACEMENT TO A MINIMUM DEPTH OF 6 INCHES AND RECOMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS PER ASTM D-1557. ALL BACKFILL MATERIAL TO BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED EIGHT (8") INCH LIFTS AND COMPACTED AS BEFORE.
- TEMPORARY DUST AND EROSION CONTROL MEASURES SHALL BE PROVIDED FOR AT ALL TIMES. SEE SHEET X.
- ANY EROSION OF THE GRADED SITE DURING THE COURSE OF THE PROJECT SHALL BE CORRECTED PRIOR TO FINALIZATION OF THE PROJECT AT NO COST TO THE OWNER.
- ALL SLOPES AND SWALES WITHIN LOTS SHALL BE MAINTAINED BY LOT OWNER.

**CONSTRUCTION NOTES:**

- ALL CONCRETE FOR STRUCTURES SHALL BE 3000 PSI. UNLESS OTHERWISE NOTED.
- MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE NOTED.
- 95% COMPACTION REQUIRED FOR STRUCTURES AS PER ASTM D1557.
- REINFORCING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60.
- RETAINING WALLS WILL BE REQUIRED WHERE THERE IS A GRADE DIFFERENCE OF 2 OR MORE FEET BETWEEN LOTS AND STREET. RETAINING WALL DESIGN AT TIME OF BUILDING PERMIT.
- 95% COMPACTION REQUIRED ON CUTS & 95% COMPACTION REQUIRED ON FILLS.

**18.44.220 - PERMIT CLOSEOUT PROCEDURE:**

AFTER THE PERMITTEE COMPLETES THE GRADING UNDER THE PERMIT THE PERMIT SHALL BE CLOSED. AS PART OF THE CLOSEOUT PROCEDURE, THE APPLICANT MUST SUBMIT THE FOLLOWING TO THE CITY:

- A STATEMENT FROM THE ENGINEER OF RECORD THAT STATES, "THE GRADING OPERATION HAS BEEN SUBSTANTIALLY COMPLETED AND GENERALLY CONFORMS TO THE APPROVED SET OF PLANS". THE PERMITTEE SHALL CALL THE PERMIT OFFICIAL TO ESTABLISH THE BEGINNING OF THE WARRANTY PERIOD AND TO NOTIFY THE PERMIT OFFICIAL THAT THE GSP HAS BEEN IMPLEMENTED.
- A COPY OF THE NOTICE OF TERMINATION FILED WITH THE STATE OR DATED CONSTRUCTION SITE NOTICE, IF APPLICABLE, IN ACCORDANCE WITH CHAPTER 15.

THE CITY WILL ISSUE A LETTER STATING GENERAL CONFORMANCE TO THE PERMIT. THIS WARRANTY PERIOD REQUIREMENTS WILL CONTINUE TO BE IN EFFECT.

**18.44.090 - WARRANTY:**

ANY PERSON ISSUED A PERMIT SHALL AGREE WARRANT AND MAINTAIN THE AREA DESCRIBED IN THE PERMIT FOR A PERIOD OF TWO YEARS AFTER THE PERMIT IS CLOSED BY THE CITY PURSUANT TO SECTION 18.44.220, OR UNTIL A BUILDING PERMIT IS ISSUED FOR THE PURPOSE OF MAINTAINING A STABILIZED SITE IN ACCORDANCE WITH THE APPROVED GSP. WHICHEVER FIRST OCCURS (THE "WARRANTY" OR "WARRANTY PERIOD"), THE CITY MAY CONDUCT INSPECTIONS OF THE PERMITTED AREA THROUGHOUT THE WARRANTY PERIOD AND REQUIRE MAINTENANCE AND CORRECTION OF THE WORK BY THE PERMIT HOLDER. FAILURE OF THE PERMIT HOLDER TO CORRECT THE WORK SHALL CONSTITUTE A FAILURE TO COMPLY WITH THE PROVISIONS OF THIS CHAPTER.

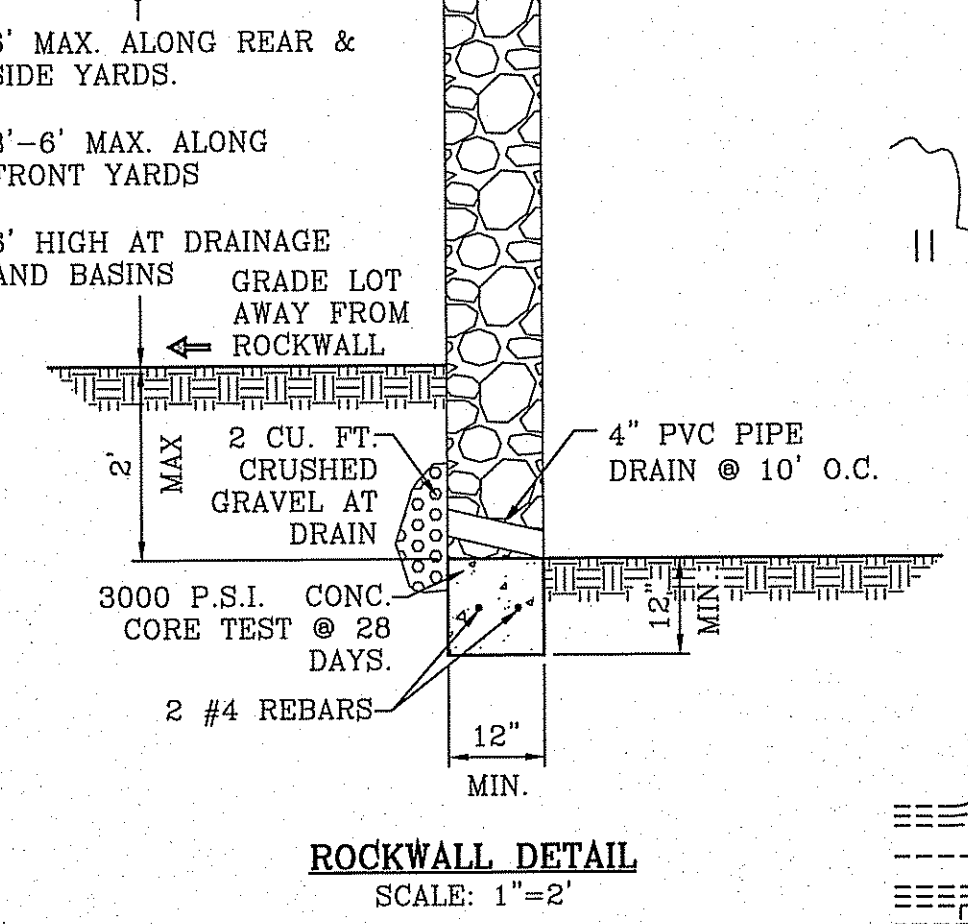
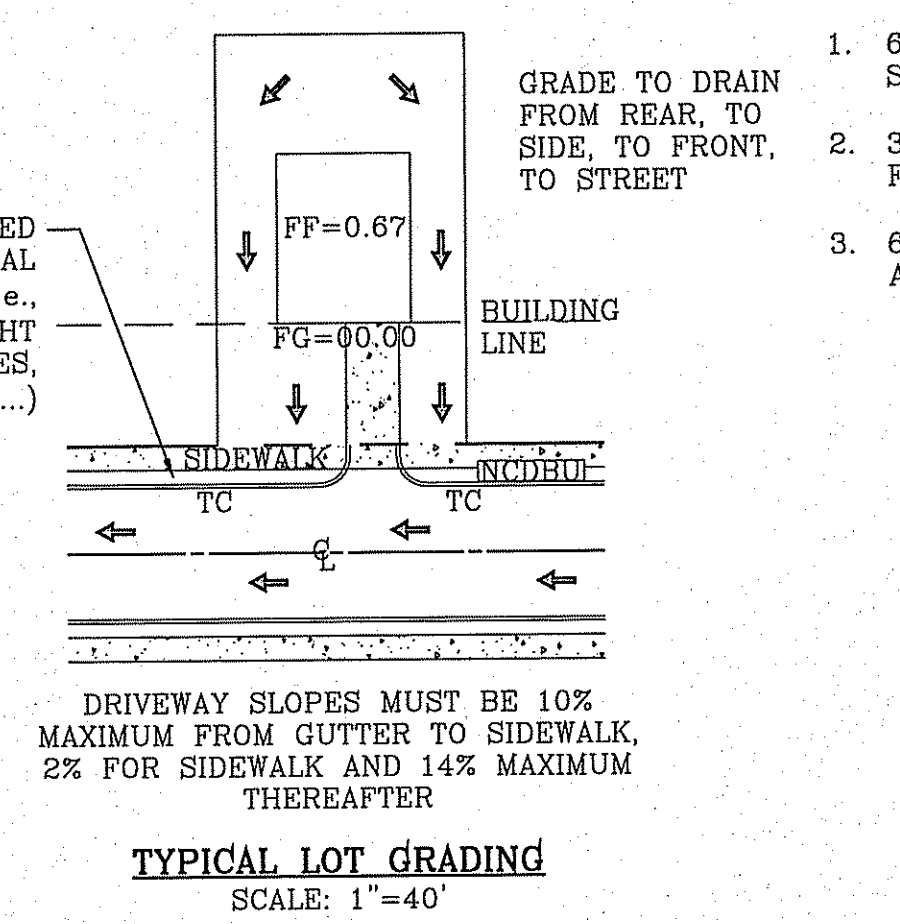
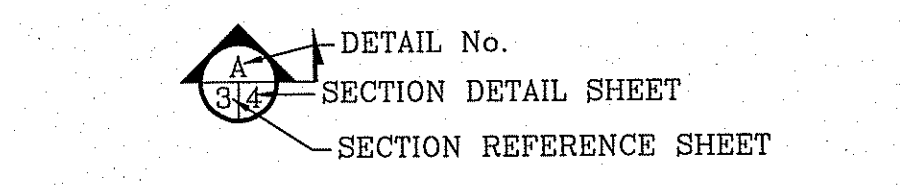
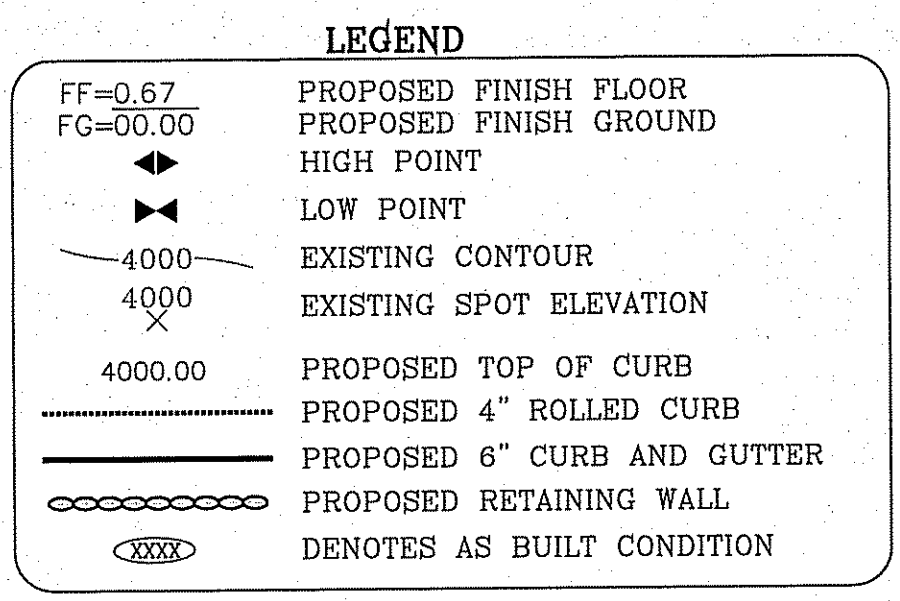
**CONSTRUCTION ACTIVITY REQUIREMENTS:**

- NO ON-SITE PROCESSING OF MATERIAL FOR COMMERCIAL OR RETAIL SALES SHALL BE ALLOWED. ON-SITE PROCESSING OF MATERIALS TO BE USED FOR PREPARATION OR CONSTRUCTION OF IMPROVEMENTS WITHIN THE SITE COVERED BY THE GRADING PERMIT SHALL BE ALLOWED.
- WORK SHALL BE CONDUCTED IN MANNER THAT PRESERVES AND DOES NOT OBSTRUCT, IMPEDE OR INTERFERE WITH THE FLOW OF STORM WATER IN NATURAL DRAINAGE WAYS, UNIMPROVED CHANNELS OR WATERCOURSES, OR IMPROVED DITCHES, CHANNELS OR CANALS IN SUCH A MANNER AS TO CAUSE FLOODING WHERE IT WOULD NOT OTHERWISE OCCUR.
- CONSTRUCTION EQUIPMENT AND FENCING SHALL BE KEPT OUT OF WATERCOURSES EXCEPT WHEN NECESSARY TO PERFORM WORK ON THE APPROVED PLANS. ADEQUATE PASS MEASURES SHALL BE INSTALLED WHERE TEMPORARY DRAINAGE BLOCKAGES WILL OCCUR. WHERE WORK WITHIN A CHANNEL IS DESIGNATED ON APPROVED PLANS, PRECAUTIONS SHALL BE TAKEN TO STABILIZE THE WORK AREA DURING CONSTRUCTION TO MINIMIZE EROSION. THE CHANNEL, INCLUDING BED AND BANKS, SHALL ALWAYS BE RESTORED/REESTABLISHED IMMEDIATELY AFTER IN CHANNEL WORK IS COMPLETED.
- WHERE A DRAINAGE WAY WILL BE CROSSED BY CONSTRUCTION VEHICLES REGULARLY DURING CONSTRUCTION, A TEMPORARY CROSSING SHALL BE CONSTRUCTED.
- MATERIAL STOCKPILING SHALL NOT BE ALLOWED WHEN GRADING OPERATIONS ARE IDLE FOR MORE THAN SEVEN CONSECUTIVE CALENDAR DAYS. STOCKPILING SHALL BE LIMITED TO TEN FEET HIGH WHEN GRADING OPERATIONS ARE BEING CONDUCTED.
- TRAFFIC CONTROL PERMIT AND/OR FLAGMEN MAY BE REQUIRED AS PART OF THE GRADING PERMIT.
- ANY USE OF VIBRATORY EQUIPMENT SHALL BE APPROVED IN WRITING BY THE DIRECTOR IN ADVANCE OF SUCH USE.

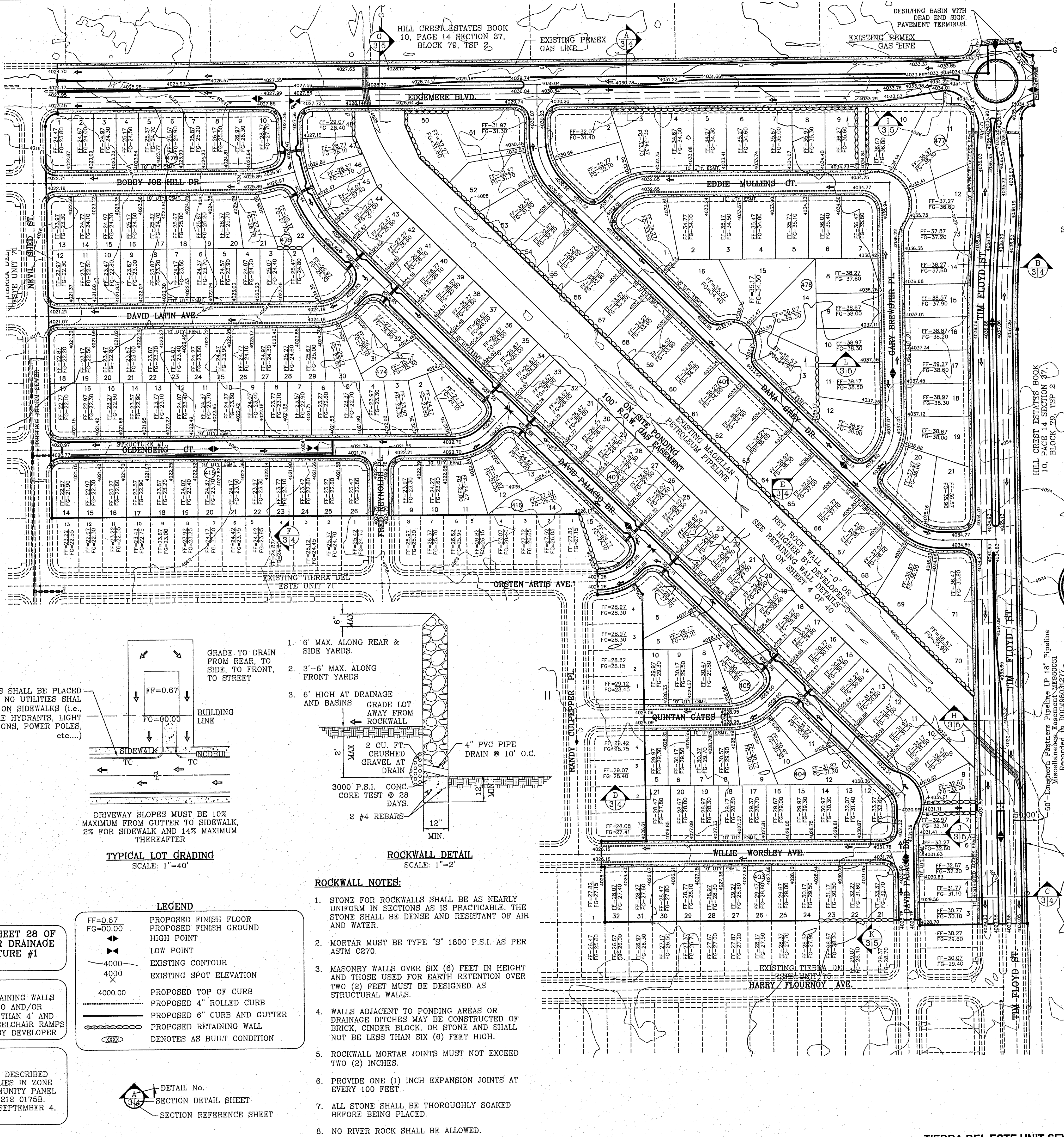
SEE SHEET 28 OF 32 FOR DRAINAGE STRUCTURE #1

**NOTE:**  
ALL RETAINING WALLS EQUAL TO AND/OR HIGHER THAN 4' AND ALL WHEELCHAIR RAMPS TO BE BY DEVELOPER

**NOTE:**  
HEREON DESCRIBED TRACT LIES IN ZONE X, COMMUNITY PANEL NO. 480212 0175B. DATED SEPTEMBER 4, 1991.



- ROCKWALL NOTES:**
- STONE FOR ROCKWALLS SHALL BE AS NEARLY UNIFORM IN SECTIONS AS IS PRACTICABLE. THE STONE SHALL BE DENSE AND RESISTANT OF AIR AND WATER.
  - MORTAR MUST BE TYPE "S" 1800 P.S.I. AS PER ASTM C270.
  - MASONRY WALLS OVER SIX (6) FEET IN HEIGHT AND THOSE USED FOR EARTH RETENTION OVER TWO (2) FEET MUST BE DESIGNED AS STRUCTURAL WALLS.
  - WALLS ADJACENT TO PONDING AREAS OR DRAINAGE DITCHES MAY BE CONSTRUCTED OF BRICK, CINDER BLOCK, OR STONE AND SHALL NOT BE LESS THAN SIX (6) FEET HIGH.
  - ROCKWALL MORTAR JOINTS MUST NOT EXCEED TWO (2) INCHES.
  - PROVIDE ONE (1) INCH EXPANSION JOINTS AT EVERY 100 FEET.
  - ALL STONE SHALL BE THOROUGHLY SOAKED BEFORE BEING PLACED.
  - NO RIVER ROCK SHALL BE ALLOWED.



SCALE: 1"=100'



50' Longhorn Partners Pipeline LP 18" Pipeline  
Miscellaneous Easement M1650001  
Reference Volume 3360 Page 0371  
Official Records of El Paso County, Texas

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESIAN TRAIL DR.	REVISIONS	BY
ELEVATION 4026.16	adjusted pemex pipeline	r.c.
DATE	REVISIONS	BY
5-29-2015	adjusted pemex pipeline	r.c.

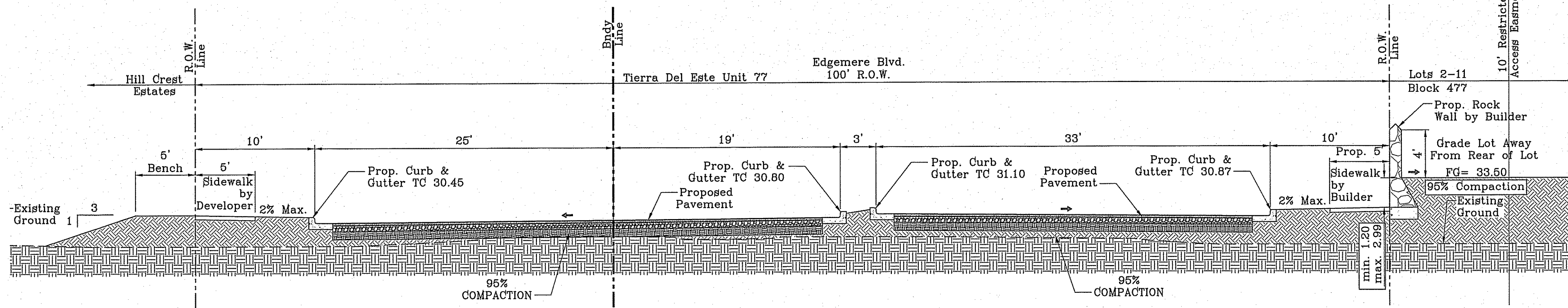
PROJECT NAME  
**Tierra del Este Unit Seventy Seven**  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, EL PASO COUNTY, TEXAS  
CONTAINING: .54.017± ACRES

SCALE  
HORIZ: 1"=100'  
VERT: ---  
DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: DN  
CHECKED BY: YC  
JOB NO.: 414-43

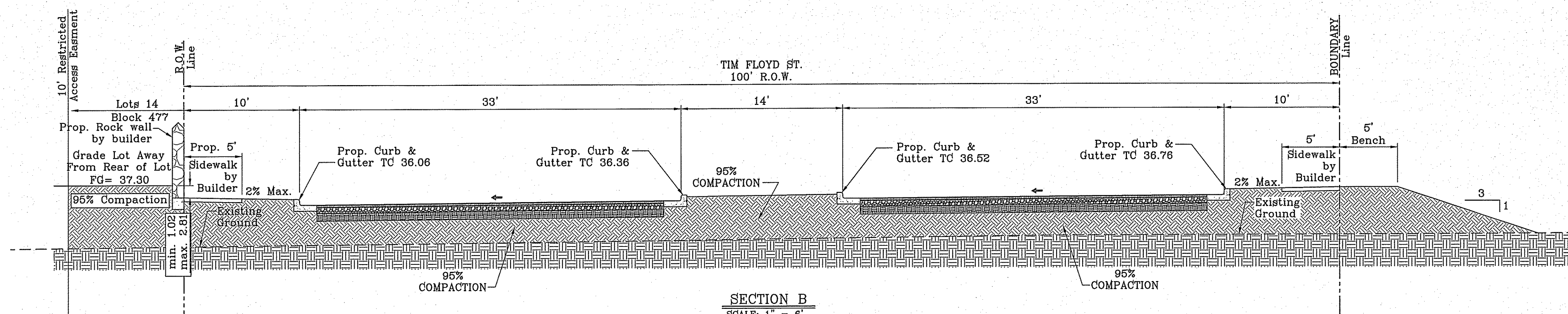
ENGINEER'S SEAL  
**CONDE INC.**  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286

SHEET TITLE  
**GRADING PLAN**  
SHT 3 OF 40

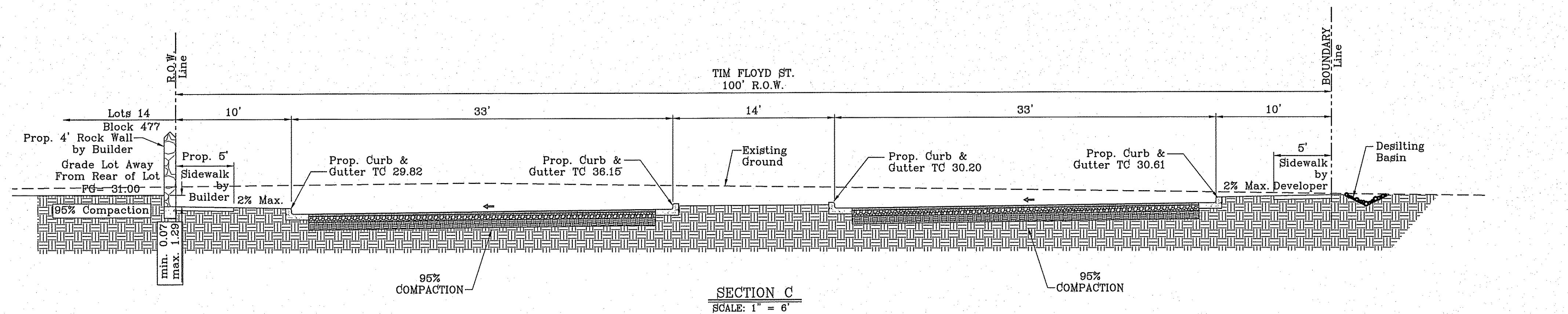




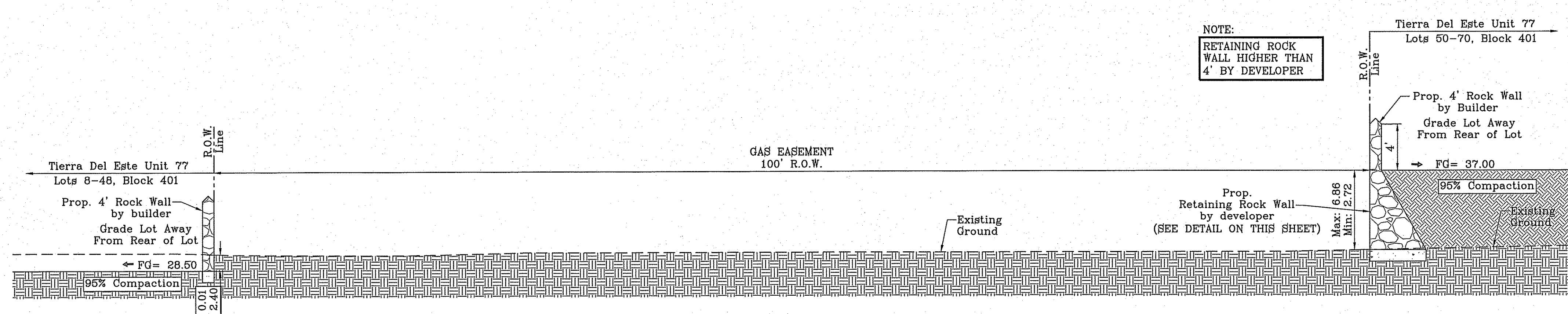
SECTION A  
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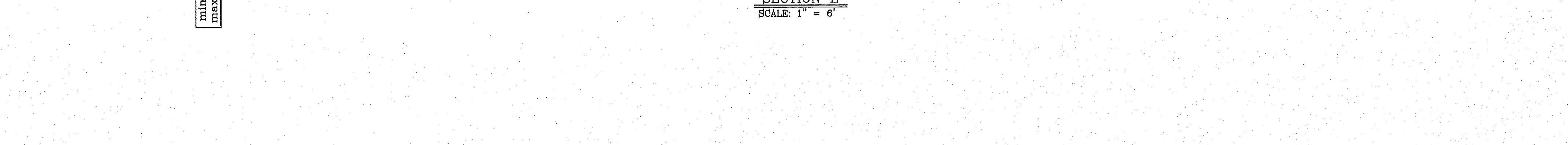
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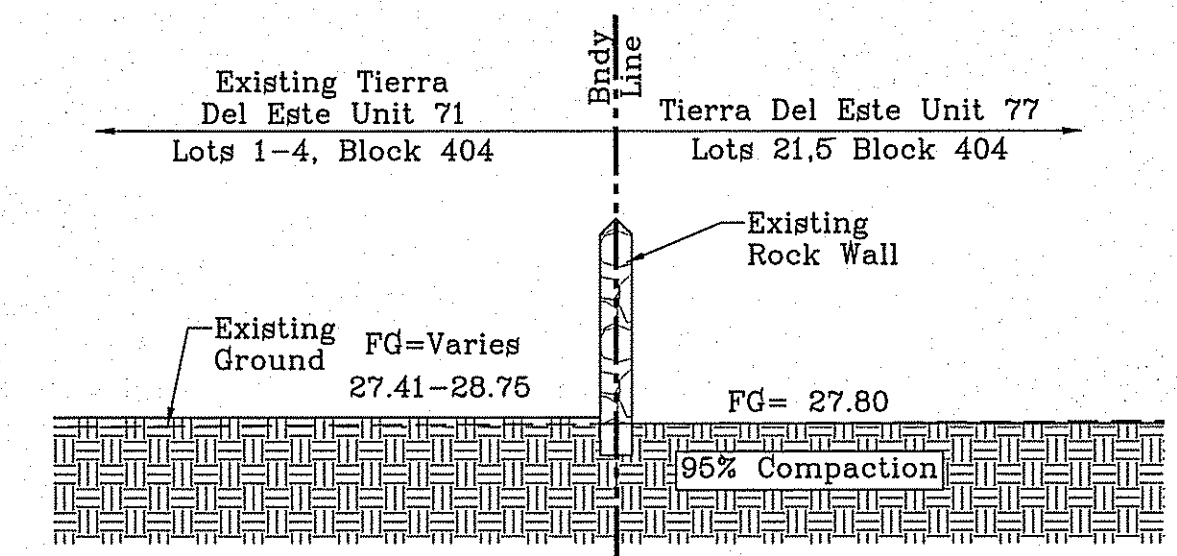
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SCALE: 1" = 6'



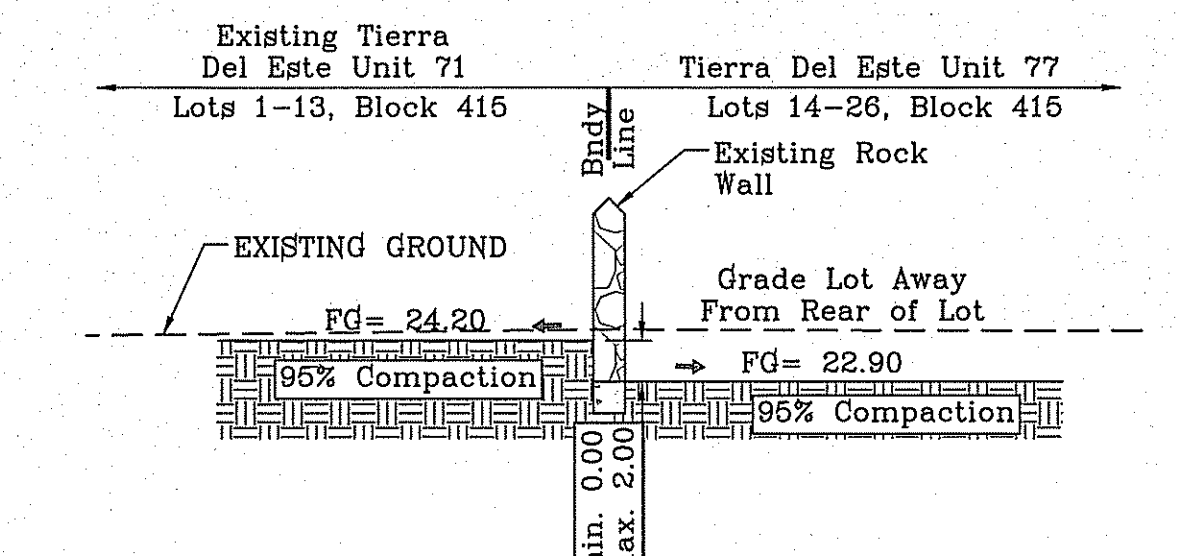
SECTION D  
SCALE: 1" = 6'



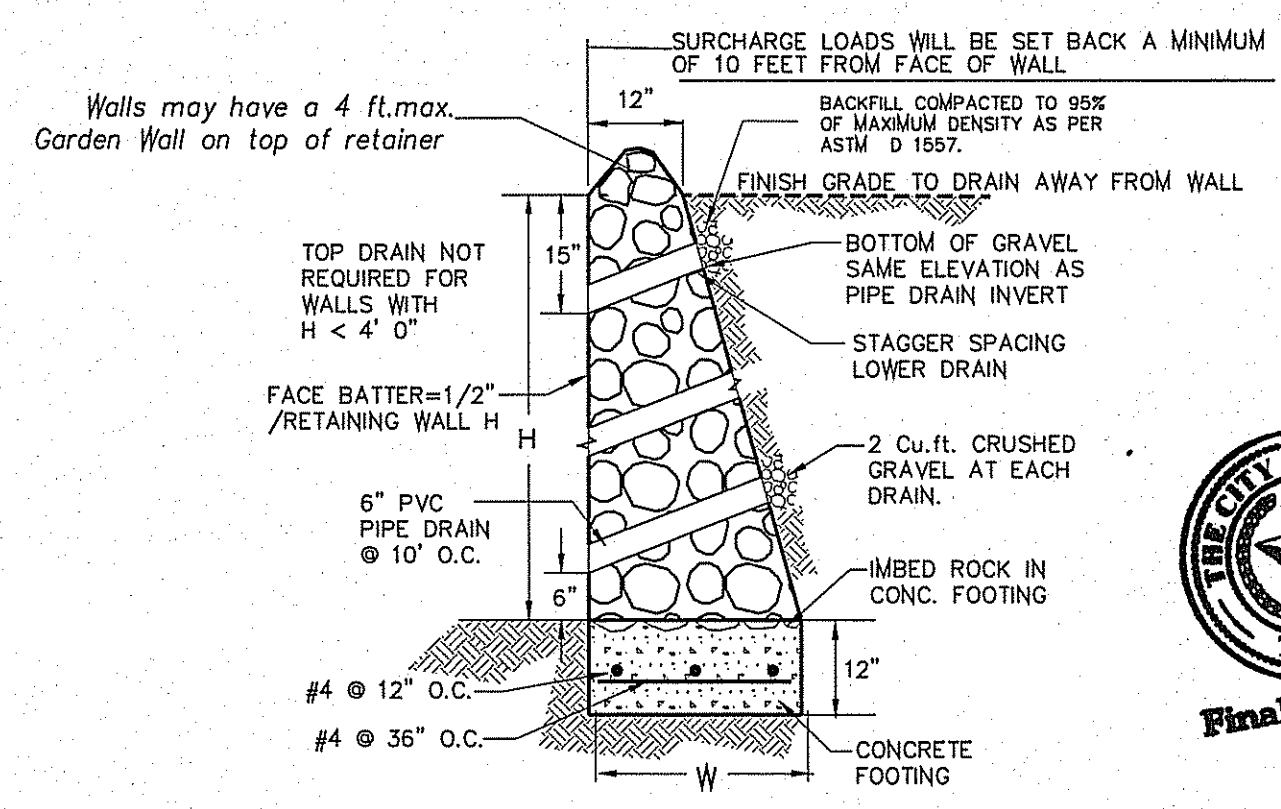
SECTION E  
SCALE: 1" = 6'



SECTION D  
SCALE: 1" = 6'



SECTION F  
SCALE: 1" = 6'



RETAINING WALL

HEIGHT H (ft.)	BASE WIDTH W (ft.)	TOE PRESSURE (lbs./s.f.)	HEEL PRESSURE (lbs./s.f.)
3'-0"	1'-3"	1929	0
4'-0"	2'-2"	1757	0
5'-0"	2'-10"	1757	0
6'-0"	3'-6"	1957	0
7'-0"	4'-2"	2075	32

ROCKWALL & RETAINING WALL NOTES

- NATURAL STONE SHALL BE SOUND AND FREE FROM LOOSE OR FRAGILE INCLUSIONS AND SHALL MEET REQUIRED STRENGTH AND DURABILITY FOR PROPOSED USE.
- MORTAR SHALL BE ASTM C-20 - 1800 PSI MORTAR.
- CONCRETE SHALL BE F'C = 3000 PSI AT 28 DAYS.
- REINFORCING STEEL SHALL BE ASTM A 615 GRADE 40, FY = 40,000 PSI
- ALLOWABLE SOIL BEARING PRESSURE = 2,300 PSF MINIMUM.
- WALL FOOTING SHALL BEAR ON FIRM UNDISTURBED OR COMPACTED GROUND (95% COMPACTION AS PER ASTM D1557).
- CHANGES IN ALL DIRECTION, WALL HEIGHT OR FOOTING ELEVATION WILL REQUIRE ADDITIONAL DESIGN.
- BACKFILL MATERIAL SHALL CONSIST OF WELL-DRAINED, COARSE GRAINED SOILS, OR FINE SILTY SANDS WITH NO CLAY CONTENT. BACKFILL MATERIAL SHALL EXERT A HORIZONTAL FORCE OF AN EQUIVALENT FLUID PRESSURE NOT TO EXCEED 30#/ft.
- SOILS BENEATH AND BEHIND WALL SHALL NOT HAVE A PLASTICITY INDEX GREATER THAN 12

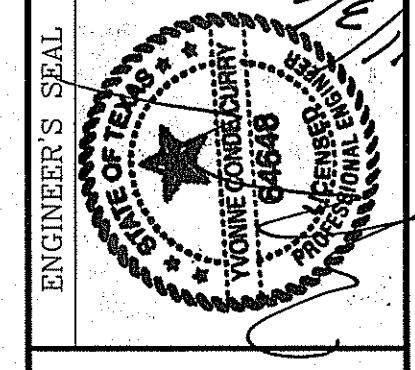
ROCK RETAINING WALL DESIGN FOR LOTS 50-70 BLOCK 401 ONLY

TIERRA DEL ESTE UNIT SEVENTY SEVEN

BENCHMARK  
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESHAN TRAIL DR. ELEVATION 4023.16  
DATE: \_\_\_\_\_  
REVISIONS: \_\_\_\_\_  
BY: \_\_\_\_\_

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
CONTAINING: 54.0174 ACRES

SCALE  
HORIZ: as shown  
VERT: FEB. 2014  
DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: DN  
CHECKED BY: YC  
JOB NO.: 414-43



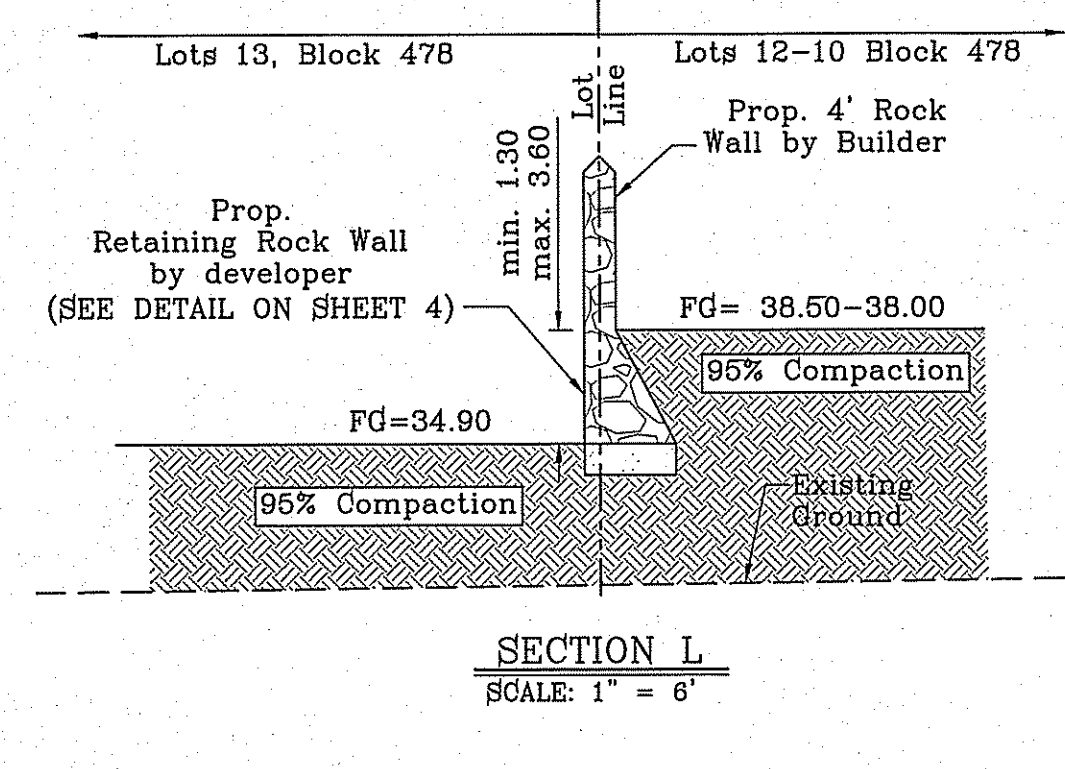
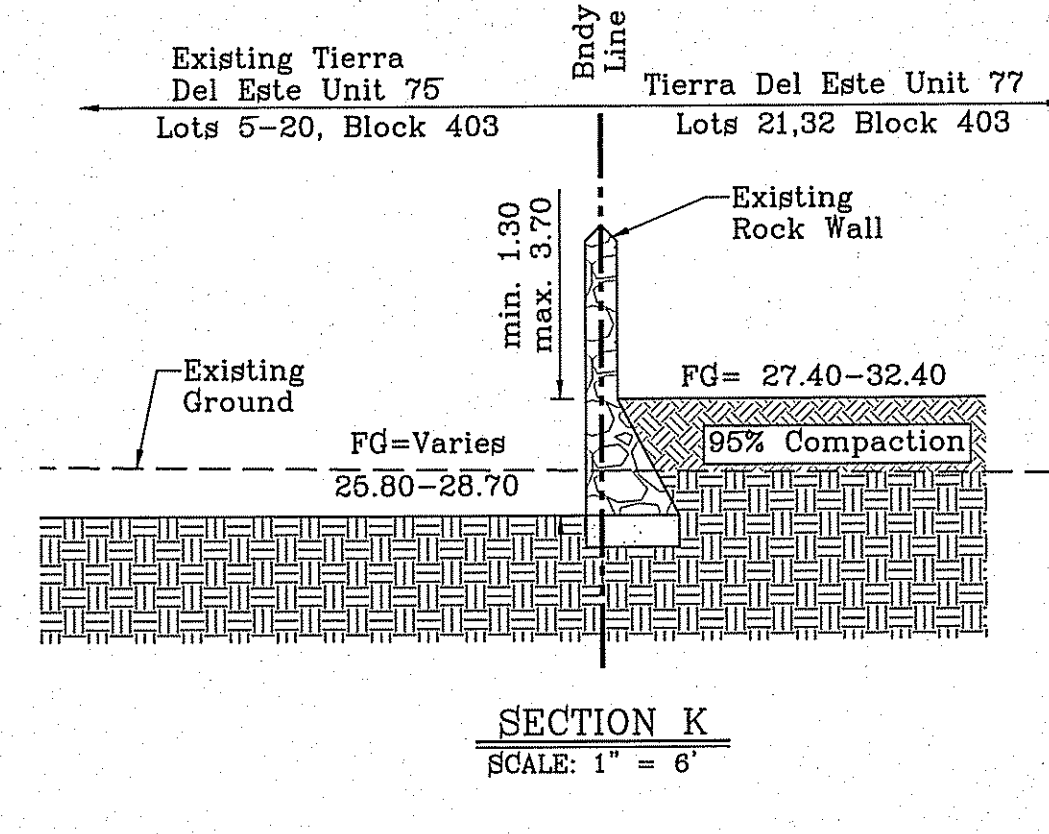
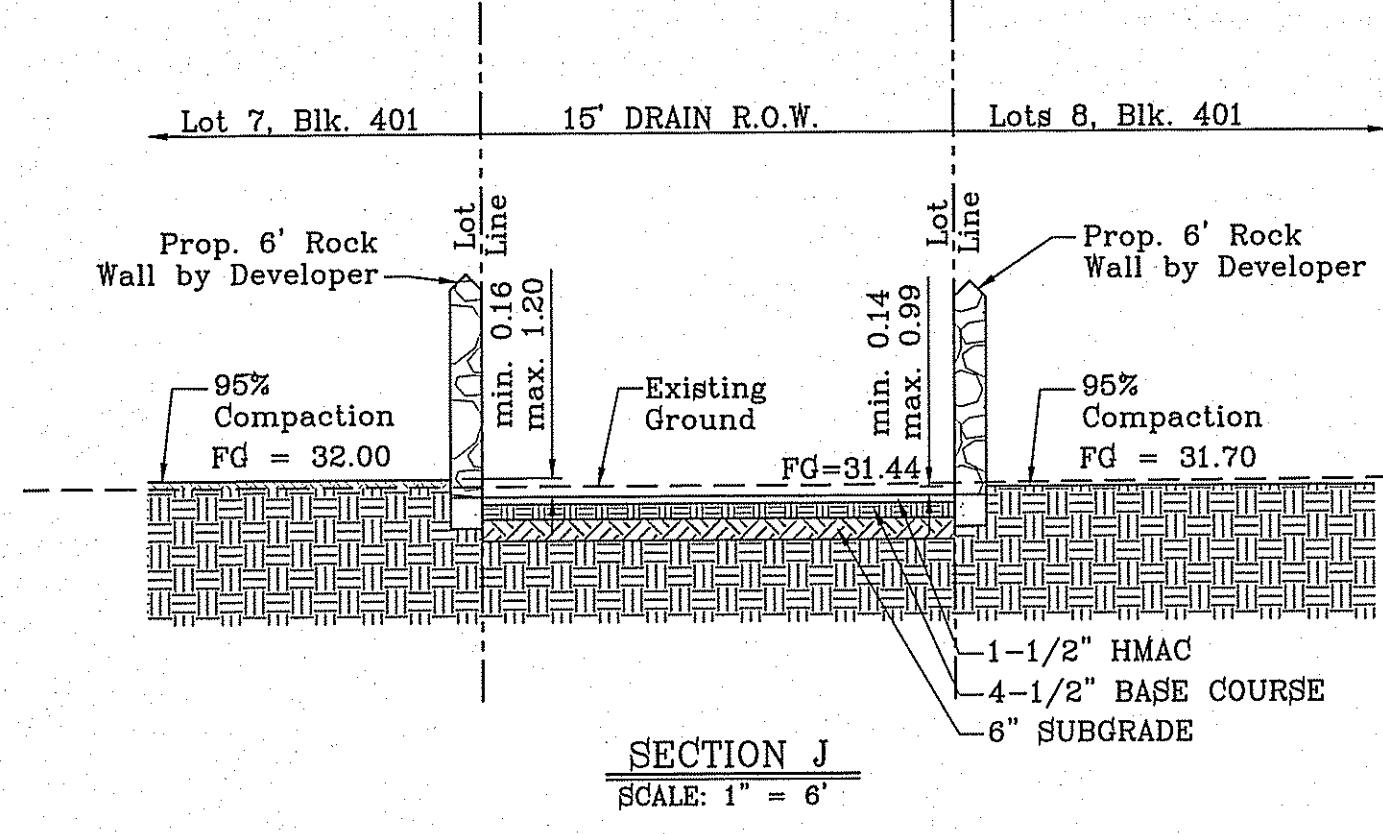
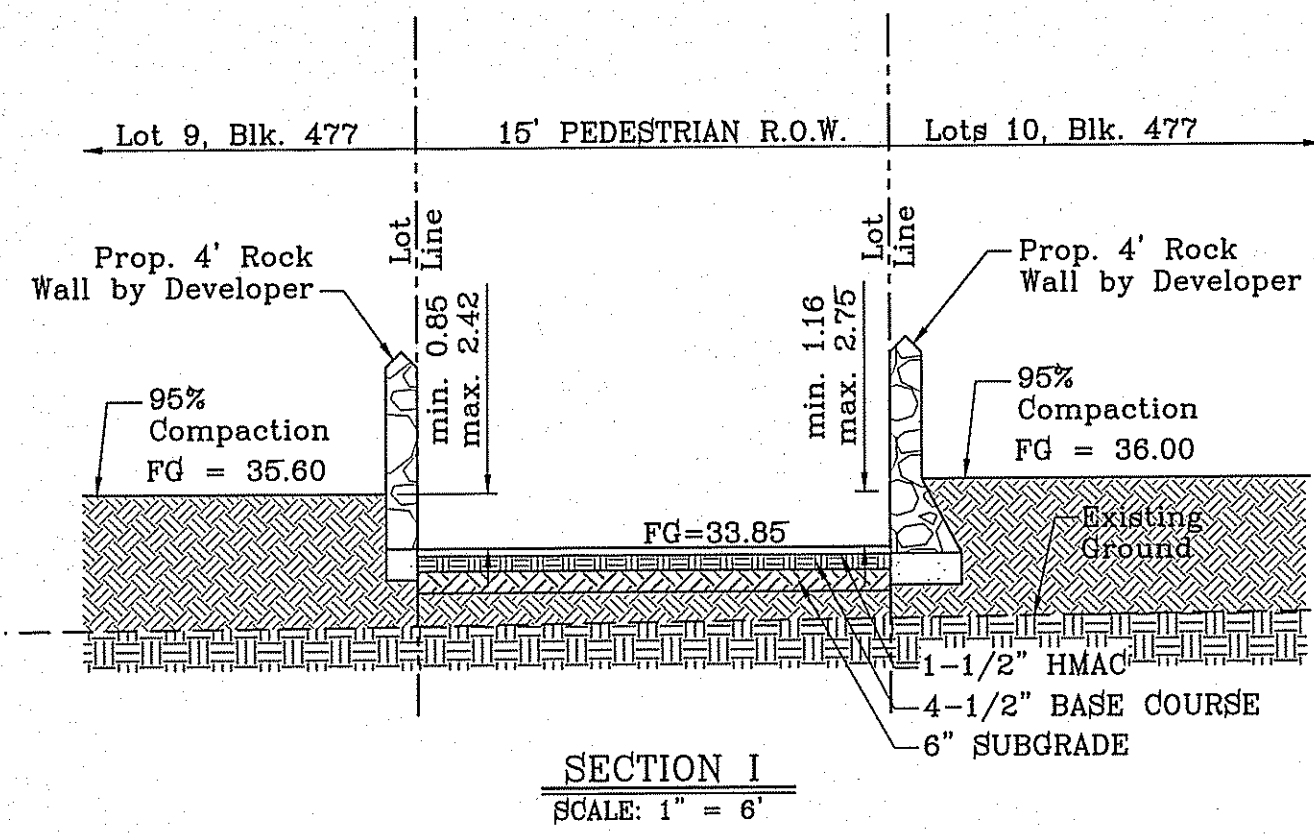
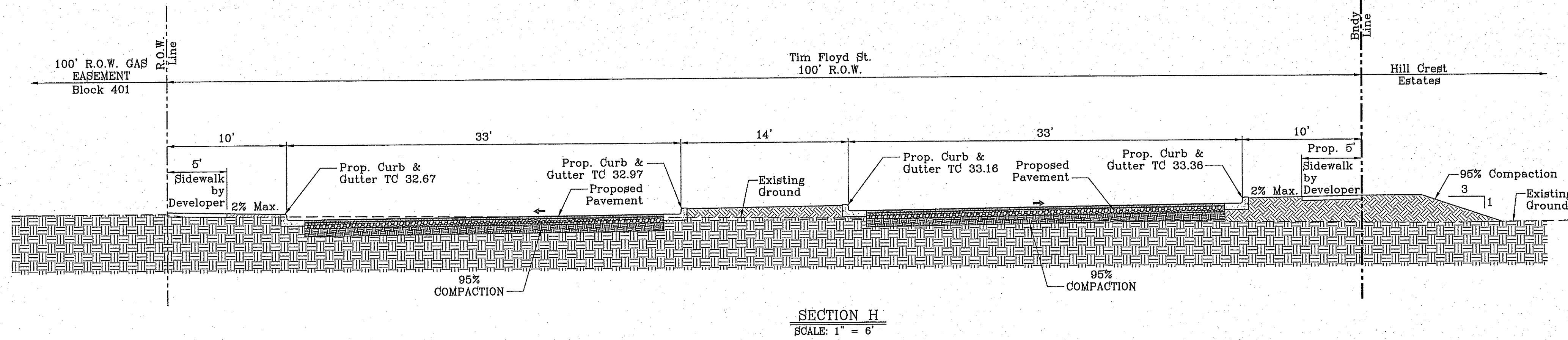
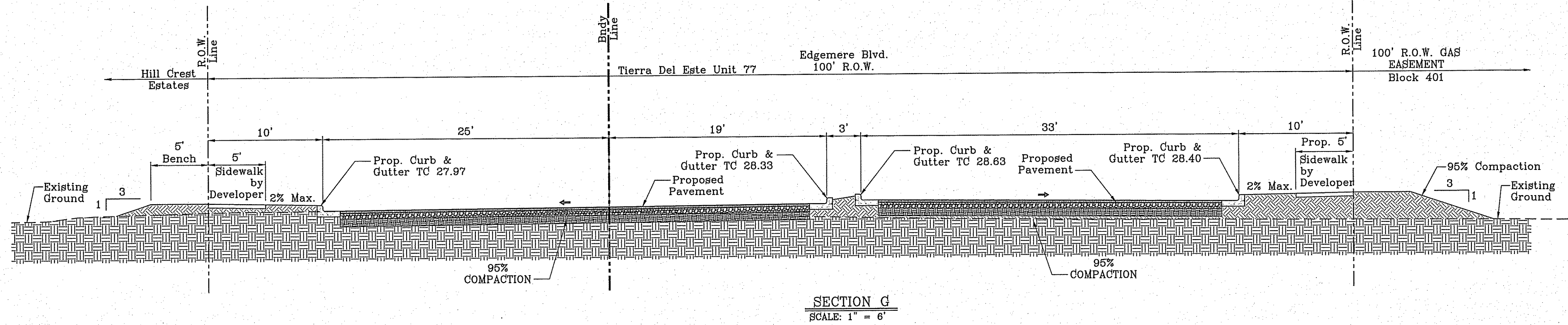
CONDE INC.  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286



SHEET TITLE  
**GRADING SECTIONS**  
SHT 4 OF 40



FILE S:\\_Subdivisions\THE 77\DWG\GRADING SECTIONS PLOTTED Monday, October 12, 2015 2:45:58 PM



BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16 ..... NAVD83 DATUM

DATE	REVISIONS	BY

**TERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING: 840.17± ACRES

SCALE as shown

HORIZ: as shown

VERT: shown

DATE: FEB. 2014

DESIGN BY: YC

INITIATED BY: JN

CHECKED BY: YC

JOB NO.: 414-43

**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

6060 SURETY DR. STE 100 EL PASO, TEXAS 79905

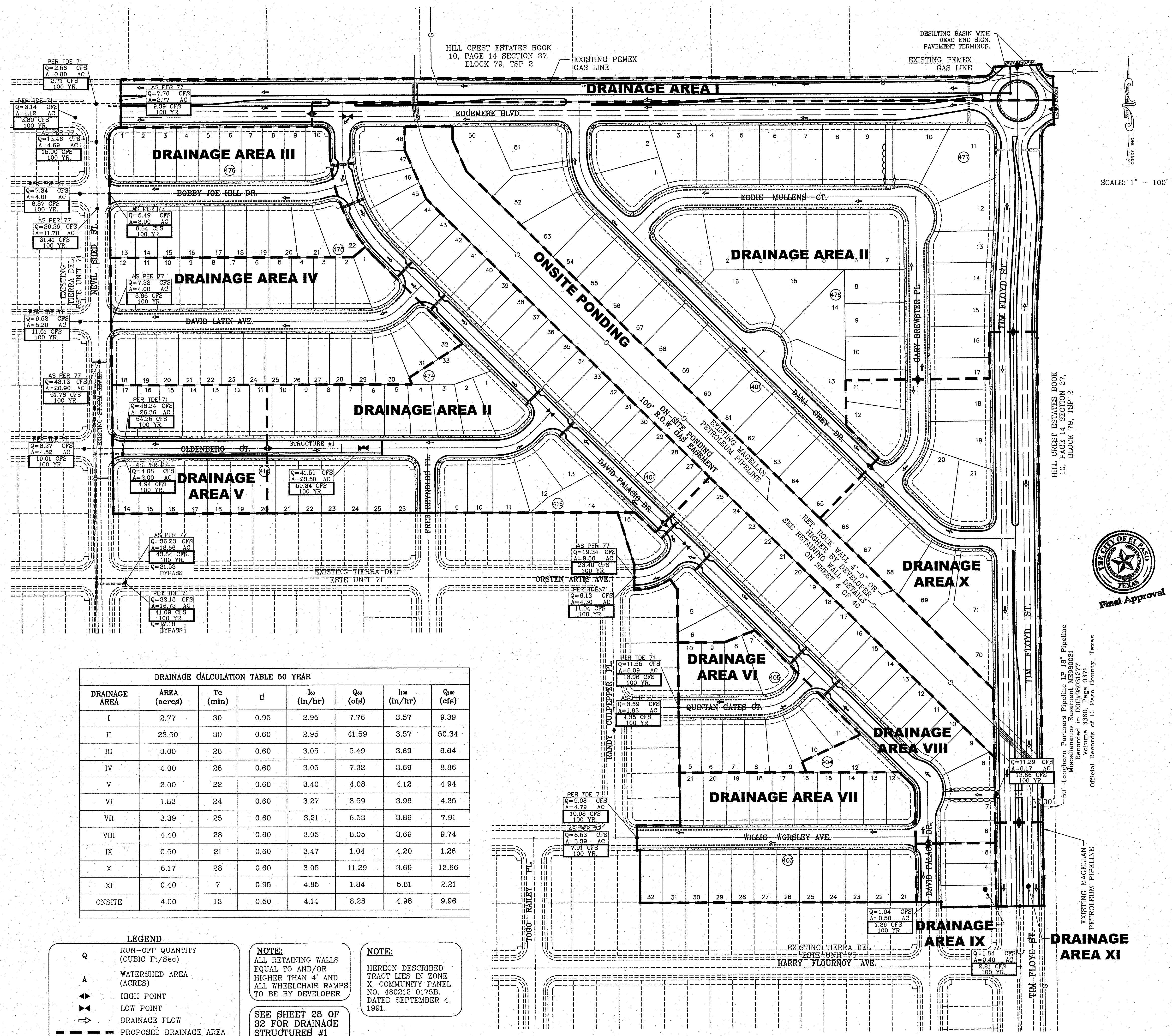
PHONE: (915) 592-0263 FAX: (915) 592-0286

REGISTRATION NO. P-2321

**GRADING SECTIONS**



FILE S:\\_Subdivisions\TBE 77\DWG\GDPL PLOTTED Monday, November 02, 2015 1:26:16 PM



**DRAINAGE CALCULATION TABLE 50 YEAR**

DRAINAGE AREA	AREA (acres)	Tc (min)	C	I <sub>50</sub> (in/hr)	Q <sub>50</sub> (cfs)	I <sub>100</sub> (in/hr)	Q <sub>100</sub> (cfs)
I	2.77	30	0.95	2.95	7.76	3.57	9.39
II	23.50	30	0.60	2.95	41.59	3.57	50.34
III	3.00	28	0.60	3.05	5.49	3.69	6.84
IV	4.00	28	0.60	3.05	7.32	3.69	8.86
V	2.00	22	0.60	3.40	4.08	4.12	4.94
VI	1.83	24	0.60	3.27	3.59	3.96	4.35
VII	3.39	25	0.60	3.21	6.53	3.69	7.91
VIII	4.40	28	0.60	3.05	8.05	3.69	9.74
IX	0.50	21	0.60	3.47	1.04	4.20	1.26
X	6.17	28	0.60	3.05	11.29	3.69	13.66
XI	0.40	7	0.95	4.85	1.84	5.81	2.21
ONSITE	4.00	13	0.50	4.14	8.28	4.98	9.96

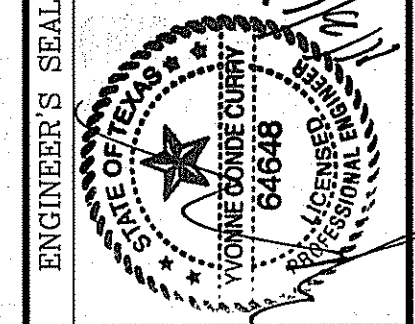
- LEGEND**
- Q RUN-OFF QUANTITY (CUBIC Ft/Sec)
  - A WATERSHED AREA (ACRES)
  - ▲ HIGH POINT
  - ▼ LOW POINT
  - DRAINAGE FLOW
  - - - PROPOSED DRAINAGE AREA

**NOTE:**  
ALL RETAINING WALLS EQUAL TO AND/OR HIGHER THAN 4' AND ALL WHEELCHAIR RAMPS TO BE BY DEVELOPER

**SEE SHEET 28 OF 32 FOR DRAINAGE STRUCTURES #1**

**NOTE:**  
HEREON DESCRIBED TRACT LIES IN ZONE X, COMMUNITY PANEL NO. 480212 0175B DATED SEPTEMBER 4, 1991.

SCALE: 1" = 100'



**CONDE INC.**  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR, STE 100  
EL PASO, TEXAS 79905  
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FAX: (915) 592-0286



**DRAINAGE PLAN**

BENCHMARK  
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESHMAN TRAIL DR. ELEVATION 4023.16 .....NAVD88 DATUM

DATE: 5-29-2015  
BY: [Signature]  
REVISIONS: adjusted pemex pipeline

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
BRING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
CONTAINING: 54.017± ACRES

SCALE: 1" = 100'  
HORIZ: 1" = 100'  
VERT: 1" = 100'  
DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: DN  
CHECKED BY: YC  
JOB NO.: 414-49

HILL CREST ESTATES BOOK 10, PAGE 14 SECTION 37, BLOCK 79, TSP 2

50'-Longhorn Partners Pipeline LP 18" Pipeline  
Miscellaneous Easement ME980031  
Recorded in DOC#88031277  
Volume 3680, Page 0371  
Official Records of El Paso County, Texas

EXISTING TIERRA DEL ESTE UNIT 71  
HARRY FLOURNOY AVE.



**NOTES:**

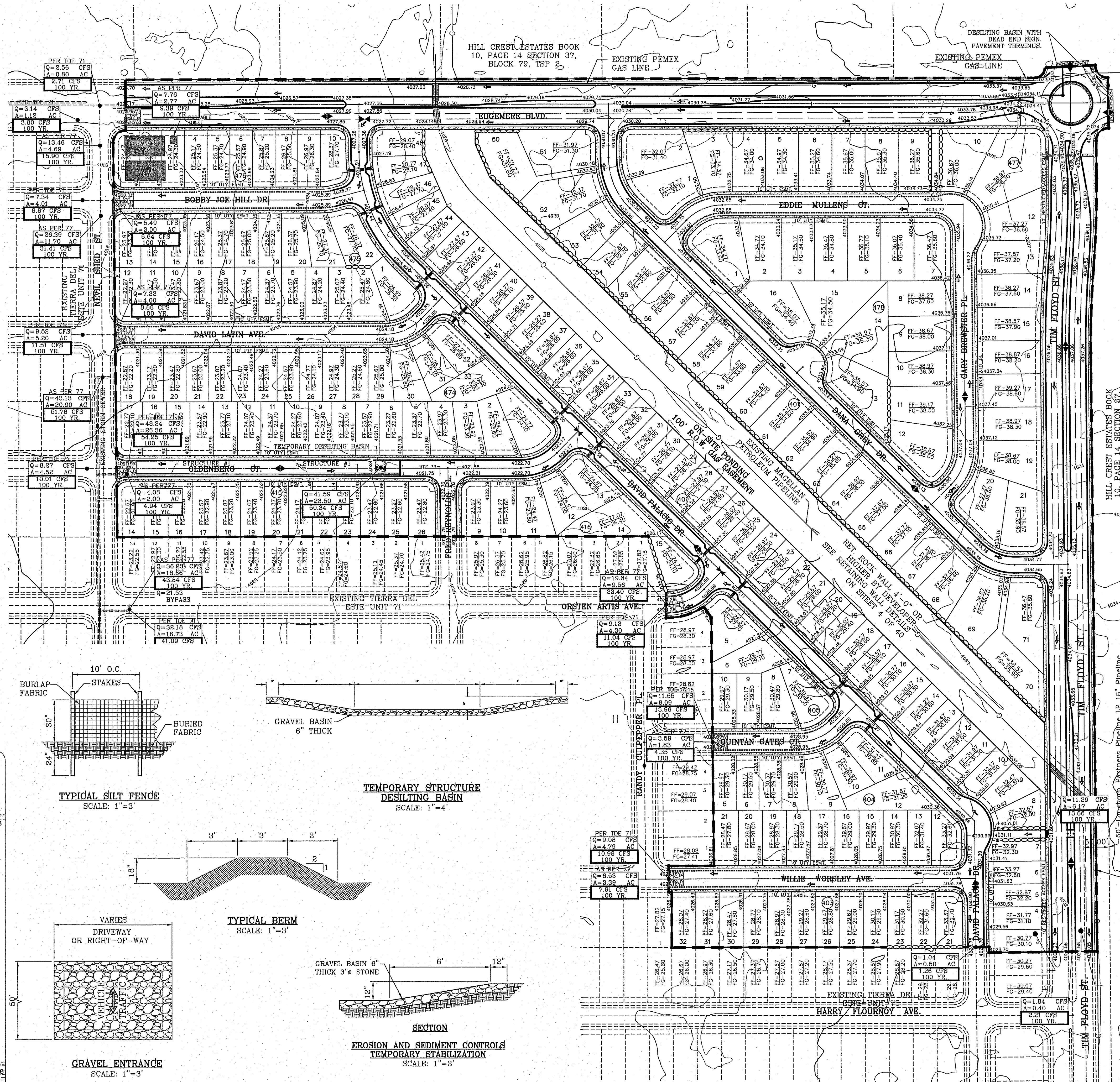
1. T.P.D.E.S. PERMIT- AS REQUIRED BY CONTRACTOR
2. STORM WATER AS PER N.P.D.E.S. PERMIT

**LEGEND**

- FF=#### PROPOSED FINISH GROUND AND FINISH FLOOR
- FG=XX.XX PROPOSED SPOT ELEVATION
- 00.00 HIGH POINT
- ▲ LOW POINT
- 4000 EXISTING CONTOUR
- 4000 EXISTING SPOT ELEVATION
- PROPOSED CONTOUR
- PROPOSED ROCK WALL
- PROPOSED RETAINING WALL
- PROPOSED SILT FENCE
- Q RUN-OFF QUANTITY (CUBIC Ft./Sec)
- A WATERSHED AREA (ACRES)
- DRAINAGE FLOW

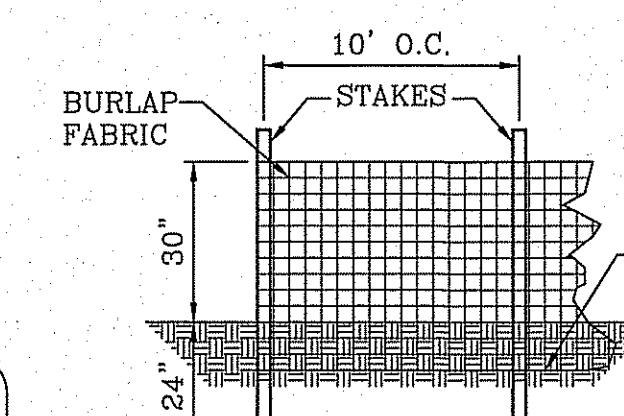
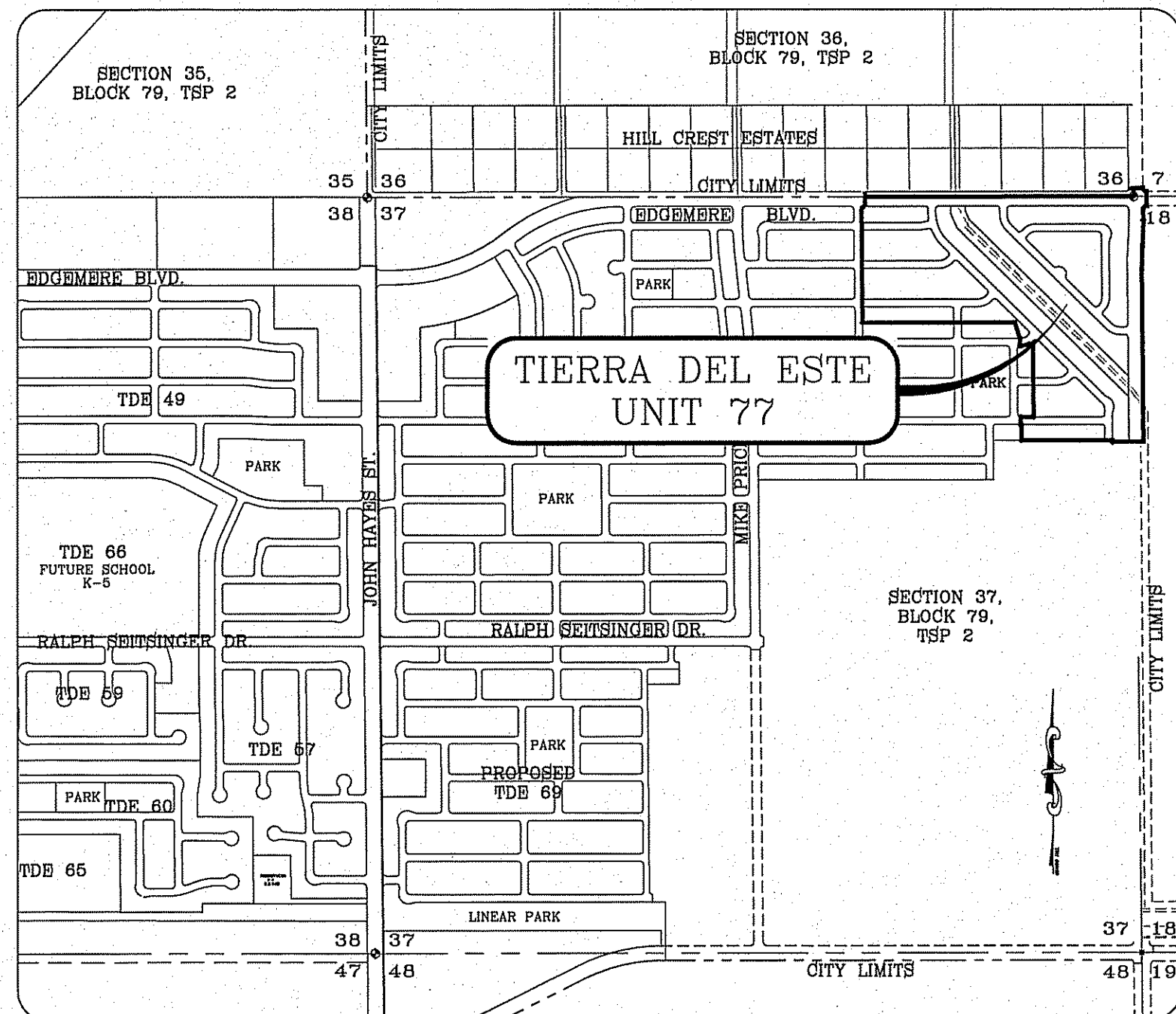
**STABILIZED ENTRANCE EROSION CONTROL NOTES**

1. SILT FENCING OR TEMPORARY BERMS SHALL BE INSTALLED AT TIME OF CONSTRUCTION.
2. TEMPORARY SWALES AND DESILTING BASINS WILL BE PLACED WHERE NECESSARY IN ORDER TO CONVEY STORM WATER RUN-OFF.
3. A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEEP WEEKLY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE.
4. THE OWNER SHALL BE RESPONSIBLE FOR INSURING THAT ALL EROSION CONTROL METHODS ARE INSPECTED ON A MONTHLY BASIS OR AFTER EVERY ERODIBLE RAINFALL (1/2" OR MORE). ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL SHALL BE MADE AT THE TIME.
5. A TEMPORARY BERM SHALL BE PROVIDED AT THE TOE OF SLOPE AND LOT LINE AT TIME OF GRADING PRIOR TO ROCKWALL CONSTRUCTION.
6. SILT FENCE TO BE INSTALLED AND MAINTAINED ALONG THE PERIMETER OF THE PARK SITE UNTIL ALL ADJUTING RESIDENCES ARE DEVELOPED.

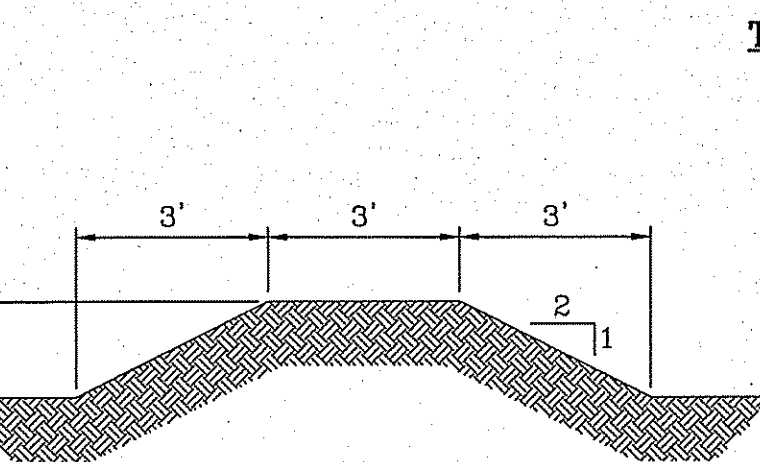


**LOCATION MAP**

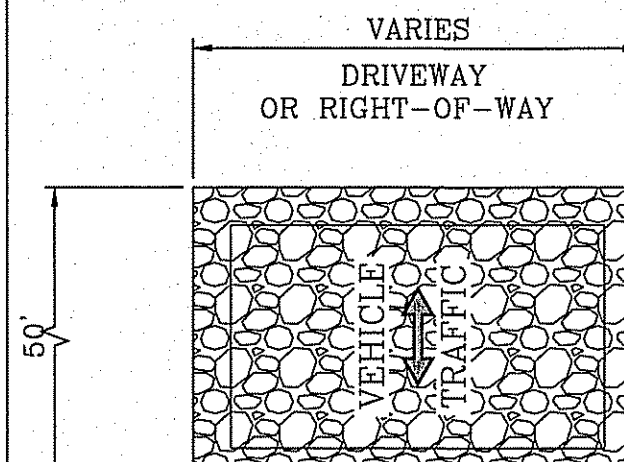
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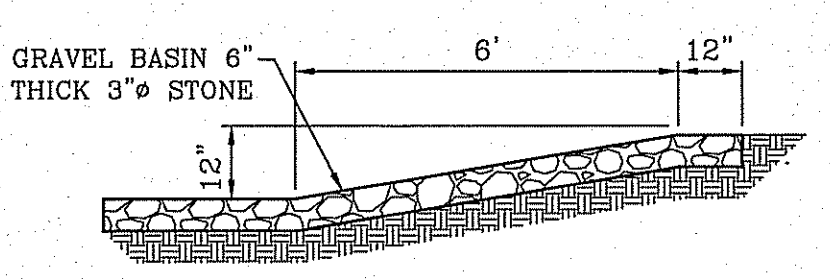
**TYPICAL SILT FENCE**  
SCALE: 1"=3'



**TEMPORARY STRUCTURE DESILTING BASIN**  
SCALE: 1"=4'



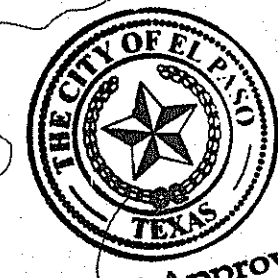
**TYPICAL BERM**  
SCALE: 1"=3'



**SECTION EROSION AND SEDIMENT CONTROLS TEMPORARY STABILIZATION**  
SCALE: 1"=3'

**GRAVEL ENTRANCE**  
SCALE: 1"=3'

SCALE: 1"=100'



BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRISHLIN TRAIL DR. ELEVATION 4053.16

DATE: 5-29-2015

REVISIONS: adjusted pemex pipeline

BY: P.C.

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 18, BLOCK 78, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS

CONTAINING: 54.017± ACRES

SCALE: HORIZ: 1"=100' VERT: 1"=10'

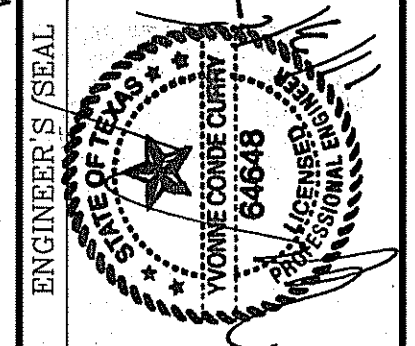
DATE: FEB. 2014

DESIGN BY: YC

INITIATED BY: DN

CHECKED BY: YC

JOB NO.: 414-443



**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. STE 100 EL PASO, TEXAS 79905

PHONE: (915) 592-0283 FAX: (915) 592-0286



**GRADING STABILIZATION STORMWATER POLLUTION PREVENTION PLAN**





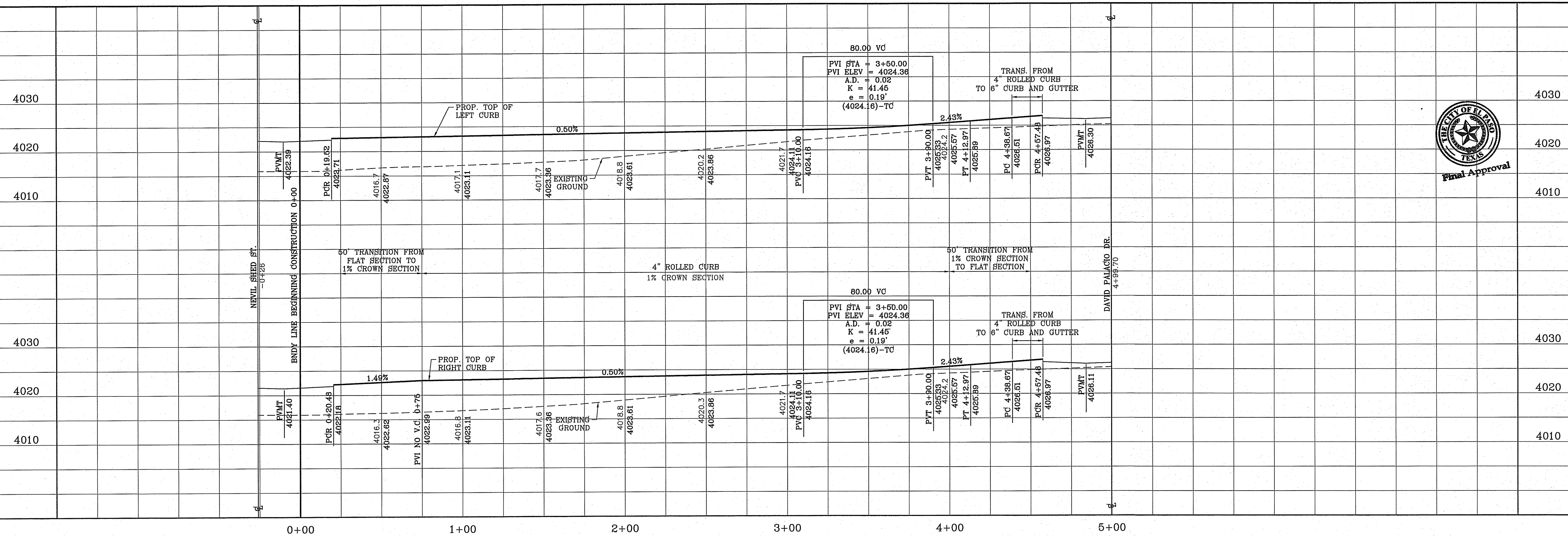
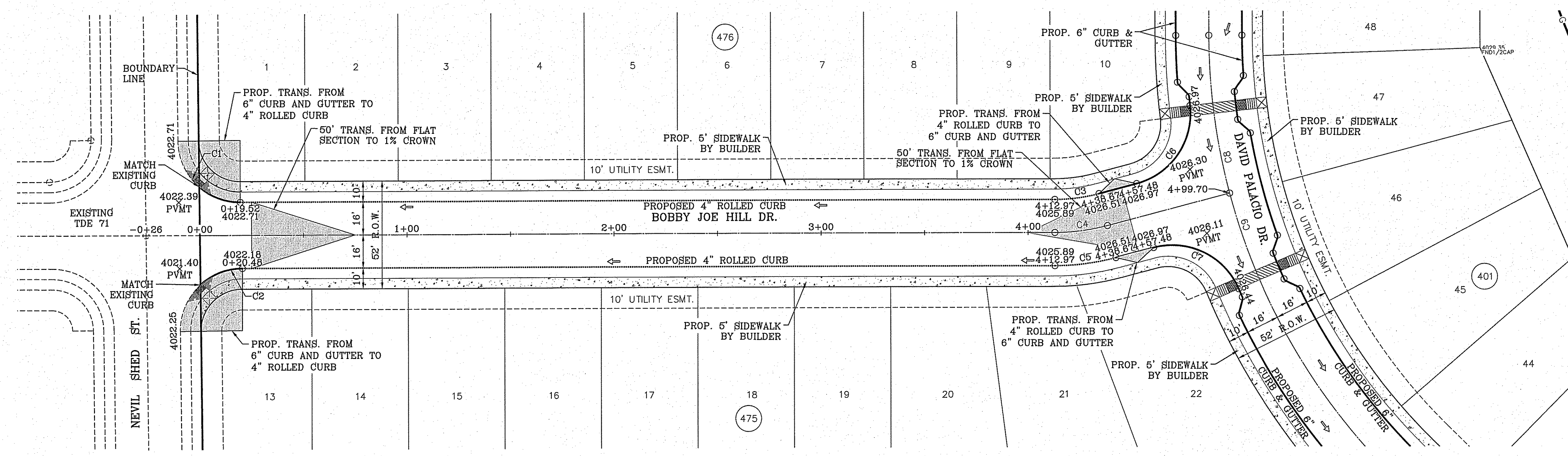


FILE S:\Subdivisions\77\DWG\PA-P-Bobby Hill IR PLOTTED Monday, October 12, 2015 2:10:38 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	46.81'	29.69'	42.20'	S45°17'35"E	89°24'10"
C2	30.00'	47.44'	30.31'	42.65'	S44°42'25"W	90°35'50"
C3	84.00'	21.59'	10.86'	21.53'	N82°38'32"E	14°43'38"
C4	100.00'	25.70'	12.92'	25.63'	N82°38'32"E	14°43'38"
C5	116.00'	29.82'	14.99'	29.73'	N82°38'32"E	14°43'38"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C6	35.00'	49.80'	30.17'	45.70'	N34°31'00"E	81°31'26"
C7	35.00'	49.80'	30.17'	45.70'	N63°57'35"W	81°31'26"
C8	300.00'	77.11'	38.77'	76.90'	S7°21'28"E	14°43'38"
C9	300.00'	161.18'	82.59'	159.25'	S30°06'48"E	30°47'01"

SCALE: 1" = 30'



BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF	BY
W. J. COE DR. AND FRISBIE TRAIL	DATE
ELEVATION 4023.16	REVISIONS

**PROJECT NAME**  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 16, BLOCK 76, PORTION OF SECTION 37, BLOCK 79, OWNERSHIP 2, TEXAS ALPINE COUNTY, TEXAS SURVEYS, EL PASO COUNTY, TEXAS, CONTAINING: 64.017± ACRES

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: DN  
 CHECKED BY: YC  
 JOB NO.: 414-43

**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

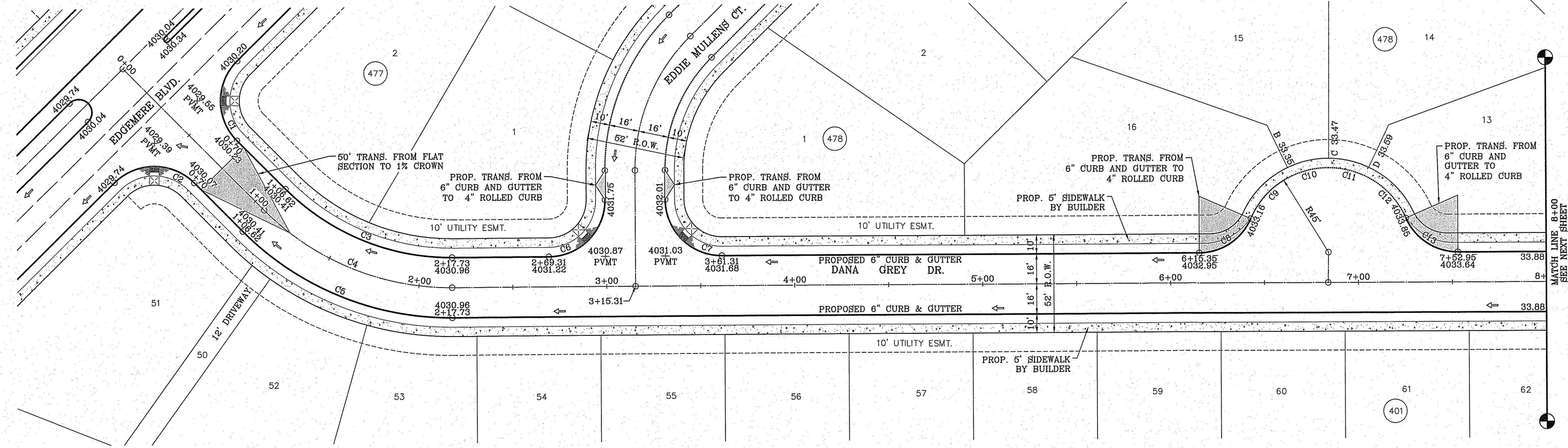
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**STREET PLAN-PROFILE**  
**BOBBY JOE HILL DR**  
**STA: 0+00 TO**  
**STA: 4+99.70**



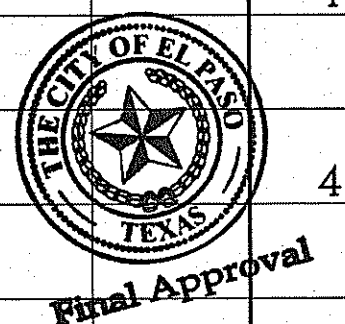
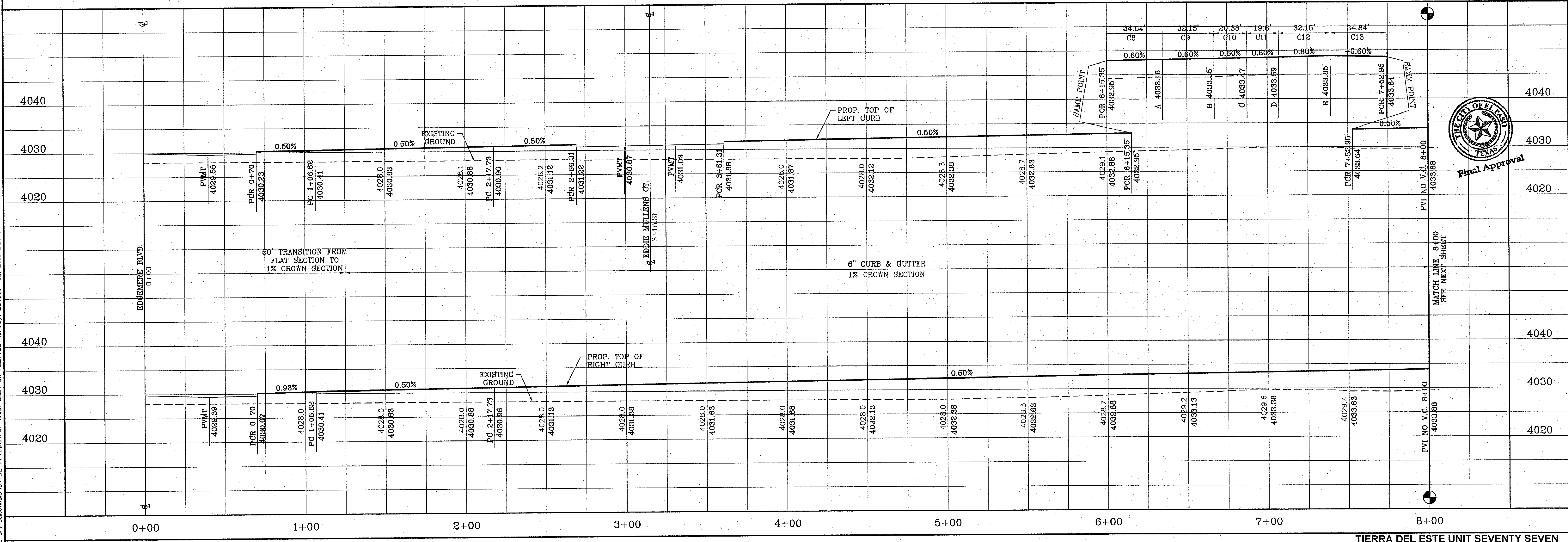
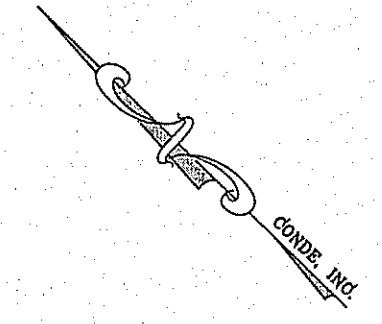
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CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	47.12'	30.00'	42.43'	S44°58'06"W	90°00'00"
C2	30.00'	47.12'	30.00'	42.43'	N45°01'54"W	90°00'00"
C3	124.00'	98.41'	51.96'	95.85'	S22°46'06"E	45°28'24"
C4	140.00'	111.11'	58.67'	108.22'	S22°46'06"E	45°28'24"
C5	156.00'	123.81'	65.37'	120.59'	S22°46'06"E	45°28'24"
C6	30.00'	47.12'	30.00'	42.43'	N89°29'42"E	90°00'00"
C7	30.00'	47.12'	30.00'	42.43'	S0°30'18"E	90°00'00"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C8	30.00'	34.84'	19.68'	32.91'	S78°46'16"E	66°31'55"
C9	45.00'	32.16'	16.80'	31.48'	S88°26'08"W	40°56'42"
C10	45.00'	20.39'	10.37'	20.22'	N58°06'42"W	25°57'38"
C11	45.00'	19.80'	10.06'	19.64'	N32°31'29"W	25°12'48"
C12	45.00'	32.16'	16.80'	31.48'	N0°33'16"E	40°56'42"
C13	30.00'	34.84'	19.68'	32.91'	S12°14'21"E	66°31'55"



SCALE: 1" = 30'



Final Approval

BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16
DATE	.....NAVD83 DATUM
REVISIONS	
BY	

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 79, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

SCALE	HORIZ: 1" = 30'
	VERT: 1" = 10'
DATE:	FEB. 2014
DESIGN BY:	YC
INITIATED BY:	DN
CHECKED BY:	YC
JOB NO.:	414-43

**CONDE INC.**  
 ENGINEERING / PLANNING SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

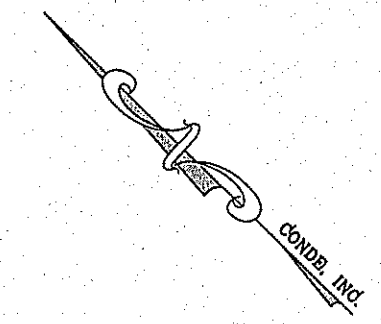
SHEET TITLE  
**STREET PLAN-PROFILE**  
**DANA GREY DR**  
 STA: 0+00 TO STA: 8+00



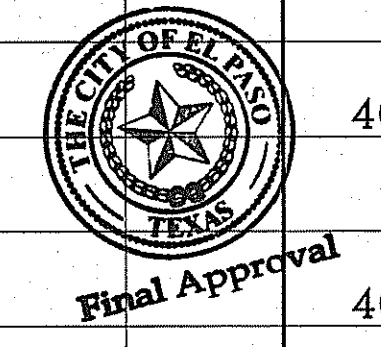
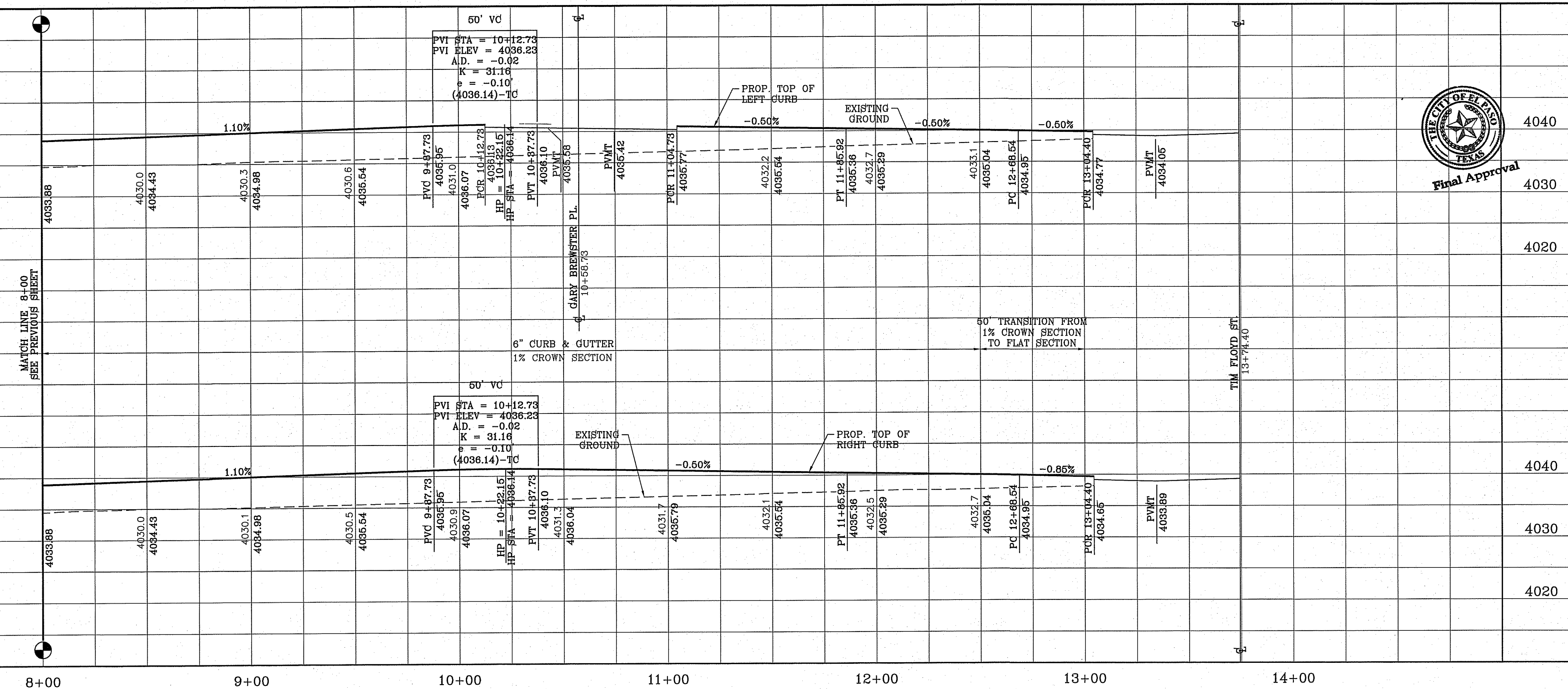
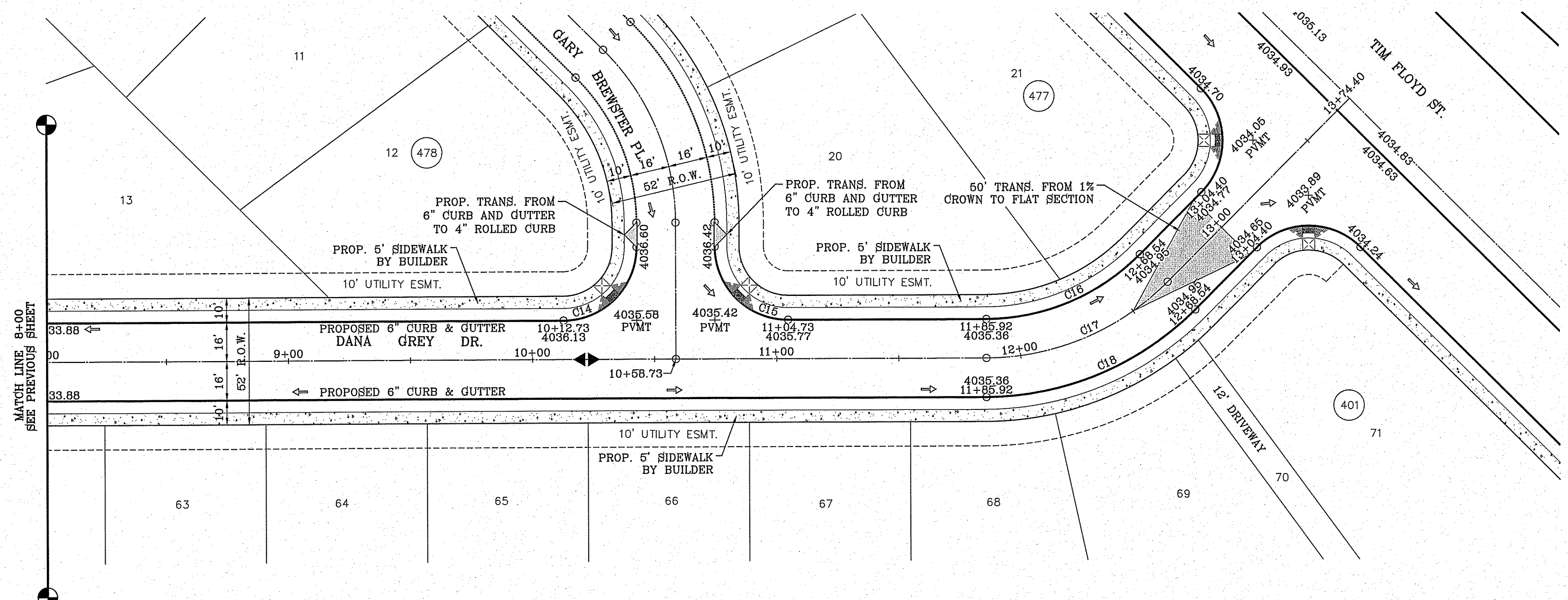
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CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C14	30.00'	47.12'	30.00'	42.43'	N89°29'42"E	90°00'00"
C15	30.00'	47.12'	30.00'	42.43'	S0°30'18"E	90°00'00"
C16	89.00'	70.03'	36.94'	68.24'	S68°02'54"E	45°05'11"
C17	105.00'	82.63'	43.59'	80.51'	S68°02'54"E	45°05'11"
C18	121.00'	95.22'	50.23'	92.78'	S68°02'54"E	45°05'11"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C19	30.00'	47.12'	30.00'	42.43'	N44°24'30"E	90°00'00"
C20	30.00'	47.12'	30.00'	42.43'	N45°35'30"W	90°00'00"



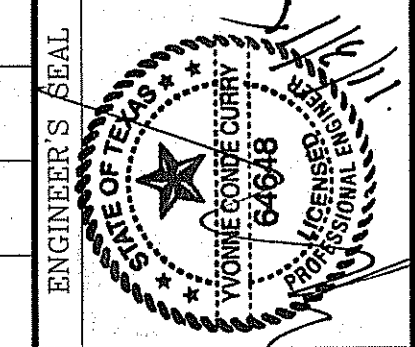
SCALE: 1" = 30'



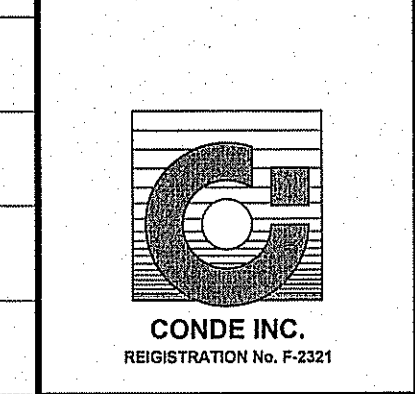
BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR AND FRISHAN TRAIL DR. ELEVATION 4023.16
DATE	.....NAVD83 DATUM
REVISIONS	
BY	

**PROJECT NAME**  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF 55 BLOCK 18, BLOCK 78, PORTION OF SECTION 27, BLOCK 56, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017+ ACRES

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: DN  
 CHECKED BY: YC  
 JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING SURVEYING / GPS  
 6090 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



**SHEET TITLE**  
**STREET PLAN-PROFILE**  
**DANA GREY DR**  
 STA: 8+00 TO  
 STA: 13+74.40

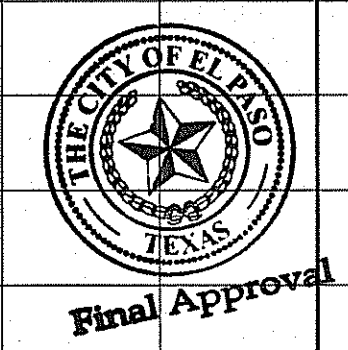
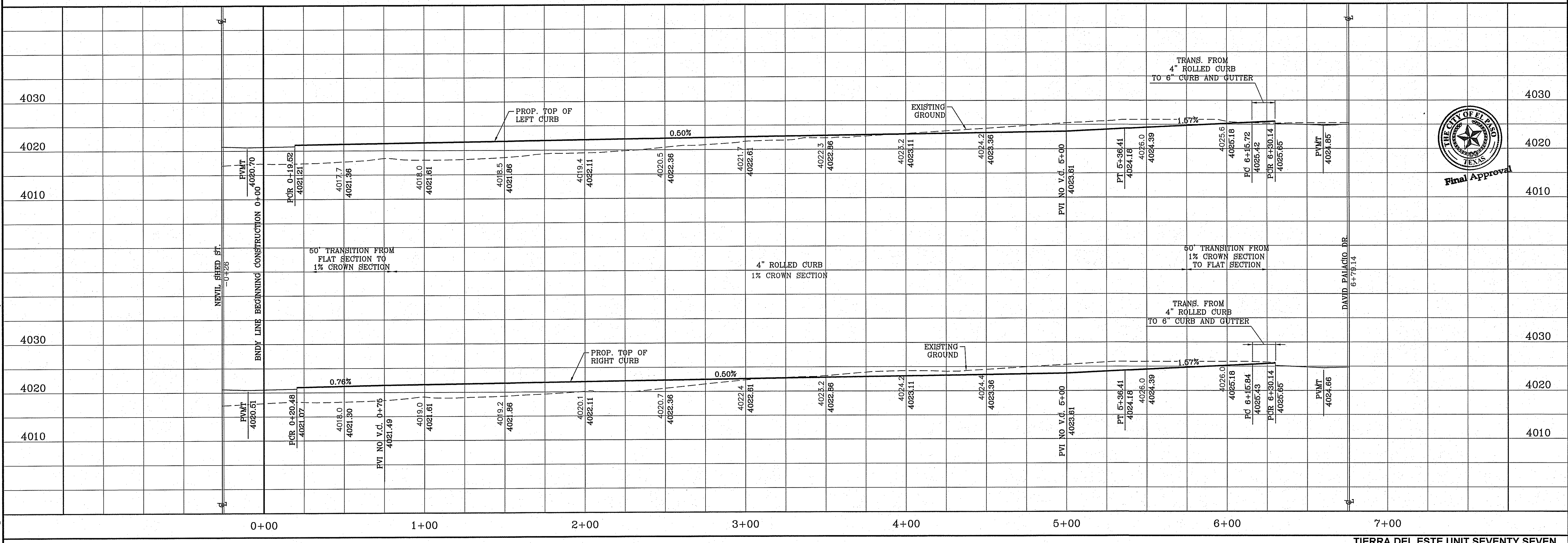
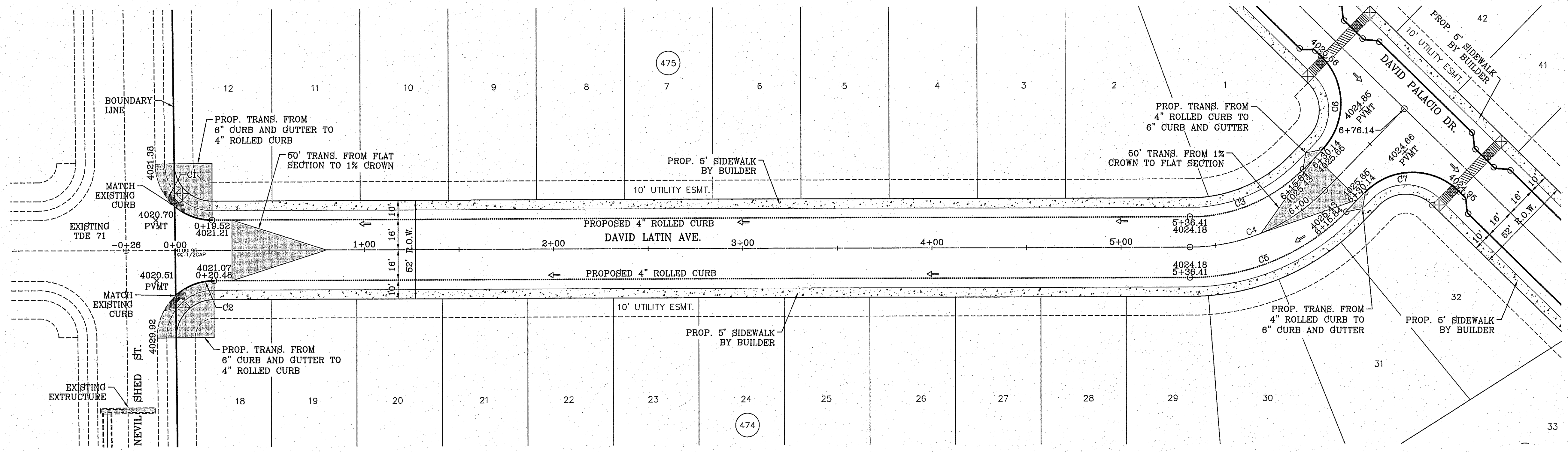


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CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	46.81'	29.69'	42.20'	S45°17'35"E	89°24'10"
C2	30.00'	47.44'	30.31'	42.65'	S44°42'25"W	90°35'50"
C3	84.00'	66.72'	35.23'	64.98'	N67°15'01"E	45°30'39"
C4	100.00'	79.43'	41.94'	77.36'	N67°15'01"E	45°30'39"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C5	116.00'	92.14'	48.66'	89.74'	N67°15'01"E	45°30'39"
C6	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C7	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"

SCALE: 1" = 30'

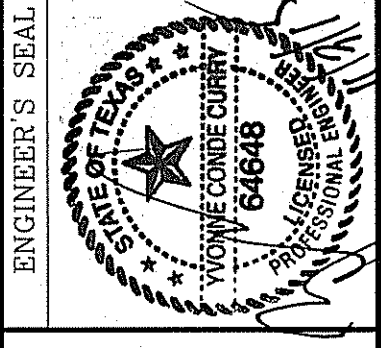


BENCHMARK  
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF  
MICK PRICE DR. AND FRIESIAN TRAIL DR.  
ELEVATION 4023.16

DATE	REVISIONS	BY

PROJECT NAME  
**Tierra del Este Unit  
Seventy Seven**  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF  
SECTION 27, BLOCK 79, TOWNSHIP 2,  
EL PASO COUNTY, TEXAS  
SURVEYED BY: J.C. CONDE  
CONTAINING: 54.017± ACRES

SCALE  
HORIZ: 1" = 30'  
VERT: 1" = 10'  
DATE: FEB. 2014  
DESIGN BY: JC  
INITIATED BY: DN  
CHECKED BY: JC  
JOB NO.: 414-43



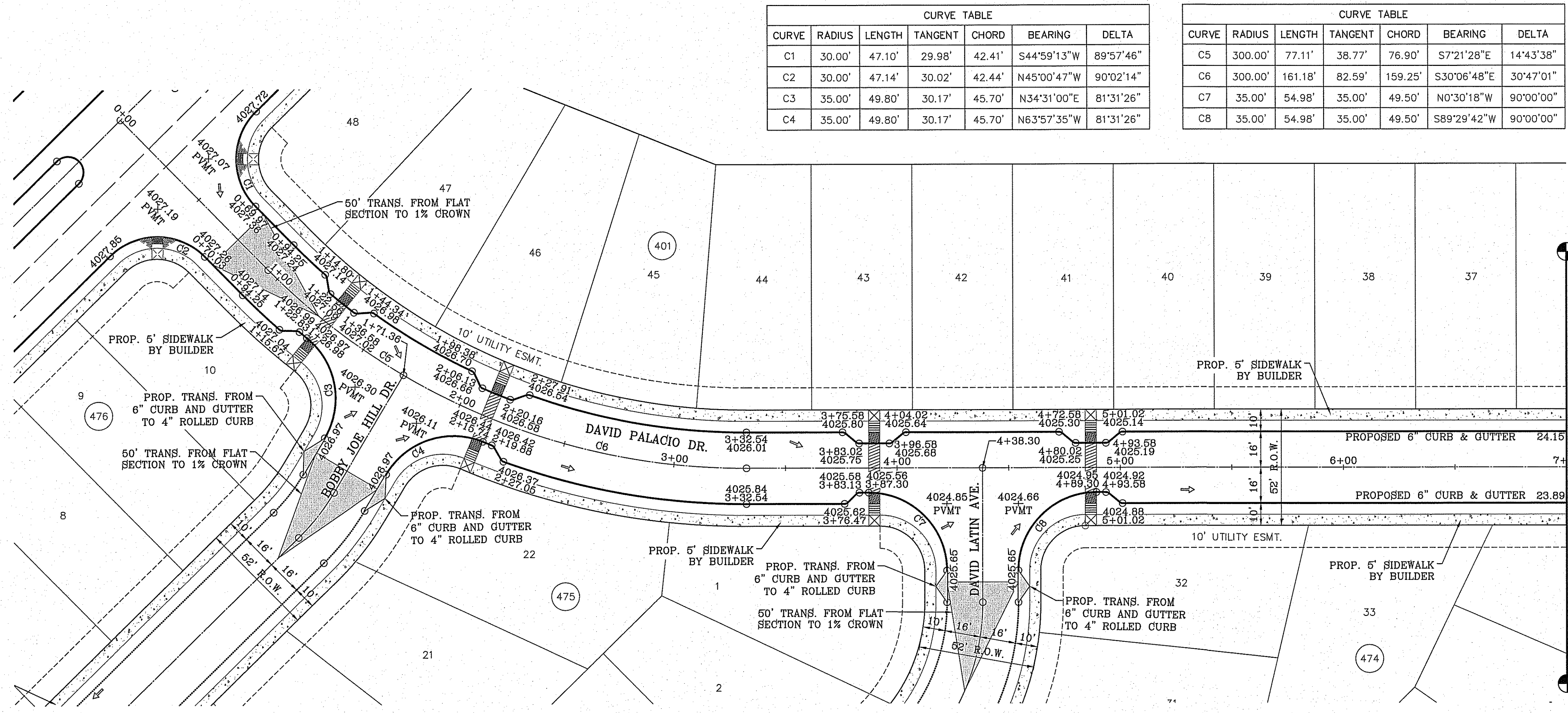
ENGINEER'S SEAL  
**CONDE INC.**  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286



SHEET TITLE  
STREET  
PLAN-PROFILE  
**DAVID LATIN  
AVE**  
STA: 0+00 TO  
STA: 6+76.14  
SHT 12 OF 40

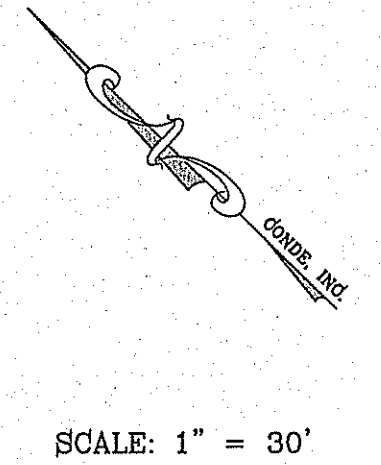


FILE S:\Subdivisions\DAVID PALACIO DR PLOTTED Monday, October 12, 2015 2:20:40 PM



CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	47.10'	29.98'	42.41'	S44°59'13"W	89°57'46"
C2	30.00'	47.14'	30.02'	42.44'	N45°00'47"W	90°02'14"
C3	35.00'	49.80'	30.17'	45.70'	N34°31'00"E	81°31'26"
C4	35.00'	49.80'	30.17'	45.70'	N63°57'35"W	81°31'26"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C5	300.00'	77.11'	38.77'	76.90'	S7°21'28"E	14°43'38"
C6	300.00'	161.18'	82.59'	159.25'	S30°06'48"E	30°47'01"
C7	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C8	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"



SCALE: 1" = 30'

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16

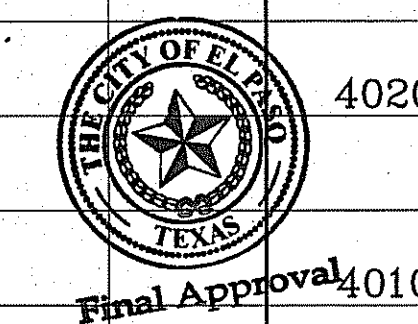
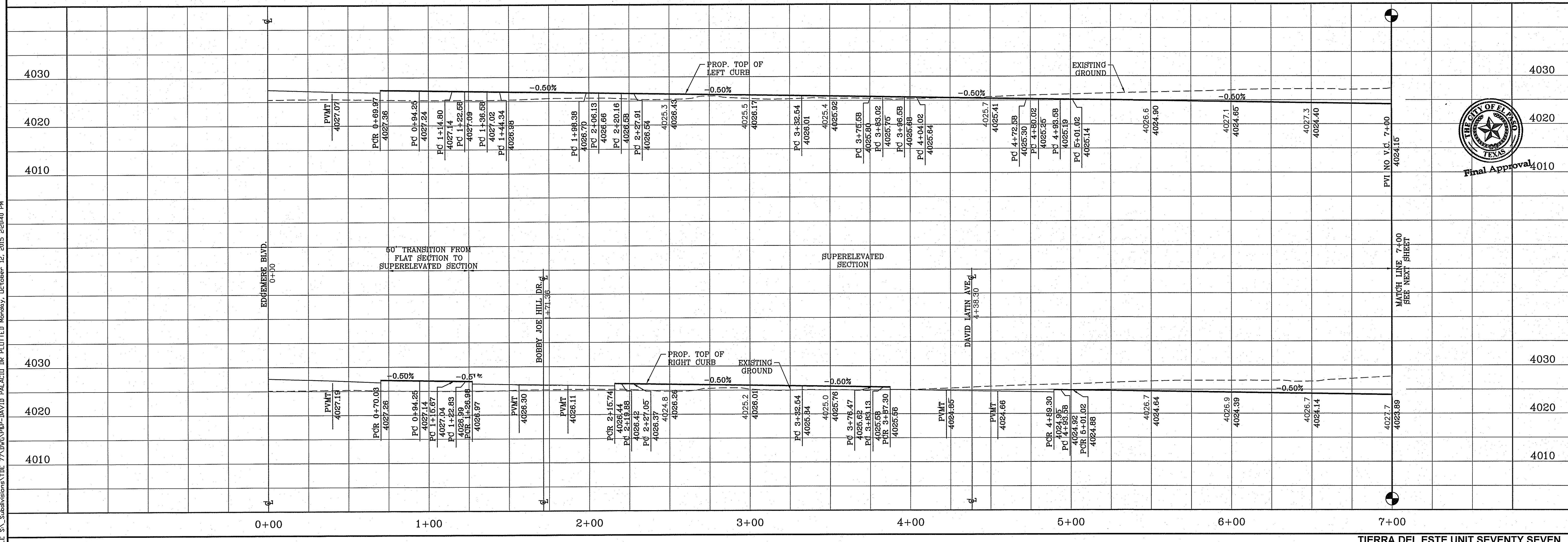
NAVD88 DATUM

DATE	REVISIONS	BY

PROJECT NAME

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 16, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, EL PASO COUNTY, TEXAS SURVEYS, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING: .54.0174 ACRES



Final Approval

SCALE

HORIZ: 1" = 30'

VERT: 1" = 10'

DATE: FEB. 2014

DESIGN BY: YC

INITIATED BY: DN

CHECKED BY: YC

JOB NO.: 414-43

ENGINEER'S SEAL

**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

600 SURETY DR. STE. 100

EL PASO, TEXAS 79905

PHONE: (915) 692-0283

FAX: (915) 692-0286



SHEET TITLE

STREET PLAN-PROFILE

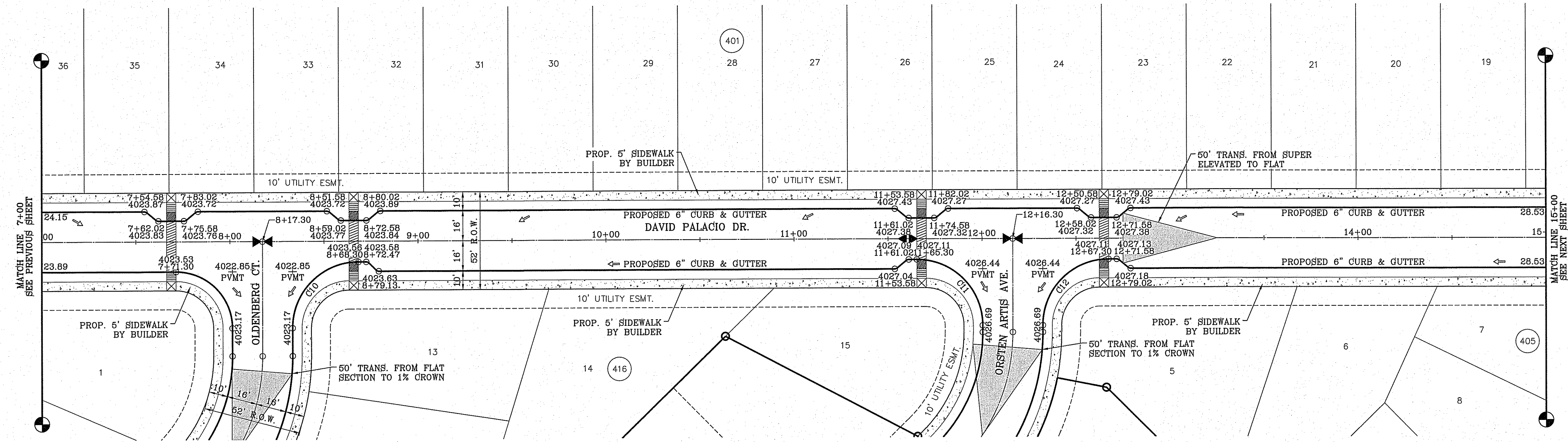
**DAVID PALACIO DR**

STA: 0+00 TO STA: 7+00

SHT 13 OF 40

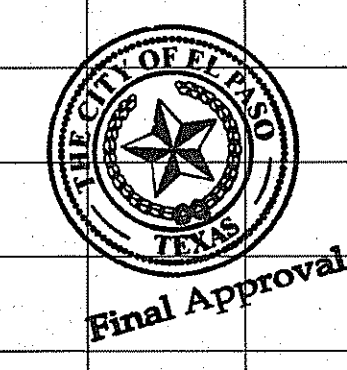
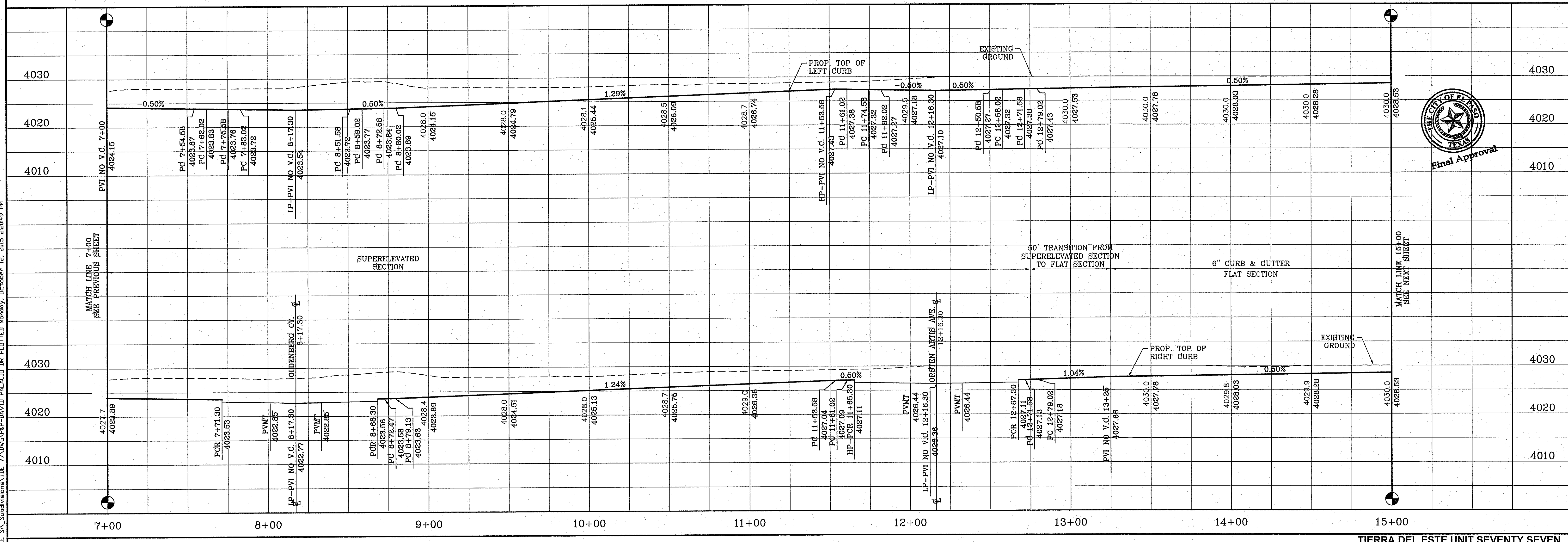
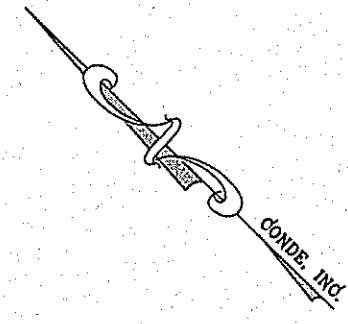


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CURVE TABLE						
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C9	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C10	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"
C11	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C12	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"

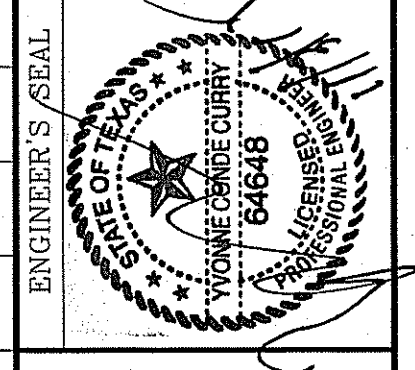
SCALE: 1" = 30'



BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16
REVISIONS	DATE
BY	

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 16, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, EL PASO COUNTY, TEXAS  
 CONTAINING: .54.017± ACRES

SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: DN  
 CHECKED BY: YC  
 JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURREY DR. SUITE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



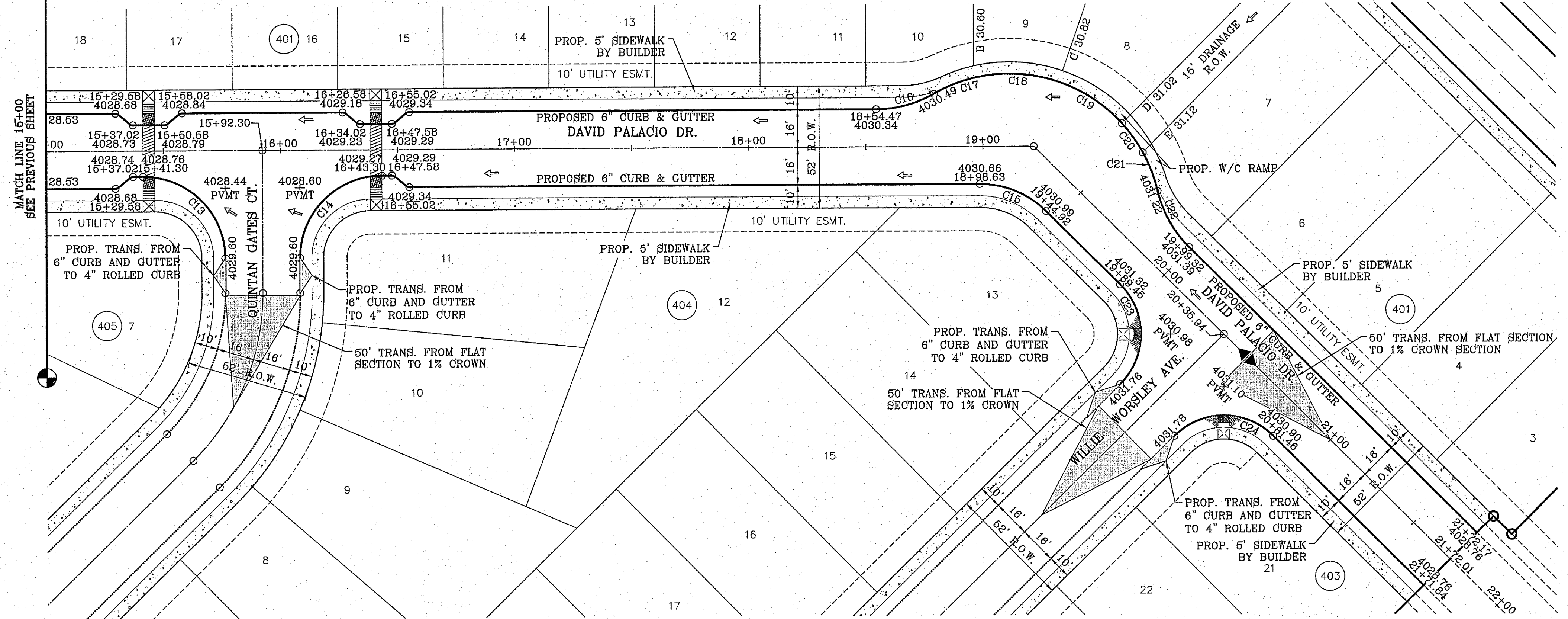
SHEET TITLE  
**STREET PLAN-PROFILE**  
**DAVID PALACIO DR**  
 STA: 7+00 TO 15+00  
 SHT 14 OF 40



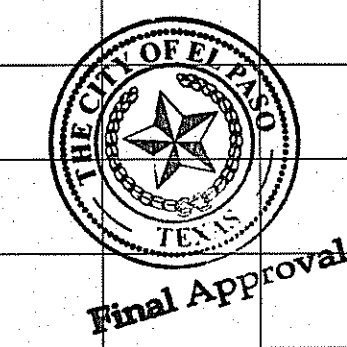
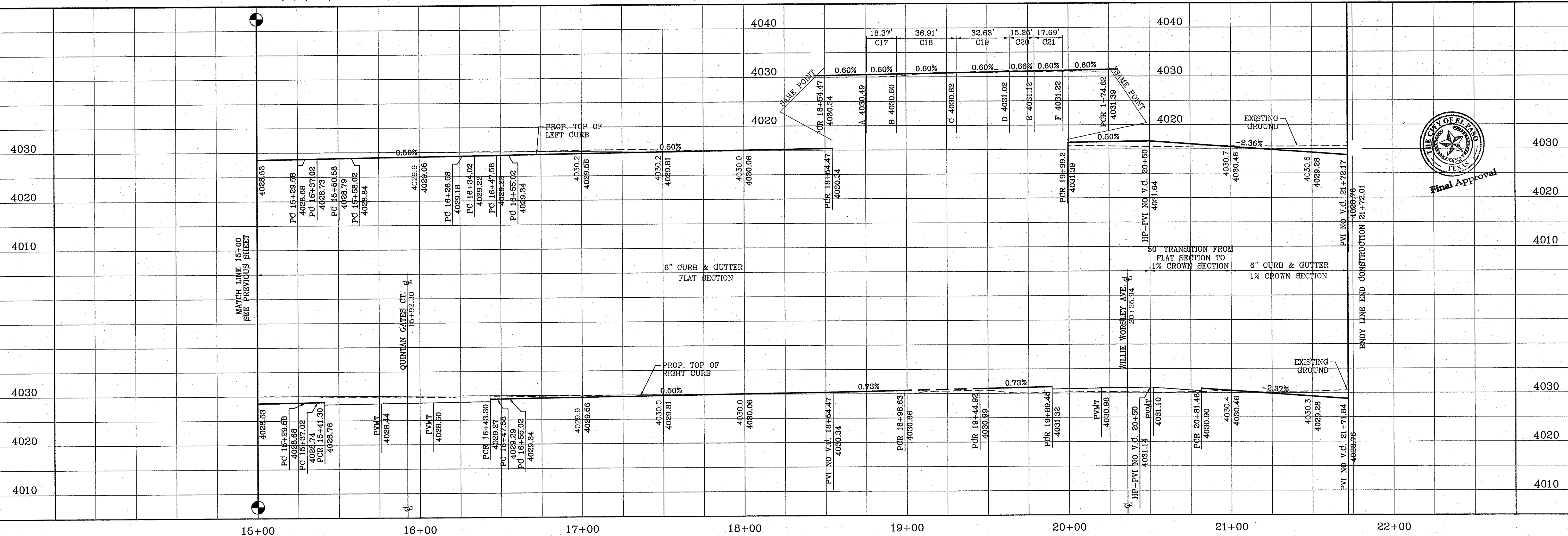
FILE SA\_Subdivisions\77\DWG\PP-DAVID PALACIO DR PLUTTED Monday, October 12, 2015 2:00 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C13	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C14	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"
C15	40.00'	31.36'	16.53'	30.56'	N23°02'54"W	44°54'49"
C16	50.00'	25.82'	13.21'	25.54'	S60°18'04"E	29°35'31"
C17	65.00'	18.37'	9.25'	18.31'	N67°00'01"W	16°11'35"
C18	65.00'	36.91'	18.97'	36.41'	N42°38'13"W	32°32'02"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C19	65.00'	32.63'	16.67'	32.29'	N11°59'21"W	28°45'42"
C20	65.00'	15.25'	7.66'	15.22'	N9°06'51"E	13°26'40"
C21	65.00'	17.69'	8.90'	17.64'	N23°38'04"E	15°35'46"
C22	50.00'	27.95'	14.35'	27.58'	S15°25'14"W	32°01'26"
C23	30.00'	47.44'	30.31'	42.65'	N44°42'25"E	90°35'50"
C24	30.00'	46.81'	29.69'	42.20'	N45°17'35"W	89°24'10"



SCALE: 1" = 30'

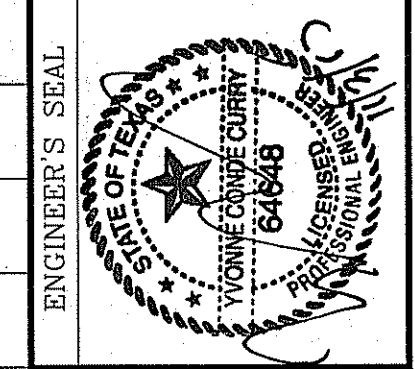


Final Approval

BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESHAN TRAIL DR. ELEVATION 4023.16
DATE	
REVISIONS	
BY	

**PROJECT NAME**  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY Co. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: .640.17± ACRES

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: DN  
 CHECKED BY: YC  
 JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

**CONDE INC.**  
 REGISTRATION No. F-221

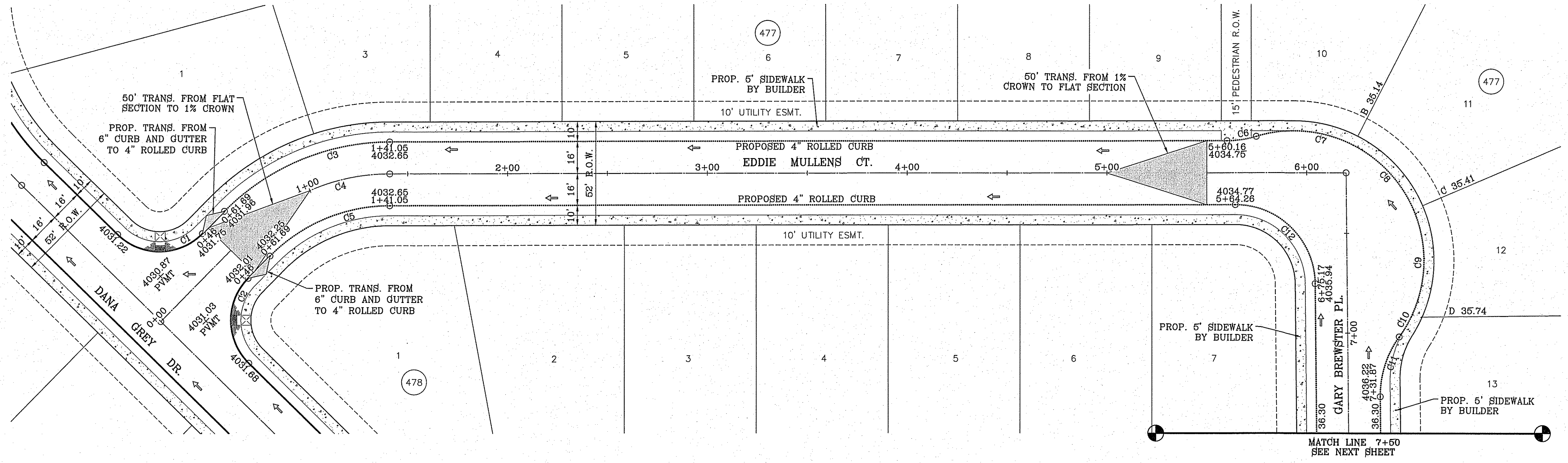
**SHEET TITLE**  
 STREET  
 PLAN-PROFILE  
**DAVID PALACIO DR**  
 STA: 15+00  
 STA: 21+72.01



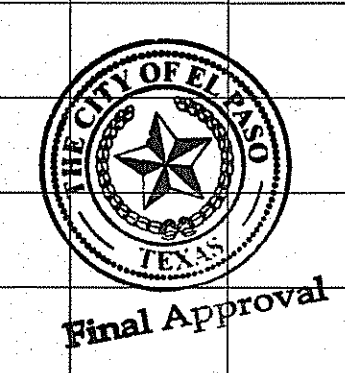
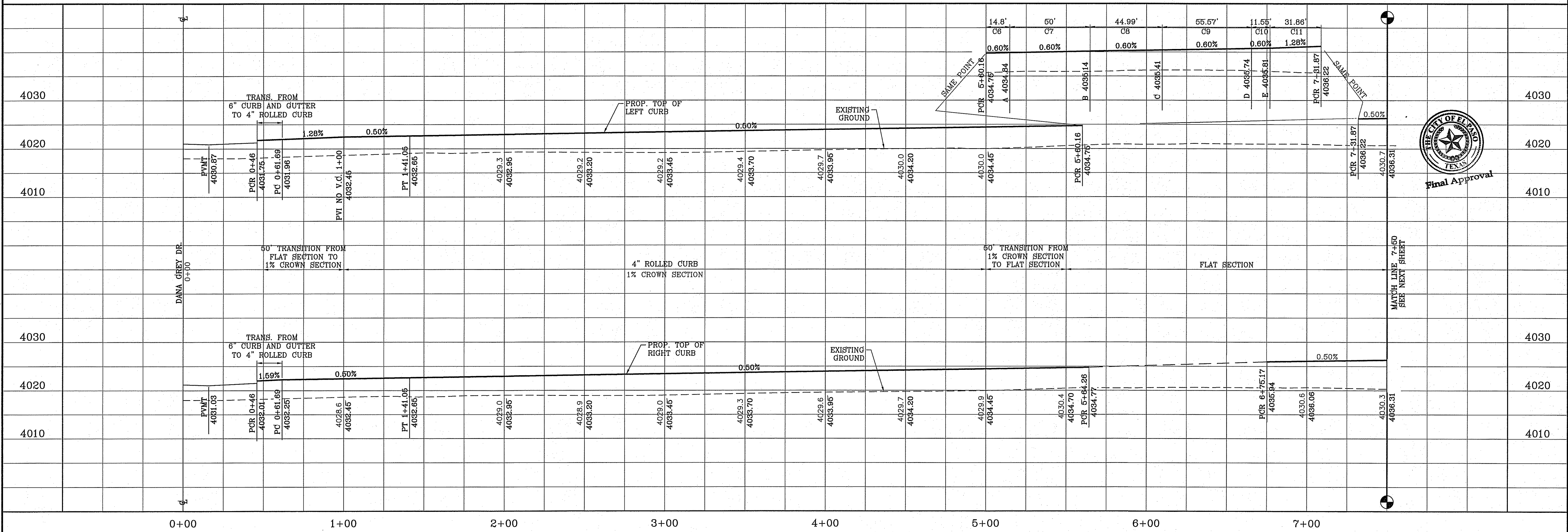
FILE S:\Subdivisions\77-DV6\VP-EDDIE & BRANDIN PLOTTED Monday, October 12, 2015 2:21:21 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	47.12'	30.00'	42.43'	N89°29'42"E	90°00'00"
C2	30.00'	47.12'	30.00'	42.43'	S0°30'18"E	90°00'00"
C3	116.00'	92.06'	48.61'	89.67'	S67°13'54"W	45°28'24"
C4	100.00'	79.37'	41.91'	77.30'	S67°13'54"W	45°28'24"
C5	84.00'	66.67'	35.20'	64.93'	S67°13'54"W	45°28'24"
C6	50.00'	14.80'	7.45'	14.74'	N81°29'23"E	16°57'27"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C7	65.00'	50.00'	26.31'	48.78'	N84°57'04"W	44°04'34"
C8	65.00'	44.99'	23.44'	44.10'	N43°05'04"W	39°39'26"
C9	65.00'	55.57'	29.61'	53.90'	N1°14'13"E	48°59'08"
C10	65.00'	11.55'	5.79'	11.54'	N30°49'16"E	10°10'59"
C11	50.00'	31.86'	16.49'	31.32'	S17°39'38"W	36°30'14"
C12	40.00'	62.44'	39.61'	56.29'	N45°18'42"W	89°26'24"



SCALE: 1" = 30'



BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF EDDIE MULLENS CT. AND FRESHMAN TRAIL ELEVATION 4033.16	NAVD83 DATUM
DATE	REVISIONS
	BY

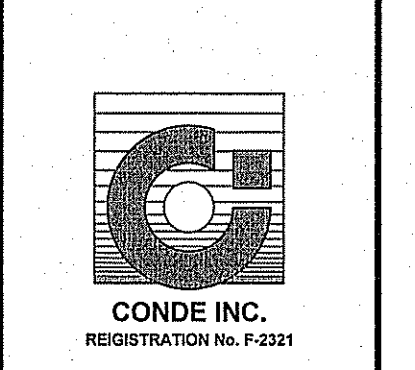
PROJECT NAME  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF  
SECTION 34, PACIFIC RAILWAY COMPANY SURVEY,  
EL PASO COUNTY, TEXAS  
CONTAINING: 54.017± ACRES

SCALE  
HORIZ: 1" = 30'  
VERT: 1" = 10'

DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: EN  
CHECKED BY: YC  
JOB NO.: 414-43

CONDE INC.  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286



SHEET TITLE  
STREET  
PLAN-PROFILE

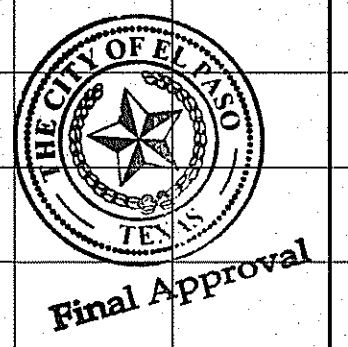
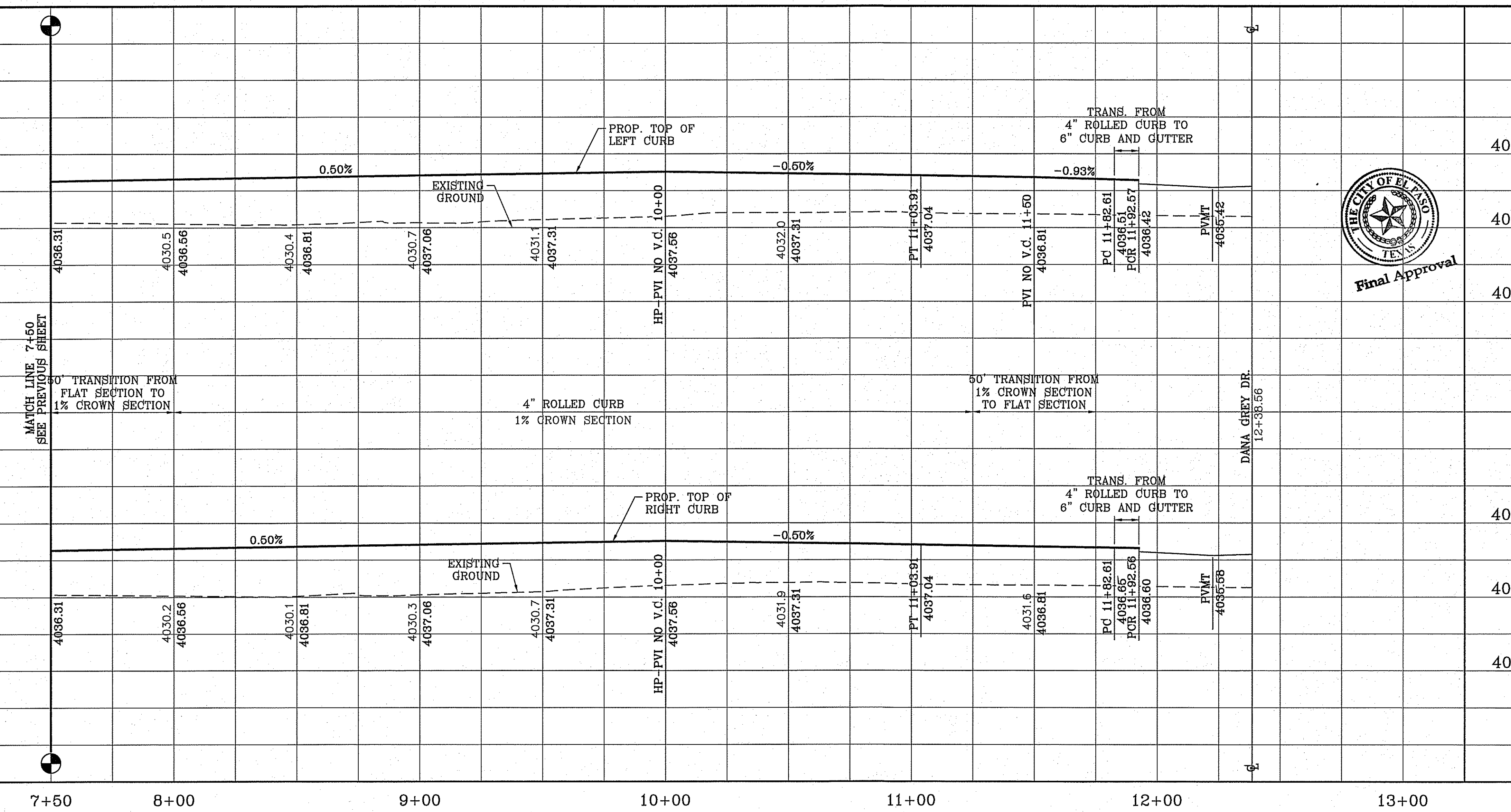
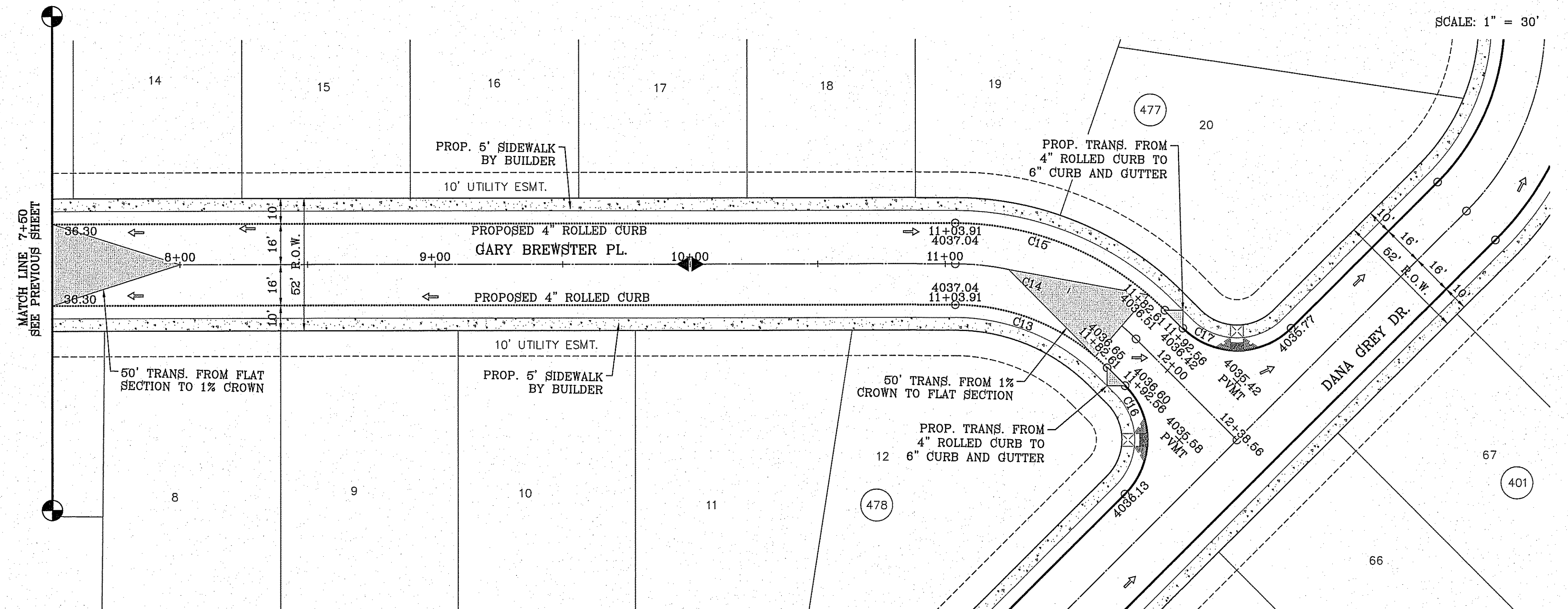
**EDDIE & GARY**  
STA: 0+00 TO  
STA: 7+50

SHT 16 OF 40



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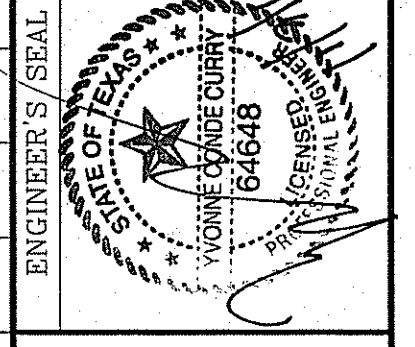
CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C13	84.00'	66.10'	34.87'	64.41'	N21°57'06"E	45°05'11"
C14	100.00'	78.69'	41.51'	76.68'	N21°57'06"E	45°05'11"
C15	116.00'	91.28'	48.15'	88.94'	N21°57'06"E	45°05'11"
C16	30.00'	47.12'	30.00'	42.43'	N89°29'42"E	90°00'00"
C17	30.00'	47.12'	30.00'	42.43'	S0°30'18"E	90°00'00"



BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESIAN TRAIL DR. ELEVATION 4023.16
DATE	.....
REVISIONS	.....
BY	.....

**PROJECT NAME**  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.0172 ACRES

<b>SCALE</b>	HORIZ: 1" = 30'
	VERT: 1" = 10'
<b>DATE</b>	FEB. 2014
<b>DESIGN BY</b>	YC
<b>INITIATED BY</b>	DN
<b>CHECKED BY</b>	YC
<b>JOB NO.</b>	414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6090 SURVEY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 582-0283  
 FAX: (915) 582-0286

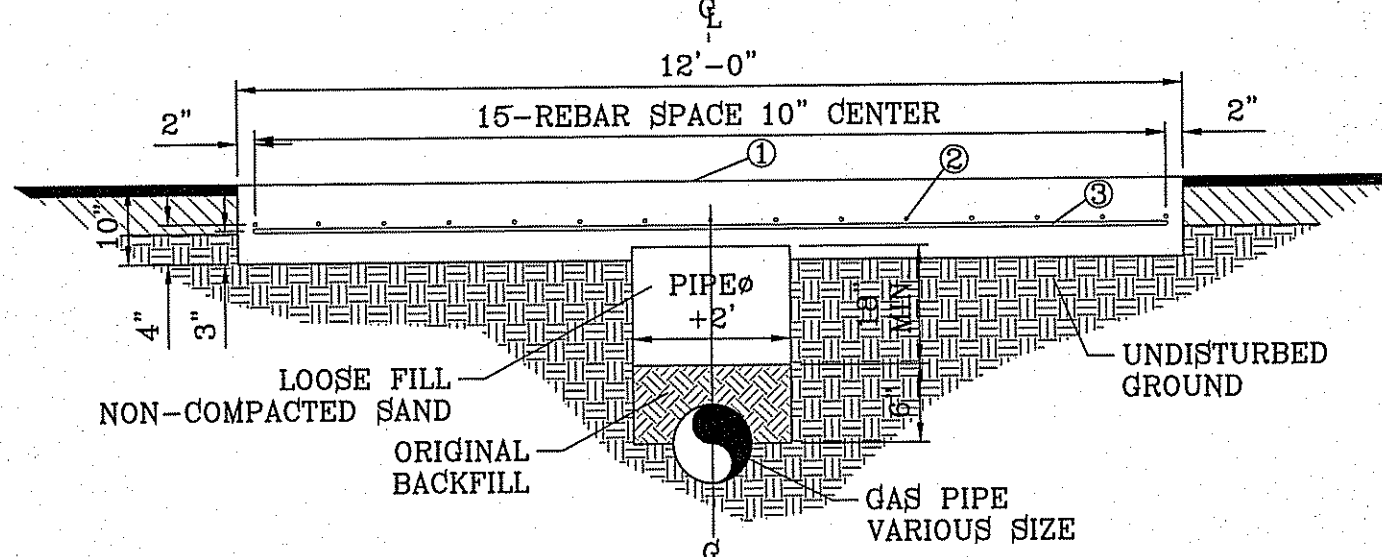
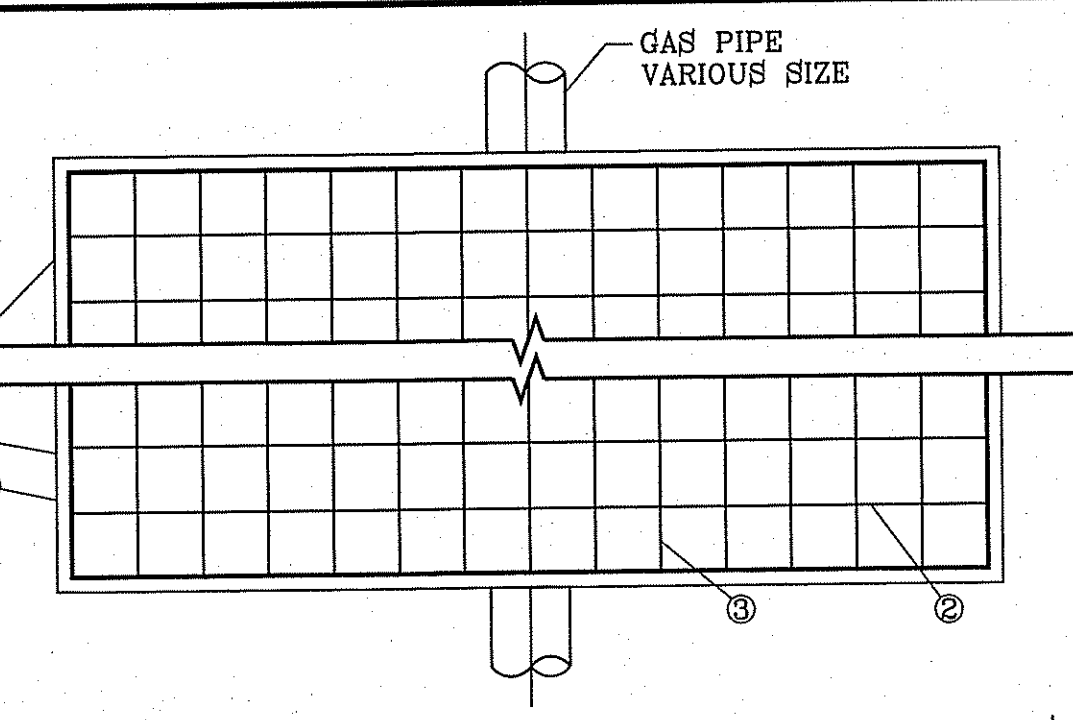


**SHEET TITLE**  
 STREET  
 PLAN-PROFILE  
**EDDIE & GARY**  
 STA: 7+50 TO  
 STA: 12+38.56



MATERIAL REQUIRED				
ITEM	QTY	SIZE	DESCRIPTION	
1	.37 CU. YD. / UN. FT.	12' x 77" ± AVG. x 10"	CONCRETE, HIGH EARLY STRENGTH, ASTM C 150 TYPE III 4000# 28 DAY STRENGTH	
2	16	11'-6" LG.	#6 REBAR - 10" C TO C	
3	16	VARIABLE LENGTH	#6 REBAR - 10" C TO C	

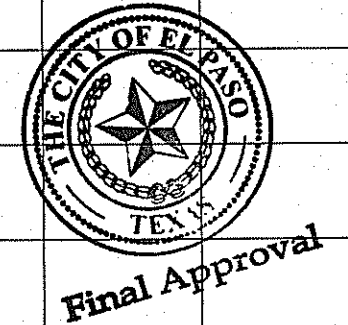
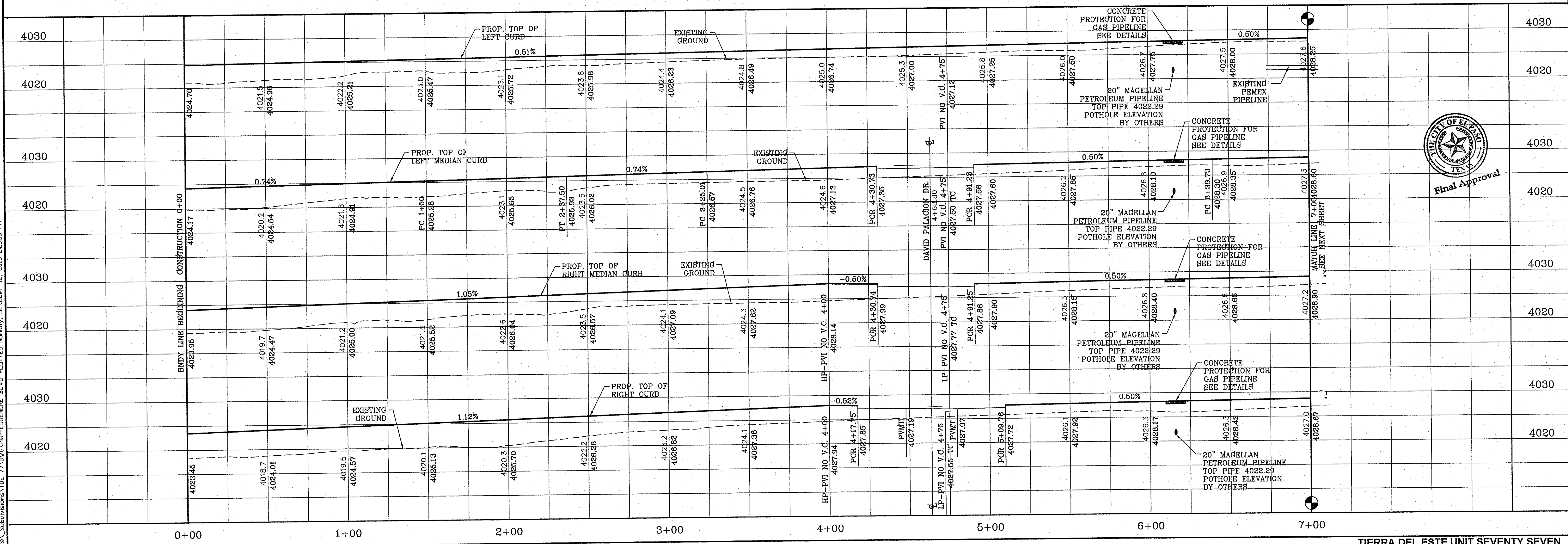
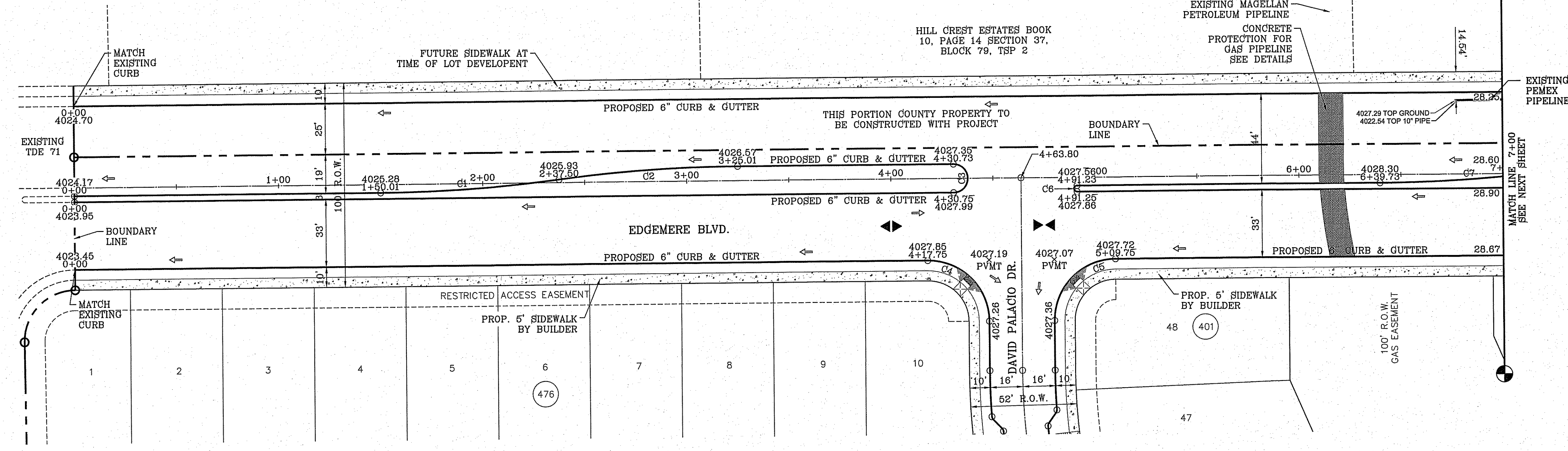
VARIABLE LENGTH AS REQUIRED



CONCRETE SLAB FOR PIPELINE PROTECTION IN VARIOUS CONSTRUCTION AREAS

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	692.73'	87.73'	43.92'	87.67'	N86°22'18"E	7°15'22"
C2	692.73'	87.73'	43.92'	87.67'	S86°22'18"W	7°15'22"
C3	7.00'	21.99'	INFINITY	14.00'	N0°01'54"W	180°00'00"
C4	30.00'	47.14'	30.02'	42.44'	N45°00'47"W	90°02'14"
C5	30.00'	47.10'	29.98'	42.41'	S44°59'13"W	89°57'46"
C6	1.50'	4.71'	INFINITY	3.00'	S0°01'54"E	180°00'00"
C7	698.77'	87.73'	43.92'	87.67'	N86°22'18"E	7°11'36"

SCALE: 1" = 30'



BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESIAN TRAIL DR. ELEVATION 4023.16	NAVD83 DATUM
DATE	5-29-2015	BY
REVISIONS	adjusted pemex pipeline	BY
		P.C.

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 33, BLOCK 79, TOWNSHIP 2, RANGE 10E, COUNTY OF EL PASO COUNTY, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, CONTAINING: 54.017± ACRES

SCALE  
HORIZ: 1" = 30'  
VERT: 1" = 10'

DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: BN  
CHECKED BY: YC  
JOB NO.: 414-43

CONDE INC.  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE. 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286



SHEET TITLE  
**STREET PLAN - PROFILE**

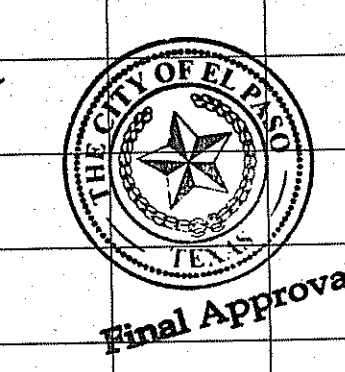
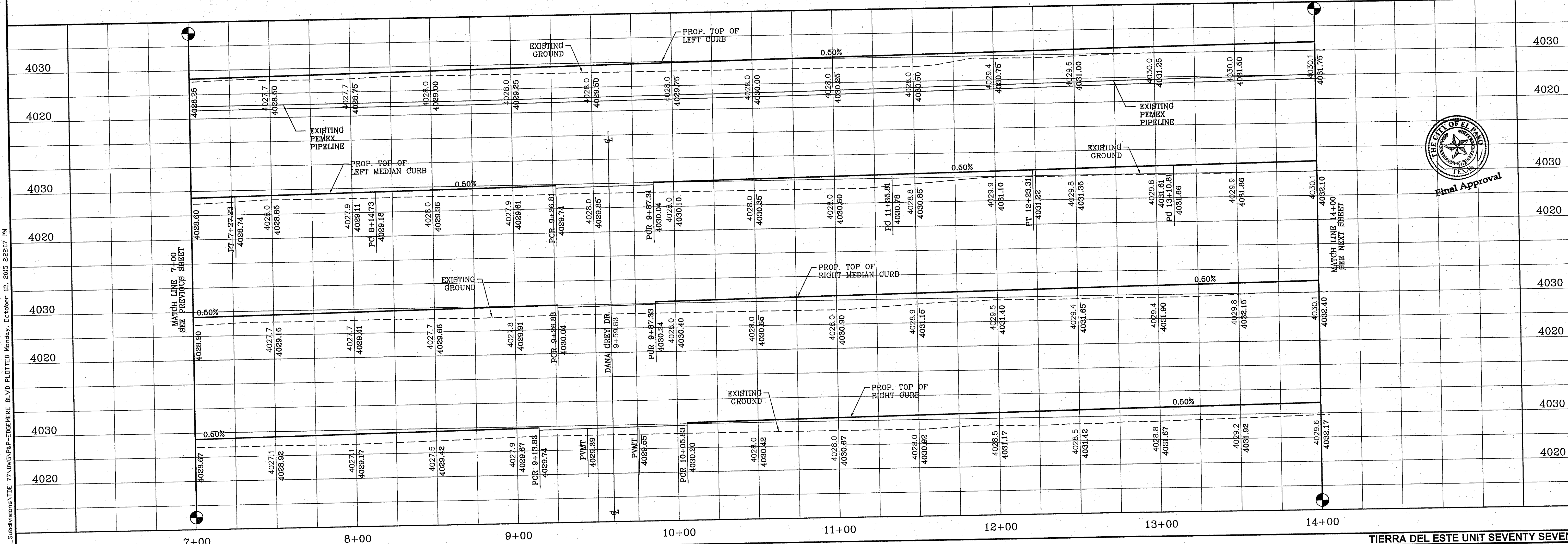
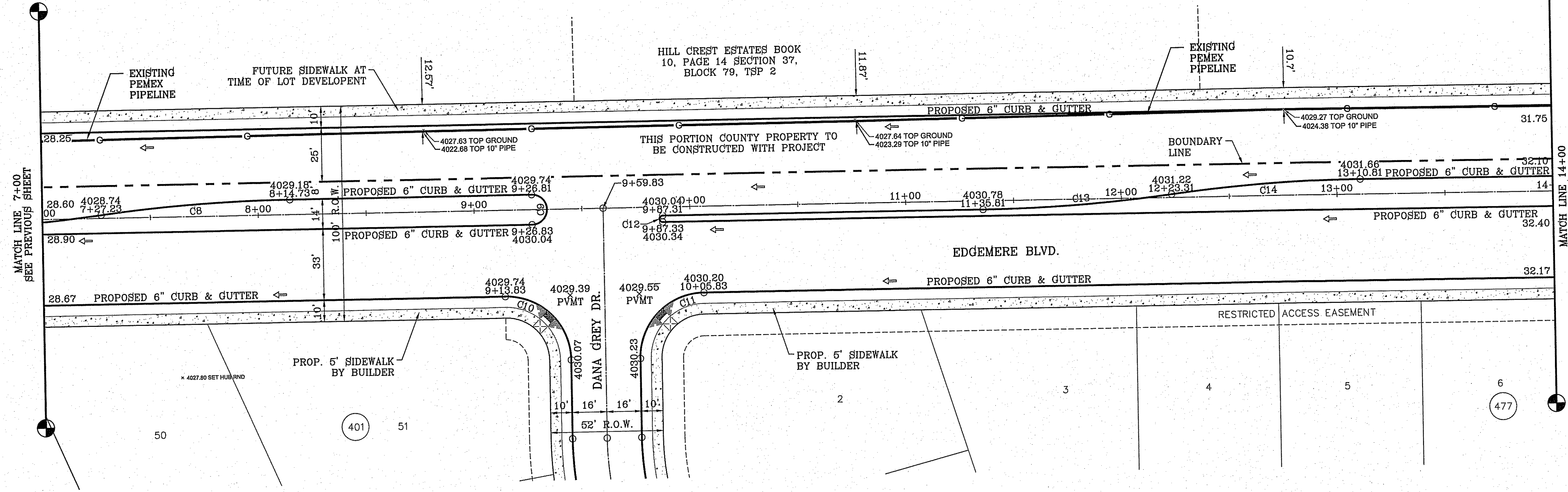
**EDGEMERE BLVD**  
STA: 0+00 TO 7+00



FILE: S:\Subdivisions\77-DVG\98-EDGEMERE BLVD PLATTED Monday, October 12, 2015 2:26:07 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C7	698.77'	87.73'	43.92'	87.67'	N86°22'18"E	7°11'36"
C8	698.77'	87.73'	43.92'	87.67'	S86°22'18"W	7°11'36"
C9	7.00'	21.99'	INFINITY	14.00'	N0°01'54"W	180°00'00"
C10	30.00'	47.12'	30.00'	42.43'	N45°01'54"W	90°00'00"
C11	30.00'	47.12'	30.00'	42.43'	S44°58'06"W	90°00'00"
C12	1.50'	4.71'	INFINITY	3.00'	S0°01'54"E	180°00'00"
C13	698.77'	87.73'	43.92'	87.67'	N86°22'18"E	7°11'36"
C14	698.77'	87.73'	43.92'	87.67'	S86°22'18"W	7°11'36"

SCALE: 1" = 30'



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6060 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BRING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, EL PASO COUNTY, TEXAS SURVEYS, CONTAINING .840.17± ACRES

**EDGEMERE BLVD**  
 STA: 7+00 TO STA: 14+00

**SHT 19 OF 40**

**CONDE INC.**  
 REGISTRATION No. F-2221

**STREET PLAN - PROFILE**

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

**ENGINEER'S SEAL**

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'

**DATE:** FEB. 2014  
**DESIGN BY:** YC  
**INITIATED BY:** DN  
**CHECKED BY:** YC  
**JOB NO.:** 414-49

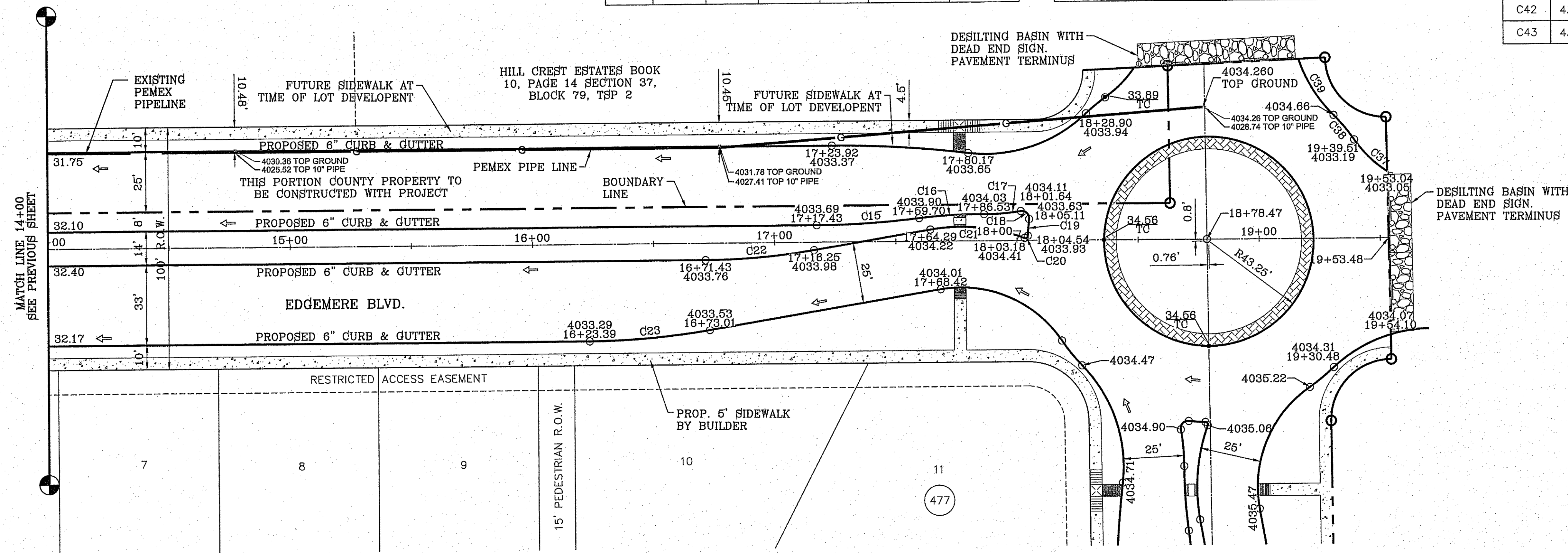
**PROJECT NAME**  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

**BENCHMARK**  
 CITY MONUMENT AT THE CENTERLINE INTERSECTION OF  
 HILL CREST DR. AND FRESIAN TRAIL DR.  
 ELEVATION 4023.16

**REVISIONS**  
 DATE 5-29-2015  
 BY adjusted pemex pipeline  
 R.O.



FILE S:\Subdivisions\TIE 77\UNGV\PEP-EDGEMERE BLVD PLOTTED Monday, December 12, 2015 2:22:19 PM

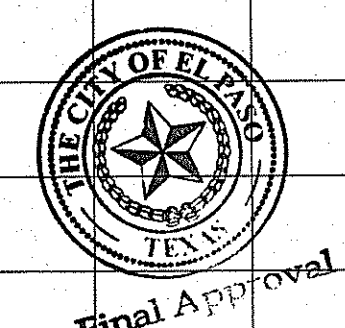
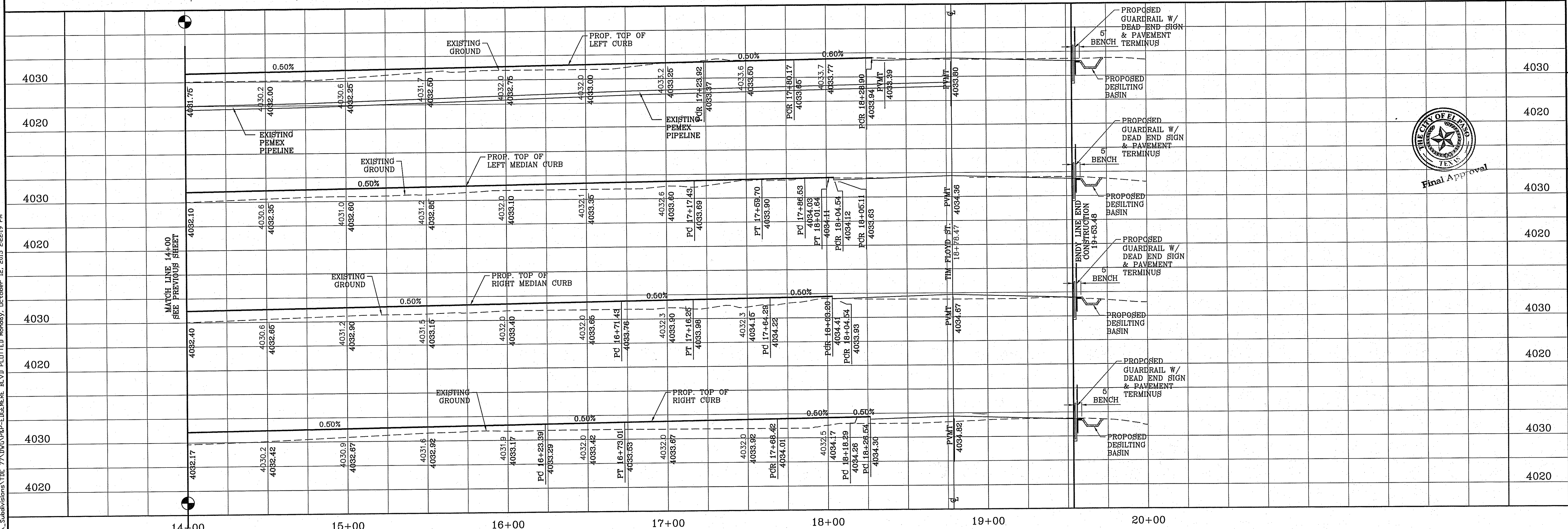


CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C15	350.00'	42.37'	21.21'	42.35'	N86°30'00"E	6°56'11"
C16	200.00'	26.89'	13.47'	26.87'	S86°53'02"W	7°42'14"
C17	85.00'	15.17'	7.61'	15.15'	N85°37'20"E	10°13'37"
C18	3.00'	5.59'	4.04'	4.82'	N46°03'59"W	106°50'59"
C19	74.75'	6.95'	3.48'	6.95'	S4°41'41"W	5°19'40"
C20	1.00'	1.90'	1.39'	1.62'	N56°20'29"E	108°37'16"
C21	75.00'	39.54'	20.24'	39.08'	N84°26'59"W	30°12'12"
C22	271.00'	45.03'	22.56'	44.97'	N85°12'31"E	9°31'10"
C23	300.00'	49.84'	24.98'	49.79'	N85°12'31"E	9°31'10"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C24	50.00'	57.44'	32.36'	54.34'	N66°38'20"W	65°49'30"
C25	73.25'	13.17'	6.60'	13.15'	S38°52'41"E	10°18'12"
C26	60.00'	53.02'	28.38'	51.31'	N18°43'00"W	50°37'34"
C27	450.00'	55.29'	27.68'	55.26'	S3°04'35"W	7°02'23"
C28	200.00'	26.68'	13.36'	26.66'	S3°39'57"E	7°38'38"
C29	85.00'	15.19'	7.61'	15.17'	N4°57'46"W	10°14'16"
C30	3.00'	5.59'	4.04'	4.82'	S43°20'35"W	106°50'59"
C31	74.75'	6.95'	3.48'	6.94'	S85°53'38"E	5°19'26"
C32	1.00'	1.90'	1.39'	1.62'	N34°14'44"W	108°37'16"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C33	75.00'	39.50'	20.22'	39.04'	S4°58'38"W	30°10'32"
C34	50.00'	57.42'	32.34'	54.32'	S22°47'17"W	65°47'50"
C35	73.25'	12.86'	6.44'	12.84'	N50°39'31"E	10°03'22"
C36	60.00'	27.84'	14.17'	27.59'	S58°55'21"W	26°35'01"
C37	50.00'	19.06'	9.65'	18.94'	S45°31'43"E	21°50'23"
C38	73.25'	13.24'	6.64'	13.22'	N39°47'17"W	10°21'31"
C39	60.00'	27.58'	14.04'	27.33'	S31°48'03"E	26°19'59"
C40	43.25'	66.01'	41.36'	59.79'	S52°22'57"W	87°26'38"
C41	43.25'	79.98'	57.34'	69.06'	S44°18'51"E	105°56'56"
C42	43.25'	68.98'	44.31'	61.90'	N37°01'09"E	91°23'04"
C43	43.25'	56.78'	33.32'	52.79'	N46°17'04"W	75°13'21"

SCALE: 1" = 30'



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6060 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BRING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEY, EL PASO COUNTY, TEXAS CONTAINING .840.172 ACRES

**EDGEMERE BLVD**  
 STA: 14+00 TO  
 STA: 19+53.48

**SHT 20 OF 40**

**CONDE INC.**  
 REGISTRATION NO. F-231

**ENGINEER'S SEAL**

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'

**DATE:** FEB. 2014  
**DESIGN BY:** YC  
**INITIATED BY:** DN  
**CHECKED BY:** YC  
**JOB NO.:** 414-49

**PROJECT NAME**  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

**BENCHMARK**  
 CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRISSIAN TRAIL DR. ELEVATION 4025.16 .....NAD83 DATUM

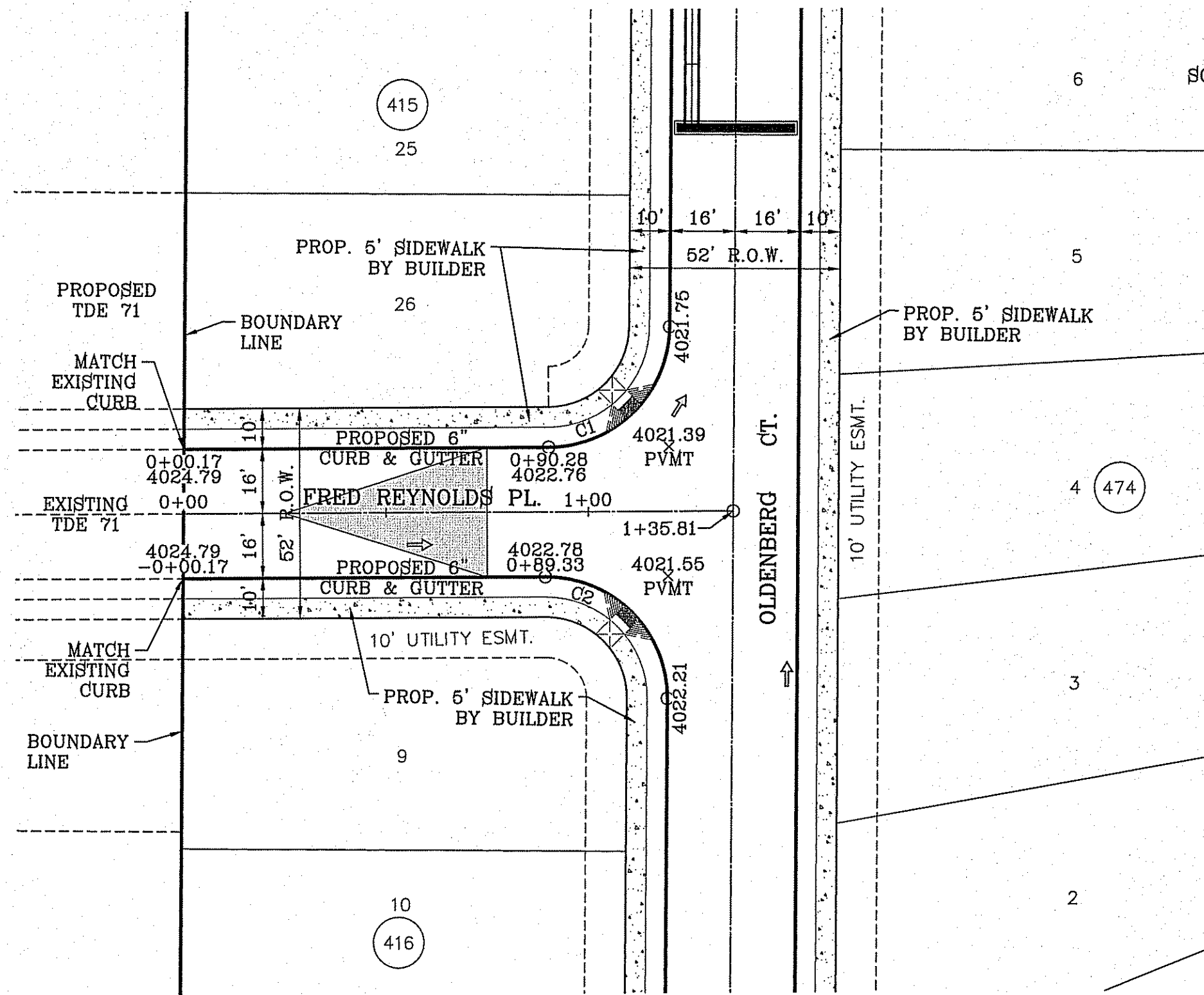
**REVISIONS**  
 DATE: 5-29-2015  
 BY: r.o.  
 adjusted pemex pipeline



CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	46.81'	29.69'	42.20'	N45°17'35"W	89°24'10"
C2	30.00'	47.44'	30.31'	42.65'	S44°42'25"W	90°35'50"

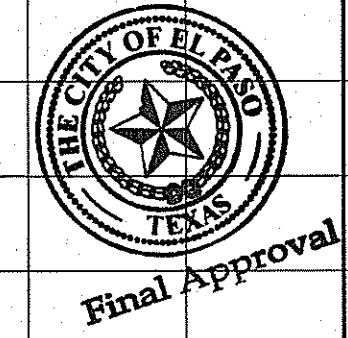
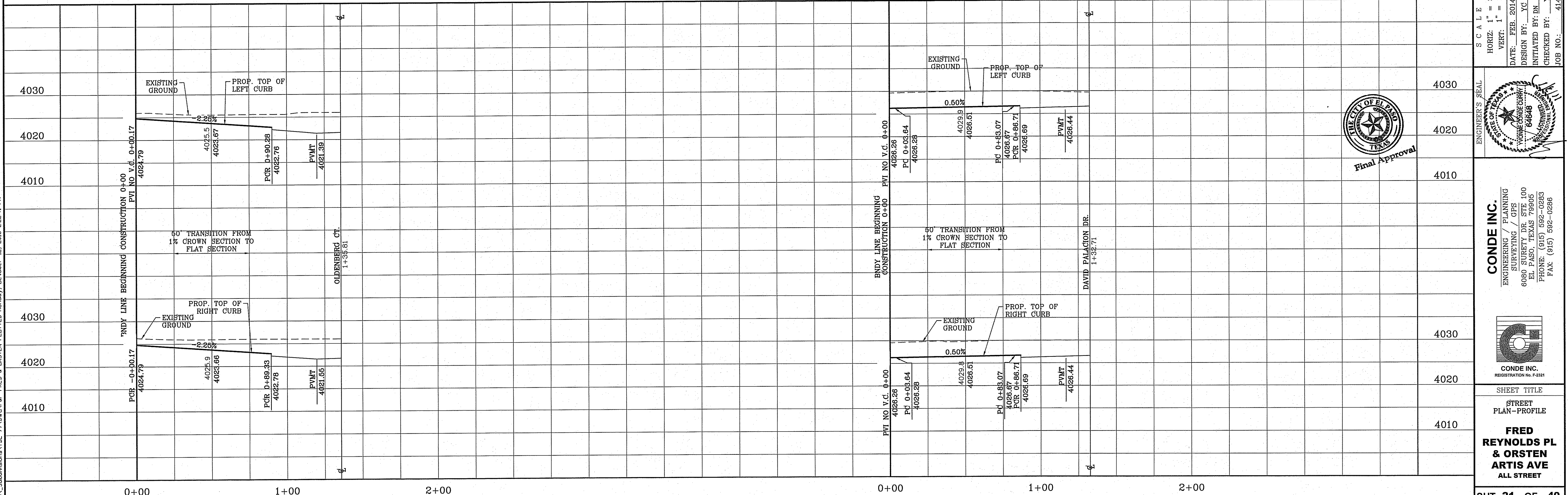
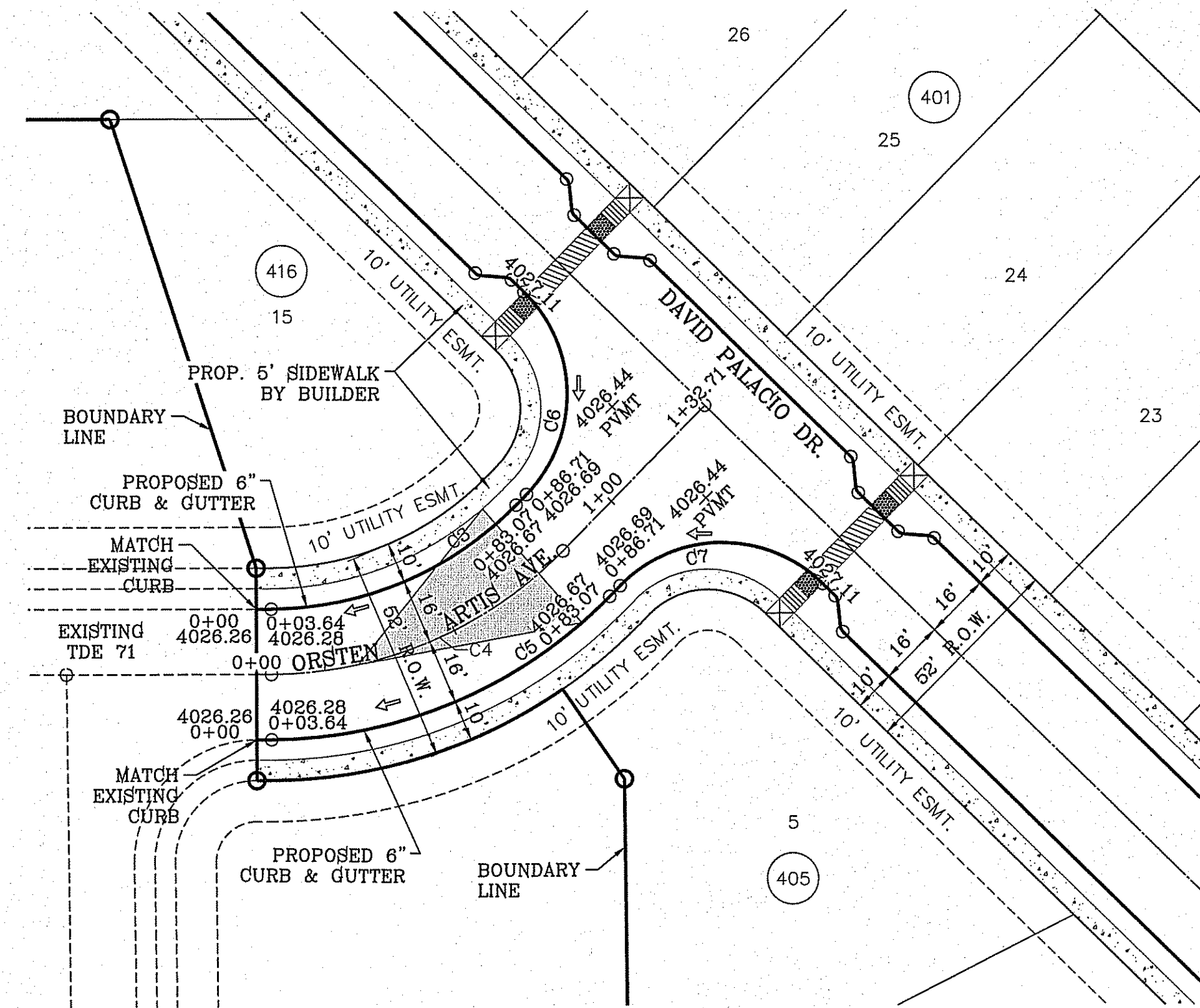


SCALE: 1" = 30'



CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C3	84.00'	66.72'	35.23'	64.98'	N67°15'01"E	45°30'39"
C4	100.00'	79.43'	41.94'	77.36'	N67°15'01"E	45°30'39"
C5	116.00'	92.14'	48.66'	89.74'	N67°15'01"E	45°30'39"
C6	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C7	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"

SCALE: 1" = 30'

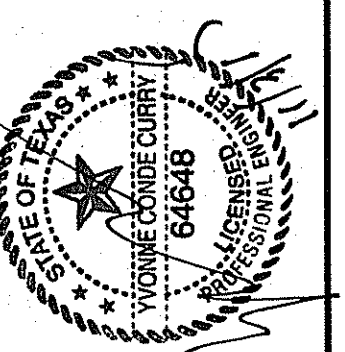


Final Approval

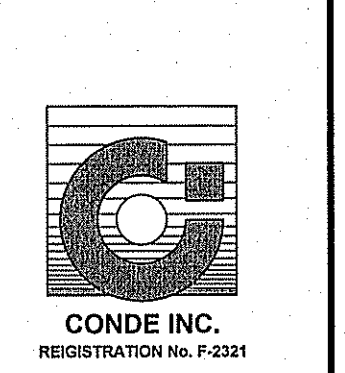
BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF WAKEFIELD DR. AND FRIEBEN PL. NAVD83 DATUM ELEVATION 4063.16
DATE	
REVISIONS	
BY	

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, RANGE 10E, COUNTY OF EL PASO, TEXAS  
 CONTAINING: .54,017± ACRES

SCALE: 1" = 30'  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: JN  
 CHECKED BY: YC  
 JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING / SURVEYING / GFS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



SHEET TITLE  
 STREET  
 PLAN-PROFILE  
**FRED REYNOLDS PL & ORSTEN ARTIS AVE**  
 ALL STREET

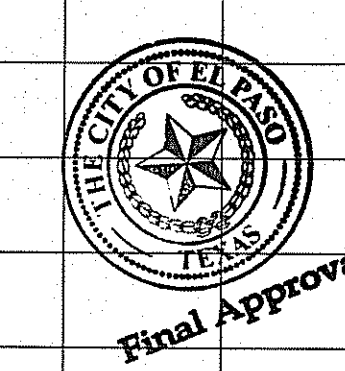
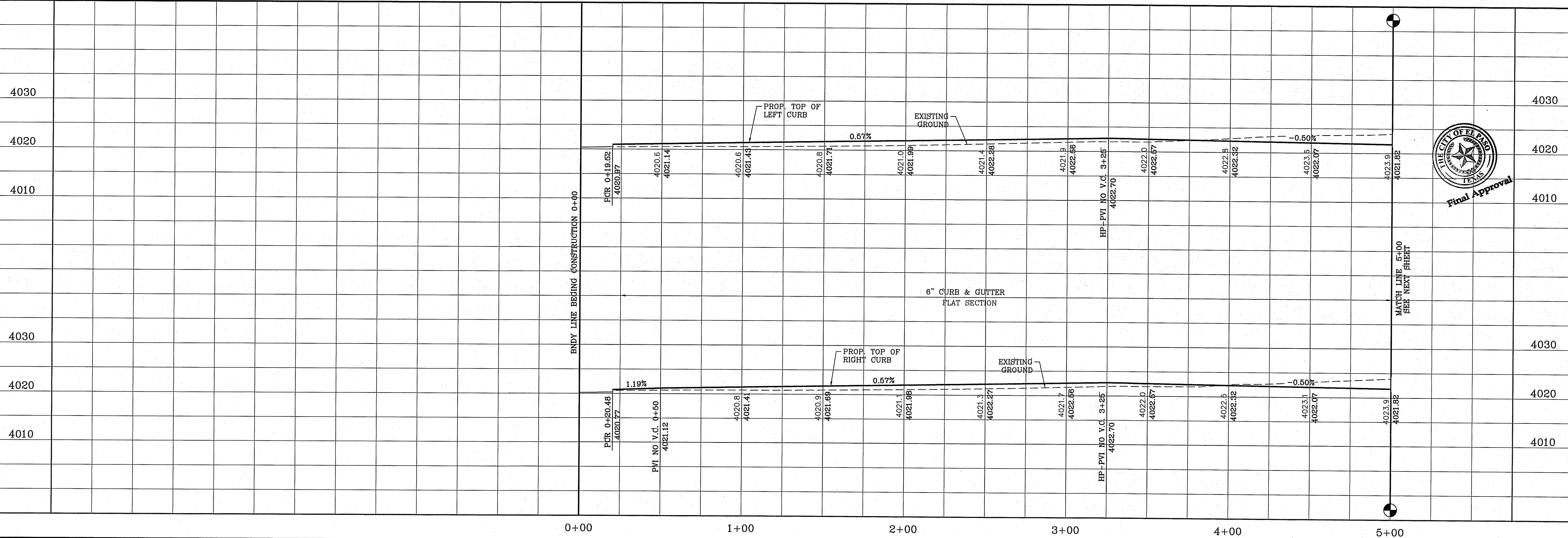
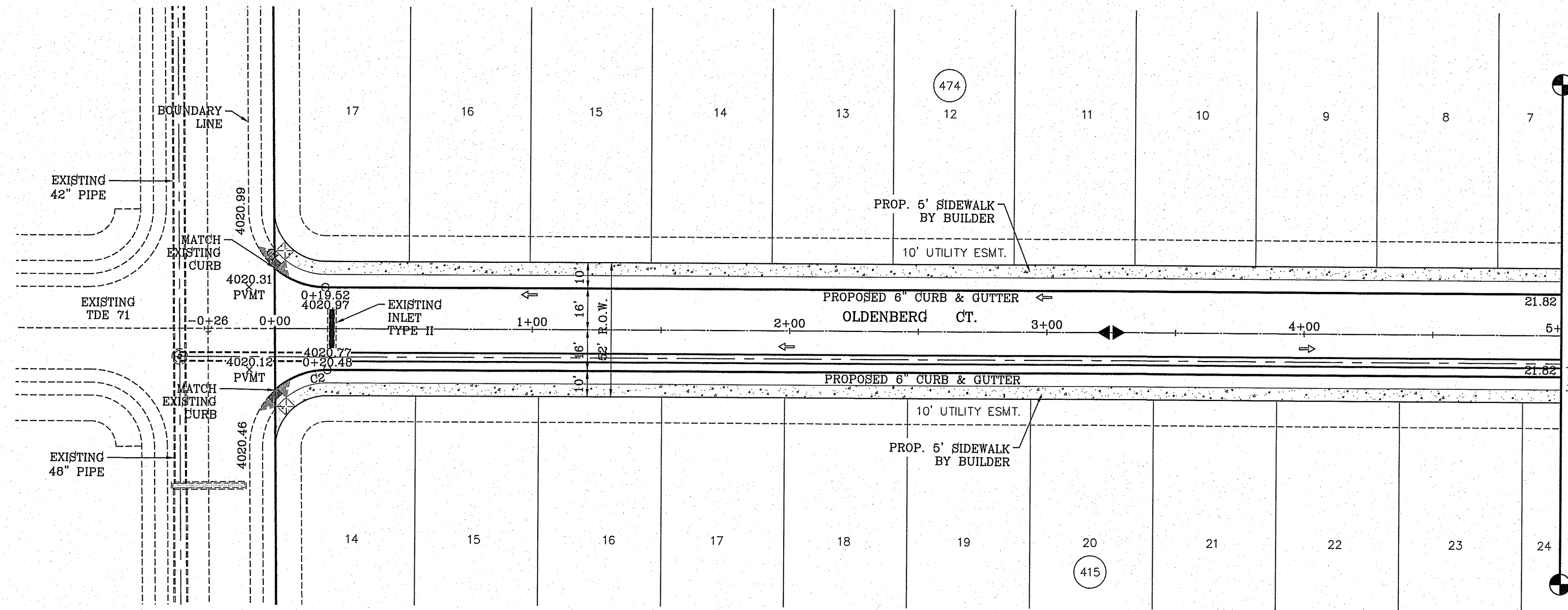
FILE: SA\_Subdivisions\TIE\_77\DWG\PP-FRED & ORSTEN PLOTTED Monday, October 12, 2015 2:29:41 PM



FILE: S:\Subdivisions\TIE 77\DWG\BP-OLDENBERG CT PLOTTED Monday, October 12, 2015 2:28:00 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	46.81'	29.69'	42.20'	S45°17'35"E	89°24'10"
C2	30.00'	47.44'	30.31'	42.65'	S44°42'25"W	90°35'50"

SCALE: 1" = 30'



BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESHMAN TRAIL DR.	ELEVATION 4023.16
DATE	REVISIONS
BY	

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 8, BLOCK 8, PORTION OF SECTION 10, BLOCK 10, PORTION OF SECTION 11, BLOCK 11, OF THE PACIFIC RAILWAY SURVEYS, TEXAS AND PACIFIC RAILWAY SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 64.017± ACRES

SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: BK  
 CHECKED BY: YC  
 JOB NO.: 414-49

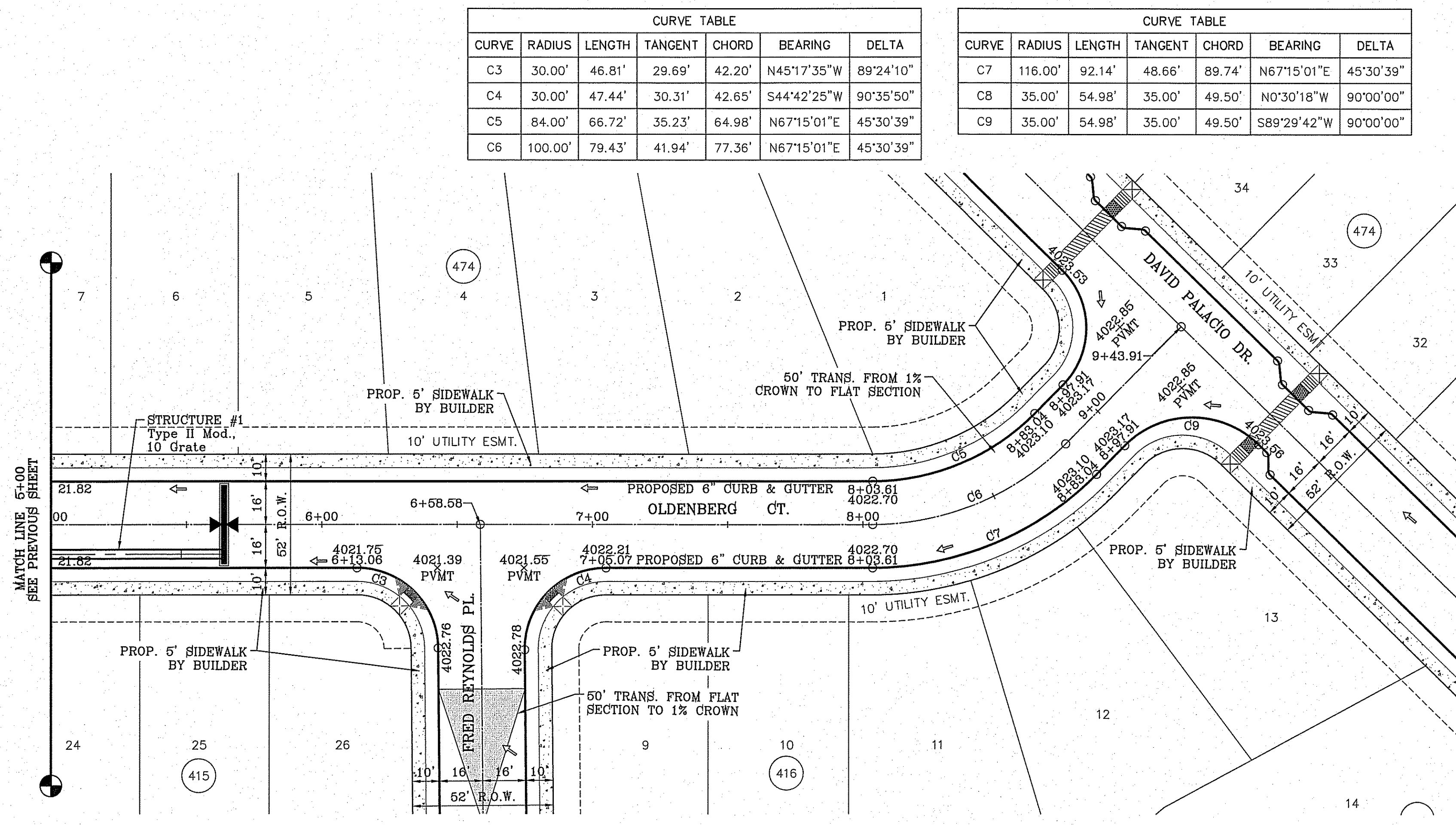
**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



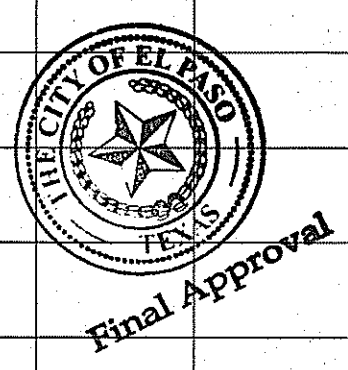
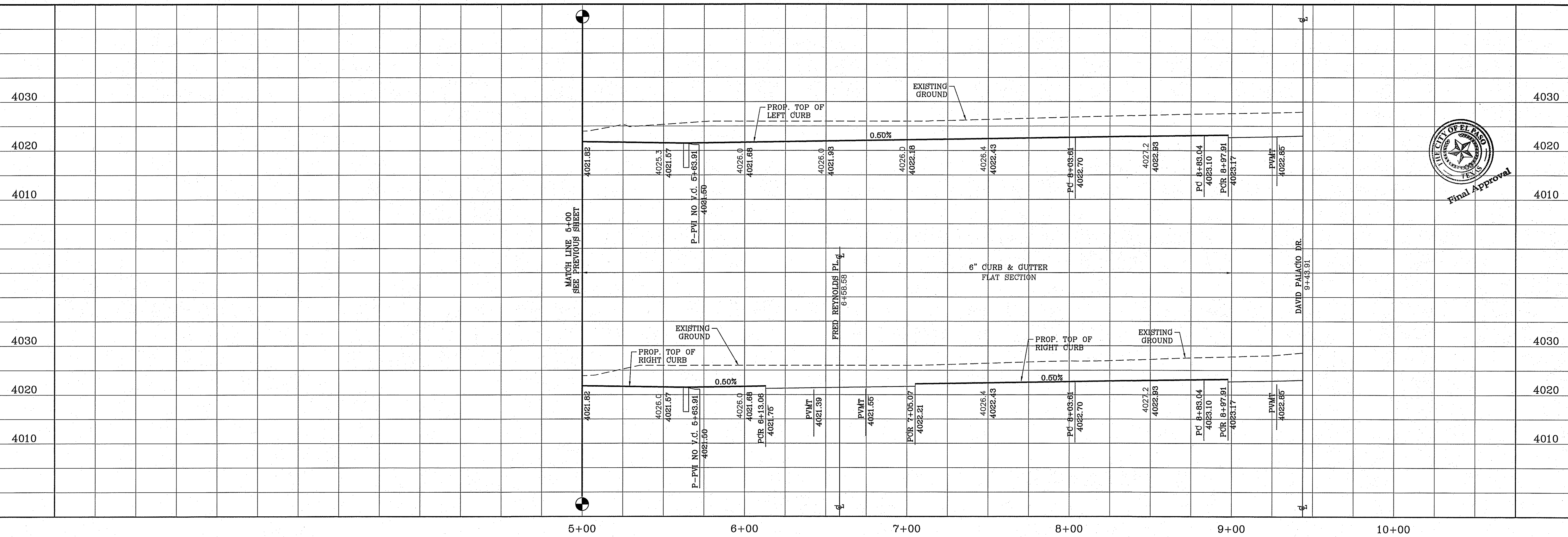
SHEET TITLE  
**STREET PLAN-PROFILE**  
**OLDENBERG CT**  
 STA: 0+00 TO  
 STA: 5+00



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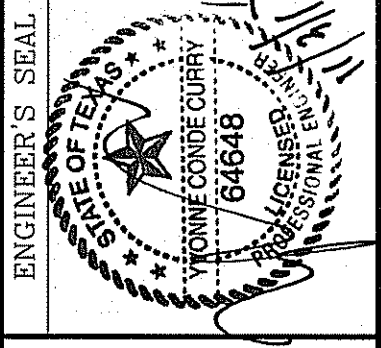
SCALE: 1" = 30'



DATE	REVISIONS	BY

**PROJECT NAME**  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 16, BLOCK 78, PORTION OF SECTION 16, BLOCK 78, AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

**SCALE**  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
**DATE:** FEB. 2014  
**DESIGN BY:** YC  
**INITIATED BY:** BN  
**CHECKED BY:** YC  
**JOB NO.:** 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



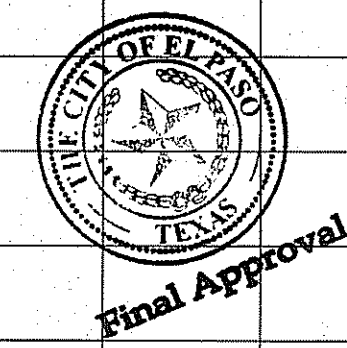
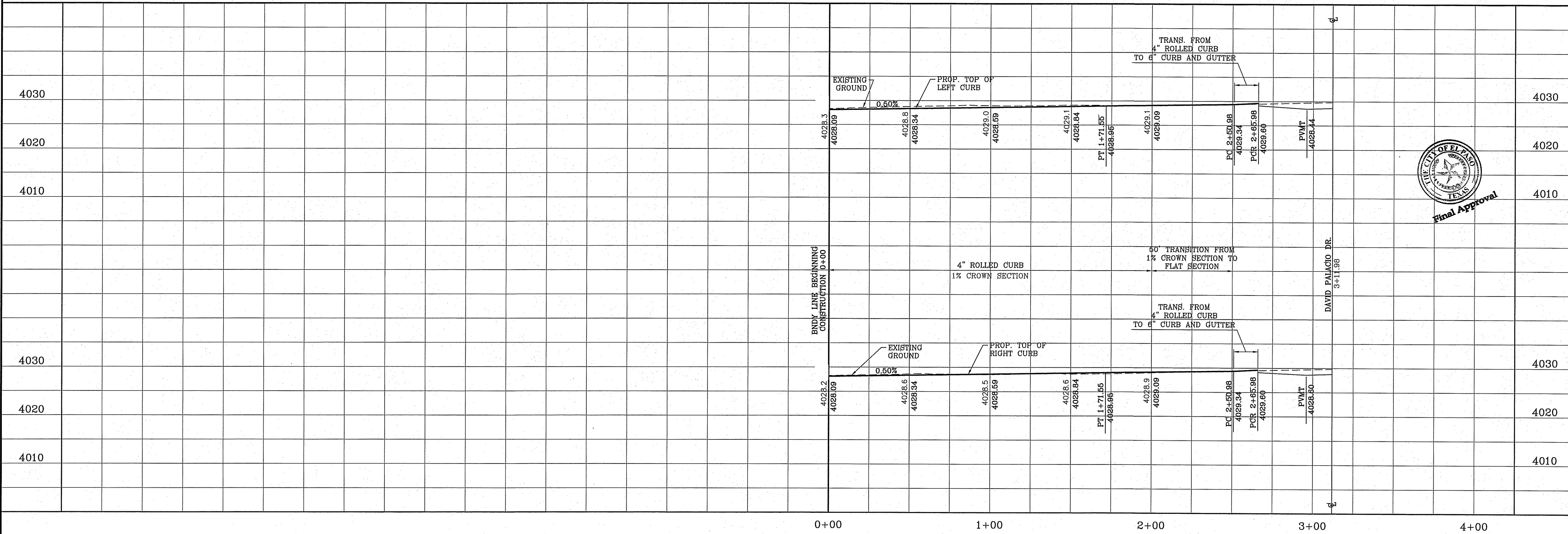
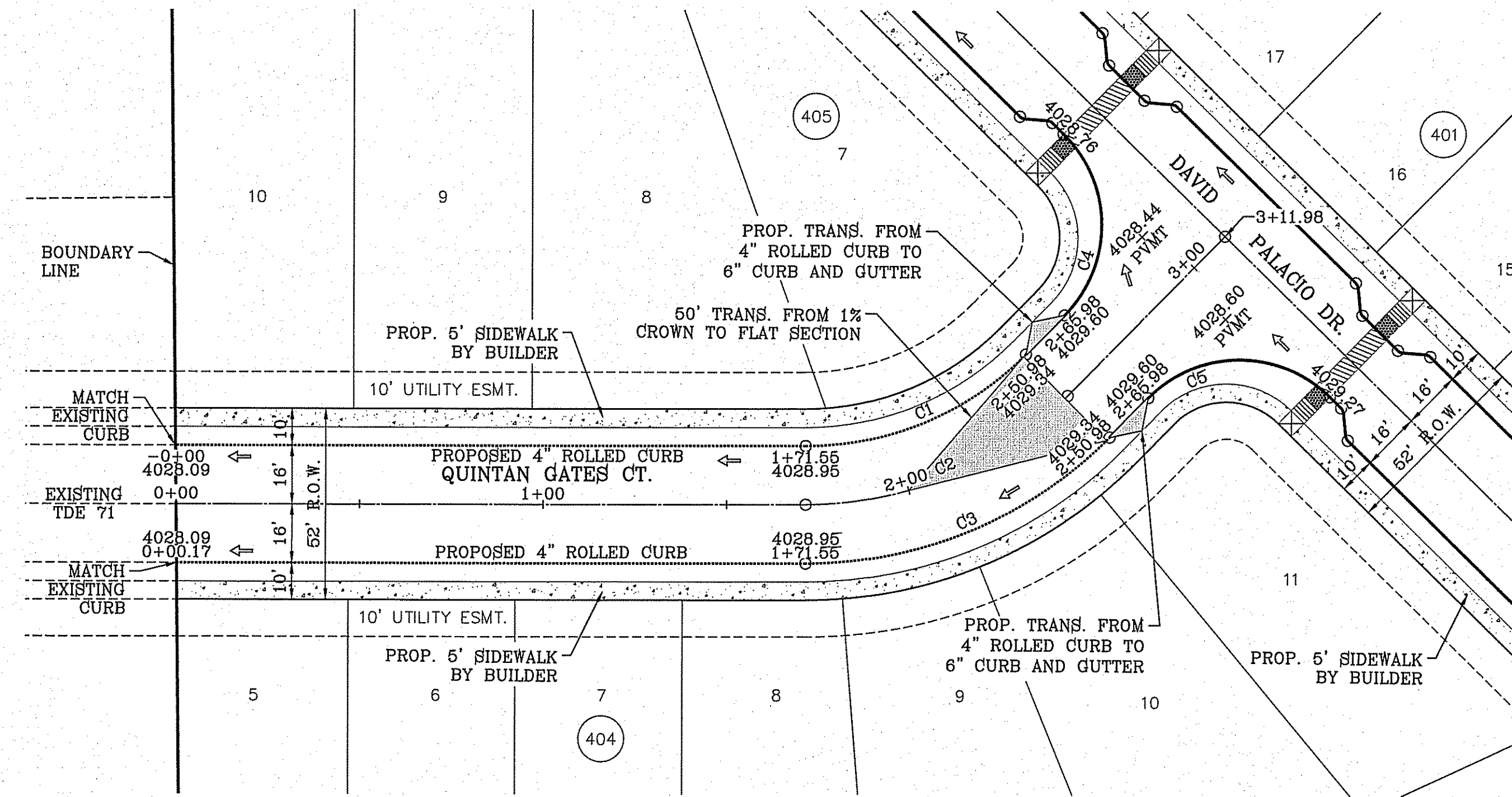
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**STREET PLAN-PROFILE**  
**OLDENBERG CT**  
 STA: 0+00 TO  
 STA: 9+43.91



FILE S:\Subdivisions\TIDE 77\DWG\98-P&P-QUINTAN GATES CT PLOTTED Monday, October 12, 2015 2:28:24 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	84.00'	66.72'	35.23'	64.98'	N67°15'01"E	45°30'39"
C2	100.00'	79.43'	41.94'	77.36'	N67°15'01"E	45°30'39"
C3	116.00'	92.14'	48.66'	89.74'	N67°15'01"E	45°30'39"
C4	35.00'	54.98'	35.00'	49.50'	N0°30'18"W	90°00'00"
C5	35.00'	54.98'	35.00'	49.50'	S89°29'42"W	90°00'00"

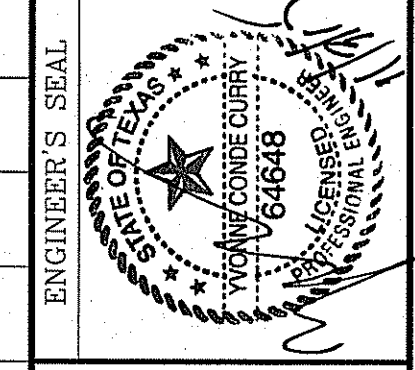
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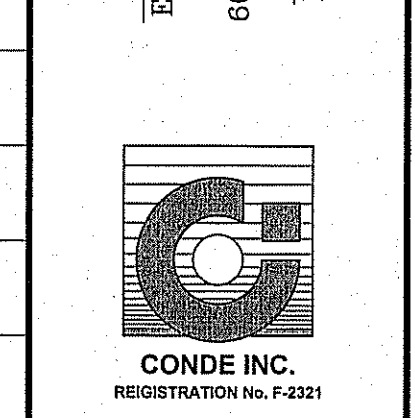
BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MAYRE PRICE DR. AND FRESIAN TRAIL DR. ELEVATION 4023.16	BY
DATE	REVISIONS

PROJECT NAME  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF  
TEXAS AND PACIFIC RAILWAY CO. SURVEYS,  
EL PASO COUNTY, TEXAS  
CONTAINING: 54.017± ACRES

SCALE  
HORIZ. 1" = 30'  
VERT. 1" = 10'  
DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: BN  
CHECKED BY: YC  
JOB NO.: 414-43



**CONDE INC.**  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286

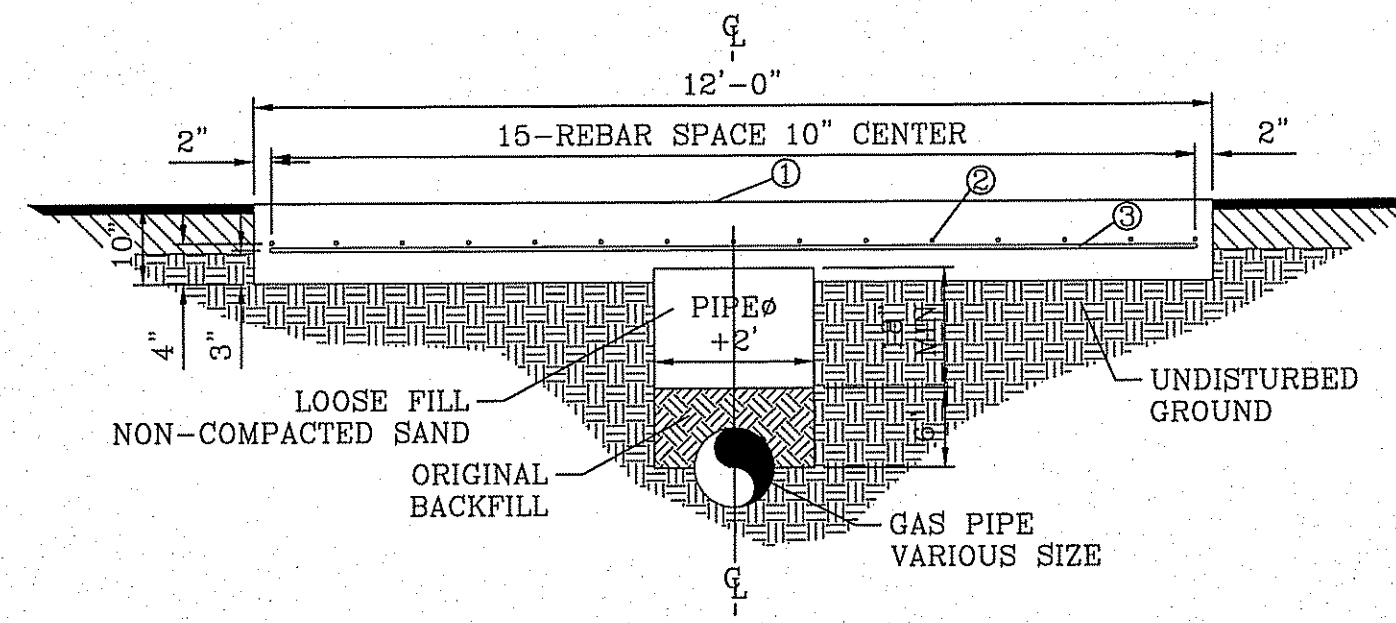
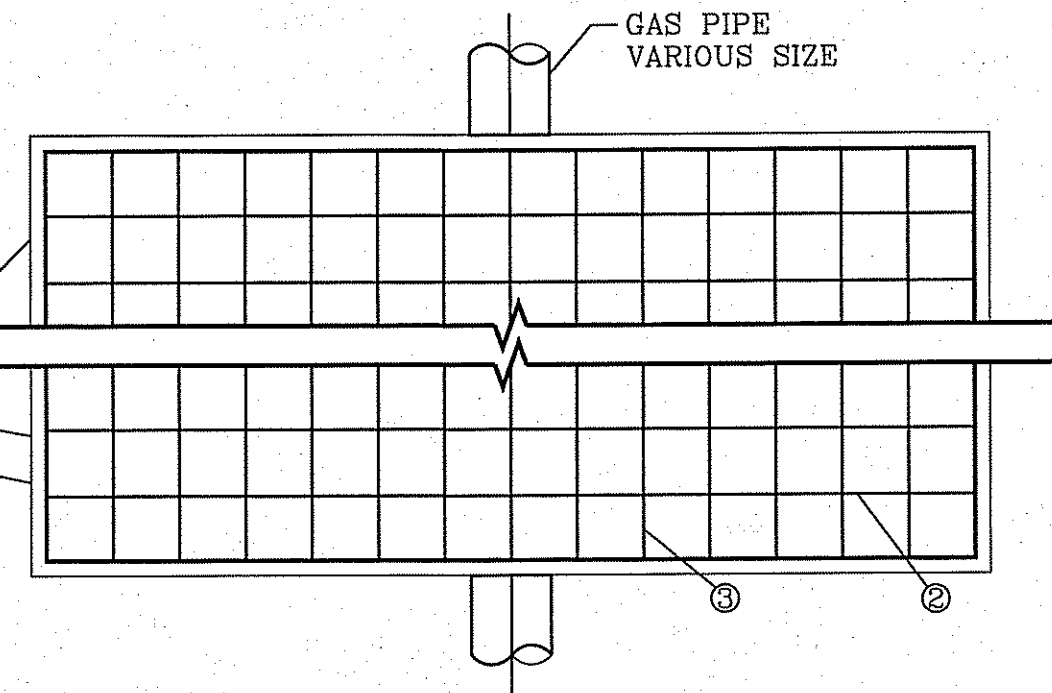


SHEET TITLE  
**STREET  
PLAN - PROFILE**  
**QUINTAN  
GATES CT**  
STA: 0+00 TO  
STA: 3+11.98

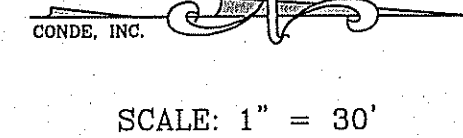


MATERIAL REQUIRED			
ITEM	QTY	SIZE	DESCRIPTION
1	.37 CU. YD. / UN. FT.	12' x 112'± AVG. x 10"	CONCRETE, HIGH EARLY STRENGTH, ASTM C 150 TYPE III 4000# 28 DAY STRENGTH
2	15	11'-8" LG.	#6 REBAR - 10" C TO C
3	15	VARIABLE LENGTH	#6 REBAR - 10" C TO C

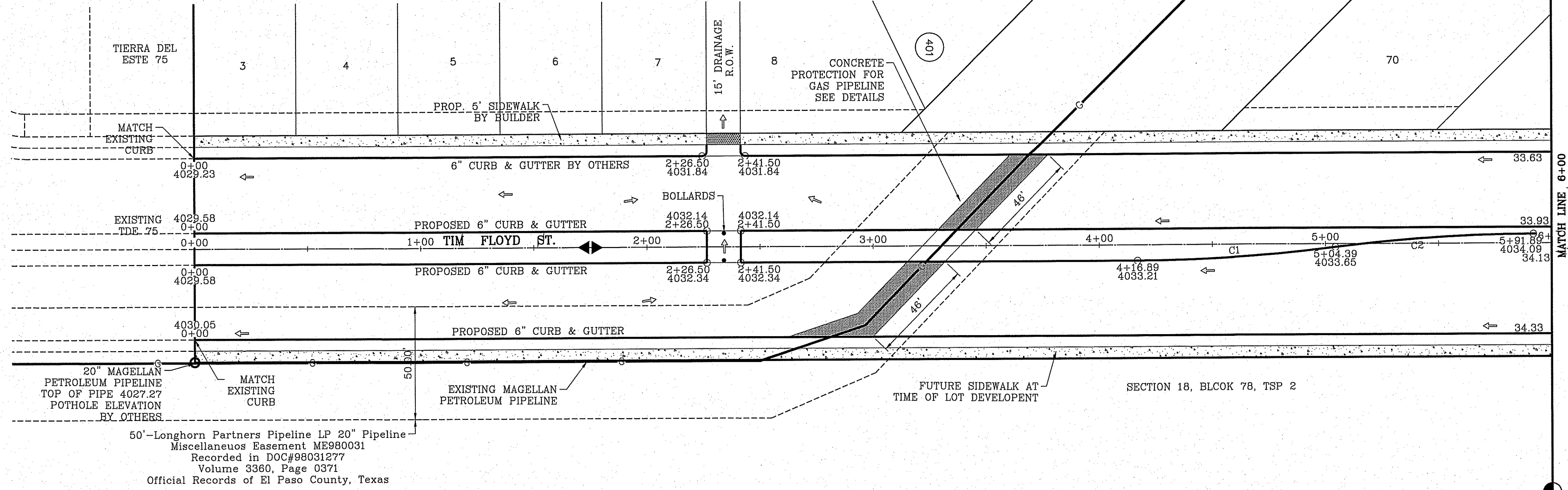
VARIABLE LENGTH AS REQUIRED



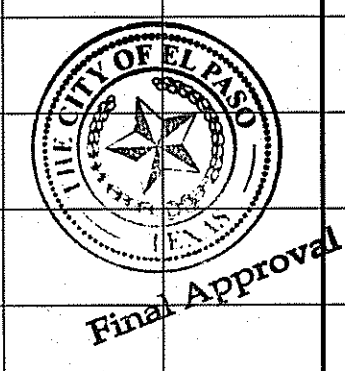
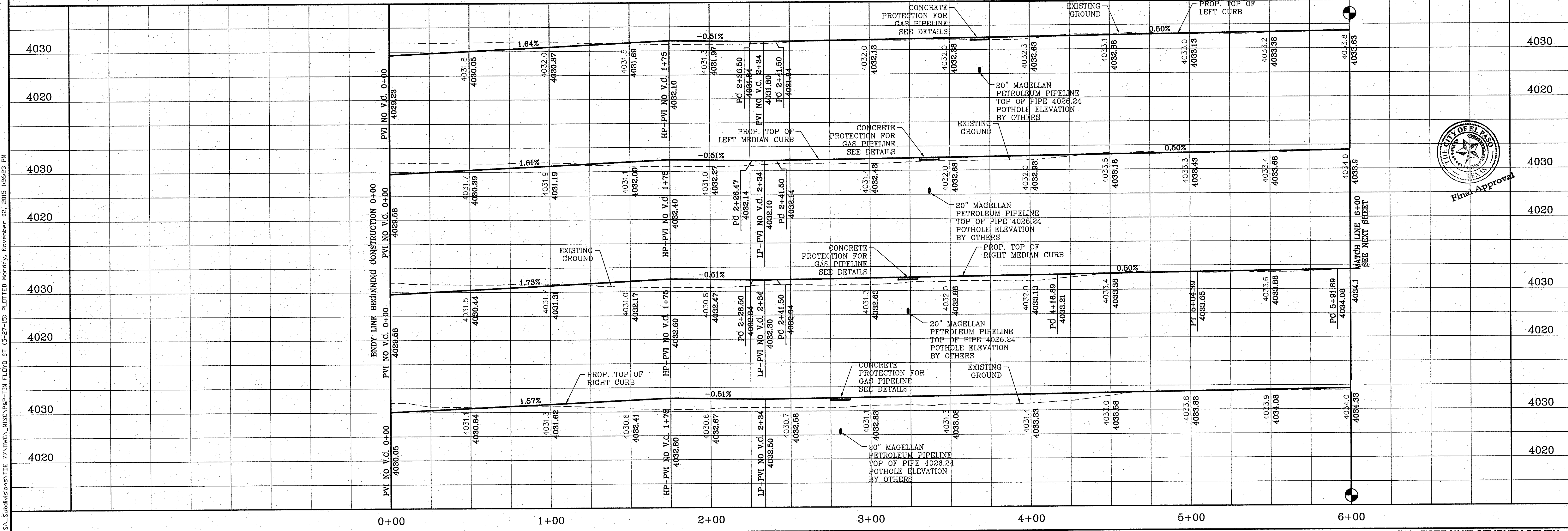
CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	698.77'	87.73'	43.92'	87.67'	N41°18'W	71°136"
C2	698.77'	87.73'	43.92'	87.67'	S41°18'E	71°136"



**CONCRETE SLAB FOR PIPELINE PROTECTION IN VARIOUS CONSTRUCTION AREAS**



50'-Longhorn Partners Pipeline LP 20" Pipeline  
 Miscellaneous Easement ME980031  
 Recorded in DOC#98031277  
 Volume 3960, Page 0371  
 Official Records of El Paso County, Texas



FILE S:\Subdivisions\TIE 77\DWG\MISC\F&P-TIM FLOYD ST (5-27-15).PLT DTD Monday, November 02, 2015 16:23 PM

DATE	REVISIONS	BY

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 16, BLOCK 78, JOHNSON'S SURVEY, TEXAS AND EL PASO COUNTY, TEXAS SURVEYS, CONTAINING: 54.017± ACRES

SCA L E  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: YC  
 CHECKED BY: YC  
 JOB NO.: 414-43

**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0263  
 FAX: (915) 592-0266

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 SHEET TITLE  
 STREET  
 PLAN-PROFILE  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 STA: 0+00 TO  
 STA: 6+00  
 SHT 25 OF 40

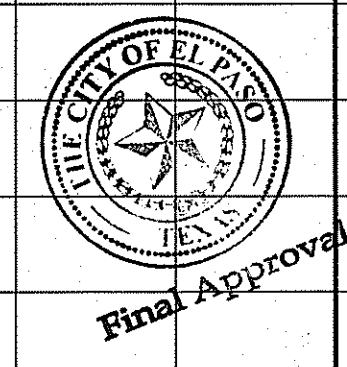
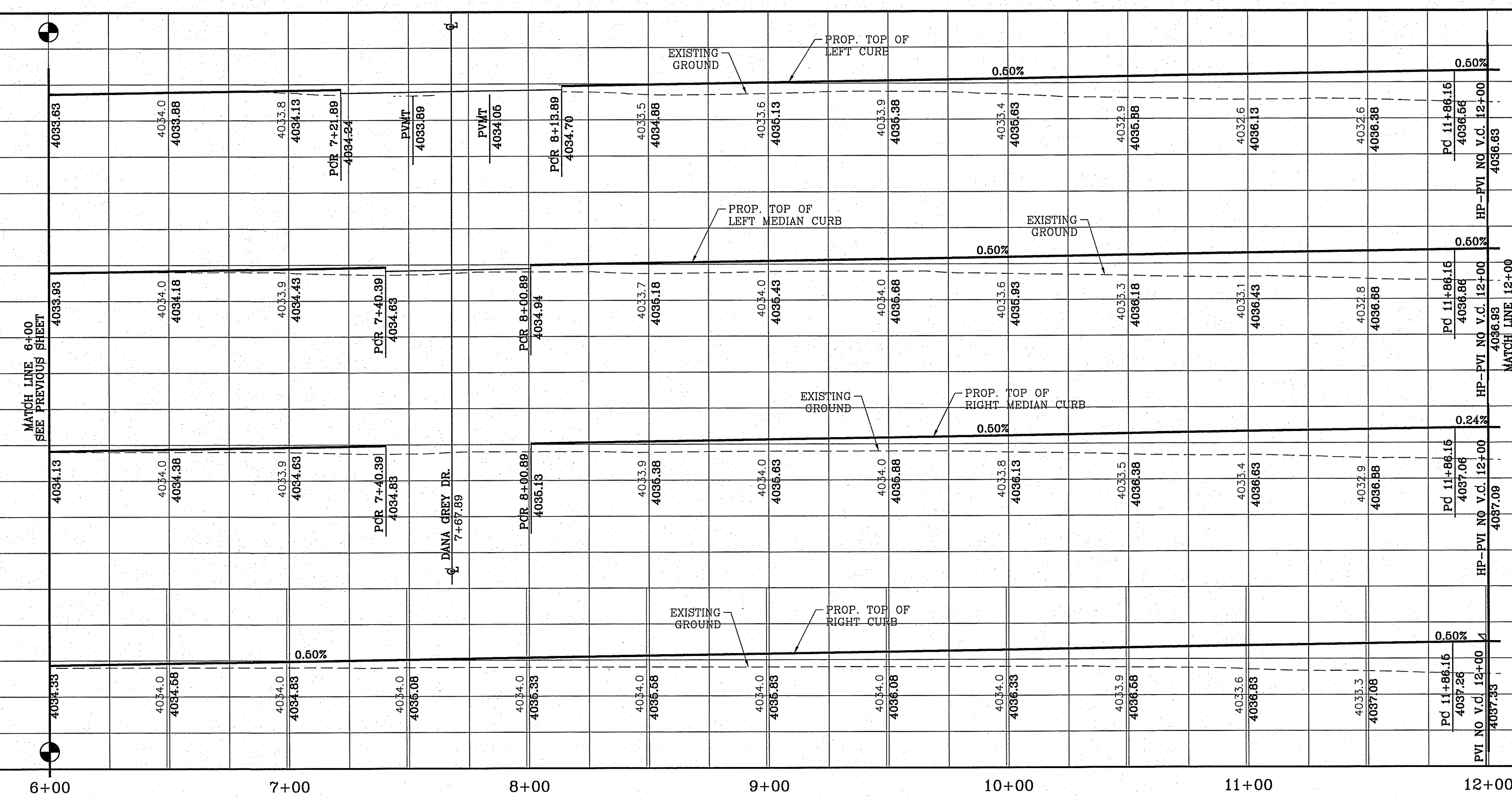
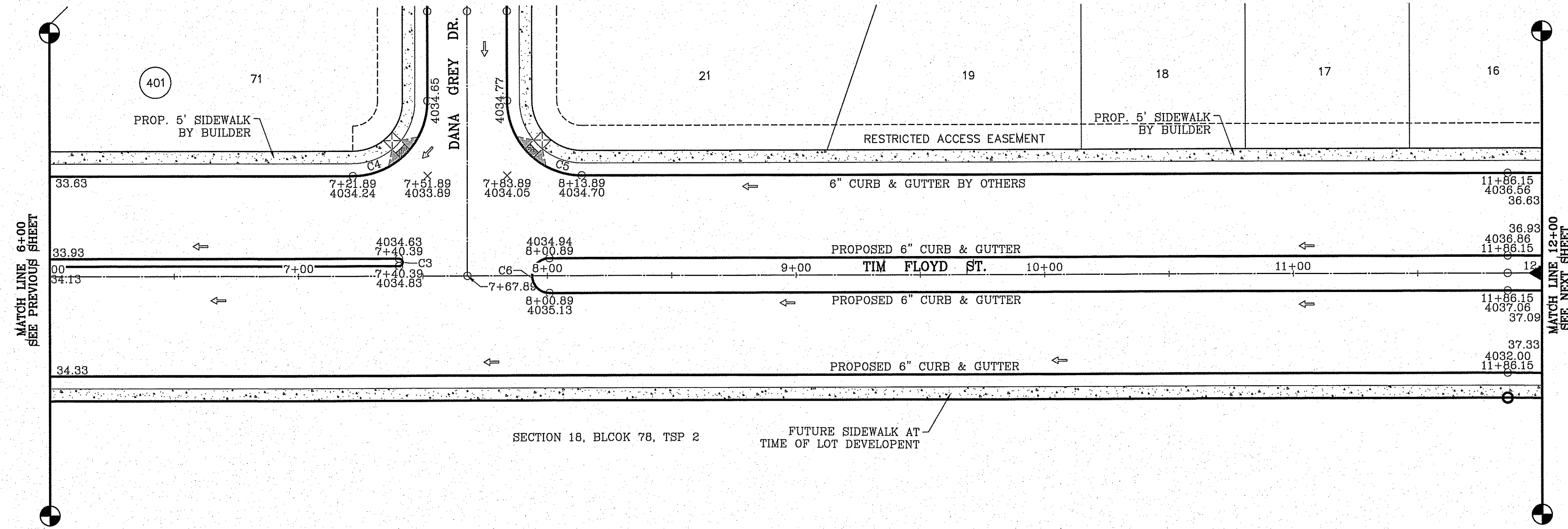


FILE: S:\Subdivisions\77\DWG\MISC\APP-TIM FLOYD ST (3-27-15).PLOT.DWG, November 02, 2015 12:50 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C3	1.50'	4.71'	INFINITY	3.00'	S89°24'30"W	180°00'00"
C4	30.00'	47.12'	30.00'	42.43'	N45°35'30"W	90°00'00"
C5	30.00'	47.12'	30.00'	42.43'	N44°24'30"E	90°00'00"
C6	7.00'	21.99'	INFINITY	14.00'	N89°24'30"E	180°00'00"



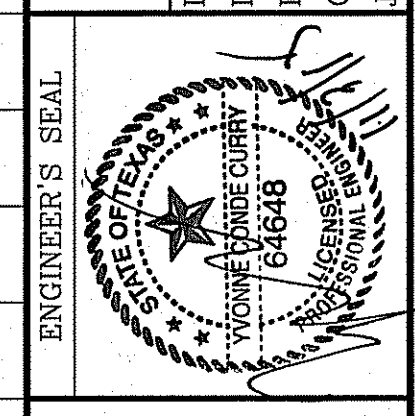
SCALE: 1" = 30'



DATE	REVISIONS	BY

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: DN  
 CHECKED BY: YC  
 JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR, STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0263  
 FAX: (915) 592-0286

REGISTRATION No. F231

SHEET TITLE  
**STREET PLAN - PROFILE**  
**TIM FLOYD ST**  
 STA: 6+00 TO  
 STA: 12+00

SHT 26 OF 40

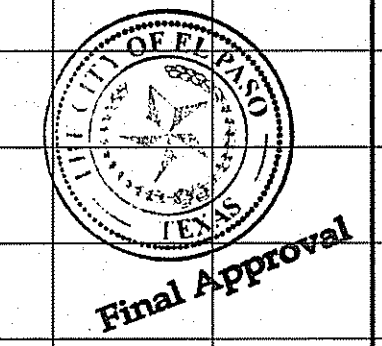
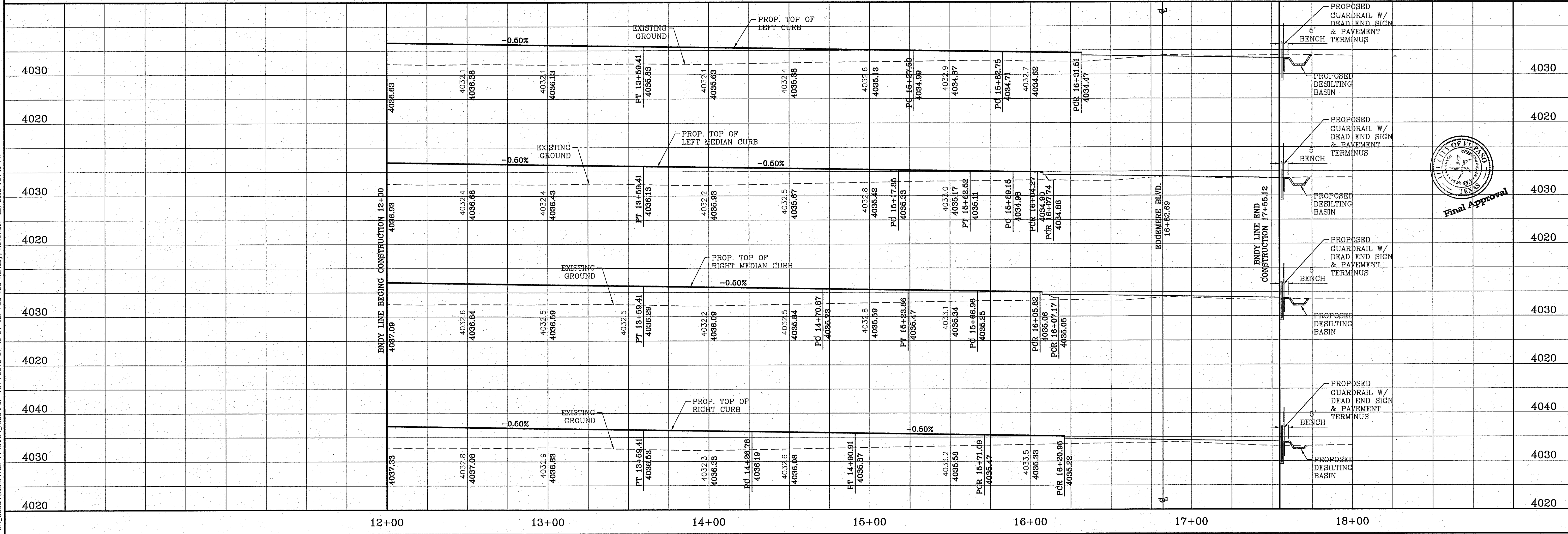
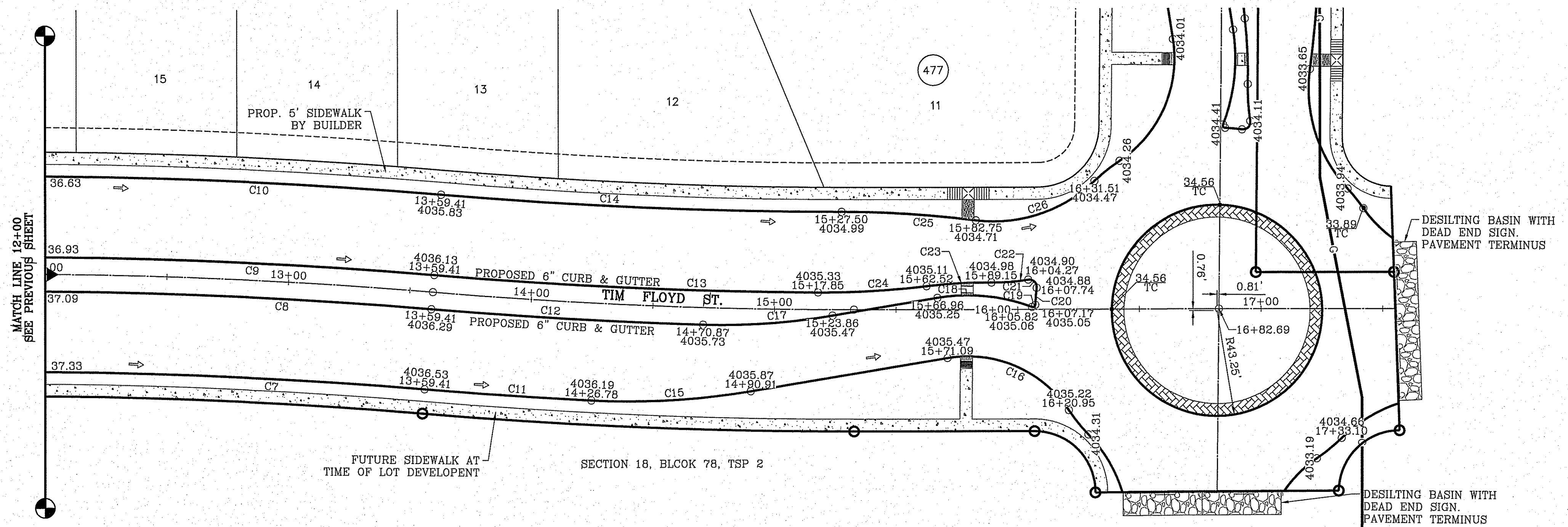
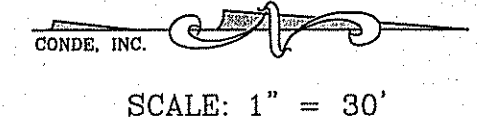


FILE S:\Subdivisions\77\DWG\MISC\PLAN-TIM FLOYD ST (5-27-15).PLOTED Monday, November 02, 2015 12:10 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C7	1960.00'	169.80'	84.95'	169.74'	S1°53'25"W	4°57'49"
C8	1993.00'	172.65'	86.38'	172.60'	S1°53'25"W	4°57'49"
C9	2007.00'	173.87'	86.99'	173.81'	S1°53'25"W	4°57'49"
C10	2040.00'	176.73'	88.42'	176.67'	S1°53'25"W	4°57'49"
C11	2040.00'	68.72'	34.36'	68.72'	N3°24'25"E	1°55'48"
C12	2007.00'	111.85'	55.94'	111.83'	N2°46'32"E	3°11'35"
C13	1993.00'	157.89'	78.99'	157.85'	N2°06'09"E	4°32'21"
C14	1960.00'	164.73'	82.41'	164.68'	N1°57'51"E	4°48'56"

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C15	300.00'	65.72'	32.99'	65.59'	N3°50'03"W	12°33'09"
C16	50.00'	57.42'	32.34'	54.32'	S22°47'17"W	65°47'50"
C17	271.00'	53.40'	26.79'	53.31'	N4°27'57"W	111°17'22"
C18	75.00'	39.50'	20.22'	39.04'	S4°58'38"W	30°10'32"
C19	1.00'	1.90'	1.39'	1.62'	N34°14'44"W	108°37'16"
C20	74.75'	6.95'	3.48'	6.94'	S85°53'38"E	5°19'26"
C21	3.00'	5.59'	4.04'	4.82'	S43°20'35"W	106°50'59"
C22	85.00'	15.19'	7.61'	15.17'	N4°57'46"W	10°14'16"

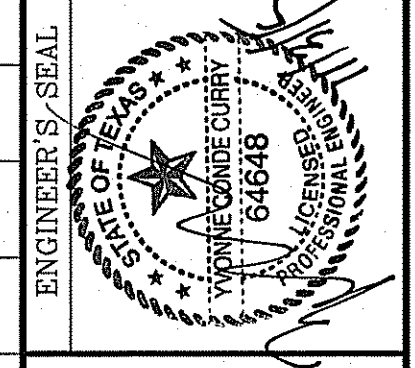
CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C23	200.00'	26.68'	13.36'	26.66'	S3°39'57"E	7°38'38"
C24	350.00'	44.72'	22.39'	44.69'	N3°49'39"W	7°19'15"
C25	450.00'	55.29'	27.68'	55.26'	S3°04'35"W	7°02'23"
C26	60.00'	53.02'	28.38'	51.31'	N18°43'00"W	50°37'34"
C27	43.25'	79.98'	57.34'	69.06'	S44°18'51"E	105°56'56"
C28	43.25'	68.98'	44.31'	61.90'	N37°01'09"E	91°23'04"
C29	43.25'	56.78'	33.32'	52.79'	N46°17'04"W	75°13'21"
C30	43.25'	66.01'	41.36'	59.79'	S52°22'57"W	87°26'38"



BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16
DATE	.....NAVD88 DATUM
REVISIONS	
BY	

**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY Co. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

SCALE	HORIZ: 1" = 30'
	VERT: 1" = 10'
	DATE: FEB. 2014
	DESIGN BY: YC
	INITIATED BY: DN
	CHECKED BY: YC
	JOB NO.: 414-43



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR., STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



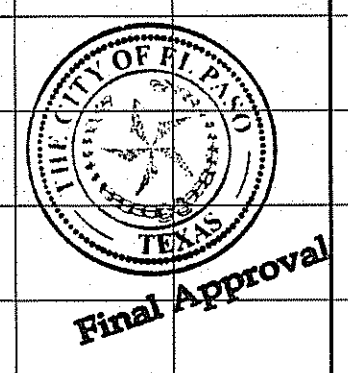
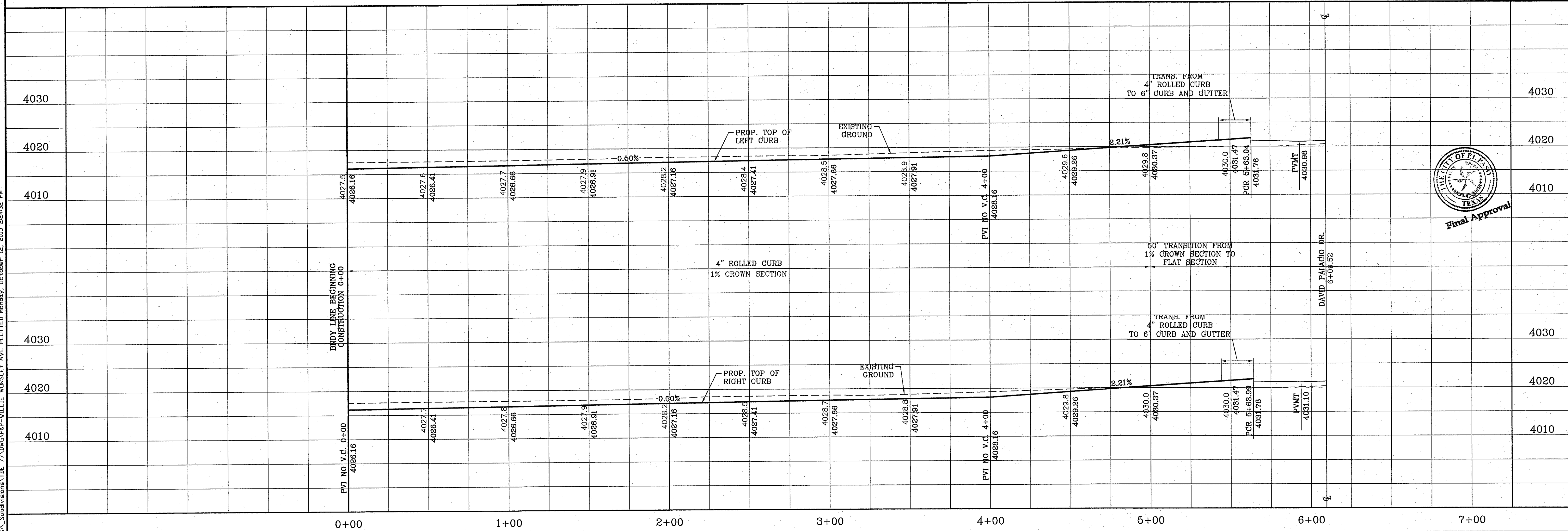
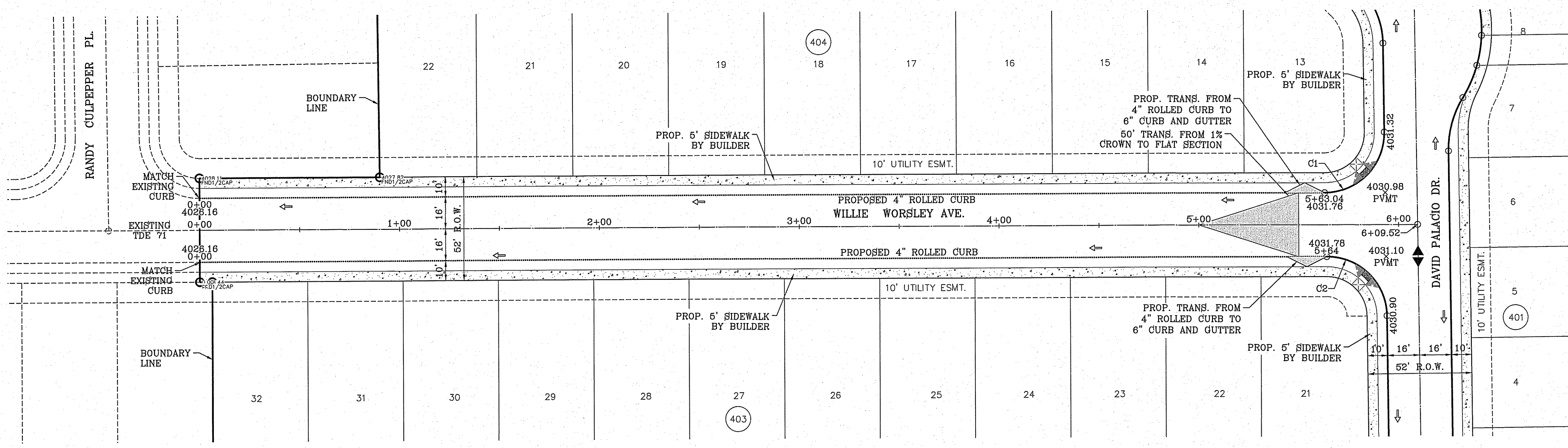
SHEET TITLE  
**STREET PLAN - PROFILE**  
**TIM FLOYD ST**  
 STA: 12+00 TO  
 STA: 17+55.05



FILE: S:\Subsites\TIE 77\DWG\PP-WILLIE WORSLEY AVE PLOTTED Monday, October 12, 2015 2:24:32 PM

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	30.00'	47.44'	30.31'	42.65'	N44°42'25"E	90°35'50"
C2	30.00'	46.81'	29.69'	42.20'	N45°17'35"W	89°24'10"

SCALE: 1" = 30'



BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF WIRE PRICE DR. AND FRIERIAN TRAILS	ELEVATION	4023.10
DATE		REVISIONS	
BY			

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PASO COUNTY, TEXAS, CONTAINING .540.17± ACRES

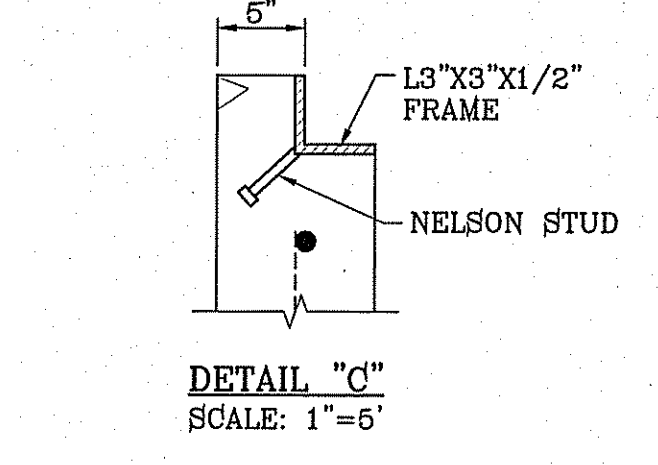
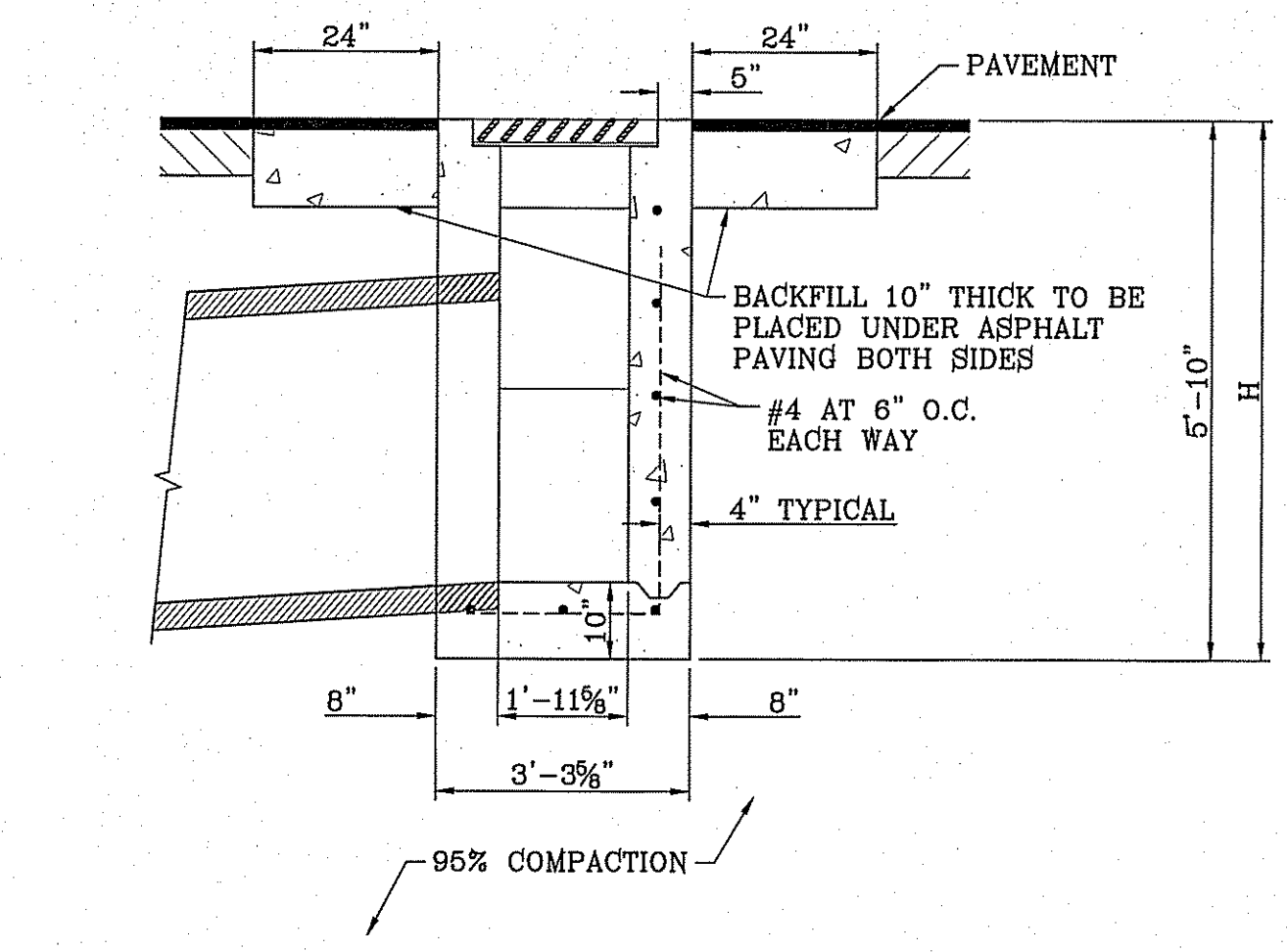
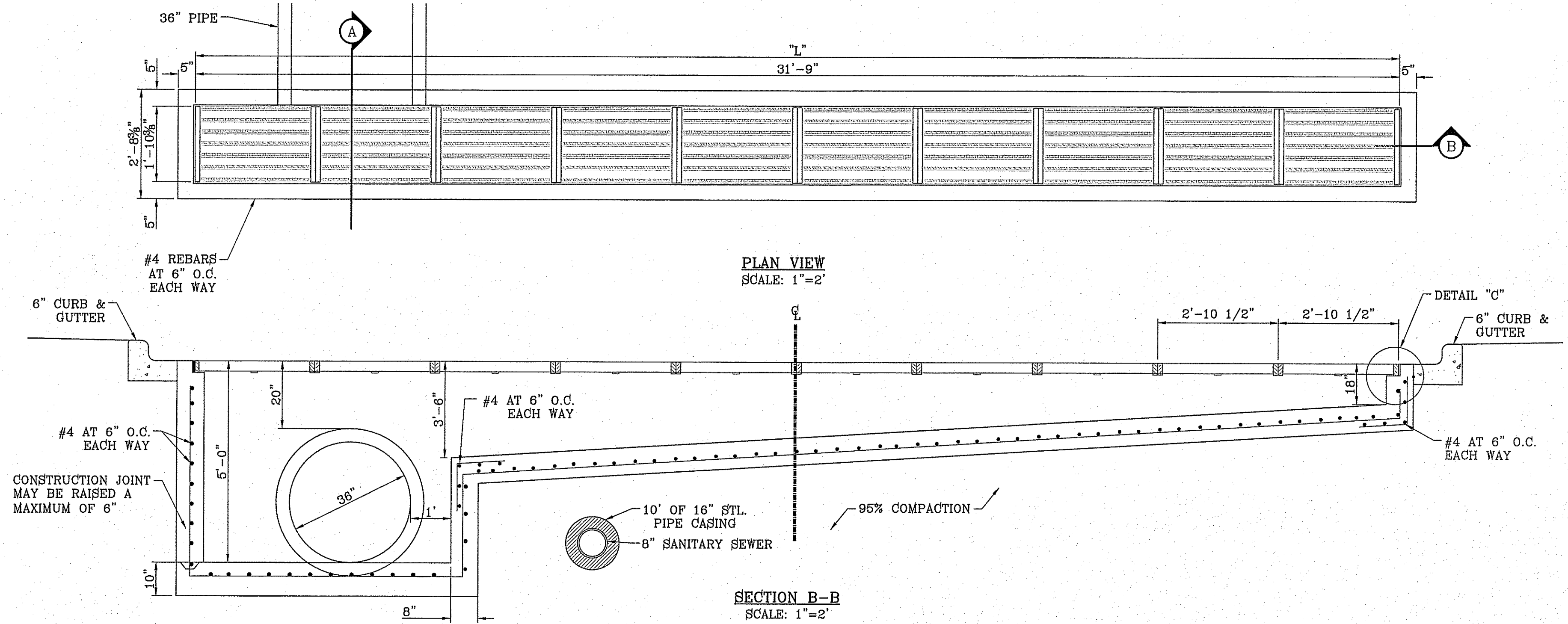
SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: EN  
 CHECKED BY: YC  
 JOB NO.: 414-43

**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6060 SUBURBY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286

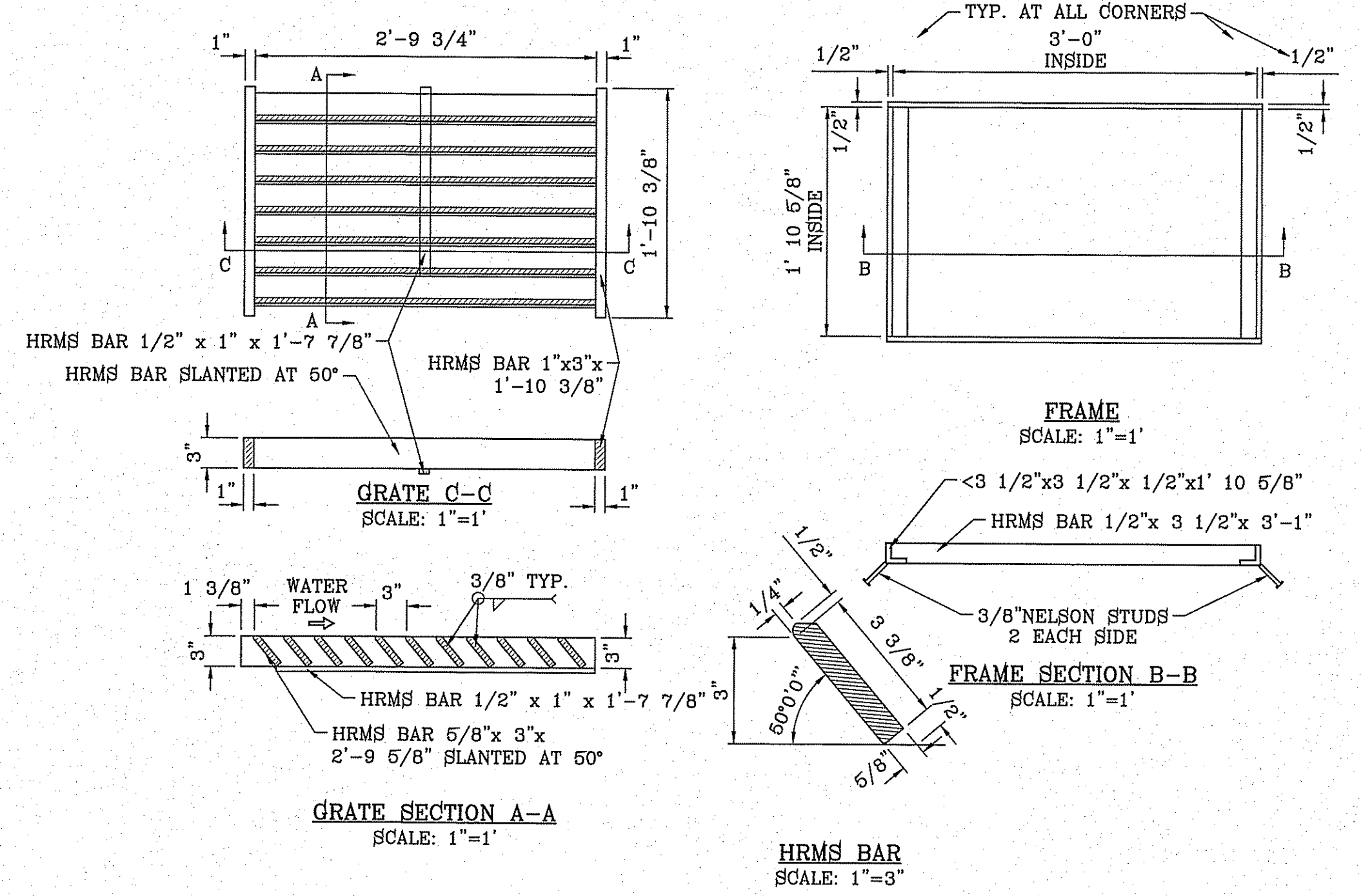
**WILLIE WORSLEY AVE**  
 STA: 0+00 TO  
 STA: 6+09.52



FILE SA\_Subdivisions\TIE 77\DWG\STRUCTURE 1 PLOTTED Monday, October 12, 2015 2:24:51 PM

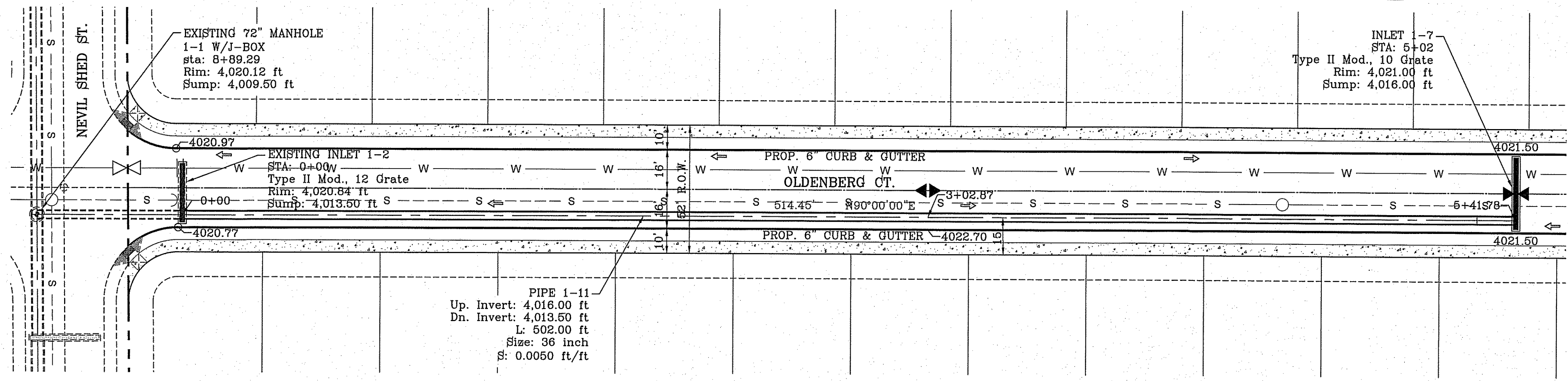


DROP. INLET TYPE II (MODIFIED)



R.C.P. PIPE DATA

PIPE	SECTION SIZE (in)	LENGTH (ft)	SLOPE (ft/ft)	DISCHARGE (cfs)	CAPACITY (cfs)	AVERAGE VELOCITY (fps)	DOWN STREAM GROUND	DOWN STREAM HGL	DOWN STREAM INVERT	UPSTREAM GROUND	UPSTREAM HGL	UPSTREAM INVERT
1-11	36	541.78	0.005	50.34	47.14	7.12	4020.84	4017.74	4013.50	4021.50	4020.82	4016.21

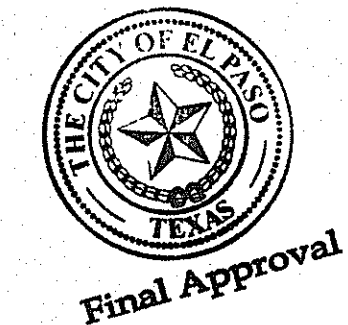
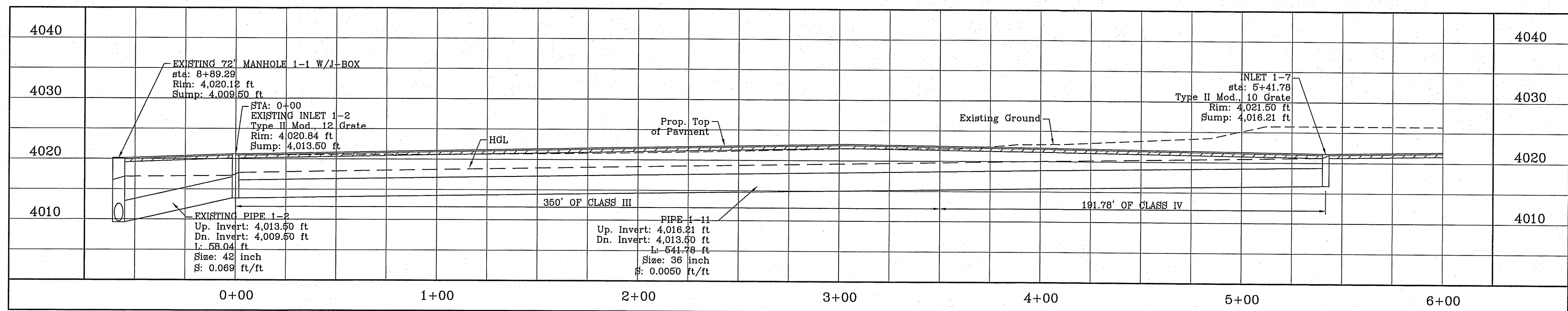


INLET DATA

INLET No.	INLET TYPE	No. GRATES	Qd <sub>50</sub> yr. cfs	Qd <sub>100</sub> yr. cfs	Qc cfs
1-7	II	10	41.69	50.34	84.92

ALL PIPES ARE R.C.P. CLASS III UNLESS OTHERWISE NOTED.

- CONSTRUCTION NOTES:
- ALL CONCRETE FOR STRUCTURES SHALL BE 3000 PSI UNLESS OTHERWISE NOTED.
  - MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE NOTED.
  - 95% COMPACTION REQUIRED FOR STRUCTURES AS PER ASTM D1657.
  - REINFORCING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A616 GRADE 60.

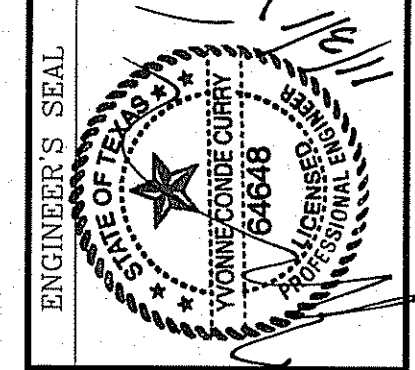


BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF	BY
MARKING PLACE DR. AND FRESIAN TRAIL DR.	
ELEVATION 4022.16	
DATE	
REVISIONS	

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 1, BLOCK 2, PORTION OF SECTION 37, BEING BLOCK 2, SURVEYS, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: FEB. 2014  
 DESIGN BY: YC  
 INITIATED BY: BN  
 CHECKED BY: YC  
 JOB NO.: 414-49



CONDE INC.  
 ENGINEERING / PLANNING  
 SURVEYING / GFS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



SHEET TITLE  
**STRUCTURE 1**



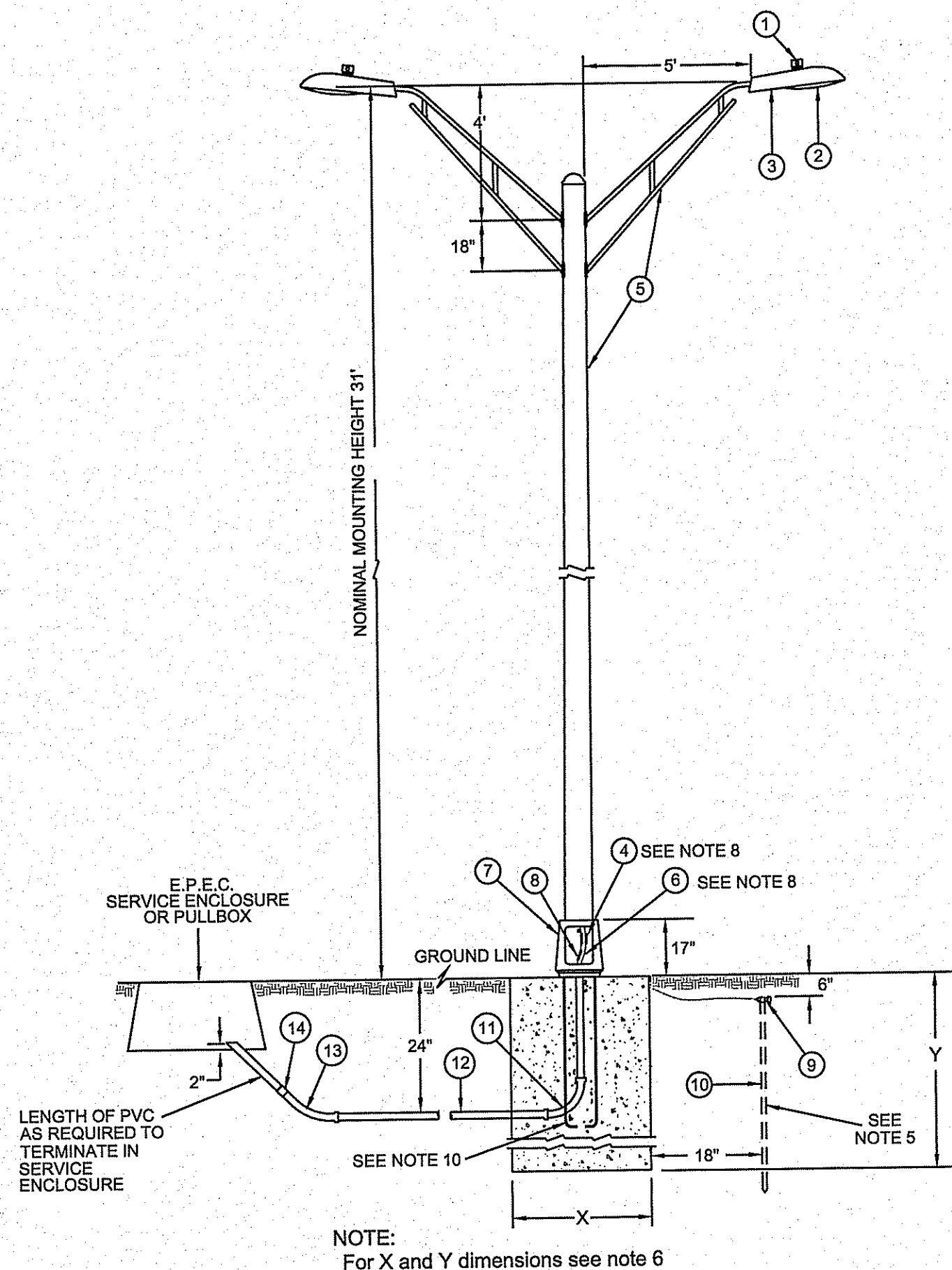
COPY THE SPECIFICATIONS XCELL FILE TO THE DRAWING PROJECT FOLDER FOR REFERENCE.  
DSU811(SPECS. DOUBLE).XLS

ITEM No.	DESCRIPTION	STOCK/DSU No.	Qty.	CU Code
1	PHOTO CELL, 240 V - SEE NOTE 1	21-225	2	
2	HPS LAMP, 100W	21-085	2	LCBRAHD
3	LUMINAIRE, 100W H.P.S.	21-335	2	
4	SLEEVES, #12-10	05-140	4	
5	STEEL POLE 3" TWIN STREET LIGHT	09-3	1	L30STL2
6	CABLE, #10, 2 CONDUCTOR	13-600	80'	L2CP1G5
7	ALUMINUM TRANSFORMER BASE (TB-1-17)	21-308	1	LTBASE
8	BREAKAWAY FUSES 30 AMP	21-250	2	LBRKFUSE
9	5/8" GROUND ROD CLAMP	07-461	1	LGRNDROD
10	5/8" X 10' CU BONDED GROUND ROD	08-628	1	
11	1" PVC 90 DEGREE ELBOW	17-297	1	L1L901
12	1" PVC CONDUIT	17-299	as req'd	LPVC1
13	1" PVC 45 DEGREE ELBOW	17-298	1	L1L451
14	1" PVC COUPLING	17-296	1	LCPLG1

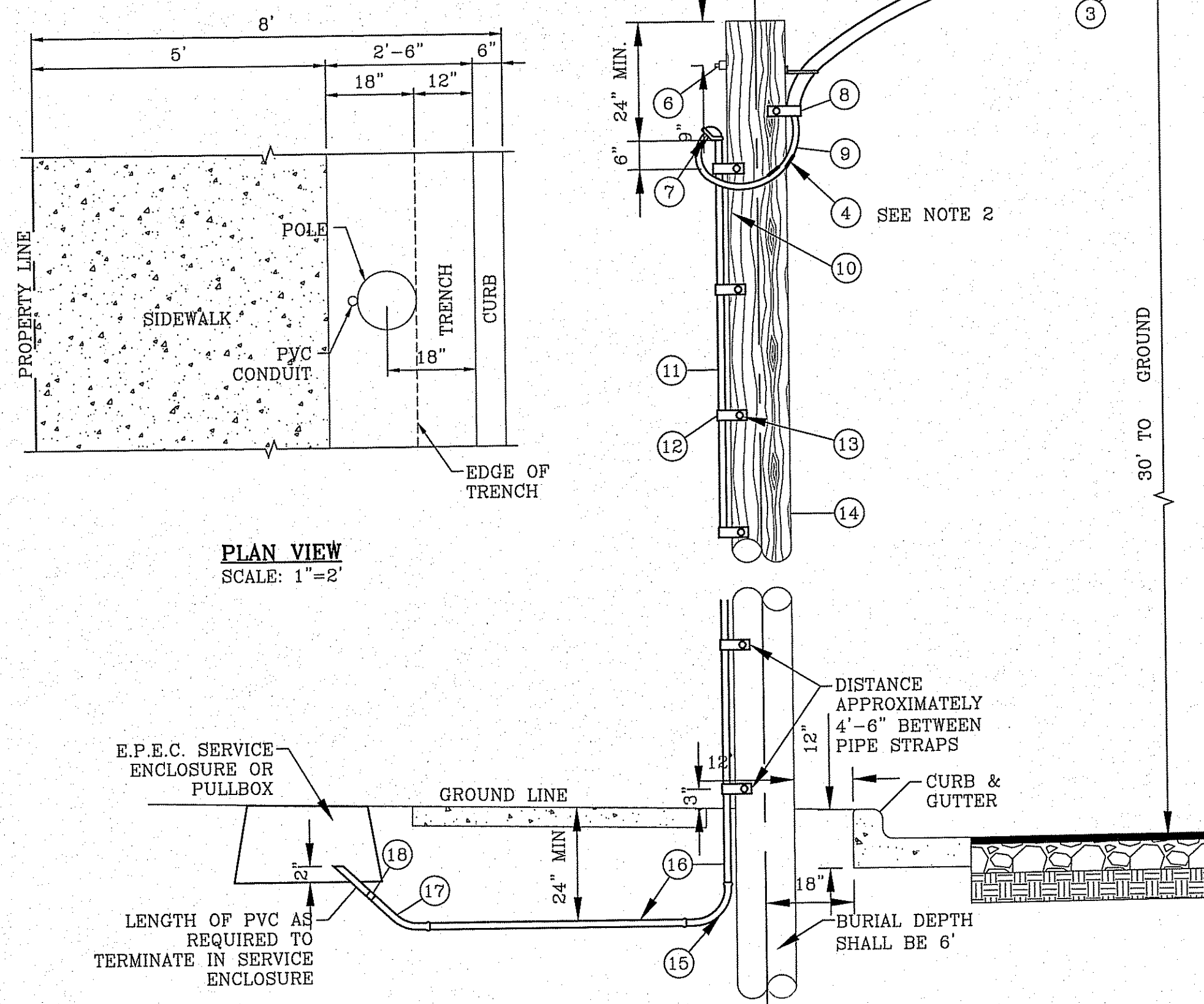
NOTES:

- MOUNT SO THAT PHOTO CELL IS FACING NORTH
- INSTALLATION MUST COMPLY WITH LOCAL CODE REQUIREMENTS
- STEEL POLE TO HAVE A BREAKAWAY BASE AS REQUIRED BY THE CITY OF EL PASO.
- POLE SHALL BE GROUNDED WITH A GROUND ROD.
- FOR ANY CLARIFICATION, EXCEPTIONS OR QUESTIONS REGARDING THIS STANDARD, CALL THE EL PASO ELECTRIC COMPANY DISTRIBUTION DESIGN DEPARTMENT
- FOUNDATION DIMENSIONS ARE AS FOLLOWS:  
DIAMETER: DEPTH:  
(Ø) (Y)  
NORMAL SOIL 24" 72"  
ROCKY SOIL 24" 60"
- 4 ANCHOR BOLTS WITH 4" HOOKS, THREAD END GALVANIZED 1" DIA. X 36" LONG, EACH BOLT FURNISHED WITH 2 HEX NUTS AND 2 FLATWASHERS ARE SUPPLIED WITH THE STEEL POLE.
- EL PASO ELECTRIC RESERVES THE RIGHT TO SUBSTITUTE THE TRUSS ARM WITH A SINGLE MEMBER MAST ARM.

UNDERGROUND TWIN RESIDENTIAL BREAKAWAY STREET LIGHT POLE



UNDERGROUND TWIN RESIDENTIAL BREAKAWAY STREET LIGHT POLE



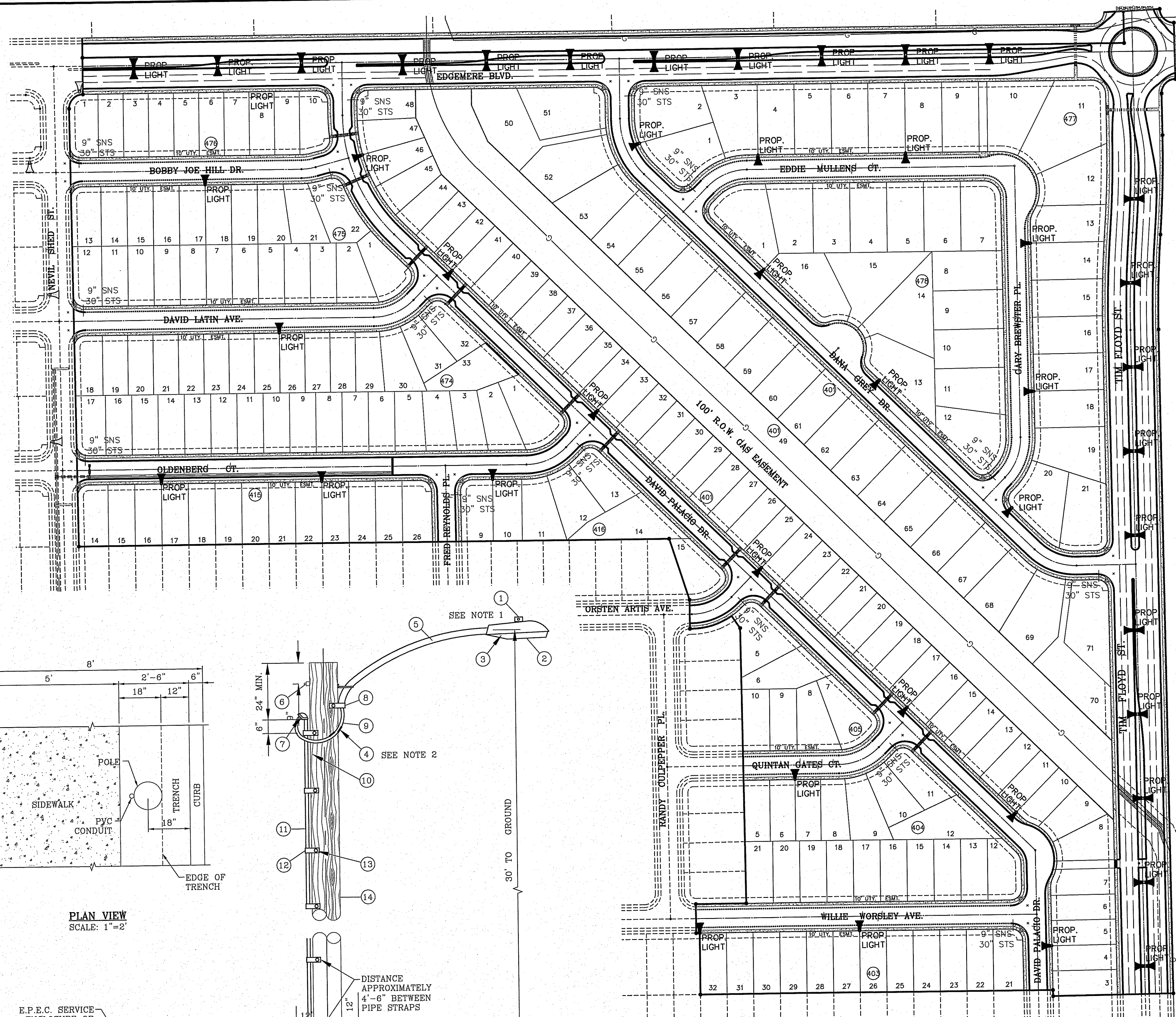
UNDERGROUND RESIDENTIAL STREET LIGHT WOOD POLE  
E.P.E.C. STD. DSU 805  
SCALE: 1"=2'

NOTE: STREET LIGHTING TO BE IN ACCORDANCE WITH EL PASO DESIGN STANDARDS, SECTION VIII

NOTE: INSTALL TRAFFIC CONTROL DEVICES AS SHOWN AND IN ACCORDANCE WITH CITY OF EL PASO DESIGN STANDARDS, SECTION VII

LEGEND

- ▲ PROPOSED LIGHT
- ◄ EXISTING LIGHT
- ◄ PROPOSED SIGN



BENCHMARK  
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR AND FRESIAN TRAIL DR. ELEVATION 4023.16 ..... NAVD83 DATUM

DATE	REVISIONS	BY

PROJECT NAME  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 78, TOWNSHIP 38N, RANGE 10E, COUNTY TEXAS AND PALS COUNTY, TEXAS. CONTAINING: 64.017+ ACRES

ENGINEER'S SEAL  
CONDE INC.  
REGISTRATION NO. F-2321

SCALE  
HORIZ: as shown  
VERT: shown  
DATE: FEB. 2014  
DESIGN BY: YC  
INITIATED BY: DN  
CHECKED BY: YC  
JOB NO.: 414-43

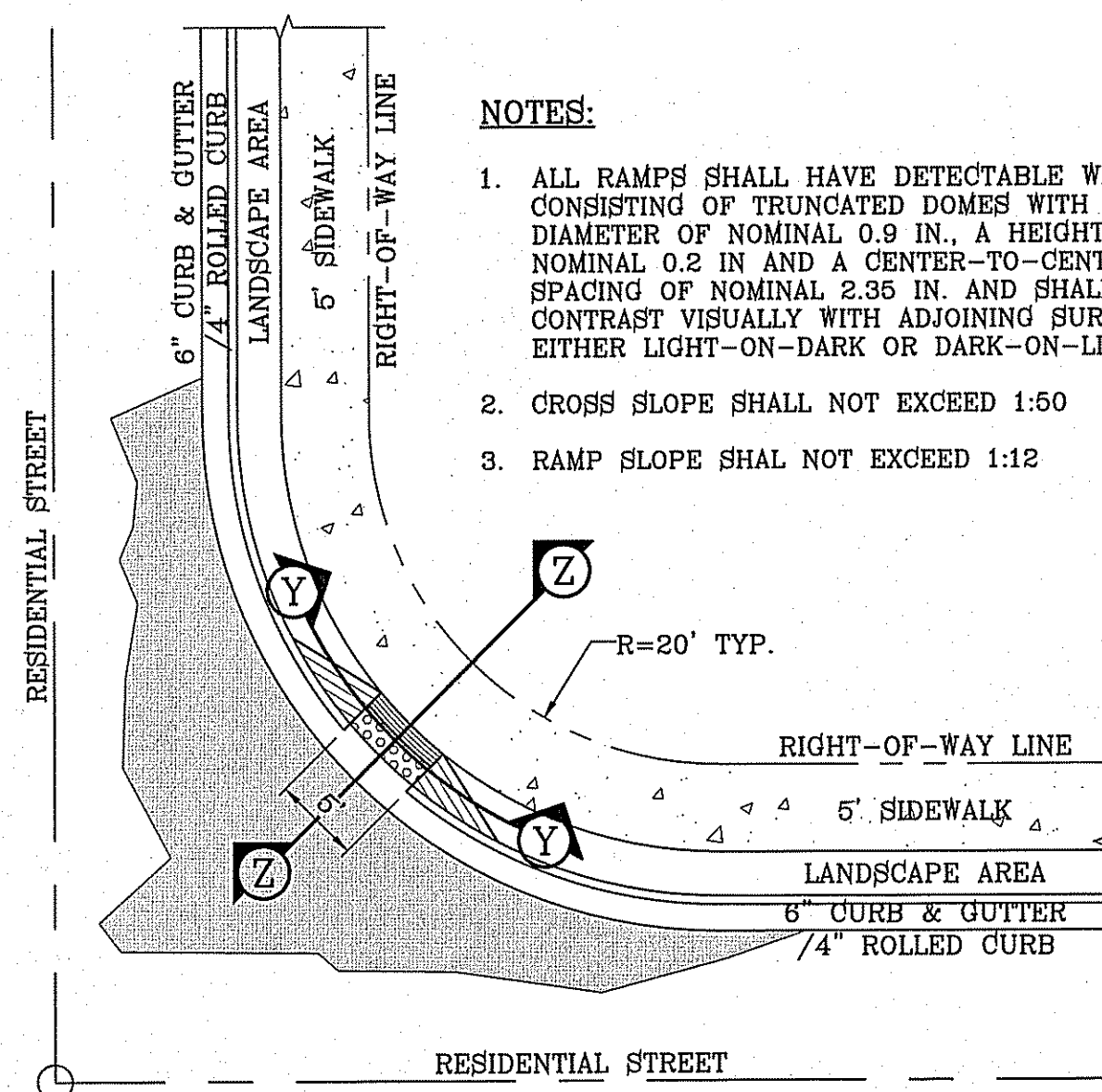
CONDE INC.  
ENGINEERING / PLANNING / SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286

TRAFFIC CONTROL AND ILLUMINATION PLAN  
SHEET TITLE

TRAFFIC CONTROL AND ILLUMINATION PLAN

FILE S:\\_Subdivisions\TIE 77\DWG\TRAFFIC CONTROL AND ILLUMINATION PLAN PLOTTED Monday, November 02, 2015 12:26:23 PM

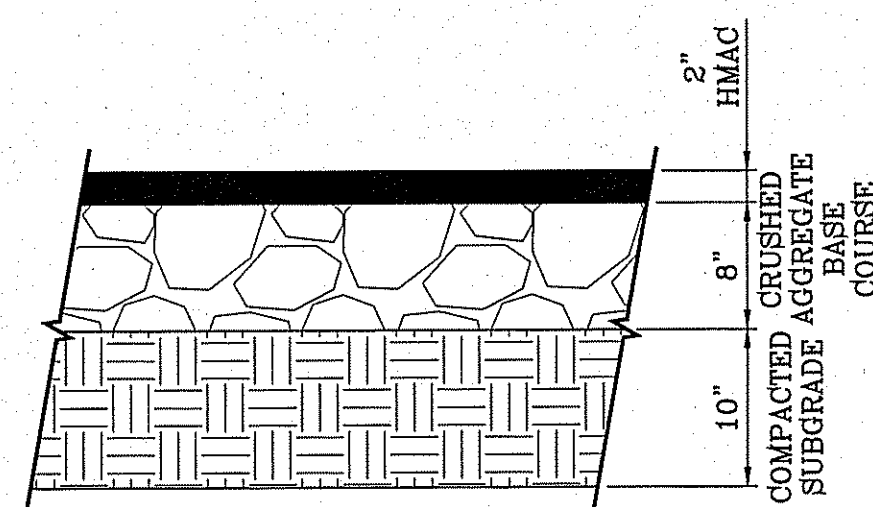




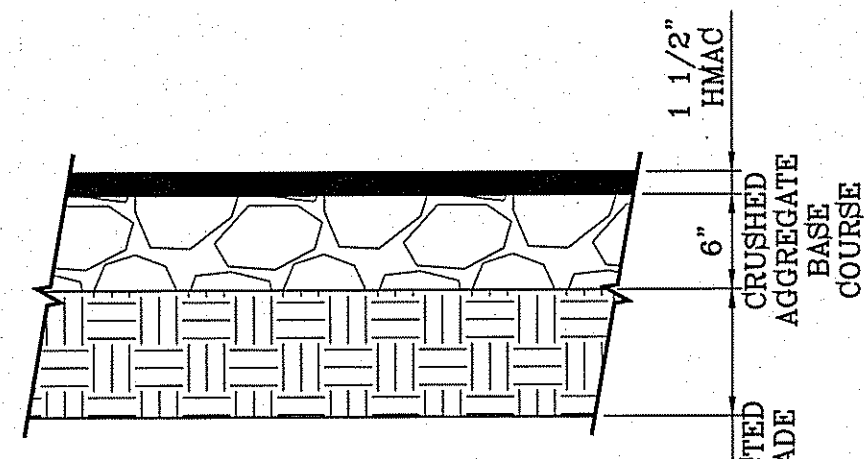
**NOTES:**

1. ALL RAMP SHALL HAVE DETECTABLE WARNINGS CONSISTING OF TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN., A HEIGHT OF NOMINAL 0.2 IN AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN. AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
2. CROSS SLOPE SHALL NOT EXCEED 1:50
3. RAMP SLOPE SHALL NOT EXCEED 1:12

**RAMP ON SIDEWALK AT CURB & GUTTER/ROLLED CURB**  
SCALE: 1"=10'



**PAVEMENT DETAIL 76' R.O.W. PAVEMENT SECTION**  
SCALE: 1"=1'



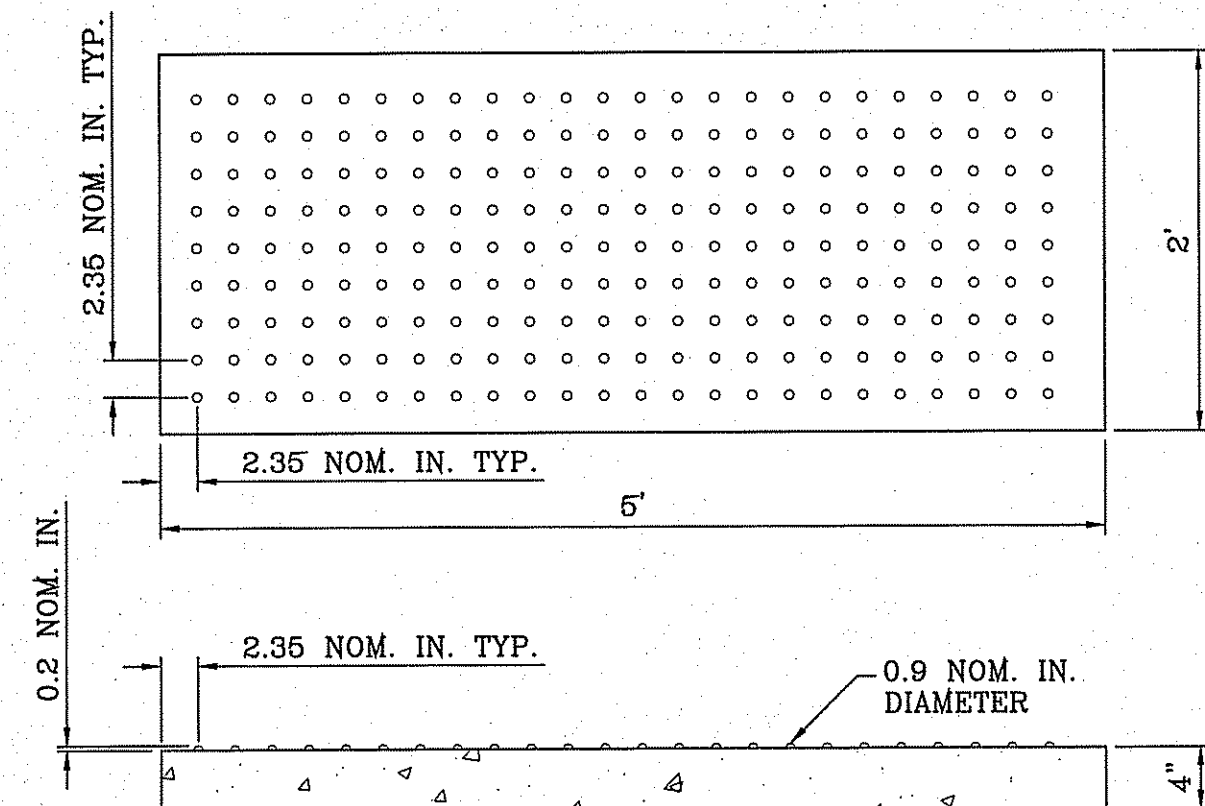
**PAVEMENT DETAIL 52' R.O.W. PAVEMENT SECTION**  
SCALE: 1"=1'

**PAVEMENT NOTES**

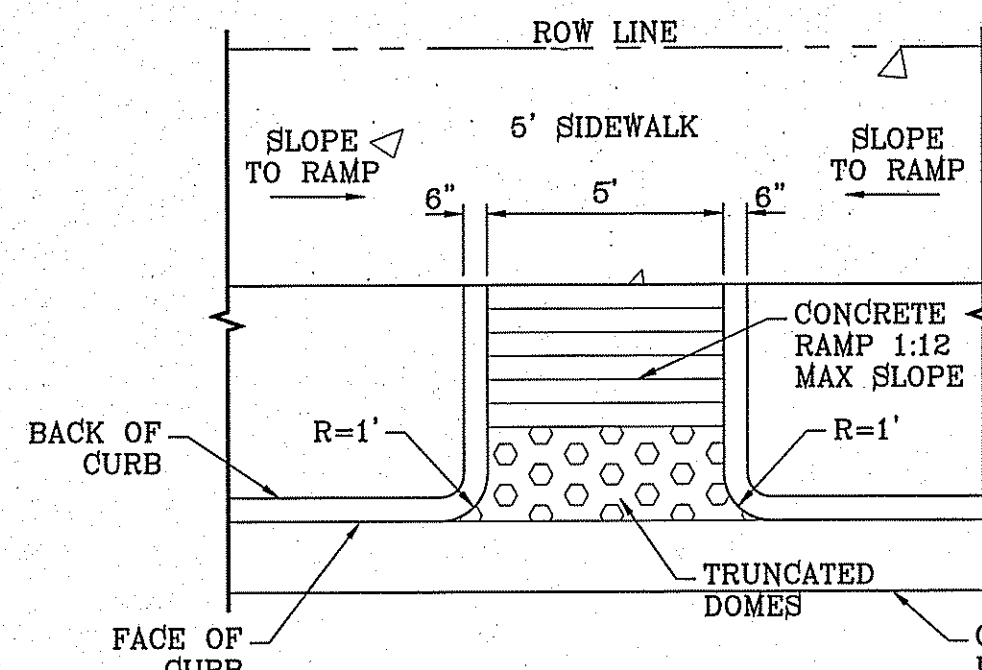
1. SUBGRADE TO BE COMPACTED TO 95% OF MAXIMUM DENSITY AS PER ASTM D1557.
2. BASE TO BE COMPACTED TO NOT LESS THAN 100% DENSITY IN ACCORDANCE WITH ASTM D1557, TYPE A, GRADE 1 OR 2.
3. BITUMINOUS MATERIAL SHALL CONFORM TO AC-10 OR AC-20, TYPE "C" IN ACCORDANCE WITH ASTM D3318.
4. PRIME COAT TO BE 0.25 GAL. PER SQUARE YARD (MINIMUM COVERAGE) MC-70.
5. COMPACTION TESTS WHERE REQUIRED BY THE CITY ENGINEER MUST BE PAID FOR BY THE DEVELOPER.
6. C.B.R. TESTS WILL BE REQUIRED AT 500 FOOT INTERVALS AFTER SUBGRADE IS PLACED AND/OR A MINIMUM OF TWO TESTS IF STREET IS LESS THAN 500 FEET.
7. STRICT VERTICAL CONTROL OF ALL CURB AND GUTTER ELEVATIONS WILL BE MAINTAINED. BLUE TOPPING WILL BE REQUIRED THROUGHOUT.
8. ALL PLANS MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF EL PASO SUBDIVISION DESIGN AND IMPROVEMENT STANDARDS.
9. HMA. BASE, SUB BASE WILL BE IN ACCORDANCE WITH THE LATEST CITY OF EL PASO SPECIFICATIONS.
10. MINIMUM PAVEMENT DESIGN DETAILS ARE SHOWN. ACTUAL PAVEMENT DESIGN WILL BE DETERMINED BY: C.B.R.

**TRENCHING**

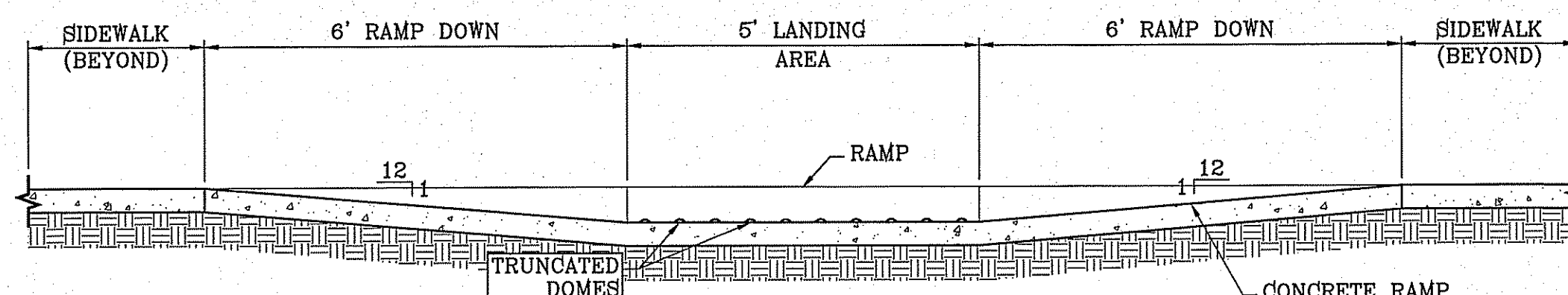
ALL TRENCHING SHALL BE DONE IN STRICT ACCORDANCE WITH OSHA-2226.



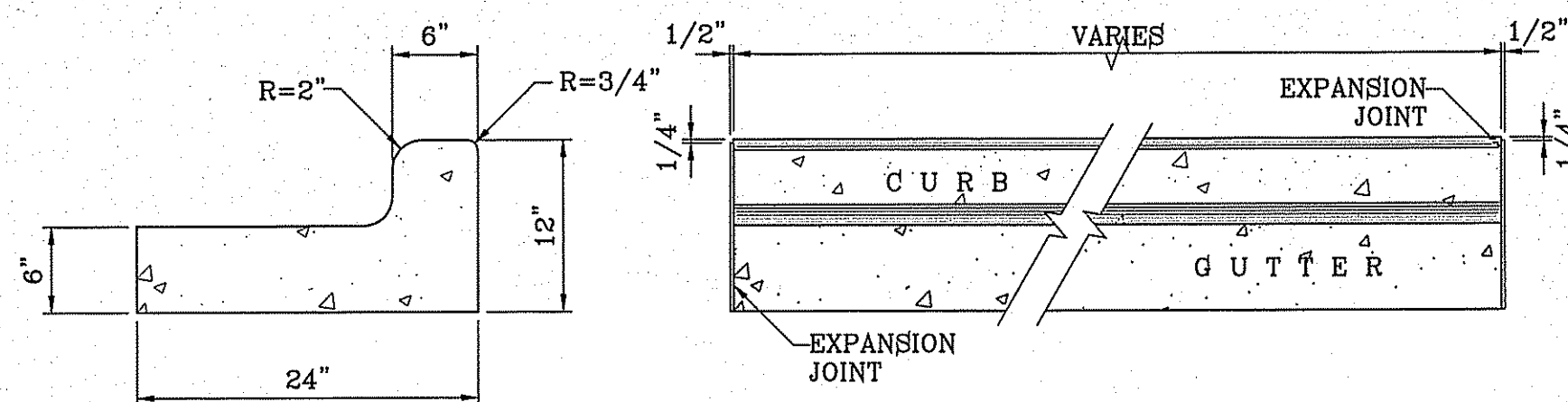
**TRUNCATED DOMES**  
SCALE: 1"=1'



**STRAIGHT RAMP**  
SCALE: 1"=4'



**RAMP ON 5' SIDEWALK SECTION Y**  
SCALE: 1"=2'



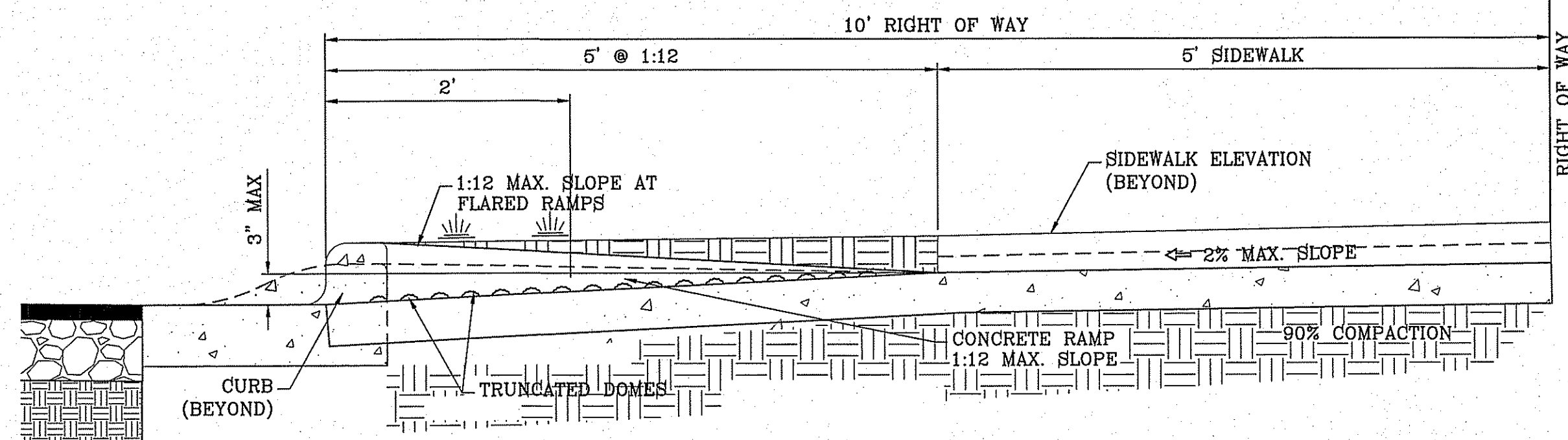
**END SECTION**

**PLAN VIEW**

**NOTES:**

1. NO EXPANSION JOINT WILL BE REQUIRED EXCEPT AT THE END OF CURB RETURNS. (POINT OF TANGENCY WITH STRAIGHT LINE).
2. CONTRACTION JOINTS (1/2" INCH MIN.) MUST BE SCORD EVERY 10 FEET IN CURB AND GUTTER.
3. ALL EXPANSION JOINTS WILL BE OF PREFORMED BITUMINOUS FIBER 1/2" INCH THICK.
4. CONCRETE: CLASS "A" 3000 PSI.
5. EXPANSION JOINTS REQUIRED AT 6' O.C. WHEN FORMING FOR CURBS.

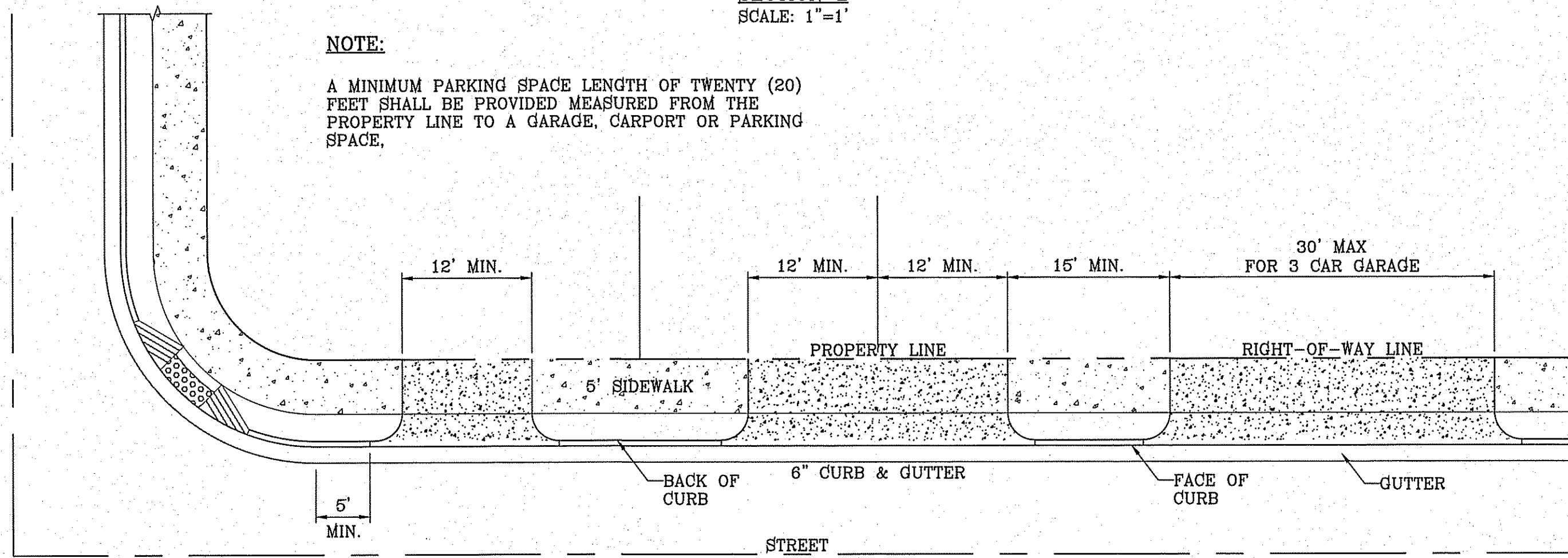
**CURB & GUTTER DETAIL**  
SCALE: 1"=1'



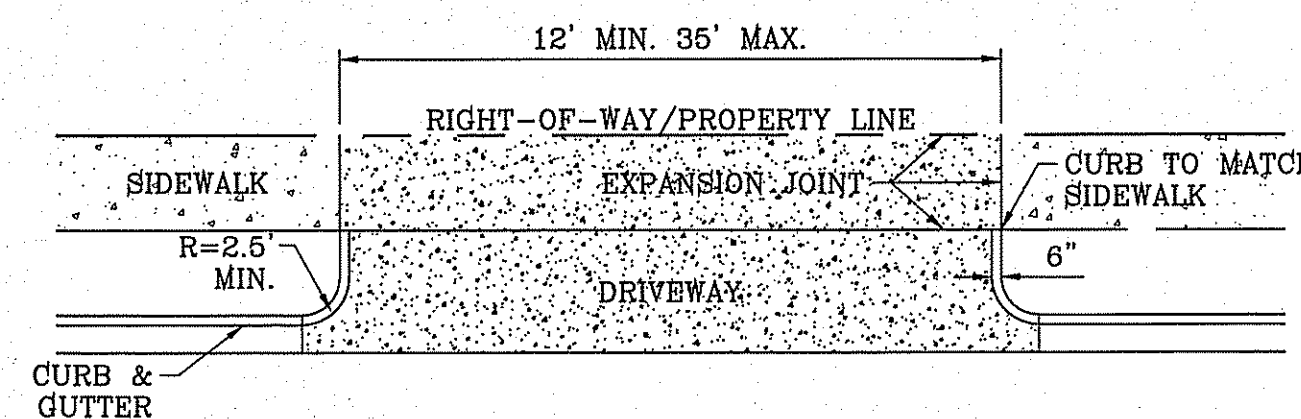
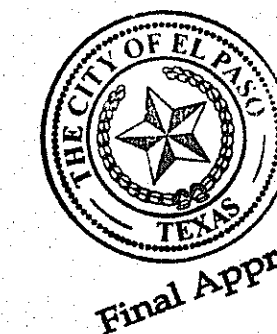
**TYPICAL WHEELCHAIR RAMP AT 4" ROLLED CURB/6" CURB & GUTTER SECTION Z**  
SCALE: 1"=1'

**NOTE:**

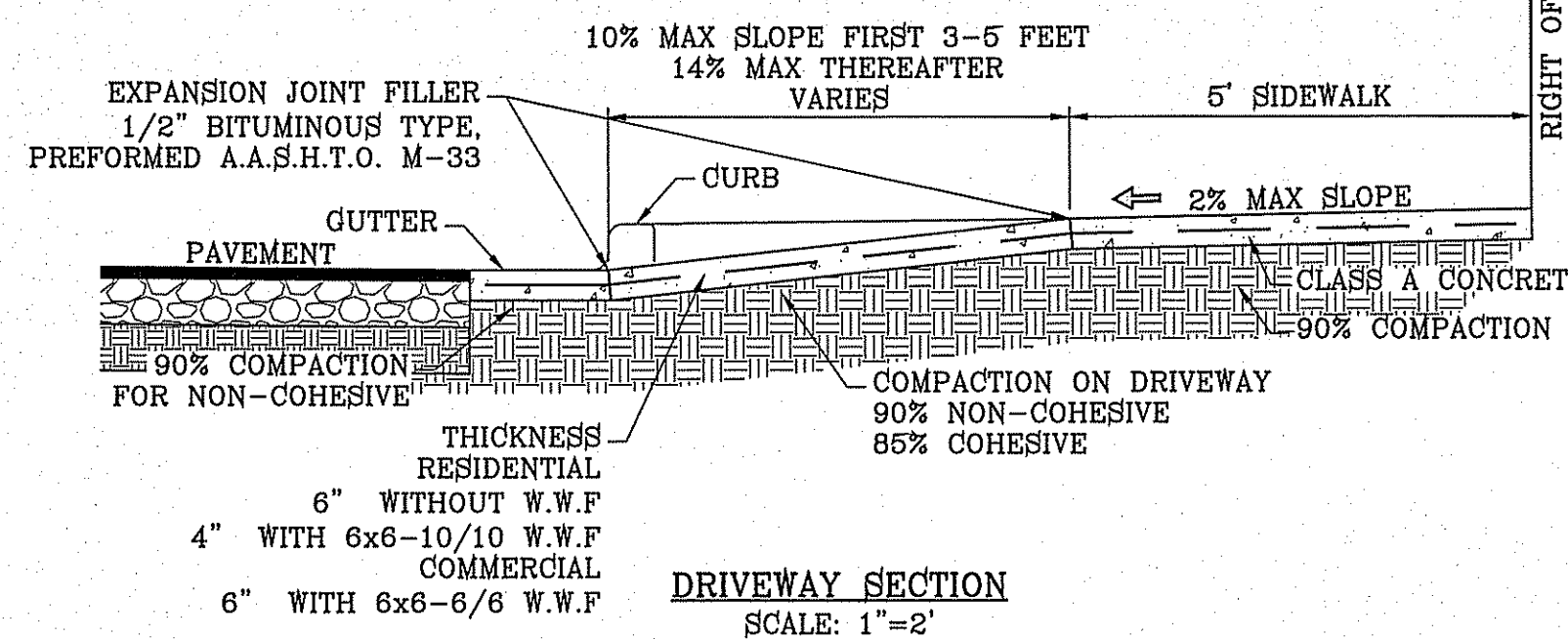
A MINIMUM PARKING SPACE LENGTH OF TWENTY (20) FEET SHALL BE PROVIDED MEASURED FROM THE PROPERTY LINE TO A GARAGE, CARPORT OR PARKING SPACE.



**TYPICAL RESIDENTIAL DRIVEWAY WITH CURB & GUTTER**  
SCALE: 1"=10'



**DRIVEWAY DETAIL**  
SCALE: 1"=10'



**DRIVEWAY SECTION**  
SCALE: 1"=2'

BENCHMARK	CITY MONUMENT AT THE CENTERLINE INTERSECTION OF CITY OF EL PASO, TEXAS ELEVATION 4023.16
DATE	.....NAVD83 DATUM
REVISIONS	
BY	

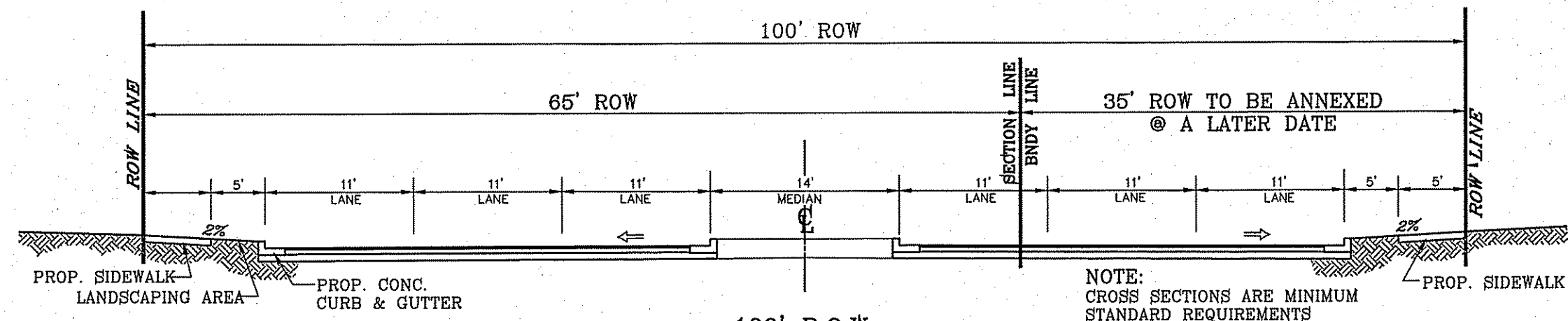
PROJECT NAME	TERRA DEL ESTE UNIT SEVENTY SEVEN
SECTION	SECTION 16, BLOCK 78, PORTION OF SECTION 34, PACIFIC RAILWAY SURVEY, TEXAS AND EL PASO COUNTY, TEXAS
CONTAINING	54.017± ACRES

SCALE	HORIZ: AS NOTED
VERT:	---
DATE	FEB. 2014
DESIGN BY:	YC
INITIATED BY:	DN
CHECKED BY:	YC
JOB NO.:	414-43

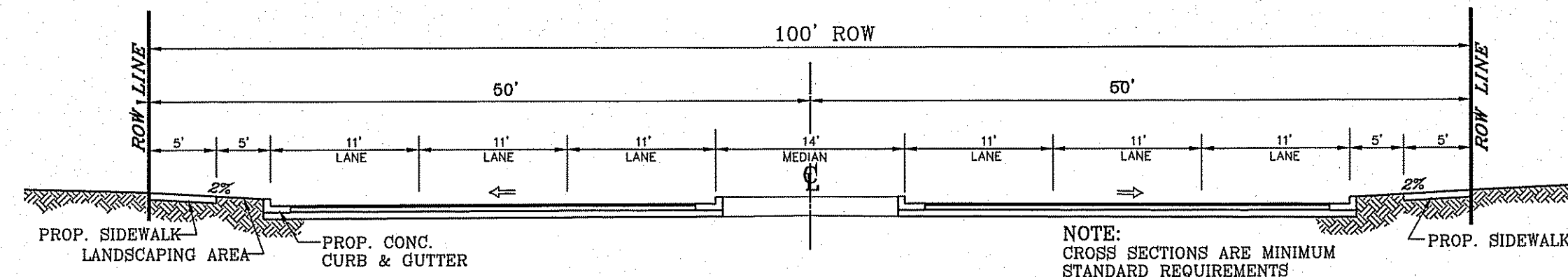
ENGINEER'S SEAL	CONDE INC.
ENGINEERING / PLANNING / SURVEYING / GPS	6080 SURETY DR. STE 100 EL PASO, TEXAS 79905
PHONE:	(915) 592-0283
FAX:	(915) 592-0286

SHEET TITLE	STANDARD DETAILS
SHT	31 OF 40

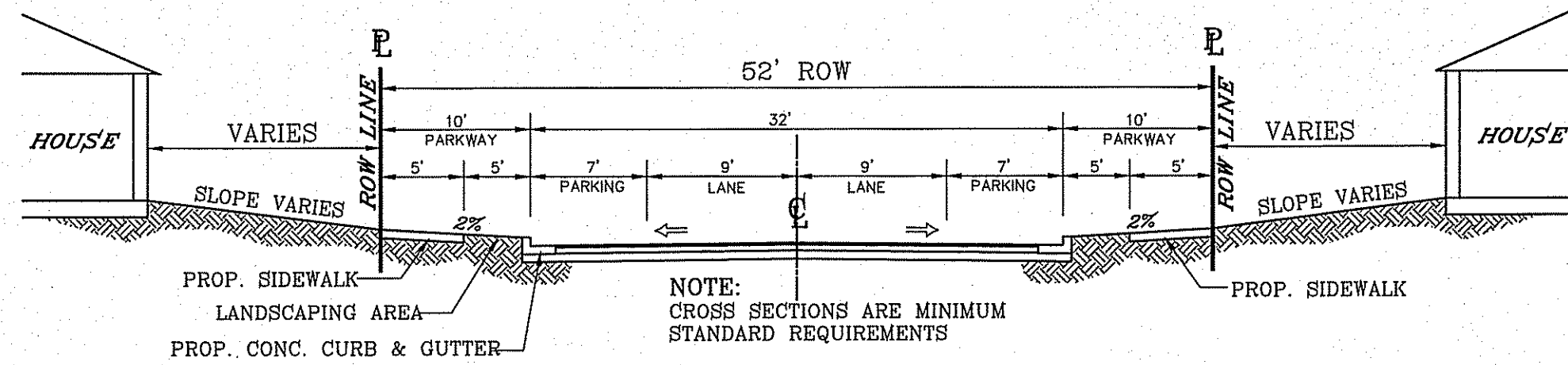




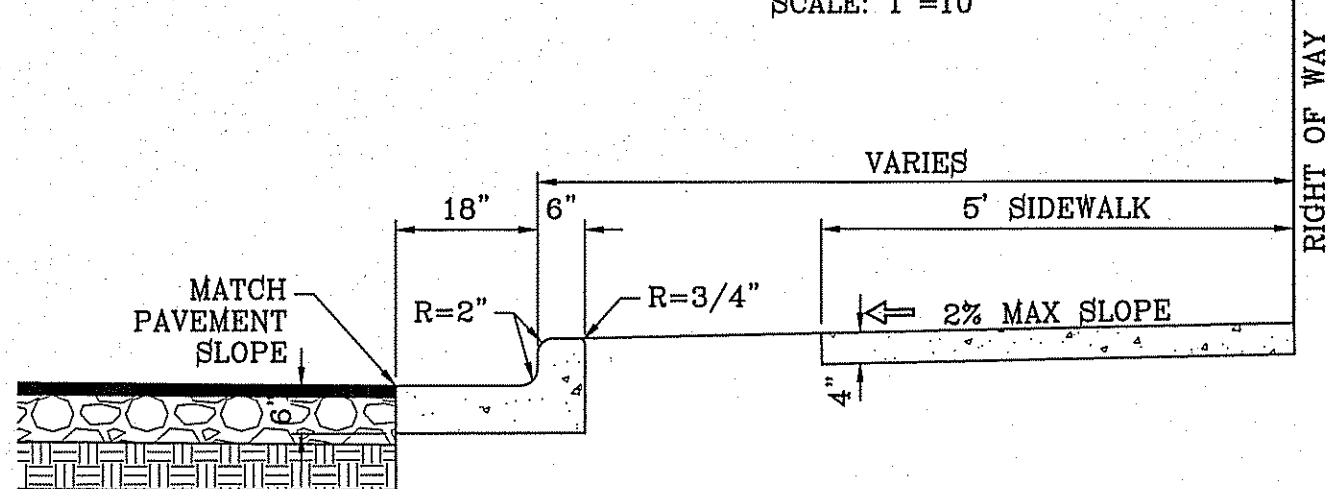
100' R.O.W.  
MAJOR ARTERIAL STREET  
SCALE: 1"=10'



100' R.O.W.  
MAJOR ARTERIAL STREET  
SCALE: 1"=10'



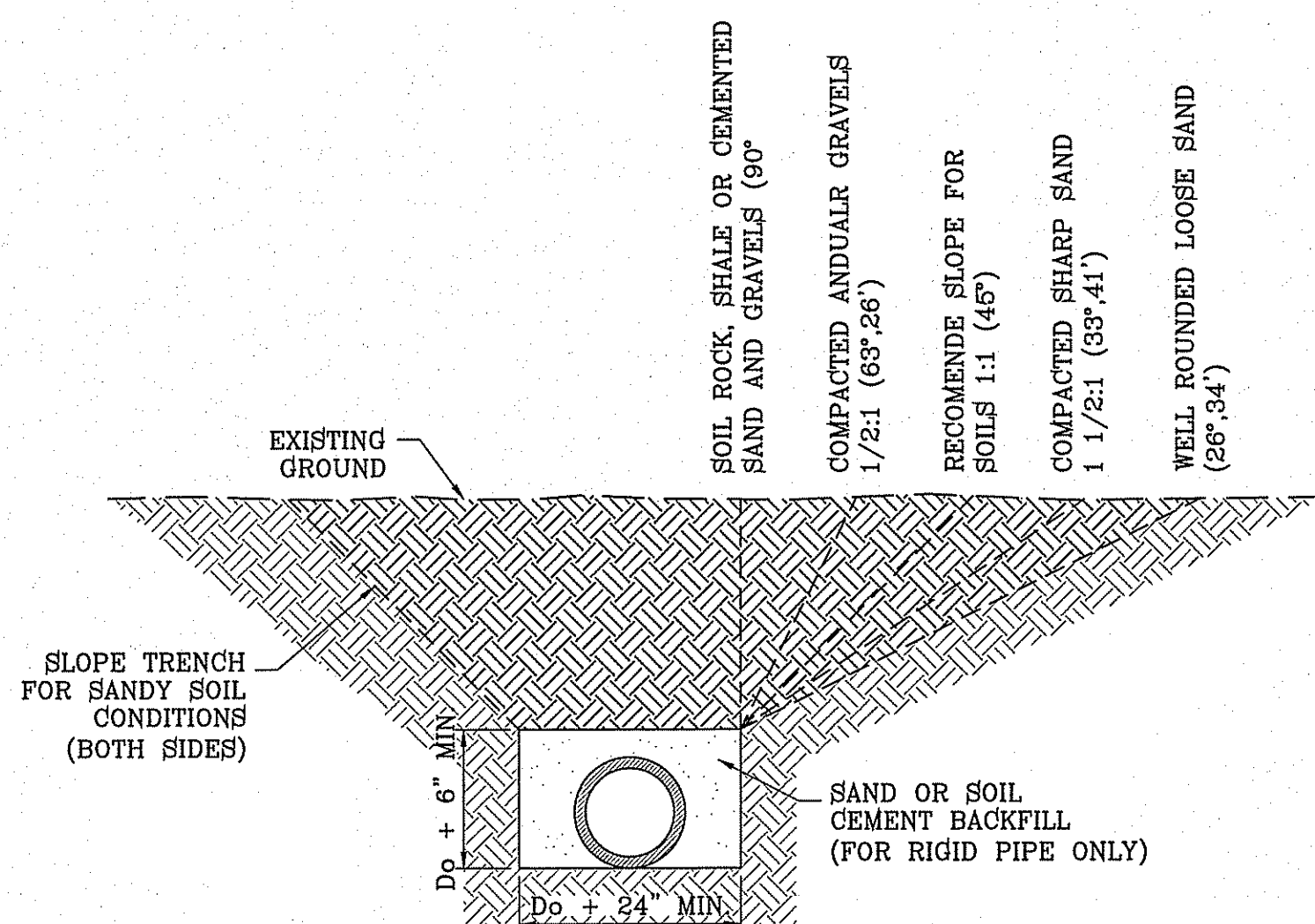
52' R.O.W.  
RESIDENTIAL SUBCOLLECTOR STREET  
SCALE: 1"=10'



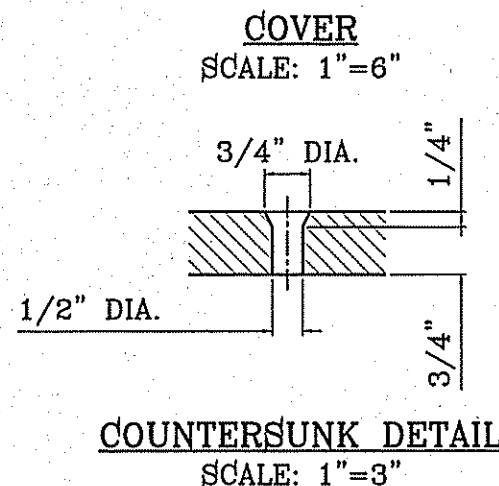
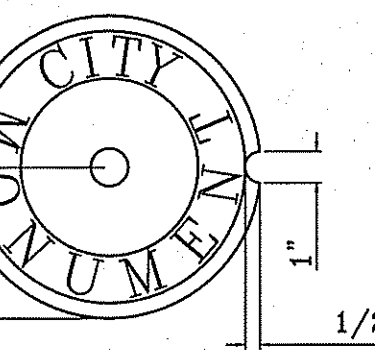
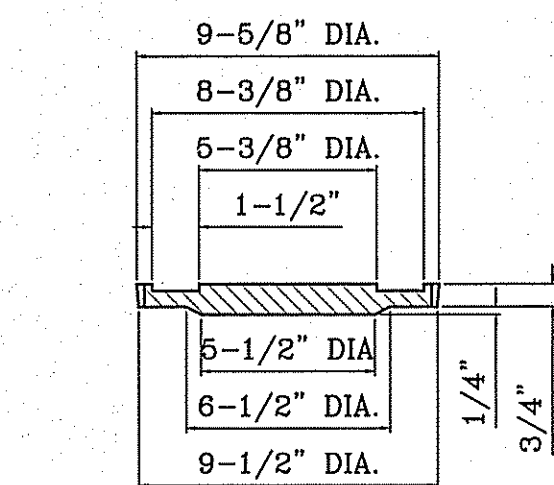
NOTES:

1. CONCRETE SHALL BE 3000 P.S.I. MINIMUM.
2. DUMMY JOINTS REQUIRED AT 10' O.C. FOR CURB/GUTTER AND 5' O.C. FOR SIDEWALK.
3. EXPANSION MATERIAL REQUIRED AT CURB RETURNS WITH 1/2" PREMOLDED ASPHALT IMPREGNATED EXPANSION MATERIAL OR EQUAL.
4. EXPANSION JOINTS REQUIRED AT 50' O.C. WHEN FORMING FOR CURBS.
5. WHENEVER SIDEWALK ABUTS ROCK OR MASONRY STRUCTURES SUCH AS CURBS OR BUILDINGS, EXPANSION JOINT FILLER SHALL BE USED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

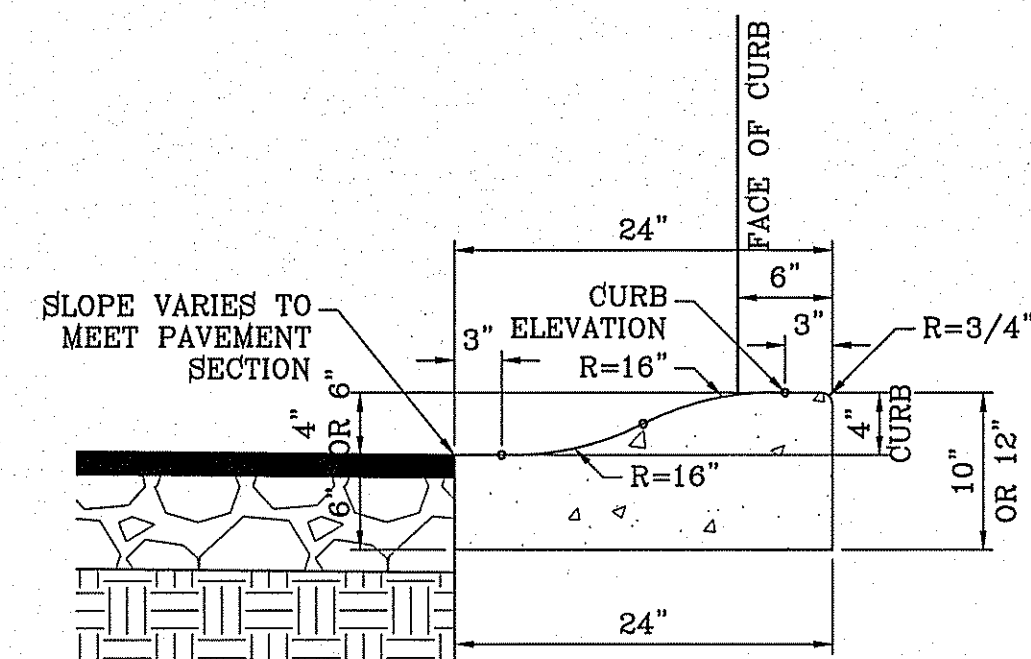
CURB & GUTTER AND  
SIDEWALK DETAIL  
SCALE: 1"=2'



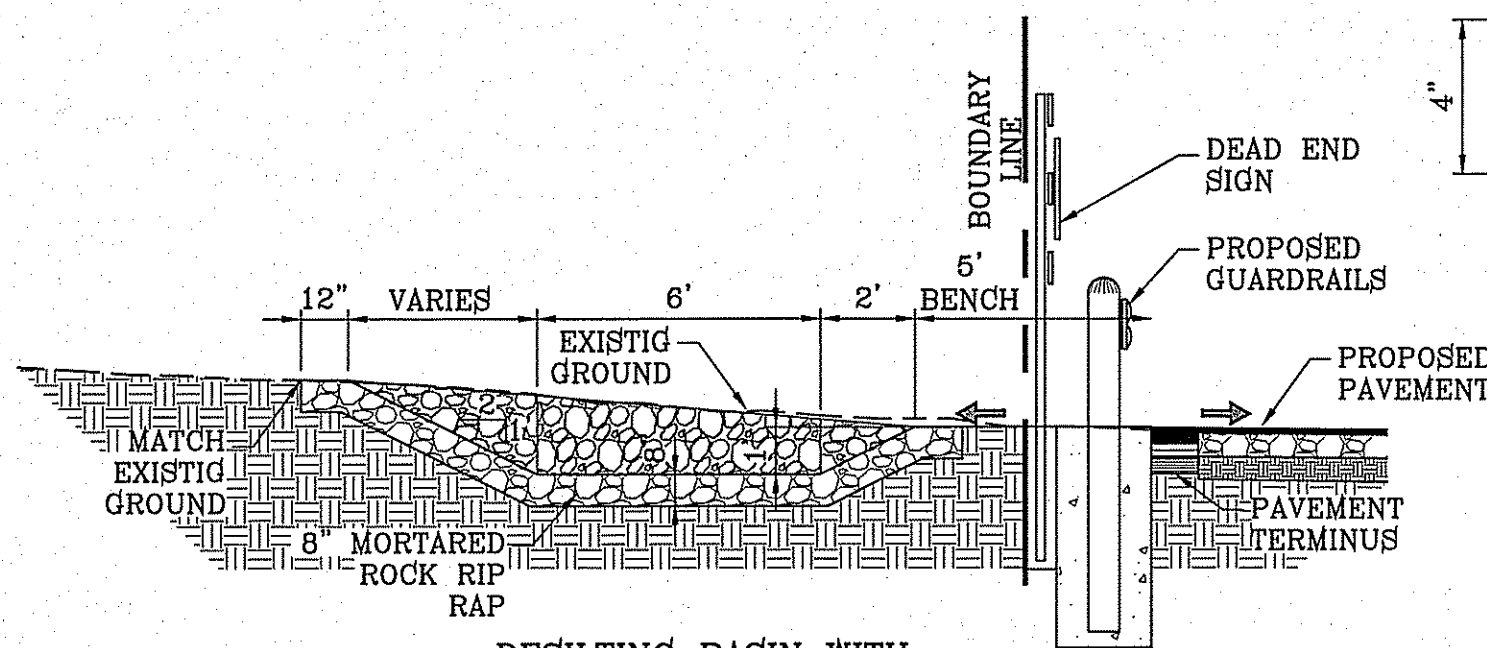
TYPICAL TRENCH SECTION  
SCALE: 1"=3'



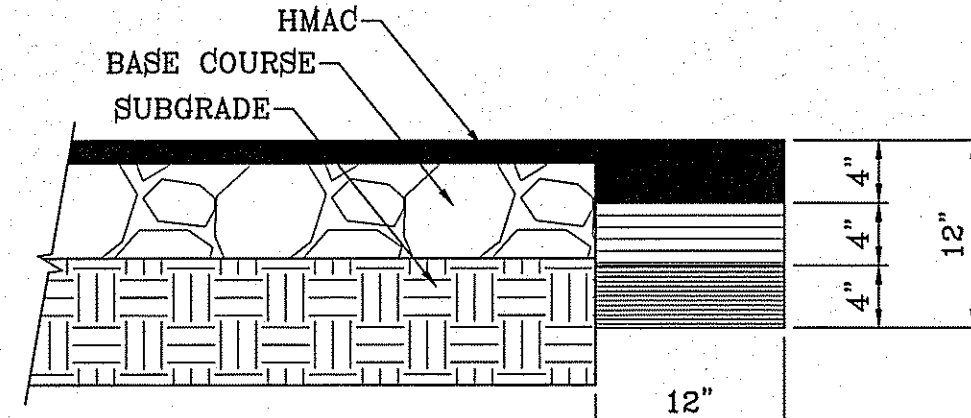
COUNTERSUNK DETAIL  
SCALE: 1"=3"



ROLLED CURB DETAIL  
SCALE: 1"=1'



DESILTING BASIN WITH  
GUARD RAIL DETAIL  
SCALE: 1"=4'



PAVEMENT TERMINUS  
SCALE: 1"=1'

NOTE:

THICKENED EDGE SHALL BE CONSTRUCTED IN COURSED NOT OVER 4" IN THICKNESS, EACH COURSE THOROUGHLY COMPACTED BEFORE PLACING NEXT COURSE, FINAL COURSE. FINAL COURSE TO BE PLACED MONOLITHIC WITH PAVEMENT.

SIZE AND CONSTRUCTION:

THE STANDARD CITY MONUMENT SHALL BE POURED-IN-PLACE CONCRETE CONE. EIGHT (8) INCHES MINIMUM DIAMETER AT THE TOP, EIGHTEEN (18) INCHES MINIMUM DIAMETER AT THE BOTTOM, THIRTY-SIX (36) INCHES MINIMUM IN DEPTH WITH THE MONUMENT CAP IN PLACE ON TOP.

THE MONUMENT SHALL BE COVERED WITH A CAST IRON BOX AND COVER.

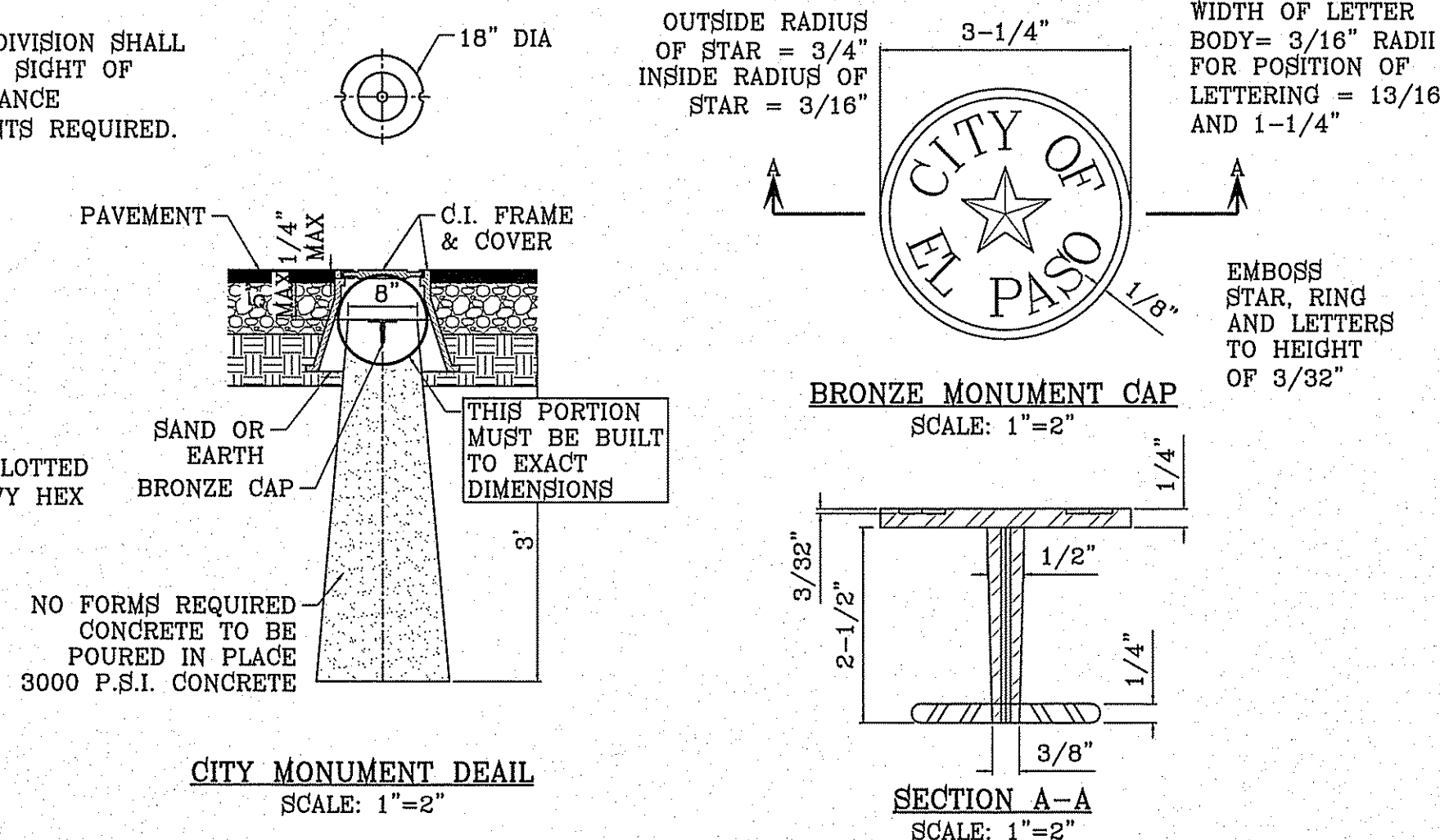
NUMBER AND LOCATIONS:

THE MONUMENTS SHALL BE INSTALLED WHERE SHOWN ON THE SUBDIVISION PLAT AS APPROVED BY THE CITY ENGINEER.

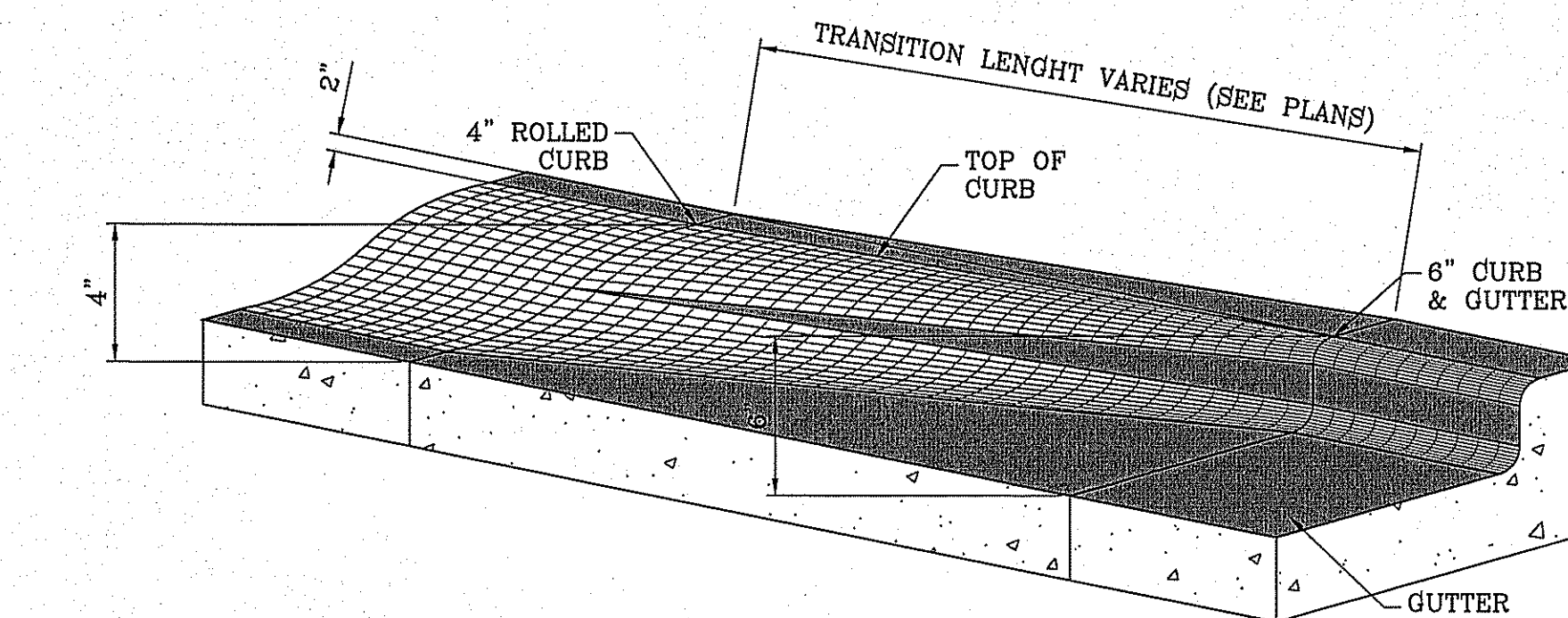
THE SIZE, TOPOGRAPHY AND LAYOUT OF THE SUBDIVISION SHALL GOVERN MONUMENT MUST BE WITHIN THE LINE OF SIGHT OF ANY OTHER MONUMENT (2000 FEET MAXIMUM DISTANCE BETWEEN MONUMENTS). THE NUMBER OF MONUMENTS REQUIRED.

NO FEWER THAN TWO MONUMENTS SHALL BE PLACED IN A ONE STREET SUB-DIVISION.

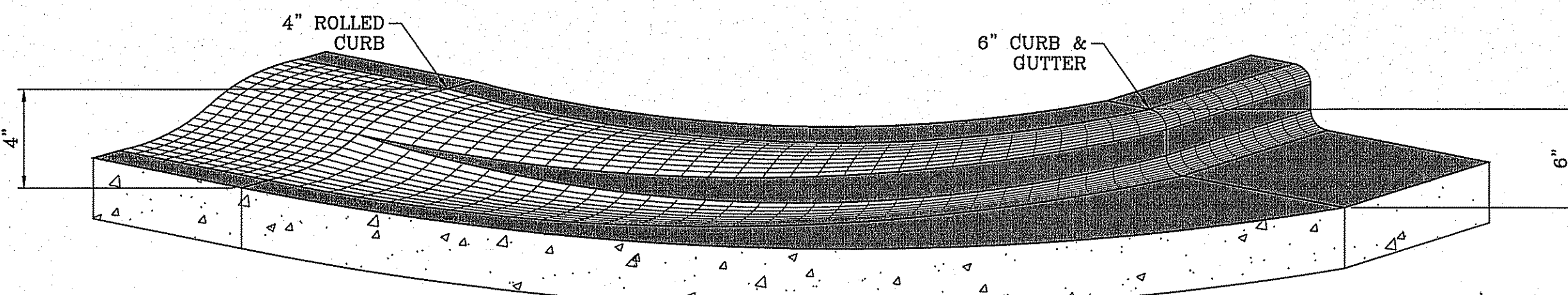
AT LEAST ONE (1) MONUMENT SHALL BE PLACED ON EACH HORIZONTAL CURVE. TWO SHALL BE PLACED IF THE POINT OF INTERSECTION (P.I.) OF THE TANGENTS LEADING INTO THE CURVE FALLS OUTSIDE OF CITY RIGHT-OF-WAY. MONUMENTS SHALL BE INSTALLED SO THAT ALL FRONT PROPERTY CORNERS OF ALL LOTS IN THE SUBDIVISION ARE WITHIN LINE OF SIGHT OF A MONUMENT, OR WITHIN SIGHT OF LINE BETWEEN TWO ADJACENT MONUMENTS.



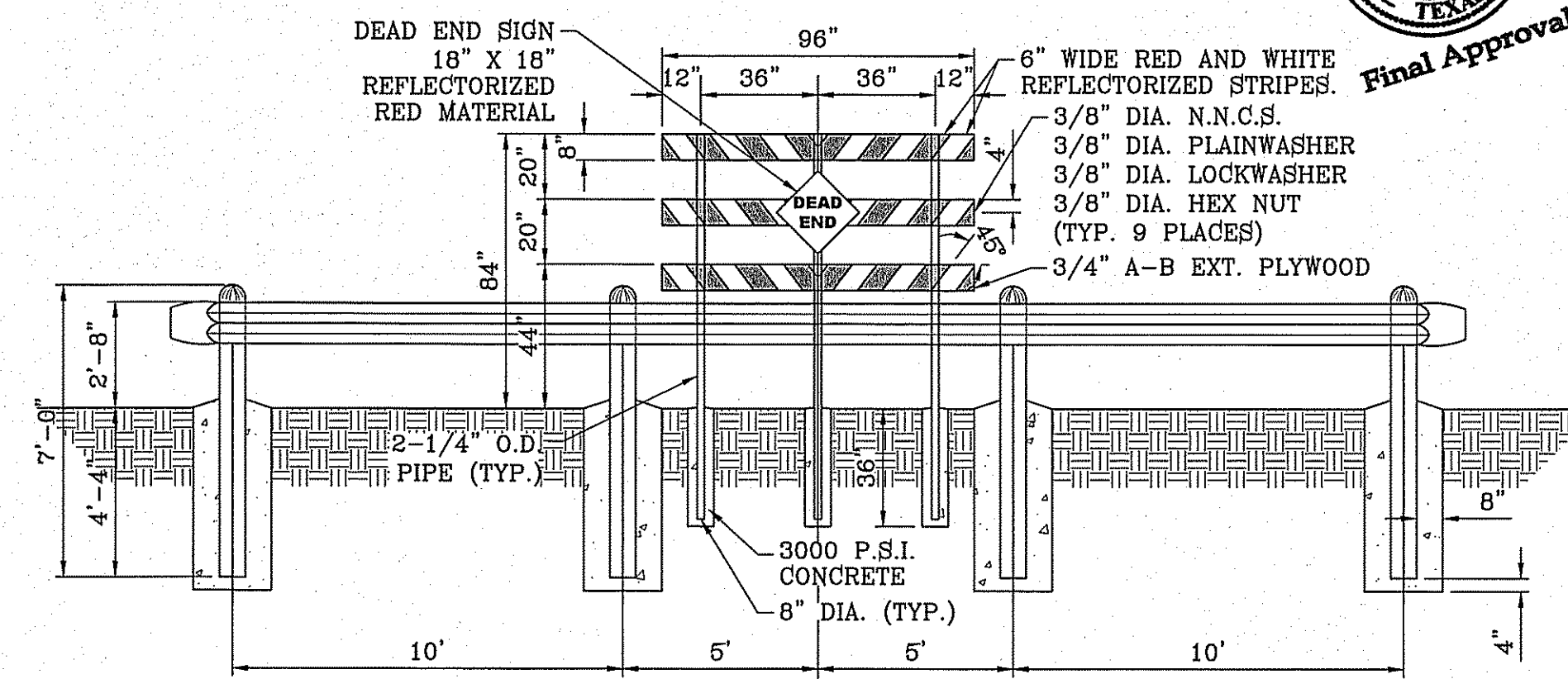
CITY MONUMENT DETAIL  
SCALE: 1"=2"



ROLLED CURB TO CURB &  
GUTTER TRANSITION  
SCALE: 1"=1'



CURB TRANSITION AT RETURNS  
SCALE: 1"=1'



GUARD RAIL DETAIL  
SCALE: 1"=4'

NOTE:  
DEAD END SIGN TO BE USED WITH GUARDRAILS.  
RED AND WHITE PORTIONS TO BE REFLECTIVE SHEETING.  
DEAD END SIGN MUST COMPLY WITH THE CITY OF EL PASO SUBDIVISION DESIGN STANDARDS.

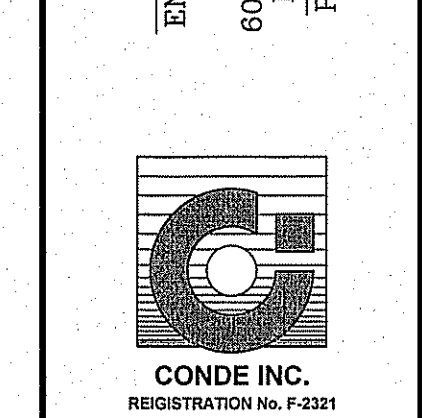
BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF	
WILEY PRICE DR. AND FRIESIAN TRAIL, DISTRICT	
ELEVATION 4023.16	
DATE	
REVISIONS	
BY	

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
BEING PORTION OF SECTION 16, BLOCK 78, PORTION OF SEVEN (7) BLOCKS, BEING PART OF SURVEY OF TEXAS AND PACIFIC RAILWAY COMPANY, EL PASO COUNTY, TEXAS CONTAINING: 54.017± ACRES

SCALE	
HORIZ: AS NOTED	
VERT: ---	
DATE: FEB. 2014	
DESIGN BY: YC	
INITIATED BY: DN	
CHECKED BY: YC	
JOB NO.: 414-43	

ENGINEER'S SEAL  
ENGINEER'S SEAL NOT REQUIRED.  
THIS SHEET IS PRODUCED FROM CITY SUBDIVISION DESIGN STANDARDS

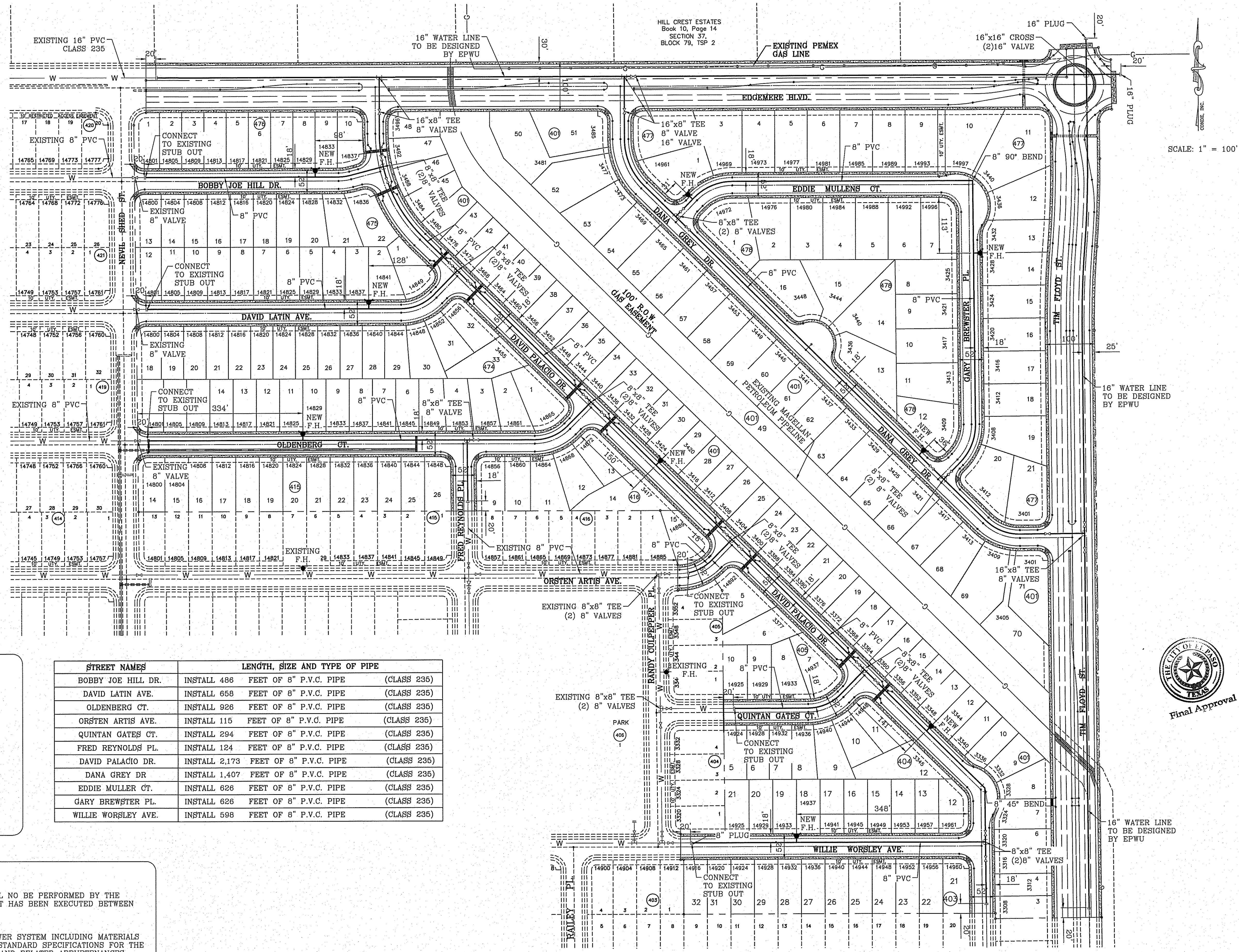
CONDE INC.  
ENGINEERING / PLANNING SURVEYING / GPS  
6090 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0263  
FAX: (915) 592-0286



FILE S:\Subdivisions\TDE 77-DWG\STANDARD DETAILS PLOTTED Monday, October 12, 2015 2:25:51 PM



FILE S:\\_Subdivisions\77-DUG-WATER DISTRIBUTION PLOTTED Monday, November 02, 2015 1:34:27 PM



SCALE: 1" = 100'

**LEGEND**

— W —	PROPOSED WATER LINE
⌋	PROPOSED 90° BEND
⊥	PROPOSED 8" TEE
⊕	PROPOSED 8" CROSS
⊙	PROPOSED FIRE HYDRANT
⊕	PROPOSED WATER VALVE
— W —	EXISTING WATER LINE
⌋	EXISTING 90° BEND
⊥	EXISTING 8" TEE
⊕	EXISTING 8" CROSS
⊙	EXISTING FIRE HYDRANT
⊕	EXISTING WATER VALVE

STREET NAMES	LENGTH, SIZE AND TYPE OF PIPE
BOBBY JOE HILL DR.	INSTALL 486 FEET OF 8" P.V.C. PIPE (CLASS 235)
DAVID LATIN AVE.	INSTALL 658 FEET OF 8" P.V.C. PIPE (CLASS 235)
OLDENBERG CT.	INSTALL 926 FEET OF 8" P.V.C. PIPE (CLASS 235)
ORSTEN ARTIS AVE.	INSTALL 115 FEET OF 8" P.V.C. PIPE (CLASS 235)
QUINTAN GATES CT.	INSTALL 294 FEET OF 8" P.V.C. PIPE (CLASS 235)
FRED REYNOLDS PL.	INSTALL 124 FEET OF 8" P.V.C. PIPE (CLASS 235)
DAVID PALACIO DR.	INSTALL 2,173 FEET OF 8" P.V.C. PIPE (CLASS 235)
DANA GREY DR.	INSTALL 1,407 FEET OF 8" P.V.C. PIPE (CLASS 235)
EDDIE MULLER CT.	INSTALL 626 FEET OF 8" P.V.C. PIPE (CLASS 235)
GARY BREWSTER PL.	INSTALL 626 FEET OF 8" P.V.C. PIPE (CLASS 235)
WILLIE WORSLEY AVE.	INSTALL 598 FEET OF 8" P.V.C. PIPE (CLASS 235)

**EPWU-PSB NOTES:**

- PUBLIC WATER AND SEWER UTILITY WORK SHALL NO BE PERFORMED BY THE CONTRACTOR UNTIL A DEVELOPMENT AGREEMENT HAS BEEN EXECUTED BETWEEN THE OWNER AND EPWU-PSB.
- CONSTRUCTION OF THE PUBLIC WATER AND SEWER SYSTEM INCLUDING MATERIALS AND TESTING SHALL CONFORM TO EPWU-PSB. STANDARD SPECIFICATIONS FOR THE INSTALLATION OF WATER MAINS, SEWER MAINS, AND RELATED APPURTENANCES.
- DURING THE SITE IMPROVEMENT WORK, THE CONTRACTOR SHALL SAFEGUARD ALL THE EXISTING SEWER MAINS AND APPURTENANT STRUCTURES AND SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRISHAN TRAIL DR. ELEVATION 4023.16

DATE: 5-28-2015

REVISIONS

BY: adjusted pemex pipeline

R.O.

**PROJECT NAME**

**TERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 18, BLOCK 76, PORTION OF SECTION 37, BLOCK 76, TOWNSHIP 2 TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING: 54.017± ACRES

**SCALE**

HORIZ: 1" = 100'

VERT: ---

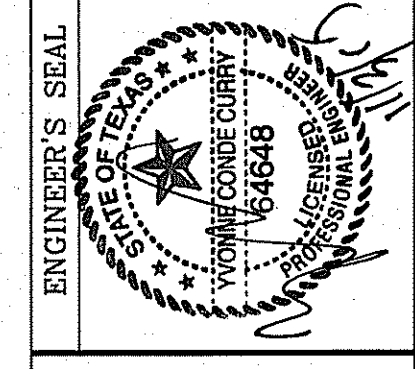
DATE: FEB. 2014

DESIGN BY: YC

INITIATED BY: YC

CHECKED BY: YC

JOB NO.: 414-43



**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. STE 100 EL PASO, TEXAS 79905

PHONE: (915) 592-0263 FAX: (915) 692-0286

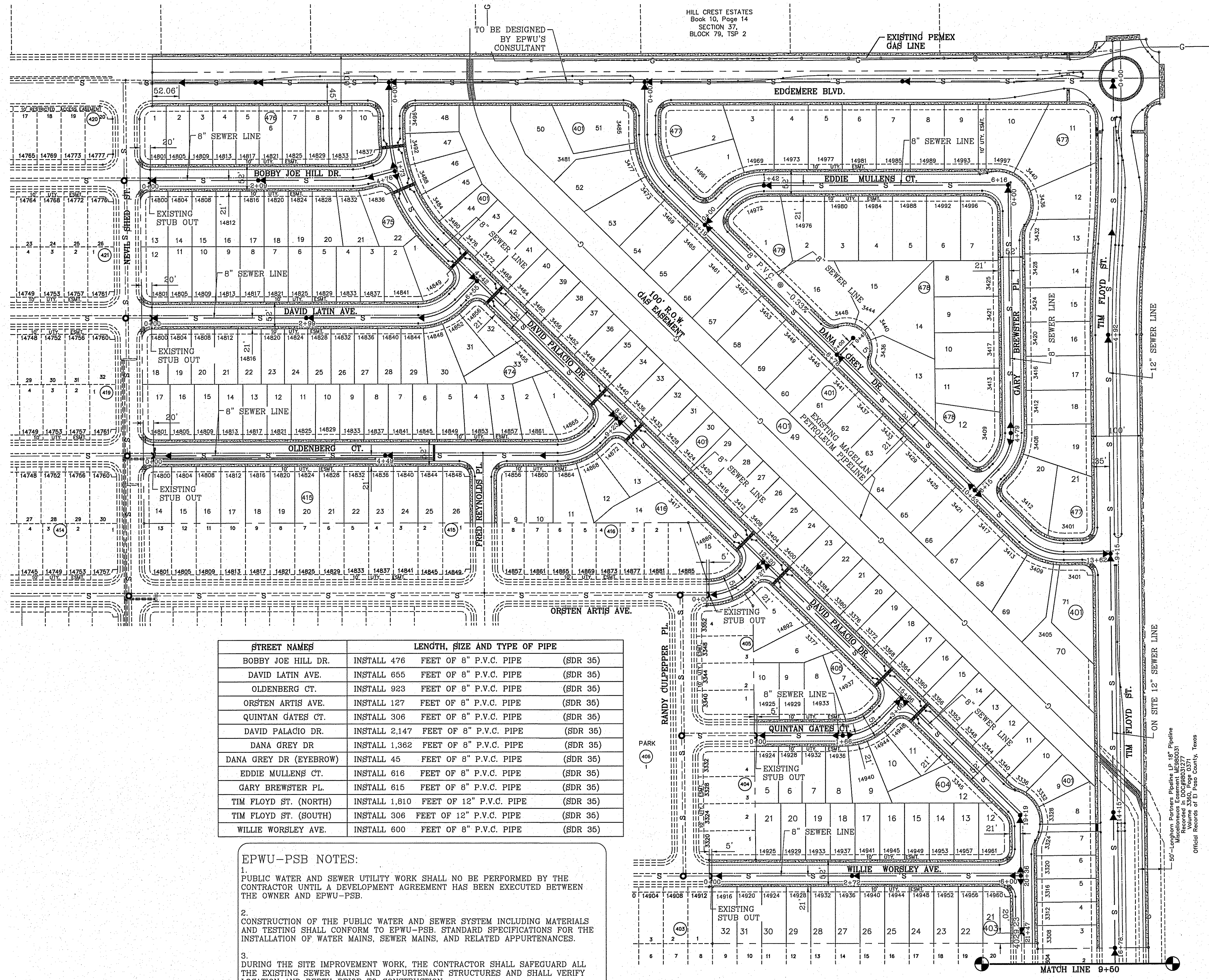


**SHEET TITLE**

**WATER DISTRIBUTION PLAN**

**SHT 33 OF 40**



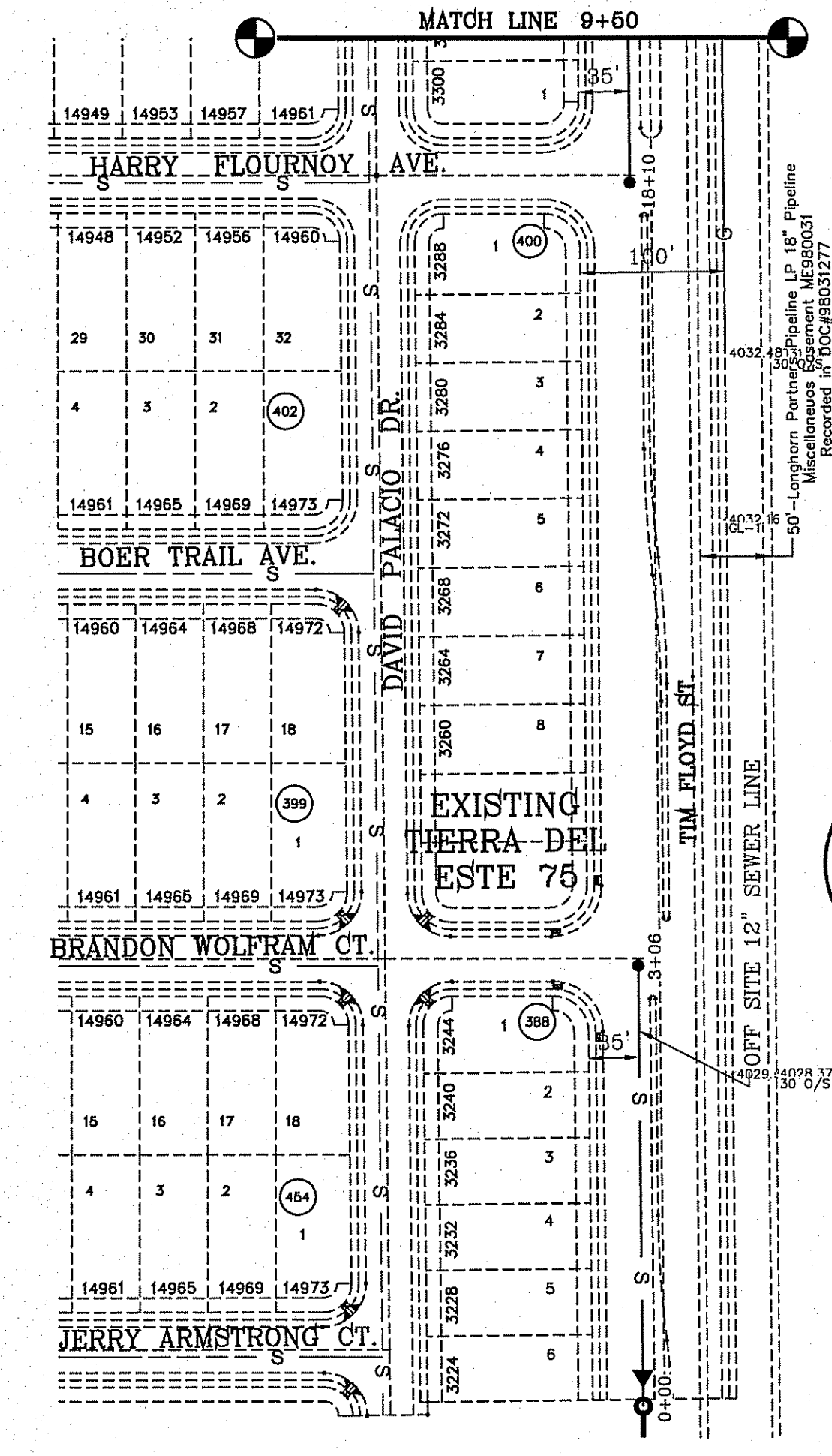


STREET NAMES	LENGTH, SIZE AND TYPE OF PIPE
BOBBY JOE HILL DR.	INSTALL 476 FEET OF 8" P.V.C. PIPE (SDR 35)
DAVID LATIN AVE.	INSTALL 655 FEET OF 8" P.V.C. PIPE (SDR 35)
OLDENBERG CT.	INSTALL 923 FEET OF 8" P.V.C. PIPE (SDR 35)
ORSTEN ARTIS AVE.	INSTALL 127 FEET OF 8" P.V.C. PIPE (SDR 35)
QUINTAN GATES CT.	INSTALL 306 FEET OF 8" P.V.C. PIPE (SDR 35)
DAVID PALACIO DR.	INSTALL 2,147 FEET OF 8" P.V.C. PIPE (SDR 35)
DANA GREY DR	INSTALL 1,362 FEET OF 8" P.V.C. PIPE (SDR 35)
DANA GREY DR (EYEBROW)	INSTALL 45 FEET OF 8" P.V.C. PIPE (SDR 35)
EDDIE MULLENS CT.	INSTALL 616 FEET OF 8" P.V.C. PIPE (SDR 35)
GARY BREWSTER PL.	INSTALL 615 FEET OF 8" P.V.C. PIPE (SDR 35)
TIM FLOYD ST. (NORTH)	INSTALL 1,810 FEET OF 12" P.V.C. PIPE (SDR 35)
TIM FLOYD ST. (SOUTH)	INSTALL 306 FEET OF 12" P.V.C. PIPE (SDR 35)
WILLIE WORSLEY AVE.	INSTALL 600 FEET OF 8" P.V.C. PIPE (SDR 35)

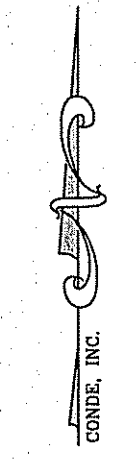
**EPWU-PSB NOTES:**

- PUBLIC WATER AND SEWER UTILITY WORK SHALL NO BE PERFORMED BY THE CONTRACTOR UNTIL A DEVELOPMENT AGREEMENT HAS BEEN EXECUTED BETWEEN THE OWNER AND EPWU-PSB.
- CONSTRUCTION OF THE PUBLIC WATER AND SEWER SYSTEM INCLUDING MATERIALS AND TESTING SHALL CONFORM TO EPWU-PSB STANDARD SPECIFICATIONS FOR THE INSTALLATION OF WATER MAINS, SEWER MAINS, AND RELATED APPURTENANCES.
- DURING THE SITE IMPROVEMENT WORK, THE CONTRACTOR SHALL SAFEGUARD ALL THE EXISTING SEWER MAINS AND APPURTENANT STRUCTURES AND SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION

50'-Longhorn Partners Pipeline LP 18" Pipeline  
 Registered as 00088031277  
 Recorded in Public Records of El Paso County, Texas



SCALE: 1" = 100'



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0263  
 FAX: (915) 592-0266

**SEWER DISTRIBUTION PLAN**

SHT 34 OF 40

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

PROJECT NAME: TIERRA DEL ESTE UNIT SEVENTY SEVEN  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, TEXAS AND EL PASO COUNTY, TEXAS  
 CONTAINING: 54.017± ACRES

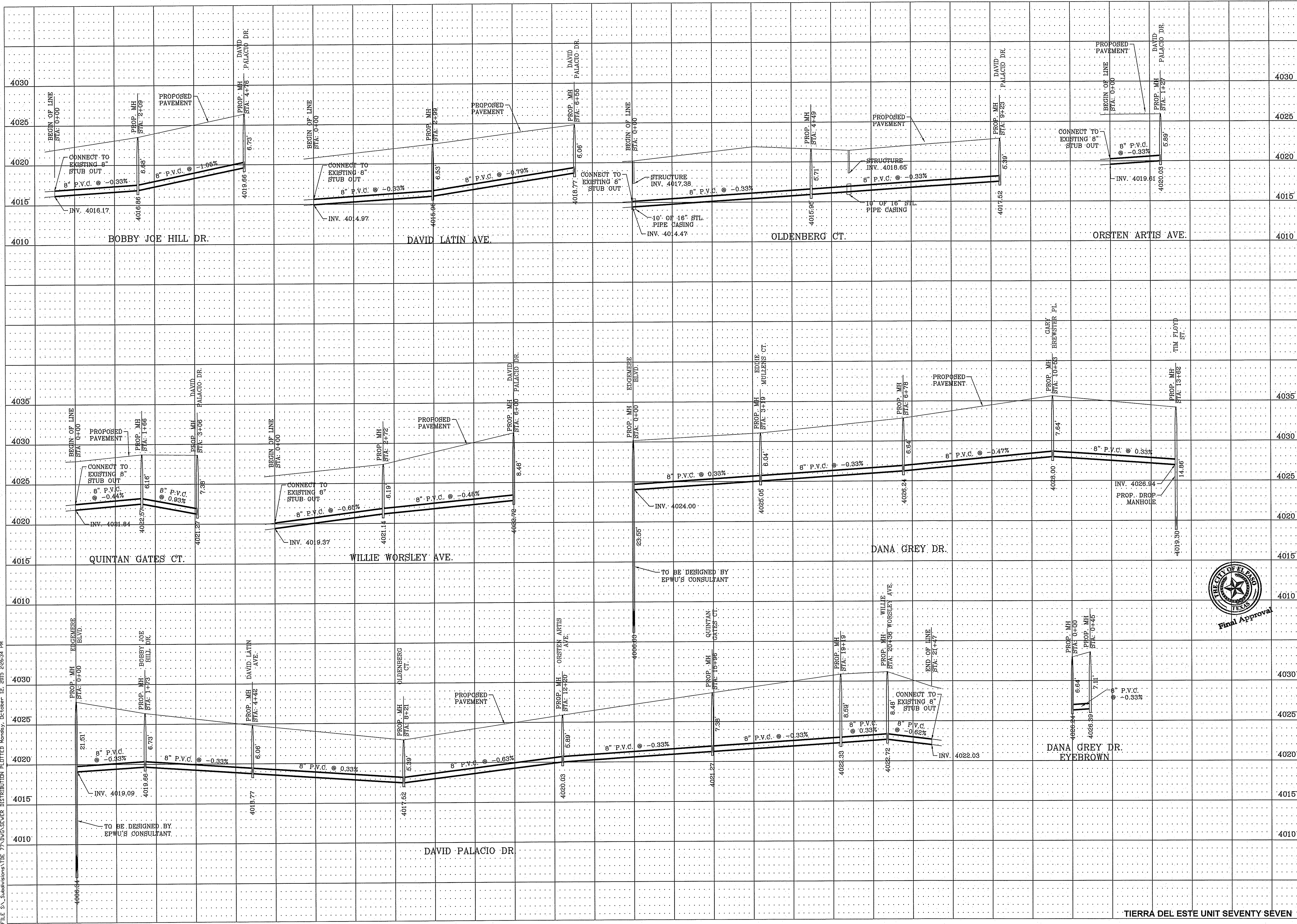
DATE: 5-29-2015  
 REVISIONS: adjusted pemex pipeline  
 BY: F.C.

BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESIAN TRAIL DR. ELEVATION 4023.16  
 NAVD88 DATUM

Official Records of El Paso County, Texas  
 Volume 3360, Page 0371  
 MacIntoshes Instrument: ME800231  
 Registered as 00088031277  
 Recorded in Public Records of El Paso County, Texas



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BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRIESIAN TRAIL DR. ELEVATION 4023.16

DATE	REVISIONS	BY

PROJECT NAME

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 16, BLOCK 76, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, EL PASO COUNTY, TEXAS CONTAINING .34-017± ACRES

SCALE

HORIZ: 1" = 100'

VERT: 1" = 5'

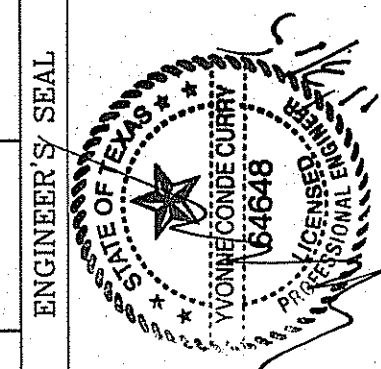
DATE: FEB. 2014

DESIGN BY: YC

INITIATED BY: DN

CHECKED BY: YC

JOB NO.: 414-43



ENGINEER'S SEAL

**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. 515-100 EL PASO, TEXAS 79905

PHONE: (915) 592-0283

FAX: (915) 592-0286

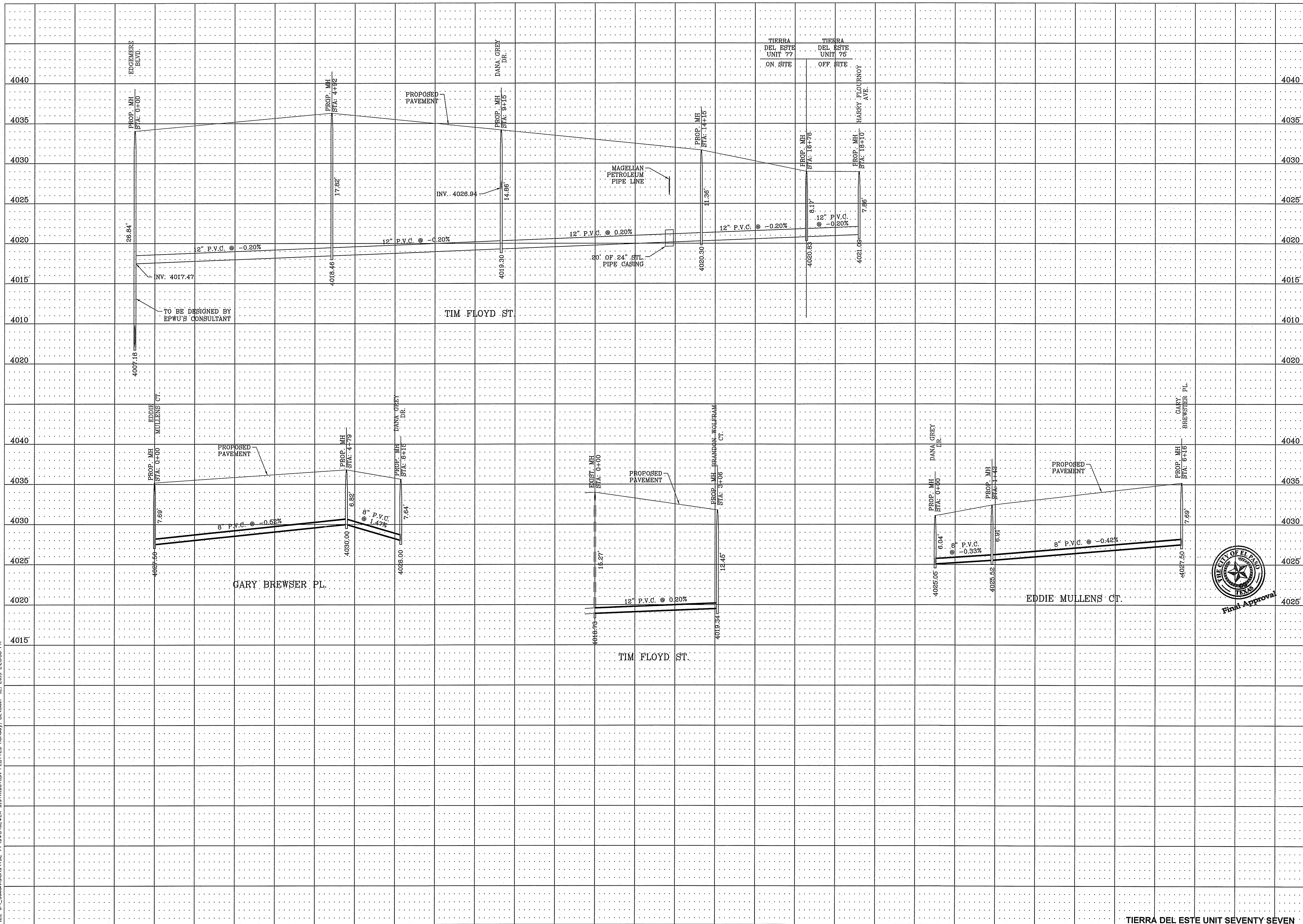
SHEET TITLE

**SEWER DISTRIBUTION PROFILE**

SHT 35 OF 40



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BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MIKE PRICE DR. AND FRESIAN TRAIL DR.	ELEVATION 4023.16
DATE	REVISIONS
BY	

**PROJECT NAME**  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, CONTAINING: 54.0.17± ACRES

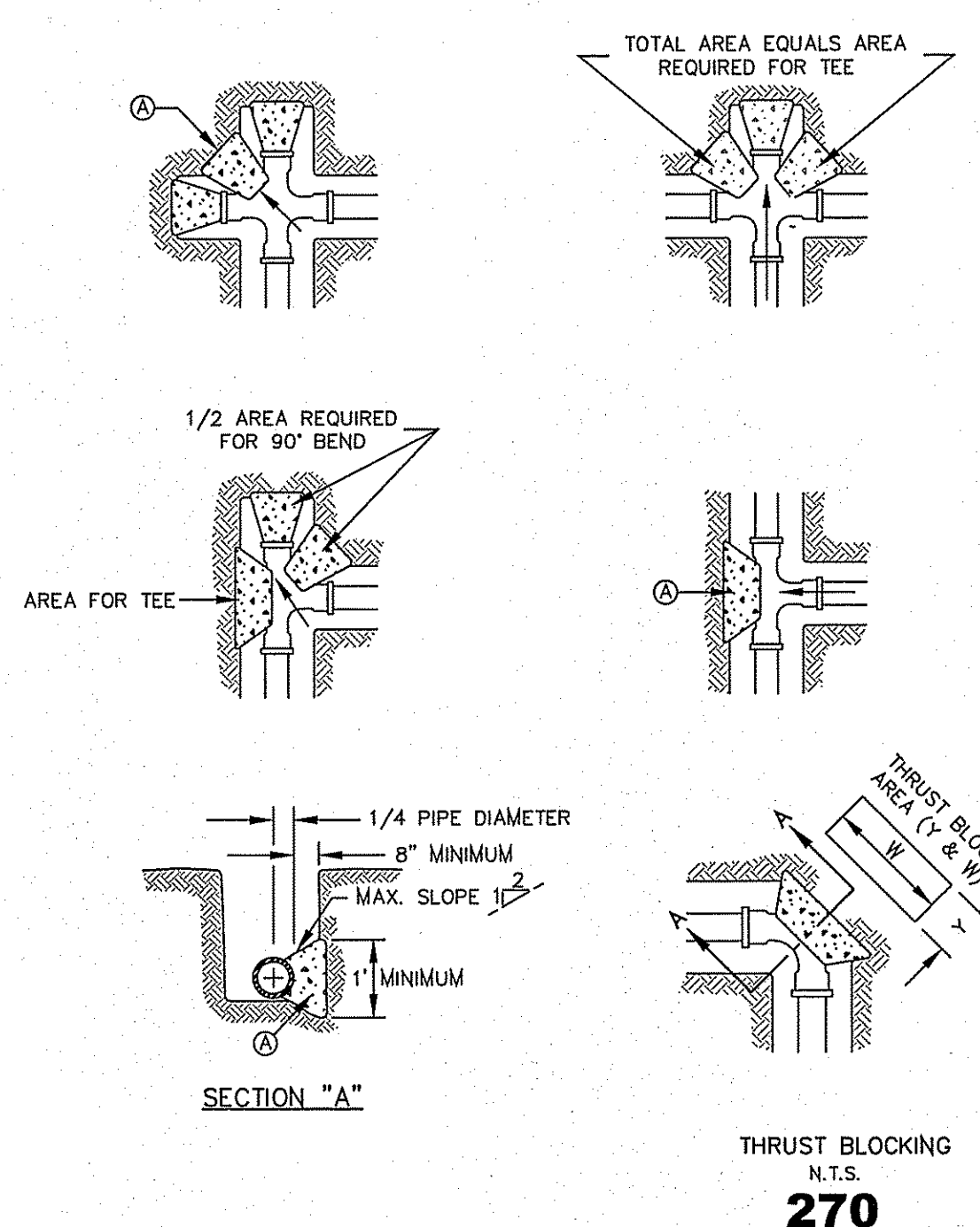
SCA L E	
HORIZ: 1" = 100'	VERT: 1" = 5'
DATE: FEB. 2014	DESIGN BY: YC
INITIATED BY: DN	CHECKED BY: YC
JOB NO.: 414-43	

ENGINEER'S SEAL

**CONDE INC.**  
 ENGINEERING / PLANNING  
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 6080 SURETY DR. STE. 100  
 EL PASO, TEXAS 79905  
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SHEET TITLE  
**SEWER DISTRIBUTION PROFILE**  
 SHT 36 OF 40  
 TIERRA DEL ESTE UNIT SEVENTY SEVEN





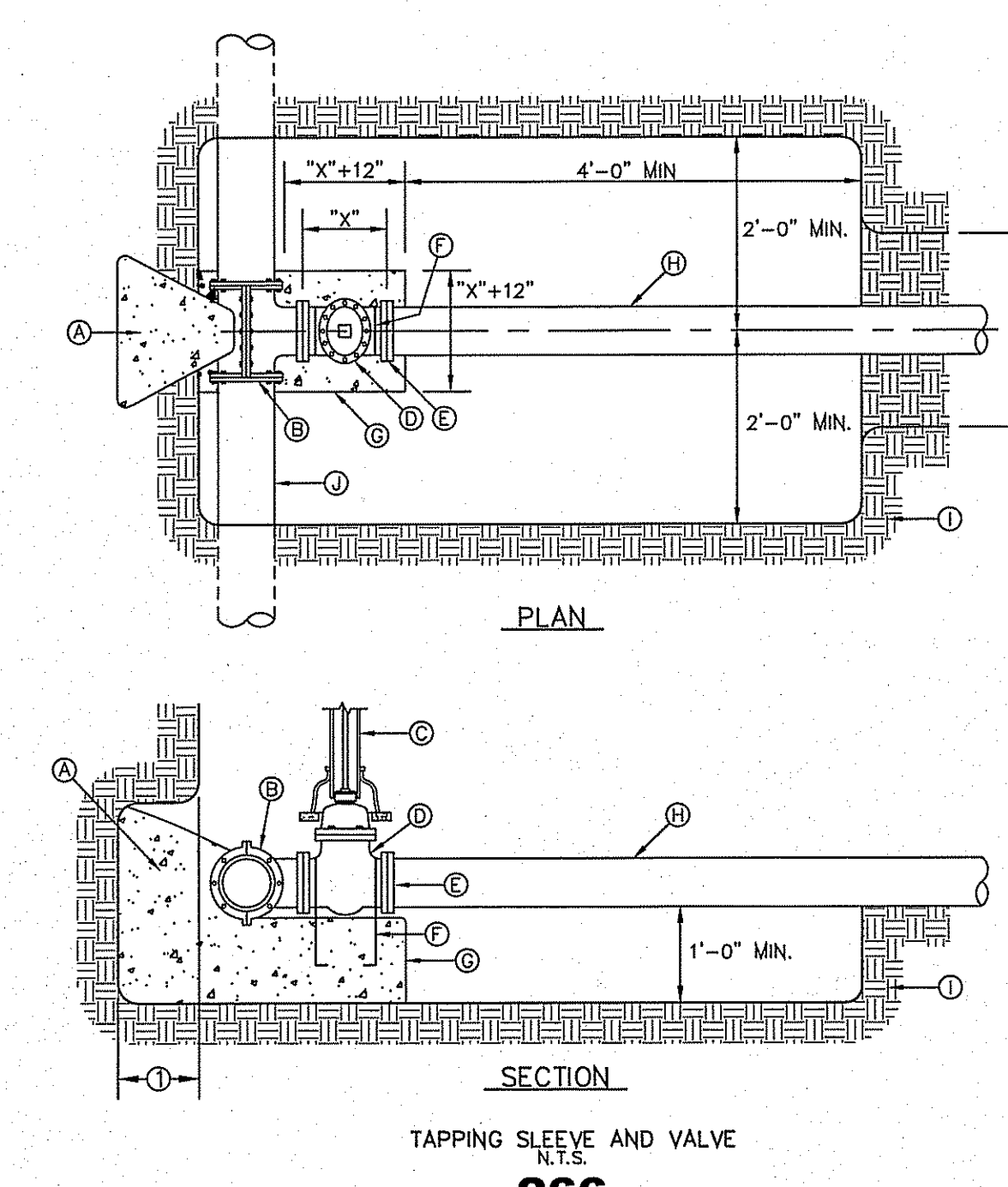
**GENERAL NOTES:**

- TABLE IS BASED ON 2000#/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
- AREAS FOR PIPE LARGER THAN 18" SHALL BE CALCULATED.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2500 PSI.
- THRUST BLOCK IS TO EXTEND TO UNDISTURBED SOIL.
- SIZE MAY BE DECREASED FOR LESSER DEGREE BENDS AS DETERMINED BY ENGINEER.
- KEEP CONCRETE CLEAR OF M.I. OR BELL AND SPIGOT JOINTS.
- BLOCK IN A SIMILAR MANNER AT TEES, HYDRANTS, PLUG OR OTHER LOCATIONS AS REQUIRED.
- WHEN NECESSARY ADDITIONAL THRUST RESTRAINT METHODS MAY BE USED, SUCH AS MECHANICAL JOINT RESTRAINTS, TIE-RODS (INSTALLED PER MANUFACTURER'S RECOMMENDATIONS) OR OTHER APPROVED METHODS.

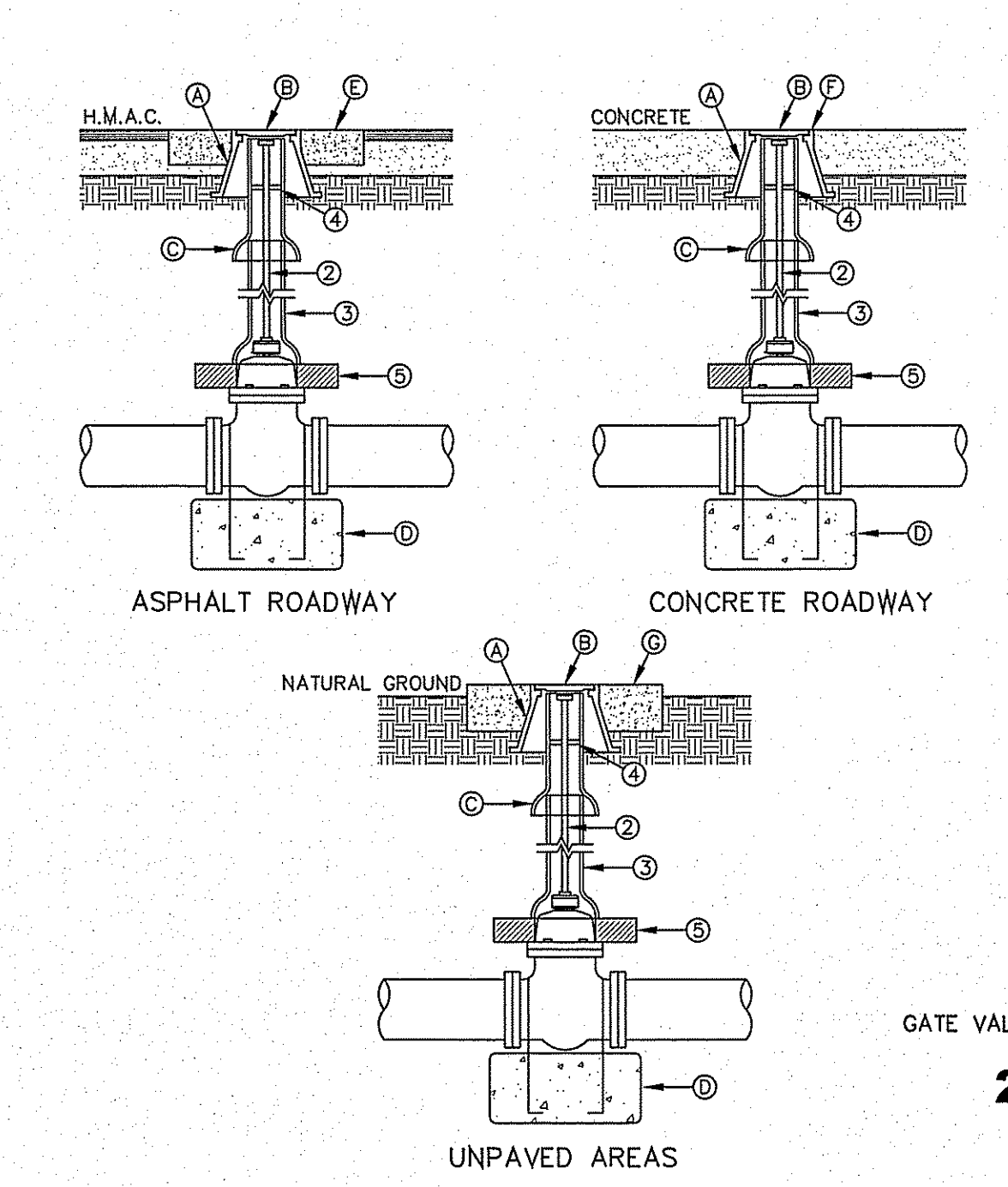
**CONSTRUCTION KEY NOTES:**

- LENGTH "Y" & "W" AS REQUIRED TO OBTAIN BEARING AREA AGAINST UNDISTURBED SOIL.
- ADDITIONAL EXCAVATION IF NECESSARY TO OBTAIN REQUIRED BEARING AREA.
- MINIMUM THRUST BLOCK AREA REQUIREMENTS FOR (Y & W) AS FOLLOWS:

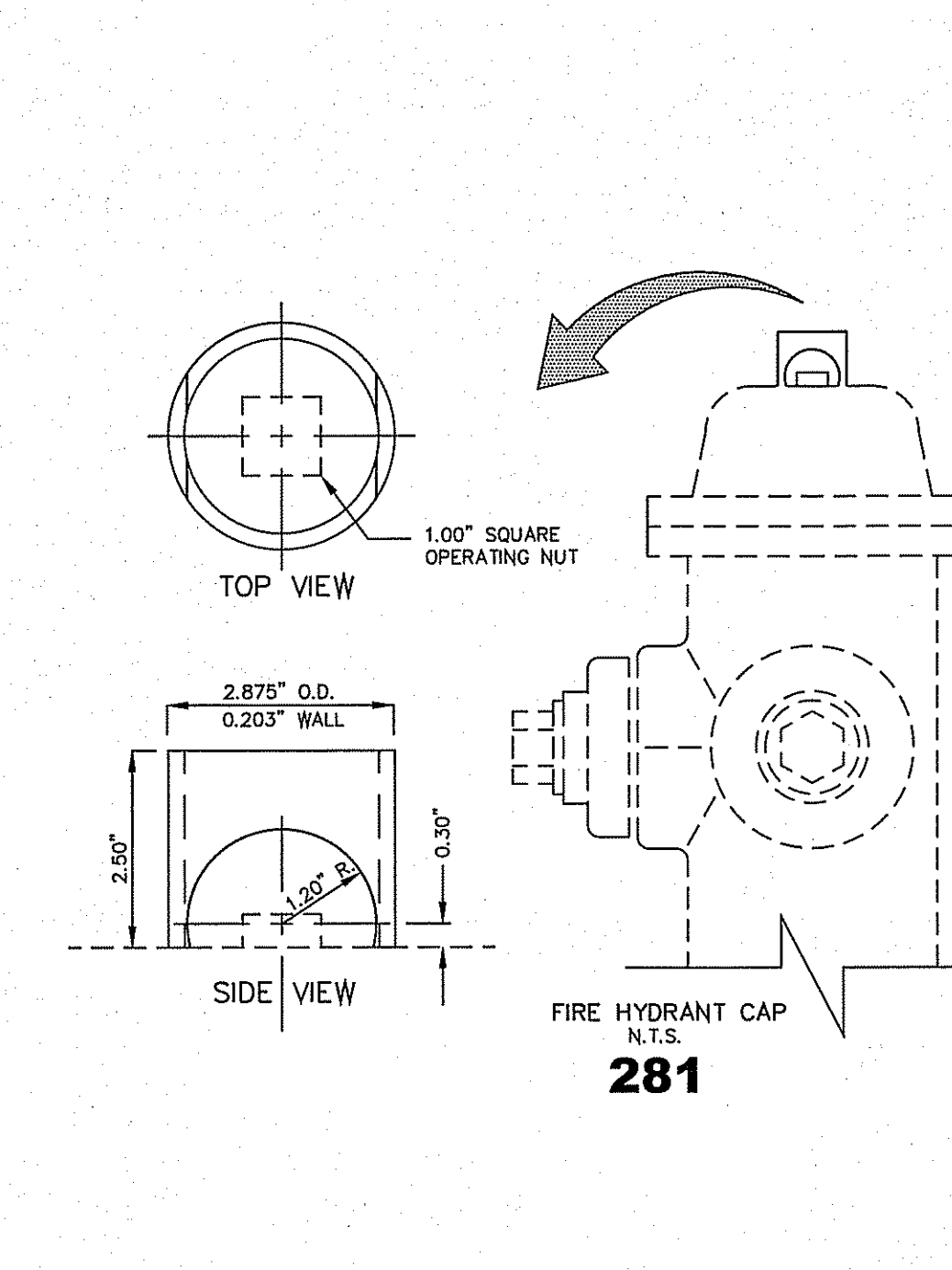
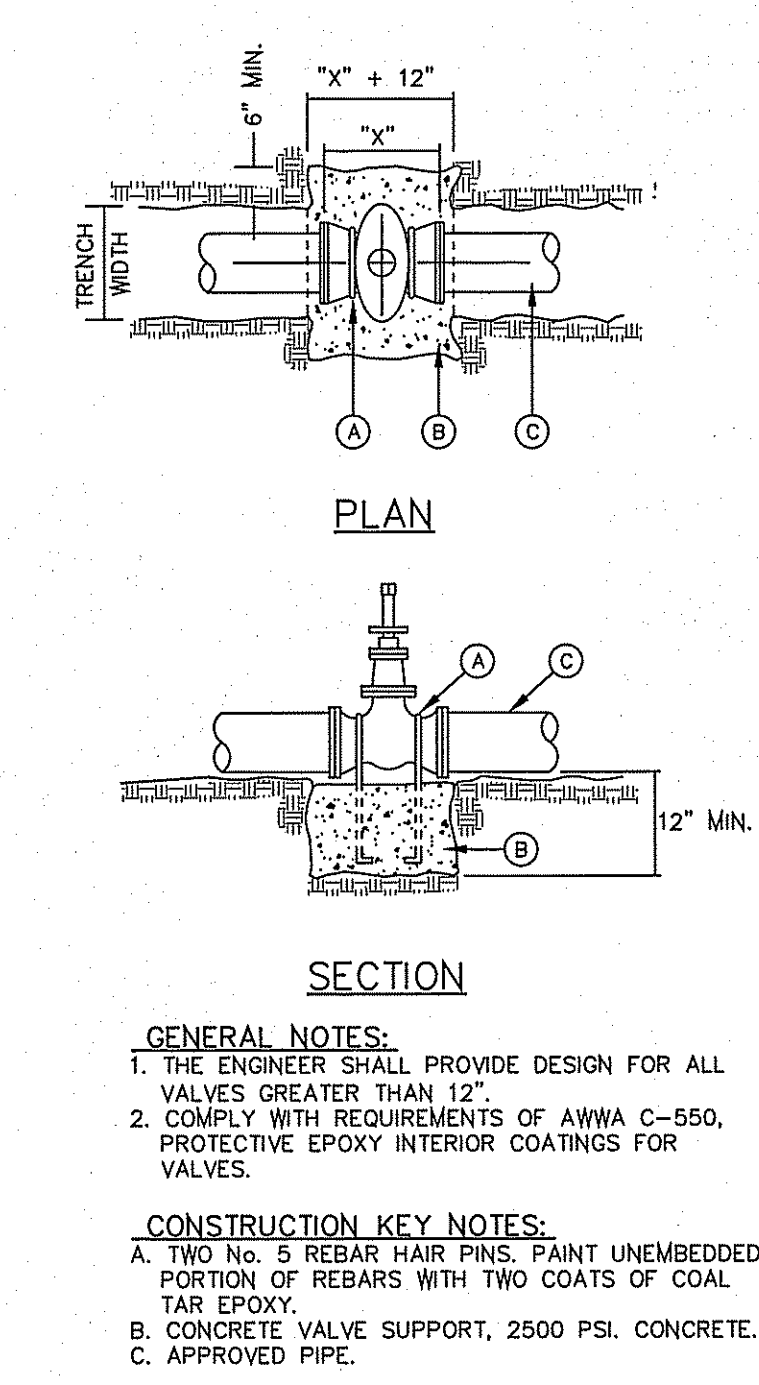
PIPE SIZE	WATER PIPE	
	TEE, DEAD END 90° BEND	45° AND 22 1/2° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET



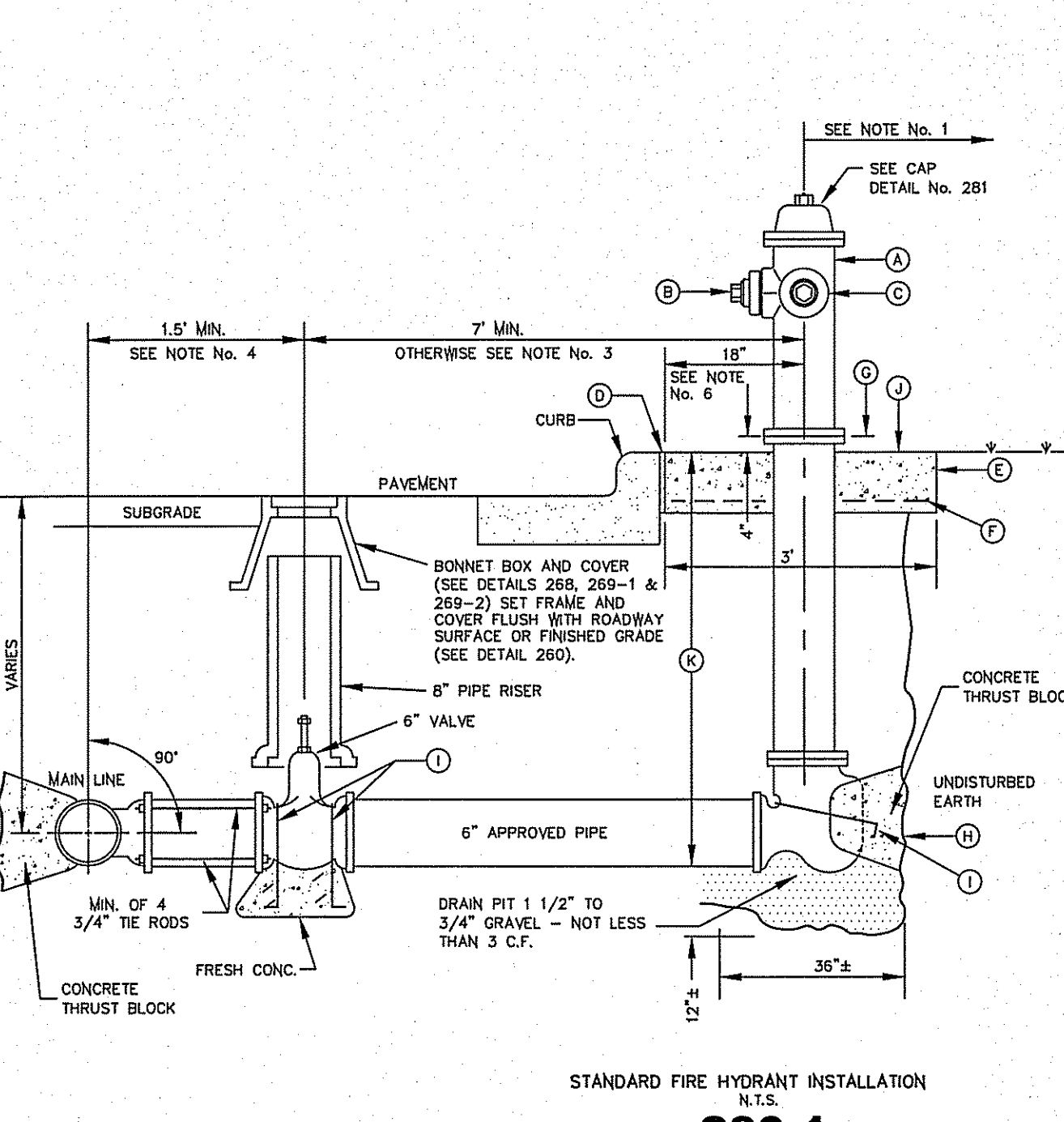
- GENERAL NOTES:**
- THRUST BLOCKING SHALL EXTEND TO UNDISTURBED EARTH.
  - TAPPING SLEEVE SHALL BE 18" MINIMUM FROM ANY BELL, COUPLING, VALVE OR FITTING LOCATED ALONG EXISTING WATER LINE TO BE TAPPED.
  - REPLACE EXCAVATED MATERIAL WITH CEMENT STABILIZED BACKFILL PRIOR TO PAVING.
  - JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.
  - INSTALL PERMANENT THRUST BLOCK UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS TO BE CLEAR OF CONCRETE.
- CONSTRUCTION KEY NOTES:**
- CONCRETE THRUST BLOCKING, PER DETAIL 270.
  - TAPPING SLEEVE.
  - RISER INSTALLATION, PER DETAIL 260.
  - TAPPING VALVE.
  - VALVE ENDS FOR TYPE OF PIPE INSTALLED.
  - 2-#5 REBAR HAIRPINS, PAINT UNEMBEDDED PORTION OF BARS WITH 2-COATS OF COAL TAR EPOXY, THEN COVER WITH 2" MINIMUM OF CEMENT MORTAR.
  - CONCRETE VALVE SUPPORT, PER DETAIL 271.
  - NEW WATER LINE TO BE INSTALLED.
  - UNDISTURBED EARTH.
  - EXISTING WATER MAIN TO BE TAPPED.



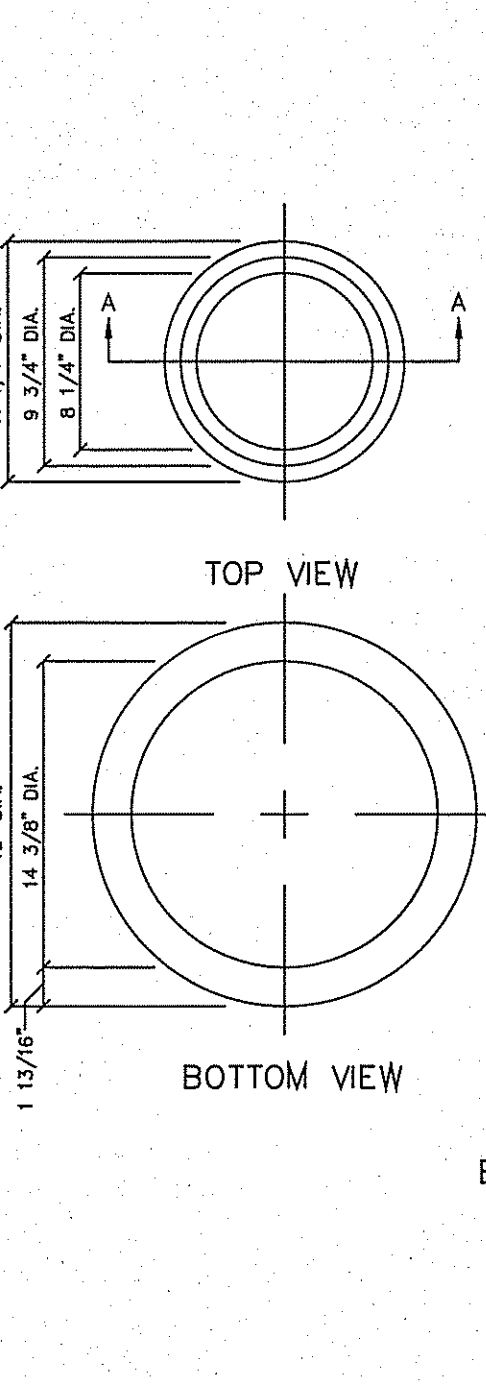
- GENERAL NOTES:**
- VALVE TYPE AND VALVE ENDS SHALL BE AS SHOWN ON THE PLANS.
  - ALL BURIED VALVES 8" AND DEEPER SHALL BE PROVIDED WITH SOLID STEEL EXTENSION STEM OPERATOR WITH 2" SQUARE AWMA NUT WITHIN 36" OF VALVE BOX COVER. NUT IS TO INDICATE DIRECTION OF ROTATION TO OPEN VALVE.
  - 8" DIA. MINIMUM VITRIFIED CLAY OR SDR 35 P.V.C. PIPE, PIPE SHALL NOT REST ON VALVE BODY.
  - 1/2" THICK STEEL TRASH RING VALVE BOX INSIDE DIAMETER MINUS 1/2".
  - MINIMUM 2 1/2" CONCRETE OR BRICK ALL AROUND.
  - CLEAR BONNET BOX OF ALL DEBRIS AND SOIL.
  - COAT BURIED PIPE AND BONNET BOX PER SPECIFICATIONS. VALVE SHALL BE WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH SPECIFICATIONS.
- CONSTRUCTION KEY NOTES:**
- BONNET BOX (SEE DETAIL 260).
  - BONNET BOX COVER (SEE DETAILS 269-1 & 269-2).
  - FINAL EXTENSION TO BONNET BOX SHALL BE WITH BELL AND SPIGOT ENDS (CLAY OR SDR 35 P.V.C. SPOOL).
  - CONCRETE VALVE ANCHOR (SEE DETAIL 271).
  - CONCRETE COLLAR (SEE DET 184-1) FLUSH WITH TOP OF H.M.C.
  - BONNET BOX FLUSH WITH TOP OF CONCRETE. CONCRETE COLLAR NOT NEEDED.
  - CONCRETE APRON (SEE DETAIL 184-2) FLUSH WITH BONNET BOX AND 2" ABOVE NATURAL GROUND.



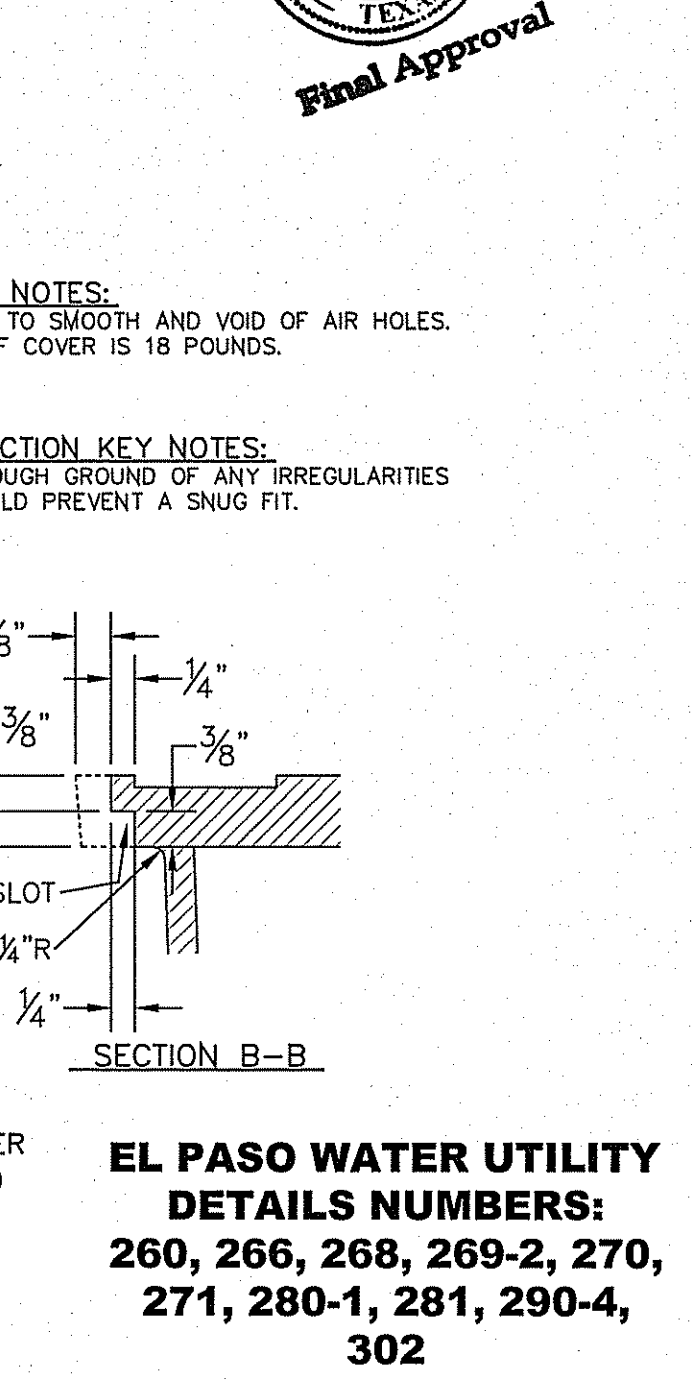
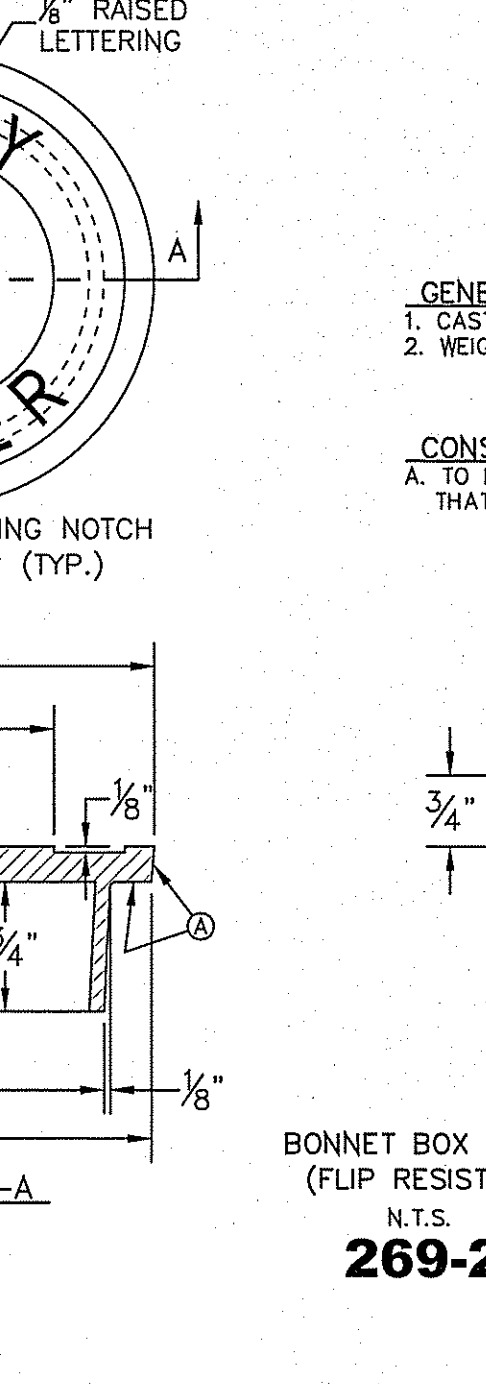
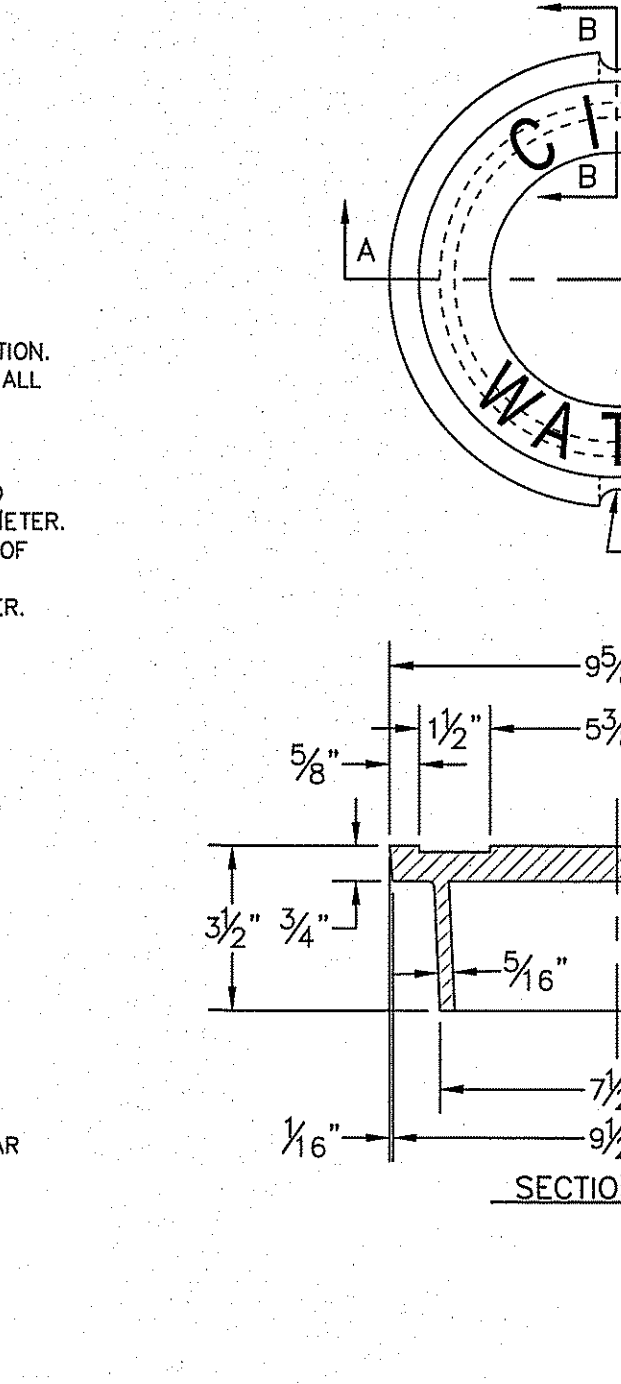
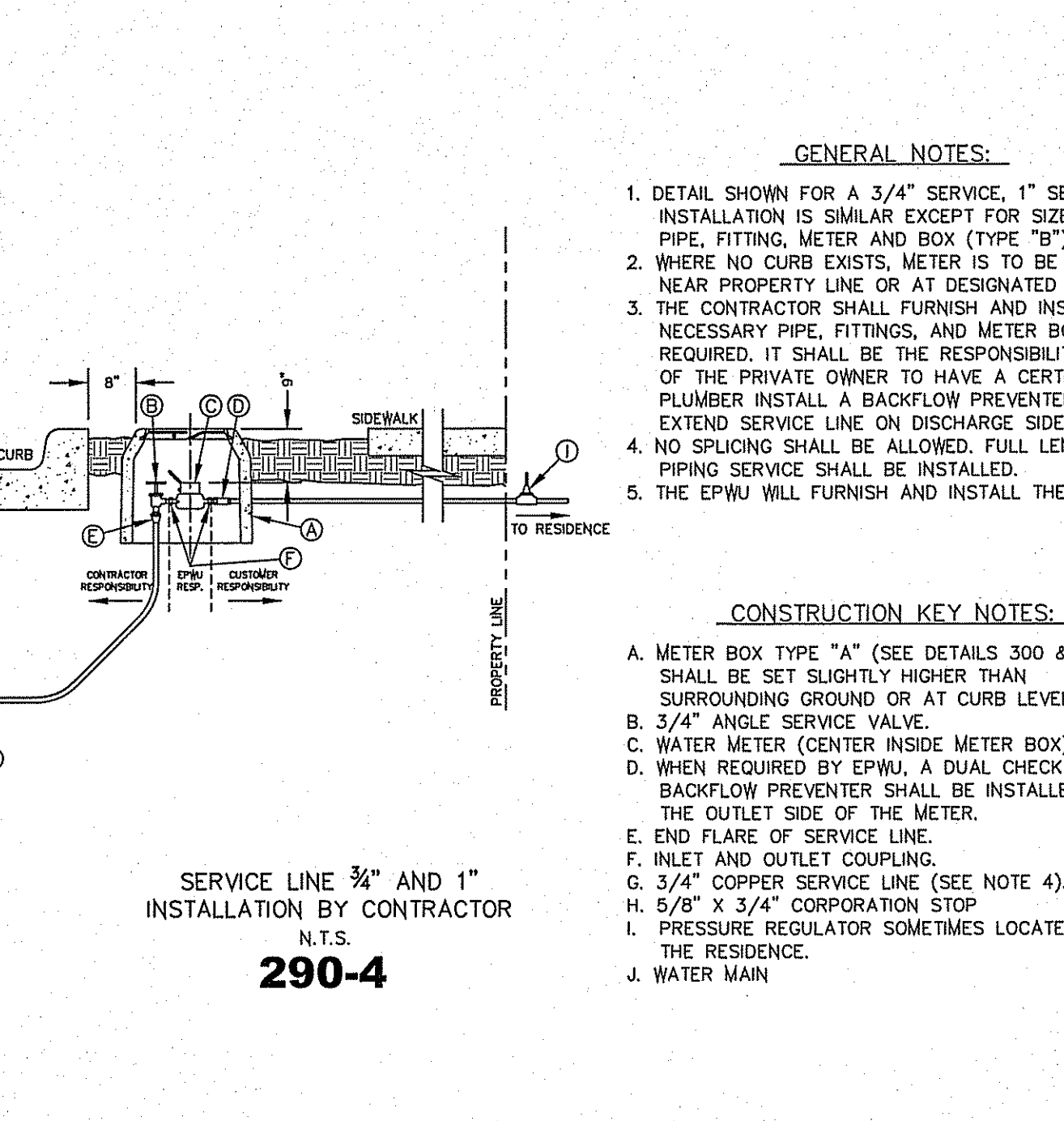
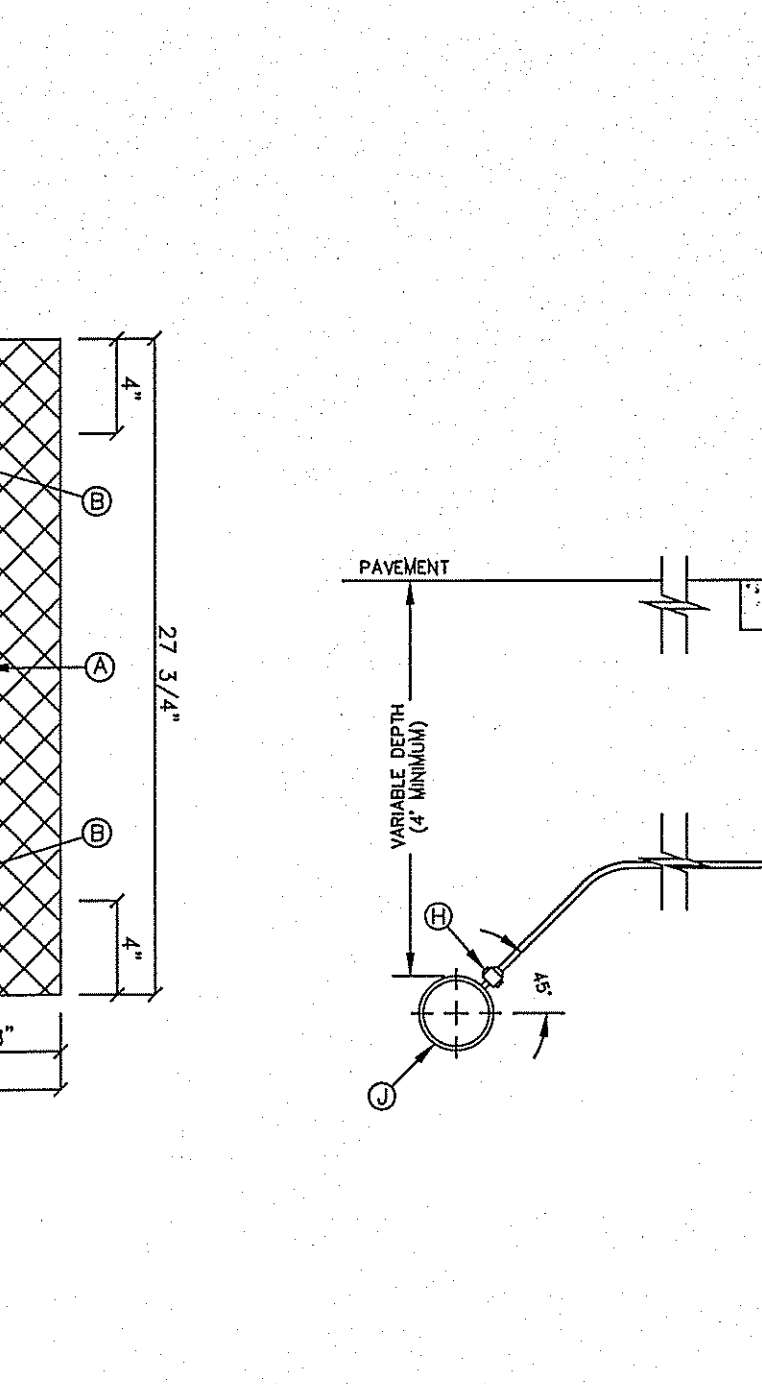
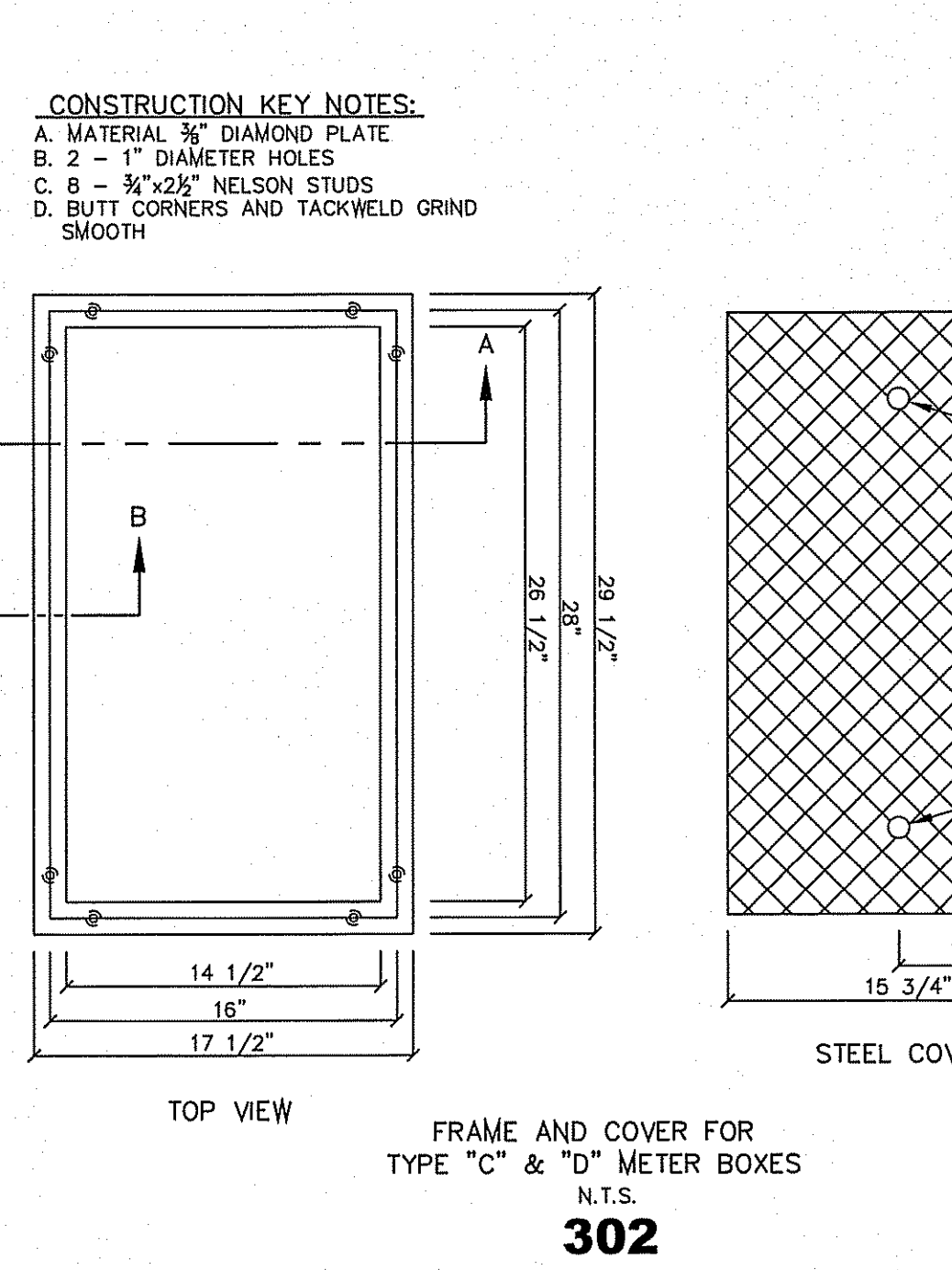
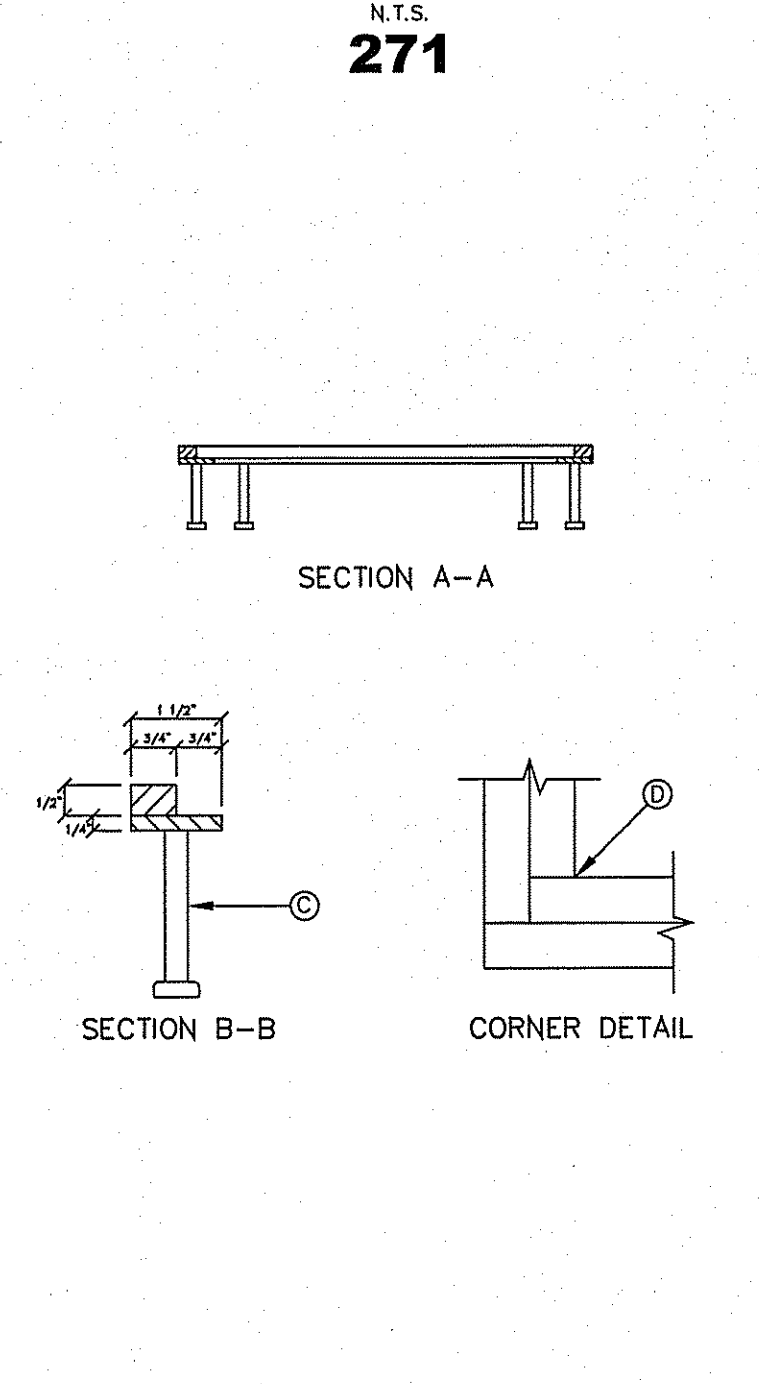
- GENERAL NOTES:**
- STEEL CAPS TO BE MACHINED FROM STEEL PIPE. NOMINAL SIZE = 2 1/2" DIA. OUTSIDE DIA. = 2.875" WALL THICKNESS = 0.203 LBS./FT. = 6.79
  - CAPS ARE TO BE TACK WELDED OR BRAZED ON FIRE HYDRANT BONNET OR WEATHER CAP.
  - THE CAPS OVER THE OPERATING NUT WILL PREVENT ACCESS TO THE UNAUTHORIZED USE OF HYDRANT WATER.



- GENERAL NOTES:**
- NO OBSTRUCTIONS WILL BE PERMITTED WITHIN 5 FT. IN ALL DIRECTIONS OF FIRE HYDRANT (PER EL PASO MUNICIPAL CODE, TITLE 12). FIRE HYDRANT SHALL NOT BE PLACED IN WHEEL CHAIR RAMP OR DRIVEWAY.
  - FIRE HYDRANT SHALL BE LOCATED AT THE BEGINNING OF CURB RETURN OR AT THE PROPERTY LINE COMMON TO ADJOINING LOTS, UNLESS OTHERWISE SHOWN ON PLANS. REFER TO DETAIL No. 282 FOR SPECIAL CASES.
  - WHERE DISTANCE IS LESS THAN 7', HYDRANT SHALL BE INSTALLED IN ACCORDANCE WITH DETAIL No. 282.
  - VALVE MAY BE CONNECTED TO TEE AT MAIN LINE. USE FLANGED MECHANICAL JOINT ENDS, WHERE SPOOL IS REQUIRED BETWEEN TEE AND VALVE. USE FLANGED MECHANICAL ENDS WITH 3/4" DIAMETER TIE RODS.
  - COMPLY WITH REQUIREMENTS OF AWWA C-502, DRY BARREL FIRE HYDRANTS AND AWWA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES AND HYDRANTS.
  - WHEN INSTALLATION IS WITHIN 10 FT. RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.
- CONSTRUCTION KEY NOTES:**
- FIRE HYDRANT PER SPEC'S.
  - PUMPER NOZZLE 4 1/2" TO BE FACING THE TRAVELED WAY, UNLESS OTHERWISE NOTED IN THE PLANS.
  - HOSE NOZZLE 2 1/2".
  - 3" PREMOULDED EXPANSION JOINT WITH 1" TOP FILLER.
  - 3"x3"x6" CONC. SQ. PAD, TO BE CONSTRUCTED AROUND FIRE HYDRANT'S CENTER LINE WHEN NOT LOCATED WITHIN SIDEWALK OR CONC. AREA.
  - #10; 6/8 WWF.
  - CONTROLLED ELEVATION LINE, LEVEL IN ALL DIRECTIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING TOP FLANGE OF THE HYDRANT TO CONTROLLED ELEVATION.
  - CONC. THRUST BLOCK, APPROX. 2'x2'x3' TO BE POURED AGAINST UNDISTURBED EARTH, F.H. WEEP HOLE MUST BE UNOBSTRUCTED.
  - 2"x1/4" STEEL ANCHOR PINS.
  - TOP OF SLAB SHALL BE AT CURB LEVEL 4" BELOW THE BREAK LINE OF THE HYDRANT, UNDER SPECIAL CONDITIONS THE ENGINEER MAY ALLOW VARIATIONS TO THIS CONSTRUCTION.
  - CONTRACTOR IS TO PROVIDE ADDITIONAL SPOOLS IF NEEDED TO MAINTAIN THE 4' MIN. CLEARANCE FROM THE CONTROLLED ELEV. LINE TO TOP OF SLAB.



- GENERAL NOTES:**
- CASTING TO BE SMOOTH AND VOID OF AIR HOLES.
  - WEIGHT OF BONNET BOX IS 95 POUNDS.
- CONSTRUCTION KEY NOTES:**
- TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.



PROJECT NAME: **TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
 CONTAINING: 54.01 ± ACRES

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MICE PRICE DR. AND FRESHMAN TRAIL DR. ELEVATION 4023.16 ..... NAVD83 DATUM

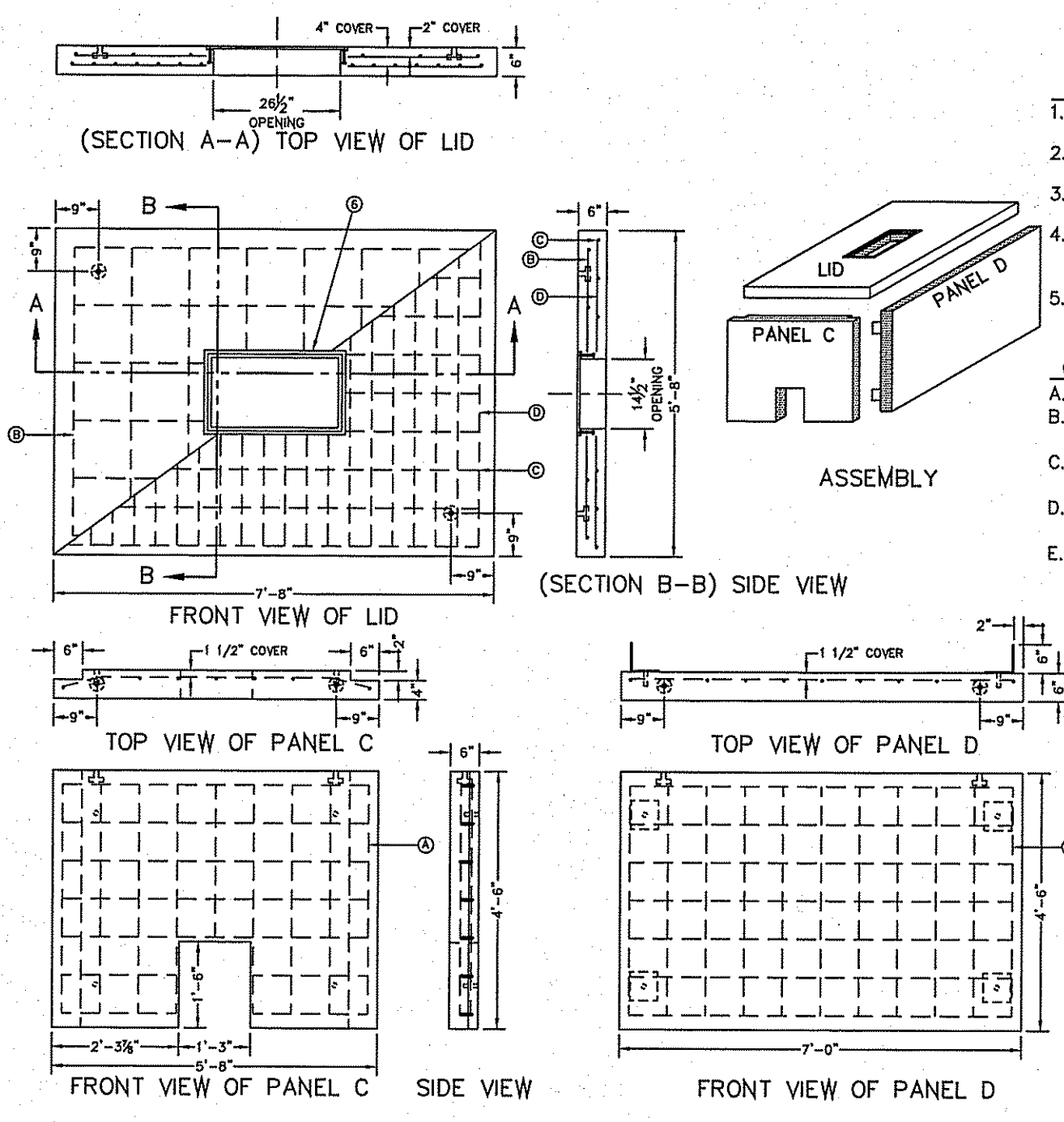
BENCHMARK: \_\_\_\_\_  
 REVISIONS: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_

ENGINEER'S SEAL: \_\_\_\_\_  
 ENGINEER'S SEAL NOT REQUIRED. THIS SHEET IS TO BE USED FROM CITY SUBDIVISION STANDARDS

CONDE INC. ENGINEERING / PLANNING / SURVEYING / GPS  
 6080 SURETY DR. STE. 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 692-0283  
 FAX: (915) 692-0286

SHEET TITLE: **WATER DETAILS**  
 SHT 37 OF 40

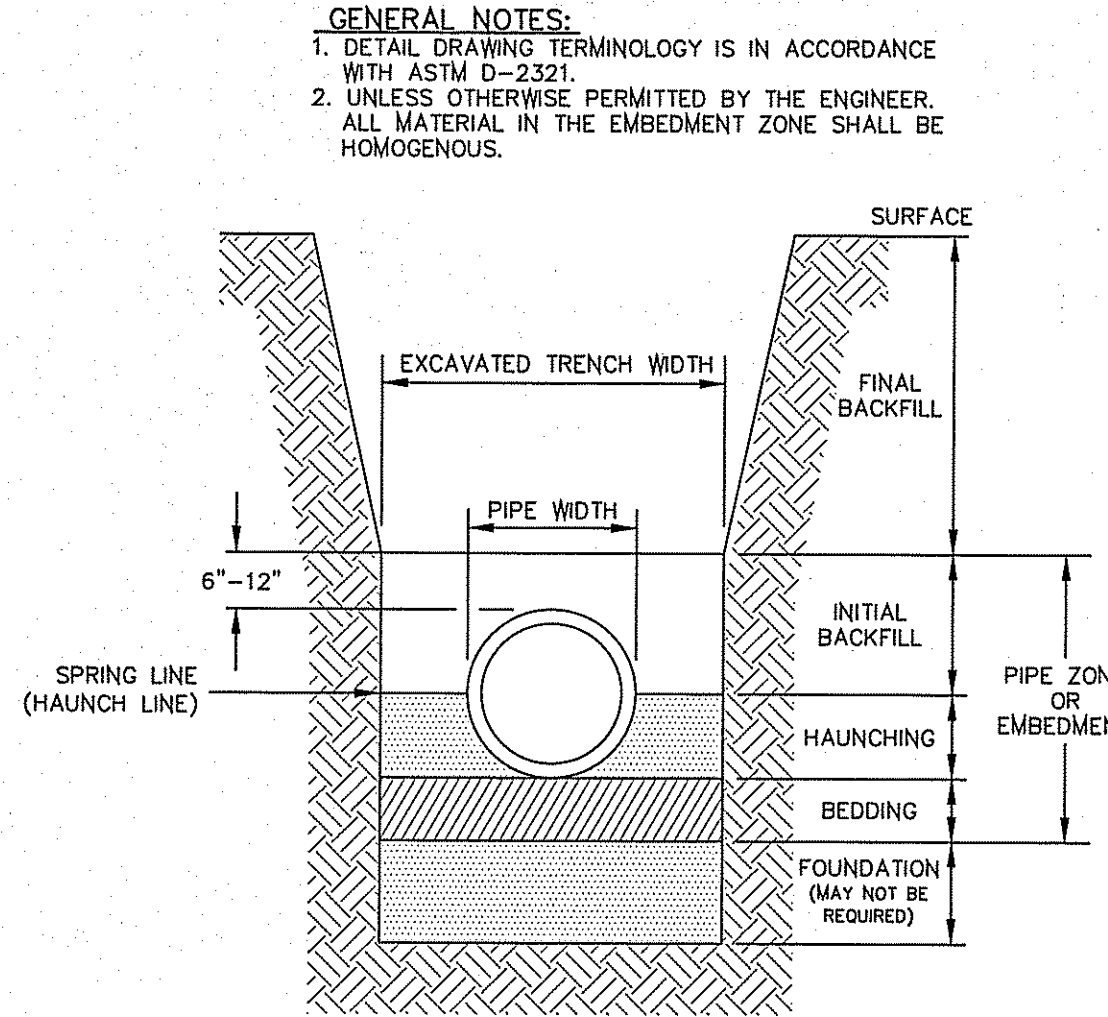




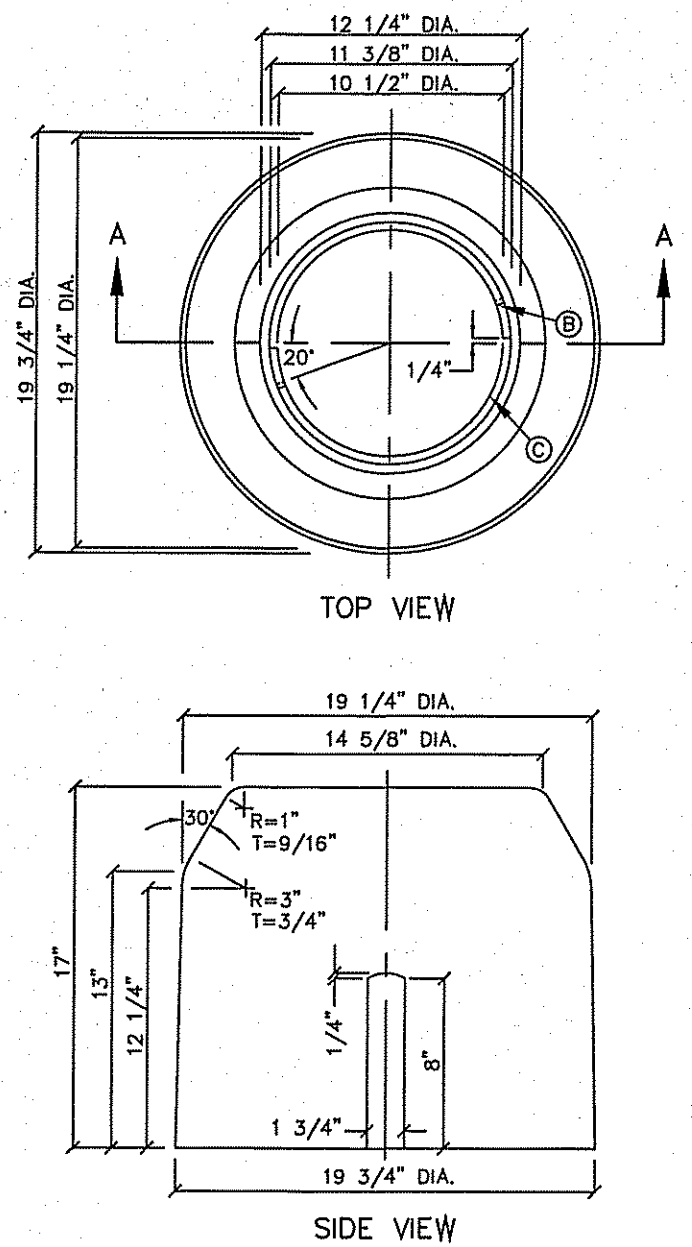
**GENERAL NOTES:**  
 1. WATER CEMENT RATIO 0.5 OR LESS BY WEIGHT OR NOT MORE THAN 5.5 GALLONS PER SACK.  
 2. REINFORCING SHALL COMPLY WITH ASTM A615 GRADE 60 STEEL F<sub>y</sub>=60000 PSI.  
 3. BAR BENDING AND PLACEMENT TO COMPLY WITH LATEST ACI STANDARDS.  
 4. LIFTERS FOR HANDLING SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS AND RATED TO HANDLE THE WEIGHT.  
 5. METER BOX SHALL BE MODULAR; CONCRETE TO HAVE A MINIMUM 28 DAYS COMPRESSIVE STRENGTH OF 4000 PSI.

**CONSTRUCTION KEY NOTES:**  
 A. No. 4 REBAR AT 8" ON CENTER, BOTH WAYS.  
 B. No. 4 REBAR AT 12" ON CENTER, BOTH WAYS (TOP LAYER).  
 C. No. 4 REBAR AT 8" ON CENTER, LONG SPAN (BOTTOM LAYER).  
 D. No. 5 REBAR AT 4 1/2" ON CENTER, SHORT SPAN (BOTTOM LAYER).  
 E. METER BOX FRAME (SEE DETAIL 302), INTEGRALLY CAST & CENTERED ON LID. SET FRAME SO COVER (SEE DETAIL 302) IS FLUSH WITH TOP SURFACE OF LID.

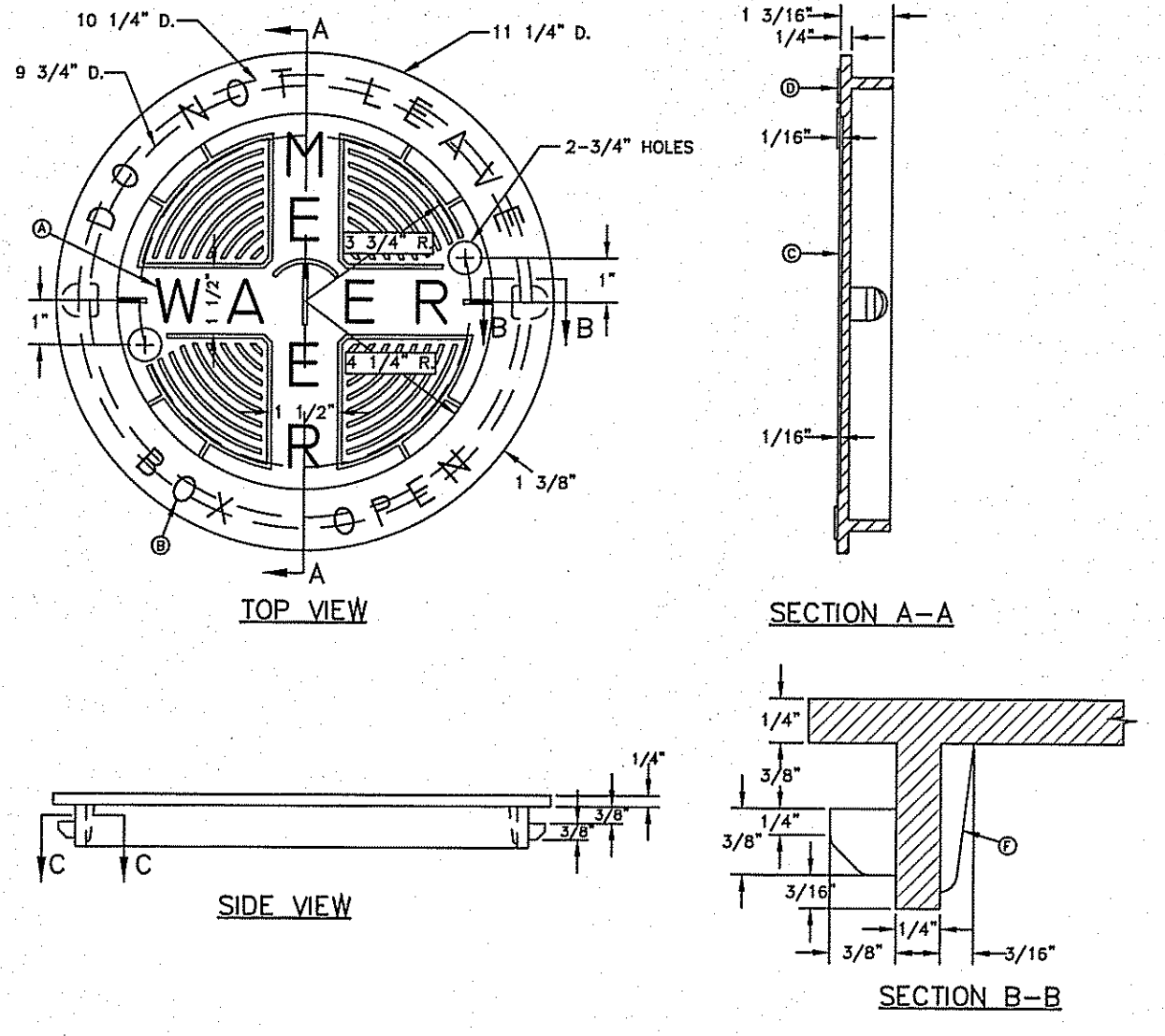
METER BOX TYPE "E" FOR 3" AND LARGER SERVICE INSTALLATION  
 N.T.S.  
**295-1**



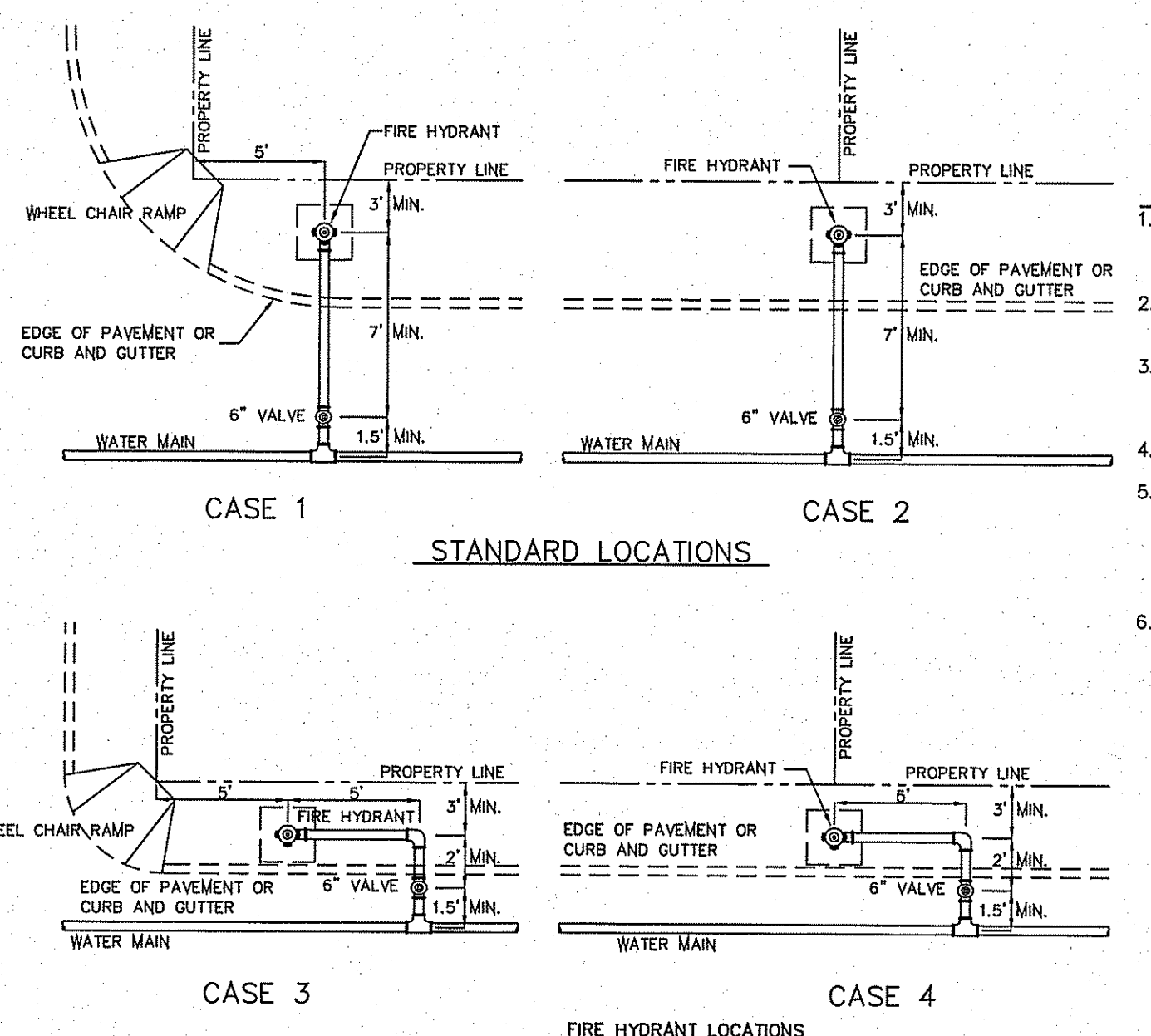
TRENCH CROSS SECTION TERMINOLOGY  
 N.T.S.  
**170**



METER BOX TYPE "A" FOR 3/4" SERVICE INSTALLATION  
 N.T.S.  
**291**

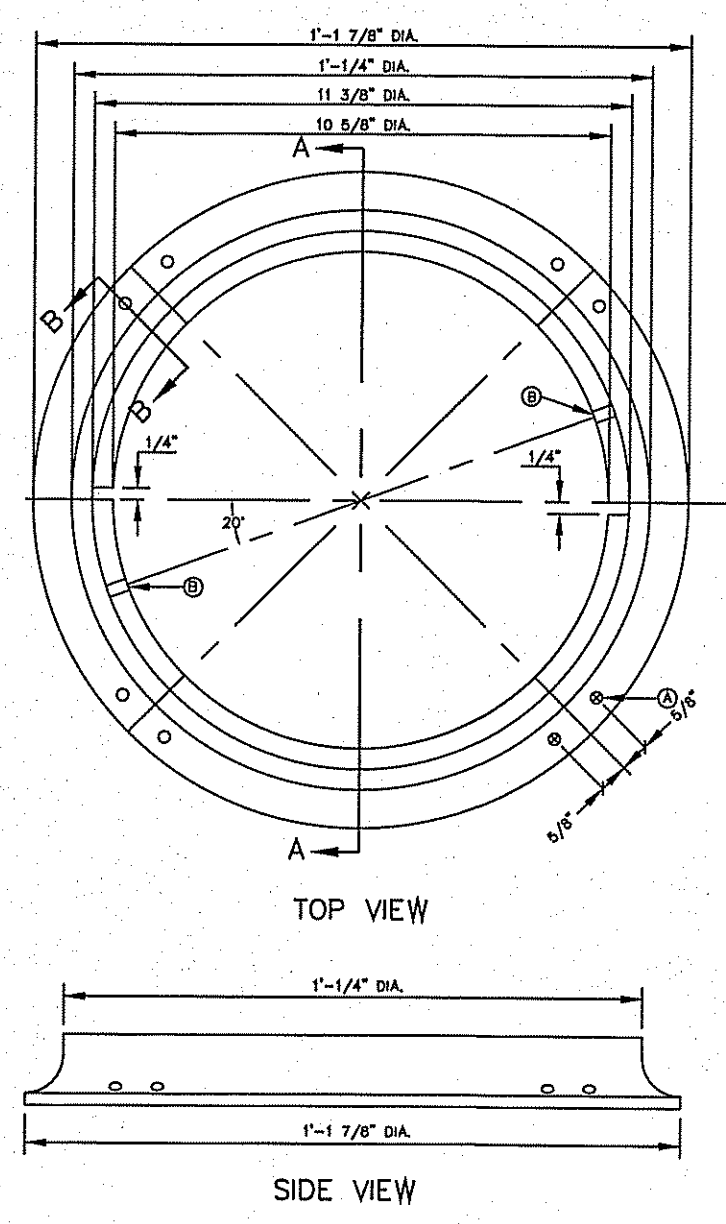


METER BOX COVER FOR TYPE "A" & "B" METER BOXES  
 N.T.S.  
**301**



STANDARD LOCATIONS  
 N.T.S.  
**282**

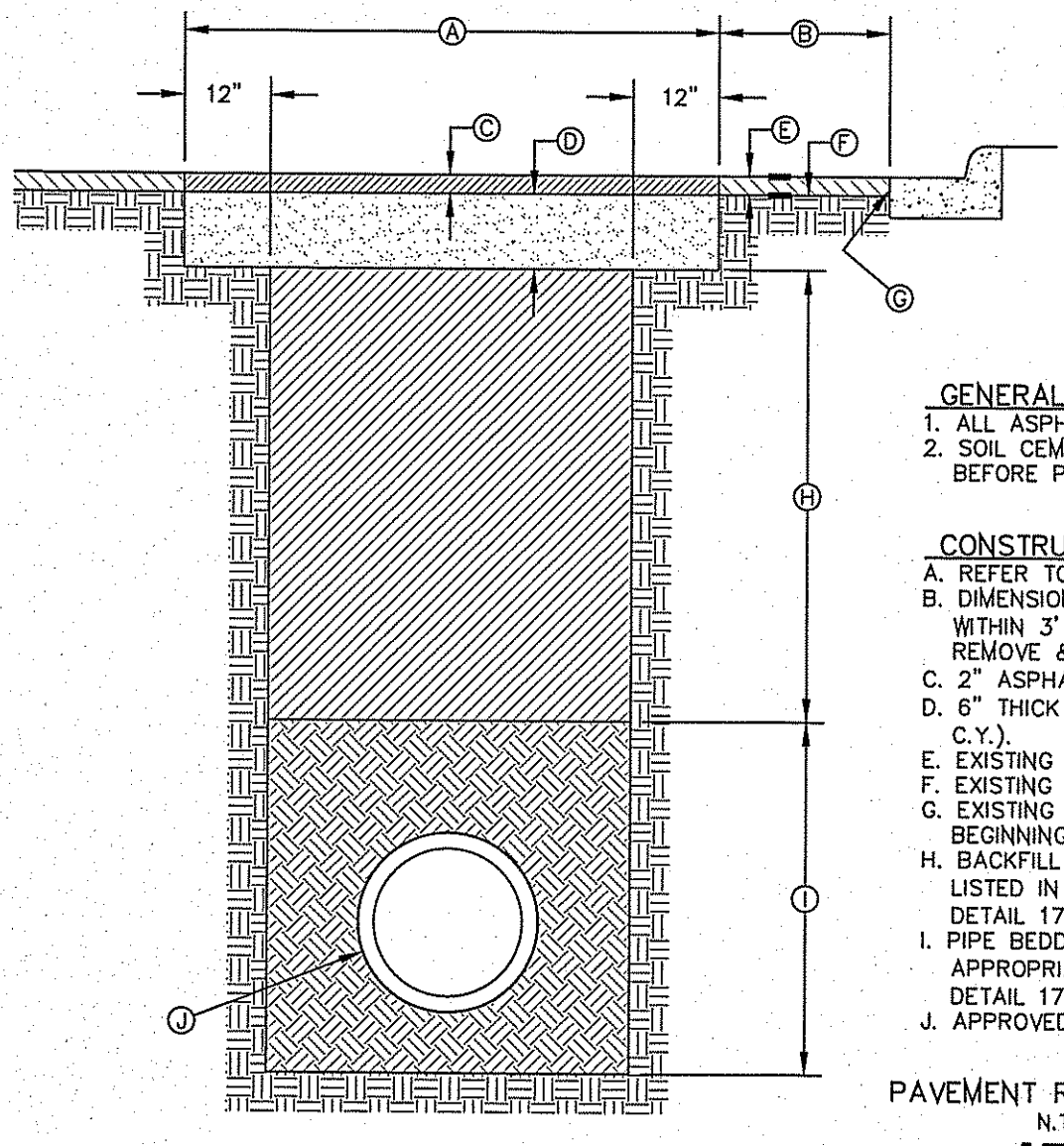
**GENERAL NOTES:**  
 1. FOR CASE 1 FIRE HYDRANT SHALL BE LOCATED AT A DISTANCE OF 5 FT. MINIMUM FROM THE PROPERTY LINE OR AT THE BEGINNING OF CURB RETURN.  
 2. FOR CASE 2 FIRE HYDRANT SHALL BE LOCATED AT THE PROPERTY LINE COMMON TO ADJOINING LOTS.  
 3. FOR CASE 3 AND IV WHERE THE DISTANCE BETWEEN THE VALVE AND THE HYDRANT IS LESS THAN 7 FT. PLACE HYDRANT AS SHOWN.  
 4. FOR INSTALLATION OF FIRE HYDRANT SEE DETAIL 280-1 OR 280-2.  
 5. A MINIMUM CLEARANCE OF 3 FT. WILL BE PROVIDED BETWEEN A FIRE HYDRANT AND A PERMANENT OBSTRUCTION (UTILITY POLE, LIGHT STANDARD, TRAFFIC SIGNAL, WHEEL CHAIR RAMP, FENCE PROTECTIVE POSTS, ETC.).  
 6. WHEN INSTALLATION IS WITHIN TxDOT RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.



METER BOX RING FOR TYPE "A" & "B" METER BOXES  
 N.T.S.  
**300**

**GENERAL NOTES:**  
 1. MATCHING SURFACES TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.  
 2. CASTING TO BE SMOOTH AND VOID OF AIR.  
 3. METER BOX COVER WEIGHT= 1 1/4 lbs.

**CONSTRUCTION KEY NOTES:**  
 A. LETTERS TO BE 1" HIGH, 3/4" WIDE, 1/8" THICK  
 B. LETTERS TO BE 3/4" HIGH, 5/8" WIDE, 1/8" THICK  
 C. INSIDE LETTERS & RIBS 1/8" TALL  
 D. OUTSIDE LETTERS 1/2" TALL  
 E. REINFORCE BACK OF LUG  
 F. REINFORCEMENT



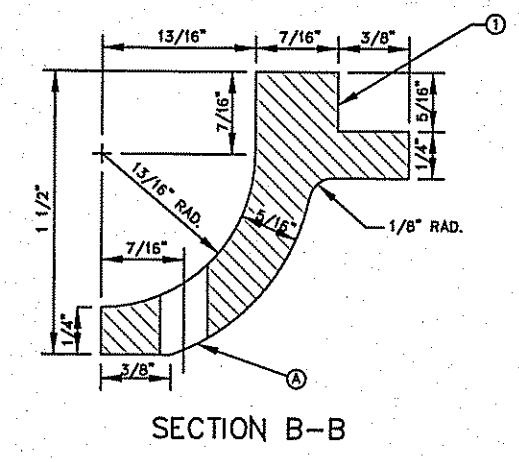
**GENERAL NOTES:**  
 1. ALL ASPHALT CUTS MUST BE SAW CUT.  
 2. SOIL CEMENT SLURRY SHALL BE ALLOWED TO CURE BEFORE PAVING OR OPENING TO ALL TRAFFIC.

**CONSTRUCTION KEY NOTES:**  
 A. REFER TO SPECS FOR LIMIT OF PAVING WIDTH.  
 B. DIMENSION VARIES WHERE GUTTER FACE, ETC. IS WITHIN 3' OF SAW CUT EDGE. CONTRACTOR SHALL REMOVE & REPLACE EXISTING HMAAC IN THIS AREA.  
 C. 2" ASPHALT MIN.  
 D. 6" THICK SOIL CEMENT BACKFILL (2 SACK PER C.Y.)  
 E. EXISTING HMAAC-THICKNESS MAY VARY.  
 F. EXISTING BASE COURSE-THICKNESS MAY VARY.  
 G. EXISTING GUTTER FACE, EDGE OF PAVEMENT OR BEGINNING OF SHOULDER.  
 H. BACKFILL DEPTH VARIES, REFER TO REQUIREMENTS LISTED IN EMBEDMENT DETAILS (DETAIL 171 THRU DETAIL 173).  
 I. PIPE BEDDING AS SPECIFIED, REFER TO APPROPRIATE EMBEDMENT DETAIL (DETAIL 171 THRU DETAIL 173).  
 J. APPROVED PIPE.

PAVEMENT REPLACEMENT  
 N.T.S.  
**179**

**GENERAL NOTES:**  
 1. MATCHING SURFACES TO BE FINISHED IF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.  
 2. CASTING TO BE SMOOTH AND VOID OF AIR HOLES.  
 3. METER BOX RING WEIGHT = 7 LBS.  
 4. METER BOX RING MADE OF CAST IRON.

**CONSTRUCTION KEY NOTES:**  
 A. 1/2" DIAMETER HOLES FOR ANCHORING RING TO CONCRETE METER BOX.  
 B. LUG STOP  
 C. LOCKING LUG SLIDE



**PROJECT NAME:** TIERRA DEL ESTE UNIT SEVENTY SEVEN  
 BEING PORTION OF SEVEN (7) BLOCKS, PORTION OF SECTION 97, BLOCK 10, TOWNSHIP 30N, RANGE 10E, COUNTY OF EL PASO, TEXAS  
 SURVEYED BY: EL PASO COUNTY, TEXAS  
 CONTAINING: 54.0.17± ACRES

**ENGINEER'S SEAL:** CONDE INC. ENGINEERING / PLANNING SURVEYING / GPS  
 6080 SURETY DR. STE 100 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283 FAX: (915) 592-0286

**DESIGN BY:** YC  
**CHECKED BY:** YC  
**DATE:** FEB. 2014

**REVISIONS:**

NO.	DESCRIPTION	DATE

**BENCHMARK:** CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MARK PRICE DR. AND FRESIAN TRAIL DR. ELEVATION 4023.10  
 NAVD83 DATUM

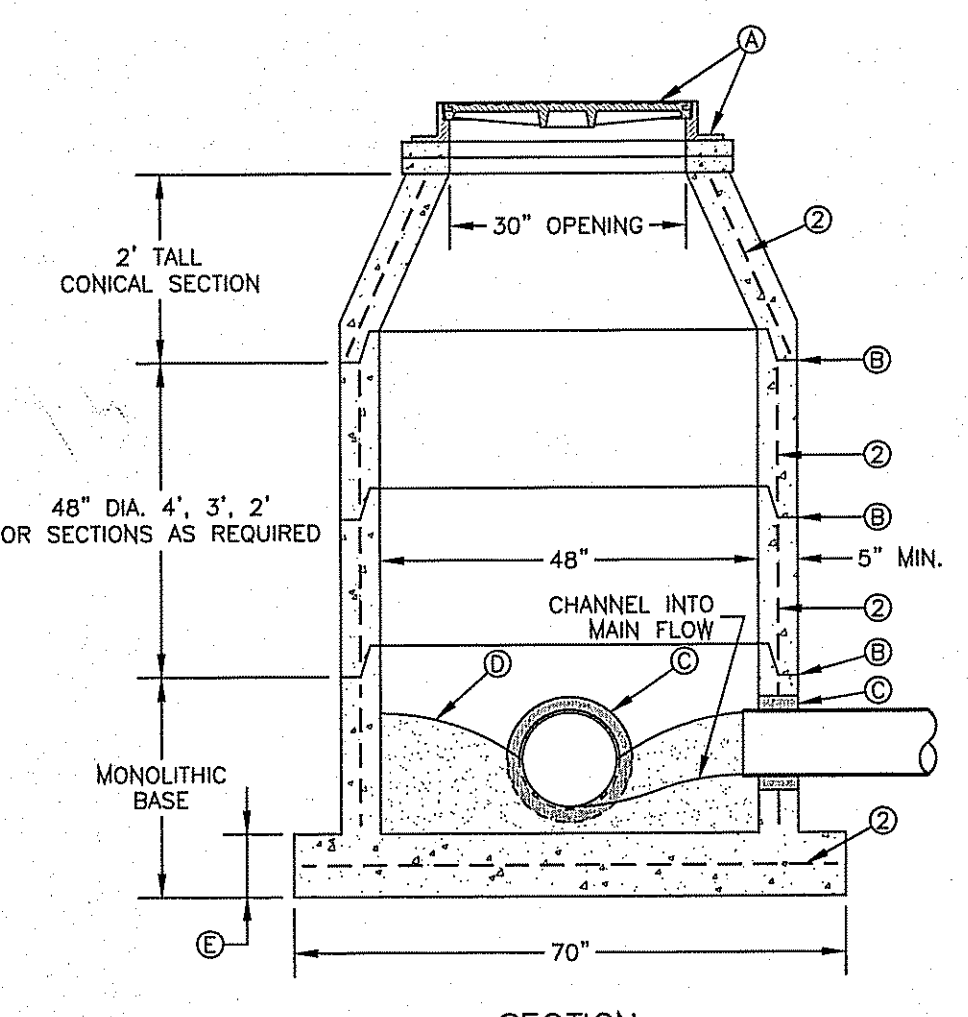
**CONDE INC.**  
 REGISTRATION No. F-2321

**SHEET TITLE:** WATER DETAILS

**SHT 38 OF 40**

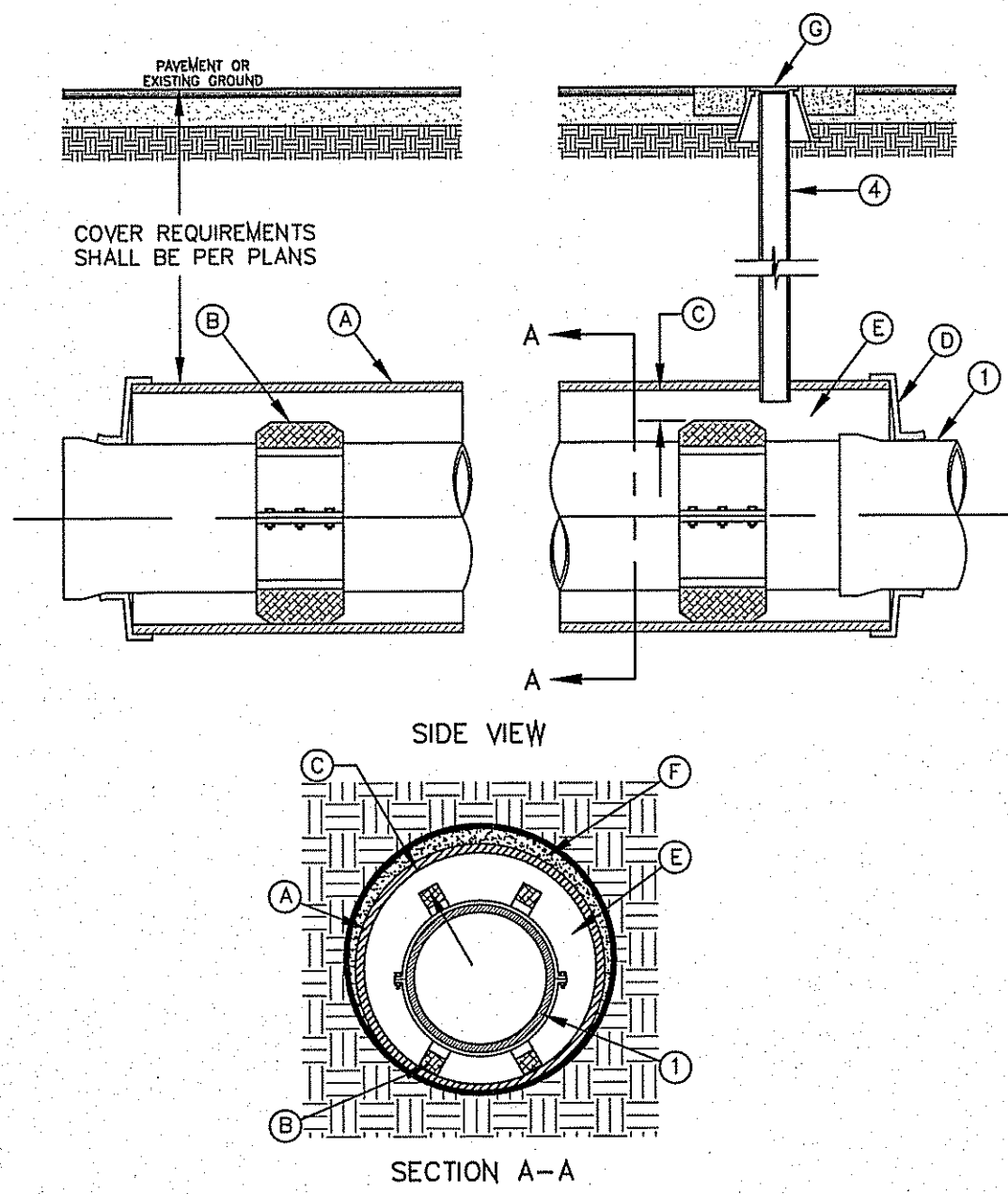


- GENERAL NOTES:**
- MANHOLE TYPE "A" SHALL BE USED FOR LINES 21" AND SMALLER.
  - PRE-CAST MANHOLE SECTIONS SHALL BE OF REINFORCED CONCRETE CONFORMING TO ASTM C-478 AND SHALL MEET H5-20 LOADING. PROVIDE REINFORCEMENT WITHIN 3" OF OPENINGS OR KNOCKOUTS, OPENINGS (UP TO 8") MADE IN FIELD SHALL BE CORE DRILLED.
  - CEMENT SHALL BE TYPE I-II, PER ASTM C-150, AND MUST CONTAIN A MINIMUM OF 4% FLY ASH OF THE TOTAL MANHOLE WEIGHT.
  - THE BASE & RISER SHALL BE INTEGRALLY CAST. CONCRETE SHALL BE MIN. 28 DAY COMPRESSIVE STRENGTH 4000psi.
  - MANUFACTURER TO PROVIDE LIFTERS OF ADEQUATE SIZE AS NEEDED.
  - THE SUBGRADE UNDER THE BASE SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM D-1557.
  - MANHOLES BELOW GROUNDWATER TO BE EXTERNALLY AND INTERNALLY COATED WITH BITUMINOUS COATING.



MANHOLE TYPE "A"  
N.T.S.  
**370-1**

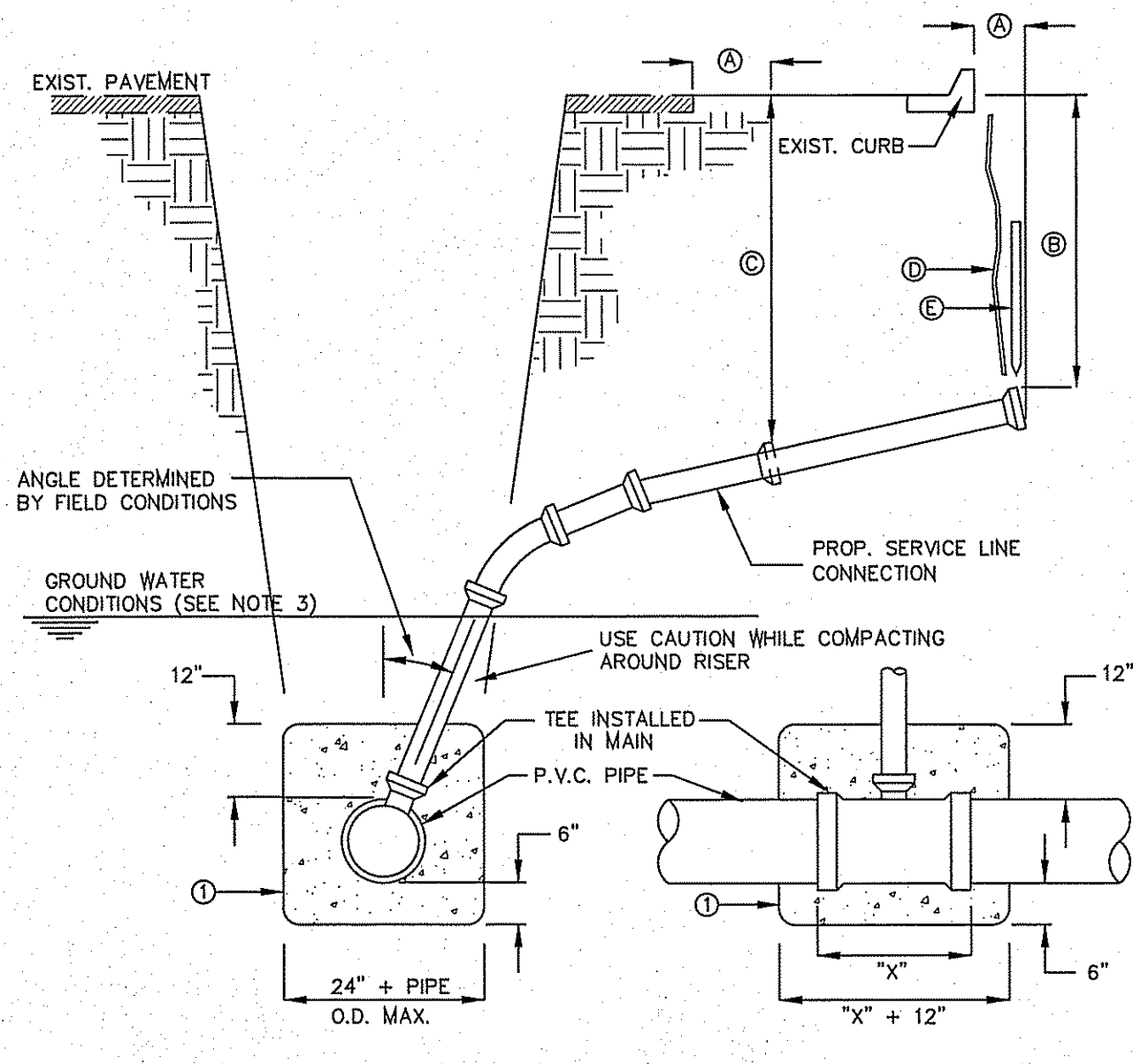
- CONSTRUCTION KEY NOTES:**
- MANHOLE RING AND COVER (SEE DETAILS 377 & 378). SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 185).
  - ALL JOINTS TO BE TONGUE, GROOVE AND SEALED WITH RAM-NEK OR APPROVED EQUAL.
  - PIPE OPENINGS/KNOCKOUTS AS REQUIRED TO FIT PIPE SIZE AND SHALL HAVE FLEXIBLE PIPE TO MANHOLE CONNECTORS (COMPRESSION TYPE ASTM-923), "KOR-N-SEAL" OR APPROVED EQUAL. GROUT AS REQUIRED.
  - CONCRETE BASE SHALL BE 8" FOR MH'S UP TO 12" DEEP AND 12" FOR DEPTHS GREATER THAN 12".



CARRIER PIPE INSTALLATION  
WITH CASING INSULATORS  
N.T.S.  
**180**

- GENERAL NOTES:**
- INSTALLATION FOR APPROVED CARRIER PIPE.
  - CASING SHALL BE INSTALLED USING EITHER JACKING, BORING OR TUNNELING METHODS FROM THE END WHICH CREATES A MINIMUM OF ACCESS AND RELOCATION PROBLEMS.
  - INSULATED SPACERS SHALL BE USED WHEN SPECIFIED, TO PROVIDE CORROSION PROTECTION.
  - PRECAUTIONARY OUTLET ("6") WITH BONNET BOX AND COVER SHALL BE USED WHEN REQUIRED BY OTHER GOVERNING AGENCIES.

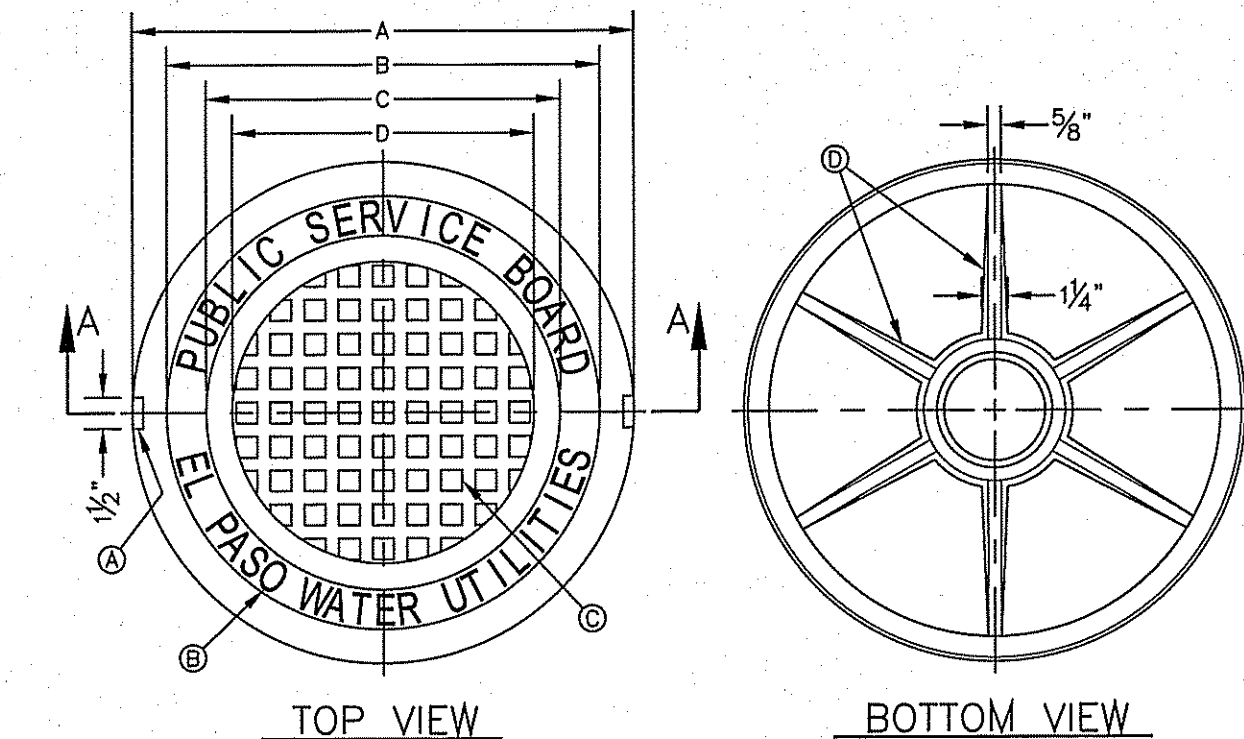
- CONSTRUCTION KEY NOTES:**
- STEEL CASING MINIMUM YIELD 36000 PSI, SIZE AND LENGTH AS SPECIFIED.
  - CASING INSULATORS, SPACING AND LOCATION PER MANUFACTURER'S RECOMMENDATIONS. INSULATORS SHALL FIT SNUG OVER THE CARRIER PIPE.
  - POSITION CARRIER PIPE APPROXIMATELY IN CENTER OF CASING. MINIMUM SPACING BETWEEN INSULATOR AND CARRIER PIPE SHALL BE 1". MAXIMUM SPACING SHALL BE 2".
  - END SHALL BE SEALED WITH BRICK AND MORTAR, BULKHEAD AND GROUT, OR WITH SYNTHETIC RUBBER SEAL, AS SPECIFIED.
  - ANNULAR SPACE SHALL BE LEFT OPEN FOR CATHODICALLY PROTECTED SYSTEM WHERE BOTH CASING AND CARRIER PIPE ARE METALLIC MATERIAL, OR AS OTHERWISE SPECIFIED.
  - PRESSURE GROUT ANNULAR SPACE OUTSIDE CASING AFTER CASING IS INSTALLED.
  - BONNET BOX AND COVER (SEE DETAILS 268, 269-1 & 269-2) SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 260).



SEWER SERVICE RISER  
AND SERVICE LINE CONNECTION  
N.T.S.  
**391**

- GENERAL NOTES:**
- IN GROUNDWATER CONDITIONS ONLY, P.V.C. SADDLES OR TEES ARE TO BE ENCASED WITH CLASS B CONCRETE.
  - UNDER CERTAIN CONDITIONS FIELD INVESTIGATIONS WILL BE REQUIRED TO DETERMINE THE ADEQUACY OF THE DEPTH OF THE LATERAL.
  - WHEN GROUND WATER IS ENCOUNTERED SERVICE RISER SHALL BE EXTENDED ABOVE ANTICIPATED WATER TABLE LEVEL.

- CONSTRUCTION KEY NOTES:**
- CONTRACTOR TO INSTALL SEWER SERVICE LINE FROM THE MAIN TO A LOCATION 6" BEHIND THE CURB OR 18" BEYOND THE EDGE OF PAYMENT, UNLESS CONDITIONS REQUIRE OTHERWISE.
  - 18" FOR STANDARD SUBDIVISION, 3.5' FOR SUBDIVISIONS WITH ON-SITE PONDING OR FLAT TERRAIN.
  - RISERS OR LATERALS EXTENDING BEYOND EXISTING ROADWAY OR OTHERWISE, UNLESS CONDITIONS REQUIRE OTHERWISE.
  - PLASTIC METALLIC MARKING TAPE RISING TO WITHIN 8" OF GROUND SURFACE OR METALLIC DISK.
  - WOODEN STAKE (1"x2"x36") VERTICALLY PLACED AT PLUGGED END OF PROPOSED SERVICE LINE.



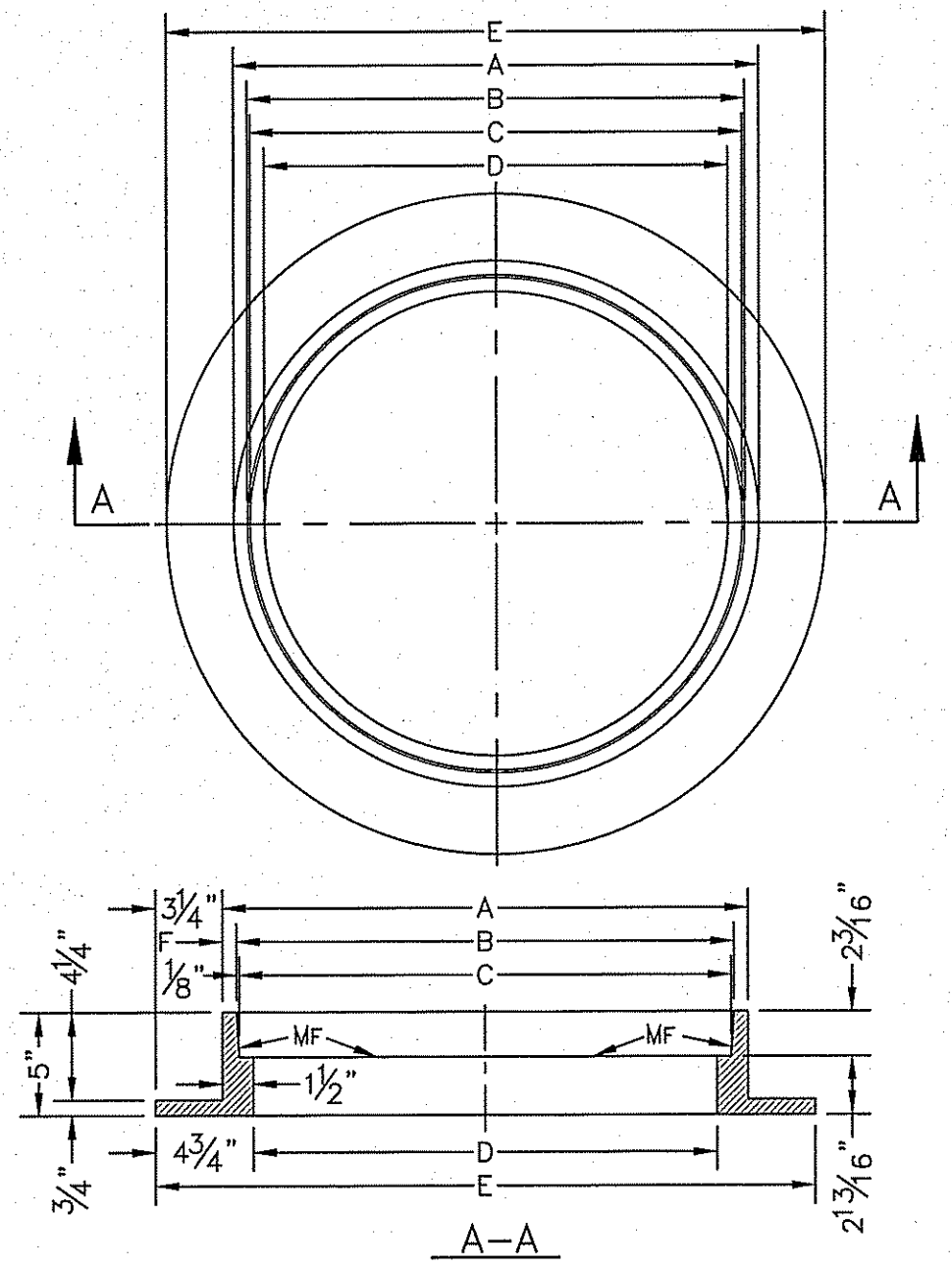
- GENERAL NOTES:**
- MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
  - CASTING TO BE SMOOTH & VOID OF AIR HOLES. CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
  - AS-CAST DIMENSIONS MAY VARY 1/8"±/ PER FOOT (AASHTO M306-07).
  - WEIGHT MAY VARY 5%± (AASHTO M306-07).

- CONSTRUCTION KEY NOTES:**
- LIFTING NOTCH.
  - 3/4" RAISED LETTERING.
  - 1" SQUARES (1/2" TALL) WITH 5/8" SPACE BETWEEN.
  - REINFORCING RIBS.
  - SLOT.

MANHOLE COVER	MANHOLE - ALL TYPES	*MANHOLE TYPE A, A1, A2 & C
A	31 3/8"	23 3/8"
B	28"	20"
C	24 3/8"	16"
D	21 1/8"	14"
WEIGHT	265 lbs.	165 lbs.

\*OBSOLETE - DO NOT USE (FOR REFERENCE ONLY)

SEWER MANHOLE COVER  
N.T.S.  
**378**

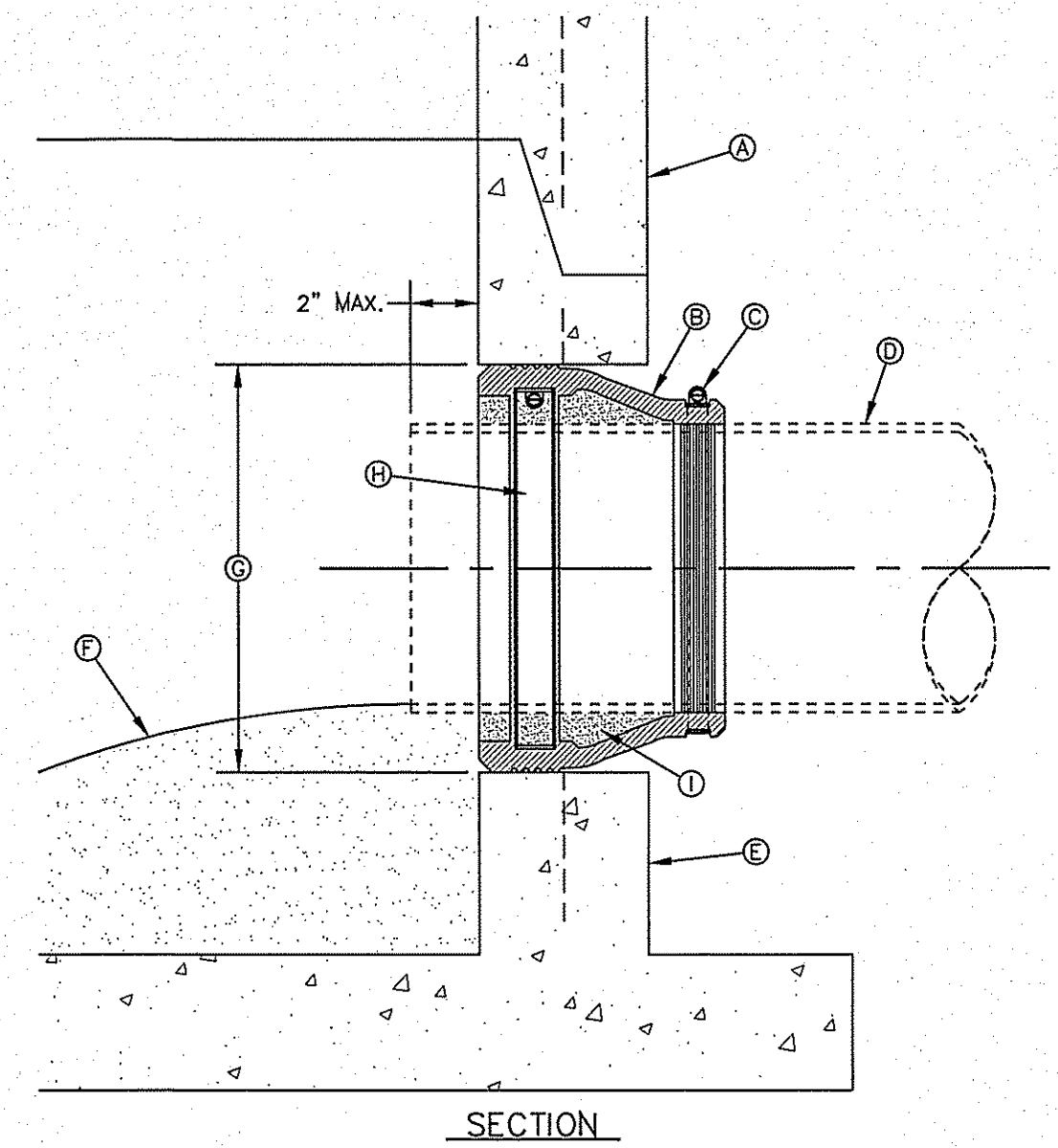


SEWER MANHOLE RING  
N.T.S.  
**377**

- GENERAL NOTES:**
- MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
  - CASTING TO BE SMOOTH & VOID OF AIR HOLES.
  - CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
  - AS-CAST DIMENSIONS MAY VARY 1/8"±/ PER FOOT (AASHTO M306-07).
  - WEIGHT MAY VARY 5%± (AASHTO M306-07).

MANHOLE RING	MANHOLE - ALL TYPES	*MANHOLE TYPE A, A1, A2 & C
A	33"	25 1/2"
B	31 3/4"	24 1/8"
C	31 1/2"	23 3/8"
D	30"	22 1/2"
E	29 1/2"	22"
F	28"	21 1/8"
WEIGHT	220 lbs.	170 lbs.

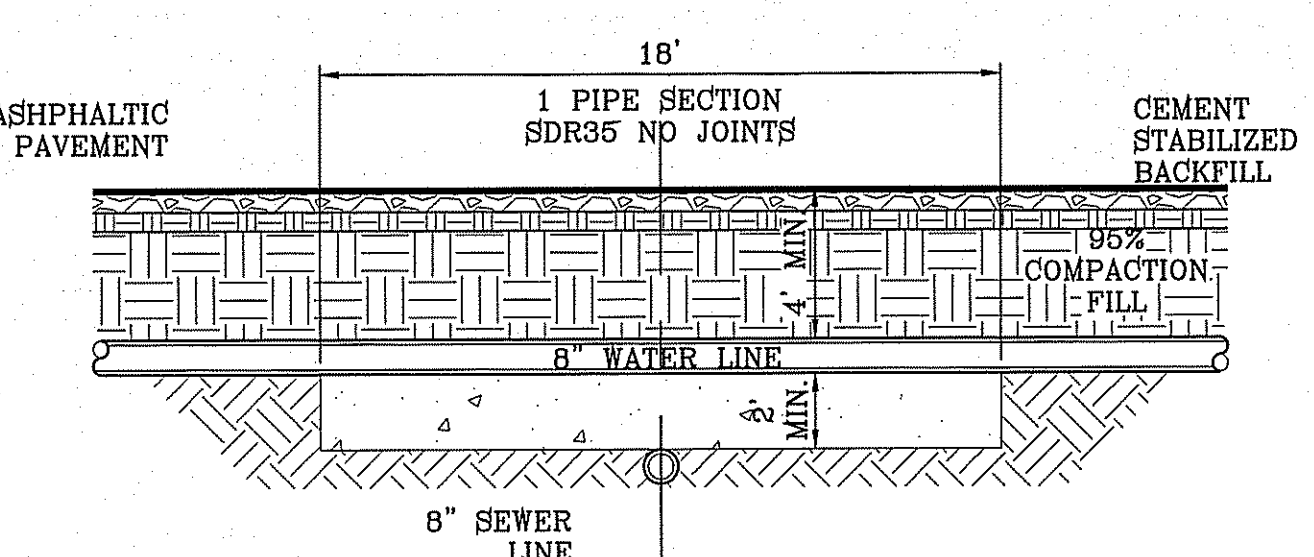
\*OBSOLETE - DO NOT USE (FOR REFERENCE ONLY)



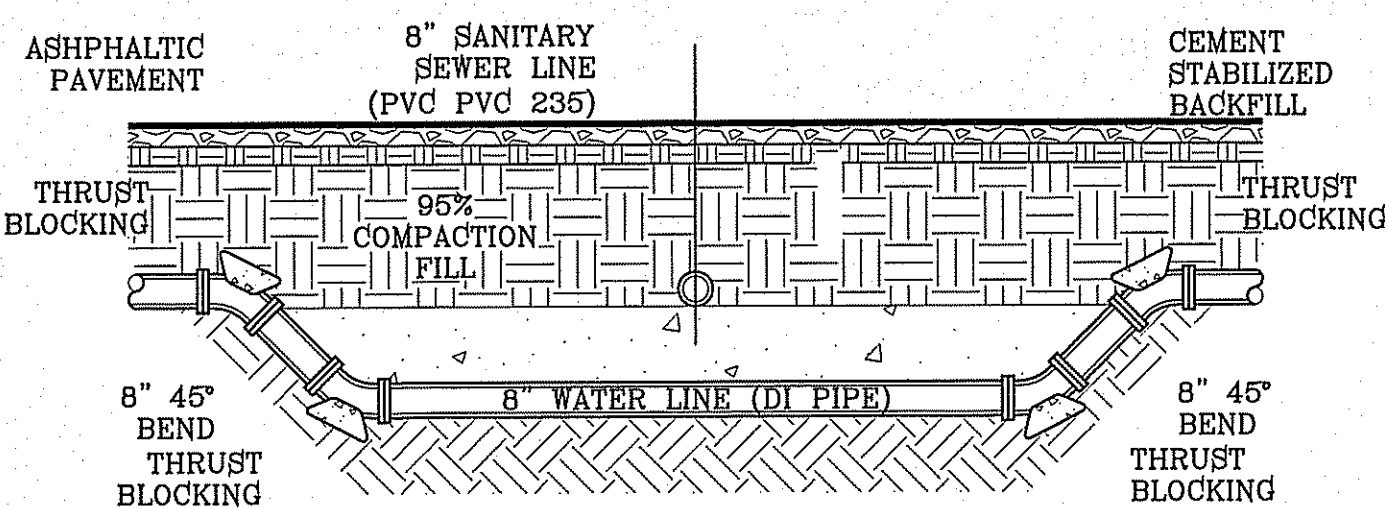
PIPE CONNECTION TO MANHOLE  
N.T.S.

- GENERAL NOTES:**
- MANHOLE CONNECTOR SHALL BE KOR-N-SEAL OR EQUAL MEETING THE REQUIREMENTS OF ASTM C-923. CONNECTOR SHALL BE FURNISHED BY CONTRACTOR.

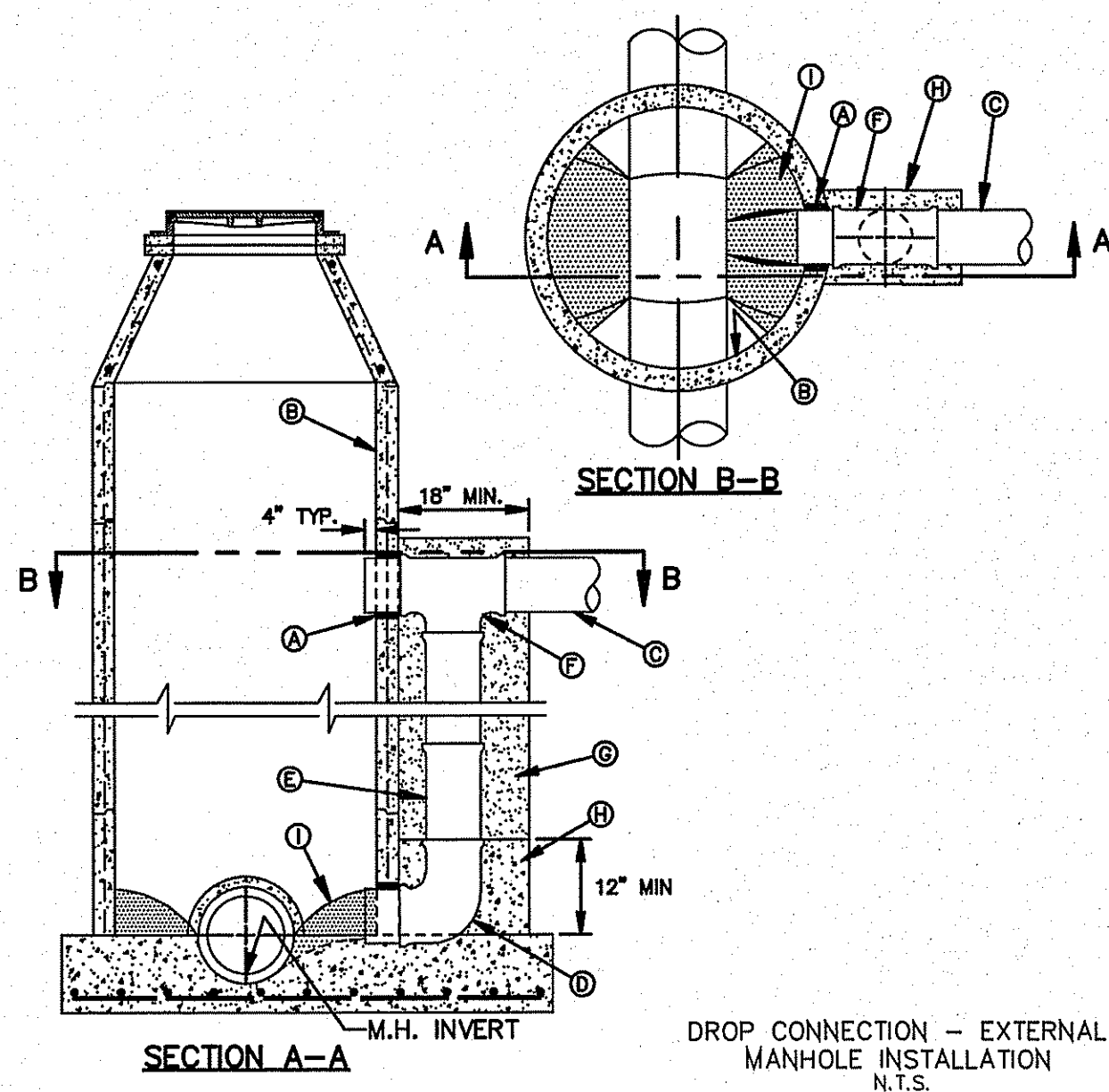
- CONSTRUCTION KEY NOTES:**
- PRECAST MANHOLE BARREL.
  - FLEXIBLE CONNECTOR.
  - PIPE CLAMP SS 316.
  - APPROVED PIPE.
  - PRECAST MANHOLE BASE.
  - GROUT AS REQUIRED TO FORM SMOOTH CHANNEL TO MANHOLE INVERT.
  - PIPE OPENINGS/KNOCKOUTS AS REQUIRED TO FIT PIPE SIZE.
  - EXPANSION BAND SS 316.
  - FILL SPACE WITH GROUT.



CONDITION 1  
SCALE: 1"=6"



CONDITION 2  
SCALE: 1"=6"



DROP CONNECTION - EXTERNAL  
MANHOLE INSTALLATION  
N.T.S.  
**375-1**

- GENERAL NOTES:**
- DROP CONNECTION SHOWN MAY BE USED ON ALL MANHOLE TYPES (NOT RECOMMENDED IN GROUND WATER CONDITIONS).
  - DROP CONNECTION TO BE CONSTRUCTED WHEN INVERT ELEVATION OF INFLUENT PIPE IS 3 FEET (OR GREATER) ABOVE THE MANHOLE INVERT.

- CONSTRUCTION KEY NOTES:**
- PIPE OPENINGS IN MANHOLE RISERS SHALL HAVE COMPRESSION TYPE FLEXIBLE PIPE TO MANHOLE CONNECTORS (A.S.T.M.- C823) "KOR-N-SEAL" OR APPROVED EQUAL.
  - MANHOLE WALL.
  - INFLUENT SEWER PIPE.
  - 90° BEND (P.V.C.).
  - P.V.C. PIPE (SDR 35).
  - P.V.C. TEE.
  - CONCRETE FLOWABLE FILL.
  - 2500 psi CONCRETE.
  - USE GROUT TO FORM A SMOOTH CHANNEL TO MANHOLE INVERT.



**CONDE INC.**  
ENGINEERING / PLANNING  
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6060 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0288



**SEWER DETAILS**

**EL PASO WATER UTILITY  
DETAILS NUMBERS:  
180, 370-1, 376, 377, 378, 391**

BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF MINE PARK DR. AND FRISBIAN TRAIL DR. ELEVATION 4063.16	BY
DATE	REVISIONS

PROJECT NAME  
**TERRA DEL ESTE UNIT  
SEVENTY SEVEN**  
BEING PORTION OF SECTION 16, BLOCK 78,  
SOUTHWEST QUARTER RAILWAY SURVEY,  
TEXAS AND PACIFIC RAILWAY COMPANY  
EL PASO COUNTY, TEXAS  
CONTAINING: 54.017± ACRES

ENGINEER'S SEAL	DATE: FEB. 2014	DESIGN BY: YC	INITIATED BY: DN	CHECKED BY: YC	JOB NO.: 414-43
ENGINEER'S SEAL	DATE: FEB. 2014	DESIGN BY: YC	INITIATED BY: DN	CHECKED BY: YC	JOB NO.: 414-43
ENGINEER'S SEAL	DATE: FEB. 2014	DESIGN BY: YC	INITIATED BY: DN	CHECKED BY: YC	JOB NO.: 414-43



FILE S:\Subdivisions\TIE 77\DWG\WATER SEWER AND DETAILS PLOTTED Monday, October 12, 2015 2:46:26 PM

**WATER AND SEWER NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TCEQ AND EL PASO WATER UTILITIES DESIGN STANDARDS AND SPECIFICATIONS WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT SHALL BE APPLIED. CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS, AT A MINIMUM, MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS."
  - PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION CONFERENCE BETWEEN THE CONSULTING ENGINEERS REPRESENTATIVE, CONTRACTORS(A), PSB ENGINEER, EL PASO COUNTY (IF APPROPRIATE), THE PSB AND ANY OTHER AFFECTED PARTIES. NOTIFY ALL SUCH PARTIES AT LEAST 48 HOURS PRIOR TO THE TIME OF THE CONFERENCE AND 48 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
  - THE CONTRACTOR SHALL GIVE THE ENGINEER, CITY, AND THE PSB A MINIMUM OF 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. PUBLIC WATER AND SEWER UTILITY WORK, INCLUDING TIE-INS SHALL NOT BE PERFORMED UNTIL A DEVELOPMENT AGREEMENT HAS BEEN EXECUTED BETWEEN THE OWNER AND EPWU-PSB. WORK SHALL BE COORDINATED WITH EPWU-PSB FIELD ENGINEER AT LEAST 48 HOURS PRIOR TO COMMENCING ANY PUBLIC UTILITY WORK.
  - ANY EXISTING PAYMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE BEFORE ACCEPTANCE OF THE WORK.
  - THE LOCATION OF ANY WATER AND/OR WASTEWATER LINES TO BE CROSSED OR CONNECTED TO SHALL BE VERIFIED BY THE CONTRACTOR AT THE TIME OF COMMENCEMENT OF CONSTRUCTION.
  - CONTRACTORS SHALL VERIFY EXACT DEPTH AND LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, DRIVEWAYS, PAVEMENT, CURB & GUTTER, SIDEWALKS, ETC. SHALL BE REPAIRED BY THE CONTRACTOR, OR THE UTILITY, AT UTILITIES OPTION, AND CONTRACTOR, OR THE UTILITY, AT UTILITIES OPTION, AND SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
  - ALL WATER MAINS SHALL HAVE A MINIMUM 48 INCHES OF COVER FROM FINISHED GRADE OR 40 INCHES BELOW ACTUAL SUBGRADE UNLESS OTHERWISE DENOTED ON THE PLANS.
  - CONTACT THE EL PASO WATER UTILITIES AND ANY OTHER CONCERNED PARTIES 48 HOURS PRIOR TO CONNECTING TO EXISTING WATER AND/OR WASTEWATER LINES.
  - ALL FILL AREAS OVER ALL UTILITIES, SHALL BE COMPACTED TO 95 % STANDARD PROCTOR DENSITY IN ACCORDANCE WITH TEX 113-E METHOD.
  - WATER AND WASTEWATER ALIGNMENTS SHOWN ON THE PLANS SHOULD BE ACHIEVED BY DEFLECTION WITH THE MANUFACTURER'S SPECIFICATIONS, EXCEPT WHERE SPECIFIC FITTINGS ARE CALLED FOR THE PLANS.
  - IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING UTILITIES SUCH AS GAS LINES, ELECTRIC LINES, WATERLINES, VALVE BOXES, FIRE HYDRANTS, STRUCTURES, AND OTHER APPURTENANCES THAT LIE WITHIN THE RIGHT-OF-WAY OR EASEMENTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL UTILITIES, DRIVEWAYS, PAVEMENT, CURB, GUTTER, SIDEWALKS, FENCES AND OTHER ITEMS DAMAGED DURING CONSTRUCTION REGARDLESS OF WHETHER ALL ITEMS ARE SHOWN ON THE PLANS AT HIS SOLE EXPENSE. IN ADDITION TO NORMAL PRECAUTIONS WHEN EXCAVATING, TAKE EXTRA CAUTION WHEN EXCAVATING WITHIN 25 FT. OF ANY UTILITIES SHOWN ON THE PLANS.
  - THE CONTRACTOR SHALL INCLUDE ADDITIONAL FLUSHING VALVES AND TEST CONNECTIONS NECESSARY TO PERFORM TEST AND STERILIZATION OPERATION.
  - ALL CONSTRUCTION ACTIVITIES, INCLUDING ACCESS, EGRESS, TRAVEL, STOCKPILING, ETC. ARE TO BE CONFINED TO AREAS IDENTIFIED BY THE ENGINEER.
  - DISPOSAL OF ALL SOIL OFFSITE WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
  - PIPE FITTINGS AND JOINTS: WATER PIPE-PVC SDR 14, C-900, CL-350 WITH BOLTLESS GASKETED JOINTS AND C.I., M.I. OR PLANGED PIPE FITTINGS UNLESS OTHERWISE SHOWN ON THE PLANS; FLUSHING VALVE / FIRE HYDRANT LEAD - DUCTILE IRON, CLASS 60, MECHANICAL JOINTS AND C.I. (D.I. ENDS) FITTINGS, UNLESS OTHERWISE SHOWN ON THE PLANS; GRAVITY SEWER - PVC SDR 35 AND SDR 26 UNLESS OTHERWISE NOTED. ALL PIPES, FITTINGS, VALVES, HYDRANTS, AND OTHER APPURTENANCES TO BE USED ON THE INSTALLATION OF PUBLIC SYSTEMS SHALL CONFORM TO THE MATERIALS AND DIMENSIONS DEPICTED ON CURRENT EPWU-PSB STANDARD DETAILS.
  - ALL GATE VALVES SHALL HAVE RESILIENT VALVE SEATS.
  - AT ALL LOCATIONS WHERE A WATERLINE CROSSES A WASTEWATER LINE, THE CONSTRUCTION SHALL STRICTLY COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS OF THE TCEQ, TCEQ SPECIFICATIONS FOR LOCATION OF WATERLINES AS REQUIRED IN TITLE 30 TAC, CHAPTER 290.44(e) (RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS) ARE MINIMUM REQUIREMENTS.
  - THE CONTRACTOR SHALL FURNISH THE ENGINEER ONE SET OF AS-BUILT PLANS REFLECTING ALL CHANGES MADE IN THE FIELD, AND TWO MEASUREMENTS TO ALL VALVES AND MANHOLES INSTALLED FROM PERMANENT OBJECTS.
  - THE PSB AND THE ENGINEER SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO ANY TESTING PHASE (DENSITY, PRESSURE, LEAKAGE, ETC.)
  - MANHOLE CONSTRUCTION AND REHABILITATION: ALL MANHOLES ARE WATERTIGHT, WITH WATERTIGHT RINGS AND COVERS. IF MANHOLES ARE WITHIN THE 100-YEAR FLOODPLAIN THE MANHOLE COVERS SHALL HAVE GASKETS AND BE BOLTED. WHERE GASKETED MANHOLES COVERS ARE REQUIRED FOR MORE THAN THREE MANHOLES IN SEQUENCE, ALTERNATE MEANS OF VENTING SHALL BE PROVIDED. BRICKS ARE NOT AN ACCEPTABLE CONSTRUCTION MATERIAL FOR ANY PORTION OF THE MANHOLE PER 30 TAC 290.317.2 (5)(F).
  - CONSTRUCTION OF PUBLIC WATER AND SEWER SYSTEM INCLUDING MATERIALS AND TESTING SHALL CONFORM WITH EPWU-PSB STANDARD SPECIFICATIONS FOR THE INSTALLATION OF WATER MAINS, SANITARY SEWER MAIN AND RELATED APPURTENANCES.
- ALL MANHOLES MUST BE TESTED TO MEET OR EXCEED THE FOLLOWING REQUIREMENTS:
- MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES. ALL MANHOLES MUST BE HYDROSTATICALLY TESTED WITH A MAXIMUM-LOSS ALLOWANCE OF 0.025-GALLON PER FOOT DIAMETER PER FOOT OF HEAD PER HOUR. OTHER TESTING METHODS, SUCH AS VACUUM TESTING, MAY BE APPROVED ON A CASE-BY-CASE BASIS BY THE EXECUTIVE DIRECTOR OF THE TCEQ.
- ALL 8" SEWER LINES SHALL BE TESTED USING THE FOLLOWING METHOD:
    - ALL LOW PRESSURE AIR SHALL CONFORM TO THE PROCEDURES DESCRIBED IN ASTM C-828, ASTM C-924, OR OTHER APPROPRIATE PROCEDURES. THE TIME FOR THE PRESSURE TO DROP SHALL BE AT LEAST AS STRINGENT AS THE REQUIREMENTS OF TCEQ RULES SECTION 317.2(A)(4)(B) DESCRIBED BELOW.
 

FOR SECTIONS OF PIPE UP TO 36-INCHES AVERAGE INSIDE DIAMETER MINIMUM TIME ALLOWABLE FOR THE PRESSURE TO DROP FROM 3.5 FOOT PER SQUARE INCH GAUGE TO 2.5 POUNDS PER SQUARE INCH GAUGE SHALL BE COMPUTED FROM THE FOLLOWING EQUATION:

$$T = \frac{0.0850(D)(K)}{(Q)} \text{ WHERE } T = \text{TIME FOR PRESSURE TO DROP 1.0 POUND PER SQUARE INCH GAUGE IN SECONDS.}$$

$$K = 0.000418(D)(L) \text{ BUT NOT LESS THAN } 1.0$$

$$D = \text{AVERAGE INSIDE DIAMETER IN INCHES}$$

$$L = \text{LENGTH OF LINE IN FEET OF SAME SIZE BEING TESTED}$$

$$Q = \text{RATE OF LOSS, 0.0015 CUBIC FEET PER MINUTE PER SQUARE FOR INTERNAL SURFACE SHALL BE USED.}$$

SINCE A K VALUE OF LESS THAN 1.0 SHALL NOT BE USED, THERE ARE MINIMUM TIMES FOR EACH PIPE DIAMETER AS OUTLINED BELOW:

PIPE DIA. (IN)	MIN. TIME (SEC)	LEN. FOR MIN (FT)	TIME FOR LONGER LENGTH (SEC)
6	340	398	0.865 (L)
8	454	298	1.520 (L)
10	567	239	2.374 (L)
12	680	199	3.419 (L)
15	850	169	5.342 (L)
18	1020	133	7.893 (L)
21	1190	114	10.471 (L)
24	1360	100	13.676 (L)
27	1530	88	17.309 (L)
30	1700	80	21.369 (L)
33	1870	72	26.866 (L)
    - ALL INFILTRATION/EXFILTRATION TESTS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS. THE TOTAL INFILTRATION OR EXFILTRATION, AS DETERMINED BY WATER TEST, MUST BE AT A RATE NOT GREATER THAN 60 GALLONS PER INCH OF PIPE DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO FEET. IF THE QUANTITY OF INFILTRATION OR EXFILTRATION EXCEEDS THE MAXIMUM QUANTITY SPECIFIED, REMEDIAL ACTION MUST BE UNDERTAKEN IN ORDER TO REDUCE THE INFILTRATION OR EXFILTRATION TO AN AMOUNT WITHIN THE LIMITS SPECIFIED IN 30 TAC SEC 317.2 (A)(4)(A).
    - DEFLECTION TEST SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID PIPES. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF FIVE PERCENT. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL OR MANDREL, SUCH TEST DEVICE SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TESTS SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES. THE DESIGN ENGINEER SHOULD RECOGNIZE THAT THIS IS A MAXIMUM DEFLECTION CRITERION FOR ALL PIPES. A REDUCED PERCENT DEFLECTION MAY BE MORE APPROPRIATE FOR SPECIFIC TYPES AND SIZES OF PIPE. REFERENCE 30 TAC SEC 317.2 (A)(4)(A).
  - THE BEDDING AND BACKFILL FOR FLEXIBLE PIPE SHALL COMPLY WITH THE STANDARDS OF ASTM D-2321, CLASSES I OR II. FOR RIGID PIPE BEDDING SHALL COMPLY WITH THE REQUIREMENTS OF ASTM-C-12 CLASSES A OR B. REFERENCE 30 TAC 6317.2.A.5

- 8" SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE OR WHEN A NEW 8" SEWER LINE IS CONNECTED TO AN EXISTING STUB OR CLEAN-OUT, IT SHALL BE TESTED FROM AN EXISTING MANHOLE TO A NEW MANHOLE.
  - WATER LINE/NEW 8" SEWER LINE SEPARATION: WHEN NEW SANITARY SEWERS ARE INSTALLED, THEY SHALL BE INSTALLED NO CLOSER TO WATER LINES THAN NINE FEET IN ALL DIRECTIONS. SEWERS THAT PARALLEL WATER LINES MUST BE INSTALLED IN SEPARATE TRENCHES. WHERE THE TEN (10) FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING GUIDELINES APPLY:
    - WHERE A SANITARY SEWER PARALLELS A WATER LINE, THE SEWER SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC MEETING ASTM SPECIFICATION WITH A PRESSURE RATING FOR BOTH THE PIPE AND JOINTS OF 160 PSI. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF TWO FEET BETWEEN OUTSIDE DIAMETERS AND THE HORIZONTAL SEPARATION SHALL BE A MINIMUM OF FOUR FEET BETWEEN OUTSIDE DIAMETERS. THE SEWER SHALL BE LOCATED BELOW THE WATER LINE.
    - WHERE A SANITARY SEWER CROSSES A WATER LINE AND THE SEWER IS CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM PRESSURE RATING OF 160 PSI, AN ABSOLUTE MINIMUM DISTANCE OF 6 INCHES BETWEEN OUTSIDE DIAMETERS SHALL BE MAINTAINED. IN ADDITION THE SEWER SHALL BE LOCATED BELOW THE WATER LINE WHERE POSSIBLE AND ONE LENGTH OF THE SEWER PIPE MUST BE CENTERED ON THE WATER LINE.
    - WHERE A SEWER CROSSES UNDER A WATER LINE AND THE SEWER IS CONSTRUCTED OF ABS TRUSS PIPE, SIMILAR SEMI-RIGID PLASTIC COMPOSITE PIPE, CLAY PIPE OR CONCRETE PIPE WITH GASKETED JOINTS, A MINIMUM TWO FOOT SEPARATION DISTANCE SHALL BE MAINTAINED. THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF SEWER WITHIN NINE FEET OF THE WATER LINE. THIS INITIAL BACKFILL SHALL BE FROM ONE QUARTER DIAMETER BELOW THE CENTERLINE OF THE PIPE TO ONE PIPE DIAMETER (BUT NOT LESS THAN 12 INCHES) ABOVE THE TOP OF THE PIPE.
    - WHERE A SEWER CROSSES OVER A WATER LINE ALL PORTIONS OF THE SEWER WITHIN NINE FEET OF THE WATER LINE SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC PIPE WITH A PRESSURE RATING OF AT LEAST 160 PSI USING APPROPRIATE ADAPTERS. IN LIEU OF THIS PROCEDURE, THE NEW CONVEYANCE MAY BE ENCASED IN A JOINT OF 160 PSI PRESSURE CLASS PIPE AT LEAST 16 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT 5 FEET INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHOULD BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL.
    - UNLESS MANHOLES CAN BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE THEY MUST BE INSTALLED SO AS TO PROVIDE A MINIMUM OF NINE FEET OF HORIZONTAL CLEARANCE FROM AN EXISTING OR PROPOSED WATER LINE. IF THE NINE FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE WATERLINE MUST BE ENCASED IN A JOINT OF 160 PSI PRESSURE CLASS PIPE AT LEAST 16 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE WATERLINE. THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT 5 FOOT INTERVALS WITH SPACERS OR BE FILLED TO THE SPRINGLINE WITH WASHED SAND. THE ENCASEMENT PIPE SHALL BE CENTERED TO THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEAL.
  - SEWERS SHALL BE LAID IN STRAIGHT ALIGNMENT WITH UNIFORM GRADE BETWEEN MANHOLES. DEVIATION FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE SHALL BE APPROVED ONLY ON A CASE BY CASE BASIS BY THE TCEQ. IF APPROVAL IS GIVEN FOR DEVIATION FROM STRAIGHT ALIGNMENT AND UNIFORM GRADE, CURRENT COMMISSION POLICY REGARDING HORIZONTAL CURVATURE SHALL BE COMPLIED WITH FULLY.
 

**GENERAL NOTES FOR CURVED 8" SEWER LINES:**

    - ALL CURVATURE OF SEWER PIPE WILL BE ACHIEVED BY PIPE DEFLECTION PER THE MANUFACTURER'S RECOMMENDED PROCEDURE
    - IN-PLACE DEFLECTION TESTS (MANDREL TEST) MUST BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID PIPE IN ACCORDANCE WITH 30 TAC SEC317.2 (A)(4)(C).
    - INFILTRATION TEST SHALL BE CONDUCTED IN ACCORDANCE WITH 30 TAC SEC317.2 (A)(4)(A) - 60 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE.
    - SPECIFIC CARE SHALL BE TAKEN TO ENSURE THAT THE JOINT IS PLACED IN THE CENTER OF THE TRENCH AND PROPERLY BEDDED IN ACCORDANCE WITH 30 TAC SEC 317.2 (A)(6).
  - THE ASTM, ANSI, OR AWWA SPECIFICATION NUMBERS FOR THE PIPE AND JOINTS ARE ASTM D3034 & ASTM 2241. THE PIPE MATERIAL, THE PRESSURE CLASSES, AND THE SDR AND/OR DR DESIGNATIONS ARE SDR 35 AND SDR 26.
  - THE DIAMETER OF THE MANHOLES SHALL BE A MINIMUM OF FOUR FEET AND THE MANHOLE COVERS SHALL HAVE A MINIMUM NOMINAL DIAMETER OF 30". THESE DIMENSIONS ARE LABELED ON THE MANHOLE DRAWING ON THE DETAIL SHEET.
  - THE MANHOLE DETAILS SHALL INSURE THAT THE TCEQ RULES CONCERNING SEWER INVERTS HAVE BEEN COMPILED WITH AS DESCRIBED IN 317.2(0)(6)(E).
  - A CROSS SECTION OF THE TRENCH DETAILS IS INCLUDED IN THE PLANS WHICH SHOW THE DIMENSIONS OF THE TRENCH AND PIPE AND THE CLASS OF BEDDING MATERIAL REQUIRED.
  - AFTER THE PIPE HAS BEEN INSTALLED AND CONNECTED, A PRESSURE TEST, FOLLOWED BY A LEAKAGE TEST, WILL BE CONDUCTED BY THE CONTRACTOR UNDER THE OBSERVATION OF THE ENGINEER. THE CONTRACTOR SHALL BE PRESENT AND SHALL FURNISH ALL NECESSARY LABOR AND EQUIPMENT FOR CONDUCTING THE TESTS. THE SPECIFIED TEST PRESSURES WILL BE BASED ON THE ELEVATION OF THE LOWEST POINT OF THE LINE OR SECTION UNDER TEST. BEFORE APPLYING THE SPECIFIED TEST PRESSURE, ALL AIR SHALL BE EXPELLED FROM THE PIPE. IF PERMANENT AIR VENTS ARE NOT LOCATED AT THE MAIN POINT, THE CONTRACTOR SHALL INSTALL CORPORATION COCKS AT SUCH POINTS. ALL DRAIN HYDRANT AND FIRE HYDRANT LEADS, WITH THE MAIN 6-INCH GATE VALVE OPEN, THE HYDRANT VALVE SEATS CLOSED AND NOZZEL CAPS OPEN, SHALL BE INCLUDED IN THE TEST.
    - PRESSURE TEST: THE ENTIRE PROJECT OF EACH VALVED SECTION SHALL BE TESTED, AT A PRESSURE OF 200 PSI FOR A SUFFICIENT PERIOD (APPROXIMATELY 10 MINUTES) TO DISCOVER ALL LEAKING OR DEFECTIVE MATERIALS. REPAIRS SHALL BE MADE BY THE CONTRACTOR TO CORRECT ANY LEAKING OR DEFECTIVE MATERIALS.
    - PRESSURE PIPE LEAKAGE TEST: A LEAKAGE TEST WILL FOLLOW THE PRESSURE TEST AND BE CONDUCTED ON THE ENTIRE PROJECT OR EACH VALVED SECTION. THE LEAKAGE TEST SHALL BE AT 160 PSI FOR AT LEAST 1 HOUR, UNLESS OTHERWISE SPECIFIED.
  - ALLOWABLE LEAKAGE: LEAKAGE SHALL BE DEFINED AS THE QUANTITY OF WATER THAT MUST BE SUPPLIED INTO THE PIPE SECTION BEING TESTED TO MAINTAIN A PRESSURE WITHIN 5 PSI OF THE SPECIFIED LEAKAGE-TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR INTO THE PIPELINE HAS BEEN EXPELLED. NO INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE IS GREATER THAN THAT DETERMINED BY THE FORMULA:
 
$$L = ND \cdot P$$

$$7,400$$

WHERE: L = ALLOWABLE LEAKAGE, IN GALLONS PER HOUR  
 N = NUMBER OF JOINTS IN THE LENGTH OF PIPELINE TESTED  
 D = NOMINAL DIAMETER OF THE PIPE, IN INCHES  
 P = AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST, IN POUNDS PER SQUARE INCH (GAUGE)
  - LOCATING AND CORRECTION OF LEAKAGE: IF SUCH TESTING DISCLOSES LEAKAGE IN EXCESS OF THIS SPECIFIED ALLOWANCE, THE CONTRACTOR, AT HIS EXPENSE, SHALL LOCATE AND CORRECT ALL DEFECTS IN THE PIPE LINE UNTIL THE LEAKAGE IS WITHIN THE INDICATED ALLOWANCE. ALL VISIBLE LEAKAGE IN PIPE SHALL ALSO BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- TCEQ NOTES:**
- THE WATERLINES MUST BE DISINFECTED BEFORE USING ACCORDING TO THE CURRENT STANDARD, AWWA C651-92. A MINIMUM OF ONE BACTERIOLOGICAL SAMPLE MUST BE COLLECTED FOR EACH 1,000 FEET OF COMPLETED WATERLINE TO CHECK EFFICIENCY OF DISINFECTION PROCEDURES AND MUST BE REPEATED IF CONTAMINATION PERSISTS AS PER 290.44(1)(3).
  - ALL NEWLY INSTALLED PIPE AND FITTINGS MUST CONFORM TO ANSI/NSF STANDARD 81 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI. ALL PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST ALSO BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AS PER 290.44(a)(1) AND (2).
  - THE SYSTEM MUST MAINTAIN A MINIMUM PRESSURE OF 35 PSI AT ALL POINTS WITHIN THE DISTRIBUTION NETWORK AT FLOW RATES OF AT LEAST 1.5 GALLONS PER MINUTE PER CONNECTION. WHEN THE SYSTEM IS INTENDED TO PROVIDE FIRE FIGHTING CAPABILITY, IT MUST ALSO MAINTAIN A MINIMUM PRESSURE OF 20 PSI UNDER COMBINED FIRE AND DRINKING WATER FLOW CONDITIONS AS REQUIRED IN 290.44(d) OF THE RULES.
- TRENCH SAFETY NOTES:**
- IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ALL TRENCHES, OVER 5 FEET IN DEPTH IN EITHER HARD AND COMPACT OR SOFT AND UNSTABLE SOIL, SHALL BE SLOPED, SHORED, SHETTED, BRACED OR OTHERWISE SUPPORTED. FURTHERMORE, ALL TRENCHES LESS THAN 5 FEET IN DEPTH SHALL ALSO BE EFFECTIVELY PROTECTED WHEN HAZARDOUS GROUND MOVEMENT MAY BE EXPECTED.
  - IN ACCORDANCE WITH THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, WHEN EMPLOYEES ARE REQUIRED TO BE IN TRENCHES 4-FEET DEEP OR MORE, ADEQUATE MEANS EXIT, SUCH AS A LADDER OR STEPS, MUST BE PROVIDED AND LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.
  - IF TRENCH SAFETY SYSTEM DETAILS WERE NOT PROVIDED IN THE PLANS BECAUSE TRENCHES WERE ANTICIPATED TO BE LESS THAN FIVE FEET IN DEPTH AND DURING CONSTRUCTION IT IS FOUND THAT TRENCHES ARE IN FACT 5 FEET OR MORE IN DEPTH OR TRENCHES LESS THAN 5 FEET IN DEPTH ARE IN AN AREA WHERE HAZARDOUS GROUND MOVEMENT IS EXPECTED, ALL CONSTRUCTION SHALL CEASE. THE TRENCHED AREA SHALL BE BARRICADED AND THE ENGINEER NOTIFIED IMMEDIATELY. CONSTRUCTION SHALL NOT RESUME UNTIL APPROPRIATE TRENCH SAFETY SYSTEM DETAILS, AS DESIGNED BY A PROFESSIONAL ENGINEER, ARE SUBMITTED TO AND ACCEPTED BY THE HORIZON REGIONAL MUNICIPAL UTILITY DISTRICT.
  - CONTRACTOR SHALL PROVIDE TO THE P.S.B. A TRENCH SAFETY PLAN, SEALED BY A REGISTERED ENGINEER.
- UTILITY NOTES:**
- CONTRACTOR MUST COORDINATE WATER SYSTEM WITH SEWER SYSTEM TO PREVENT ANY CONFLICTS WHERE THIS LINES INTERSECT ONE ANOTHER.
  - AREAS WHERE WATER PIPES CROSS OVER SEWER PIPES SHALL NOT HAVE ANY JOINTS.
  - WATER & SEWER TO HAVE A MINIMUM SEPARATION OF 10 FEET.

THE FOLLOWING LIST INCLUDES THE KNOWN RESPONSIBLE AUTHORITIES:

- TEXAS GAS SERVICE (915) 680-7238
- IVAN ALOECER.....(915) 680-7238
- EL PASO ELECTRIC COMPANY (505) 882-2317
- ROBERT BECERRA.....(505) 882-2317
- EL PASO WATER UTILITIES (915) 694-6530
- FELIPE LOPEZ.....(915) 694-6530
- TIME WARNER COMMUNICATIONS (915) 776-7416
- RAY MENDOZA.....(915) 776-7416
- PARKS AND RECREATION (915) 598-0771
- DAVID OCHOA.....(915) 621-3781
- LOUIS ALOYSIUS.....(915) 621-3781
- ATAK (915) 696-5119
- FRANCISCO VACIO.....(915) 696-5119

**WATER NOTES:**

- CONTACT UTILITY COMPANIES FOR EXACT LOCATION FOR UNDERGROUND UTILITIES IN THE AREA.
- PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AT THE FOLLOWING: TAPPING, SLEEVES, TEES, BENDS, PLUGS - ALL FITTINGS.
- INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF (5') FIVE FEET AS PER O.S.H.A. STANDARDS.
- ALL P.V.C. PIPE ON THIS PLAN SHALL BE ENCASED WITH SELECT BEDDING WHEN PLACED IN CITY ROW. IN SITU (ACCEPTABLE) MATERIAL CAN BE USED IN PRIVATE LINES.
- ALL VALVES ON P.V.C. WATER MAINS SHALL BE ANCHORED IN CONCRETE.
- CITY PAVING CUT PERMIT REQUIRED BEFORE EXCAVATION.
- RECONNECTION OF EXISTING WATER LINE SYSTEM SHOWN ON THESE PLANS MUST BE MADE, SUCH THAT MINIMAL INTERRUPTION OF SERVICE TO CUSTOMER IS MADE.
- ALL EXISTING LINES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR PROTECTING 8" SEWER LINES (INCLUDING SERVICES) FROM DAMAGE AS A RESULT OF CONSTRUCTION.
- VALVES AND OTHER PIPE MATERIALS TO BE ABANDONED SHALL BE REMOVED AND DISPOSED AT THE CONTRACTOR'S RESPONSIBILITY AND EXPENSE.
- CONTRACTOR SHALL VERIFY LOCATION OF SERVICES BEFORE CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE WITH CITY CONSTRUCTION SEQUENCE AND TRAFFIC CONTROL PLANS.
- CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE TO CUSTOMERS IF SERVICE WILL BE INTERRUPTED FOR MORE THAN (4) HOURS IN A 24-HOUR PERIOD.
- CONTRACTOR TO ADJUST WATER VALVES TO FINAL GRADE WHERE NECESSARY. COORDINATE FINAL GRADE ELEVATION WITH STREET NAME.
- FIRE PROTECTION LINE TO BE SIZED BY FIRE PROTECTION CONTRACTOR.

**SEWER NOTES:**

- CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA.
- INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF (5') FIVE FEET AS PER O.S.H.A. STANDARDS.
- ALL P.V.C. PIPE ON THIS PLAN SHALL BE ENCASED WITH SELECT BEDDING WHEN PLACED IN CITY ROW. IN SITU (ACCEPTABLE) MATERIAL CAN BE USED IN PRIVATE LINES.
- PROVIDE MANHOLE ADAPTER WHERE P.V.C. PIPE CONNECTS TO MANHOLE.
- WATER & SANITARY SEWER MAIN SEPARATION REQUIREMENTS SHALL COMPLY WITH "T.C.E.Q." MINIMUM VERTICAL SEPARATION REQUIREMENTS. (REFER TO SPECIFICATIONS).
- ALL EXISTING 8" SEWER LINES AND SERVICES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY SERVICE TO CUSTOMERS IF SERVICE WILL BE INTERRUPTED FOR MORE THAN (4) HOURS IN A 24-HOUR PERIOD. CONTRACTOR IS RESPONSIBLE FOR PROTECTING 8" SEWER LINES (INCLUDING SERVICES) FROM DAMAGE AS A RESULT OF CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE WITH CITY CONSTRUCTION SEQUENCE AND TRAFFIC CONTROL PLANS.

**PAVEMENT NOTES:**

SEE SHEET 31 FOR PAVEMENT NOTES

**TERRA DEL ESTE UNIT SEVENTY SEVEN**

BEING PORTION OF SECTION 16, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING: 54.017± ACRES

S C A L E

HORIZ: ---  
 VERT: ---  
 DATE: FEB. 2014  
 DESIGN BY: JC  
 INITIATED BY: DN  
 CHECKED BY: JC  
 JOB NO.: 414-43

ENGINEER'S SEAL

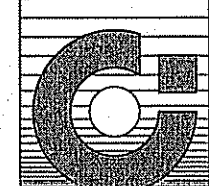
ENGINEER'S SEAL NOT REQUIRED. THIS SHEET IS PRODUCED FROM CITY SUBDIVISION DESIGN STANDARDS

**CONDE INC.**  
 ENGINEERING / PLANNING / SURVEYING / GPS  
 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 692-0286

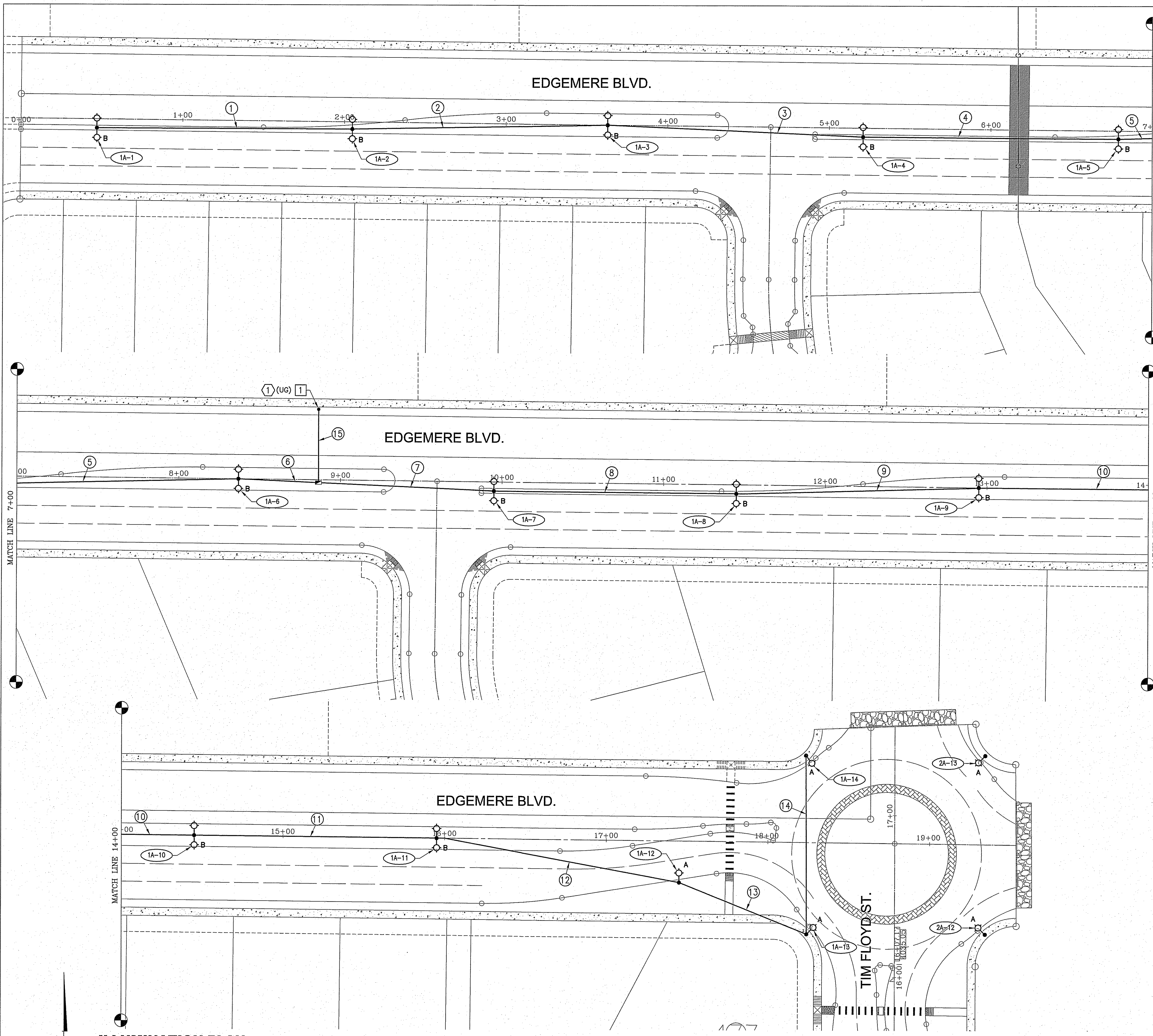
SHEET TITLE

**WATER AND SEWER NOTES**

SHT 40 OF 40







1(1) = TXDOT TY A(240/480) 100(NS) SS(E) GC(O) SEE SHEET ED(4)-03, NO METER.  
NO SAFETY SWITCH, 2 EACH 30A-2P BRANCH BREAKERS, 100A-2P MAIN BREAKER

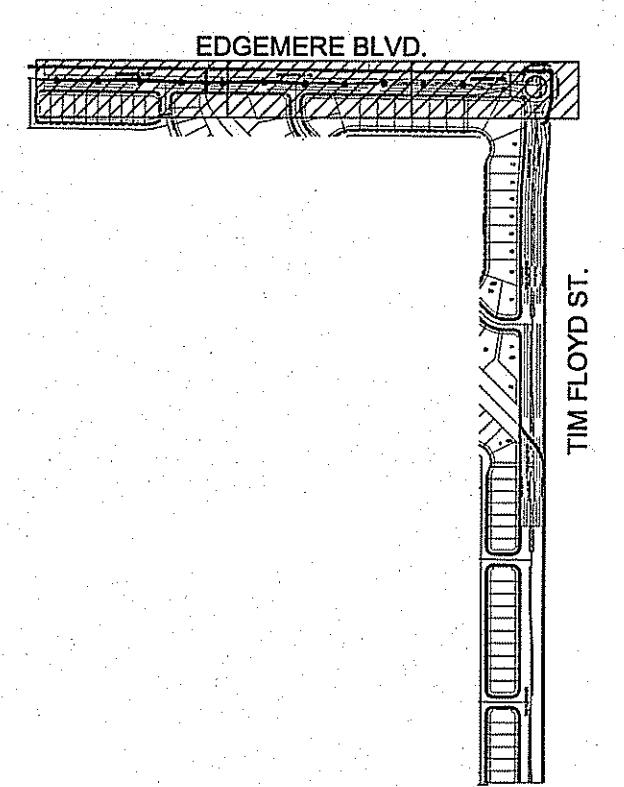
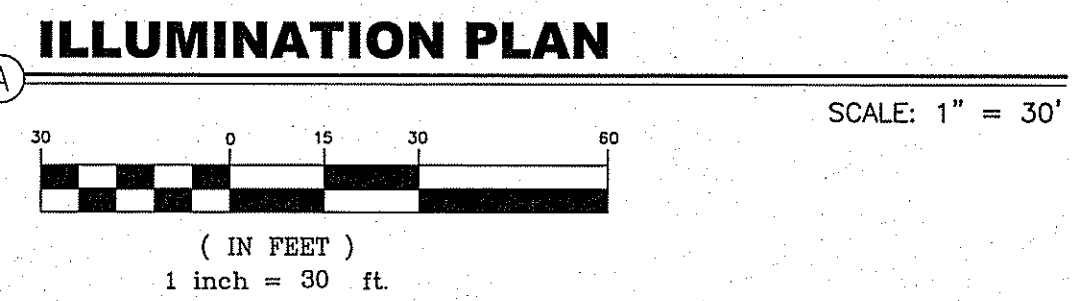
LIGHT NO.	STATION	BASELINE	OFFSET
1A-1	0+47	EDGEMERE	RT
1A-2	2+05	EDGEMERE	RT
1A-3	3+63	EDGEMERE	-
1A-4	5+21	EDGEMERE	RT
1A-5	6+80	EDGEMERE	RT
1A-6	8+37	EDGEMERE	-
1A-7	9+95	EDGEMERE	RT
1A-8	11+45	EDGEMERE	RT
1A-9	12+95	EDGEMERE	-
1A-10	14+45	EDGEMERE	-
1A-11	15+95	EDGEMERE	-
1A-12	17+45	EDGEMERE	RT
1A-13	18+24	EDGEMERE	RT
1A-14	18+24	EDGEMERE	LT

RUN NO.	TRENCH BORE	(PVC) (SCHD 40) (2 INCH) BORE	GROUND WIRE LENGTH	CONDUCTORS QUANTITY & LENGTH		ESTIMATED LENGTH OF RUN (LINEAR FT.)
				#6	#6 XHHW	
1	158	-	158	2 @	158	158
2	158	-	158	2 @	158	158
3	158	-	158	2 @	158	158
4	158	-	158	2 @	158	158
5	158	-	158	2 @	158	158
6	45	-	45	2 @	45	45
7	115	-	115	2 @	115	115
8	150	-	150	2 @	150	150
9	150	-	150	2 @	150	150
10	150	-	150	2 @	150	150
11	150	-	150	2 @	150	150
12	152	-	152	2 @	152	152
13	85	-	85	2 @	85	85
14	110	-	110	2 @	110	110
15	45	-	45	2 @	45	45

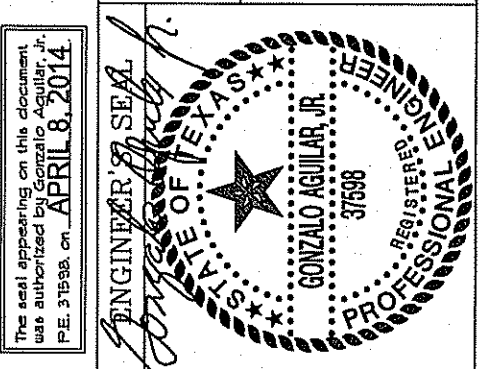
**KEYED NOTES:** THIS SHEET ONLY

1 HEIGHT OF GRANITE CONCRETE SERVICE SUPPORT POLE SHALL BE COORDINATED WITH EL PASO ELECTRIC TO PROVIDE THE REQUIRED CLEARANCES AND DISTANCES PER DSO1870. VERIFY PRIOR TO PURCHASE AND CUTTING OF SERVICE SUPPORT POLE.

REFER TO SHEET 3 OF 4 FOR GENERAL NOTES, ELECTRICAL LEGEND, LIGHT STANDARD ASSEMBLY AND TYPICAL TRENCH DETAIL.

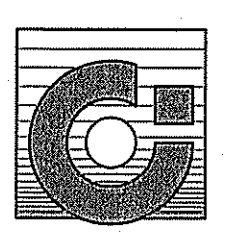


Final Approval



SCALE  
HORIZ: 1" = 30'  
VERT: 1" = 10'  
DATE: APRIL 2014  
DESIGN BY: C.A.  
INITIATED BY: C.A.  
CHECKED BY: C.A.  
JOB NO.: 113-37

**CONDE INC.**  
ENGINEERING / PLANNING  
SURVEYING / GPS  
6080 SURETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0263  
FAX: (915) 592-0266



REGISTRATION No. F-2321

SHEET TITLE

ILLUMINATION PLAN

EDGEMERE BLVD.

START: 0+00 TO

END: 19+35

**E-1**

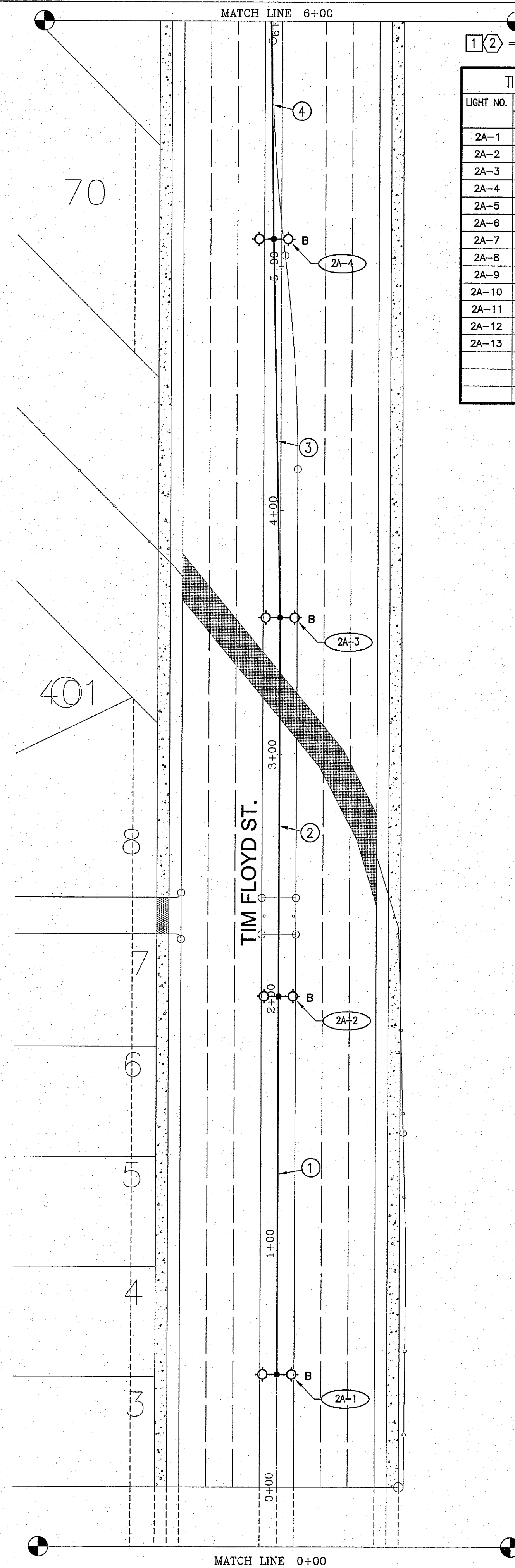
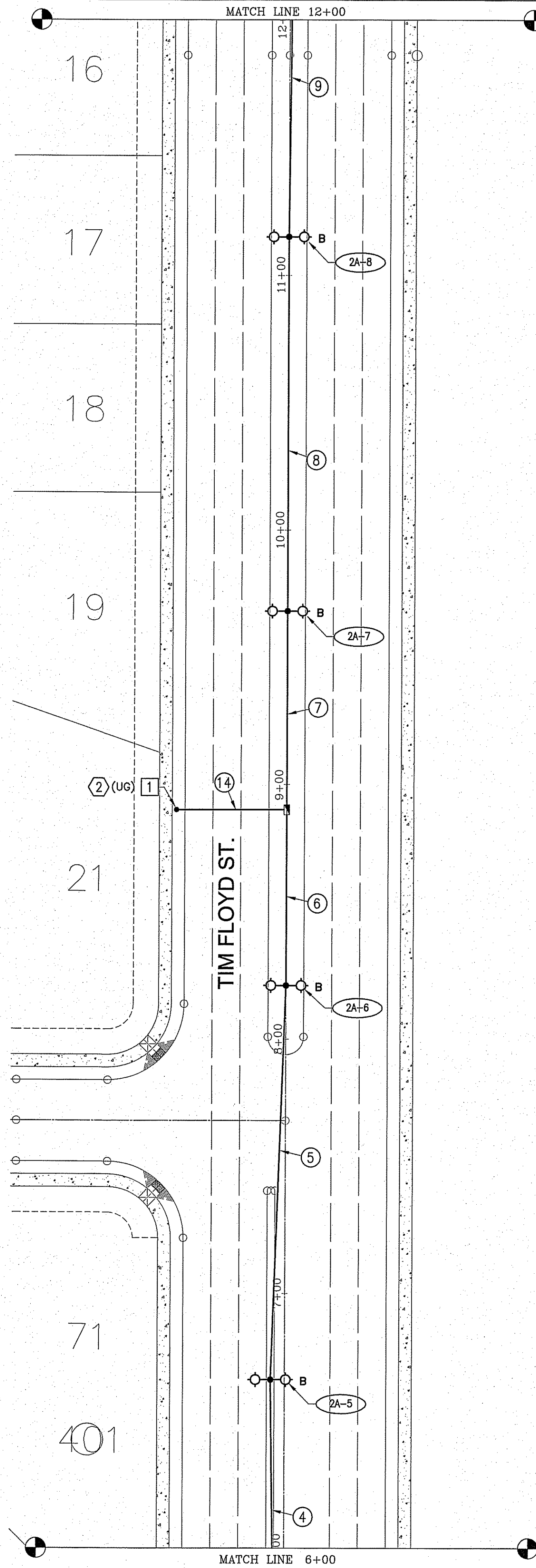
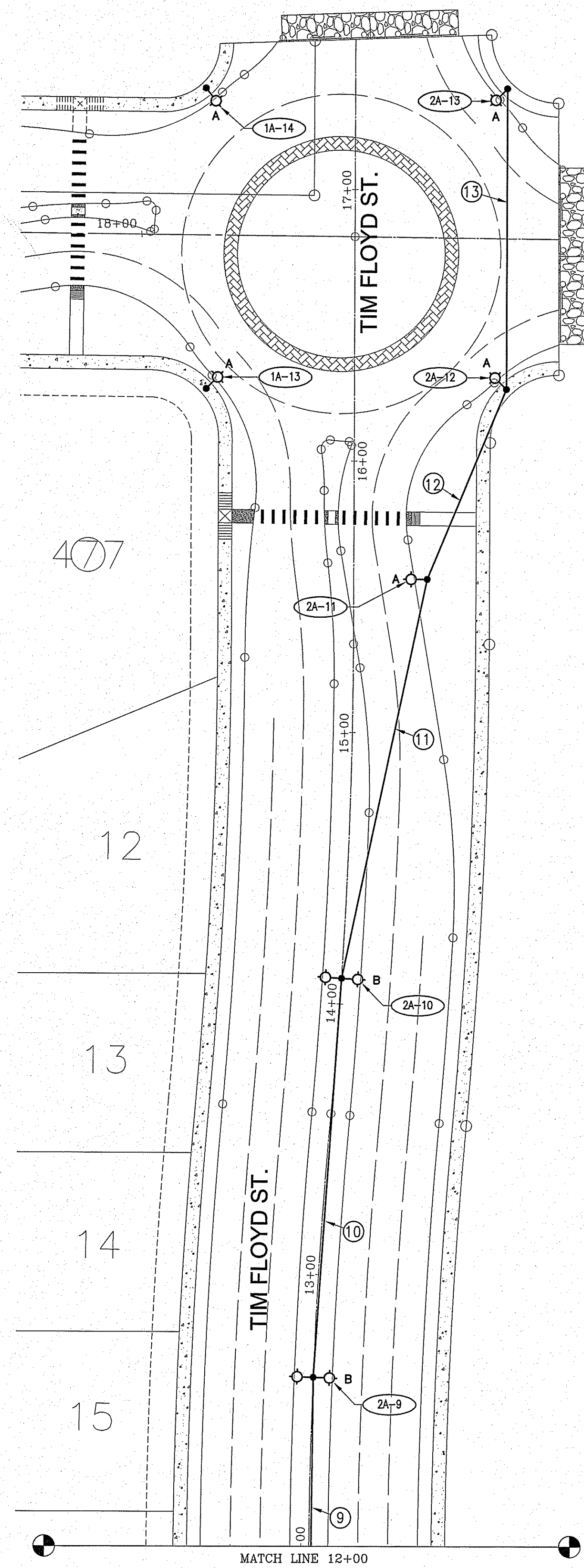
SHT 1 OF 4

**GONZALO AGUILAR**  
PROFESSIONAL ENGINEER, INC.  
REGISTRATION NUMBER: F-4190  
481 B N. RESLER  
PHONE: (915) 581-6622  
FAX: (915) 581-2824  
email: gonzaga@aol.com

BENCHMARK  
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF  
RAMBLER ENGINEER DR. AND JOHN HAYDEN ST.  
ELEVATION 4018.75  
DATE  
REVISIONS  
BY

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
BEING PORTION OF BLOCK 16, BLOCK 18, PORTION OF SECTION 27, BLOCK 5, BLOCKS 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000





**ILLUMINATION PLAN**

SCALE: 1" = 30'

①② = TXDOT TY A(240/480) 100(NS) SS(E) GC(O) SEE SHEET ED(4)-03, NO METER, NO SAFETY SWITCH, 2 EACH 30A-2P BRANCH BREAKERS, 100A-2P MAIN BREAKER

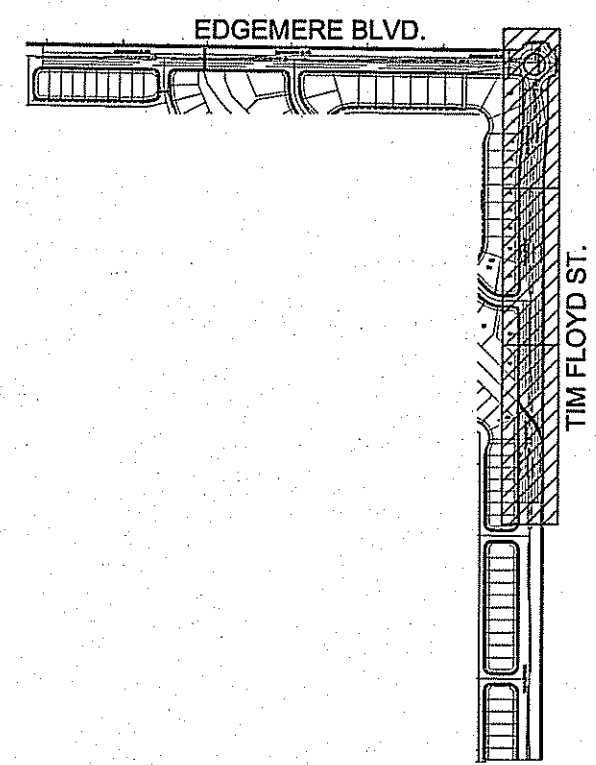
TIM FLOYD SERVICE SOURCE ②			
LIGHT NO.	LOCATION		
	STATION	BASELINE	OFFSET
2A-1	0+46	TIM FLOYD	-
2A-2	2+00	TIM FLOYD	-
2A-3	3+47	TIM FLOYD	-
2A-4	5+11	TIM FLOYD	LT
2A-5	6+65	TIM FLOYD	LT
2A-6	8+20	TIM FLOYD	-
2A-7	9+68	TIM FLOYD	-
2A-8	11+15	TIM FLOYD	-
2A-9	12+62	TIM FLOYD	-
2A-10	14+10	TIM FLOYD	-
2A-11	15+57	TIM FLOYD	RT
2A-12	16+27	TIM FLOYD	RT
2A-13	17+37	TIM FLOYD	RT

CONDUIT/CABLE SCHEDULE--SERVICE NO. ②				
RUN NO.	(PVC) (SCHD 40) (2 INCH)		CONDUCTORS QUANTITY & LENGTH	ESTIMATED LENGTH OF RUN (LINEAR FT.)
	TRENCH	BORE		
1	155	-	2 @ 155	155
2	155	-	2 @ 155	155
3	155	-	2 @ 155	155
4	153	-	2 @ 153	153
5	155	-	2 @ 155	155
6	69	-	2 @ 69	69
7	78	-	2 @ 78	78
8	147	-	2 @ 147	147
9	147	-	2 @ 147	147
10	147	-	2 @ 147	147
11	151	-	2 @ 151	151
12	76	-	2 @ 76	76
13	112	-	2 @ 112	112
14	45	-	2 @ 45	45

**KEYED NOTES:** THIS SHEET ONLY

- ① HEIGHT OF GRANITE CONCRETE SERVICE SUPPORT POLE SHALL BE COORDINATED WITH EL PASO ELECTRIC TO PROVIDE THE REQUIRED CLEARANCES AND DISTANCES PER DSO1870. VERIFY PRIOR TO PURCHASE AND CUTTING OF SERVICE SUPPORT POLE.

REFER TO SHEET 3 OF 4 FOR GENERAL NOTES, ELECTRICAL LEGEND, LIGHT STANDARD ASSEMBLY AND TYPICAL TRENCH DETAIL.



**KEY MAP**

N.T.S.

**GONZALO AGUILAR**  
 PROFESSIONAL ENGINEER, INC.  
 481 B N. RESLER  
 Phone: (915) 581-5822  
 Fax: (915) 581-2824  
 email: gonzaga@aol.com

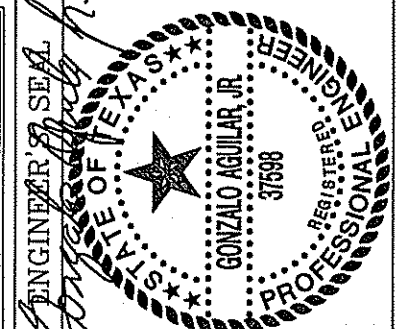
BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF EDGEMERE BLVD. AND JOHN HAYES ST.  
 ELEVATION 4018.75

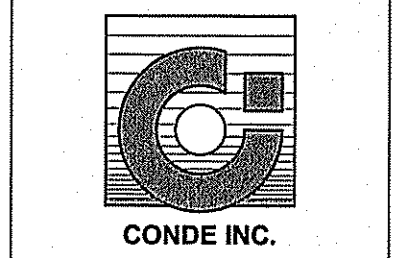
DATE	REVISIONS	BY

PROJECT NAME  
**TERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, TOWNSHIP 2S, RANGE 7E, COUNTY OF EL PASO COUNTY, TEXAS  
 CONTAINING: 54.038± ACRES

SCALE  
 HORIZ: 1" = 30'  
 VERT: 1" = 10'  
 DATE: APRIL 2014  
 DESIGN BY: G.A.  
 INITIATED BY: G.A.  
 CHECKED BY: G.A.  
 JOB NO.: 113-37



**CONDE INC.**  
 ENGINEERING / PLANNING  
 SURVEYING / GPS  
 6090 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
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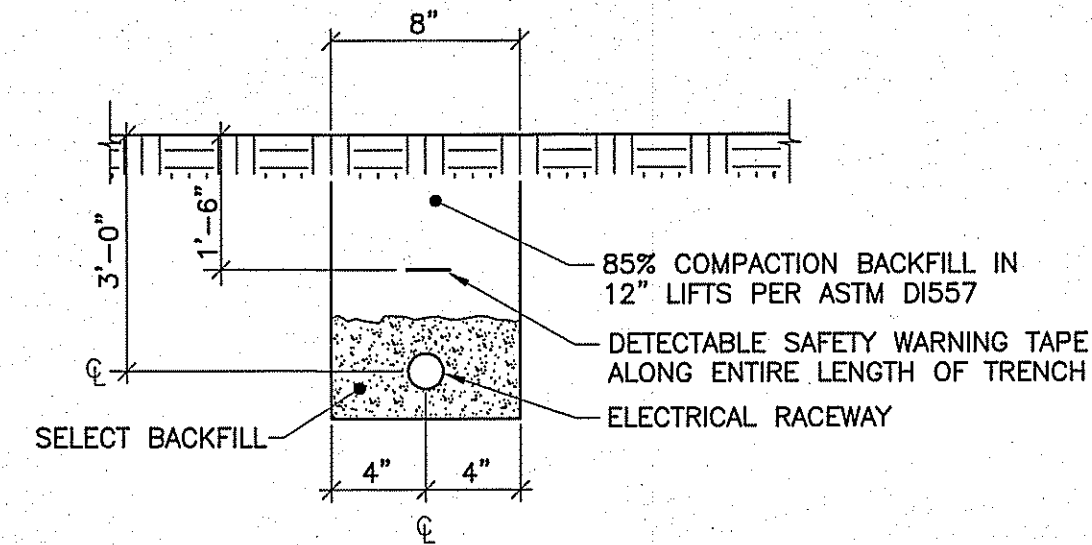
SHEET TITLE  
**ILLUMINATION PLAN  
 TIM FLOYD STREET**

START: 0+00 TO  
 END: 17+00

**E-2**  
 SHT 2 OF 4



LIGHT STANDARD ASSEMBLY SCHEDULE						
TYPE	SYMBOL	LAMPS	STEEL POLE		LUMINAIRE	
			MNTG. HGT.	DESCRIPTION	QTY.	DESCRIPTION
A		1-250W HPS	30'	FLUTED STEEL POLE, TRANSFORMER BASE, MOSS GREEN FINISH, BREAK AWAY FUSES (2) [1][2]	1	TXDOT APPROVED ROADWAY LUMINAIRE, DARK SKY COMPLIANT, 480 VOLTS, WITH LEVELING BUBBLE.
B		2-250W HPS	30'	FLUTED STEEL POLE, TRANSFORMER BASE, MOSS GREEN FINISH, BREAK AWAY FUSES (4) [1][2]	2	TXDOT APPROVED ROADWAY LUMINAIRE, DARK SKY COMPLIANT, 480 VOLTS, WITH LEVELING BUBBLE.



TYPICAL TRENCH DETAIL

N.T.S.

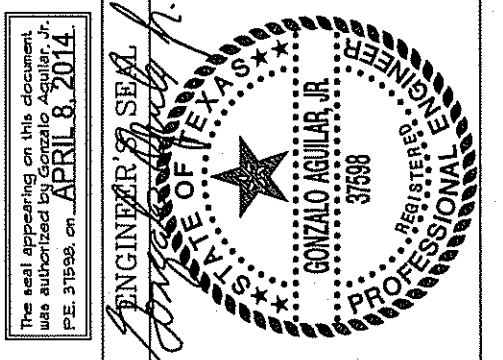
ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	NEW LIGHT STANDARD ASSEMBLY AS SCHEDULED ON NEW CONCRETE BASE
	DENOTES NEW LIGHT STANDARD ASSEMBLY NUMBER. SEE SERVICE SOURCE TABLES.
	DENOTES NEW CONDUIT/CABLE RUN. SEE CONDUIT/CABLE SCHEDULES
	DENOTES NEW ELECTRICAL SERVICE POINT NUMBER
	DENOTES KEYED NOTE
	NEW UNDERGROUND ELECTRICAL (TRENCHED)
	NEW UNDERGROUND ELECTRICAL (BORED)
	NEW GROUND BOX PER CITY OF EL PASO STREETS DEPARTMENT STANDARDS (TXDOT TYPE "A") LABELED "ILLUMINATION"

**KEYED NOTES:** THIS SHEET ONLY

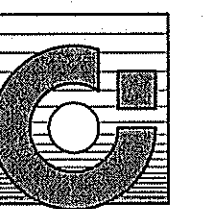
- 1 PROVIDE 8' ARM WITH DECORATIVE ARM SUPPORT WITH MOSS GREEN FINISH TO MATCH ARMS AND SUPPORTS USED ON LEE TREVINO. COORDINATE AND VERIFY WITH CITY OF EL PASO STREETS DEPT. PRIOR TO SUBMITTING SHOP DRAWINGS AND PRIOR TO PURCHASE.
- 2 POLES, ANCHOR BOLTS AND ANCHOR BOLT CIRCLES SHALL MATCH THE GREEN FLUTED STEEL POLES USED ON LEE TREVINO. COORDINATE AND VERIFY WITH CITY OF EL PASO STREETS DEPT. PRIOR TO SUBMITTING SHOP DRAWINGS AND PRIOR TO PURCHASE.

**GENERAL ELECTRICAL NOTES:** APPLICABLE TO ALL ELECTRICAL SHEETS

1. CONTRACTOR SHALL COORDINATE THE EXACT LOCATIONS OF ELECTRICAL SERVICE WITH E.P.E.Co. SERVICE SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST VERSION OF THE E.P.E.Co. ELECTRICAL SERVICE REQUIREMENTS BOOK. ANY EQUIPMENT THAT IS STATED IN THE E.P.E.Co. REQUIREMENTS TO BE PROVIDED AND INSTALLED BY THE OWNER, SHALL BE PROVIDED AND INSTALLED BY THIS CONTRACTOR UNDER THIS CONTRACT.
2. CITY STANDARDS: ALL WORK, MATERIALS AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE CITY OF EL PASO, TEXAS CITY STANDARDS SPECIFICATIONS; STREETS DEPARTMENT, STREET ILLUMINATION.
3. ALL TRENCHING AND CONDUIT SHALL BE INSTALLED WITHIN CITY OF EL PASO RIGHT-OF-WAYS. TRENCHING AND CONDUIT SHALL NOT BE INSTALLED WITHIN PRIVATE PROPERTY. MINIMUM BURIAL DEPTH OF CONDUITS SHALL BE 24" FROM TOP OF FINISHED GRADE OR FINISHED SURFACE TO TOP OF CONDUITS.
4. USE SONOTUBE FOR FORMING POLE CONCRETE BASES. SONOTUBE SHALL BE LEFT IN PLACE. USE 2 SACK CEMENT TO BACKFILL HOLES. TOP OF BASES SHALL BE 4" ABOVE FINAL FINISHED GRADE.
5. ALL EXPOSED CONDUIT SHALL BE RIGID GALVANIZED STEEL. PROVIDE TRANSITION ELBOW FROM PVC TO RIGID STEEL BELOW GRADE. WRAP STEEL CONDUIT IN CONTACT WITH EARTH TO PREVENT CORROSION.
6. ALL GROUND RODS SHALL BE 5/8"x10'-0" COPPER CLAD.
7. SPLICES SHALL ONLY BE ALLOWED IN GROUND BOXES OR HAND HOLES.



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 6080 SURETY DR. STE 100  
 EL PASO, TEXAS 79905  
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 FAX: (915) 592-0286



CONDE INC.  
 REGISTRATION No. P-2321

SHEET TITLE

**ELECTRICAL  
 DETAILS**

**E-3**

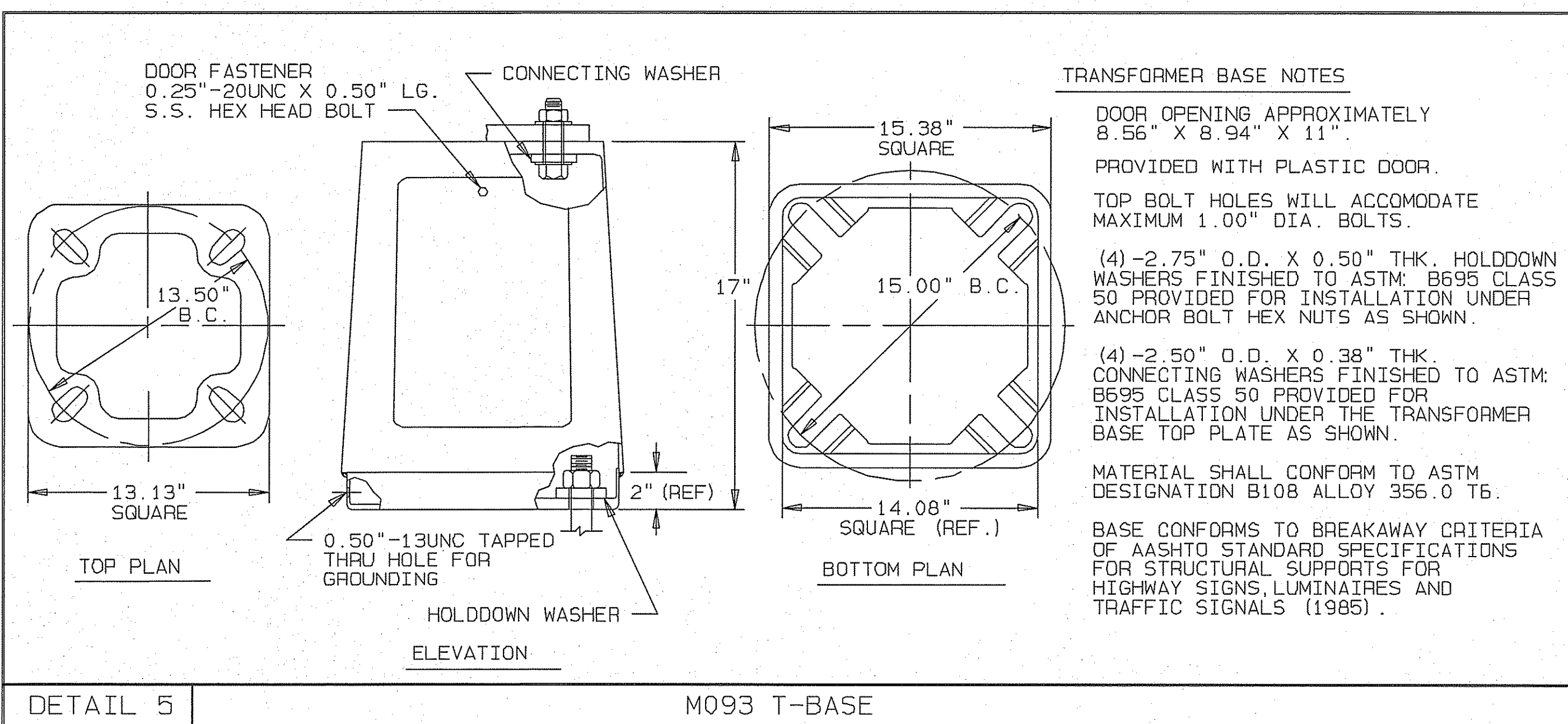
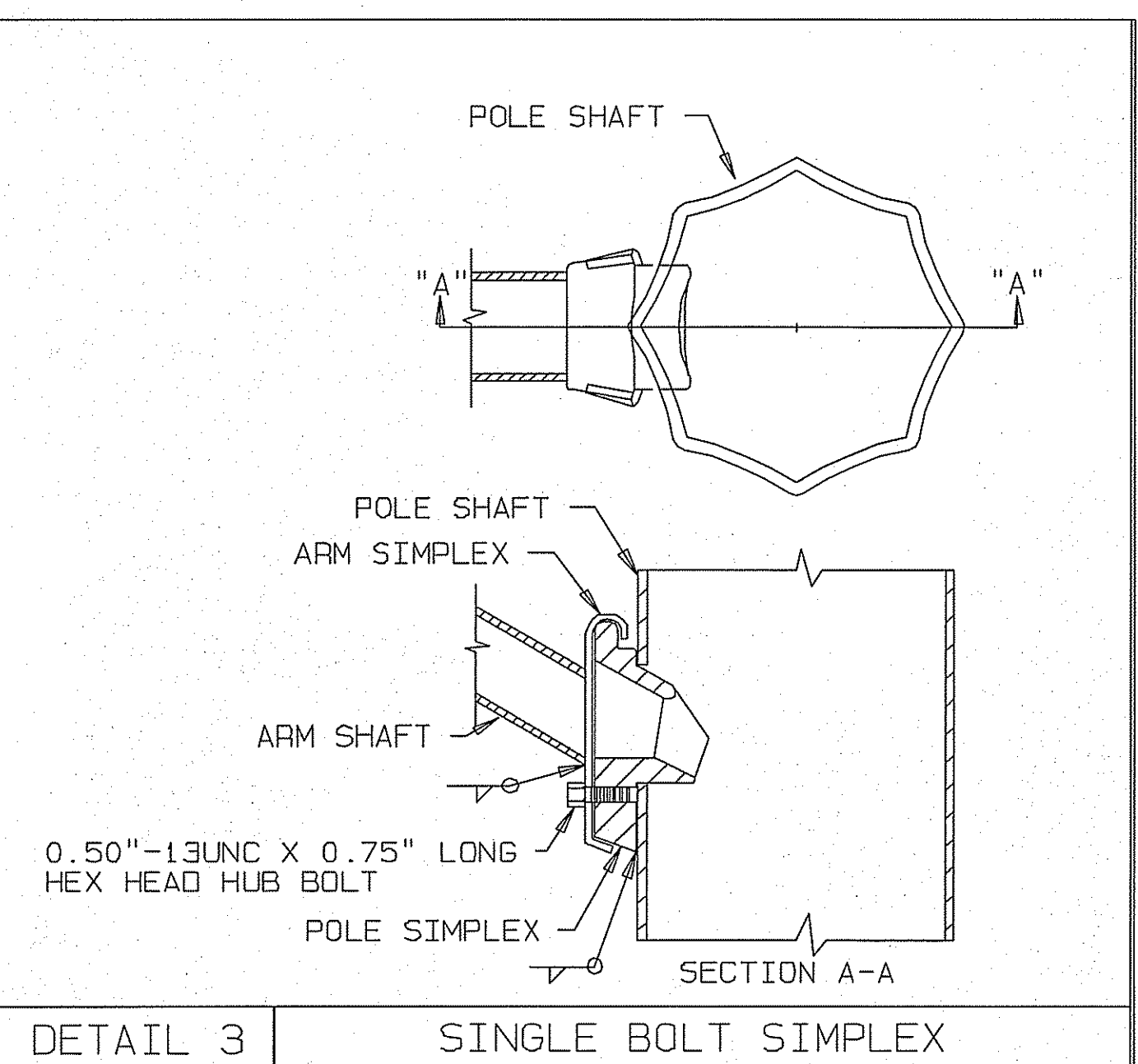
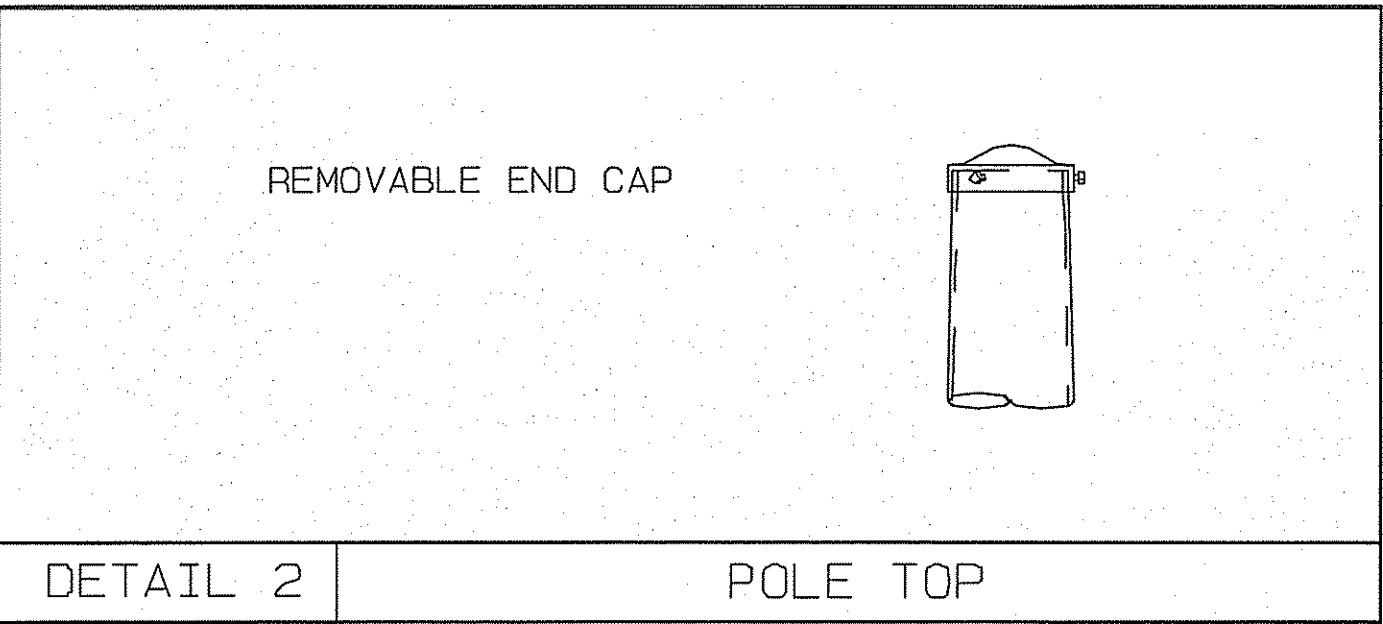
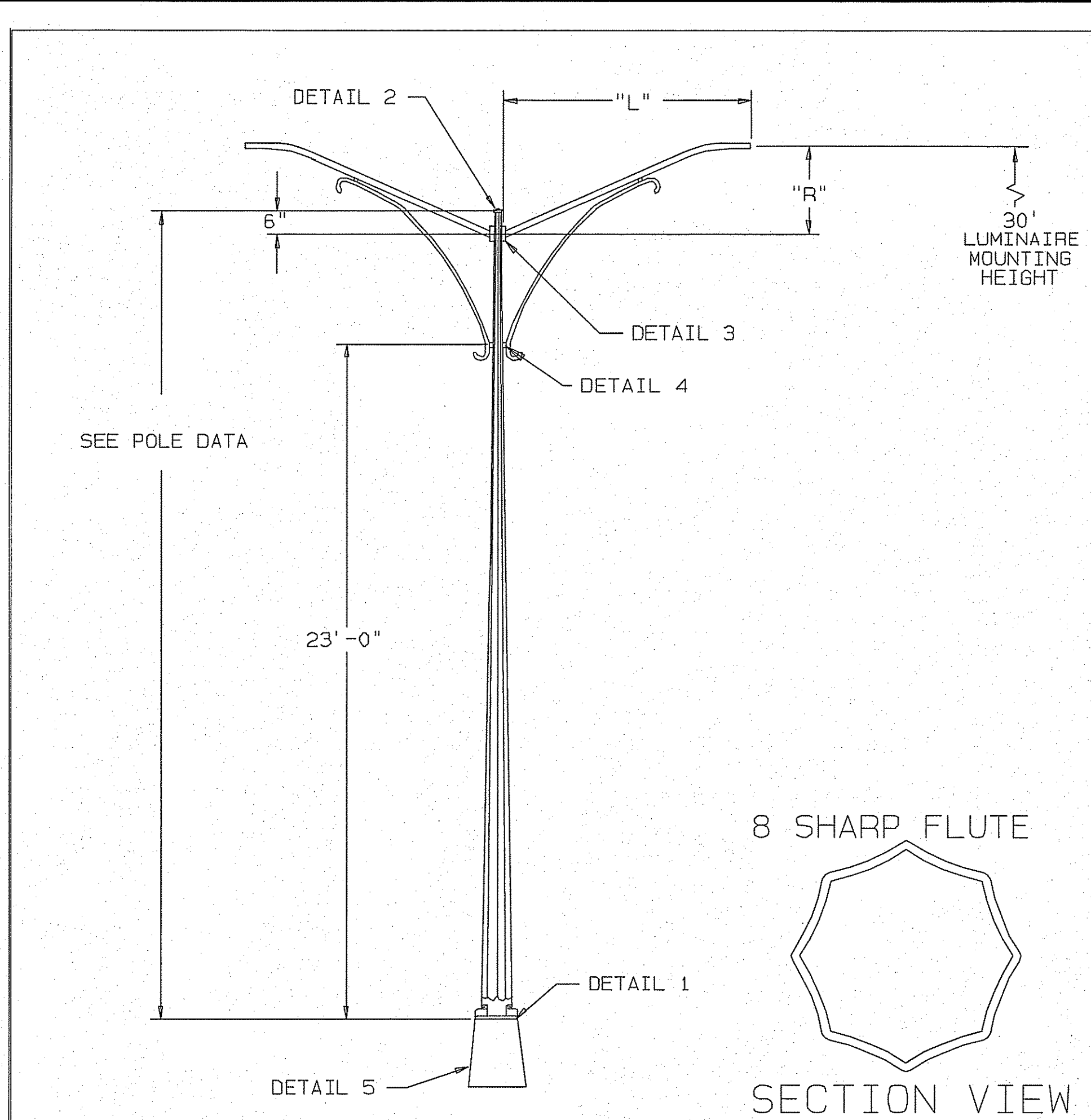
**GONZALO AGUILAR**  
 PROFESSIONAL ENGINEER, INC.  
 REGISTRATION NUMBER: F-4190  
 481 S N. REISLER  
 PHONE: (915) 581-6622  
 FAX: (915) 581-2824  
 email: gonzaleng@aol.com

BENCHMARK	
CITY MONUMENT AT THE CENTERLINE INTERSECTION OF RALPH SHUTSINGER DR. AND JOHN HAYES ST	ELEVATION 4016.75
DATE	REVISIONS
BY	

PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN**  
 BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 78, TOWNSHIP 22, TEXAS AND EL PASO COUNTY, TEXAS CONTAINING: .54.0383± ACRES

S C A L E  
 HORIZ: N/A  
 VERT: N/A  
 DATE: APRIL 2014  
 DESIGN BY: G.A.  
 INITIATED BY: G.A.  
 CHECKED BY: G.A.  
 JOB NO.: 113-37





**TRANSFORMER BASE NOTES**

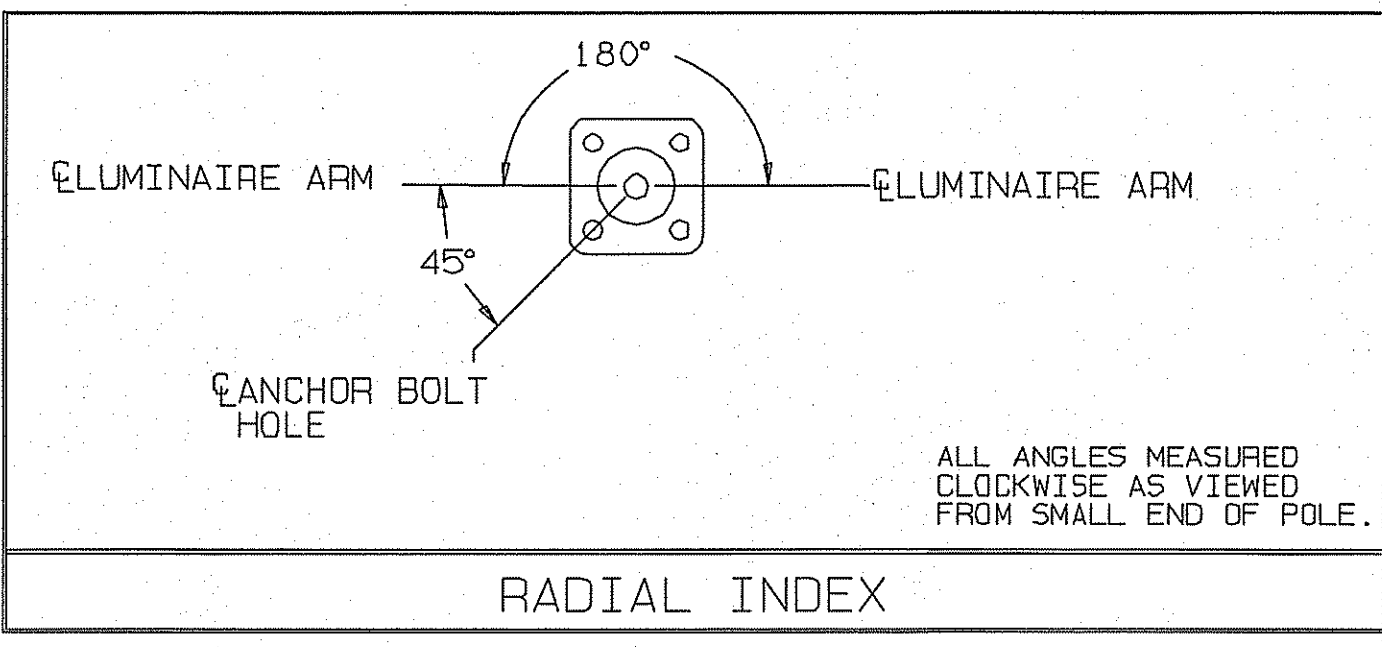
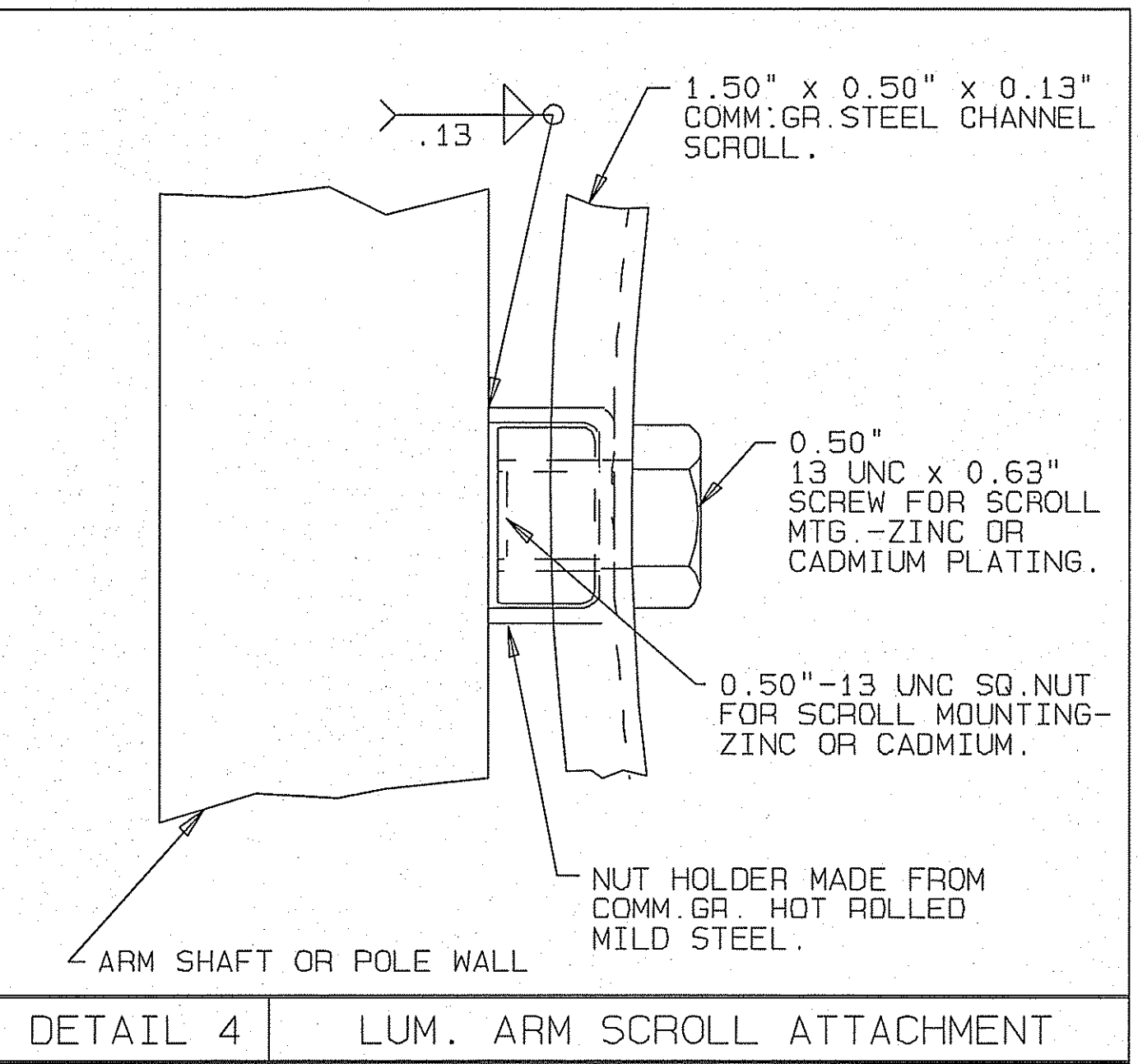
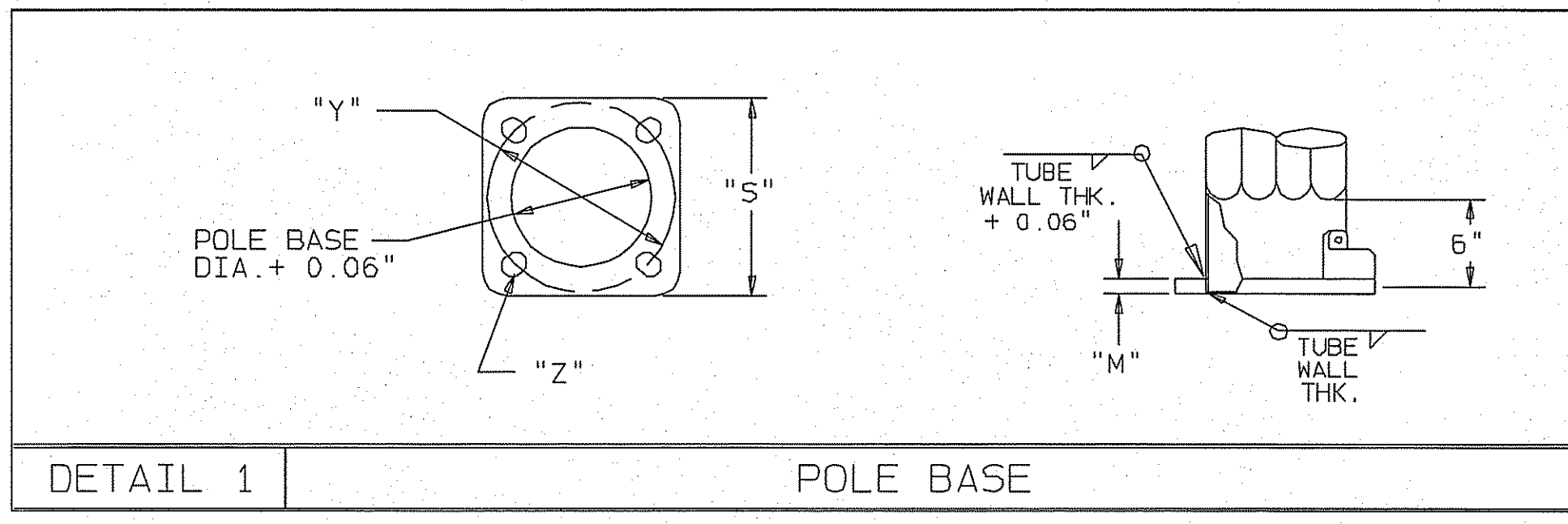
DOOR OPENING APPROXIMATELY 8.56" X 8.94" X 11".  
 PROVIDED WITH PLASTIC DOOR.  
 TOP BOLT HOLES WILL ACCOMMODATE MAXIMUM 1.00" DIA. BOLTS.

(4) -2.75" O.D. X 0.50" THK. HOLDDOWN WASHERS FINISHED TO ASTM: B695 CLASS 50 PROVIDED FOR INSTALLATION UNDER ANCHOR BOLT HEX NUTS AS SHOWN.

(4) -2.50" O.D. X 0.38" THK. CONNECTING WASHERS FINISHED TO ASTM: B595 CLASS 50 PROVIDED FOR INSTALLATION UNDER THE TRANSFORMER BASE TOP PLATE AS SHOWN.

MATERIAL SHALL CONFORM TO ASTM DESIGNATION B108 ALLOY 356.0 T6.

BASE CONFORMS TO BREAKAWAY CRITERIA OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS (1985).



**NOTES:**

1. DETAILS ARE TYPICAL FOR TYPE "B" LIGHT STANDARD ASSEMBLIES.
2. DETAILS ARE TYPICAL FOR TYPE "A" LIGHT STANDARD ASSEMBLIES, EXCEPT PROVIDE A SINGLE ARM IN LIEU OF DOUBLE ARM.



**MATERIAL DATA**

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE SHAFT	A595 GR. A	55	GALVANIZING	A153	
ARM PIPE		36	SIMPLEX ATTACHMENT	A27 65-35	
POLE BASE	A36	36			

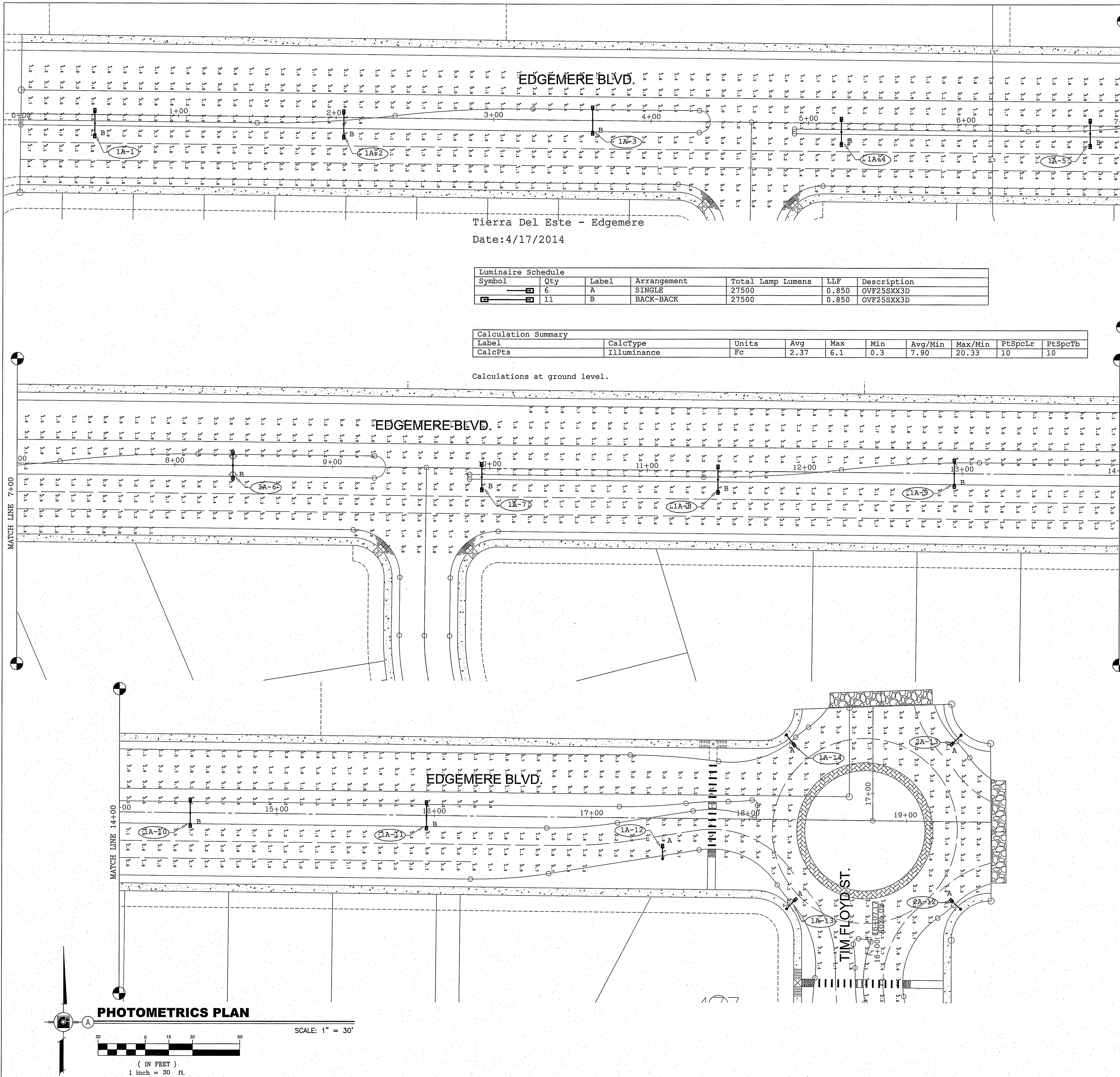
FINISH: VALMONT SPECIFICATION F283BQ  
 BASE COAT: HOT-DIP GALVANIZE TO ASTM: A123  
 FINISH: TGIC OR URETHANE POLYESTER POWDER  
 COLOR: MOSS GREEN

**POLE AND SIGNAL ARM DATA**

ITEM	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT				LUMINAIRE ARM TUBE				
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	PIPE O.D. (IN)	WALL THK. (IN)	RISE HEIGHT (FT) "R"	SPAN (FT) "L"	
		7.50	3.79	26.50	11	13.00	13.00	1.25	1.25	1.00	SEE TX DOT SHEETS				2.38	0.154	2.50	8.00

REV.	DATE	REVISION	valmont	
A	11/14/02	CHG. BOLT CIRCLE FROM 13.5	Valley, NE 68064 (402) 359-2201	
JOB NAME			VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.	
SOLD TO			EL PASO ELECTRIC	
SHIP TO				
P.O. NO.				
AGENT			CLARK POWER PRODUCTS	
DATE: 10/22/02			DRAWN: MLR4	
REV 10/28/02			SHEET 4 OF 4	
TITLE			DRAWING NO. DB00638	





EDGEMERE BLVD.

Tierra Del Este - Edgemere  
Date: 4/17/2014

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
□	6	A	SINGLE	27500	0.850	OVF25SXX3D
□	11	B	BACK-BACK	27500	0.850	OVF25SXX3D

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PtSpLr	PtSpTb
CalcPts	Illuminance	Fc	2.37	6.1	0.3	7.90	20.33	10	10

Calculations at ground level.

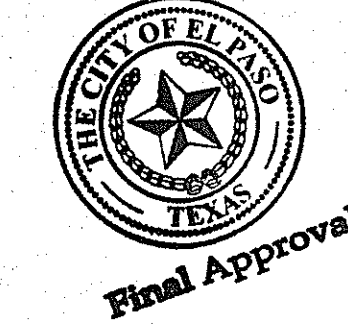
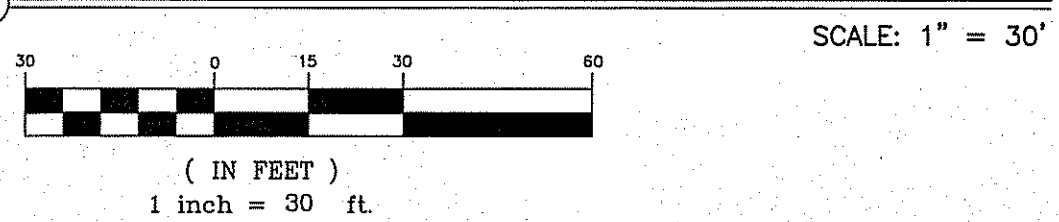
EDGEMERE BLVD.

EDGEMERE BLVD.

TIM FLOYD ST.

LumNo	Label	X	Y	Z	Orient	Tilt
1	A	62990.95	51454.09	30	180.901	0
2	A	63021.85	51533.27	30	137.315	0
3	A	62911.35	51531.72	30	38.02	0
4	A	62910.20	51642.64	30	315.308	0
5	A	63020.71	51643.78	30	227.318	0
6	A	63106.94	51623.27	30	271.183	0
7	B	62971.73	49755.80	30	0.592	0
8	B	62970.55	49913.79	30	0.592	0
9	B	62966.08	50071.76	30	0.592	0
10	B	62971.43	50229.82	30	0.592	0
11	B	62970.83	50387.82	30	0.592	0
12	B	62965.82	50545.78	30	0.592	0
13	B	62971.29	50703.84	30	0.592	0
14	B	62971.12	50853.85	30	0.592	0
15	B	62965.56	51003.80	30	0.592	0
16	B	62965.48	51153.81	30	0.592	0
17	B	62965.40	51303.81	30	0.592	0

**PHOTOMETRICS PLAN**



DATE	REVISIONS	BY

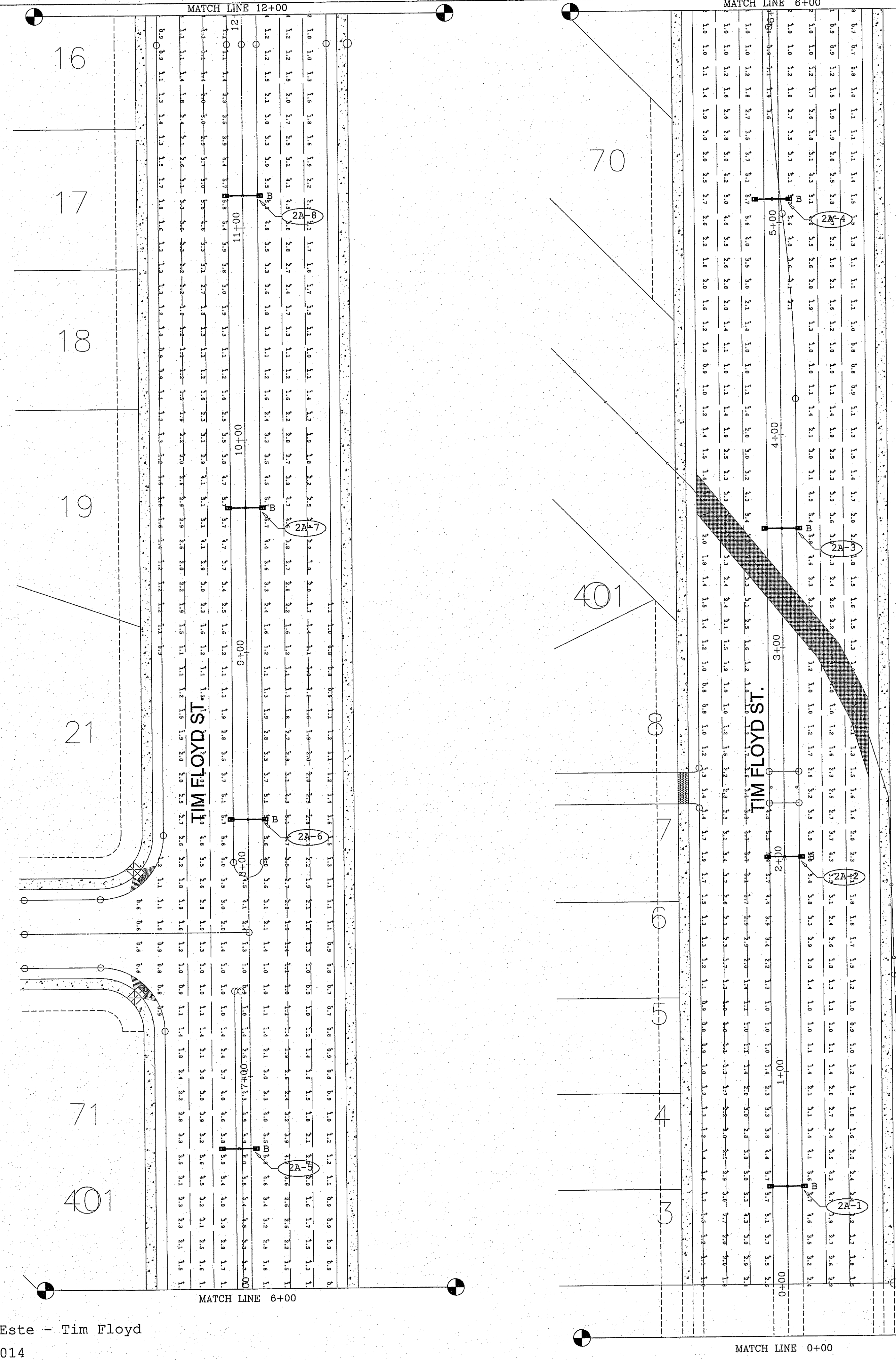
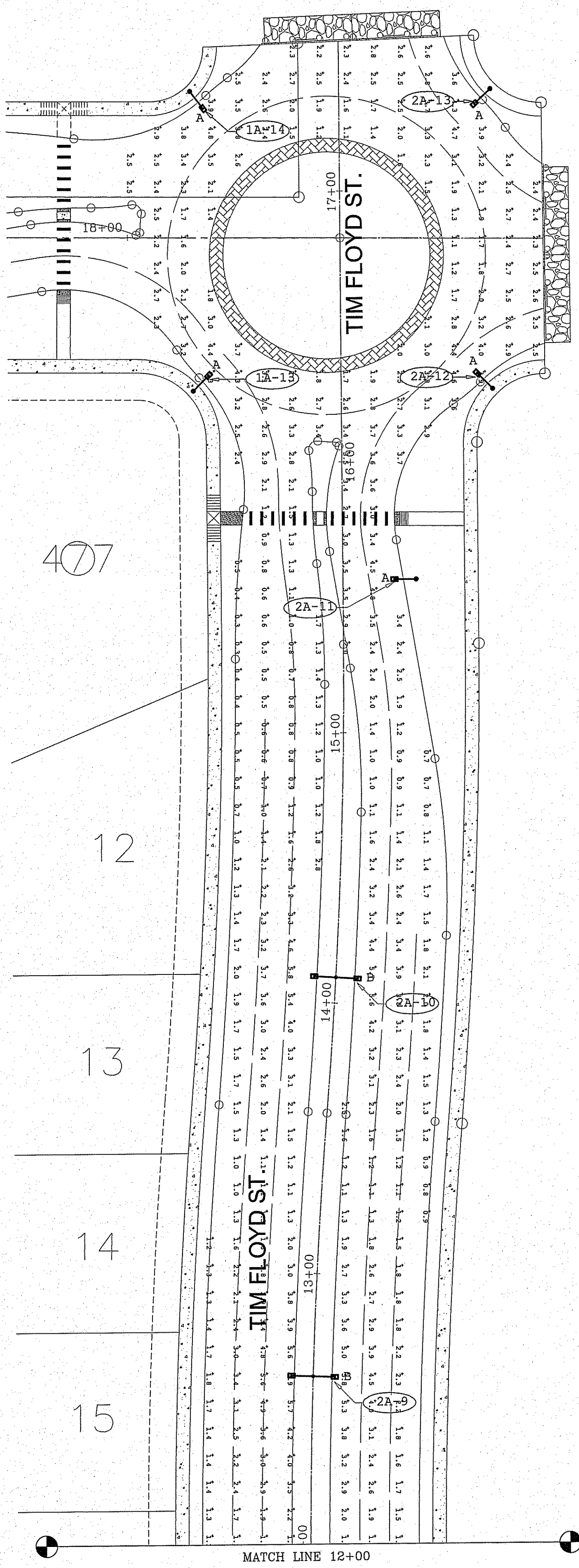
**PROJECT NAME**  
TIERRA DEL ESTE UNIT SEVENTY SEVEN  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING .94653E ACRES

**ENGINEER'S SEAL**  
S C A L E  
HORIZ: 1" = 30'  
VERT: 1" = 10'  
DATE: APRIL 2014  
DESIGN BY: \_\_\_\_\_  
INITIATED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
JOB NO.: 113-37

**ENGINEER'S SEAL**  
Final Approval

**SHEET TITLE**  
PHOTOMETRICS PLAN  
EDGEMERE BLVD.  
START: 0+00 TO  
END: 19+35  
**P-1**  
SHT 1 OF 4





LumNo	Label	X	Y	Z	Orient	Tilt
1	A	63091.03	51615.64	30	270.524	0
2	A	63020.71	51643.78	30	225.52	0
3	A	62910.20	51642.64	30	313.436	0
4	A	62911.35	51531.72	30	38.184	0
5	A	63021.85	51533.27	30	135.68	0
6	B	64601.38	51589.18	30	90.562	0
7	B	64446.39	51587.58	30	90.562	0
8	B	64291.40	51585.98	30	90.562	0
9	B	64136.44	51581.13	30	90.562	0
10	B	63981.47	51577.30	30	90.562	0
11	B	63826.42	51581.18	30	90.562	0
12	B	63679.43	51579.66	30	90.562	0
13	B	63532.44	51578.15	30	90.562	0
14	B	63385.43	51578.08	30	88.413	0
15	B	63238.34	51586.32	30	87.064	0

Tierra Del Este - Tim Floyd  
Date: 4/17/2014

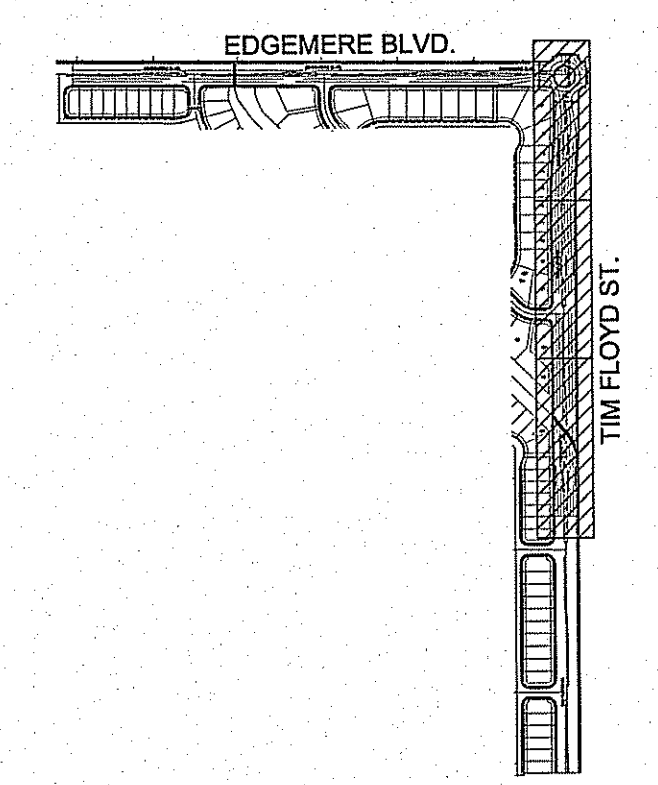
**PHOTOMETRICS PLAN**

SCALE: 1" = 30'

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
□	5	A	SINGLE	27500	0.850	OVF25SXX3D
□	10	B	BACK-BACK	27500	0.850	OVF25SXX3D

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	2.30	6.0	0.3	7.67	20.00
		PtSpLr	10				
		PtSpTb	10				

Calculations at ground level.



**KEY MAP**



REVISIONS	DATE	BY

**PROJECT NAME**  
TIERRA DEL ESTE UNIT SEVENTY SEVEN  
BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, CONTAINING: 54.038± ACRES

**SCALE**  
HORIZ: 1" = 30'  
VERT: 1" = 10'  
DATE: APRIL 2014  
DESIGN BY: \_\_\_\_\_  
INITIATED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
JOB NO.: 113-97

**ENGINEER'S SEAL**  
SHEET TITLE  
PHOTOMETRICS PLAN  
TIM FLOYD STREET  
START: 0+00 TO  
END: 17+00  
**P-2**



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DISCLAIMER:

DATE: FILE:

# ROADWAY ILLUMINATION LIGHT FIXTURES

## Fixture Housing:

- A. Provide \*UL listed fixture suitable for use in wet locations. Ensure optical compartment meets IEC Standard 60529-IP 65. Place a permanent label inside fixture indicating fixture meets \*UL, IP 65 optical, and shows date of manufacture. Meet ANSI 136.15 wattage label requirements.
- B. Construct fixture housing, lens frame, and door from 96% copper-free, die cast aluminum. Provide fixture mounting to a 2-in. pipe arm. Equip fixture with a 4-bolt clamp capable of adjustments plus or minus 5 degrees from level. Meet ANSI 136.31 3.0 G vibration requirements.
- C. Attach a level bubble to the fixture housing. Ensure the level bubble is sensitive to 1 degree changes in position at any point within 5 degrees of the level position. Ensure the level bubble is clearly visible from the ground up to a 50 ft. mounting height. Ensure level bubble corresponds to level position of fixture.
- D. Do not exceed 1.6 sq. ft. effective projected area. Do not exceed 60 lb. maximum weight.
- E. Equip fixture with a 3-prong photocell receptacle with shorting cap installed.
- F. Paint inside and outside of fixture light gray, when installing on galvanized poles. For all other fixtures, paint to match the color of the pole as directed by the Department.
- G. Use a thermoset powder coat system. Ensure paint exceeds 1000-hr. salt-spray test in accordance with ASTM B117. Ensure a nominal thickness of 2.5 mil and no pigment loss upon 50 double-rubs using Methyl Ethyl Ketone (MEK) solvent in accordance with ASTM D5402, "Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs."
- H. Fabricate brackets, nuts, bolts, washers, ballast tray, and parts from stainless-steel, or aluminum of adequate thickness as approved by the Department except that:
  1. The 4 bolts/studs, 4 flat washers, 4 lock washers, and clamp that attach the luminaire to the arm may be galvanized in accordance with ASTM A123, A153 or B633. Provide means to ensure clamp is in the open position when installing.
  2. Glass lens retainer spring clips may be fabricated from galvanized steel in accordance with ASTM A153.
  3. Provide nylon throat or other approved locking means for all stainless steel nuts.
- I. Provide optical assemblies which meet the following:
  1. Polished aluminum reflectors with Alzak or equal coating.
  2. Do not paint reflectors, except that, when approved by the Engineer, some surfaces may be painted with 92% reflective white paint.
  3. Reflectors may be one piece or segmented as follows.
    - a. One piece reflectors:
      1. Seal photometric compartment by the use of a seamless or vulcanized seam, closed-cell silicone gasket, or other method approved by the Department.
      2. Provide a non-adjustable lamp socket mounting method so the lamp center is consistent with the reflector.
    - b. Segmented reflectors:
      1. Attach segments at both ends (or opposite sides if segments are square) of the segment to a rigid aluminum base plate and side wall support assembly. Seal glass lens to lens frame with a one piece seamless silicone gasket.
  4. Equip the optical assembly with a lamp support in addition to the lamp socket to ensure the outer envelope is positioned as intended.
- J. Provide 5/32 in. thick (min.) clear heat tempered or borosilicate glass.

## Electrical Components:

- K. Meet the following ballast requirements and pass tests in accordance with Test Method Tex-1130-T, "Ballasts of Lighting Assemblies."
  1. Mount electrical components on a removable stainless steel or aluminum tray of adequate thickness.
  2. Provide a fixture wiring diagram on or near the ballast.
  3. Use a copper wound magnetic regulating three isolated coil ballast.
  4. Provide ballast factor between 0.95 and 1.0.
  5. When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of plus 10 percent and minus 10 percent, do not exceed the following:
    - a. 220 Watts for 150 watt nominal lamp rating
    - b. 440 Watts for 250 watt nominal lamp rating
    - c. 552 Watts for 400 watt nominal lamp rating
  6. During fluctuation of the test voltage of plus 10 percent and minus 10 percent, ensure the lamp wattage fluctuation does not exceed a total of 20 percent and ballast maintains lamp wattage within the following limits.
    - a. 110 Watts minimum and 180 Watts maximum for 150 Watt nominal lamp rating
    - b. 175 Watts minimum and 370 Watts maximum for 250 Watt nominal lamp rating
    - c. 280 Watts minimum and 475 Watts maximum for 400 Watt nominal lamp rating
  7. Ensure the ballast power factor, when tested at circuit voltage indicated on the plans, is not less than 90%.
  8. Permanently and clearly mark ballast or fixture to indicate following:
    - a. Lamp type
    - b. Catalog number
    - c. Voltage rating
    - d. Connection diagram
    - e. Manufacturer
    - f. \*UL listing
- L. Meet the following electronic starting aid requirements and pass tests in accordance with Test Method Tex-1140-T, "Electronic Starting Aids of High Pressure Sodium Vapor Lighting Assemblies."
  1. Provide a starting pulse with an amplitude of 2500 volts minimum, 4000 volts maximum.
  2. Ensure the pulse width is a minimum of 0.8 microseconds at 2250 volts.
  3. Ensure the pulse occurs when the open circuit voltage is equal to or greater than 90 percent of peak open circuit voltage.
  4. Ensure pulse repetition rate is a minimum of one per cycle.
  5. Provide a pulse current of 0.18 amperes (min.).
  6. Discontinue to pulse when, either,
    - a. the lamp starts, or
    - b. after a minimum of 3 minutes and a maximum of 10 minutes if the lamp fails to start.
- M. Do not place fuses inside pole mounted luminaires. For wall mount or underpass mounted luminaires, provide internal 10 amp time-delay fuses.
- N. Provide a two position terminal block for connecting supply wires which meet the following requirements:
  1. Insulate using nylon, porcelain, or phenolic material. Ensure phenolic terminal block is of adequate construction as approved by the Department.
  2. Fabricate terminals from nickel, tin plated brass, or aluminum.
- O. Equip fixture with MOV surge protection in accordance with IEEE recommendations.
  1. Connect MOV from line to neutral or from line to line.
  2. Install MOV on the terminal block.

## Lamp & Socket:

- P. Provide \*UL listed mogul base lamp sockets rated for 600 V, 1500 W that can withstand a 5000 V pulse. Meet \*UL 496 requirements. Use porcelain-insulated lamp sockets with nickel plated copper alloy screw shells. Equip socket shell with a spring tensioned contact. Use nickel-plated copper alloy or stainless steel for the spring and contact.
- Q. Supply and secure lamps inside the fixture that meet the following:
  1. Use pre-qualified high pressure sodium (HPS) lamps from TxDOT's material producers list of the wattages shown on the plans. No alternatives allowed.
  2. Average rated lamp life 30,000 hours.
  3. Fully extinguish at end of usable lamp life and remain extinguished without cycling.
  4. Do not provide lamps that burn at reduced output at end of life.
  5. Meet the Federal Toxic Characteristic Leachate Procedure (TCLP) limits.

## Performance:

- R. Meet the following photometric requirements using published photometric data and photometric data obtained by testing sampled fixtures.
  1. 150 Watt mast arm (underpass) mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectangular area measuring 110.0 ft. by 30.0 ft., when mounted in a level position as indicated on the properly mounted fixture level bubble 20.0 ft. above the midpoint of either long side of the surface area. Do not exceed 50:1 maximum to minimum horizontal illuminance uniformity ratio within the rectangular area.
  2. 250-watt mast arm mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectangular area measuring 190.0 ft. by 45.0 ft., when mounted properly in a level position as indicated on the level bubble 40.0 ft. above the midpoint either long side of the surface area. Ensure light intensities along a line parallel to and 20.0 ft. in from the long side of this rectangular area do not decrease by more than 0.50 foot-candles in any 5.0 ft. interval along the line from 10.0 ft. to 90.0 ft. on both sides of the luminaire and provide a minimum intensity of 0.30 foot-candles at any point along the line. Do not exceed 20:1 maximum-to-minimum horizontal illuminance uniformity ratio within the rectangular area.
  3. 400-watt mast arm mounted luminaire. Meet IESNA Cutoff requirements. Provide a minimum intensity of 0.20 foot-candle in a rectangular area measuring 220.0 ft. by 60.0 ft. when mounted properly in a level position as indicated on the level bubble 50.0 ft. above the midpoint of either long side of the surface area. Ensure light intensities along a line parallel to and 30.0 ft. in from the long side of this rectangular area do not decrease by more than 0.75 foot-candle in any 10.0 ft. interval along the line from 10.0 ft. to 90.0 ft. on both sides of the luminaire and provide a minimum intensity of 0.30 foot-candle at any point along the line. Do not exceed 20:1 maximum-to-minimum horizontal illuminance uniformity ratio within the rectangular area.
- S. Ensure photometric data is consistent from fixture to fixture. Match published photometric data (or approved photometric reports submitted during the prequalification process as the typical photometric output instead of published data) as follows:
  1. Point of maximum candela within 5 degrees horizontally and vertically.
  2. Maximum candela within 20% of published maximum candela.
  3. Fixture efficiency within 10% of published efficiency.

\* When reference is made to UL, it can be considered to mean a Nationally Recognized Independent Testing Lab (NRTL). Comperable standards of Canadian Standard Association, Electrical Testing Laboratories or Factory Mutual can be equal to the referenced UL standard.



Sheet 1 of 2

**Texas Department of Transportation**  
Traffic Operations Division

## ROADWAY ILLUMINATION DETAILS

(RDWY ILLUM LIGHT FIXTURES)

**RID(LUM1)-07**

© TxDOT January 2007	9th TxDOT	CK1 TxDOT	9th TxDOT	CK1 TxDOT
REVISIONS	COUNT	SECT	JUN	HIGHWAY
			COUNTY	SHEET NO.

72A



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**Prequalification:**

- T. Use only pre-qualified fixtures. No alternates will be considered.
1. Only materials with approved product codes or designations from prequalified producers are accepted on bids. The Construction Division (CST) of the Texas Department of Transportation (TxDOT) maintains the material producers list of approved producer product codes or designations. Use the following website to view this list: [http://www.dot.state.tx.us/business/producer\\_list.htm](http://www.dot.state.tx.us/business/producer_list.htm)  
Use of prequalified material does not relieve the contractor of the responsibility to provide materials that meet the specifications. All materials, including those shown on the prequalified material list, may be inspected and tested at any time and may be rejected if not in compliance with the specifications.
  2. Notify the Department in writing as to which fixture from the prequalified list of approved fixtures will be supplied on each project.
  3. To have a fixture listed as pre-qualified:
    - a. Submit a sample of each type of luminaire and all pertinent data, including published photometric data and recently tested photometric data (IES format, both "averaged" and both sides of "un-averaged" data) to: TxDOT- TRF 118 East Riverside Dr. Austin, TX 78704
    - b. Demonstrate a commitment to quality.
    - c. Submit the following documentation:
      1. QA/QC program documentation with the following minimum requirements;
        - a. Written statement of the companies QA/QC policy.
        - b. QA/QC person employed that has special QA/QC training and has QA/QC as their primary job responsibility.
        - c. A written procedure specifically for handling orders for fixtures built to TxDOT specifications.
        - d. A written procedure for keeping track of fixtures built, certified, and tested for TxDOT orders.
        - e. A check list of features for TxDOT fixtures with QA/QC person signature.
      2. Fixture UL certification
      3. IP 65 certification
      4. 3G certification
      5. Aluminum casting and paint analysis
      6. Socket, MOV, and shutoff ignitor data
      7. Stainless steel and aluminum bracket data
      8. Ballast electrical data
      9. Photometric data
      10. Lamp data
    - d. Prequalification samples, if approved, will not be returned to the manufacturer but will be retained by the Department for comparison testing. Once a fixture has been approved, do not change any material or manufacturing method without prior approval of the Department. Unapproved changes will result in rejection of the fixture.
    - e. In addition, luminaires will be tested for compliance with this specification. Luminaires that inconsistently pass testing or that are inconsistent with published photometric information will be removed from the pre-qualified list at the discretion of the Department.

**Sampling:**

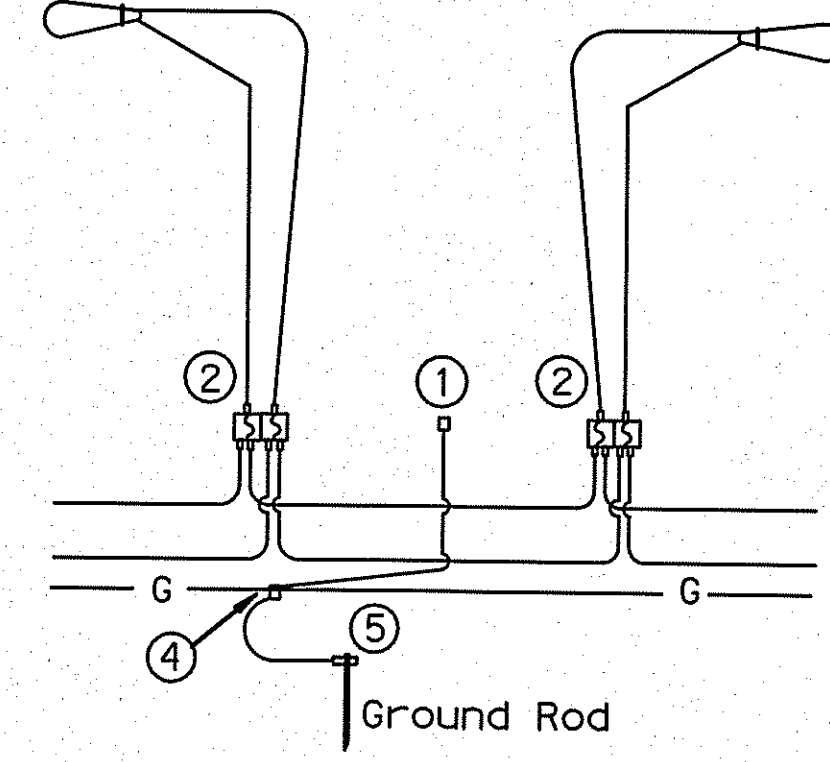
U. Sample in accordance with Test Method Tex-1110-T, "Sampling Lighting Assemblies."

**Manufacturer Warranty:**

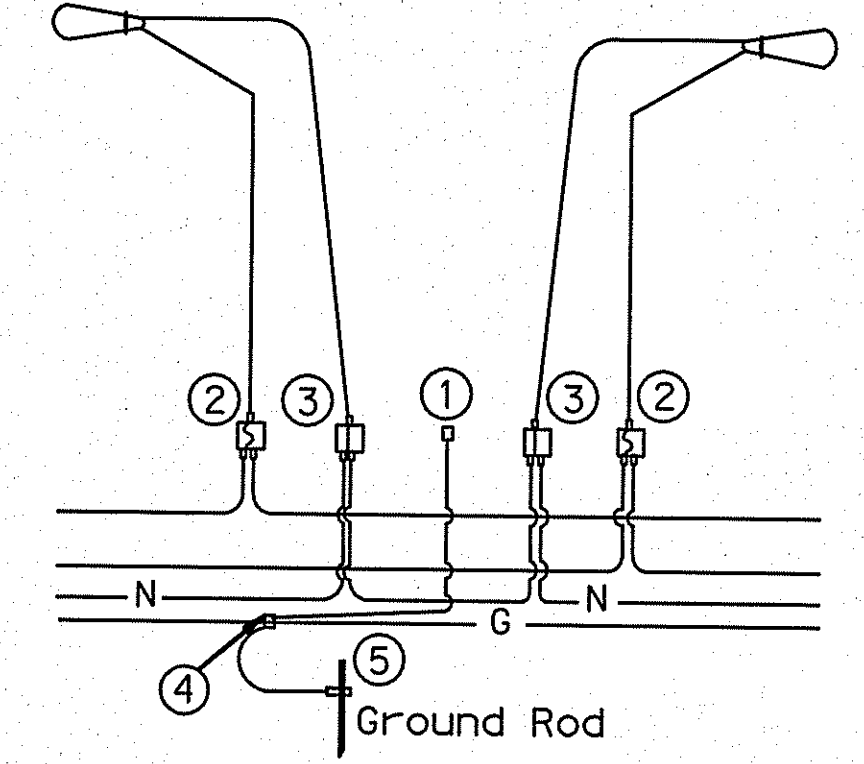
V. Replace failed fixtures, when non-operable due to defects in materials or workmanship within five years of installation with a fixture that passes all testing, delivered to the project location. Lamps and photocells are subject to the warranties of their respective manufacturers.

**Testing:**

- W. Conduct electrical testing required in the Ballast section. Provide photometric testing of fixtures. Test fixtures at the following rates.
1. Manufacturer Testing. Before fixtures are shipped from the manufacturer, test fixtures as follows. From each lot or manufacturing run, select one completed fixture of each 25, with a minimum of 2 and a maximum of 5. Test photometrics at an independent test lab inspected and approved by TxDOT. Electrical testing may be performed at manufacturer's facility.
    - a. Provide IES photometric report in two formats:
      1. Standard averaged format for asymmetric fixtures.
      2. Un-averaged format showing both sides. Un-averaged data may be supplied in two files or as approved by the Department.
    - b. Provide electrical and photometric test data directly to TRF-TE electronically for evaluation prior to shipping fixtures to the project. Do not ship fixtures until test data for each lot is approved by TRF-TE.
    - c. Provide the following information on test reports:
      1. TxDOT's Control-Section-Job number, maintenance contract number, or purchase order number the fixtures are assigned to,
      2. a unique fixture test number per fixture,
      3. date of manufacture, and
      4. quantities supplied and lot number per fixture type.
    - d. Write the unique lab report number on the top of the fixture housing with permanent marker. Ensure the test lab retains the results for 5 years. Provide the Department access to documentation.
    - e. Retain records of manufacturing lots, test reports, lot quantities, and other pertinent details. Submit records to the Department upon request.
    - f. Submit to TRF-TE a daily shipment report for shipments to each job.
    - g. Make available to TxDOT inspectors upon request, all manufacturing facilities involved in the production of fixtures for use on Department projects, inventories of fixtures produced to Department specifications, and records of fixture testing and tracking.
  2. Departmental Test Reporting. Departmental test reports will be issued in accordance with Tex 1110-T.



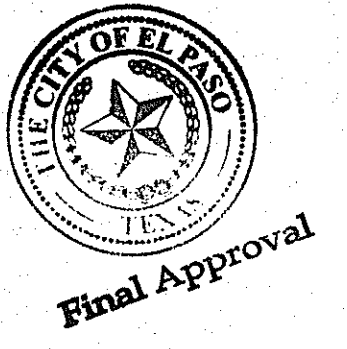
**FOR THREE-WIRE CIRCUIT-CENTER GROUNDED**  
 LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.



**FOR FOUR-WIRE CIRCUIT-CENTER GROUNDED**  
 LUMINAIRES SERVED AT 240V (240/480 VOLT SERVICE)

**NOTES:**

- ① Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors.
- ② ③ Use pre-qualified Breakaway Connectors for both T-Base and Shoe-Base installations.
- ④ Split Bolt or other connector.
- ⑤ Use Ground Rod Clamp listed for its intended purpose (i.e. concrete, direct burial...)



Sheet 2 of 2

**Texas Department of Transportation**  
 Traffic Operations Division  
**ROADWAY ILLUMINATION DETAILS**  
 (RDWY ILLUM LIGHT FIXTURES)  
**RID (LUM2) -07**

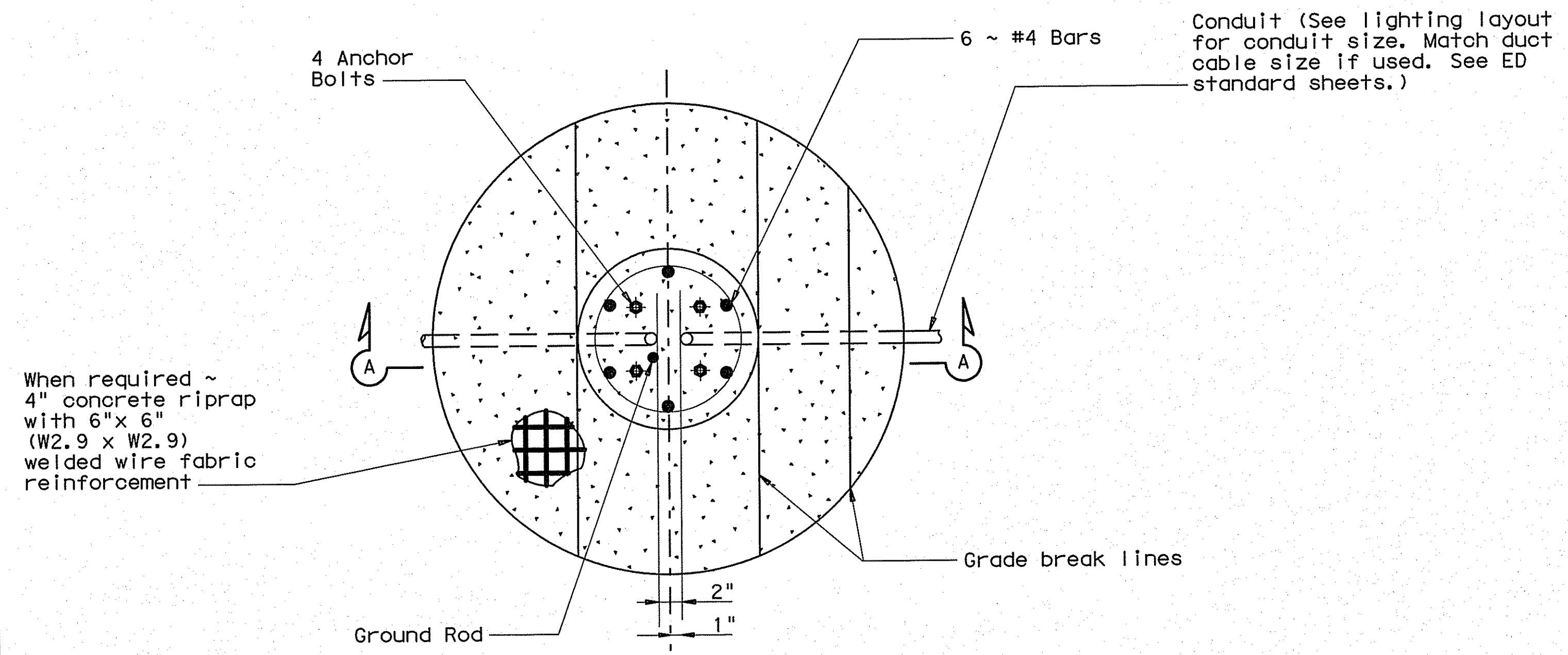
© TxDOT January 2007		DR: TxDOT	CK: TxDOT	DR: TxDOT	CK: TxDOT
REVISIONS		DATE	SECT	JOB	HIGHWAY
		LIST	COUNTY		SHEET NO.



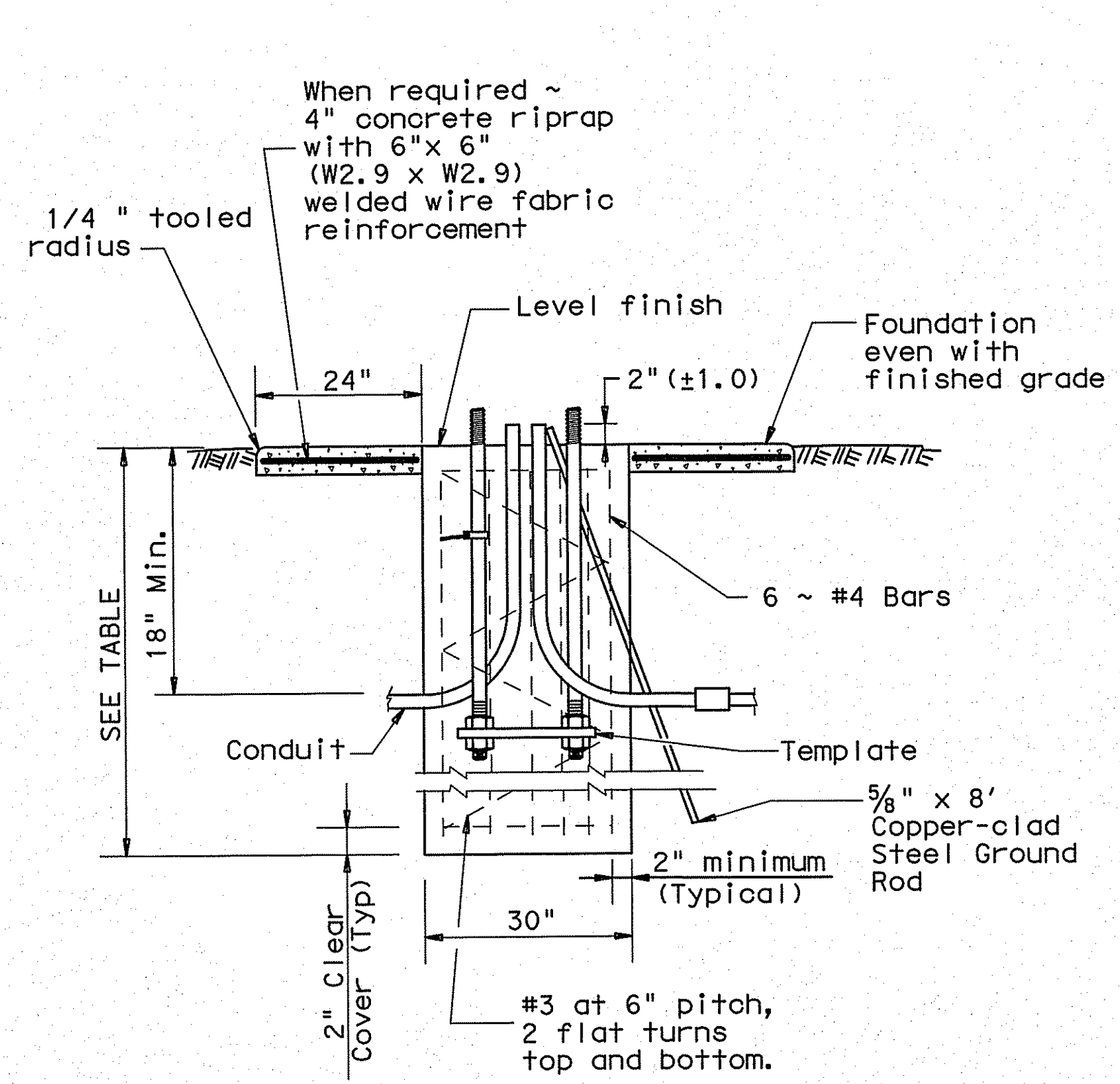




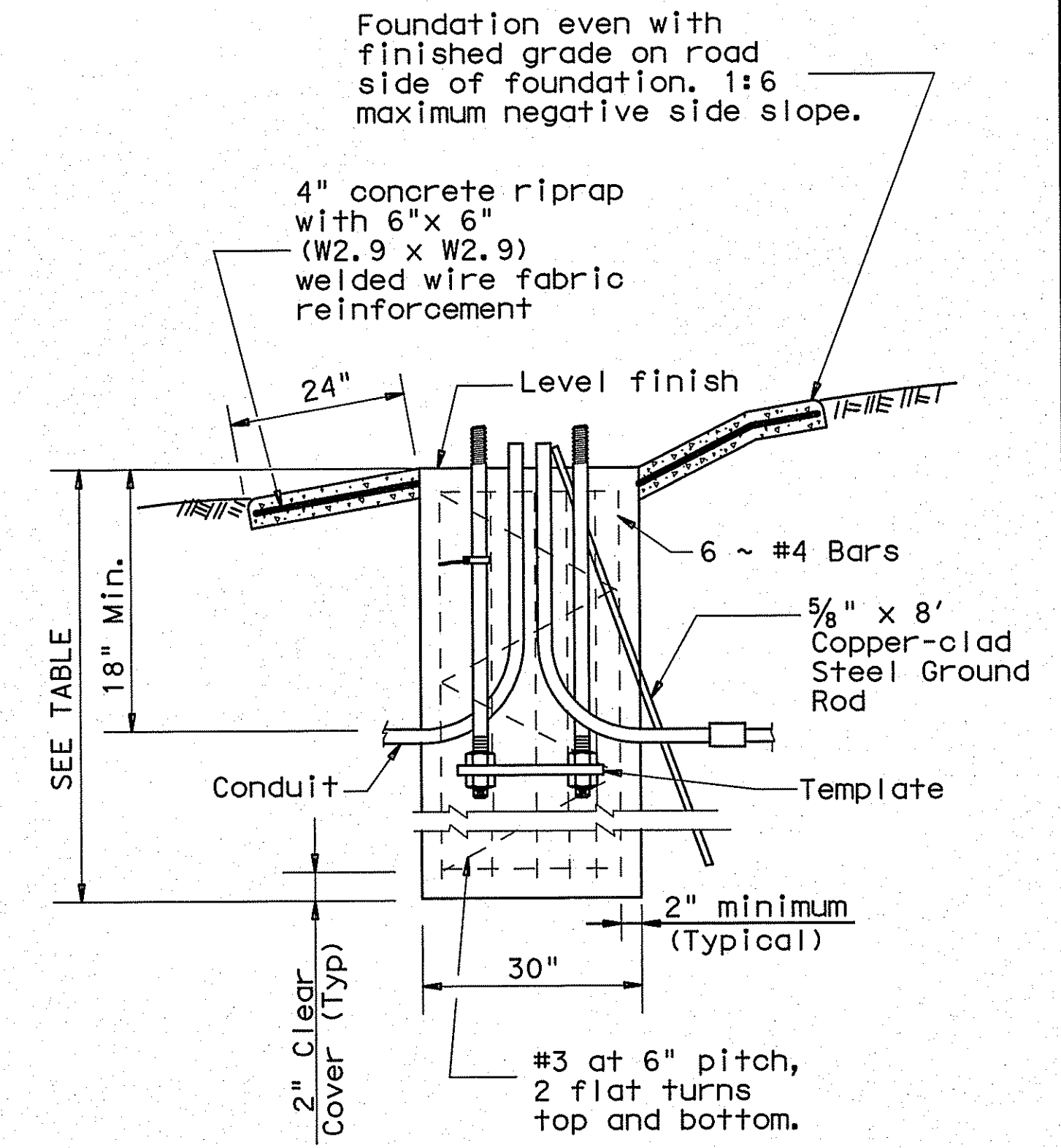
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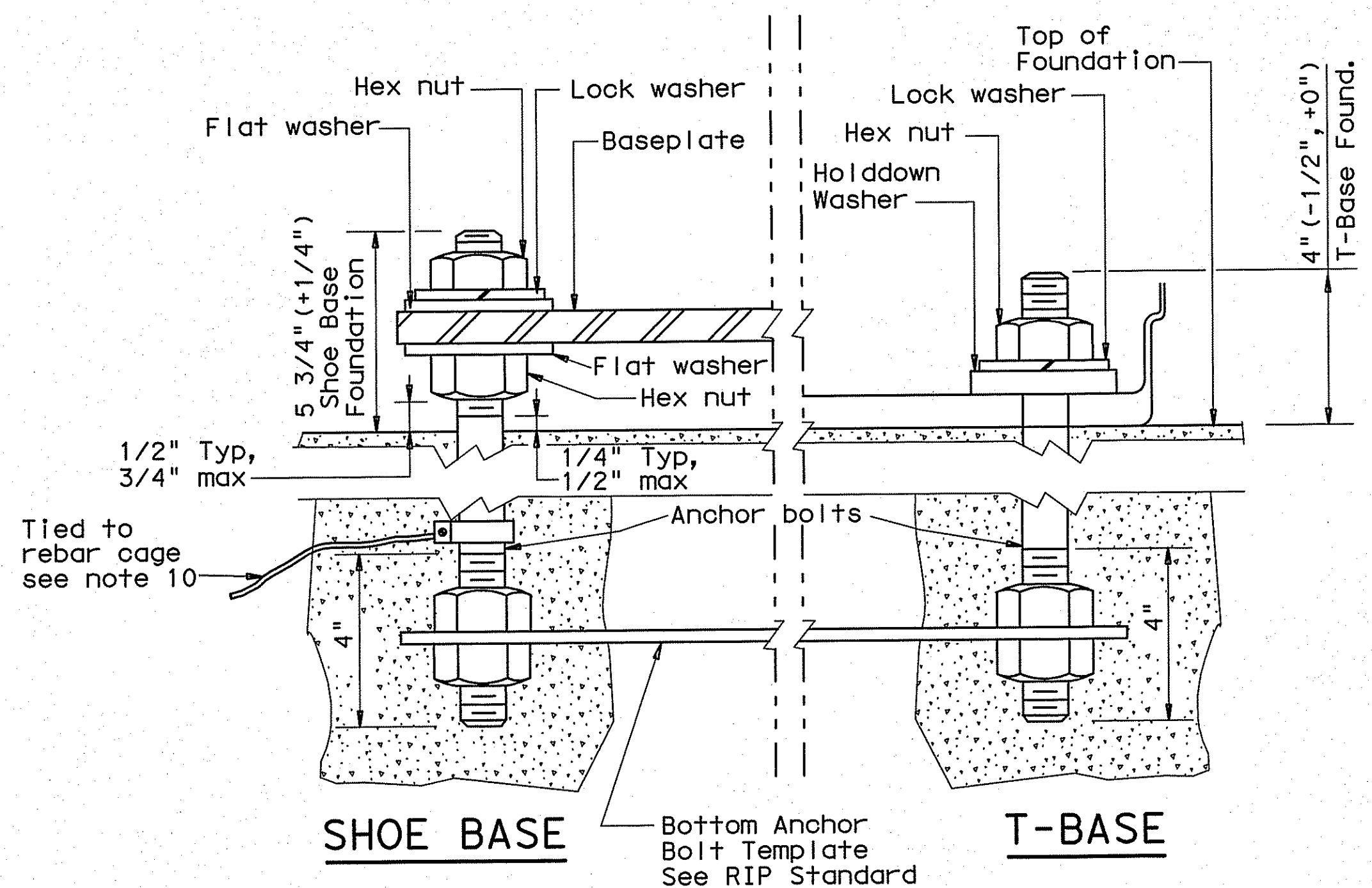
**FOUNDATION DETAIL**



**SECTION A-A**  
SHOWING CONSTANT GRADE



**SECTION A-A**  
SHOWING SLOPED GRADE



**ANCHOR BOLT DETAIL**

**PAY QUANTITY OF RIPRAP PER FOUNDATION**  
(Install only when shown on the plans)

Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

**RECOMMENDED FOUNDATION LENGTHS**  
(See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6'	6'	6'
>20 ft. to 30 ft.	8'	6'	6'
>30 ft. to 40 ft.	8'	8'	6'
>40 ft. to 50 ft.	10'	8'	6'

**ANCHOR BOLTS**

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1 in. x 30 in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4 in. x 30 in.

**BREAKAWAY POLE PLACEMENT** (See note 6)

Roadway Functional Classification	** Pole offset (distance to transformer base, tolerance + 6 in.-0 in.)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

\* or as close to ROW line as is practical  
 \*\* provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.

- "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
- Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
- Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
- Use appropriate class of concrete as specified in Items 416 and 432.
- Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
- Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less, see design guidelines for further information.
- Use 8 hold down washers on transformer base poles as recommended by the manufacturer and supplied with base.
- Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
- Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
- Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete.
- Use rip rap on T-base foundations that are located on a sloped grades.



Texas Department of Transportation  
 Traffic Operations Division  
**ROADWAY ILLUMINATION DETAILS**  
 (RDWY ILLUM FOUNDATIONS)  
**RID (FND) - 11**

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1-11	REVISIONS	CONT	SECT	JOB
				HIGHWAY
			DIST	COUNTY
				SHEET NO.



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**I. GENERAL REQUIREMENTS FOR ALL ELECTRICAL WORK**

The location of all conductors, conduits, junction boxes, ground boxes, and electrical services is diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

Materials shall be new and unused. Materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC), National Electrical Manufacturers Association (NEMA) standards, and shall be Underwriters Laboratories (UL) Listed unless otherwise shown on the plans or specifications or approved by the Engineer in writing. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection. When reference is made to UL, it can be considered to mean a Nationally Recognized Independent Testing Lab (NRTL). Comparable standards of Canadian Standard Association, Electrical Testing Laboratories or Factory Mutual can be equal to the referenced UL standard. Where reference is made to NEMA listed devices, IEC listed devices shall not be considered to be an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing.

With the exception of high strength bolts, miscellaneous nuts, bolts and hardware may be stainless steel when plans specify galvanized, provided that bolts are 1/2 inch or less in diameter. The Contractor shall provide the following electrical test instruments as required by the Engineer to confirm compliance with the contract and the NEC. Those test instruments are voltmeter, amp probe, megger (1000 volt DC) and torque wrenches. All meters shall have been properly calibrated within one year. Calibration certification shall be provided to the Engineer upon request. Calibration certification tag shall also be applied to the meter. The Contractor shall operate meters during inspection as requested by the Engineer. Grounding shall be as shown on the plans and in accordance with the NEC. Metallic conduit, light poles, luminaires on bridge structures, and all metal enclosures shall be bonded to the system-grounding conductor. The ground rod in each ground box or junction box at the bridge ends, and in each ground box installed for underpass lighting will also be bonded to the system grounding conductor. The grounding conductor shall be bare or, if insulated, shall be green. Ground rods, connectors, and bonding jumpers will not be paid for separately, but will be subsidiary to the various bid items.

**SUBMITTALS:**

The contractor shall submit for approval six (6) copies of catalog cut sheets for each of the following three (3) categories.

Category 1. Electrical services including photoeell.

Category 2. Breakaway disconnects, heat shrink tubing, heat shrink filler tape, GelCaps and ground boxes which will include loading capacity certification.

Category 3. Highmast assembly kits, when applicable. See Item 614 "Highmast Illumination Assemblies". Submittals shall be legible and shall be marked to indicate which product on a cut sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, the Contractor shall furnish to the State such warranties and guarantees. Any deviation from plans or specifications, including deviations due to plan error should be prominently displayed on the submittal. Any changes not prominently noted in submittal and incorporated into the work without proper authorization will constitute grounds for rejection of that portion of the work.

**II. CONDUIT**

**A. MATERIALS**

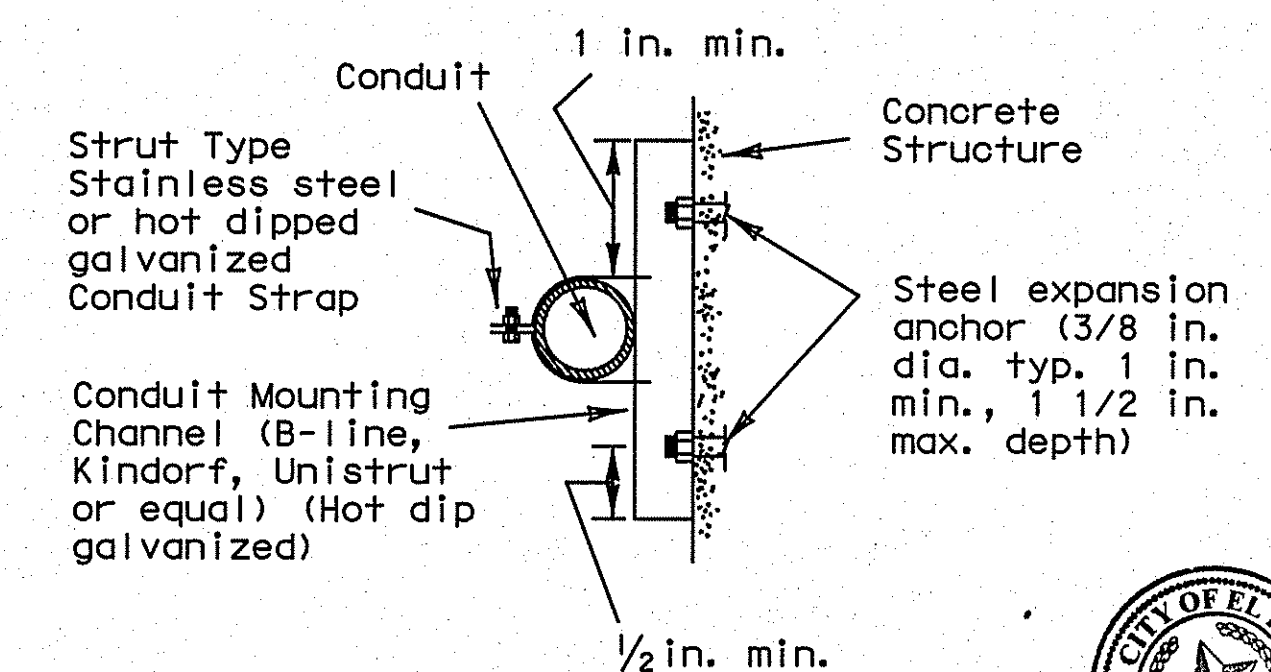
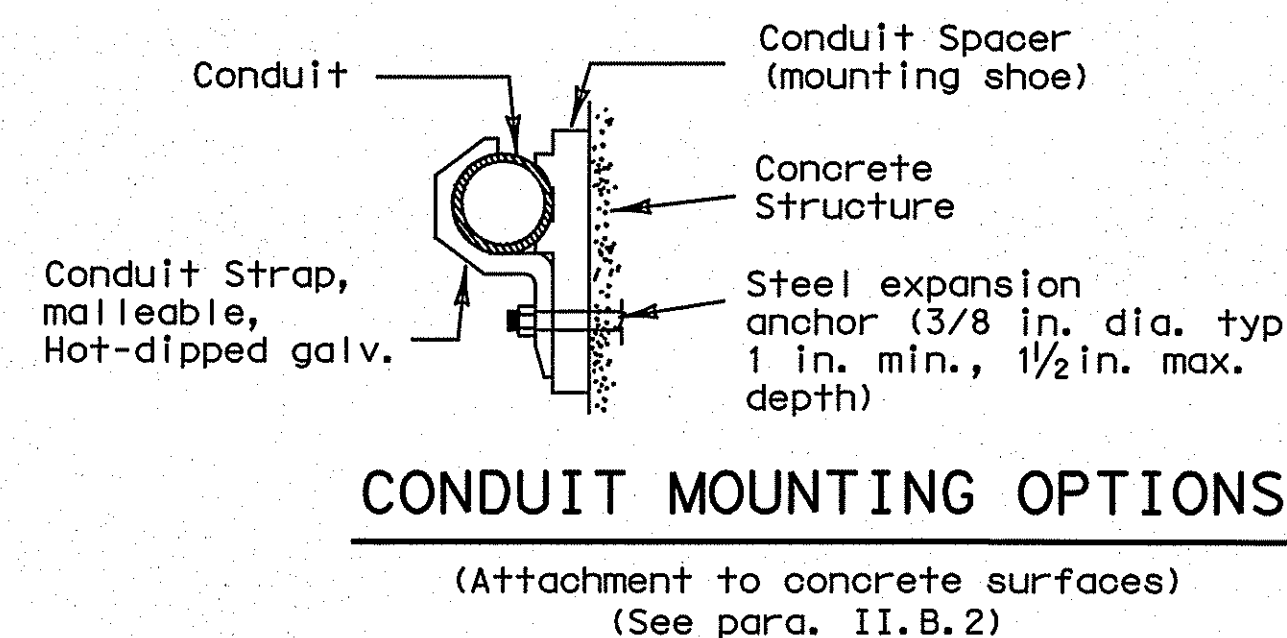
- Conduit and fittings shall be UL Listed for the intended use shown on plan sheets.
- Conduit shall be the type shown by descriptive code or shown elsewhere on the plans. Substitution of the various types of conduits will not be permitted. All flexible conduit in rigid metallic conduit (RMC) systems shall be Liquidtight Flexible Metal (LFMC) conduit. All flexible conduit in PVC systems shall be Liquidtight Flexible Non-metallic conduit (LFNC).
- All exposed conduits shall be RMC, unless otherwise specifically shown on the plans. All metal conduit shall be properly grounded.
- Couplings, connectors, conduit bodies, grounding bushings, and offset nipples for RMC shall be electro-zinc plated steel or hot dipped galvanized malleable iron, threaded or threadless compression type, rain-tight and shall be UL listed for the intended use.
- Expansion joints for metal conduit shall be provided with an internal or external bonding jumper and shall be UL listed.
- Unless otherwise shown on the plans, junction box minimum sizes shall be in accordance with the following table which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes are present, the conductors shall be counted as if all are of the larger size. Situations not applicable to the table shall be sized in accordance with NEC 370-28.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

- RMC system junction boxes equal to or smaller, in any dimension, than 12 x 12 x 6 (HxWxD), surface mounted and containing conductors #8 or larger, shall be hot dipped galvanized cast iron with minimum wall thickness of 3/16 inch, shall have external mounting lugs, and shall be UL listed Crouse-Hinds Type WAB, OZ/Cedney Type YS or approved equal. Unless otherwise shown elsewhere on the plans, RMC system junction boxes larger than the aforementioned boxes but equal to or smaller, in any dimension, than 18 x 18 x 6 (HxWxD) shall be 14-ga. stainless steel; RMC system junction boxes larger than 18 x 18 x 6 (HxWxD) shall be 12-ga. stainless steel. All metal junction boxes shall be equipped with a threaded hole or lug for grounding. Stainless steel boxes 12 x 12 x 6 and larger need not be UL Listed but shall meet the other requirements of the NEC and shall have ribs, stiffeners, or thicker metal and shall have external mounting feet. Junction boxes with an internal volume of more than 100 cu. in. may be supported by connection of two or more rigid metal conduits, where specifically shown on the plans or where approved by the Engineer.
- Junction boxes containing only #10 or #12 AWG conductors shall be Crouse Hinds Type GRFX, Appleton Type JBOX, two-gang FD, or similar approved cast iron box. Boxes shall be sized according to NEC Table 370-16(a).
- IMC and EMT conduit shall not be used unless specifically required by the plan layout sheets. Junction boxes in EMT conduit systems shall be made from galvanized sheeting and shall be UL listed and approved for outdoor use, unless otherwise noted on the plans. Sheet metal junction boxes shall be sized in accordance with the NEC. Junction boxes for IMC conduit systems shall meet the requirements of boxes used with RMC systems.
- Junction boxes in PVC conduit systems shall be PVC, intended for outdoor use, unless otherwise noted on the plans.
- Elbows in PVC conduit systems one inch and larger shall be rigid metal, with the exception of traffic signal systems which may have PVC elbows instead of rigid. If any part of the rigid metal elbow is buried less than 18 inches underground the elbow and rigid metal extension shall be grounded. Grounding shall be accomplished by means of a grounding bushing installed on the extension. Unless specifically shown on the plans, rigid metal elbows containing, or entering ground boxes containing only communications conductors, loop detectors, or other low voltage power limited circuits need not be grounded unless a ground wire is present in the conduit or ground box. The rigid metal elbows located in concrete foundations may be extended with PVC conduit and need not be grounded provided that the end of the elbow nearest the end of the conduit run exiting the foundation is at least 2 inches below the concrete. RMC elbows will not be eliminated. RMC elbows will not be paid for directly, but will be subsidiary to various bid items.
- High-Density Polyethylene (HDPE) conduit shall meet the requirements of Item 622, Duct Cable, except that the HDPE conduit, when bid under Item 618, Conduit, shall not contain factory installed conductors. Fittings for HDPE conduit shall be UL listed as an electrical conduit connector or shall be thermally fused using an electrically heated wound wire resistance welding method. HDPE conduit may be substituted for bored schedule 40 or schedule 80 PVC conduit. When such substitution is made, bored HDPE shall be schedule 40 of the size PVC being replaced. The HDPE conduit shall transition to PVC (or RMC elbow when required) at the bore pit. Size and schedule shall be as shown on the plans. Substituted conduit may not be extended to ground boxes or foundations; RMC elbows shall be installed at ground boxes and foundations. RMC elbows will not be eliminated.
- All conduit support hardware including straps, nuts, bolts, screws, retaining anchors and washers shall be hot dipped galvanized or stainless steel. Strut type conduit straps shall be stainless steel or hot dipped galvanized. Strut type straps need not be made of malleable type material. Stamped-cadmium plated straps will not be allowed. Straps having only one mounting hole shall not be allowed for use on conduits 2 inches and larger with the exception of electrical service poles where stainless steel standoff straps will be allowed. Two piece conduit straps designed to be used with a mounting shoe shall be installed only with the correctly sized shoe.

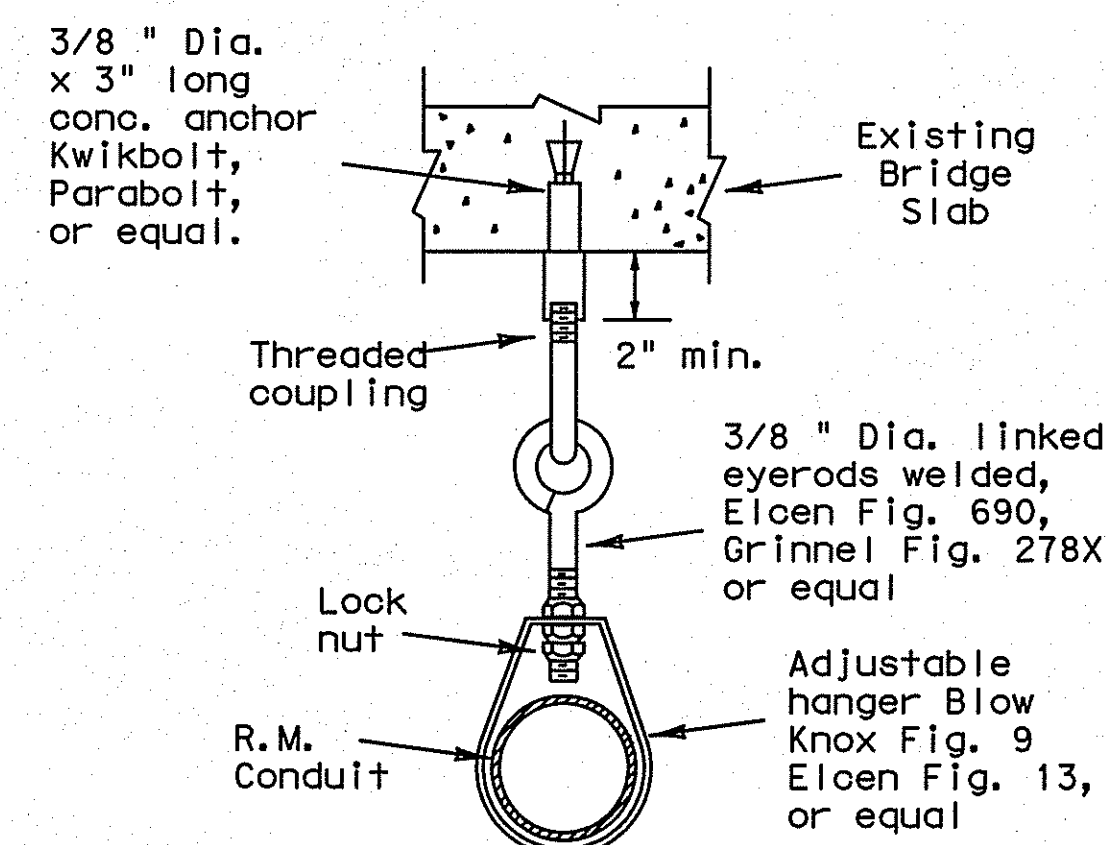
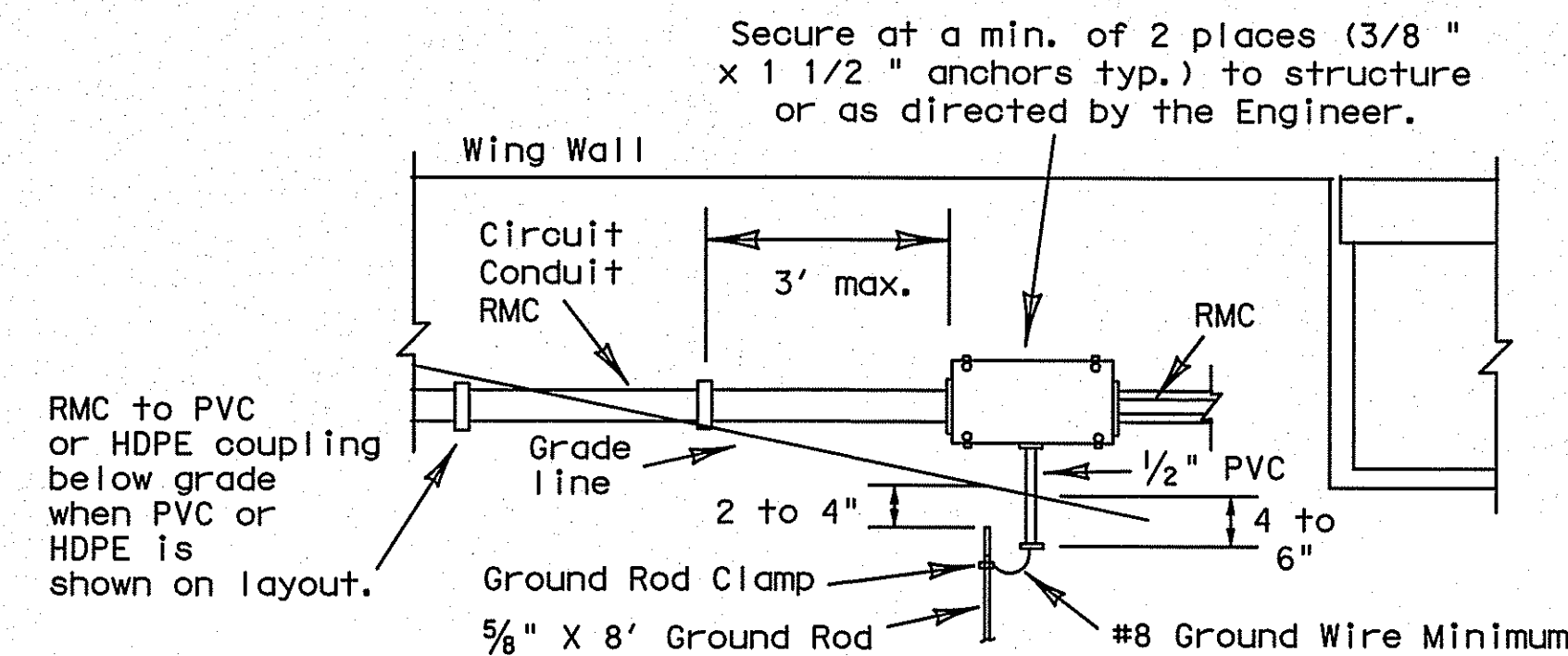
**B. CONSTRUCTION METHODS**

- Conduit in structures shall have expansion fittings at structure expansion joints. All straight runs of RMC conduit exposed on structures such as bridges shall have expansion joints installed at maximum intervals of 150 feet. Expansion joints shall be installed so they allow for movement of the conduit. Installation of the joint in such a manner that will not allow for movement shall be repaired at no expense to the state. The method of determining the final setting length of the expansion joint shall be provided to the Engineer upon request.
- Conduit supports shall be spaced at maximum intervals of 5 feet. Conduit spacers shall be used with metal conduit placed on surfaces of concrete structures (See conduit mounting options).
- Conduit supports shall not be attached directly to prestressed concrete beams except as shown specifically in the plans and approved by the Engineer.
- Unless otherwise shown on the plans, conduit placed beneath existing roadways, driveways, or sidewalks, or after the base or surfacing operation has begun, shall be accomplished by jacking or boring. The Contractor shall back fill and compact the bore pits to the bottom of the conduit prior to installing connecting conduit or duct cable to prevent bending of the connection.
- Conduit trenched in the subgrade of new roadways shall be backfilled with excavated material, unless otherwise noted on the plans. Conduit trenched in the sub-base of new roadways shall be backfilled with cement-stabilized base.
- Open ends of all conduit and raceways shall be fitted with temporary caps or plugs to prevent entry of dirt, debris and rodents during construction. The temporary cap may be constructed of duct tape, but in all cases shall be tightly fixed to the conduit and shall be durable. The contractor shall clean out the conduit and prove it clear in accordance with Standard Specifications Item 618.3 prior to installing any conductors.
- Conduit entry into the top of enclosures such as safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes shall be made weatherproof using conduit sealing hubs, or threaded bosses.
- A bonding jumper shall be installed from each grounding bushing to the nearest grounding rod, grounding lug, and/or equipment grounding conductor. All jumpers shall be the same size as equipment grounding conductor. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing. At electrical services, grounding electrode conductor shall be a solid Copper #6 AWC.
- Metal junction boxes shall be bonded to the grounding conductor in accordance with the NEC.
- Conduits entering ground boxes shall be placed so that the conduit ends shall be not less than 3 inches nor more than 6 inches from bottom of box (See ground box detail on sheet ED(3)).
- Conduit ends shall be sealed with heat shrink boots with waterproof sealant, urethane foam, or by other methods approved by the Engineer. Sealing shall be done after completion of any required pull tests. Duct tape shall not be used as a permanent conduit sealant. Silicone caulking shall not be used as a sealant.
- All strut mounting material and hardware shall be hot-dip galvanized or shall be stainless steel. The cut ends of strut and non-galvanized rigid metal conduit threads shall be coated with a zinc rich paint (90% or more Zinc content). Zinc rich paint may only be used to touch up galvanized material as allowed under item 445.6 galvanizing. The painting of non-galvanized material with a zinc rich paint shall not be considered as an approved alternative for galvanized materials.
- All PVC conduit terminations shall be fitted with bushings or bell ends. All metal conduit terminations shall be fitted with a grounding type bushing.



**NOTES**

- Ground rod clamp to be UL listed for direct burial.
- For conduit placed in structure, use flush-mounted box.
- Bond junction box and metal conduits to equipment grounding conductor and grounding electrode conductor using listed connector.
- Seal all conduits entering the junction box from underground.
- Install bell end or bushing on 1/2" PVC conduit both ends.
- Ground rod to be driven within 8 inches of 1/2 inch PVC conduit end.



5/03 Revision  
Revised notes.

**Texas Department of Transportation**  
Traffic Operations Division

**ELECTRICAL DETAILS-  
CONDUIT**

**ED(1)-03**

© TxDOT January 1992		REVISED	DATE	BY	CHKD	DATE	BY
4-98	12-00	3-03	5-03				
SHEET NO.		COUNTY		SECTION		PROJECT	

71A

DATE: FILE:



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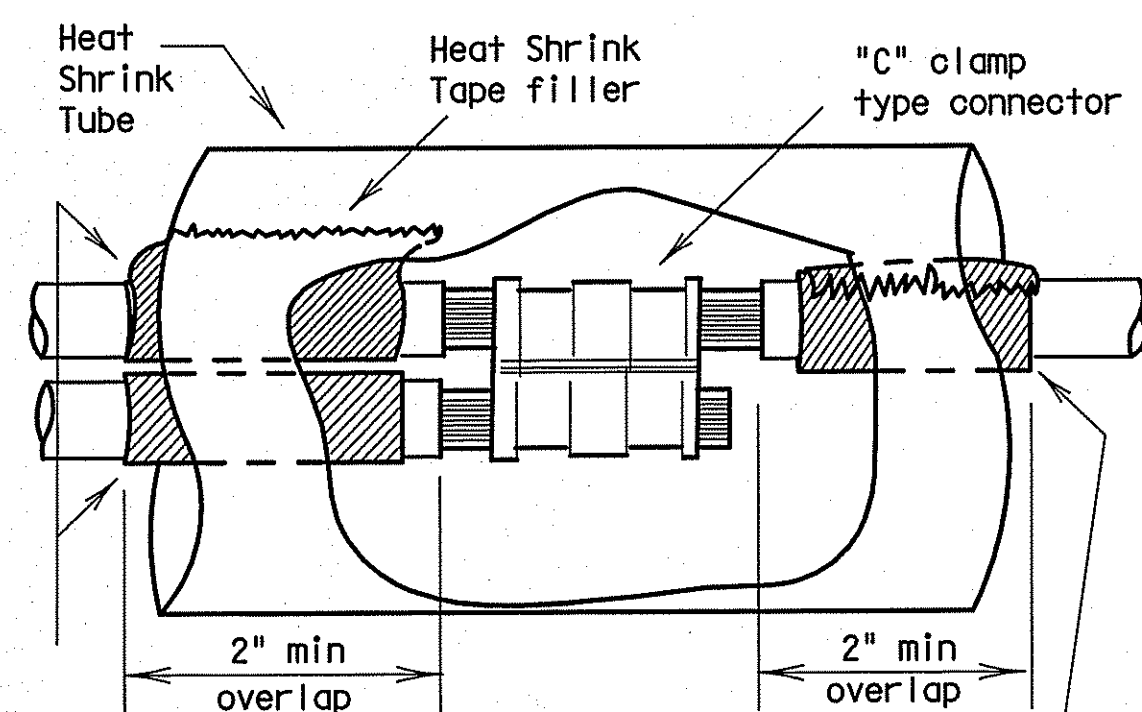
**I. ELECTRICAL CONDUCTORS**

**A. MATERIALS**

- Insulated conductors shall be NEC Type XHHW. Insulated conductors shall be color coded in accordance with the NEC, articles 200, 250, and 310; i.e. Insulation of grounded conductors (neutrals) shall be white. Grounding conductors (ground wires) shall be bare or insulation shall be green. Insulation of ungrounded conductors (hots) shall be any color except green, white, or gray. Identification of conductors #6 American Wire Gauge (AWG) and smaller shall be by continuous jacket color. Color coding of electrical conductors #4 AWG and larger shall be either by continuous color jacket or by colored tape. Colored tape marker shall consist of a half-lap of tape covering a 6-inch length of conductor.
- Where two or more circuits are present in one conduit or enclosure, the conductors of each circuit shall be identified by a permanent non-metallic tag at each accessible location. The tag shall be fastened to the conductors by two plastic straps. Each tag shall indicate circuit number, letter, or other identification shown in the plans.
- Grounding electrode conductor #6 AWG for bonding to ground rod at electrical service, shall be solid. Connection of conductor to ground rod shall be made using UL Listed connectors designed for such purposes.
- Heat Shrink Tape filler shall be used to seal the ends of heat shrink tubing around two or more conductors that are insulated with heat shrink tubing. Tape material shall have a minimum dielectric strength of 225 volts per mil and shall be cross-linked butyl rubber. Tape shall be supplied in rolls and shall have a backing (release paper) to prevent the tape from sticking to itself.
- Heat shrink tubing shall be heavy wall, UL listed for 600 volts or greater and shall have factory applied internal sealant.
- GelCaps shall be UL listed for 600-volt applications. GelCap shall have see-through elastomer molded cover. Cover shall be filled with high dielectric insulating gel silicone sealant to provide waterseal. Cover shall be held in place by snap-lock, molded clamp made of UV stable polypropylene.
- Splicing materials, insulating materials, breakaway disconnects, GelCaps and fuse holders will not be paid for directly but shall be subsidiary to various bid items.

**B. CONSTRUCTION METHODS**

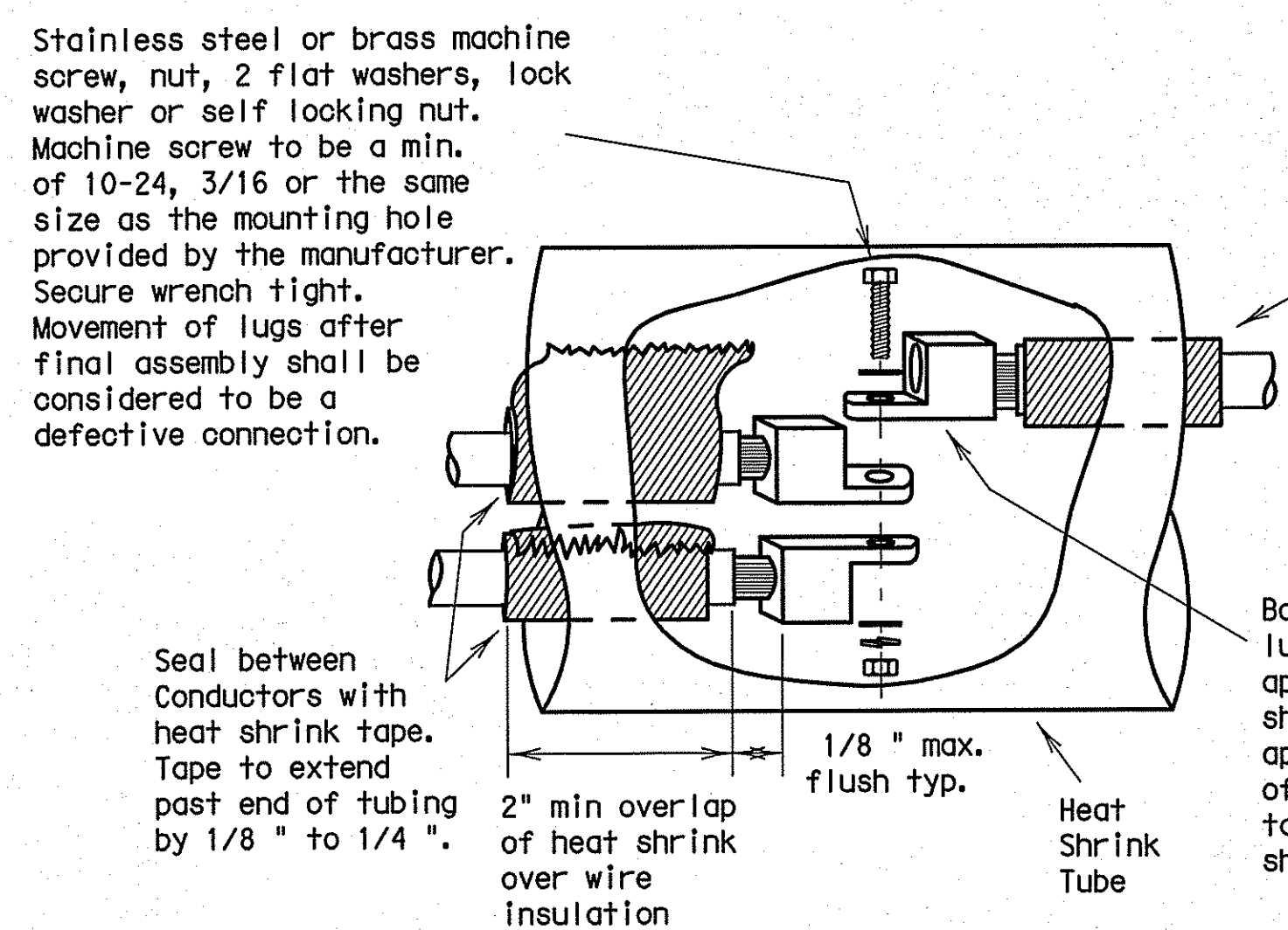
- After conductors have been installed in conduit, a pull test shall be made on conductors. When any length of conductor cannot be freely pulled, the Contractor shall make any needed alterations or repairs at no expense to the State.
- The Contractor shall perform insulation resistance tests in accordance with Item 620, "Electrical Conductors." The Contractor shall coordinate with the Engineer to witness the tests.
- A sufficient length of conductor for making up connections shall be left in ground boxes (2 feet minimum, 3 feet maximum, to point of splice, 3 feet minimum, 4 feet maximum, when conductor is pulled through with no splice), enclosures, weatherheads and pole bases (1 foot minimum, 1.5 feet maximum).
- Splices shall be made only in junction boxes, ground boxes, pole bases, or electrical enclosures and shall be made with listed compression or screw type pressure connectors, terminal blocks, bolted lugs, or split bolt connectors. Splices shall be insulated with heavy wall heat shrink tubing or GelCaps and shall be made so as to provide a watertight splice. Heat shrink sleeve shall overlap conductor insulation a minimum of 2 inches on both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, the Contractor shall increase the diameter of the conductors insulation using heat shrink filler tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Tape shall be visible after completion of all splices. Where filler tape is used but not visible, the Engineer shall approve each individual splice by conducting a physical inspection of each splice. When it appears the tubing has been burned, or overheated the tubing shall be considered to be defective and shall be replaced.
- GelCaps when used in place of heat shrink method of splicing, shall be sized and installed according to manufacturer's specifications. (Raychem GelCap and GelCap SL or equal.)
- Wire nuts may be used for #8 AWG or smaller conductors in above-ground junction boxes, but not in pole bases or ground boxes. Wire nuts shall be positioned upright to prevent the accumulation of water. Wire nuts used at these locations shall have factory applied waterproof sealant.
- Conductors in illumination poles shall be supported by a J-hook in the top of the pole.
- All conductors bid under Item 620 "Electrical Conductors" shall have breakaway electrical disconnects installed anytime conductors pass through a break-away support device.
- For terminating the conductors, insulation-jacketing material shall be removed in such a manner as to not nick any of the individual strands of the conductor. When individual conductor strands are removed, the conductor shall be considered to be damaged.
- When a conductor or cable has been damaged, or fails to pass an insulation resistance test, the conductor shall be replaced.
- Duct tape, black electrical tape, or wire nuts shall not be used in the repair of a damaged conductor.
- For terminations, no more than one wire may be installed under a single pressure connector, unless the device is listed for more than one wire.
- Conductors connected to break-away in line fuse holders must be installed in accordance with the specific manufacturer's installation instructions. Where threaded connections are made, they shall be properly torqued. Where crimp type connections are made, crimps shall be made using properly sized crimping pliers. Proper conductor terminations are critical to the safe operation of break-away devices.
- Waterproofing boots shall be properly trimmed to fit snugly around the conductor so as to provide a water proof connection. No more than one wire may enter a single opening in any one boot. Waterproofing boots must provide the correct number of openings. Where only one wire is to be connected to a boot, the boot may not be a two wire type.



Seal between conductors with heat shrink tape. Tape to extend past end of tubing by 1/8" to 1/4".

Increase insulation diameter with heat shrink tape if necessary. Tape to extend past end of tubing by 1/8" to 1/4".

**SPLICE OPTION 1**  
C-CLAMP



Stainless steel or brass machine screw, nut, 2 flat washers, lock washer or self locking nut. Machine screw to be a min. of 10-24, 3/16 or the same size as the mounting hole provided by the manufacturer. Secure wrench tight. Movement of lugs after final assembly shall be considered to be a defective connection.

Seal between conductors with heat shrink tape. Tape to extend past end of tubing by 1/8" to 1/4".

2" min overlap of heat shrink over wire insulation

1/8" max. flush top.

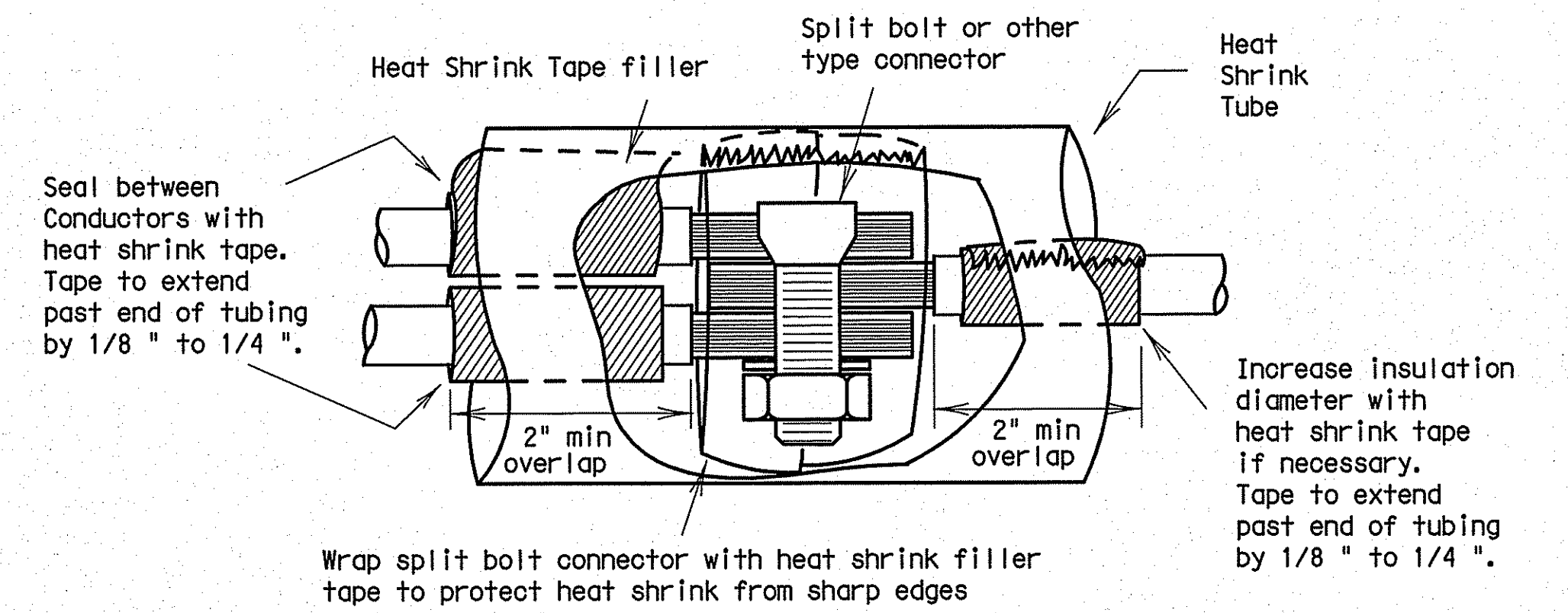
Heat Shrink Tube

Increase insulation diameter with heat shrink tape if necessary. Tape to extend past end of tubing by 1/8" to 1/4".

Bolt together lugs and prior to applying heat shrink tubing, apply two layers of heat shrink tape to cover sharp edges.

**SPLICE OPTION 2**  
BOLTED WIRE LUGS

**SPLICE OPTION 3**  
SPLIT BOLT



Seal between conductors with heat shrink tape. Tape to extend past end of tubing by 1/8" to 1/4".

2" min overlap

Split bolt or other type connector

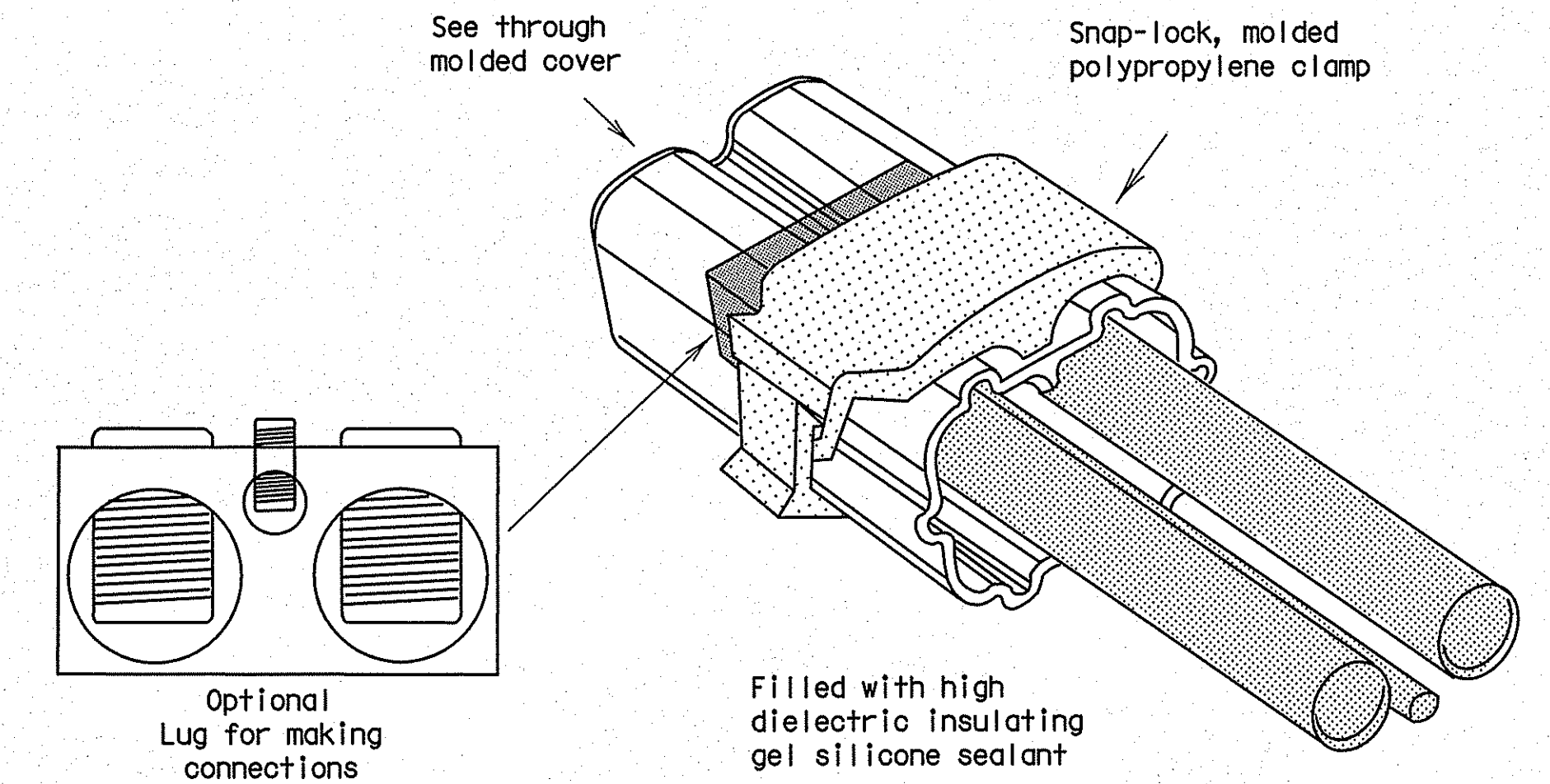
Heat Shrink Tube

Increase insulation diameter with heat shrink tape if necessary. Tape to extend past end of tubing by 1/8" to 1/4".

Wrap split bolt connector with heat shrink filler tape to protect heat shrink from sharp edges

**SPLICE OPTION 4**  
GELCAP

GelCap shall be sized and installed according to manufacturer's specifications



See through molded cover

Snap-lock, molded polypropylene clamp

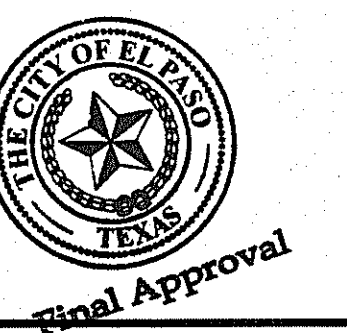
Optional Lug for making connections

Filled with high dielectric insulating gel silicone sealant

- All conduits that contain circuit wiring of 50 volts or more shall contain an equipment grounding conductor (EGC). Conduit for traffic signals shall have an EGC, with a minimum size of #8 AWG stranded. Unless otherwise shown on the plans, the EGC for all other conduits shall be the same AWG size as the largest current carrying conductor contained in that conduit. The EGC shall be paid for item 620-Electrical Conductors.

**C. TEMPORARY WIRING**

- Temporary conductors and electrical equipment to provide power for utilization equipment, shall be installed in accordance with the NEC article 305. All temporary wiring materials and methods shall comply with the standard sheets. All power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade, supplied from a utility power source, shall be provided with a ground fault circuit interrupter.
- Residual current protective devices (GFCI) may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
- Where wire nuts are approved for temporary wiring, they shall be of the self-sealing type.
- All conductor splices must be contained within a listed enclosure, ground box or the splices will be more than ten feet above grade vertically and more than five feet horizontally from any metal structure. Where temporary conductors are installed in any area that is likely to be subjected to vehicle traffic, or mobile construction equipment, the vertical clearance to ground shall be at least 18 feet when measured at the lowest point. Where power conductors are to be supported by a span wire, the span wire shall be properly grounded.
- Existing conduit containing service conductors uncovered during the construction process shall be repaired in a timely manner in accordance with the NEC. Existing non-metallic conduit exposed during construction shall not be left exposed above grade, or with less than eighteen inches of cover, without protective methods approved by the Engineer.



Texas Department of Transportation  
Traffic Operations Division

**ELECTRICAL DETAILS-  
CONDUCTORS**

ED (2) -03

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**II. GROUND RODS**

**A. MATERIALS**

- All ground rods installed at electrical services, including supplemental lightning protection ground rods specified by the plans in other locations such as pole bases, shall be copper clad and UL listed. Rods shall be a minimum diameter of 5/8 inch. The length shall be a minimum of 8 feet. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets.
- Ground rod clamps shall be listed to be in direct contact with the soil. Where concrete encasement is required, the clamp shall be listed for concrete encasement.

**B. CONSTRUCTION METHODS**

- Ground rods installed in locations such as pole bases, to provide supplemental lightning protection need not be totally in contact with the soil. Where called for in the plans, rods may be encased in soil or concrete or any combination of soil and concrete. When concrete encased, the connection of the conductor to the rod shall be readily accessible for inspection or repairs. When driven into the soil the upper end shall be between 2 to 4 inches below finished grade. Ground rods shall not be placed in the same drilled hole as a timber pole.
- Ground rods shall be installed such that the end imprinted with the rod's part number is installed as being the upper end.
- Non-conductive coatings such as concrete splatter shall be removed from the rod at the clamp location.
- Routing of lightning protection ground rod wires shall be run as short and straight as possible. Where bends are required they shall have a minimum radius of four inches.
- Unless specifically called for by the plans, conduits used for ground rod wires shall be non-metallic. Where metal conduits are specified, a grounding bushing and properly sized bonding jumper shall be provided and properly installed on each end.
- Where rocky soil or a solid rock bottom is encountered when driving a ground rod and the horizontal trench placement method is the only viable solution, written authorization from the Engineer must be obtained.

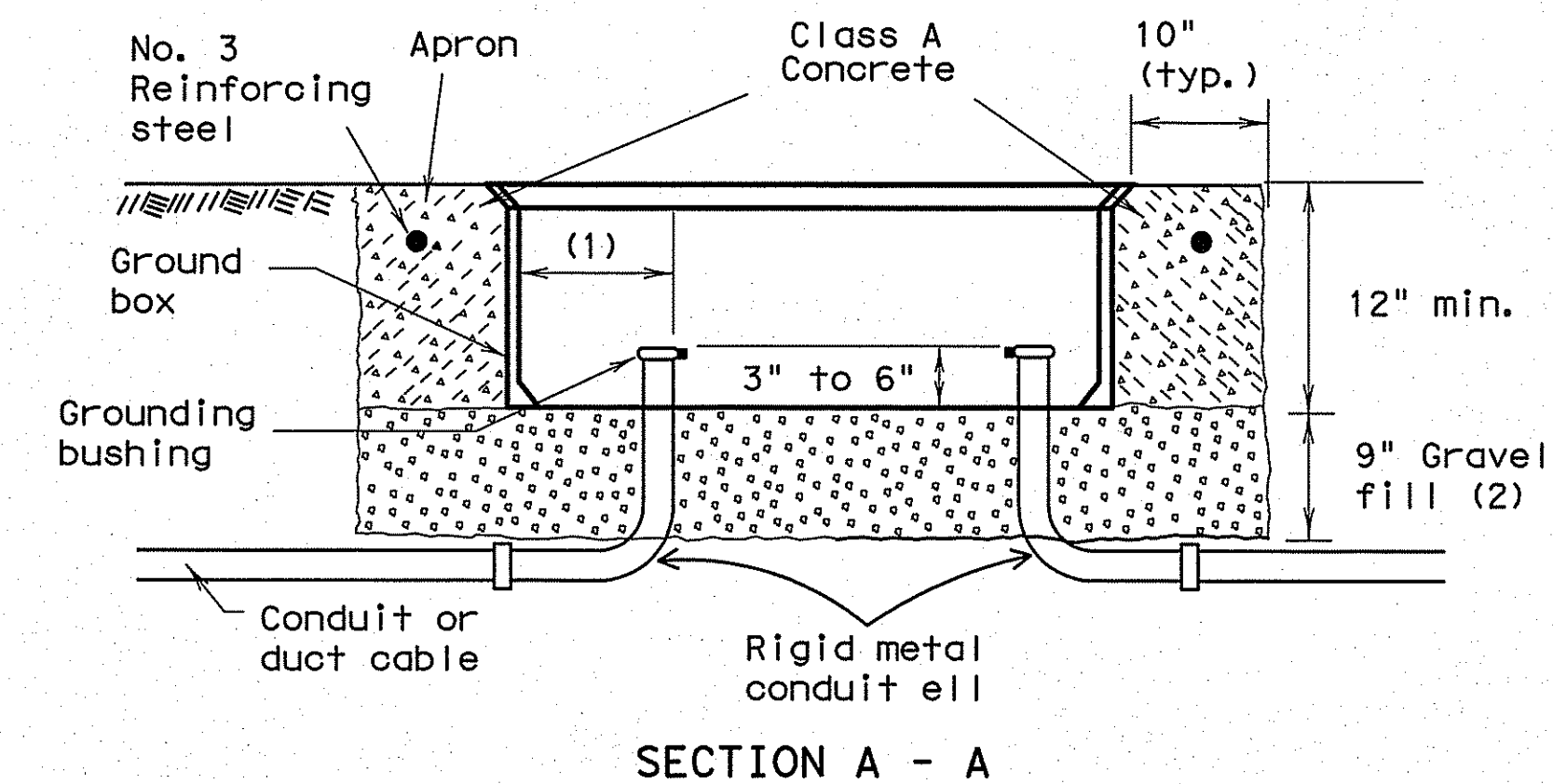
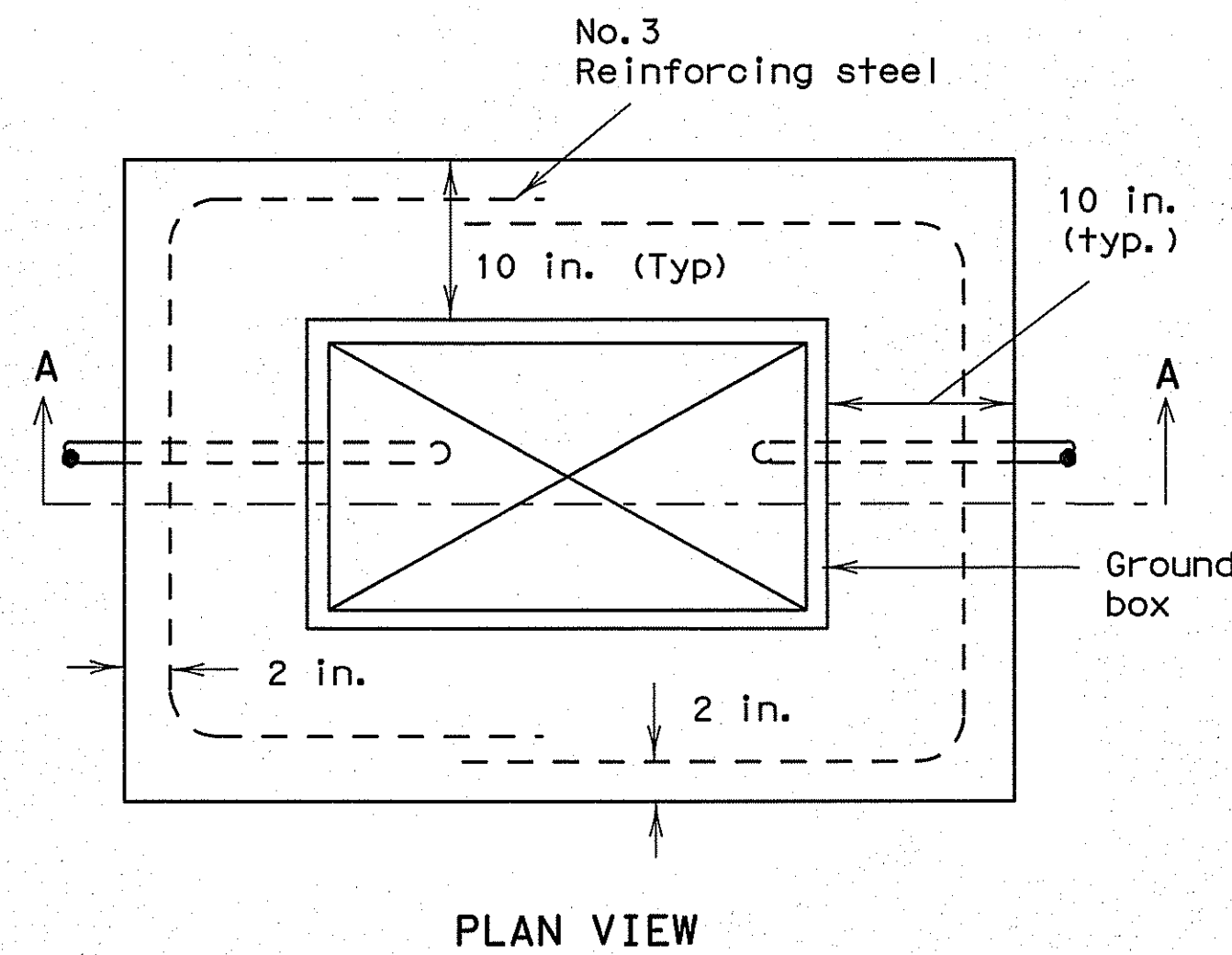
**III. GROUND BOX**

**A. MATERIALS**

- Ground boxes 16x30x24 inches (WxLxD) or smaller shall be polymer concrete of the type required by the descriptive code shown elsewhere. Larger ground boxes shall be as shown elsewhere in the plans.
- All ground boxes and covers shall be permanently marked either by impress or by permanent ink, with manufacturer's model number and manufacturer's name or logo.
- Covers shall be bolted down, and bolt holes in the box shall be arranged to drain dirt.
- Ground box Types A, B, C, D & E shall meet the following requirements:
  - Ground boxes and covers be manufactured from polymer concrete reinforced with continuous strands of woven or stitched borosilicate fiberglass cloth. The polymer concrete shall be made from catalyzed polyester resin, sand and aggregate, and shall have a minimum compressive strength of 11,000 psi. Polymer concrete containing chopped fiberglass or fiberglass reinforced plastic is not acceptable.
  - Minimum inside dimensions shall be as follows (width x length x depth):
    - Type A shall be 11.5 inches x 21 inches x 10 inches, (122311)
    - Type B shall be 11.5 inches x 21 inches x 20 inches, (122322)
    - Type C shall be 15.25 inches x 28.25 inches x 10 inches, (162911)
    - Type D shall be 15.25 inches x 28.25 inches x 20 inches, (162922)
    - Type E shall be 11.5 inches x 21 inches x 16 inches, (122317)
  - Bottom edge of box or extension shall be footed with a minimum 1 1/4 inch flange.
  - Ground boxes shall withstand 600 lbs. per sq. ft. applied over the entire sidewall with less than 1/4 inch deflection per foot length of box. Ground boxes and covers shall withstand a test loading of 20,000 lbs. over a 10 inch by 10 inch area centered on the cover with less than 1/2 inch deflection. Ground boxes and covers shall meet Western Underground Standards 3.6. Manufacturer shall supply certification by an independent laboratory or sealed by a Texas-Licensed Professional Engineer.
  - Covers shall be 2 inch (nominal) thick polymer concrete. All hardware shall be stainless steel. Cover shall be secured with two 1/2 inch stainless steel bolts. Bolts shall be self-retaining and shall withstand a minimum of 70 ft-lbs. torque and shall have a minimum 750 lbs. straight pull out strength. Nuts shall be floating and shall provide a minimum of 1/2 inch movement from the center of the nut. Covers shall be skid resistant, minimum 0.5 coefficient of friction. Covers shall be interchangeable between manufacturers and shall conform to the dimensions shown herein. Unless otherwise approved by the Engineer, cover shall be legibly imprinted with the following words in minimum 1 inch letters:
    - Ground Boxes containing wiring for traffic signals shall be labeled, Danger High Voltage Traffic Signal.
    - Ground boxes containing wiring for illumination systems shall be labeled, Danger High Voltage Illumination.
    - Ground boxes containing wiring for traffic management systems shall be labeled, Danger High Voltage Traffic Management.
    - Ground boxes containing wiring for sign illumination systems shall be labeled, Danger High Voltage Sign Illumination.
    - Ground boxes containing wiring for traffic signals that also contain illumination, powered by the signal electrical service, shall be labeled, Danger High Voltage Traffic Signal.

**B. CONSTRUCTION METHODS**

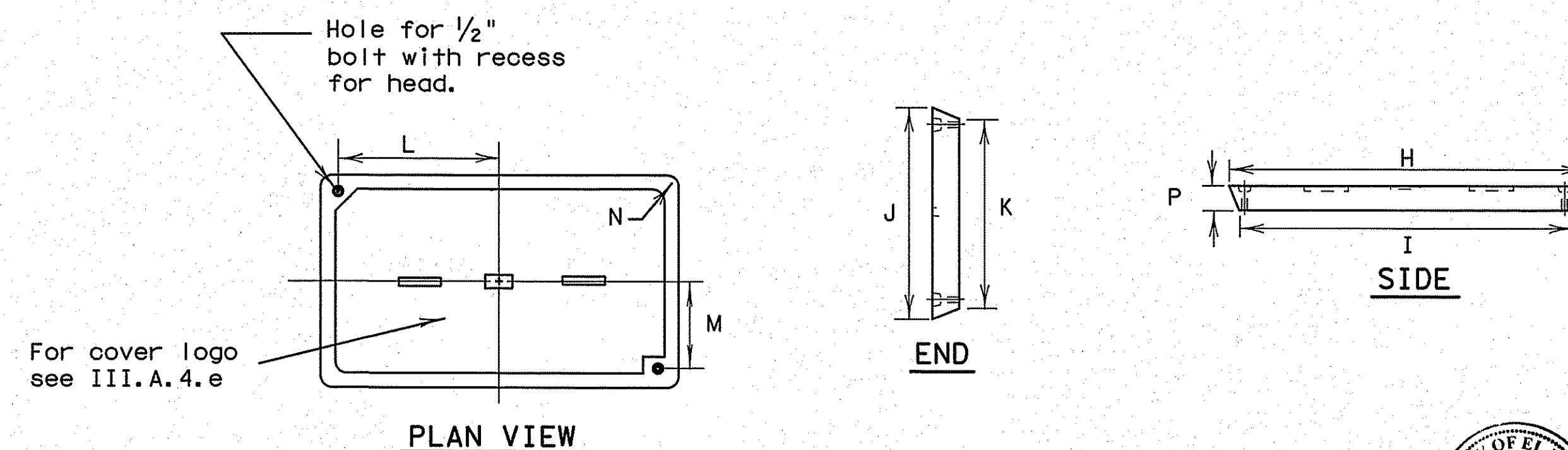
- Ground boxes shall be set on a 9 inch (minimum) bed of aggregate from 3/4 " up to 2" in size. Aggregate shall be in place prior to setting box and conduits shall be capped. Any gravel or dirt in conduit shall be removed.
- When required by Item descriptive code, construction of an apron encasing a ground box including concrete and reinforcing steel shall not be paid for directly but shall be subsidiary to the ground box. Reinforcing steel may be field bent. Concrete for aprons shall be considered miscellaneous concrete for testing purposes. Aprons shall be cast in place.
- Conduit holes may be cut in the walls of type B & D boxes at least 18 inches beneath the cover.
- If, within the limits of this project, the Contractor must utilize an existing ground box equipped with a metal cover, the Contractor shall bond the cover to the grounding conductor with a 3 foot long flexible stranded jumper the same size as the grounding conductor. Connection of bonding jumper to metal ground cover shall not be paid for directly but shall be subsidiary to various bid items. The box(es) must be clearly shown on the plans with plan notes fully describing the work required.
- If there are other ground boxes with metal covers within the project limits but not involved in the contract, the Engineer may direct the Contractor to ground the covers, designating and identifying the specific boxes in writing. This work will be paid for separately.
- Termination to metal ground box covers shall be made using a tank ground type lug.



**APRON FOR GROUND BOXES**

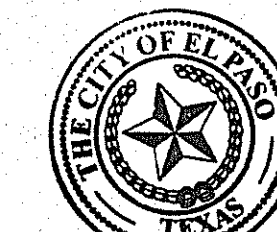
(Where required)

- Final position of end of conduit shall not exceed one-half the distance to the side of box opposite the conduit entry.
- Place gravel "under" the box, not "in" the box. Gravel should not encroach on the interior volume of the box.
- Install bushing on the upper end of all ells.
- Where a ground rod is present in the ground box, connect it to any and all equipment grounding conductors using a listed connector.
- Maintain sufficient space between all conduits so as to allow for proper installation of bushings.
- All conduits shall be installed in a neat and workmanlike manner.
- All conduits installed in the ground box shall be sealed after completion of conductor installation and any required pull tests. Silicone shall not be used as sealant.



**GROUND BOX COVER**

GROUND BOX COVER DIMENSIONS								
BOX SIZE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



Final Approval



DATE: FILE:

5/03 Revision  
 Revised notes.

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4-98	REVISIONS				
12-00					
3-03					
5-03					

**ELECTRICAL DETAILS-  
GROUND BOXES**

ED(3)-03



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**ELECTRICAL SERVICES NOTES**

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary for a complete and proper electrical service installation as specified in the plans to obtain electrical power shall be paid for, performed, furnished and installed by the Contractor. The Contractor shall contact the Utility for metering and shall comply with all Utility requirements.

Primary line extensions, connection charges, meter charges, and other charges by the Utility company to provide power to the location shown, when required, shall be paid for under force account work. The costs associated with these charges shall be approved by the Engineer prior to engaging the Utility company to do the work. The Contractor shall consult with the appropriate Utility to determine costs and requirements, and shall coordinate the Utility's work as approved by the Engineer. The Contractor shall be reimbursed only the amount billed by the Utility. No additional amount for supervision of the Utility's work will be paid.

Materials shall be new and unused, materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and shall be Underwriters Laboratories (UL) Listed. Electrical Service conduits, conductors, disconnects, contactors, circuit breaker panel sizes, and branch circuit breakers, shall be as shown in the Electrical Service Data elsewhere in the plans. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection.

The Contractor shall submit for approval no less than six (6) copies of catalog cut sheets on electrical service materials. Submittals shall be legible and shall be marked to indicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

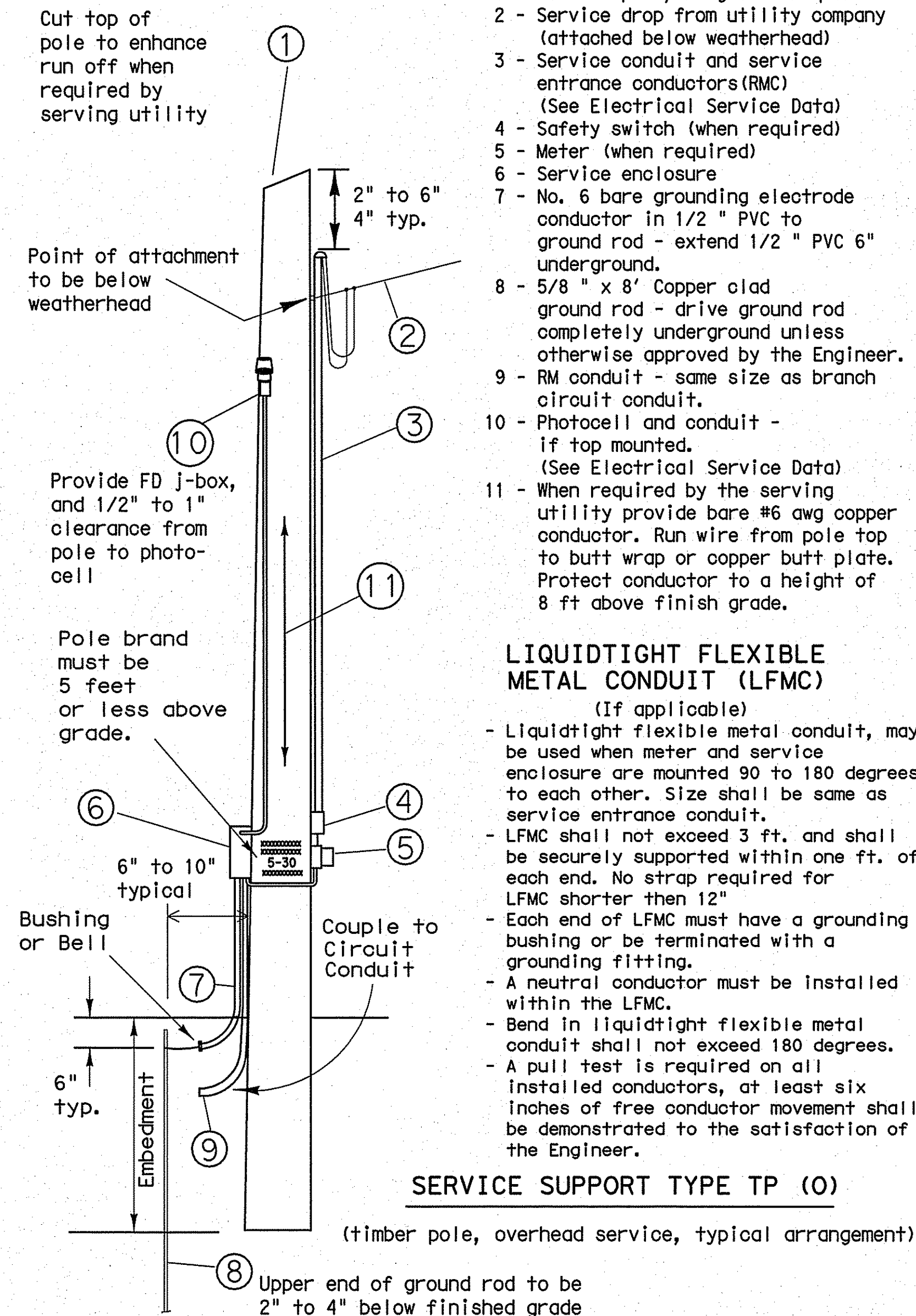
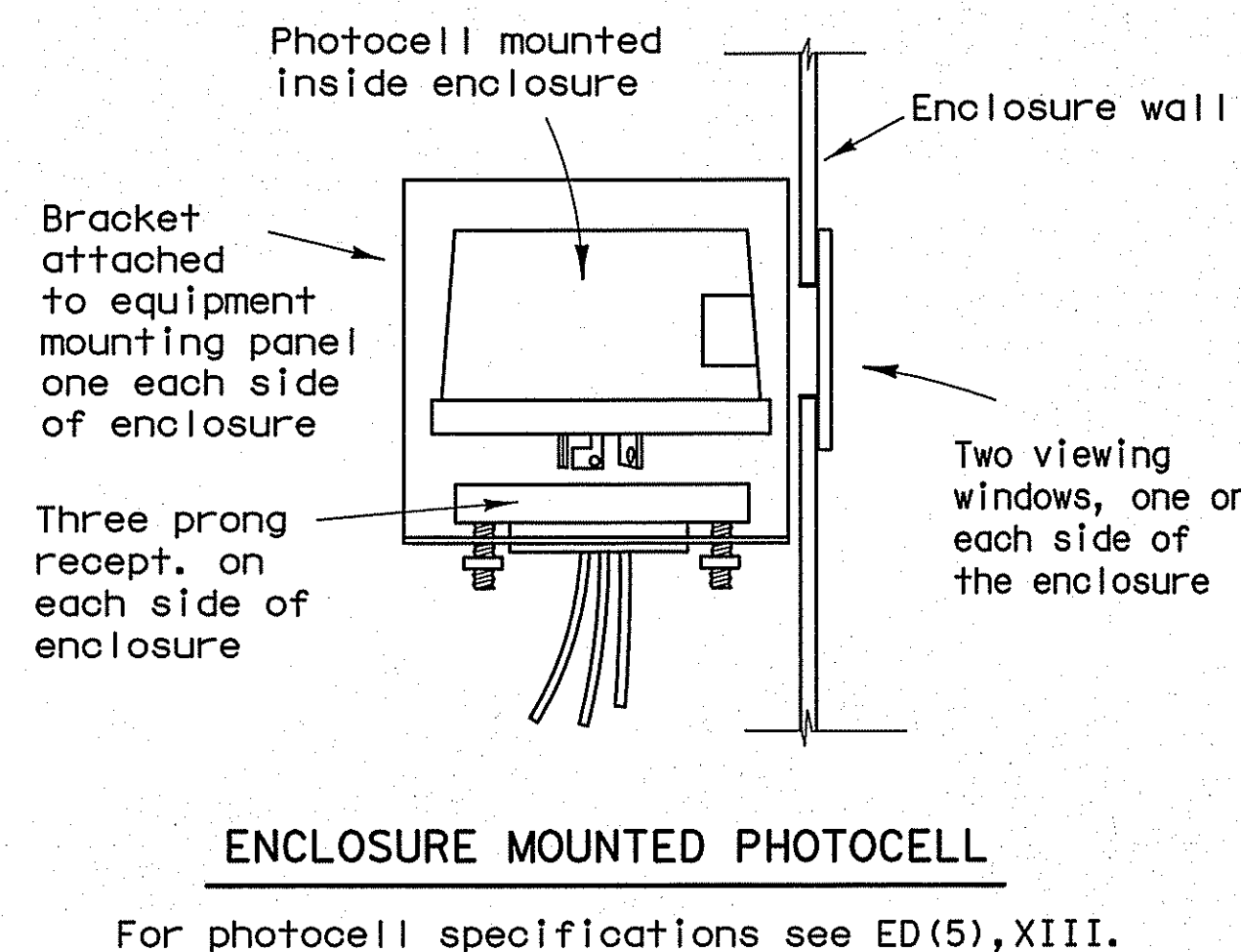
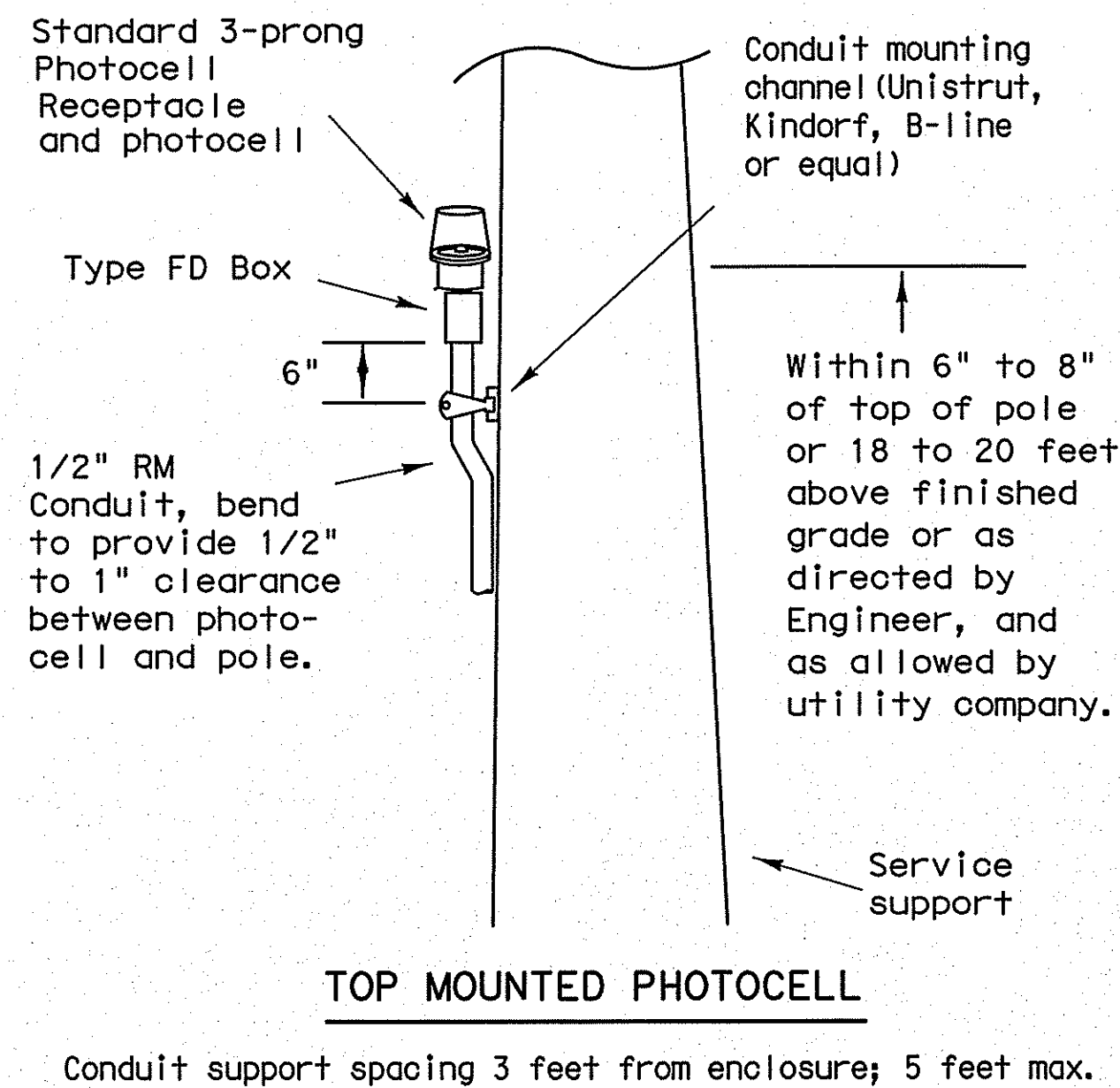
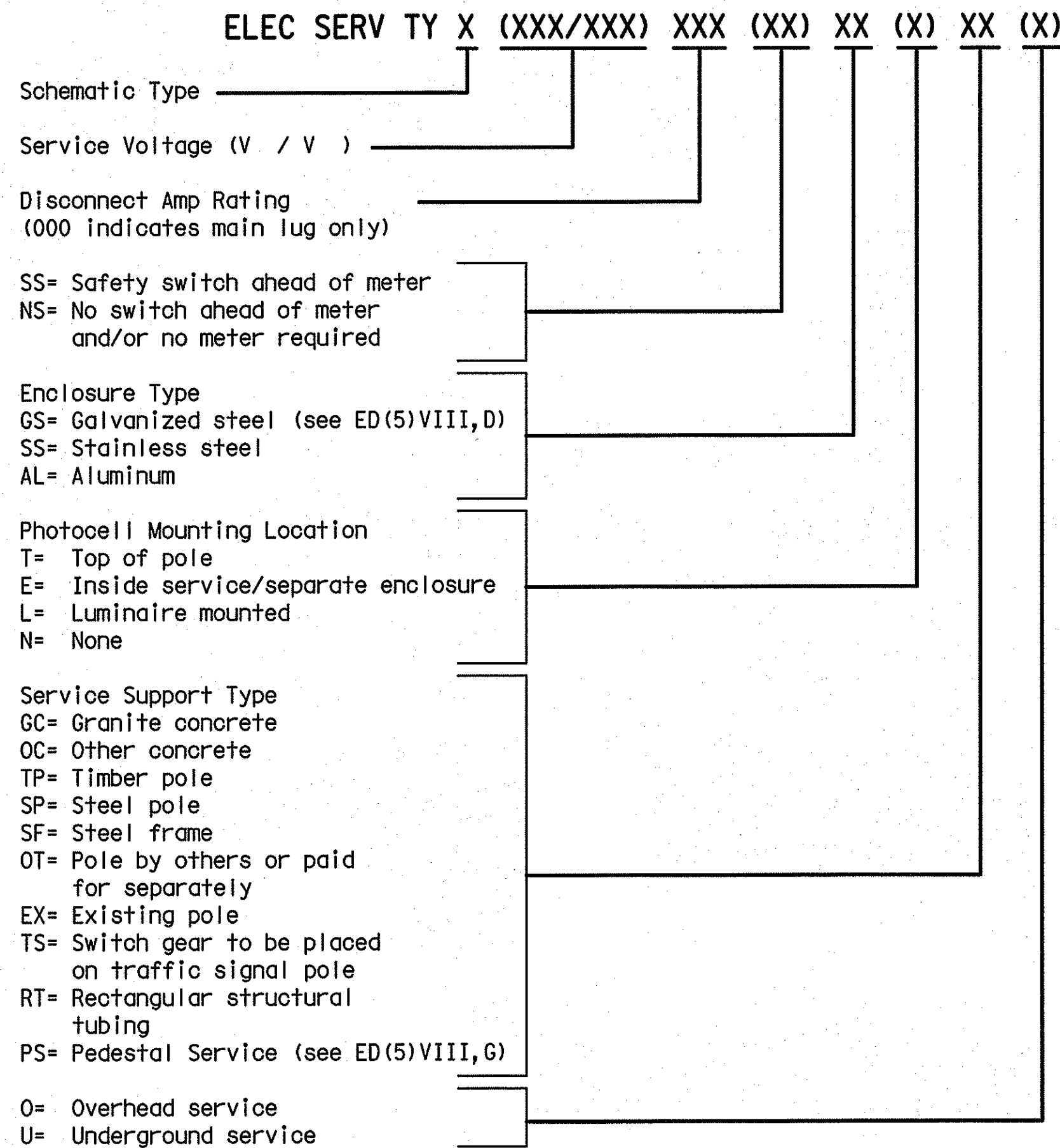
The Contractor shall provide locks keyed with Master #2195 for all lockable electrical enclosures. Keys and locks become property of the State. Unless otherwise approved by the Engineer, enclosures shall not be energized until locks are provided and all bolts are installed. Circuit directories, where provided, shall be filled out. All breakers and components in shop built panels and enclosures shall be labeled with duo-colored plastic labels. Letters shall be a minimum 3/8" in height.

Enclosures with external disconnects that de-energize all equipment inside the enclosure, need not have dead front trim, except that incoming line terminations shall be protected from incidental contact.

When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used. All wiring and components shall be rated for 75 degrees C. Minimum size for service entrance conductors shall be #6 XHHW.

- I. Safety Switch. A safety switch, placed ahead of the meter, shall only be used when specified by the Utility and when shown on the Electrical Service Data. The switch shall be UL Listed, heavy duty type, 600 volt, unfused, with a UL type 3R enclosure and equipped with a solid neutral (s/n) assembly. The switch shall be padlockable in the "on" position.
- II. Service Type. Electrical service types A, C, D, and T shall be as schematically detailed on ED(4) or ED(5). Other service types shall be as detailed elsewhere on the plans.
- III. Branch Circuit Breakers. Circuit breakers shall be thermal magnetic and have a minimum interrupting capacity of 10,000 amps and a voltage rating compatible with their use. Circuit breakers shall be sized as shown in the electrical service data. Circuit breakers in panelboards and load centers shall be full size and designed exclusively for the panelboard or load center in use. Tandem and half-width breakers shall not be used. All circuit breakers shall be permanently and clearly marked identifying the circuit or device supplied. Circuit breakers shall be UL Listed to UL489.
- IV. Circuit Breaker Panelboard. Panelboards shall be UL Listed. Panelboards shall have copper busses, a minimum of 6 one-pole spaces or as required in the electrical service data, and when required will be rated for service equipment. Enclosure shall meet or exceed UL type 3R classification. Panelboards shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be bolt-in type only.
- V. Circuit Breaker Load Center. Load centers shall be UL Listed. Load centers for type T services may have copper or aluminum busses, all other load centers will be copper bus only. Load center will have a minimum of 4 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Load centers shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be plug-in type only. Load centers for type T services shall accommodate a maximum of 6 one-pole breakers.
- VI. Separate or Auxiliary Enclosure. Separate enclosures for HOA, photocell and lighting contactors for types D & T Services shall be a UL Listed assembly with outer door. Interior shall have dead front trim. HOA switch operator shall extend through the dead front trim. Photocell shall be mounted inside the enclosure as described in paragraph XIII when required by descriptive code. Separate enclosures shall meet the construction requirements of paragraph VIII. E, except that separate enclosure shall not have external operating handle, need not have a data pocket and door may latch at only one point. All equipment may be located in one enclosure instead of two, when approved by the Engineer.
- VII. Where a Type D or T service is provided, laminated "as built" drawings are required as shown on ED(5) VIII E; shall be delivered before completion of the work, to the Engineer in lieu of placement within these smaller enclosures. Conduit may not enter the back wall of a service enclosure penetrating the equipment mounting panel. Provide grounding bushings on all metal conduits, terminate bonding jumper to grounding bus. Grounding bushing is not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss such as a meter base.

**EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE**



- 1 - Class 5 pole, height as required
- 2 - Service drop from utility company (attached below weatherhead)
- 3 - Service conduit and service entrance conductors (RMC) (See Electrical Service Data)
- 4 - Safety switch (when required)
- 5 - Meter (when required)
- 6 - Service enclosure
- 7 - 6 bare grounding electrode conductor in 1/2" PVC to ground rod - extend 1/2" PVC 6" underground.
- 8 - 5/8" x 8' Copper clad ground rod - drive ground rod completely underground unless otherwise approved by the Engineer.
- 9 - RM conduit - same size as branch circuit conduit.
- 10 - Photocell and conduit - if top mounted. (See Electrical Service Data)
- 11 - When required by the serving utility provide bare #6 awg copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor to a height of 8 ft above finish grade.

**LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)**

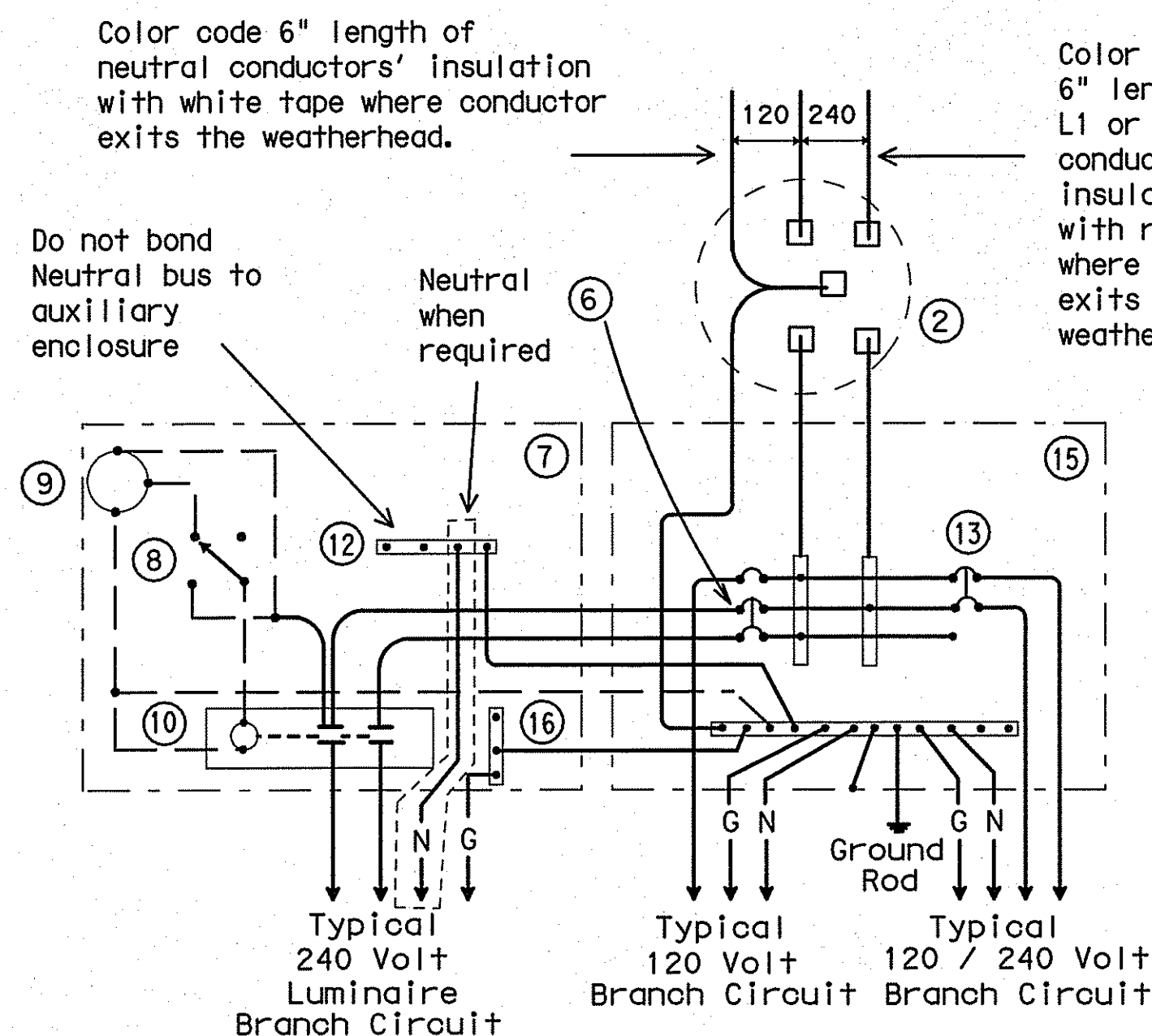
- (If applicable)
- Liquidtight flexible metal conduit, may be used when meter and service enclosure are mounted 90 to 180 degrees to each other. Size shall be same as service entrance conduit.
  - LFMC shall not exceed 3 ft. and shall be securely supported within one ft. of each end. No strap required for LFMC shorter than 12"
  - Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting.
  - A neutral conductor must be installed within the LFMC.
  - Bend in liquidtight flexible metal conduit shall not exceed 180 degrees.
  - A pull test is required on all installed conductors, at least six inches of free conductor movement shall be demonstrated to the satisfaction of the Engineer.

**TIMBER POLE NOTES**

1. Conduit and electrical conductors attached to the electrical service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
2. Pole top mounted photocell, install on north side of pole or in service enclosure as required. See Electrical Service Data.
3. Attach meter and service equipment with stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Gain pole as required to provide flat surfaces for each strut. Paint ends of galvanized channel with zinc rich paint. Gain depth 5/8" max. Gain height 1 7/8" max. Strut to be 1" max. deep, and 1 5/8" wide max. Secure each strut section to timber pole with two galvanized or SS lag bolts, 1/4" diameter min. by 1 1/2" length min. Place flat out galvanized or SS washer on each lag bolt. Gain pole in a neat and workmanlike manner.
4. Embedment depth shall be as required in Item 627 Treated Timber Poles.
5. Poles trimmed for excess length shall be trimmed from the top end only.

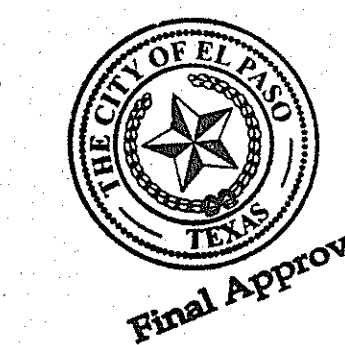
**SCHEMATIC LEGEND**

- 1 - omitted
  - 2 - Meter (when required)
  - 3 - Service Assembly Enclosure
  - 4 - Main Disconnect Breaker (Not Used)
  - 5 - Omit
  - 6 - Circuit Breaker, 15 Amp typical for control circuit wiring
  - 7 - Auxiliary Enclosure
  - 8 - Control Station ("H-O-A" Switch)
  - 9 - Photo Electric Control (enclosure-mounted shown)
  - 10 - Lighting Contactor
  - 11 - Power Distribution Terminal Blocks (Not Used)
  - 12 - Neutral Bus required when 120 v. lights are controlled by lighting contactor
  - 13 - Branch Circuit Breaker (See Electrical Service Data)
  - 14 - Circuit Breaker Panelboard (Not Used)
  - 15 - Load Center
  - 16 - Ground Bus
- Power Wiring  
- - - Control Wiring  
— N — Neutral Conductor (when required to serve 120 v. loads only)  
— G — Equipment grounding conductor—always required



**SCHEMATIC TYPE I**  
120/240 VOLTS - THREE WIRE

Install photocell and lighting contactor when shown on Electrical Service Data.



Texas Department of Transportation  
Traffic Operations Division

**ELECTRICAL DETAILS-  
SERVICE SCHEMATICS AND  
SUPPORT-TYPE TP (OVERHEAD)**  
ED(4)-03

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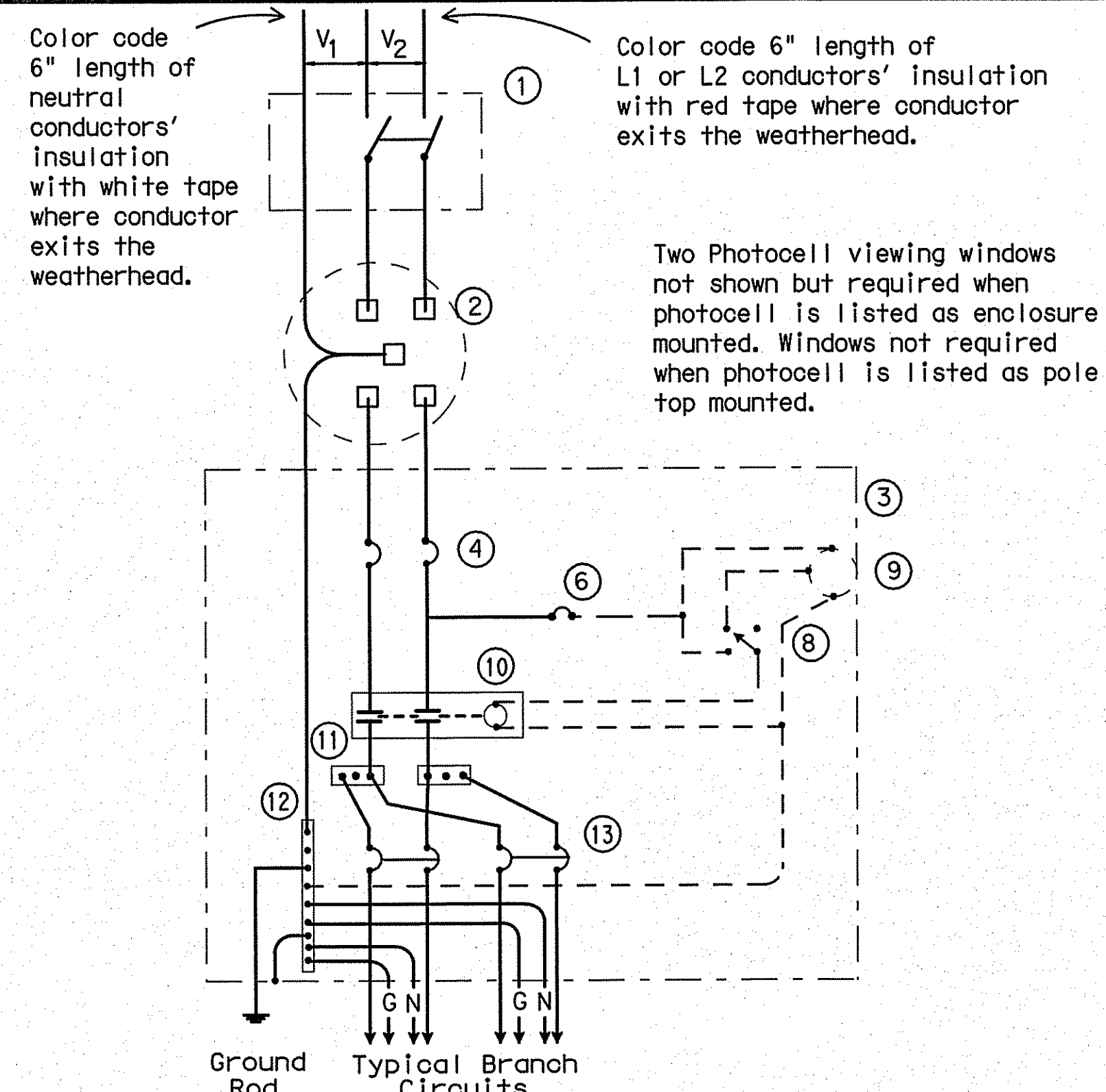
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**SERVICE ENCLOSURE NOTES**

- VIII. Service Assembly Enclosures. All service assemblies and enclosures shall be UL Listed for the intended purpose.
- Shop built or shop assembled service assemblies (all types except Type T and Type D without lighting contactor or enclosure mounted photo cell) and all auxiliary equipment enclosures mounted with service equipment and paid for as part of Item 628, "Electrical Services", shall be built or assembled by a UL Listed Industrial Control Panel shop and shall have a unique serial numbered UL Label with the words "LISTED ENCLOSED INDUSTRIAL CONTROL PANEL". The same or an additional label shall have the name, location, and phone number of the shop, the UL file number of the shop, the shop order or drawing number, date of manufacture or assembly, and the line voltage. The service assembly enclosure shall also be labeled "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT".
  - Conduit entries into the top of enclosures shall have threaded hub. Conduit entries through the equipment mounting back plate will not be allowed.
  - All service enclosure front doors shall be permanently labeled "DANGER HIGH VOLTAGE". Label shall be a self sticking type, intended for outdoor installation. Lettering style, layout and colors of red, black and white shall be as required by OSHA. Label letters shall be 1 to 1 1/2 inches high or as high as the enclosure door width will permit for smaller services. Separate or auxiliary lighting enclosures need not be OSHA labeled when mounted in the same viewing plane as the service enclosure front door. Where only one type of load is served by the service, the service door shall be marked using duo-colored plastic labels or self adhesive vinyl weather resistant labels, minimum of 1 inch high, applied in a neat and workmanlike manner. On the label will be the service number shown on the plans as well as identifying the load served specifically (i.e. lighting, landscaping, signals, traffic management or other wording as directed by the Engineer). Safety switches need not be OSHA labeled unless specifically required by the serving utility.
  - Type GS enclosures will only be allowed for service Types D and T without an enclosure mounted photocell and/or lighting contactor and the Type C panelboard. This spec will allow an "off the shelf" product meeting these specifications to be used. Type GS enclosures shall be made from pre-galvanized steel sheeting, hot dipped galvanized steel, or powder coat painted steel unless shown differently on the plans. Steel enclosures shall be painted inside and outside; galvanized enclosures may be painted. Unless otherwise approved by the Engineer, painted enclosures shall be gray, beige, white or light green. Panelboard/loadcenter enclosures shall meet UL type 3R requirements, shall have a dead front trim, and an outer padlockable door preventing unauthorized persons from operating contained equipment. Galvanized steel is no longer allowed for Types A, C, or custom-built D or T enclosures. If GS is shown in the descriptive code for any of these, an AL shall be provided.
  - Type AL enclosures for service Types A and C shall meet UL type 3R requirements and shall also meet additional requirements of this paragraph. The enclosure shall have both a main disconnect remote operator handle and a door latch handle. Die-cast handles are not acceptable. The main disconnect remote operator shall be flange-mounted, shall interlock the door when in the "on" position, and shall be padlockable in both the "on" or "off" positions. Door latch shall latch at two or more points, operate by a handle separate from disconnect switch and be capable of being locked. Door closure clamps will not be allowed. Lock must be keyed to Master #2195. All the enclosures shall have either a continuous stainless steel piano hinge with stainless steel pin or enclosures less than 30 inches may have two heavy duty hinges, those over 30 inches must have three. Heavy duty two and three point hinges shall have a 0.185 inch minimum diameter electro-zinc plated steel pin or a stainless steel pin. Two point hinged doors shall be rated for 56 lbs of loading. Three point hinged doors shall be rated for 70 lbs of loading. The door shall have an attached data pocket constructed of either thermoplastic or metal. Pocket shall be 12" x 12", unless that size will not fit in enclosure. The pocket shall then be as large as possible, as approved by the Engineer, and mechanically attached with stainless steel nuts and bolts, or stainless steel or aluminum rivets. Enclosure shall include an equipment mounting panel installed inside the enclosure on collar studs or tapped bosses, and constructed of a minimum 12 gauge galvanized steel. Equipment mounting panels shall not be painted. Enclosure shall have factory installed external mounting feet. Enclosure door shall be capable of opening at least 130 degrees, with arm or other approved means to hold the door open. Only the enclosure exterior will be primed and painted. Paint color shall be beige or gray and shall be powder coat paint as shown below. Condensation drainage shall be provided in the bottom of the enclosure before leaving the factory. The Contractor shall prepare and submit a schematic drawing unique to an individual service. The approved drawing shall be laminated and placed in the document pocket of the service at the time of shipment to the job site. All applicable wiring diagrams and plan sheet layouts for all equipment and branch breaker circuits supplied by that service shall also be laminated and placed in the document pocket prior to shipping. Type AL enclosures for Type D and T services with enclosure mounted photocell and/or lighting contactor shall have the loadcenter interior mounted in an enclosure with properly adapted dead front trim. Types D and T shall not have a loadcenter exterior "can" mounted inside another enclosure meeting these specifications. (Do not put one enclosure inside another enclosure). Types D and T with enclosure mounted photocell and/or lighting contactor shall meet the additional requirements of this paragraph except that remote-operating handle will not be provided.
  - Type SS enclosures for Type A and C shall meet all the requirements above for their respective type AL. Type SS enclosures for D and T shall meet all the requirements above for their respective type AL. Stainless Steel shall not be painted.
  - PS enclosure shall be as detailed and specified on ED(8). Galvanized steel will not be allowed for any pedestal service. If GS is shown in the descriptive code an AL will be provided.
- Powder Coat Paint. Powder coating shall be either a polyester thermosetting resin, a zinc rich primer with a TGIC (triglycidyl isocyanurate) powder overcoating, or a zinc-rich epoxy powder, applied by either electrostatic spray or fluidized bed immersion, high temperature oven cured, high density, low gloss, 4 mil thick (minimum), coating. Adhesion shall meet the 5A or 5B classifications of ASTM D3359. Finish shall be uniform in appearance and free of scratches.
  - Main Disconnect. Main disconnect device shall be a circuit breaker, as specified in the Electrical Service Data, shall be two or three pole, and rated for the voltage and amperage specified. Circuit breaker shall be an UL Listed thermal-magnetic circuit breaker controlled by flange-mounted remote operator in the service assembly enclosure when required. Circuit breakers shall have a minimum interrupting rating of 10,000 Amps. When the utility company provides a transformer larger than 50 KVA, Contractor shall verify that the available fault current is less than the circuit breaker interrupting capacity (AIC) rating and shall provide documentation from the Utility to the Engineer. Documentation shall be submitted at the same time as other electrical submittals. Circuit breaker shall be UL Listed to UL489. No backfed breakers will be allowed for use as a main disconnect.
  - Control Circuit. Control circuit protection shall be 15 amp circuit breaker.
  - Control Station ("H-O-A" Switch). Control station shall be a maintained-contact, three position selector switch in an UL type enclosure. Switch shall be rated 600 volts and shall be fitted with "Hand-Off-Auto" legend.
  - Photo Electric Control. Photo electric control shall consist of a photocell, internal lightning arrester, and relay or bimetallic switch mounted inside a weatherproof enclosure with standard 3-prong twist lock photocell plug and receptacle. The enclosure shall be made of poly-acrylic with clear acrylic window. Enclosure chassis shall be molded thermosetting plastic. The photocell shall have a polyethylene gasket, and shall have a hermetically sealed cadmium sulfide cell. The arrester shall have an enclosed type expulsion arrester rated 2.0 KV sparkover with 5,000 amps follow-through. Relay or switch shall be time delay type with normally closed contacts. Photo electric control shall be rated a minimum of 1800 VA, voltage as required. Enclosure mounted photocells shall be the same as above except that the photocell shall be mounted inside the enclosure. The enclosure shall have two acrylic panned windows, or other material approved by the Engineer, one on each side of the enclosure. Each window shall be rectangular approximately one inch by two inches, round 2 inch diameter, or as otherwise approved by the Engineer. Bracket and photocell's receptacle will be mounted inside enclosure next to each window. Except for window side, 2" of clearance is required on all sides of photocell for ease of replacement. The photocell's receptacle is held in place by two mounting screws on bracket and located next to each window of the enclosure. The 3-prong twist lock photocell shall be mounted in a position to receive light from the window closest to the photocell. The photocell shall be mounted in a position to receive light from one window. Top of pole mounted photocells shall be mounted as shown on ED(4). The Contractor shall be responsible for proper operation of the photo-electric control. The Contractor shall move and/or adjust or shield the photocell from stray or ambient nighttime light or shall make any other adjustments required for proper operation. The photocell shall face North when practicable. Unless otherwise shown on the plans, the photocell shall turn on the illumination system at 1.0 +/- 0.5 footcandle and turn off the illumination system at two footcandles higher than turn on.
  - Lighting Contactor. Lighting contactor shall be a UL Listed NEMA rated lighting contactor, two-pole or multipole as required, electrically held type designed to control high pressure sodium lighting loads, with silver alloy double break contacts rated at 240 volts, 480 volts or 600 volts as required. Lighting contactor shall not be the DIN rail mounted type.
  - Power Distribution Terminal Blocks. Power distribution terminal blocks shall be rated for 600 volts and shall be used for line side connections to branch circuit breakers where more than one circuit breaker is required. Lugs on blocks shall be properly sized for conductors being used. Only one conductor shall be placed under each lug.
  - Neutral/Ground Bus. Neutral/ground bus shall be a factory made bus permanently bonded to the enclosure with properly sized lugs for grounding and neutral conductors.

**SCHEMATIC LEGEND**

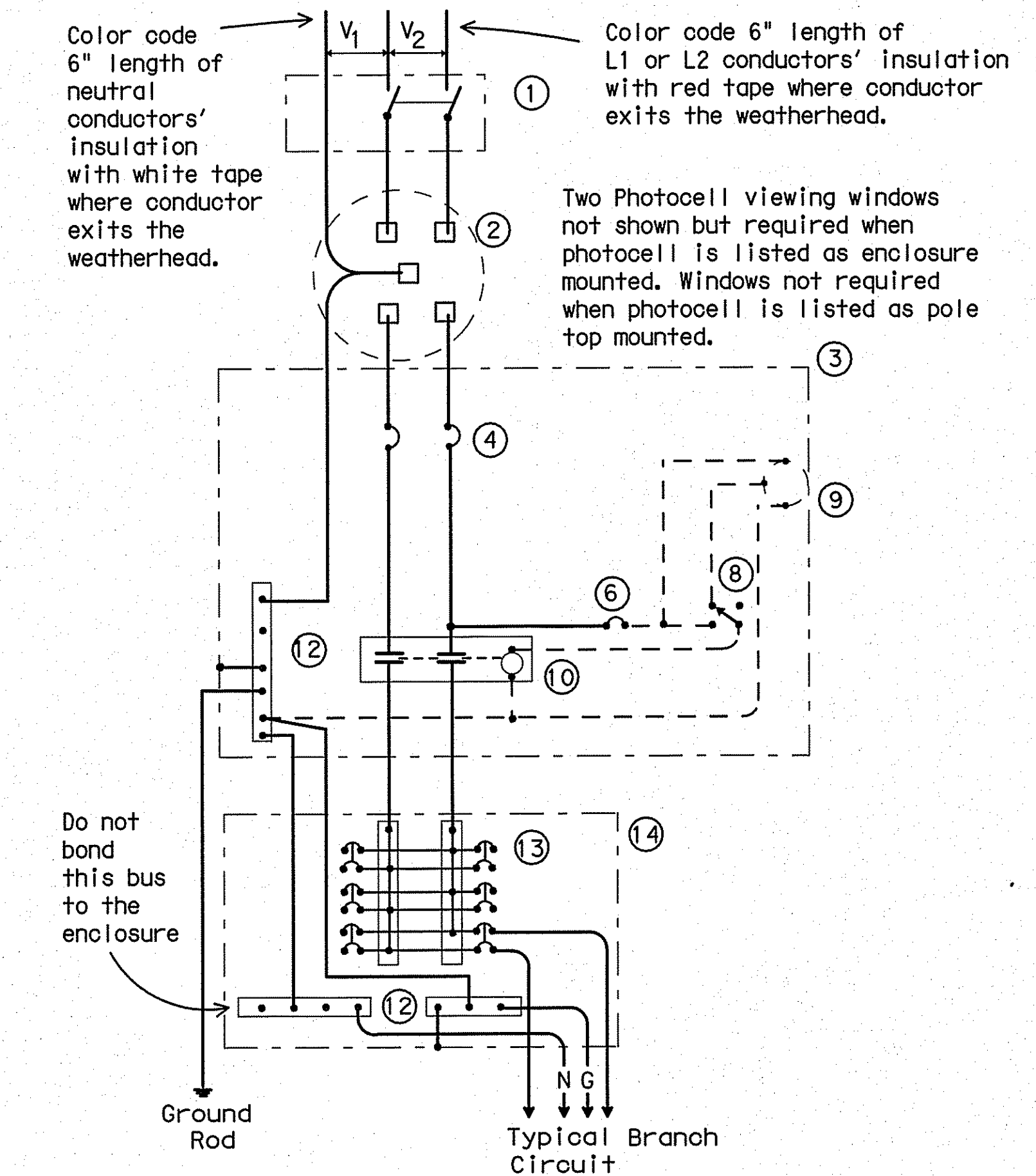
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|---|---|
| 1 - Safety Switch (when required)                         | 12 - Neutral/Ground Bus   |
| 2 - Meter (when required)                                 | 13 - Branch Circuit Breaker (See Electrical Service Data)   |
| 3 - Service Assembly Enclosure                            | 14 - Circuit Breaker Panelboard (See Electrical Service Data)   |
| 4 - Main Disconnect Breaker (See Electrical Service Data) | (If Type C is shown as AL or SS on descriptive code, this is the service assembly enclosure only. Panelboard enclosure is GS unless otherwise noted.) |
| 5 - Omit  | 15 - Load Center  |
| 6 - Circuit Breaker, 15Amp                                |   |
| 7 - Auxiliary Enclosure                                   |   |
| 8 - Control Station ("H-O-A" Switch)                      | — Power Wiring  |
| 9 - Photo Electric Control (enclosure-mounted shown)      | --- Control Wiring  |
| 10 - Lighting Contactor                                   | -N- Neutral Conductor (when required) serve 120 v. loads only   |
| 11 - Power Distribution Terminal Blocks                   | -G- Equipment grounding conductor-always required   |



**SCHEMATIC TYPE A**

**THREE WIRE**

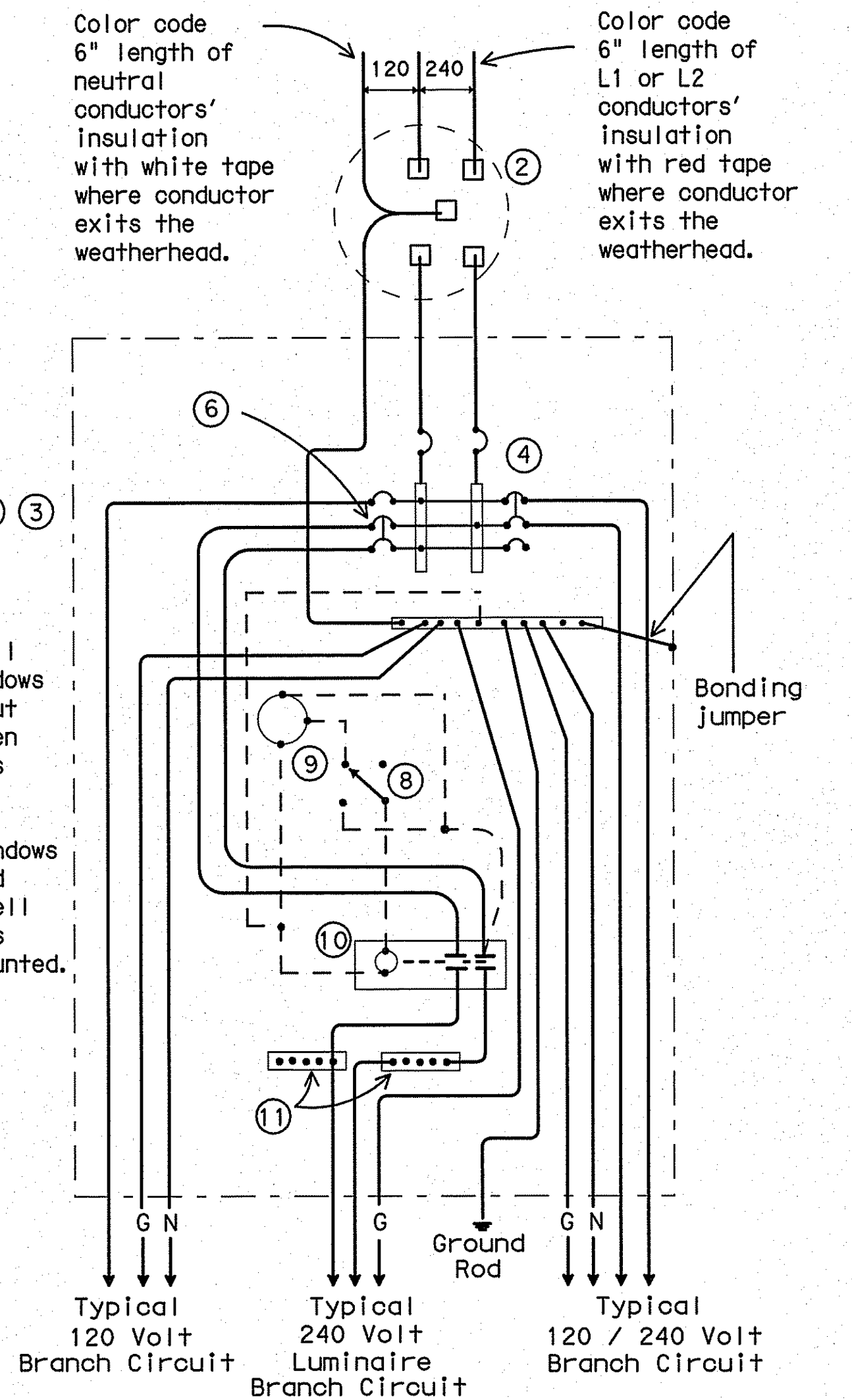
Maximum feeder circuit size (High Mast Poles):  
 100 amps for two pole 480V, 125 amps for one  
 or two pole 120V or 240V. Maximum branch  
 circuit size: 50 amps.



**SCHEMATIC TYPE C**

**THREE WIRE**

Maximum feeder circuit size (High Mast Poles):  
 100 amps for two pole 480V, 125 amps for one  
 or two pole 120V or 240V. Maximum branch  
 circuit size: 50 amps.



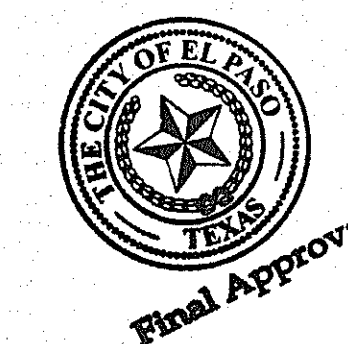
**SCHEMATIC TYPE D**

**120/240 VOLTS - THREE WIRE**

Install photocell and lighting contactor when shown on Electrical Service Data. See Type D service notes.

**TYPE D SERVICE NOTES**

Photocell and lighting contactor shall be located either in the same UL type 3R enclosure with load center or, if approved by Engineer, in separate enclosure. There shall be a window on each side of enclosure to allow operation of photocell. Both photocell contactor and breaker area shall have dead front trim. Enclosure, except for RT and PS supports, shall not exceed 36 inches in height or 16 inches in width unless approved by the Engineer. Ty D load center with lighting controls or TY D separate lighting control enclosure shall have power distribution blocks for a minimum of 4, #8 conductors per phase.



Texas Department of Transportation  
 Traffic Operations Division

**ELECTRICAL DETAILS-  
 SERVICE ENCLOSURE  
 & NOTES**

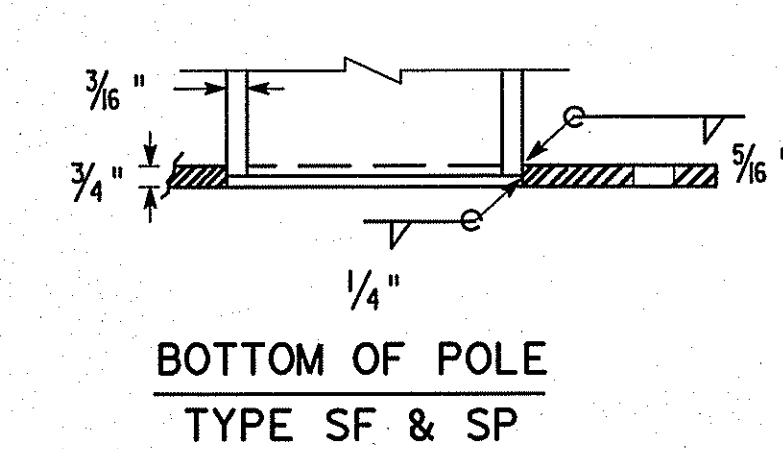
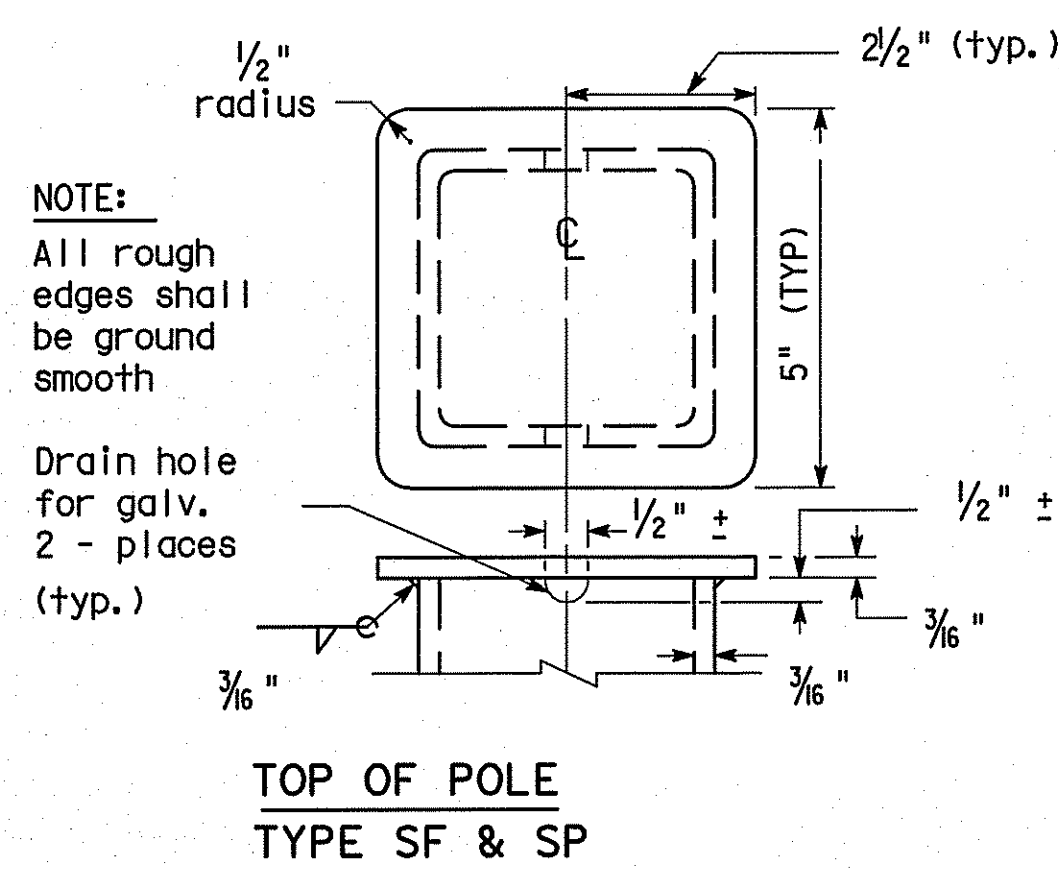
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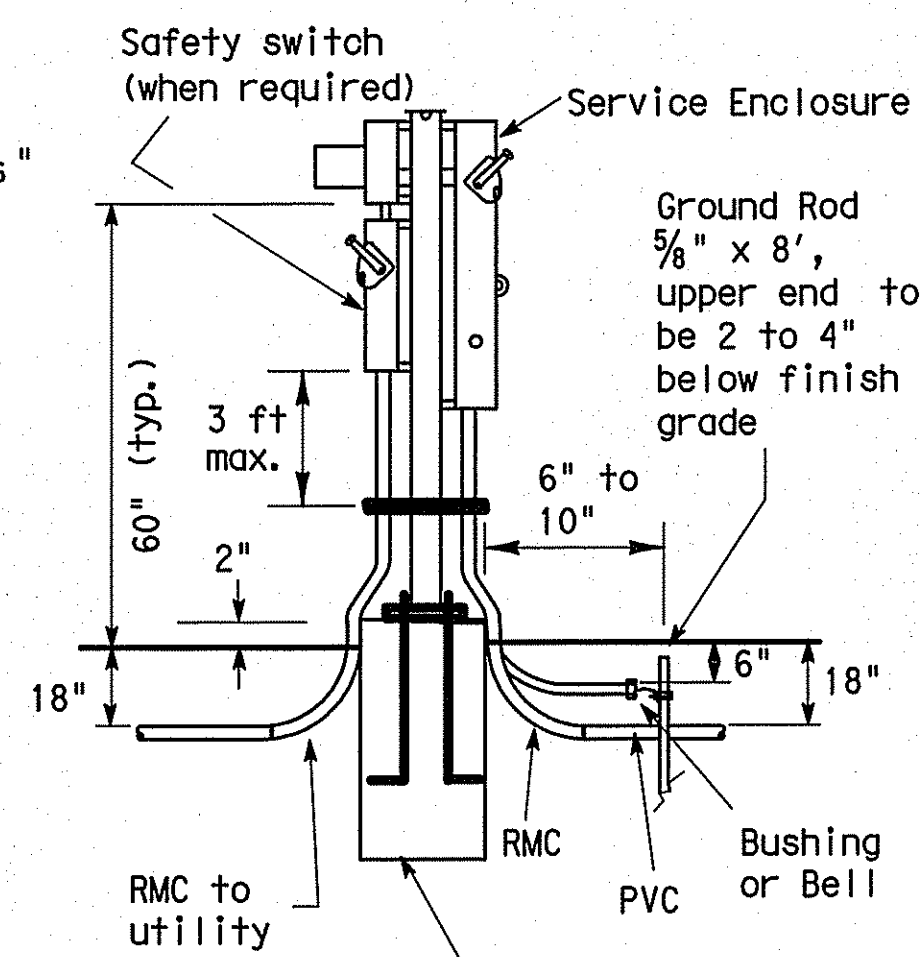


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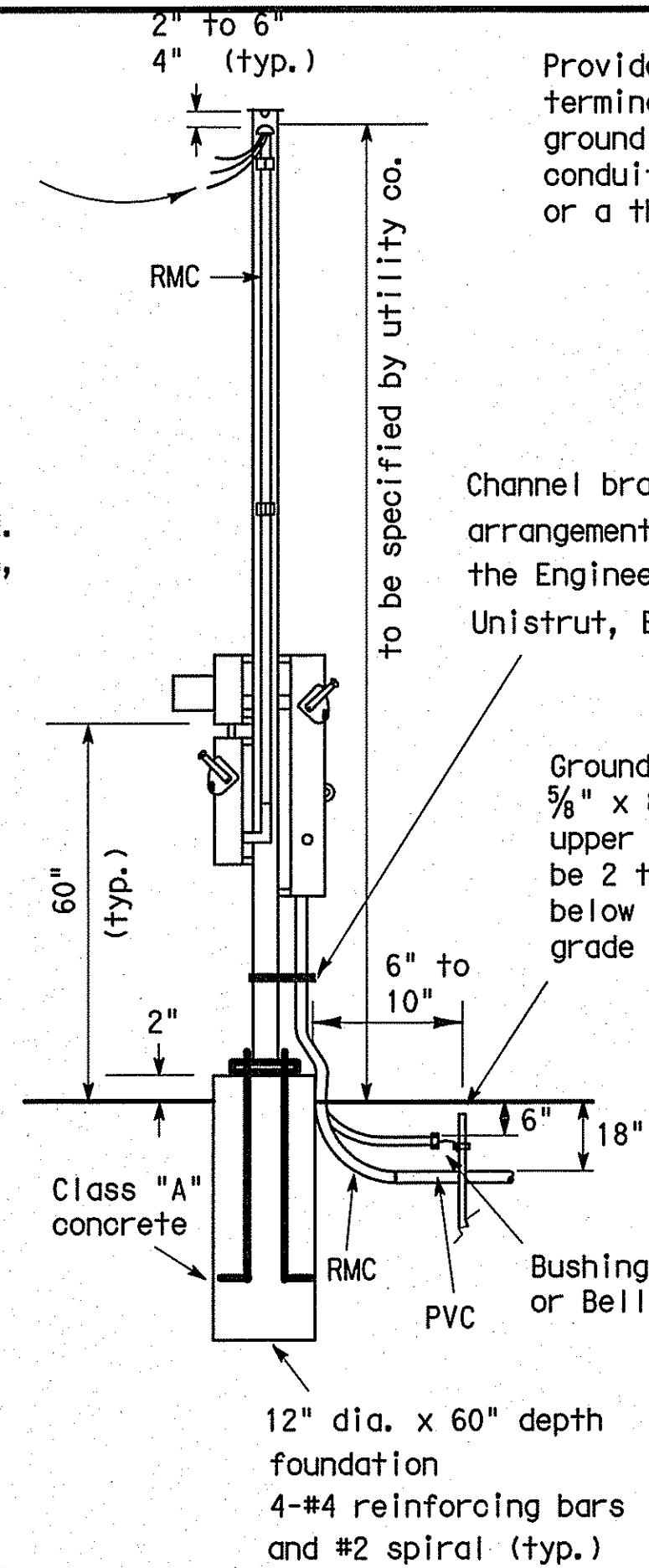
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Color code 6" of grounded neutral conductors insulation with white tape where conductor exits the weatherhead. Color code 6" of L1 or L-2 Hot-ungrounded conductors insulation with red tape where conductor exits the weatherhead. Conductor free length, 12" min., 18" max.



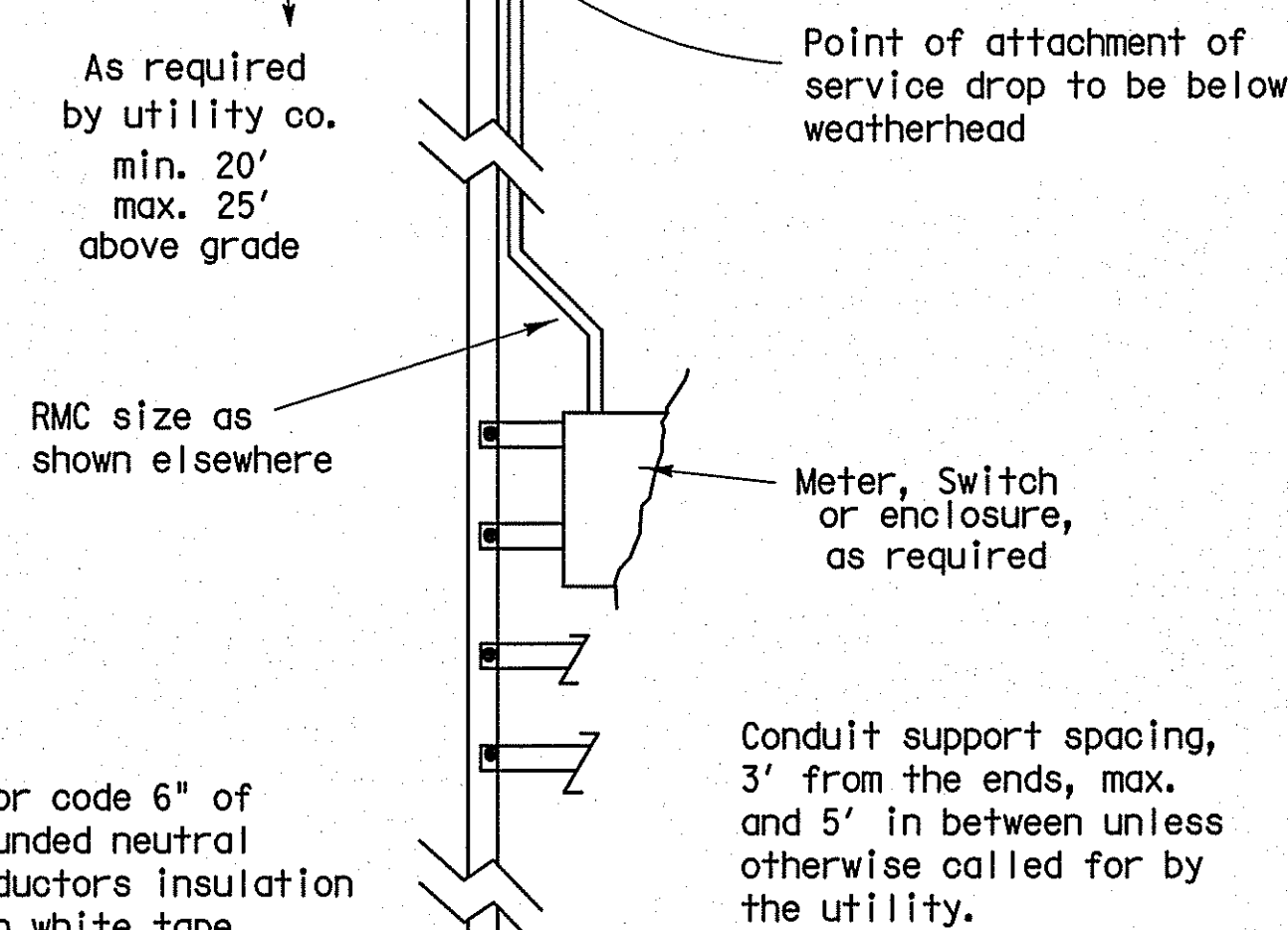
**SERVICE SUPPORT  
TYPE SP (U)  
UNDERGROUND SERVICE  
WITH SAFETY SWITCH**



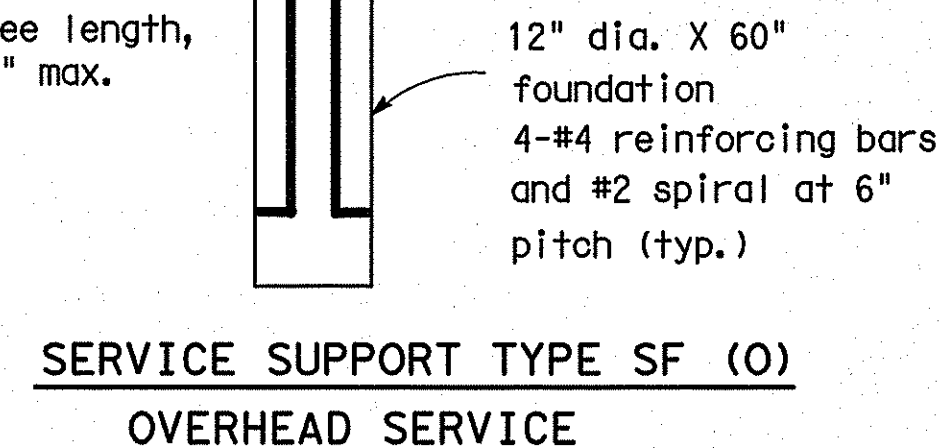
**SERVICE SUPPORT  
TYPE SP (O)  
OVERHEAD SERVICE  
WITH SAFETY SWITCH**

**UNDERGROUND RISER  
AT UTILITY POLE  
(for underground service)**

Top of weatherhead to be 2" to 6", 4" typical below the top of pole.



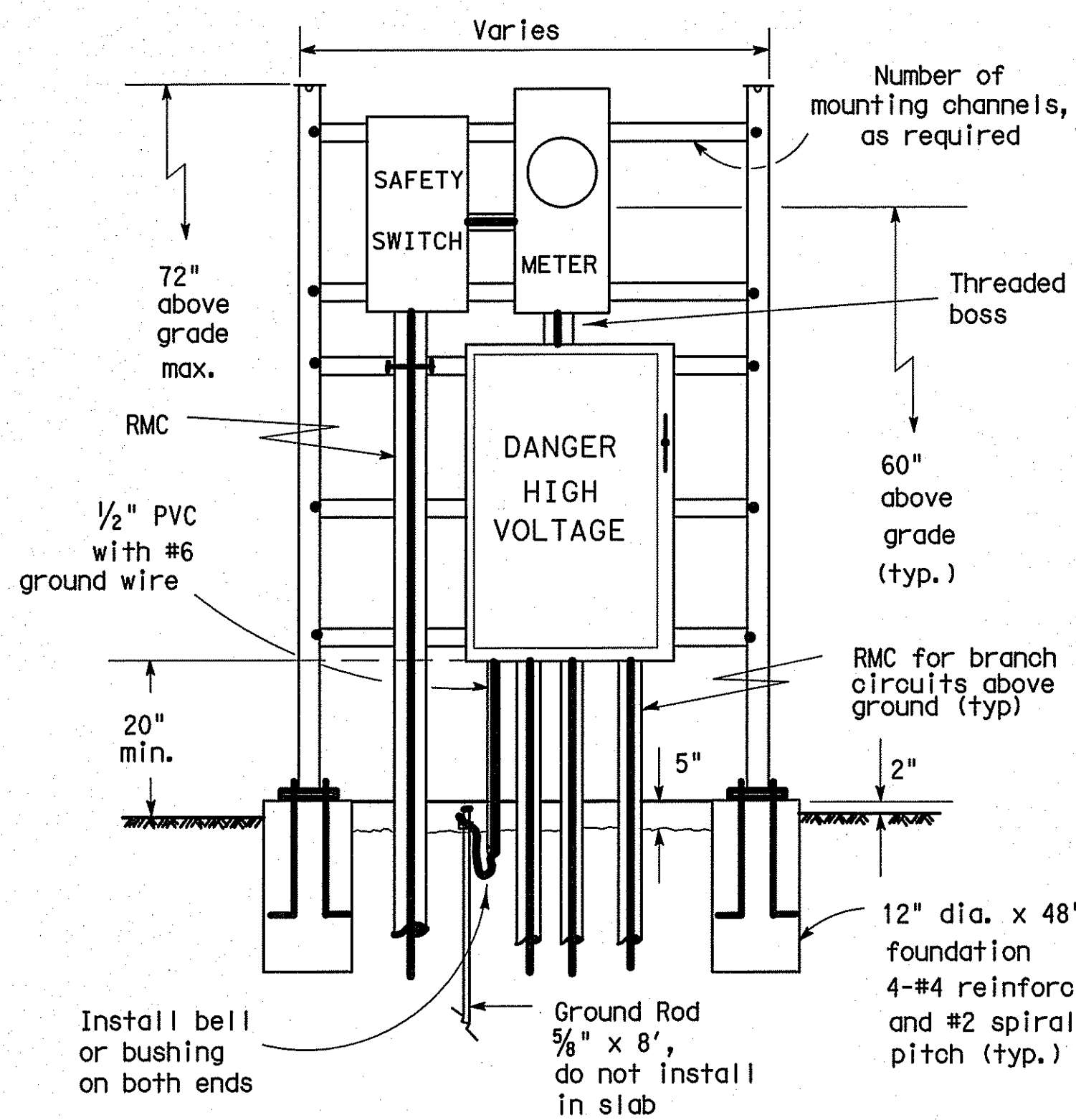
Color code 6" of grounded neutral conductors insulation with white tape where conductor exits the weatherhead. Color code 6" of L1 or L-2 Hot-ungrounded conductors insulation with red tape where conductor exits the weatherhead. Conductor free length, 12" min., 18" max.



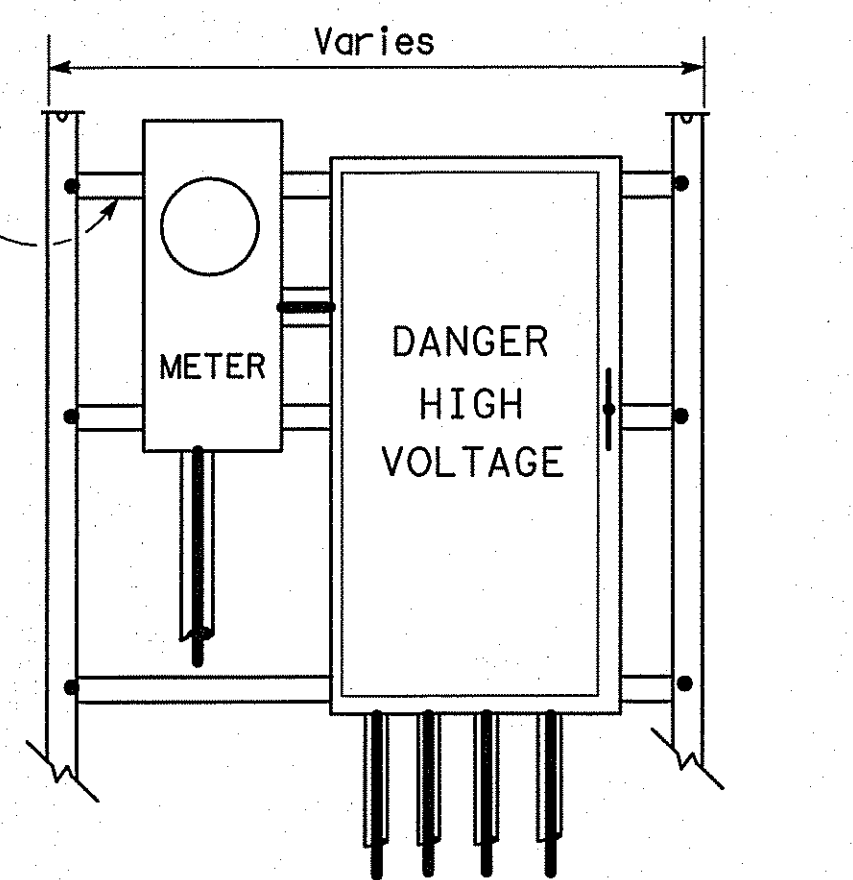
**SERVICE SUPPORT TYPE SF (O)  
OVERHEAD SERVICE**

**NOTES:**

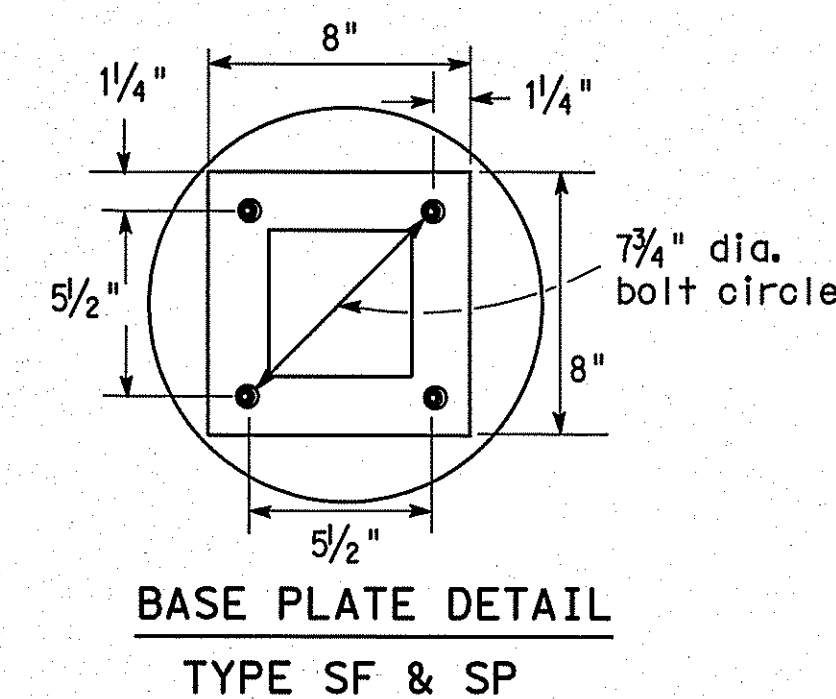
- Support Type SP and SF: Fabricated from 4" x 4" x 3/16" square structural tubing, ASTM A500 Grade A or G or equal. Base plate shall be 3/4" plate, ASTM A36 or equal. All equipment and conduit shall be mounted on galvanized channel strut, 1 1/2" x 1 5/8" x 12 gauge galvanized steel channel (Unistrut, Kindorf, B-line or equal) clamped with channel hardware, bolted or welded to vertical member as approved by the Engineer.
- Paint field cut ends of all channels with zinc-rich paint.
- All Steel Poles (SP and SF) shall be hot-dip galvanized after fabrication. Poles for overhead service shall be fitted with eyebolt or similar fitting, as approved by the utility company, for attachment of service drop to the pole.
- All conduit and conductors attached to the electrical service and within 12 inches of the electrical service will not be paid for directly, but shall be subsidiary to the electrical service. All conduit and conductors from the utility company pole to the point 12 inches from the electrical service, including conduit and conductors required for the utility pole riser when furnished by the Contractor, will be paid for separately.
- All mounting hardware and installation details of services shall be in accordance with utility company specifications.
- Anchor bolts for underground service supports shall be 3/4" x 18" x 4" (dia. x length x hook length). Anchor bolts for overhead services shall be 3/4" x 56" x 4". Anchor bolts shall be provided with leveling nuts.
- Conduit for grounding electrode conductor (ground rod wire) shall be 1/2" PVC. All other conduit on electrical services shall be rigid metal conduit. Service entrance conduit size shall be as shown elsewhere. Conduit for branch circuit entry to enclosure shall be the same size as that shown on the layout sheets for branch circuit conduit. Rigid metal conduit shall extend to the rigid metal elbow and then be coupled to the type conduit shown on the layout for that particular branch circuit. RMC shall have grounding bushings in enclosures.
- If pole is painted, each separate painted piece shall have a bonding jumper attached to a tapped hole.
- Sheet metal screws are not allowed for bonding. Provide 1/4-20 machine screws. Remove all non-conductive material at contact points. Terminate bonding jumper using listed device. Bonding jumper min. #6 AWG Copper. Make up all threaded bonding connections wrench tight.
- Conduits entering enclosure from underground shall be sealed at both ends. Silicone sealant will not be allowed.
- Ground rod clamp to be UL listed for direct burial.
- Service entrance conductors shall exit separately bused non-metallic openings in weatherhead.
- Free conductor at weatherhead to be 12 in. min., 18 in. max., or as required by utility. Color code grounded-neutral conductor with white tape covering 6 in. of conductor. Color code L1 or L2 Hot un-grounded conductor with red tape covering 6 in. of conductor. Service drop and service entrance conductors must not contact metal pole in such a manner as to result in abrasion of insulated conductors.
- Conduit support spacing to be max. 3 ft. from ends, and max. 5 ft. in between.
- Shop drawings are not required for service support structure unless specifically stated elsewhere or as directed by the Engineer.
- Service enclosure to be labeled as specified on ED(5) VIII C.
- Liquidtight flexible metal conduit (LFMC) may be used between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. LFMC shall be the same size as service entrance conduit. LFMC shall not exceed 3 ft. and shall be securely supported within one foot of each end. LFMC shorter than 12" need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. A neutral conductor must be installed within the LFMC. Bend in LFMC shall not exceed 180 degrees. A pull test is required on all installed conductors, at least six inches of free conductor movement shall be demonstrated to the satisfaction of the Engineer.



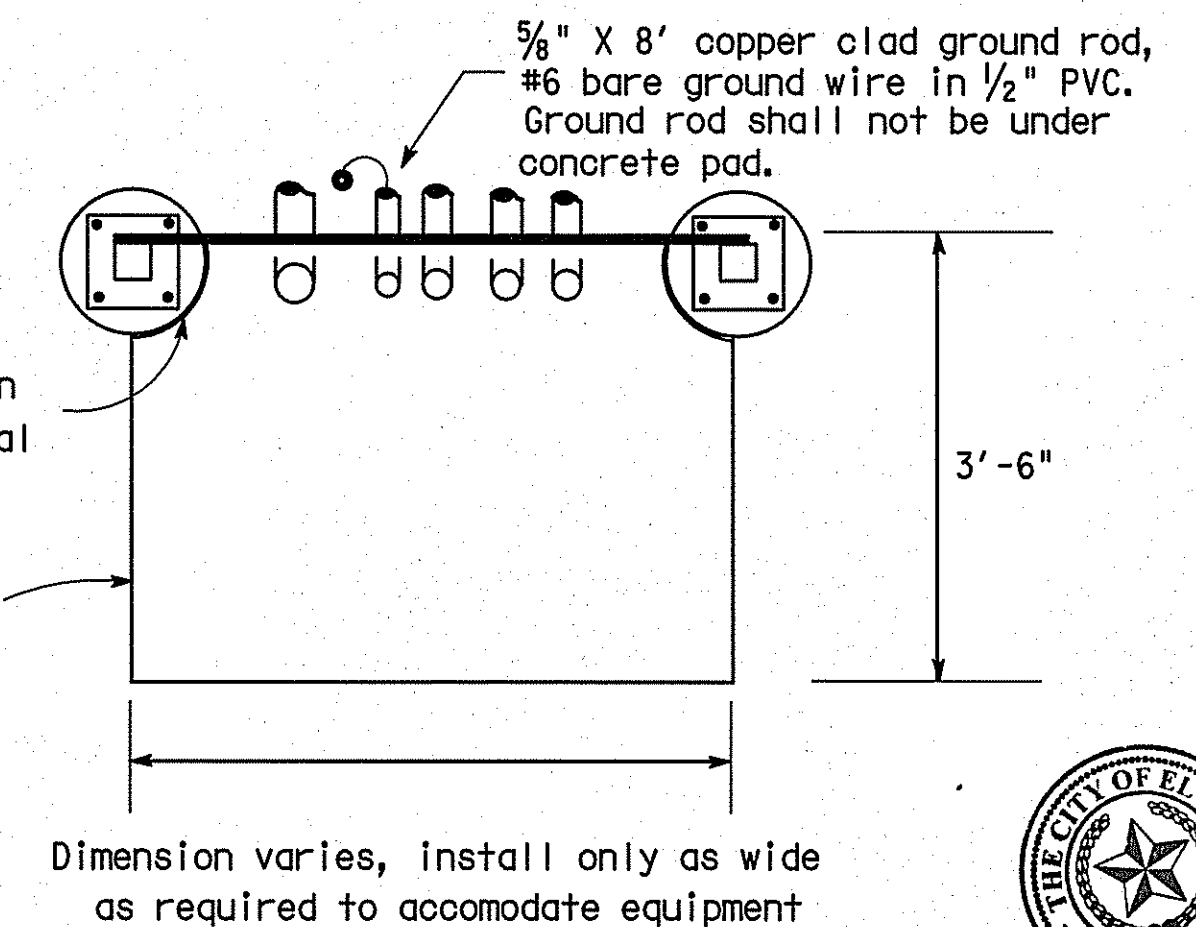
**SERVICE SUPPORT TYPE SF (U)  
UNDERGROUND SERVICE  
WITH SAFETY SWITCH  
(Typical Arrangement)**



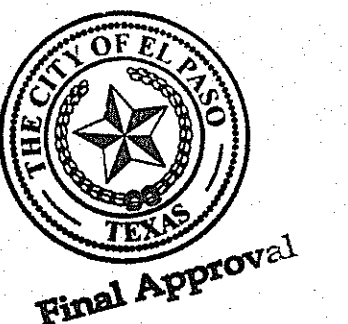
**SERVICE SUPPORT TYPE SF (U)  
UNDERGROUND SERVICE  
WITHOUT SAFETY SWITCH**



**BASE PLATE DETAIL  
TYPE SF & SP**



**SERVICE SUPPORT TYPE SF (O) & SF (U)  
TOP VIEW**



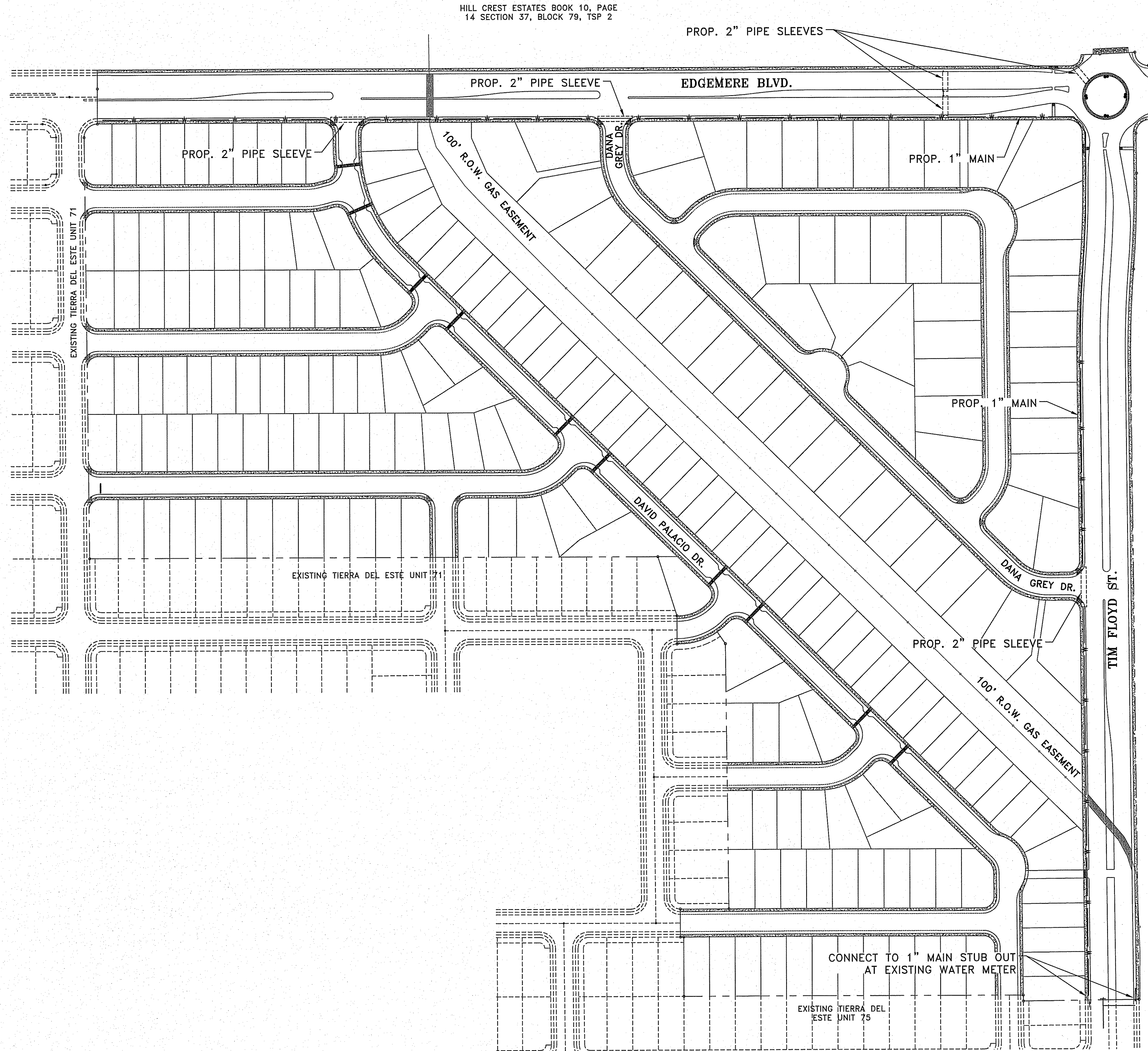
Texas Department of Transportation  
Traffic Operations Division

**ELECTRICAL DETAILS-  
SERVICE SUPPORT  
TYPES SF & SP**

ED(6)-03

5/03 Revision	© TxDOT January 1992	REVISED	DATE	BY	CHKD	DATE	BY
Revised notes.	4-98	12-00	3-03	5-03			





HILL CREST ESTATES BOOK 10, PAGE 14 SECTION 37, BLOCK 79, TSP 2

PROP. 2" PIPE SLEEVES

PROP. 2" PIPE SLEEVE

EDGEMERE BLVD.

PROP. 2" PIPE SLEEVE

100' R.O.W. GAS EASEMENT

DANA GREY DR.

PROP. 1" MAIN

EXISTING TIERRA DEL ESTE UNIT 71

PROP. 1" MAIN

EXISTING TIERRA DEL ESTE UNIT 71

DAVID PALACIO DR.

DANA GREY DR.

PROP. 2" PIPE SLEEVE

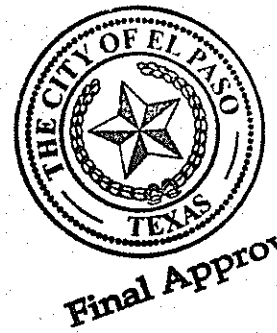
100' R.O.W. GAS EASEMENT

TIM FLOYD ST.

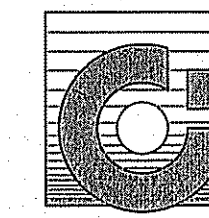
CONNECT TO 1" MAIN STUB OUT AT EXISTING WATER METER

EXISTING TIERRA DEL ESTE UNIT 75

1" = 100'



**CONDE INC.**  
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 6080 SURREY DR. STE 100  
 EL PASO, TEXAS 79905  
 PHONE: (915) 592-0283  
 FAX: (915) 592-0286



SHEET TITLE

**SHEET INDEX**

SHT 1 OF 5

HILL CREST ESTATES BOOK 10, PAGE 14 SECTION 37, BLOCK 79, TSP 2

S C A L E

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VERT:

DATE: FEB. 2014

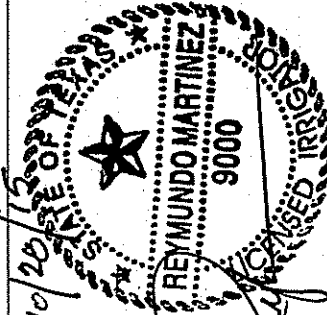
DESIGN BY: R.M.

INITIATED BY: RR

CHECKED BY: R.M.

JOB NO.: 119-97

IRRIGATOR'S SEAL



PROJECT NAME  
**TIERRA DEL ESTE UNIT SEVENTY SEVEN  
 ARTERIAL LANDSCAPE AND IRRIGATION**

BRING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS CONTAINING: .54.0532 ACRES

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF RALPH SEITSINGER DR. AND JOHN HAYES ST. ELEVATION 4016.75

DATE

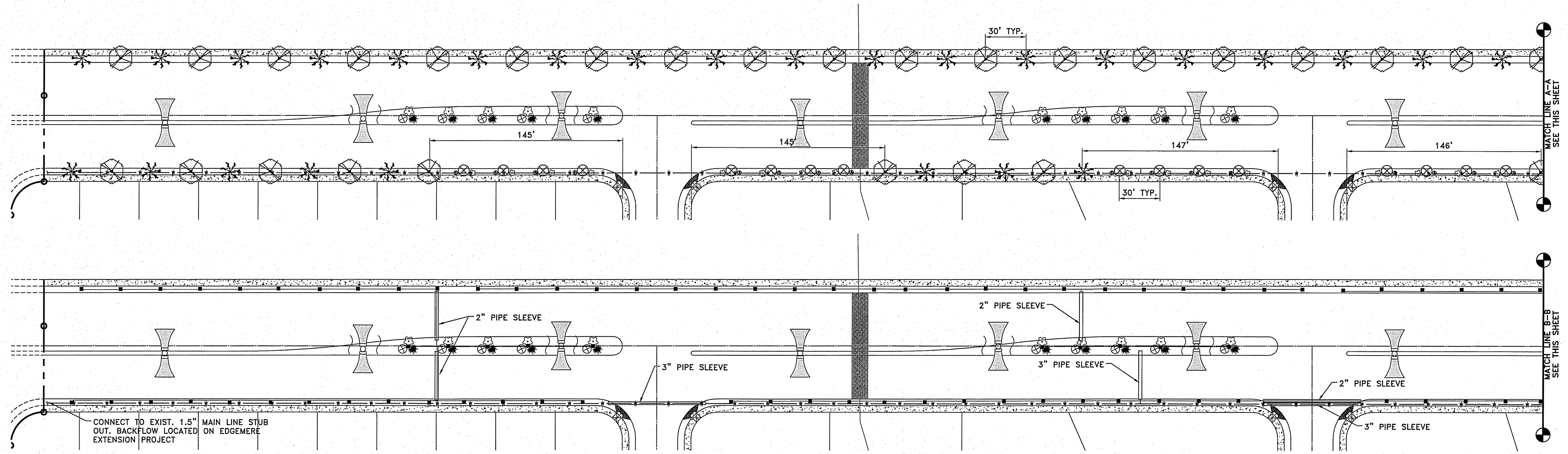
REVISIONS

BY



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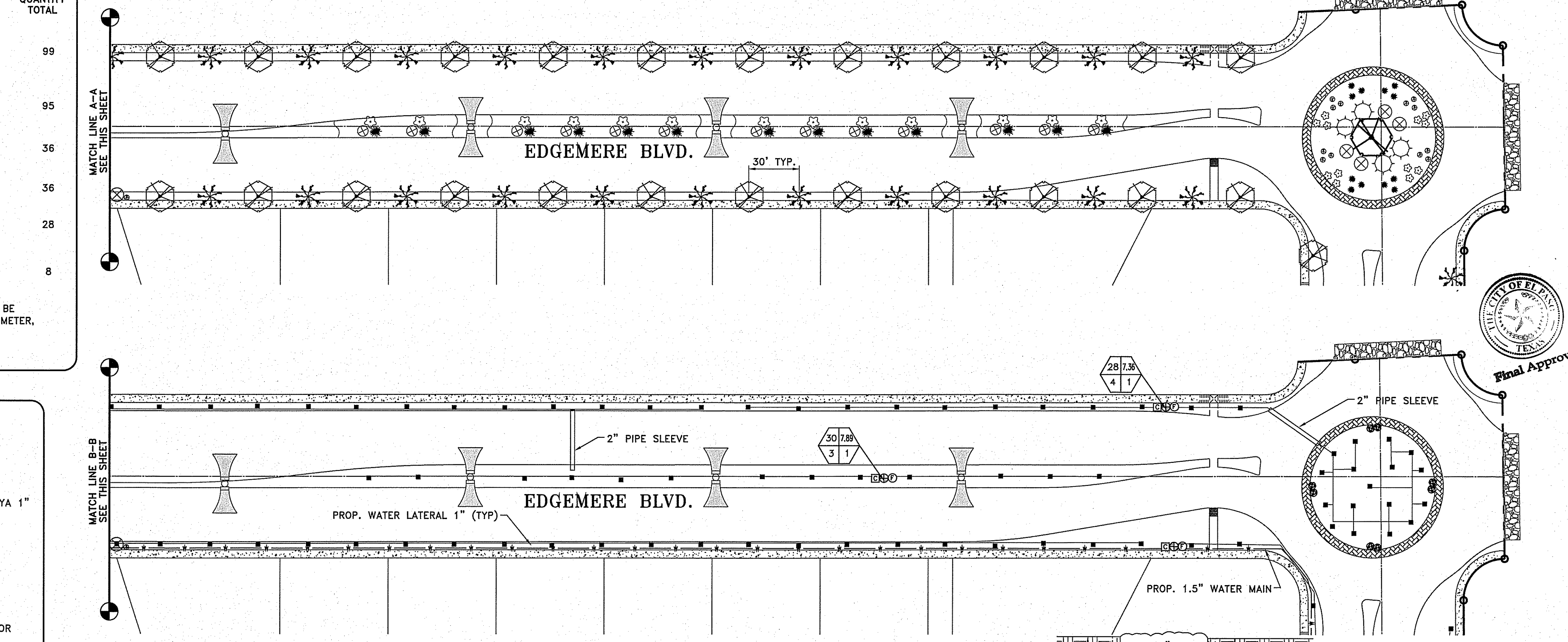
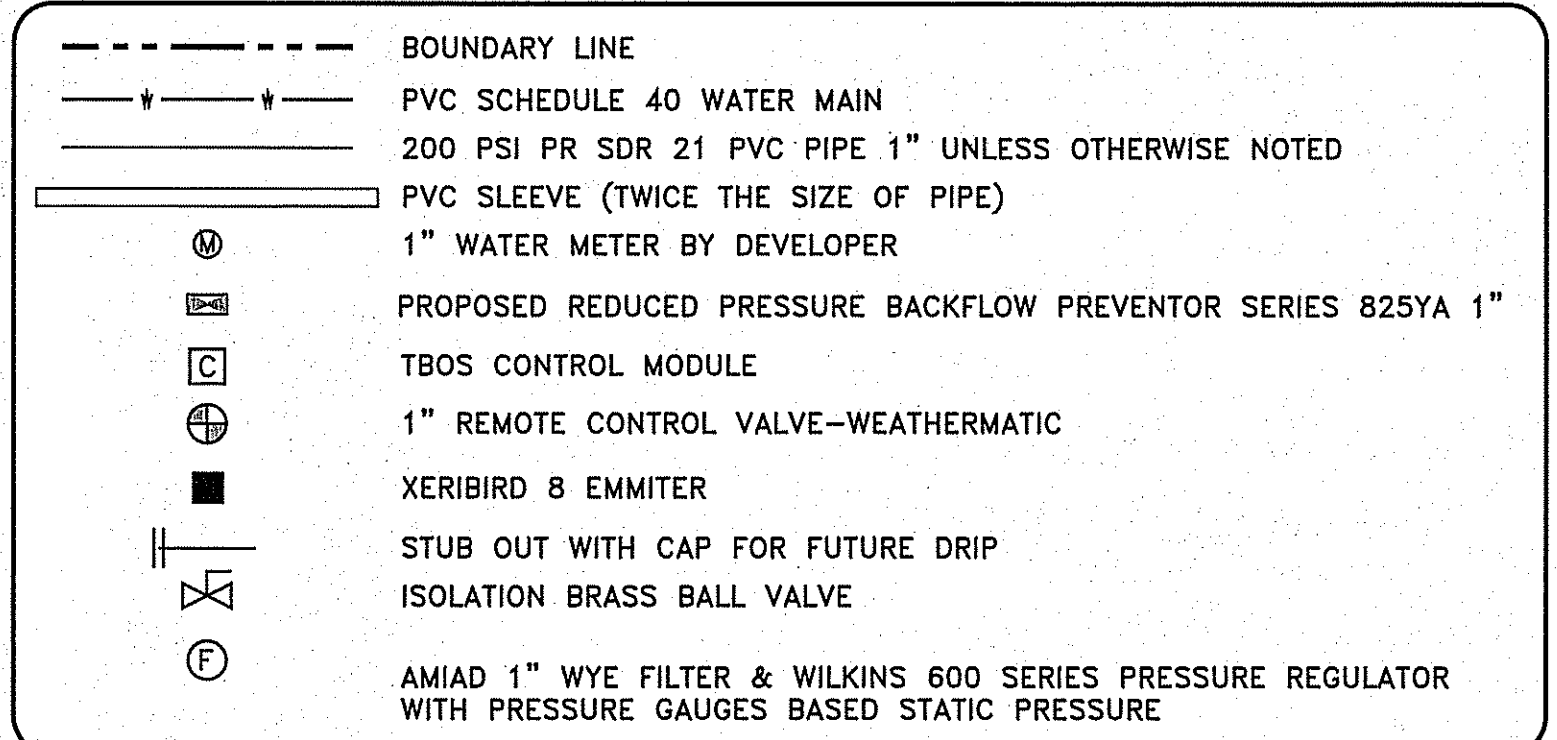
1" = 30'



**LEGEND**

SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE	QUANTITY ON EDGEMERE	QUANTITY TOTAL
	FAN-TEX ASH	FRAXINUS VELUTINA	2" CAL.	48	99
	CHINESE JUNIPER	JUIPERUS CHINENSIS	2 CAL.	46	95
	NEW GOLD LANTANA	LANTANA CAMARA 'NEW GOLD'	1 GAL.	8	36
	TEXAS SAGE	LEUCOPHYLLUM 'FRUTESCENS'	5 GAL.	8	36
	DESERT ROSEMARY	POLIOMINTHA INCANA	5 GAL.	8	28
	FRANKLIN RED BOULDER			8	8
	PADRE CANYON CHAT, 3" DEPTH WITH DeWih Pro-5 WEED BARRIER FABRIC TO BE PINNED DOWN AT 3" ON CENTER EACH WAY & AT 12" ON CENTER ALONG PERIMETER, OVERLAP MIN. 12" AT SEAMS				

**LEGEND**



**WATER MAIN AND LATERAL NOTES:**

1. WATER MAIN SHOWN IN EXAGGERATED LOCATION FOR CLARITY ON PLAN VIEW PURPOSES ONLY. SEE DETAIL "A" ON THIS SHEET FOR WATER MAIN AND LATERAL LOCATION.

2. ALL LATERALS SIZE TO BE 1" UNLESS OTHERWISE NOTED.

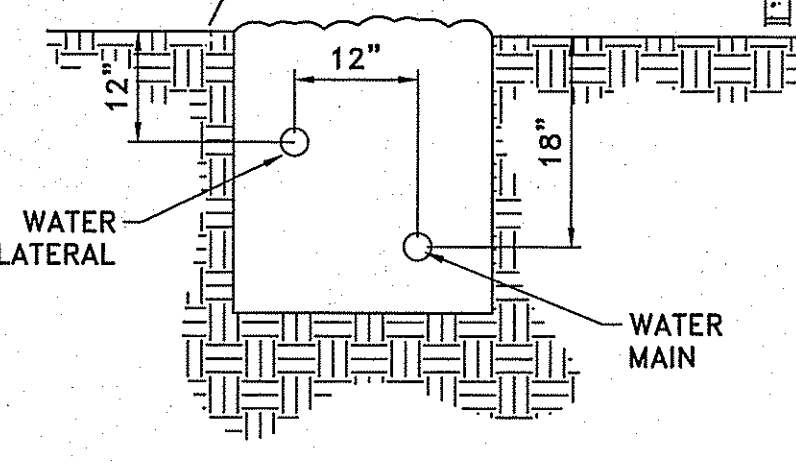
**NOTE:**

IRRIGATION IS REGULATED BY THE TEXAS COMMISSION IN ENVIRONMENTAL QUALITY (T.C.E.Q.) (MC-178), P.O. BOX 13087, AUSTIN TEXAS. 78711-3037, TCEQ'S WEB SITE IS : WWW.TCEQ.STATE.TX.US

**NOTES:**

1. PVC SLEEVES TO BE WRAPPED WITH MINIMUM 4 MIL PLASTIC AND TAPED WITH 3M BRAND HD PLASTIC TAPE

2. QUICK COUPLER VALVES AND ISOLATION VALVES BOX ARE TO BE INSTALLED WITH TAG THAT READS, "NON POTABLE WATER NOT SAFE FOR DRINKING"



- KEYED NOTES:**
- IRRIGATION TAP POINT VERIFY 55 PSI. NOTIFY OWNER IN WRITING IF ABOVE CRITERIA NOT MET.
  - CONTROLLER LOCATION 110V POWER BY DEVELOPER. COORDINATE EXACT LOCATION IN FIELD.
  - CONTRACTOR REQUIRED TO APPLY FOR AND OBTAIN ALL PERMITS AND PASS ALL INSPECTIONS.

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF RALPH SEITSINGER DR. AND JOHN HAYES ST. ELEVATION 4018.75

DATE

REVISIONS

BY

**TIERRA DEL ESTE UNIT SEVENTY SEVEN ARTERIAL LANDSCAPE AND IRRIGATION**

BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEY, EL PASO COUNTY, TEXAS CONTAINING .946356 ACRES

SCALED

HORIZ. DATE: FEB. 2014

VERT. DATE: FEB. 2014

DESIGN BY: R.M.

INITIATED BY: RR

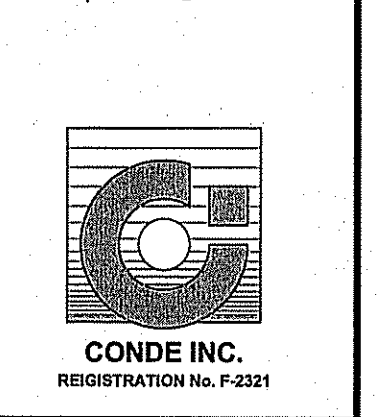
CHECKED BY: R.M.

JOB NO.: 113-37

CONDE INC. ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. STE 100 EL PASO, TEXAS 79905

PHONE: (915) 692-0283 FAX: (915) 692-0286

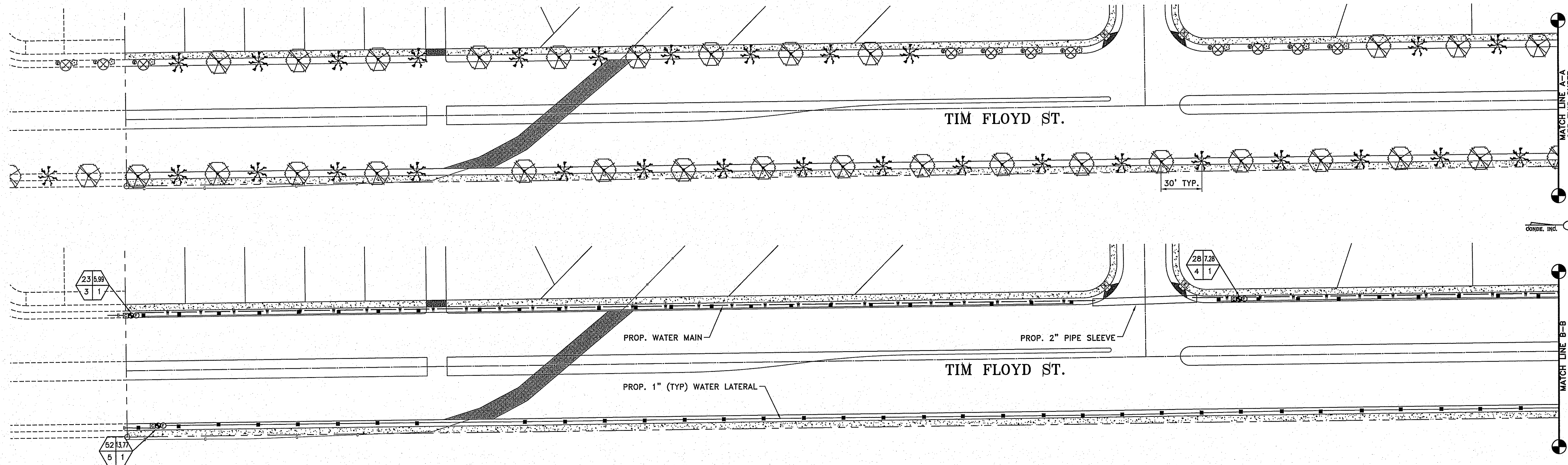


SHEET TITLE

**EDGEMERE BLVD. ARTERIAL LANDSCAPE AND IRRIGATION**

SHT 2 OF 5





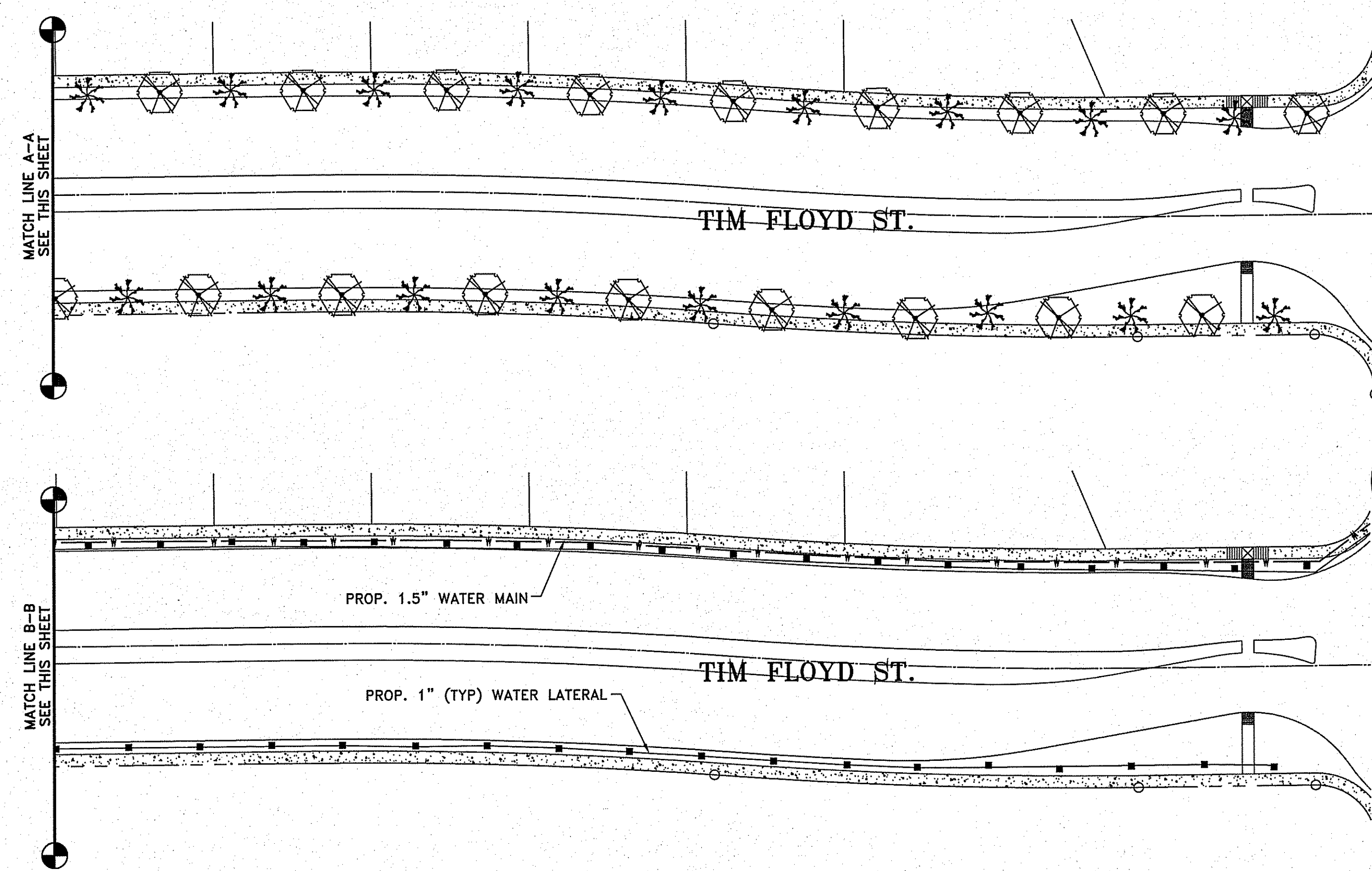
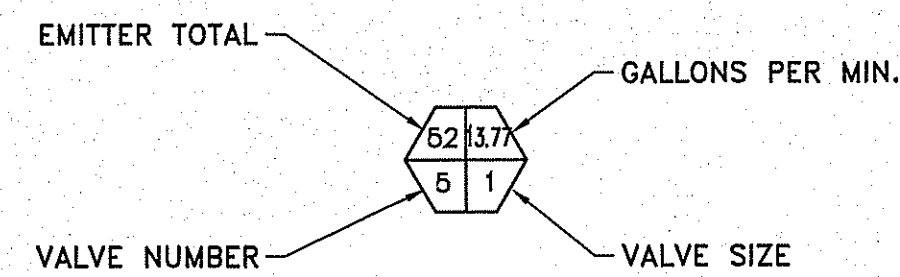
1" = 30'

**WATER MAIN AND LATERAL NOTES:**  
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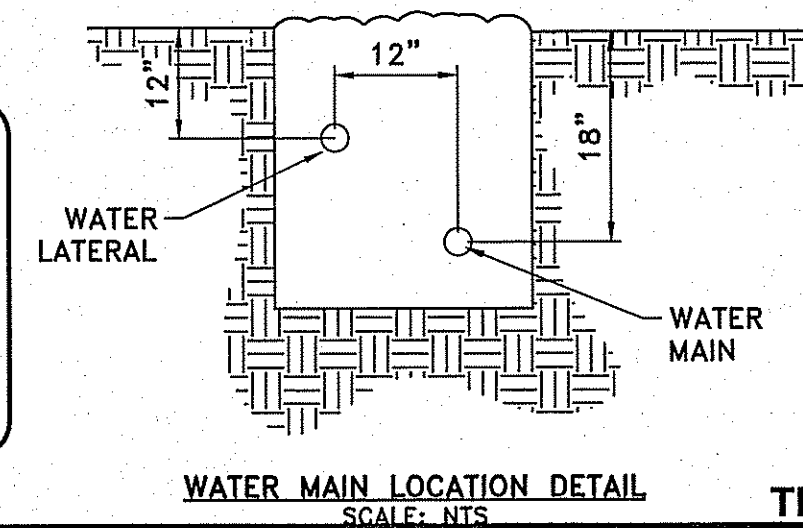
**NOTE:**  
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LEGEND					
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LEGEND	
	BOUNDARY LINE
	PVC SCHEDULE 40 WATER MAIN
	200 PSI PR SDR 21 PVC PIPE 1" UNLESS OTHERWISE NOTED
	PVC SLEEVE (TWICE THE SIZE OF PIPE)
	1" WATER METER BY DEVELOPER
	PROPOSED REDUCED PRESSURE BACKFLOW PREVENTOR SERIES 825YA 1"
	TBOS CONTROL MODULE
	1" REMOTE CONTROL VALVE-WEATHERMATIC
	XERIBIRD 8 EMMITER
	STUB OUT WITH CAP FOR FUTURE DRIP
	ISOLATION BRASS BALL VALVE
	AMIAD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR WITH PRESSURE GAUGES BASED STATIC PRESSURE



**NOTES:**  
 1. PVC SLEEVES TO BE WRAPPED WITH MINIMUM 4 MIL PLASTIC AND TAPED WITH 3M BRAND HD PLASTIC TAPE  
 2. QUICK COUPLER VALVES AND ISOLATION VALVES BOX ARE TO BE INSTALLED WITH TAG THAT READS, "NON POTABLE WATER NOT SAFE FOR DRINKING"



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  - CONTRACTOR REQUIRED TO APPLY FOR AND OBTAIN ALL PERMITS AND PASS ALL INSPECTIONS.

BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF RALPH SEISINGER DR. AND JOHN HAYES ST. ELEVATION 4016.75

DATE

REVISIONS

BY

PROJECT NAME

**TIERRA DEL ESTE UNIT SEVENTY SEVEN ARTERIAL LANDSCAPE AND IRRIGATION**

BEING PORTION OF SECTION 16, BLOCK 76, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TEXAS AND PACIFIC RAILWAY CO. SURVEYS, CONTAINING: 64.033± ACRES

SCALE

HORIZ: VERT:

DATE: FEB. 2014

DESIGN BY: R.M.

INITIATED BY: RR

CHECKED BY: R.M.

JOB NO.: 119-97

CONDE INC.

ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. STE. 100 EL PASO, TEXAS 79905

PHONE: (915) 592-0283 FAX: (915) 592-0286

CONDE INC. REGISTRATION No. F-2311

SHEET TITLE

**TIERRA DEL ESTE UNIT SEVENTY SEVEN**

**TIERRA DEL ESTE UNIT SEVENTY SEVEN ARTERIAL LANDSCAPE AND IRRIGATION**

SHT 3 OF 5

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**LANDSCAPE NOTES:**

- PLANT MATERIAL SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE WRITTEN PERMISSION OF THE OWNER. THE USE OF MATERIALS DIFFERING IN KIND, QUALITY OR SIZE FROM THAT SPECIFIED WILL BE ALLOWED ONLY AFTER OWNER IS CONVINCED THAT ALL MEANS OF OBTAINING THE SPECIFIED MATERIAL HAVE BEEN EXHAUSTED. AT THE TIME BIDS ARE SUBMITTED, THE CONTRACTOR IS ASSUMED TO HAVE LOCATED THE MATERIALS NECESSARY TO COMPLETE THE JOB AS SPECIFIED. ALL REQUESTS FOR SUBSTITUTIONS MUST BE SUBMITTED NO LATER THAN TWO WEEKS PRIOR TO THE INITIATION OF WORK.
- PLANT MATERIAL QUALITY, SIZE AND CONDITION SHALL BE IN ACCORDANCE WITH AMERICAN STANDARD FOR NURSERY STOCK, 1980 EDITION, AS PUBLISHED BY THE COMMITTEE ON HORTICULTURAL STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
- ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY. ALL PLANTS SHALL HAVE NORMAL, WELL DEVELOPED BRANCHES AND VIGOROUS ROOT SYSTEMS. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, FREE FROM DEFECTS, DISFIGURING KNOTS, ABRASIONS OF THE BARK, SUNSCALED INJURIES, PLANT DISEASES, INSECT EGGS, BORES AND ALL OTHER FORMS OF INFECTIONS.
- UNLESS OTHERWISE STATED ON THE DRAWINGS OR APPROVED BY THE OWNER'S REPRESENTATIVE, ALL PLANTS SHALL BE NURSERY GROWN AND SHALL BE TAGGED WITH NURSERY LABELS INDICATING SPECIES AND VARIETY.
- NON-CONTAINER GROWN PLANTS SHALL HAVE A SOLID BALL OF EARTH OF MINIMUM SPECIFIED SIZE AND HELD IN PLACE SECURELY BY BURLAP AND A STOUT TWINE OR ROPE, SEE TREE AND SHRUB PLANTING DETAIL. BROKEN OR LOOSE BALLS WILL BE REJECTED.
- UNLESS SPECIFICALLY NOTED ON DRAWING, ALL TREES SHALL HAVE A SINGLE TRUNK THAT IS STRAIGHT AND FREE OF "DOG-LEGS", "CROOKS", "Y-CROTCHES", OR OTHER DISFIGURING SHAPES. THE CENTRAL LEADER OF ALL TREES SHALL NOT HAVE BEEN PRUNED. TREES WITH DOUBLE LEADERS ARE NOT ACCEPTABLE, UNLESS SPECIFIED AS MULTI-TRUNKED.
- ALL PLAN MATERIAL SHALL HAVE A UNIFORMED SHAPE AROUND ITS COMPLETE CIRCUMFERENCE. PLAN MATERIAL WITH IRREGULAR BRANCHING PATTERNS OR WITH BRANCHING PATTERNS MORE HIGHLY DEVELOPED ON ONE SIDE THAN ON OTHER SIDES SHALL NOT BE ACCEPTABLE.
- THE OWNER'S REPRESENTATIVE SHALL BE THE JUDGE OF THE QUALITY AND ACCEPTABILITY OF ALL PLANT MATERIALS. ALL REJECTED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND REPLACED WITH ACCEPTABLE MATERIALS AT NO ADDITIONAL COST TO OWNER.
- ALL TREES, SHRUBS AND GROUND COVERS SHALL BE GUARANTEED FOR THE PERIOD OF ONE FULL YEAR BEGINNING ON THE DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL REPLACE ANY DEAD OR UNHEALTHY PLANTS WITHIN 10 WORKING DAYS OF WRITTEN NOTIFICATION AT NO EXPENSE TO THE OWNER. THE CONTRACTOR SHALL NOT BE RESPONSIBLE NOR VANDALIZED PLANT MATERIAL.
- ALL PLANTING BEDS SHOWN ON PLANS SHALL BE MULCHED. NO BEDS WILL BE LEFT UNCOVERED OR NOT TOP DRESSED, UNLESS OTHERWISE SPECIFIED.

**GRADING**

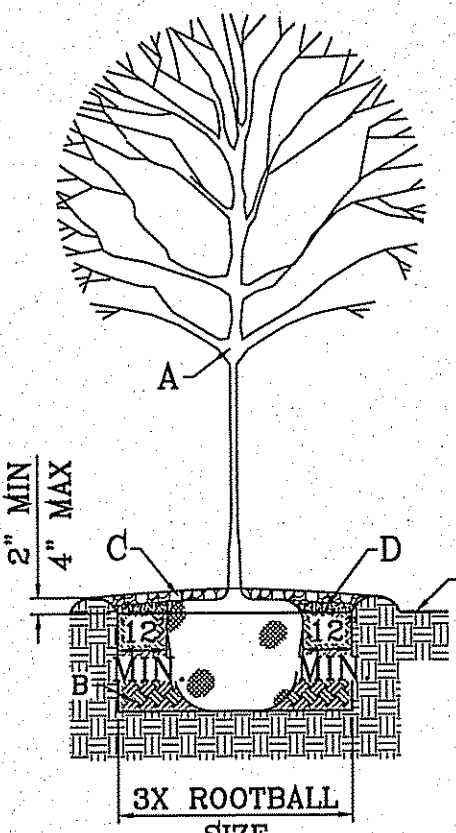
- PERFORM GRADING AND EXCAVATION WORK IN COMPLIANCE WITH APPLICABLE SPECIFICATIONS, REQUIREMENTS, CODES AND ORDINANCES OF ALL GOVERNING BODIES HAVING JURISDICTION.
- FINE GRADING: SURFACE SHALL BE RAKED FREE OF STONES AND EXTRANEIOUS MATERIALS AND DEBRIS TO A SMOOTH AND EVEN TEXTURE. ALL EXTRANEIOUS MATTER WILL BE DISPOSED OF BY CONTRACTOR.

**PROTECTIONS:**

- CONTRACTOR SHALL BE FAMILIAR WITH PLANS, DETAILS AND SPECIFICATIONS AS THEY PERTAIN TO THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNER'S REPRESENTATIVE IF ANY ITEMS CONTAINED WITHIN THE SCOPE OF WORK DEFINED HEREIN ARE IN CONFLICT WITH PROPOSED CONTRACT.
- EXISTING UTILITY LINES ARE TO BE BLUE STAKED PRIOR TO EXCAVATION. CHECK AND FIELD VERIFY ALL SITE CONDITIONS, UTILITIES AND SERVICES PRIOR TO EXCAVATION. CALL FOR BLUE STAKING.
- THE CONTRACTOR SHALL BE LIABLE FOR ANY LOOSE OR DAMAGE TO ANY WORK OR MATERIALS, SUPPLIES AND EQUIPMENT ON THE JOB SITE CAUSED BY THE CONTRACTOR OR ITS EMPLOYEES.
- CONTRACTOR IS TO BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WITH WARNING LIGHTS OR OTHER WARNING MEASURES AS NECESSARY. PROTECTION OF EXISTING SHRUBS, TREES, AND OTHER PLANT MATERIALS ARE ALSO TO BE INCLUDED.
- PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS CREATED BY EARTHWORK OPERATIONS. ALL DAMAGES THAT MAY OCCUR DURING THIS PHASE OF WORK SHALL BE THE CONTRACTOR'S FINANCIAL RESPONSIBILITY.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER CONTRACTORS.

**GENERAL NOTES:**

- THE DEVELOPER SHALL REGISTER THE PROJECT WITH TDLR, TO INCLUDE SUBMITTAL OF DRAWINGS, INSPECTION AND CERTIFICATE OF SUBSTANTIAL COMPLEXION.
- ALL TURF AREAS ARE HYBRID BERMUDA 'SANTA ANA' SOG OR SEED IN ACCORDANCE TO PARKS DESIGN AND CONSTRUCTION STANDARDS.
- SEEDING NEEDS TO OCCUR BETWEEN APRIL 16 THROUGH JUNE 16 TO YIELD BEST ESTABLISHED STAND. OUTSIDE THAT WINDOW SOG SHOULD BE THE METHOD OF PLANTING.
- TREE LOCATIONS TO BE COORDINATED WITH PARKS DEPARTMENT IN THE FIELD TO PREVENT BEING PLANTED TOO CLOSE TO SPRINKLERS.
- ENGINEERED WOOD CHIP FIBERS SHALL BE COMPACTED AS PER THE SUPPLIER'S TESTING LAB RECOMMENDATIONS, WHICH SHALL COMPLY WITH THE MOST CURRENT STANDARDS IN ACCESSIBILITY.
- SILT FENCE TO BE INSTALLED AND MAINTAINED ALONG THE PERIMETER OF THE PARK SITE UNTIL ALL ADJUTING RESIDENCES ARE DEVELOPED.



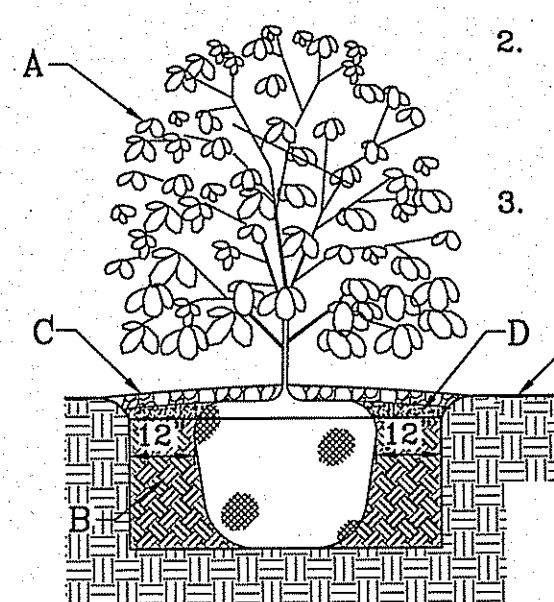
**TREE PLANTING DETAIL**  
SCALE: 1"=4'

**GENERAL NOTES:**

- SOIL BELOW ROOT BALL TO REMAIN UNDISTURBED TO PREVENT TREE FROM SETTLING.
- TOP OF ROOTBALL INDICATES LEVEL AT WHICH TREE WAS GROWN AND DUGH THIS REPRESENTS THE LEVEL AT WHICH THE TREE SHOULD BE INSTALLED; THAT LEVEL MAY ONLY BE EXCEEDED BY A ONE INCH LAYER OF MULCH.
- PRIOR TO BACKFILLING TREE, ALL WIRE, ROPE AND SYNTHETIC MATERIALS SHALL BE REMOVED FROM THE TREE ROOTBALL AND THE PLANTING PIT.
- PRIOR TO BACKFILLING, ALL BURLAP SHALL BE CUT AWAY FROM THE TOP AND SIDES OF THE ROOTBALL.

**CONSTRUCTION NOTES:**

- TREE.
- PLANTING SOIL MIXTURE (REF. SPECIFICATIONS).
- WATER RETENTION BASIN.
- 4" DEPTH OF BARK MULCH.
- FINISH GRADE.



**SHRUB PLANTING DETAIL**  
SCALE: 1"=3'

**GENERAL NOTES:**

- STABILIZED SOIL BELOW ROOT BALL TO PREVENT SHRUB FROM SETTLING.
- PRIOR TO BACKFILLING SHRUB, ALL WIRE, ROPE AND SYNTHETIC MATERIALS SHALL BE REMOVED FROM THE SHRUB ROOT BALL AND THE PLANTING PIT.
- PRIOR TO BACKFILLING, ALL BURLAP SHALL BE CUT AWAY AND REMOVED FROM THE TOP AND SIDES OF THE ROOT BALL.

**CONSTRUCTION NOTES:**

- SHRUB.
- COMPACTED BACKFILL (REF. SPECIFICATIONS).
- WATER RETENTION BASIN.
- 4" DEPTH OF BARK MULCH.
- FINISH GRADE.

**IRRIGATION NOTES**

- ALL WORK MUST BE IN COMPLIANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES AND REGULATIONS.
- ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL PROVIDED ALL EQUIPMENT, TOOLS, PRODUCTS, MATERIALS, LABOR, TRANSPORTATION AND OBTAIN ALL PERMITS AND PAY ALL REQUIRED FEES.
- ALL PAVEMENT TRENCHING SHALL BE IN PERFORMED TO THE CITY OF EL PASO FOR PUBLIC WORK CONSTRUCTION.
- PIPING UNDER HARDCAPE (DRIVEWAYS, SIDEWALKS, etc. etc.) SHALL REQUIRE SLEEVING. GENERALLY TWO SIZES LARGER THAN IRRIGATION PIPING AND ONE FOOT BEYOND EDGE OF HARDCAPE.
- ALL SPRINKLER HEADS ADJACENT TO HARDCAPE SHALL BE PLACED A MINIMUM OF ONE FOOT FROM EDGE OF SURFACING.
- SOME PIPES, VALVES, BACKFLOWS etc. etc. HAVE BEEN SHOWN IN PAVING, SIDEWALKS OR OUTSIDE THE BOUNDARY FOR CLARITY ONLY.
- STATIC PRESSURE (65 PSI) BASED ON CLOSEST FIRE HYDRANT TO THE PROJECT SITE ON **PEBBLE HILLS BLVD. AND JOHN HAYES ST.** AS PER THE P&B. THE CONTRACTOR/INSTALLER SHALL FIELD VERIFY THE STATIC PRESSURE OF THE WATER SUPPLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO IMMEDIATELY CONTACT THE LICENSED IRRIGATOR IF STATIC PRESSURE OR FIELD CONDITIONS ARE DIFFERENT IN THE FIELD THAN SHOWN ON PLANS.
- CONTRACTOR IS REQUIRED TO APPLY FOR AND OBTAIN IRRIGATION PERMIT FROM BPAI

**TRENCHING**

- CONTACT LOCAL UTILITY COMPANIES AND BLUE STAKE ALL UTILITIES PRIOR TO EXCAVATION.
- ALL TRENCHING SHALL BE DONE IN STRICT ACCORDANCE WITH OSHA-2226.
- PIPES MUST BE FLUSHED AND INSPECTED BY PROJECT INSPECTOR BEFORE INSTALLING VALVES AND SPRINKLERS.
- PIPES SHALL NOT BE BURIED UNTIL INSPECTED BY PROJECT INSPECTOR. CONTRACTOR MUST UNCOVER THE WORK TO BE INSPECTED AND/OR TESTED AND BE RE-BURIED AT THEIR EXPENSE.
- AVOID OBSTACLES (UTILITIES, TREE ROOTS, BOULDERS etc. etc.) ALLOW A MINIMUM OF TWO INCHES OF COVERAGE
- BACKFILL MATERIAL SHALL CONTAIN NO LUMPS, ROCKS LARGER THAN ONE INCH OR ORGANIC MATERIAL. BACKFILL MATERIAL MUST BE APPROVED BY PROJECT INSPECTOR PRIOR FILLING OF TRENCHES.
- IF EXCAVATING 16 INCHES OR DEEPER WITH POWER EQUIPMENT, YOU MUST BY LAW CALL 1-800-DIG TESS (800-344-8377) 48 HOURS BEFORE EXCAVATING.
- LATERAL LINES SHALL BE TO A DEPTH OF 12". MAIN LINES SHALL BE TO A DEPTH OF 18" AND VALVE ELECTRICAL WIRES TO A DEPTH OF 18", SEE TRENCH DETAIL ON 5 OF 5.

**SOLVENT WELDING**

- USE IPS WELD-ON CLEANER AND PURPLE PRIMER P68 OR P70 TO CLEAN AND PREPARE THE PIPES BEING JOINED.
- USE IPS WELD-ON GRAY GLUE #711 HEAVY DUTY.
- LACK OF SUFFICIENT SOLVENT WILL RESULT IN A WEAK CONNECTION, EXCESS SOLVENT WILL WEAKEN THE STRUCTURE. USE THE RIGHT AMOUNT OF SOLVENT FOR A SOUND INSTALLATION.
- PIPE BENDS AND FITTINGS MUST BE INSPECTED DURING PRESSURE TEST. SOLVENT WELDING IS REQUIRED ON ALL PIPE BENDS AND FITTINGS. INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- CLEAN OFF ALL BURRS FROM PIPE CUTS, BEVEL THE END OF THE MAIN LINE AND WIPE EXCESS SOLVENT FROM JOINT.

**ELECTRICAL WIRING**

- WIRES SHOULD NOT BE STRETCHED TIGHT IN THE TRENCHES, ALLOW EXTRA WIRE FOR SHARP TURNS IN THE TRENCHES.
- WIRING SHALL BE UL LISTED FOR DIRECT BURIAL AND SIZED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- DIRECT BURIAL WIRE SPLICES MUST BE WATERPROOF AS PER MANUFACTURER'S SPECIFICATIONS.
- WIRES SHALL BE LABELED WITH WATERPROOF TAGS AT THE CONTROLLER AND VALVE BOX.

- (A) PROPOSED METER
- (B) SERVICE LINE, NO OUTLETS ALLOWED. COPPER
- (C) FINISH GRADE
- (D) TYPE K COPPER ELL
- (E) TYPE K COPPER NIPPLE
- (F) BRASS UNION, 4" ABOVE GRADE, MIN.
- (G) BACKFLOW PREVENTOR DEVICE (SEE PLAN) HEIGHT 12" MIN, MAX 30"
- (H) COPPER MAINLINE
- (I) 28" MINIMUM DEPTH
- (J) 3000 PSI CONCRETE PAD, 4" DEPTH, EXTEND 4" BEYOND EDGE OF ENCLOSURE
- (K) PIPE SHALL BE SLEEVED THROUGH CONCRETE PAD WITH SEALED SHG 40 PVC.
- (L) BACKFLOW ENCLOSURE (SEE PLAN)
- (M) MUST MEET R VALUE OF 25, & PROVIDED MINIMUM CLEARANCES.
- (N) STEEL SUPPORT BRACKETS BOLTED TO CONCRETE PAD
- (O) BRASS ISOLATION VALVE.
- (P) BRICK BLOCK AT EACH CORNER
- (Q) FLANGE
- (R) 3/8" PEA GRAVEL, 4" DEEP (NO SOIL IN BOX)
- (S) SET IN CARLSON VALVE BOX
- (T) WEED CLOTH ALL AROUND BOX PIPE AND UNDER PEA GRAVEL. TAPE TO SEAL ALL GAPS AND PENETRATIONS. USE 3M HIGH GRADE PLASTIC TAPE.
- (U) 1419 CARLSON VALVE BOX WITH LID AND BOLT. COLOR TO BE TAN FOR ROCK MULCH AREAS AND GREEN FOR TURF AREAS
- (V) PVC MAINLINE AS PER IRRIGATION PLAN

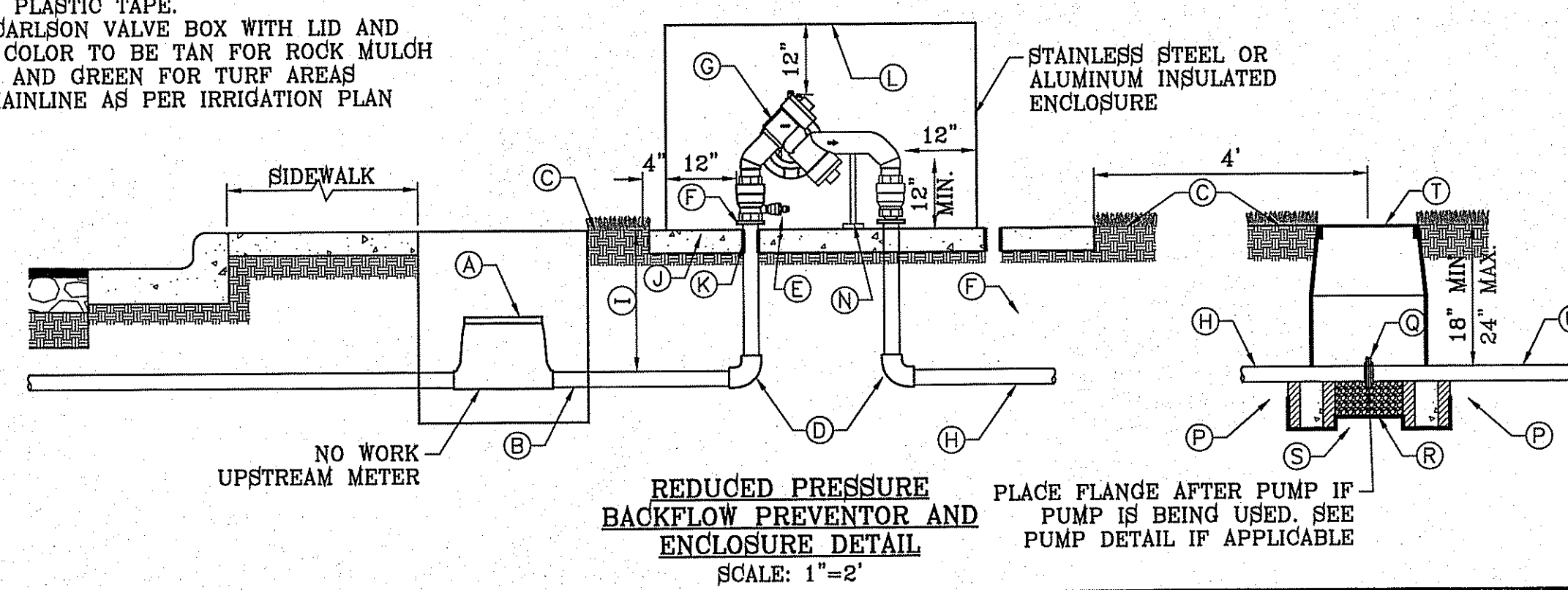
**GENERAL NOTES:**

- ENCLOSURE MUST NOTE ASSE#1060 FOR BACKFLOW DEVICE.
- DO NOT INSTALL IN FLOOD PRONE AREAS.
- METAL RISER PIPING REQUIRED.
- JOINTS TO BE ADEQUATELY RESTRAINED.
- HORIZONTAL INSTALLATION REQUIRED AS SHOWN. RPBP SHALL BE SUPPORTED AT ALL TIMES DURING AND AFTER INSTALLATION. PIPES ARE NOT TO BARE WEIGHT OF RP DEVICE. BACKFLOW PREVENTION DEVICE SHALL BE PROPERLY SUPPORTED BY BRACKETS AND NOT COPPER RISERS OR COPPER RISERS WILL BE REPLACED.

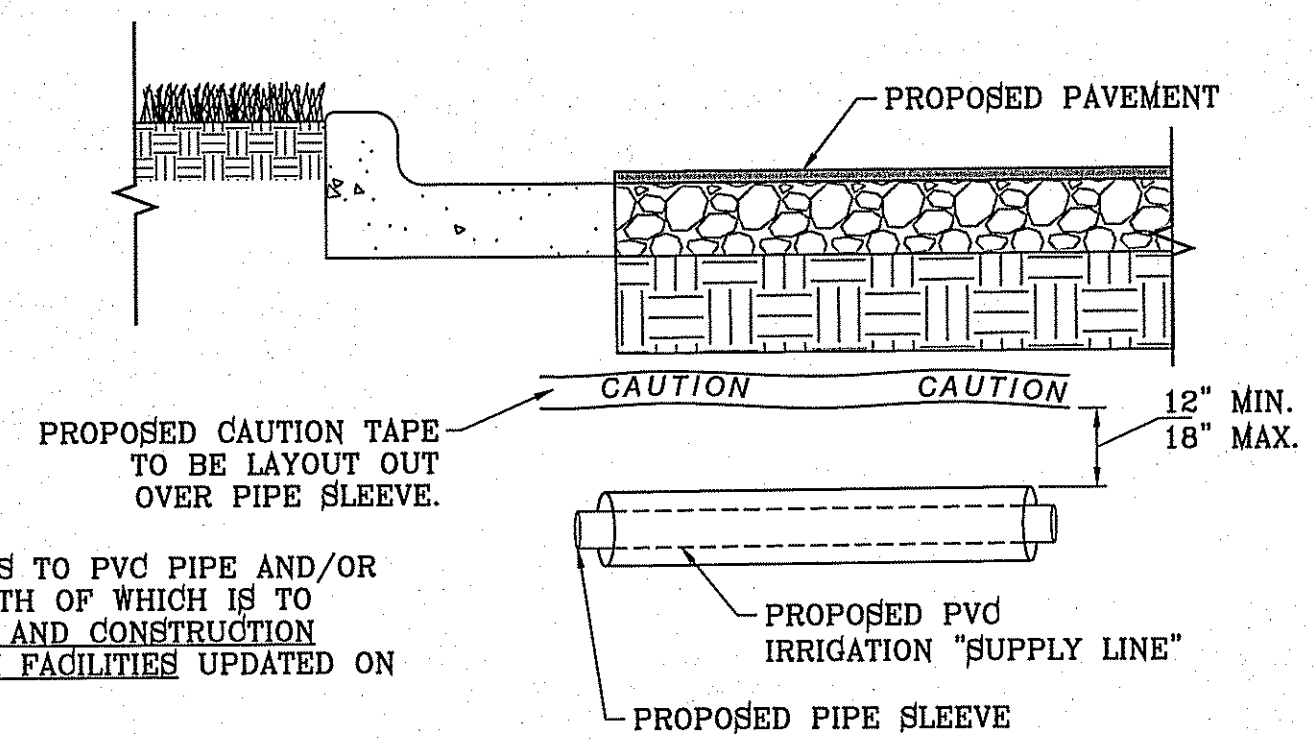
**ELECTRICAL NOTES:**

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, COORDINATING, AND INSTALLING ALL ELECTRICAL AND ELECTRICAL SUPPLIES NECESSARY FOR THE INSTALLATION AND OPERATION OF THE IRRIGATION SYSTEM SPECIFIED.

ALL ELECTRICAL SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REQUIREMENTS OF ALL GOVERNING BODIES HAVING JURISDICTION.



**REDUCED PRESSURE BACKFLOW PREVENTOR AND ENCLOSURE DETAIL**  
SCALE: 1"=2'

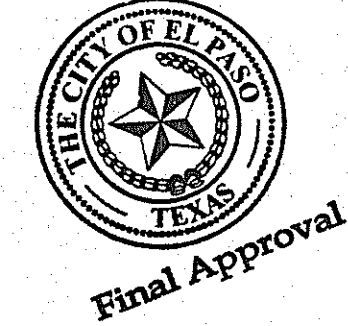


**PIPE SLEEVE DETAIL WITH GENERAL NOTES**  
SCALE: 1"=1'

- (A) BUCKNER DOUBLE LUG QUICK-COUPLING VALVE WITH PURPLE CAP
- (B) LASCO PRE-ASSEMBLED SWING JOINT WITH SNAP LOCK STABILIZER ASSEMBLY AND BRASS FITTING
- (C) PVC LATERAL
- (D) 1419 PURPLE CARLSON VALVE BOX W/ FLAT LID
- (E) SOLID BRICK BLOCK AT EACH CORNER
- (F) 3/8" PEA GRAVEL TO UNDERSIDE OF BRASS FITTING, 4" DEEP (NO SOIL IN BOX)
- (G) WATER PROOF TAGS THAT READ "NON-POTABLE WATER NOT SAFE FOR DRINKING."
- (H) PROVIDE WEED BARRIER FABRIC 'DeWITT PRO 5' UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS
- (I) 6 mm BLACK POLYETHYLENE PLASTICTAPE TO ALL INLET AND OUTLET PIPE
- (J) PVC PIPE STABILIZER

- (A) FINISH GRADE
- (B) 1419 CARLSON VALVE BOX WITH LID AND BOLT. COLOR TO BE TAN FOR ROCK MULCH AREAS AND GREEN FOR TURF AREAS
- (C) IRRIGATION MAINLINE/LATERAL MAINLINE
- (D) IRRIGATION MAINLINE SERVICE TEE OR ELL
- (E) WEATHERMATIC 8200CR-20 ELECTRIC CONTROL VALVE
- (F) SCHEDULE 80 PVC UNIONS ON LINES 3" OR SMALLER, AND FLANGES ON LINES 3" OR LARGER
- (G) LATERAL LINE
- (H) 1 CUBIC FOOT 1" DIAMETER WASHED ROCK
- (I) 6"x8"x16" SOLID CMU BLOCK
- (J) PROVIDE WEED BARRIER FABRIC 'DeWITT PRO 5' UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS RAINBIRD
- (K) AMIAD WYE FILTER TO BE SET AT ANGLE TO BE ABLE TO DRAIN AND BE SERVICED READILY.
- (L) WILKINS BF4 BRONZE BODY OR IN-LINE PRESSURE REGULATOR
- (M) GAUGE

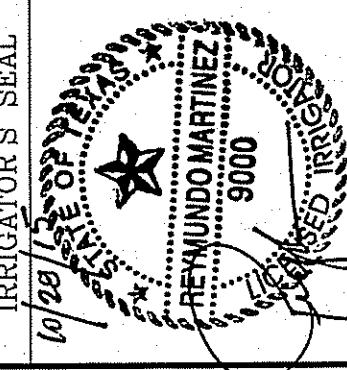
**NOTE:**  
PVC PIPE ASSEMBLIES AT IRRIGATION VALVES, PRESSURE REGULATOR AND FILTER ARE TO HAVE UNIONS ON BOTH INTAKE AND DISCHARGE SIDES OF THE EQUIPMENT WHEN THE PIPE IS SMALLER THAN THREE INCHES AND FLANGES ARE TO BE USED ON PIPE THREE INCHES AND LARGER. INSURE THAT THE EQUIPMENT AND FITTINGS ARE ACCOMMODATED WITHIN THE 1419 CARLSON IRRIGATION VALVE BOX.



REVISIONS	DATE	BY

**TERRA DEL ESTE UNIT SEVENTY SEVEN ARTERIAL LANDSCAPE AND IRRIGATION**  
BEING PORTION OF SECTION 16, BLOCK 76, PORTION OF SECTION 37, BLOCK 79, TOWNSHIP 2, TARRANT AND PACIFIC RAILWAY CO. SURVEYS, EL PASO COUNTY, TEXAS  
CONTAINING: 64.036± ACRES

**CONDE INC.**  
ENGINEERING / PLANNING / SURVEYING / GPS  
6000 SUBIETY DR. STE 100  
EL PASO, TEXAS 79905  
PHONE: (915) 592-0283  
FAX: (915) 592-0286



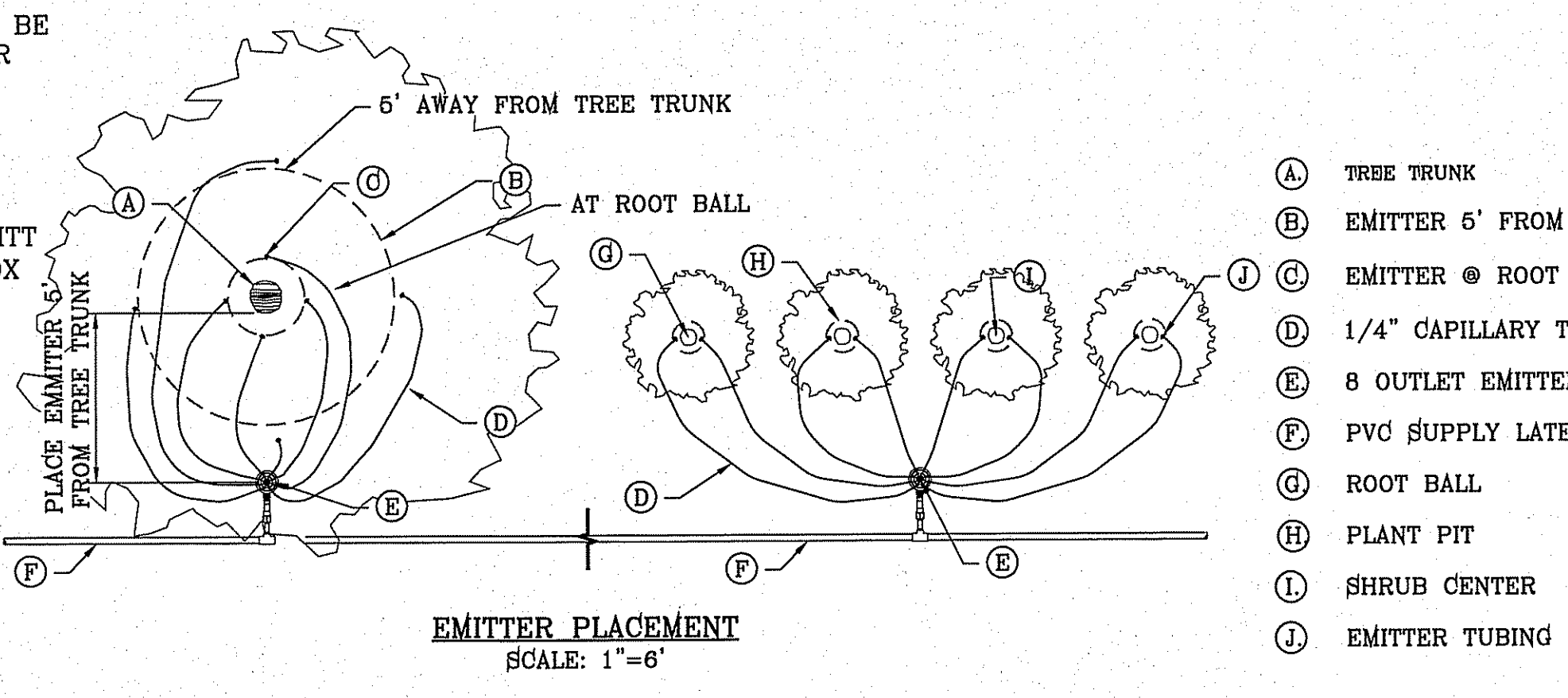
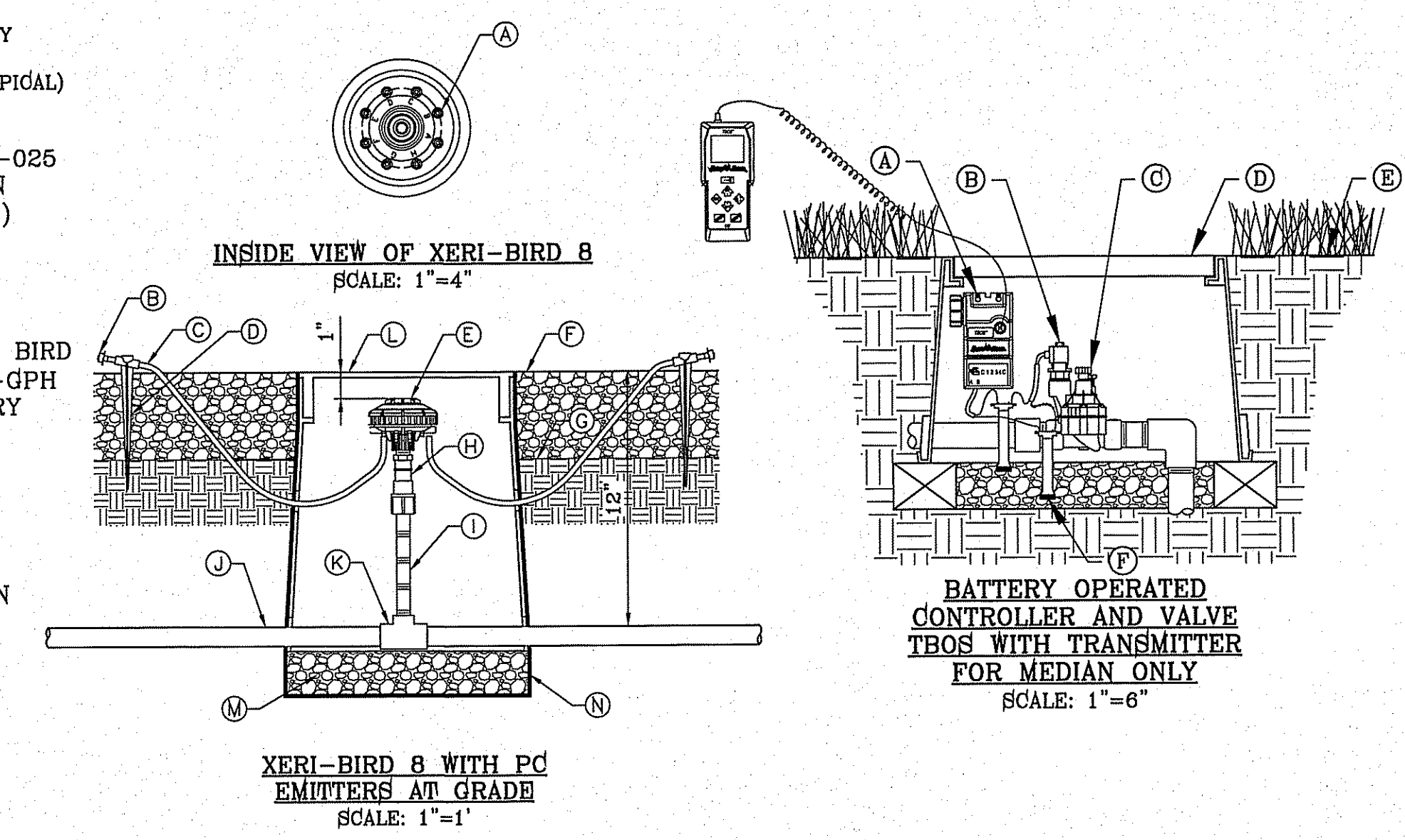
**CONDE INC.**  
REGISTRATION No. F-2321

**IRRIGATION DETAILS**



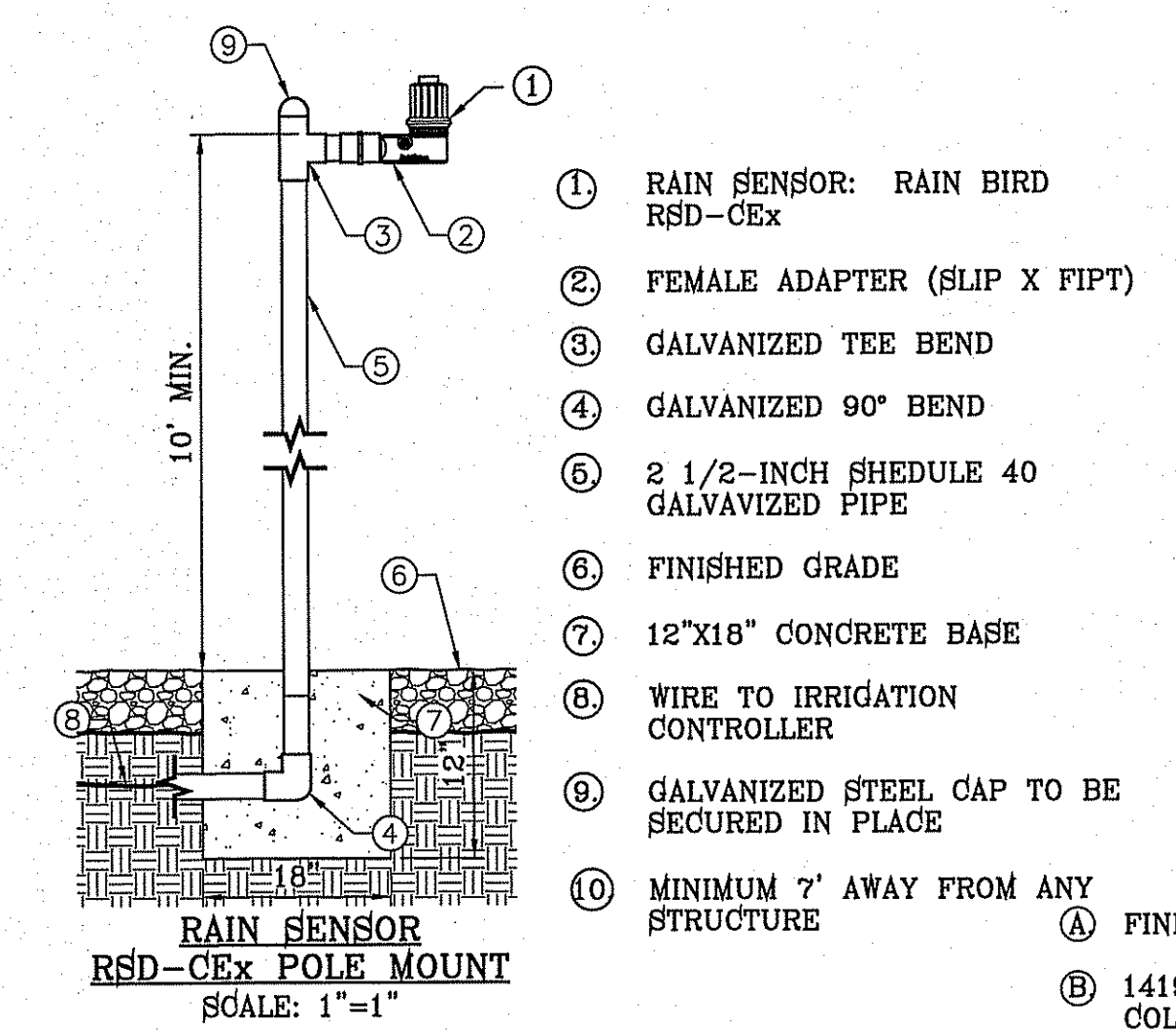
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- (A) (8) 1-GPH XERI-BUGS INSTALLED AT FACTORY
- (B) DIFFUSER BUG CAP, RAIN BIRD DBC-026 (TYPICAL)
- (C) 1/4-INCH TUBING: POLYETHYLENE DISTRIBUTION TUBING RAIN BIRD PT-026 OR VINYL DISTRIBUTION TUBING RAIN BIRD DT-026 (0.170 I.D. X 0.250 O.D.)
- (D) 1/4-INCH TUBING STAKE: RAIN BIRD TS-026 (1 OF 2)
- (E) MULTI-OUTLET EMISSION DEVICE RAIN BIRD XERI-BIRD 8 XBD-81 (WITH EIGHT 1-GPH XERI-BUG XB-10PC EMITTERS FACTORY INSTALLED)
- (F) TOP OF MULCH
- (G) FINISH GRADE
- (H) RETROFIT PRESSURE REGULATOR: RAIN BIRD PRS-060-30
- (I) PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
- (J) PVC LATERAL PIPE
- (K) PVC SCH 40 TEE OR ELL
- (L) SET IN CARSON 910 SERIES BOX AND BE BOLTED DOWN, COLOR TO BE TAN FOR ROCK MULCH AREAS AND GREEN FOR TURF AREAS
- (M) 3/8" PEA GRAVEL, 4" DEEP
- (N) PROVIDE WEED BARRIER FABRIC "DeWITT PRO 5" UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS

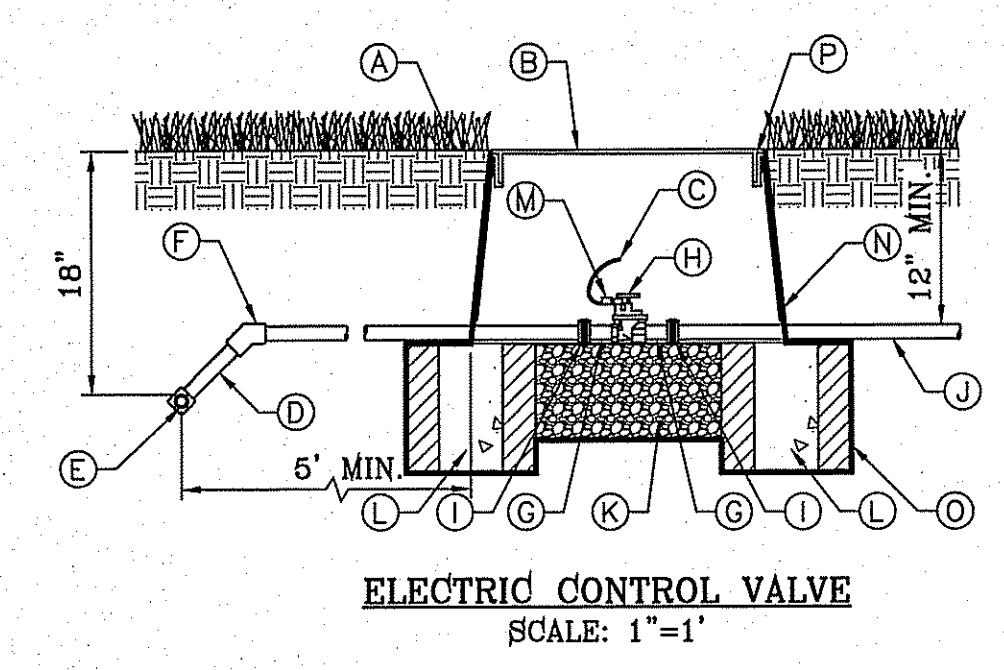


- (A) TREE TRUNK
- (B) EMITTER 5' FROM TREE TRUNK (1 OF 4)
- (C) EMITTER @ ROOT BALL (1 OF 4)
- (D) 1/4" CAPILLARY TUBING (0.170 I.D. X 0.250 O.D.)
- (E) 8 OUTLET EMITTER
- (F) PVC SUPPLY LATERAL FROM ZONE CONTROL VALVE
- (G) ROOT BALL
- (H) PLANT PIT
- (I) SHRUB CENTER
- (J) EMITTER TUBING PLACEMENT

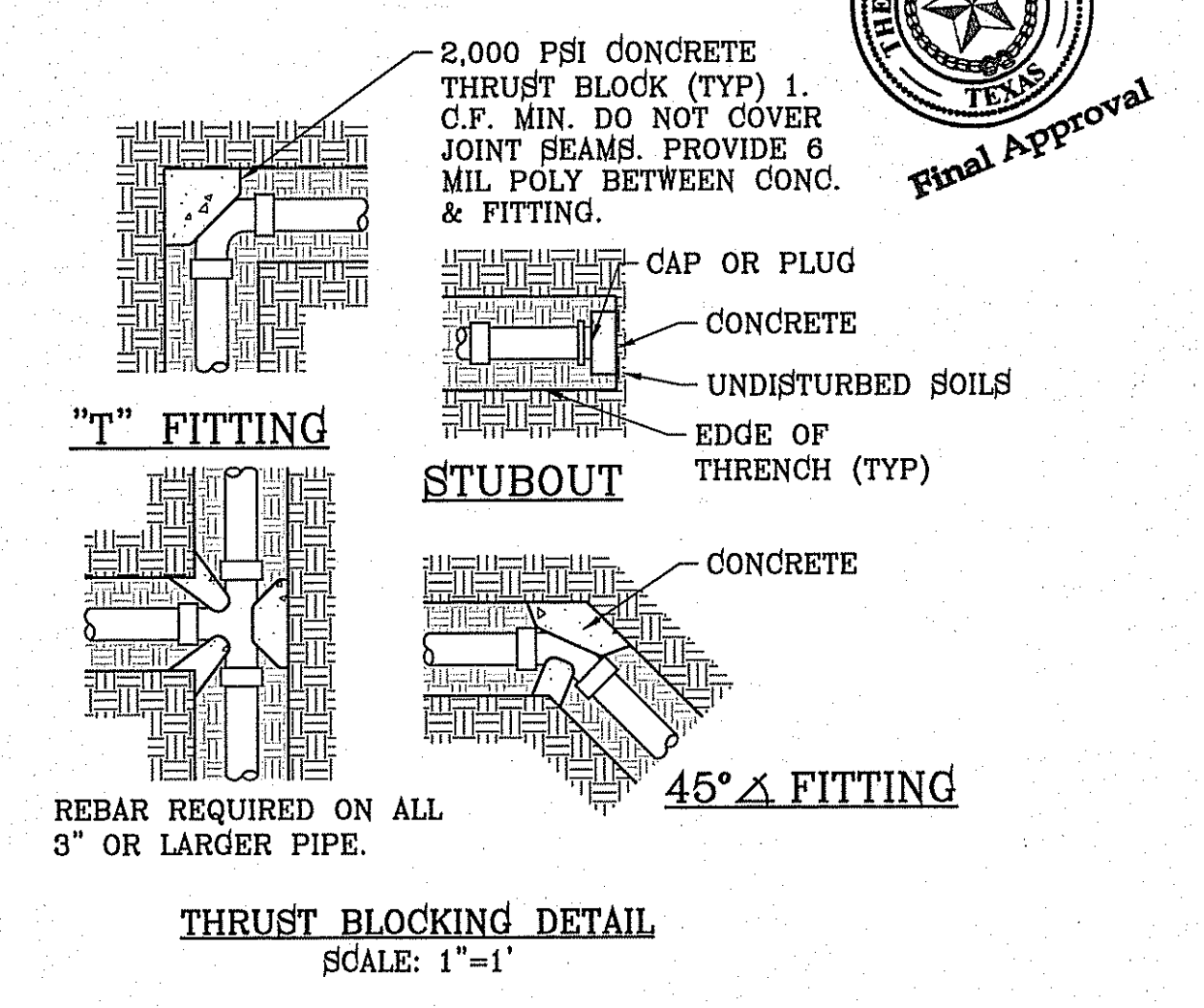
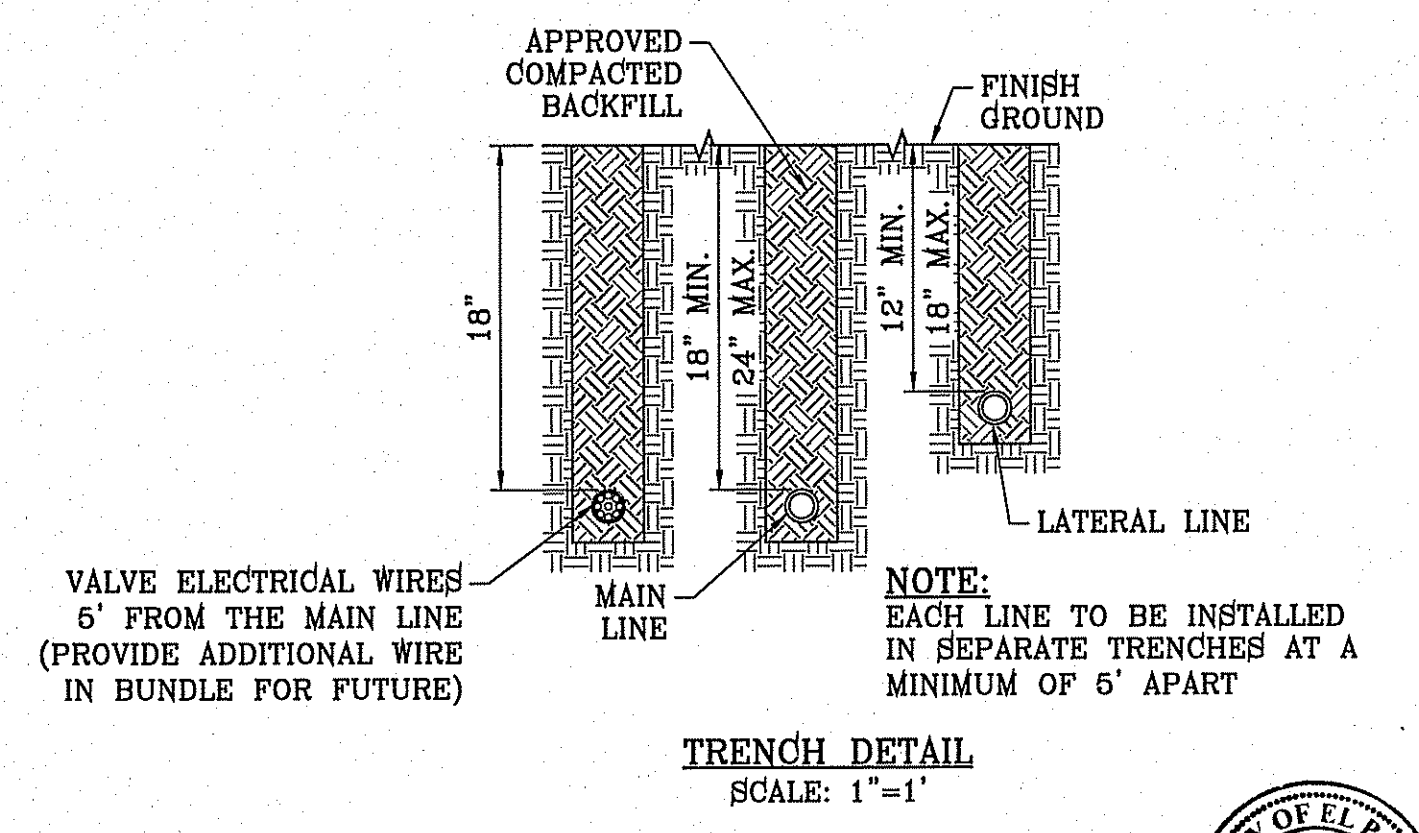
- (A) RAIN BIRD TBO'S CONTROL MODULE
- (B) RAIN BIRD TBO'S SOLEOID
- (C) RAINBIRD 100-PESB REMOTE CONTROL VALVE
- (D) CARSON VALVE BOX 1419 WITH BOLT. COLOR TO BE TAN FOR ROCK MULCH AREAS AND GREEN FOR TURF AREAS
- (E) FINISH GRADE
- (F) WATERPROOF CONNECTION: RAIN BIRD "QUICK CONNECT" DBY (1 OF 2)
- (G) RAINBIRD TBO'S FIELD TRANSMITTER



- (1) RAIN SENSOR: RAIN BIRD RSD-CEX
- (2) FEMALE ADAPTER (SLIP X FIPT)
- (3) GALVANIZED TEE BEND
- (4) GALVANIZED 90° BEND
- (5) 2 1/2-INCH SCHEDULE 40 GALVANIZED PIPE
- (6) FINISHED GRADE
- (7) 12"x18" CONCRETE BASE
- (8) WIRE TO IRRIGATION CONTROLLER
- (9) GALVANIZED STEEL CAP TO BE SECURED IN PLACE
- (10) MINIMUM 7' AWAY FROM ANY STRUCTURE



- (A) FINISH GRADE
- (B) 1419 CARSON VALVE BOX WITH LID AND BOLT, COLOR TO BE TAN FOR ROCK MULCH AREAS AND GREEN FOR TURF AREAS
- (C) 3M SCOTCHLOK CONNECTORS OR APPROVED EQUAL
- (D) IRRIGATION MAINLINE/LATERAL MAINLINE
- (E) IRRIGATION MAINLINE SERVICE TEE OR ELL
- (F) SCHEDULE 80 PVC ELBOW
- (G) SCHEDULE 80 PVC CLOSED NIPPLE
- (H) WEATHERMATIC 8200CR-20 ELECTRIC CONTROL VALVE
- (I) SCHEDULE 80 PVC UNIONS ON LINES 3" OR SMALLER, AND FLANGES ON LINES 3" OR LARGER
- (J) LATERAL LINE
- (K) 1 CUBIC FOOT 1" DIAMETER WASHED ROCK
- (L) 8"x8"x16" SOLID CMU BLOCK
- (M) 24" WIRE EXPANSION COIL
- (N) 6 mm BLACK POLYETHYLENE PLASTIC TAPE TO ALL INLET AND OUTLET PIPE
- (O) PROVIDE WEED BARRIER FABRIC "DeWITT PRO 5" UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS



BENCHMARK

CITY MONUMENT AT THE CENTERLINE INTERSECTION OF RALPH SETSINGER DR AND JOHN HAYES ST. ELEVATION 4016.75

DATE	REVISIONS	BY

PROJECT NAME

**TIERRA DEL ESTE UNIT SEVENTY SEVEN ARTERIAL LANDSCAPE AND IRRIGATION**

BEING PORTION OF SECTION 18, BLOCK 78, PORTION OF SECTION 18, BLOCK 78, COMPANY'S SUBDIVISION AND PLANNED RAILWAY CONSTRUCTION, EL PASO COUNTY, TEXAS CONTAINING: 64.033± ACRES

SCALE

HORIZ: AS NOTED

VERT: ---

DATE: FEB. 2014

DESIGN BY: R.M.

INITIATED BY: RR

CHECKED BY: R.M.

JOB NO.: 119-37

IRRIGATOR'S SEAL

REYUNDO MARTINEZ  
9000

**CONDE INC.**

ENGINEERING / PLANNING SURVEYING / GPS

6080 SURETY DR. SITE 100 EL PASO, TEXAS 79905

PHONE: (915) 592-0283 FAX: (915) 592-0286

REGISTRATION No. P-2321

**CONDE INC.**

SHEET TITLE

**IRRIGATION DETAILS**

SHT 5 OF 5