

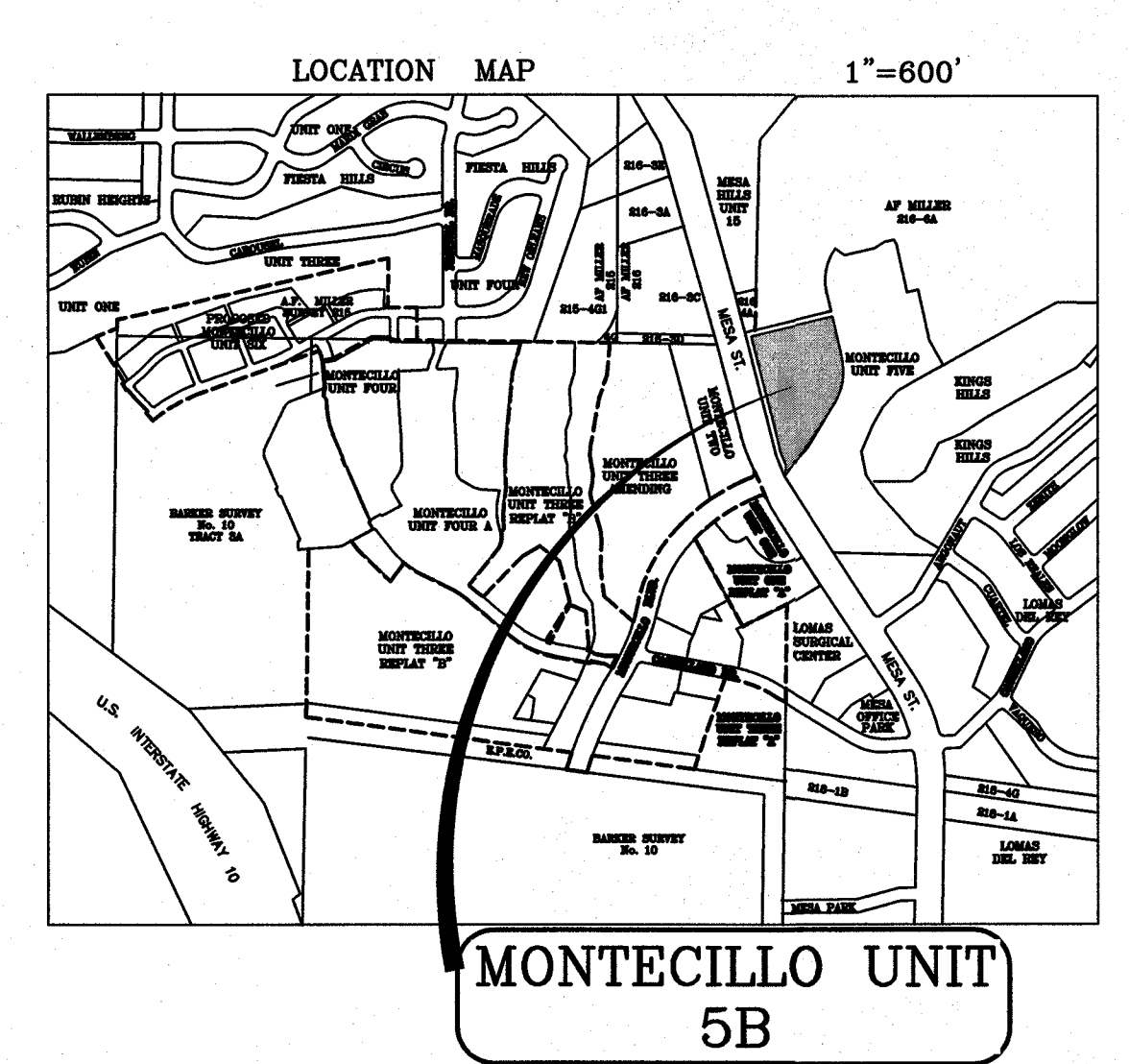
# MONTECILLO UNIT 5B SUBDIVISION IMPROVEMENTS

## INDEX

TITLE	SHEET No.
COVER SHEET	1 OF 44
PLAT	2 OF 44
OVERALL SITE PLAN	3 OF 44
OVERALL GRADING PLAN	4 OF 44
OVERALL STORM DRAIN PLAN	5 OF 44
OVERALL DRAINAGE PLAN	6 OF 44
OVERALL STRIPING & SIGNAGE PLAN	7 OF 44
VIN GRANADA - PLAN & PROFILE 1 OF 3	8 OF 44
VIN GRANADA - PLAN & PROFILE 2 OF 3	9 OF 44
VIN GRANADA - PLAN & PROFILE 3 OF 3	10 OF 44
VIN GRANADA - STORM DRAIN P&P	11 OF 44
VIN SEVILLA - PLAN & PROFILE	12 OF 44
VIN SEVILLA - STORM DRAIN P&P	13 OF 44
VIN VALENCIA - PLAN & PROFILE	14 OF 44
VIN PAZ - PLAN & PROFILE	15 OF 44
MEST ST. - PLAN & PROFILE	16 OF 44
EAST MONTECILLO - PLAN & PROFILE	17 OF 44
LOT 1 BLK 29 - STORM DRAIN P&P	18 OF 44
MESA ST MEDIAN OPENING PLAN	19 OF 44
MESA ST & VIN SEVILLA RETAINING WALL P&P	20 OF 44
WATER AND SEWER DISTRIBUTION PLAN 1 OF 2	21 OF 44
WATER AND SEWER DISTRIBUTION PLAN 1 OF 2	22 OF 44
12" WATERLINE ROADWAY - PLAN & PROFILE	23 OF 44
NEW 12" WATERLINE - PLAN & PROFILE	24 OF 44

## INDEX

TITLE	SHEET No.
WATER AND SEWER DETAILS	25 OF 44
WATER AND SEWER DETAILS	26 OF 44
WATER AND SEWER DETAILS	27 OF 44
WATER AND SEWER GENERAL NOTES	28 OF 44
STANDARD DETAILS	29 OF 44
STANDARD DETAILS	30 OF 44
STANDARD DETAILS -STORM DRAIN	31 OF 44
OVERALL SWPPP PLAN	32 OF 44
OVERALL SWPPP SLOPE STABILIZATION PLAN	33 OF 44
OVERALL SWPPP DETAILS	34 OF 44
STORMWATER POLLUTION PREVENTION PLAN	35 OF 44
L1 LANDSCAPING - INDEX AND NOTES	36 OF 44
L2 LANDSCAPING - PLANTING AND MATERIALS	37 OF 44
L3 LANDSCAPING - IRRIGATION PLAN	38 OF 44
L4 LANDSCAPING - DETAILS	39 OF 44
L5 LANDSCAPING - IRRIGATION DETAILS	40 OF 44
E-1 ELECTRICAL SPECIFICATIONS	41 OF 44
E-2 ELECTRICAL PLAN	42 OF 44
E-3 ELECTRICAL DETAILS	43 OF 44
ST-1 PHOTOMETRIC PLAN	44 OF 44



**CITY DEVELOPMENT DEPARTMENT**  
 Reviewed For Conformance For Condition Related To:  
 Sidewalks      Driveways  
 Grading & Drainage      Retaining Back Walls  
 Wheelchair Ramps      On Site Parking Layout  
 On Site Parking Layout  
 Contractor: *Jose Vizcarra*      Call 24 Hours Prior To Construction For Inspections      2-20-17  
 By: \_\_\_\_\_

PROJECT BENCHMARK  
 CENTRAL MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 6A,  
 A.F. MILLER SURVEY 216, AND PORTION  
 OF TRACT 21, JOHN BARKER SURVEY 10,  
 CITY OF EL PASO, EL PASO COUNTY, TEXAS  
 CONTAINING: 12.686± ACRES

ENGINEER'S SEAL  
  
 RONALD R. BOHANNAN  
 P.E. #88928

TERRA WEST, LLC  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 858-3100  
 www.tierawestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REVISIONS	BY
		DESIGN	

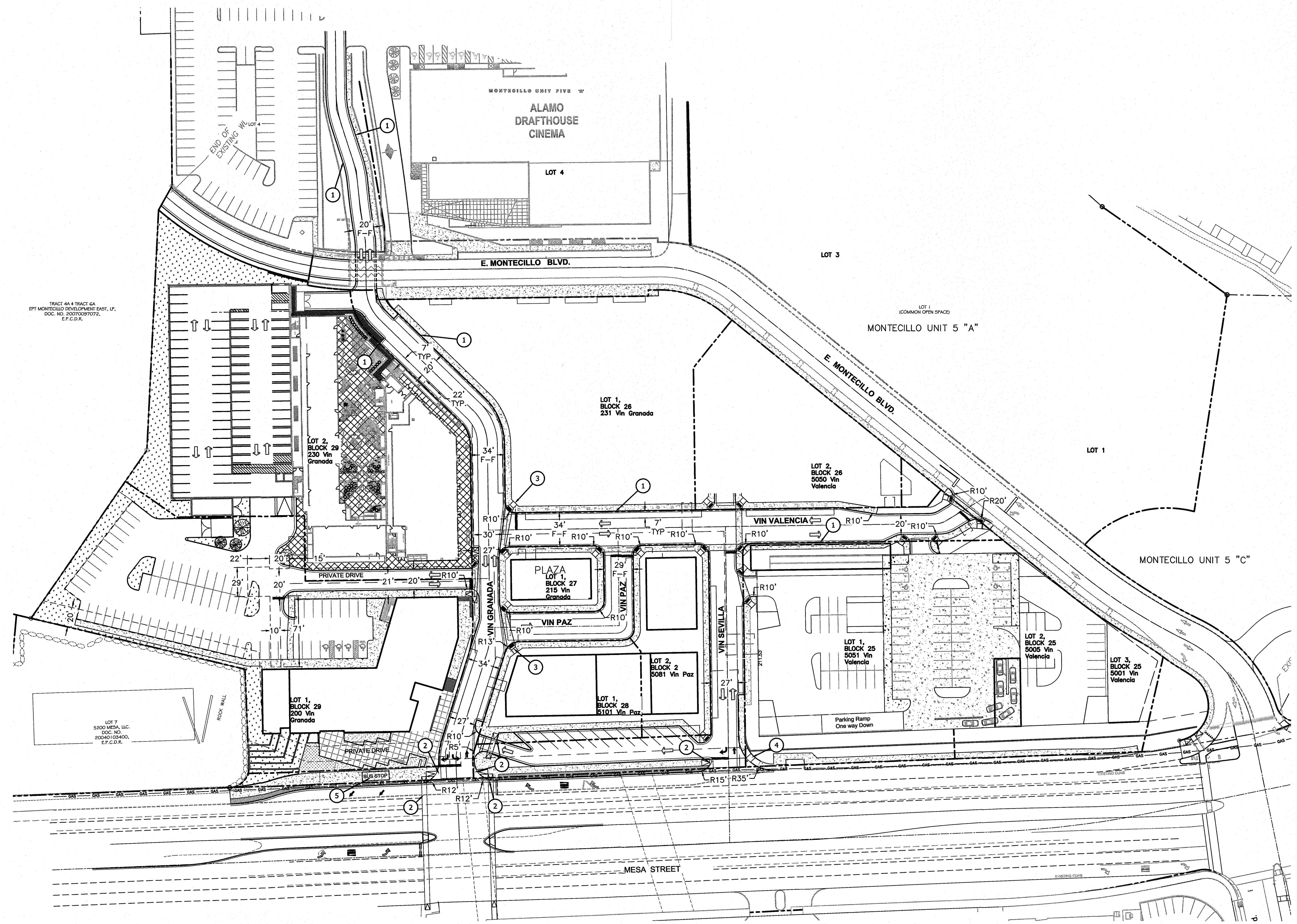
DESIGNED BY: JN  
 DRAWN BY: BF  
 DRAWING NAME: 2015062\_1-COVER SHEET-CITY  
 JOB NO.: 2015062  
 DATE: 06/06/2016  
 CHECKED BY: JN  
 DATE: 06/06/2016

SHEET TITLE  
**COVER SHEET**  
 SHT 1 OF 44







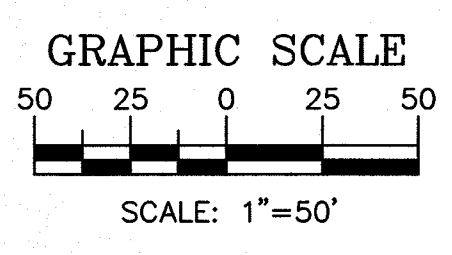
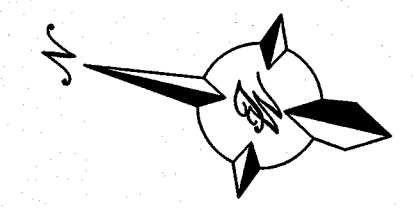


- LEGEND**
- Curb & Gutter
  - Boundary Line
  - - - Easement
  - - - Centerline
  - - - Right-of-Way
  - ▬ Building
  - ▬ Sidewalk
  - ▬ Screen Wall
  - ▬ Retaining Wall
  - ☼ Street Lights
  - Lane
  - Striping
  - - - Existing Curb & Gutter
  - - - Existing Sidewalk
  - - - Existing Lane
  - - - Existing Striping

- SITE LEGEND**
- ① CURB & GUTTER (SEE DETAIL SHEET 29)
  - ② STRAIGHT HC RAMP (SEE DETAIL SHEET 30)
  - ③ DIAGONAL HC RAMP (SEE DETAIL SHEET 30)
  - ④ BLENDED CURB HC RAMP (SEE DETAIL SHEET 30)
  - ⑤ BUS STOP

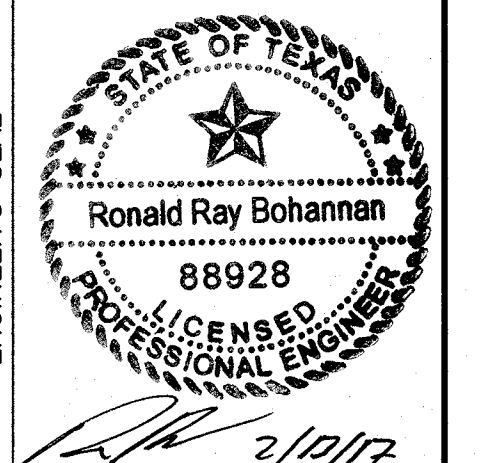


Final Approval



PROJECT BENCHMARK  
CENTRAL MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACT 21, JOHN BARKER SURVEY, 10,  
EL PASO, EL PASO COUNTY, TEXAS  
CITY OF CONTAINING: 12.686± ACRES



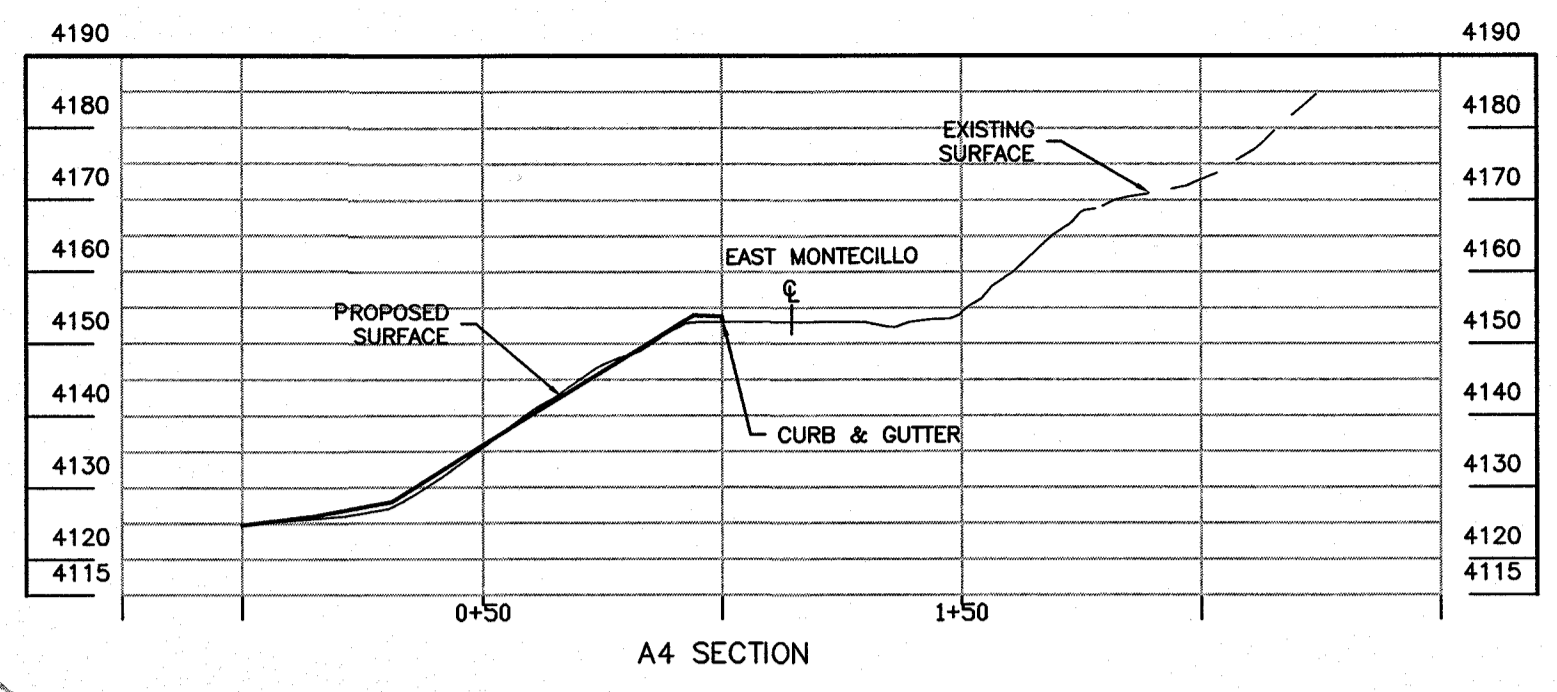
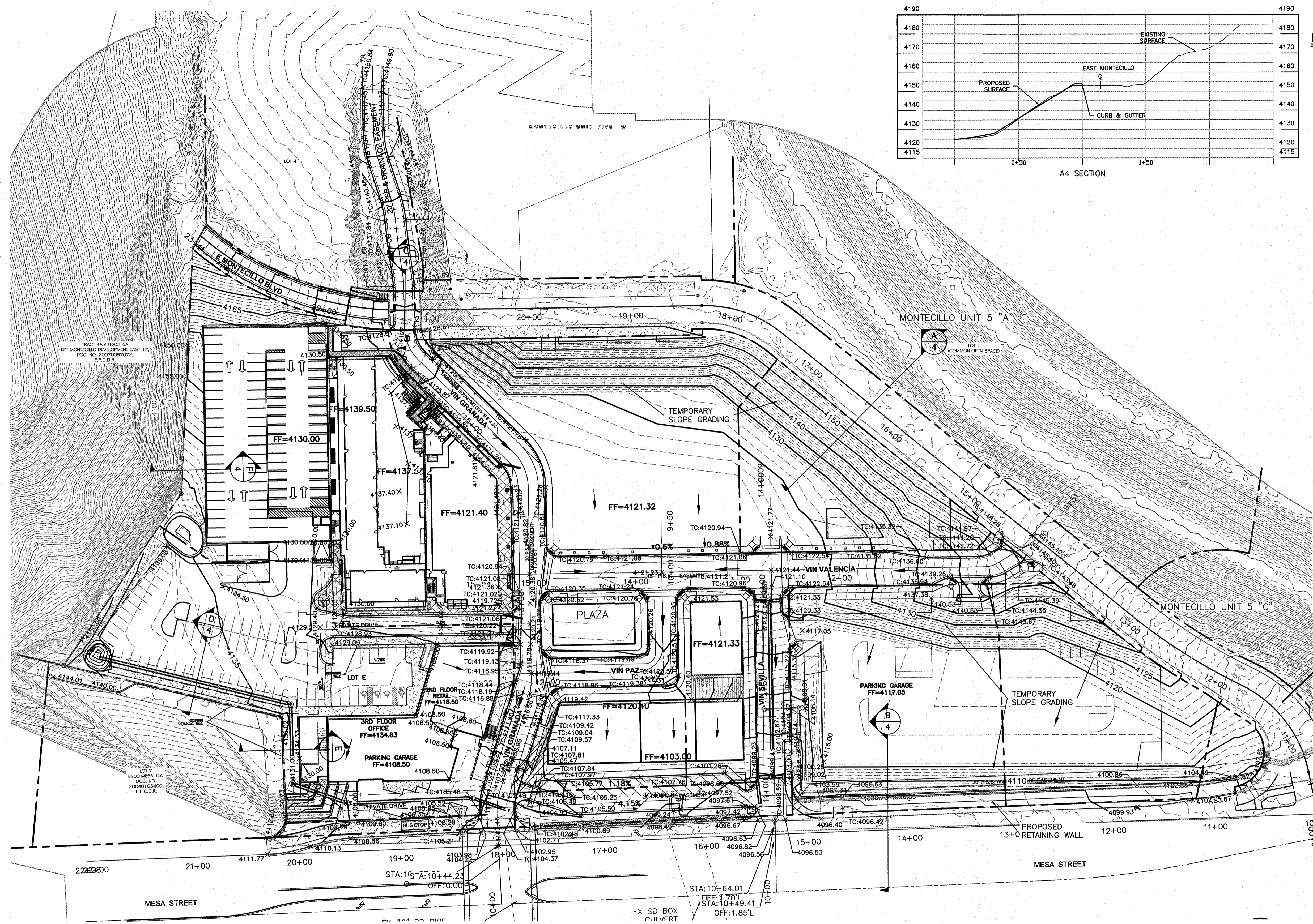
RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 888-3100  
www.tierrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

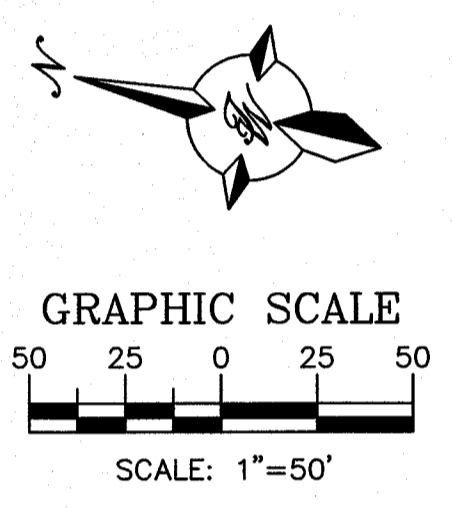
NO.	DATE	REMARKS	BY
		DESIGN	
		OVERALL SITE PLAN	

SHEET TITLE  
**OVERALL SITE PLAN**  
SHT 3 OF 44





- LEGEND**
- CURB & GUTTER
  - BOUNDARY LINE
  - - - EASEMENT
  - - - CENTERLINE
  - - - RIGHT-OF-WAY
  - ▭ BUILDING
  - ▭ SIDEWALK
  - ▭ SCREEN WALL
  - ▭ RETAINING WALL
  - 5010 — CONTOUR MAJOR
  - 5011 — CONTOUR MINOR
  - x 5048.25 SPOT ELEVATION
  - FLOW ARROW
  - - - EXISTING CURB & GUTTER
  - - - SUBDIVISION BOUNDARY LINE
  - - - 5010 - - - EXISTING CONTOUR MAJOR
  - - - 5011 - - - EXISTING CONTOUR MINOR
  - x 5048.25 EXISTING SPOT ELEVATION
  - ▭ STORE FRONT



**BENCHMARK**  
 PROJECT BENCHMARK  
 CENTRAL MONUMENT  
 CENTRAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 6A,  
 A.F. MILLER SURVEY 216, AND PORTION  
 OF TRACTS 10, 11, 12, 13, 14, 15, 16,  
 CITY OF EL PASO, EL PASO COUNTY, TEXAS  
 CONTAINING: 12.686± ACRES

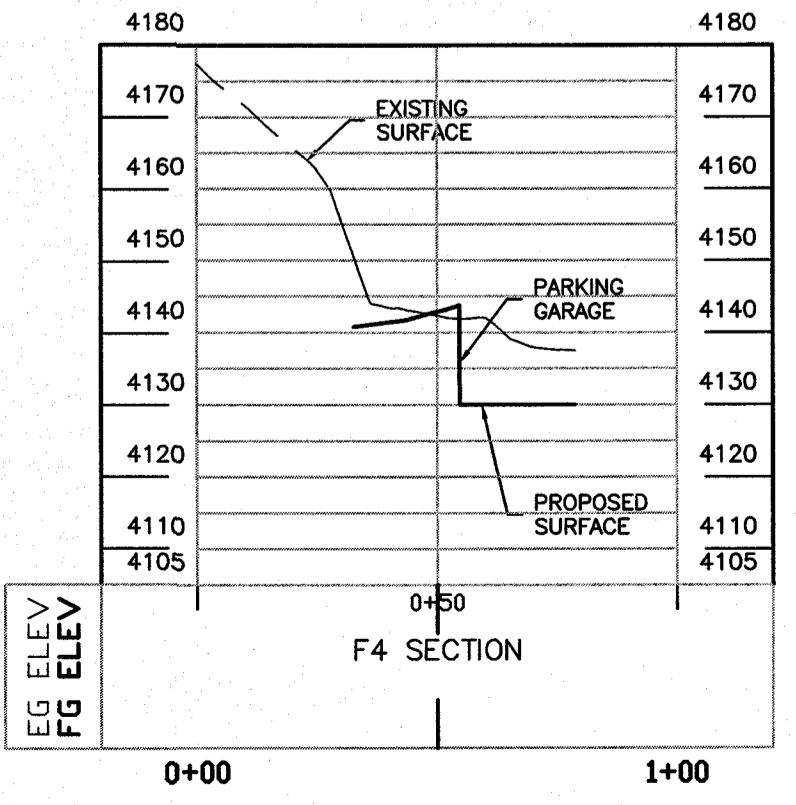
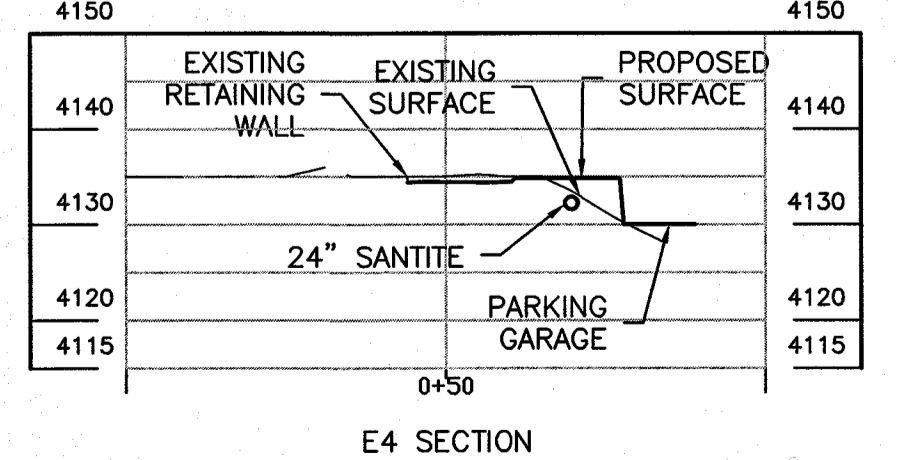
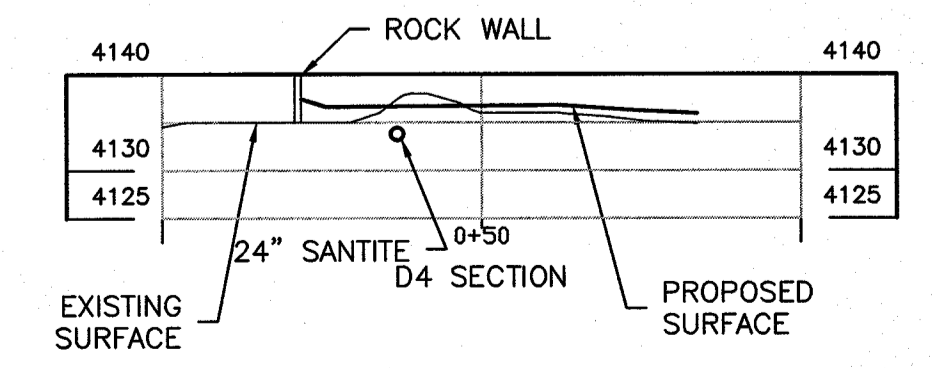
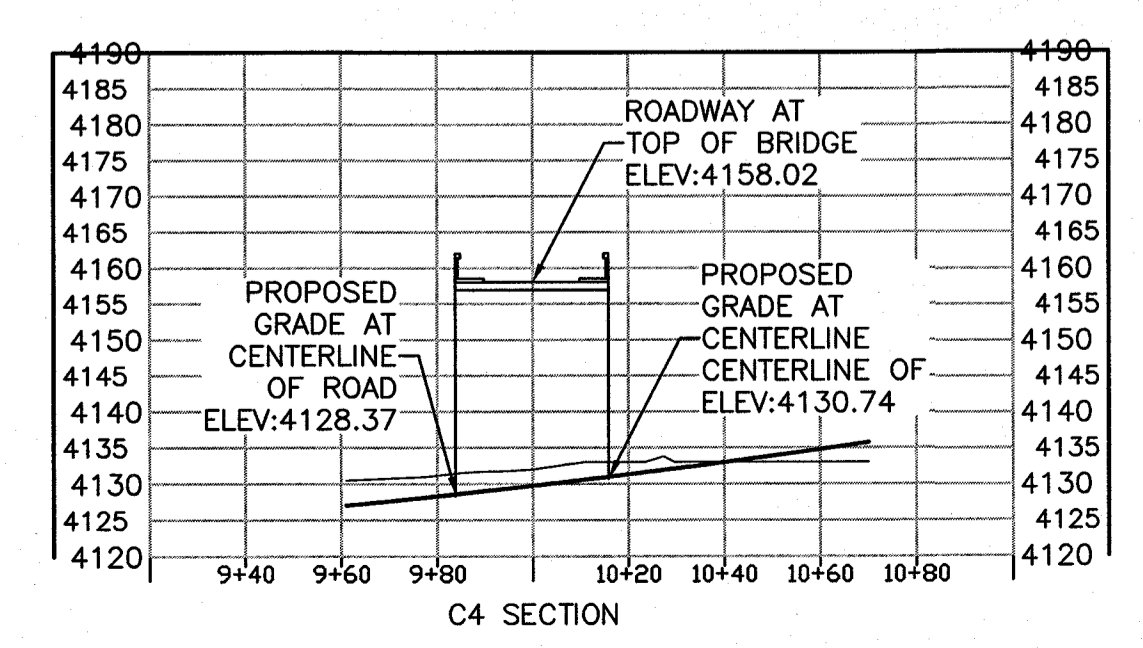
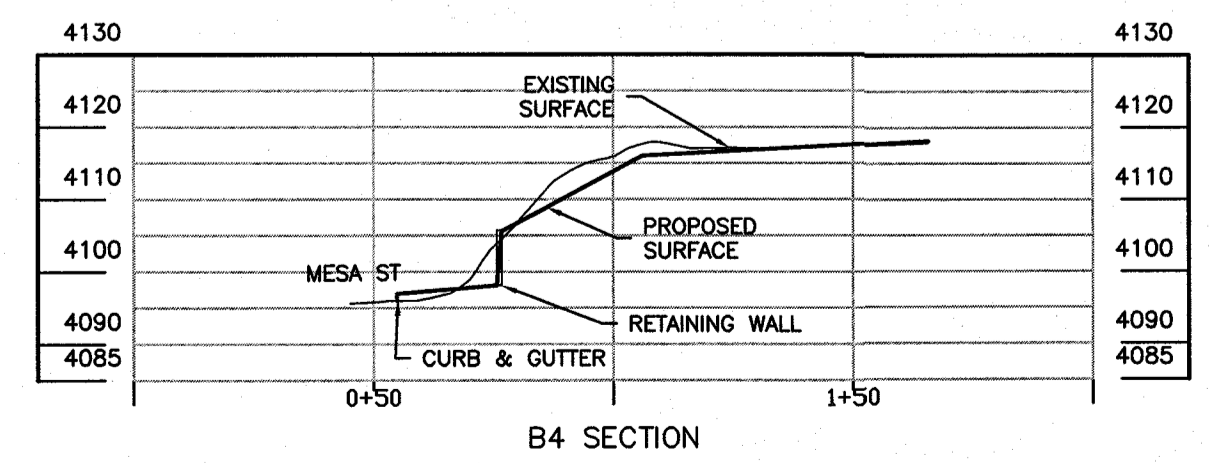


RONALD R. BOHANNAN  
 P.E. #88928

**TERRA WEST, LLC**  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 858-3100  
 www.terrawestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REVISIONS

BY	DATE	REVISIONS
DESIGNED BY: JN	DATE: 06/06/2016	DESIGN
DRAWN BY: BF	DATE: 06/06/2016	
DRAWING NAME: 2015062_4-OVERALL GRADING PLAN	JOB NO.: 2015062	
CHECKED BY: JN	DATE: 06/06/2016	



**OVERALL GRADING PLAN**



Inlet Calculations (100yr Flow)														
Inlet #	Inlet Type	Q <sub>required</sub> (cfs)	d (ft)	V (fps)	Clogging Factor	T (ft)	E <sub>o</sub>	R <sub>f</sub>	R <sub>s</sub>	E	Q <sub>grate</sub> (cfs)	Q <sub>curb</sub> (cfs)	Q <sub>total</sub> (cfs)	Bypass (cfs)
CB1	Type I (2 grate)	3.23	0.17	5.63	0.7	7.73	0.73	1.08	0.11	0.82	2.64	1.49	2.89	0.34
CB2	Type I (2 grate)	3.23	0.17	5.63	0.7	7.73	0.73	1.08	0.11	0.82	2.64	1.49	2.89	0.34
CB3	Type I (2 grate)	15.75	0.41	4.12	0.7	19.54	0.36	1.21	0.19	0.55	8.74	5.57	10.01	5.74
CB4	Type I (2 grate)	2.34	0.16	5.25	0.7	5.45	0.88	1.11	0.13	1.00	2.33	1.36	2.58	0.00
CB5	Type I (4 grate)	4.41	0.16	8.52	0.7	7.12	0.77	0.82	0.22	0.68	3.00	1.90	3.43	0.98
CB6	Type I (4 grate)	4.41	0.16	8.52	0.7	7.12	0.77	0.82	0.22	0.68	3.00	1.90	3.43	0.98
CB7	Type I (3 grate)	3.81	0.21	4.09	0.7	9.61	0.63	1.22	0.36	0.90	3.44	2.45	4.12	0.00
CB8	Type I (3 grate)	3.81	0.21	4.09	0.7	9.61	0.63	1.22	0.36	0.90	3.44	2.45	4.12	0.00

CB1 & CB2 bypass flows will proceed to CB10 (CB6 in Unit 5A)  
 CB3 bypass flows will proceed to CB10 (CB6 in Unit 5A)  
 CB5 and CB6 bypass flows will proceed to the catch basin in Mesa Street

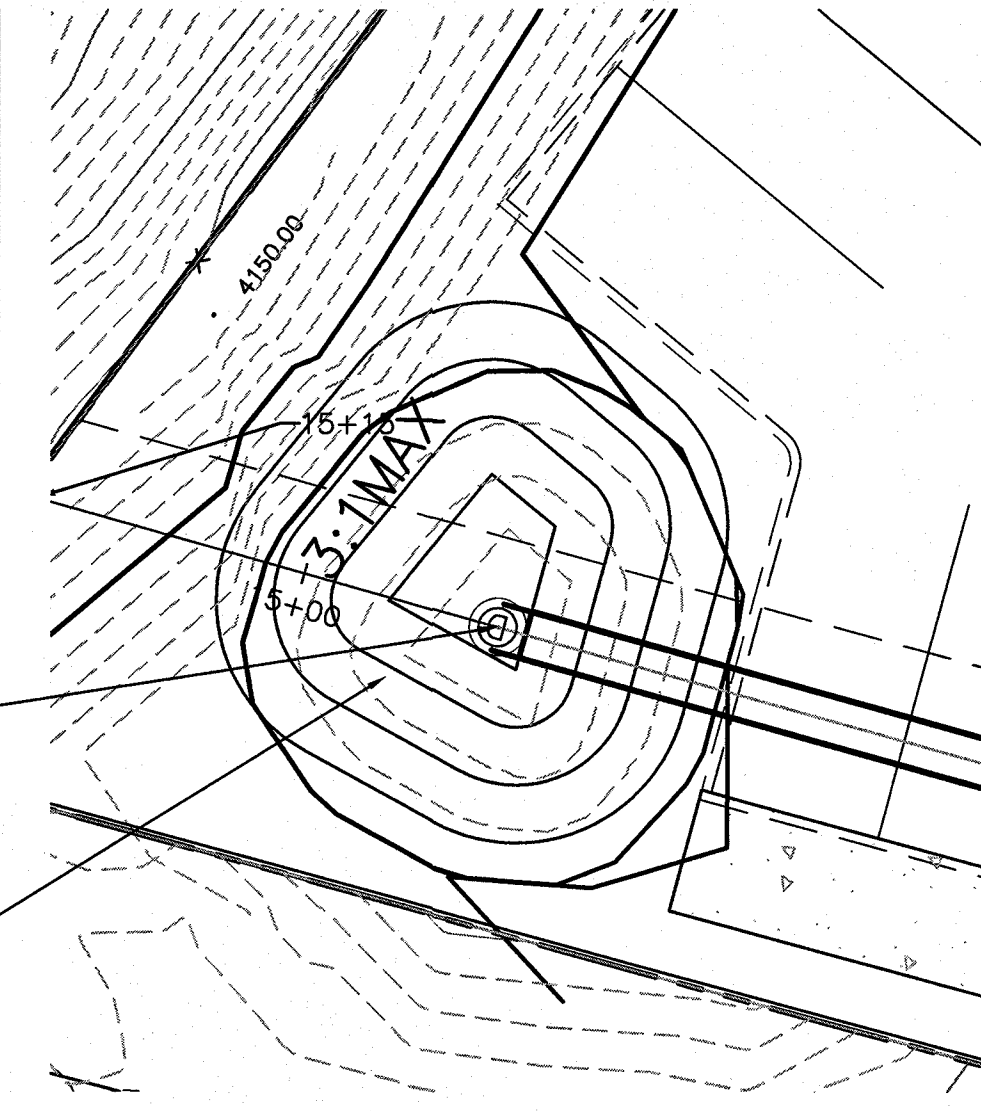
$E_o = 1 - (1 - (W/T))^{2.67}$  Equation 7-1, page 73 DDM  
 $R_f = 1 - 0.09(V - V_o)$  Equation 7-3, page 74 DDM  
 $R_s = 1 / (1 + (0.15V^{1.8} / S_o^{1.3}))$  Equation 7-4, page 76 DDM  
 $E = R_f E_o + R_s (1 - E_o)$  Equation 7-5, page 77 DDM  
 $Q_{grate} = Q \cdot E$  Equation 7-6, page 77 DDM  
 $Q_{curb} = C_{cu} (L - 1.8W) d^{1.5}$  Equation 7-13, page 81 DDM  
 $Q_{total} = (Q_{grate} + Q_{curb}) * 0.7$   
 Bypass =  $Q_{required} - Q_{total}$

W=width of grate=3.0'  
 L=length of grate=3.82' for 2-grate inlet and 7.49' for 4-grate inlet  
 T=spreed of flow on pavement  
 V=velocity at inlet  
 V<sub>o</sub>=splash over velocity=6.50 fps from Figure 7-2 on page 75 of the DDM  
 S<sub>o</sub>=pavement cross slope (foot per foot)  
 Q=runoff quantity  
 d=depth of runoff at inlet  
 R<sub>f</sub>=ratio of frontal flow intercepted  
 R<sub>s</sub>=ratio of side flow intercepted  
 C<sub>cu</sub>=2.3  
 E<sub>o</sub>=ratio of frontal flow to total gutter flow

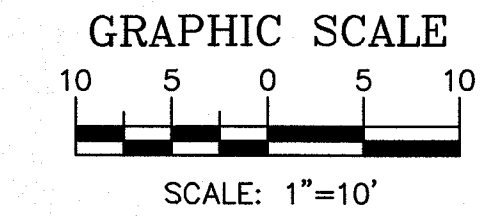
Label	Length (Unified) (ft)	Total Flow (ft <sup>3</sup> /s)	Rise (Unified) (in)	Capacity (Full Flow) (ft <sup>3</sup> /s)	Velocity (Average) (ft/s)	Invert (Upstream) (ft)	Invert (Downstream) (ft)	Slope (ft/ft)	Hydraulic Grade Line (In) (ft)	Elevation Ground (Start) (ft)	Hydraulic Grade Line (Out) (ft)	Elevation Ground (Stop) (ft)
Pipe 1	192	36.62	24	43.90	15.64	4128.21	4122.05	0.032	4130.14	4142.60	4125.71	4134.49
Pipe 2	79	36.62	24	48.15	16.87	4,122.05	4,119.00	0.039	4,123.98	4,134.49	4,122.23	4,131.00
Pipe 3	60	36.62	24	133.48	36.24	4,119.00	4,101.20	0.297	4,120.93	4,131.00	4,108.70	4,110.00
Pipe 4	123	36.62	24	37.76	11.66	4,101.20	4,098.28	0.024	4,107.44	4,110.00	4,104.69	4,105.44
Pipe 5	7	3.81	24	78.05	12.85	4116.71	4116.00	0.101	4117.39	4120.83	4117.25	4120.80
Pipe 6	9	3.81	24	68.83	11.77	4116.71	4116.00	0.079	4117.25	4120.17	4117.39	4120.80
Pipe 7	170	7.62	24	89.10	17.32	4116.00	4093.53	0.132	4116.98	4120.80	4095.50	4099.41
Pipe 8	7	3.43	24	77.50	13.36	4094.23	4093.53	0.100	4095.47	4098.73	4095.50	4099.41
Pipe 9	9	11.05	24	53.57	13.75	4093.53	4093.10	0.048	4095.33	4099.41	4095.33	4098.73
Pipe 10	23	14.48	24	156.92	5.23	4093.10	4089.00	0.410	4095.12	4098.73	4095.07	4096.60
Pipe 11	16	3.23	24	43.32	8.09	4117.50	4117.00	0.031	4118.70	4120.77	4118.71	4120.77
Pipe 12	20	6.46	24	105.97	18.66	4117.00	4113.26	0.187	4118.21	4120.77	4118.30	4120.00
Pipe 13	20	10	30	88.87	2.04	4116.80	4116.00	0.040	4120.24	4121.30	4120.23	4122.00

SEE STAND PIPE  
 DETAIL SHEET 31

VOLUME=900 CU. FT.  
 INLET CAPACITY=37.00 CFS

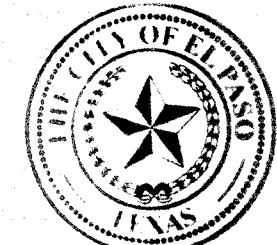


WATER QUALITY CATCHMENT

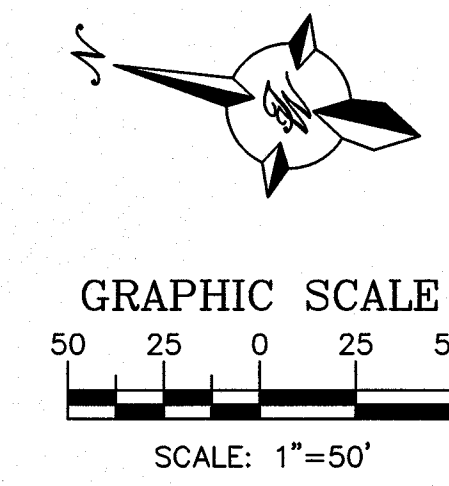
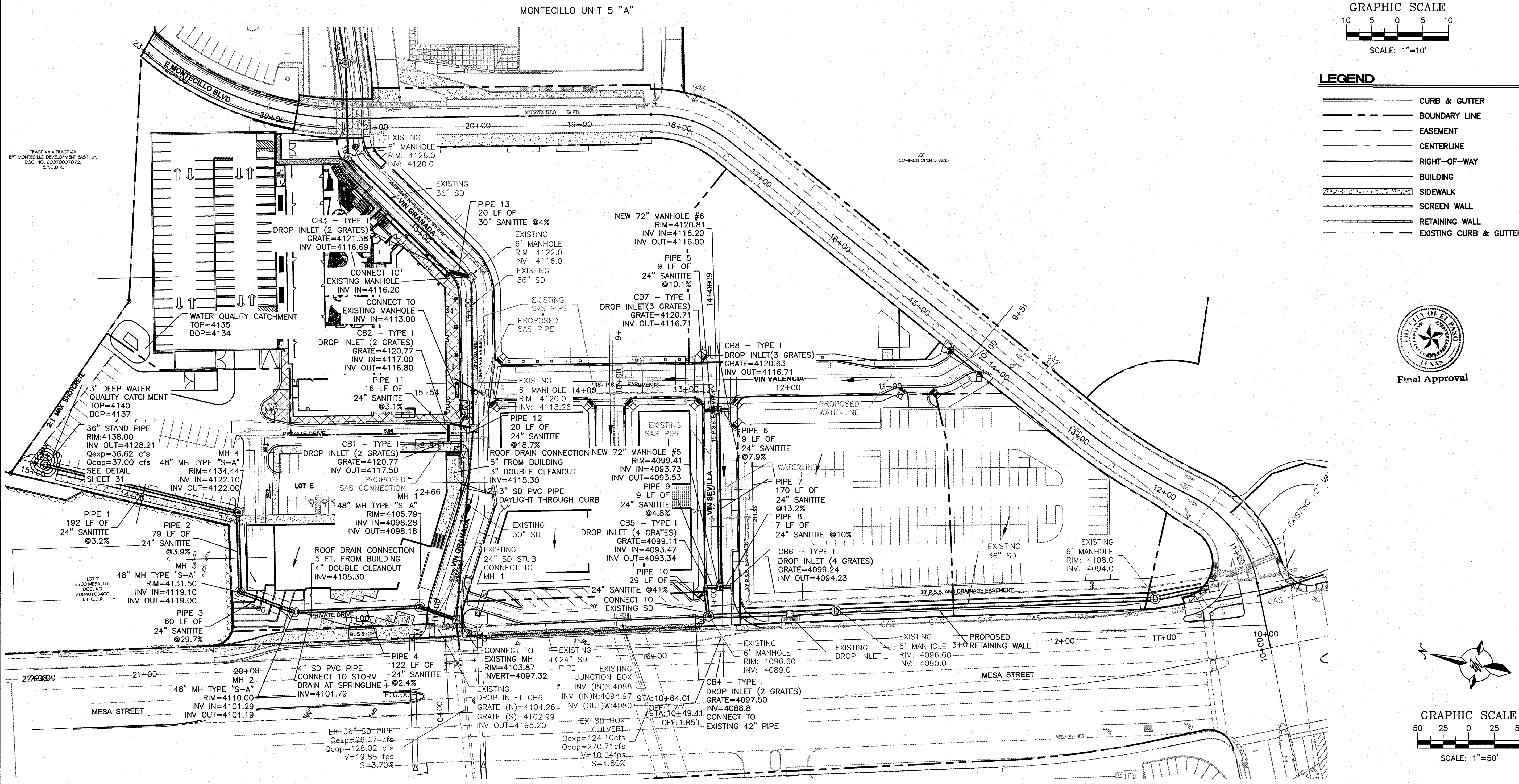


LEGEND

- CURB & GUTTER
- - - BOUNDARY LINE
- - - EASEMENT
- - - CENTERLINE
- - - RIGHT-OF-WAY
- ▬ BUILDING
- ▬ SIDEWALK
- ▬ SCREEN WALL
- ▬ RETAINING WALL
- - - EXISTING CURB & GUTTER



Final Approval



PROJECT BENCHMARK  
 CENTRAL BUSINESS DISTRICT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 6A,  
 A.F. MILLER SURVEY 216, AND PORTION  
 OF TRACT 21, JOHN BARKER SURVEY, 10,  
 CITY OF EL PASO, EL PASO COUNTY, TEXAS  
 CONTAINING: 12.686± ACRES

ENGINEER'S SEAL  
  
 RONALD R. BOHANNAN  
 P.E. #88928

TIERRA WEST, LLC  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 858-3100  
 www.tierrawest.com  
 TEXAS BUSINESS NO.  
 F-11773

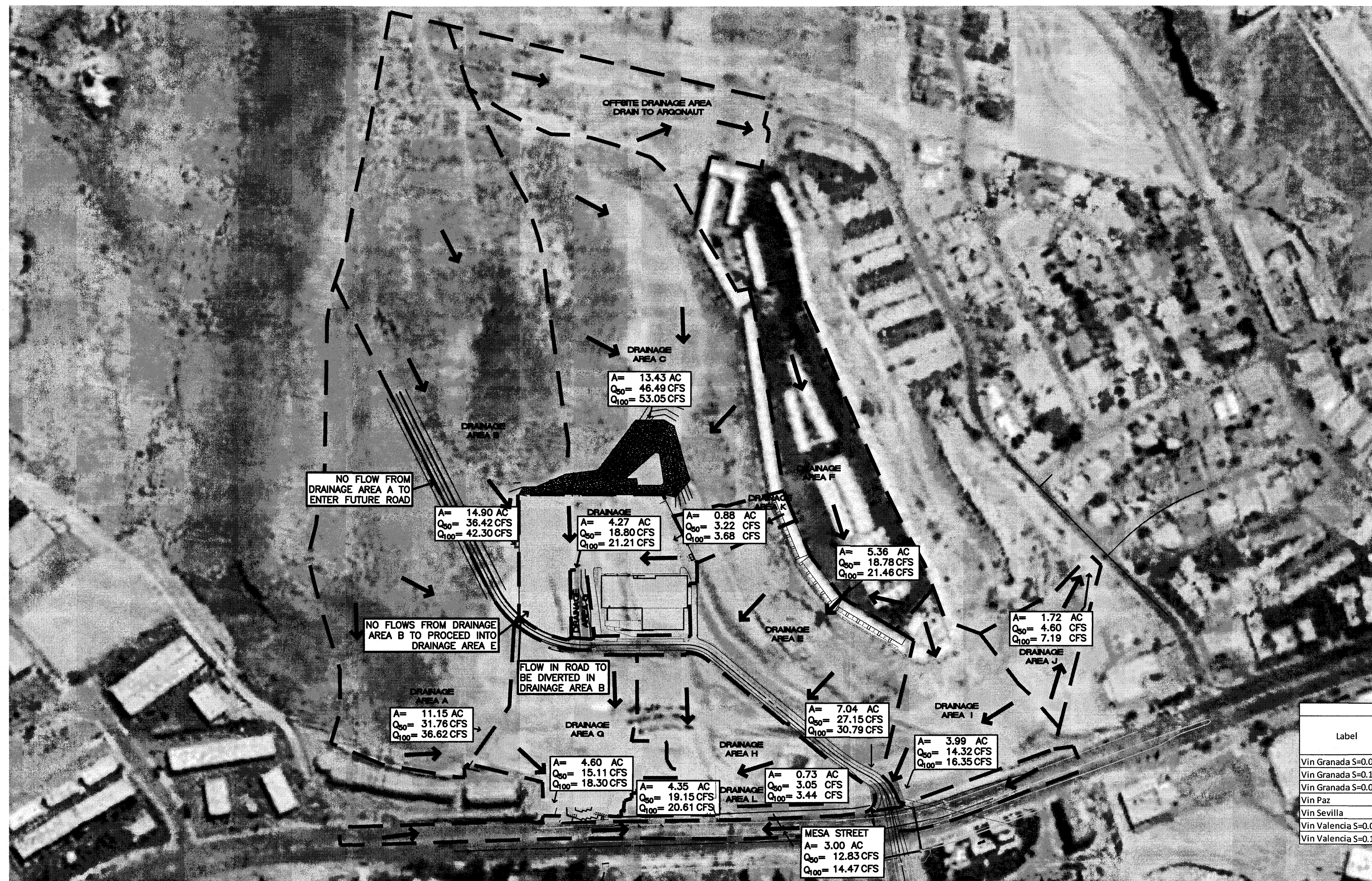
NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN  
 DRAWN BY: BF  
 DRAWING NAME: 2015062-4-OVERALL GRADING PLAN  
 CHECKED BY: JN  
 DATE: 06/06/2016  
 DATE: 06/06/2016  
 JOB NO.: 2015062  
 DATE: 06/06/2016

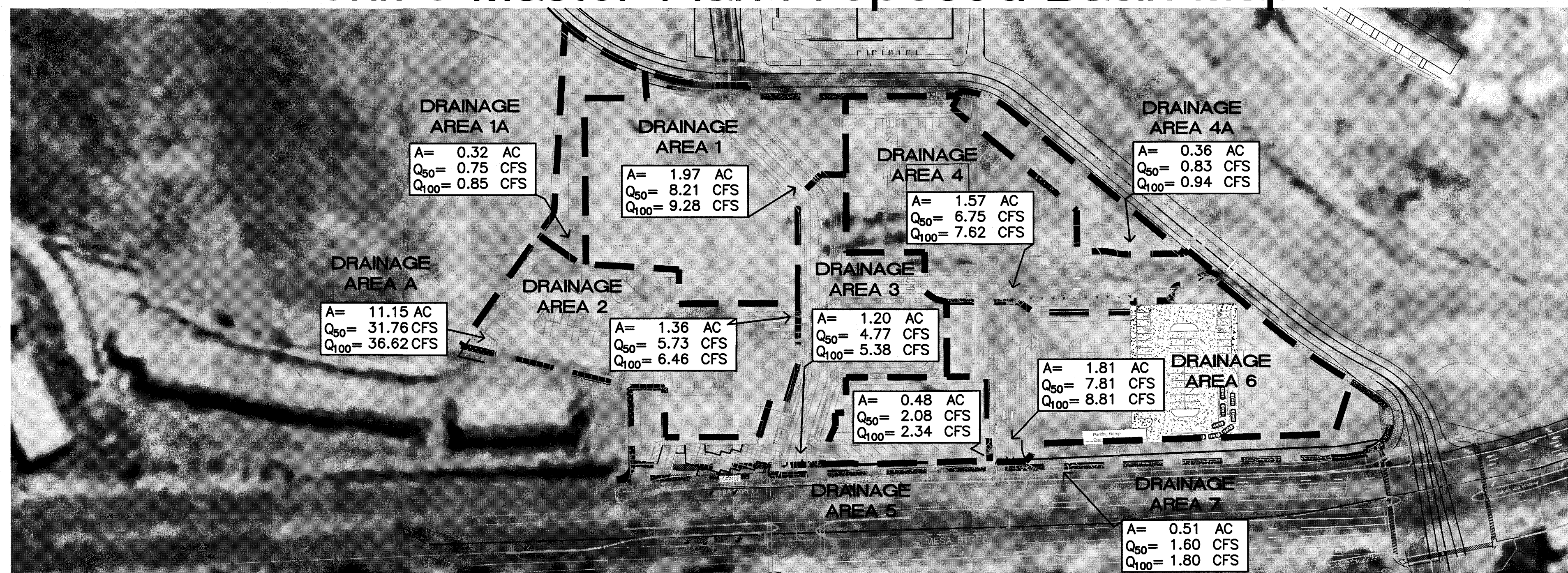
SHEET TITLE  
**OVERALL STORM  
 DRAIN PLAN**

SHT 5 OF 44





Unit 5 Master Plan Proposed Basin Map



Unit 5B Proposed Basin Map

Historic Drainage Data (Unit 5 Report)										
Drainage Area	Area (Sq. Ft.)	Area (Ac)	Tc (Min)	C-value	I <sub>50yr</sub> (in/hr)	Q <sub>50yr</sub> (cfs)	V <sub>50yr</sub> (ac-ft)	I <sub>100yr</sub> (in/hr)	Q <sub>100yr</sub> (cfs)	V <sub>100yr</sub> (ac-ft)
A	485,835	11.15	21.0	0.80	3.53	31.76	2.80	4.07	36.62	2.97
G	200,572	4.60	17.3	0.90	3.83	16.00	1.21	4.38	18.30	1.38
H	189,323	4.35	17.3	0.90	3.83	15.11	1.14	4.38	17.28	1.30
L	31,820	0.73	15.0	0.80	4.04	2.38	0.17	4.61	2.72	0.19
Totals						65.25	5.12		74.91	5.85

Developed Drainage Data (Unit 5 Report)										
Drainage Area	Area (Sq. Ft.)	Area (Ac)	Tc (Min)	C-value	I <sub>50yr</sub> (in/hr)	Q <sub>50yr</sub> (cfs)	V <sub>50yr</sub> (ac-ft)	I <sub>100yr</sub> (in/hr)	Q <sub>100yr</sub> (cfs)	V <sub>100yr</sub> (ac-ft)
A*	485,835	11.15	16.0	0.85	3.95	37.76	2.77	4.51	43.11	3.16
G*	200,572	4.60	10.0	0.95	4.60	20.29	1.28	5.19	22.89	1.46
H*	189,323	4.35	10.0	0.95	4.60	19.15	1.20	5.19	21.61	1.38
L	31,820	0.73	10.0	0.90	4.60	3.05	0.19	5.19	3.44	0.22
Totals						80.25	5.44		91.05	6.21

Developed Drainage Data Unit 5B										
Drainage Area	Area (Sq. Ft.)	Area (Ac)	Tc (Min)	C-value	I <sub>50yr</sub> (in/hr)	Q <sub>50yr</sub> (cfs)	V <sub>50yr</sub> (ac-ft)	I <sub>100yr</sub> (in/hr)	Q <sub>100yr</sub> (cfs)	V <sub>100yr</sub> (ac-ft)
1	85,676	1.97	10.0	0.90	4.60	8.21	0.52	5.19	9.26	0.59
1A	14,098	0.32	10.0	0.50	4.60	0.75	0.05	5.19	0.85	0.05
2	59,121	1.36	10.0	0.91	4.60	5.73	0.36	5.19	6.46	0.41
3	52,092	1.20	10.0	0.88	4.60	4.77	0.30	5.19	5.38	0.34
4	68,174	1.57	10.0	0.93	4.60	6.76	0.42	5.19	7.62	0.49
4A	15,633	0.36	10.0	0.50	4.60	0.83	0.05	5.19	0.94	0.06
5	20,955	0.48	10.0	0.93	4.60	2.08	0.13	5.19	2.34	0.15
6	78,881	1.81	10.0	0.93	4.60	7.81	0.49	5.19	8.81	0.56
7	22,062	0.51	10.0	0.68	4.60	1.60	0.10	5.19	1.80	0.11
Totals						38.53	2.42		43.47	2.77

Total Allowable Discharge for Unit 5B from Unit 5 Report	42.35	2.98
Unit 5B Basins in DA G from Unit 5 Report (1, 2, 3)	21.11	1.34
Unit 5A Basins in DA H from Unit 5 Report (4, 5, 6)	18.77	1.20
Unit 5B Basins in DA L from Unit 5 Report (7)	1.80	0.11
Total Discharge Retained in Unit 5B (1A & 4A)	1.79	0.11
Total Discharge from Unit 5B	41.68	

V<sub>100yr</sub> = ARC/12 City of El Paso Design Standards for Construction Pages 2-1 and 2-4  
 A = 100% of contributing watershed area in acres  
 R = Rainfall in inches Taken from NOAA Atlas 14, Volume 1, Version 5 for 100-year, 24-hr event = 4.0 inches  
 C = Runoff Factor  
 Example for DA "A"  $\frac{11.15 \text{ Ac}(4.0 \text{ in})(0.80)}{12} = 2.97 \text{ ac-ft}$

\*DENOTES DRAINAGE AREAS THAT ARE RESTRICTED TO DISCHARGES LESS THAN THE DEVELOPED FLOWS SHOWN IN THE TABLE ABOVE. FLOWS SHOWN ON THE MAP TO THE LEFT ARE THE MAXIMUM ALLOWABLE DISCHARGES FOR EACH DRAINAGE AREA.

Label	Roughness Coefficient	Channel Slope (ft/ft)	Discharge (ft <sup>3</sup> /s)	Flow Area (ft <sup>2</sup> )	Wetted Perimeter (ft)	Hydraulic Radius (ft)	Top Width (ft)	Normal Depth (ft)	Critical Depth (ft)	Velocity (ft/s)	Velocity Head (ft)	Specific Energy (ft)
Vin Granada S=0.008	0.013	0.008	9.28	3.89	34.39	0.11	34.00	0.19	0.21	2.39	0.09	0.28
Vin Granada S=0.120	0.013	0.12	9.28	1.54	25.83	0.06	25.59	0.12	0.21	6.02	0.56	0.68
Vin Granada S=0.0223	0.013	0.0223	9.28	2.85	34.33	0.08	34.00	0.16	0.21	3.25	0.16	0.33
Vin Paz	0.013	0.0153	5.38	1.84	19.58	0.09	19.19	0.19	0.24	2.92	0.13	0.32
Vin Sevilla	0.013	0.1268	8.81	1.45	25.05	0.06	24.81	0.12	0.21	6.08	0.57	0.69
Vin Valencia S=0.008	0.013	0.008	7.62	3.46	34.36	0.10	34.00	0.18	0.20	2.20	0.08	0.26
Vin Valencia S=0.1119	0.013	0.1119	7.62	1.36	24.28	0.06	24.05	0.11	0.20	5.60	0.49	0.60

Westside Region Rainfall Intensity

50yr Event		100yr Event	
T <sub>c</sub> (min)	I (in/hr)	T <sub>c</sub> (min)	I (in/hr)
10	4.60	10	5.19
11	4.48	11	5.06
12	4.36	12	4.94
13	4.25	13	4.82
14	4.14	14	4.71
15	4.04	15	4.61
16	3.95	16	4.51
17	3.86	17	4.41
18	3.77	18	4.32
19	3.69	19	4.23
20	3.61	20	4.15
21	3.53	21	4.07
22	3.46	22	3.99
23	3.39	23	3.91
24	3.33	24	3.84
25	3.26	25	3.77
26	3.20	26	3.71
27	3.14	27	3.64
28	3.09	28	3.58
29	3.03	29	3.52
30	2.98	30	3.46

$$I_{50} = \frac{105.87}{(T_c + 22.27)^{0.9025}}$$

$$I_{100} = \frac{140.07}{(T_c + 26.09)^{0.9189}}$$

t<sub>c</sub> minimum = 10 minutes



- NOTES:
- ALL FUTURE DEVELOPMENT WITHIN A.F. MILLER SURVEY 216 TRACT 6A MUST SUBMIT A SITE SPECIFIC GRADING AND DRAINAGE PLAN SHOWING THAT THE MAXIMUM DISCHARGE DOES NOT EXCEED WHAT IS SHOWN ON THIS PLAN.
  - ANY DEVIATION FROM THIS OVERALL DRAINAGE MASTER PLAN SHALL REQUIRE CALCULATIONS TO SHOW DRAINAGE INFRASTRUCTURE IS NOT ADVERSELY IMPACTED OR THE REDESIGN/CONSTRUCTION OF AFFECTED INFRASTRUCTURE.



Final Approval

BENCHMARK: CITY MONUMENT AT POINT OF CURVE CENTERING MONTECILLO BLVD. ADDRESS: MONTECILLO UNIT ONE MONTECILLO UNIT ONE (STATION 0+82.81) ELEVATION: 4107.13 .....(CITY DATUM)

PROJECT NAME: MONTECILLO UNIT 5 "A"

BEING A REPLAT OF A PORTION OF LOTS 3 AND 6, BLOCK 2, MONTECILLO UNIT THREE AND PORTION OF TRACT 1, REPLAT "B", AND PORTION OF TRACT 1, JOHN BARKER SURVEY 10, EL PASO COUNTY, TEXAS CITY OF EL PASO, TEXAS CONTAINING: 10.6582 ACRES

ENGINEER'S SEAL: RONALD R. BOHANNAN P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 858-3100  
www.tierrewest.com  
TEXAS BUSINESS NO. F-11773

NO.	DATE	BY	REMARKS
			DESIGN

DESIGNED BY: JN DATE: 2/29/2016  
 DRAWN BY: DY DATE: 2/29/2016  
 CHECKED BY: JN DATE: 3/04/2016  
 JOB NO.: 2015061

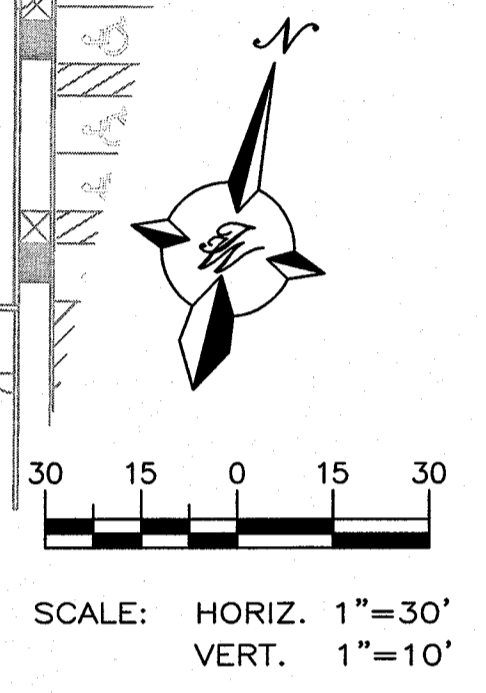
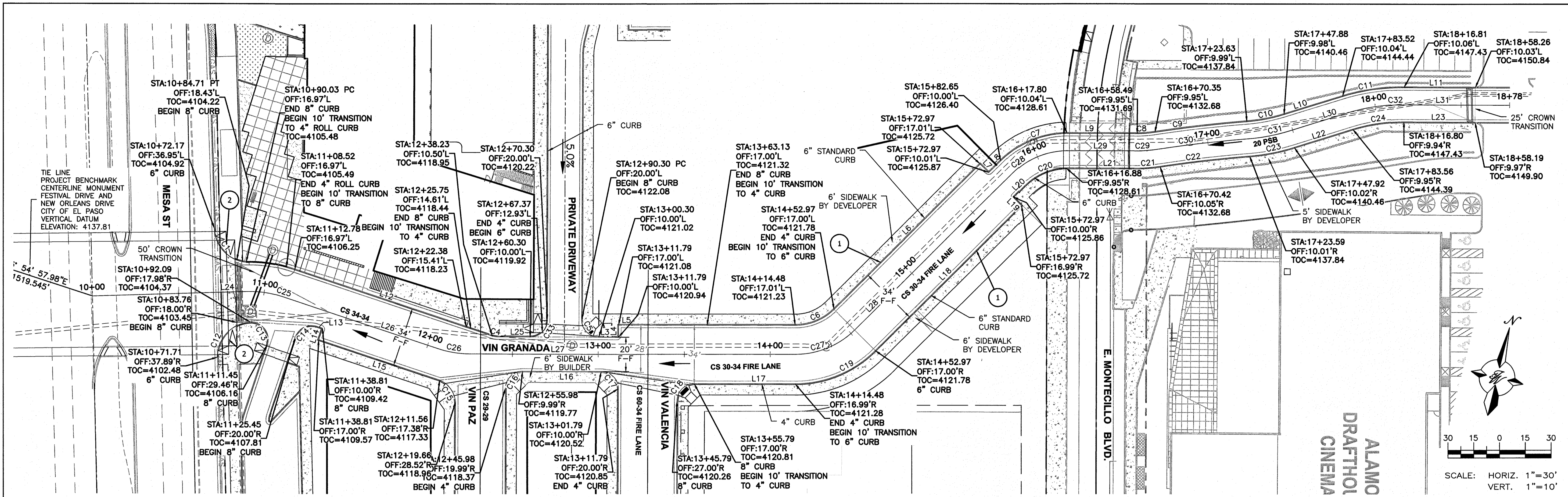
SHEET TITLE: OVERALL DRAINAGE PLAN

SHT 6 OF 44







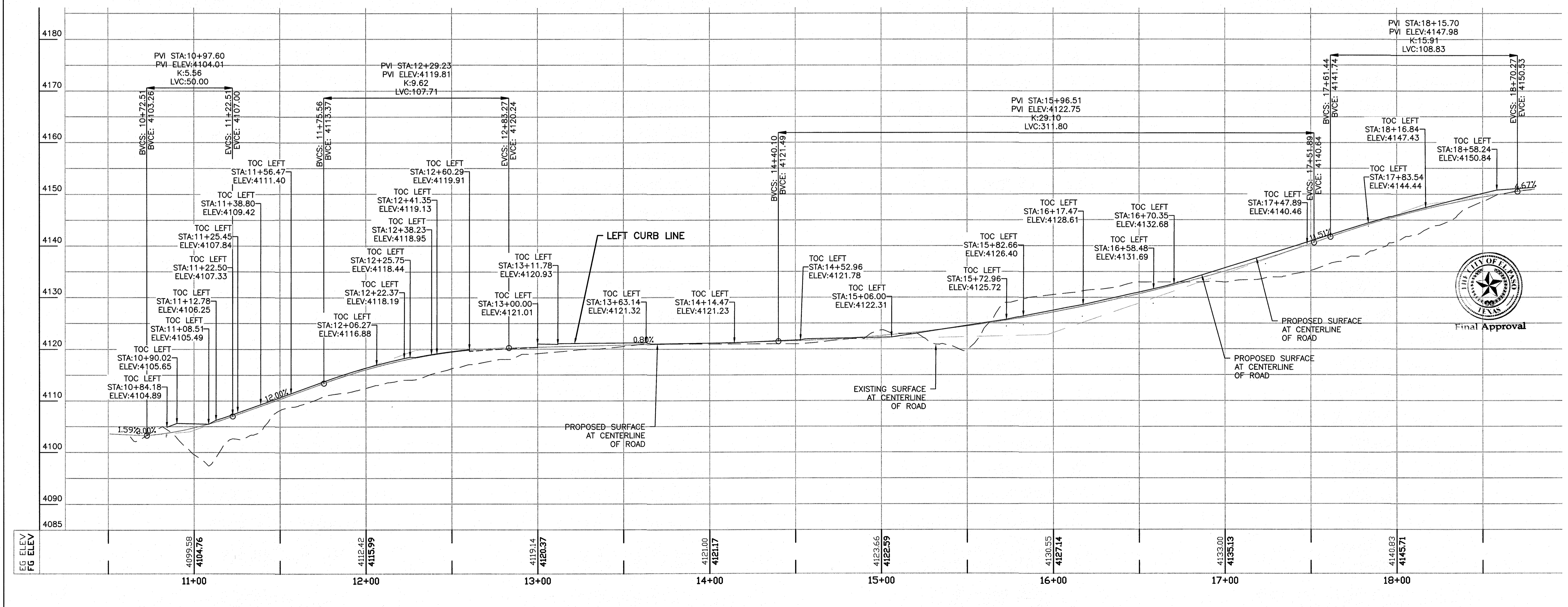


PROJECT BENCHMARK  
CENTRAL LINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACT 21, JOHN BARKER SURVEY 10,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING 12.868± ACRES

ENGINEER'S SEAL  
RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
www.tierwestllc.com  
TEXAS BUSINESS NO.  
F-11773



NO.	DATE	REMARKS
		DESIGN
		REVISIONS

DESIGNED BY: JN  
DRAWN BY: BF  
CHECKED BY: JN

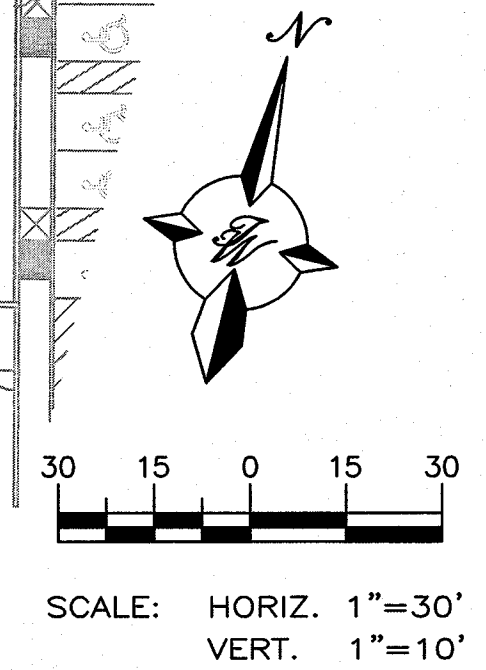
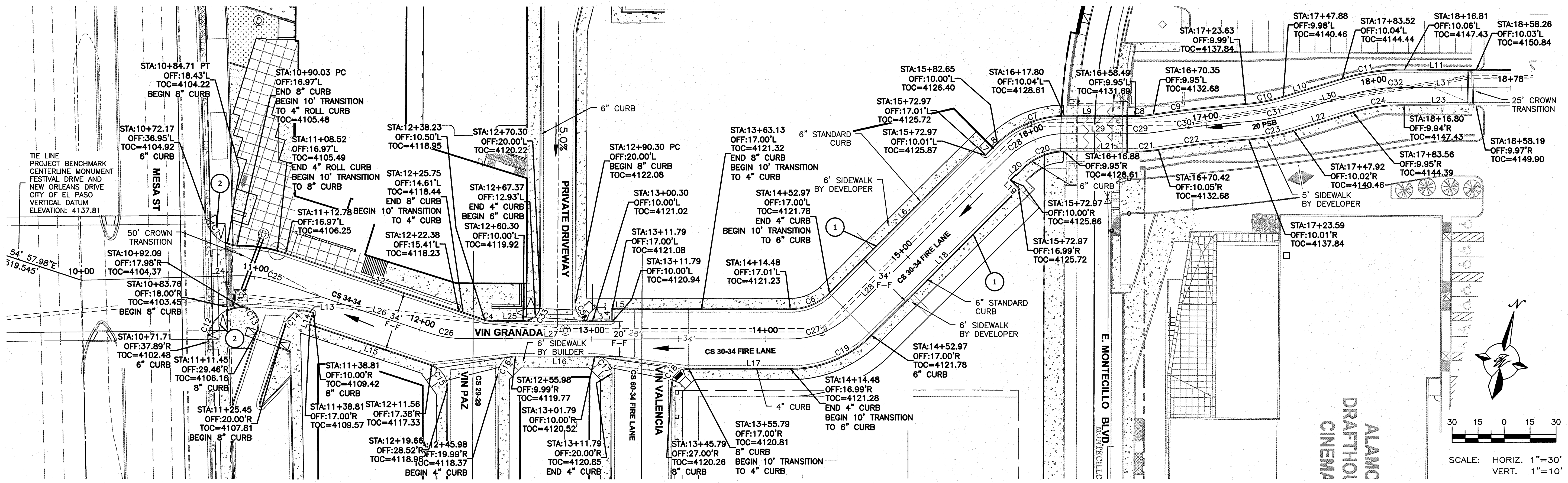
DATE: 06/06/2016  
DATE: 06/06/2016  
DATE: 06/06/2016

JOB NO.: 2015062  
DRAWING NAME: 2015062\_13\_VIN GRANADA.LP  
DATE: 06/06/2016

SHEET TITLE  
**VIN GRANADA  
LEFT CURB  
PLAN & PROFILE**

SHT 8 OF 44

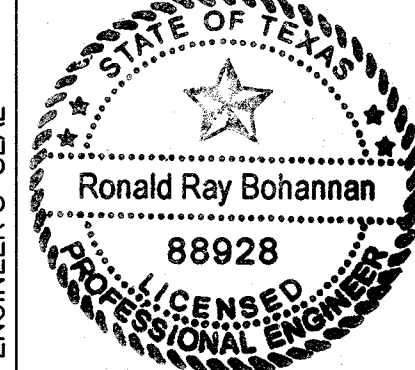




ALAMCO  
DRAFTING  
CINEMA

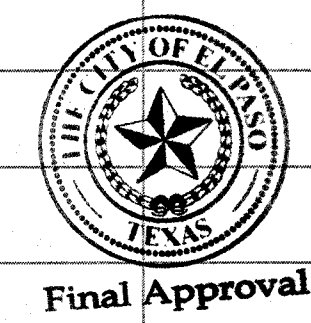
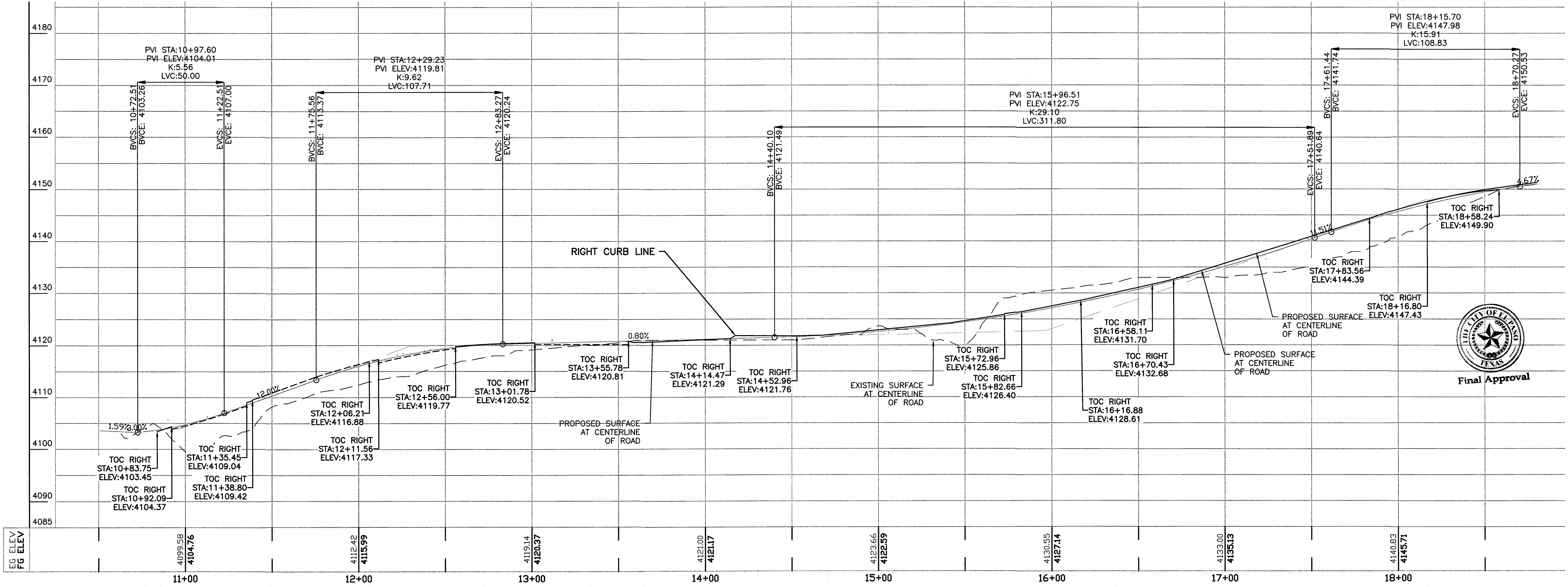
PROJECT BENCHMARK  
CENTRAL MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACT 21, JOHN BARKER SURVEY 10,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING 12.6866 ACRES



RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 856-3100  
www.tierrawestllc.com  
TEXAS BUSINESS NO.  
F-11773



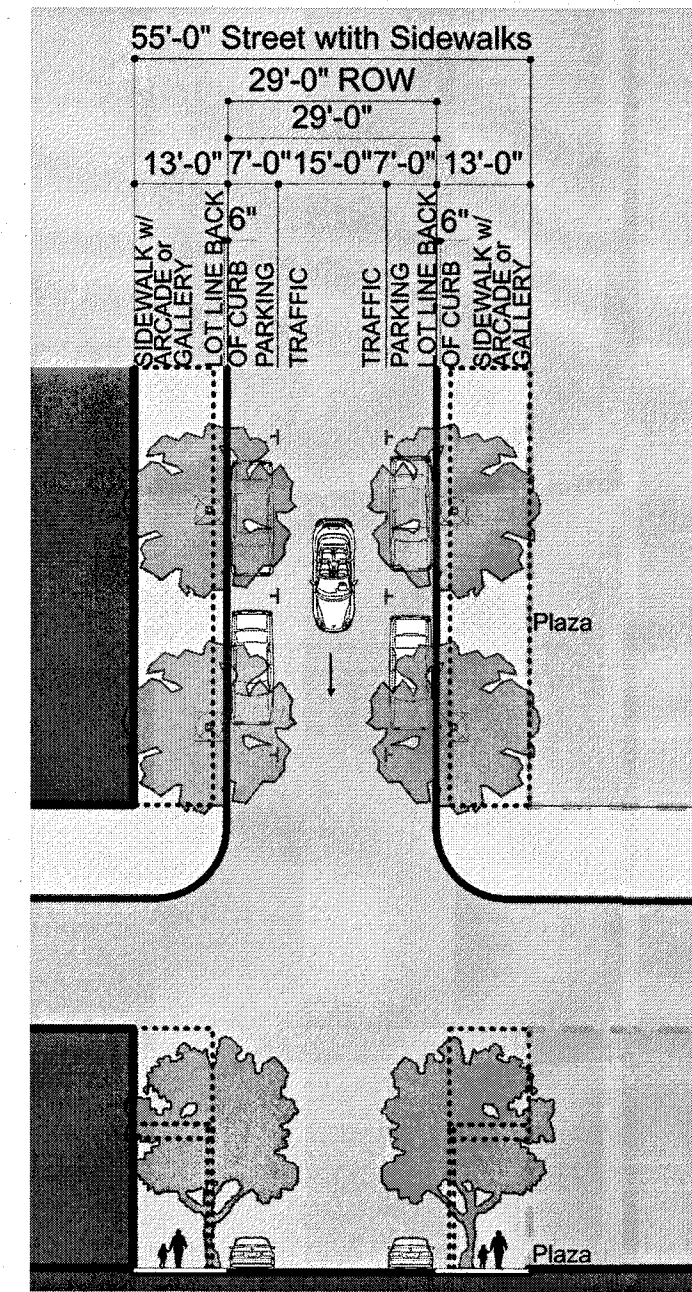
NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

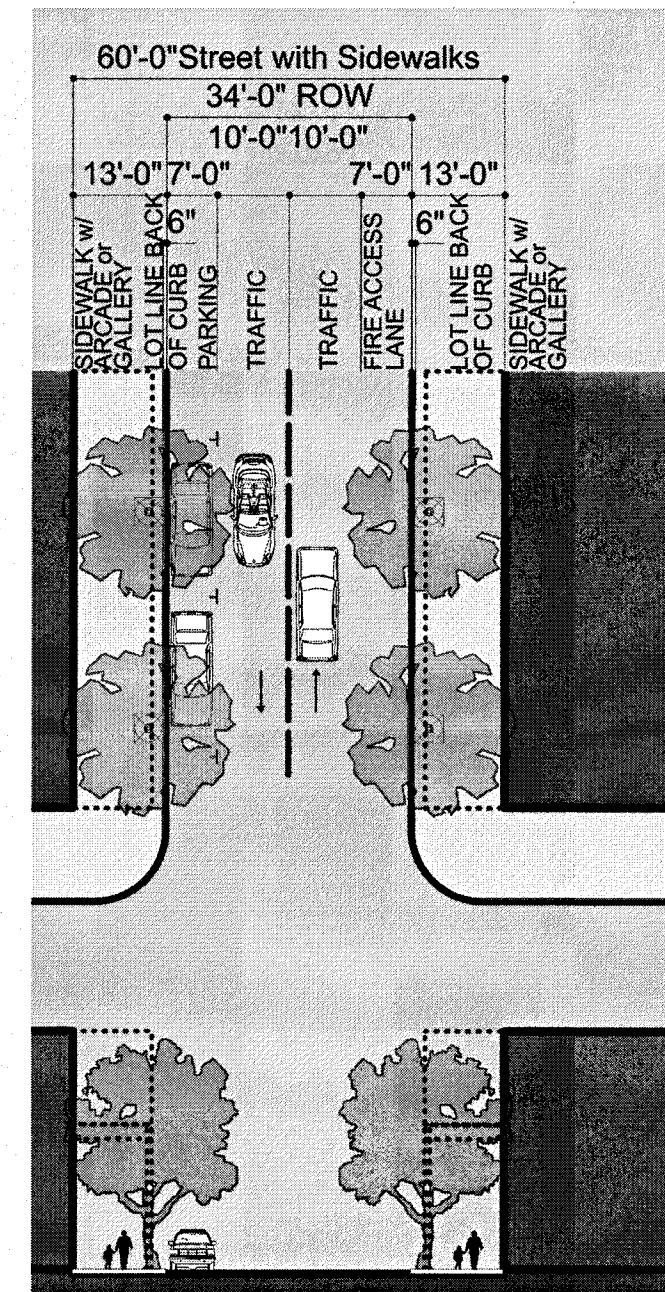
DESIGNED BY: JN	DATE: 06/06/2016
DRAWN BY: BF	DATE: 06/06/2016
CHECKED BY: JN	JOB NO.: 2015062
	DATE: 06/06/2016

SHEET TITLE  
**VIN GRANADA  
RIGHT CURVA  
PLAN & PROFILE**  
SHT 9 OF 44

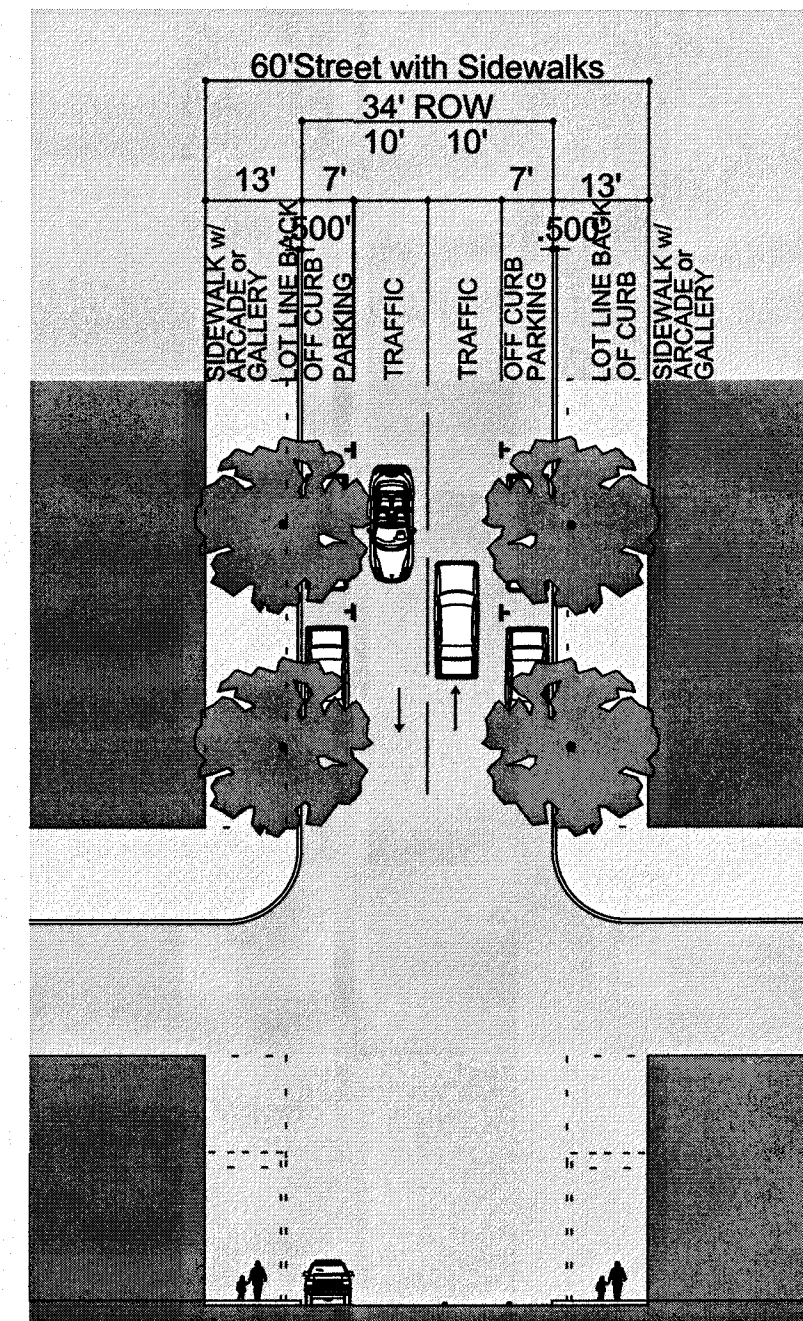




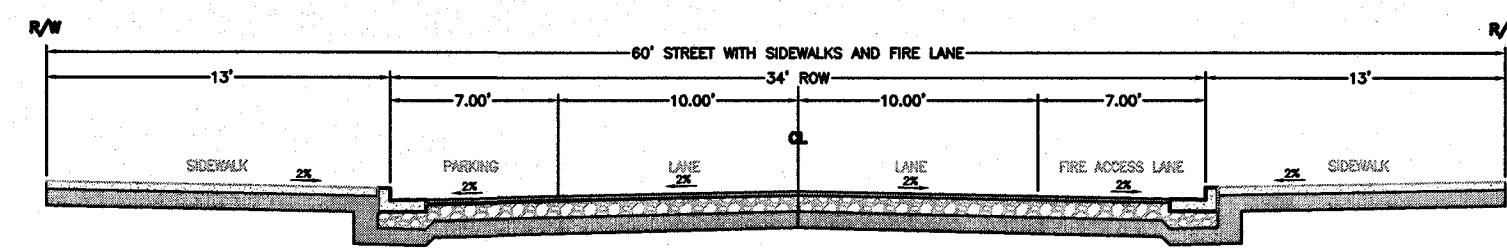
CS 29-29	
Thoroughfare Type	Commercial Street
Transect Zone Assignment	T5, T50, T6
Right-of-Way Width	29'
Street Width	29'
Design Speed	slow movement
Design Speed	20 mph
Pedestrian Crossing Time	8.2 seconds
Traffic Lanes	1 One way lane
Parking Lanes	Both sides @ 7' marked
Radius	15 feet
Public Frontage Type	Arcade, Gallery, Shopfront
Walkway Type	13' sidewalk
Planter Type	4' x 4' Tree well in sidewalk
Planter Type	Vertical
Landscape Type	Trees @ 30' o.c. average
Transportation Provision	SH, TR



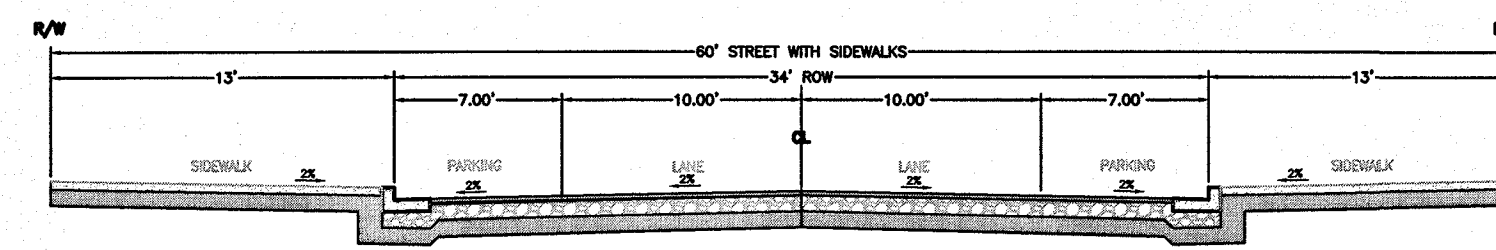
CS 34-34 Fire Lane	
Thoroughfare Type	Commercial Street
Transect Zone Assignment	T40, T5, T50, T6
Right-of-Way Width	34'
Street Width	34'
Design Speed	slow movement
Design Speed	20 mph
Pedestrian Crossing Time	9.7 seconds
Traffic Lanes	2 lanes One each way
Parking Lanes	One sides @ 7' marked
Radius	10 feet
Public Frontage Type	Arcade, Gallery, Shopfront
Walkway Type	13' sidewalk
Planter Type	4' x 4' Tree well in sidewalk
Planter Type	Vertical
Landscape Type	Trees @ 30' o.c. average
Transportation Provision	BR, SH, TR



CS 34-34 27	
Thoroughfare Type	Commercial Street
Transect Zone Assignment	T40, T5, T50, T6
Right-of-Way Width	34'
Pavement Width	34'
Movement	slow movement
Design Speed	20 mph
Pedestrian Crossing Time	9.7 seconds
Traffic Lanes	2 lanes One each way
Parking Lanes	Two sides @ 7' marked
Curb Radius	10 feet
Public Frontage Type	Arcade, Gallery, Shopfront
Walkway Type	13' sidewalk
Planter Type	4' x 4' Tree well in sidewalk
Planter Type	Vertical
Landscape Type	Trees @ 30' o.c. average
Transportation Provision	BR, SH, TR



VIN GRANADA STREET SECTION



VIN GRANADA STREET SECTION

BASIS OF STATIONING IS CENTERLINE OF ROAD  
\* STATIONING ALIGNMENT - LINE & CURVE DATA

**LEGEND**

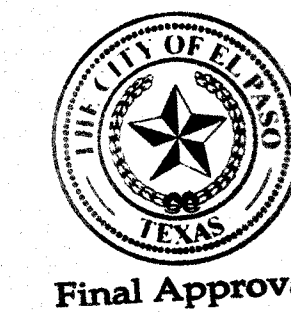
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- STREET LIGHTS
- LANE
- STRIPING
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING SIDEWALK
- EXISTING LANE
- EXISTING STRIPING

**SITE LEGEND**

- ① CURB & GUTTER (SEE DETAIL SHEET 29)
- ② UNI-DIRECTIONAL HC RAMP (SEE DETAIL SHEET 30)
- ③ UNI-DIRECTIONAL HC RAMP (SEE DETAIL SHEET 30)

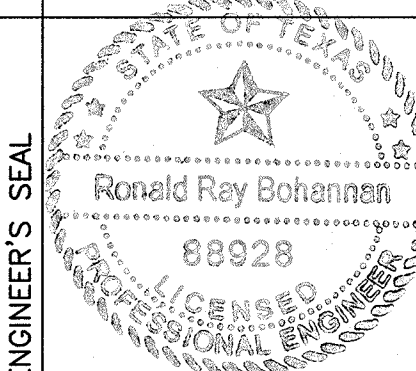
Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	30.95	20.02	88.58	S60° 08' 12"E	27.96
C5	15.71	10.00	90.00	S58° 47' 41"E	14.14
C6	25.13	32.00	45.00	N53° 42' 11"E	24.49
C7	42.32	55.08	44.03	N53° 15' 10"E	41.29
C8	10.75	70.00	8.80	N71° 48' 18"E	10.74
C9	53.92	770.00	4.01	N69° 24' 46"E	53.91
C10	22.08	100.00	12.65	N65° 05' 32"E	22.04
C11	36.33	119.00	17.49	N67° 30' 45"E	36.19
C12	31.85	20.00	91.25	S30° 18' 09"W	28.59
C13	18.42	10.00	105.54	N48° 20' 37"W	15.92
C14	15.71	10.00	90.00	S49° 25' 47"W	14.14
C15	16.57	15.28	62.11	N49° 39' 27"W	15.77
C16	15.71	10.00	90.00	S31° 12' 58"W	14.14
C17	15.71	10.00	89.99	N58° 47' 27"W	14.14
C18	15.71	10.00	90.00	N31° 12' 11"E	14.14
C19	51.84	66.00	45.00	N53° 42' 11"E	50.51
C20	26.81	35.00	43.57	N52° 59' 25"E	25.98
C21	13.82	90.00	8.80	N71° 48' 18"E	13.80
C22	52.52	750.00	4.01	N69° 24' 46"E	52.51
C23	26.50	120.00	12.65	N65° 05' 32"E	26.45
C24	30.23	99.00	17.49	N67° 30' 45"E	30.11
* C25	21.08	60.00	20.13	N84° 21' 48"E	20.98
* C26	19.09	60.00	18.23	N85° 19' 01"E	19.01
* C27	38.48	49.00	45.00	N53° 42' 13"E	37.50
* C28	35.13	45.00	44.73	N53° 40' 40"E	34.24
* C29	11.76	80.00	8.43	N71° 49' 43"E	11.75
* C30	53.71	766.61	4.01	N69° 26' 51"E	53.70
* C31	23.85	109.51	12.48	N65° 07' 59"E	23.80
C32	32.99	108.79	17.38	N67° 32' 46"E	32.86

Line Table		
Line #	Length	Direction
L3	11.48	N76° 12' 11.25"E
L4	7.00	N13° 47' 48.71"W
L5	102.69	N76° 12' 11.31"E
L6	120.00	N31° 12' 11.25"E
L7	7.00	S58° 47' 48.75"E
L8	9.70	N31° 15' 53.04"E
L9	34.01	N76° 10' 21.39"E
L10	35.64	N58° 45' 56.17"E
L11	41.46	N76° 15' 32.91"E
L13	3.36	N85° 34' 12.83"W
L14	7.00	N4° 25' 47.17"E
L15	74.28	N85° 30' 21.40"W
L16	45.81	S76° 12' 52.55"W
L17	58.69	N76° 12' 11.25"E
L18	120.00	N31° 12' 11.25"E
L19	6.99	N58° 47' 48.75"E
L20	9.69	N31° 12' 24.72"E
L21	41.00	N76° 10' 20.18"E
L22	35.64	N58° 45' 56.17"E
L23	41.39	N76° 15' 32.91"E
* L24	90.03	N74° 17' 47.50"E
* L26	95.17	S85° 34' 10.76"E
* L27	189.11	N76° 12' 13.31"E
* L28	129.70	N31° 12' 13.31"E
* L29	40.57	N76° 02' 30.27"E
* L30	35.98	N58° 49' 50.91"E
* L31	61.59	N76° 12' 15.07"E



**BENCHMARK**  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACT 21 JOHN BARKER SURVEY 10,  
CITY OF EL PASO, TEXAS  
CONTAINING: 12.668± ACRES



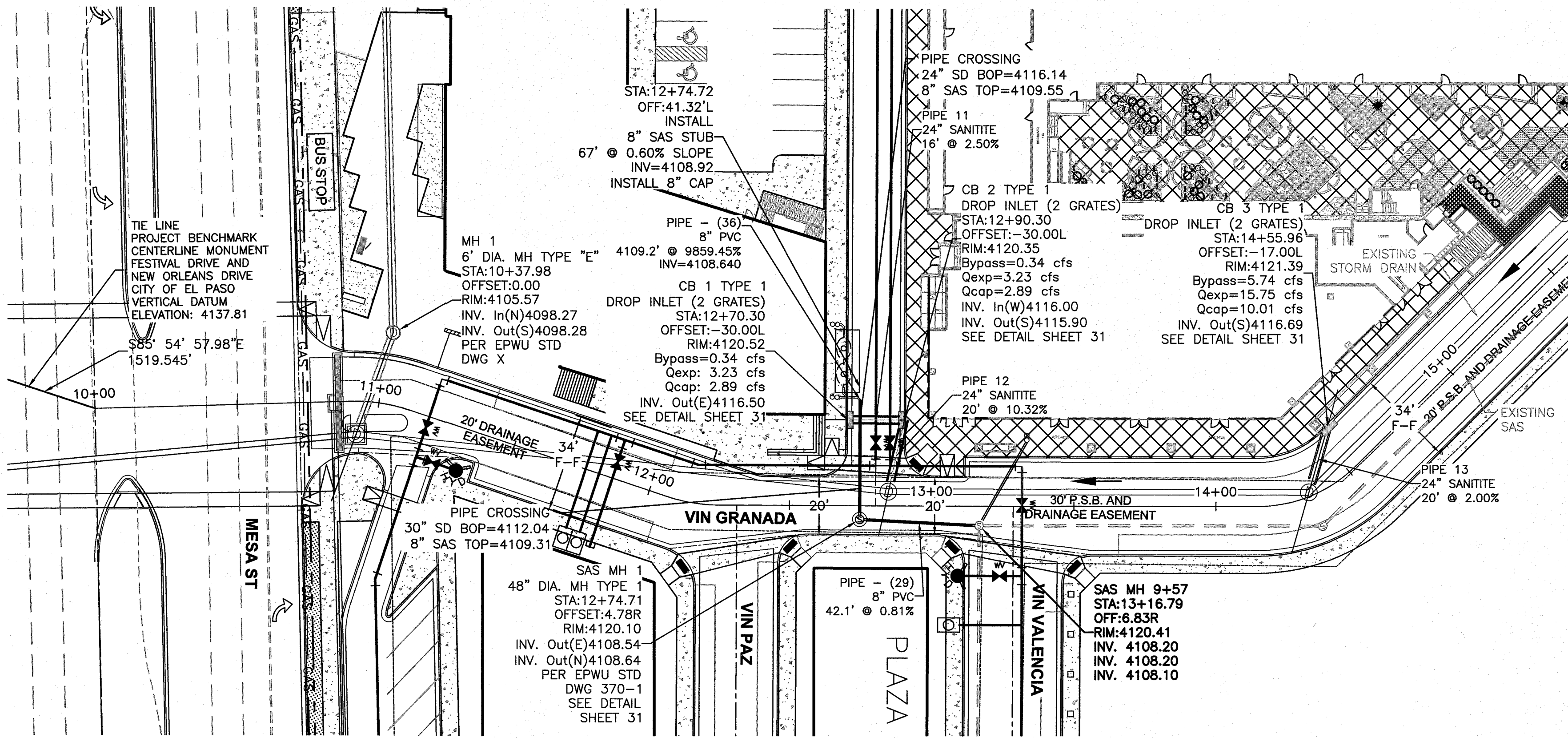
RONALD R. BOHANNAN  
P.E. #88928

**TERRA WEST, LLC**  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 888-5100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	
		DESIGNED BY: JN	
		DRAWN BY: BF	
		DRAWING NAME: 2015062_13_VIN GRANADA_PY	
		CHECKED BY: JN	
		DATE: 06/06/2016	
		JOB NO.: 2015062	
		DATE: 06/06/2016	

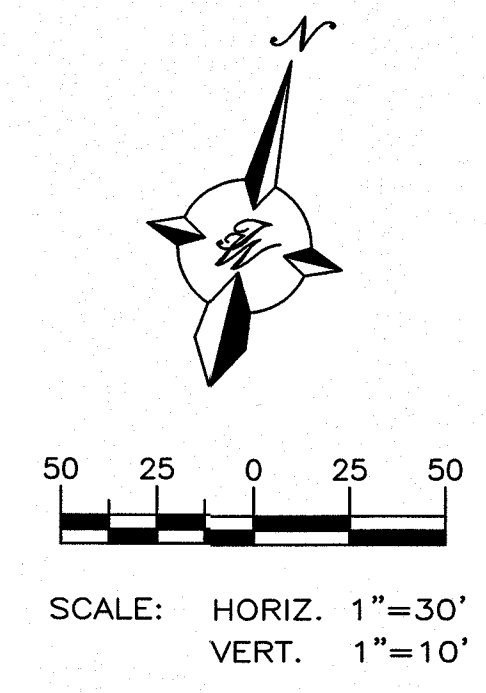
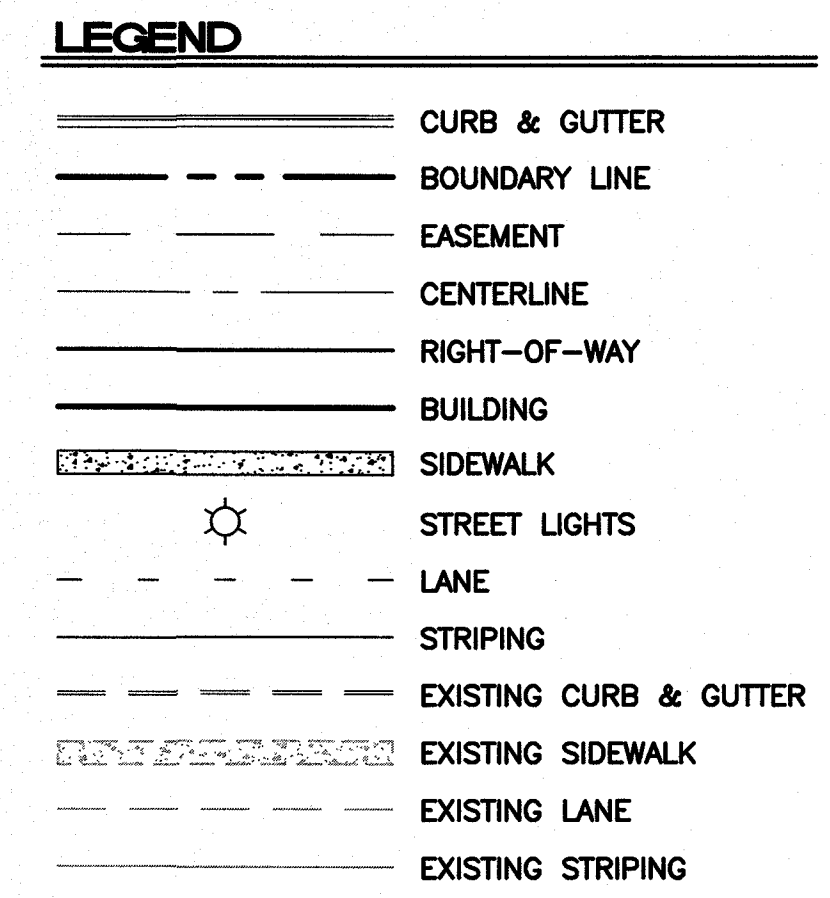
SHEET TITLE  
**VIN GRANADA  
DETAILS**  
SHT 10 OF 44



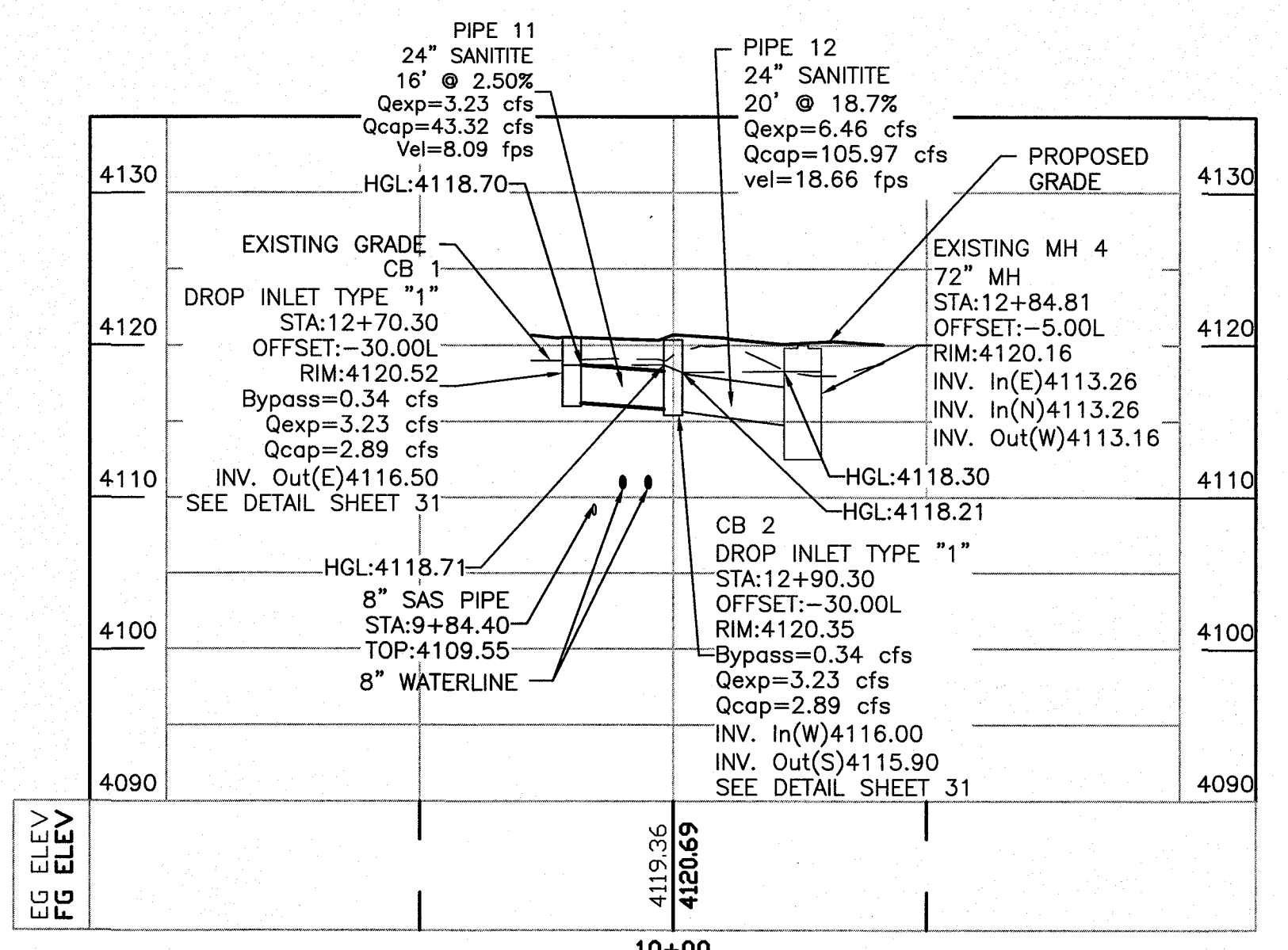


SD Pipe Table		
NAME	LENGTH	BEARING
Pipe 11	16.00'	N76° 13' 34.86"E
Pipe 12	20.00'	S1° 23' 51.60"E
Pipe 13	20.00'	S1° 41' 46.47"W

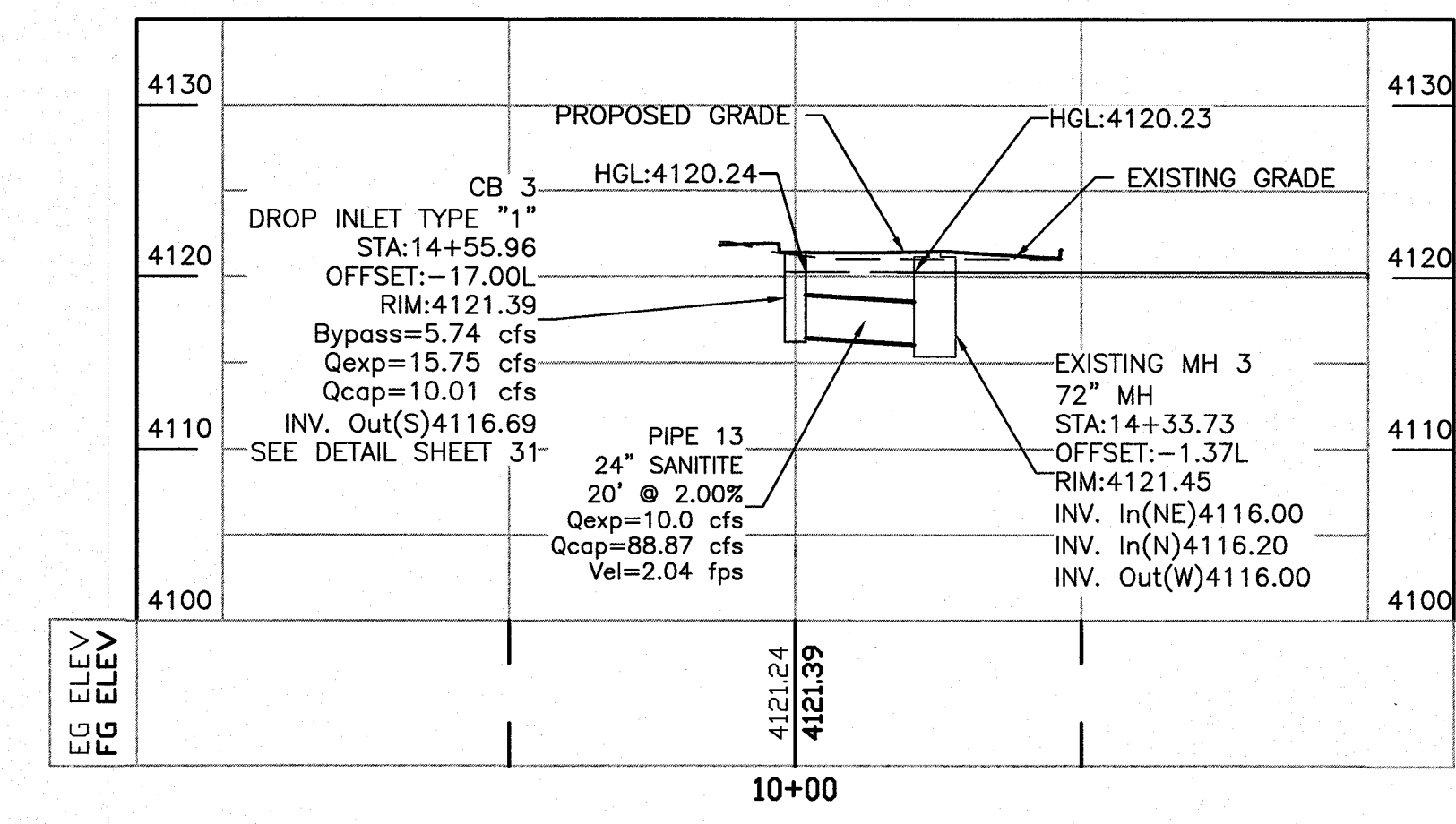
SAS Pipe Table		
NAME	LENGTH	BEARING
Pipe - (29)	42.14'	S78° 59' 33.22"W
Pipe - (36)	46.10'	N13° 46' 57.08"W



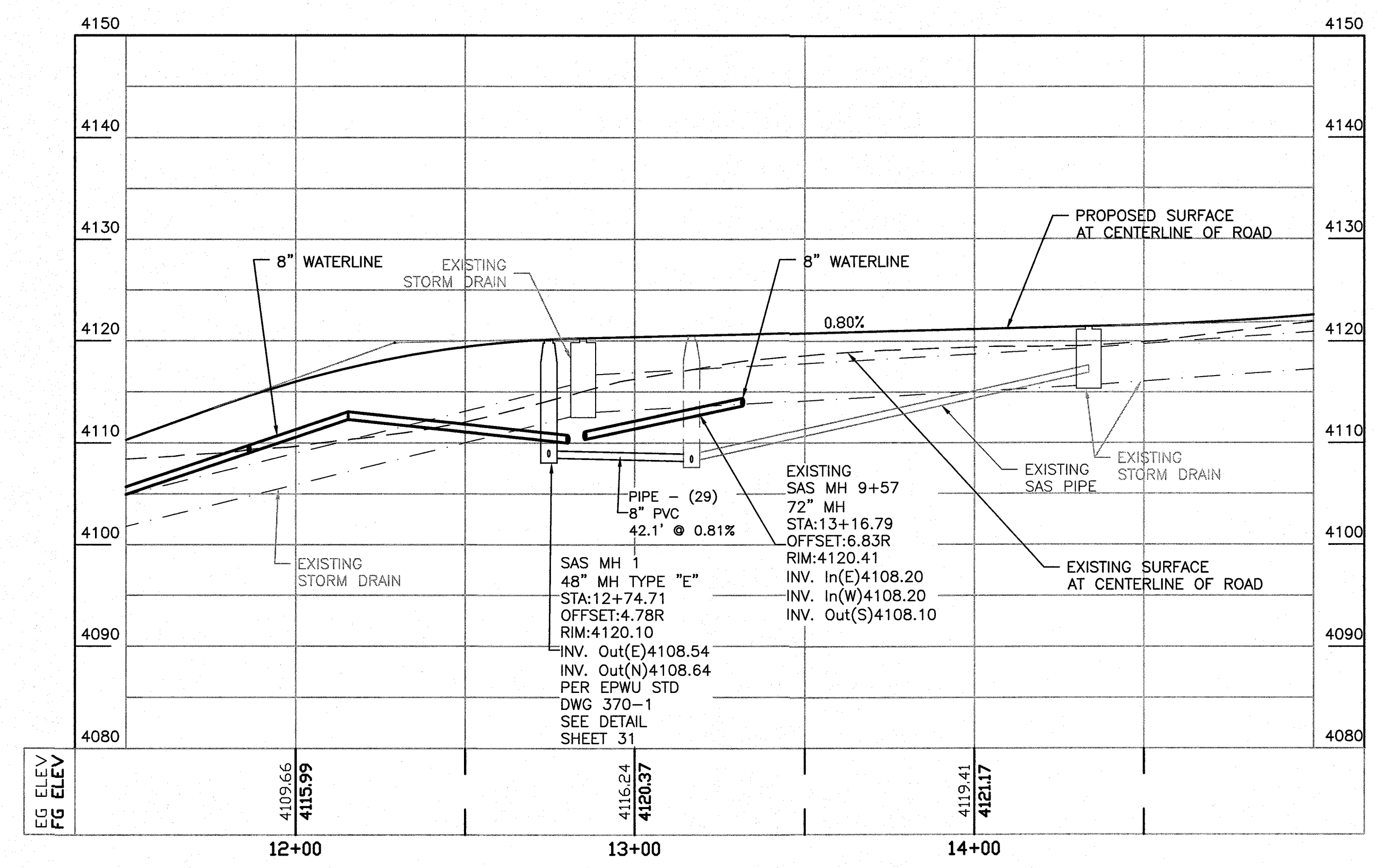
NOTE: SEE SHEET 8 FOR ALIGNMENT CURVE AND LINE TABLE.



CB 1 & 2 Profile



CB 3 Profile



Vin Granada Profile

**BENCHMARK**  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 8A,  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACTS 10, 11, 12, 13, 14, 15, 16,  
CITY OF EL PASO COUNTY, TEXAS  
CONTAINING 12.686± ACRES

**ENGINEER'S SEAL**  
  
RONALD R. BOHANNAN  
P.E. #88928

**TIERRA WEST LLC**  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
www.tierrawest.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

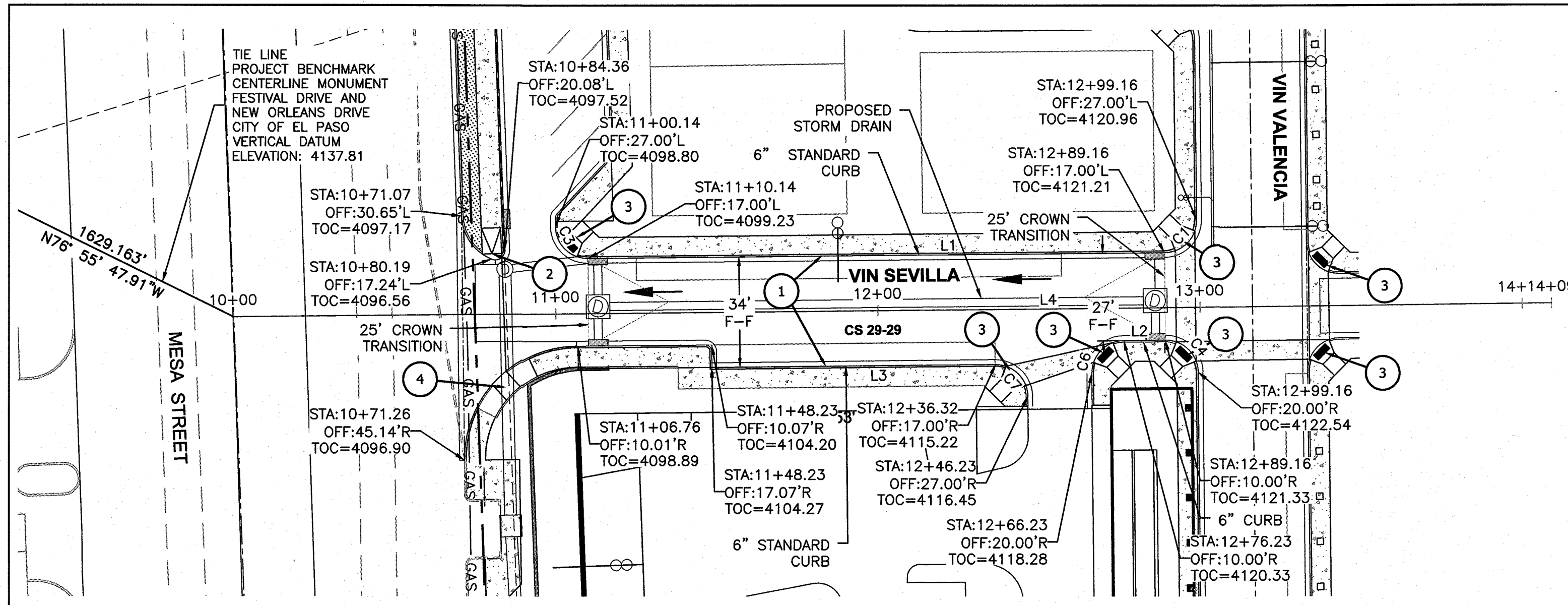
DESIGNED BY: JN DATE: 06/06/2016  
DRAWN BY: BF DATE: 06/06/2016  
DRAWING NAME: 2015062\_13\_VIN GRANADA\_SD JOB NO.: 2015062  
CHECKED BY: JN DATE: 06/06/2016

SHEET TITLE  
**VIN GRANADA SD  
SD & SAS  
MODIFICATIONS**  
SHT 11 OF 44



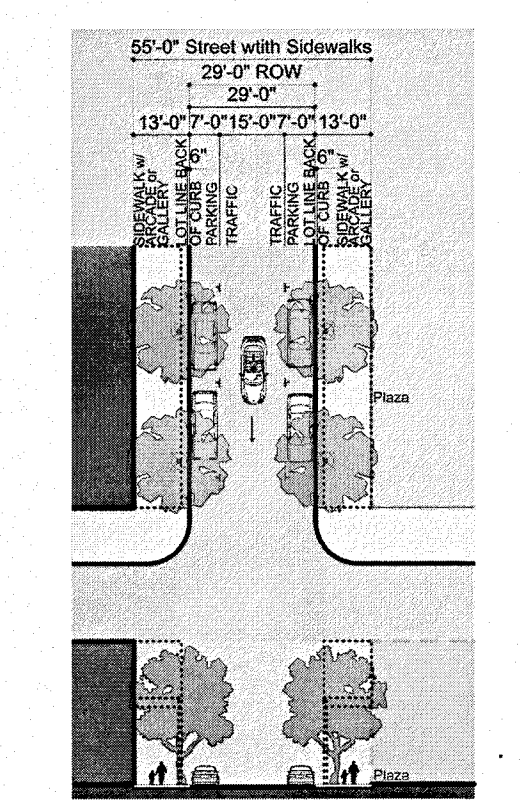
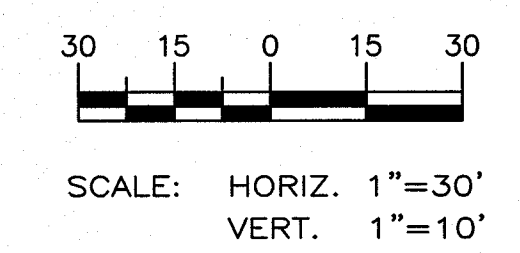
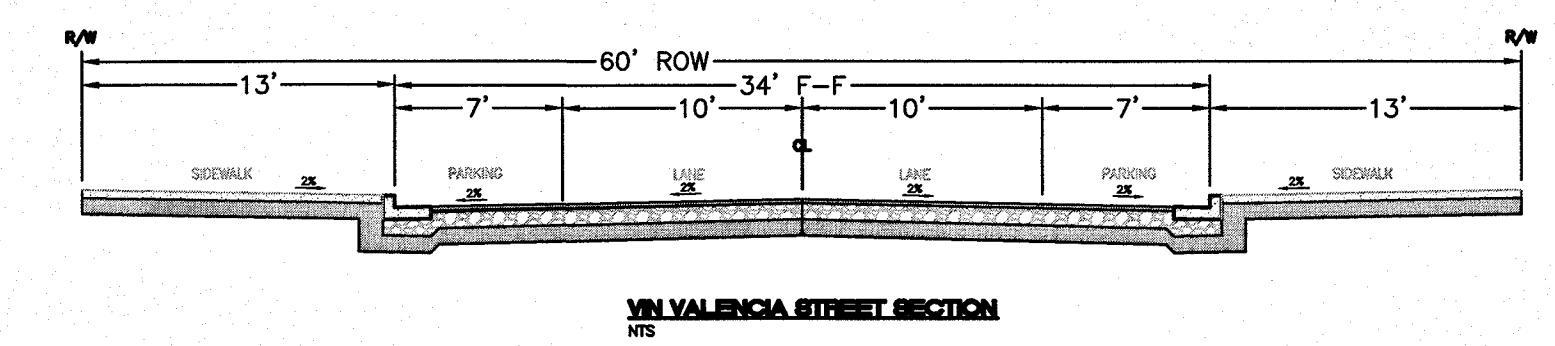
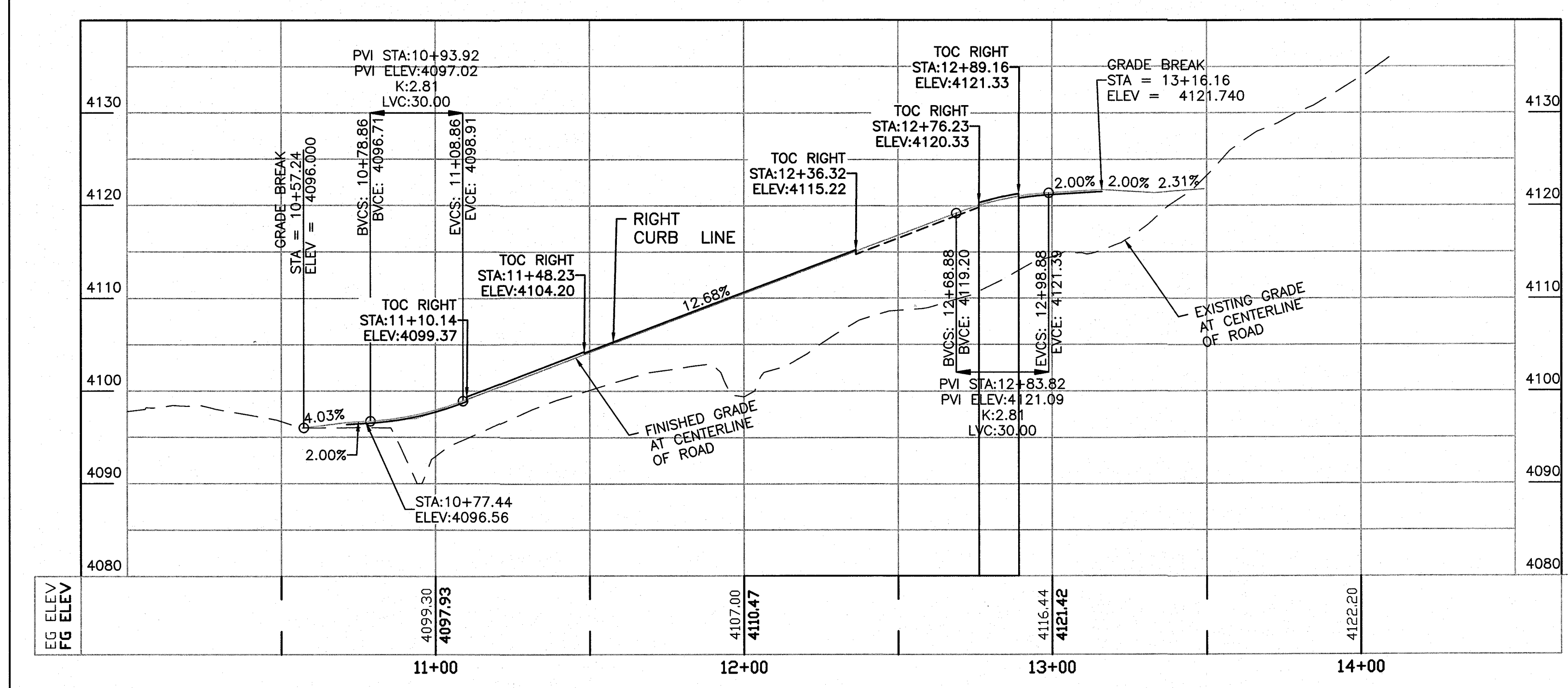
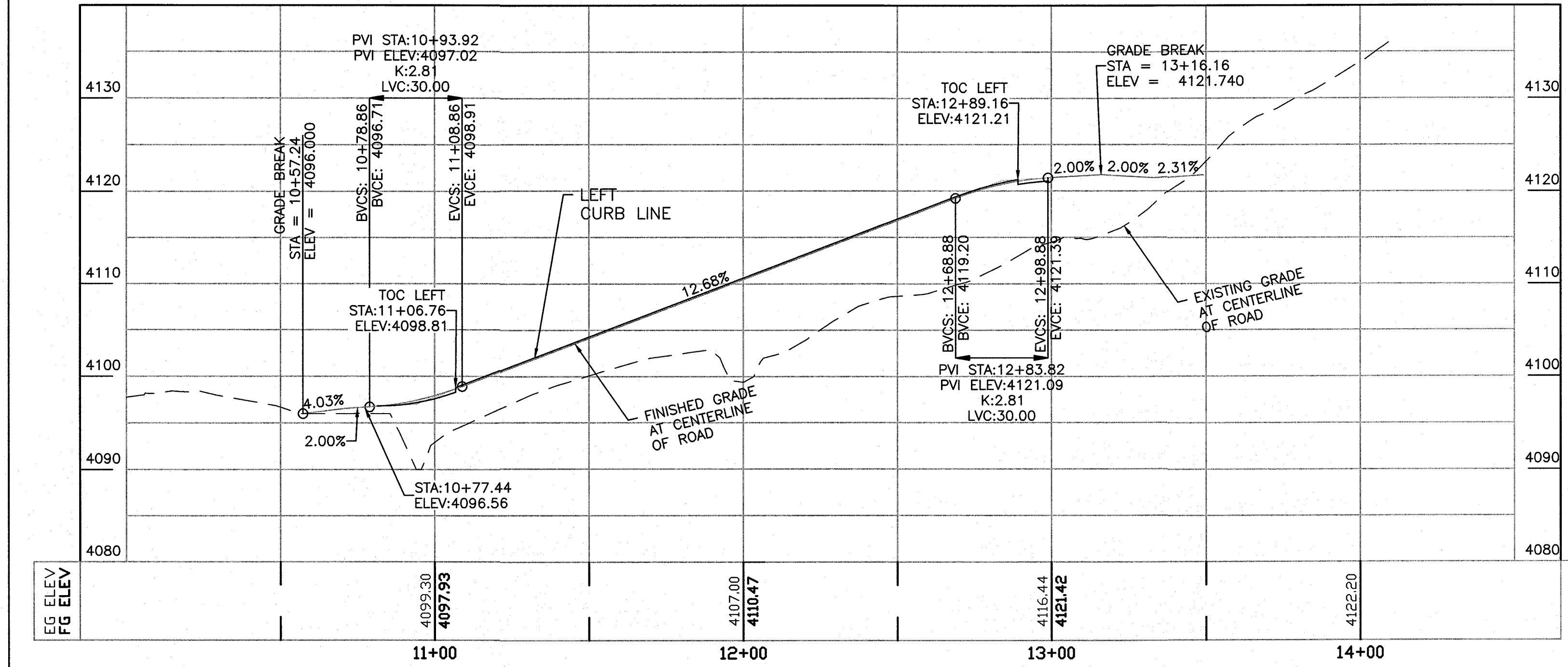
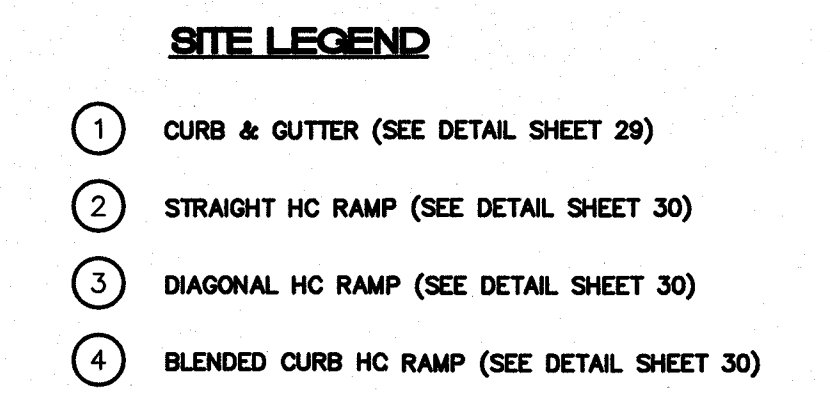
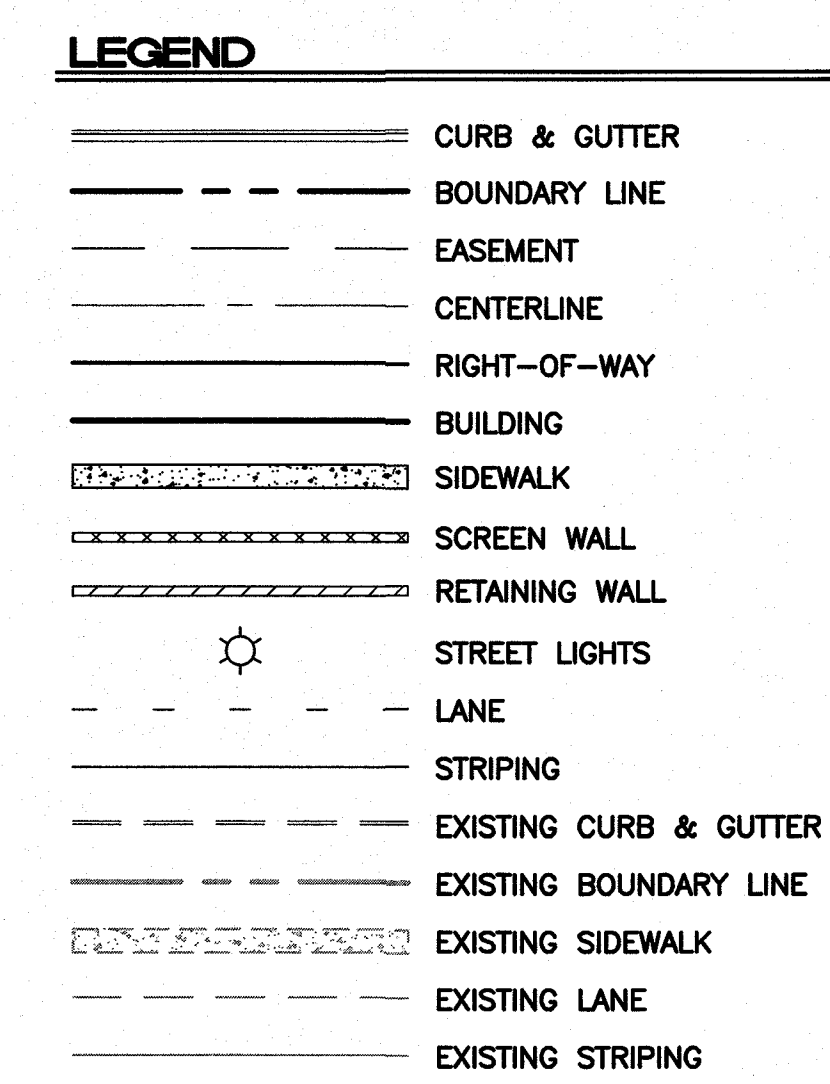
Final Approval





BASIS OF STATIONING IS CENTERLINE OF ROAD  
 \* STATIONING ALIGNMENT - LINE & CURVE DATA

Line Table			Curve Table					
Line #	Length	Direction	Curve #	Length	Radius	Delta	Chord Direction	Chord Length
L1	179.02	N76° 12' 11.25"E	C1	15.71	10.00	90.00	N31° 12' 12"E	14.14
L2	12.94	N76° 12' 11.25"E	C3	15.71	10.00	90.00	S58° 47' 49"E	14.14
L3	129.56	S76° 12' 09.12"W	C4	15.71	10.00	90.00	S58° 47' 48"E	14.14
L4	409.15	N76° 12' 14.34"E	C6	15.71	10.00	90.00	N31° 12' 05"E	14.14
			C7	15.61	10.00	89.42	N58° 30' 54"W	14.07



**CS 29-29**

Right-of-Way Type	Commercial Street
Street Zone Assignment	TS, TRD, TB
Right-of-Way Width	29'
Street Width	29'
Street	see equipment
Sign Spaced	20 high
1st Speed	5.2 seconds
Minimum Crossing Time	1 One-way flow
1st Lane	Both sides @ 7' marked
2nd Lane	15 foot
3rd Lane	15 foot
4th Lane	Asphalt, Curb, Striping
5th Lane	17 sidewalk
6th Lane	4' x 4' Tree well in sidewalk
7th Lane	Vertical
8th Lane	Tree @ 30' o.c. in-pave
9th Lane	SI TR

**BENCHMARK**  
 PROJECT BENCHMARK  
 CENTERLINE MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 6A,  
 A.F. MILLER SURVEY 216, AND PORTION  
 OF TRACTS 10 AND 11, SURVEY NO. 10,  
 OF EL PASO COUNTY, TEXAS  
 CONTAINING 12.6864 ACRES

**ENGINEER'S SEAL**  
  
 RONALD R. BOHANNAN  
 P.E. #88928

**TIERRA WEST, LLC**  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 www.tierrawest.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REMARKS

DESIGNED BY: JN  
 DRAWN BY: BF  
 DRAWING NAME: 2015092-15\_VIN SEVILLA.PY  
 CHECKED BY: JN

DATE: 06/06/2016  
 DATE: 06/06/2016  
 JOB NO.: 2015092  
 DATE: 06/06/2016

**SHEET TITLE**  
**VIN SEVILLA**  
**PLAN & PROFILE**

**SHT 12 OF 44**



BASIS OF STATIONING IS CENTERLINE OF VIN SEVILLA

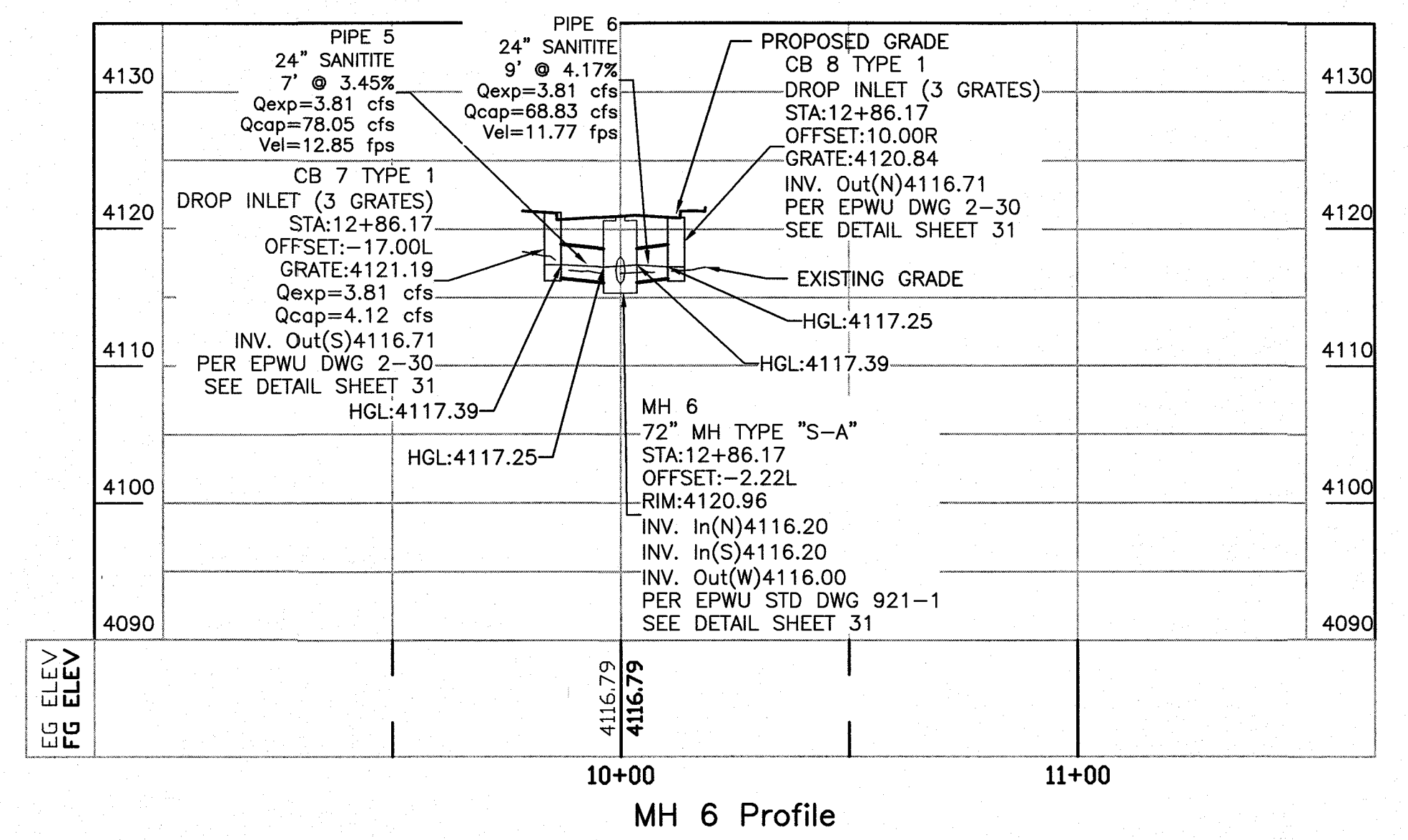
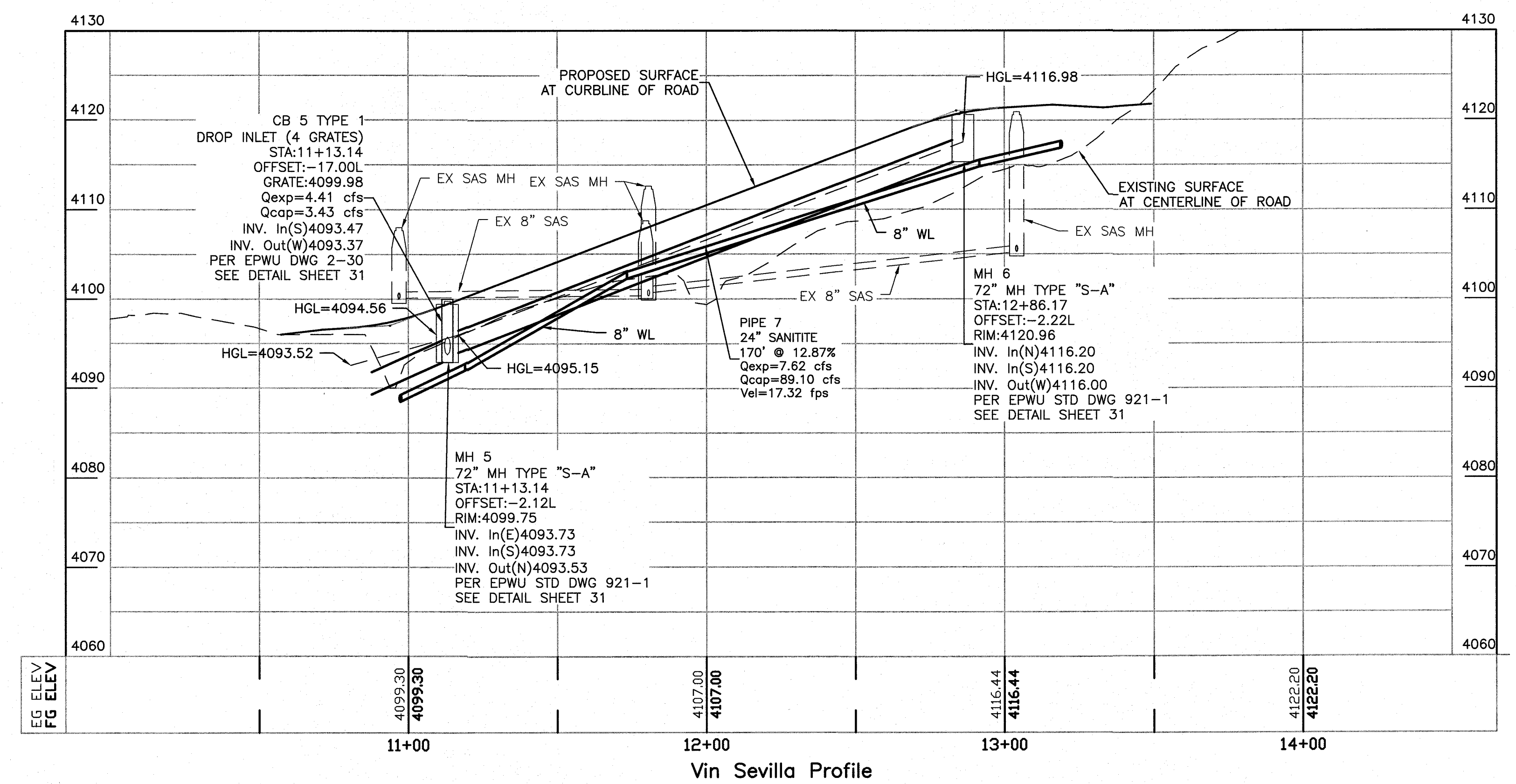
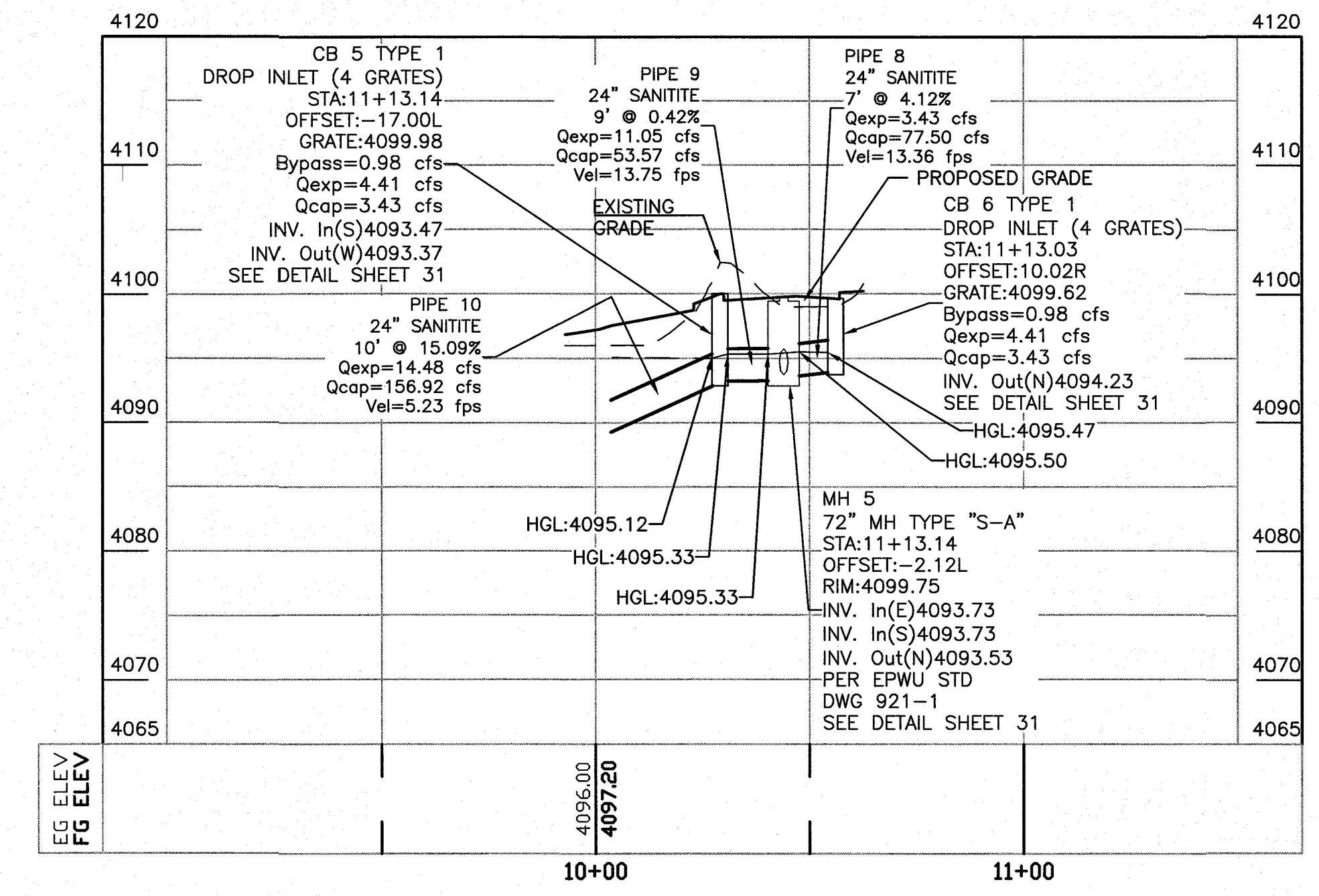
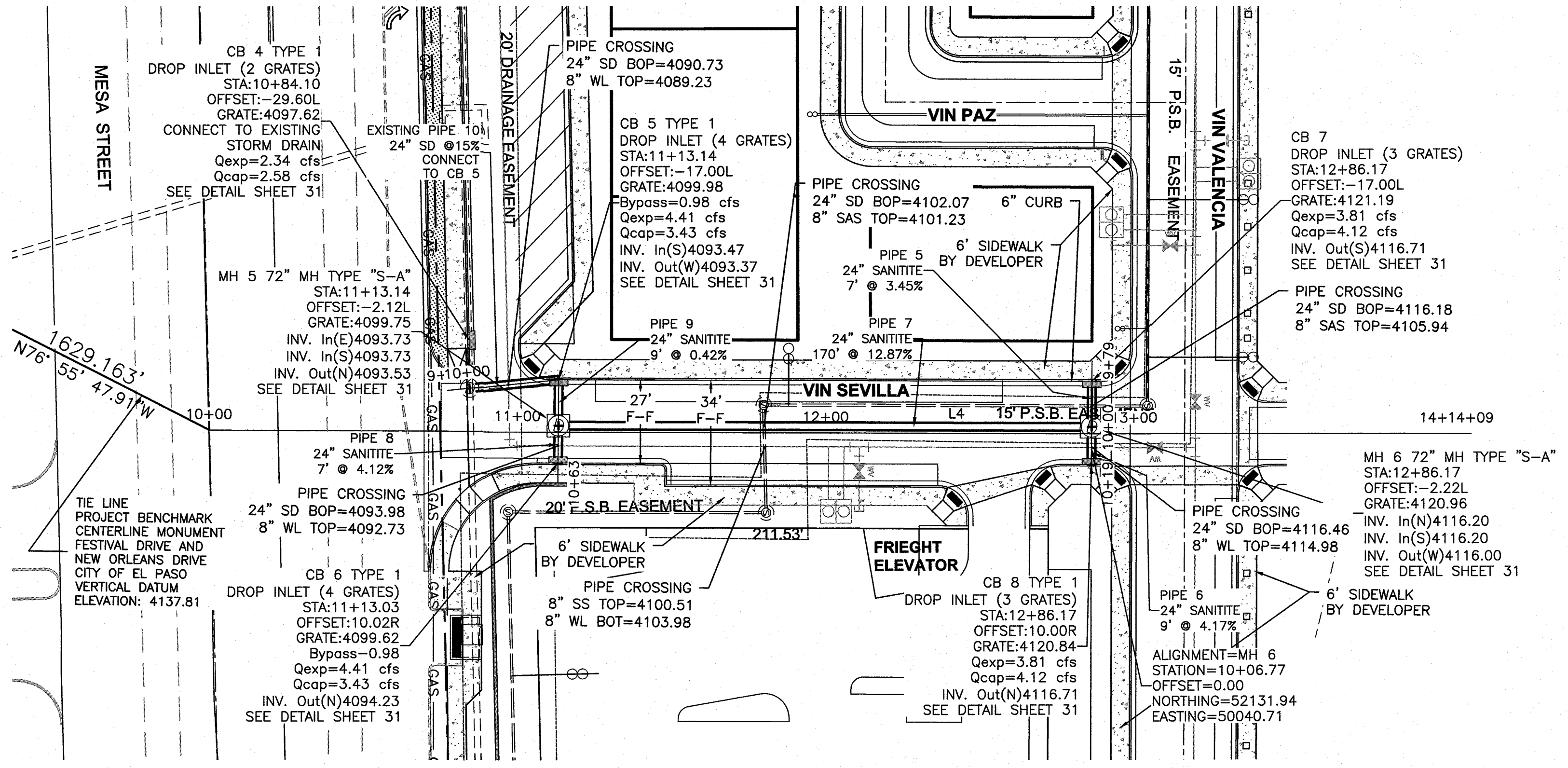
Line #	Length	Direction
L4	409.15	N76° 12' 14.34"E

**LEGEND**

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- STREET LIGHTS
- LANE
- STRIPING
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING SIDEWALK
- EXISTING LANE
- EXISTING STRIPING

**Pipe Table**

NAME	LENGTH	BEARING
PIPE 5	7.00'	N13° 47' 44.79"W
PIPE 6	9.00'	S13° 47' 48.93"E
PIPE 7	170.00'	S76° 10' 13.51"W
PIPE 8	7.00'	S13° 18' 50.56"E
PIPE 9	9.00'	N13° 47' 14.19"W
PIPE 10	23.00'	S70° 15' 10.46"W



30 15 0 15 30  
 SCALE: HORIZ. 1"=30'  
 VERT. 1"=10'

**PROJECT BENCHMARK**  
 CENTERLINE MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 TRACT 21, JOHN BAKER SURVEY, 10  
 CITY OF EL PASO, J. H. BAKER SURVEY, TEXAS  
 ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 44 AND 64  
 CITY OF EL PASO, J. H. BAKER SURVEY, 10  
 CITY OF EL PASO, JOHN BAKER SURVEY, TEXAS  
 CONTAINING: 12.686± ACRES

**ENGINEER'S SEAL**  
  
 RONALD R. BOHANNAN  
 P.E. #88928

**DESIGNER**  
 TERRA WEST, LLC  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 856-3100  
 www.terrawestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

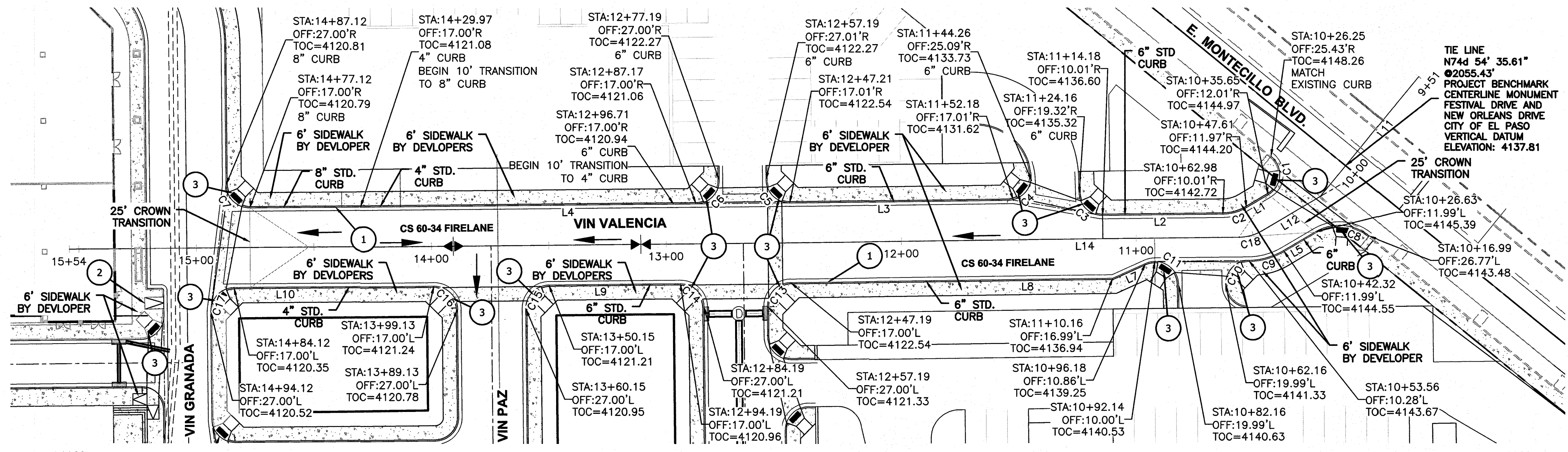
NO.	DATE	REMARKS	BY
DESIGN	06/06/2016	DESIGN	JIN
REVISIONS	06/06/2016	REVISIONS	BF
CHECKED	06/06/2016	CHECKED	JIN

SHEET TITLE  
**VIN SEVILLA\_SD  
 PLAN & PROFILE**

SHT 13 OF 44

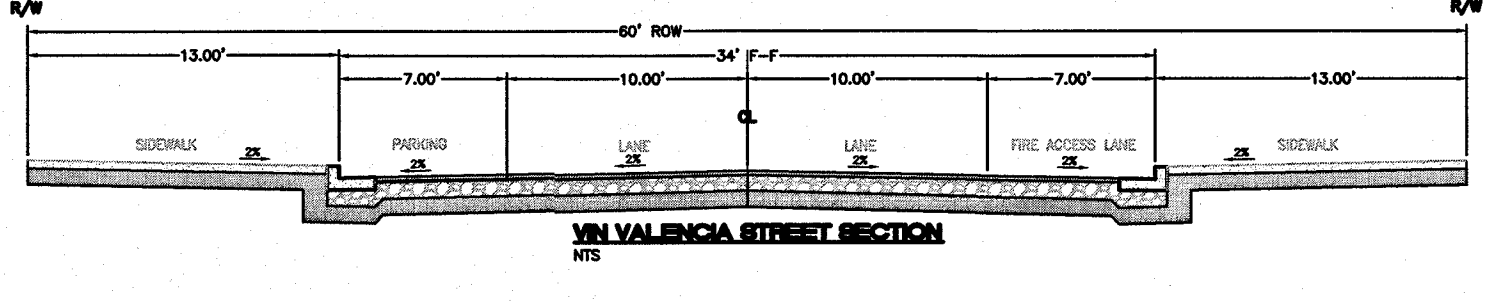
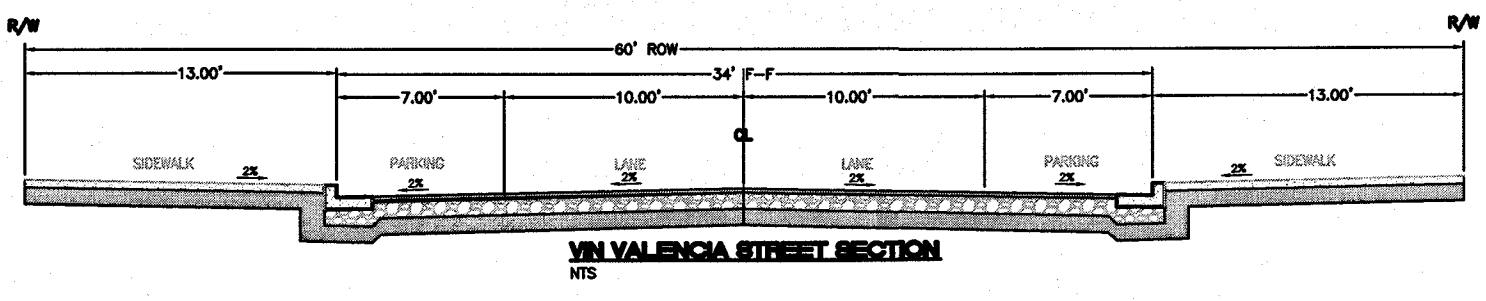
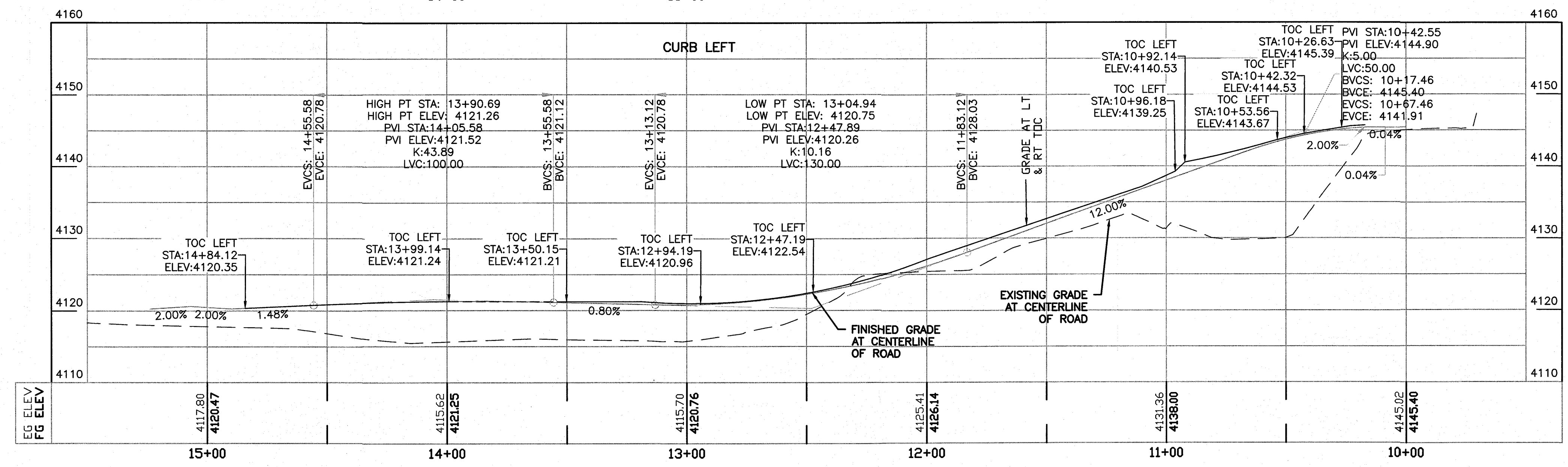
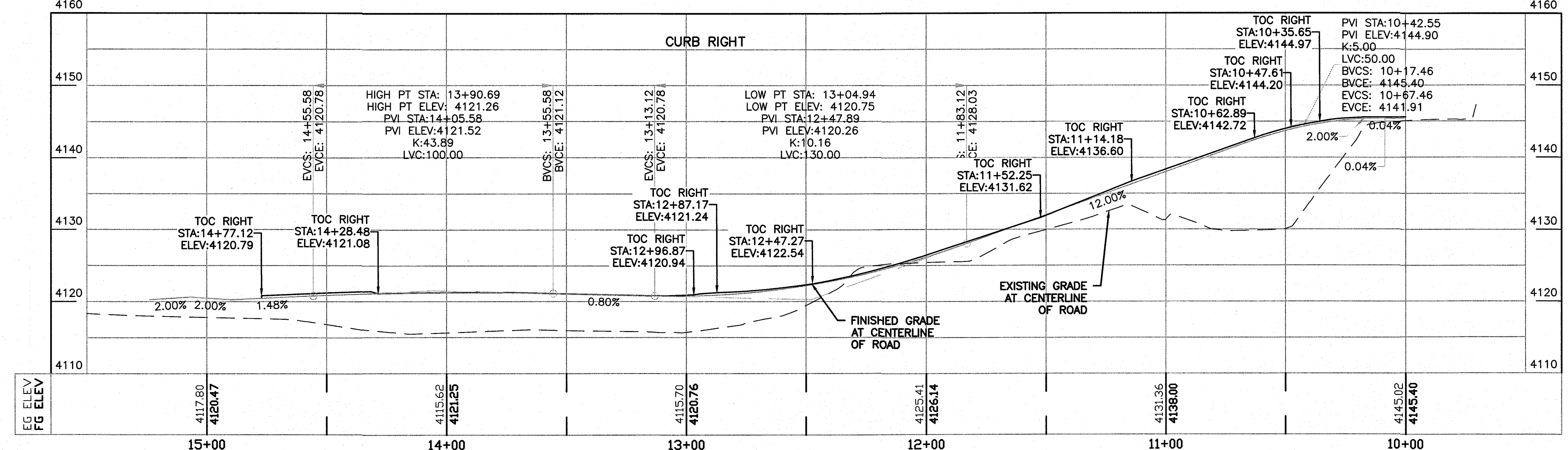
2:\2015\20150621.DWG 5B Montecillo E.P. Plan\Substation Improvements\0010022\_15\_Vin Sevilla\_SD.dwg File 16, 2017 - 8:05am



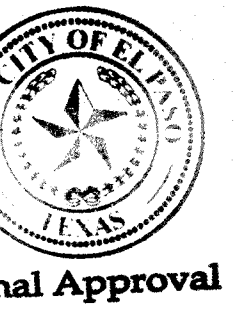


BASIS OF STATIONING IS CENTERLINE OF ROAD  
 \* STATIONING ALIGNMENT - LINE & CURVE DATA

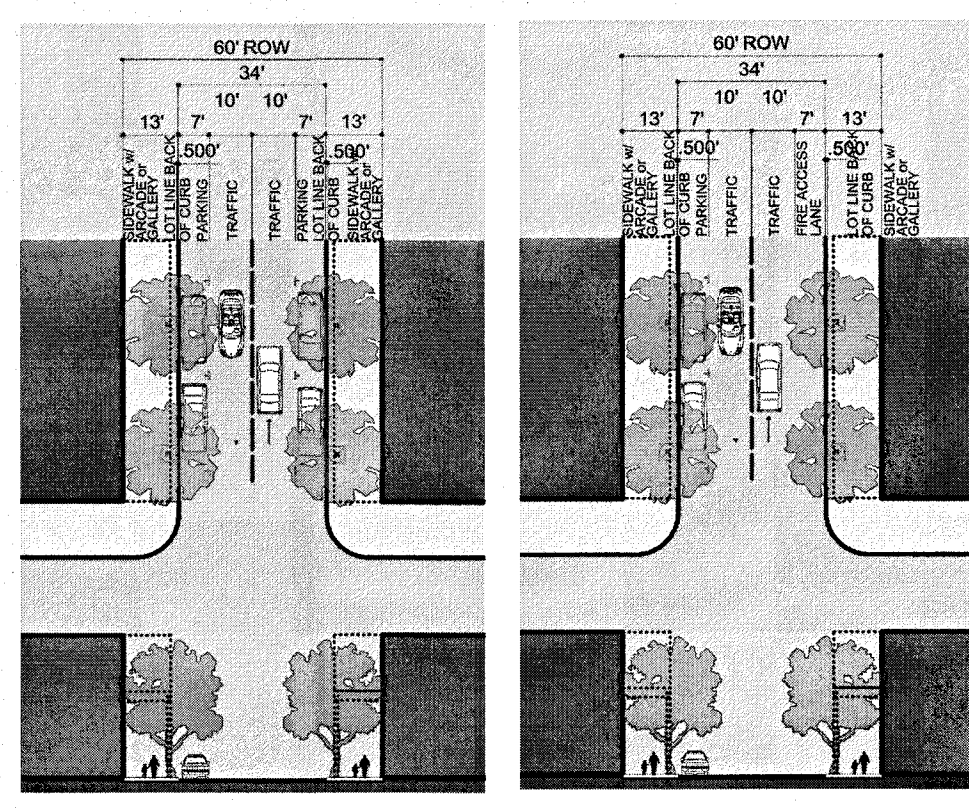
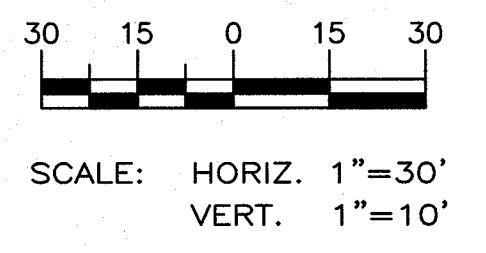
Line Table			Curve Table					
Line #	Length	Direction	Curve #	Length	Radius	Delta	Chord Direction	Chord Length
L1	10.85	N43° 59' 08.62"W	C1	19.20	10.00	110.00	S81° 00' 52"W	16.38
L2	51.21	N13° 47' 47.55"W	C2	10.54	20.00	30.19	N28° 53' 28"W	10.42
L3	92.66	N13° 47' 48.52"W	C3	15.02	10.00	86.05	N29° 13' 51"E	13.85
L4	189.95	N13° 47' 48.73"W	C4	17.48	10.00	100.15	N63° 52' 18"W	15.34
L5	15.69	N43° 59' 08.62"W	C5	15.69	10.00	89.89	N31° 15' 34"E	14.13
L6	15.27	N37° 27' 46.37"W	C6	15.69	10.00	89.90	N58° 50' 53"W	14.13
L7	137.03	N13° 47' 48.16"W	C7	15.71	10.00	90.00	N31° 12' 11"E	14.14
L8	55.96	N13° 47' 47.55"W	C8	24.43	20.00	70.00	N8° 59' 08"W	22.94
L9	84.99	N13° 47' 47.55"W	C9	15.65	30.00	29.88	N29° 02' 42"W	15.47
L10	84.99	N13° 47' 47.55"W	C10	7.85	10.09	44.58	N81° 18' 04"W	7.65
L11	66.08	N63° 59' 08.55"W	C11	19.84	9.97	113.96	N19° 17' 15"E	16.73
L12	28.76	N43° 59' 08.55"W	C12	15.71	10.00	90.00	N58° 47' 48"W	14.14
L13	15.71	10.00	C13	15.71	10.00	90.00	N31° 12' 12"E	14.14
L14	15.71	10.00	C14	15.71	10.00	90.01	N58° 48' 02"W	14.14
L15	15.71	10.00	C15	15.71	10.00	90.02	N31° 12' 56"E	14.15
L16	15.71	10.00	C16	15.71	10.00	90.02	N31° 12' 56"E	14.14
L17	15.71	10.00	C17	15.71	10.00	90.02	N31° 12' 56"E	14.14
L18	10.54	20.00	C18	10.54	20.00	30.19	N28° 53' 28"W	10.42



- LEGEND**
- CURB & GUTTER
  - BOUNDARY LINE
  - EASEMENT
  - CENTERLINE
  - RIGHT-OF-WAY
  - BUILDING
  - SIDEWALK
  - SCREEN WALL
  - RETAINING WALL
  - STREET LIGHTS
  - LANE
  - STRIPING
  - EXISTING CURB & GUTTER
  - EXISTING BOUNDARY LINE
  - EXISTING SIDEWALK
  - EXISTING LANE
  - EXISTING STRIPING



- SITE LEGEND**
- 1 CURB & GUTTER (SEE DETAIL SHEET 29)
  - 2 STRAIGHT HC RAMP (SEE DETAIL SHEET 30)
  - 3 DIAGONAL HC RAMP (SEE DETAIL SHEET 30)
  - 4 BLENDED CURB HC RAMP (SEE DETAIL SHEET 30)
  - 5 BUS STOP



Thoroughfare Type	Commercial Street	Thoroughfare Type	Commercial Street
Transportation Provision	BR, SR, TR	Transportation Provision	BR, SR, TR
Design Speed	20 mph	Design Speed	20 mph
Production/Conditioning Time	9.7 seconds	Production/Conditioning Time	9.7 seconds
Traffic lanes	2 lanes One each way	Traffic lanes	2 lanes One each way
Parking lanes	None	Parking lanes	None
Public Footage Type	Arched, Gallery, Shopfront	Public Footage Type	Arched, Gallery, Shopfront
Walkway Type	13' sidewalk	Walkway Type	13' sidewalk
Planter Type	4' x 4' Tree well in sidewalk	Planter Type	4' x 4' Tree well in sidewalk
Curb Type	Vertical	Curb Type	Vertical
Landscaping Type	Trees @ 30' o.c. average	Landscaping Type	Trees @ 30' o.c. average

**PROJECT BENCHMARK**  
 CENTRALINE MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 ELEVATION: 4197.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 8A,  
 FULLER SURVEY, SECTION 06,  
 TOWNSHIP 10N, RANGE 07E,  
 COUNTY OF EL PASO, COUNTY TEXAS  
 CONTAINING: 12.686± ACRES

**ENGINEER'S SEAL**  
  
 RONALD R. BOHANNAN  
 P.E. #88928

**TIERRA WEST, LLC**  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87110  
 (505) 856-3100  
 www.tierrawest.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REVISIONS	BY
		DESIGN	

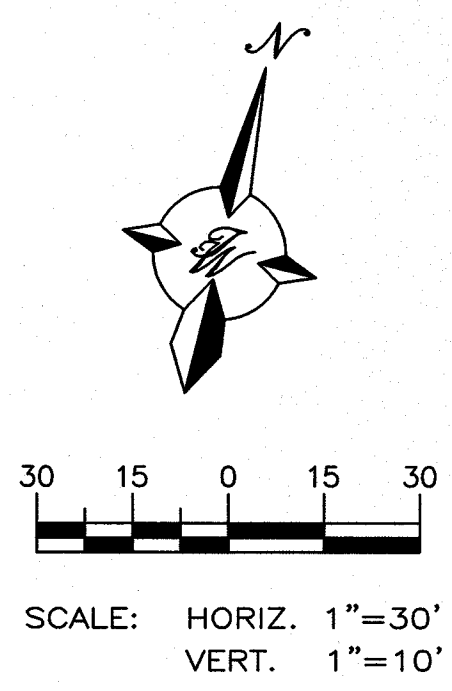
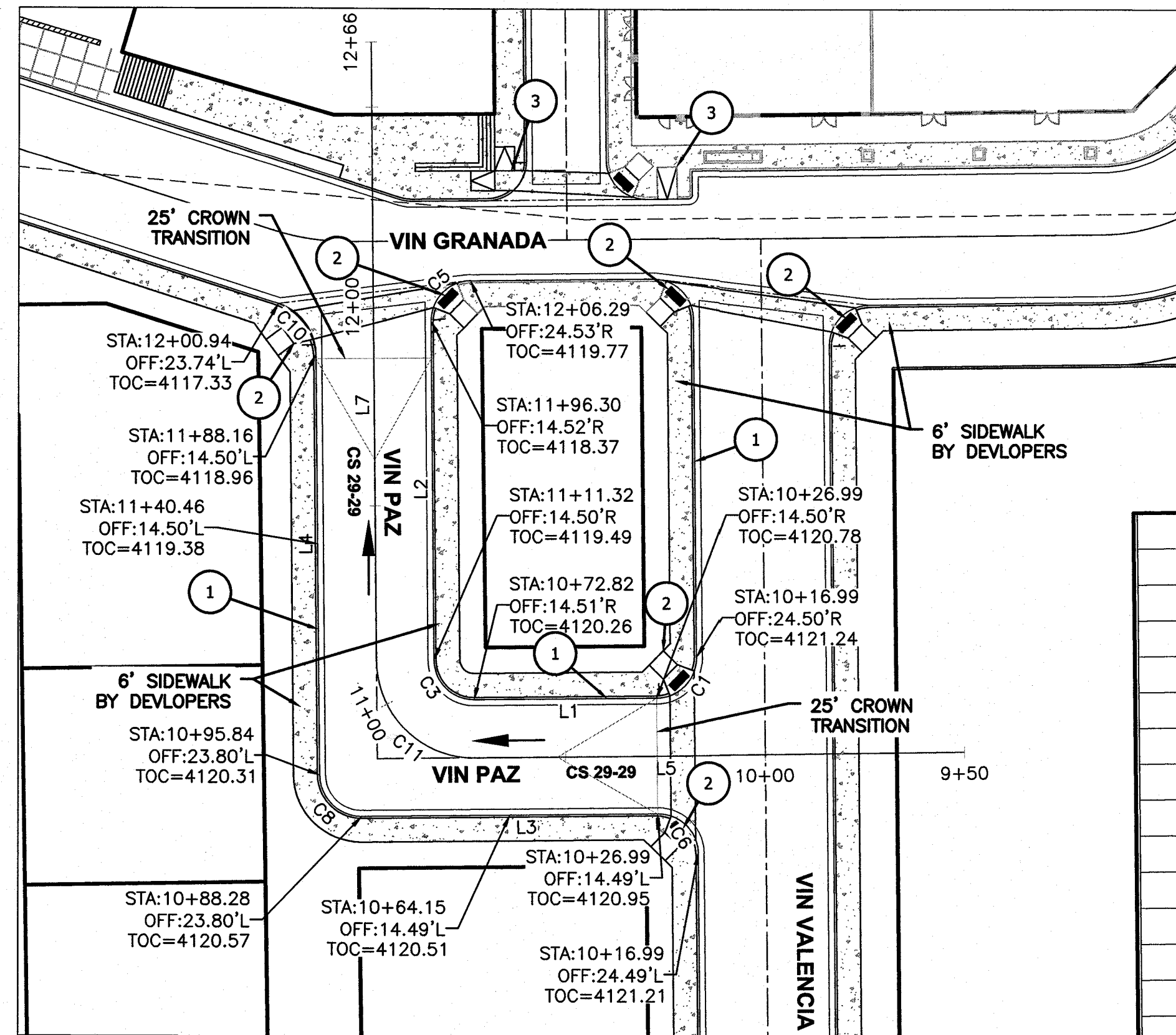
DESIGNED BY: JN  
 DRAWN BY: BF  
 DRAWING NAME: 2015062\_14\_VIN VALENCIA\_PV  
 CHECKED BY: JN

DATE: 06/06/2016  
 DATE: 06/06/2016  
 JOB NO.: 2015062  
 DATE: 06/06/2016

**SHEET TITLE**  
**VIN VALENCIA**  
**PLAN & PROFILE**

**SHT 14 OF 44**



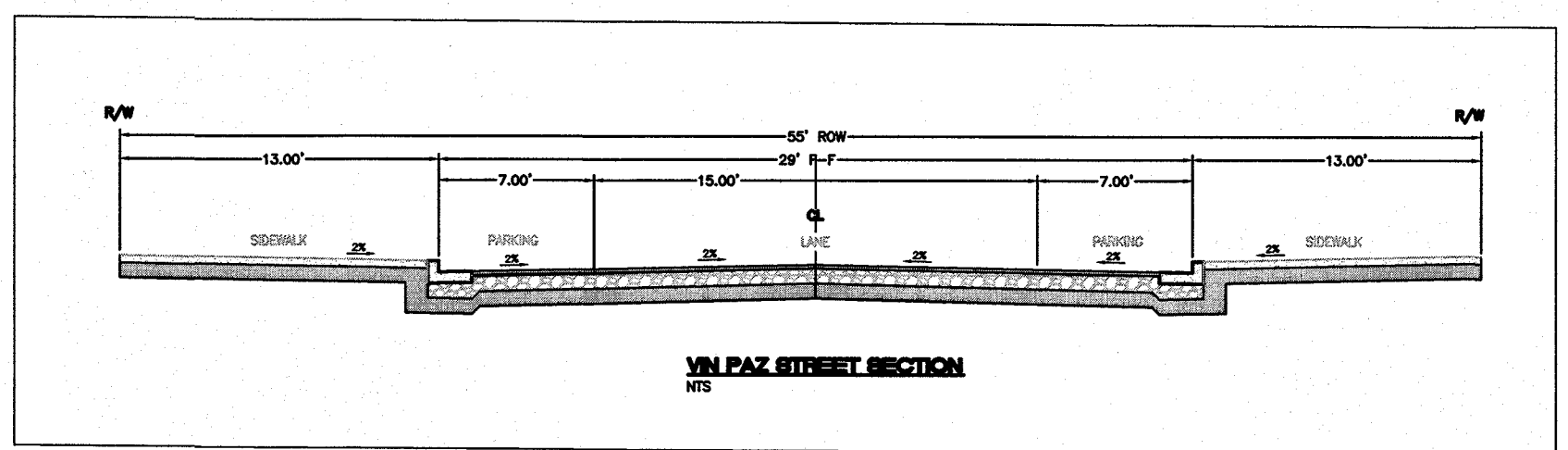
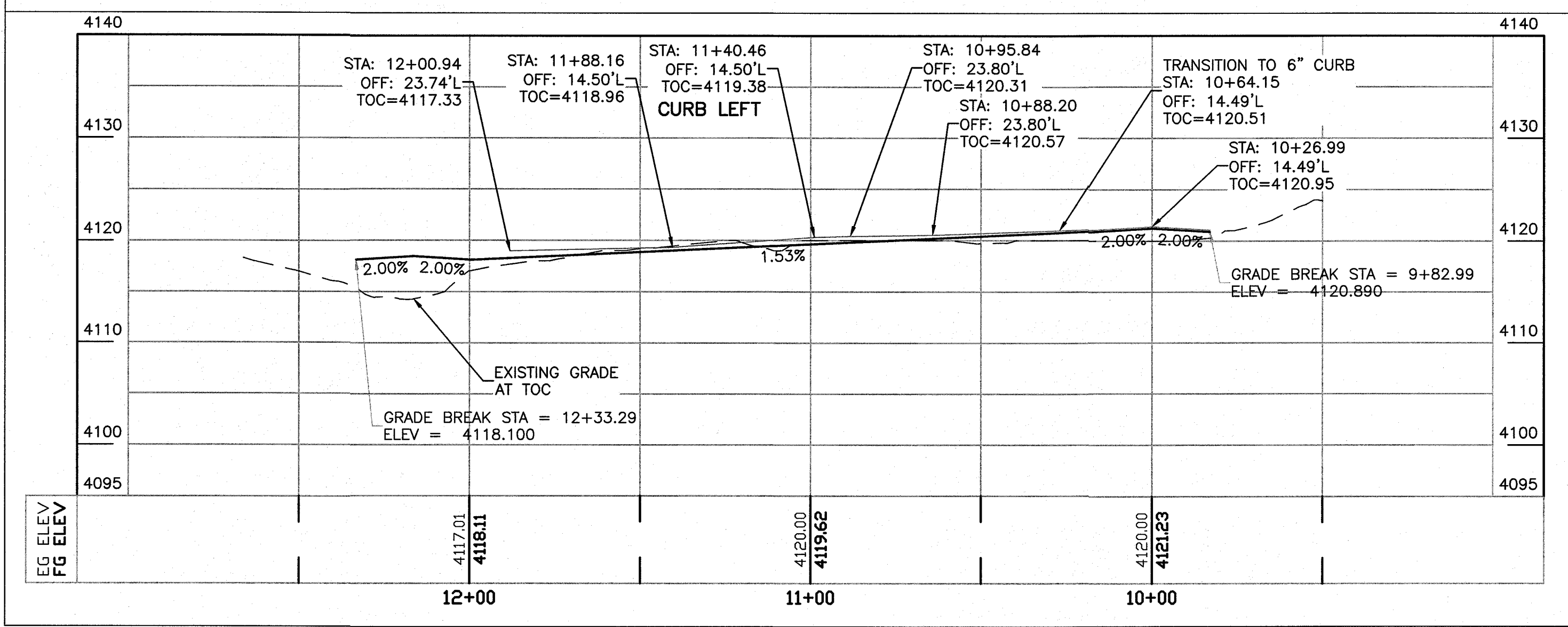
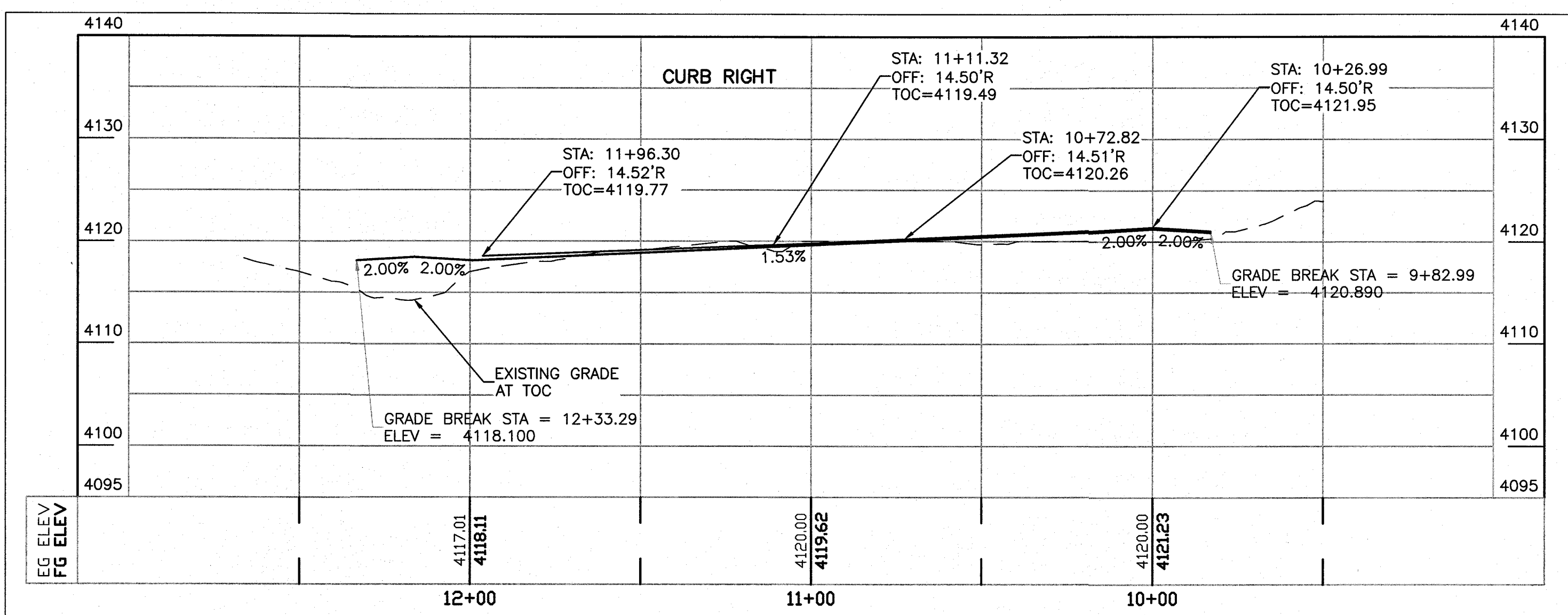


BASIS OF STATIONING IS CENTERLINE OF ROAD  
\* STATIONING ALIGNMENT - LINE & CURVE DATA

Line Table			Curve Table					
Line #	Length	Direction	Curve #	Length	Radius	Delta	Chord Direction	Chord Length
L1	45.83	S76° 13' 39.70"W	C1	15.71	10.00	90.02	S31° 12' 56"W	14.15
L2	84.98	N13° 46' 56.16"W	C3	15.71	10.00	89.99	N58° 46' 38"W	14.14
L3	74.32	S76° 11' 44.23"W	C5	15.71	10.00	90.00	N31° 12' 58"E	14.14
L4	105.36	N13° 47' 48.47"W	C6	15.71	10.00	90.01	N58° 48' 02"W	14.14
* L5	122.83	S76° 12' 13.19"W	C8	16.49	10.50	90.01	N58° 48' 08"W	14.85
* L7	154.99	N13° 47' 45.61"W	C10	16.85	13.46	71.73	N49° 39' 27"W	15.77
			* C11	38.48	24.50	90.00	N58° 47' 46"W	34.65

- SITE LEGEND**
- ① 4" CURB & GUTTER (SEE DETAIL SHEET 29)
  - ② UNI-DIRECTIONAL HC RAMP (SEE DETAIL SHEET 30)
  - ③ UNI-DIRECTIONAL HC RAMP (SEE DETAIL SHEET 30)

- LEGEND**
- CURB & GUTTER
  - BOUNDARY LINE
  - EASEMENT
  - CENTERLINE
  - RIGHT-OF-WAY
  - BUILDING
  - SIDEWALK
  - SCREEN WALL
  - RETAINING WALL
  - ☀ STREET LIGHTS
  - LANE
  - STRIPING
  - EXISTING CURB & GUTTER
  - EXISTING SIDEWALK
  - EXISTING LANE
  - EXISTING STRIPING



55,000' Street with Sidewalks

Thoughtful Type	Commercial Street
Travel Lane Assignment	75 TCO, 75
Right-of-Way Width	29'
Pavement Width	29'
Movement	slow movement
Design Speed	20 mph
Pedestrian Crossing Time	8.2 seconds
Traffic Lanes	1 One way lane
Parking Lanes	Both sides @ 7' marked
Curb Height	15" curb
Public Frontage Type	Accade, Gallery, Shopfront
Walkway Type	12' sidewalk
Planter Type	4' x 4' Tree well in sidewalk
Curb Type	Vertical
Landscape Type	Trees @ 30' o.c. average
Transportation Provision	BK, TR

PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4157.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A MILLER SURVEY 216, AND PORTION  
OF TRACTS 10, 11, 12, 13, 14, 15,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 1.2, 686± ACRES

ENGINEER'S SEAL  
  
 RONALD R. BOHANNAN  
 P.E. #88928

TIERRA WEST, LLC  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 855-7100  
 www.tierrewestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

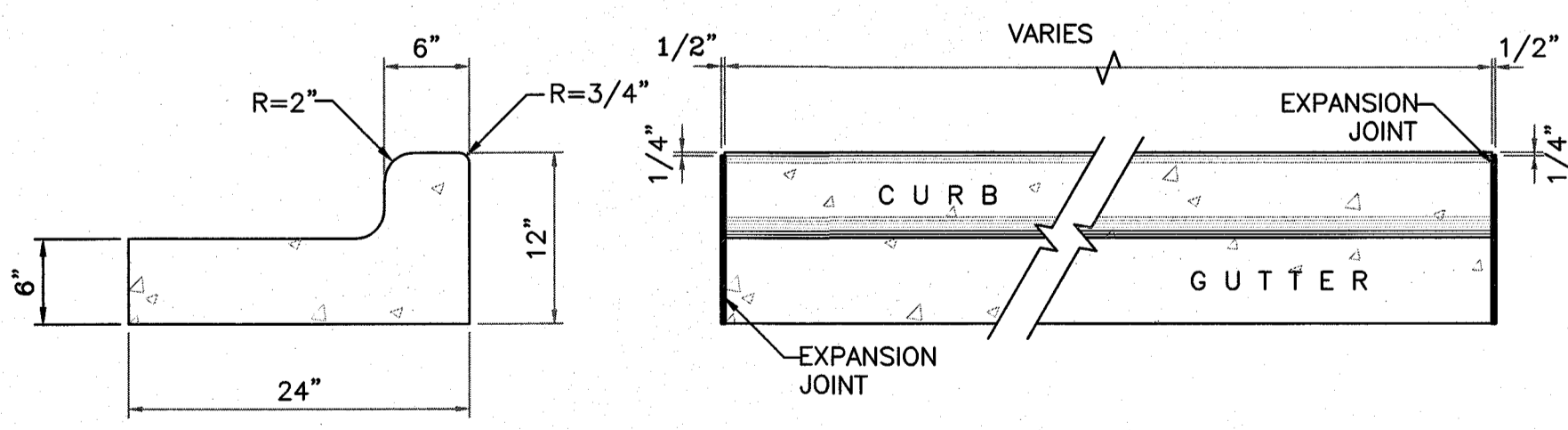
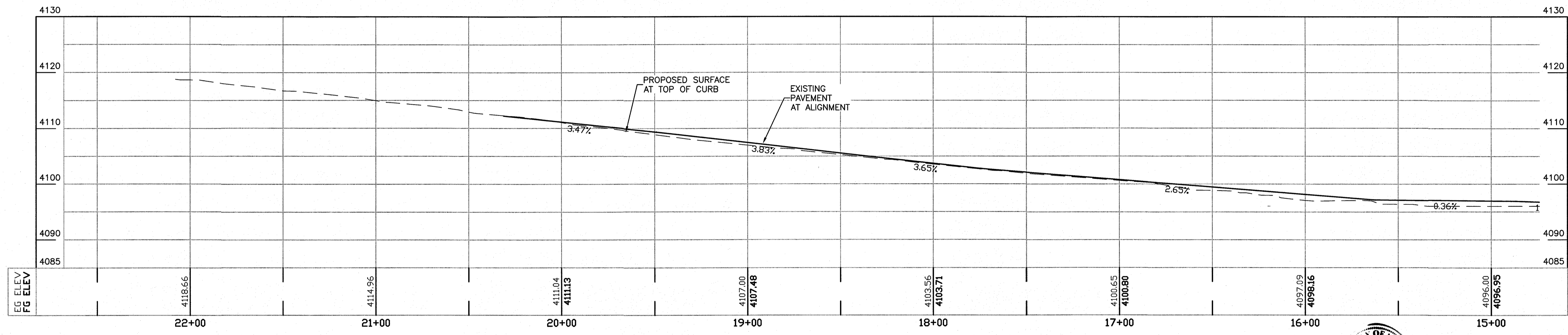
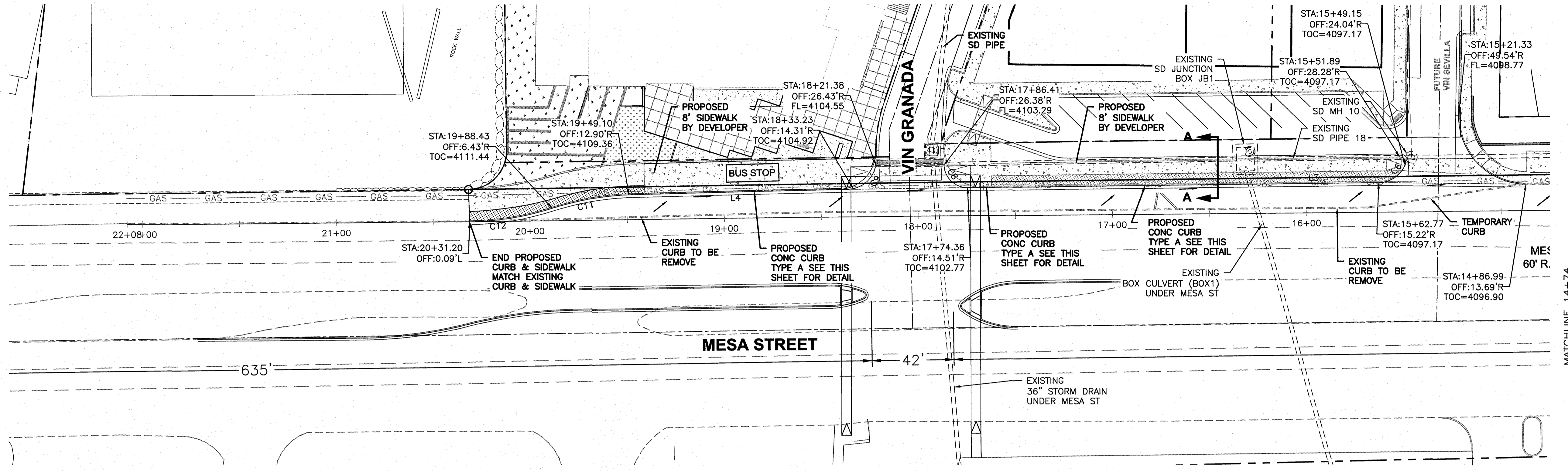
NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN DATE: 06/06/2016  
 DRAWN BY: BF DATE: 06/06/2016  
 DRAWING NAME: 2015062\_18\_VIN\_PAZ\_PV JOB NO.: 2015062  
 CHECKED BY: JN DATE: 06/06/2016

SHEET TITLE  
**VIN PAZ  
PLAN & PROFILE**

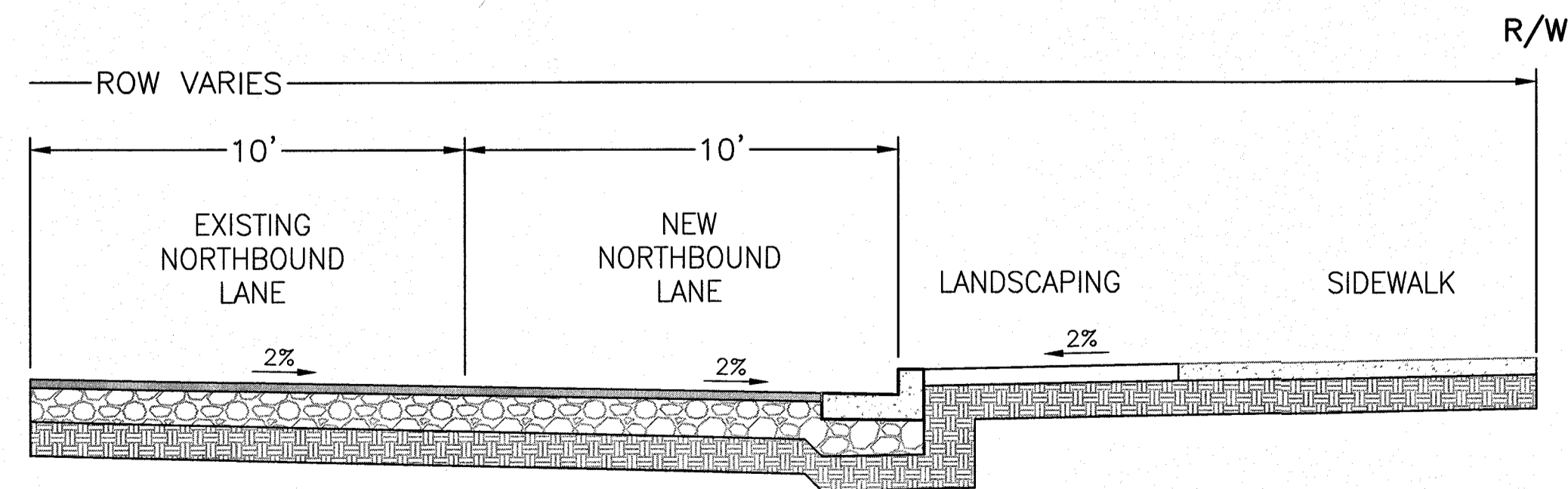
SHT 15 OF 44





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

**STANDARD 6" CURB & GUTTER DETAIL**  
SCALE: 1"=1'

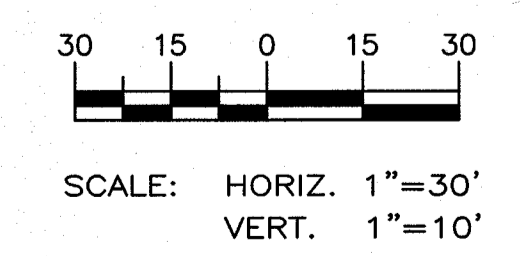
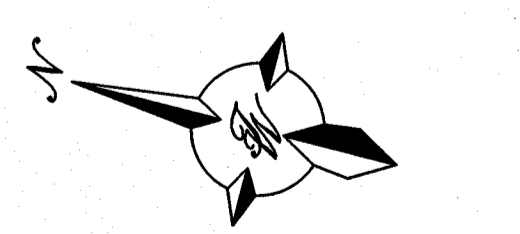


**SECTION A-A  
MESA STREET SECTION**  
NTS

**LEGEND**

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- STREET LIGHTS
- LANE
- STRIPING
- EXISTING CURB & GUTTER
- EXISTING SIDEWALK
- EXISTING LANE
- EXISTING STRIPING

NOTE: COORDINATE ALL MESA STREET IMPROVEMENTS WITH TxDOT



**PROJECT BENCHMARK**  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
STATION: 44+00  
ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
ALL IN SUNDY BARBER SURVEY TO  
OF TRACT EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING 12.686± ACRES

**ENGINEER'S SEAL**  
RONALD R. BOHANNAN  
P.E. #88928

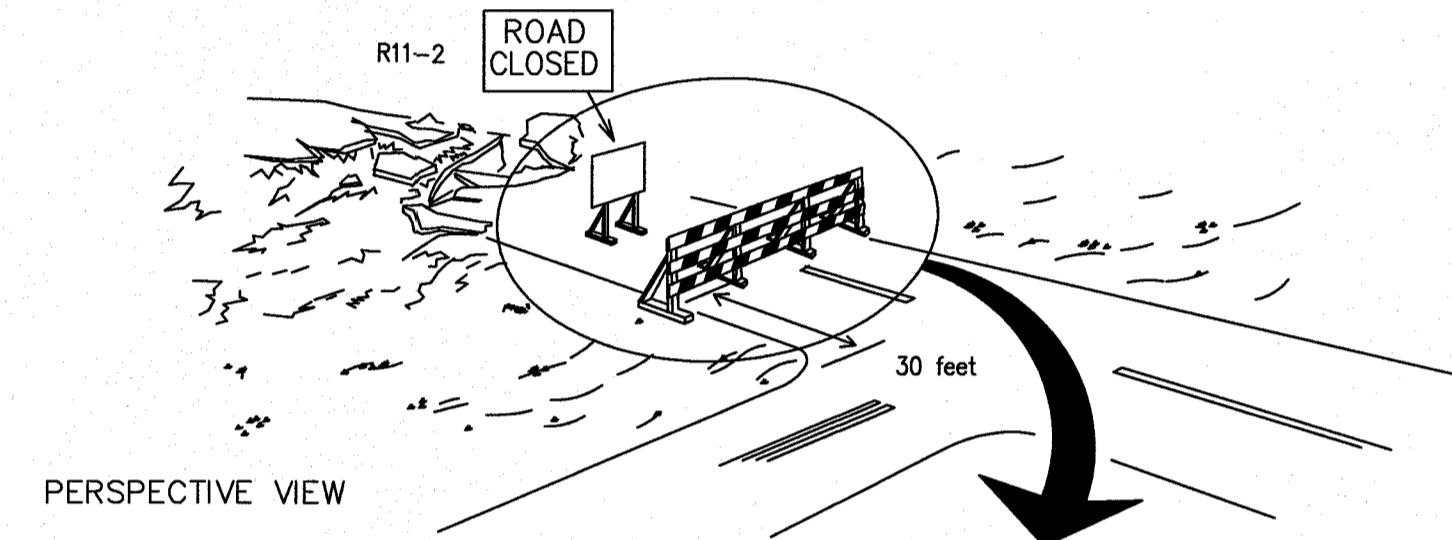
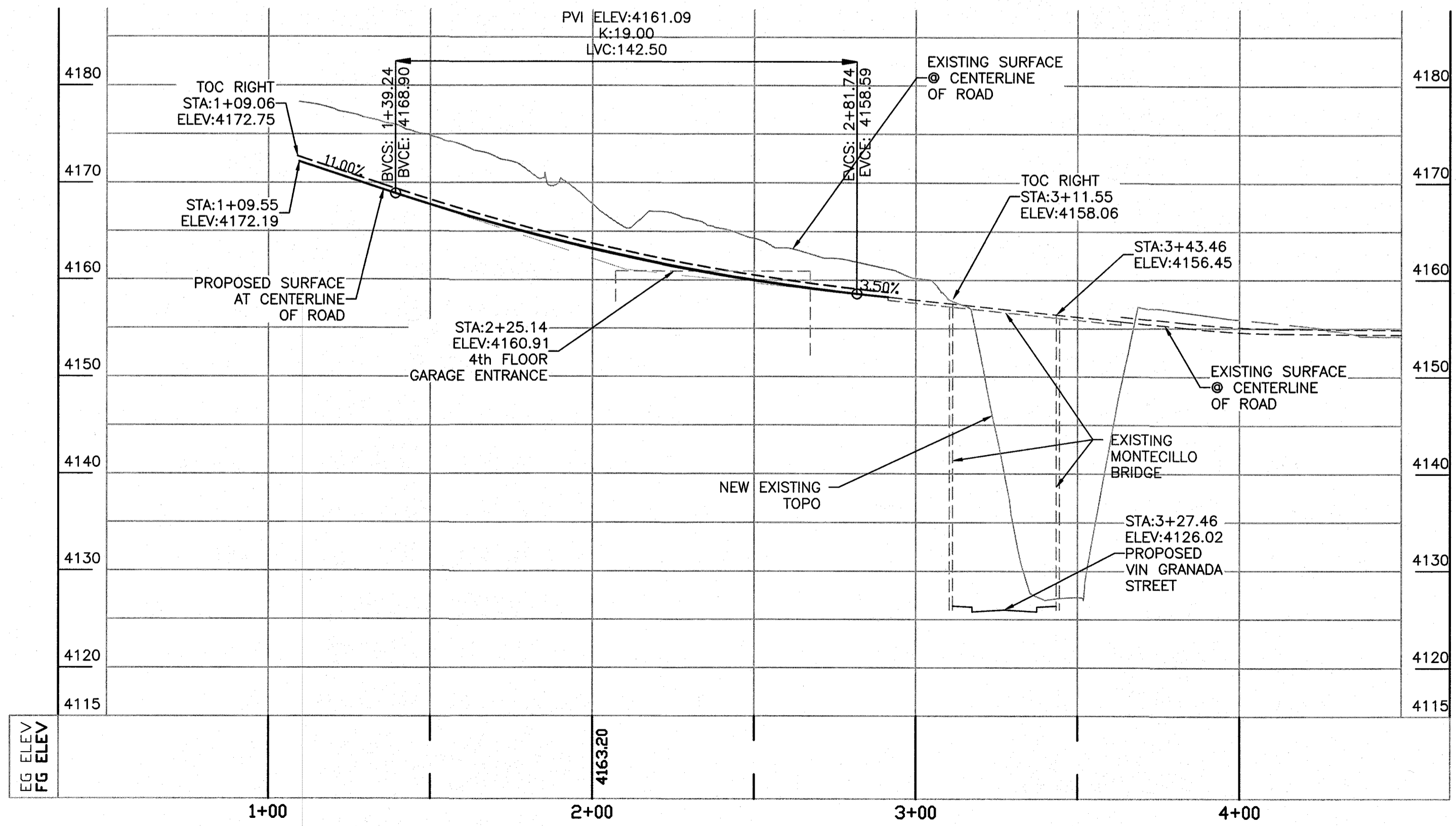
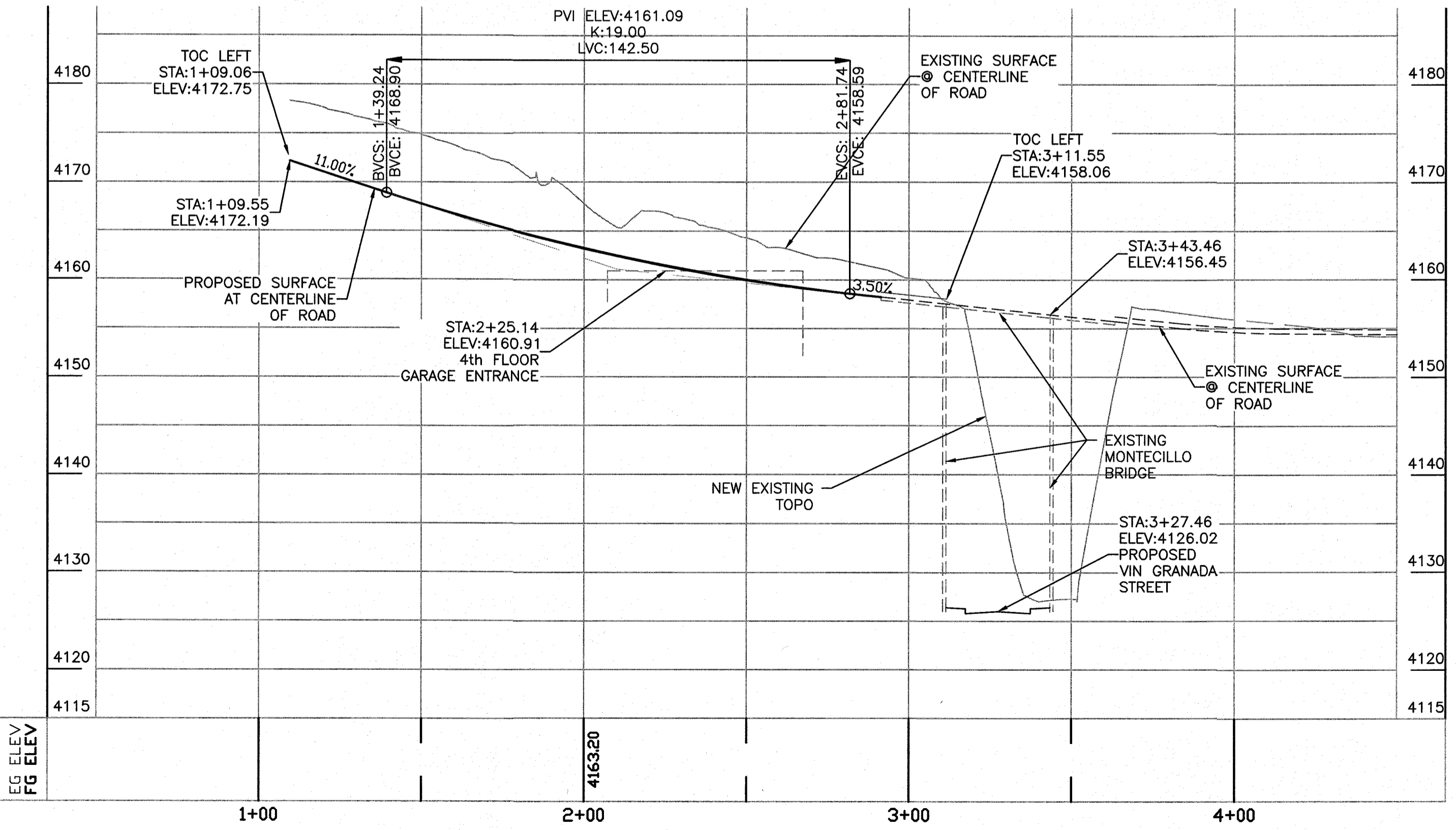
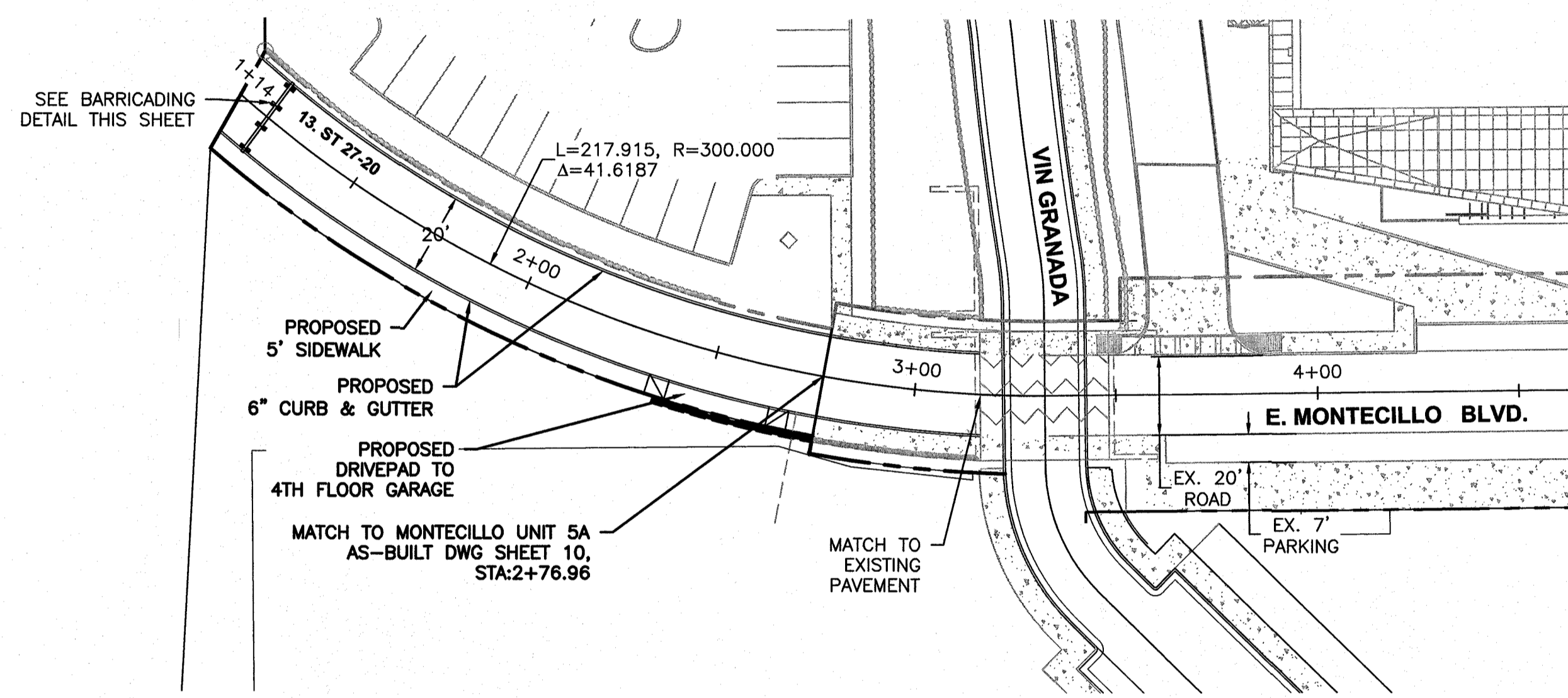
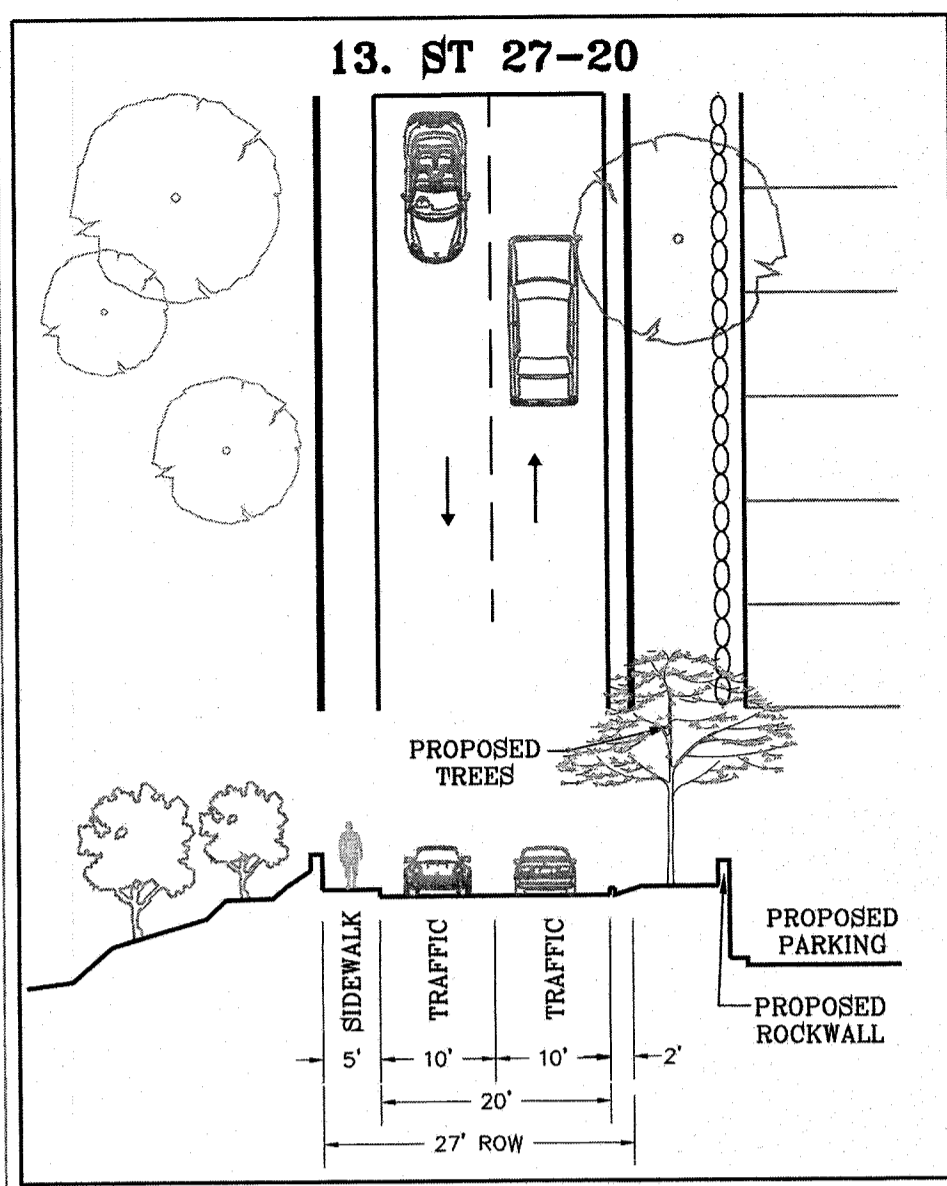
**TIERRA WEST, LLC**  
5571 MIDWAY PARK PLACE, NE  
ALBUQUERQUE, NM 87109  
(505) 855-1100  
www.tierrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
	06/06/2016	DESIGNED BY: JN	
	06/06/2016	DRAWN BY: BF	
	20160617	DRAWING NAME: 20160617_MESA ST.PV	
	06/06/2016	CHECKED BY: JN	

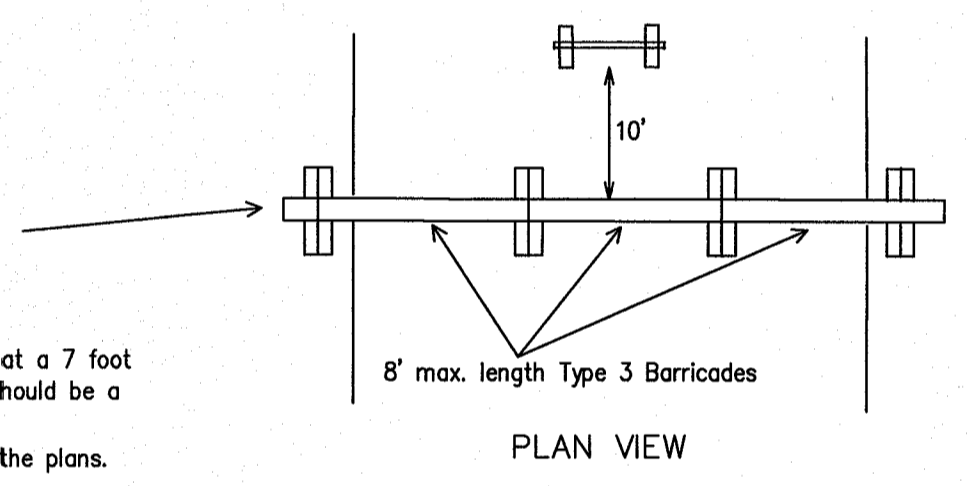
**SHEET TITLE**  
**MESA ST**  
**PLAN & PROFILE**  
STA: 17+00 TO 20+50

**SHT 16 OF 44**





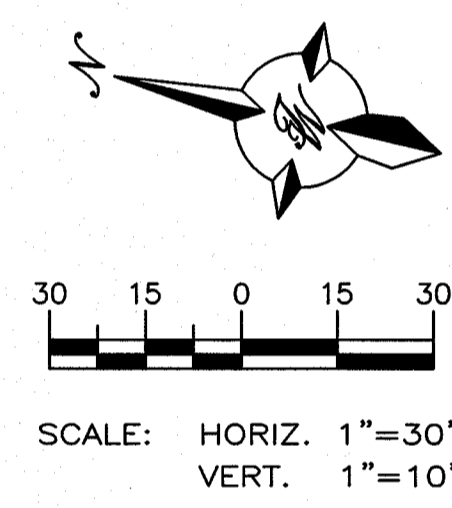
- The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.
- Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
  - Advance signing shall be as specified elsewhere in the plans.



TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION

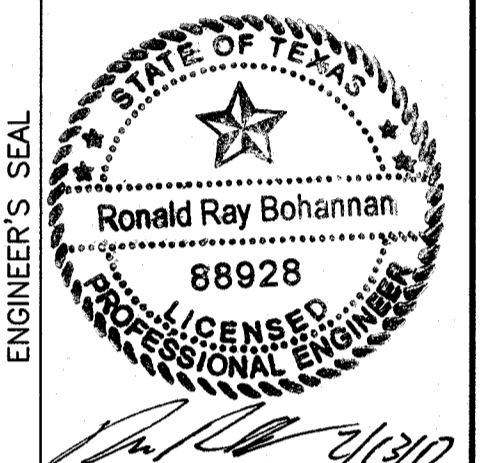
**LEGEND**

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- STREET LIGHTS
- LANE
- STRIPING
- EXISTING CURB & GUTTER
- EXISTING SIDEWALK
- EXISTING LANE
- EXISTING STRIPING



**PROJECT BENCHMARK**  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4157.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A.F. MILLER SURVEY, 216, AND PORTION  
OF TRACTS 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



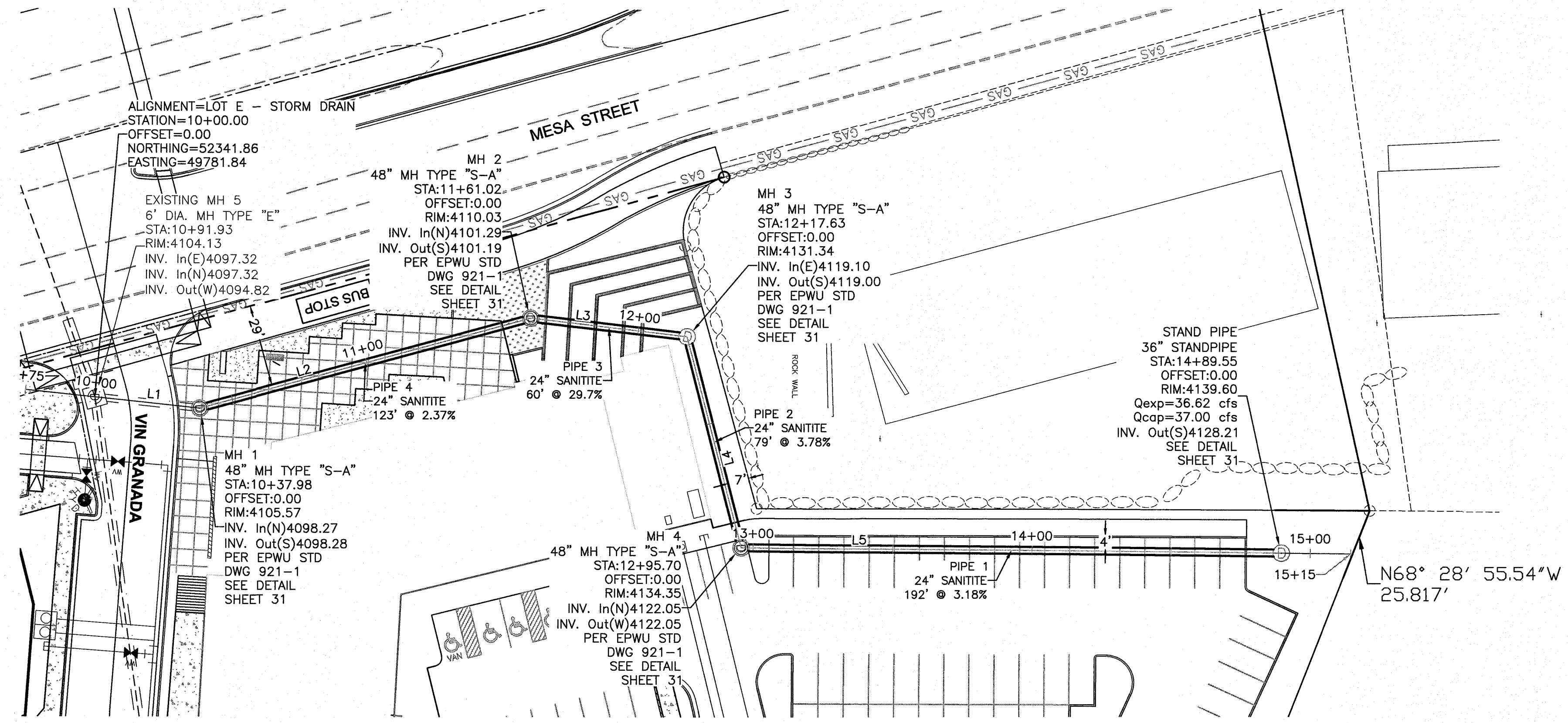
RONALD R. BOHANNAN  
P.E. #88928

**TIERRA WEST LLC**  
5571 MIDWAY PARK PLACE, NE  
ALBUQUERQUE, NM 87109  
(505) 885-7100  
www.tierrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
DESIGN	06/06/2016	DESIGN	JUN
REVISIONS	06/06/2016	REVISIONS	BF
DATE: 06/06/2016	DATE: 06/06/2016	JOB NO.: 2015062	CHECKED BY: JUN
DATE: 06/06/2016	DATE: 06/06/2016		

SHEET TITLE  
**EAST MONTECILLO BLVD**  
SHT 17 OF 44



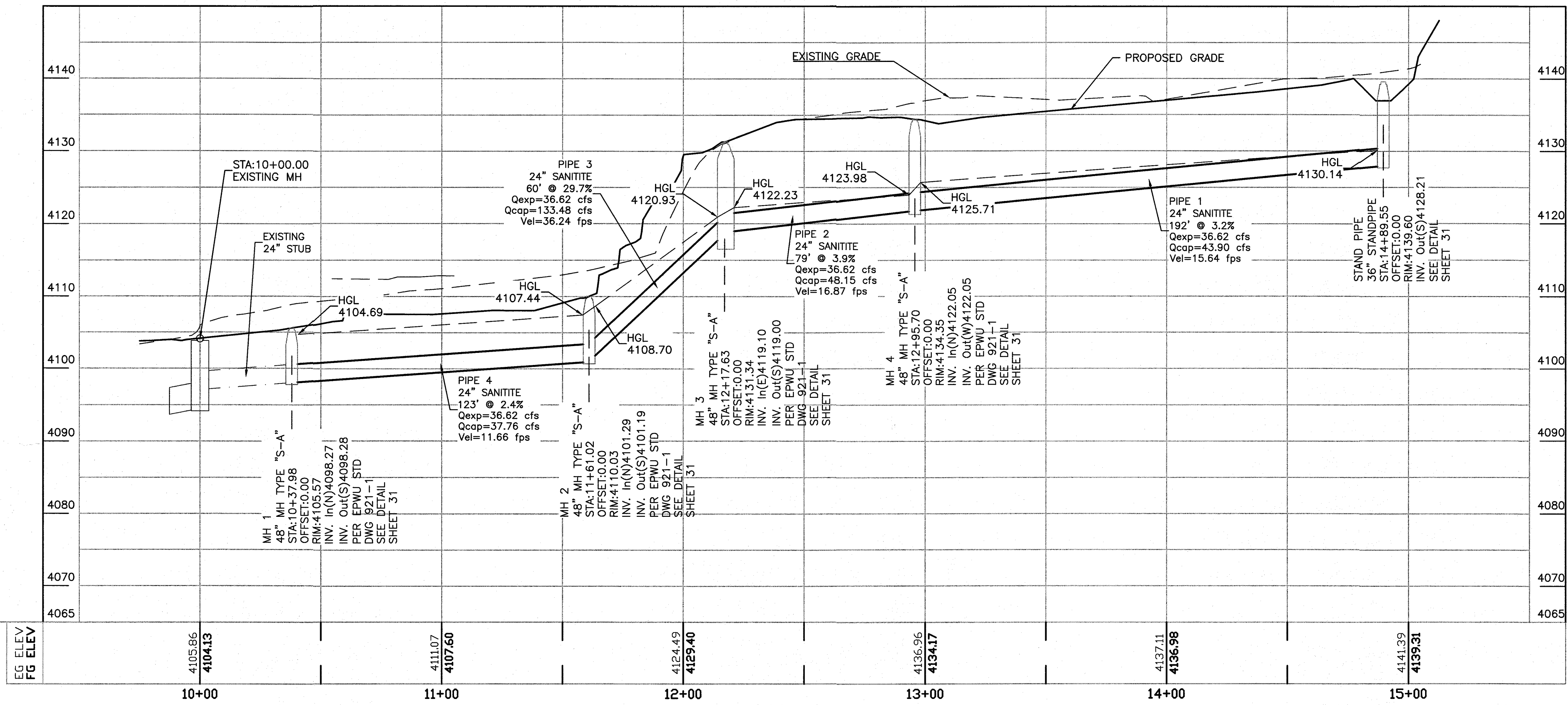
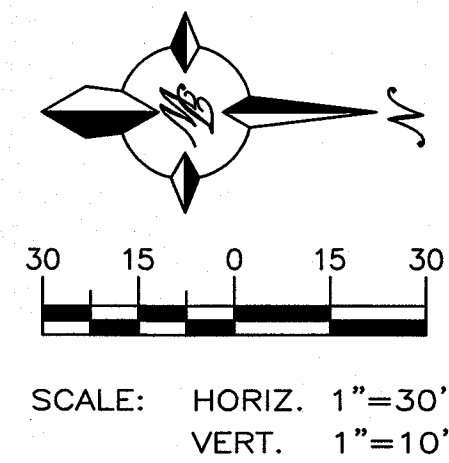


BASIS OF STATIONING IS CENTERLINE OF STORM DRAIN

Alignment Table				
Line #	Length	Direction	Start Point	End Point
L1	37.98	N6° 06' 10.86"E	(49781.84,52341.86)	(49785.88,52379.63)
L2	123.04	N15° 17' 27.94"W	(49785.88,52379.63)	(49753.43,52498.31)
L3	56.61	N6° 43' 01.40"E	(49753.43,52498.31)	(49760.05,52554.53)
L4	78.06	N75° 30' 09.45"E	(49760.05,52554.53)	(49835.63,52574.07)
L5	193.86	N0° 38' 09.23"E	(49835.63,52574.07)	(49837.78,52767.92)

Pipe Table		
NAME	LENGTH	BEARING
Pipe 1	192.00'	N0° 38' 09.23"E
Pipe 2	79.00'	N75° 30' 09.45"E
Pipe 3	60.00'	N6° 43' 01.40"E
Pipe 4	123.00'	N15° 17' 27.94"W

- LEGEND**
- CURB & GUTTER
  - BOUNDARY LINE
  - EASEMENT
  - CENTERLINE
  - RIGHT-OF-WAY
  - BUILDING
  - SIDEWALK
  - SCREEN WALL
  - RETAINING WALL
  - ☼ STREET LIGHTS
  - LANE
  - STRIPING
  - EXISTING CURB & GUTTER
  - EXISTING SIDEWALK
  - EXISTING LANE
  - EXISTING STRIPING



**BENCHMARK**  
 PROJECT BENCHMARK  
 CENTERLINE MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CITY OF EL PASO  
 VERTICAL DATUM  
 OF THE CITY OF EL PASO  
 ELEVATION: 4757.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
 BEING A PORTION OF TRACTS 4A AND 6A,  
 A FULLER SURVEY 216, AND PORTION  
 OF TRACTS 207, 216, 217, 218, 219,  
 CITY OF EL PASO, EL PASO COUNTY, TEXAS  
 CONTAINING 12.666± ACRES



RONALD R. BOHANNAN  
 P.E. #88928

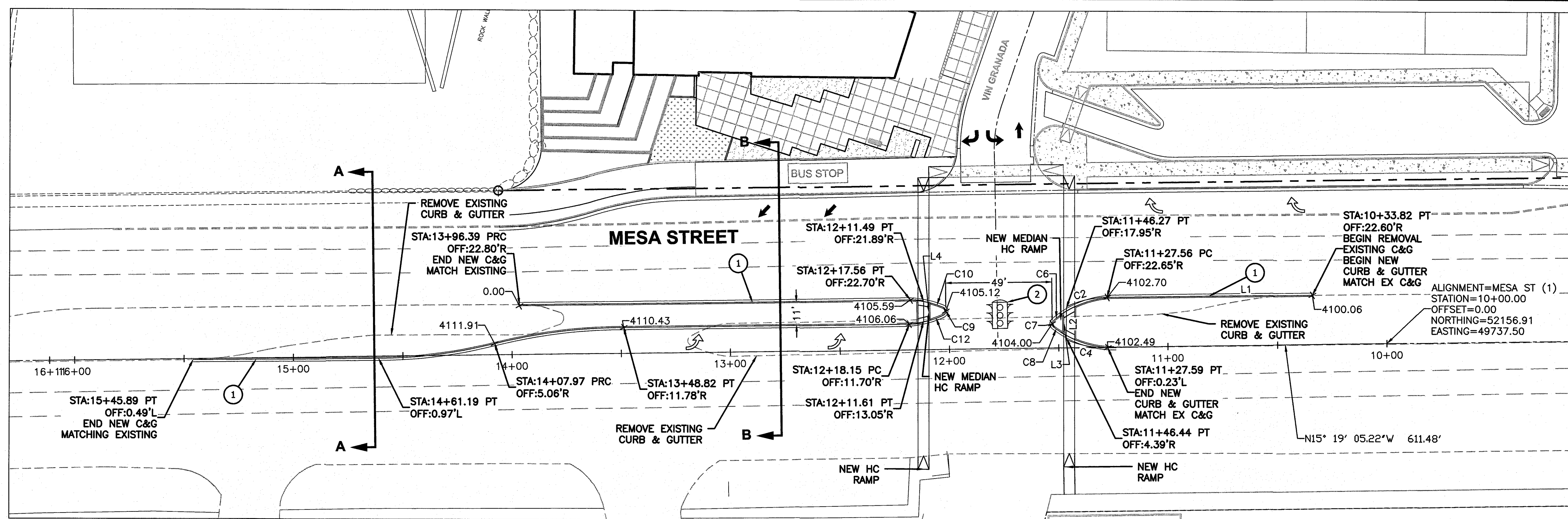
**TIERRA WEST LLC**  
 5571 MIDWAY PARK PLACE, NE  
 ALBUQUERQUE, NM 87109  
 (505) 855-3100  
 www.tierrawestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN DATE: 06/06/2016  
 DRAWN BY: BF DATE: 06/06/2016  
 DRAWING NAME: 2015062-15 LOT E-5B JOB NO.: 2015062  
 CHECKED BY: JN DATE: 06/06/2016

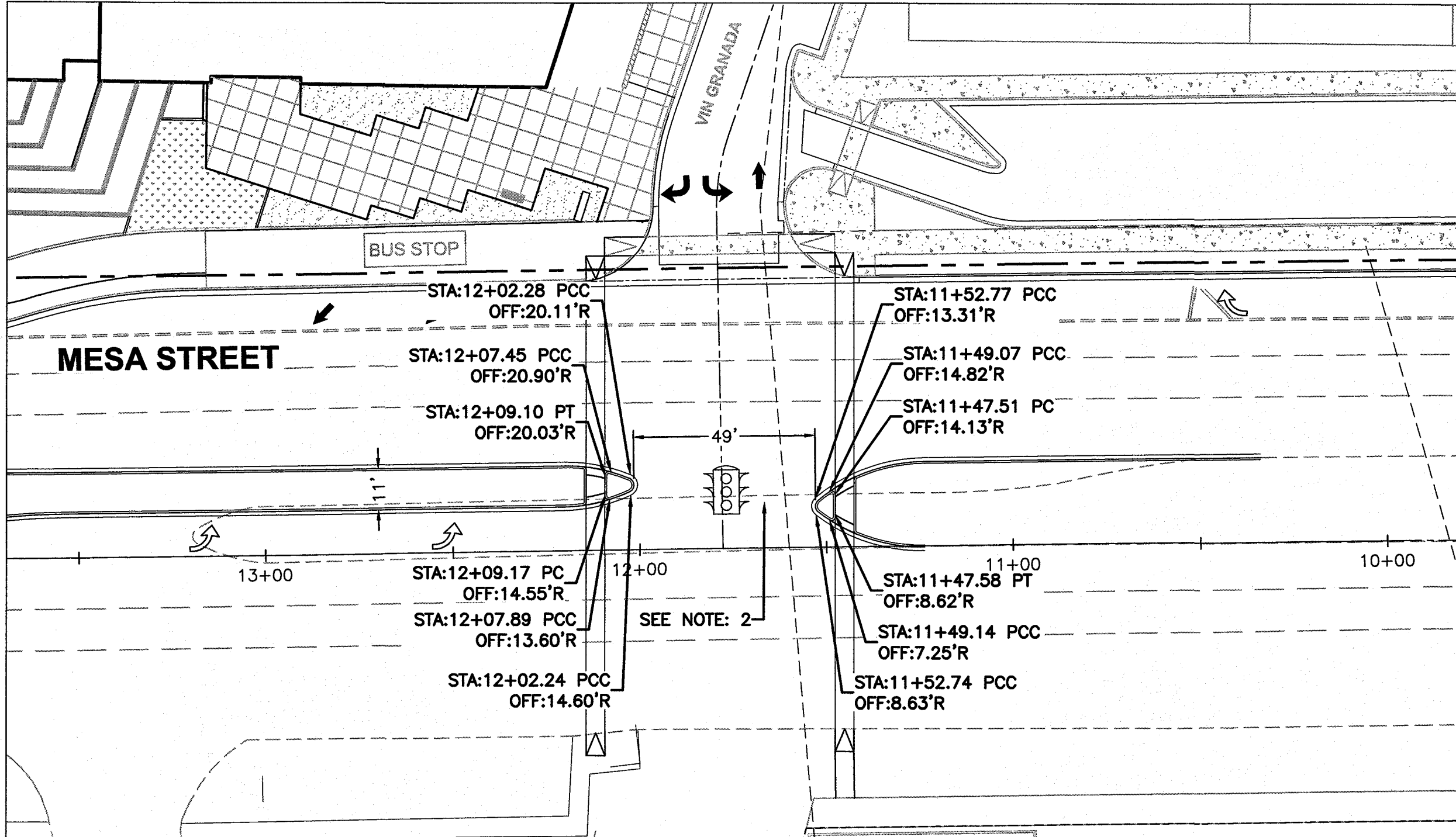
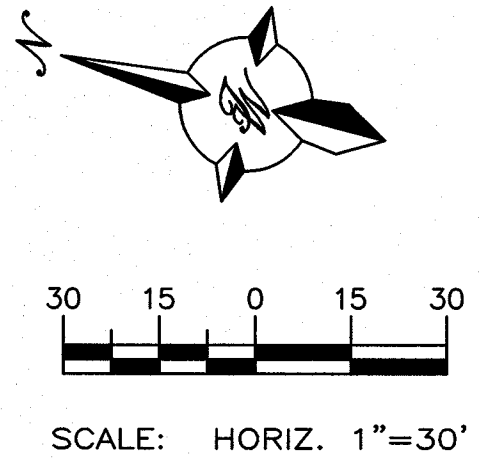
SHEET TITLE  
**LOT 1 BLK 29**  
**STORM DRAIN**  
**PLAN & PROFILE**  
 SHT 18 OF 44





- LEGEND**
- CURB & GUTTER
  - - - BOUNDARY LINE
  - - - EASEMENT
  - - - CENTERLINE
  - - - RIGHT-OF-WAY
  - ☼ STREET LIGHTS
  - - - LANE
  - - - STRIPING
  - - - EXISTING CURB & GUTTER
  - - - EXISTING SIDEWALK
  - - - EXISTING LANE
  - - - EXISTING STRIPING

- SITE LEGEND**
- ① CURB & GUTTER (SEE DETAIL SHEET 27)
  - ② TRAFFIC SIGNAL BY OTHERS. VIN GRANADA TO REMAIN CLOSED UNTIL TRAFFIC SIGNAL IS INSTALLED AND FULLY OPERATIONAL.
- NOTE:  
COORDINATE ALL MESA STREET IMPROVEMENTS WITH TXDOT

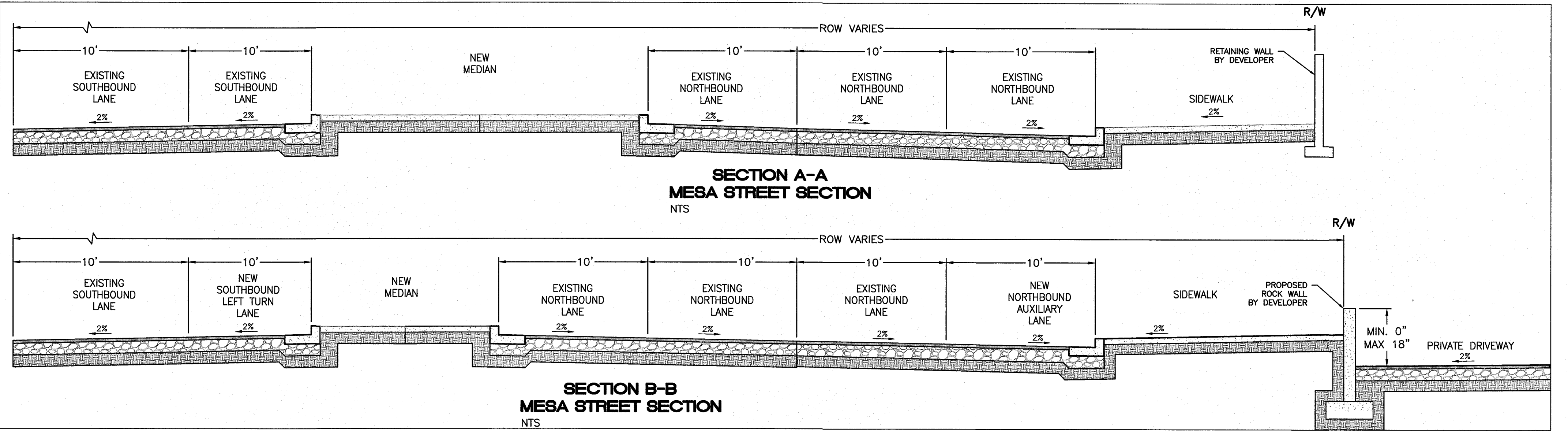
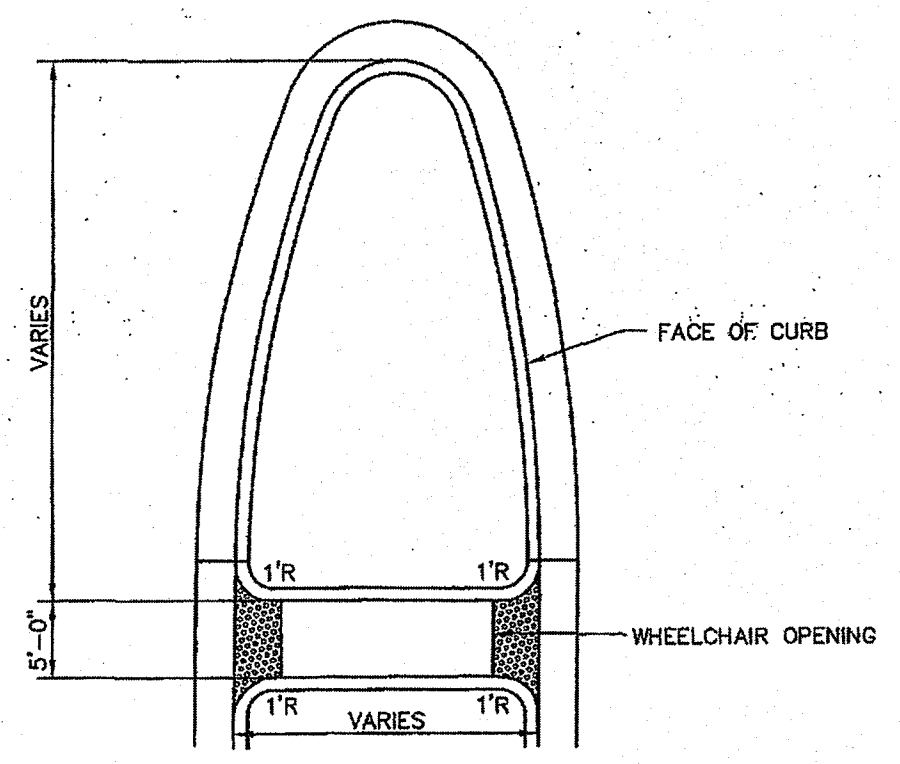
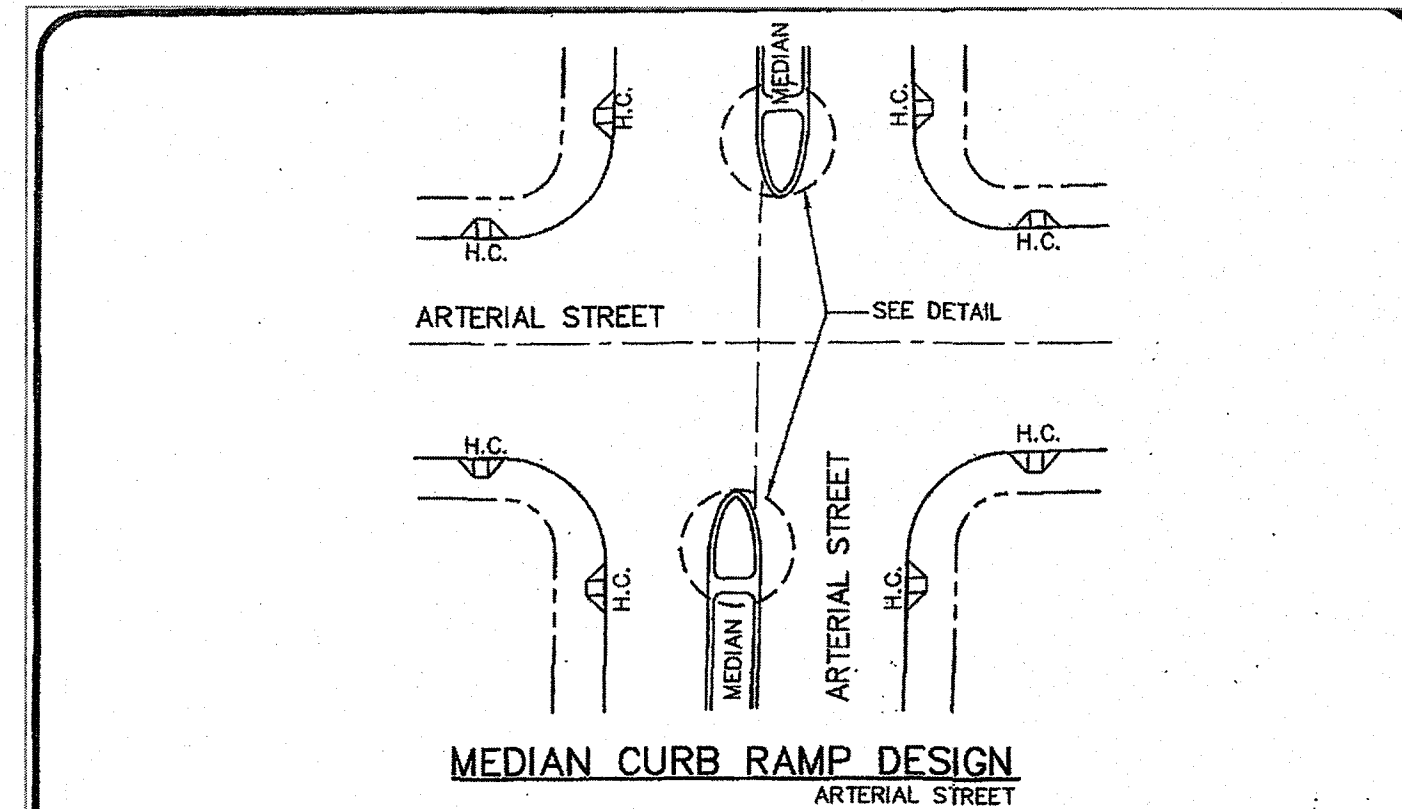


**Line Table**

Line #	Length	Direction
L1	93.74	S15° 16' 58.79"E
L2	13.57	N75° 24' 43.85"E
L3	5.90	S75° 24' 43.85"W
L4	5.48	N75° 24' 43.85"E

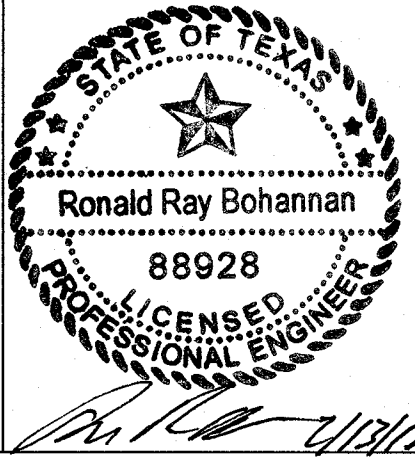
**Curve Table**

Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C2	18.64	45.00	23.73	S27° 08' 49"E	18.50
C4	18.76	45.00	23.88	N3° 57' 43"W	18.62
C6	3.82	45.00	4.87	S51° 57' 03"E	3.82
C7	3.58	2.00	102.64	N74° 17' 45"E	3.12
C8	3.68	45.00	4.69	N20° 37' 58"E	3.68
C9	4.86	2.00	133.45	S74° 17' 45"W	3.67
C10	5.08	45.00	6.47	S4° 20' 04"W	5.08
C12	5.59	45.00	7.11	N35° 25' 15"W	5.58



PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4157.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A.F. MILLER SURVEY 216, AND PORTION  
OF TRACT 2A, JOHN PARKER SURVEY 0,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.668± ACRES

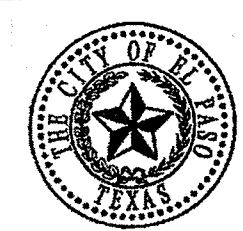


RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
www.tierrawest.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN DATE: 06/06/2016  
DRAWN BY: BF DATE: 06/06/2016  
DRAWING NAME: 201502\_14\_MESA\_MEDIAN\_OPENING.PY JOB NO.: 2015062  
CHECKED BY: JN DATE: 06/06/2016

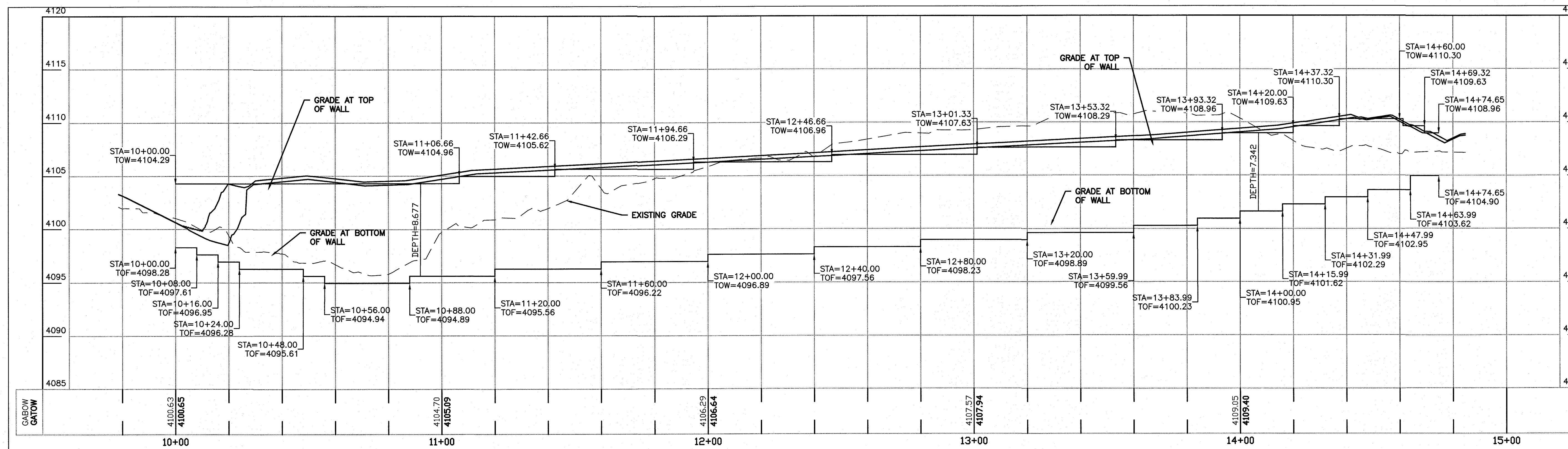
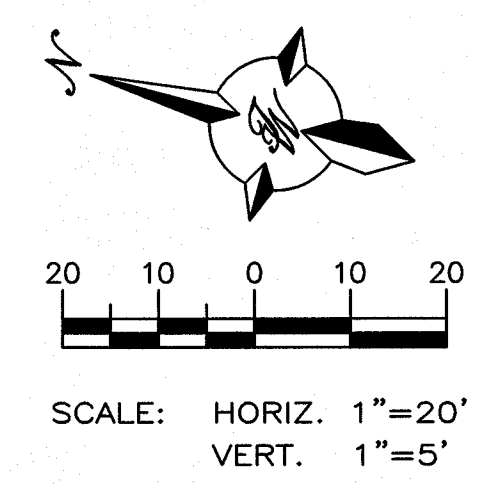
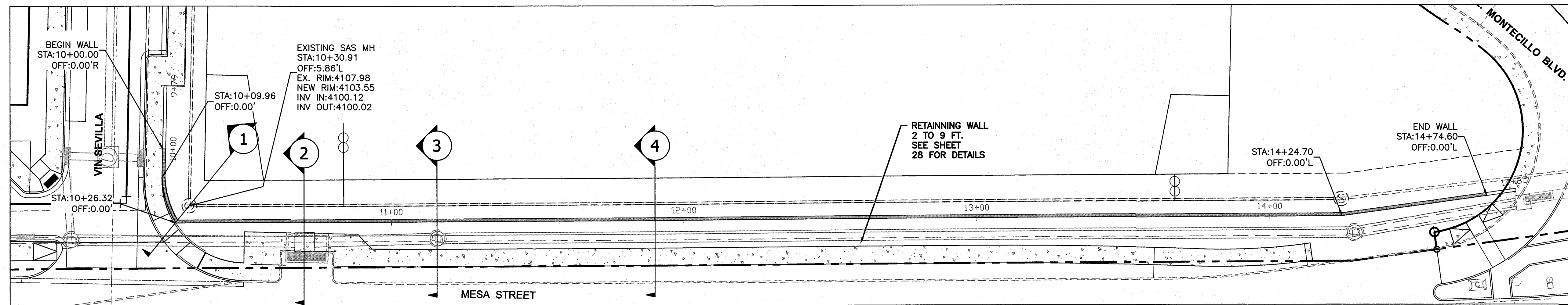


TITLE 19 - SUBDIVISION ORDINANCE  
ENGINEERING DEPARTMENT  
DESIGN STANDARDS  
FOR CONSTRUCTION

MEDIAN CURB  
RAMP DESIGN  
(ARTERIAL)  
6-32  
Approved By: B. A. SHUBERT Checked By: H. M. B.  
Date: JUNE 03, 2008 Drawn By: OBC/J.R.

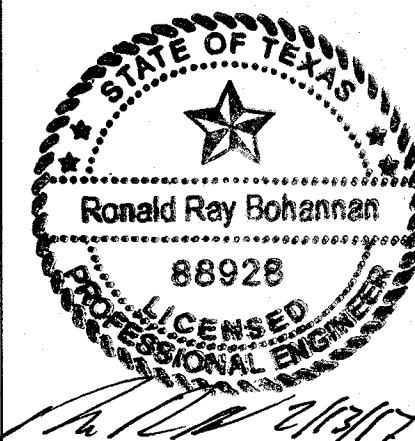
SHEET TITLE  
**MESA ST, MEDIAN  
OPENING**





BENCHMARK  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
SECTION 5A  
OF TRACT 5A  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
ELEVATION: 4137.81

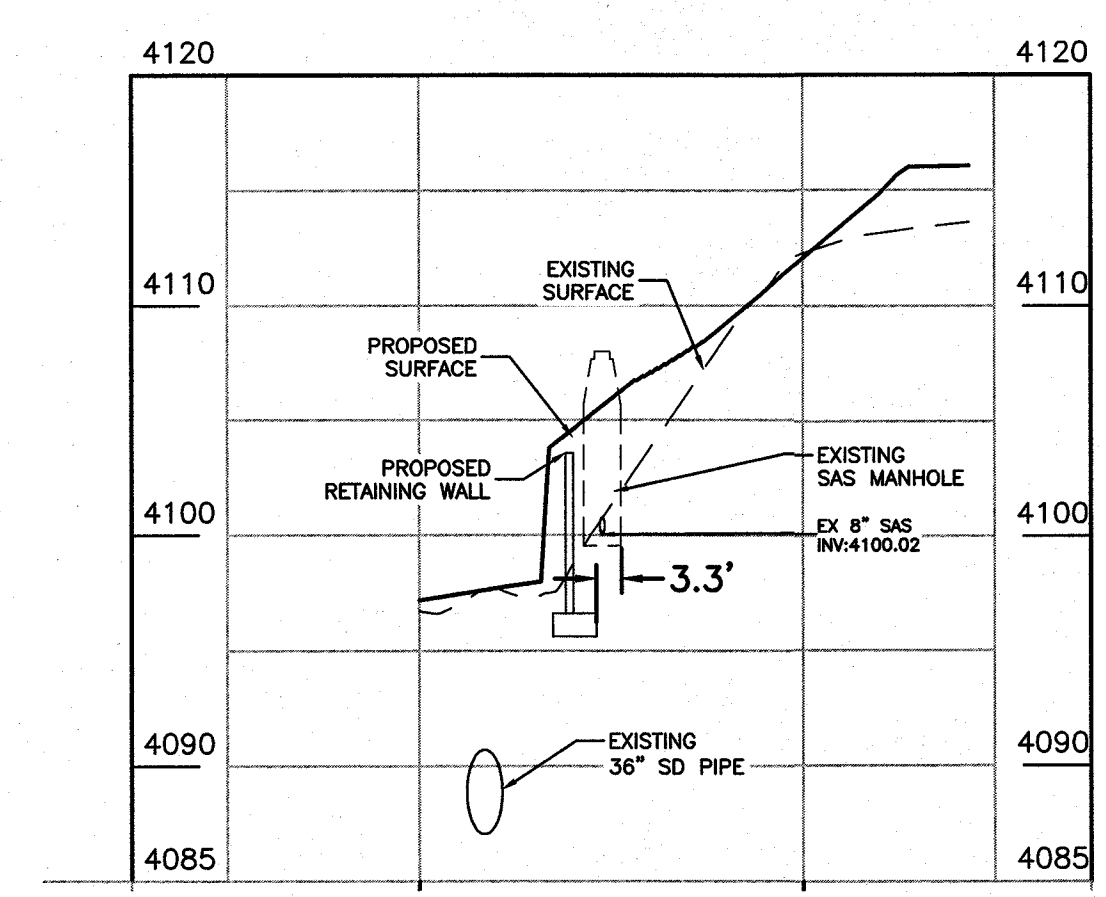
PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 8A  
SECTION 5A  
OF TRACT 5A  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.686± ACRES



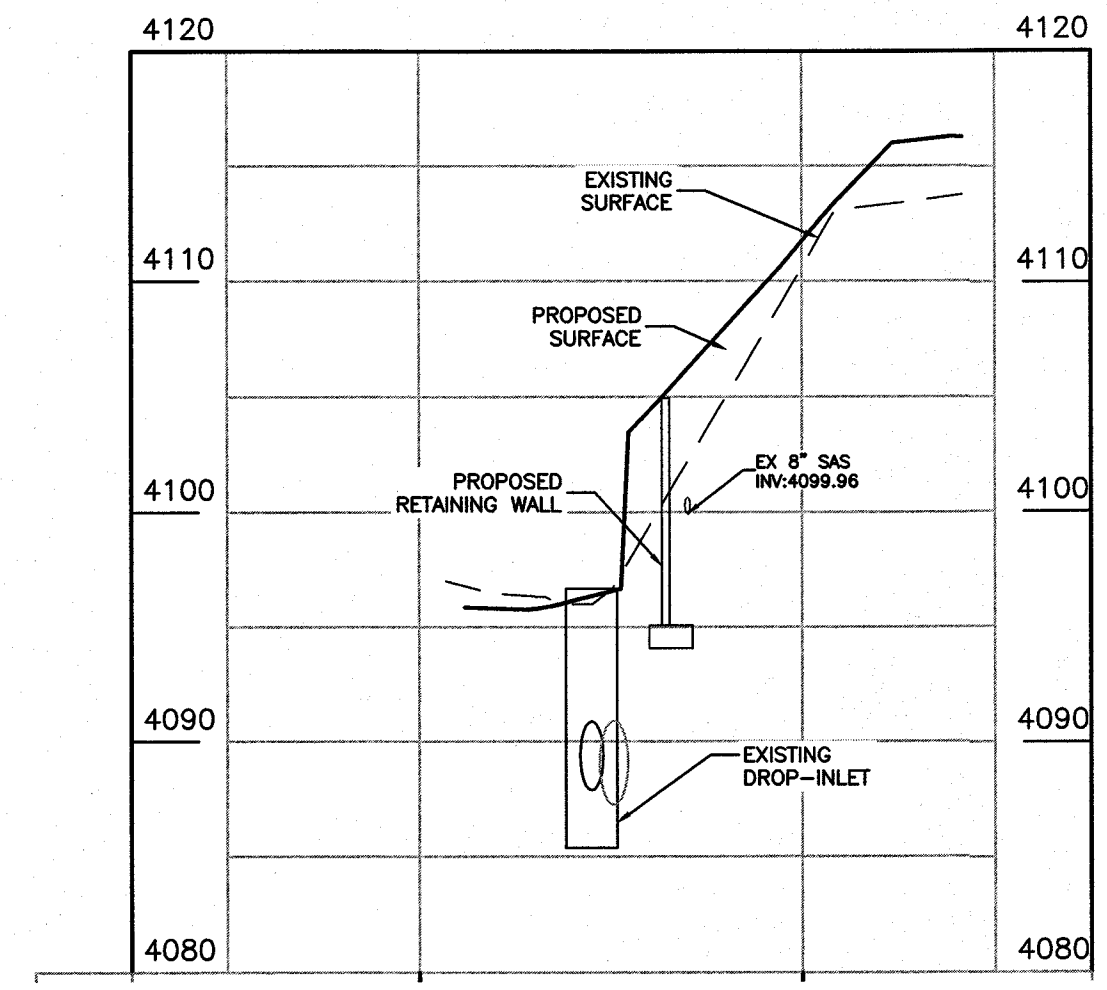
RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87110  
www.tierrawest.com  
TEXAS BUSINESS NO.  
F-11773

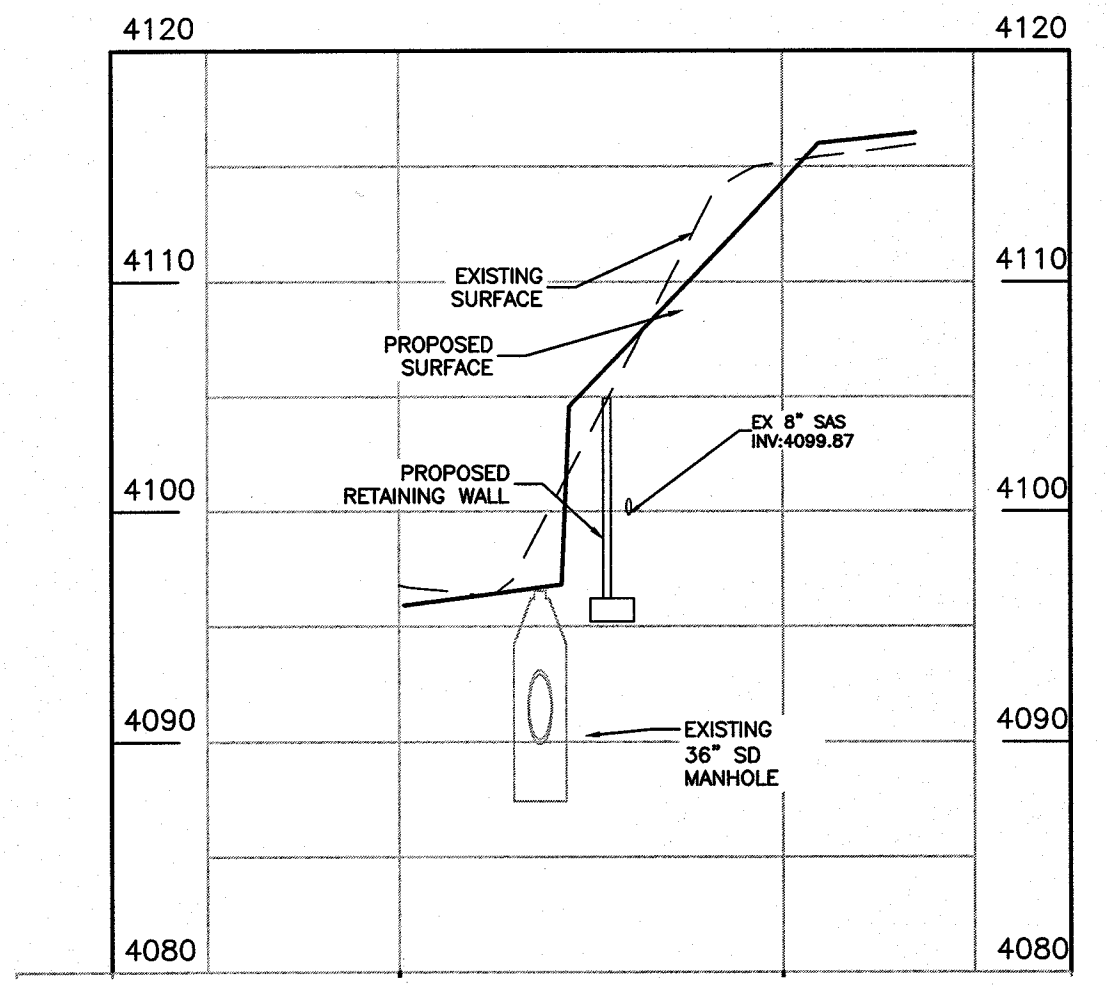
**NOTE:**  
RETAINING WALL TO BE DESIGNED AND BUILT BY OTHERS.



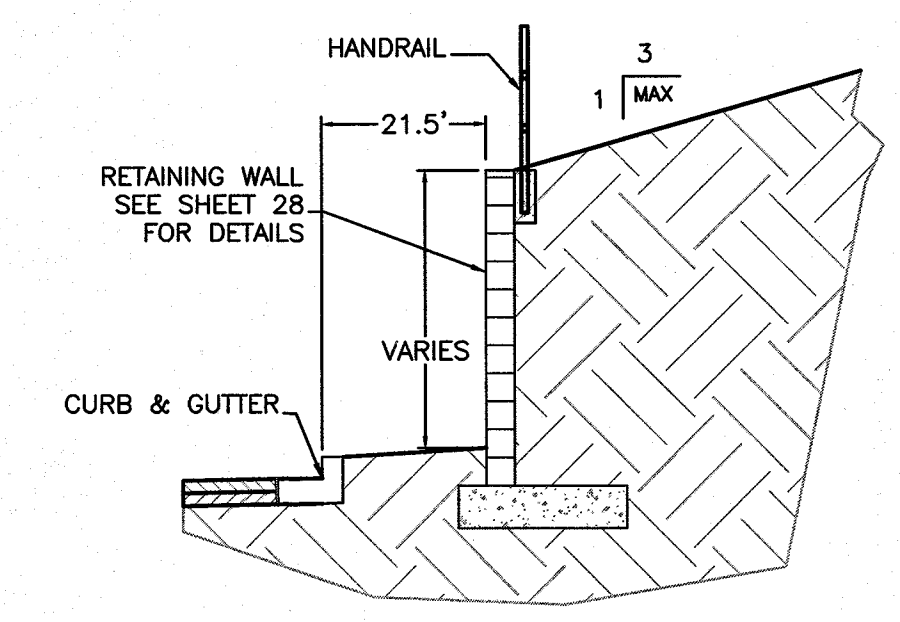
SECTION 1  
NTS



SECTION 2  
NTS



SECTION 3  
NTS

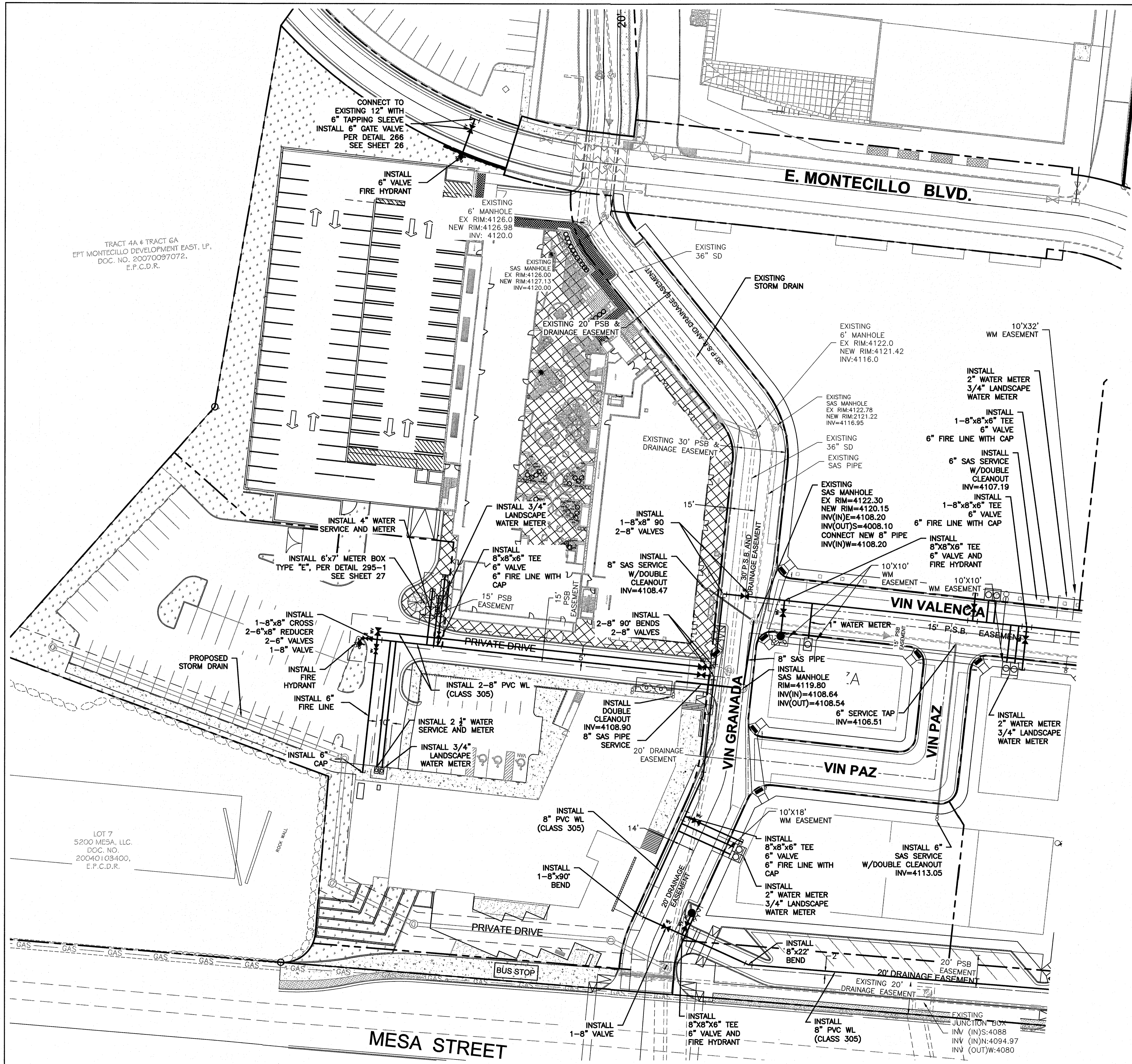


SECTION 4  
NTS

**CAUTION:**  
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS. PRIOR TO STARTING THE WORK, ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

NO.	DATE	REMARKS	BY
DESIGNED BY: JN	DATE: 06/06/2016	REVISIONS	
DRAWN BY: BF	DATE: 06/06/2016	DESIGN	
DRAWING NAME: 2015062-WALL-PP	JOB NO.: 2015062		
CHECKED BY: JN	DATE: 06/06/2016		
SHEET TITLE			
<b>MESA ST &amp; SEVILLA RETAINING WALL PLAN &amp; PROFILE</b>			
SHT 20 OF 44			



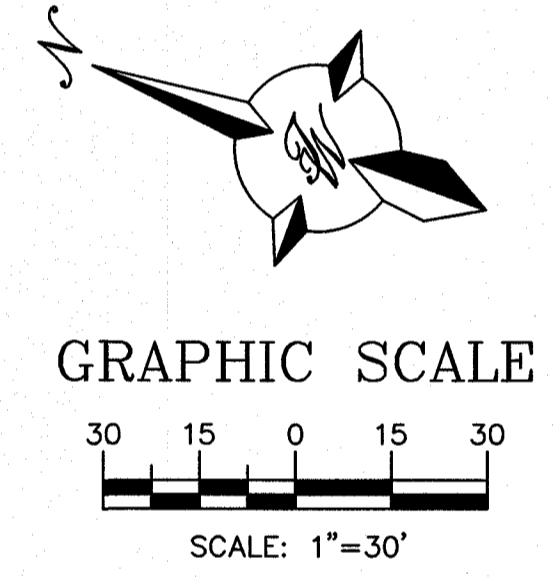
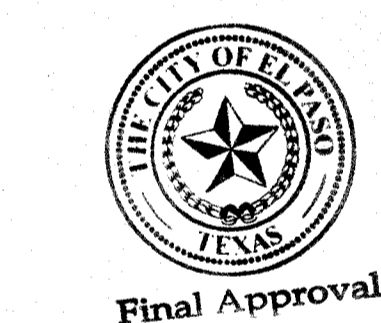


**GENERAL NOTES:**

1. CONTRACTOR MUST COORDINATE WATER SYSTEM WITH SEWER SYSTEM TO PREVENT ANY CONFLICTS WHERE THESE LINES INTERSECT ONE ANOTHER.
2. PROVIDE 4 FEET OF COVER MINIMUM FOR ALL PROPOSED WATER LINES.
3. AREAS WHERE WATER PIPES CROSS OVER SEWER PIPES SHALL NOT HAVE ANY JOINTS.
4. PROPOSED WATER LINE SHALL BE 8' FROM CENTERLINE (North and East), UNLESS OTHERWISE NOTED.
5. PROPOSED WATER SERVICE LINE SHALL BE 5' FROM LOT LINE.
6. WATER PIPE TO BE DR14, C900, CLASS 305 IN ACCORDANCE WITH EPWU-PSB STANDARDS.
7. NO FENCES, SIGNS, TREES OR ROCKWALLS TO BE PLACED WITHIN UTILITY EASEMENTS.
8. CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
9. INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF (5') FEET AS PER O.S.H.A. STANDARDS.
10. PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AT THE FOLLOWING: TAPPING SLEEVES, TEES, BENDS, PLUGS AND ALL FITTINGS.
11. ALL VALVES ON P.V.C. WATER MAINS SHALL BE ANCHORED IN CONCRETE.
12. P.V.C. PIPE SHALL BE PLACED WITH SELECT BEDDING MATERIAL ALL AROUND.
13. CAUTION: VERIFY LOCATION & DEPTH OF EXISTING GAS MAIN IN THE AREA OF CONSTRUCTION, BEFORE INSTALLING WATER LINE.
14. WATER PIPES SHALL BE PVC C900 DR 18 CLASS 305, AND DUCTILE IRON FITTINGS.

**NOTES:**

1. PUBLIC WATER AND SEWER UTILITY WORK SHALL NOT BE PERFORMED BY THE CONTRACTOR UNTIL A DEVELOPMENT AGREEMENT HAS BEEN EXECUTED BETWEEN THE OWNER AND E.P.W.U. - P.S.B.
2. CONSTRUCTION OF THE PUBLIC WATER AND SEWER SYSTEM INCLUDING MATERIALS AND TESTING SHALL CONFORM TO E.P.W.U. - P.S.B STANDARD SPECIFICATIONS FOR THE INSTALLATION OF WATER MAINS, SEWER MAINS AND RELATED APPURTENANCES.
3. DUE TO ANTICIPATED PRESSURES PRIVATE PRESSURE REGULATING DEVICES ARE REQUIRED AT THE DISCHARGE SIDE OF EACH WATER METER.

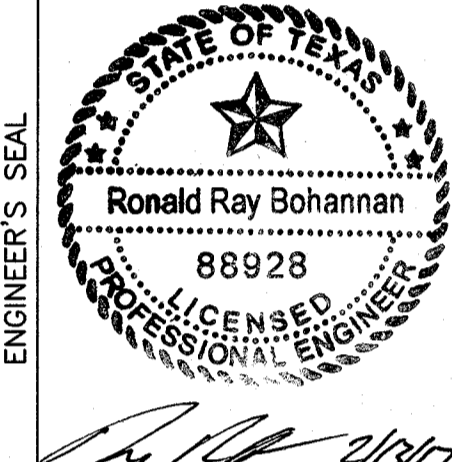


**LEGEND**

- CURB & GUTTER
- - - BOUNDARY LINE
- - - EASEMENT
- - - CENTERLINE
- - - RIGHT-OF-WAY
- ▬ BUILDING
- ▬ SIDEWALK
- - - EXISTING CURB & GUTTER
- 8" WL — WATERLINE
- SINGLE CLEAN OUT
- DOUBLE CLEAN OUT
- EXISTING SD MANHOLE
- EXISTING INLET
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- - - EX. 8" SAS — EXISTING SANITARY SEWER LINE
- - - EX. 10" WL — EXISTING WATER LINE
- - - EX. 18" RCP — EXISTING STORM SEWER LINE

**BENCHMARK**  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4157.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A LLER SURVEY, BEING A PORTION  
OF TRACT EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.886± ACRES



RONALD R. BOHANNAN  
P.E. #88928

**TIERRA WEST LLC**  
5571 MIDWAY PARK PLACE, NE  
ALBUQUERQUE, NM 87109  
(505) 858-3100  
www.tierrewestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REVISIONS	BY
	06/06/2016	DESIGN	
	06/06/2016	REVISIONS	
	06/06/2016	DESIGN	
	06/06/2016	REVISIONS	

SHEET TITLE

**WATER & SEWER DISTRIBUTION PLAN**



**WATER NOTES:**

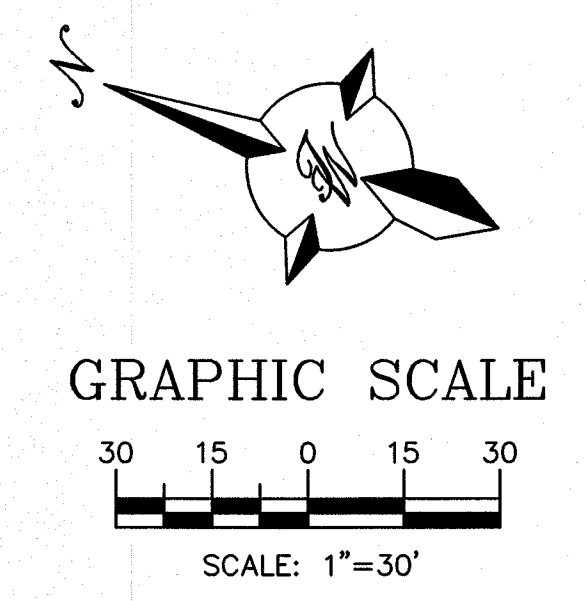
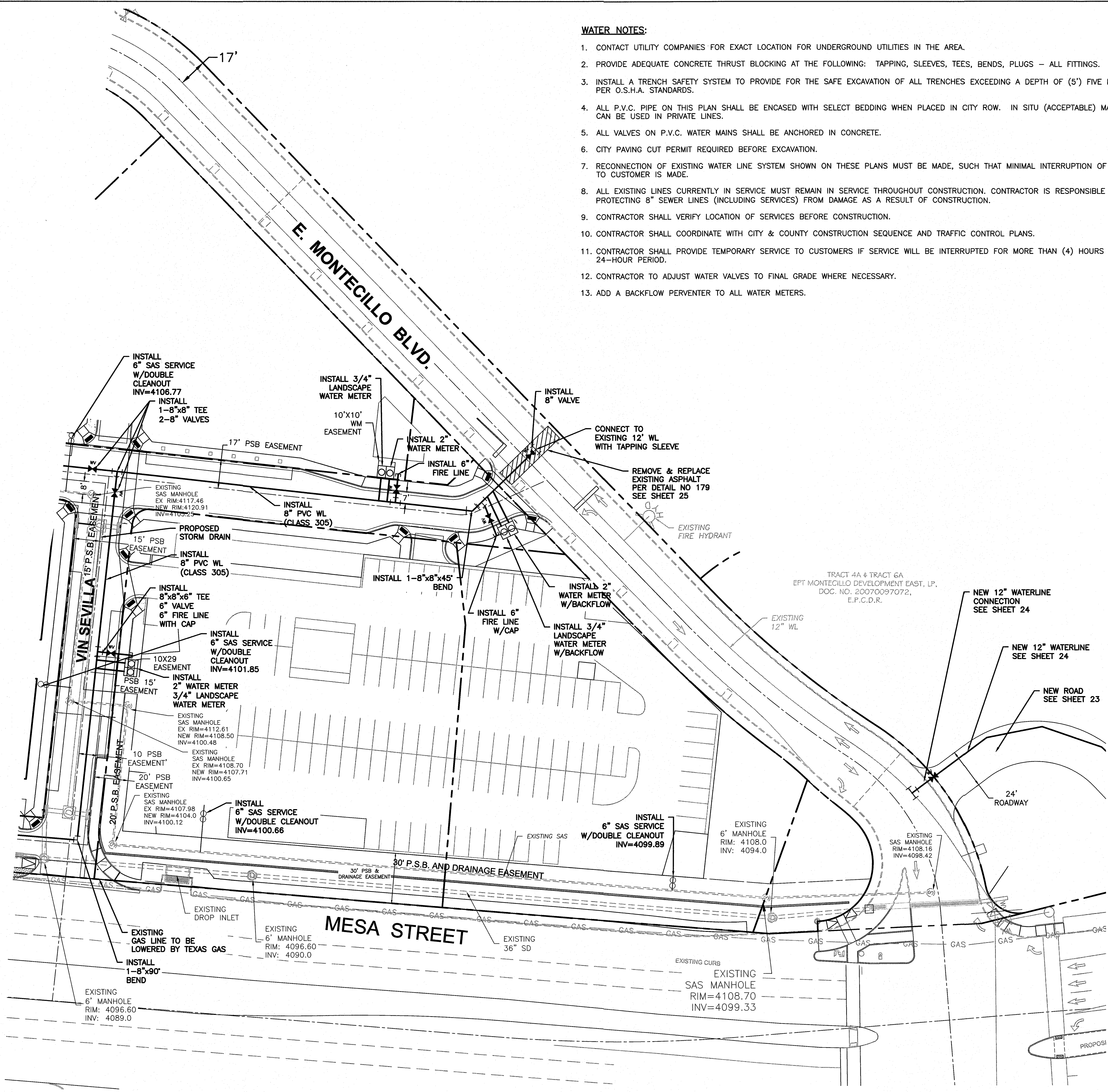
- CONTACT UTILITY COMPANIES FOR EXACT LOCATION FOR UNDERGROUND UTILITIES IN THE AREA.
- PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AT THE FOLLOWING: TAPPING, SLEEVES, TEES, BENDS, PLUGS - ALL FITTINGS.
- INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH 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.
- CONTRACTOR SHALL VERIFY LOCATION OF SERVICES BEFORE CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE WITH CITY & COUNTY 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.
- ADD A BACKFLOW PERVERTER TO ALL WATER METERS.

**GENERAL NOTES:**

- CONTRACTOR MUST COORDINATE WATER SYSTEM WITH SEWER SYSTEM TO PREVENT ANY CONFLICTS WHERE THESE LINES INTERSECT ONE ANOTHER.
- PROVIDE 4 FEET OF COVER MINIMUM FOR ALL PROPOSED WATER LINES.
- AREAS WHERE WATER PIPES CROSS OVER SEWER PIPES SHALL NOT HAVE ANY JOINTS.
- PROPOSED WATER LINE SHALL BE 8' FROM CENTERLINE (North and East), UNLESS OTHERWISE NOTED.
- PROPOSED WATER SERVICE LINE SHALL BE 5' FROM LOT LINE.
- WATER PIPE TO BE DR14, C900, CLASS 305 IN ACCORDANCE WITH EPWU-PSB STANDARDS.
- NO FENCES, SIGNS, TREES OR ROCKWALLS TO BE PLACED WITHIN UTILITY EASEMENTS.
- CONTACT UTILITY COMPANIES FOR EXACT LOCATION OF UNDERGROUND UTILITIES IN THIS AREA BEFORE EXCAVATION.
- INSTALL A TRENCH SAFETY SYSTEM TO PROVIDE FOR THE SAFE EXCAVATION OF ALL TRENCHES EXCEEDING A DEPTH OF (5') FEET AS PER O.S.H.A. STANDARDS.
- PROVIDE ADEQUATE CONCRETE THRUST BLOCKING AT THE FOLLOWING: TAPPING SLEEVES, TEES, BENDS, PLUGS AND ALL FITTINGS.
- ALL VALVES ON P.V.C. WATER MAINS SHALL BE ANCHORED IN CONCRETE.
- P.V.C. PIPE SHALL BE PLACED WITH SELECT BEDDING MATERIAL ALL AROUND.
- CAUTION: VERIFY LOCATION & DEPTH OF EXISTING GAS MAIN IN THE AREA OF CONSTRUCTION, BEFORE INSTALLING WATER LINE.

**NOTES:**

- PUBLIC WATER AND SEWER UTILITY WORK SHALL NOT BE PERFORMED BY THE CONTRACTOR UNTIL A DEVELOPMENT AGREEMENT HAS BEEN EXECUTED BETWEEN THE OWNER AND E.P.W.U. - P.S.B.
- CONSTRUCTION OF THE PUBLIC WATER AND SEWER SYSTEM INCLUDING MATERIALS AND TESTING SHALL CONFORM TO E.P.W.U. - P.S.B. STANDARD SPECIFICATIONS FOR THE INSTALLATION OF WATER MAINS, SEWER MAINS AND RELATED APPURTENANCES.
- DUE TO ANTICIPATED PRESSURES PRIVATE PRESSURE REGULATING DEVICES ARE REQUIRED AT THE DISCHARGE SIDE OF EACH WATER METER.



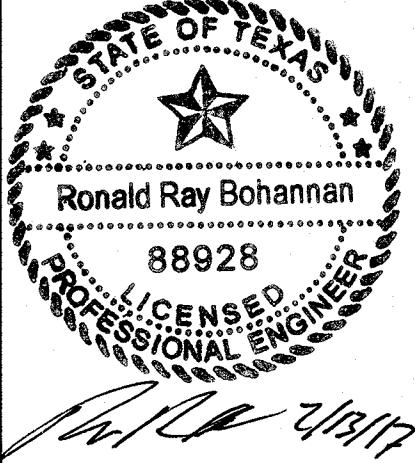
CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF EXISTING WATERLINE PRIOR TO CONSTRUCTION.

**LEGEND**

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- RIGHT-OF-WAY
- BUILDING
- SIDEWALK
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- WATERLINE
- SINGLE CLEAN OUT
- DOUBLE CLEAN OUT
- EXISTING SD MANHOLE
- EXISTING INLET
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE

PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
SECTION 16, TOWNSHIP 15N, RANGE 10E, COUNTY OF EL PASO, TEXAS  
ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A, BEING A PORTION OF TRACT 5A, S.W. 1/4 SECTION 16, TOWNSHIP 15N, RANGE 10E, COUNTY OF EL PASO, TEXAS  
CONTAINING: 12.886± ACRES



RONALD R. BOHANNAN  
P.E. #88928

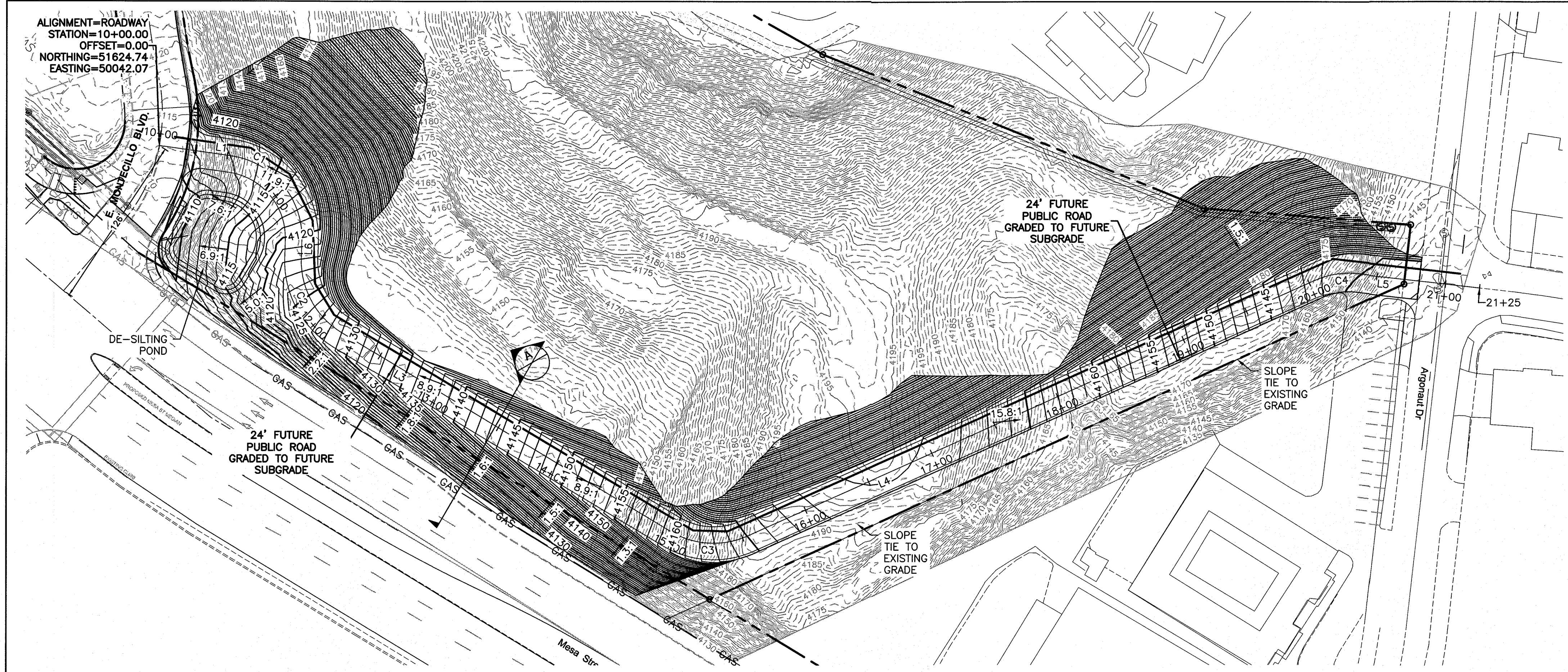
TERRA WEST LLC  
5571 MIDWAY PARK PLACE, NE  
ALBUQUERQUE, NM 87109  
(505) 858-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
	06/06/2016		
	06/06/2016		
	06/06/2016		

SHEET TITLE  
**WATER & SEWER DISTRIBUTION PLAN**  
SHT 22 OF 44

Z:\000\001002\001 Unit 5B Montecillo\001\Waterline\001\001.dwg, 15\_Meter-Sewer Distribution.dwg, Feb. 13, 2017 - 12:43pm

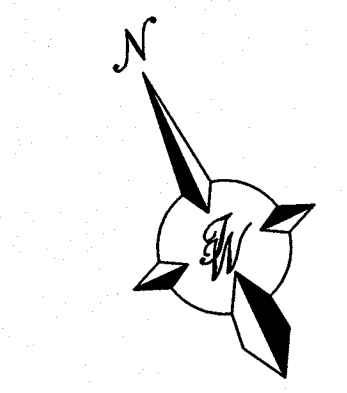
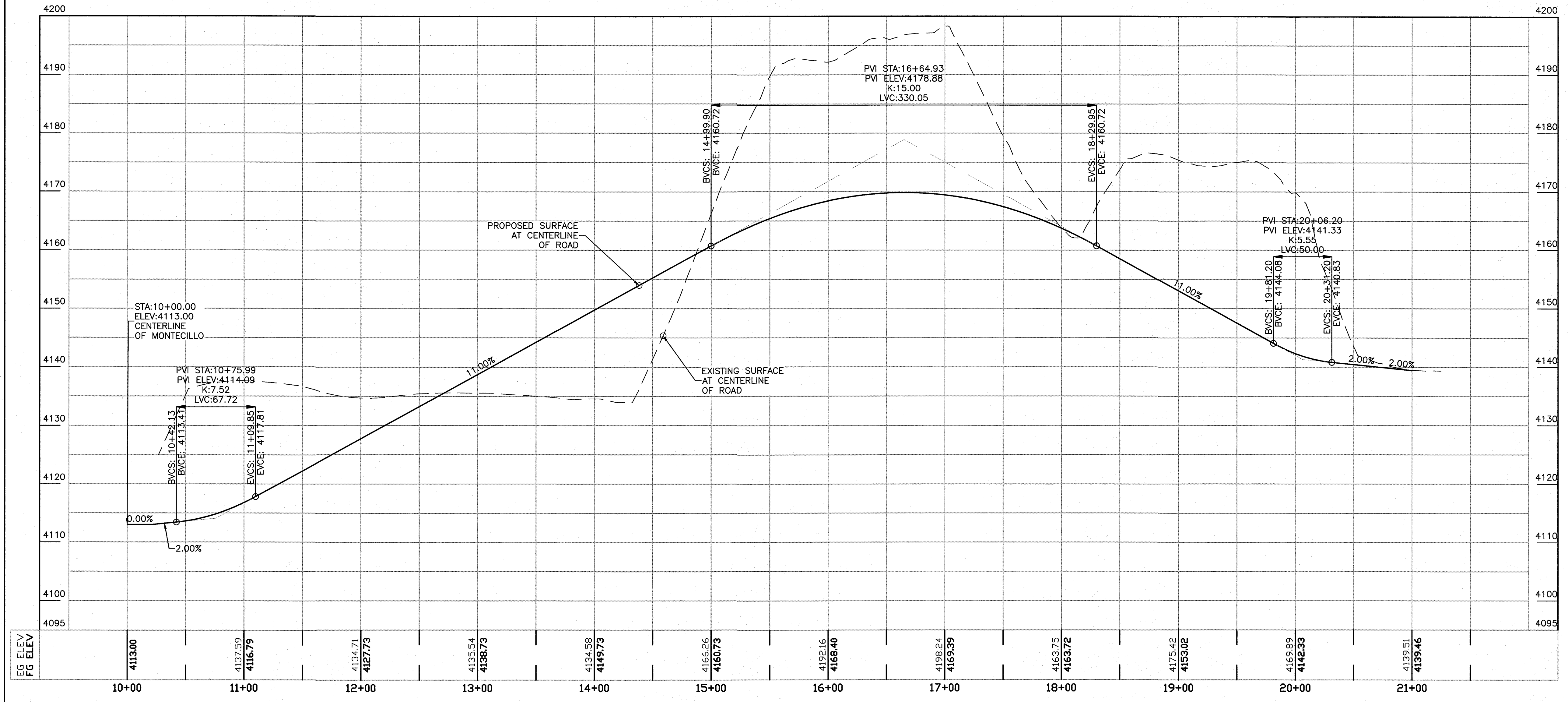
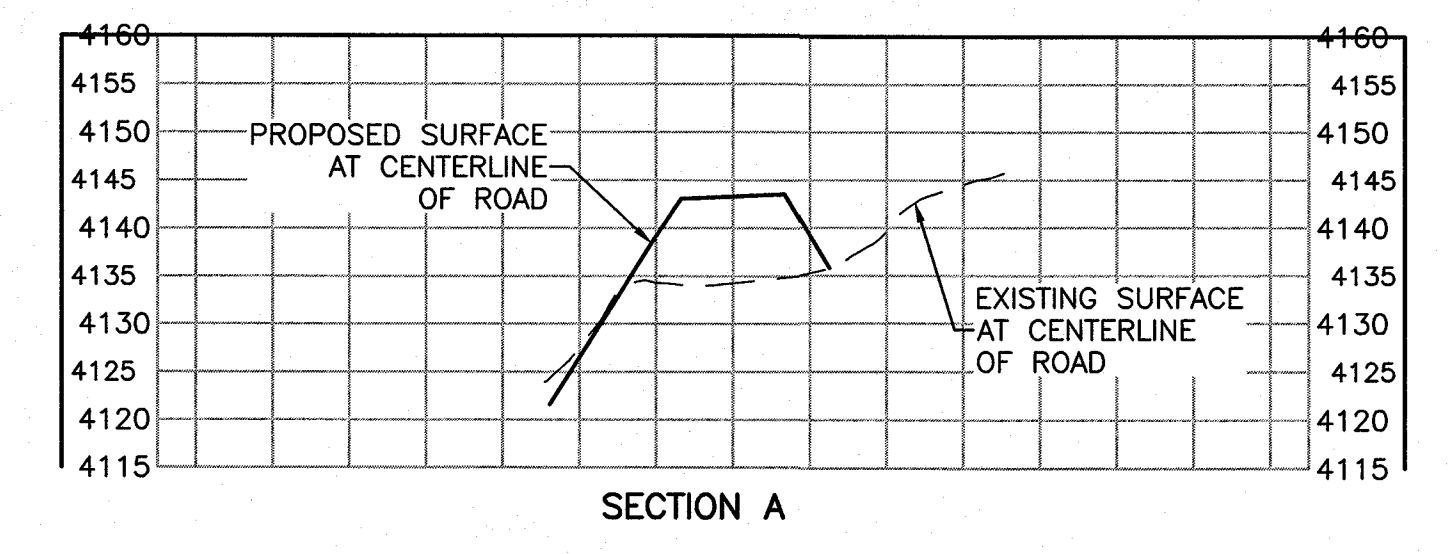




**LEGEND**

--- EXISTING CURB & GUTTER

--- EXISTING BOUNDARY LINE



50 25 0 25 50

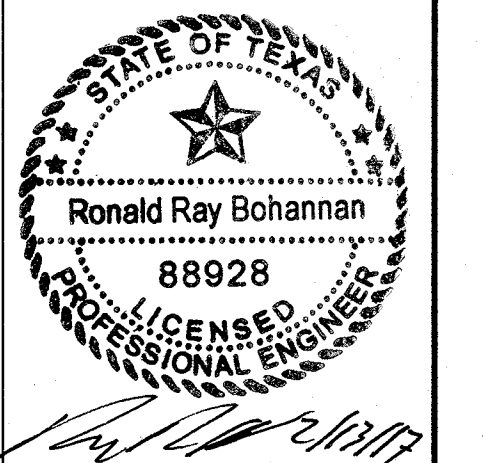
SCALE: HORIZ. 1"=50'

VERT. 1"=10'



BENCHMARK  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
CENTRAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A MILLER SURVEY 216, AND PORTION  
OF TRACTS 10, 11, 12, 13, 14, 15,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING 12.686± ACRES



RONALD R. BOHANNAN  
P.E. #88928

**TERRA WEST LLC**  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87110  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

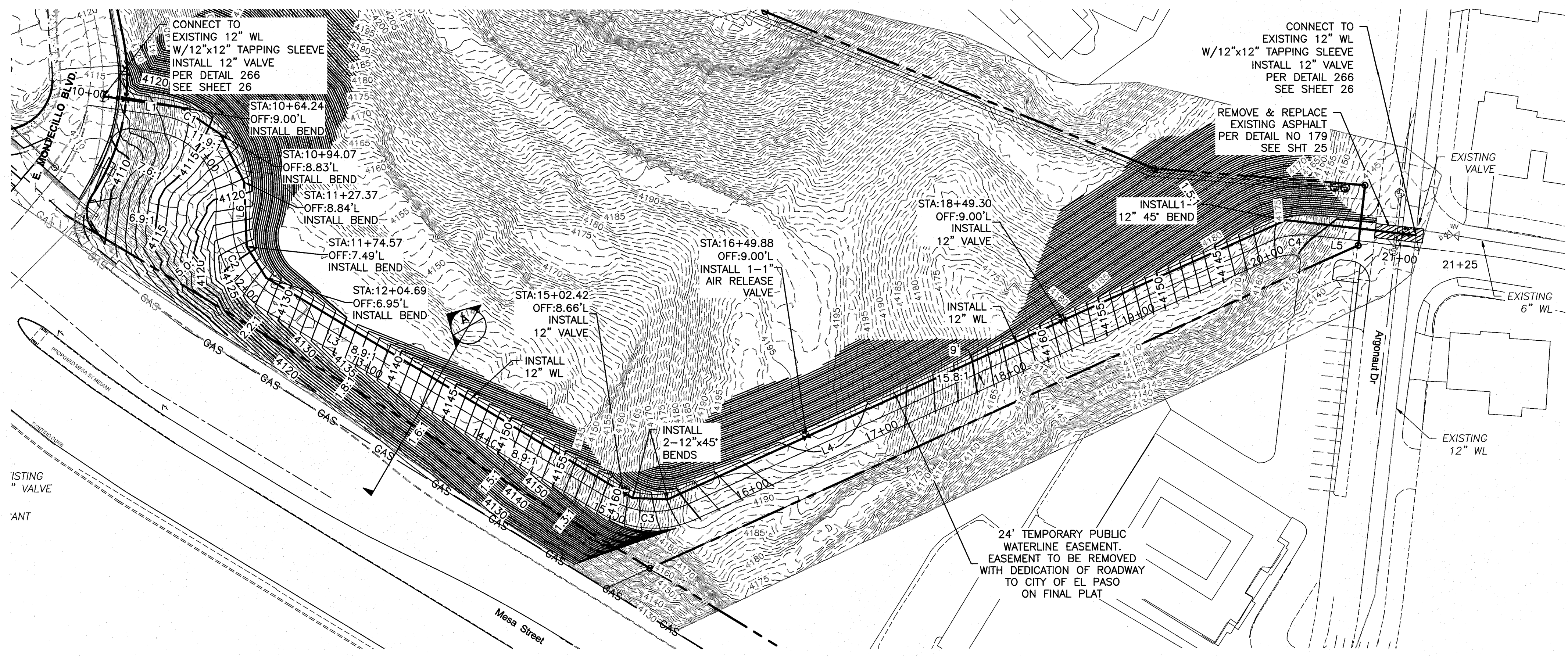
DESIGNED BY: JN DATE: 06/06/2016  
 DRAWN BY: BF DATE: 06/06/2016  
 DRAWING NAME: 2015062-16-WATERLINE P&P JOB NO.: 2015062  
 CHECKED BY: JN DATE: 06/06/2016

SHEET TITLE  
**12 IN WL ROADWAY  
P&P**

SHT 23 OF 44

Z:\2015\2015062 UNIT 5B Montecillo\El Paso\Watershed\2015062-16-Waterline P&P.dwg Plot: 13, 2017 - 15:48pm





BASIS OF STATIONING IS CENTERLINE OF ROAD  
ROADWAY ALIGNMENT - LINE & CURVE DATA

Line Table			Curve Table					
Line #	Length	Direction	Curve #	Length	Radius	Delta	Chord Direction	Chord Length
L5	88.07	S58° 33' 31.91"E	C1	88.35	60.00	84.37	S14° 40' 17"E	80.58
L4	450.83	S89° 13' 35.99"E	C2	64.39	60.00	61.49	S3° 13' 57"E	61.35
L3	278.89	S33° 58' 41.89"E	C3	57.86	60.00	55.25	S61° 36' 09"E	55.64
L6	11.94	S27° 30' 47.25"W	C4	32.12	59.42	30.98	S73° 53' 34"E	31.73
L1	52.45	S56° 51' 20.54"E						

- LEGEND**
- EXISTING CURB & GUTTER
  - EXISTING BOUNDARY LINE
  - ⊕ EXISTING SD MANHOLE
  - ⊕ EXISTING INLET
  - ⊕ EXISTING SAS MANHOLE
  - ⊕ EXISTING FIRE HYDRANT
  - ⊕ EXISTING WATER VALVE
  - ⊕ EXISTING WATER METER
  - EX. 10" WL --- EXISTING WATER LINE

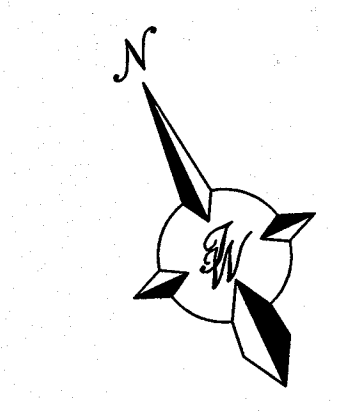
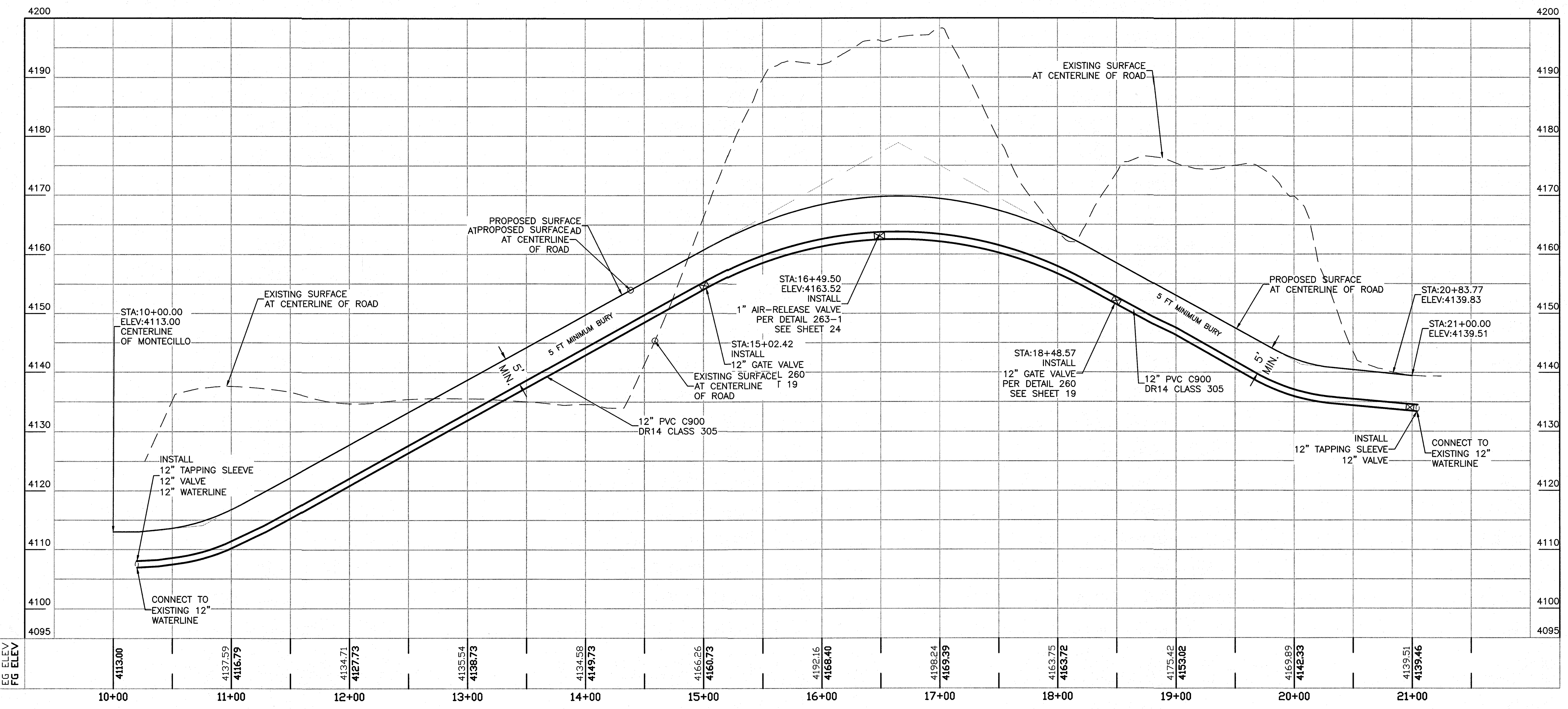
**PROJECT BENCHMARK**  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
OF TRACTS 4A AND 6A  
CITY OF EL PASO COUNTY, TEXAS  
ELEVATION: 4157.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
ALLER SURVEY OF 6.1 ACRES, PORTION  
OF TRACTS 4A AND 6A, SURVEY  
CITY OF EL PASO COUNTY, TEXAS  
CONTAINING 12.686± ACRES

**ENGINEER'S SEAL**  
STATE OF TEXAS  
Ronald Ray Bohannon  
88928  
LICENSED PROFESSIONAL ENGINEER

RONALD R. BOHANNAN  
P.E. #88928

**TERRA WEST LLC**  
5571 MIDWAY PARK PLACE, NE  
ALBUQUERQUE, NM 87109  
(505) 855-1100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773



SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

NO.	DATE	REMARKS
		DESIGN
		REVISIONS

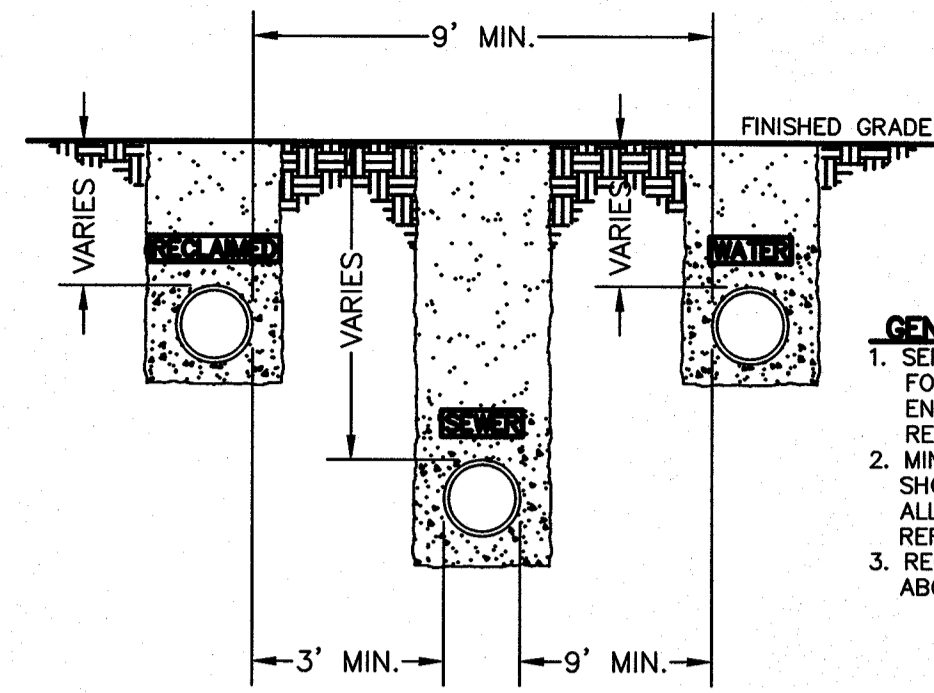
DESIGNED BY: JN  
DRAWN BY: BF  
DRAWING NAME: 2015062\_16-WATERLINE P&P  
CHECKED BY: JN

DATE: 06/06/2016  
DATE: 06/06/2016  
JOB NO.: 2015062  
DATE: 06/06/2016

SHEET TITLE  
**NEW 12" WATERLINE  
PLAN & PROFILE**

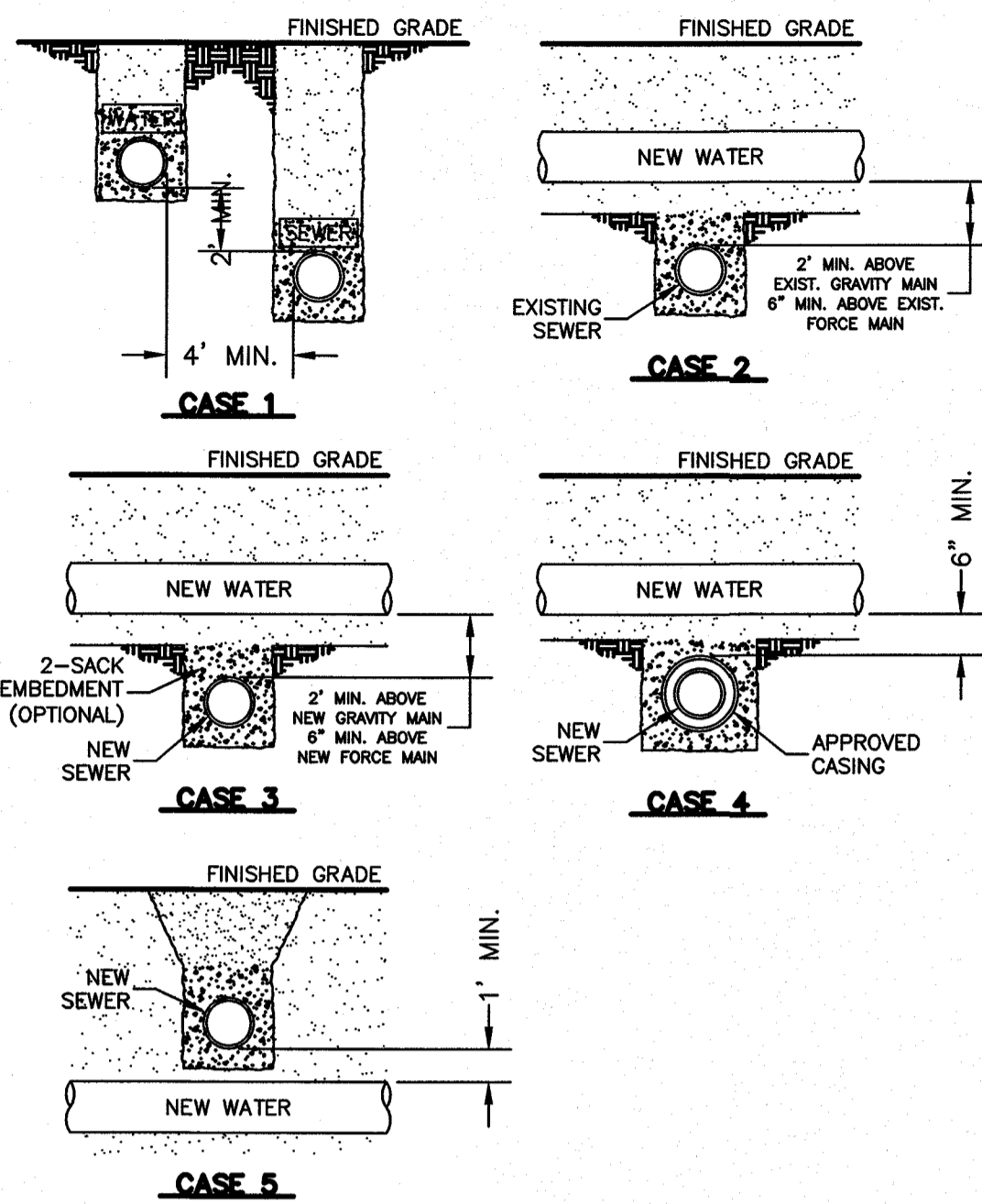
SHT 24 OF 44





**GENERAL NOTES:**  
 1. SEPARATION DISTANCES SHALL FOLLOW TEXAS COMMISSION ON ENVIRONMENTAL QUALITY STANDARD REQUIREMENTS.  
 2. MINIMUM SEPARATION DISTANCES SHOWN, IF CONDITIONS DO NOT ALLOW FOR INDICATED DISTANCES REFER TO DETAILS 161, 162 & 163.  
 3. RECLAIMED WATER LINE AT OR ABOVE SEWER LINE.

**SECTION**  
**SEPARATION DISTANCE POTABLE WATER, SANITARY SEWER AND RECLAIMED WATER**  
 N.T.S.  
**160**



**GENERAL NOTES:**  
 1. NEW OR EXISTING POTABLE WATER AND SANITARY SEWER MAINS.  
 2. SEPARATION DISTANCES SHALL FOLLOW TEXAS COMMISSION ON ENVIRONMENTAL QUALITY STANDARD REQUIREMENTS.

**CONSTRUCTION KEY NOTES:**  
 WHEN SPACING TIME BY FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, SEPARATION SHALL BE DETERMINED ACCORDING TO THE FOLLOWING CONDITIONS:

**CASE 1:** NEW POTABLE WATER MAIN OR FORCE MAIN PARALLEL TO POTABLE WATER MAIN (PER TCEQ §290.44(a)(4)).  
 • LOCATION: WATER ABOVE SEWER OR FORCE MAIN.  
 • SEWER MATERIALS: EXISTING GRAVITY MAIN (PVC, SD305 OR CLAY) OR FORCE MAIN TO REMAIN IF NOT LEAKING-IF LEAKING, REPLACE ONE PIPE SEGMENT PER CASE 3 REQUIREMENTS.  
 • SEPARATE TRENCHES SHALL BE USED.

**CASE 2:** NEW POTABLE WATER MAIN CROSSING EXISTING GRAVITY SANITARY SEWER MAIN OR EXISTING FORCE MAIN (PER TCEQ §290.44(a)(4)(B)) AND §290.44(a)(4)(B)(ii)).  
 • LOCATION: WATER ABOVE SEWER OR FORCE MAIN.  
 • SEWER MATERIALS: EXISTING GRAVITY MAIN (PVC, SD305 OR CLAY) OR FORCE MAIN TO REMAIN IF NOT LEAKING-IF LEAKING, REPLACE ONE PIPE SEGMENT PER CASE 3 REQUIREMENTS.  
 • CENTER ONE SEGMENT OF WATER PIPE OVER SEWER MAIN OR FORCE MAIN.  
 • MINIMUM PIPE SEGMENT LENGTH FOR WATER PIPE SHALL BE 18 FEET LONG.

**CASE 3:** NEW POTABLE WATER MAIN CROSSING NEW GRAVITY SANITARY SEWER MAIN OR NEW FORCE MAIN (PER TCEQ §290.44(a)(4)(B)(i), §290.44(a)(4)(B)(ii) AND §290.44(a)(4)(B)(iii)).  
 • LOCATION: WATER ABOVE SEWER OR FORCE MAIN.  
 • SEWER MATERIALS: NEW GRAVITY MAIN - PVC (150 PSI) OR DI REQUIRED, CENTER UNDER WATER MAIN. NEW FORCE MAIN - PVC (150 PSI) OR DI REQUIRED, FORCE MAIN TO BE EMBEDDED IN CEMENT STABILIZED BACKFILL, THE TOTAL LENGTH OF ONE PIPE PLUS 12" BEYOND THE JOINT AT EACH END.  
 • MAIN TO REMAIN IF NOT LEAKING-IF LEAKING, REPLACE ONE PIPE SEGMENT PER CASE 3 REQUIREMENTS.  
 • CENTER ONE SEGMENT OF WATER PIPE OVER SEWER PIPE OR FORCE MAIN.  
 • MINIMUM PIPE SEGMENT LENGTH FOR WATER AND SEWER SHALL BE 18 FEET LONG.  
 • FOR NEW GRAVITY SEWER ONLY, IN LIEU OF PVC (150 PSI) OR DI, INSTALL ONE PIPE SEGMENT OF SD305 SEWER MAIN MUST BE EMBEDDED IN CEMENT STABILIZED BACKFILL, THE TOTAL LENGTH OF ONE PIPE PLUS 12" BEYOND THE JOINT AT EACH END.

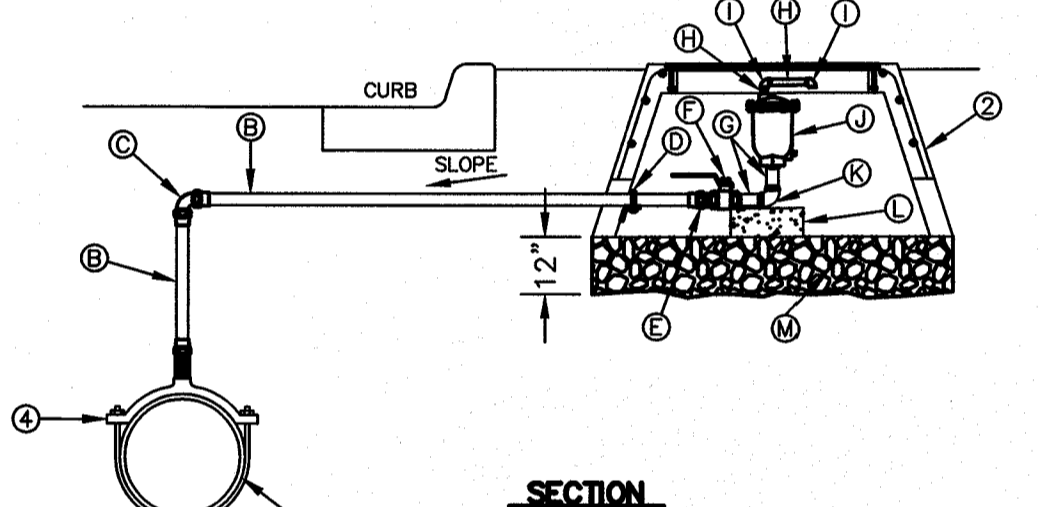
**CASE 4:** NEW POTABLE WATER MAIN CROSSING NEW GRAVITY SANITARY SEWER MAIN OR NEW FORCE MAIN (PER TCEQ §290.44(a)(4)(B)(i), §290.44(a)(4)(B)(ii) AND §290.44(a)(4)(B)(iii)).  
 • LOCATION: WATER ABOVE SEWER OR FORCE MAIN.  
 • SEWER MATERIALS: NEW GRAVITY MAIN - SD305 ACCEPTABLE, NEW FORCE MAIN - PVC (150 PSI) OR DI REQUIRED. IN ADDITION, SEWER MAIN OR FORCE MAIN MUST BE ENCASED IN DI OR STEEL, TWO NOMINAL SIZES LARGER THAN MAIN AND AT LEAST 18 FEET LONG.  
 • CENTER CASING PIPE ON WATER MAIN.

**CASE 5:** NEW GRAVITY SANITARY SEWER MAIN OR NEW FORCE MAIN CROSSING NEW POTABLE WATER MAIN (PER TCEQ §290.44(a)(4)(B)(i), §290.44(a)(4)(B)(ii) AND §290.44(a)(4)(B)(iii)).  
 • LOCATION: SEWER OR FORCE MAIN ABOVE WATER.  
 • NEW GRAVITY MAIN OR FORCE MAIN REQUIRES ONE PIPE SEGMENT OF PVC (150 PSI) OR DI. IN ADDITION, WATER MUST BE DI OR STEEL OR ENCASED IN DI OR STEEL, TWO NOMINAL SIZES LARGER THAN MAIN AND AT LEAST 18 FEET LONG.  
 • CENTER ONE SEGMENT OF SEWER PIPE ON WATER MAIN.

**SECTION**  
**SEPARATION DISTANCE SANITARY SEWER AND POTABLE WATER (SPECIAL CONDITIONS)**  
 N.T.S.  
**161**

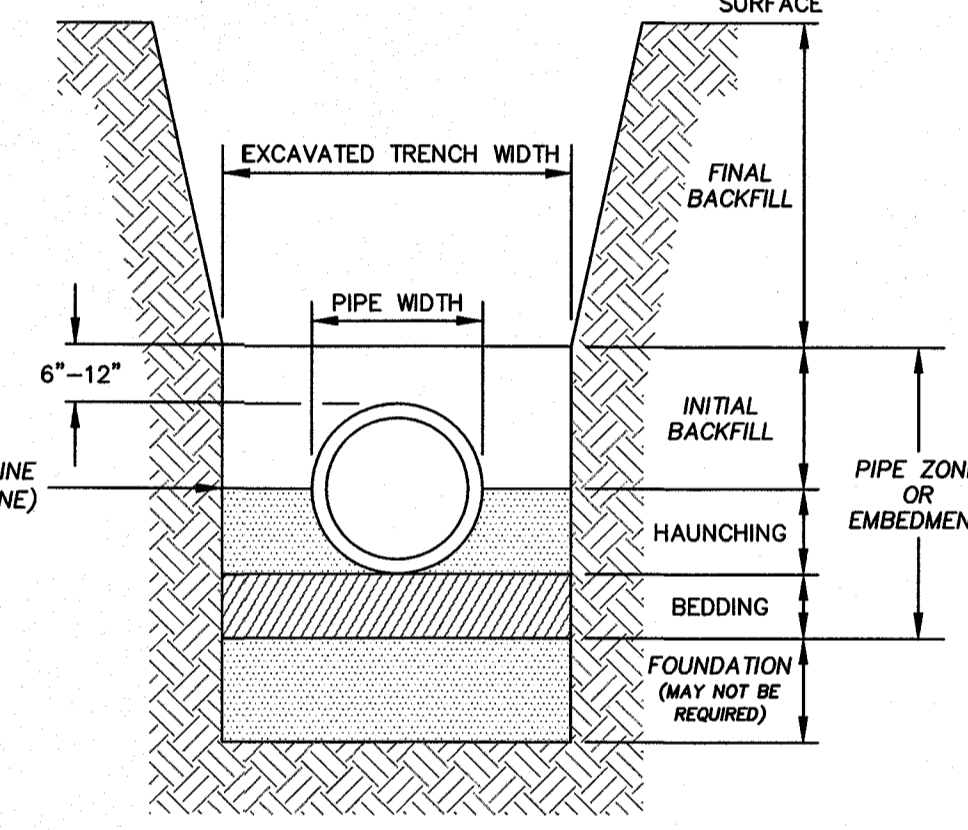
**GENERAL NOTES:**  
 1. ALL ASPHALT CUTS MUST BE SAW CUT.  
 2. SOIL CEMENT SLURRY SHALL BE ALLOWED TO CURE BEFORE PAVING OR OPENING TO ALL TRAFFIC.

**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 HMAc IN THIS AREA.  
 C. 2" ASPHALT MIN.  
 D. 12" THICK SOIL CEMENT BACKFILL (2 SACK PER C.Y. OF SOIL).  
 E. EXISTING HMAc-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.



**SECTION**  
**AIR RELEASE VALVE FOR LINES 16" AND SMALLER BEHIND CURB INSTALLATION**  
 N.T.S.  
**263-1**

**GENERAL NOTES:**  
 1. DETAIL DRAWING TERMINOLOGY IS IN ACCORDANCE WITH ASTM D-2321.  
 2. UNLESS OTHERWISE PERMITTED BY THE ENGINEER, ALL MATERIAL IN THE EMBEDMENT ZONE SHALL BE HOMOGENOUS.



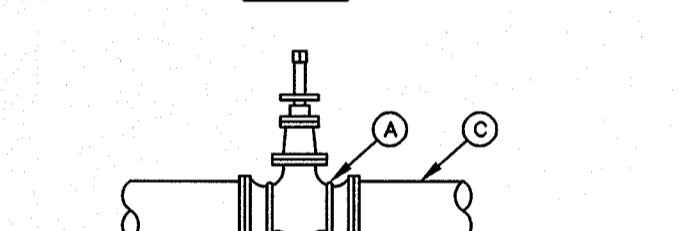
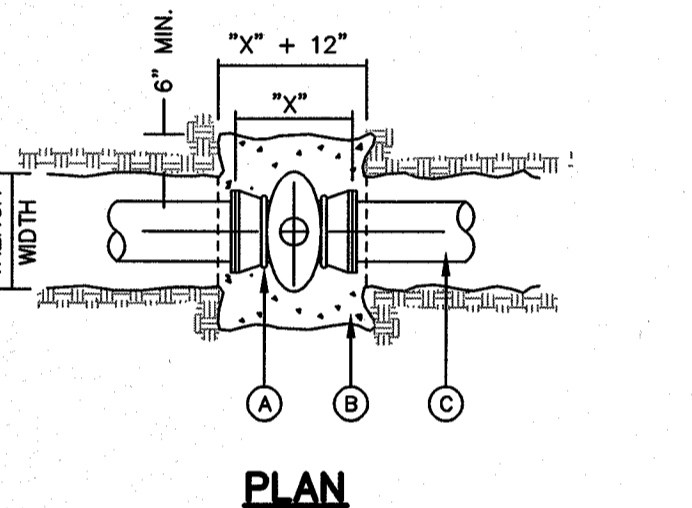
**TRENCH CROSS SECTION TERMINOLOGY**  
 N.T.S.  
**170**

**GENERAL NOTES:**  
 1. INSTALLATION SHALL GENERALLY BE FOR A MAIN-LINE 16" AND SMALLER (1" AIR RELEASE VALVE SHOWN). INSTALLATION OF OTHER SIZED VALVES IS SIMILAR.  
 2. VALVE VAULT SHALL BE TYPE "D", SEE DETAIL 294. SET TOP OF VAULT SLIGHTLY HIGHER THAN SURROUNDING GROUND OR AT CURB LEVEL.  
 3. VALVE AND PIPE SIZES AS SPECIFIED.  
 4. WHERE TOP OUTLET FITTING IS NOT PROVIDED BY MANUFACTURER, PROVIDE TAPPING SADDLE TO SIZE OF AIR VALVE.

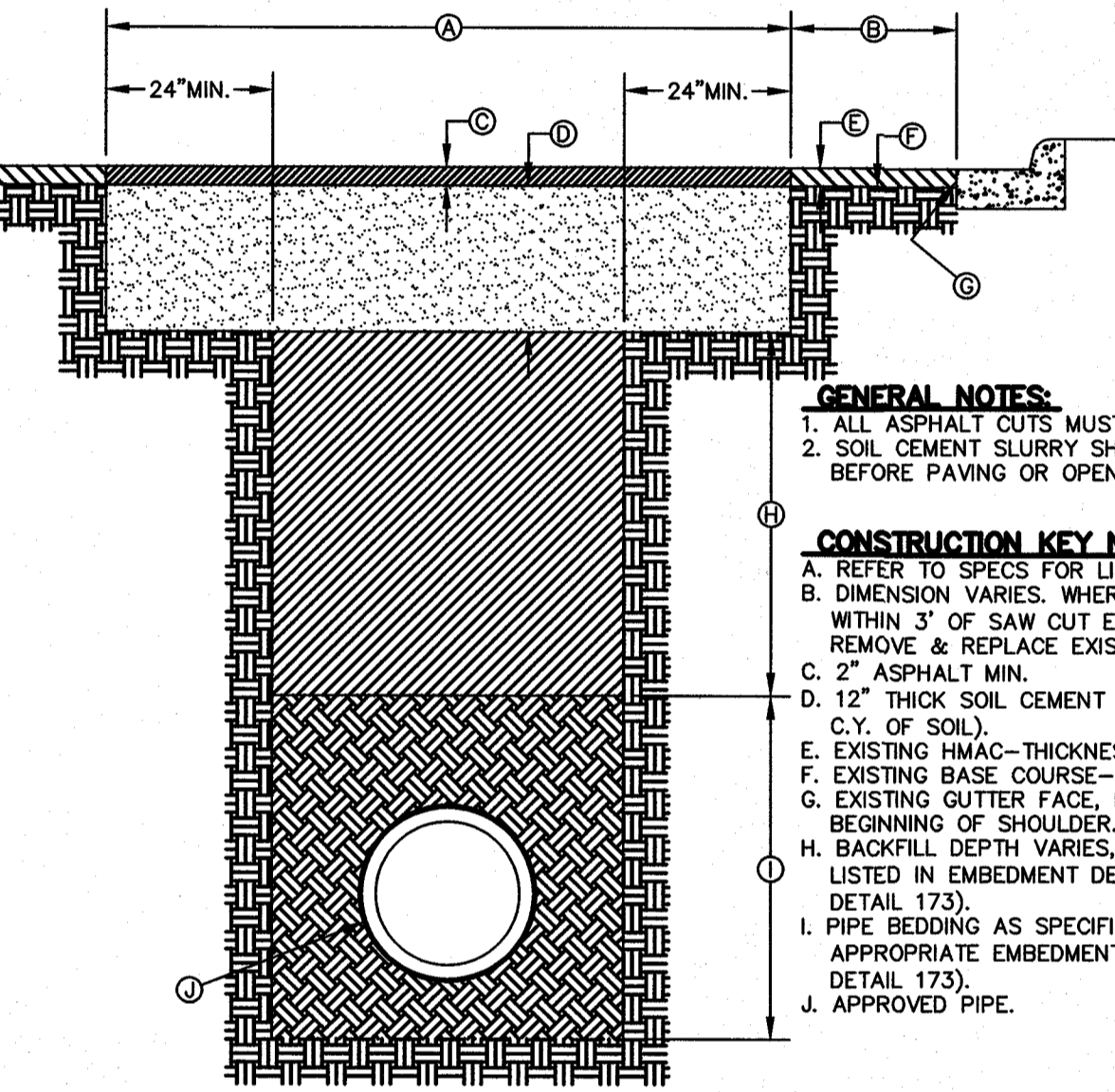
**CONSTRUCTION KEY NOTES:**  
 A. MAINLINE, SIZE AS SPECIFIED.  
 B. 1" COPPER PIPE.  
 C. 1" FLARED BRONZE 90° ELBOW.  
 D. ANCHOR PIPING TO VALVE VAULT WITH 3"x3"x1/4" ANGLE & 3/8" STRAP.  
 E. 1" FLARED BY MALE THREADED BRONZE COUPLING.  
 F. 1" FEMALE THREADED BRONZE BALL VALVE.  
 G. 1" MALE THREADED BRASS NIPPLE.  
 H. 1/2" MALE THREADED BRASS NIPPLE.  
 I. 1/2" FEMALE THREADED BRONZE 90° ELBOW.  
 J. AIR RELEASE VALVE, SIZE AS SPECIFIED.  
 K. 1" FEMALE THREADED BRONZE 90° ELBOW.  
 L. VALVES INSTALLED WITH CONCRETE SUPPORTS AS REQUIRED.  
 M. GRAVEL FILL.

**GENERAL NOTES:**  
 1. THE ENGINEER SHALL PROVIDE DESIGN FOR ALL VALVES GREATER THAN 12".  
 2. COMPLY WITH REQUIREMENTS OF AWWA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES.

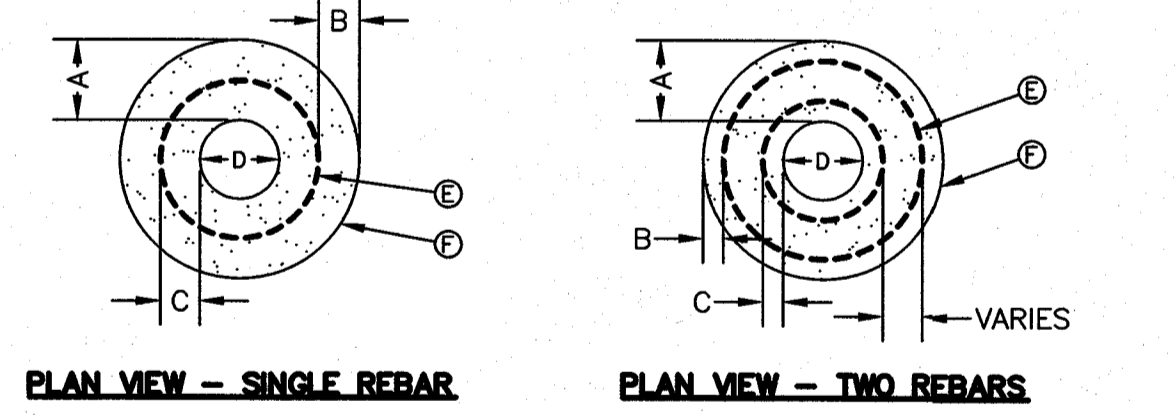
**CONSTRUCTION KEY NOTES:**  
 A. TWO NO. 5 REBAR HAIR PINS. PAINT UNEMBEDDED PORTION OF REBARS WITH TWO COATS OF COAL TAR EPOXY.  
 B. CONCRETE VALVE SUPPORT, 2500 PSI. CONCRETE. C. APPROVED PIPE.



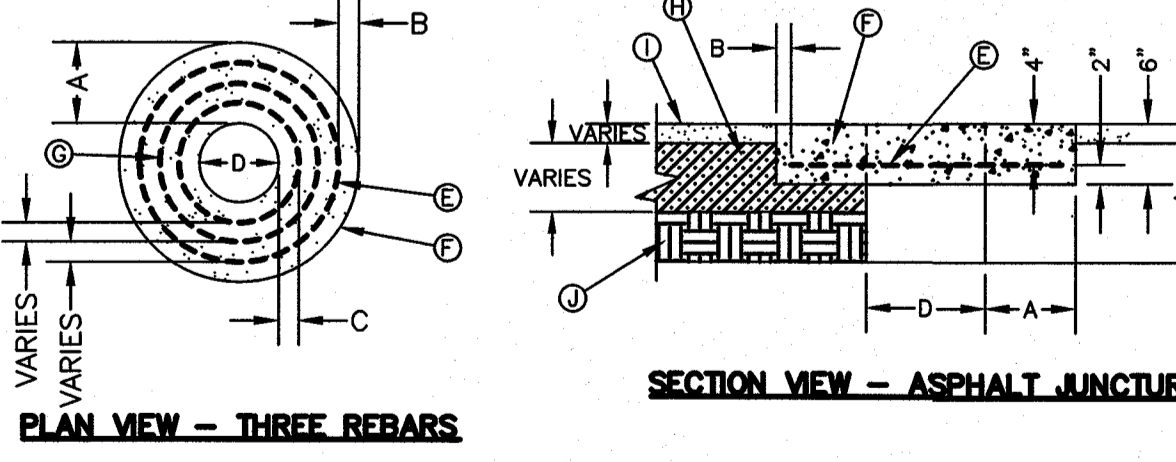
**VALVE ANCHOR**  
 N.T.S.  
**271**



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



**PLAN VIEW - SINGLE REBAR**  
**PLAN VIEW - TWO REBARS**



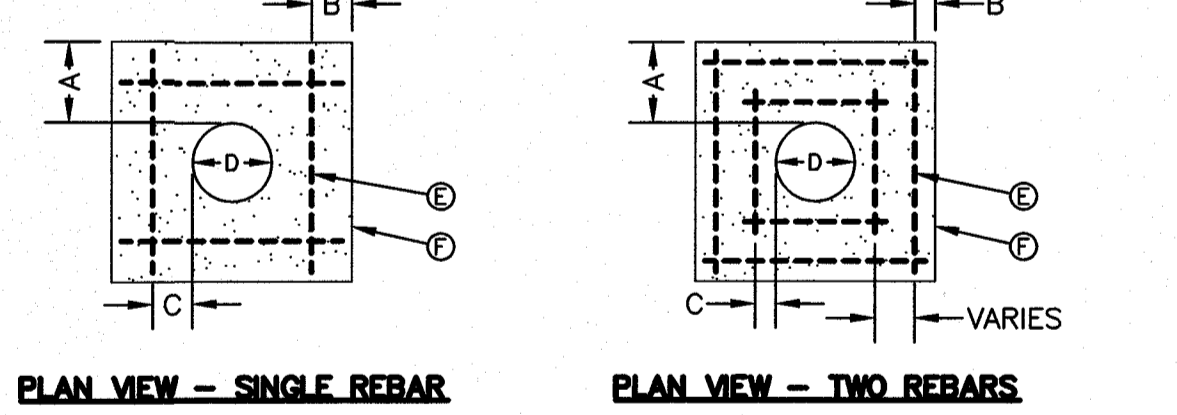
**PLAN VIEW - THREE REBARS**  
**SECTION VIEW - ASPHALT JUNCTURE**

**GENERAL NOTES:**  
 1. THE CONCRETE COLLAR SHOULD BE CAST IN-PLACE CONCRETE. (MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI. HIGH EARLY CONCRETE IS REQUIRED).  
 2. TOPS OF CONCRETE COLLAR SHALL BE FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.  
 3. ANY DISTURBED SUBGRADE UNDER THE CONCRETE COLLAR SHALL BE COMPACTED TO 95% DENSITY ± 3% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.  
 4. ANY DISTURBED BASE COARSE UNDER THE CONCRETE COLLAR SHALL BE COMPACTED TO 100% DENSITY ± 2% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.  
 5. PROVIDE A MINIMUM OF 1 1/2" OF CONCRETE COVER FOR ALL REINFORCING STEEL.  
 6. REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-20).  
 7. NO. 3 REINFORCING STEEL HOOPS SHALL BE SPACED EQUALLY.

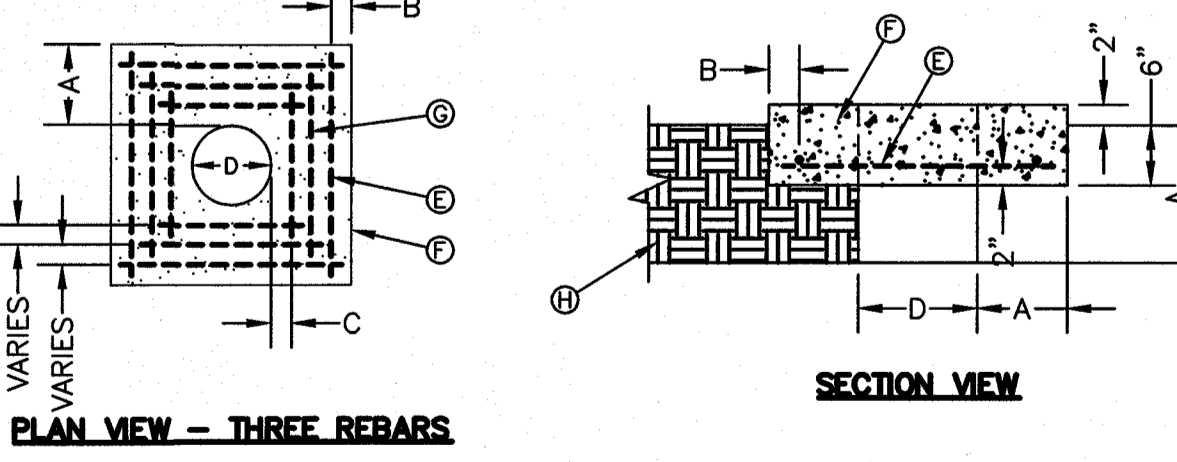
**CONSTRUCTION KEY NOTES:**  
 E. #3 REINFORCING STEEL TYP.  
 F. CONCRETE COLLAR.  
 G. #3 REINFORCING STEEL EQUALLY SPACED.  
 H. COMPACTED BASE COARSE.  
 I. PAVEMENT.  
 J. COMPACTED SUBGRADE.

"D" DIAMETER OF PENETRATION	NUMBER OF #3 REINFORCING STEEL BARS	"A" MINIMUM CONCRETE HORIZONTAL DIMENSION FROM PENETRATION	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE COLLAR TO CENTER OF NEAREST REBAR	"C" MINIMUM CLEARANCE FROM EDGE OF CONCRETE COLLAR TO CENTER OF NEAREST REBAR
0" TO 6"	1	4"	1 1/2"	1 1/2"
6.1" TO 18"	2	6"	1 1/2"	1 1/2"
18.1" AND OVER	3	8"	1 1/2"	1 1/2"

**CONCRETE COLLAR INSTALLATION IN PAVED AREAS**  
 N.T.S.  
**184-1**



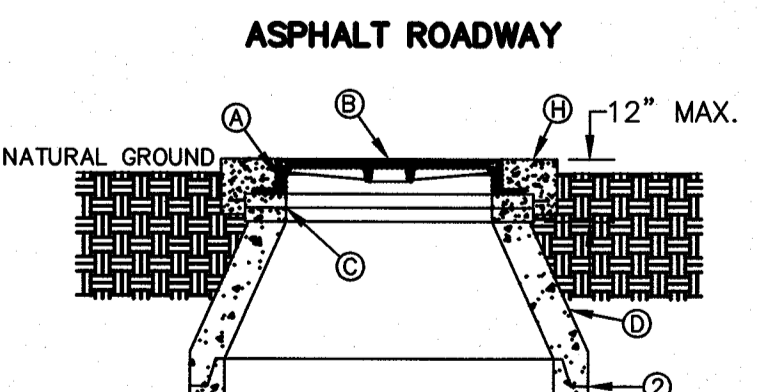
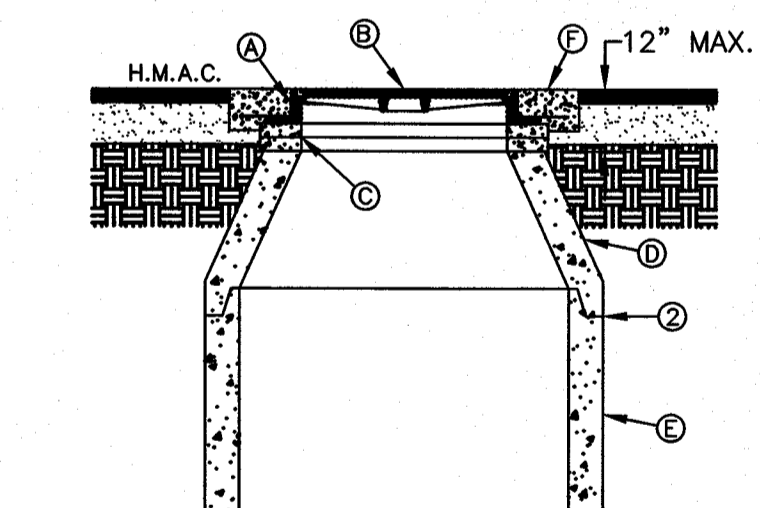
**PLAN VIEW - SINGLE REBAR**  
**PLAN VIEW - TWO REBARS**



**PLAN VIEW - THREE REBARS**  
**SECTION VIEW**

"D" DIAMETER OF PENETRATION	NUMBER OF #3 REINFORCING STEEL BARS	"A" MINIMUM CONCRETE HORIZONTAL DIMENSION FROM PENETRATION	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE APRON TO CENTER OF NEAREST REBAR	"C" MINIMUM CLEARANCE FROM EDGE OF CONCRETE APRON TO CENTER OF NEAREST REBAR
0" TO 6"	1	4"	1 1/2"	1 1/2"
6.1" TO 18"	2	6"	1 1/2"	1 1/2"
18.1" AND OVER	3	8"	1 1/2"	1 1/2"

**CONCRETE APRON INSTALLATION IN NON-PAVED AREAS**  
 N.T.S.  
**184-2**



**ASPHALT ROADWAY**  
**UNPAVED AREAS**

**GENERAL NOTES:**  
 1. MANHOLE TYPE SHALL BE AS SHOWN ON THE PLANS.  
 2. SEAL JOINTS PER SPECIFICATIONS.

**CONSTRUCTION KEY NOTES:**  
 A. MANHOLE RING (SEE DETAIL 377).  
 B. MANHOLE COVER (SEE DETAIL 378).  
 C. CONCRETE ADJUSTMENT RINGS AS REQUIRED.  
 D. MANHOLE CONE SECTION.  
 E. MANHOLE BARREL SECTION.  
 F. CONCRETE COLLAR (SEE DETAIL 184-1) FLUSH WITH TOP OF H.M.A.C.  
 G. MANHOLE RING FLUSH WITH TOP OF CONCRETE, CONCRETE COLLAR NOT NEEDED.  
 H. CONCRETE APRON (SEE DETAIL 184-2) FLUSH WITH MANHOLE RING AND 2" ABOVE NATURAL GROUND.

**MANHOLE RING AND COVER INSTALLATION**  
 N.T.S.  
**185**



**BENCHMARK**  
 PROJECT BENCHMARK CENTERLINE MONUMENT FESTIVAL DRIVE AND NEW ORLEANS DRIVE CITY OF EL PASO VERTICAL DATUM ELEVATION: 4157.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**



**ENGINEER'S SEAL**  
 RONALD R. BOHANNAN  
 P.E. #88928

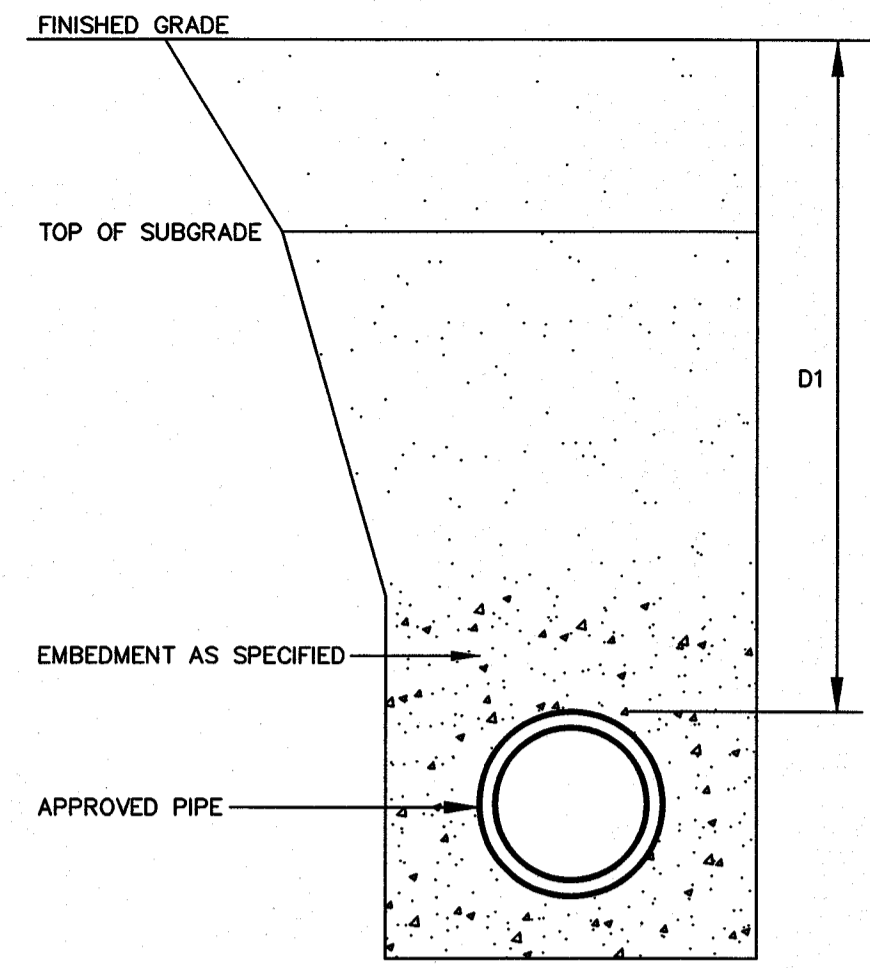
**TIERRA WEST, LLC**  
 5571 MIDWAY PARK PLACE, NE  
 ALBUQUERQUE, NM 87110  
 (505) 856-1100  
 www.tierrawest.com  
 TEXAS BUSINESS NO. F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN  
 DRAWN BY: BF  
 DATE: 06/06/2016  
 DATE: 06/06/2016  
 JOB NO.: 2015082  
 DRAWING NO.: 2015082-23-DETAILS  
 CHECKED BY: JN  
 DATE: 06/06/2016

**WATER AND SEWER DETAILS**





**COVER FOR WATER MAINS**  
N.T.S.  
**250**

**GENERAL NOTES:**

- REFER TO UTILITY DETAIL FOR PAVEMENT REPLACEMENT AND BACKFILL REQUIREMENTS.
- TRENCH SAFETY SYSTEMS SHALL BE USED WHEN TRENCH DEPTH EXCEEDS 5 FEET.

**CONSTRUCTION KEY NOTES:**

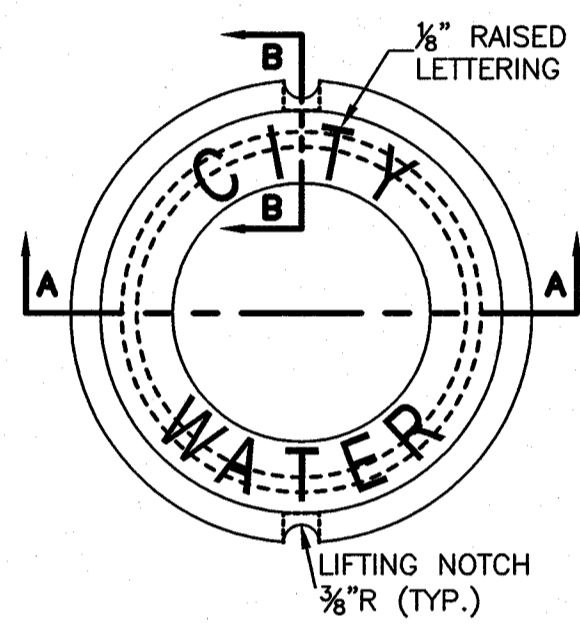
A. COVER FOR WATER MAINS SHALL DEPEND ON THE PIPE SIZE AND THE FOLLOWING INSTALLATION CONDITIONS.

CONDITION A - NORMAL LINE INSTALLATION, STREET AND DRAINAGE PROJECTS, WATERLINE RELOCATION

CONDITION B - NEW SUBDIVISIONS, NON-PAVED AREA

AND SHALL BE AS FOLLOWS.

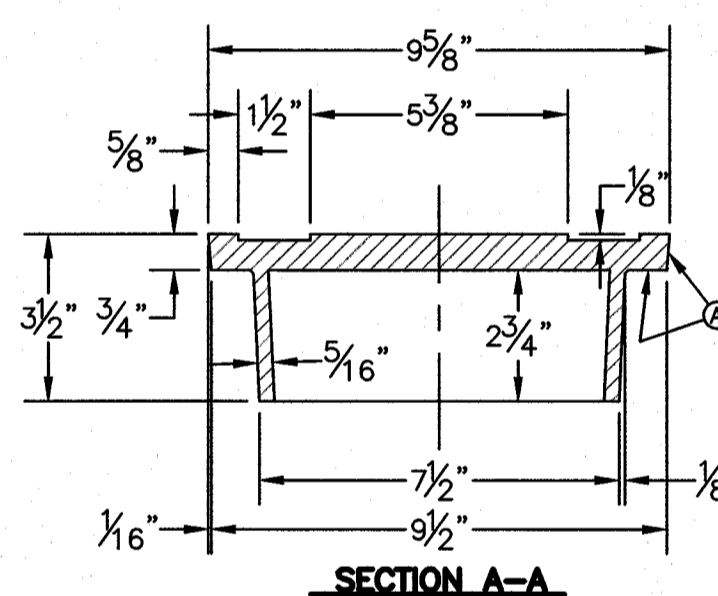
PIPE SIZE	CONDITION	DIMENSION
6", 8"	A	D1 = 4'
6", 8"	B	D1 = 4'
12" & LARGER	A OR B	D1 = 5'



- GENERAL NOTES:**
- CASTINGS TO SMOOTH AND VOID OF AIR HOLES.
  - WEIGHT OF COVER IS 18 POUNDS.

**CONSTRUCTION KEY NOTES:**

A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.

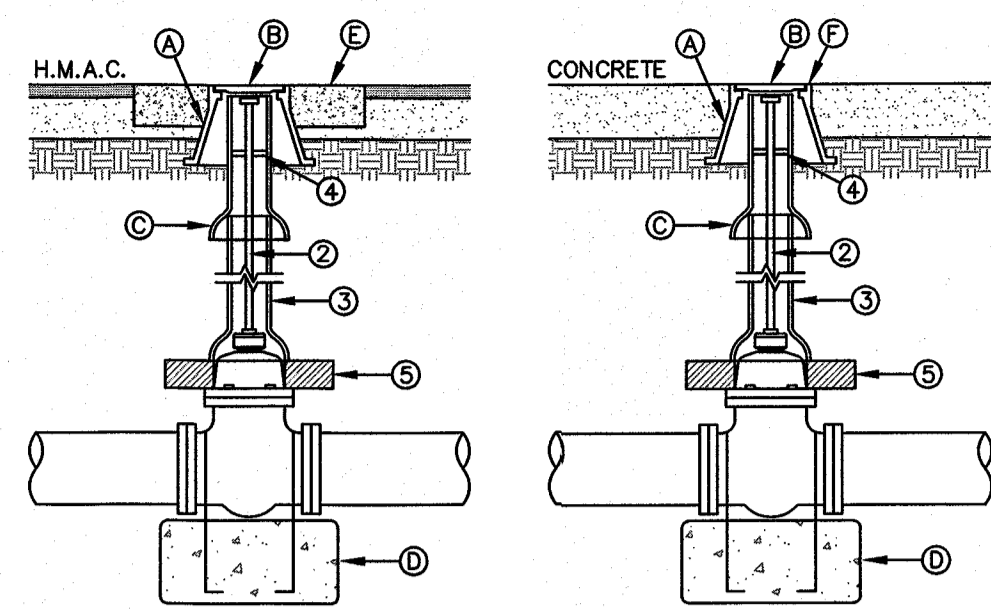


**SECTION A-A**

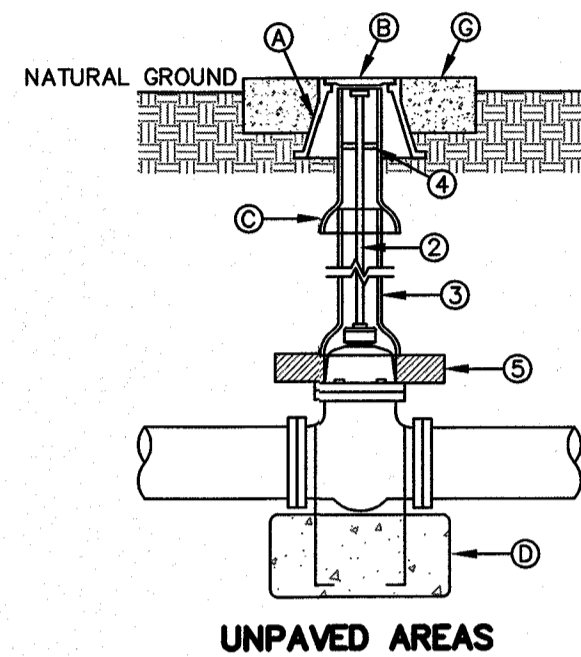
**BONNET BOX COVER (FLIP RESISTANT)**  
N.T.S.  
**269-2**

**GENERAL NOTES:**

A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.



**ASPHALT ROADWAY CONCRETE ROADWAY**



**UNPAVED AREAS**

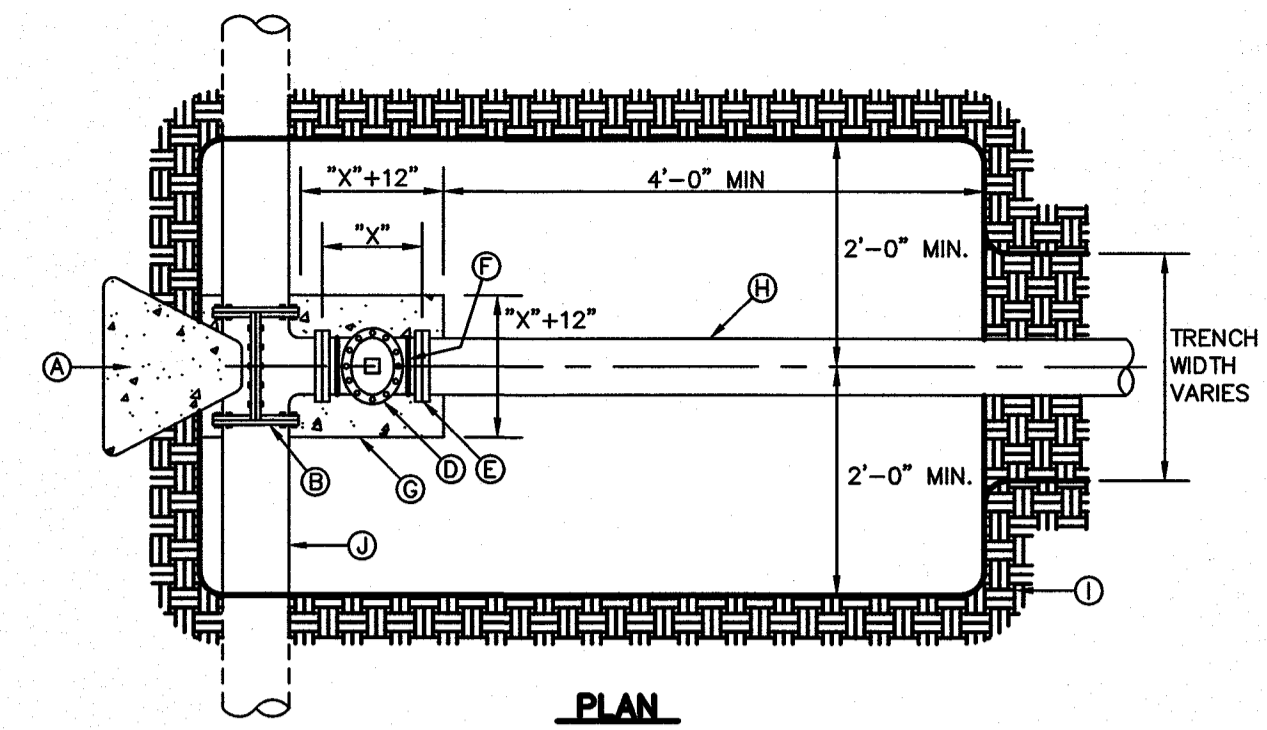
**GATE VALVE INSTALLATION**  
N.T.S.  
**260**

**GENERAL NOTES:**

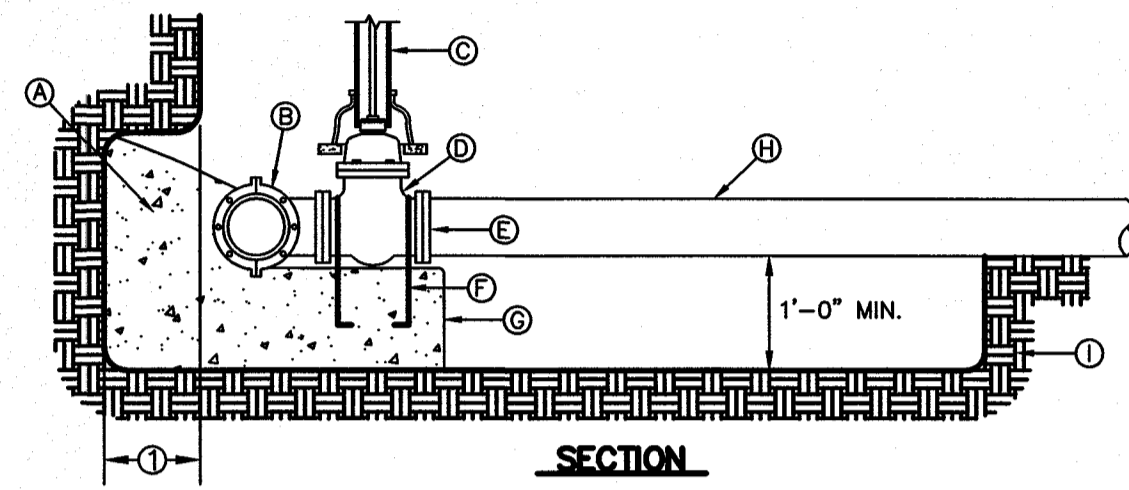
- VALVE TYPE AND VALVE ENDS SHALL BE AS SHOWN ON THE PLANS.
- ALL BURIED VALVES 5' AND DEEPER SHALL BE PROVIDED WITH SOLID STEEL EXTENSION STEM OPERATOR WITH 2" SQUARE ANWMA NUT WITHIN 36" OF VALVE BOX COVER. NUT IS TO INDICATE DIRECTION OF ROTATION TO OPEN VALVE.
- 8" DIA. MINIMUM VITRIFIED CLAY OR SDR 35 P.V.C. PIPE, PIPE SHALL NOT REST ON VALVE BODY.
- 1/2" THICK STEEL TRASH RING VALVE BOX INSIDE DIAMETER MINUS 1/4".
- MINIMUM 2 1/2" CONCRETE OR BRICK ALL AROUND.
- CLEAN 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 268).
- 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.A.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.



**PLAN**



**SECTION**

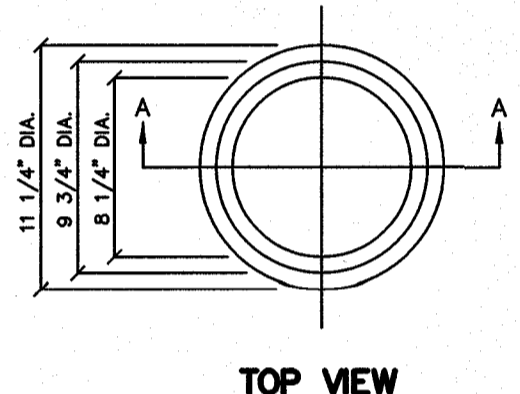
**TAPPING SLEEVE AND VALVE INSTALLATION**  
N.T.S.  
**266**

**GENERAL NOTES:**

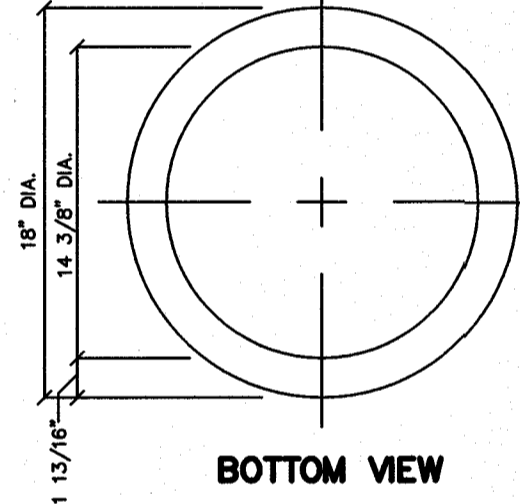
- THRUST BLOCKING SHALL EXTEND TO UNDISTURBED EARTH.
- TAPPING SLEEVE SHALL BE 18" MINIMUM FROM ANY BELL, COUPLING, VALVE OR FITTING LOCATED ALONG EXISTING WATER LINE TO BE TAPPED.
- REPLACE EXCAVATED MATERIAL WITH CEMENT STABILIZED BACKFILL PRIOR TO PAVING.
- JOINTS AND BOLTS SHALL BE CLEAR OF CONCRETE.
- INSTALL PERMANENT THRUST BLOCKING UNDER VALVE BEFORE TAP IS MADE. JOINTS AND BOLTS TO BE CLEAR OF CONCRETE.

**CONSTRUCTION KEY NOTES:**

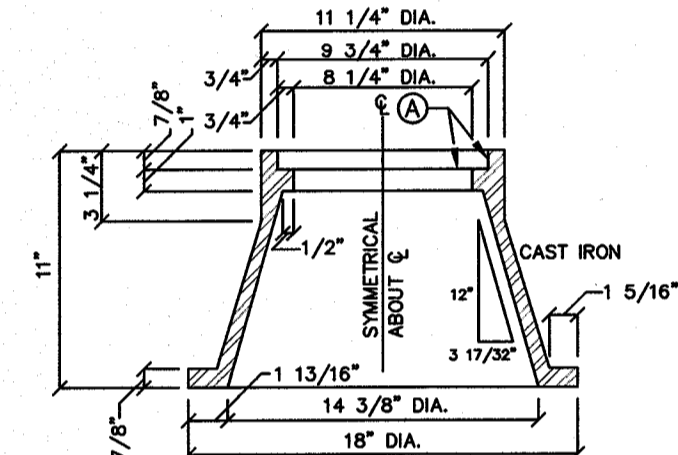
- CONCRETE THRUST BLOCKING, PER DETAIL 270.
- TAPPING SLEEVE.
- RISER INSTALLATION, PER DETAIL 260.
- TAPPING VALVE.
- VALVE ENDS FOR TYPE OF PIPE INSTALLED.
- 2-#5 REBAR HAIRPINS, PAINT UNEMBEDDED PORTION OF BARS WITH 2-SOATS OF COAL TAR EPOXY, THEN COVER WITH 2" MINIMUM OF CEMENT MORTAR.
- CONCRETE VALVE SUPPORT, PER DETAIL 271.
- NEW WATER LINE TO BE INSTALLED.
- UNDISTURBED EARTH.
- EXISTING WATER MAIN TO BE TAPPED.



**TOP VIEW**



**BOTTOM VIEW**

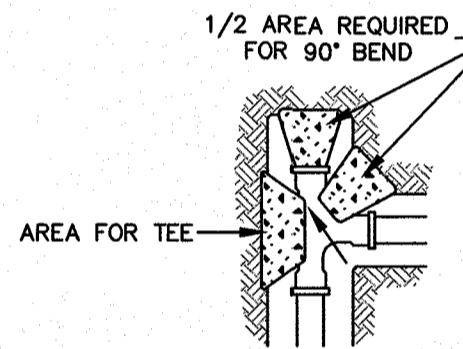
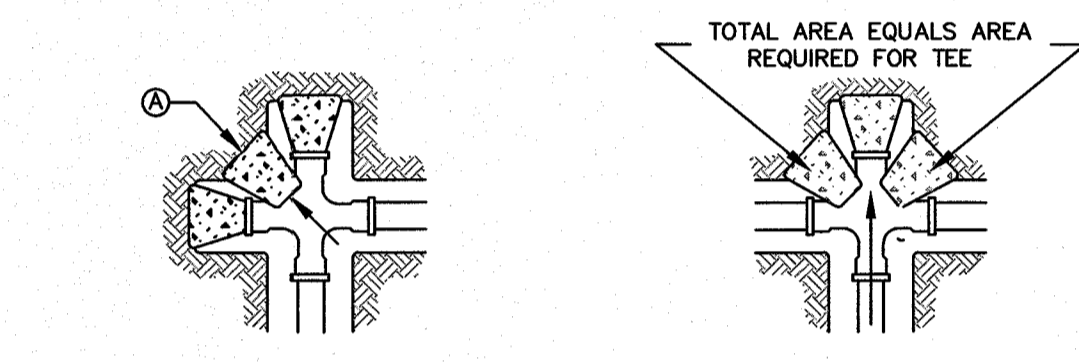


**SECTION A-A**

- GENERAL NOTES:**
- CASTING TO BE SMOOTH AND VOID OF AIR HOLES.
  - WEIGHT OF BONNET BOX IS 95 POUNDS.

**CONSTRUCTION KEY NOTES:**

A. TO BE ROUGH GROUND OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.



**SECTION "A"**

**THRUST BLOCKING**  
N.T.S.  
**270**

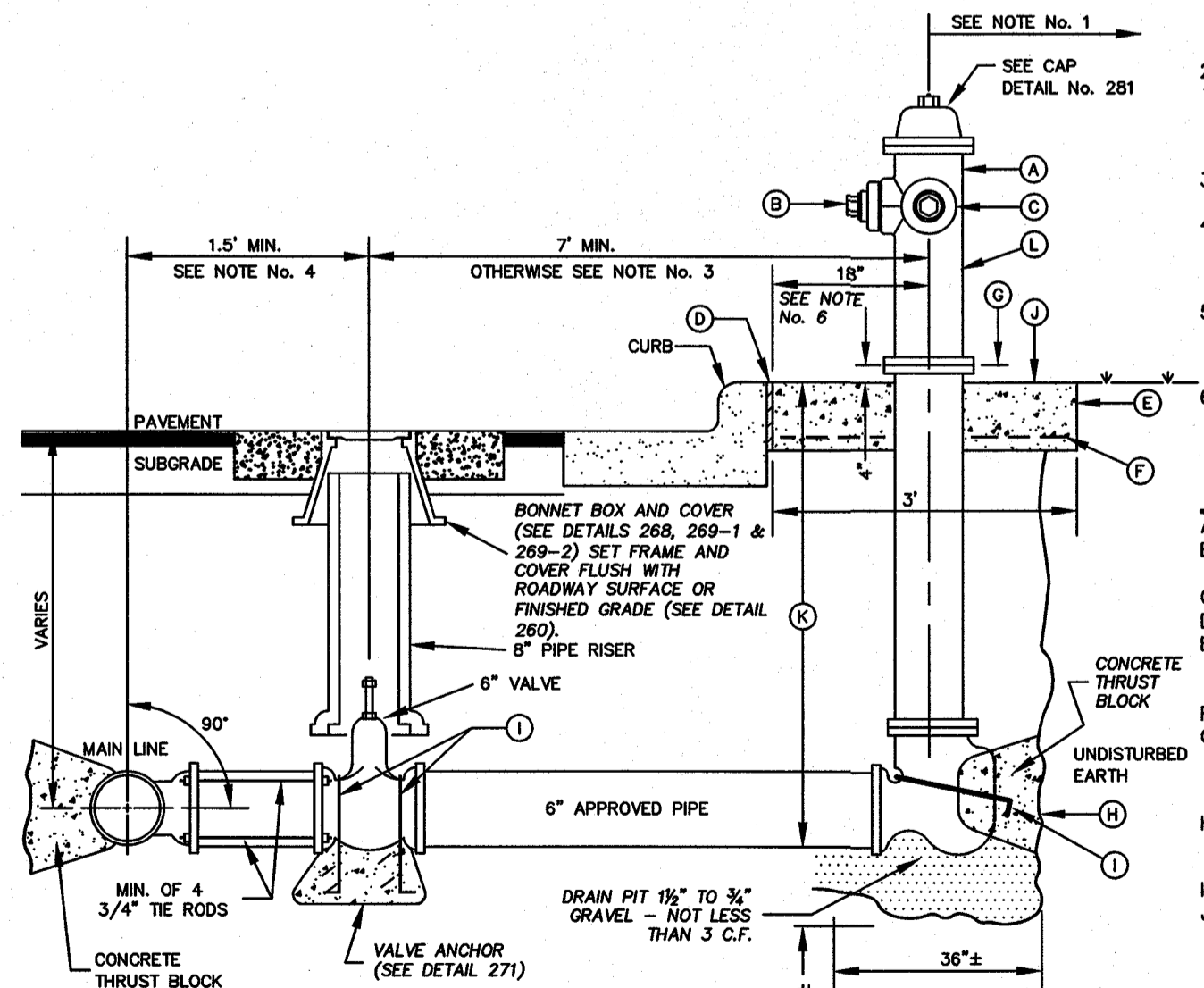
**GENERAL NOTES:**

- 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.J. 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 MANUFACTURERS' 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° & 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

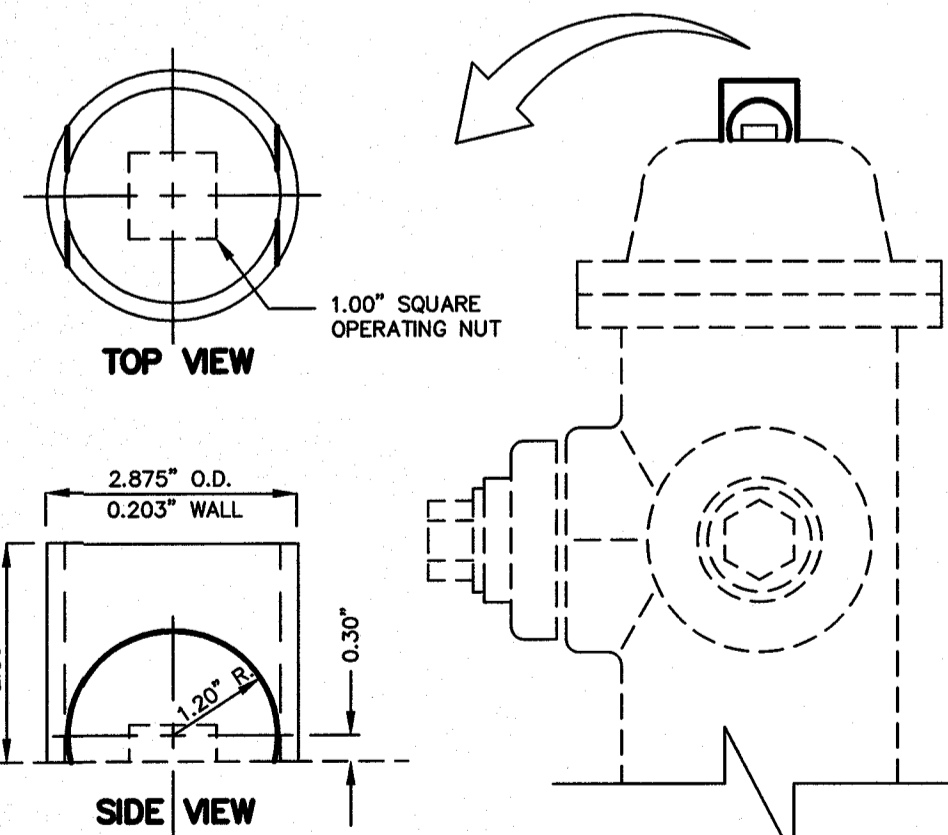


**FIRE HYDRANT INSTALLATION**  
N.T.S.  
**280-1**

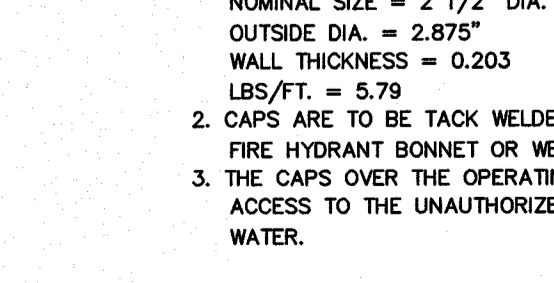
- GENERAL NOTES:**
- NO OBSTRUCTIONS WILL BE PERMITTED WITHIN 5 FT. IN ALL DIRECTIONS OF FIRE HYDRANT (PER EL PASO MUNICIPAL CODE, TITLE 12). FIRE HYDRANT SHALL NOT BE PLACED IN WHEEL CHAIR RAMP OR DRIVEWAY.
  - FIRE HYDRANT SHALL BE LOCATED AT THE BEGINNING OF CURB RETURN OR AT THE PROPERTY LINE COMMON 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 ANWMA C-502, DRY BARREL FIRE HYDRANTS AND ANWMA C-550, PROTECTIVE EPOXY INTERIOR COATINGS FOR VALVES AND HYDRANTS.
  - WHEN INSTALLATION IS WITHIN 1-FOOT 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" TO BE FACING THE TRAVELED WAY, UNLESS OTHERWISE NOTED IN THE PLANS.
- HOSE NOZZLE 2 1/2".
- 1/2" 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; 6/6 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.
- MAXIMUM OF ONE (1) SPOOL EXTENSION ALLOWED TO MAINTAIN THE CONTROLLED ELEVATION LINE TO TOP OF SLAB. ADDITIONAL ADJUSTMENT MUST BE MADE WITH OFFSETS & FITTINGS AS NEEDED.
- REQUIRED - DAWSON ANTI TERRORISM CORROSION RESISTANT VALVE KIT (DATV).



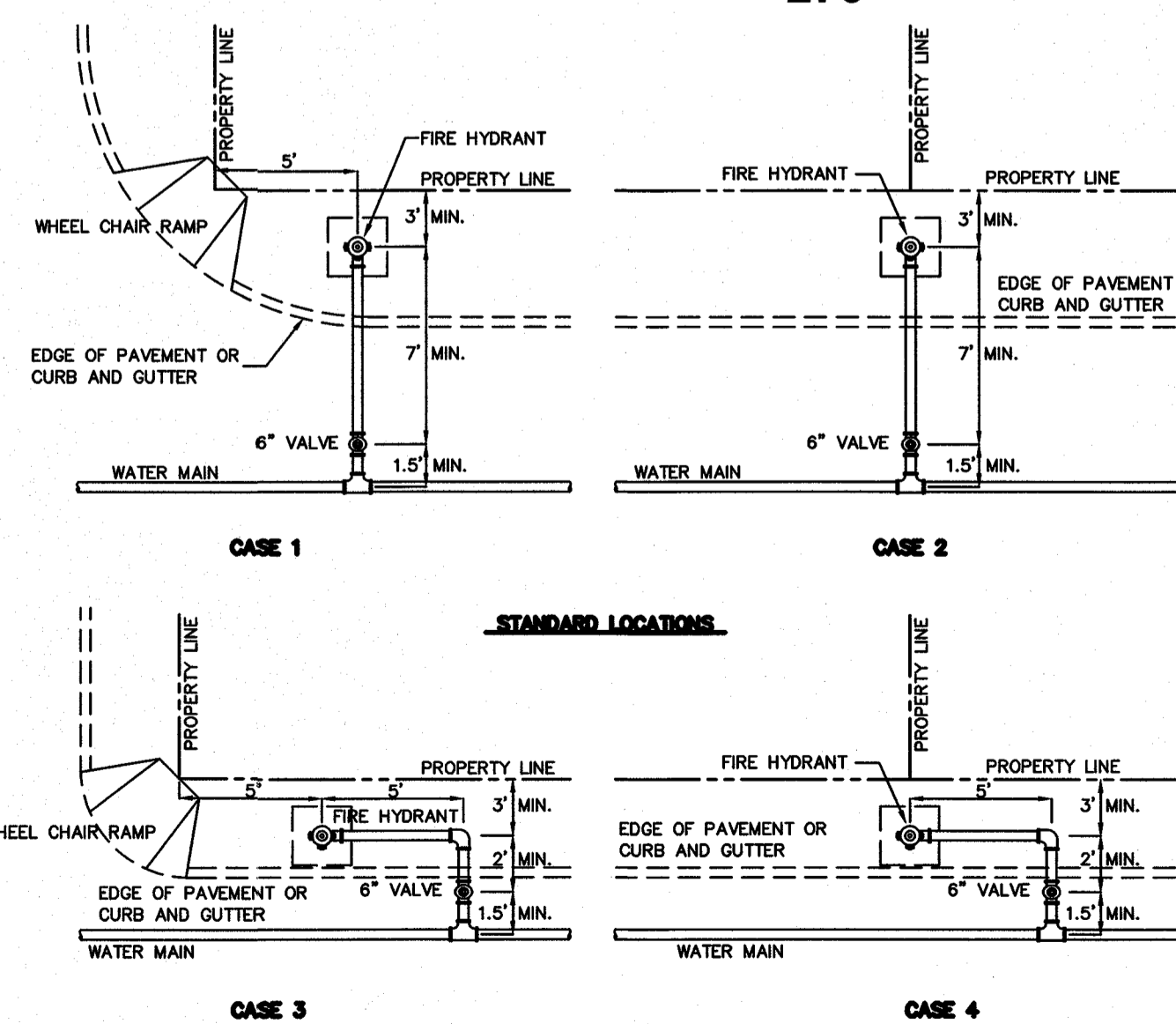
**TOP VIEW**



**SIDE VIEW**

- 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. = 5.79
  - 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.

**FIRE HYDRANT CAP**  
N.T.S.  
**281**



**STANDARD LOCATIONS**

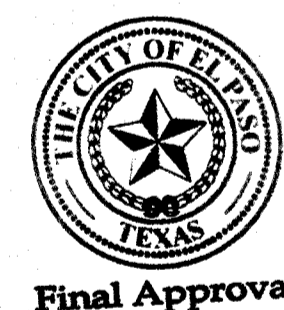
**CASE 3**

**CASE 4**

**FIRE HYDRANT LOCATIONS**  
N.T.S.  
**282**

**GENERAL NOTES:**

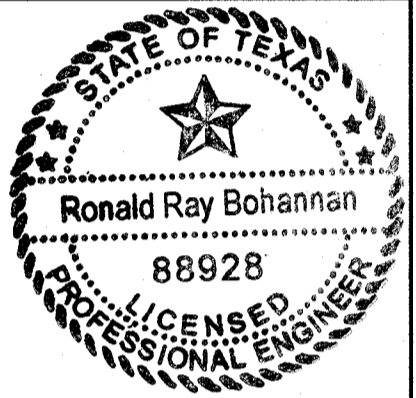
- FOR CASE 1 FIRE HYDRANT SHALL BE LOCATED AT A DISTANCE OF 5 FT. MINIMUM FROM THE PROPERTY LINE OR AT THE BEGINNING OF CURB RETURN.
- FOR CASE 2 FIRE HYDRANT SHALL BE LOCATED AT THE PROPERTY LINE COMMON TO ADJOINING LOTS.
- FOR CASE 3 AND IV WHERE THE DISTANCE BETWEEN THE VALVE AND THE HYDRANT IS LESS THAN 7 FT. PLACE HYDRANT AS SHOWN.
- FOR INSTALLATION OF FIRE HYDRANT SEE DETAIL 280-1 OR 280-2.
- 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.).
- WHEN INSTALLATION IS WITHIN 1-FOOT RIGHT OF WAY, HYDRANT SHALL NOT BE PLACED IN SIDEWALK AREA OR ANY CLOSER THAN 5' FROM BACK OF CURB.



Final Approval

PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
DRAWING NO. 2015062  
ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**



RONALD R. BOHANNAN  
P.E. #88928

TERRA WEST LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87110  
(505) 856-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	BY	REMARKS
DESIGNED BY: JN <td>DATE: 06/06/2016 <td></td> <td>DESIGN</td> </td>	DATE: 06/06/2016 <td></td> <td>DESIGN</td>		DESIGN
DRAWN BY: BF <td>DATE: 06/06/2016 <td></td> <td>REVISIONS</td> </td>	DATE: 06/06/2016 <td></td> <td>REVISIONS</td>		REVISIONS
DRAWING NAME: 2015062-23-DETAILS <td>JOB NO.: 2015062 <td></td> <td></td> </td>	JOB NO.: 2015062 <td></td> <td></td>		
CHECKED BY: JN <td>DATE: 06/06/2016 <td></td> <td></td> </td>	DATE: 06/06/2016 <td></td> <td></td>		

WATER AND SEWER  
DETAILS

EL PASO WATER UTILITY  
DETAILS NUMBERS:  
250, 260, 266, 268, 269-2, 270,  
280-1, 281, & 282







**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 (P.S.B. 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 WITHIN 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 SPOIL OFFSITE WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- PIPE FITTINGS AND JOINTS: WATER PIPE-PVC C-900 DR 18, CLASS 305 AND DUCTILE IRON FITTINGS UNLESS OTHERWISE SHOWN ON THE PLANS; FLUSHING VALVE / FIRE HYDRANTS LEAD DUCTILE IRON, CLASS 50, 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(a) (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 MANHOLE 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 290.44(f) (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.

**22. 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 POUND PER SQUARE INCH GAUGE TO 2.5 POUNDS PER SQUARE INCH GAUGE SHALL BE COMPUTED FROM THE FOLLOWING EQUATION:

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

$$K = 0.000419(D)(L), \text{ BUT NOT LESS THAN 1.0}$$

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

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

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

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	0.855 (L)
8	454	298	1.620 (L)
10	567	239	2.374 (L)
12	680	199	3.419 (L)
15	850	159	5.342 (L)
18	1020	133	7.693 (L)
21	1190	114	10.471 (L)
24	1380	100	13.678 (L)
27	1530	88	17.309 (L)
30	1700	80	21.369 (L)
33	1870	72	25.858 (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 50 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 5317.2.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 150 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 150 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 150 PSI USING APPROPRIATE ADAPTERS. IN LIEU OF THIS PROCEDURE, THE NEW CONVEYANCE MAY BE ENCASED IN A JOINT OF 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE WATERLINE. 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 150 PSI PRESSURE CLASS PIPE AT LEAST 18 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 PMTJE 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.

**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(f)(3).
- ALL NEWLY INSTALLED PIPE AND FITTINGS MUST CONFORM TO ANSI/NSF STANDARD 61 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(g)(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 OR COMPACT OR SOFT AND UNSTABLE SOIL SHALL BE SLOPED, SHORED, SHEETED, 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
MARIA ORTIZ.....	
EL PASO ELECTRIC COMPANY	(915) 543-5970
SILVIA RIVAS.....	
EL PASO WATER UTILITIES	(915) 594-5515
FELIPE LOPEZ.....	
TIME WARNER COMMUNICATIONS	(915) 241-0878
RAY MENDOZA.....	
PARKS AND RECREATION	(915) 598-0771
DAVID OCHOA.....	(915) 621-3791
LOUIS ALOYSIUS.....	
AT&T	
FRANCISCO VACIO.....	(915) 595-5119

**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 JOHN HAYES ST.
- FIRE PROTECTION LINE TO BE SIZED BY FIRE PROTECTION CONTRACTOR.

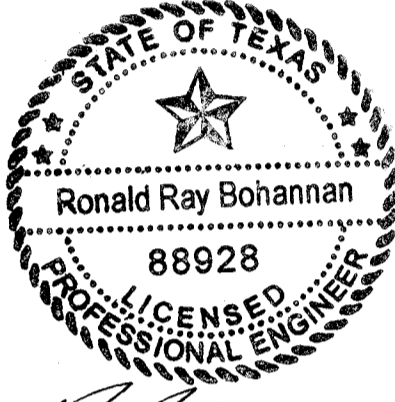
**SEWER NOTES:**

- 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.

BENCHMARK  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
NEW ORLEANS DRIVE  
MONTECILLO UNIT 5B  
VERTICAL DATUM  
ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 44 AND 64  
BEING MILLER SURVEY 216, AND PORTION  
OF TRACT 21 JOHN BARKER SURVEY 10,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.686± ACRES

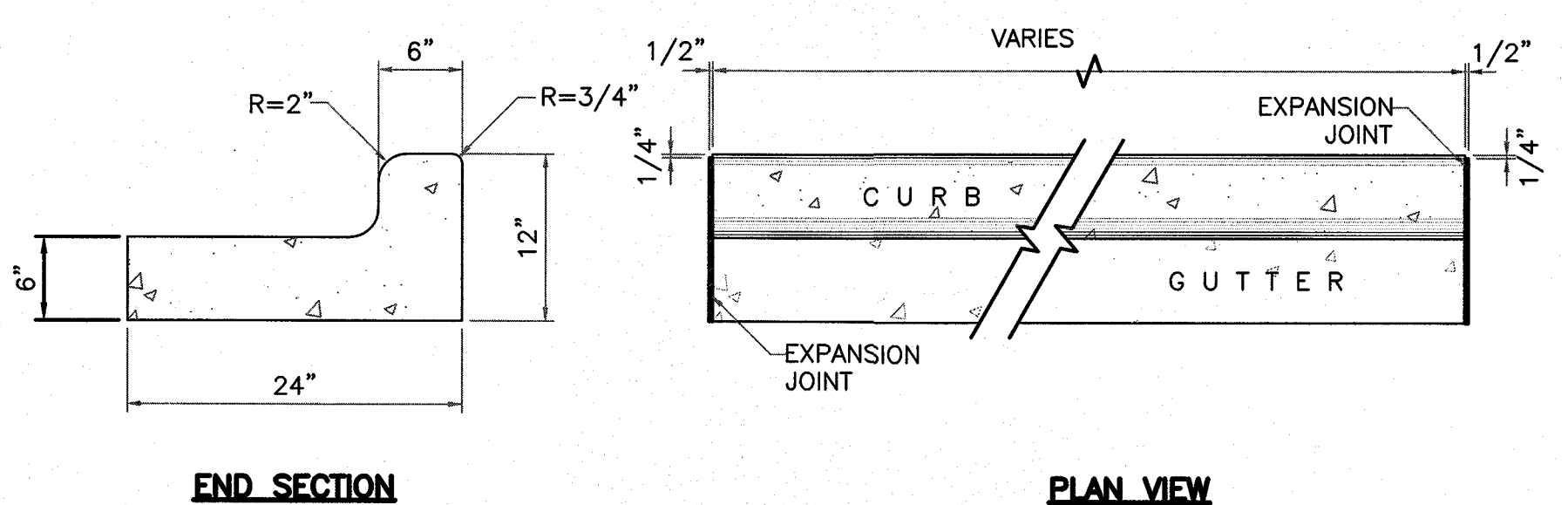
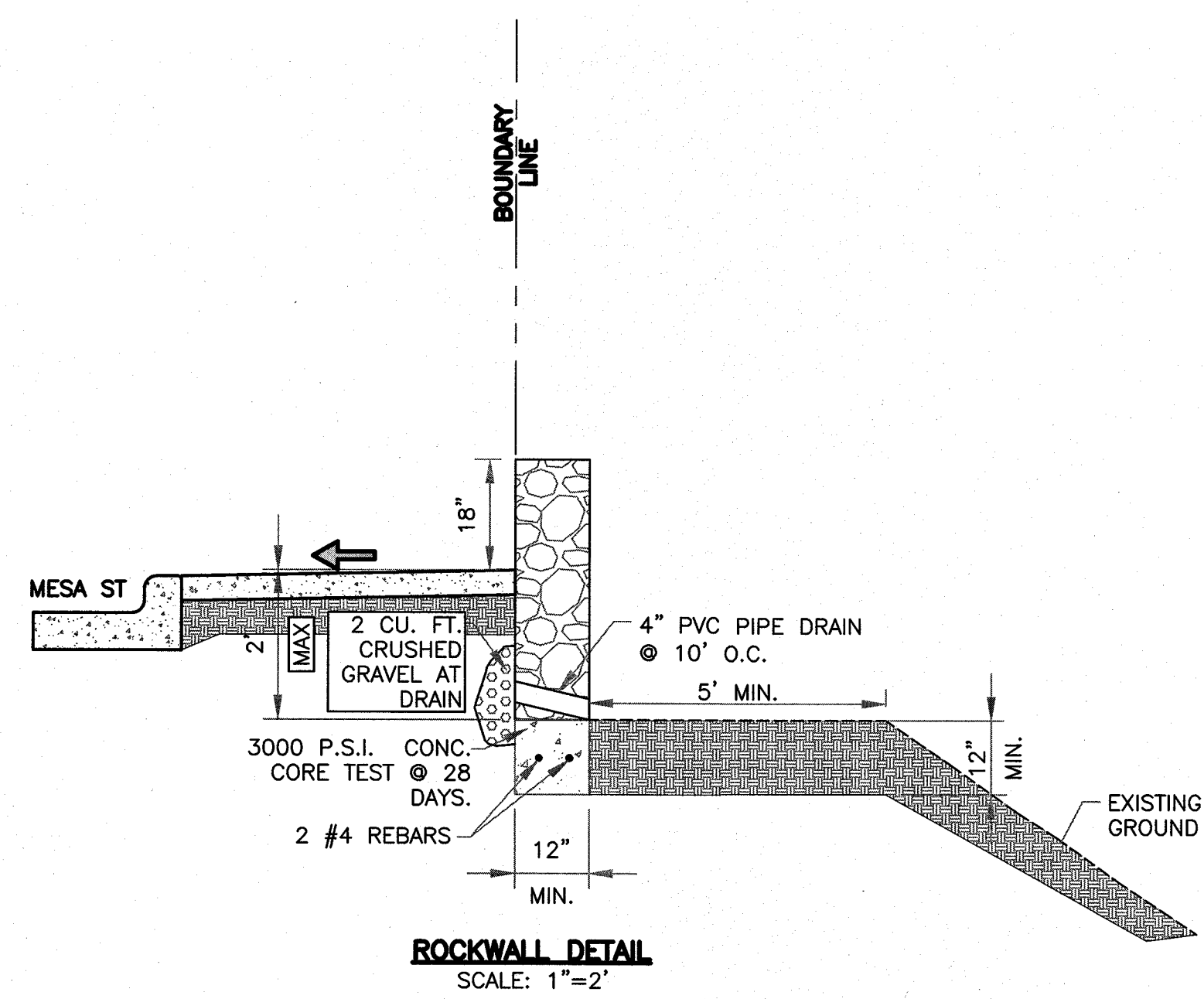
ENGINEER'S SEAL  
  
RONALD R. BOHANNAN  
P.E. #88928



TERA WEST LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 858-3100  
www.terawestllc.com  
TEXAS BUSINESS NO.  
F-11773

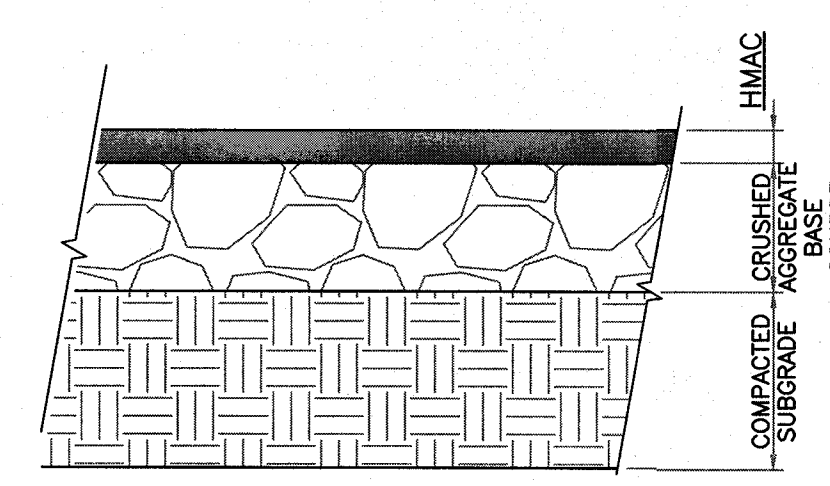
NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	
DESIGNED BY: JN	DATE: 06/06/2016		
DRAWN BY: BF	DATE: 06/06/2016		
DRAWING NAME: 2015082_26-GENERAL NOTES	JOB NO.: 2015062		
CHECKED BY: JN	DATE: 06/06/2016		





- 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 5' O.C. WHEN FORMING FOR CURBS.

**STANDARD 6" CURB & GUTTER DETAIL**  
SCALE: 1"=1'

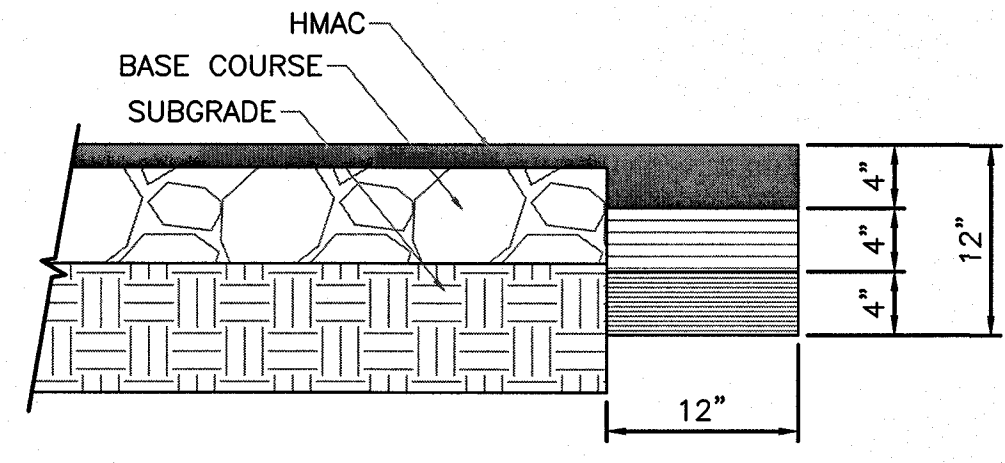


**PAVEMENT NOTES**

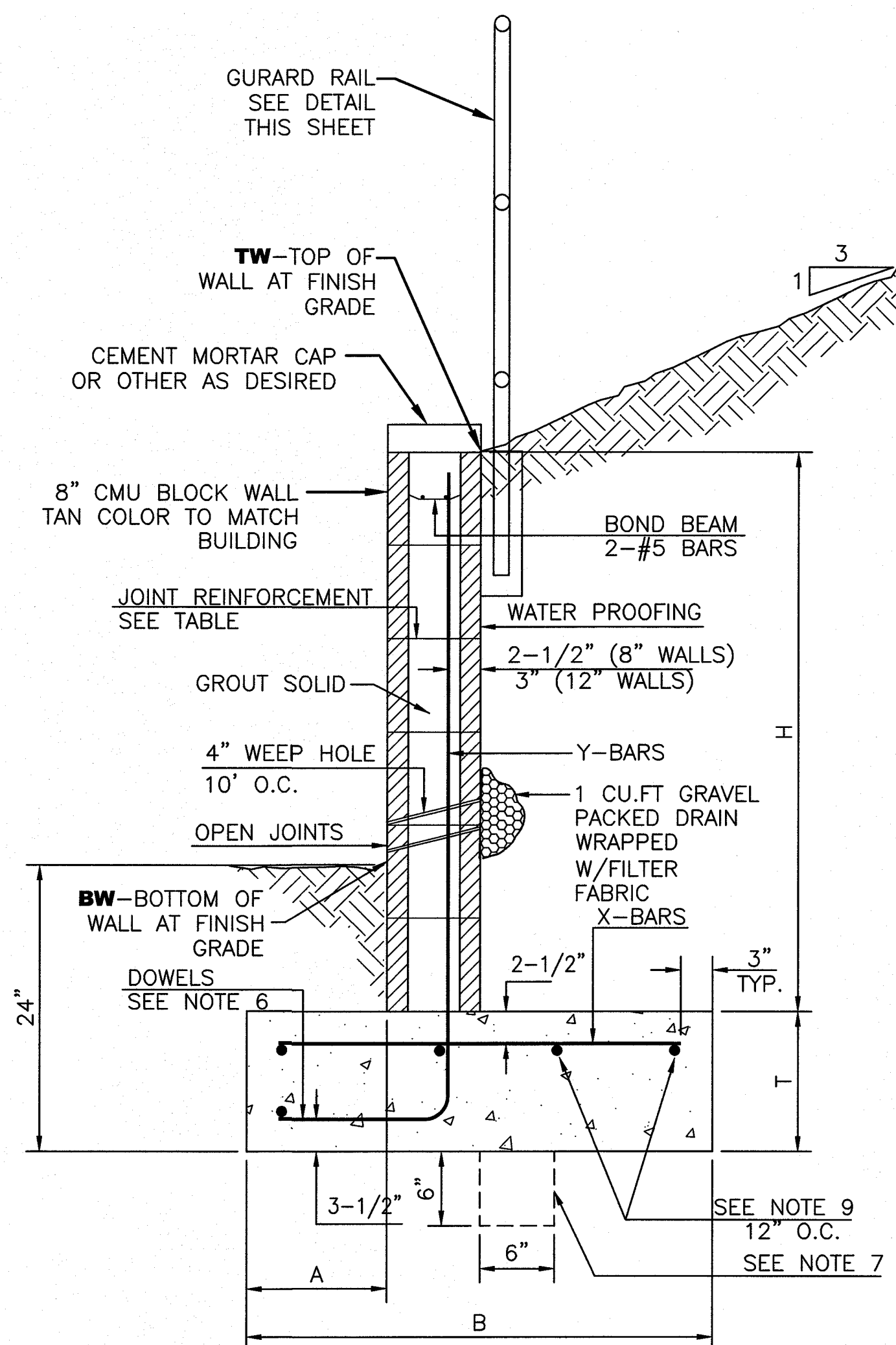
1. SUBGRADE TO BE COMPACTED TO 95% OF MAXIMUM DENSITY AS PER ASTM D1557.
2. BASE TO BE COMPACTED TO NOT LESS THAN 100% DENSITY IN ACCORDANCE WITH ASTM D1557, TYPE A, GRADE 1 OR 2.
3. BITUMINOUS MATERIAL SHALL CONFORM TO AC-10 OR AC-20, TYPE "C" IN ACCORDANCE WITH ASTM D3318.
4. PRIME COAT TO BE 0.25 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. HMAc, 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.

**NOTE:**  
PAVEMENT DESIGN TO BE DETERMINED BY CBR TESTS



**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.



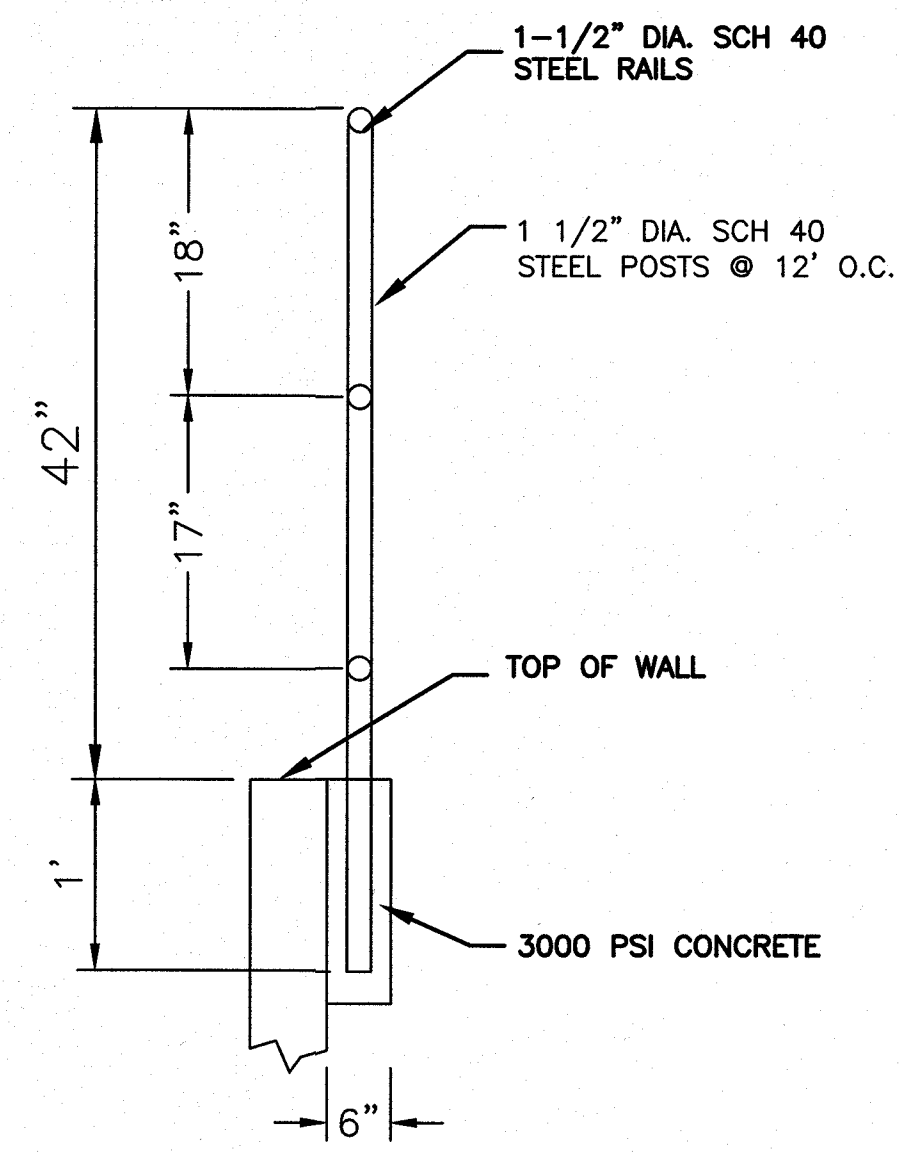
**8 INCH REINFORCED CONCRETE MASONRY WALL**

H	A	B	T	Y-BARS	X-BARS
ft.-in.	in.	ft.-in.	in.		
2'-0"	8"	2'-0"	9"	#4 @32" O.C.	
2'-8"	8"	2'-0"	9"	#4 @32" O.C.	#4 @24" O.C.
3'-4"	8"	2'-4"	9"	#4 @32" O.C.	#4 @24" O.C.
4'-0"	10"	2'-8"	9"	#4 @32" O.C.	#4 @24" O.C.
4'-8"	12"	3'-4"	10"	#5 @32" O.C.	#4 @18" O.C.
5'-4"	14"	3'-10"	10"	#6 @16" O.C.	#4 @18" O.C.
6'-0"	16"	4'-8"	12"	#6 @ 8" O.C.	#4 @12" O.C.

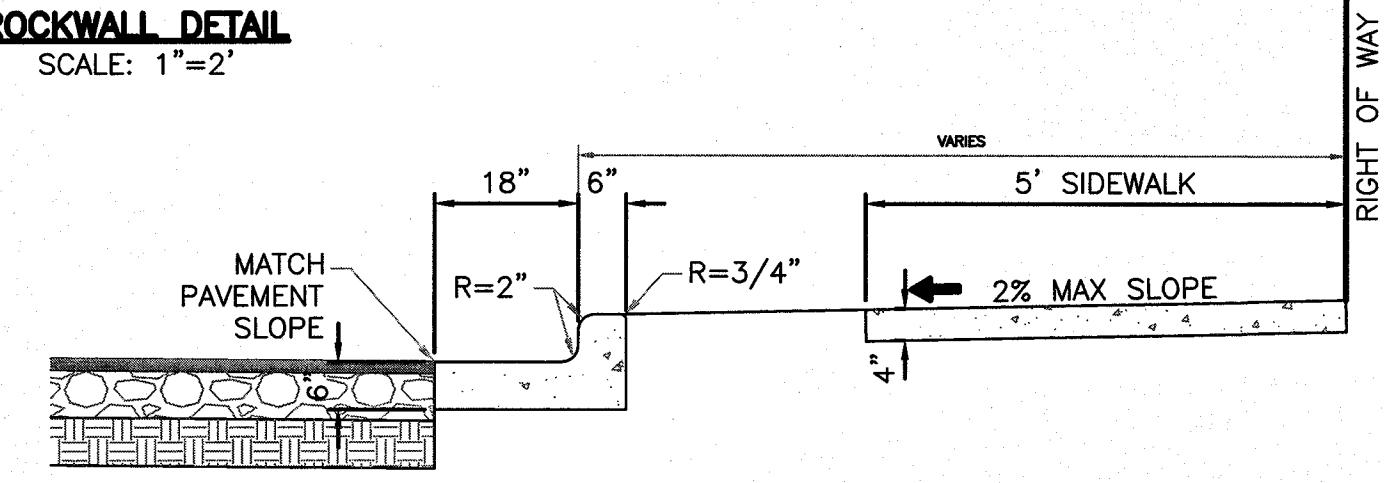
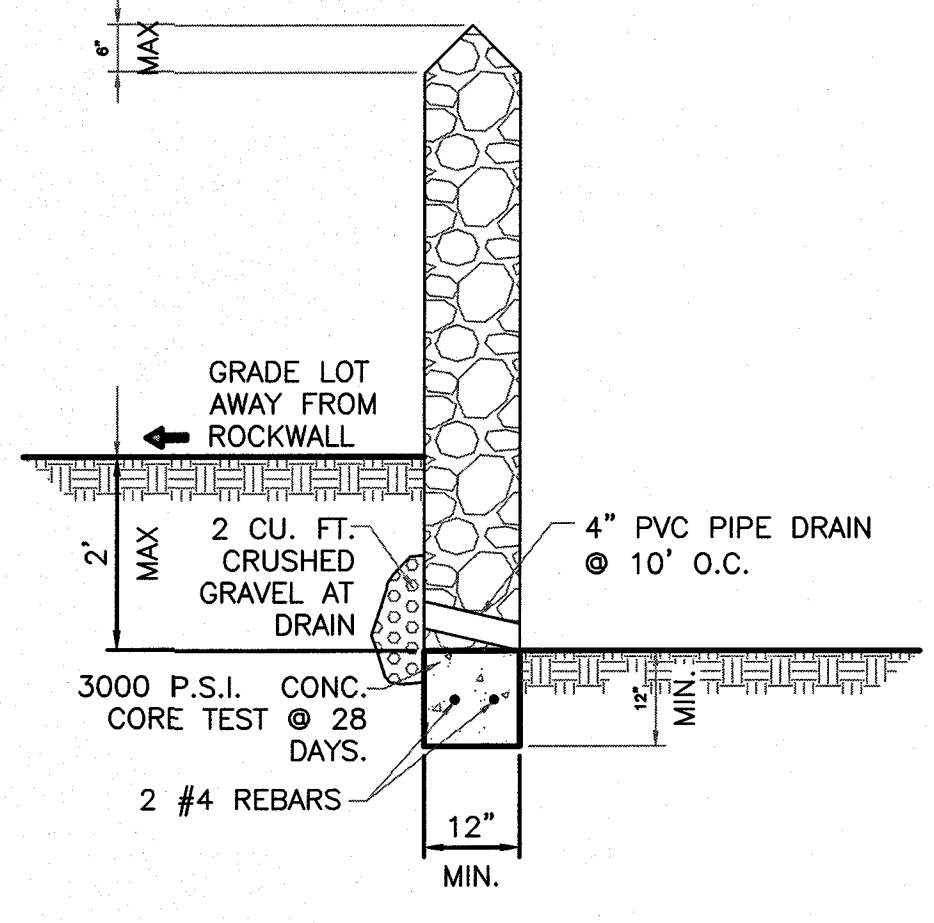
**12 INCH REINFORCED CONCRETE MASONRY WALL**

H	A	B	T	Y-BARS	X-BARS
ft.-in.	in.	ft.-in.	in.		
5'-4"	14"	3'-8"	10"	#6 @18" O.C.	#4 @24" O.C.
6'-0"	15"	4'-2"	12"	#4 @16" O.C.	#4 @18" O.C.
6'-8"	16"	4'-6"	12"	#6 @24" O.C.	#5 @18" O.C.
7'-4"	18"	4'-10"	12"	#6 @16" O.C.	#5 @18" O.C.
8'-0"	20"	5'-4"	12"	#7 @18" O.C.	#6 @12" O.C.
8'-8"	20"	5'-8"	12"	#7 @16" O.C.	#6 @12" O.C.

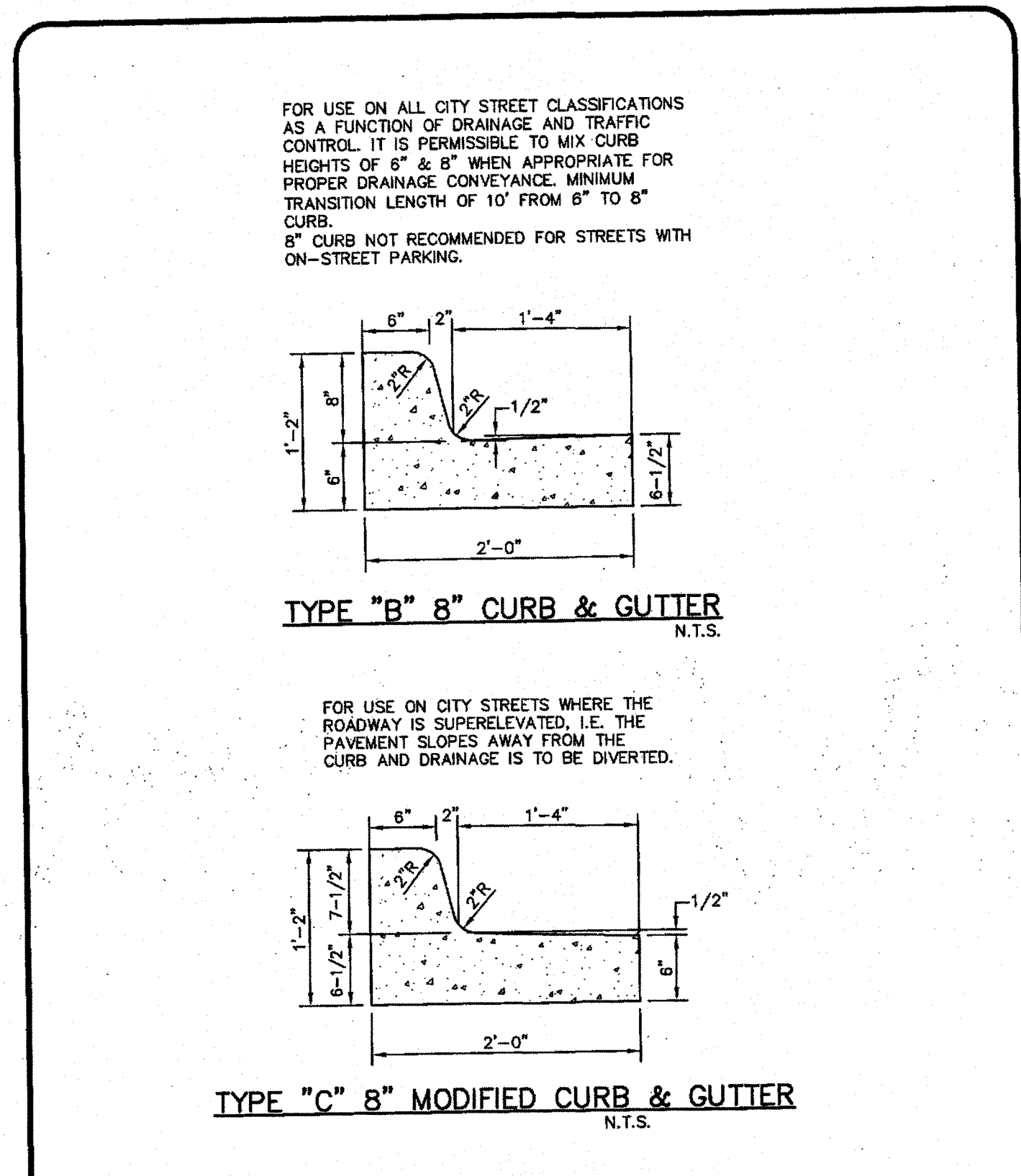
- GENERAL NOTES:**
1. ALL CONCRETE IS TO BE 4000 PSI @ 28 DAYS.
  2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM. D 1557 FOR A DEPTH OF 12" MOISTURE CONTENT IS TO BE ± 2.0%.
  3. BACK FILL AGAINST WALLS IS TO BE HAND-PLACED AND COMPACTED.
  4. ALL BARS ARE TO BE GRADE 60, ASTM 615.
  5. TRUSS TYPE DUR-O-WALL EVERY OTHER COURSE.
  6. DOWELS SHALL BE AT LEAST EQUAL IN SIZE AND SPACING TO V-BARS. SHALL PROJECT A MINIMUM OF 30 BAR DIA. INTO THE FILLED BLOCK CORES, AND SHALL EXTEND TO THE TOE OF THE FOOTING.
  7. PROVIDE KEY FOR 8" AND 12" WALLS WHERE H EXCEEDS 6'-0"
  8. USE EITHER EXPANSION JOINTS ON 20' CENTERS OR PILASTERS EVERY 16'.
  9. BOND BEAM, 1-#4 BARS FOR WALLS UNDER 3'-4", 2-#4 BARS FOR WALLS UNDER 5'-4", 2-#5 BARS FOR WALLS OVER 5'-4".



**NOTE:**  
CLEAN SURFACE OF PIPE AND PAINT WITH ONE SHOP COAT RED OXIDE AND TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69)



- 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.



TITLE 19 - SUBDIVISION ORDINANCE  
ENGINEERING DEPARTMENT  
DESIGN STANDARDS  
FOR CONSTRUCTION

TYPE "B" AND "C" CURB AND GUTTER  
6-7

Approved By: R. A. SHELBERG      Checked By: H. M. E.  
Date: JUNE 03, 2008      Drawn By: QEC/J.E.

**PROJECT BENCHMARK**  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
CENTRAL DATUM  
ELEVATION: 4137.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**

**ENGINEER'S SEAL**  
Ronald R. Bohannon  
88928  
LICENSED PROFESSIONAL ENGINEER

RONALD R. BOHANNAN  
P.E. #88928

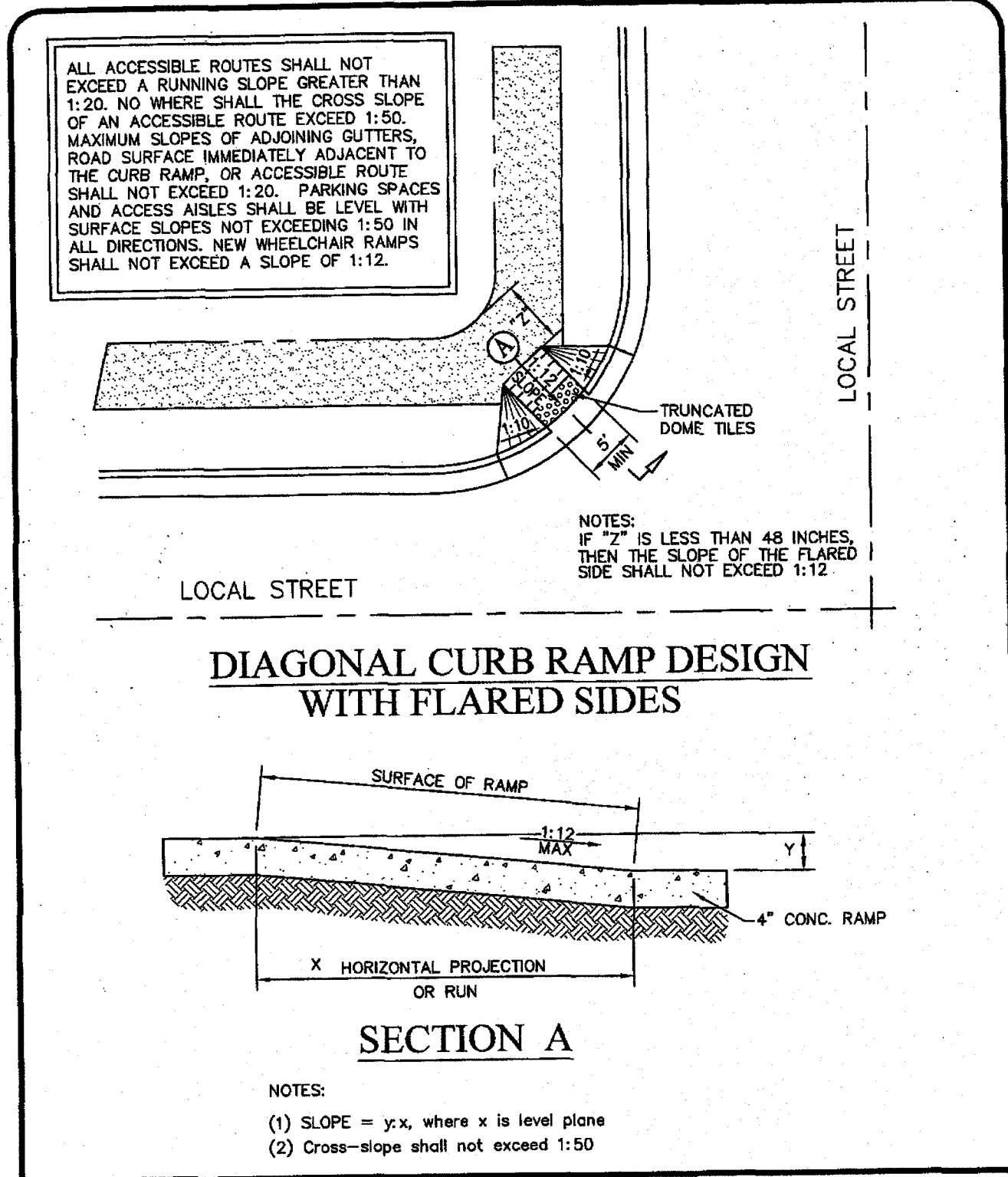
**TERRA WEST, LLC**  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 858-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
DESIGNED BY: JN	DATE: 06/06/2016	REVISIONS	
DRAWN BY: BF	DATE: 06/06/2016	DESIGN	
DRAWING NAME: 2015062_27-STANDARDS DETAILS	JOB NO.: 2015062		
CHECKED BY: JN	DATE: 06/06/2016		

SHEET TITLE  
**STANDARD DETAILS**

SHT 29 OF 44

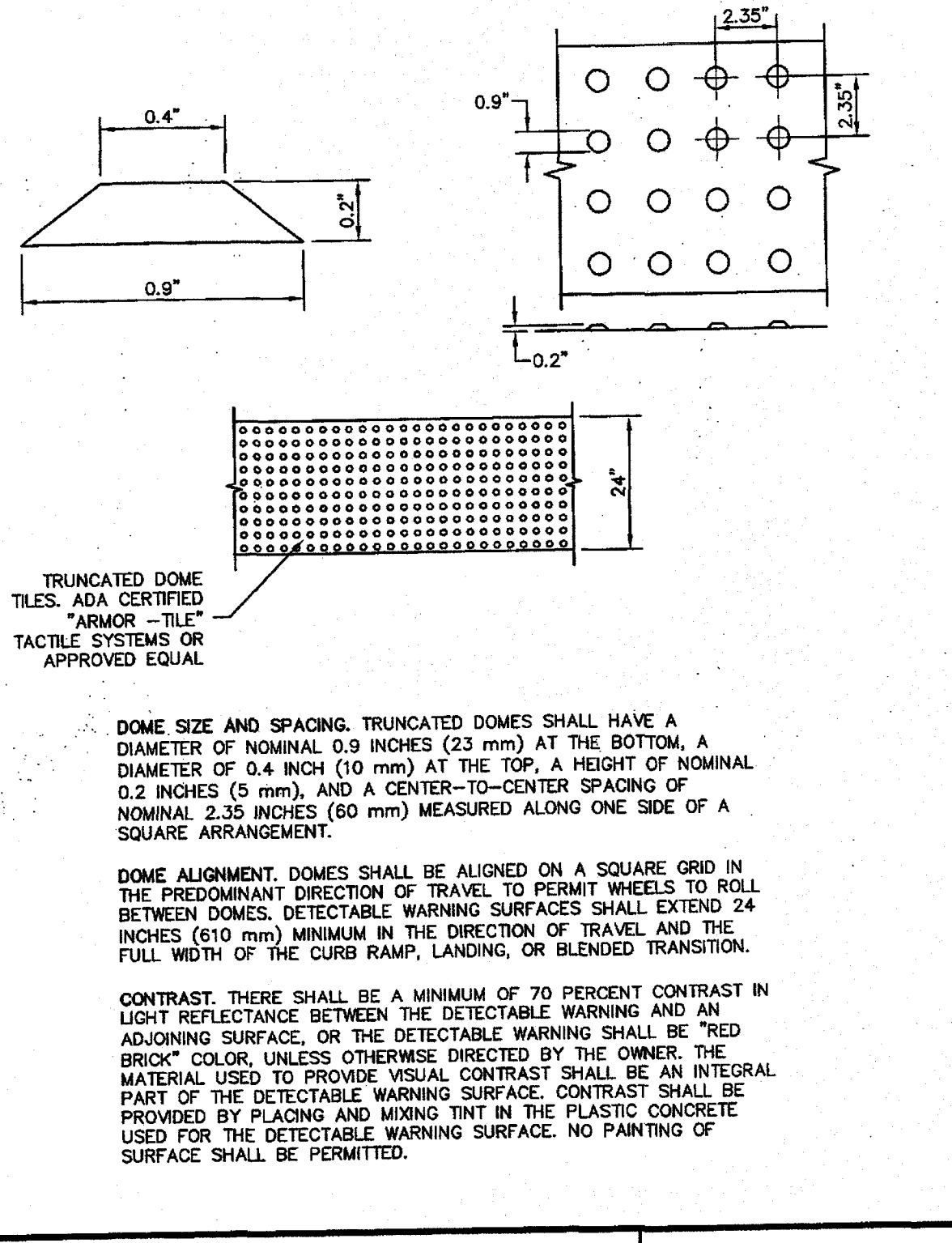




TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

DIAGONAL CURB RAMP DESIGN W/ FLARED SIDES 6-22

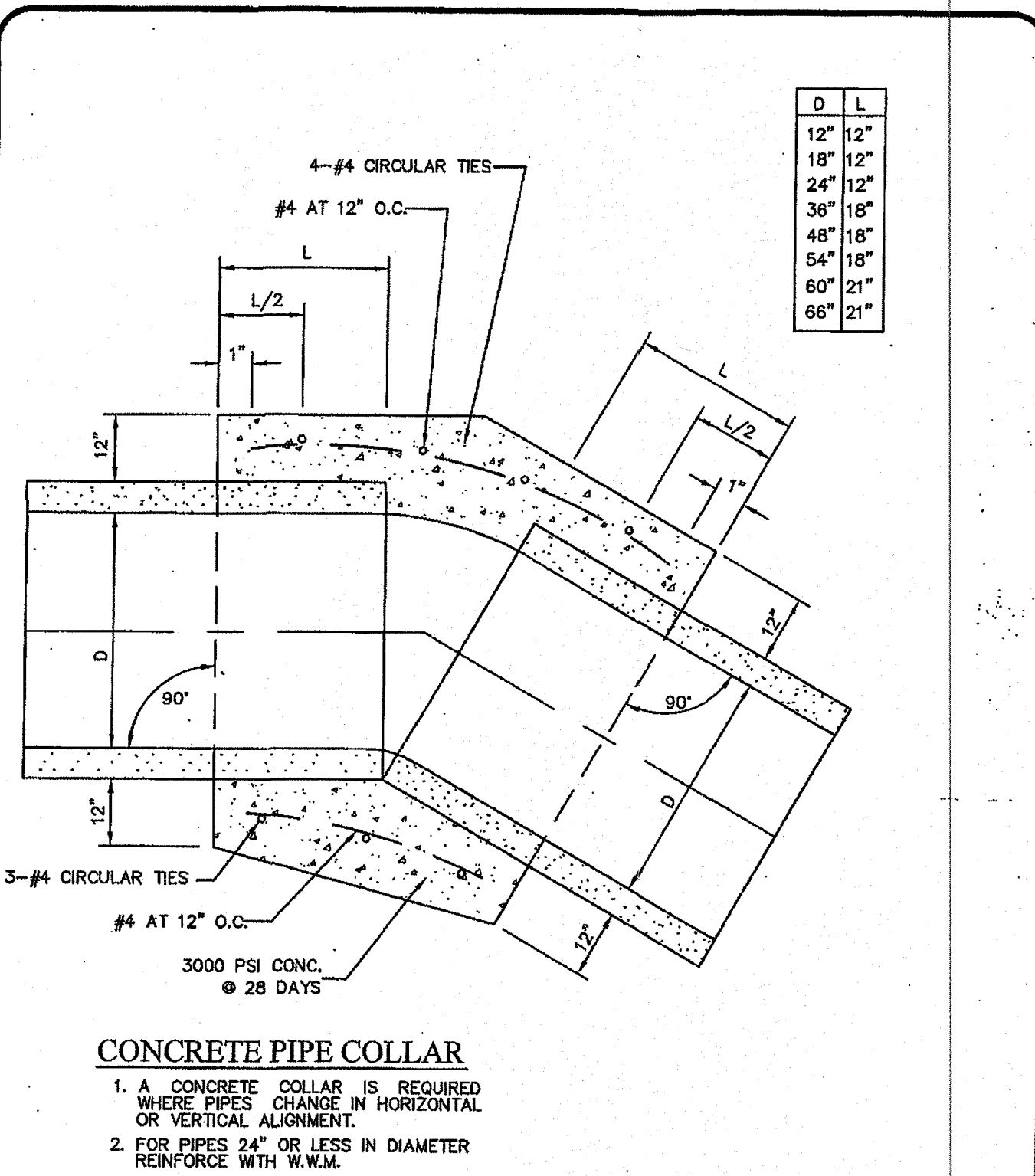
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

DOMES SIZE AND SPACING 6-28

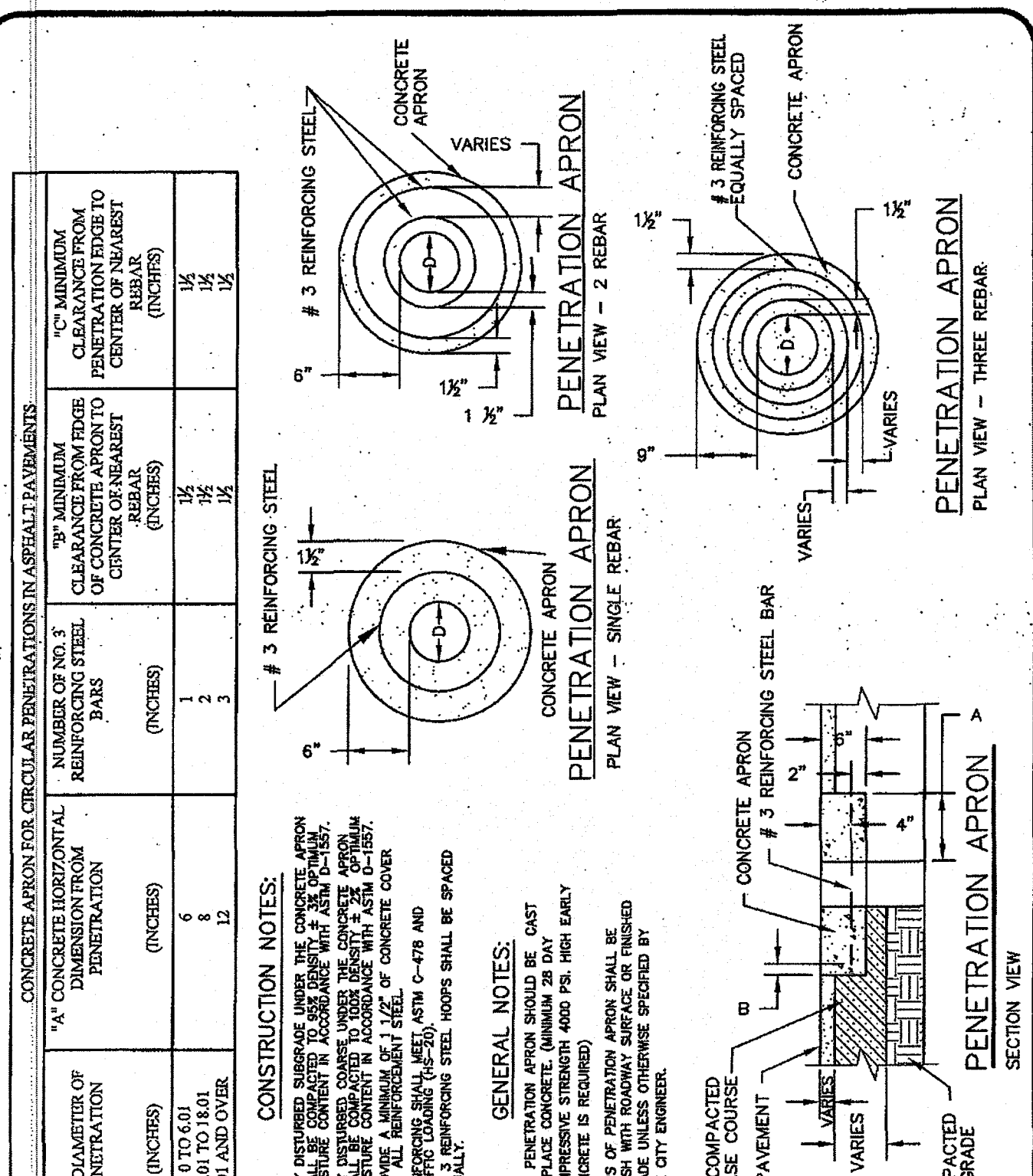
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

CONCRETE PIPE COLLAR 2-25

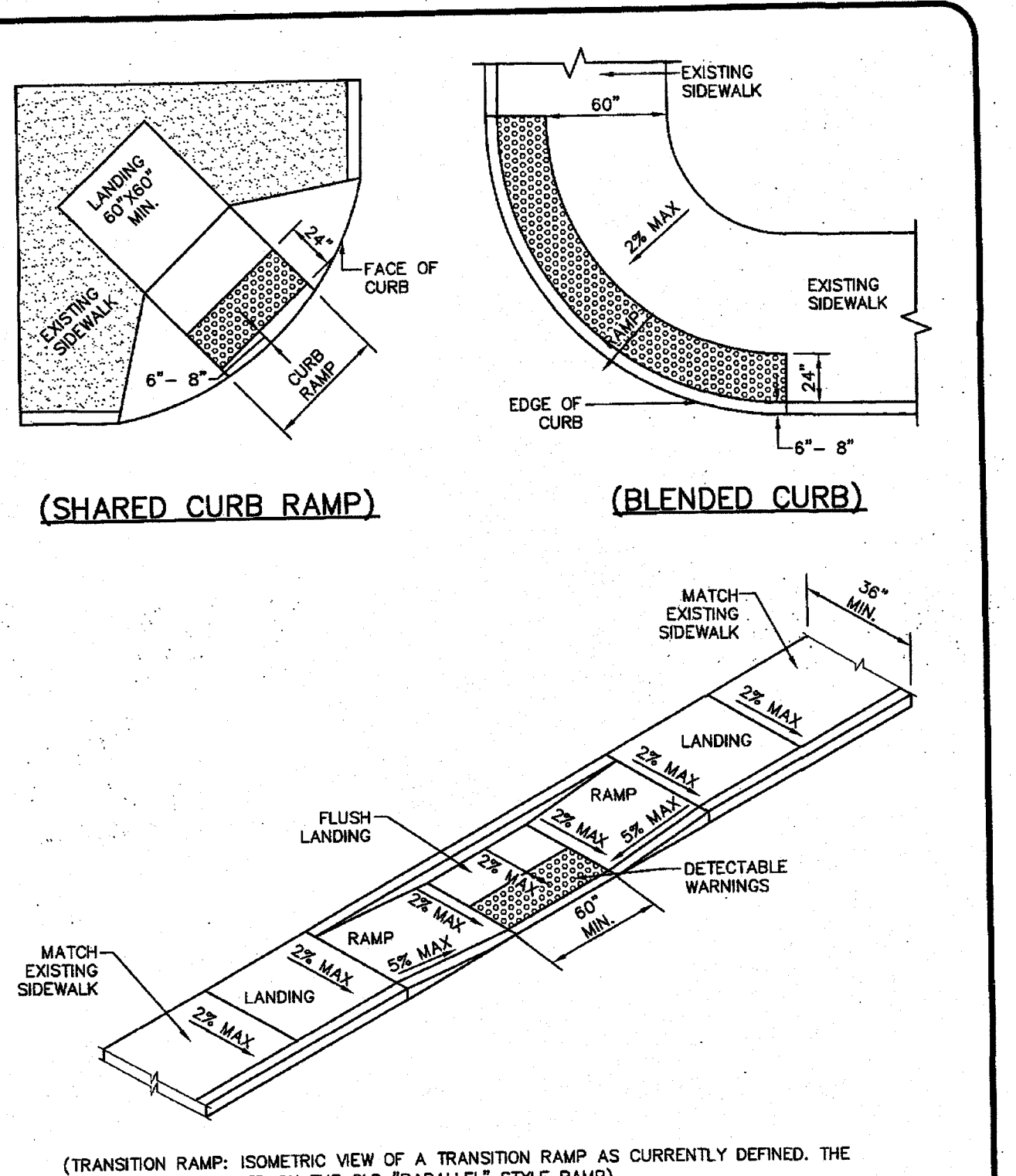
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

PENETRATION APRON 2-19

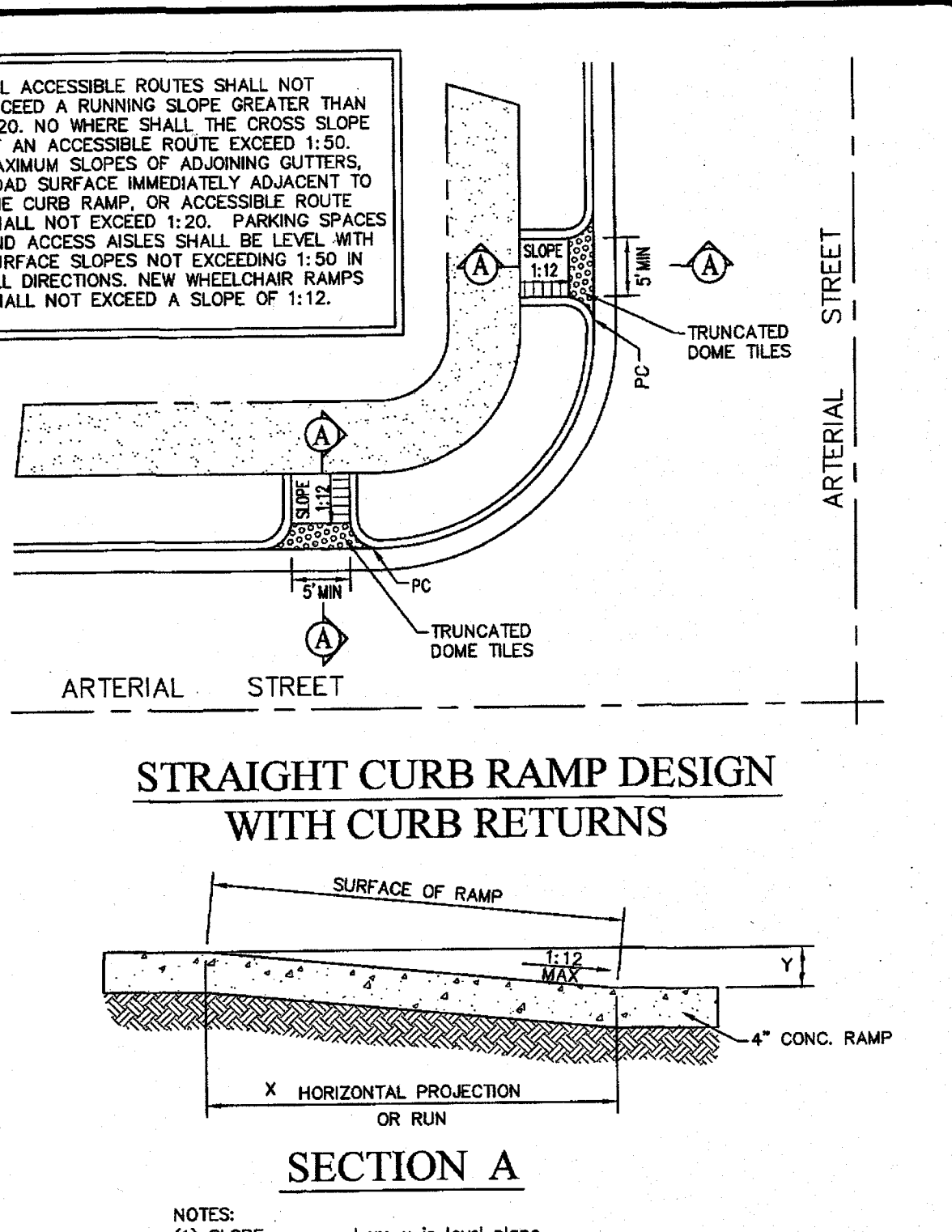
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

LOCATION OF DETECTABLE WARNINGS ON VARIOUS RAMPS 6-27

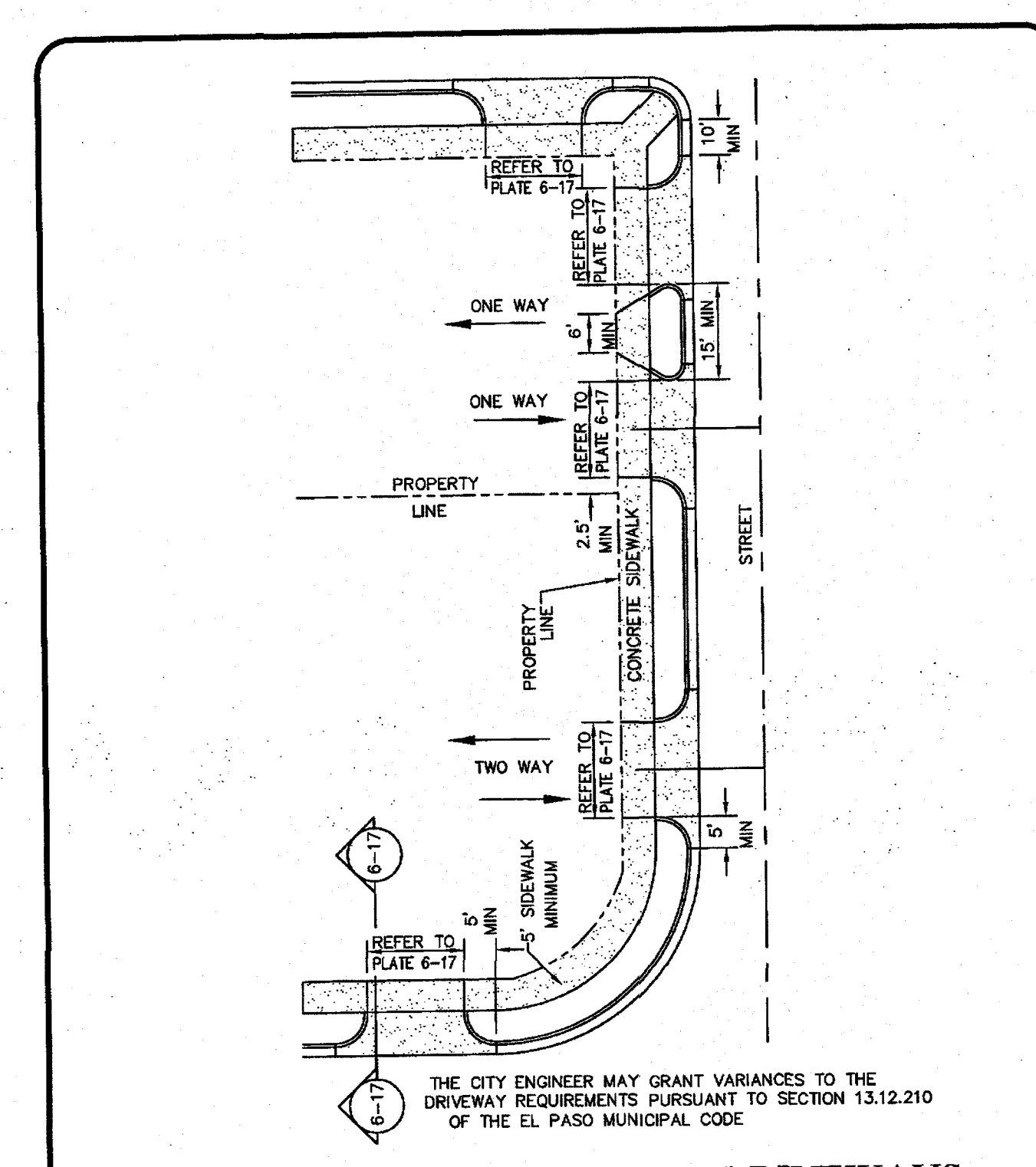
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

STRAIGHT CURB RAMP DESIGN W/ CURB RETURNS 6-20

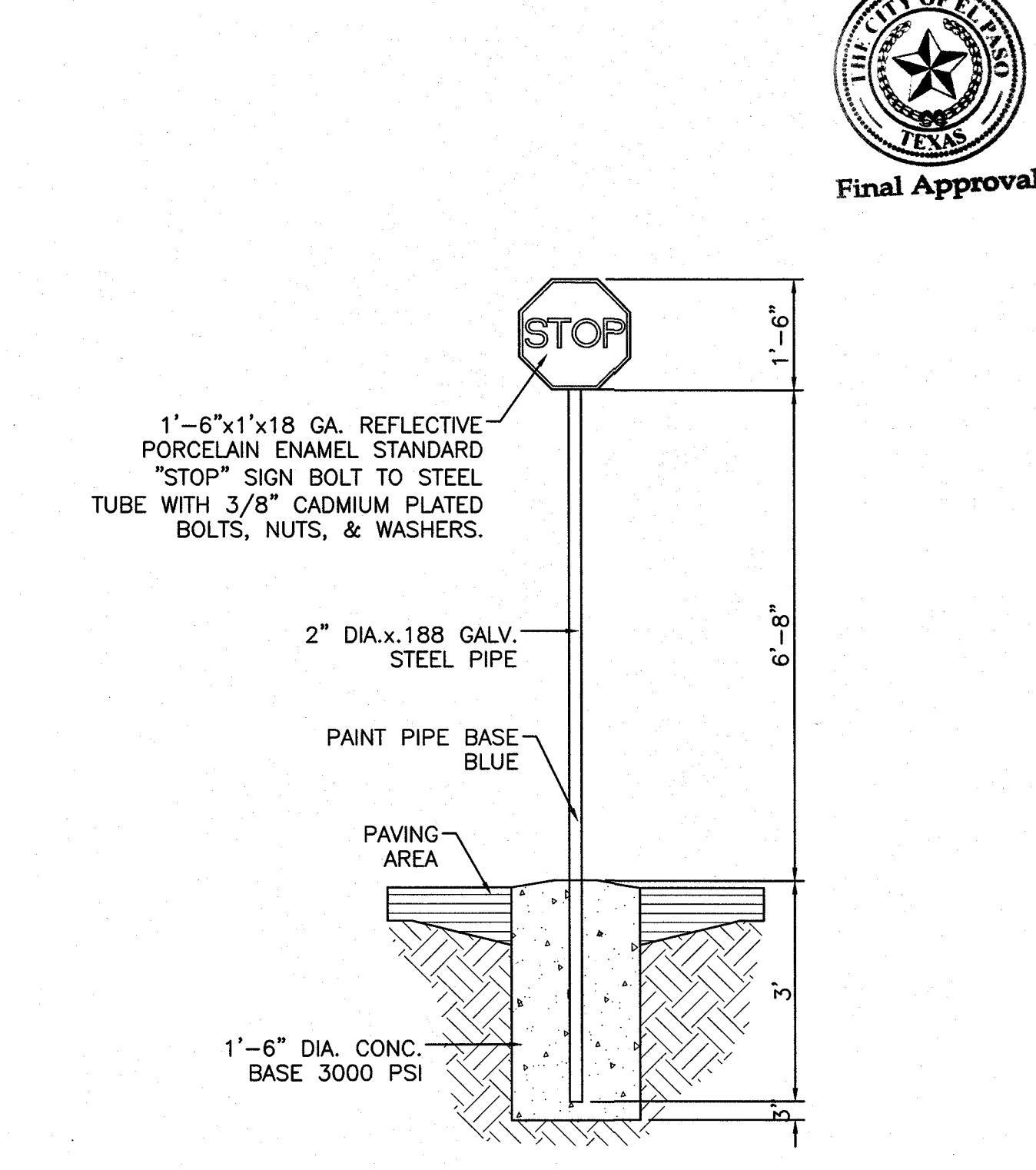
Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

COMMERCIAL / INDUSTRIAL DRIVEWAYS 6-15A

Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.



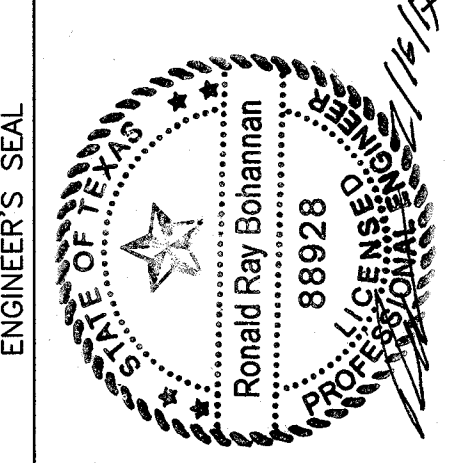
TITLE 19 - SUBDIVISION ORDINANCE  
 ENGINEERING DEPARTMENT  
 DESIGN STANDARDS FOR CONSTRUCTION

STOP SIGN 1'-6" = 1'-0"

Approved By: R. A. SHUBERT  
 Date: JUNE 03, 2008  
 Checked By: H. M. B.  
 Drawn By: QBC/J.R.

BENCHMARK  
 PROJECT BENCHMARK  
 CENTRAL MONUMENT  
 FESTIVAL DRIVE AND  
 NEW ORLEANS DRIVE  
 CULVERT AT  
 CIRCULAR DRIVE  
 ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**



RONALD R. BOHANNAN  
 P.E. #88928

TERRA WEST LLC  
 5571 MIDWAY PARK PLACE NE  
 ALBUQUERQUE, NM 87109  
 (505) 858-3100  
 www.terrawestllc.com  
 TEXAS BUSINESS NO.  
 F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JIN  
 DATE: 06/06/2016  
 DRAWN BY: BF  
 DATE: 06/06/2016  
 DRAWING NAME: 2015062-27-STANDARDS DETAILS  
 JOB NO.: 2015062  
 CHECKED BY: JIN  
 DATE: 06/06/2016

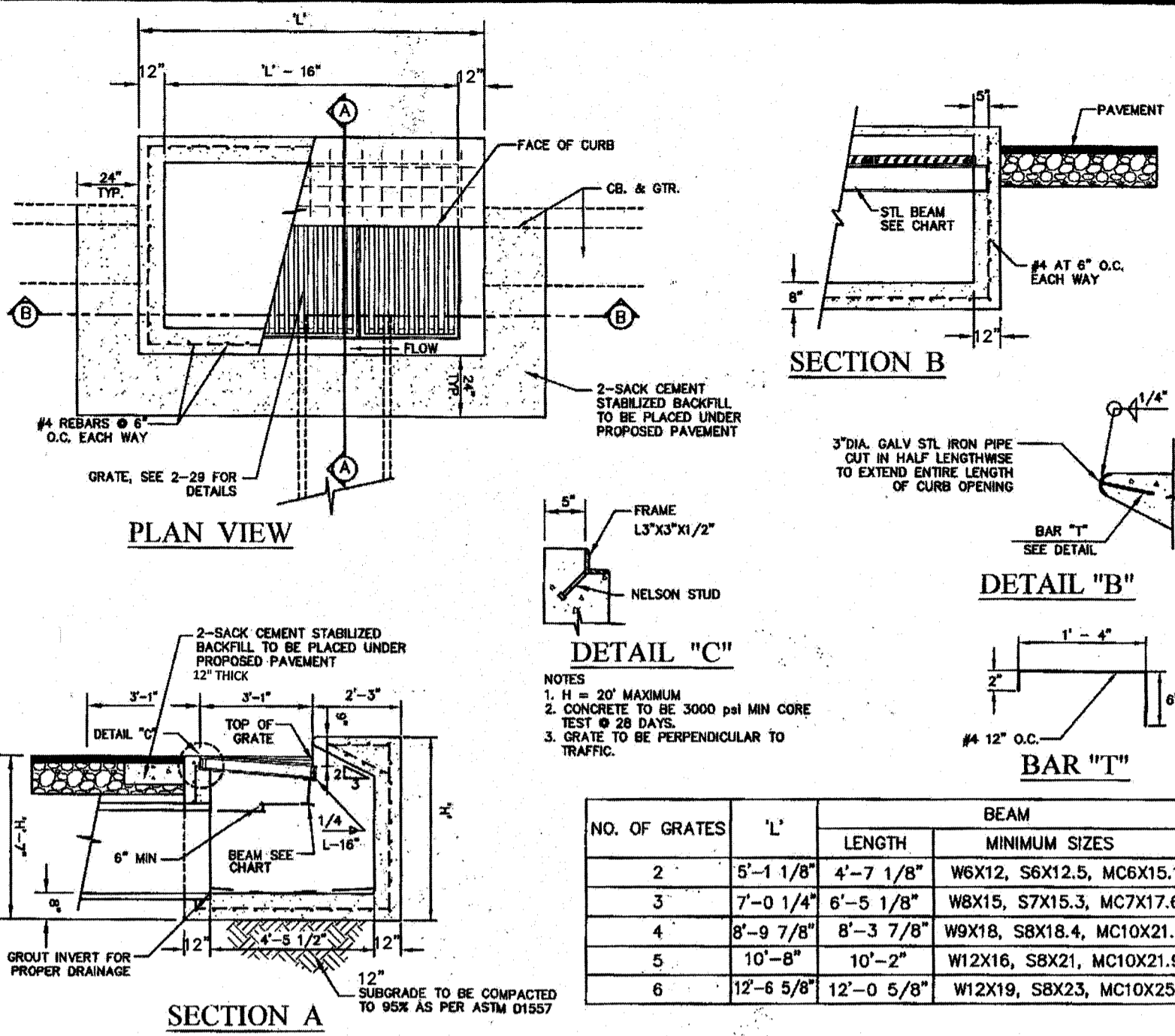
STANDARD DETAILS



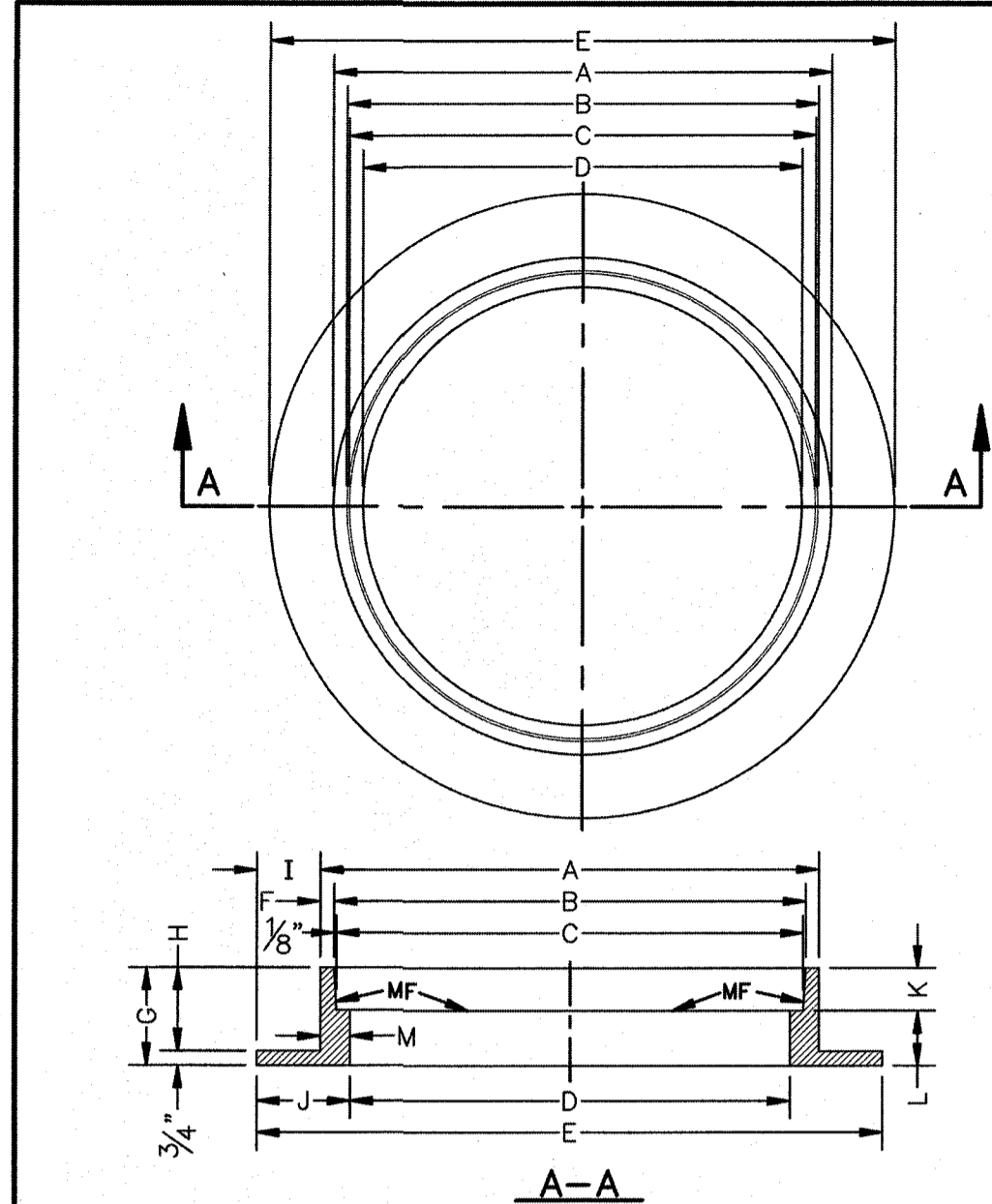


ENGINEERING DEPARTMENT  
DESIGN STANDARDS  
FOR CONSTRUCTION

Approved by: J. A. [Signature]  
Checked by: [Signature]  
Date: 2-20



NO. OF GRATES	L'	LENGTH	BEAM MINIMUM SIZES
2	5'-1 1/8"	4'-7 1/8"	W6X12, S6X12.5, MC6X15.1
3	7'-0 1/4"	6'-5 1/8"	W8X15, S7X15.3, MC7X17.6
4	8'-9 7/8"	8'-3 7/8"	W9X18, S8X18.4, MC10X21.9
5	10'-8"	10'-2"	W12X16, S8X21, MC10X21.9
6	12'-6 5/8"	12'-0 5/8"	W12X19, S8X23, MC10X25

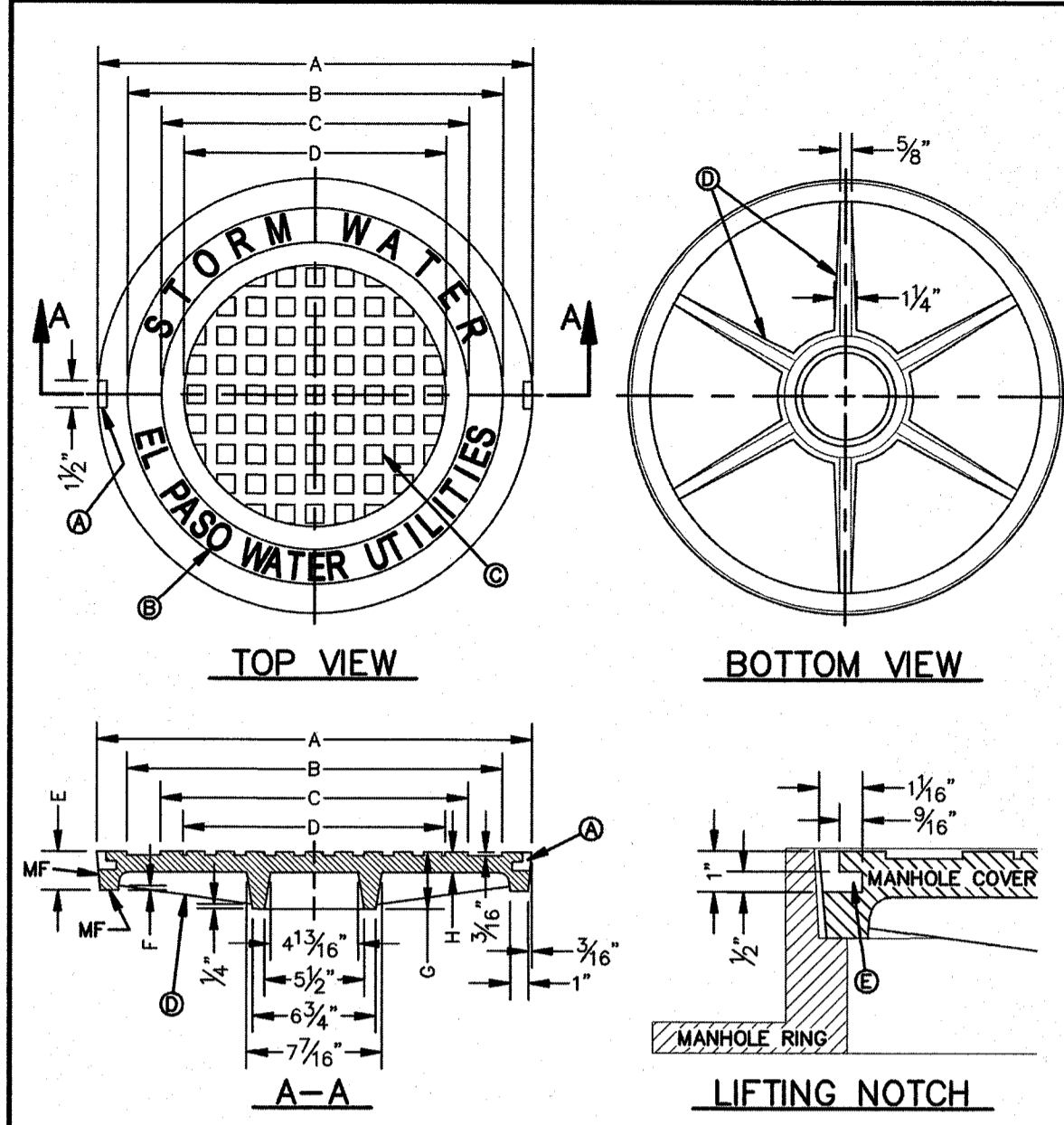


STANDARD DETAIL DATE: 8/19/2009 REV: [ ] STORMWATER MANHOLE RING N.T.S. EL PASO WATER UTILITIES PUBLIC UTILITIES BOARD

- GENERAL NOTES:**
1. MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
  2. CASTING TO BE SMOOTH & VOID OF AIR HOLES.
  3. CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
  4. AS-CAST DIMENSIONS MAY VARY 1/8" ± PER FOOT (AASHTO M306-07).
  5. WEIGHT MAY VARY 5% (AASHTO M306-07).
  6. SHADED DIMENSIONS IN TABLE FOR REFERENCE ONLY. SOURCE: CITY OF EL PASO DESIGN STANDARDS FOR CONSTRUCTION, DETAIL 2-16.

SEE NOTE 6

MANHOLE RING	MANHOLE - ALL TYPES	MANHOLE TYPE 48"	MANHOLE TYPE 72"
A	33"	25 1/2"	32 3/4"
B	31 1/2"	23 3/8"	31 3/8"
C	31 1/2"	23 3/8"	31 3/8"
D	30"	22 1/2"	30"
E	39 1/2"	34 1/2"	42"
F	5"	1 1/8"	1 1/8"
G	5"	6"	6"
H	4 1/4"	5 1/4"	5 1/4"
I	3 1/4"	4 1/4"	4 1/4"
J	4 1/4"	6"	6"
K	2 1/8"	3 1/8"	3 1/8"
L	2 1/8"	2 1/8"	2 1/8"
M	1 1/2"	1 1/2"	1 1/2"
WEIGHT	220 lbs.	165 lbs.	225 lbs.



- GENERAL NOTES:**
1. MATCHING SURFACES MARKED "MF" TO BE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
  2. CASTING TO BE SMOOTH & VOID OF AIR HOLES.
  3. CASTING MUST MEET REQUIREMENTS OF AASHTO M306-07.
  4. AS-CAST DIMENSIONS MAY VARY 1/8" ± PER FOOT (AASHTO M306-07).
  5. WEIGHT MAY VARY 5% (AASHTO M306-07).
  6. SHADED DIMENSIONS IN TABLE FOR REFERENCE ONLY. SOURCE: CITY OF EL PASO DESIGN STANDARDS FOR CONSTRUCTION, DETAIL 2-17.

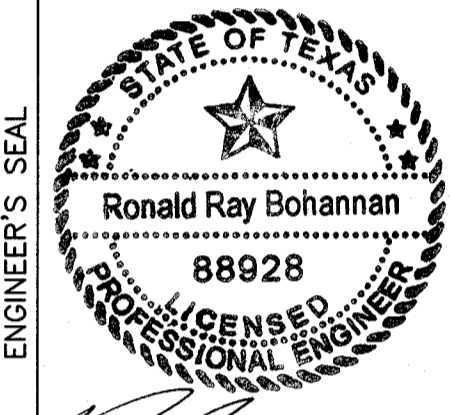
SEE NOTE 6

MANHOLE COVER	MANHOLE - ALL TYPES	MANHOLE TYPE 48"	MANHOLE TYPE 72"
A	31 3/8"	23 3/8"	31 3/8"
B	28 3/8"	20 3/8"	28 3/8"
C	24 3/8"	16 3/8"	24 3/8"
D	21 3/8"	14 3/8"	21 3/8"
E	2 1/8"	3"	3"
F	1 1/4"	1 1/4"	1 1/4"
G	3 3/8"	3"	3"
H	1 1/8"	1"	1"
WEIGHT	265 lbs.	175 lbs.	310 lbs.

STANDARD DETAIL DATE: 8/19/2009 REV: [ ] STORMWATER MANHOLE COVER N.T.S. EL PASO WATER UTILITIES PUBLIC UTILITIES BOARD

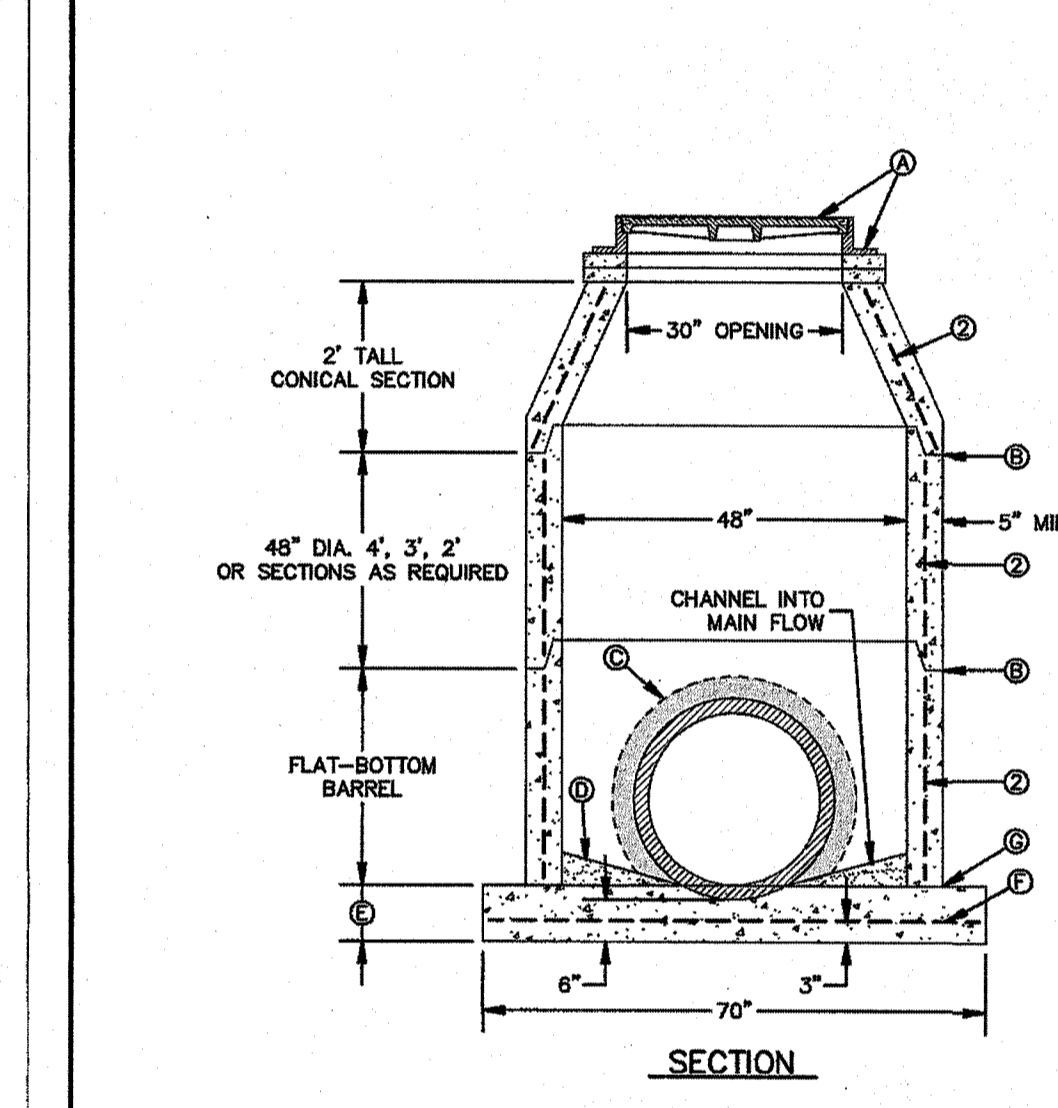
PROJECT BENCHMARK  
CENTURINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4757.81

PROJECT NAME  
**MONTECILLO UNIT 5B**



RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST, LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 858-1100  
www.tierrawest.com  
TEXAS BUSINESS NO.  
F-11773



- GENERAL NOTES:**
1. MANHOLE TYPE "S-A1" SHALL BE USED FOR LINES 24" AND SMALLER, NOT TO BE USED UNDER GROUND WATER CONDITIONS.
  2. PRE-CAST MANHOLE SECTIONS SHALL BE OF REINFORCED CONCRETE CONFORMING TO ASTM C-478 AND SHALL MEET HS-20 LOADING. PROVIDE REINFORCEMENT WITHIN 3" OF OPENINGS OR KNOCKOUTS. OPENINGS (UP TO 8") MADE IN FIELD SHALL BE CORE DRILLED.
  3. CEMENT SHALL BE TYPE I-II, PER ASTM C-150, AND MUST CONTAIN A MINIMUM OF 4% FLY ASH OF THE TOTAL MANHOLE WEIGHT.
  4. THE BASE SHALL BE CAST IN PLACE CONCRETE (MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI) POURED ON UNDISTURBED OR THOROUGHLY COMPACTED SUB-BASE.
  5. MANUFACTURER TO PROVIDE LIFTERS OF ADEQUATE SIZE AS NEEDED.
  6. THE SUBGRADE UNDER THE BASE SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM D-1557.
- CONSTRUCTION KEY NOTES:**
- A. MANHOLE RING AND COVER (SEE DETAILS 916 & 917). SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 185).
  - B. ALL JOINTS TO BE TONGUE, GROOVE AND SEALED WITH MORTAR OR RAM-NEK (OR APPROVED EQUAL).
  - C. PIPE OPENINGS/KNOCKOUTS AS REQUIRED TO FIT PIPE SIZE AND SHALL HAVE A CONCRETE COLLAR ALL AROUND (SEE DETAIL 928-2).
  - D. GROUT AS REQUIRED.
  - E. CONCRETE BASE SHALL BE 8" FOR MH'S UP TO 12" DEEP AND 12" FOR DEPTHS GREATER THAN 12".
  - F. NO. 4 REBARS 8" ON CENTER, BOTH WAYS.
  - G. SEAL ALL AROUND WITH MORTAR OR RAM-NEK (OR APPROVED EQUAL).

STANDARD DETAIL DATE: 9/8/2009 REV: [ ] STORMWATER MANHOLE TYPE "S-A1" N.T.S. EL PASO WATER UTILITIES PUBLIC UTILITIES BOARD

Bill of Materials

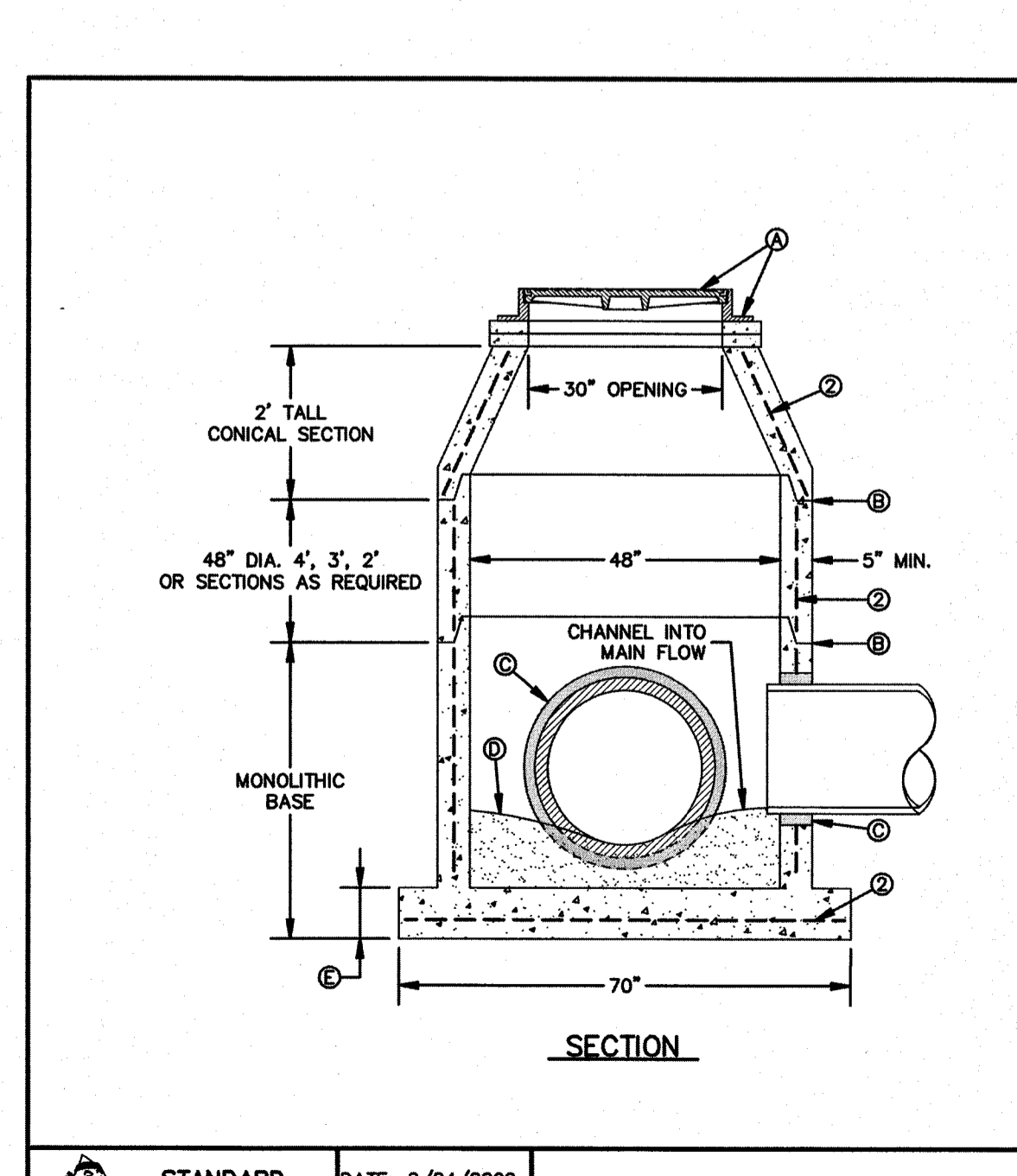
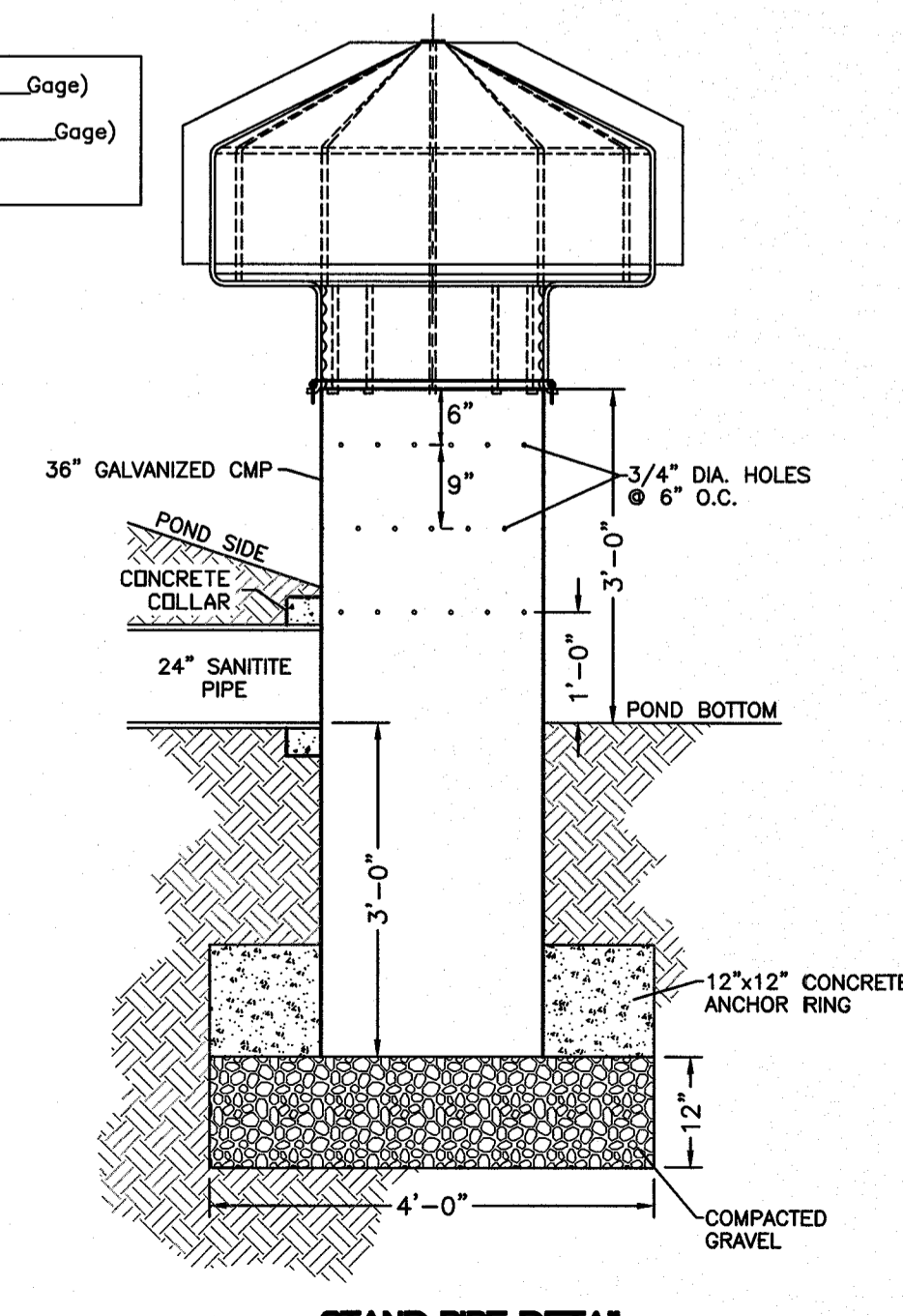
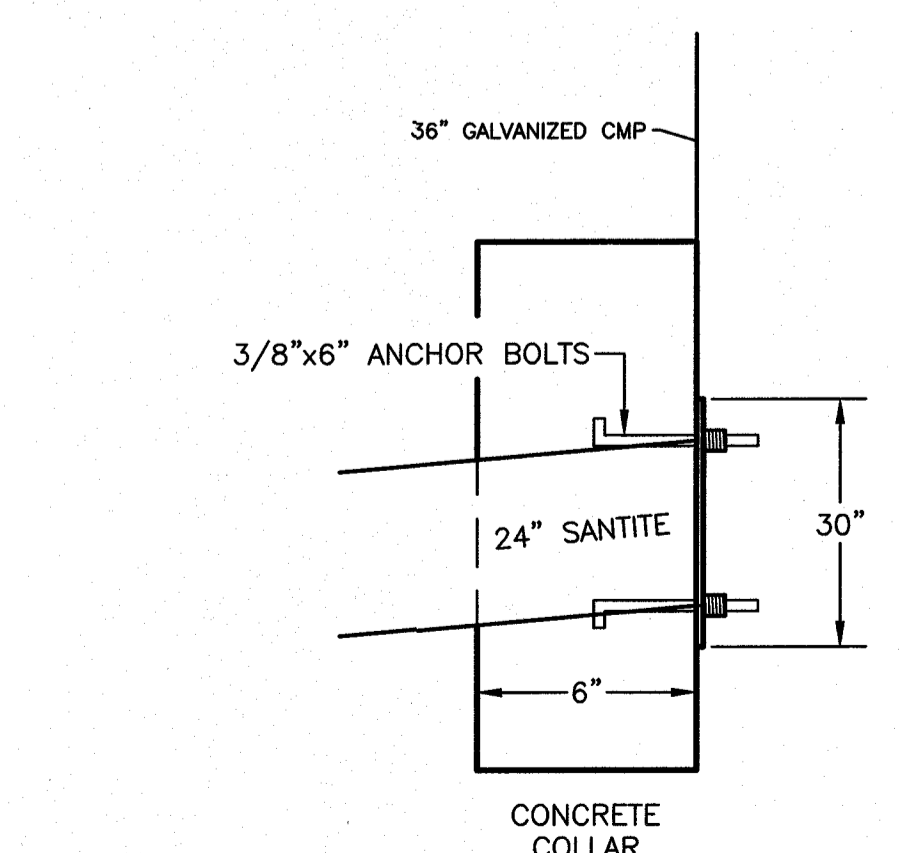
C.M. Riser \_\_\_\_\_ Diam., \_\_\_\_\_ Lin. Ft., Metal thickness = \_\_\_\_\_ ( \_\_\_\_\_ Gage)

C.M. Conduit \_\_\_\_\_ Diam., \_\_\_\_\_ Lin. Ft., Metal thickness = \_\_\_\_\_ ( \_\_\_\_\_ Gage)

∅ Angle = \_\_\_\_\_ Degrees Volume of Concrete = \_\_\_\_\_ Cu. Yds.

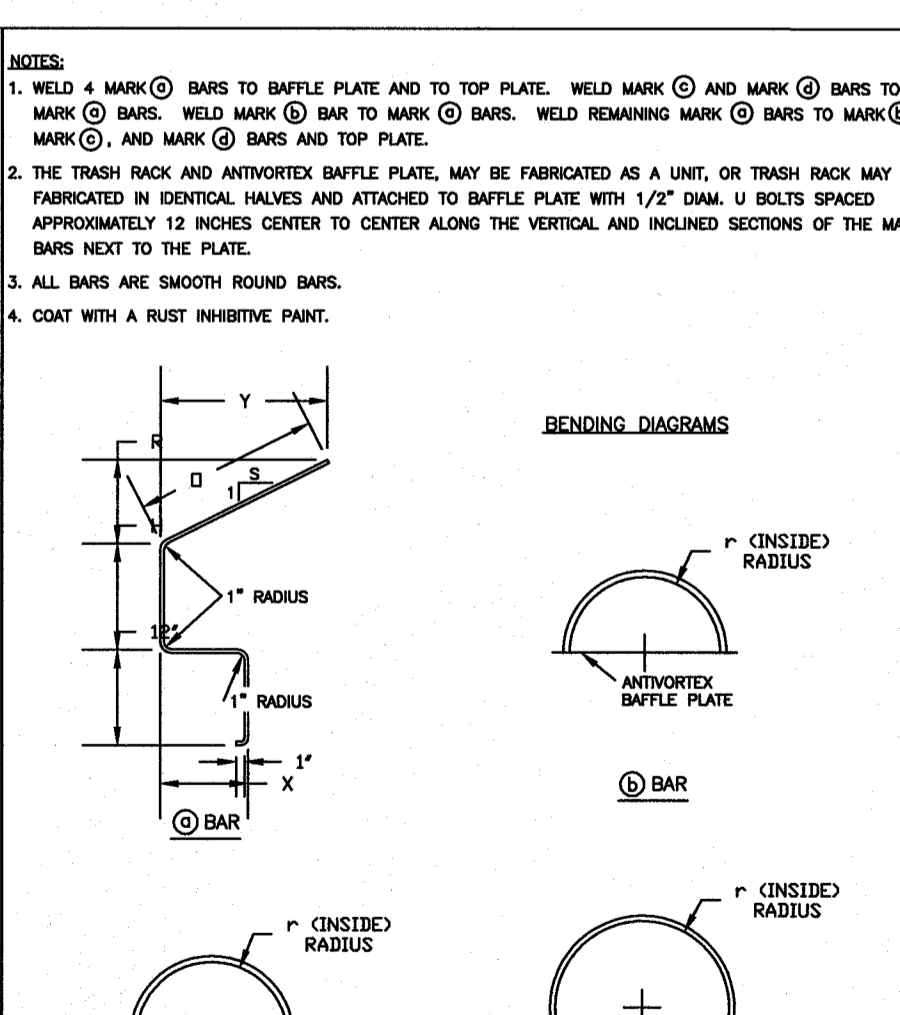
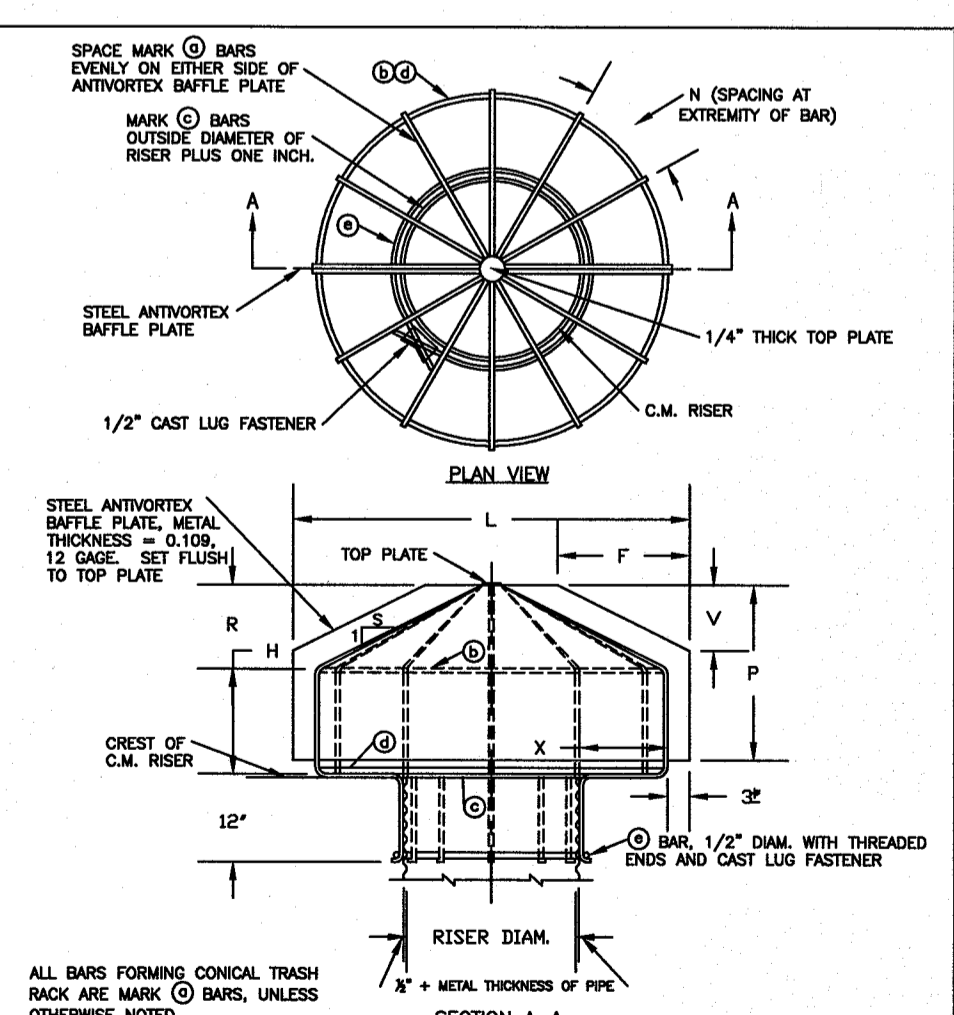
Concrete Table

Riser Diameter (Inches)	Volume of Concrete (Cu. Yds./Inch)
18	.0055
21	.0074
24	.0097
30	.0152
36	.0218



- GENERAL NOTES:**
1. MANHOLE TYPE "S-A1" SHALL BE USED FOR LINES 24" AND SMALLER.
  2. PRE-CAST MANHOLE SECTIONS SHALL BE OF REINFORCED CONCRETE CONFORMING TO ASTM C-478 AND SHALL MEET HS-20 LOADING. PROVIDE REINFORCEMENT WITHIN 3" OF OPENINGS OR KNOCKOUTS. OPENINGS (UP TO 8") MADE IN FIELD SHALL BE CORE DRILLED.
  3. CEMENT SHALL BE TYPE I-II, PER ASTM C-150, AND MUST CONTAIN A MINIMUM OF 4% FLY ASH OF THE TOTAL MANHOLE WEIGHT.
  4. THE BASE & RISER SHALL BE INTEGRALLY CAST. CONCRETE SHALL BE MIN. 28 DAY COMPRESSIVE STRENGTH 4000psi.
  5. MANUFACTURER TO PROVIDE LIFTERS OF ADEQUATE SIZE AS NEEDED.
  6. THE SUBGRADE UNDER THE BASE SHALL BE COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM D-1557.
  7. MANHOLES BELOW GROUNDWATER TO BE EXTERNALLY AND INTERNALLY COATED WITH BITUMINOUS COATINGS.
- CONSTRUCTION KEY NOTES:**
- A. MANHOLE RING AND COVER (SEE DETAILS 916 & 917). SET FRAME AND COVER FLUSH WITH ROADWAY SURFACE OR FINISHED GRADE (SEE DETAIL 185).
  - B. ALL JOINTS TO BE TONGUE, GROOVE AND SEALED WITH MORTAR OR RAM-NEK (OR APPROVED EQUAL).
  - C. 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 (SEE DETAIL 928-1).
  - D. GROUT AS REQUIRED.
  - E. CONCRETE BASE SHALL BE 8" FOR MH'S UP TO 12" DEEP AND 12" FOR DEPTHS GREATER THAN 12".

STANDARD DETAIL DATE: 9/24/2009 REV: [ ] STORMWATER MANHOLE TYPE "S-A1" N.T.S. EL PASO WATER UTILITIES PUBLIC UTILITIES BOARD



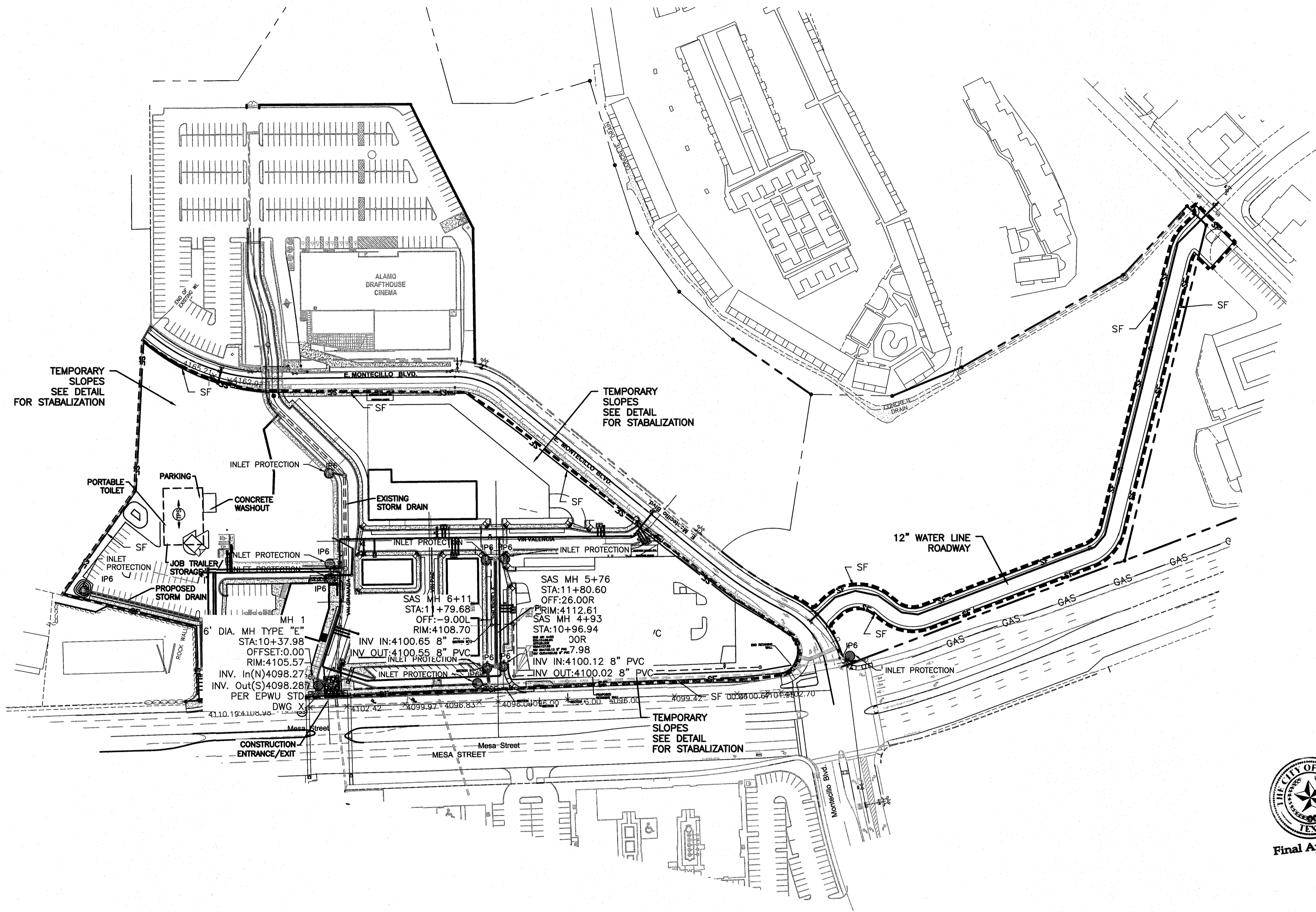
United States Department of Agriculture  
Natural Resources Conservation Service

10-229 Page 1 of 3  
Designed: [ ]  
Checked: [ ]  
Approved: [ ]

NO.	DATE	REVISIONS	BY
		DESIGN	

STANDARDS  
DETAILS - STORM  
DRAIN  
SHT 31 OF 44





**LEGEND**

---	BOUNDARY LINE
---	RIGHT OF WAY LINE
---	LIMITS OF DISTURBANCE
---	STORM DRAIN
▲	SILT DIKE DIVERSION

**EROSION DETAILS**

CE	TEMPORARY STONE CONSTRUCTION EXIT
SF	TEMPORARY SILT FENCE
IP1	BLOCK AND AGGREGATE INLET SEDIMENT FILTER
SB	TEMPORARY SEDIMENT BASIN

**EROSION NOTES**

TPS	TEMPORARY PARKING AND STORAGE
SS	SWPPP INFORMATION SIGN
SD	SILT DIKE DIVERSION

**MAINTENANCE**

ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A 0.5" RAINFALL EVENT, AND CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

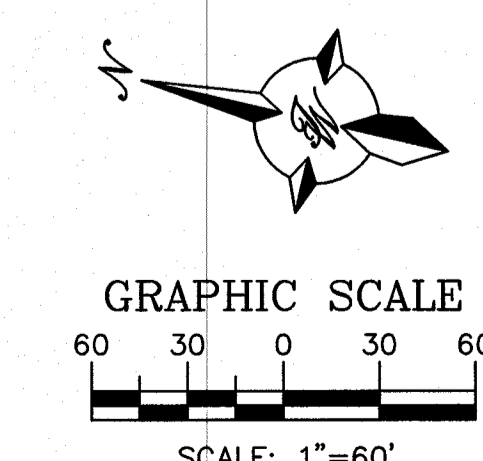
1. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING, OR DETERIORATION.
2. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEDED AS NEEDED.
3. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
4. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
5. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AS CONDITIONS DEMAND.
6. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT SHALL BE REMOVED FROM SEDIMENT BASINS OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 50%.

**CAUTION**

ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

**SEQUENCE OF CONSTRUCTION**

1. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
2. CONSTRUCT THE SILT FENCES ON THE SITE.
3. PREPARE TEMPORARY PARKING AND STORAGE AREA.
4. CONSTRUCT THE SEDIMENTATION AND SEDIMENT TRAP BASINS.
5. CLEAR AND GRUB THE SITE.
6. UNDERCUT GRADE AS REQUIRED.
7. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.
8. FINISH GRADING THE SITE. RAISE GRADES TO INDUCE DRAINAGE TOWARD TEMPORARY SEDIMENT BASINS.
9. PROTECT LANDSCAPE DRAINS FROM SEDIMENT AFTER INSTALLATION.
10. STABILIZE GRADED AREAS UPON COMPLETION. SEE SHEET 31 FOR DETAILS.



**GENERAL EROSION NOTES**

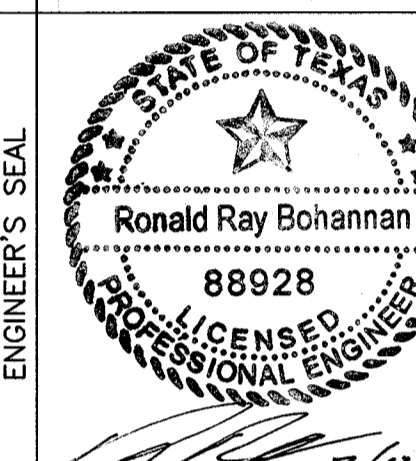
- A. THE STORMWATER POLLUTION PREVENTION PLAN IS COMPRISED OF THIS DRAWING ("SITE MAP"), THE STANDARD DETAILS, THE PLAN NARRATIVE, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
- B. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND TCEQ GENERAL PERMIT TO DISCHARGE UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM
- C. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST OF OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.
- D. BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
- E. SITE MAP MUST CLEARLY DELINEATE ALL STATE WATERS. PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
- F. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
- G. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES.
- H. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DETAINED AND PROPERLY TREATED OR DISPOSED.
- I. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
- J. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- K. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORMWATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- L. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
- M. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS STOPPED FOR AT LEAST 21 DAYS, SHALL BE TEMPORARILY SEEDED. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. PROVIDE ADEQUATE TEMPORARY IRRIGATION FOR GERMINATION.
- N. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY SEEDED. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN.
- O. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.
- P. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
- Q. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE DETENTION POND AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
- R. ON-SITE & OFFSITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
- S. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
- T. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) TO PREVENT EROSION.
- U. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.



Final Approval

BENCHMARK  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
COUNTY OF EL PASO  
SURVEY TO  
TRACT 51, JOHN BARBER SURVEY, T.10  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 4.13781  
ELEVATION: 4137.81

PROJECT NAME  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
SUNNY BAY SUBDIVISION, PART OF  
TRACT 51, JOHN BARBER SURVEY, T.10  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.6866+ ACRES



ENGINEER'S SEAL  
RONALD R. BOHANNAN  
P.E. #88928

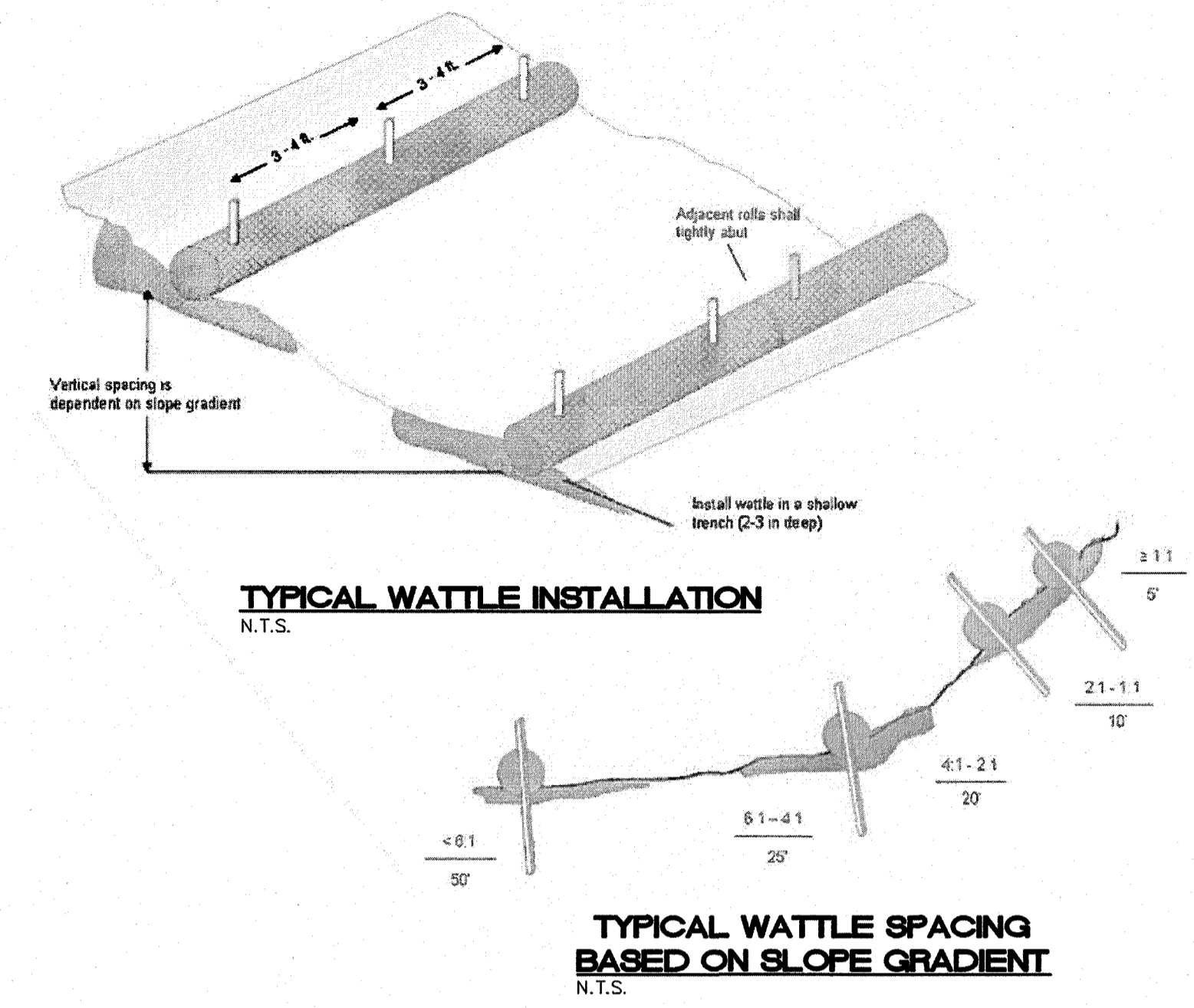
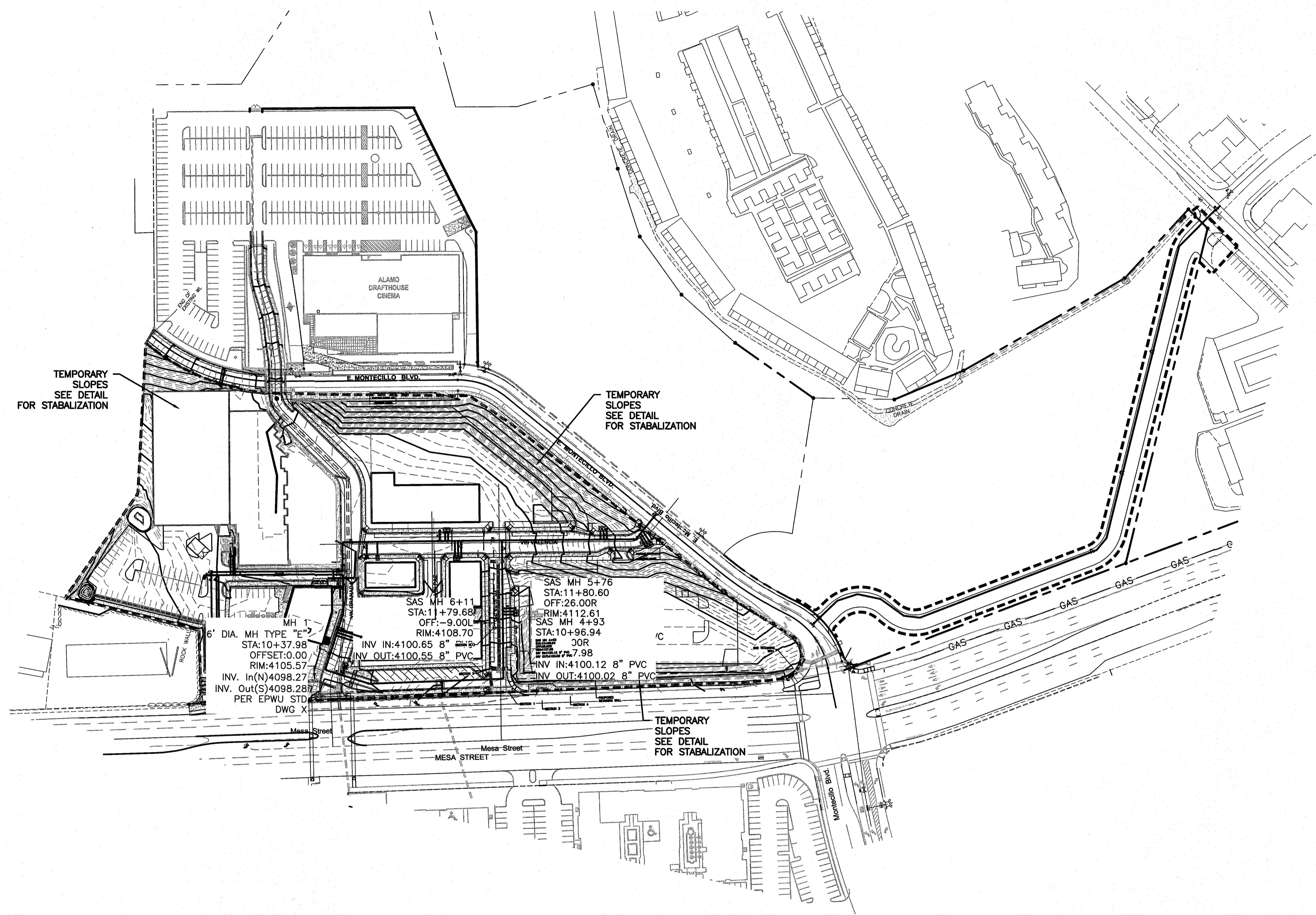
TERRA WEST LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 856-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
DESIGN		DESIGN	
DESIGNED BY: JIN	DATE: 06/06/2016		
DRAWN BY: BF	DATE: 06/06/2016		
DRAWING NAME: 2015082_OVERALL SWPPP PLAN	JOB NO.: 2015062		
CHECKED BY: JIN	DATE: 06/06/2016		

SHEET TITLE  
**OVERALL SWPPP PLAN**  
SHT 32 OF 44

Z:\2015\2015082\_OVERALL SWPPP PLAN.dwg 13: 2017 - 12:49pm





TEMPORARY SLOPES FOR STABILIZATION SEE DETAIL FOR STABILIZATION

TEMPORARY SLOPES FOR STABILIZATION SEE DETAIL FOR STABILIZATION

TEMPORARY SLOPES FOR STABILIZATION SEE DETAIL FOR STABILIZATION

MH 1  
6' DIA. MH TYPE "E"  
STA:10+37.98  
OFFSET:0.00  
RIM:4105.57  
INV. In(N)4098.27  
INV. Out(S)4098.28  
PER EPWU STD  
DWG X

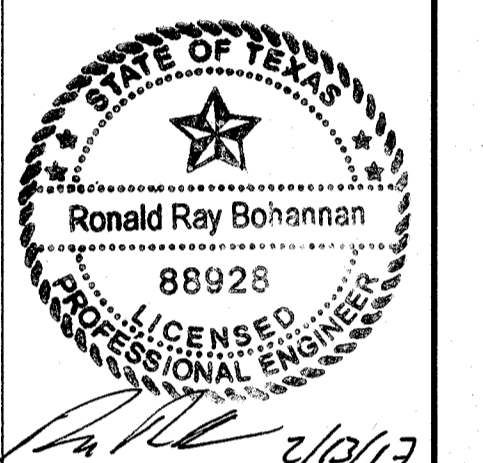
SAS MH 6+11  
STA:11+79.68  
OFF:-9.00L  
RIM:4108.70  
INV IN:4100.65 8" PVC  
INV OUT:4100.55 8" PVC

SAS MH 5+76  
STA:11+80.60  
OFF:26.00R  
RIM:4112.61  
SAS MH 4+93  
STA:10+96.94  
RIM:4107.79  
COR  
INV IN:4100.12 8" PVC  
INV OUT:4100.02 8" PVC



BENCHMARK  
PROJECT BENCHMARK  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4137.81

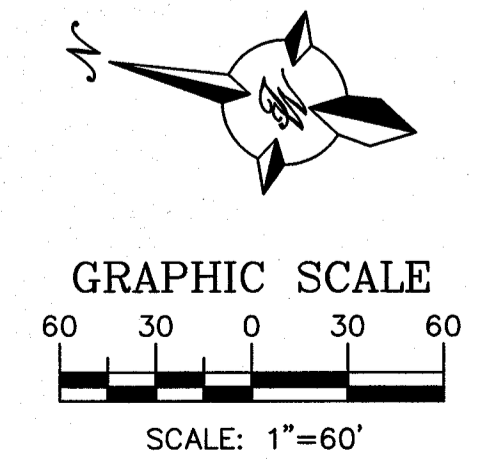
PROJECT NAME  
**MONTICILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 6A,  
A MILLER SURVEY 216, AND A PORTION  
OF TRACT 10, SURVEY 100,  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.686± ACRES



RONALD R. BOHANNAN  
P.E. #88928

TIERRA WEST LLC  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 855-1100  
www.tierrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

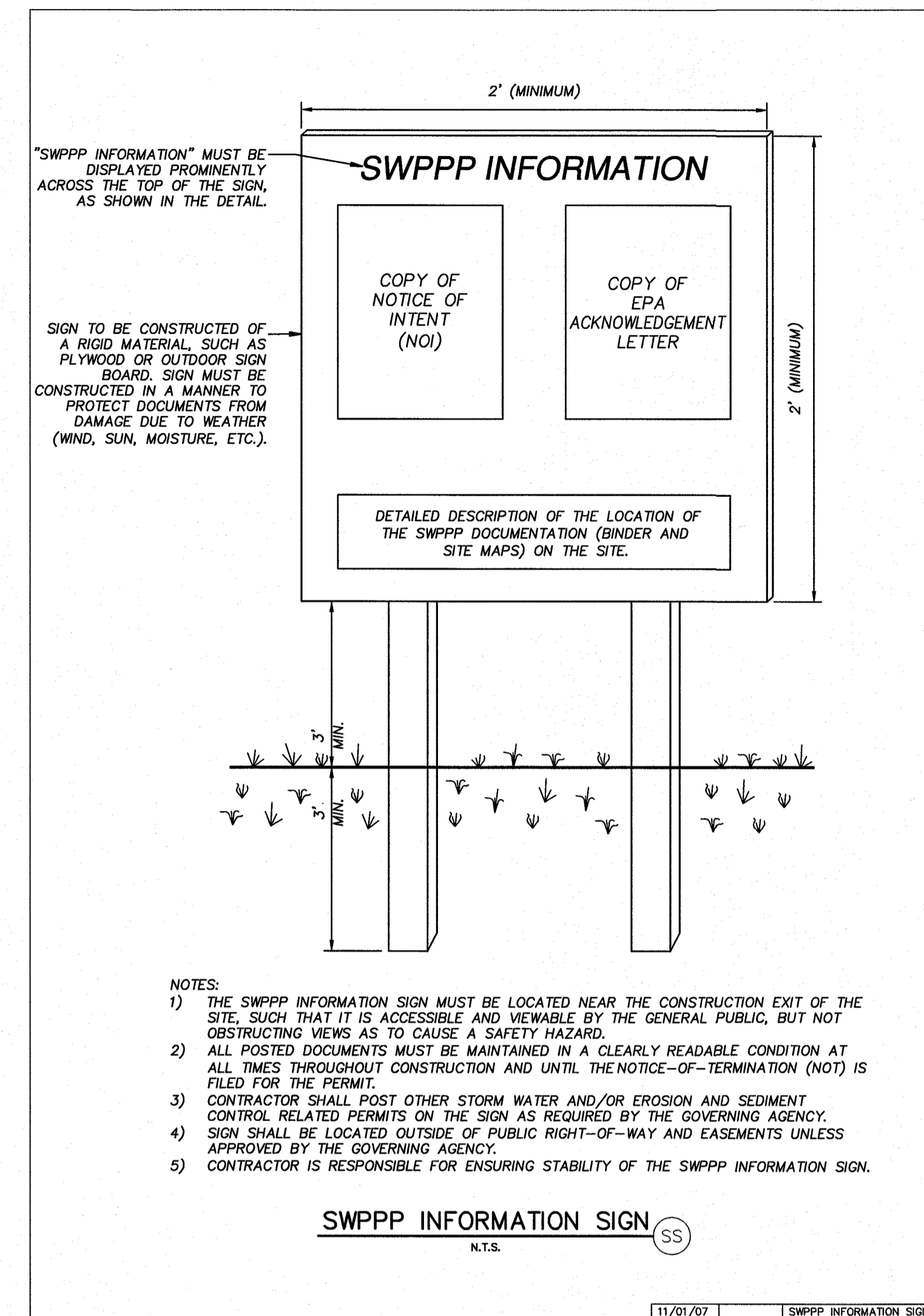
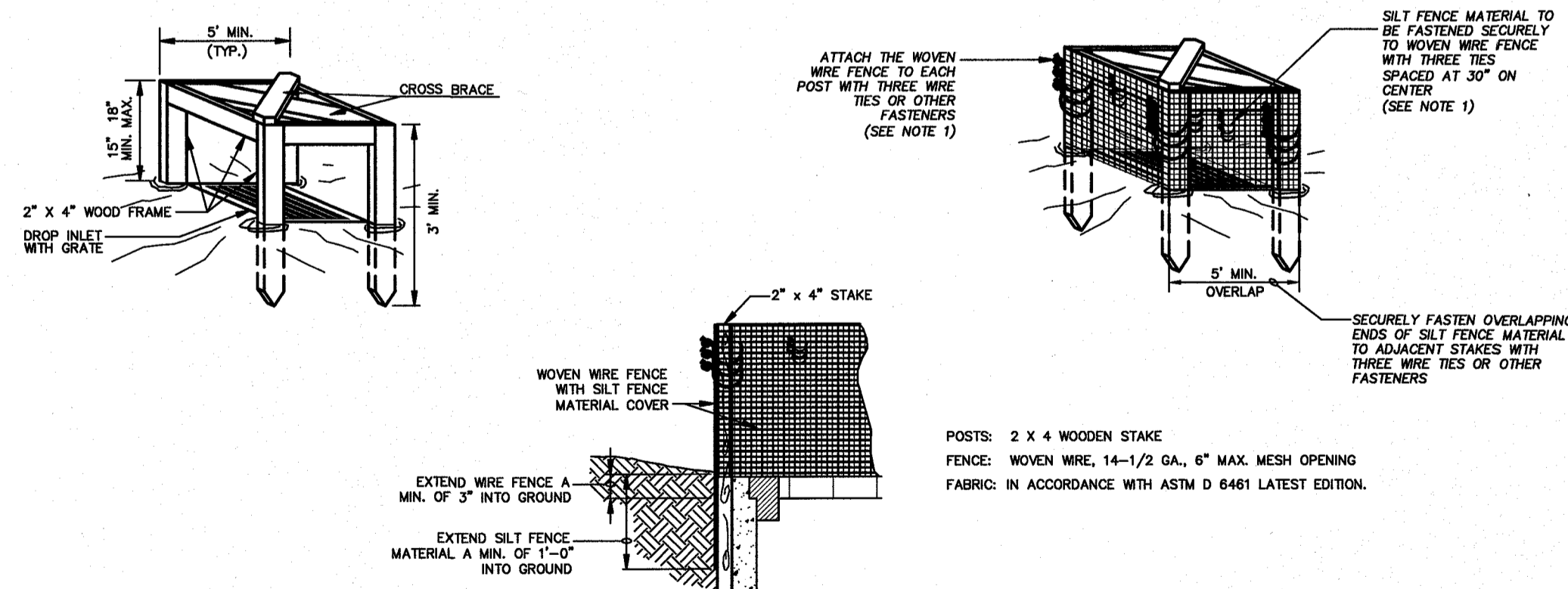
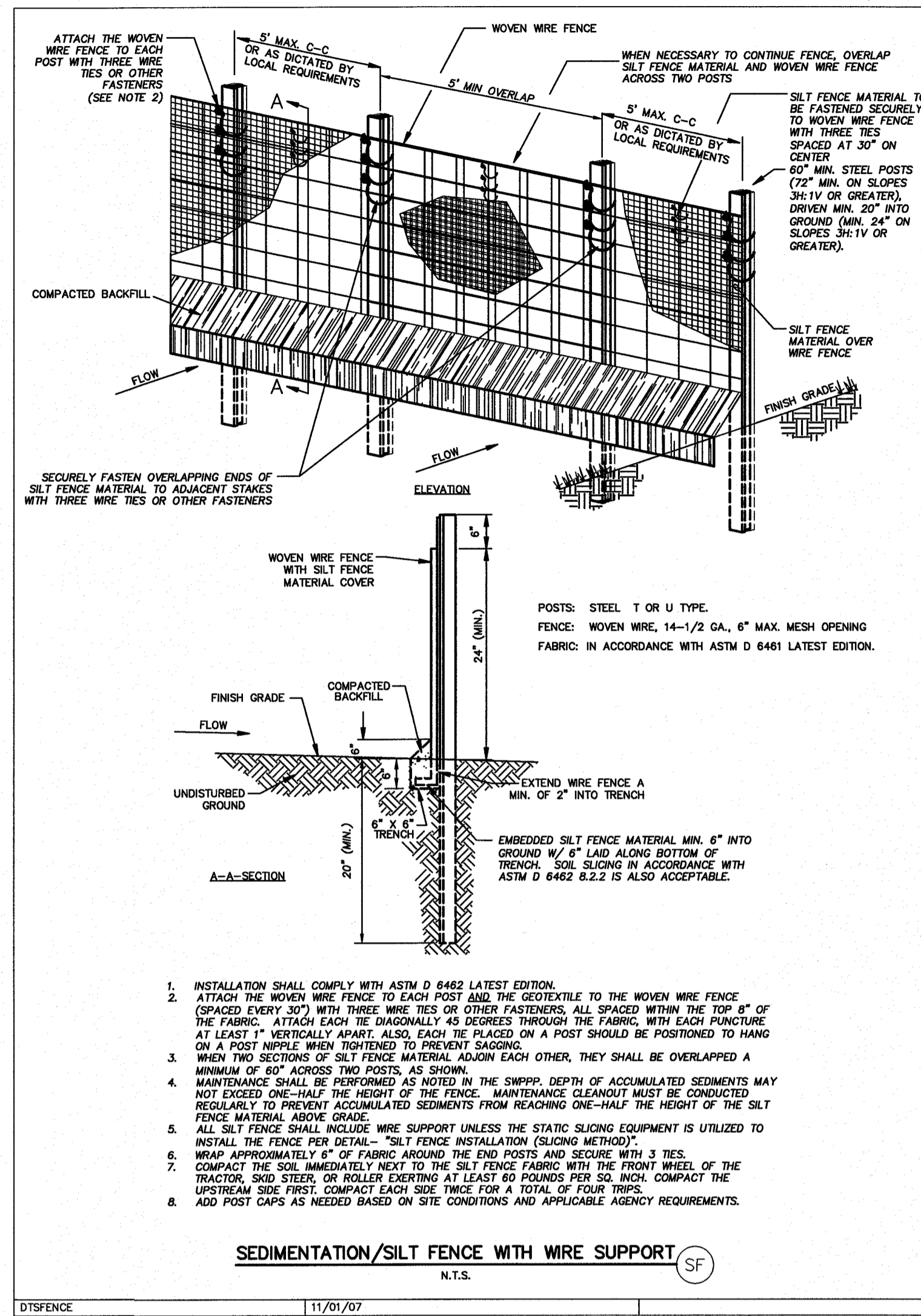
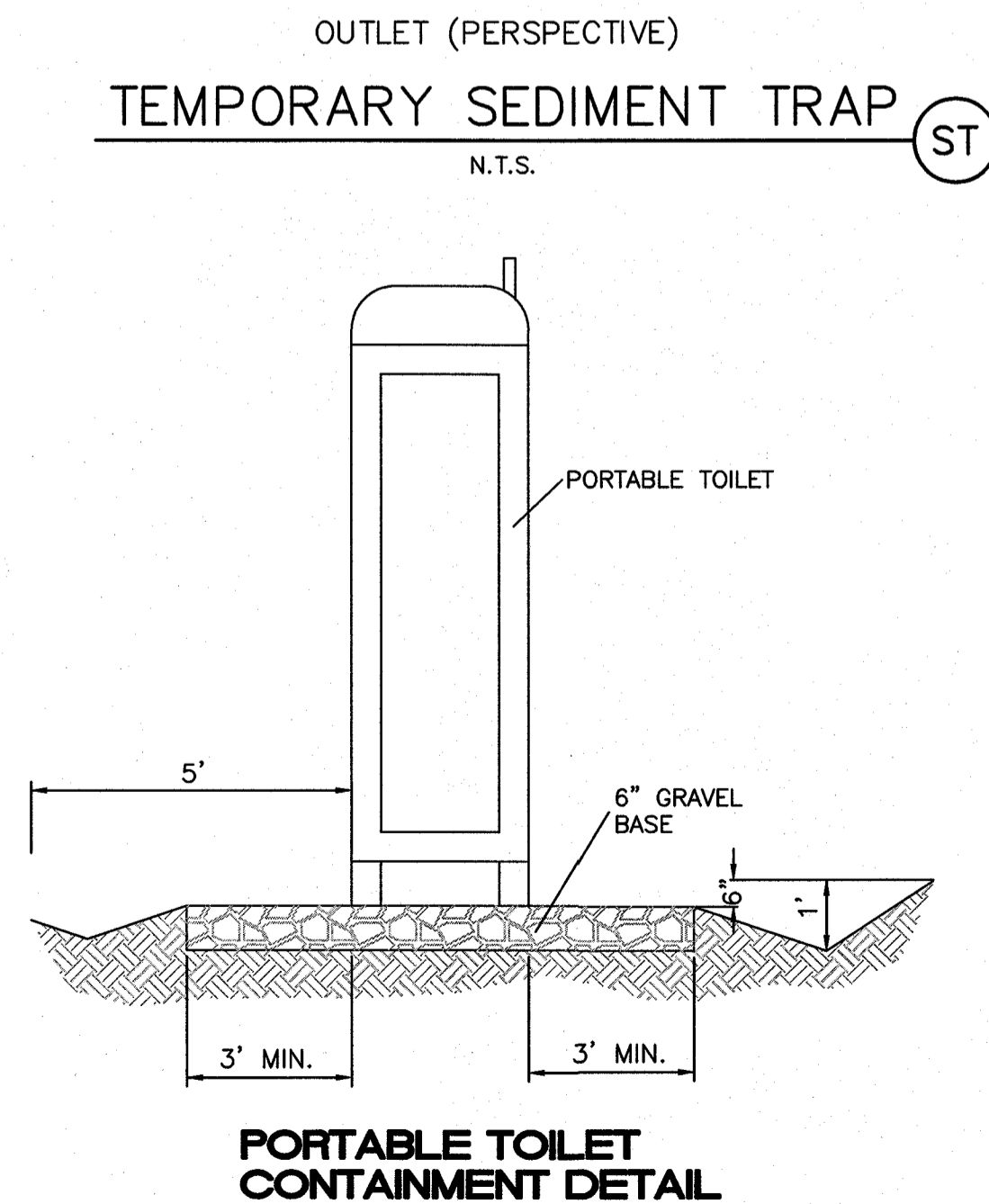
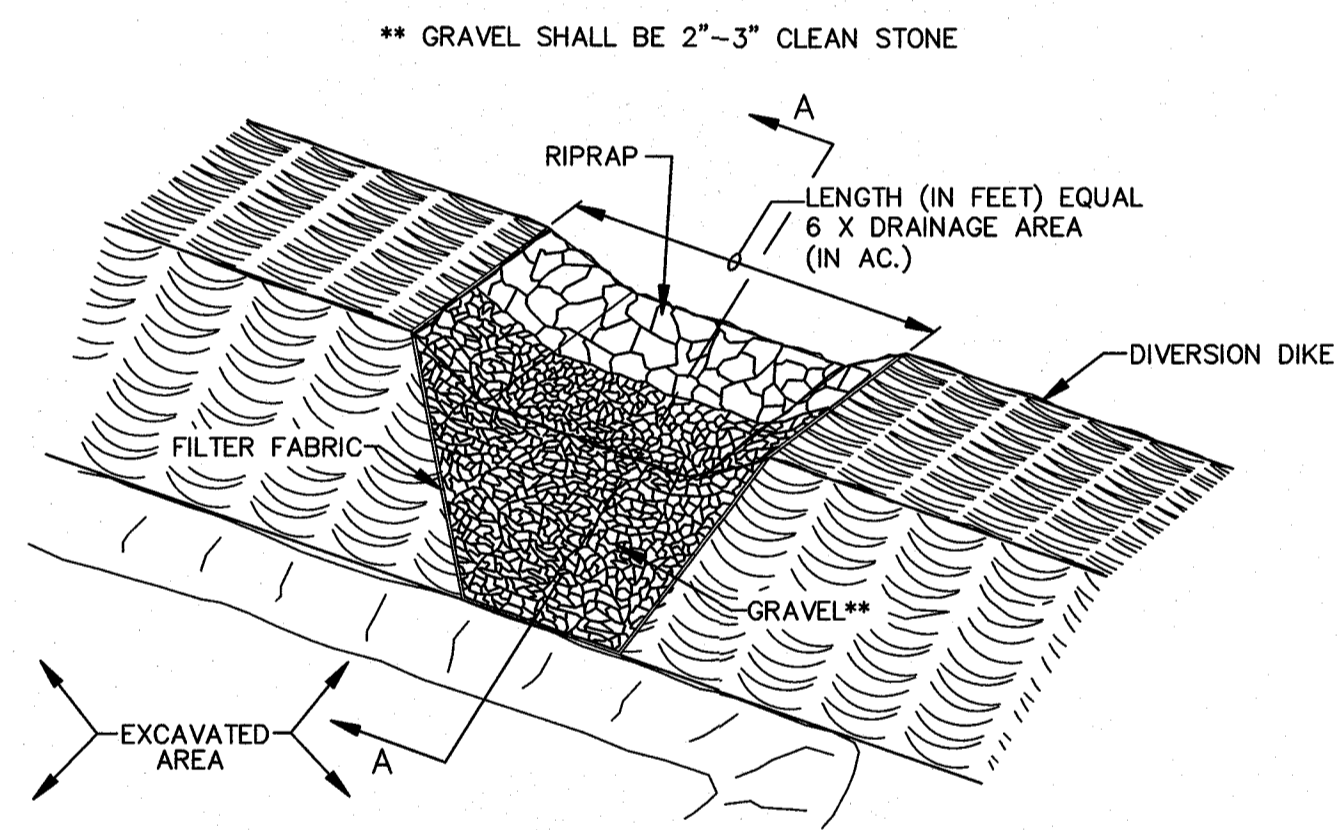
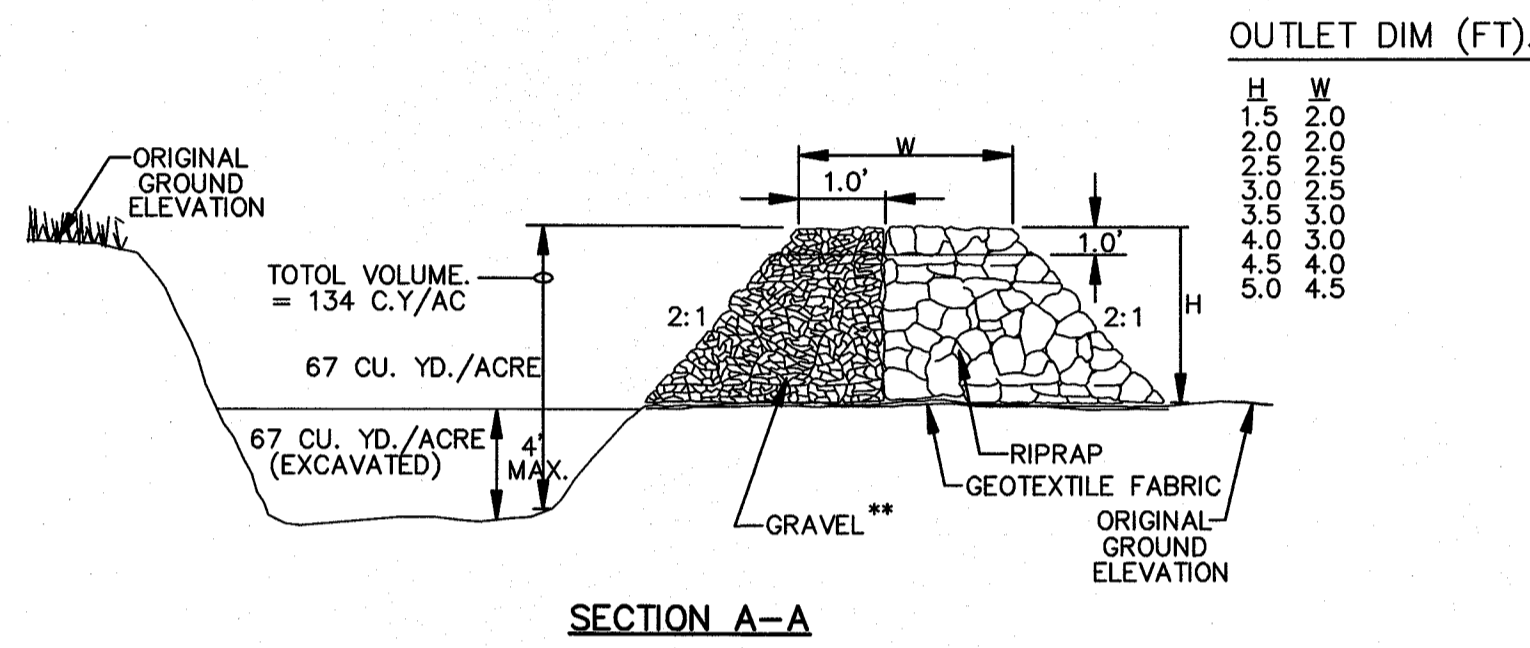
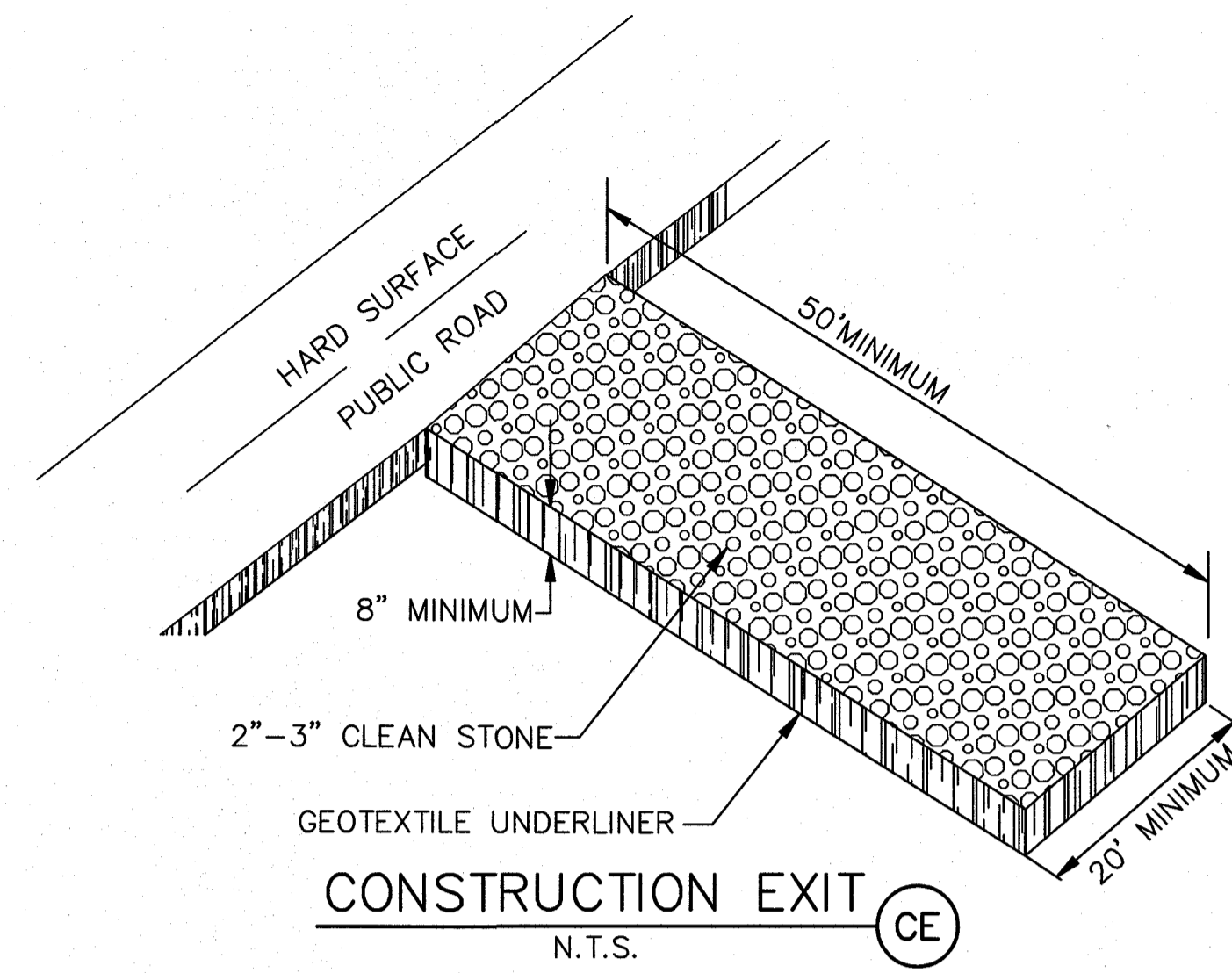
NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	
		DESIGNED BY: JN	
		DRAWN BY: BF	
		DRAWING NAME: 2015092_OVERALL SWPPP PLAN	
		CHECKED BY: JN	
		DATE: 06/06/2016	
		DATE: 06/06/2016	
		DATE: 06/06/2016	



SHEET TITLE  
**OVERALL SWPPP  
SLOPE  
STABILIZATION PLAN**  
SHT 33 OF 44

Z:\2015\2015092 UNIT 5B Monticillo El Paso\SWPPP\Drawings\Improvements\2015092\_Overall SWPPP Plan.dwg 13, 2017 12:49pm





**PROJECT BENCHMARK**  
CENTERLINE MONUMENT  
FESTIVAL DRIVE AND  
NEW ORLEANS DRIVE  
CITY OF EL PASO  
VERTICAL DATUM  
ELEVATION: 4157.81

**PROJECT NAME**  
**MONTECILLO UNIT 5B**  
BEING A PORTION OF TRACTS 4A AND 8A,  
SUNBELT SURVEY, SECTION 10,  
TOWNSHIP 15N, RANGE 10E, COUNTY, TEXAS  
CITY OF EL PASO, EL PASO COUNTY, TEXAS  
CONTAINING: 12.686± ACRES

**ENGINEER'S SEAL**  
STATE OF TEXAS  
Ronald Ray Bohannon  
88928  
LICENSED PROFESSIONAL ENGINEER  
2/13/17

**RONALD R. BOHANNAN**  
P.E. #88928

**TERRA WEST LLC**  
5571 MIDWAY PARK PLACE, NO. 109  
ALBUQUERQUE, NM 87109  
(505) 856-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
F-11773

NO.	DATE	REMARKS	BY
		DESIGN	
		REVISIONS	

DESIGNED BY: JN DATE: 06/06/2016  
DRAWN BY: BF DATE: 06/06/2016  
DRAWING NAME: 2015062\_OVERALL\_SWPPP\_PLAN JOB NO.: 2015062  
CHECKED BY: JN DATE: 06/06/2016

SHEET TITLE  
**OVERALL SWPPP DETAILS**

**SHT 34 OF 44**



Site Description

PROJECT NAME AND LOCATION: MONTECILLO UNIT 5B, EL PASO COUNTY, TEXAS
PROJECT DESCRIPTION: THE PROJECT CONSISTS OF NEW SMARTCODE DEVELOPMENT WHICH INCLUDES SITE IMPROVEMENTS SUCH AS NEW CONCRETE SIDEWALKS, DRIVEWAYS, CONCRETE CURB/GUTTER, RETAINING ROCKWALLS, NEW ASPHALTIC PAVEMENT, AND LANDSCAPING.
EXISTING CONDITIONS: THE EXISTING SITE IS UNDEVELOPED.
MAJOR SOIL DISTURBING ACTIVITIES: SOIL DISTURBING ACTIVITIES WILL CONSIST OF CLEARING AND GRUBBING SCARIFYING SITE GRADING INCLUDING CUTTING AND FILLING AND COMPACTING FOR THE CONSTRUCTION OF MIXED USE BUILDINGS AND ASSOCIATED SITE DETAILS (EX: WALKS, CURBING, DRAINAGE STRUCTURES, RETAINING WALLS, ASPHALT PAVEMENT, CONCRETE DRIVES, LANDSCAPING, ETC.)
TOTAL PROJECT AREA: 12.69 ACRES
TOTAL AREA TO BE DISTURBED: 1.6121 ACRES +/-
WEIGHTED RUNOFF COEFFICIENT (AFTER CONSTRUCTION): 0.95
EXISTING CONDITION OF SOIL AND VEGETATIVE COVER: THE EXISTING SITE IS VACANT.

NAME OF RECEIVING WATERS: STORMWATER RUNOFF GENERATED ONSITE WILL BE DIRECTED TOWARDS THE WESTERN PART OF THE SITE AND INTO A DRAINAGE COLLECTION SYSTEM THAT WILL CONVEY THE WATER TO THE PARAGON CHANNEL (FLOW PATH 20A) AND ONTO THE RIO GRANDE.

OWNER CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED, ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

OWNER: SIGNED DATE

OWNER: NAME DATE

TITLE DATE

GENERAL CONTRACTOR CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I WILL COORDINATE, EITHER THROUGH THE GENERAL CONTRACTOR OWNER, OR DIRECTLY, WITH THE CONTRACTOR(S) AND/OR SUBCONTRACTOR(S) IDENTIFIED IN THE POLLUTION PREVENTION PLAN HAVING RESPONSIBILITY FOR IMPLEMENTING STORM WATER CONTROL MEASURES TO MINIMIZE ANY IMPACT MY ACTIONS MAY HAVE ON THE EFFECTIVENESS OF THESE STORM WATER CONTROLS MEASURES.

SIGNED: COMPANY: DRAINAGE AREA PERIMETER HAS SLIT REACHED 1/3 OF FENCE HEIGHT? IS FENCE PROPERLY SECURED? IS THERE EVIDENCE OF WASHOUT OR OVERTOPPING? MAINTENANCE REQUIRED FOR SLIT FENCE AND STRAW BAILS:

NAME: ADDRESS:

TITLE: TELEPHONE:

DATE:

SUB - CONTRACTOR CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I WILL COORDINATE, EITHER THROUGH THE GENERAL CONTRACTOR, OWNER OR DIRECTLY WITH THE CONTRACTOR(S) AND/OR SUBCONTRACTOR(S) IDENTIFIED IN THE POLLUTION PREVENTION PLAN HAVING RESPONSIBILITY FOR IMPLEMENTING STORM WATER CONTROL MEASURES TO MINIMIZE ANY IMPACT MY ACTIONS MAY HAVE ON THE EFFECTIVENESS OF THESE STORM WATER CONTROLS MEASURES.

SIGNED: NAME: COMPANY: ADDRESS: TELEPHONE: DATE:

NAME: TITLE: COMPANY: ADDRESS: TELEPHONE: DATE:

ADDRESS: ADDRESS: TELEPHONE: TELEPHONE: DATE: DATE:

EROSION AND SEDIMENT CONTROL

SOIL STABILIZATION PRACTICES

- TEMPORARY SEEDING
PERMANENT PLANTING, SODDING OR SEEDING
MULCHING
SOIL RETENTION BLANKET
BUFFER ZONES
PRESERVATION OF NATURAL RESOURCES

OTHER:

INSPECTION AND MAINTENANCE REPORT FORM

TO BE COMPLETED EVERY 7 DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5 INCHES OR MORE

INSPECTOR: DATE:

INSPECTOR'S QUALIFICATIONS: DAYS SINCE LAST RAINFALL:

AMOUNT OF LAST RAINFALL: INCHES

STABILIZATION MEASURES DRAINAGE AREADAY SINCE LAST DISTURBANCE/DAYS SINCE NEXT DISTURBANCE: STABILIZED YES/NOSTABILIZED WITH

SATILIZATION REQUIRED: CONDITION

TO BE PERFORMED BY ON OR BEFORE:

SEDIMENT BASIN:

DEPTH OF SEDIMENT BASIN CONDITIONS OF BASIN SIDE SLOPES: ANY EVIDENCE OF OVERTOPPING OF THE CONDITION OF OUTFALL FROM SEDIMENT BASIN EMBANKMENT MAINTENANCE REQUIRED FOR SEDIMENT BASIN:

TO BE PERFORMED BY ON OR BEFORE:

OTHER CONTROLS

STABILIZED CONSTRUCTION ENTRANCE:

DOES MUCH SEDIMENT GET TRACKED ONTO ROAD? IS THE GRAVEL CLEAN OR IS IT FILLED WITH SEDIMENT DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO LEAVE THE SITE? IS THE CULVERT BENEATH THE ENTRANCE WORKING? NOT APPLICABLE

MAINTENANCE REQUIRED FOR STABILIZED CONSTRUCTION ENTRANCE:

TO BE PERFORMED BY ON OR BEFORE:

PERIMETER STRUCTURAL CONTROLS

Date:

SLIT FENCE AND STRAW BAILS

DRAINAGE AREA PERIMETER HAS SLIT REACHED 1/3 OF FENCE HEIGHT? IS FENCE PROPERLY SECURED? IS THERE EVIDENCE OF WASHOUT OR OVERTOPPING? MAINTENANCE REQUIRED FOR SLIT FENCE AND STRAW BAILS:

TO BE PERFORMED BY ON OR BEFORE:

CHANGES REQUIRED TO THE POLLUTION PLAN:

REASONS FOR CHANGES

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSONS OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

SIGNATURE: DATE:

STRUCTURE PRACTICES: (T-TEMPORARY; P-PERMANENT)

- SILT FENCES
HAY BALES
ROCK BEAMS
DIVERSION INTERCEPTION OR PERIMETER BIKES
DIVERSION INTERCEPTION OR PERIMETER SWALES
DIVERSION BIKE AND SWALE COMBINATIONS
PIPE SLOPE DRAINS
CONCRETE FLUMES
ROCK BEDDING AT CONSTRUCTION EXIST
TIMBER MATTING AT CONSTRUCTION EXIST
CHANNEL LINERS
SEDIMENT TRAPS
SEDIMENT BASINS
STORM INLET SEDIMENT TRAP
STONE OUTLET STRUCTURES
CURBS AND GUTTERS
STORM DRAINS
VELOCITY CONTROL DEVICES
VEGETATED SWALES & NATURAL DEPRESSIONS (Landscape Planters)

Other:

A:

BEST MANAGEMENT PRACTICES

- 1. STRUCTURAL CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT IN EFFECTIVE OPERATING CONDITION.
2. DOCUMENTATION OF MAINTENANCE ACTIVITIES INCLUDING FREQUENCY, LOT DESIGNATION, INSPECTION OF STRUCTURAL CONTROL MATERIALS STORAGE AREAS, VEHICLES ENTRANCE AND EXITS, ACTIONS TAKEN AND INSPECTORS NAME.
3. CONSTRUCTION SITE NOTICE WILL BE MAINTAINED ON SITE.
4. COPY OF SWPPP SHALL BE KEPT ON SITE.
5. PERMITTEE MUST RETAIN THE SWPPS, NOI AND INSPECTION LOG FOR A MINIMUM OF THREE YEARS FROM TERMINATION AND FINAL STABILIZATION OF PROJECT.

WASTE MATERIALS

ALL WASTE MATERIALS, INCLUDING CONSTRUCTION DEBRIS, SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. NO CONSTRUCTION MATERIAL SHALL BE BURIED ON SITE. THE DUMPSTER SHALL BE EMPTIED AS NECESSARY OR AS REQUIRED BY ORDINANCE 9.04 (SOLID WASTE MANAGEMENT) AND THE TRASH BE HAULED TO A LICENSED LANDFILL.

BEST MANAGEMENT PRACTICES CONTROLS

I. WASTE MATERIALS: ALL WASTE MATERIALS INCLUDING CONSTRUCTION DEBRIS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. NO CONSTRUCTION WASTE MATERIAL SHALL BE BURIED ON SITE. THE TRANSIT DUMPSTER SHALL COMPLY WITH ORDINANCE 18.52.010 (ENCLOSURE & REMOVAL OF WASTE MATERIALS DURING CONSTRUCTION). THE DUMPSTER SHALL BE EMPTIED AS NECESSARY OR AS REQUIRED BY ORDINANCE 9.04 (SOLID WASTE MANAGEMENT) AND THE TRASH SHALL BE HAULED TO A LICENSED LANDFILL.

II. HAZARDOUS WASTE: AT A MINIMUM ANY PRODUCTS IN THE FOLLOWING CATEGORIES SHALL BE CONSIDERED HAZARDOUS: PAINT, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SPILL STABILIZATION, CUBING COMPOUNDS AND ADDITIVES, IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS THE CONTRACTOR SHALL TAKE IMMEDIATE ACTION AND CONTACT THE FORD DEPARTMENT AND TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).

III. SANITARY WASTE: ALL SANITARY WASTE SHALL BE COLLECTED FROM THE CONSTRUCTION PORTABLE UNITS AS NECESSARY OR AS REQUIRED, CHAPTER 18.08 (BUILDING CODE), MY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR ALL WASTE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

IV. SPILL PREVENTION THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURES OF MATERIALS TO STORM WATER RUNOFF.

V. GOOD HOUSEKEEPING: A. STORE ONLY ENOUGH PRODUCTS REQUIRED TO DO THE JOB
B. NEATLY STORE MATERIALS ON-SITE IN AN ORDERLY MANNER
C. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER
D. DO NOT MIX SUBSTANCES WITH ONE ANOTHER, UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER
E. USE ENTIRE CONTENTS OF A PRODUCT BEFORE DISPOSING OF THE CONTAINER
F. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL

VI. HAZARDOUS PRODUCTS: PRACTICES USED TO REDUCE RISKS: A. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINER IF AT ALL POSSIBLE
B. READ IN ORIGINAL LABELS, PRODUCT INFORMATION AND MATERIAL SAFETY DATA SHEETS (MSDS)
C. DISPOSE SURPLUS PRODUCT IN ACCORDANCE WITH MANUFACTURER'S OR LOCAL & STATE RECOMMENDED METHODS

VII. PETROLEUM PRODUCTS: ALL ON-SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANGE OF LEAKAGE. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED ANY ASPHALT SUBSTANCES USED ON-SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.

VIII. SPILL CONTROL PRACTICES: A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES:
B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON-SITE
C. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY
D. SPILL AREA SHALL BE WELL VENTILATED AND APPROPRIATE CLOTHING WILL BE WORN:
E. ANY SPILL SHALL BE REPORTED TO THE APPROPRIATE GOVERNMENTAL AGENCY
F. MEASURES SHALL BE TAKEN TO PREVENT A SPILL FROM REOCCURRING

IX. MAINTENANCE AND INSPECTION PROCEDURES: ALL POLLUTION PREVENTION MEASURES SHALL BE INSPECTED AT LEAST ONCE A MONTH OR WITHIN 24 HOURS PRIOR TO ANTICIPATED STORM EVENT AND FOLLOWING A STORM EVENT OF 0.5 INCHES OR MORE. INSPECTION IN FINAL STABILIZED AREAS PRIOR DURING ARID PERIODS WILL BE CONDUCTED MONTHLY. BEST MANAGEMENT PRACTICES AND POLLUTION CONTROL PROCEDURES SHALL BE INSPECTED FOR ADEQUACY A REPORT SUMMARIZING THE SCOPE OF INSPECTION SHALL BE DONE & RETAINED ALONG WITH THE STORM DRAINAGE POLLUTION CONTROL PLAN.

X. REMARKS: DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT MAY ENTER RECEIVING WATERS, DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, WATERBODY OR STREAMBED CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEANED AS SOON AS PRACTICABLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDES, MATTING, FALSEWORK, PILING DEBRIS OR OTHER OBSTRUCTIONS PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT A PART OF THE FINISHED WORK.

XI. BATCH / ASPHALT PLANT: NO CONCRETE OR ASPHALT MATERIALS WILL BE BATCHED ON-SITE. THESE CONSTRUCTION MATERIALS SHALL BE OBTAINED FROM A SUPPLIER PRODUCING THESE MATERIALS OFF-SITE IN COMPLIANCE WITH ALL FEDERAL REGULATIONS, ROCKWALL MORTAR BATCHED ON-SITE SHALL COMPLY TO THESE STORMWATER POLLUTION PREVENTION MEASURES AND ALL NPDES REQUIREMENTS.

XII. LISTED ENDANGERED OR THREATENED SPECIES AND CRITICAL HABITAT: THE PROJECT SITE IS SITUATED WITHIN A URBAN AREA LOCATED ALONG NORTH MEZA STREET, EL PASO, TEXAS. NO KNOWN ENDANGERED OR THREATENED SPECIES AND/OR CRITICAL HABITAT HAVE BEEN FOUND OR DOCUMENTED ON THIS PROPERTY.

XIII. HISTORIC IMPACT: A REVIEW OF AVAILABLE TEXAS HISTORICAL COMMISSION (THC) AND NATIONAL REGISTER OF HISTORIC PLACES (NRHP) INFORMATION INDICATED THAT THERE ARE NO KNOWN SITES ELIGIBLE FOR HISTORIC RECORD LISTING WITHIN THE AREA OF THE PROPOSED PROJECT.

XIV. SOURCES OF NON-STORM WATER DISCHARGES: THE FOLLOWING SUBSTANCES ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

CONCRETE, FUEL TANKS, LUBRICANTS, DETERGENTS, FERTILIZERS, CLEANING SOLVENTS, PAINTS, CURING COMPOUNDS, ASPHALTIC PRODUCTS, DUMPSTERS AND PORTABLE TOILETS.

DESIGNATED AREAS FOR EQUIPMENT MAINTENANCE REPAIR AND WASH DOWN (INCLUDING CONCRETE TRUCK WASH-DOWN) SHALL HAVE APPROPRIATE POLLUTANT CONTROLS INCLUDING, BUT NOT LIMITED TO, EARTHEN BERMS, ETC.

BEST MANAGEMENT PRACTICES CONTROLS

XV. ALLOWABLE DISCHARGES: NO PERSON SHALL INTRODUCE OR CAUSE TO BE INTRODUCED INTO THE MUNICIPAL SEWER SYSTEM (MS4) OR WATERS WITHIN THE JURISDICTION OF THE CITY OF EL PASO, ANY DISCHARGE THAT IS NOT COMPOSED ENTIRELY OF STORMWATER. IT IS AN AFFIRMATIVE DEFENSE TO ANY ENFORCEMENT ACTION FOR VIOLATION OF THE FOREMENTIONED THAT THE DISCHARGE WAS COMPOSED ENTIRELY OF ONE OR MORE OF THE FOLLOWING CATEGORIES OF DISCHARGES:
1. A DISCHARGE RESULTING FROM FIREFIGHTING
2. AGRICULTURAL STORMWATER RUNOFF.
3. A DISCHARGE FROM LAWN WATERING, LANDSCAPE IRRIGATION OR OTHER IRRIGATION WATER.
4. A DISCHARGE FROM UNCONTAMINATED PUMPED GROUNDWATER OR RISING GROUNDWATER.
5. UNCONTAMINATED GROUNDWATER INFILTRATION
6. UNCONTAMINATED DISCHARGE FROM A FOUNDATION DRAIN, CRAWL SPACE PUMP FOOTING DRAIN OR SUMP PUMP
7. A DISCHARGE FROM WATER LISTED IN STREET WASHING, PROVIDED THAT THE WATER IS INTO CONTAMINATED WITH ANY HARMFUL CLEANING SUBSTANCE.

XVI. OFFSITE VEHICLE TRACKING: IN ADDITION TO THE STABILIZED CONSTRUCTION ENTRANCES THE FOLLOWING MEASURES SHALL BE OBSERVED DURING CONSTRUCTION:
X HAUL ROADS SHALL BE DAMPENED FOR DUST CONTROL
X LOADED HAUL TRUCKS SHALL BE COVERED WITH TARP/PAULIN
X EXCESS DIRT ON ROAD SHALL BE REMOVED DAILY
X STABILIZED CONSTRUCTION ENTRANCE
OTHER:

XVII. ILLEGAL OR PROHIBITED DISCHARGES: NO PERSON SHALL INTRODUCE OR CAUSE TO BE INTRODUCED INTO THE MS4 ANY DISCHARGE THAT CAUSES OR CONTRIBUTES TO CAUSING THE CITY TO VIOLATE A WATER QUALITY STANDARD THE CITY'S NPDES PERMIT, OR ANY STATE-ISSUED DISCHARGE PERMIT FOR DISCHARGES FROM ITS MS4. NO PERSON SHALL RELEASE OR CAUSE, ALLOW OR PERMIT TO BE INTRODUCED ANY OF THE FOLLOWING SUBSTANCES INTO THE MS4 OR THE WATERS WITHIN THE JURISDICTION OF THE CITY SUCH THAT THE SUBSTANCE MAY ENTER THE AIR GROUNDWATER:

- 1. ANY USED MOTOR OIL, ANTIFREEZE, OR ANY OTHER MOTOR VEHICLE FLUID.
2. ANY INDUSTRIAL WASTE.
3. ANY HAZARDOUS WASTE, INCLUDING HAZARDOUS HOUSEHOLD WASTE.
4. ANY DOMESTIC SEWAGE OR SEPTIC TANK WASTE, GREASE, TRAP WASTE OR GRIT TRAP WASTE.
5. ANY WASTEWATER FROM A COMMERCIAL CARWASH FACILITY, FROM ANY COMMERCIAL VEHICLE WASHING, CLEANING, OR MAINTENANCE AT ANY NEW OR USED AUTOMOBILE OR OTHER VEHICLE DEALERSHIP, RENTAL AGENCY, BODY SHOP, REPAIR SHOP, OR MAINTENANCE FACILITY.
6. ANY WASTEWATER FROM A COMMERCIAL MOBILE POWER WASHER OR FROM THE WASHING OR OTHER CLEANING OF INCLUDING EXTERIOR WHERE THE WASTEWATER CONTAINS ANY HARMFUL CLEANING SUBSTANCE.
7. ANY WASTEWATER FROM COMMERCIAL FLOOR, RUG, OR CARPET CLEANING.
8. ANY WASTEWATER FROM THE WASHDOWN OR OTHER CLEANING OF PAVEMENT THAT CONTAINS ANY HARMFUL QUANTITY OF ANY CLEANING SUBSTANCE OR ANY WASTEWATER FROM THE WASHDOWN OR OTHER CLEANING OF ANY PAVEMENT WHERE ANY SPILL, LEAK, OR OTHER RELEASE OF OIL, MOTOR FUEL, OR OTHER PETROLEUM OR HAZARDOUS SUBSTANCE HAS OCCURRED, UNLESS ALL HARMFUL QUANTITIES OF SUCH RELEASED MATERIAL HAVE BEEN PREVIOUSLY REMOVED.
9. ANY EFFLUENT FROM A COLLING TOWER, CONDENSER, COMPRESSOR, EMISSIONS SCRUBBER, EMISSIONS FILTER, OR THE BLOWDOWN FROM A BOILER.
10. ANY READY-MIXED CONCRETE, MORTAR, CERAMIC, OR ASPHALT BASE MATERIAL OR HYDROMULCH MATERIAL, OR FROM THE CLEANING OF COMMERCIAL VEHICLES OR EQUIPMENT CONTAINING OR USED IN TRANSPORTING OR APPLYING, SUCH MATERIALS.
11. ANY FILTER BACKWASH FROM A SWIMMING POOL, FOUNTAIN OR SPA.
12. ANY SWIMMING POOL OR SPA WATER.
13. ANY DISCHARGE FROM WATER LINE DISINFECTION BY SUPERCHLORINATION OR OTHER MEANS IF IT CONTAINS ANY HARMFUL QUANTITY OF CHLORINE OR ANY OTHER CHEMICAL USED IN LINE DISINFECTION.
14. ANY WATER FROM A WATER CURTAIN IN A SPRAY ROOM USED FOR PAINTING VEHICLES OR EQUIPMENT.
15. ANY CONTAMINATED RUNOFF FROM A VEHICLE WRECKING YARD.
16. ANY SUBSTANCE OR MATERIAL THAT WILL DAMAGE, BLOCK, OR CLOG THE MS4.
17. ANY RELEASE FROM A PETROLEUM STORAGE TANK (PST), OR ANY DISCHARGE OF PUMPED, CONFINED, OR TREATED WASTEWATER FROM THE REMEDIATION OF ANY FEDERAL STANDARDS AND REQUIREMENTS.

NO PERSON SHALL INTRODUCE OR CAUSE TO BE INTRODUCED INTO THE MS4 OR WATERS WITHIN THE JURISDICTION OF THE CITY OF EL PASO, ANY HARMFUL QUANTITY OF SEDIMENT, SILT, EARTH, SOIL, OR OTHER MATERIAL ASSOCIATED WITH CLEARING, GRADING, EXCAVATION OR OTHER CONSTRUCTION ACTIVITIES, OR ASSOCIATED WITH LANDFILLING OR OTHER PLACEMENT OR DISPOSAL OF SOIL, ROCK, OR OTHER EARTH MATERIALS, IN EXCESS OF WHAT COULD BE RETAINED ON SITE OR CAPTURED BY EMPLOYING SEDIMENT AND EROSION CONTROL MEASURES TO THE MAXIMUM EXTENT PRACTICABLE UNDER PREVAILING CIRCUMSTANCES.

NO PERSON SHALL CONNECT A LINE CONVEYING SANITARY SEWAGE, DOMESTIC OR INDUSTRIAL, TO THE MS4, OR ALLOW SUCH A CONNECTION TO CONTINUE.

REGULATION OF PESTICIDES HERBICIDES AND FERTILIZERS:

- 1. ANY SALE, DISTRIBUTION, APPLICATION, LABELING, MANUFACTURE, TRANSPORTATION, STORAGE, OR DISPOSAL OF A PESTICIDE, HERBICIDE, OR FERTILIZER MUST COMPLY FULLY WITH ALL STATE AND FEDERAL STATUTES AND REGULATIONS INCLUDING, WITHOUT LIMITATION, THE FEDERAL REGULATIONS PROMULGATED PURSUANT TO FIFRA, CHAPTERS 63, 75 AND 76 OF THE TEXAS AGRICULTURE CODE AND ALL STATE REGULATIONS PROMULGATED PURSUANT THERETO; AND ANY OTHER STATE OR FEDERAL REQUIREMENT.
2. NO PERSON SHALL USE OR CAUSE TO BE USED ANY PESTICIDE OR HERBICIDE, CONTRARY TO ANY DIRECTIONS FOR USE OR ANY LABELING REQUIRED BY STATE OR FEDERAL STATUTE OR REGULATION.
3. NO PERSON SHALL DISPOSE OF, DISCARD, STORE, OR TRANSPORT A PESTICIDE, HERBICIDE, OR FERTILIZER, IN A MANNER THAT THE PERSON KNOWS, OR REASONABLY SHOULD KNOW, IS LIKELY TO CAUSE, OR DOES CAUSE, A HARMFUL QUANTITY OF THE PESTICIDE, HERBICIDE, OR FERTILIZER TO ENTER THE MS4 OR WATERS OF THE UNITED STATES.

A RETAIL DEALER WHO ANNUALLY SELLS DIRECTLY TO THE PUBLIC MORE THAN FIVE HUNDRED GALLONS OF OIL IN CONTAINERS FOR USE OFF-PREMISES SHALL POST IN A PROMINENT PLACE A SIGN PROVIDED BY THE STATE INFORMING THE PUBLIC THAT IMPROPER DISPOSAL OF USED OIL IS PROHIBITED BY LAW THE SIGN SHALL PROMINENTLY DISPLAY THE TOLL-FREE TELEPHONE NUMBER OF THE STATE USED OIL INFORMATION CENTER (ORD. 13477 &1 (PART). 1998)

GRADING STABILIZATION ACTIVITY PLAN

GRADING STABILIZATION NOTES:

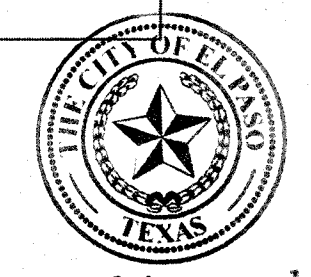
- A. LOT 5 - STABILIZATION MEASURES WILL NOT BE REQUIRED-SITE IS IN PROCESS OF OBTAINING BUILDING PERMIT - FINAL STABILIZATION IS CONSTRUCTION OF BUILDINGS, PAVING, AND LANDSCAPING.
B. LOT 3 - THIS LOT MAY BECOME IDLE AFTER GRADING - FINAL STABILIZATION MEASURES WILL BE INSTALLATION OF 3 INCHES OF SCREENINGS ON COMPACTED SUBGRADE. MAINTENANCE AND INSPECTION MEASURES WILL BE REQUIRED AS PER GSP.
C. STABILIZATION MEASURE FOR LOT 4, BLOCK 4 (POND) TO BE HYDROMULCH SLOPES DESIGN: ROUGHEN SLOPES. MIX: 65-85 lbw WOOD MULCH/1000 sq.ft. SEED: BUFFALO GRASS SEED @ 25 lbw/1000 sq.ft. WATER: 30-35 lbs of MULCH PER 100 GALLONS OF WATER. WATER SLOPE THEN APPLY HYDROMULCH. TEMPORARY IRRIGATION AND WATER SLOPES TWICE PER WEEK UNTIL VEGETATION ESTABLISHED.

GRADING STABILIZATION PLAN

- 1. SEDIMENT CAUSED BY EXCESSIVE EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE LEAVING THE SITE
2. PROJECT AREAS PHYSICALLY DISTURBED DURING DEVELOPMENT SHALL BE EXPOSED TO EROSION PRODUCING INFLUENCES FOR THE SHORTEST PERIOD OF TIME.
3. AFTER COMPLETION OF THE SITE GRADING THE PROJECT AREAS SHALL BE WATERED AS REQUIRED TO CONTROL WIND EROSION.
4. SITE MONITORING SHALL BE PERFORMED BY THE PERMITTEE RESPONSIBLE FOR THE GRADING. ALL STABILIZATION MEASURES SHALL BE CHECKED ON A MONTHLY BASIS AND SHALL CONTINUE TO BE MAINTAINED.
5. A MONITORING AND INSPECTION PROGRAM SHALL BE IMPLEMENTED UNTIL A STABILIZED SITE IS ACHIEVED OF BUILDING RESUMES. INACTIVE/IDLE SITES SHALL BE INSPECTED AND MAINTAINED ON ONE OF THE FOLLOWING SCHEDULES: A. AT LEAST ONCE EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS OF A WIND EVENT B. AT LEAST ONCE EVERY 7 CALENDAR DAYS ON A SET SPECIFIC DAY
6. AFTER PERMITTEE COMPLETES THE GRADING THE PERMIT SHALL BE CLOSED. AS PART OF THE CLOSURE PROCEDURES, THE APPLICANT MUST SUBMIT THE FOLLOWING:
a. 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 NOTIFY THE PERMIT OFFICIAL GSP HAS BEEN IMPLEMENTED.
b. SHALL SUBMIT A COPY OF THE NOTICE OF TERMINATION FILED WITH THE STATE.

Table with 4 columns: STABILIZATION MEASURES, INSPECTION DATE, MAINT. DATE, MAINTENANCE TYPE. Rows include WATERING OF SITE, WEED PREVENTION AND MOWING, RE-GRADING OF SITE DUE TO EROSION, SEDIMENT FROM EROSION SHALL BE REMOVED FROM SITE, ASURE MAINTENANCE OF SWPPP MEASURES.

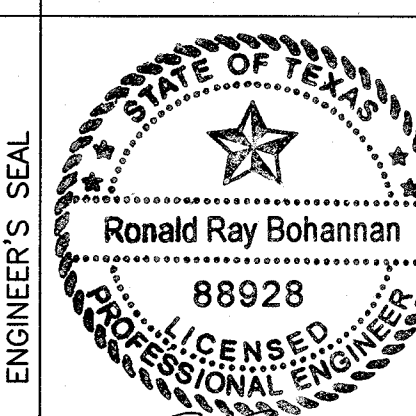
Table with 3 columns: ACTIVITIES, DATE, SIGNATURE. Rows for CONSTRUCTION ACTIVITIES LOG.



Final Approval

BENCHMARK PROJECT BENCHMARK CENTERLINE MONUMENT FESTIVAL DRIVE AND NEW ORLEANS DRIVE CITY OF EL PASO VERTICAL DATUM ELEVATION: 4157.81

MONTECILLO UNIT 5B BEING A PORTION OF TRACTS 4A AND 6A, A.F. MILLER SURVEY 216, AND PORTION OF JOHNSON SURVEY 10, CITY OF EL PASO, EL PASO COUNTY, TEXAS CONTAINING: 12.686± ACRES



RONALD R. BOHANNAN P.E. #88928

TERRA WEST LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 856-1100 www.terrawestllc.com TEXAS BUSINESS NO. F-11773

Table with 4 columns: NO., DATE, REMARKS, BY. Includes rows for DESIGNED BY: JN, DRAWN BY: BF, CHECKED BY: JN.

STORMWATER POLLUTION PREVENTION PLAN



**GENERAL NOTES**

THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING AND PROPOSED UTILITIES AND ALL SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

NO CHANGES SHALL BE MADE WITHOUT NOTIFICATION OF LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE

THE FINISHED GRADES OF ALL PLANTING AREAS SHALL BE SMOOTH, EVEN AND FREE OF HUMPS, DEPRESSIONS OR IRREGULARITIES. SEE DETAILS TO DETERMINE FINISH GRADE ADJACENT TO CONCRETE AREAS AND WALKWAYS TO ALLOW FOR MULCH THICKNESS (IF SPECIFIED).

CONTRACTOR SHALL PERFORM LANDSCAPE MAINTAINANCE ON PROJECT UNTIL COMPLETION AND ACCEPTANCE.

**TREE NOTES:**

PROVIDE PLANTS TYPICAL OF THEIR SPECIES OR VARIETY, WITH NORMAL, DENSELY DEVELOPED BRANCHES AND VIGOROUS, FIBROUS ROOT SYSTEMS. PROVIDE ONLY SOUND, HEALTHY VIGOROUS PLANTS FREE FROM DEFECTS, DISFIGURATIONS, OR ABRASIONS. PLANTS SHALL BE FIRMLY ROOTED IN THEIR CONTAINERS BUT NOT POT BOUND WITH CIRCLING ROOTS. THE OWNER'S REPRESENTATIVE HAS FINAL APPROVAL OF ALL PLANT MATERIAL AND MAY REJECT PLANT MATERIAL AT THEIR DISCRETION.

TREES AND SHRUBS MUST MEET THE SIZE REQUIREMENTS INDICATED ON THE LEGEND. THE CONTRACTOR MAY SUBSTITUTE A LARGER SIZE DUE TO AVAILABILITY BUT AT NO ADDITIONAL EXPENSE TO THE OWNER.

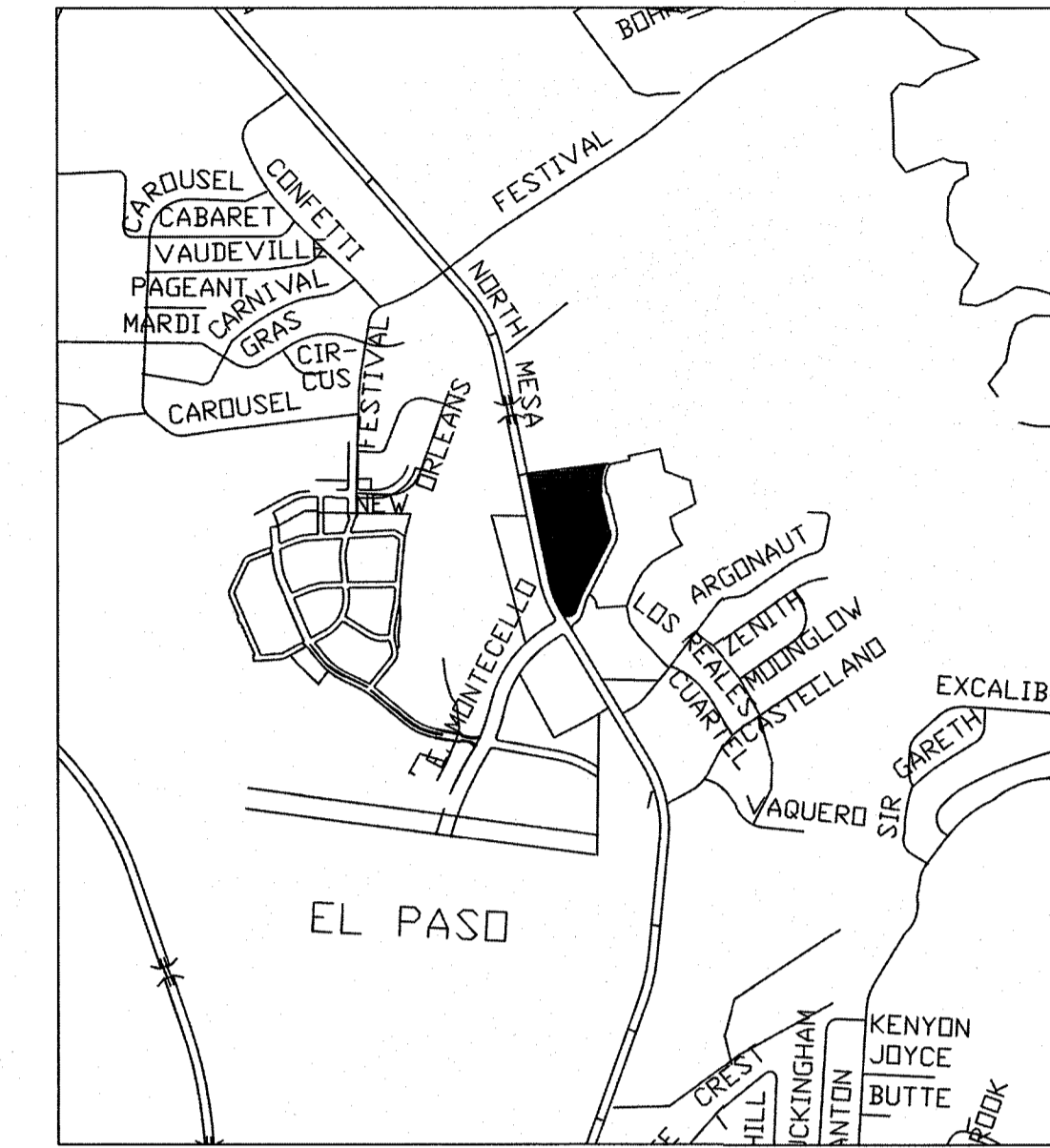
SEE PLANTING SPECIFICATIONS FOR MORE INFORMATION FOR PLANTING IN IMPERVIOUS SOILS. IMPERVIOUS SOILS HOLD WATER FOR MORE THAN 24 HOURS IN PLANTING PIT.

**PLANTING NOTES**

- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PREVENT PLANTS FROM FALLING OR BEING BLOWN OVER AND TO STRAIGHTEN OR REPLANT ALL PLANTS WHICH ARE DAMAGED DUE TO WIND. PLANTS BLOWN OVER BY HIGH WINDS SHALL NOT BE A CAUSE FOR ADDITIONAL EXPENSE TO THE OWNER, BUT SHALL BE THE FINANCIAL RESPONSIBILITY OF THE CONTRACTOR.
- NATIVE SOIL FOR PLANTING SHALL BE FREE FROM HARD CLODS, STIFF CLAY, HARD PAN, STONES LARGER THAN 1" IN DIAMETER, NOXIOUS WEEDS AND PLANTS, SOD, PARTIALLY DISINTEGRATED DEBRIS INSECTS OR ANY OTHER UNDESIRABLE MATERIAL. PLANTS OR SEEDS THAT WOULD BE TOXIC OR HARMFUL TO GROWTH. IT SHALL BE TESTED TO DETERMINE THE PH FACTOR, FERTILITY, SOLUBLE SALTS AND PERCOLATION.
- EXCAVATE TWO TIMES GREATER THAN THE ROOT BALL-DIAMETER OF SHRUBS AND ROOT BALLS OF TREES. SCARIFY THE BOTTOM OF PLANTING PIT BEFORE PLACING PLANT. PLACEMENT OF PLANT SHALL BE PERPENDICULAR TO GROUND/VERTICAL WITHOUT LEANING.
- SET PLANT MATERIAL IN PLANTING PIT TO PROPER GRADE AND ALIGNMENT. SET PLANTS SO THAT THE ROOT BALL IS FLUSH WITH FINISHED GRADE. REMOVE ALL WIRE, STRING, WIRE BASKETS, BURLAP, CONTAINERS, ETC. FROM THE ROOTBALL OF PLANTS BEFORE BACKFILLING THE PLANTING HOLE. BACKFILL THE PIT WITH 50% NATIVE SOIL (UNLESS UNSUITABLE FOR GROWTH) 50% COMPOST. IMPERVIOUS SOIL AND LARGE ROCKS MUST BE REMOVED. "WATER IN" TO PREVENT AIR POCKETS AND SETTLING. FORM A RING OF SOIL AROUND PLANTS THAT ARE LOCATED ON A SLOPE TO RETAIN WATER.
- CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF PLANT MATERIAL QUANTITIES. IN THE EVENT OF VARIATION BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND THE PLANS, THE PLANS SHALL CONTROL. IMPROPER PLANT COUNT MADE BY THE LANDSCAPE CONTRACTOR SHALL BE NO CAUSE FOR ADDITIONAL COSTS TO THE OWNER.
- THE CONTRACTOR SHALL MEET BOTH THE CONTAINER SIZE AND CALIFER SIZE, AS WELL AS HEIGHT AND SPREAD SPECIFICATIONS.
- CONTRACTOR WILL NOT PLANT MATERIAL SHOWN ON PLANS WHEN IT IS EVIDENT THAT FIELD CONDITIONS HAVE CHANGED SINCE PLANS WERE DRAWN OR IF OTHER CONFLICTS ARE EVIDENT. ANY CHANGES ARE TO BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT BEFORE PLANTING IS DONE IN THE AREA.
- PLANT SUBSTITUTIONS MAY BE PERMITTED DUE TO AVAILABILITY ISSUES NOT PRICE. REQUEST SUBSTITUTION IN WRITING GIVING REASON FOR SUCH SUBSTITUTIONS AND SOURCES ALREADY CONTACTED.
- WARRANTY FOR THE PLANTING MATERIAL SHALL BE ONE YEAR FROM THE DATE OF ACCEPTANCE. (TREES, SHRUBS AND GROUND COVER PLANTS - AS APPLIES).

**GENERAL IRRIGATION NOTES**

- ALL MATERIALS LISTED BY BRAND NAME MAY BE SUBSTITUTED BY EQUAL OR BETTER PRODUCTS AS DECIDED BY LANDSCAPE ARCHITECT.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING AND PROPOSED UTILITIES, AND ALL SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OTHER CONTRACTORS WORKING ON THE SITE. COORDINATE INSTALLATION OF SLEEVING!
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY WATER PRESSURE, WATER SOURCE AND SIZE IN THE FIELD PRIOR TO CONSTRUCTION. SHOULD A DISCREPANCY EXIST BETWEEN DESIGN PRESSURE AND FIELD PRESSURE THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY.
- IF PRESSURE IS MORE THAN 90 PSI DOWNSTREAM OF METER NOTIFY THE PROJECT MANAGER AND LANDSCAPE ARCHITECT IMMEDIATELY.
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
- LOCATION OF THE CONTROLLER AND BACKFLOW SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE.
- STAKE OUT TREE LOCATIONS PRIOR TO TRENCHING.
- THE CONTRACTOR SHALL NOT IMPEDE DRAINAGE IN ANY WAY. THE CONTRACTOR SHALL ALWAYS MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS, WALLS, ETC.
- ALL PIPING/WIRING RUNNING BENEATH PAVED SURFACES (DRIVES, WALKS, ETC.) SHALL BE INSTALLED IN SCHEDULE 40 PVC SLEEVES. SLEEVES MUST BE 2 X THE DIAMETER SIZE OF PIPE ENCASED. EXTEND SLEEVE TWENTY-FOUR INCHES (24") BEYOND EDGE OF HARD SURFACES; WRAP ENDS WITH FOUR (4) MILS PLASTIC AND GOOD QUALITY PLASTIC TAPE. GRAY, CLOTH DUCT TAPE IS NOT ACCEPTABLE.
- USE DRI-SPLICE CONNECTORS FACTORY FILLED WITH SILICONE FOR VALVE WIRING.
- ALL PIPE CUTS SHALL BE MITERED TO 90 DEGREES TO ASSURE PROPER SOLVENT WELD. ALL BURRS SHALL BE REMOVED PRIOR TO GLUING AND MUST HAVE A FILED BEVELED EDGE A MINIMUM OF ONE FOURTH (1/4) THE WIDTH OF PIPE WALL. USE "3-STEP" GLUING PROCESS. PIPE MUST BE CLEAN AND PRIMER APPLIED AS RECOMMENDED BY MANUFACTURER WHEN GLUING PROCESS IS UNDERTAKEN. PRIMER SHOULD BE MOIST AS GLUE IS APPLIED AND PVC PIPING IS ASSEMBLED. USE IPS WELD-ON PURPLE PRIMER P68 OR P70. USE IPS WELD-ON GRAY GLUE #111 HEAVY DUTY. WIPE OFF ALL EXCESS CEMENT AND LET SET PER MANUFACTURER'S RECOMMENDATIONS. INITIAL SET TIMES SHALL BE MINIMUM OF 5 MIN. FOR 1/2 TO 1-1/4" PIPE; 8 MIN. FOR 1-1/2" PIPE TO 2" PIPE; 2 HOURS FOR 2-1/2" TO 6" PIPE. CURE TIMES ARE 20 MIN. FOR 1/2" TO 1-1/4" PIPE; 30 MIN. FOR 1-1/2" PIPE; 4 HOURS FOR 2-1/2" PIPE. WHEN HUMIDITY EXCEEDS 60% INCREASE CURE TIME BY 50%. ONCE WELD IS SET, PIPE SHALL NOT BE MOVED FOR ANY REASON UNTIL SET TIMES HAVE BEEN ACHIEVED. WATER SHALL NOT BE TURNED ON UNTIL ALL CURE TIMES HAVE BEEN ACHIEVED.
- THE PROJECT MANAGER MUST BE PRESENT DURING ALL FLUSHING, TESTING AND ADJUSTING. THE CONTRACTOR MUST PROVIDE 24 HRS NOTICE TO THE PROJECT MANAGER PRIOR TO CONDUCTING THE TESTS.
- THE FINISH GRADE OF ALL TRENCHED AREAS SHALL BE SMOOTH, EVEN AND CONSISTENT, FREE OF ANY HUMPS, DEPRESSIONS OR OTHER GRADING IRREGULARITIES. OVERFILL TRENCHES AND COMPACT SO NOT TO CRUSH THE PIPE. FOR SETTLING AND BACKFILL AND REGRADE IF NECESSARY. DO NOT PLACE GRAVEL UNTIL TRENCHES ARE ACCEPTABLE.
- THE CONTRACTOR SHALL FINE TUNE AND ADJUST THE IRRIGATION SYSTEM SO THAT NO WATER WILL RUN ONTO THE STREET OR WALKS
- THE CONTRACTOR SHALL MAINTAIN ALL WORK UNTIL ALL WORK IS COMPLETE AND ACCEPTED.
- WARRANTY PERIOD IS ONE YEAR FROM DATE OF ACCEPTANCE.
- SUBMITTALS DUE AT OR PRIOR TO THE FINAL WALK-THROUGH INSPECTION
  - BACKFLOW REPORT
  - TBOS TRANSMITTER
  - AS-BUILTS
  - MAINTENANCE AGREEMENT - AS APPLICABLE
- IRRIGATION SUBMITTALS PRIOR TO CONSTRUCTION SHALL BE SUBMITTED IN DIGITAL FORMAT.



**PROJECT AREA**  
NO SCALE

BEING A PORTION OF TRACTS 4A AND 6A, A.F. MILLER SURVEY NO. 216, AND A PORTION OF TRACT 21, JOHN BARKER SURVEY NO. 10 CITY OF EL PASO, EL PASO COUNTY, TEXAS. CONTAINING 9.3904 ACRES



TREES AND OTHER PLANTS IN LEAF DELIVERED TO THE SITE SHALL BE COVERED WITH CANVAS TARP DURING TRANSPORT. PLASTIC TARPS ARE PROHIBITED. TRANSPORT IN ENCLOSED VAN IS ACCEPTABLE BUT PLANTS MUST BE UNLOADED IMMEDIATELY UPON ARRIVAL AT SITE. DO NOT LIFT TREES BY THE TRUNK. LIFT BY CONTAINER.

SHEET INDEX	
L1	SITE MAP, SHEET INDEX, NOTES
L2	PLANTING & MATERIALS PLAN
L3	IRRIGATION PLAN
L4	CONSTRUCTION DETAILS
L5	IRRIGATION DETAILS

A LANDSCAPE DESIGN FOR  
**MONTECILLO UNIT 5B**  
EL PASO, TEXAS

LISA MCNELIS  
LANDSCAPE ARCHITECT  
1900 FOXBORO COURT  
LAS CRUCES, NEW MEXICO 88007  
(515) 621-9032

**L1**  
INDEX AND NOTES



BEING A PORTION OF TRACTS 4A AND 6A, A.F. MILLER SURVEY NO. 216,  
AND A PORTION OF TRACT 21, JOHN BARKER SURVEY NO. 10  
CITY OF EL PASO, EL PASO COUNTY, TEXAS.  
CONTAINING 9.3904 ACRES

VERIFY QUANTITIES. PLAN TAKES PRECEDENCE.

**MATERIAL LEGEND AND DETAIL KEY- PROJECT TOTALS:**

- 1" FRANKLIN RED GRAVEL 3" DEPTH  
2" BELOW TOP OF ADJACENT PAVING. USE WEED BARRIER FABRIC.  
SEE DETAIL E SHEET L4.
- TREE WELL PLANTER WITH ROOT BARRIER  
USE 3" DEPTH 3/4" FRANKLIN RED GRAVEL MULCH.  
NO WEED BARRIER.  
SEE DETAIL F SHEET L4.

USE DEWITT PRO 5 WEED BARRIER OR EQUAL.

SEE SHEET L4 FOR PLANTING DETAILS.

TREE LEGEND/SCHEDULE - PROJECT TOTALS

SYM	KEY	COMMON NAME	BOTANICAL NAME	CONT.	SIZE	QUANT.	REMARKS
MO	○	MONTEREY OAK	QUERCUS POLYMORPHA	36"BOX	3" CAL, 12HT-6" SPREAD	31	SINGLE TRUNK
CPT	○	CHINESE PISTACHE	PISTACIA CHINENSIS	36"BOX	3" CAL, 12HT-6" SPREAD	26	SINGLE TRUNK
LET	○	LACEBARK ELM	ULMUS PARVIFOLIA	36"BOX	3" CAL, 12HT-6" SPREAD	14	SINGLE TRUNK

SEE SHEET L4 FOR PLANTING DETAILS.

TREE SIZE AND CLEARANCES MUST MEET CITY OF EL PASO STANDARDS.  
NO LOW FORKS IN TREE TRUNKS. THOSE FORMS DO NOT ALLOW FOR  
PRUNING FOR (7) CLEARANCE REQUIREMENTS WITHOUT DESTROYING FORM OF TREE.

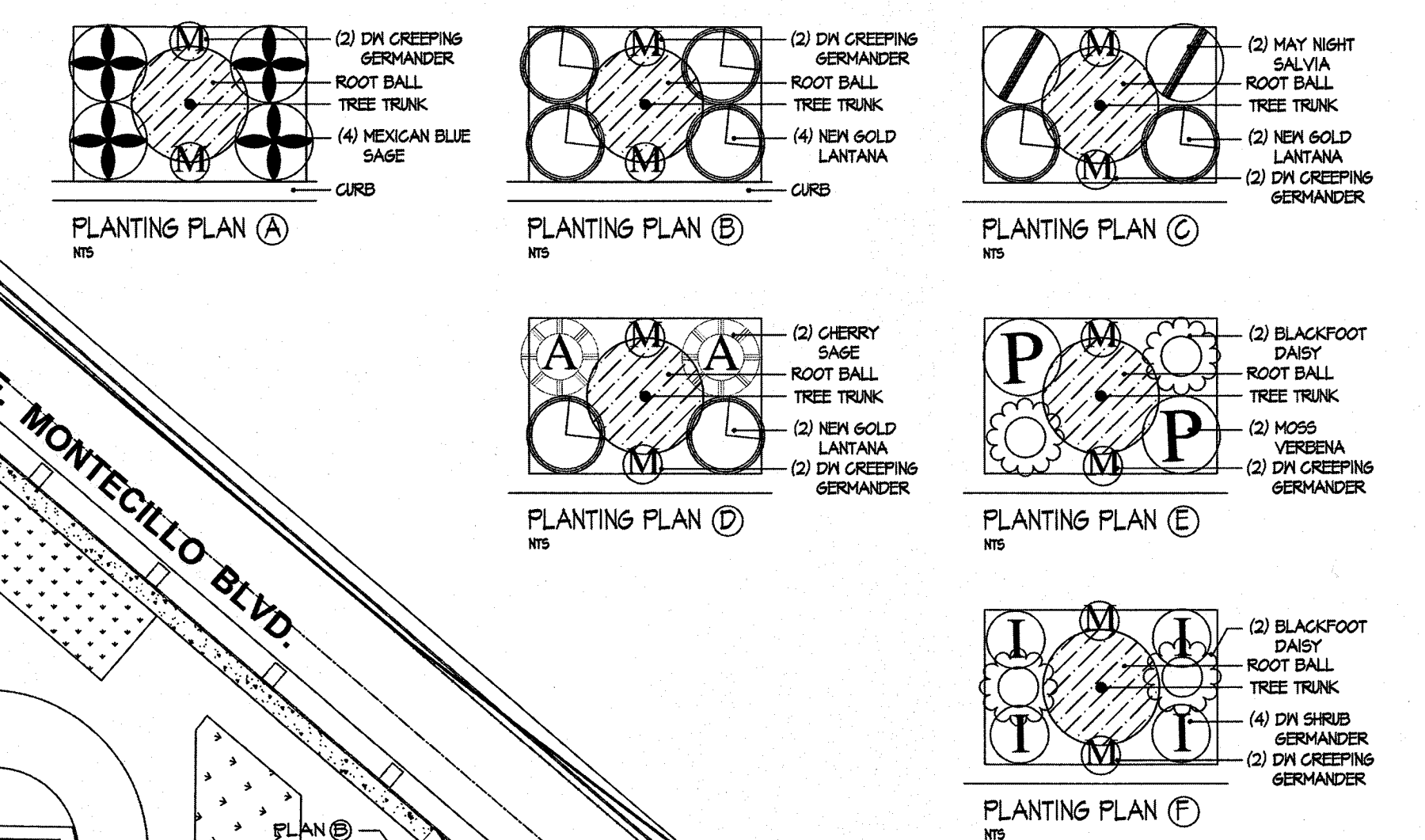
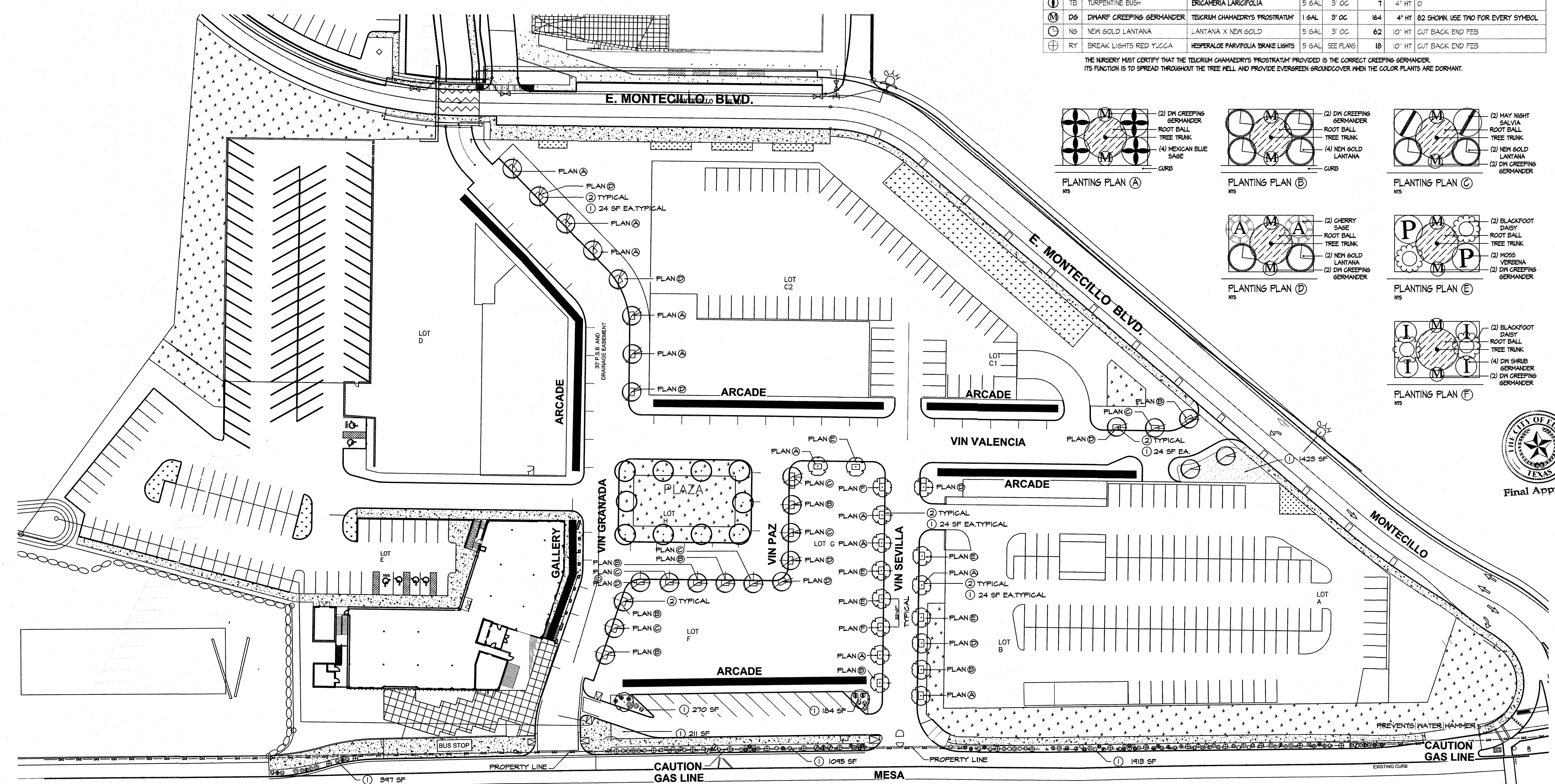
TREES MUST DISPLAY A CENTRAL LEADER AND MEET ANSI STANDARD Z601  
AMERICAN STANDARD FOR NURSERY STOCK, LATEST EDITION

PLANT LEGEND/SCHEDULE PROJECT TOTALS

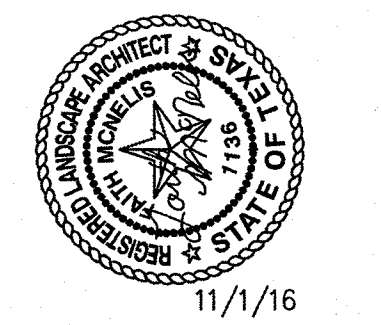
SYM	KEY	COMMON NAME	BOTANICAL NAME	CONT.	SPACINGS	QUANT.	SIZE	REMARKS
CS	○	SUN GOLD CREEPING GAZANIA	GAZANIA RIGENS var. LEUCOLAENA	1.6AL	2' OC	20	4" HT	10 SHOWN. USE TWO FOR EVERY SYMBOL
PV	○	MOSS PURPLE VERBENA	VERBENA TENUISECTA	1.6AL	3' OC	24	10" HT	12 SHOWN. USE TWO FOR EVERY SYMBOL
MB	○	MEXICAN BLUE SAGE	SALVIA CHAMAEDRYOIDES	5.6AL	3' OC	54	8" HT	0
DA	○	DAMIANITA	CHRYSACTINIA MEXICANA	5.6AL	3' OC	6	10" HT	0
RP	○	MAY NIGHT SALVIA	SALVIA SUPERBA MAY NIGHT	1.6AL	3' OC	38	10" HT	14 SHOWN. USE TWO FOR EVERY SYMBOL
BF	○	BLACKFOOT DAISY	MELAMPODIUM LEUCANTHUM	1.6AL	3' OC	56	8" HT	28 SHOWN. USE TWO FOR EVERY SYMBOL
DG	○	DWARF SHRUB GERMANDER	TELRUM CHAMAEDRYIS	1.6AL	3' OC	50	6" HT	25 SHOWN. USE TWO FOR EVERY SYMBOL
CS	○	CHERRY SAGE	SALVIA GREGGII	5.6AL	3' OC	30	18" HT	CUT BACK TO 12" END FEB.
FL	○	PURPLE LANTANA	LANTANA MONTEVIDENSIS	5.6AL	3' OC	14	10" HT	CUT BACK END FEB.
SD	○	SANDROPS	CALYLOPHUS HARTWEGII	1.6AL	3' OC	16	4" HT	8 SHOWN. USE TWO FOR EVERY SYMBOL
TB	○	TURPENTINE BUSH	ERIGONIA LARGIFOLIA	5.6AL	3' OC	7	4" HT	0
DG	○	DWARF CREEPING GERMANDER	TELRUM CHAMAEDRYIS PROSTRATUM	1.6AL	3' OC	164	4" HT	82 SHOWN. USE TWO FOR EVERY SYMBOL
NG	○	NEW GOLD LANTANA	LANTANA X NEW GOLD	5.6AL	3' OC	62	10" HT	CUT BACK END FEB.
RY	○	BREAK LIGHTS RED YUGCA	HESPERALOE PARVIFOLIA BRAKE LIGHTS	5.6AL	SEE PLANS	18	10" HT	CUT BACK END FEB.

THE NURSERY MUST CERTIFY THAT THE TELRUM CHAMAEDRYIS PROSTRATUM PROVIDED IS THE CORRECT CREEPING GERMANDER.  
ITS FUNCTION IS TO SPREAD THROUGHOUT THE TREE WELL AND PROVIDE EVERGREEN GROUNDCOVER WHEN THE COLOR PLANTS ARE DORMANT.

DO NOT BURY PLANTS IN GRAVEL!



A LANDSCAPE DESIGN FOR  
**MONTECILLO UNIT 5B**  
EL PASO, TEXAS



LISA MCNELIS  
LANDSCAPE ARCHITECT  
1900 FOXBORO COURT  
LAS CRUCES, NEW MEXICO 88007  
(515) 621-3032



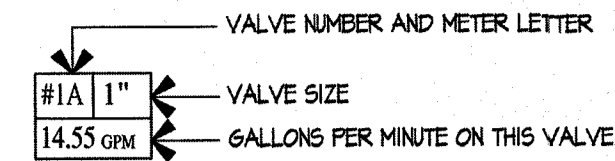
**PLAN VIEW A - PLANTING AND MATERIALS**  
SCALE: 1" = 40' - 0"



IRRIGATION IS REGULATED BY:  
 PO BOX 13087  
 AUSTIN, TEXAS 78711-3087  
 TCEQ 512 239-6719  
 CHAPTER 34, TEXAS WATER CODE  
 IRRIGATOR'S LIC. #8947



IRRIGATION PLANS ARE SCHEMATIC AND DO NOT INDICATE EXACT LOCATION AND LENGTH OF PIPE AND COMPONENTS. ALL COMPONENTS ARE TO BE PLACED IN LANDSCAPE AREAS. COMPONENTS ARE SHOWN OUTSIDE OF LANDSCAPE AREAS FOR LEGIBILITY.



METER A

#1A 1"
1.35 GPM

METER B

#1B 1"	#2B 1"	#3B 1"	#4B 1"
2.56 GPM	2.7 GPM	6.24 GPM	6.80 GPM

MATERIAL LEGEND:

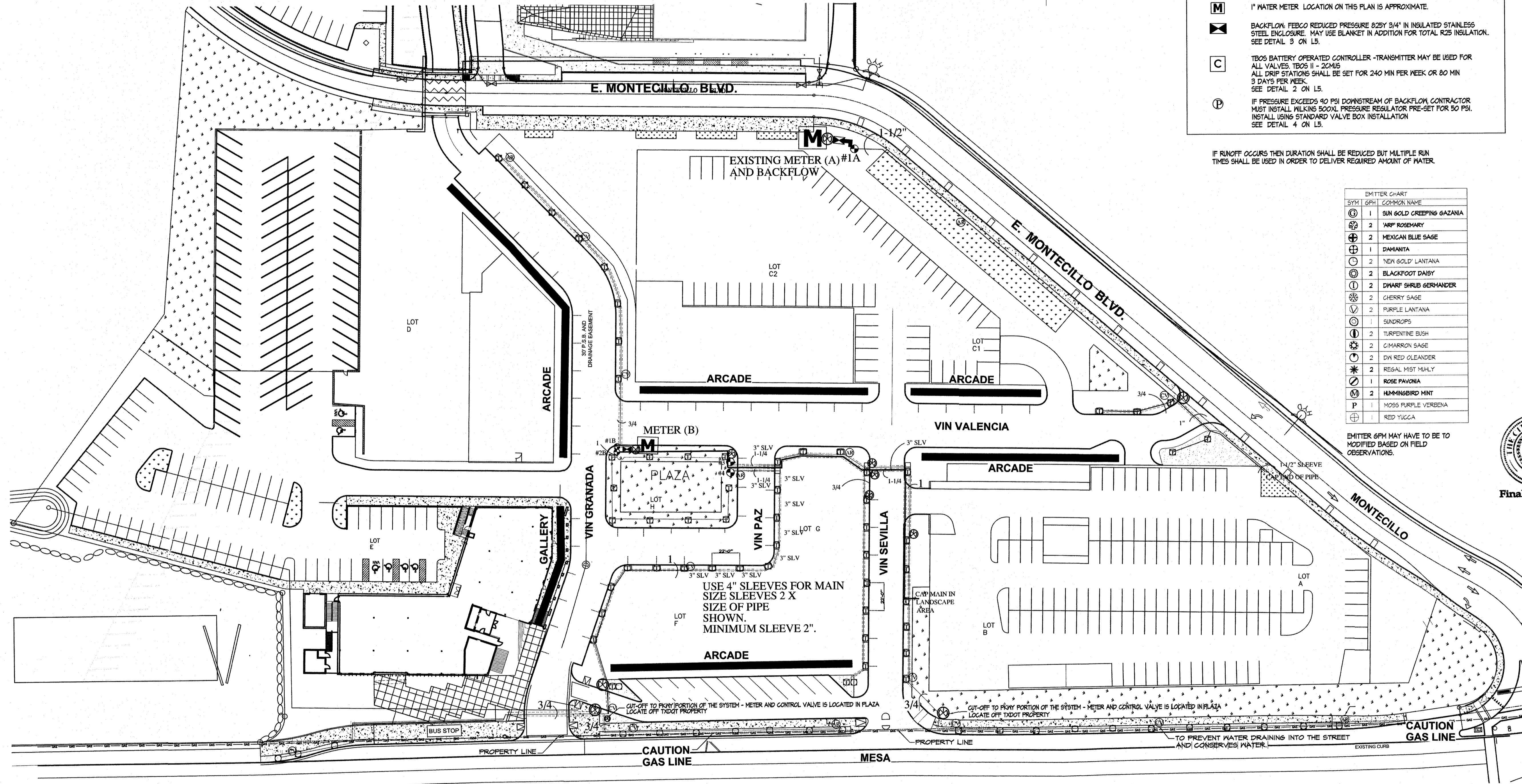
- 2" PRESSURE MAIN PVC SCHEDULE 40, DEPTH 16" TO TOP OF PIPE. SEE DETAIL 6 ON L5.
- LATERAL PVC CLASS 200, DEPTH 12", TO TOP OF PIPE. SEE DETAIL 6 ON L5.
- - - - SCH 40 SLEEVING UNDER ALL PAVED AREAS WHERE LINES ARE RUN. USE 2X THE DIAMETER OF THE SLEEVED PIPE. MARK CONCRETE AT SLEEVE ENDS.
- ⊖ DRIP EMITTER FOR TREES. RAINBIRD XEB-BIRD XEB-80 WITH FILTER AND PRESSURE REGULATOR. USE 4 XEB-20PC AND 4 XEB-20PC EMITTERS PER TREE. 2 GPM SET IN EMITTER VALVE BOX. SEE DETAILS 1, 3, AND 4 ON SHEET L5.
- ⊖ DRIP EMITTER FOR PLANTS ON PVC LATERALS. RAINBIRD XEB-BIRD XEB-80 WITH FILTER AND PRESSURE REGULATOR. USE 1 XEB-20PC EMITTER OR AS SPECIFIED ON THE EMITTER LEGEND. PLACE ON UPHILL SIDE OF PLANT. CAP UNUSED OUTLETS. SEE DETAIL 8 ON SHEET L5.
- ⊖ ELECTRIC REMOTE VALVE. RAINBIRD PESB. SIZE ON PLAN WITH CUT OFF BALL VALVE, FILTER AND TBOS CONTROL MODULE/SOLENOID IN LOCKING VALVE BOX. SEE DETAILS 1, 2, AND 5 ON L5.
- ⊖ ISOLATION VALVE IN LOCKING VALVE BOX
- ⊖ IN LINE SPRING CHECK VALVE. PLACE IN VALVE BOX. USE SAME BOX DETAIL AS AIR VACUUM RELIEF VALVE. SEE DETAIL 1 ON L5.
- ⊖ AIR VACUUM RELIEF VALVE. SEE DETAIL 1 ON L5.
- M 1" WATER METER. LOCATION ON THIS PLAN IS APPROXIMATE.
- ⊖ BACKFLOW PREVENTOR REDUCED PRESSURE 825Y 3/4" IN INSULATED STAINLESS STEEL ENCLOSURE. MAY USE BLANKET IN ADDITION FOR TOTAL R25 INSULATION. SEE DETAIL 3 ON L5.
- C TBOS BATTERY OPERATED CONTROLLER - TRANSMITTER MAY BE USED FOR ALL VALVES. TBOS II - 204US. ALL DRIP STATIONS SHALL BE SET FOR 240 MIN PER WEEK OR 80 MIN 3 DAYS PER WEEK. SEE DETAIL 2 ON L5.
- P IF PRESSURE EXCEEDS 40 PSI DOWNSTREAM OF BACKFLOW CONTRACTOR MUST INSTALL MILKING BOOXL PRESSURE REGULATOR PRE-SET FOR 50 PSI. INSTALL USING STANDARD VALVE BOX INSTALLATION. SEE DETAIL 4 ON L5.

IF RUNOFF OCCURS THEN DURATION SHALL BE REDUCED BUT MULTIPLE RUN TIMES SHALL BE USED IN ORDER TO DELIVER REQUIRED AMOUNT OF WATER.

EMITTER CHART

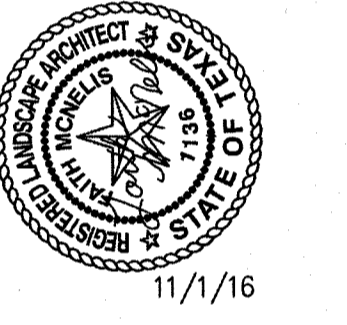
SYM	GEN	COMMON NAME
⊖	1	SUN GOLD CREEPING GAZANIA
⊖	2	'MAY' ROSEMARY
⊖	2	MEXICAN BLUE SAGE
⊖	1	DAMAZANTA
⊖	2	'NEE' GOLD' LANTANA
⊖	2	BLACKFOOT DAISY
⊖	2	'DWARF' SHRUB GERANIUM
⊖	2	CHERRY SAGE
⊖	2	PURPLE LANTANA
⊖	1	SUNSCROPS
⊖	2	TURPENTINE BUSH
⊖	2	CIMARRON SAGE
⊖	2	DIY RED OLEANDER
⊖	2	REGAL MIST MILLY
⊖	1	ROSE PAVONIA
⊖	2	HAMMINGBIRD MINT
⊖	1	MOSS PURPLE VERBENA
⊖	1	RED YUCCA

EMITTER GPM MAY HAVE TO BE TO MODIFIED BASED ON FIELD OBSERVATIONS.



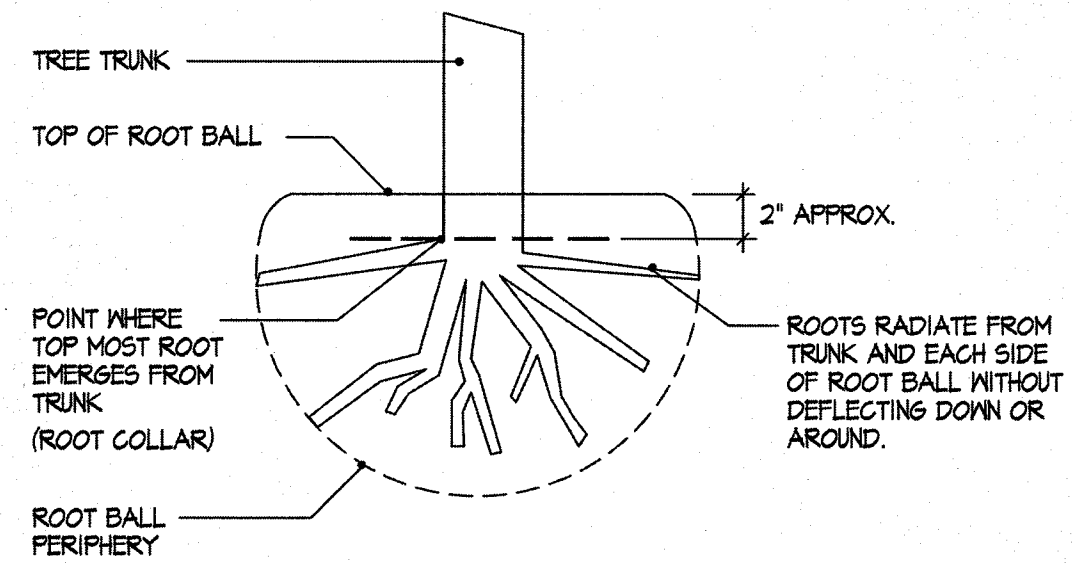
PLAN VIEW A - IRRIGATION PLAN  
 SCALE: 1" = 40' - 0"

A LANDSCAPE DESIGN FOR  
**MONTECILLO UNIT 5B**  
 EL PASO, TEXAS



LISA MCNELIS  
 LANDSCAPE ARCHITECT  
 1000 FOXBORO COURT  
 LAS CRUCES, NEW MEXICO 88007  
 (575) 621-9052





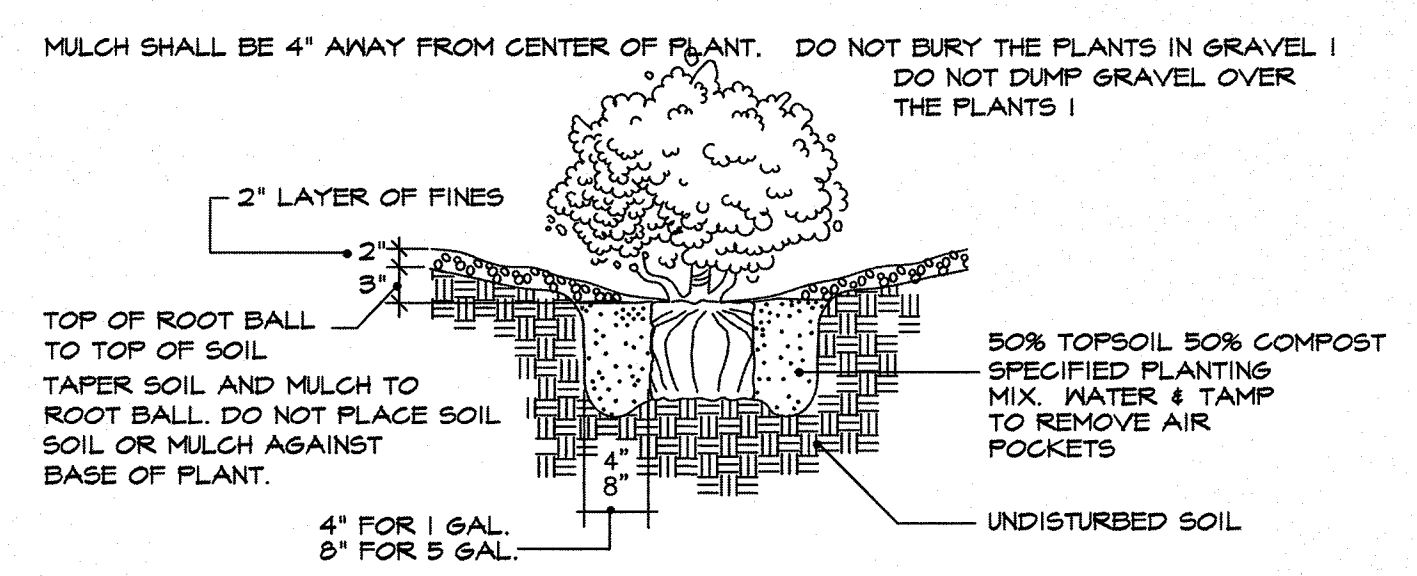
THE POINT WHERE THE TOP-MOST ROOTS EMERGE FROM THE TRUNK SHOULD BE WITHIN TOP 2" OF SUBSTRATE.

THE ROOT COLLAR AND THE ROOT BALL INTERIOR SHOULD BE FREE OF DEFECTS INCLUDING CIRCLING, KINKED, ASCENDING, AND STEM GIRDLING ROOTS.

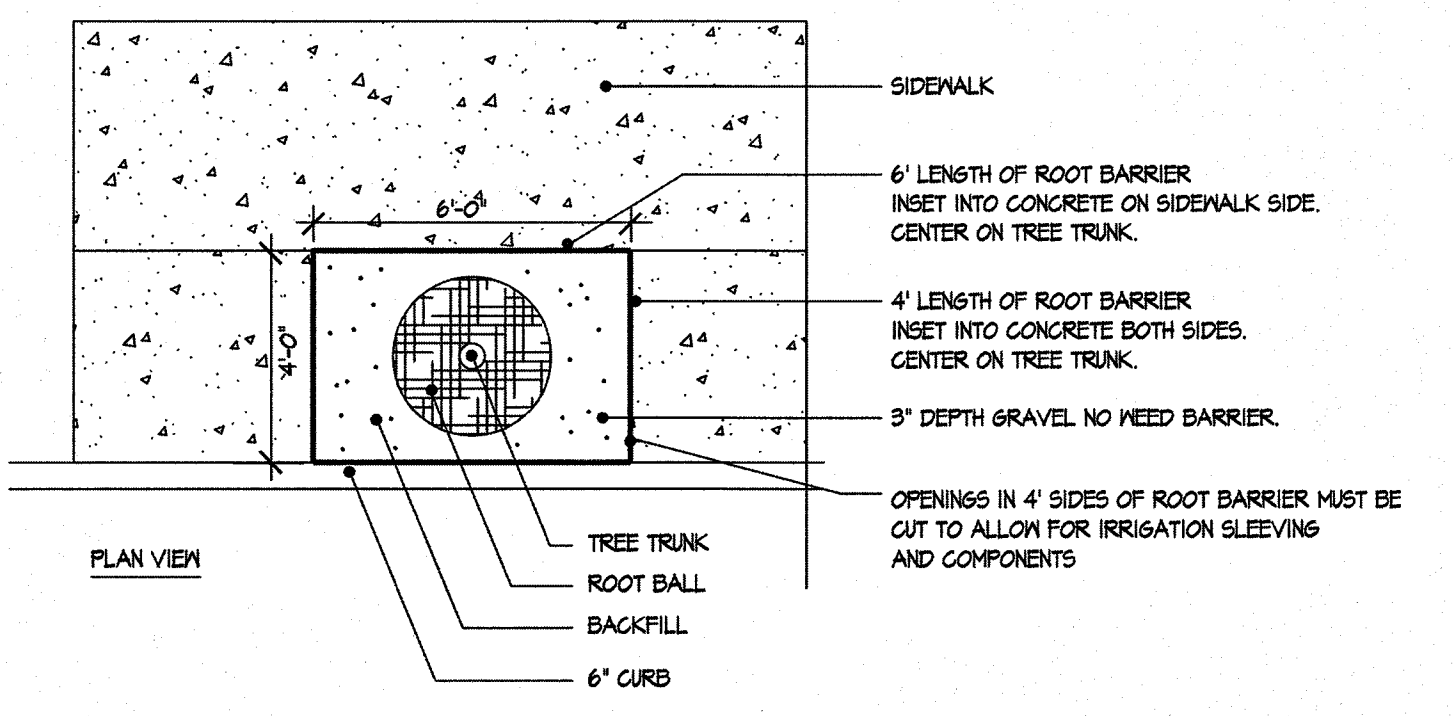
STRUCTURAL ROOTS SHALL REACH THE PERIPHERY NEAR THE TOP OF THE ROOT BALL ON ALL SIDES OF THE TREE.

A RANDOM SAMPLE OF TREE ROOT BALLS MAY BE INSPECTED. THE CONTRACTOR MUST REMOVE THE SIDES OF THE BOX AS NEEDED FOR INSPECTION. THE INSPECTION MAY INVOLVE SOME REMOVAL OF ROOTS OR SOIL.

**A** ROOT OBSERVATION DETAIL  
NOT TO SCALE



**D** TYPICAL SHRUB AND GROUND COVER PLANTING DETAIL - SECTION  
NOT TO SCALE



**F** ROOT BARRIER INSTALLATION DETAIL  
NOT TO SCALE

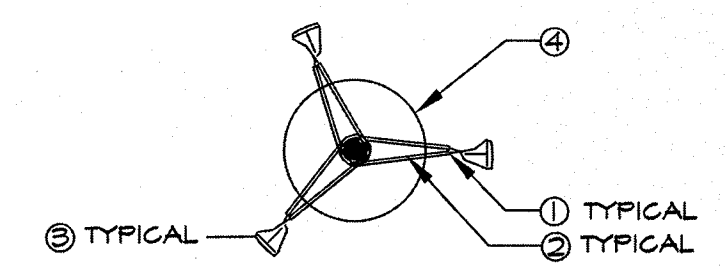
STAKING IS NOT REQUIRED BUT IF DEEMED NECESSARY THE STAKING DETAIL SHALL BE FOLLOWED. STAKING IS AT THE DISCRETION OF THE CONTRACTOR, LANDSCAPE ARCHITECT AND CITY OF EP REP. BUT SHOULD TREES REQUIRE STAKING THE CONTRACTOR SHALL INCLUDE THE COST OF THE STAKING IN THE COST OF THE TREE.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE STAKES AT END OF THE GUARANTEE PERIOD AT NO COST TO THE OWNER.

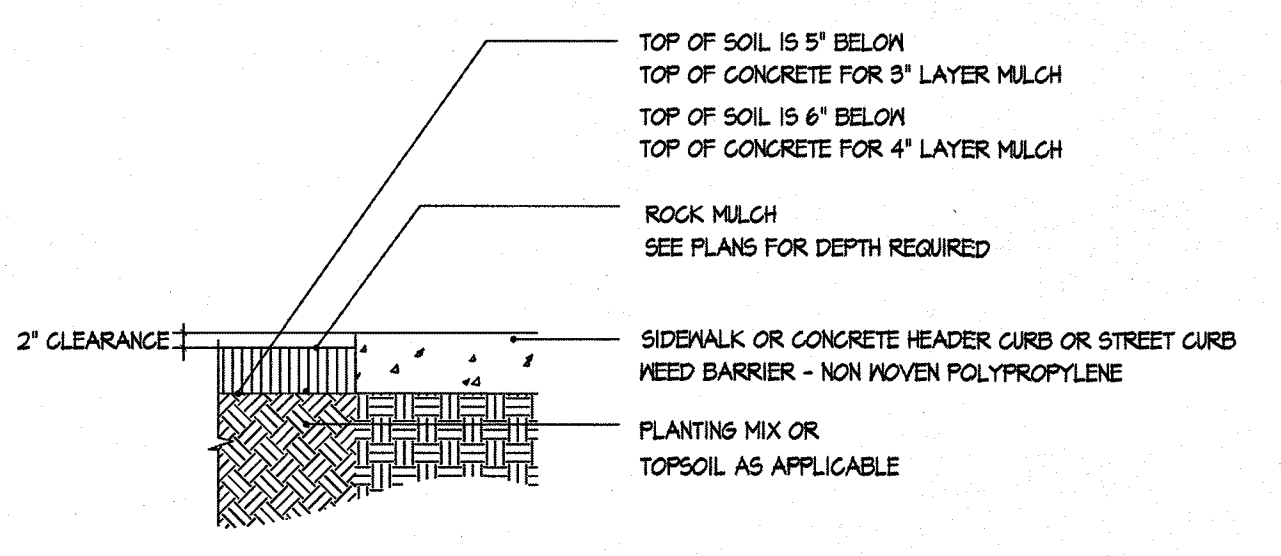
TREES THAT ARE DAMAGED DUE TO IMPROPER OR LACK OF STAKING MUST BE REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.

WIRES SHALL NOT BE TAUT BUT SHOULD ALLOW MOVEMENT OF 5 - 10 DEGREES FROM VERTICAL.

STAKES SHALL NOT BE DRIVEN INTO ROOTBALL OF TREES.



**B** TYPICAL TREE GUYING DETAIL - PLAN VIEW  
NOT TO SCALE

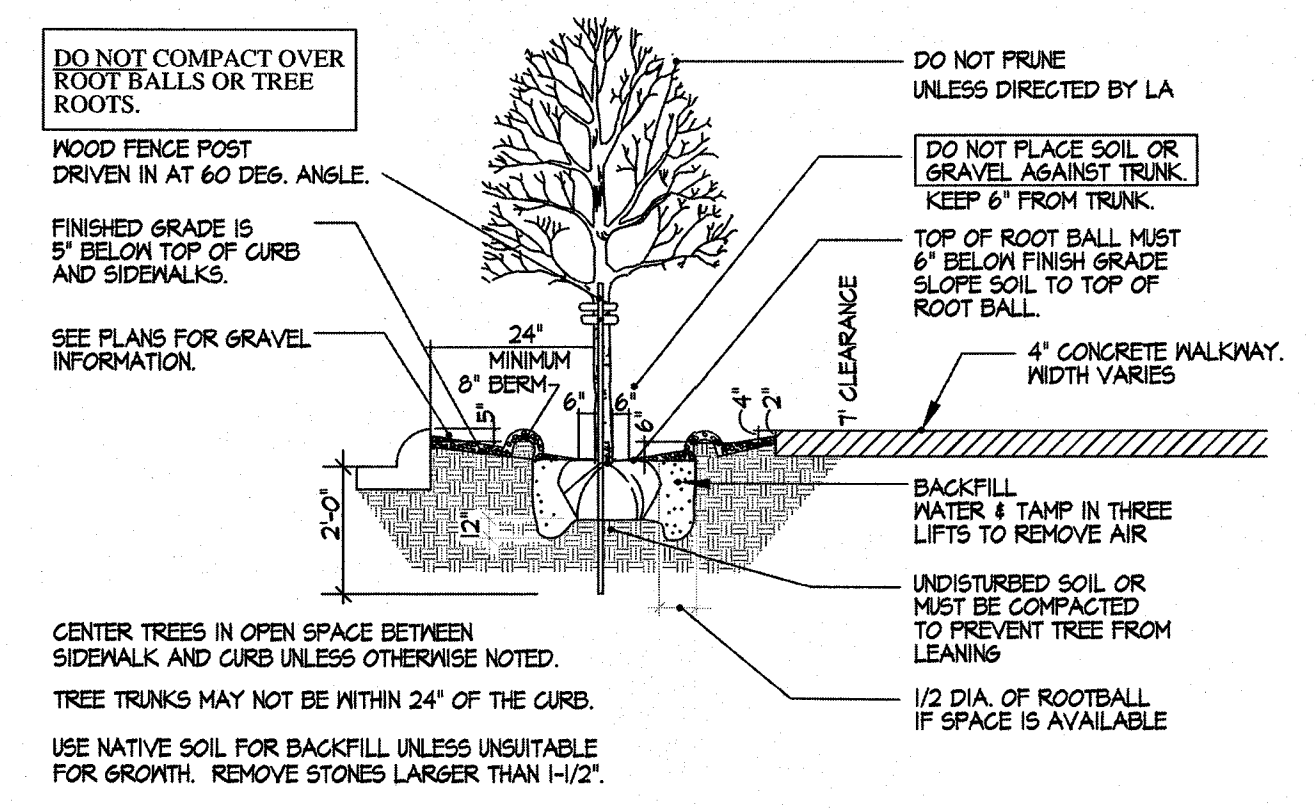
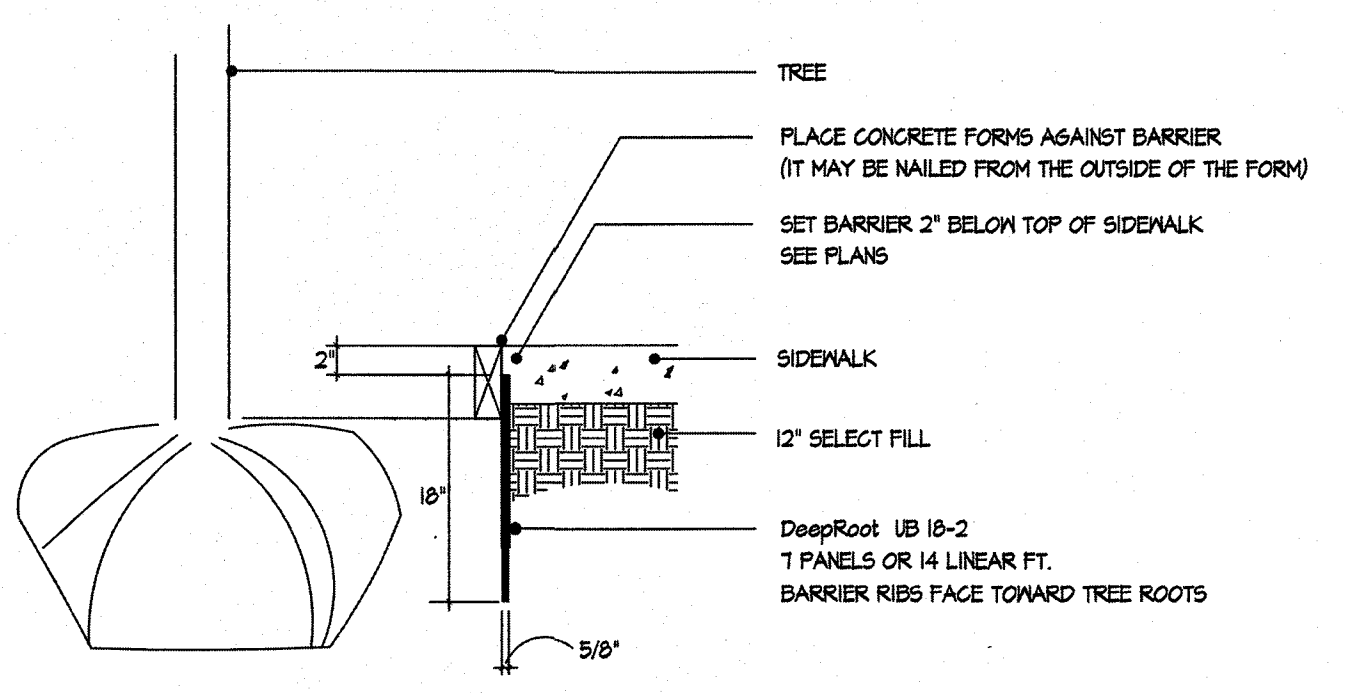


**E** GRAVEL AT CONCRETE DETAIL  
NOT TO SCALE

**INSTALLATION SEQUENCE**

1. PREPARE BASE AND SUBGRADE
2. TRENCH TO APPROPRIATE DEPTH FOR INSTALLATION OF ROOT BARRIER SO THAT TOP OF BARRIER IS 2" BELOW FINISHED GRADE OF SIDEWALK.
3. PLACE ROOT BARRIER IN TRENCH. VERTICAL RIBS MUST FACE TOWARD TREE ROOTS.
4. BACKFILL AND COMPACT TO REQUIREMENTS.
5. PLACE FORM MATERIAL AGAINST BARRIER

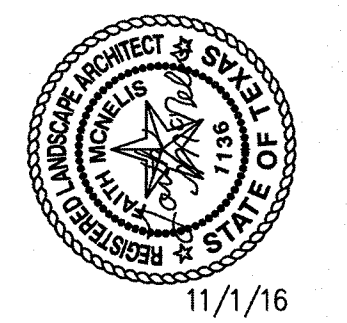
**SECTION / ELEVATION**



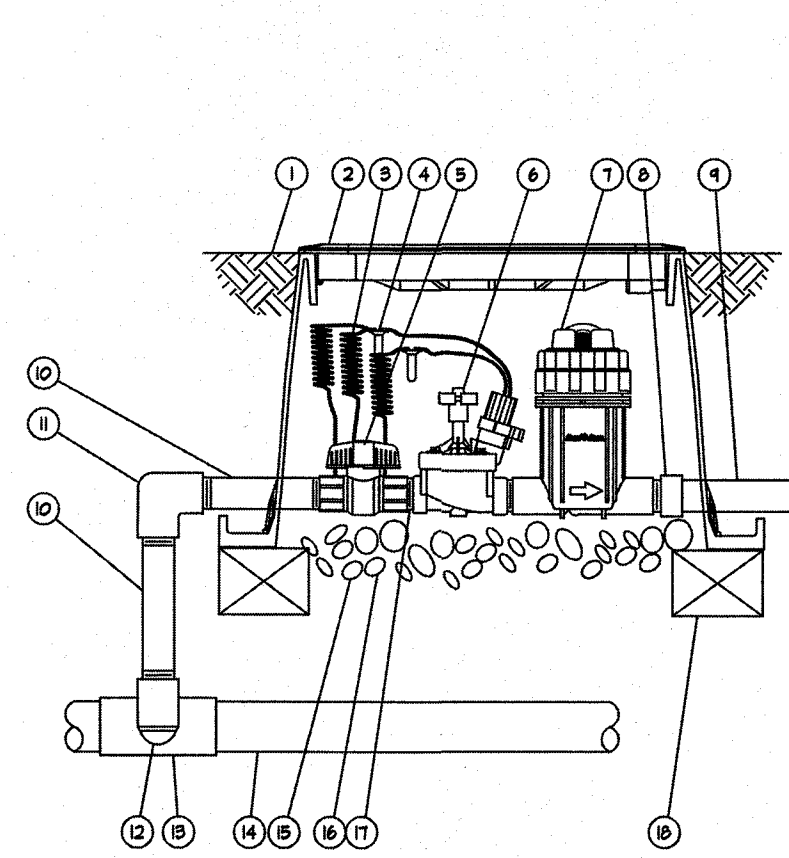
**C** TYPICAL TREE PLANTING DETAIL - SECTION/ELEV.  
NOT TO SCALE



Final Approval





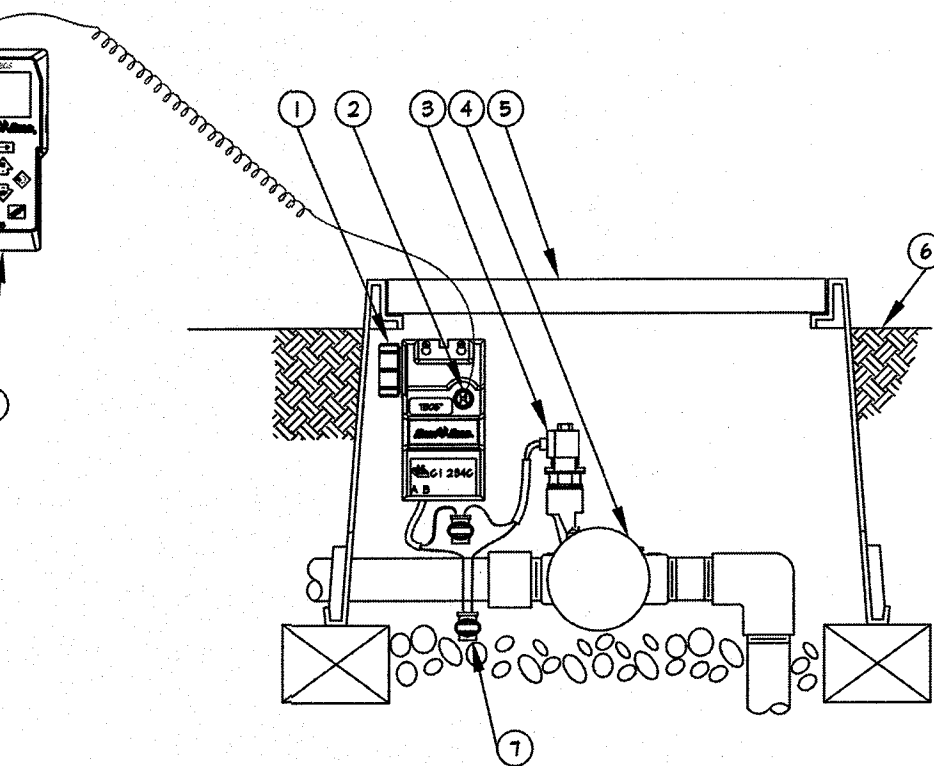
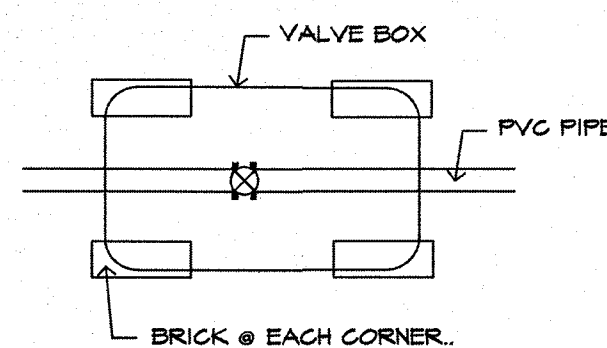


- 1 FINISH GRADE/TOP OF MULCH
- 2 VALVE BOX WITH BOLT DOWN COVER
- 3 90-INCH LINEAR LENGTH OF WIRE, COILED
- 4 WATERPROOF CONNECTION
- 5 BALL VALVE
- 6 REMOTE CONTROL VALVE: RAIN BIRD PESB
- 7 QUICK CHECK BASKET FILTER NOT PRESSURE REGULATING! RAIN BIRD PRB-GKCHK-200
- 8 PVC SCH 40 FEMALE ADAPTOR
- 9 LATERAL PIPE
- 10 PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
- 11 PVC SCH 40 ELL
- 12 PVC SCH 80 NIPPLE (2-INCH LENGTH HIDDEN) AND PVC SCH 40 ELL
- 13 PVC SCH 40 TEE OR ELL
- 14 MAINLINE PIPE
- 15 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
- 16 PVC SCH 80 NIPPLE, CLOSE
- 17 BRICK - ONE AT EA. CORNER

NOTE:  
REFER TO LEGEND ON IRR SHEET FOR ADDITIONAL INSTRUCTIONS

1 DRIP STATION CONTROL VALVE IN LOCKING VALVE BOX  
NOT TO SCALE

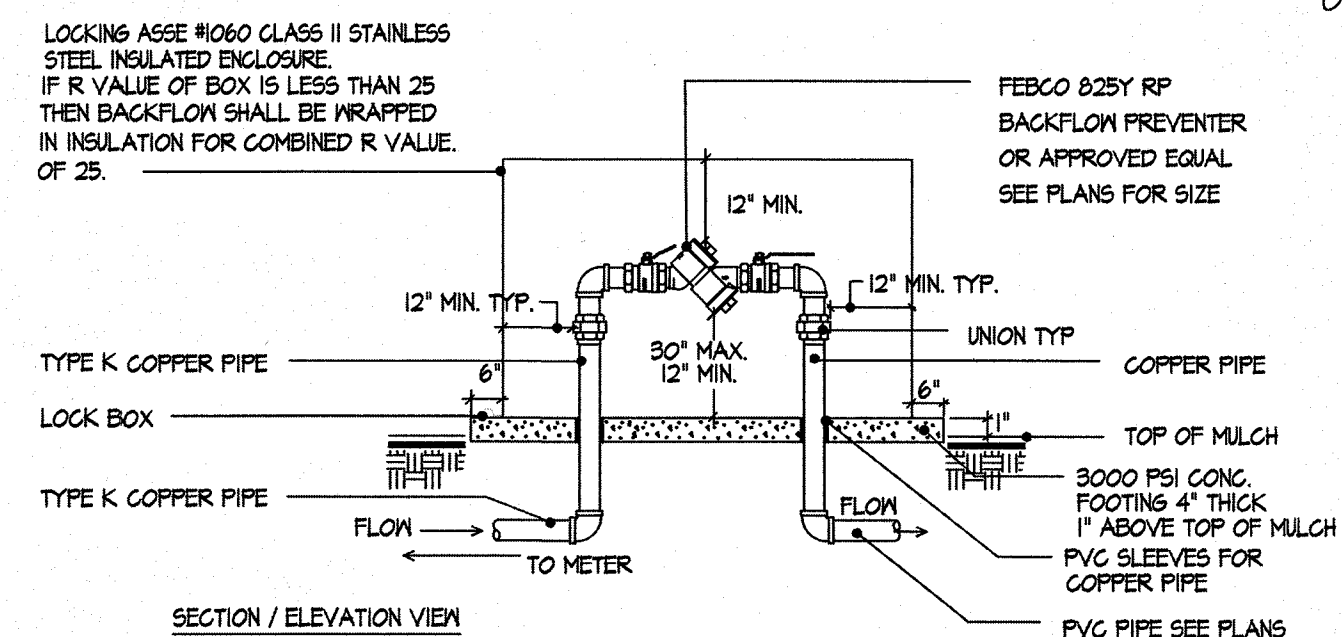
THIS DETAIL SHALL TAKE PRECEDENCE TO ANY OTHER DETAIL SHOWING VALVE BOX INSTALLATION.



- 1 RAIN BIRD TBS CONTROL MODULE
- 2 INFRARED CONNECTION FOR PROGRAM CONTROL
- 3 RAIN BIRD TBS SOLENOID
- 4 REMOTE CONTROL VALVE
- 5 VALVE BOX WITH COVER
- 6 TOP OF MULCH - 1" DOWN
- 7 WATERPROOF CONNECTION (1 OF 2)
- 8 RAIN BIRD TBS FIELD TRANSMITTER

NOTE:  
SEE DETAIL SHOWS TYPICAL INSTALLATION OF TBS MODULE AND TRANSMITTER DETAIL IN VALVE BOX.  
REFER TO CONTROL VALVE DETAIL (THIS SHEET) FOR VALVE AND COMPONENTS FOR THIS PROJECT.  
CONTRACTOR TO SUPPLY MANUFACTURER RECOMMENDED BATTERIES AND TBS-SOLENOID AT EACH VALVE. ONLY ONE TRANSMITTER IS REQUIRED.

2 TBS MODULE AND TRANSMITTER DETAIL  
NOT TO SCALE



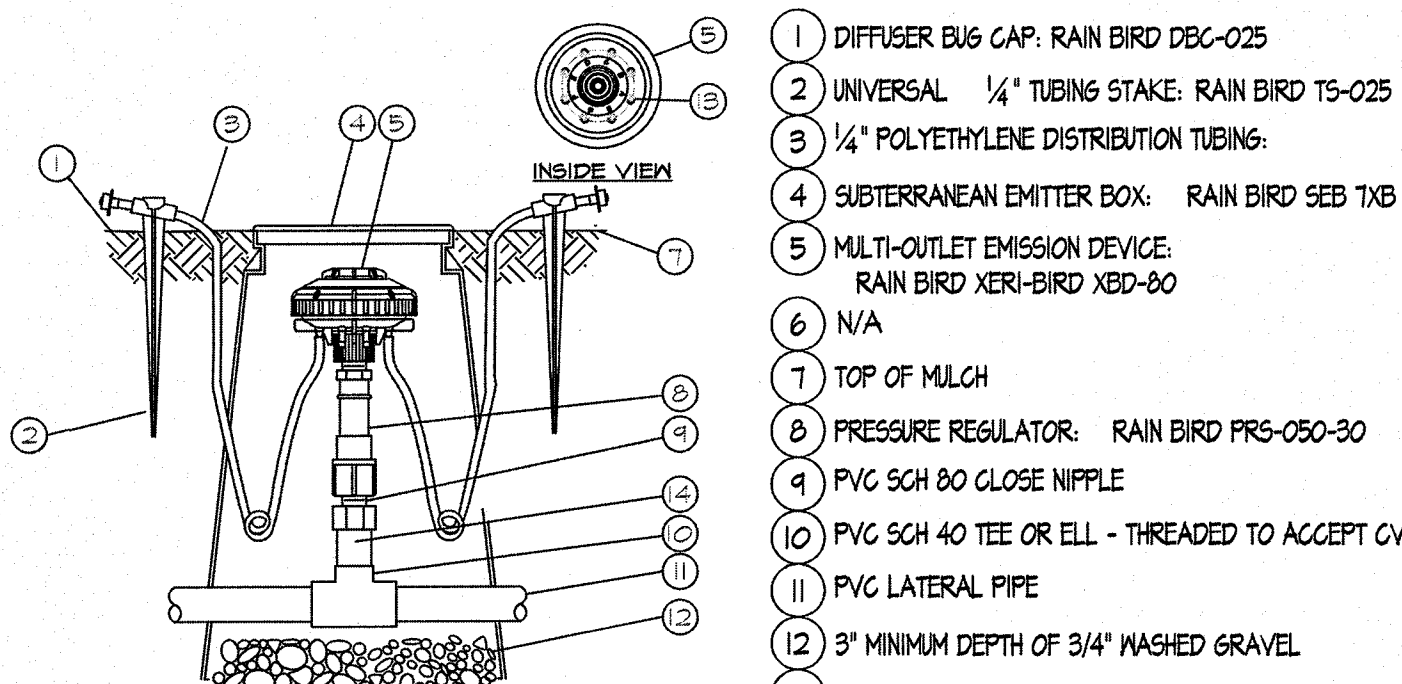
- 1 TOP OF GRAVEL MULCH
- 2 6" VALVE BOX
- 3 CRISP IC SERIES AIR/VACUUM RELEASE VALVE SIZE - 1/4" DIAMETER OF THE PIPE TO BE INSTALLED AT HIGH POINTS IN LATERAL AND MAIN LINES.
- 4 PVC SCH 40 FEMALE ADAPTOR
- 5 PVC SCH 80 RISER
- 6 BRICK (1 OF 2)
- 7 PVC HEADER PIPE
- 8 PVC SCH 40 TEE
- 9 3" MINIMUM DEPTH OF 3/4" WASHED GRAVEL
- 10 NEED BARRIER CLOTH

4 BRICK PLACEMENT FOR VALVE BOXES  
NOT TO SCALE

NOTE: BRICKS TO SIT ON NEED CLOTH ON UNDISTURBED SOIL. DISTURBED SOILS SHALL BE COMPACTED WITH TAMPER PRIOR TO SETTING NEED CLOTH & BRICKS. VALVE BOX AND EXTENSIONS TO SIT ON BRICKS. VALVE BOX AND EXTENSIONS TO HAVE A MINIMUM 2" CLEARANCE TO THE TOP OF PVC PIPE.

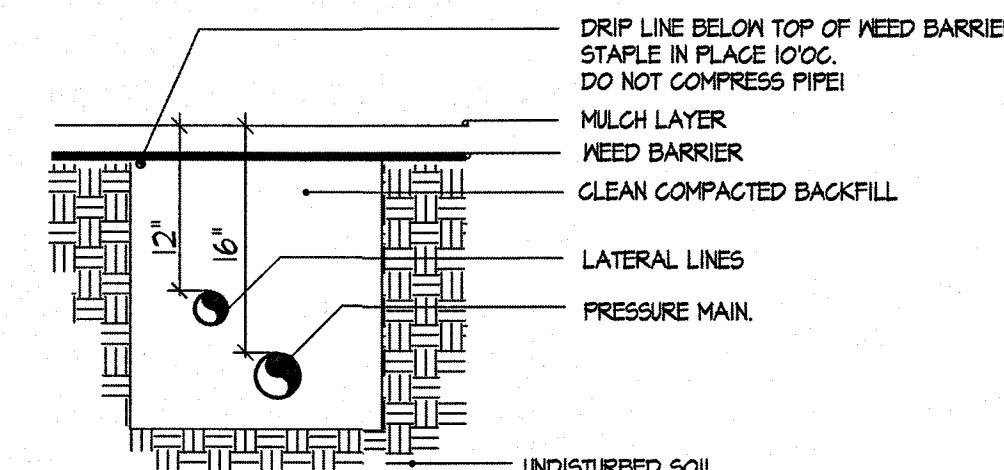
5 WIRE CONNECTORS  
NOT TO SCALE

6 PIPE PLACEMENT  
NOT TO SCALE



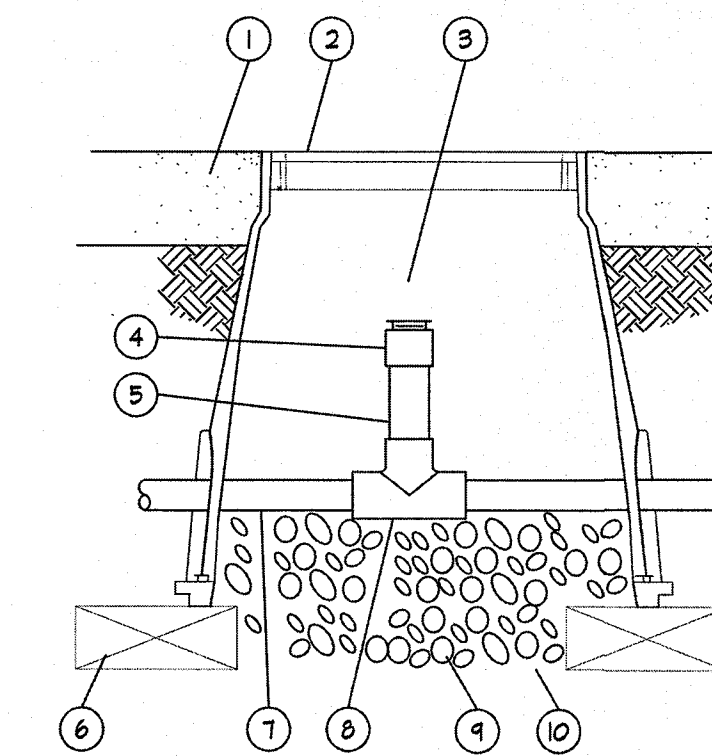
NOTE:  
1. COIL ADDITIONAL 9" OF TUBING IN EMITTER BOX TO FACILITATE MAINTENANCE.  
USE ONE DEVICE PER TREE - 8 26PH EMITTERS  
USE ONE 26PH EMITTER PER PLANT. DEVICE MUST BE WITHIN 20' OF PLANT.

8 DRIP EMITTER FOR TREES AND PLANTS RAIN BIRD XERI-BIRD 8 MULTI OUTLET EMISSION DEVICE  
NOT TO SCALE

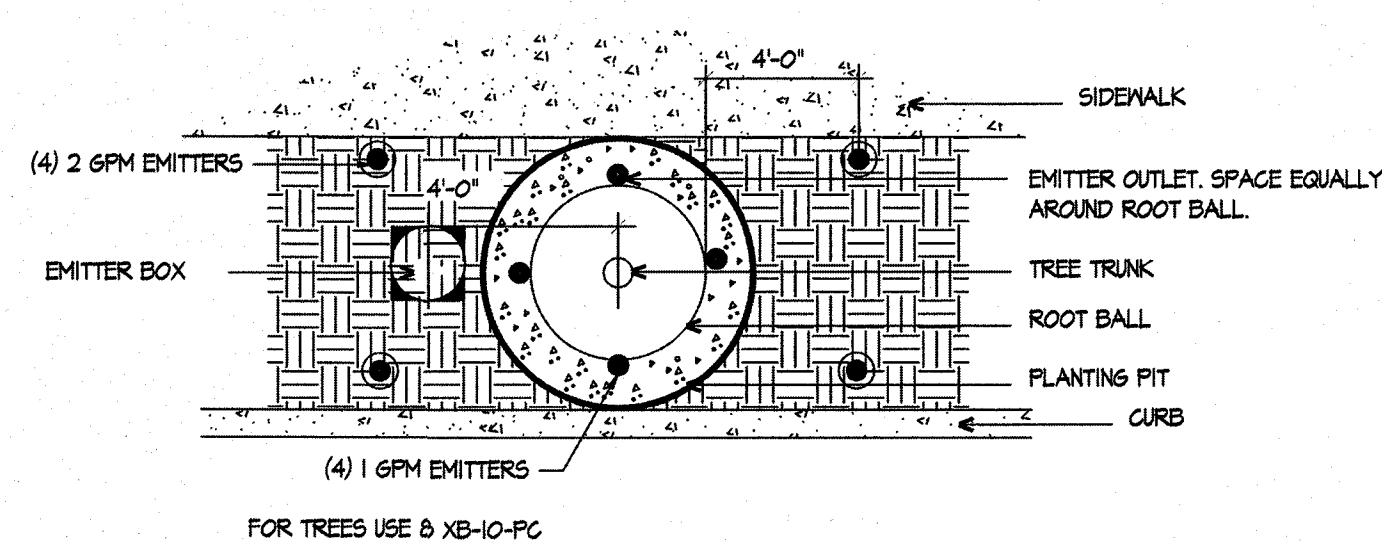


NOTE:  
ALL PLASTIC PIPING SHALL BE SNAKED WITHIN TRENCH.  
ALL MAINLINE PIPING TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTALLATION SPECIFICATIONS.

6 PIPE PLACEMENT  
NOT TO SCALE

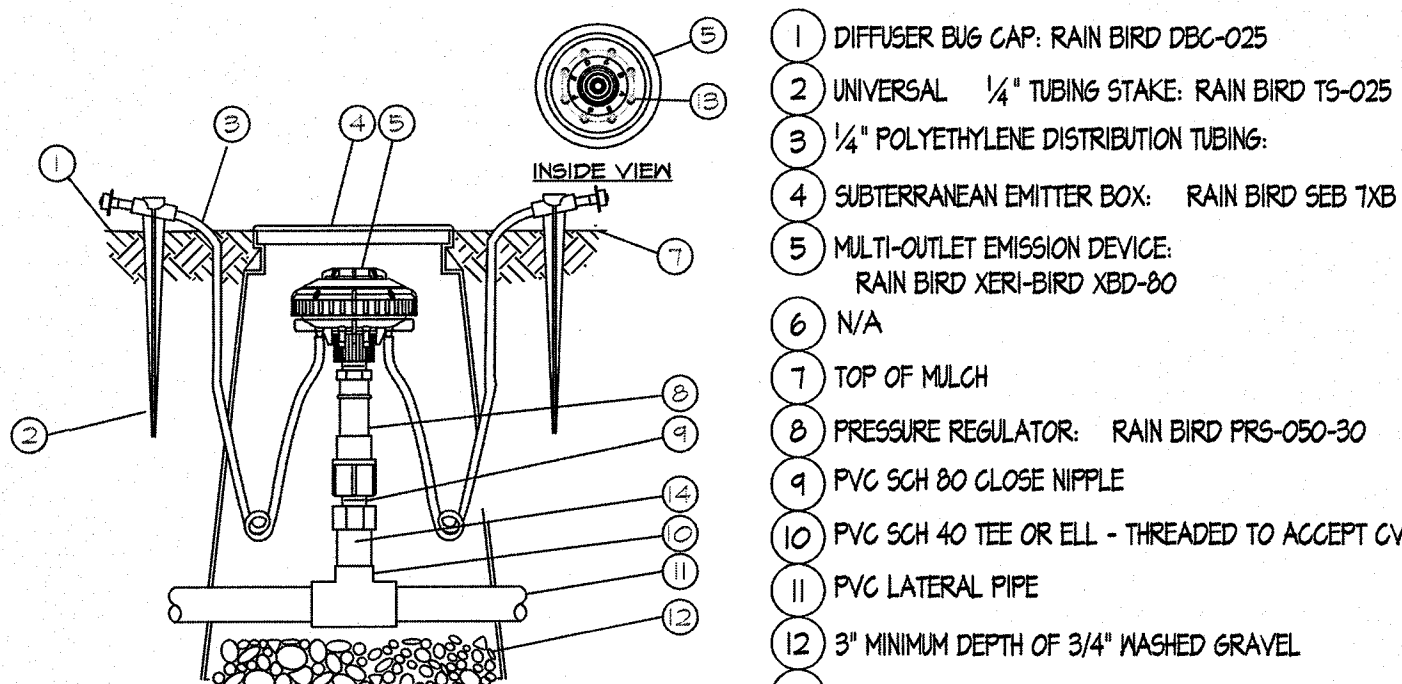


7 AIR VACUUM/RELEASE VALVE  
NOT TO SCALE



LOCATE INNER RING EMITTER OUTLETS WITHIN 4" OF ROOTBALL.  
LOCATE OUTER RING EMITTER OUTLETS 4" FROM ROOTBALL.  
DO NOT EXCEED 20' WITH MICROTUBING.

7 NEW TREE IN 4' TO 6' WIDE PARKWAY - EMITTER LAYOUT - PLAN VIEW  
NOT TO SCALE



INSTALL (8) EMITTERS PER TREE, SPACE EVENLY AROUND ROOTBALL, IN OFFSET TRIANGULAR PATTERN FOR TREES, SEE IRRIGATION LEGEND FOR OUTLET EMITTER SIZE.  
A. EMITTER TUBING.  
B. MULTI OUTLET EMITTER DEVICE, INSTALL 3' FROM TREE TRUNK ON WEST SIDE.  
C. TREE TRUNK.  
D. TREE ROOTBALL.

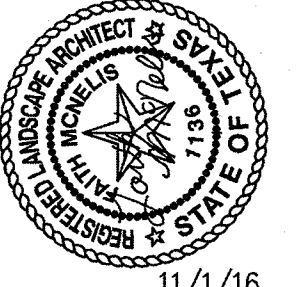
LOCATE INNER RING EMITTER OUTLETS WITHIN 3" OF TREE TRUNK.  
LOCATE OUTER RING EMITTER OUTLETS 3' FROM ROOTBALL.  
DO NOT EXCEED 20' OF MICROTUBING.  
FOR SHRUBS AND GRASS/COVER PLANTS PLACE EMITTER ON UPHILL SIDE OF PLANT 12" FROM STEM.

9 EMITTER PLACEMENT FOR TREES  
NOT TO SCALE



IRRIGATION IS REGULATED BY:  
PO BOX 13087  
AUSTIN, TEXAS 78711-3087  
TCEQ 512 239-6719  
CHAPTER 34, TEXAS WATER CODE  
IRRIGATOR'S LIC. #8947

A LANDSCAPE DESIGN FOR  
**MONTECILLO UNIT 5B**  
EL PASO, TEXAS



LISA MCNELIS  
LANDSCAPE ARCHITECT  
1900 FOXBORO COURT  
LAS CRUCES, NEW MEXICO 88007  
(515) 621-3032



















NORTH MESA STREET  
(LEAS STATE HWY. NO. 20)  
(R.O.W. WIDTH VARIES)

MONTECILLO BLVD.  
(R.O.W. WIDTH VARIES)

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
A (⊕)	LIGHT POLE MOUNTED FIXTURE WITH LIGHT DISTRIBUTION DESIGNATION
'X'X	FOOTCANDLE READING



**ENGINEERING-PLUS**  
130 Will Scarlett, El Paso, TX 79924 | TFR#: 11465  
Ph: 915-543-1642 | Fx: 915-757-6697

**ST-1**

SHT 44 OF 44

BENCHMARK	
DATE	BY

PROJECT NAME  
**MONTECILLO UNIT FIVE "B"**

S C A L E  
1" = 50'-0"

DATE: AUG. 2016  
DESIGN BY: STAFF  
INITIATED BY: STAFF  
CHECKED BY: STAFF  
JOB NO.: 118-35

**TERRA WEST, LLC**  
5571 MIDWAY PARK PLACE NE  
ALBUQUERQUE, NM 87109  
(505) 856-3100  
www.terrawestllc.com  
TEXAS BUSINESS NO.  
P-11773

SHEET TITLE  
ILLUMINATION STUDY

MONTECILLO UNIT FOUR A