



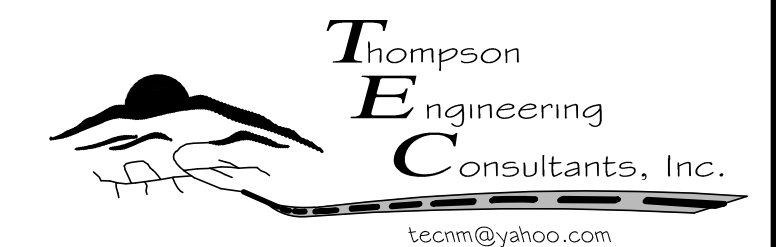
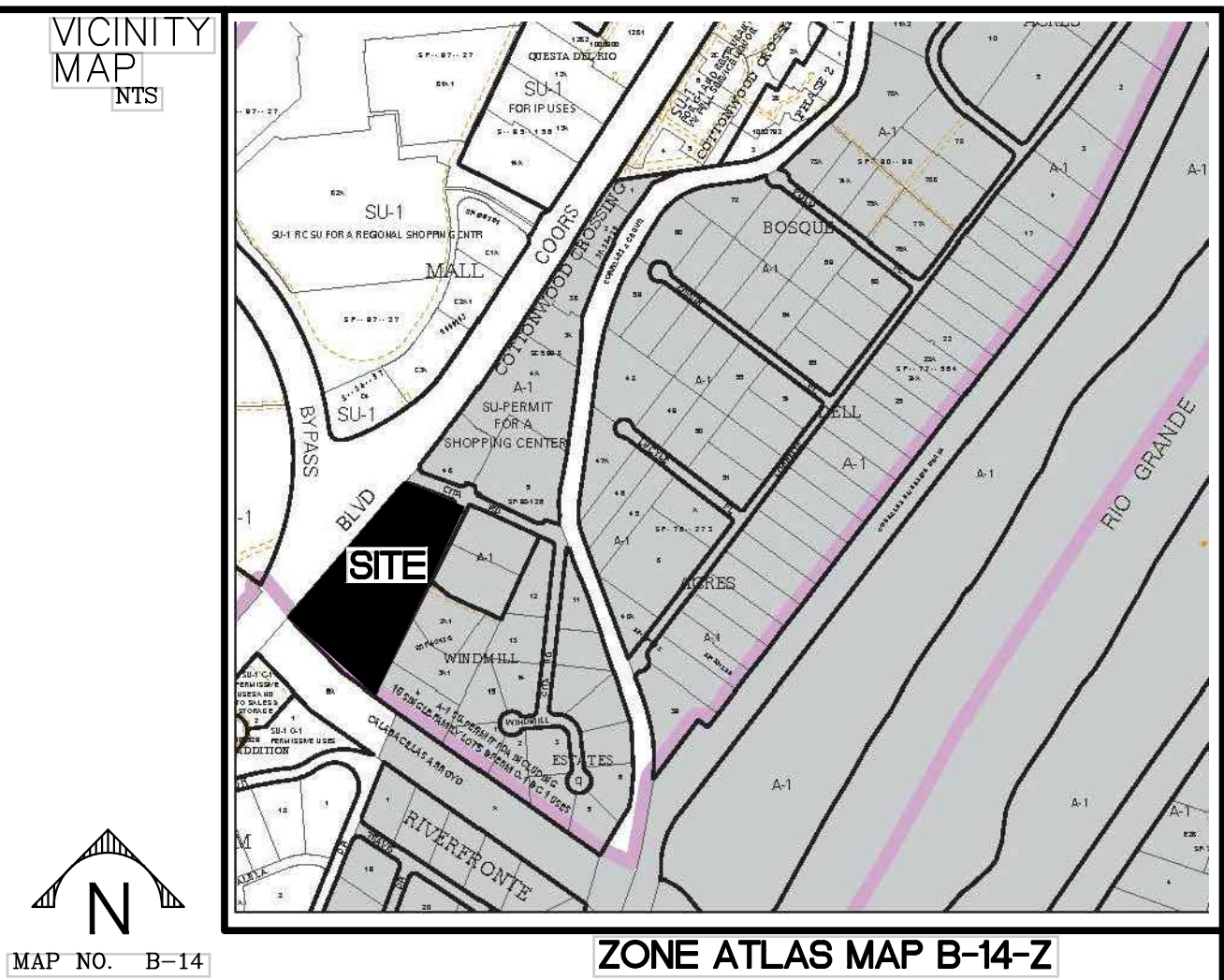
**CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
PLANS FOR CONSTRUCTION**

COORS-COORS BYPASS IMPROVEMENTS

PROJECT # 741571

INDEX OF SHEETS

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- 10 STORM DRAIN PLAN AND PROFILE
- 11 DETAILS



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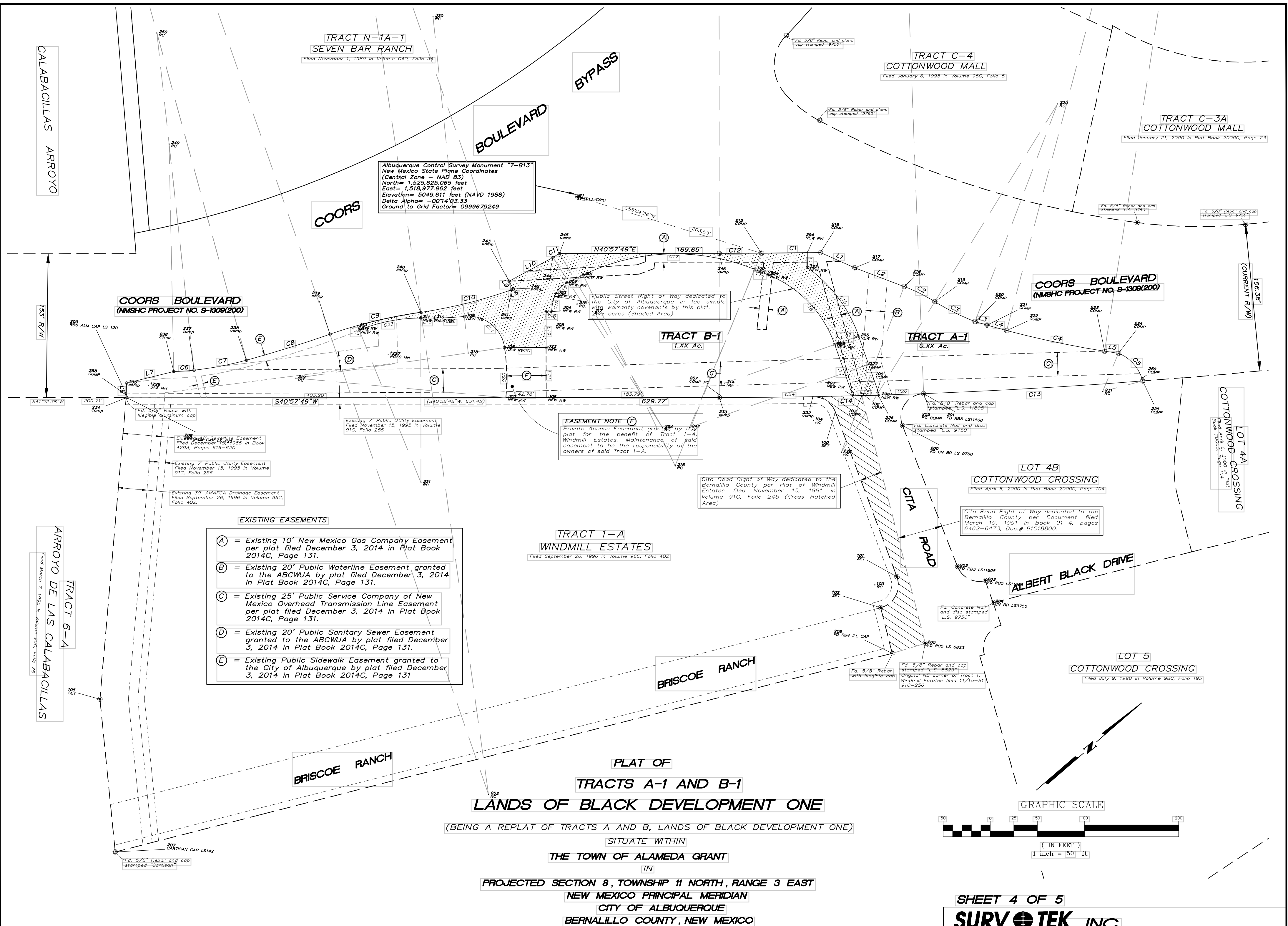


NOTES:

1. CONTRACTOR SHALL WORK CONTINUOUSLY, 24-HOURS PER DAY, ON ALL ARTERIAL ROADWAYS WHEN TRAFFIC LANES ARE CLOSED TO TRAFFIC UNLESS THE WORK VIOLATES THE CITY'S NOISE ORDINANCE.
2. IF THE CONTRACTOR IS NOT ALLOWED TO WORK AT NIGHT DUE TO NOISE ORDINANCE VIOLATIONS, THE CONTRACTOR SHALL OPEN ALL TRAFFIC LANES TO TRAFFIC WITH THE PROPER USE OF TRENCH PLATES DURING NON-WORKING HOURS, AND MUST WORK MINIMUM HOURS FROM 9:00 A.M. TO 3:00 P.M. MONDAY THROUGH SATURDAYS.
3. ARTERIAL STREETS ARE AS INDICATED IN THE "LONG RANGE ROADWAY SYSTEM" MAP PUBLISHED BY THE MID-REGION COUNCIL OF GOVERNMENTS (MRCOG).

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE
ENGINEERS STAMP & SIGNATURE		APPROVED	ENGINEER	DATE	APPROVED FOR CONSTRUCTION		
		DRC Chairman					
		Transportation					
		Water/Wastewater					
		Hydrology					
		C I P					
		AMAFCA					
		Constr. Coord.			CITY ENGINEER	DATE	
PROJECT NUMBER		ZONE ATLAS NO.		DRAWING NO. 1 OF 11			
741571		B-14-Z					

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TRACT N-1A-1
SEVEN BAR RANCH
Filed November 1, 1989 in Volume C40, Folio 34

TRACT C-4
COTTONWOOD MALL
Filed January 6, 1995 in Volume 95C, Folio 5

TRACT C-3A
COTTONWOOD MALL
Filed January 21, 2000 in Plat Book 2000C, Page 23

Albuquerque Control Survey Monument "7-B13"
New Mexico State Plane Coordinates
(Central Zone - NAD 83)
North= 1,525,625.065 feet
East= 1,518,977.962 feet
Elevation= 5049.611 feet (NAVD 1988)
Delta Alpha= -00'14"03.33
Ground to Grid Factor= 0999679249

Public Street Right of Way dedicated to the City of Albuquerque in fee simple with warranty covenants by this plat.
2.82 acres (Shaded Area)

EASEMENT NOTE (F)
Private Access Easement granted by this plat for the benefit of Tract 1-A, Windmill Estates. Maintenance of said easement to be the responsibility of the owners of said Tract 1-A.

Cite Road Right of Way dedicated to the Bernalillo County per Plat of Windmill Estates filed November 15, 1991 in Volume 91C, Folio 245 (Cross Hatched Area)

Cite Road Right of Way dedicated to the Bernalillo County per Document filed March 19, 1991 in Book 91-4, pages 6462-6473, Doc.# 91018800.

- EXISTING EASEMENTS**
- (A) = Existing 10' New Mexico Gas Company Easement per plat filed December 3, 2014 in Plat Book 2014C, Page 131.
 - (B) = Existing 20' Public Waterline Easement granted to the ABCWUA by plat filed December 3, 2014 in Plat Book 2014C, Page 131.
 - (C) = Existing 25' Public Service Company of New Mexico Overhead Transmission Line Easement per plat filed December 3, 2014 in Plat Book 2014C, Page 131.
 - (D) = Existing 20' Public Sanitary Sewer Easement granted to the ABCWUA by plat filed December 3, 2014 in Plat Book 2014C, Page 131.
 - (E) = Existing Public Sidewalk Easement granted to the City of Albuquerque by plat filed December 3, 2014 in Plat Book 2014C, Page 131

**PLAT OF
TRACTS A-1 AND B-1
LANDS OF BLACK DEVELOPMENT ONE**

(BEING A REPLAT OF TRACTS A AND B, LANDS OF BLACK DEVELOPMENT ONE)

SITUATE WITHIN

THE TOWN OF ALAMEDA GRANT

IN

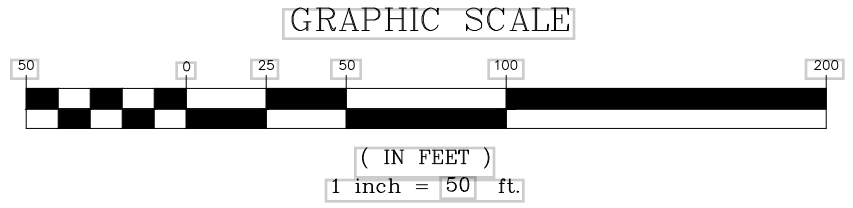
PROJECTED SECTION 8, TOWNSHIP 11 NORTH, RANGE 3 EAST

NEW MEXICO PRINCIPAL MERIDIAN

CITY OF ALBUQUERQUE

BERNALILLO COUNTY, NEW MEXICO

JANUARY 2016



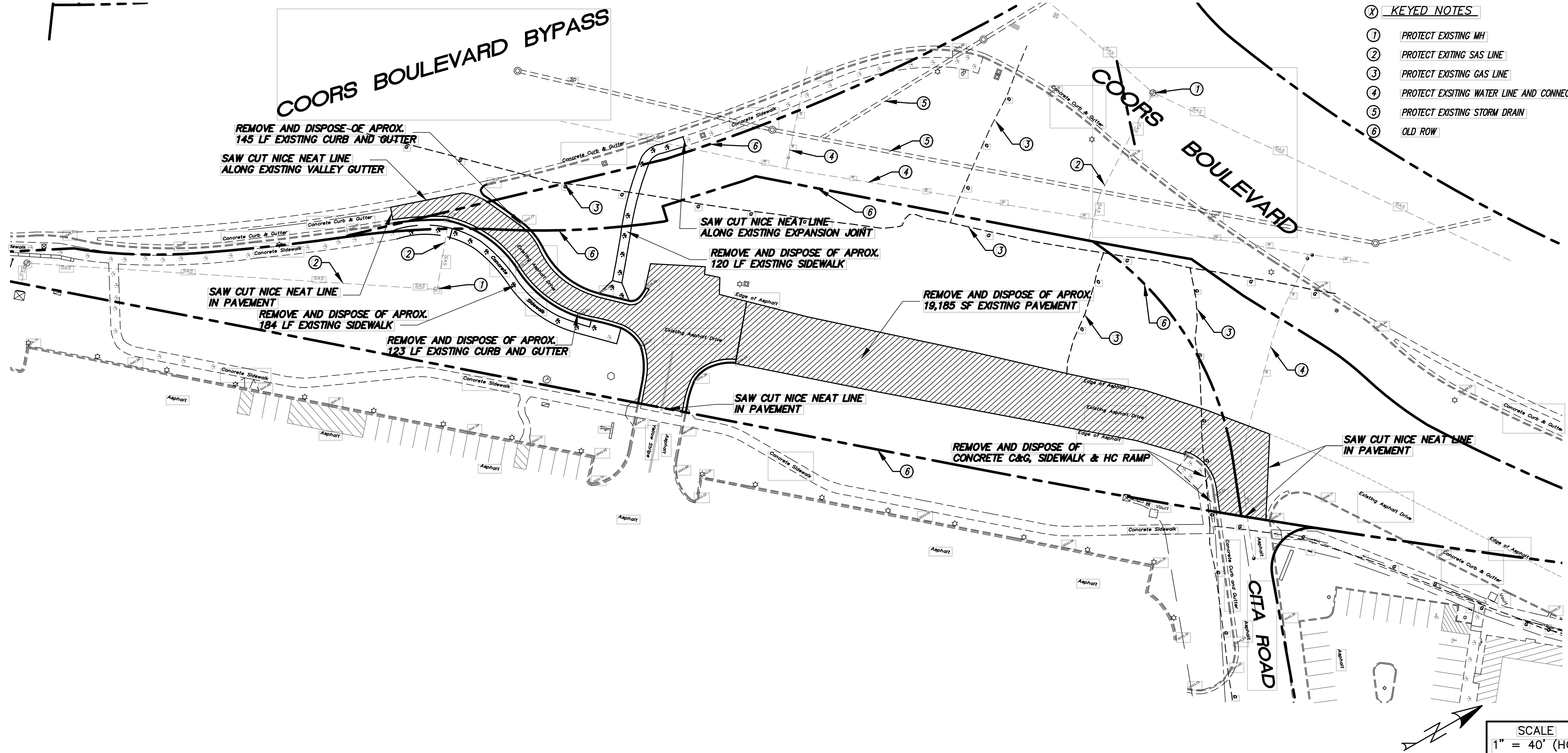
SHEET 4 OF 5

SURV+TEK, INC.

Consulting Surveyors
9384 Valley View Drive, N.W. Albuquerque, New Mexico 87114
Phone: 505-897-3366
Fax: 505-897-3377

CITY OF ALBUQUERQUE GENERAL NOTES

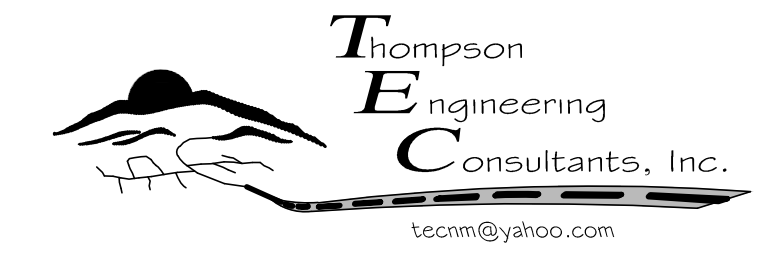
1. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS- PUBLIC WORKS CONSTRUCTION-1986-UPDATE NO. 9.
2. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, 260-1990, (ALBUQUERQUE AREA) 1-800-321-ALERT (2537) (STATEWIDE) FOR LOCATION OF EXISTING PUBLIC UTILITIES.
3. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
4. SHOULD A CONFLICT EXIST BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY FOR ALL PARTIES.
5. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ADJACENT PROPERTIES DURING CONSTRUCTION.
6. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING SAFETY AND HEALTH.
7. ALL UTILITIES AND UTILITY SERVICE LINES SHALL BE INSTALLED PRIOR TO PAVING.
8. BACKFILL COMPACTION SHALL BE ACCORDING TO SPECIFIED STREET USE OR PER COA STANDARD DRAWING 2465, WHICHEVER IS MORE STRINGENT.
9. TACK COAT REQUIREMENTS SHALL BE DETERMINED DURING CONSTRUCTION BY THE PROJECT ENGINEER.
10. SIDEWALKS AND WHEELCHAIR RAMPS WITHIN THE CURB RETURNS SHALL BE CONSTRUCTED WHEREVER A NEW CURB RETURN IS CONSTRUCTED. HOWEVER, NO SIDEWALKS ARE TO BE CONSTRUCTED BEHIND THE CUL-DE-SAC.
11. NOT USED.
12. ALL STORM DRAINAGE FACILITIES SHALL BE COMPLETED PRIOR TO FINAL ACCEPTANCE.
13. THE CONTRACTOR SHALL COORDINATE WITH THE WATER AUTHORITY SEVEN(7) DAYS IN ADVANCE OF PERFORMING WORK THAT WILL AFFECT THE PUBLIC WATER OR SANITARY SEWER WORK REQUIRING SHUTOFF OF FACILITIES DESIGNATED AS MASTER PLAN FACILITIES MUST BE COORDINATED WITH THE WATER AUTHORITY 14 DAYS IN ADVANCE OF PERFORMING SUCH WORK. ONLY WATER AUTHORITY CREWS ARE AUTHORIZED TO OPERATE PUBLIC VALVES. SHUT-OFF REQUESTS MUST BE MADE ONLINE AT http://www.abcwua.org/Water_Main_Shutoff.aspx
14. CONTRACTOR SHALL NOTIFY THE ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE CITY SURVEYOR MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE CITY SURVEYOR AND SHALL NOTIFY THE CITY SURVEYOR AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY THE CITY SURVEYOR. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATION OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO SECTION 4.4 OF THE SPECIFICATIONS.
15. SEVEN (7) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE CONSTRUCTION COORDINATION DIVISION A DETAILED CONSTRUCTION SCHEDULE. TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL OBTAIN A BARRICADING PERMIT FROM THE CONSTRUCTION COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. CONTRACTOR MUST REFER TO SECTION 19 OF THE STANDARD SPECIFICATION FOR TRAFFIC CONTROL.
16. ALL STREET STRIPING ALTERED OR DESTROYED SHALL BE REPLACED WITH PLASTIC REFLECTORIZED STRIPING BY CONTRACTOR TO EXISTING LOCATION OR AS INDICATED BY THIS PLAN SET. FINAL STRIPING TO BE COORDINATED WITH C.O.A. TRAFFIC OPERATIONS (505-857-8004).
17. CAUTION: THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926, SUBPART P-EXCAVATIONS.
18. ANY WORK OCCURRING WITHIN AN ARTERIAL ROADWAY REQUIRES TWENTY-FOUR HOUR CONSTRUCTION.
19. CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL GRAFFITI FROM EQUIPMENT, WHETHER PERMANENT OR TEMPORARY.
20. WHEN APPLICABLE, CONTRACTOR SHALL, ON BEHALF OF THE OWNER AND OPERATORS, SECURE "TOPSOIL DISTURBANCE PERMIT" FROM THE CITY AND/OR FILE A NOTICE OF INTENT (N.O.I.) WITH THE EPA PRIOR TO BEGINNING CONSTRUCTION.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL CONSTRUCTION SIGNING UNTIL THE PROJECT HAS BEEN ACCEPTED BY THE CITY OF ALBUQUERQUE.
22. ALL FILL SHALL BE CLEAN, FREE FROM VEGETATION, DEBRIS, AND OTHER DELETERIOUS MATERIALS, AND SHALL NOT BE CONTAMINATED WITH HYDROCARBONS OR OTHER CHEMICAL CONTAMINANTS.
23. IF CULTURAL RESOURCES, SUCH AS HISTORIC OR PREHISTORIC ARTIFACTS OR HUMAN REMAINS ARE DISCOVERED DURING EXCAVATION OR CONSTRUCTION, WORK SHALL CEASE AND THE ENGINEER SHALL NOTIFY LOCAL AUTHORITIES. IF HUMAN REMAINS ARE DETERMINED BY THE OFFICE OF THE MEDICAL EXAMINER NOT TO BE RECENT, THE ENGINEER SHALL NOTIFY THE STATE HISTORIC PRESERVATION OFFICER (SHPO) AT 827-6320.
24. TWO WEEKS PRIOR TO CONSTRUCTION, CONTRACTOR TO NOTIFY ABQRIDE TRANSIT DEPARTMENT TO DISCUSS THE IMPACT OF TRAFFIC CONTROL PLAN ON BUS ROUTE AND ANY OTHER TRANSIT INFRASTRUCTURE BEING IMPACTED. CONTACT PERSON FOR ABQRIDE: SHABIH RIZVI (505)724-3139 OR (505) 331-0253, EMAILS: svzvl@abq.gov



- KEYED NOTES**
1. PROTECT EXISTING MH
 2. PROTECT EXISTING SAS LINE
 3. PROTECT EXISTING GAS LINE
 4. PROTECT EXISTING WATER LINE AND CONNECTIONS
 5. PROTECT EXISTING STORM DRAIN
 6. OLD ROW

LEGEND

- ⊙ Storm Drain Manhole
- ⊙ Sanitary Sewer Manhole
- SAS Sanitary Sewer Line
- SD Storm Drain Line
- ⬡ High Voltage Tower
- OHE Overhead Wires
- UGE Underground Electric Line
- UG Gas Underground Gas Line
- FO Underground Fiber Optic Line
- W Underground Water Line
- Sanitary Sewer Clean-out
- ⊠ Water Meter
- Water Valve
- ⊠ Hydrant
- ⊠ Electric Transformer
- ⊠ Telephone Pedestal
- ⊠ Light Pole
- ⊠ Concrete Symbol
- ⊠ Cable Pedestal
- ⊠ Storm Drain Inlet



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 PHONE: (505) 271-2199 FAX: (505) 830-9426

**CITY OF ALBUQUERQUE
 PUBLIC WORKS DEPARTMENT
 TRANSPORTATION DEVELOPMENT**

**COORS-COORS BYPASS IMPROVEMENTS
 GENERAL NOTES AND DEMO PLAN**

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.
City Project No. 741571		Zone Map No. B-14-Z	Sheet 3 Of 11

AS BUILT INFORMATION	
CONTRACTOR	DATE
STARTED BY	DATE
ACCEPTED BY	DATE
FIELD DRAWN BY	DATE
REVISION BY	DATE
CHECKED BY	DATE
RECORDED BY	DATE
NO.	NO.

SURVEY INFORMATION	
Albuquerque Control Survey Monument "7-B13"	DATE
New Mexico State Plane Coordinates	BY
(Central Zone - MAD 83)	
North= 1,525,625.065 feet	
East= 1,518,977.962 feet	
Elevation= 5048.611 feet (NAD 1988)	
Delta Alpha= -001403.33	
Ground to Grid Factor= 0.999879249	

ENGINEER'S SEAL	
NO.	DATE
REMARKS	BY
DESIGN	DATE
DRAWN BY	DATE
CHECKED BY	DATE

INTRODUCTION

The purpose of this report is to provide a drainage plan for the proposed roadway through Tracts A and B of Lands of Black Development One and a conceptual drainage plan for the expansion of display parking for Larry H. Miller Hyundai car dealership. This plan is in accordance with the regulations set by the City of Albuquerque.

BACKGROUND AND EXISTING CONDITIONS

Tracts A and B are two small parcels of land about 1.795 acres and 0.557 acres respectively located just east of the Coors Boulevard and Coors Boulevard By-Pass. There is an existing access road, which runs through Tracts A and B, just west of the commercial buildings. The existing access road allows vehicles to exit Coors Boulevard By-Pass on the south end of Tract B and directs traffic north, through Tract B to connect with Cita Road, and eventually Coors Boulevard. Toward the south end of the existing access road there is a turn off into the car dealership. Ponding occurs on Tracts A and B, which prevents most flows from entering the commercial buildings downstream. The southern portion of Tract B does let some water flow onto the Hyundai car dealership site.

Currently there is a 24 inch diameter storm drain underneath Coors Boulevard Right of Way, which takes storm water south and connects to an 84 inch pipe near Coors Boulevard By Pass. According to sheets 54 and 62 of the SAD 223 Coors By Pass Improvements signed 5/8/1997, the 24 inch pipe carries 9.4 cfs and the 84 inch pipe carries 174.4 cfs during the 100 year storm event. The contents of this storm drain system flow into the Arroyo De Las Calabacillas.

METHODOLOGY

The developed runoff rate was found by using Table A-9 of the Albuquerque Development Process Manual (DPM) Section 22.3. The weighted runoff rate was calculated as 15% Treatment Type B and 85% Treatment Type D.

The downstream capacity was analyzed using Manning's equation and Bernoulli's equation based on the City of Albuquerque DPM Section 22.3. The Bernoulli equation was used to determine the amount of head needed to send the runoff from Tract A and northeast portion of Tract B through the 24 inch pipe. Once the runoff reaches the 84 inch pipe the Manning's equation was used to evaluate the effects from the additional flow.

PROPOSED CONDITIONS

A pre-design meeting was held with Curtis Cherne on 1/16/2015, where it was agreed that Tracts A and B would be allowed free discharge providing that the existing 24 inch diameter pipe has capacity for the site to drain into and that the water quality requirements are met.

It is proposed to relocate the existing access road so that it curves to the west of Tract B rather than through it. The proposed access road will have a Type C inlet that allows runoff to enter the existing 24 inch storm drain to the northwest through a proposed 18 inch Reinforced Concrete Pipe (RCP), 25 ft from the Type C inlet, along the proposed 18 inch RCP, a manhole will be constructed to allow runoff from Tract A to enter storm drain system.

It is also proposed to use Tract B for more display parking for the Hyundai car dealership. The north portion of Tract B will drain to a water quality pond that is located in the landscaping between the proposed access road and the display parking. This water quality pond will have a minimum volume of about 1147 cubic feet. An 18 inch plastic pipe will allow water to enter into the back of the Type C inlet in the proposed access road and from there enter the existing storm drain system.

The southern portion of Tract B will drain to the proposed water quality pond to the south end of the Hyundai car dealership. This water quality pond will have a minimum volume of 376 cubic feet. There are several inlets in the bridge that goes over the Arroyo De Las Calabacillas. These inlets are 24 inch in diameter and they allow runoff from the bridge to enter the Arroyo De Las Calabacillas. It is proposed to have a pipe connect the proposed southern water quality pond to the 24 inch inlet on the northeast corner of the bridge.

TABLE 1 - WATER QUALITY FIRST FLUSH VOLUMES

Location	Impervious Area (ft ²)	Runoff (in)	Volume (ft ³)
Tract B SW	13243	0.34	376
Tract B NE	40490	0.34	1147

TABLE 2 - AREAS AND FLOWRATES

Subbasin	Area (ft ²)	Area (Ac)	Flowrate (cfs)
Access Road	13243	0.3040	1.26
Tract B(NE)	40489	0.9295	3.74
Tract A	24267	0.5571	2.24

RUNOFF RATE FOR PROPOSED ACCESS ROAD

Peak discharge rate based on Table A-9 of the Albuquerque DPM.

$$\begin{aligned} \text{Area}_{\text{Road}} &:= 0.206531 \text{ Ac} \\ \text{Area}_{\text{Landscaping}} &:= 0.037039 \text{ Ac} \\ \text{Area}_{\text{Sidewalk}} &:= 0.060686 \text{ Ac} \\ \text{Area}_{\text{Total}} &:= \text{Area}_{\text{Road}} + \text{Area}_{\text{Landscaping}} + \text{Area}_{\text{Sidewalk}} = 0.304 \text{ Ac} \end{aligned}$$

Treatment Type Percentages/Areas

$$\begin{aligned} \text{Area}_{\text{TTA}} &:= 0 \\ \text{Area}_{\text{TTB}} &:= 0.5 \cdot \text{Area}_{\text{Landscaping}} = 0.019 \\ \text{Area}_{\text{TTT}} &:= 0.5 \cdot \text{Area}_{\text{Landscaping}} = 0.019 \\ \text{Area}_{\text{TTD}} &:= \text{Area}_{\text{Road}} + \text{Area}_{\text{Sidewalk}} = 0.267 \end{aligned}$$

Table A-9. Peak Discharge (cfs/Ac) for Zone 1.

100 YEAR PEAK DISCHARGE - LOOKUP TABLE				
ZONE	A	B	C	D
1	1.290	2.030	2.870	4.370
2	1.560	2.280	3.140	4.700
3	1.870	2.600	3.450	5.020
4	2.200	2.920	3.730	5.250

$$Q_w := 1.29 \cdot \text{Area}_{\text{TTA}} + 2.030 \cdot \text{Area}_{\text{TTB}} + 2.87 \cdot \text{Area}_{\text{TTT}} + 4.37 \cdot \text{Area}_{\text{TTD}} = 1.258 \text{ cfs}$$

RUNOFF RATE FOR TRACT A AND THE NORTHEAST PORTION OF TRACT B

Peak discharge rate based on Table A-9 of the Albuquerque DPM chapter 22.2.

$$\begin{aligned} \text{Area}_{\text{TractA}} &:= 0.5571 \text{ Ac} \\ \text{Area}_{\text{TractBNE}} &:= 0.9295 \text{ Ac} \\ \text{Area}_{\text{Total}} &:= \text{Area}_{\text{TractA}} + \text{Area}_{\text{TractBNE}} = 1.4866 \text{ Ac} \end{aligned}$$

Treatment Type Percentages/Areas
Since both Tract A and Tract B are assumed to have 15% Treatment Type B and 85% Treatment Type D, from here on the calculations will use the total area.

$$\text{TTA} := 0 \quad \text{TTB} := 0.15 \quad \text{TTC} := 0 \quad \text{TTD} := 0.85$$

$$\text{Area}_{\text{TTA}} := \text{Area}_{\text{Total}} \cdot \text{TTA} = 0$$

$$\text{Area}_{\text{TTB}} := \text{Area}_{\text{Total}} \cdot \text{TTB} = 0.223$$

$$\text{Area}_{\text{TTC}} := \text{Area}_{\text{Total}} \cdot \text{TTC} = 0$$

$$\text{Area}_{\text{TTD}} := \text{Area}_{\text{Total}} \cdot \text{TTD} = 1.264$$

Table A-9 Peak Discharge (cfs/acre)

100 YEAR PEAK DISCHARGE - LOOKUP TABLE				
ZONE	A	B	C	D
1	1.290	2.030	2.870	4.370
2	1.560	2.280	3.140	4.700
3	1.870	2.600	3.450	5.020
4	2.200	2.920	3.730	5.250

$$Q_w := 1.29 \cdot \text{Area}_{\text{TTA}} + 2.030 \cdot \text{Area}_{\text{TTB}} + 2.87 \cdot \text{Area}_{\text{TTC}} + 4.37 \cdot \text{Area}_{\text{TTD}} = 5.975 \text{ cfs}$$

EXISTING 24 INCH PIPE ANALYSIS

Elevations and lengths, per Sheets 54 and 62 of the SAD 223 Coors By Pass Improvements.

The following MathCAD sheets are used to determine the downstream capacity by evaluating the hydraulic gradeline for a given flowrate.

Point 1 is located where the Tract B pond connects to the 24 inch diameter pipe. Point 2 is located where the 24 inch pipe meets the 84 inch pipe.

24" diameter pipe leading from water quality pond to the 84 inch diameter pipe.

$$\begin{aligned} D_{24} &:= 218.5 \\ Z_1 &:= 5031.01 \\ Z_2 &:= 5030.2 \end{aligned}$$

$$\begin{aligned} \text{Slope of 24 inch pipe} &:= \frac{Z_1 - Z_2}{L} = 0.0037 \\ Q &:= 15.4 \text{ cfs} \\ n &:= 0.013 \end{aligned}$$

D2 represents the distance from the invert to the hydraulic gradeline at point 2. During the 100 year storm event the 84 inch pipe will have a depth of 5.2 ft, which means that the top of water is 2.7 ft. above the invert of the 24 inch pipe.

$$\begin{aligned} P_w &:= \pi \left(\frac{D_{24}}{2} \right)^2 = 6.283 \text{ ft} \\ R_h &:= \frac{A}{P_w} = 0.5 \text{ ft} \end{aligned}$$

$$S_f := \left[\frac{Q \cdot n}{1.486 A \cdot R_h} \right]^2 = 0.00463$$

D1 represents the calculated difference between top of water elevation and pipe invert.

$$D_1 := D_2 - S_0 \cdot L + S_f \cdot L = 2.903$$

Actual difference between top of proposed pond and invert at point 1 = 8.95 ft

12 INCH PIPE CAPACITY

Manning Formula:

Circular Channel Input	
Flow	3.74 cfs
Slope	0.02 ft/ft
Manning's n	0.011
Diameter	12 in

Output	
Depth	0.575 ft
Flow Area	0.467 sf
Velocity	8.01 fps
Velocity Head	0.997 ft
Top Width	0.989 ft
Froude Number	2.05
Critical Depth	0.824 ft
Critical Slope	0.00782 ft/ft

18 IN. PIPE CAPACITY CALCS

Manning Formula:

Circular Channel Input	
Flow	7.3 cfs
Slope	0.02 ft/ft
Manning's n	0.013
Diameter	18 in

Output	
Depth	0.742 ft
Flow Area	0.872 sf
Velocity	8.37 fps
Velocity Head	1.09 ft
Top Width	1.50 ft
Froude Number	1.93
Critical Depth	1.047 ft
Critical Slope	0.00695 ft/ft

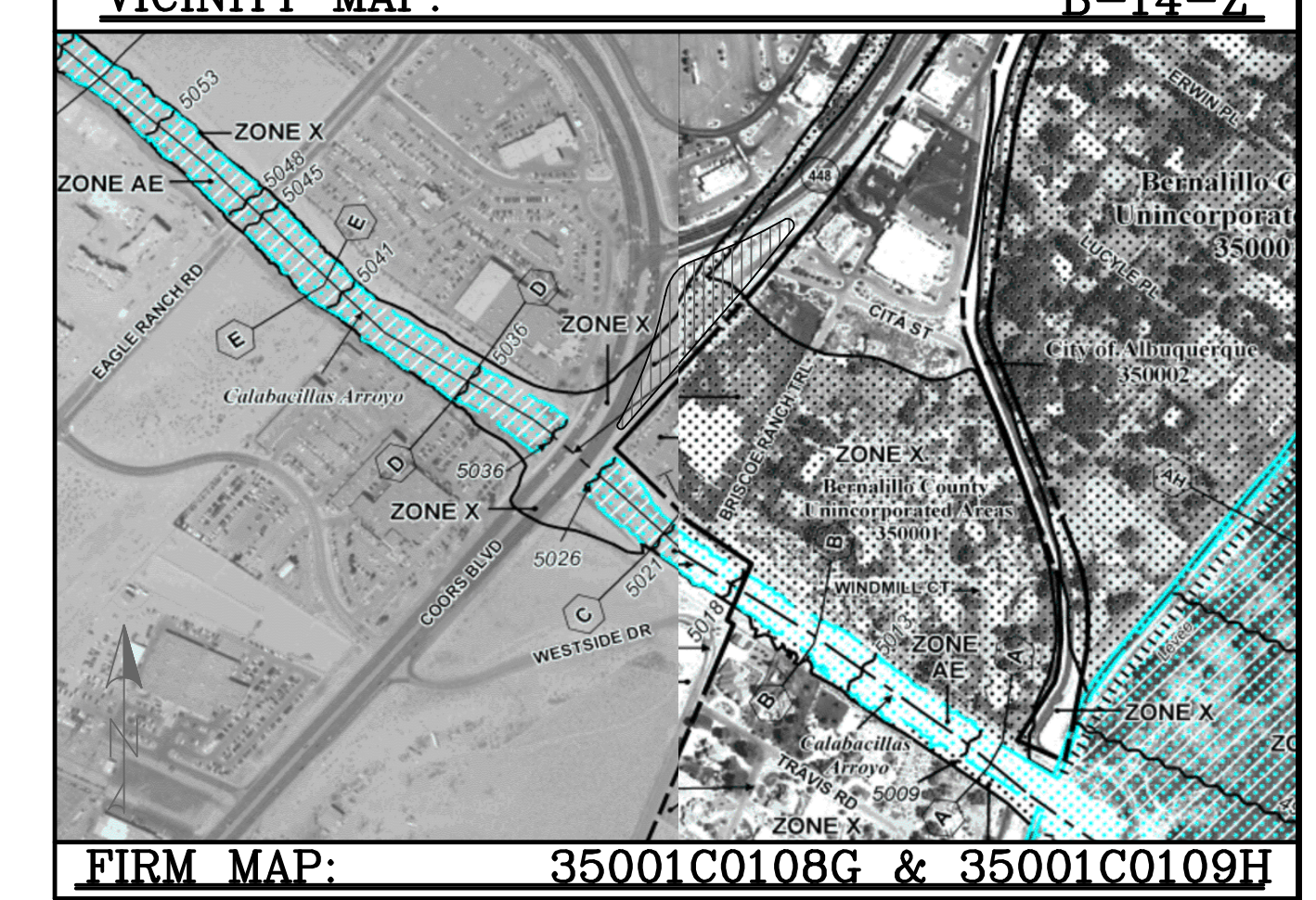
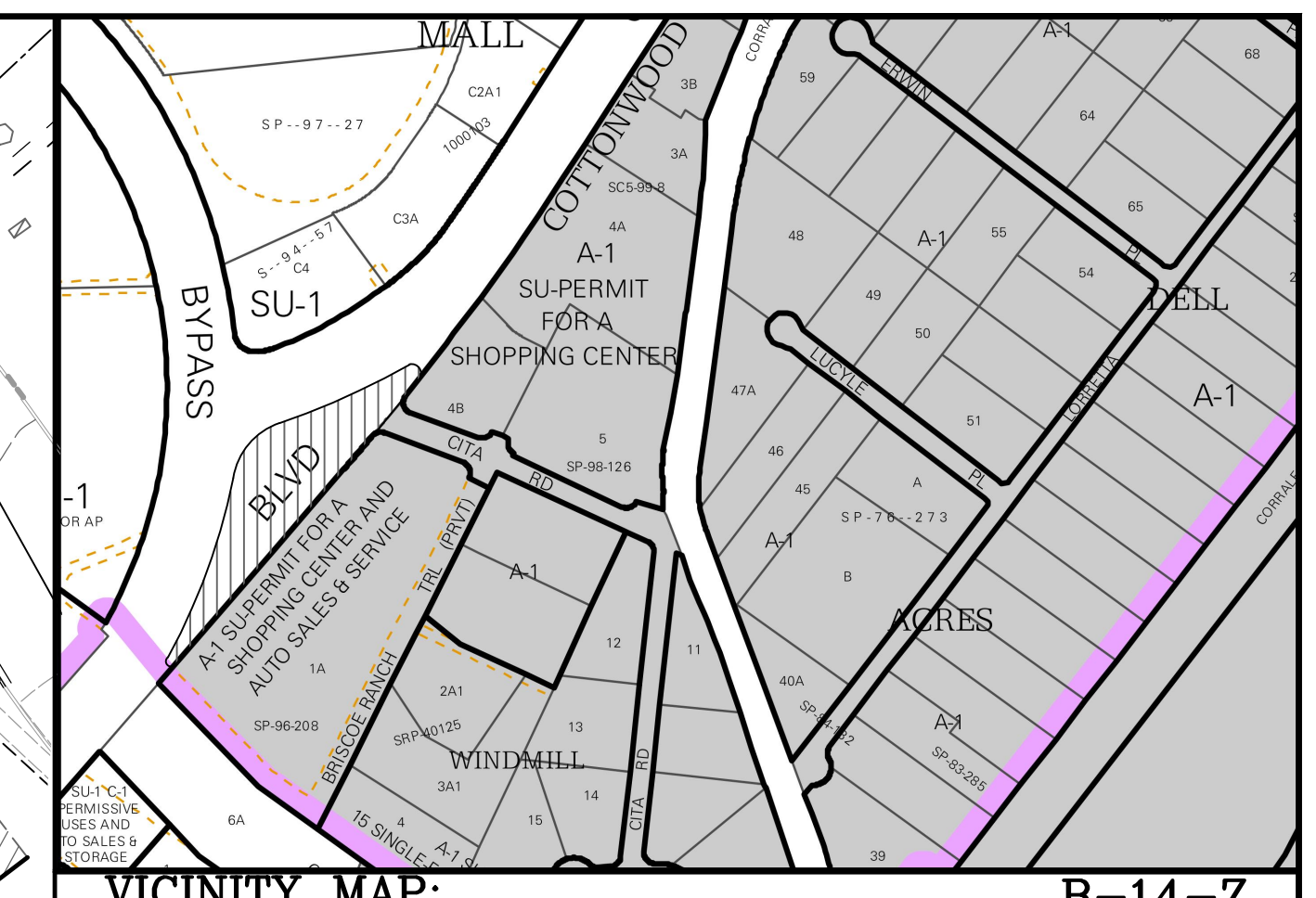
84 IN. PIPE USAGE EVALUATION

Manning Formula:

Circular Channel Input	
Flow	181.7 cfs
Slope	0.001 ft/ft
Manning's n	0.013
Diameter	84 in

Output	
Depth	5.189 ft
Flow Area	30.6 sf
Velocity	5.94 fps
Velocity Head	0.548 ft
Top Width	6.13 ft
Froude Number	0.469
Critical Depth	3.507 ft
Critical Slope	0.00321 ft/ft

Sheet 54 of the SAD 223 document indicates that 174.4 cfs flows through the 84 inch diameter pipe during a 100 year storm. In addition to the 174.4 cfs already in the pipe, 6 cfs will come from Tract A and the northwest portion of Tract B, and 1.3 cfs will come from the proposed access road. The proposed total flow in the 84 inch pipe is equal to 181.7 cfs.



GRATE CAPACITY FOR PROPOSED ROADWAY CALCULATIONS

The plan is to build a road near the Coors and Coors By Pass intersection. This road will have Type C inlet in sump conditions. This sheet is used to determine if a Double C is required.

The grate has four sides. Two sides are 25' long with 13 bearing bars (0.5" x 3.5" x 39"). The other two sides are 40' long with 2 end bars (0.5" x 3" x 25") and seven cross bars (0.5" dia. x 24")

$$L_{\text{inches}} := 2 \cdot (25 - 13 \cdot 0.5) + 1 \cdot (40 - 2 \cdot 0.5 - 7 \cdot 0.5) = 72.5 \text{ in}$$

$$L_{\text{ft}} := \frac{L_{\text{inches}}}{12} = 6.042 \text{ ft}$$

$$\text{Area}_{\text{inches}} := (25 - 13 \cdot 0.5)(40 - 2 \cdot 0.5 - 7 \cdot 0.5) = 656.75 \text{ in}^2$$

$$\text{Area}_{\text{ft}} := \text{Area}_{\text{inches}} \cdot \left(\frac{1}{12} \right)^2 = 4.561 \text{ ft}^2$$

- 1) Top of Curb = h1
- 2) Top of RoW = h2

$$\begin{aligned} h_1 &:= 0.5 \text{ ft} \\ h_2 &:= 0.87 \text{ ft} \end{aligned}$$

Grate Calculations

$$\begin{aligned} \text{Weir Grate Opening, } Q &:= C_w \cdot L \cdot h^{1.5} \\ C_w &:= 3 \\ L &:= 6.042 \end{aligned}$$

$$\begin{aligned} \text{Orifice Grate Opening, } Q_{\text{orif}} &:= C_A \cdot (2 \cdot G \cdot h)^{0.5} \\ C_A &:= 0.6 \\ G &:= 5.56 \end{aligned}$$

$$\begin{aligned} Q_1 &:= C_w \cdot L \cdot (h_1)^{1.5} = 6.409 \text{ cfs} & Q_{\text{orif}1} &:= C_A \cdot (2 \cdot 32 \cdot 2 \cdot h_1)^{0.5} = 18.93 \text{ cfs} \\ Q_2 &:= C_w \cdot L \cdot (h_2)^{1.5} = 14.709 \text{ cfs} & Q_{\text{orif}2} &:= C_A \cdot (2 \cdot 32 \cdot 2 \cdot h_2)^{0.5} = 24.971 \text{ cfs} \end{aligned}$$

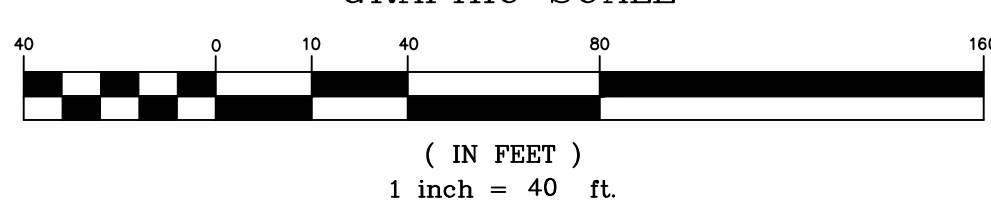
Since the weir equation produced the smallest results it is the governing equation. The flowrate coming to the inlet is 1.258 cfs, which is less than 6.409 cfs. Therefore only a Single Type C inlet is required.

This inlet can handle more than what is seen on this sheet because the throat and one side of the grate is ignored.

LEGEND

- PROPERTY BOUNDARY
- SUBBASIN BOUNDARY
- MAJOR CONTOURS PER SURV-TEK SURVEY 2015
- MINOR CONTOURS PER SURV-TEK SURVEY 2015
- PROPOSED POND CONTOURS
- HIGH PRESSURE GAS LINE

GRAPHIC SCALE



ENGINEER'S SEAL
 TRACTS A AND B, LANDS OF BLACK DEVELOPMENT ONE
 EXHIBIT 1 DRAINAGE PLAN
 FLOYD DEVELOPMENT SERVICES, LLC
 DEVELOPMENT, ENGINEERING, & WATERSHED CONSULTING
 918 PINEHURST RD SE, SUITE 102
 RIO RANCHO, NM 87124
 HUGH@DEVELOPNM.COM
 505-366-4187
 DRAWN BY SMT
 DATE 12-07-15
 Coors-CoorsByPass.dwg
 SHEET # 1 of 1
 JOB # 001-14-100

PNT#	Northing	Easting	Pnt. Elevation	Discription	PC & PT Stationing
1	1525357.7777	1518921.4423	5046.080	STANDARD C & G	STA. 10+00.00, 8.00' RT.
2	1525358.8470	1518926.6280	xxxxxx	SIDEWALK	
3	1525356.8960	1518932.3019	xxxxxx	SIDEWALK	
4	1525427.6944	1518932.1363	5047.000	STANDARD C & G	STA. 10+65.85, 15.79' LT.
5	1525424.1596	1518939.1918	5046.930	STANDARD C & G	STA. 10+67.06, 8.00' LT.
6	1525444.0553	1518955.2567	5047.020	STANDARD C & G	STA. 10+91.85, 8.00' LT.
7	1525432.9261	1518966.7703	5046.700	STANDARD C & G	STA. 10+91.20, 8.00' RT.
8	1525429.4926	1518970.5304		SIDEWALK	
9	1525425.5606	1518975.0625		SIDEWALK	
10	1525458.3568	1518986.6707	5046.860	STANDARD C & G	STA. 11+92.59, 7.78' LT.
11	1525454.1207	1518989.6713		SIDEWALK	
12	1525450.6787	1518994.5858		SIDEWALK	
13	1525465.6465	1519015.2639		RAMP	
14	1525471.8028	1519014.9831		RAMP	
15	1525472.7050	1519023.4508		RAMP	
16	1525479.7891	1519022.6271	5047.360	RAMP	
17	1525480.0625	1519028.6209	5047.360	RAMP	
18	1525467.7086	1519023.6787		RAMP	
19	1525467.2216	1519029.2066		RAMP	
20	1525467.8452	1519060.6531	5047.630	STANDARD C & G	STA. 30+56.53, 15.00' LT.
21	1525436.6767	1519096.6011	5044.000	STANDARD C & G	STA. 30+08.95, 15.00' LT.
22	1525462.1102	1519122.7301		STANDARD C & G	STA. 30+05.87, 21.34' RT.
23	1525459.3252	1519122.9562		STANDARD C & G	STA. 30+03.88, 19.38' RT.
24	1525459.1026	1519122.7716		STANDARD C & G	STA. 30+03.87, 19.09' RT.
25	1525458.6337	1519117.0721	5044.000	STANDARD C & G	STA. 30+07.87, 15.00' RT.
26	1525504.3035	1519027.9150		HEADER CURB	
27	1525503.5383	1519021.5437		HEADER CURB	
28	1525509.0795	1519023.8450		HEADER CURB	
29	1525496.7186	1519048.7231	5047.600	MEDIAN C&G	STA. 30+84.46, 1.00' RT.
30	1525493.2916	1519046.8389	5047.600	MEDIAN C&G	STA. 30+83.64, 4.82' LT.
31	1525496.0677	1519027.8907	5047.160	MEDIAN C&G	STA. 30+99.77, 15.14' LT.
32	1525495.7943	1519021.8969	5047.160	MEDIAN C&G	STA. 31+04.12, 19.27' LT.
33	1525494.0122	1519011.5550	5047.060	MEDIAN C&G	STA. 11+64.43, 11.28' RT.
34	1525496.8057	1519009.2521	5047.060	MEDIAN C&G	STA. 11+65.91, 8.00' RT.
35	1525506.8316	1519013.7477	5047.160	MEDIAN C&G	STA. 11+76.57, 8.00' RT.
36	1525512.3822	1519016.0267	5047.160	MEDIAN C&G	STA. 11+82.39, 8.00' RT.
37	1525522.6742	1519019.8732	5047.230	MEDIAN C&G	STA. 11+93.04, 8.00' RT.
38	1525523.0355	1519023.4795	5047.230	MEDIAN C&G	STA. 11+94.51, 11.28' RT.
39	1525514.3837	1519029.6186	5047.260	MEDIAN C&G	STA. 31+10.47, 0.17' LT.
40	1525509.9652	1519033.6778	5047.260	MEDIAN C&G	STA. 31+04.51, 0.85' LT.
41	1525520.8046	1519045.4765	5047.260	RAMP	
42	1525525.2230	1519041.4173	5047.260	RAMP	
43	1525530.2878	1519038.3868		RAMP	
44	1525534.0183	1519043.1312		RAMP	
45	1525513.0577	1518999.0088	5047.460	RAMP	
46	1525518.6099	1519001.2843	5047.460	RAMP	
47	1525516.7582	1518990.2490		RAMP	
48	1525522.3042	1518992.5389		RAMP	
49	1525523.1322	1518978.1602		SIDEWALK	
50	1525528.6593	1518977.4950		SIDEWALK	
51	1525540.1093	1518971.6401		SIDEWALK	
52	1525541.4523	1518965.7923		SIDEWALK	
53	1525563.3173	1519014.3180	5047.470	STANDARD C & G	STA. 12+30.87, 8.00' LT.
54	1525569.9146	1519031.9572	5047.100	STANDARD C & G	STA. 12+41.01, 8.00' RT.
55	1525557.8007	1519033.2250		SIDEWALK	
56	1525556.2220	1519039.0135		SIDEWALK	
57	1525666.7725	1519060.2507	5046.350	STANDARD C & G	STA. 13+41.40, 8.00' LT.
58	1525664.1273	1519078.4954	5046.060	STANDARD C & G	STA. 13+50.57, 8.00' RT.
59	1525661.2956	1519081.9144		SIDEWALK	
60	1525657.5100	1519086.5695		SIDEWALK	
61	1525739.5267	1519146.9663		STANDARD C & G	STA. 14+51.94, 8.00' LT.
62	1525725.2662	1519154.2215		STANDARD C & G	STA. 14+51.94, 8.00' RT.
63	1525721.3257	1519156.1773		SIDEWALK	
64	1525715.9806	1519158.9030		SIDEWALK	
65	1525723.1154	1519172.8417		SIDEWALK	
66	1525728.4564	1519170.1078		SIDEWALK	
67	1525732.3656	1519168.1757		STANDARD C & G	STA. 14+67.60, 8.00' RT.
68	1525746.6261	1519160.9205		STANDARD C & G	STA. 14+67.60, 8.00' LT.
69	1525774.7421	1519145.2714	5049.020	SD MANHOLE	
70	1525763.6127	1519179.5899	5046.360	SD MANHOLE	
71	1525743.0428	1519196.7735	5044.530	SD INLET	STA. 15+00.00, 8.00' RT.
72	1525726.3090	1519201.2565	5042.500	SD INVERT FROM POND	
73	1525737.6449	1519278.8793	5045.130	STANDARD C & G	STA. 15+88.57, 8.00' RT.
74	1525752.5311	1519284.7445	5045.440	STANDARD C & G	STA. 15+88.57, 8.00' LT.
75	1525742.9838	1519308.9759	5045.560	STANDARD C & G	STA. 16+14.61, 8.00' LT.
76	1525745.9455	1519311.3788	5045.600	STANDARD C & G	STA. 16+15.76, 11.64' LT.
77	1525772.6026	1519315.6204	5045.300	STANDARD C & G	STA. 16+09.94, 37.99' LT.
78	1525722.8079	1519316.5360	5045.620	STANDARD C & G	STA. 16+29.04, 8.00' RT.
79	1525718.5375	1519313.7801		RAMP	
80	1525713.8887	1519311.9393		RAMP	
81	1525714.0523	1519325.1070	5046.200	RAMP	
82	1525708.3101	1519326.0275	5046.200	RAMP	
83	1525699.2773	1519322.5838	5046.250	STANDARD C & G	STA. 16+43.29, 27.68' RT.
84	1525714.5891	1519337.8792	5046.100	VALLEY CUTTER	
85	1525706.8753	1519356.1654	5046.000	VALLEY CUTTER	
86	1525684.5958	1519340.2885	5046.100	STANDARD C & G	STA. 16+65.15, 34.85' RT.
87	1525699.4055	1519375.2814	5045.980	STANDARD C & G	STA. 16+92.28, 8.24' RT.

AS BUILT INFORMATION			
CONTRACTOR	DATE	DATE	DATE
WORK	DATE	DATE	DATE
STARTED BY	DATE	DATE	DATE
ACCEPTED BY	DATE	DATE	DATE
FIELD CHECKED BY	DATE	DATE	DATE
REVISION BY	DATE	DATE	DATE
CORRECTED BY	DATE	DATE	DATE
MICRO-FILM INFORMATION			
RECORDED BY	DATE	DATE	DATE
NO.	DATE	DATE	DATE

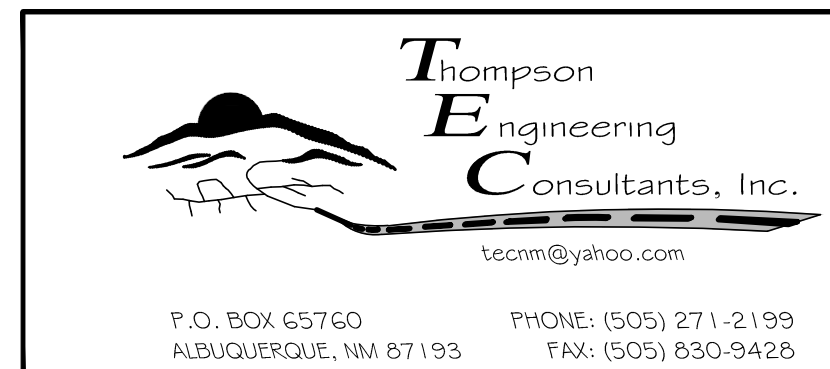
BENCH MARK	
Albuquerque Control Survey Monument "7-B13"	
New Mexico State Plane Coordinates	
(Central Zone - NAD 83)	
North= 1,525,625.065 feet	
East= 1,518,977.962 feet	
Elevation= 5048.611 feet (NAD 1988)	
Delta Alpha= -001403.33	
Ground to Grid Factor= 0.999879249	

SURVEY INFORMATION	
FIELD NOTES	DATE
NO.	DATE
BY	DATE

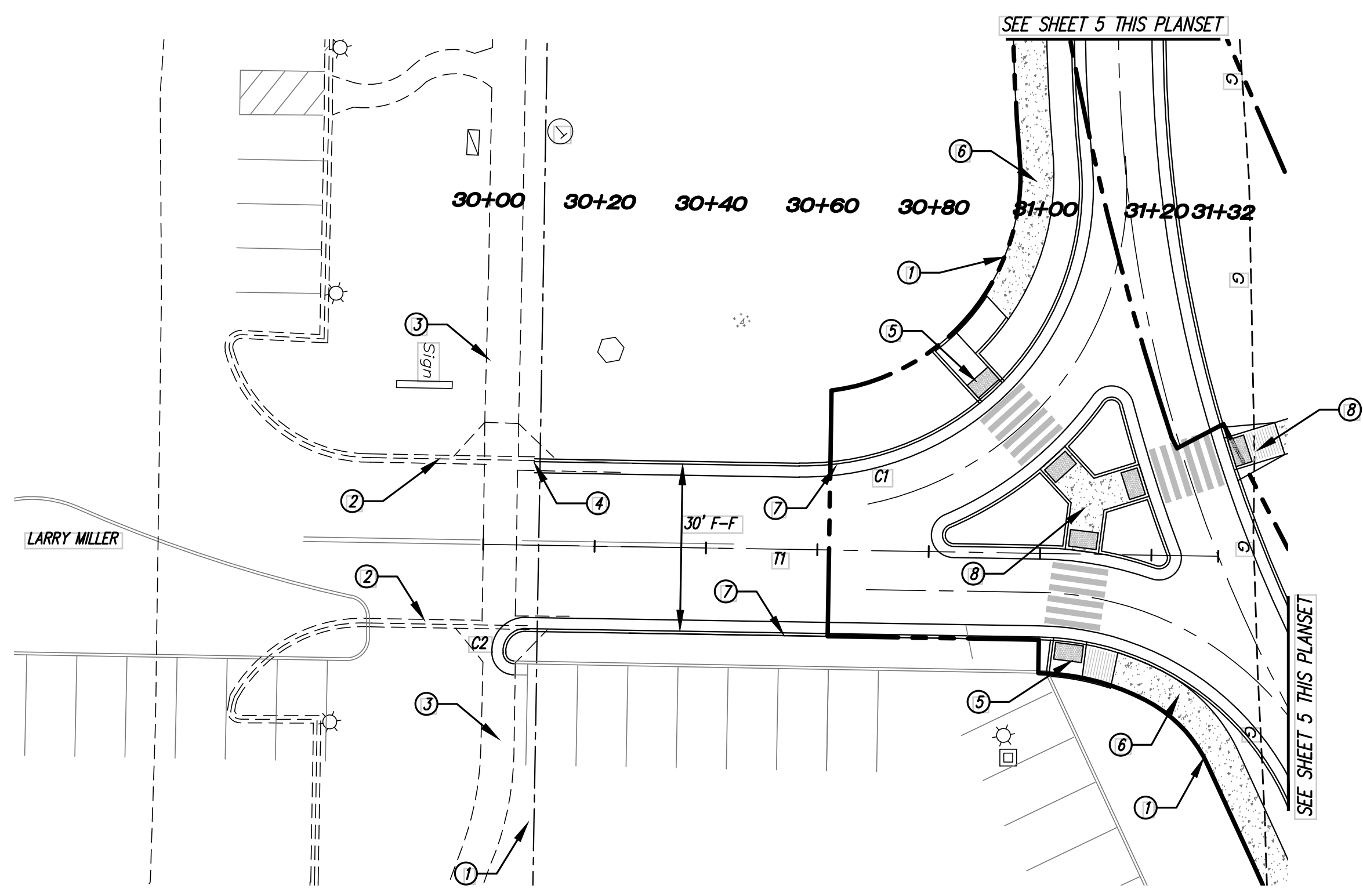
ENGINEER'S SEAL	
NO.	DATE
BY	DATE

REMARKS	
NO.	DATE
BY	DATE

DESIGN	
DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE

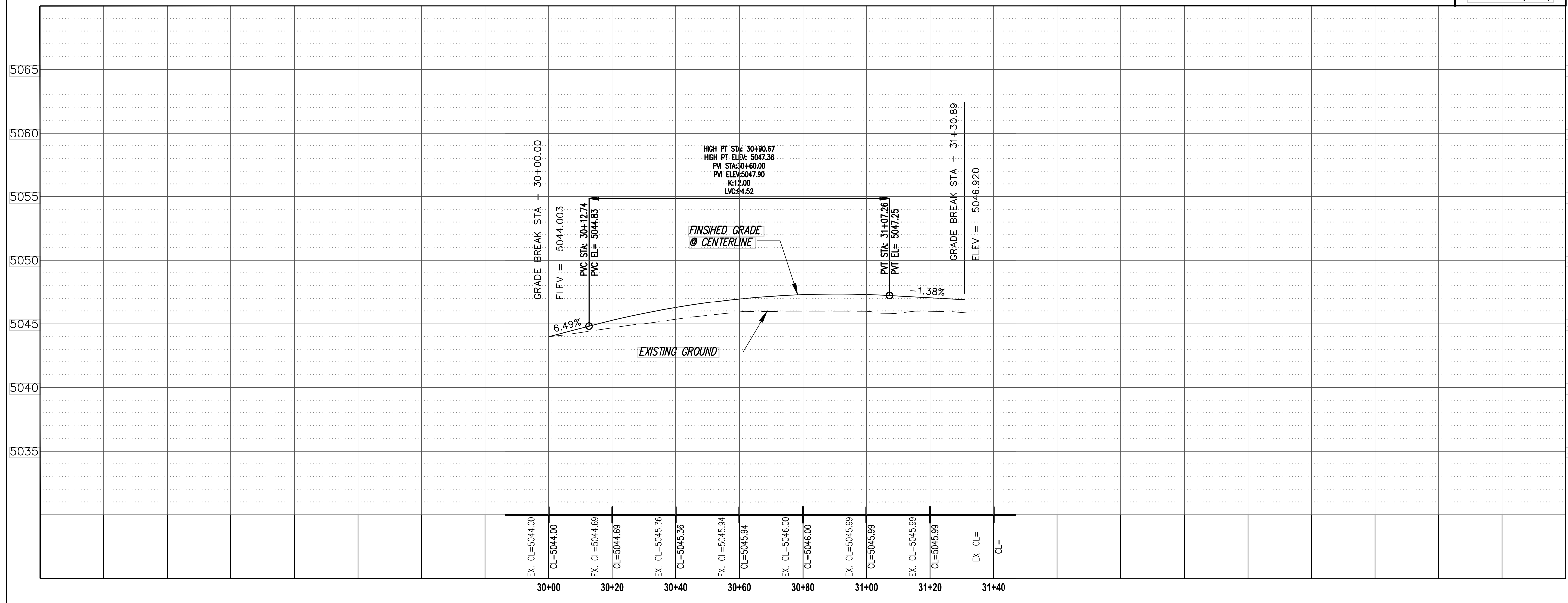


CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT TRANSPORTATION DEVELOPMENT			
COORS-COORS BYPASS IMPROVEMENTS			
POINT TABLE			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.
City Project No. 741571		Zone Map No. B-14-Z	Sheet 6 Of 11



MILLER ENTRANCE

SCALE
 1" = 20' (HOR)
 1" = 5' (VER)



GENERAL NOTE:
 1. ALL EXISTING UTILITIES TO BE FIELD VERIFY PRIOR TO CONSTRUCTION. ANY DAMAGE AND REPAIRS SHALL BE SOLE RESPONSIBILITY OF THE CONTRACTOR.
 2. SEE COORDINATE PLAN FOR ALL PC AND PT POINTS, ELEVATIONS, X AND Y COORDINATES.

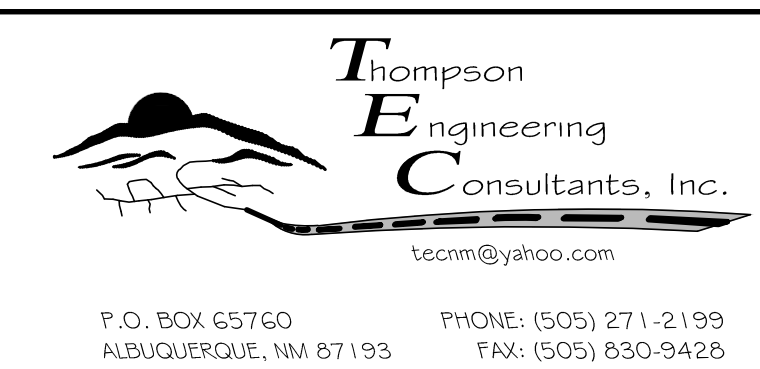
- KEYED NOTES**
- ① RIGHT OF WAY
 - ② EXISTING CURB AND CUTTER
 - ③ EXISTING SIDEWALK
 - ④ TIE INTO EXISTING CURB AND CUTTER PER COA STD DWG
 - ⑤ INSTALL: DIRECTIONAL HANDICAP RAMP W/TURNVATED DOMES PER COA STD DWG 2426
 - ⑥ INSTALL: 6" WIDE SIDEWALK PER COA STD DWG 2415
 - ⑦ INSTALL: STD C&G PER COA STD DWG 2415
 - ⑧ SEE SHEET 5 AND SHEET 8 THIS PLANSET

CURVE TABLE

CX	RADIUS	DELTA	LENGTH	TANGENT
C1	50.00	S82°41'29.75"W	84.19	74.59
C2	4.00	N85°17'48.46"E	6.37	5.72

CENTERLINE TANGENT DATA

IX	DELTA	TANGENT
T1	N49°04'10.67"W	132.01



CITY OF ALBUQUERQUE
 PUBLIC WORKS DEPARTMENT
 TRANSPORTATION DEVELOPMENT
COORS-COORS BYPASS IMPROVEMENTS
MILLER ENTRANCE PAVING PLAN AND PROFILE

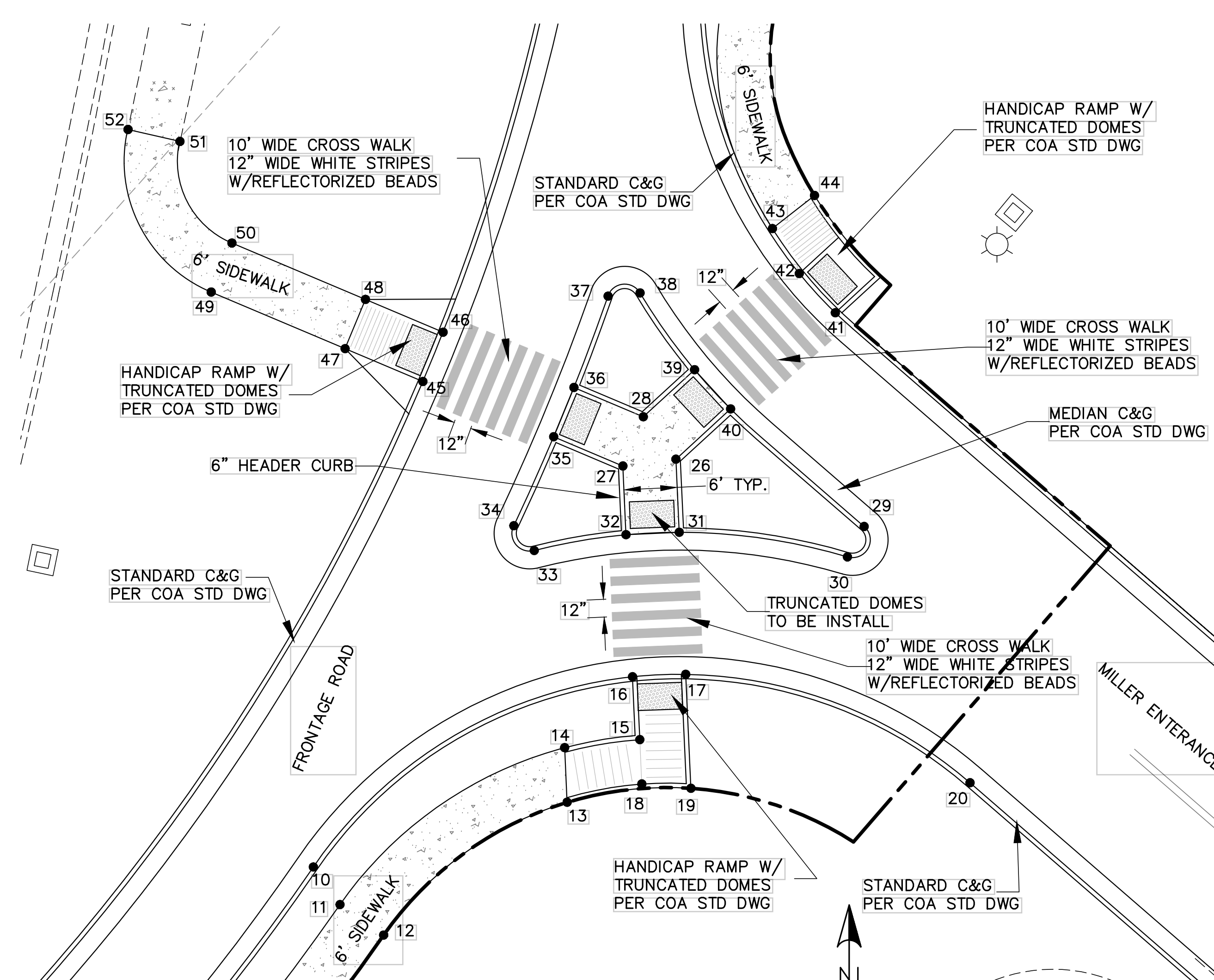
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.

City Project No. **741571** Zone Map No. **B-14-Z** Sheet **9** Of **11**

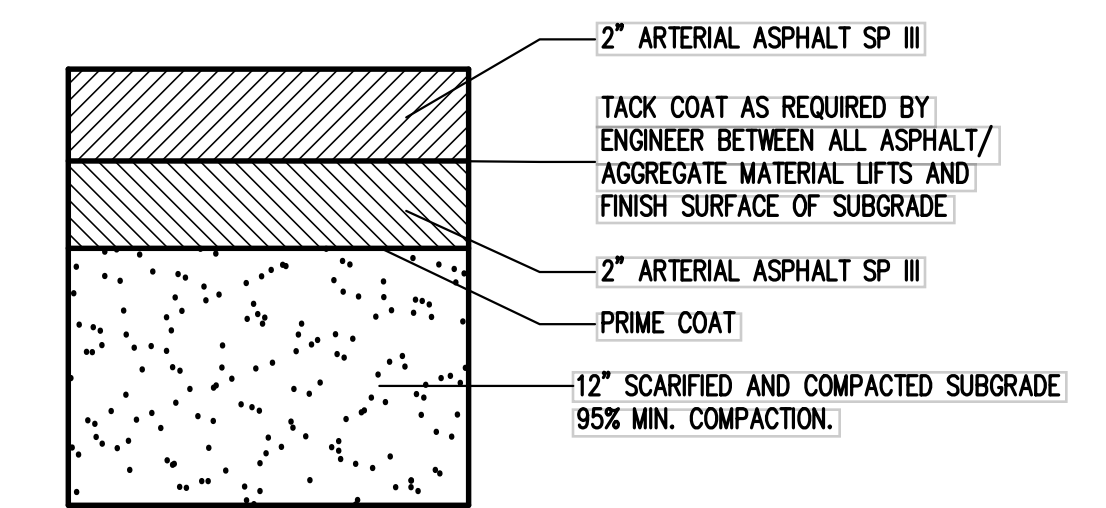
AS BUILT INFORMATION	
CONTRACTOR	DATE
WORK STARTED BY	DATE
ACCEPTANCE BY	DATE
FIELD CHECK BY	DATE
REVISION BY	DATE
CORRECTED BY	DATE
RECORDED BY	DATE
NO.	NO.

SURVEY INFORMATION	
FIELD NOTES	DATE
NO.	DATE
BY	

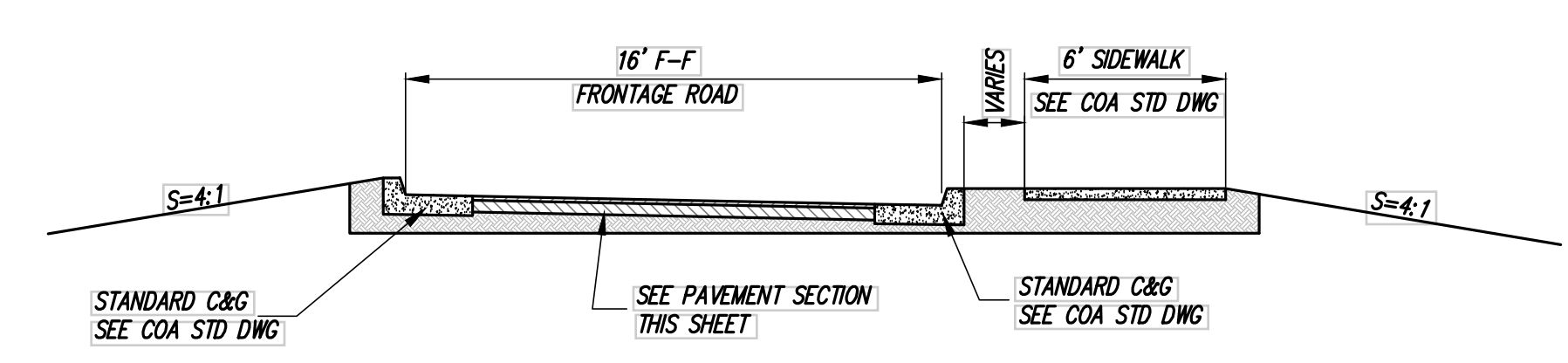
ENGINEER'S SEAL	
NO.	DATE
REMARKS	BY
DESIGN	DATE
DRAWN BY	DATE
CHECKED BY	DATE



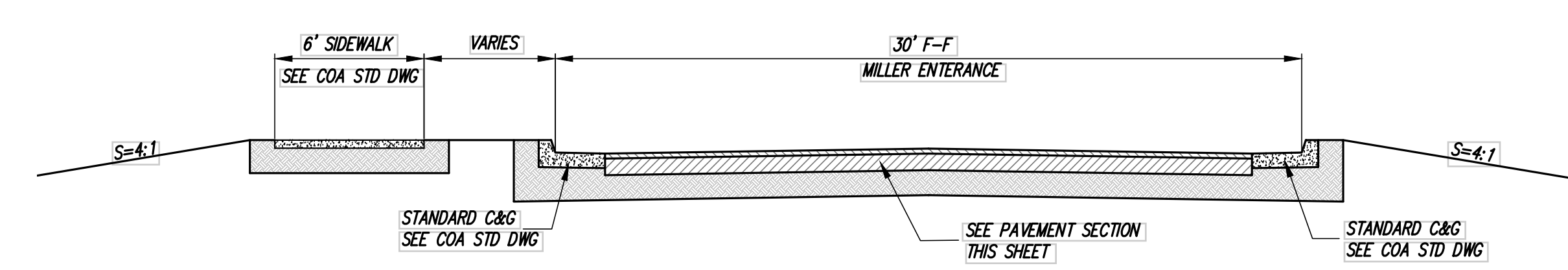
HANDICAP CROSSING DETAIL
SCALE 1"=10'
NOTE:
SEE POINT TABLE SHEET THIS PLANSET




PAVEMENT SECTION
NTS



FRONTAGE ROAD TYPICAL SECTION
NTS



MILLER ENTRANCE TYPICAL SECTION
NTS


Thompson
Engineering
Consultants, Inc.
tecnm@yahoo.com
 P.O. BOX 65760 ALBUQUERQUE, NM 87193 PHONE: (505) 271-2199 FAX: (505) 830-9426

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT TRANSPORTATION DEVELOPMENT			
COORS-COORS BYPASS IMPROVEMENTS DETAILS			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	MO./DAY/YR.	MO./DAY/YR.
City Project No. 741571	Zone Map No. B-14-Z	Sheet 11	Of 11

AS BUILT INFORMATION	
CONTRACTOR Albuquerque Control Survey Monument "7-B13"	DATE
WORK New Mexico State Plane Coordinates (Central Zone - NAD 83)	DATE
DESIGNED BY North= 1,525,625.065 feet	DATE
DRAWN BY East= 1,518,977.962 feet	DATE
CHECKED BY Elevation= 5048.611 feet (NAD 1988)	DATE
RECORDED BY Delta Alpha= -001403.33	DATE
NO.	NO.
ENGINEER'S SEAL	
NO.	DATE
BY	DATE
REMARKS	DATE
DESIGN	DATE
CHECKED BY	DATE