City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 8, 2000

Ronald R. Bohannan, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

RE: Engineer's Certification Plan for La Cueva Town Center in Window "G" (C19/D11D) Submitted for Certificate of Occupancy Approval and Release of Financial Guarantees, Engineer's Certification Stamp Dated 4/26/00.

Dear Mr. Bohannan:

Based on the information provided on May 4, 2000, the above referenced certification plan is acceptable for release of the Certificate of Occupancy and for release of the Financial Guarantees for the La Cueva Town Center in Window "G".

It is my understanding that request to FEMA for the Letter of Map Revision (LOMR) to remove the existing floodplain from this site is currently being prepared. Until the LOMR is received from FEMA, flood insurance may be required.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982,

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Whitney Reierson, City Hydrology
Terri Martin, DRB 98-402
Ben Spencer, La Cueva Town Center, Ltd.
File

DRAINAGE REPORT
FOR

La Cueva Town Center

Prepared by:

Tierra West, LLC
4421 McLeod Rd., NE, Suite D
Albuquerque, New Mexico 87109

February, 1999

I certify that this report was prepared under my supervision, and I am a registered professional engineer in the state of New Mexico in good standing.

Ronald R. Bohannan
PE NO 7868

Job No 980012

Location

The site is located on the northeast corner of Wyoming Boulevard and Paseo del Norte, NE and it is within the Window G Sector Development Plan of North Albuquerque Acres. The site contains ± 23.950 acres. La Cueva Town Center, LTD.,Co. proposes to develop a retail center that will include a grocery store and nine pad sites for shops and other retail businesses. The exact location is highlighted on the attached zone atlas map.

Legal Description

The legal description of the project is the remainder of Lots 1 and 26 through 32 and all of Lots 1 thru 8, and Lots 25 thru 32, Block 20 and lots 31 and 32, Block 19 of North Albuquerque Acres along with Tract 2, Unit 3. Tract C, La Cueva Village Unit 1 and that portion of the Holly easement from Wyoming Boulevard NE to the end of Lot 8, for a total of ± 23.950 acres.

Zoning and Surrounding Development

The site is zoned C-2 and includes all of the permissive and conditional uses under that designation. The City's Planning Department is preparing a new sector development plan (La Cueva Sector Plan) and they currently planning the remaining areas that border the Window G Sector Plan. The site is surrounded by a many different uses and zoning designations. The area to the north is developed with apartments, multi-family, townhouses, and single family homes. A City of Albuquerque water tank is on a portion of the land to the east and the remaining area around this tank is zoned for offices, plant nursery, townhouses and single family housing. East of Barstow, the zoning is multi-family and church. Presently, the land just west of Wyoming Boulevard is zoned for multi-family, townhouses, single family units, and office and institutional uses. The land to the south is zoned for multi-family and townhouses.

Purpose

The purpose of this drainage report is to provide the drainage analysis and management plan for the proposed ± 23.950 acre Retail Development. We are requesting approval for rough grading, Site Development Plan for Subdivision Approval, Preliminary Plat and Building Permit Approval.

Existing Drainage Conditions

The site lies within the approved Window G Sector Plan and the corresponding Master Drainage Plan prepared by Jeffrey G. Mortensen and Associates (C19/D11). The Master Plan area consists of the realigned Carmel Avenue, south to Paseo del Norte and from Wyoming Boulevard east to Barstow Street. The proposed site is undeveloped and the vegetation on site consists of weeds, grasses and occasional cacti. The site is divided into five basins and one analysis point. (See Figures 1, 2 and 3 in map pocket.)

We have divided the existing site into five basins and one Analysis Point. Basins 1 through 3 contain onsite flows and Basins 4 and 5 are properties owned by others that contribute flows. The Analysis Point (AP 1) represents offsite flows entering the site from an arroyo and is located at the southeast corner of the property.

offsite basin map?

The existing basins discharge the following amounts of storm water: Basin 1, 11.269 cfs; Basin 2, 11.074 cfs; Basin 3, 15.736 cfs; Basin 4, 4.892 cfs; Basin 5, 1.816 cfs.

Analysis Point 1 (AP-1) is located at the southeast corner of the proposed site near Paseo del Norte and is the analysis point for an arroyo that enters the site. Hec-Ras analysis was performed on the arroyo and the resulting information is located in The Master Drainage Plan for Window "G" and on Figure 3, found in the map pocket. From the Hec-Ras analysis, the arroyo discharges 321 cfs onto the site for undeveloped conditions.

The Master Drainage Plan and Ultimate Conditions for Window G (Figure 4) proposes

3?

improvements upstream from the site. The improvements include the construction of a concrete channel and a public storm water system in Barstow Street and Paseo del Norte. The construction of this concrete channel is complete. The public storm water system improvements in Paseo del Norte are a joint venture between the City of Albuquerque and Bernalillo County. The City of Albuquerque's has competed their portion by placing the 78" RCP from Wyoming Boulevard to 500 feet east of Wyoming. Bernalillo County is responsible for completing the portion of the 78-inch RCP from 500 feet east of Wyoming to Tennyson, including the storm water system in Barstow Street. With the completion of these improvements this offsite flow (AP-1) will be eliminated. The Bernalillo County Public Works Department (BCPW) indicated the proposed improvements are designed and the construction documents for the improvements to Paseo del Norte and Barstow Street will be put out for bid in early February. They expect to give the Notice to Proceed the last part of March 1999. The improvements must be completed within 14 months. Within 6 months, the Paseo del Norte to Barstow improvements, including Barstow, should be completed. Once this portion is completed the offsite flows are eliminated.

Flood Plain and Soil Conditions

As shown on Panel 141 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the County of Bernalillo, New Mexico, and incorporated areas, dated September 20, 1996, one flood Hazard Zone designated AO with a depth of one foot impact the proposed site. See Figure 1. These flood hazard zone is associated with the arroyo which traverse the site. The existing flowrates shown on the Basin Map are taken from the "North and South Domingo Baca Arroyo and Paseo del Norte Corridor Drainage Management Plan" prepared for AMAFCA by Resource Technology, Inc. dated December, 1991 and reflect undeveloped conditions. See figure 2. A CLOMR has been

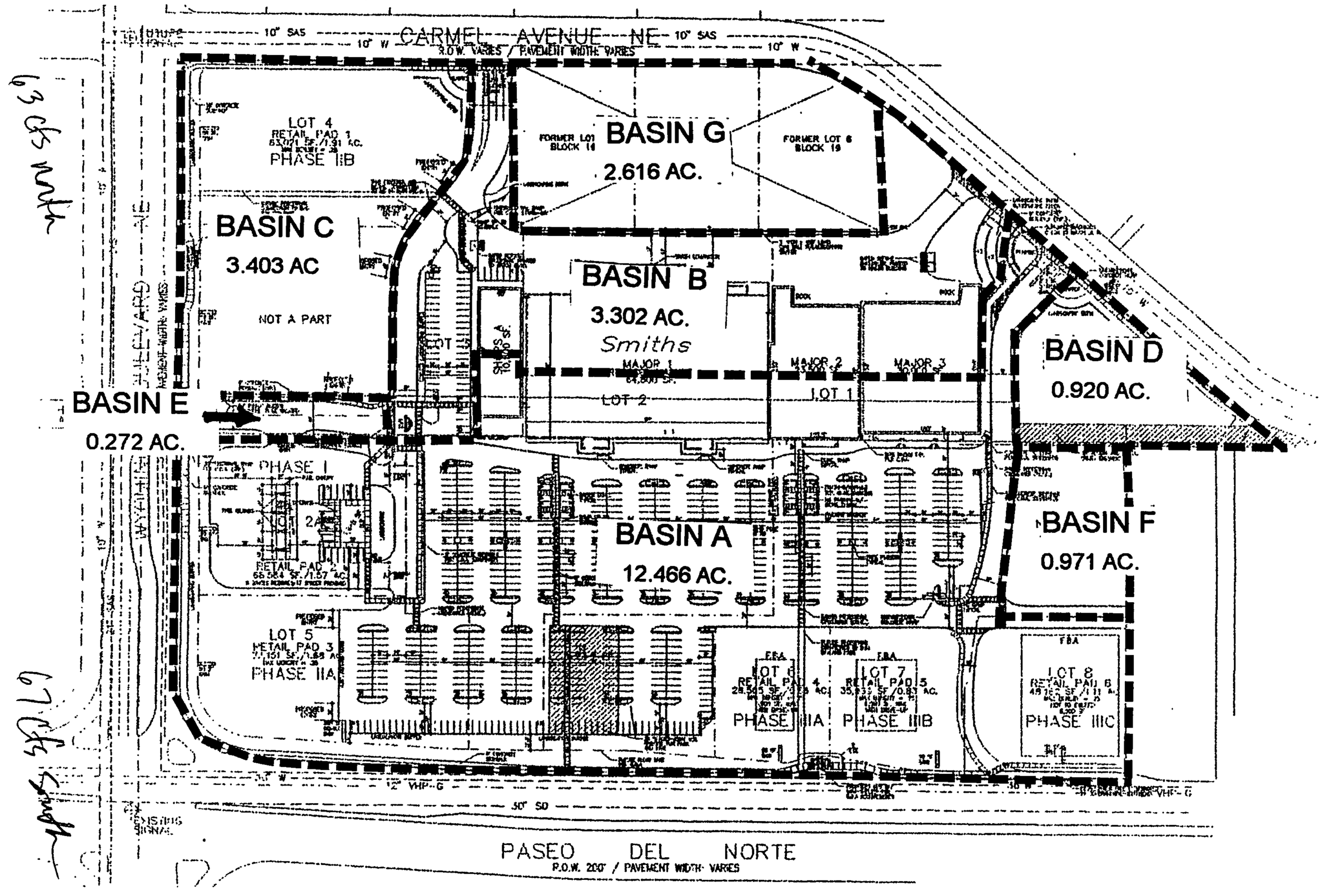
received from
~~submitted to~~ Federal Emergency Management Agency (FEMA) for this site by the City of Albuquerque and Bernalillo County. When the improvements proposed by the City of Albuquerque and Bernalillo County have been completed a LOMR will be requested. Before a LOMR will be issued, FEMA is requesting that the avulsion located east of the proposed site be addressed. A memo addressing the avulsion by Jeff Mortensen and Associates can be found in Appendix D. The City of Albuquerque has completed their portion of a new 78" RCP in Paseo del Norte and the County expect to begin work on their portion March 1999.

The site contains two types of soil, Embudo-Tijeras complex (EtC) and Embudo gravelly fine sandy loam (EmB), as indicated on the Soil Map (Sheet 11) from the Soil Conservation Service Survey of Bernalillo County. Both The Embudo -Tijeras complex and Embudo gravelly fine sandy loam have runoff that is medium, the hazard of water erosion is moderate and control of moisture is required for proper compaction.

Proposed Conditions and On-Site Drainage Management Plan

This site lies with the Master Drainage Plan for Window "G", prepared and submitted by Jeffery Mortensen and Associates and approved by the City of Albuquerque. We propose the construction of a new retail shopping center known as La Cueva Town Center. This is the same area shown as Tract C and Future Shopping Center in the approved Drainage Master Plan shown on Figure 4, in the attached map pocket, and in the Master Drainage Report. The Master Drainage Plan used the following percentage of land treatments: 3.3% land treatment "A", 6.7% land treatment 'B" and 90 % land treatment "D". We are proposing 15% land treatment "B" and 85% land treatment "D".

The proposed shopping center will consist of a "in line" grocery store, four adjacent buildings and nine pad sites for future retail stores. The site has been divided into five onsite basins and two offsite basins. See the attached Developed Conditions Basin Map. Basins A



LA CUEVA TOWN CENTER - BASIN MAP
DEVELOPED CONDITIONS

through E represent the onsite basins and E and F represent properties owned by others that contribute flows to our site (offsite).

What about city well site?

The developed flows rates from the developed basins are as follows:

BASIN	DEVELOPED Q100 (CFS)	DEVELOPED V100 (CF)
A	58.054	97019
B	15.378	25700
C	15.849	26487
D	4.284	7160
E	1.266	2116
BASIN	DEVELOPED Q100 (CFS)	DEVELOPED V100 (CF)
F	4.521	7555
G	12.184	20362

111.536

Basin A is composed of the southern portion of the grocery store site, lot 2, three adjacent retail sites, lots 1 and 2, future pad sites, lots 2A, 5, 6, 7, 8 and the eastern entrance from Carmel Avenue. The roofs of the grocery store and adjacent buildings are pitched in the middle and have an internal roof drain system that connect to the proposed storm sewer system. phase See appendix C for the roof drain analysis. The entrance from Carmel Avenue was designed with a 4 percent slope and the runoff is channeled to a type "D" inlet. Q? Cap? This inlet is connected to an onsite storm water system . The onsite storm water system carries flows from the roofs, the Eastern Carmel entrance, the asphalt parking lot and the future pad sites. The storm water system is collected in a series of type "D" storm water inlets located in the parking lot and driveways area. This storm water system is then connected to the existing drainage structure found at the corner of Paseo del Norte and Wyoming by a 36-inch pipe. The existing drainage channel is connected to the 48-inch RCP in Wyoming Boulevard. The flows in this pipe will connect to the new 78" storm water pipe found in Paseo del Norte as proposed in the

Storm drain Sys. layout?

Master Drainage Plan. (See Grading and Drainage Plan, Figures 6 and 7.) Lots 6, 7 and 8 are future pad sites and are within Phase III of the development. These sites will be rough graded. The developed runoff from these lots will be channeled to the parking lot by overland flow. Once the runoff is in the parking area it will be channeled to the inlets within the parking area. Lot 2A is a proposed gas station. The storm water from this site is channeled to an inlet located at the southwest corner. This inlet is connected to the onsite system by an 18-inch corrugated metal pipe. Lot 5 will be developed in Phase II of the development. This site will be rough graded and the flows channeled to a desilting pond. Desilting ponds have been shown for the initial development until the outlying pads have been developed. The desilting pond will capture the silt from undeveloped Lots 6, 7, 8, the parking lot and Lot 5. This basin contains ± 12.466 acres and discharges 58.054 cfs into the Wyoming Boulevard public storm water system which is connected to the 78" pipe in Paseo del Norte and flows west.

Basin B consists of ± 3.302 acres and flows from east to west to the west drive entrance from Carmel Avenue. This basin is comprised of one half of the building area of the grocery store, Lot 2 and adjacent buildings, Lots 1 and 3. The internal roof drains drain along the northern roof of the Smiths and the adjacent building will be connected to the proposed onsite storm sewer system. The proposed storm drain system consists of a series of drop inlets found within the paved parking and driveways. (See the grading and drainage plan.) This system will be connected to the existing 36" stub located at the southeast corner of Wyoming Boulevard and Carmel Avenue. This existing pipe is connected to the Wyoming storm water system. (See Figures 3 and 4.) This is in accordance with the Master Drainage Plan. Basin B, under developed conditions, discharges 15.378 cfs into the public storm water system.

Basin C is located at the northwest corner of the site (Lot 4) and will be developed in Phase II. For this submittal, Phase I will be rough graded to sheet flow to a desilting pond. When the site is developed, a drop inlet will be constructed and connected to the onsite storm

water system. This basin contains ±3.403 acres and, under developed conditions, this basin will discharge 15.849 cfs into the public storm water system.

Basin D (Lot 9) is located between the vacated portion of Holly Avenue and the eastern entrance on Carmel Avenue. The proposed use for this basin is for an office site to be developed in Phase II. Until the site is developed the basin will be graded to drain to a desilting pond. Within this desilting pond is a type "D" inlet which is connected to the onsite storm water system. An inlet will be placed in this basin during its' development to carry the developed runoff to the storm water system. This basin contains ±0.920 acres and under developed conditions discharges 4.284 cfs.

Basin E is the main entrance to the shopping center from Wyoming Boulevard. Due to the overall size of the site, the existing slopes, and the reconstruction of Wyoming Boulevard, this basin slopes from 4 to 7 percent and discharges directly into Wyoming Boulevard. This basin contains ± 0.272 acres and discharges 1.266 cfs.

picked up where? goes north or south?

Basin F is an offsite basin located near the eastern property line and is not part of this development. However, La Cueva Town Center, LTD, Co., acquired the owner's permission to grade this site. The basin will be graded so that the developed storm water will enter our site via overland flow. Under developed conditions this basin will discharges 4.521 cfs onto our site. This storm water will be accepted and channeled to the inlets found within the south parking lot and eventually discharge to Wyoming Boulevard.

Basin G is an offsite basin located along Carmel Avenue and north of Basin B. ?

Presently the basin slopes from east to west at 5 to 6 percent. Under developed conditions this ±2.616 acre site discharges 12.184 cfs. The storm water enters the proposed site at a swale located in the west entrance on Carmel Avenue and then into the onsite storm water system.

Several temporary desilting ponds are shown onsite for the initial development. These

Street cap.? Wyoming, Carmel? inlets required?

desilting pond will be eliminated as the future pad sites are developed and replaced with inlets. These inlets will be connected to onsite storm water system which discharges to the pubic storm water system. These desilting ponds were designed to disburse the sediment (carried in the flows) across the site, keeping it on site and out of the public storm drain system until these future pad sites are developed. The desilting ponds volumes were based on a 100-year, 24-hour storm using land treatment "B".

The desilting pond located in Basin A is designed to capture the sediment that crosses the site the undeveloped Basin F and portion of Basin A. The sediment is allowed to settle to the bottom of the pond and the storm water to discharge into the storm water system via a outlet pipe located six inches above the bottom of the pond.

The desilting ponds in Basin C is to capture all the runoff sediment for this basin only, no offsite flows enter the basin. Initially a type "D" inlet will be placed at the bottom of the desilting pond and connected to the storm sewer manhole which is connected to the public storm system. When this pad site is developed in Phase II the pond will be removed.

Basin D is to be developed in Phase III and until then a desilting pond will be necessary to contain all the sediment being carried across this basin. An inlet has been established 6" above the pond bottom. This inlet is connected to the onsite storm system which discharges into the public storm system at Wyoming Boulevard.

Emergency Conditions

For emergency conditions the storm water will be carried in the service roads and parking lots to the desilting ponds. In the fully developed condition the storm water will flow through the parking lots to the service roads and into the streets.

Summary

The grading and drainage plan and the storm water management plan for this project meets the criteria developed in the Master Drainage Plan for Window G as approved by the City of Albuquerque. The Master Drainage Plan shows the site being divided into two basins. The northern basin which discharges 63 cfs into the public storm drain system in Wyoming Boulevard and the southern basin which discharges 67 cfs of developed storm water into the public storm water system in Paseo del Norte. This plan has the developed storm water for this project entering the public storm water system as proposed in the Master Drainage Plan. We have 47.7 cfs with a volume of entering the public storm water system near Wyoming and Carmel, northern basin and 62.6 cfs entering the Paseo del Norte storm water system, southern basin and 1.266 cfs entering Worming directly. The storm water under developed conditions for this project is less than the allowable reported in the Master Drainage Plan.

Infrastructure List

The water and sewer are public utilities. The storm sewer is private to the city connections where it becomes public.

See Appendix B

RUNOFF SUMMARY TABLE -DEVELOPED CONDITIONS

ONSITE BASINS

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
A	42315	12.466	0.0015178
B	113944	3.302	0.0040872
C	602691	3.403	0.0216186
D	272485	0.920	0.0097740
E	11825	0.272	0.0004241

BASIN	DEVELOPED Q100 (CFS)	DEVELOPED V100 (CF)
A	58.054	97019
B	15.378	25700
C	15.849	26487
D	4.284	7160
E	1.266	2116

BASIN	AREA (SF)	AREA (AC)	AREA (MI^2)
F	42297	0.971	0.0015172
G	113953	2.616	0.0040875

BASIN	DEVELOPED Q100 (CFS)	DEVELOPED V100 (CF)
F	4.521	7555
G	12.184	20362

TIERRA WEST LLC
4421 McLeod Road NE, Suite D, Albuquerque, NM 87109 Phone (505) 883-7592 - Fax (505) 883-7034

RUNOFF CALCULATIONS

Date: Jan. 29, 1999 Project: La Cueva Town Center Zone Atlas: C-19

This procedure is in accordance with the City of Albuquerque Development Process Manual, Volume 2, Section 22.2, "Hydrology", peak discharge rate for small watersheds less than forty acres in size.

Precipitation Zone from Figure A-1: 3
Land treatment descriptions are in Table A-4.

1. RUNOFF RATE COMPUTATION

Use Equation A-10: $Q_P = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
Values of Q_{pi} are from Table A-9, and are in CFS/acre. Area values are in acres.

EXISTING CONDITIONS (CFS) 100% A

BASIN	Q_{PA}	A_A	Q_{PB}	A_B	Q_{PC}	A_C	Q_{PD}	A_D	Q_P
Basin 1	1.870	6.026	2.600	0.000	3.450	0.000	5.020	0.000	11.269
Basin 2	1.870	5.922	2.600	0.000	3.450	0.000	5.020	0.000	11.074
Basin 3	1.870	8.415	2.600	0.000	3.450	0.000	5.020	0.000	15.736
Total									**38.079**
OFFSITE FLOWS - EXISTING CONDITIONS (CFS)									
Basin 4	1.870	2.616	2.600	0.000	3.450	0.000	5.020	0.000	4.892
Basin 5	1.870	0.971	2.600	0.000	3.450	0.000	5.020	0.000	1.816
Total									**6.708**
DEVELOPED RATE OF RUNOFF (CFS)									
Basin A	1.870	0.000	2.600	1.870	3.450	0.000	5.020	10.596	58.054
Basin B	1.870	0.000	2.600	0.495	3.450	0.000	5.020	2.807	15.378
Basin C	1.870	0.000	2.600	0.510	3.450	0.000	5.020	2.893	15.849
Basin D	1.870	0.000	2.600	0.138	3.450	0.000	5.020	0.782	4.284
Basin E	1.870	0.000	2.600	0.041	3.450	0.000	5.020	0.231	1.266
									94.831
Basin F	1.870	0.000	2.600	0.146	3.450	0.000	5.020	0.825	4.521
Basin G	1.870	0.000	2.600	0.392	3.450	0.000	5.020	2.224	12.184
Total									**16.705**

2. RUNOFF VOLUME COMPUTATION

Use Equation A-5 to compute weighted excess precipitation:

Weighted E = "E" = $(E_A A_A + E_B A_B + E_C A_C + E_D A_D)/(A_A + A_B + A_C + A_D)$

$(A_A + A_B + A_C + A_D) = \sum A_i$

Use Equation A-6 to compute the volume:

V_{360} = "E" x $(A_A + A_B + A_C + A_D)$ x 3630 feet^3/acre·inch

Values of E_i are from Table A-8, and are in inches. Area values are in acres.

BASIN	E_A	A_A	E_B	A_B	E_C	A_C	E_D	A_D	$\sum A_i$	"E"	V_{360}
ONSITE EXISTING VOLUME OF RUNOFF (CF)											
Basin 1	0.66	6.026	0.92	0.000	1.29	0.000	2.36	0.000	6.026	0.660	14437.0
Basin 2	0.66	5.922	0.92	0.000	1.29	0.000	2.36	0.000	5.922	0.660	14188.0
Basin 3	0.66	8.415	0.92	0.000	1.29	0.000	2.36	0.000	8.415	0.660	20161.0
Total											**48786.0**
OFFSITE BASINS EXISTING VOLUME OF RUNOFF (CF)											
Basin 4	0.66	2.616	0.92	0.000	1.29	0.000	2.36	0.000	2.616	0.660	6267.0
Basin 5	0.66	0.971	0.92	0.000	1.29	0.000	2.36	0.000	0.971	0.660	2326.0
Total											**8593.0**
DEVELOPED VOLUME OF RUNOFF (CUBIC FEET)											
ONSITE EXISTING VOLUME OF RUNOFF (CF)											
Basin A	0.66	0.000	0.92	1.870	1.29	0.000	2.36	10.596	12.466	2.144	97019.0
Basin B	0.66	0.000	0.92	0.495	1.29	0.000	2.36	2.807	3.302	2.144	25700.0
Basin C	0.66	0.000	0.92	0.510	1.29	0.000	2.36	2.893	3.403	2.144	26487.0
Basin D	0.66	0.000	0.92	0.138	1.29	0.000	2.36	0.782	0.920	2.144	7160.0
Basin E	0.66	0.000	0.92	0.041	1.29	0.000	2.36	0.231	0.272	2.144	2116.0
Total											**158482.0**
ONSITE BASINS DEVELOPED VOLUME OF RUNOFF (CF)											
Basin F	0.66	0.000	0.92	0.146	1.29	0.000	2.36	0.825	0.971	2.144	7555.0
Basin G	0.66	0.000	0.92	0.392	1.29	0.000	2.36	2.224	2.616	2.144	20362.0
Total											**27917.0**

Roof Drains

- Land = D
- AREA = Ac

$Q_{100} = 5.02 \times A_D$

$V_{100} = \underline{2.36 \times A_D} \times 3630 =$

Building 1

AREA = 10,800 SF / = 5400 ft² — 2 - 4" pipes = 2 x .27 = 0.54

$Q_{100} = 5.02 \times 0.124^2$, $Q_{100} = 0.62$ CFS

$V_{100} = 2.36 \times 0.124 \times 3630 = 1062$ CF

Building 2

AREA = 64,800 SF/2 = 32,400

$Q_{100} = 5.02 \times 0.734 = Q_{100} = 3.73$ CFS — 8"

$V_{100} = 2.36 \times 0.734 \times 3630 = 6372$ CF

Building 3

AREA = 23,500 SF/2 = 11,750 ft²

$Q_{100} = 5.02 \times 0.270 = Q_{100} = 1.35$ CFS

$V_{100} = 2.36 \times 0.270 \times 3630 = 2311$ CF

Building 4

AREA = 30,000 SF/2 = 15,000

$Q_{100} = 1.72$ CFS

$V_{100} = 2950$ CFS

100 yr, 6 hr storm

BUILDING No. 1

Q_{100} = 0.62 CFS
V_{100} = 1062 CF

Time for water to leave roof

$$\frac{1062 \text{ CF}}{0.54 \text{ CFS}} = 1967 \text{ sec} = 33 \text{ min}$$

2-4" ROOF DRAINS
$Q = 2 \times 0.27 = 0.54$ CFS

$$t_c = 0.078 \left(\frac{L^{0.77}}{S^{0.385}} \right) \Rightarrow \begin{matrix} S = .02 \\ L = 90 \end{matrix} \quad t_c = 11 \text{ min}$$

BUILDING No 2.

Q = 3.73 CFS
V = 6372 CF

3 ~ 6" pipes = 3 * 0.80 = 2.40 CFS

$$t_c = 0.078 \left(\frac{100^{0.77}}{5^{.385}} \right) = 12.2 \text{ min}$$

Building No. 3

Q = 1.35 cfs
V = 2311

$$V = \frac{2311}{Q} \cdot t - t = 71 \text{ min}$$
$$Q \quad .54$$

2 ~ 4" ϕ pipes = 2 * .27 = 0.54 CFS

Building No. 4

Q = 1.72 cfs 2 ~ 6" ∅ pipes · 2x .80 = 1.60 cfs
X = 2950

$$t = \frac{2950}{1.60} \cdot 31 \text{ min}$$

Pipe Capacity

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area

R = D/4

S = Slope

n = 0.013

Pipe	D	Slope	Area	R	Q Provided	Velocity
	(in)	(%)	(ft^2)		(cfs)	provided
LA CUEVA						
4" roof drain	4	2	0.09	0.083333	0.27	3.09
6" roof drain	6	2	0.20	0.125	0.80	4.05
8"	8	2	0.35	0.166667	1.71	4.91
9"	9	2	0.44	0.1875	2.35	5.31
10"	10	2	0.55	0.208333	3.11	5.70
12"	12	2	0.79	0.25	5.05	6.43
18"	18	2	1.77	0.375	14.90	8.43
24"	24	2	3.14	0.5	32.08	10.21
30"	30	2	4.91	0.625	58.16	11.85
32"	32	2	5.59	0.666667	69.09	12.37
36"	36	2	7.07	0.75	94.58	13.38
40"	40	2	8.73	0.833333	125.26	14.35

all 2%?

Storm Drain System - Pipe Sizing

Analysis Point No. 1

Inlet No 1

- Area = 13,100 ft
  ÷ 0.3007 ac $Q = 5.02 \times 0.3007 \text{ ac} = 1.510$ CFS

100% Treatment "D"

Analysis Point No. 2

Roof areas of Major 2 & Major 3 $= \left(\frac{23,500 + 30,000}{2}\right) \div 43560 = 0.6141$ ac

$Q = 5.02 \times 0.6141 = 3.08$ CFS

+ AP No. 1 + 1.51

4.59 CFS

* See Pipe Capacity Chart

12" ϕ pipe, Q = 5.05 use 12" pipe

Analysis Point No 3

Roof Areas = 64,550 SF => 1.4819 ac = Q = 7.439 CFS

+ Inlet No. 1 (AP 1) + 1.510 CFS

* See Pipe Capacity Chart $Q_{TOT} = 8.95$ CFS

18" ϕ Pipe, Q = 14.90 CFS

use 18" ϕ pipe

Analysis Point No. 4.

1) Parking Area + Landscaping = 85% "D", 15% "B"
2) + Offsite Flow from Basin A, see Basin Summary Sheet =
3) + AP3.

355,847

Park/Land Contributing Area = 355,847 = 302,470 "D"

53,377.0 "B"

(1) $Q = 5.02 * 60.94 + 2.60 * 1.225 = 38.64$ CFS
(2) + 4.521 CFS
(3) + 8.95 CFS

51.5 CFS

* See Pipe Capacity Chart

30' ϕ Pipe, Q = 58.16 > 51.50 CFS

USE 30' ϕ PIPE

Analysis Point No. 5

Contributing Area = 46708 ft²

(2)
85% "D" = 0.911 ac
15% "B" = 0.161 ac

$Q = 5.02 * 0.911 + 2.60 * 0.161 = 4.99$ cfs

* See pipe capacity chart

12"ϕ pipe Q = 5.05 > 4.99 cfs, use 12"ϕ pipe

Analysis Point No. 6

BASINS A+C $Q_A = 4.521$
$Q_C = 64.435$

$Q_T = 68.96$

* See Pipe Capacity Chart

32"ϕ pipe, Q = 69.09 → 68.96

USE 32"ϕ pipe to connect to existing system in Wyoming Blvd.

Analysis Point No. 7

1/2 ROOF AREAS FOR MAJOR 2 & 3, AREA = 0.6141 ac
ASPHALT AREA = $\frac{220 \times 25}{43560} = 0.126$

$Q = 5.02 \times 0.7404 = 3.72$ cfs

$Q_{12"} = 5.05$ cfs > 3.72 cfs

Analysis Point No. 8

(1)
ROOF AREAS = 64,550 SF = 1.4819 AC.
+ Drive Area 85% "D" = 1.489 ac = 2.97 ac
Entrance 15% "C" = 0.263

+ $Q = 5.02 \times 2.9 + 2.60 \times 0.263 = 15.59$ cfs

* See Pipe Capacity Chart

$Q_{24} = 32.08 > 15.59$

Analysis Point No. 9

Roofs = 1.4819 Ac.
+ 2.947 Ac 2.505 "D"
0.442 "B"

$Q_9 = 3.987 \times 5.02 + 0.442 \times 2.60 = 21.2$ cfs

See Pipe capacity chart

24" pipe $Q = 32.08$ cfs > 21.2 cfs

Analysis Point No. 10

Basins B+D $Q_B = 12.184$
See Basin Summary $Q_D = 29.130$

$Q_{10} = 41.314$ cfs

30" pipe $Q = 58.16$ cfs > 41.314

Use 30" pipe

CITY OF ALBUQUERQUE

August 3, 2009

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe Street N.E.
Albuquerque, NM 87108

Re: Dallar Tree, 8200 Wyoming Blvd. NE
Request of Permanent Certificate of Occupancy (C.O.)—Approved
Engineer's Stamp dated 04/28/09 (C-19/D050)
Certification dated 07/31/09

Dear Mr. Arfman,

Based upon the information provided on 7/31/09, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3982.

Sincerely,

Timothy E. Sims
Plan Checker-Hydrology, Planning Dept
Development and Building Services

C: CO Clerk—Katrina Sigala
file

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

CITY OF ALBUQUERQUE

May 12, 2009

Fred C. Arfman, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. NE
Albuquerque, NM 87108

Re: Dollar Tree, 8200 Wyoming Blvd NE, Grading and Drainage Plan
Engineer's Stamp dated 4-28-09 (C19/D011D)

Dear Mr. Arfman,

Based upon the information provided in your submittal received 4-28-09, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

CITY OF ALBUQUERQUE

June 25, 2008

David Aube, PE
Design Group
202 Central Ave SE Suite 200
Albuquerque, NM 87106

Re: Big 5 at La Cueva Town Center Grading and Drainage Plan
Engineer's Stamp dated 6-24-08 (C19/D011D)

Dear Mr. Aube,

Based upon the information provided in your submittal received 6-24-08, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

August 5, 2009

Stephen A. Dunbar, Registered Architect
Modulus Architectis
2325 San Pedro NE, Ste. 2b
Albuquerque, NM 87110

Re: Certification Submittal for Final Building Certificate of Occupancy for
Dollar Tree, [C-19 / D011D]
8102 Wyoming NW
Architect's Stamp Dated 08/05/09

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Dear Mr. Dunbar:

The TCL / Letter of Certification submitted on August 5, 2009 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

TRAFFIC CERTIFICATION

I, STEPHEN DUNBAR , NMPE OR NMRA 004218 , OF THE FIRM MODULUS ARCHITECTS INC. HEREBY CERTIFY THAT THIS PROJECT IS IN SUBSTANTIAL DESIGN COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 5/22/07 THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY STEPHEN DUNBAR OF THE FIRM MODULUS ARCHITECTS INC. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON 8/3/09 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR PERMANENT CERTIFICATE OF OCCPANCY.

THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE TRAFFIC ASPECTS OF THIS PROJECT. THOSE RELYING ON THE RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

Signature of Engineer or Architect

8/5/09
Date

ARCHITECT'S STAMP

STATE OF NEW MEXICO
STEPHEN A. DUNBAR
No. 4218
8/5/09
REGISTERED ARCHITECT

MODULUS ARCHITECTS
2325 San Pedro NE, Suite 2b
Albuquerque, New Mexico 87110
p 505.338.1499 f 505.338.1498
toll free: 1-866-224-2161

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

September 8, 2008

Stephen A. Dunbar, Registered Architect
2325 San Pedro NE, Ste. 2B
Albuquerque, NM 87110

Re: Certification Submittal for Final Building Certificate of Occupancy for
Big 5 @ La Cueva Town Center, [C-19 / D011D]
8102 Wyoming Blvd NE
Architect's Stamp Dated 09/04/08

Dear Mr. Dunbar:

The TCL / Letter of Certification submitted on September 4, 2008 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 12/2005)

Big5@ C-19/D011D

PROJECT TITLE: LA CUEVA TOWN CNTR (BIG-5) ZONE MAP: C-19

DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Lot 1-B

CITY ADDRESS: 8102 WYOMING BLVD N.E

ENGINEERING FIRM: DAVE ALBE/DESIGN GROUP CONTACT: DAVE

ADDRESS: _____ PHONE: _____

CITY, STATE: ABQ ZIP CODE: _____

OWNER: B/SPENCER/ LA CUEVA TOWN CNTR LLC. CONTACT: DANIEL

ADDRESS: _____ PHONE: _____

CITY, STATE: ABQ ZIP CODE: _____

ARCHITECT: GEORGE PAINHART ARCH & ASSOC CONTACT: STEPHEN.

ADDRESS: 2323 SAN PEDRO N.E STE 2B PHONE: _____

CITY, STATE: ABQ, NM ZIP CODE: 87110

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CITY, STATE: _____ ZIP CODE: _____

CONTRACTOR: WILGER ENT CONTACT: DON

ADDRESS: 425 EDMOH PHONE: 345-2354

CITY, STATE: LOS RANCHOS DE ABQUERQUE ZIP CODE: 87107

TYPE OF SUBMITTAL:

_____ DRAINAGE REPORT
_____ DRAINAGE PLAN 1st SUBMITTAL
_____ DRAINAGE PLAN RESUBMITTAL
_____ CONCEPTUAL G & D PLAN
_____ GRADING PLAN
_____ EROSION CONTROL PLAN
_____ ENGINEER'S CERT (HYDROLOGY)
_____ CLOMR/LOMR
\ TRAFFIC CIRCULATION LAYOUT
_____ ENGINEER'S CERT (TCL)
_____ ENGINEER'S CERT (DRB SITE PLAN)
_____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:

_____ SIA/FINANCIAL GUARANTEE RELEASE
_____ PRELIMINARY PLAT APPROVAL
_____ S. DEV. PLAN FOR SUB'D APPROVAL
_____ S. DEV. FOR BLDG. PERMIT APPROVAL
_____ SECTOR PLAN APPROVAL
_____ FINAL PLAT APPROVAL
_____ FOUNDATION PERMIT APPROVAL
_____ BUILDING PERMIT APPROVAL
X CERTIFICATE OF OCCUPANCY (PERM)
_____ CERTIFICATE OF OCCUPANCY (TEMP)
_____ GRADING PERMIT APPROVAL
_____ PAVING PERMIT APPROVAL
_____ WORK ORDER APPROVAL
_____ OTHER (SPECIFY)

RECEIVED
SEP 04 2008
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

_____ YES
\ NO
_____ COPY PROVIDED

DATE SUBMITTED: 9/4/08 BY: Stephen A. Dunbar

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

TRAFFIC CERTIFICATION

I, STEPHEN DUNBAR, NMPE OR NMRA 004218 , OF THE FIRM MODULUS ARCHITECTS INC. HEREBY CERTIFY THAT THIS PROJECT IS IN SUBSTANTIAL DESIGN COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED ADMINISTRATIVE AMENDMENT PLAN DATED 6/25/08. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY STEPHEN DUNBAR OF THE FIRM MODULUS ARCHITECTS INC. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON 9/04/08 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR FINAL CERTIFICATE OF OCCPANCY.

THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE TRAFFIC ASPECTS OF THIS PROJECT. THOSE RELYING ON THE RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

RECEIVED
SEP 04 2008
HYDROLOGY

Signature of Engineer or Architect

ARCHITECT'S STAMP

STATE OF NEW MEXICO
STEPHEN A. DUNBAR
No. 4218
REGISTERED ARCHITECT

9/4/08
Date

Modulus Architects
2325 San Pedro NE, Suite 2b Albuquerque, NM 87110
p: 505-338-1499 f: 505-338-1498 Toll Free 1-866-224-2161