City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 23, 2000

Jeff Mortensen, P.E.
Jeff Mortensen & Assoc.
6010 B Midway Park Blvd. NE
Albuquerque, NM 87109

Attn: J. Graeme Means, P.E.

RE: NEW MEXICO METAL SYSTEMS, ALBUQUERQUE INDUSTRIAL PARK, 5880 Office Blvd NE (E17-D29). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANY APPROVAL. ENGINEER'S STAMP DATED JUNE 22, 2000.

Dear Mr. Mortensen:

Based on the information provided on your June 22, 2000 submittal, the above referenced project is approved for Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,

John P. Murray, P.E.
Hydrology

c: Whitney Reierson
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 19, 1999

Graeme Means
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: NEW MEXICO METAL SYSTEMS (E17/D29), GRADING & DRAINAGE SUBMITTAL FOR BUILDING PERMIT APPROVAL. ENGINEER'S STAMP DATED 6-22-99

Dear Mr. Means:

Based upon the information provided in your 6-23-99 submittal, the referenced project is approved for Building Permit assuming that the Private Drainage Easement you make reference to in your plan exists (copy of easement not provided).

Please attach a copy of this approval letter to the construction drawings when submitting for Hydrology Division sign-off.

If I can be of further assistance, feel free to contact me at 768-2766.

Sincerely,

Scott Davis
PWD, Hydrology Div.

c: file

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

November 6, 1985

Victor J. Chavez, P.E.
Chavez-Grieves Consulting Engineers
4520 Montgomery Blvd., NE
Albuquerque, New Mexico 87109

RE: CONCEPTUAL GRADING & DRAINAGE PLAN FOR CAVAN BUSINESS CENTER - SUBMITTED OCTOBER 18, 1985 FOR SITE DEVELOPMENT PLAN APPROVAL (E-17/D60)

Dear Victor:

The referenced submittal dated October 18, 1985, is approved for Site Development Plan provided the proposed retaining wall along west property line is extended approximately 150 feet south-east at turn.

Before Building Permit approval, a vacation of existing lot lines will be required along with an approved Drainage Report.

If you have any questions or comments regarding this project, please call me at 766-7644.

Cordially,

Roger A. Green, PE

Roger A. Green, P.E.
C.E./Design Hydrology

cc: Cavan Associates, Ltd.
3320 E. Shea Blvd. #200
Phoenix, AZ 85028

RAG/bsj

July 7, 1988

Dienna/Simpkins Company
1110 North Post Oak Rd - Suite 300
Houston, Texas 77055

RE: DIENNA/SIMPKINS BUILDING
SOUTHWEST DISTRIBUTING
DRAINAGE MANAGEMENT PLAN

Dear Sir:

Chavez-Grieves Consulting Engineers is pleased to submit our Drainage Management Plan for the above-referenced project.

This report addresses comments from Mr. Roger Green, P.E., City of Albuquerque, Hydrology Section.

We appreciate the opportunity to provide professional engineering services to Dienna/Simpkins Company. Questions and comments regarding this submittal are welcome.

Sincerely,

CHAVEZ-GRIEVES CONSULTING ENGINEERS, INC.

Prepared by: _____
Ricardo Sanchez

Reviewed by: _____
Victor J. Chavez, P.E.

RS:vc

I. PURPOSE AND SCOPE:

This Drainage Management Plan involves the Dienna/Simpkins Building (Southwest Distributing Building) and other sites within the watershed basin from which runoff impacts Office Boulevard.

Dienna/Simpkins is currently planning development of a tract of land containing approximately 8.41 acres of Lot C-2B, Albuquerque Industrial Park, in Bernalillo County, New Mexico.

This study is to address concerns by the City of Albuquerque, Hydrology Section.

II. SITE LOCATION:

The proposed Dienna/Simpkins Building and other property in which runoff impacts Office Boulevard is approximately 400 feet north of the intersection of Office Boulevard and Singer Boulevard running north for approximately 1200 feet to the Bear Arroyo. The watershed basin begins on the west side Office Boulevard and runs approximately 700 feet east. An area map has been included as exhibit "A".

III. FLOOD ZONE

The watershed basin is not located within a flood plain according to the Flood Hazard Boundary Map, City of Albuquerque, New Mexico, Bernalillo County Panel 16 of 50 (see exhibit "B") and is not subject to requirements of the National Flood Insurance Program.

IV. EXISTING CONDITIONS:

The watershed basin is approximately 34.2 acres in size.

The watershed basin slopes from east to west with a slope of approximately 2%.

The soils investigation by Fox & Associates in September 1985 indicate that the soils are mainly sand.

The soils have been classified to be of Soil Conservation Service (SCS) type "A" (High Infiltration Rate). SCS soil hydrologic group "A" is assumed to be representative of soils on the entire area.

At present Office Boulevard accepts all runoff generated from the watershed basin. Once runoff is in the road, it is transported to the intersection of Office Boulevard and Midway Place via Office Boulevard. Presently there are two catchbasins, one on each side of Office Boulevard which tie to a manhole via a 24" RCP pipe. At this manhole, runoff is discharged to the Bear Arroyo via a 36" RCP. Another catchbasin is located on the north side of Midway Place. This catchbasin also ties to the existing 36" RCP.

From review of City of Albuquerque work order document #2030 and site investigations, the 24" and 36" RCP lines accept only runoff from the watershed basin.

V. <u>PROPOSED CONDITIONS</u>:

Proposed development of the watershed basin will be for industrial type buildings, parking areas & landscaping areas. A coefficiency of runoff of 0.77 is used for the developed watershed basin.

Storm water from this area will be discharged to Office Boulevard.

VII. DESIGN CRITERIA:

The design criteria involves determining upstream watershed basins which impact Office Boulevard.

VII. HYDROLOGIC DESIGN MODEL:

1. The Rational Formula is used to estimate rates of runoff. The Rational Formula is as follows:

   Q = CiA

   Q = Rate of runoff in cubic feet per second

   C = Coefficient of runoff (dimensionless)

     = 0.77

   i = Rainfall intensity in inches per hour

   A = Drainage area in acres

2. Runoff rates and volumes have been based on the 100-year - 6 hour accumulated rainfall for the Albuquerque of 2.2 inches.

3. The time of concentration (Tc) was computed using the Kirpich Equation for each basin as follows:

   Tc = 0.00013 L 0.77/S 0.385

   L = Length of the water course from the most distant point to the point of reference in feet.

   S = Slope between the most distant point and the point of reference.

The above procedures are consistent with policies used in Design Development Manual.

A summary of results from the modeling are contained in a following section entitled Summary of Calculations. Full calculations (enclosed as exhibit "C") are included in this drainage report. It is believed that the model developed for the plan area presents an accurate picture of runoff conditions of the area following development.

VIII. SUMMARY OF CALCULATIONS:

Peak discharge from the Watershed Basin = 127.46 cfs

IX. OTHER CONSIDERATIONS:

Other considerations such as sedimentation control, erosion control, and dust control were considered in this report and will be included in the construction documents. The following is a discussion on how the above items will be addressed.

Sedimentation control is not considered to be a problem and is not addressed by special construction in this development.

In general, erosion of the site will not be a problem. The areas along the man-made swale will require special attention such as construction fabric or concrete. This matter will be addressed in the final drainage management report and construction documents. Temporary erosion control measures will be used during the construction period to prevent soil from washing into public right-of-way or private property. These measures shall include the construction of temporary berms. These berms shall remain in place until permanent surfaces are constructed.

During construction the site shall be maintained in a "wet-down" condition to the degree necessary to prevent excessive

dust. Periodically, spillage in the public right-of-way, shall be sprinkled with water; however, watering that results in mud on public streets will not be permitted and alternate cleaning methods shall be used.

X. CONCLUSIONS:

The 100-year storm will create 127.46 cfs of runoff due to development of the watershed basin. Development of the watershed basin will require the following:

1. The construction of four double type "C" catchbasins on each side of Office Boulevard.
2. The construction of one type "A" catchbasin on each side of Office Boulevard.

XI. RECOMMENDATIONS:

We recommend that this plan be approved as presented.

XII. REFERENCES:

1. City of Albuquerque, Development Process Manual, Volume II, Design Criteria.
2. Handbook of Hydraulics, 3rd Edition, by Calvin Victor Davis and Kenneth E. Sorenson.
3. Standard Handbook for Civil Engineers, 3rd Edition, by Fredrick S. Merritt.

Job _____ Sheet No. 1 of _____

Subject FLOW TO EXISTING/NEW CATCHBASINS Job. No. _____

Client DIENNA/SIMPKINS By RGS Date 7/4/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. **Albuquerque, NM**

AREA OF DRAINAGE BASIN = 34.2 ACRES

LENGTH OF TRAVEL = 1300 FT

AVERAGE SLOPE= 0.01

TRAVEL = 3.1 min use 10 min

C = 0.77

I = 2.2 in/hr PLATE 22.2 D-2

6-hr, 100 yr rainfall = 2.2 in PLATE 22.2 D-1

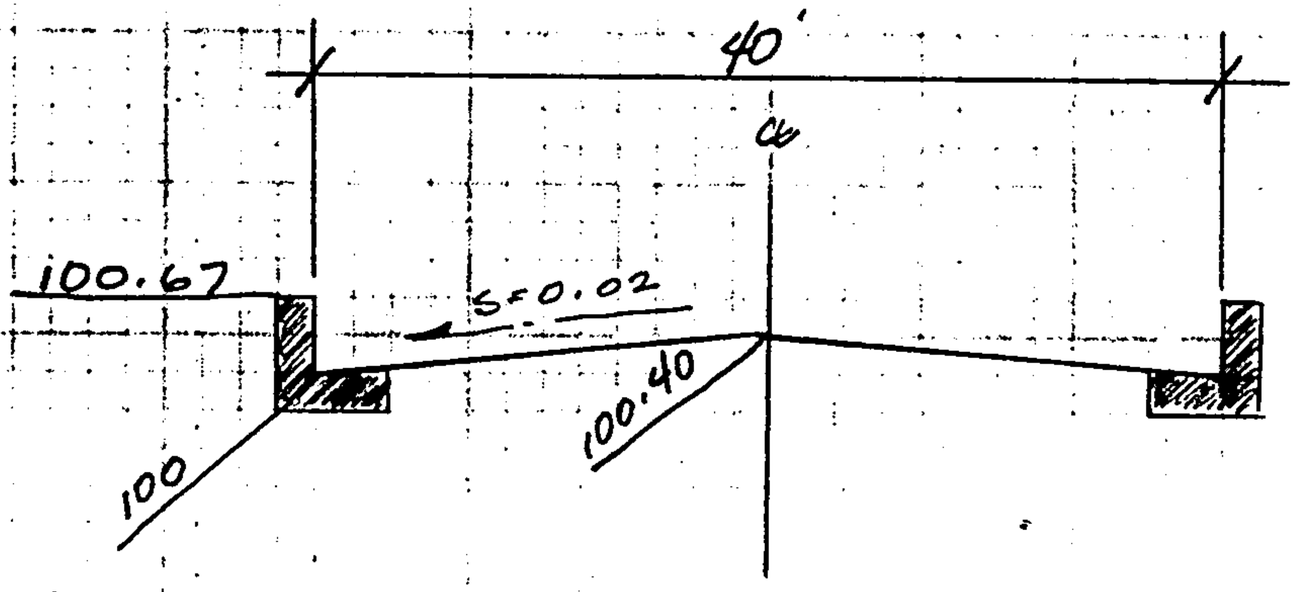
i = (2.2)/(2.2) = 4.84 in/hr

$Q = CIA = 0.77(4.84)(34.2) = 127.46$ CFS

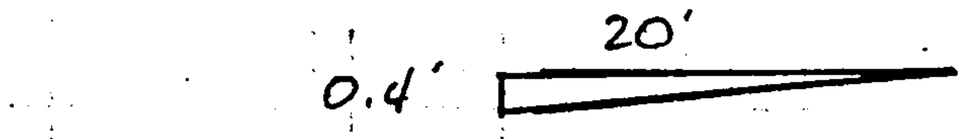
$Q_{10} = 0.657(127.46) = 83.74$ CFS

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

DATA FROM MIDWAY BUSINESS PARK
RECORD DRAWINGS
WORK ORDER # 2030



CAPACITY OF ½ STREET TO ℄ (TOP OF CROWN)



AREA = ½(20)(0.4) = 4 SQ FT

WETTED PERIMETER = $\sqrt{0.4^2 + 20^2}$ = 20,00

n = 0.017

R = 4/20 = 0.2

$Q = \frac{1.49}{n} R^{2/3} S^{1/2} A$

$= \frac{1.49}{0.017} (0.2)^{2/3} (0.0048)^{1/2} (4)$

= 8.3 CFS

Job _____ Sheet No. _____ of _____

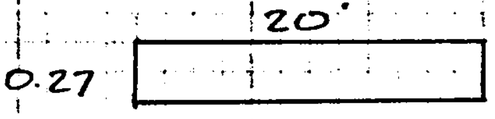
Subject STREET CAPACITIES Job. No. _____

Client DIENNA / SIMPKINS By RGS Date 7/4/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. **Albuquerque, NM**

CAPACITY TO TOP OF CURB (½ STREET):

AREA FROM TOP OF CROWN TO TOP OF CURB:



AREA = 0.27(20) = 5.4 SF

TOTAL AREA = 4 + 5.4 = 9.4 SF

WETTED PERIMETER:

$= 0.27 + \sqrt{0.4^2 + 20^2} = 20.27$

$R = \frac{9.4}{20.27} = 0.46$

$Q = \frac{1.49}{0.017}(0.46)^{2/3}(0.0048)^{1/2}(9.4)$

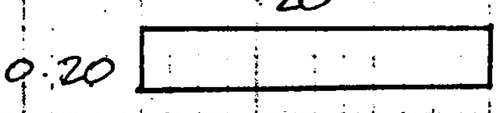
$= (87.65)(0.60)(0.07)(9.4)$

$= 34.20$ CFS

TOTAL Q FOR ENTIRE STREET

$2 \times 34.20 = 68.39$ CFS

CAPACITY OF ½ STREET WITH RUNOFF FLOW 0.20' HIGHER THAN TOP OF CURB:



Job [illegible] Sheet No. 1 of

Subject STREET CAPACTIES

Client DIENNA / SIMPKINS

Job. No.

By RGS Date 7/4/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

AREA = 20(0.2) = 4 SF

TOTAL AREA = 4 + 5.4 + 4 = 13.4 SF

WETTED PERIMETER:

$= 0.2 + 0.27 + \sqrt{0.4^2 + 20^2} = 20.47$

$R = 13.4 / 20.47 = 0.65$

$Q = \frac{1.49}{0.017}(0.65)^{2/3}(0.0048)^{1/2}(13.4)$

$= 61.34$ CFS

TOTAL Q FOR ENTIRE STREET

$2 \times 61.34 = 122.68$ CFS

127.46 CFS FLOW FROM BASIN
122.68 CFS FLOW IN STREET
4.78 CFS ADDITIONAL FLOW

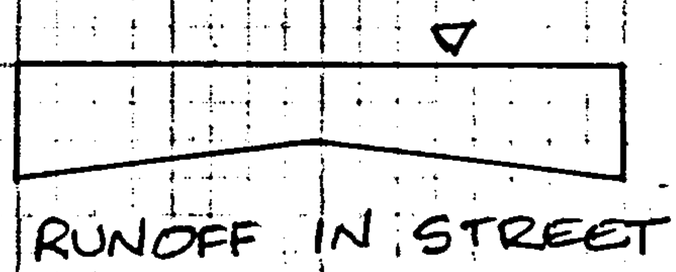
4.78/2 = 2.39 CFS ON SIDEWALK AREA

Job _____ Sheet No. _____ of _____

Subject INLET DESIGN Job. No. _____

Client DIENNA / SIMPKINS By RGS Date 7/5/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. **Albuquerque, NM**



Q TO INLET ① = 127.46 CFS

DEPTH TO INLET ① = 0.87'

INSTALL ONE TYPE "A" C.B. ON EACH SIDE OF OFFICE BLVD. CAPACITY OF 2 TYPE "A" C.B. = 26 CFS

Q TO INLET ② = 127.46 - 26 = 101.46 CFS

DEPTH TO INLET ② = 0.87 - 0.13 = 0.74'

INSTALL ONE DOUBLE TYPE "C" C.B. ON EACH SIDE OF OFFICE BLVD. CAPACITY OF 2 DOUBLE TYPE "C" C.B. = 24 CFS

Q TO INLET ③ = 101.46 - 24 = 77.46 CFS

DEPTH TO INLET ③ = 0.74 - 0.05 = 0.71'

INSTALL ONE DOUBLE TYPE "C" C.B. ON EACH SIDE OF OFFICE BLVD. CAPACITY OF 2 DOUBLE TYPE "C" C.B. = 23 CFS

Sheet No. _____ of _____

Subject INLET DESIGN
Client DIENNA / SIMPKINS

Job. No. _____
By RGS Date 7/5/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

Q TO INLET ④ = 77.46 - 23 = 54.46 CFS

DEPTH TO INLET ④ = 0.71 - 0.05 = 0.66'

INSTALL ONE DOUBLE TYPE "C" C.B. ON EACH SIDE OF OFFICE BLVD. CAPACITY OF 2 DOUBLE "C" C.B. = 19 CFS.

Q TO INLET ⑤ = 54.64 - 19 = 35.46 CFS

DEPTH TO INLET ⑤ = 0.66 - 0.05 = 0.61

INSTALL ONE DOUBLE TYPE "C" C.B. ON EACH SIDE OF OFFICE BLVD. CAPACITY OF 2 DOUBLE "C" C.B. = 17.50 CFS

Q TO INLET ⑥ = 35.46 - 17.50 = 17.96 CFS

DEPTH TO INLET ⑥ = 0.61 - 0.05 = 0.56

CAPACITY OF EXISTING DOUBLE "C" C.B. = 13.5 CFS

17.96 - 13.5 = 4.46 CFS TO EXISTING DOUBLE "C" AT MIDWAY & OFFICE. ⑦

Sheet No. ____ of ____

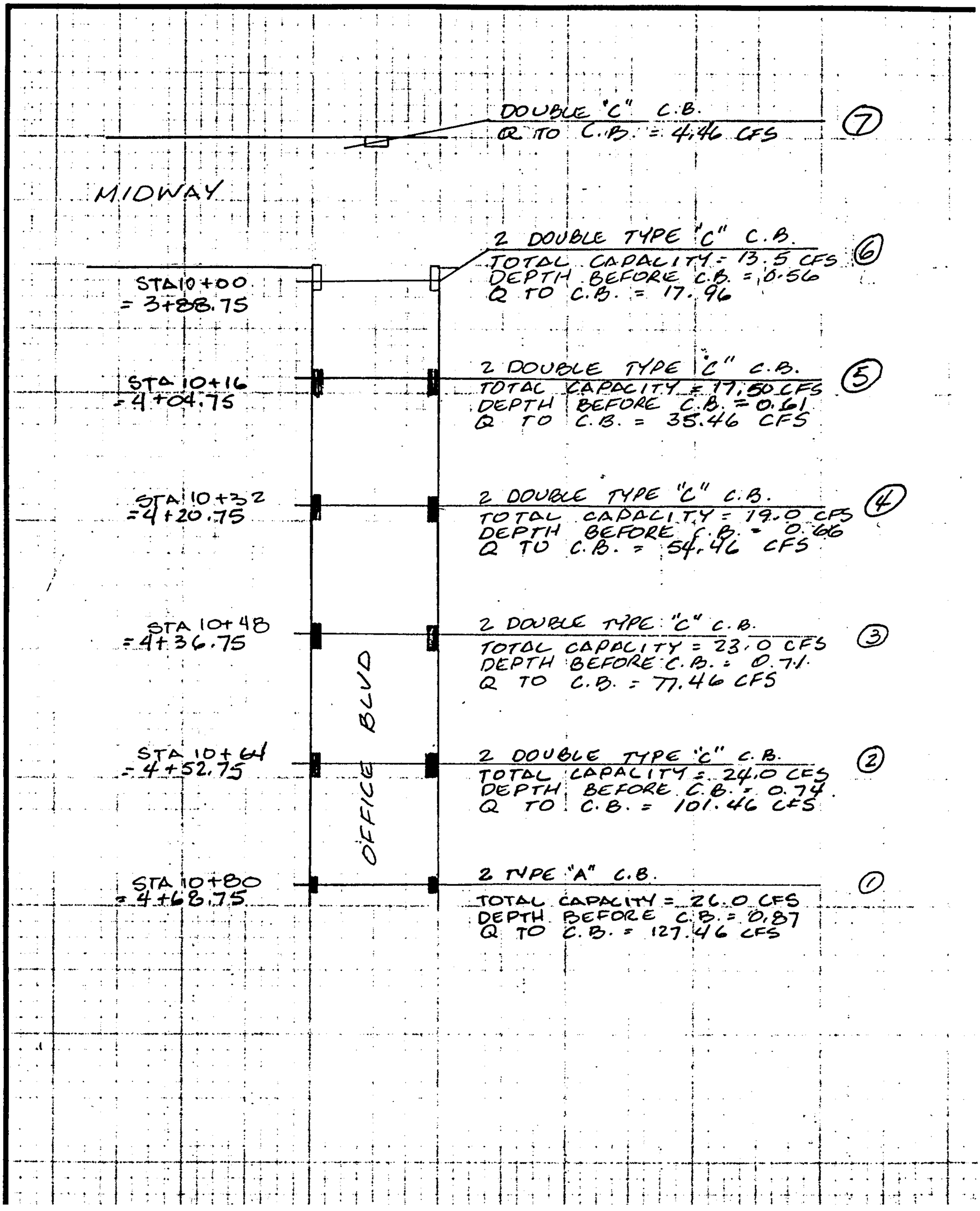
Subject INLET DESIGN (SUMMARY)

Job. No. ____

Client DIENNA / SIMPKINS

By RGS Date 7/4/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. **Albuquerque, NM**



Job _____ Sheet No. _____ of _____

Subject CATCHBASINS INSTALLED BY D.S. Job. No. _____

Client DIENNA/SIMPKINS By RGS Date 7/5/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. Albuquerque, NM

FROM DRAINAGE REPORT ON PLAN:

EXISTING ON SITE CONDITIONS

Q_{100} = 16.29 CFS

PROPOSED ON SITE CONDITIONS

Q_{100} = 31.35 CFS

INCREASED RUNOFF

31.35 - 16.29 = 15.06 CFS.

INSTALL ONE DOUBLE "C" C.B. ON EAST SIDE OF OFFICE BLVD.

Subject HYDRAULIC CALCS
Client DIENNA / SIMPKINS

Job. No.
By RGS Date 1/5/88

CHAVEZ - GRIEVES / CONSULTING ENGINEERS, Inc. **Albuquerque, NM**

EAST SIDE OF STREET:

FROM COA WORK ORDER DWG #2030, EXISTING CATCH BASIN @ STA 3+88.75

STA	GRATE ELEVATION
3+88.75	19.06
4+04.75	19.14
4+20.75	19.21
4+36.75	19.29
4+52.75	19.37
4+68.75	19.44

Sheet
Date
Computed by
Checked by
Pipe "n" :

TABLE_____
SIZE AND PROFILE OF UNDERGROUND STORM DRAINS

PROJECT DIENNA/SIMPKINS
LOCATION
DIVISION OFFICE
DISTRICT OFFICE

INLET OR JUNCTION NUMBERS		Distance Between Design Points, in feet, Measured to ℄ of Inlet or Junction	HYDRAULIC DESIGN DATA ON UNDERGROUND STORM DRAINS														
			Adopted Design										Elevation of Invert at Design Point, (Col. 2) in Feet		Elevation of Ground Surface, in Feet		Notes
			Design Discharge Capacity, in c.f.s.	Selected Size of Pipe, in Inches	Hydraulic Grade Line Thru Pipe Length			Head Loss at Change in Section				Elevation Hydraulic Grade Line, Col 8, Plus Head Loss, Col. 12					
					Slope in Ft./Ft.	Rise in Feet	Elevation at ℄ of Upstream Design Pt.	Velocity of Inflow (v) in Ft./Sec.	Velocity Head $\frac{v^2}{2g}$	Loss Coefficient, K	Head Loss, in Feet, $= K\frac{v^2}{2g}$		Incoming Pipe	Outgoing Pipe	Natural Surface	Finished Grade	
From	To																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
(1)	(2)	16'	13	24"	0.0048	0.08	16.05	2.2	0.08	0.04	0.003	16.053	15.06	15.04		19.49	
(2)	(3)	16'	25	24"	0.0048	0.08	15.95	2.2	0.08	0.04	0.003	15.953	14.96	14.94		19.36	
(3)	(4)	16'	36.5	24"	0.0048	0.08	15.85	2.2	0.08	0.04	0.002	15.853	14.86	14.84		19.29	
(4)	(5)	116'	46.0	24"	0.0048	0.08	15.76	2.2	0.08	0.04	0.003	15.763	14.77	14.75		19.21	
(5)	(6)	16'	54.75	24"	0.0048	0.08	15.66	2.2	0.08	0.04	0.003	15.663	14.67	14.65		19.14	
(6)(6)	(J1)	41.6'	61.5	24"	0.0156	0.65	15.01	2.2	0.08	0.04	0.003	15.013	14.63	14.38		19.0	
(J1)		—	123	—	—	—	14.23	2.2	0.08	0.1	0.008	14.238	12.73	12.73		18.64	
(J1)	(J2)	36.6	127.5	36"	0.018	0.66	14.35	2.2	0.08	0.04	0.003	14.353	12.73	12.07		20.00	
(J2)		—	127.5	—	—	—	13.57	2.2	0.08	0.1	0.008	13.578	12.82	12.07		20.00	
(J2)	OUTLET	460.0	127.5	36"	0.018	0.83	6.07	2.2	0.08	0.04	0.003	6.073	12.07	5.79		20.00	