

FRANK D. LOWE & ASSOCIATES  
REGISTERED PROFESSIONAL ENGINEER  
MARCH 11, 2004

CONCEPTUAL GRADING AND DRAINAGE PLAN  
OFFICE/WAREHOUSE FOR HONEY DO PLUMBING  
LOT 11, ALAMEDA BUSINESS PARK  
ALBUQUERQUE, NEW MEXICO

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JOB NO:	667
DATE:	MARCH 11, 2004
REVISIONS	

SHEET NO.  
1 OF 2

C-16/D6DD



## DRAINAGE CALCULATIONS:

### EXISTING CONDITIONS:

The site is located on the west side of Paseo Alameda Drive, the second lot north of the intersection with Vista Alameda Drive. The lot slopes from southwest to northeast, except for the west end of the lot which slopes at about 2-1/2 to 1 for a horizontal distance of about 60'. The toe of the slope falls approximately on the west property line and is at the level of Edith Boulevard, a vertical distance of approximately 24 feet below the highest point on the lot. Paseo Alameda Drive is paved with standard curb and gutter.

### DEVELOPED CONDITIONS:

It is proposed to construct a new office / warehouse building on the site as shown. Asphalt parking will surround the building on three sides. All storm runoff will be directed through the parking lot to the NE corner of the site where it will discharge into the street via the sidewalk culvert.

### DRAINAGE CRITERIA:

The calculations shown on this plan were prepared in accordance with Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque in cooperation with Bernalillo County, New Mexico and the Metropolitan Arroyo Flood Control Authority, January, 1993.

### PRECIPITATION\_ZONE:

The site is between the Rio Grande River and San Mateo Blvd. and is, therefore, in Precipitation Zone 2.

### LAND TREATMENT AREAS:

The peak discharge per acre and excess precipitation are shown for the four land treatments in Zone 2 in the table below, and the values shown are from the City of Albuquerque D.P.M. Also shown are the existing and proposed land treatment areas.

LAND TREAT.	100-yr.	10-yr.	100-yr.	10-yr.	Existing Site Areas	%	Developed Site Areas	%
	q(cfs/acre)	E(in)			Sq.Ft.	Acres	Sq.Ft.	Acres
A	1.56	0.38	0.53	0.13	0.0	0.0000	0.0	0.0000
B	2.28	0.95	0.78	0.28	0.0	0.0000	13.7	4.361
C	3.14	1.71	1.13	0.52	100.0	0.7302	28.1	8.953
D	4.70	3.14	2.12	1.34	0.0	0.0000	58.2	18.496
Totals					100.0	0.7302	31,810	0.7302

### PEAK DISCHARGE:

#### EXISTING CONDITIONS:

Q100 = 0.7302 \* 3.14 = 2.29 cfs

Q10 = 0.7302 \* 1.71 = 1.25 cfs

#### DEVELOPED CONDITIONS:

Q100 = 0.1001 \* 2.28 + 0.2055 \* 3.14 + 0.4246 \* 4.70 = 2.87 cfs

Q10 = 0.1001 \* 0.95 + 0.2055 \* 1.71 + 0.4246 \* 3.14 = 1.78 cfs

### VOLUME, 100-YEAR AND 10-YEAR, 6-HOUR:

#### EXISTING CONDITIONS:

V100 = (31,810 \* 1.13) / 12 = 2,995 cf

V10 = (31,810 \* 0.52) / 12 = 1,378 cf

#### DEVELOPED CONDITIONS:

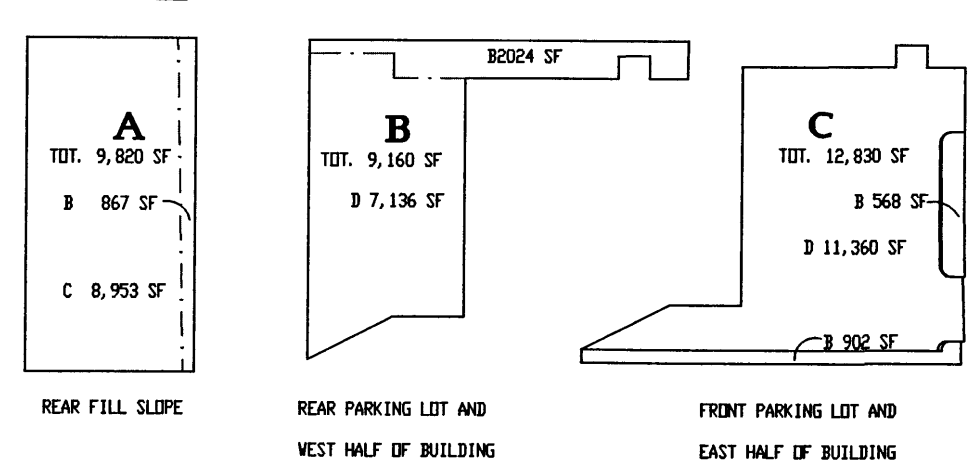
V100 = (4,361 \* 0.78 + 8,953 \* 1.13 + 18,496 \* 2.12) / 12 = 4,394 cf

V10 = (4,361 \* 0.28 + 8,953 \* 0.52 + 18,496 \* 1.34) / 12 = 2,555 cf

### SUMMARY OF ON-SITE VOLUMES AND PEAK DISCHARGE RATES:

	V100(CF)	V10(CF)	Q100(CFS)	Q10(CFS)
DEVELOPED	4,394	2,555	2.87	1.78
EXISTING	2,995	1,378	2.29	1.25
INCREASE	1,399	1,177	0.58	0.53

### SUBBASINS:



### SUMMARY OF SUBBASIN DISCHARGE:

SUBBASIN	TR. B (CFS)	TR. C (CFS)	TR. D (CFS)	TOTAL (CFS)
A	0.04	0.65	0.00	0.69
B	0.11	0.00	0.77	0.88
C	0.08	0.00	1.22	1.30
TOTALS	0.23	0.65	1.99	2.87

### LEGEND:

EXISTING	NEW	DESCRIPTION
35.05	35.00	CONTOUR
35.50		SPOT ELEVATION
	0.0100	PROPERTY LINE
	0.0200	SLOPE (FT PER FT)
		SWALE
		SLOPE (FEET PER FOOT)
		SHEET FLOW
		ROOF FLOW
		DOWNSPOUT
		BOC = BACK OF CURB
		DC = DRIVE CUT
		EA = EDGE OF ASPHALT
		EC = EDGE OF CONCRETE
		FL = FLOW LINE
		TC = TOP OF CURB/CONCRETE
		TA = TOP OF ASPHALT
		G = GROUND
		FP = FENCE POST

### GENERAL NOTES FROM TOPOGRAPHIC SURVEY:

- CONTOUR INTERVAL IS ONE (1) FOOT.
- ELEVATIONS ARE BASED ON CITY OF ALBUQUERQUE STATION No. "NDC 7-1B2", HAVING AN ELEVATION OF 5084.40.
- UTILITIES SHOWN HEREON ARE IN THEIR APPROXIMATE LOCATION BASED ONLY ON ABOVE GROUND EVIDENCE FOUND IN THE FIELD AND AS-BUILT INFORMATION PROVIDED BY THE CLIENT. UTILITIES SHOWN HEREON, WHETHER INDICATED AS ABANDONED OR NOT, SHALL BE VERIFIED BY OTHERS FOR EXACT LOCATION AND/OR DEPTH PRIOR TO EXCAVATION OR DESIGN CONSIDERATIONS.
- THIS IS NOT A BOUNDARY SURVEY. BEARINGS AND DISTANCES SHOWN HEREON ARE FOR REFERENCE ONLY.

### FLOOD MAP:

NO FLOOD ZONES IMPACT THIS SUBDIVISION.

### LEGAL DESCRIPTION:

LOT 11, PLAT OF ALAMEDA BUSINESS PARK.

### SIDEWALK CULVERT:

Design Q = 2.87 cfs  
Use Weir Equation  $Q = C L H^{3/2}$   $C = 2.65$   $L = 2.0$   $H = 0.67'$   
 $Q = 2.65 \times 2.0 \times 0.67^{3/2} = 2.91 > 2.87$  (Adequate)

### CURB OPENING - REAR PARKING LOT:

Design Q = 0.77 cfs  
Use Weir Equation  $Q = C L H^{3/2}$   $C = 2.65$   $L = 1.0$   $H = 0.5'$   
 $Q = 2.65 \times 1.0 \times 0.50^{3/2} = 0.94 > 0.77$  (Adequate)

### CURB OPENING - FRONT PARKING LOT:

Design Q = 0.55 (SUBBASIN C) AND 0.67 (SUBBASIN D) = 1.30 cfs  
Use Weir Equation  $Q = C L H^{3/2}$   $C = 2.65$   $L = 1.0$   $H = 0.5'$   
 $Q = 2.65 \times 1.5 \times 0.50^{3/2} = 1.41 > 1.22$  (Adequate)

### CHANNEL BEHIND REFUSE ENCLOSURE:

Design Q = 0.88 cfs  
Use Weir Equation  $Q = C L H^{3/2}$   $C = 2.65$   $L = 0.8$   $H = 0.67'$   
 $Q = 2.65 \times 0.8 \times 0.67^{3/2} = 1.16 > 0.88$  (Adequate)

### CHANNEL NORTH OF BUILDING:

Design Q = 0.88 cfs 3/4" GRAVEL-LINED CHANNEL  $N = 0.025$   
 $V = (1.486 / N) (R)^{2/3} (S)^{1/2}$   $R = A/P$   $S = 0.0050$  FT/FT  
 $A = (4 \times 0.5) / 2 = 1.0$  SF  $P = 2 (0.5^2 + 2.0^2)^{1/2} = 4.12$  FT  
 $R = 1.0 / 4.12 = 0.24$   
 $V = (1.486 / 0.025) (0.24)^{2/3} (0.0050)^{1/2} = 1.62$  CFS  
 $Q = AV = 1.0 \times 1.62 = 1.62$  CFS  $> 0.88$  CFS (ADEQUATE)

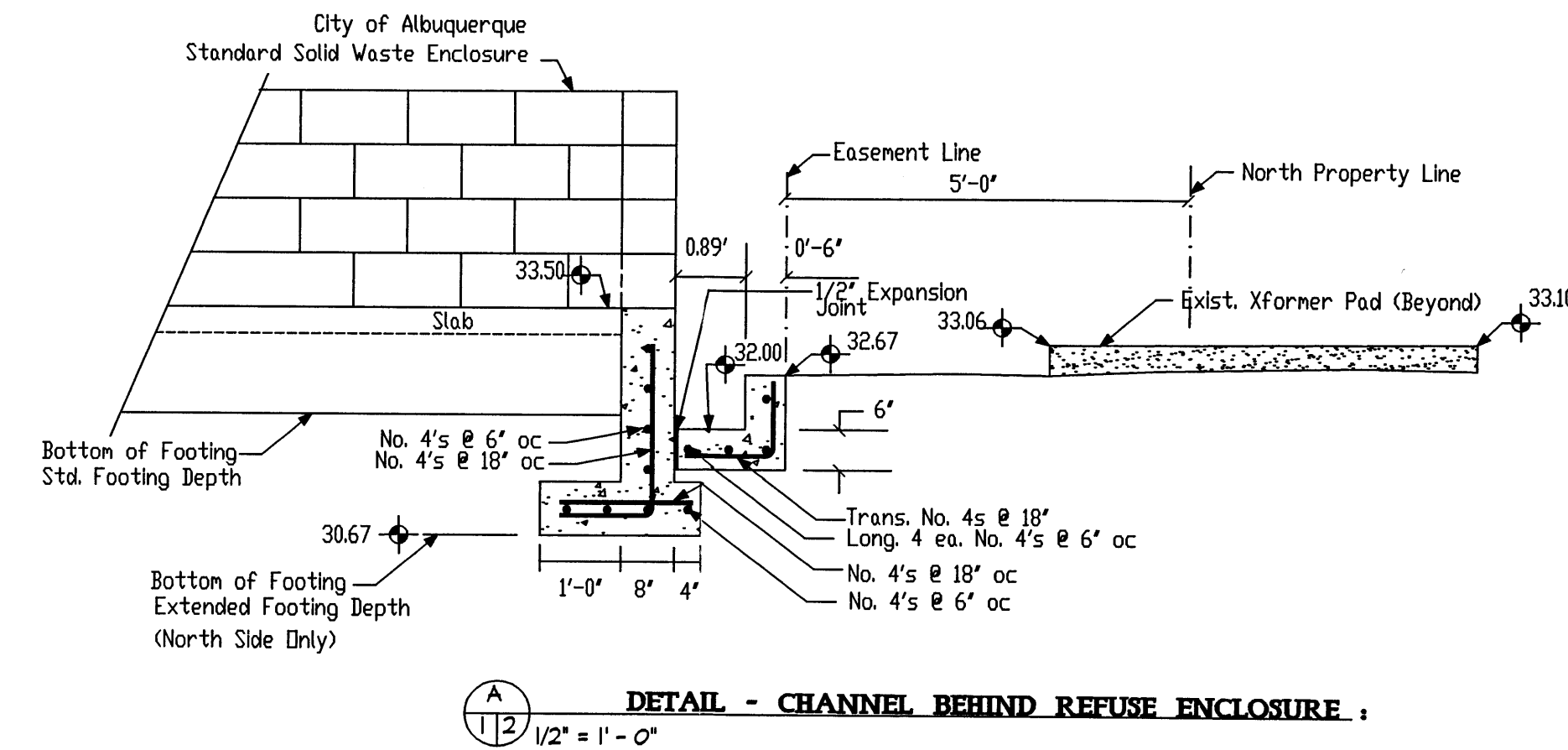
### EROSION CONTROL NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:
  - NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
  - DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
  - SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT-BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPTLY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENT ORIGINATING FROM THE SITE.
  - CONTROL OF SEDIMENT-LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

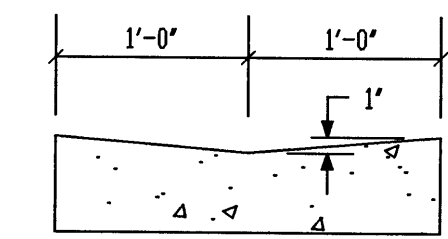
### CITY OF ALBUQUERQUE DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19) NOTICE TO CONTRACTORS

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
- ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREIN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS UPDATED THROUGH REVISION NO. 6.
- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC., 260-1990, FOR LOCATION FOR EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
- WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

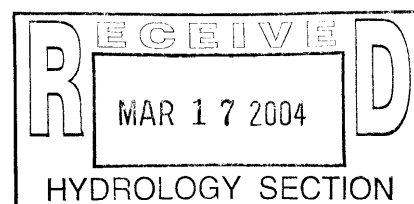
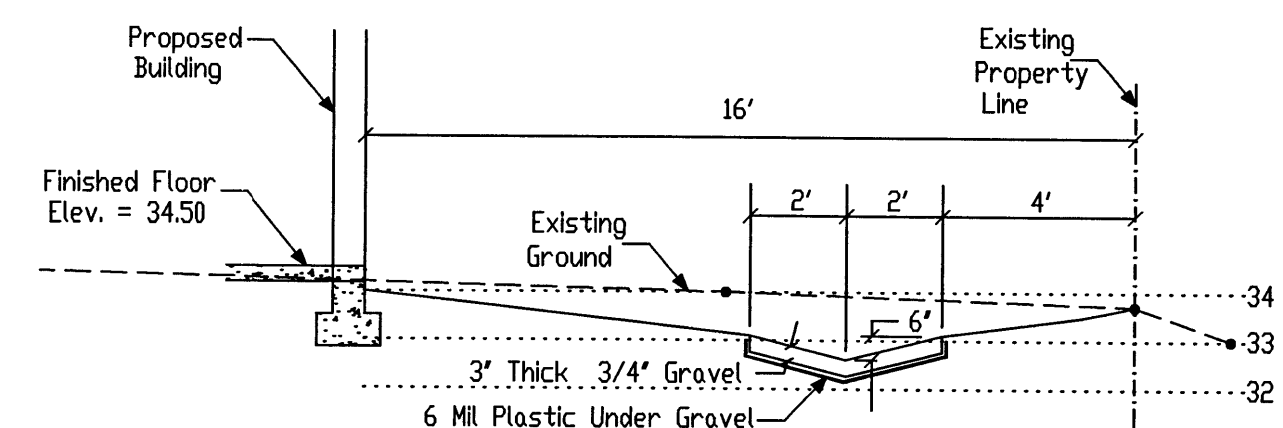
APPROVAL FOR PCC RUNDOWN	NAME	DATE
INSPECTOR		



### DETAIL - CONCRETE VALLEY GUTTER: 1/2" = 1' - 0"



### DETAIL - CHANNEL NORTH OF PROPOSED BUILDING: 1/2" = 1' - 0"



DRAINAGE CALCULATIONS  
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