City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 18, 1994

Frank D. Lovelady, P.E.
Lovelady & Associates
300 Alamosa NW
Albuquerque, N.M. 87107

RE: GRADING & DRAINAGE PLAN FOR RAMADA INN (K-10/D25)
RECEIVED AUGUST 5, 1994 FOR BUILDING PERMIT APPROVAL
ENGINEER'S STAMP DATED 8/4/94

Dear Mr. Lovelady:

Based on the information included in the submittal referenced above, City Hydrology approves this project for Building Permit.

Include a copy of the approved Grading & Drainage Plan, dated 8/4/94, in the set of construction documents that will be submitted to the "one stop" for the Building Permit.

A seperate permit is required for construction of private drainage facilities within the City Right-of-Way. A copy of this letter must be on hand when applying for the excavation permit.

Engineer's Certification of grading & drainage Per DPM checklist must be approved before any Certificate of Occupancy will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia

WPHYD/8675/jpc

Investigation Phase Report, 1984

TABLE 4

NEH-4 DATA SUMMARY

100-YEAR STORM DEVELOPED CONDITIONS

Area No.	Basin Length (Feet)	Elev. Drop (Feet)	Slope	Area (Acres)	CN	T_p (Min.)	Direct Runoff (Inches)	Runoff Volume (Acre-ft.)	Peak Flow (cfs)
1D	1850	183	0.0989	33.4	68	10	0.27	0.73	40
2D	6070	318	0.0524	169.4	72	20	0.38	5.33	146
3D	5200	301	0.0579	83.7	68	16	0.27	1.84	63
4D	4850	226	0.0465	143.4	68	18	0.27	3.14	96
5D	1350	72	0.0533	9.5	74	10	0.45	0.35	19
6D	1730	86	0.0499	24.1	74	10	0.45	0.89	49
7D	750	33	0.0044	2.8	76	10	0.52	0.12	7
8D	7850	399	0.0508	441.8	83	24	0.84	30.46	698
9D	3850	142	0.0369	55.7	88	16	1.13	5.19	179
10D	2300	88	0.0383	21.5	81	10	0.73	1.31	72
11D	2200	71	0.0323	16.0	76	10	0.52	0.69	38
12D	5600	156	0.0279	248.1	85	24	0.94	19.35	443
13D	4400	90	0.0205	106.5	90	22	1.27	11.13	278
14D	2000	14	0.0070	74.9	90	18	1.27	7.83	239
15D	3800	108	0.0284	119.7	90	18	1.27	12.52	382
16D	1995	48	0.0241	7.5	92	12	1.42	0.88	40
17D	3150	56	0.0178	81.6	90	18	1.27	8.54	261
18D	4450	63	0.0142	210.6	83	26	0.84	14.52	307
19D	1650	38	0.0230	23.5	92	10	1.42	2.76	152
20D	3650	87	0.0238	181.7	85	18	0.94	14.17	433

TABLE 6

NEH-4 DATA SUMMARY

10 -YEAR STORM DEVELOPED CONDITIONS

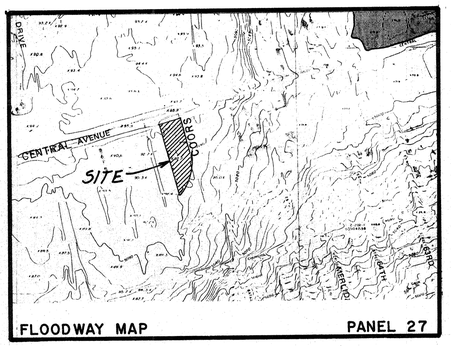
Area No.	Basin Length (Feet)	Elev. Drop (Feet)	Slope	Area (Acres)	CN	T_p (Min.)	Direct Runoff (Inches)	Runoff Volume (Acre-ft.)	Peak Flow (cfs)
1D	1850	183	0.0989	33.4	68	10	0.05	0.14	7
2D	6070	318	0.0524	169.4	72	20	0.10	1.37	38
3D	5200	301	0.0579	83.7	68	16	0.05	0.34	12
4D	4850	226	0.0465	143.4	68	18	0.05	0.58	18
5D	1350	72	0.0533	9.5	74	10	0.13	0.10	6
6D	1730	86	0.0499	24.1	74	10	0.13	0.26	14
7D	750	33	0.0440	2.8	76	10	0.17	0.04	2
8D	7850	399	0.0508	441.8	83	24	0.35	12.68	291
9D	3850	142	0.0369	55.7	88	16	0.54	2.49	86
10D	2300	88	0.0383	21.5	81	10	0.29	0.51	28
11D	2200	71	0.0323	16.0	76	10	0.17	0.22	12
12D	5600	156	0.0279	248.1	85	24	0.42	8.55	196
13D	4400	90	0.0205	106.5	90	22	0.64	5.63	141
14D	2000	14	0.0070	74.9	90	18	0.64	3.96	121
15D	3800	108	0.0284	119.7	90	18	0.64	6.33	193
16D	1995	48	0.0241	7.5	92	12	0.75	0.47	22
17D	3150	56	0.0178	81.6	90	18	0.64	4.32	132
18D	4450	63	0.0142	210.6	83	26	0.35	6.05	128
19D	1650	38	0.0230	23.5	92	10	0.75	1.47	81
20D	3650	87	0.0238	181.7	85	18	0.42	6.26	191

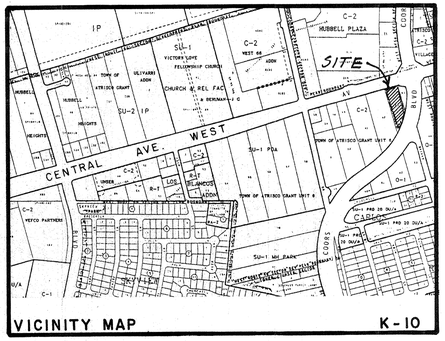
year storm runoff for the developed conditions can be predicted for the storm sewer in the North/South Coors Connection. Areas 14D and 18D contribute flows to this storm sewer. HYMO predicts a peak discharge rate from Area 14D of 160 cfs at 0.32hours and a peak of 188 cfs in Area 18D at 0.48 hours. All values are based on overland flow reaching the downstream end of the basin. Actual flows used for design of the storm sewer would depend on where the consultant selects his storm sewer entrance locations. For the purposes of this report it is assumed that runoff from areas 14D and 18D will be carried in the North/South Coors Connection storm sewer.

6. RECOMMENDATIONS

The following recommendations are made regarding the Investigation Report phase of the Amole Del Norte re-evaluation study:

1) That the drainage area boundary determined in this report (see Plates I-III) be accepted and approved by the City. Other Drainage plans within and adjacent to the Amole Del Norte drainage area should be adjusted or approved accordingly, including having the consultant size the North/South Coors Connection storm sewer to handle the flows intended for the Amole Hubbell Extension from Areas 14D and 18D.





SCALE 1" = 20'

LEGEND

EXISTING CONTOUR	5090
NEW CONTOUR	90
EXISTING SPOT ELEVATION	5094.6
NEW SPOT ELEVATION	92.40
PROPERTY LINE	
SWALE	
SHEET FLOW	
TOP OF CURB	TC
TOP OF ASPHALT	TA
FLOWLINE	FL
TOP OF WALL	TW

TEMPORARY BENCH MARK
SPIKE ON POWER POLE
ELEV. = 5094.50

POWER POLE

TR. 62

N'LY PORTION TR. 63

PORTION
BATAAN DRIVE
(APPARENTLY VACATED)

NEW MOTEL
FIN. FLR = 5094.00

BASIN "A"
BASIN "B"
BASIN "C"

N 15° 00' 12" W 477.33'

S 15° 00' 22" E 253.71'

N 15° 06' 25" E 150.05'

PROPERTY LINE

CENTRAL AVENUE S.W.

COORS BOULEVARD S. W.

ASPHALT SIDEWALK

CONC. CUTOFF WALL

REMOVE C&G

NEW ASPHALT PAVEMENT

1'-0" CURB OPENING
INV = 89.70

EXISTING
R = 876.93'
L = 270.14'
Δ = 17°38'59"

C.M.U. RET. WALL @ P.L.

CONC. SIDEWALK

LANDSCAPING

RIDGE

SLOPE

RETAINING WALL

CANOPY

REBAR W/ CAP #7907

CONST. 2 EA. 4" PVC PIPES THRU CURB PER STD. DWG. 2235
INV. IN = 92.94
INV. OUT = 92.80

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

1. 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.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS REVISED.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. 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.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO ARTERIAL STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. THE ADDRESS OF THE PROPERTY SERVED IS 6000 Central Avenue SW

APPROVALS:

HYDROLOGY John P. Curtin (NAME) 8-18-94 (DATE)

INSPECTOR _____ (NAME) _____ (DATE)

CONSTRUCTION _____ (NAME) _____ (DATE)

LEGAL DESCRIPTION:

A CERTAIN TRACT OF LAND, BEING AND COMPRISING A PORTION OF TRACT SIXTY-THREE (63) OF THE PLAT SHOWING A PORTION OF TRACTS ALLOTTED FROM TOWN OF ATRISCO GRANT, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT THEREOF, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON DECEMBER 5, 1944 IN VOLUME D, FOLIO 118, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SAID TRACT HEREIN DESCRIBED, BEING A POINT ON THE SOUTHERLY RIGHT-OF-WAY OF CENTRAL AVENUE S.W.; THENCE, FROM SAID POINT OF BEGINNING N 75DEG 06'25" E, 150.05 FEET TO THE NORTHEAST CORNER; THENCE S 15DEG 00'22" E, 253.71 FEET TO A POINT ON A CURVE, SAID POINT ALSO BEING A POINT ON THE WESTERLY RIGHT-OF-WAY OF COORS BOULEVARD S.W. AND THE SOUTHEAST CORNER OF SAID TRACT; THENCE SOUTHWESTERLY ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 876.93 FEET, AN ARC LENGTH OF 270.14 FEET, THROUGH A CENTRAL ANGLE OF 17DEG 38'59", TO THE SOUTHWEST CORNER OF SAID TRACT; THENCE N 15DEG 00'12" W, 477.33 FEET TO THE POINT OF BEGINNING AND CONTAINING 1.3020 ACRES, MORE OR LESS. LEGAL DESCRIPTION PREPARED BY FRANKLIN E. WILSON, N.M.L.S. 6446.

BENCH MARK:

All elevations shown on this plan are referenced to A.C.S. Control Station 8-K10, Elevation = 5082.145 Feet.

TEMPORARY BENCH MARK:

Spike on power pole approximately 50' west of the N.W. corner of the site.
Elevation = 5094.50.

RECEIVED
AUG 5 1994

FRANK D. LOVE
NEW MEXICO
7/7/94
REGISTERED PROFESSIONAL ENGINEER
REVISED 8/4/94

SHEET 1 OF 2

GRADING & DRAINAGE PLAN

RAMADA INN

COORS & CENTRAL SW
ALBUQUERQUE, N.M.

EXISTING CONDITIONS:

The site is located at the intersection of the Coors Extension and Central Avenue, S.W. at the southwest corner of the intersection. There is very small parcel of land between the site and Coors Boulevard which is a portion of Bataan Drive right-of-way which has apparently been vacated. The site slopes from north to south at a slope of slightly less than one percent. The site is presently undeveloped except for a turnout which was constructed at the southerly tip of the site. The ramp is constructed in such a way that access can only be to and from the southbound lanes of Coors Boulevard. The property directly to the west is undeveloped, also. The site bourders on Central Avenue to the north and on Coors Boulevard to the south.

DEVELOPED CONDITIONS:

It is proposed to construct a motel on the site as shown on the plan. Almost all drainage will be discharged from the building into the parking lot where it will be conveyed to Coors Boulevard through the existing south drivepad. Only a very small area will be allowed to drain to Central Avenue.

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 Albuquerque Metropolitan Arroyo Flood Control Authority, January 1993.

PRECIPITATION ZONE:

The site is west of the Rio Grande River and is, therefore, in Precipitation Zone 1.

LAND TREATMENTS:

No grading has taken place on Site. The existing site is all Treatment A. The developed land treatment areas are shown in the following table:

Land Treatment	q 100-yr.	q 10-yr.	E 100-yr.	E 10-yr.	Percent of Site	Area of Site Sq.Ft.	Area of Site Acres
A	1.29	0.24	0.44	0.08	0.0	0,000	0.000
B	2.03	0.76	0.67	0.22	24.3	13,780	0.316
C	2.87	1.49	0.99	0.44	0.0	0,000	0.000
D	4.37	2.89	1.97	1.24	75.7	42,935	0.986
Totals					100.0	56,715	1.302

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

Existing Conditions:

V100 = 56715 X (0.44/12) = 2080 CF
V10 = 56715 X (0.08/12) = 378 CF

Developed Conditions:

V100 = (0.67 X 13780 + 1.97 X 42935)/12 = 7818 CF
V10 = (0.22 X 13780 + 1.24 X 42935)/12 = 4689 CF

PEAK DISCHARGE, 100-YEAR AND 10-YEAR:

Existing Conditions:

Q100 = 1.302 X 1.29 = 1.68 CFS
Q10 = 1.302 X 0.24 = 0.31 CFS

Developed Conditions:

Q100 = 2.03 X 0.316 + 4.37 X 0.986 = 4.95 CFS
Q10 = 0.76 X 0.316 + 2.89 X 0.986 = 3.09 CFS

OFF-SITE FLOW:

The land adjacent to the site on the west is extremely flat and undeveloped. There is no indication that runoff from this area would tend to enter this site. However, there is some runoff from Central Avenue which tends to enter the front of the site. An area of approximately 3500 sq.ft. (0.08 ac.) is directly adjacent to the driveway entrance. This results in the following off-site flow quantity through the driveway which is accepted: Q_{100} = 0.08 X 4.37 = 0.35 CFS

DRAINAGE BASINS "B" AND "C":

Almost all site runoff leaves the site through the south driveway. Two smaller drainage basins, Basin "B" and Basin "C", have been defined to calculate flow quantities for outlet structures.

Basin "B" - 12,275 sf 6,782 sf Treat."B"(55%) and 5,493 Treat"D"(45%)
q = 0.55 X 2.03 + 0.45 X 4.37 = 3.08 cfs/acre Q_{100} = 3.08 X 0.28 = 0.86 cfs
Drains through 1' curb opening - check Weir Equation $Q = CLH^{3/2}$ C = 2.65
L = 1.0 H = 0.5' Q = 2.65 X 1.0 X $0.5^{3/2}$ = 0.93 cfs > 0.86 cfs.

Basin "C" - 4,416 sf 2,373 sf Treat"B"(54%) and 2,043 sf Treat"D"(46%).
q = 0.54 X 2.03 + 0.46 X 4.37 = 3.11 cfs/acre Q_{100} = 3.11 X 0.10 = 0.31 cfs
Drains through 2 each 4" PVC pipes through curb. Use Orifice Equation
$Q = CA(2GH)^{1/2}$ C = 0.6 A = 0.0855 sf H = 0.33'
Q = 0.6 X 0.0855 (2 X 32.2 X 0.33)$^{0.5}$ = 0.23 cfs < 0.31 cfs Use 2 each

ANALYSIS OF DOWNSTREAM CONDITIONS:

Reference: "INVESTIGATION PHASE REPORT for THE RE-EVALUATION STUDY of the AMOLE DEL NORTE STORM DIVERSION FACILITY", City of Albuquerque Project No. 1814, Albuquerque, New Mexico, July 1984.

The site lies at the northeast corner of Basin 18 of the above study. On page 17 and 18 of the study, a result of the Investigation Report phase as pertaining to Area 18D (Developed) is discussed as follows:

"Another result of the Investigation Report phase is that the 100-year storm runoff for the developed conditions can be predicted for the storm sewer in the North/South Coors Connection. Areas 14D and 18D contribute flows to this storm sewer. HYMO predicts a peak discharge rate from Area 14D of 160 cfs at 0.32 hours and a peak of 188 cfs in Area 18D at 0.48 hours. All values are based on overland flow reaching the downstream end of the basin. Actual flows used for design of the storm sewer would depend on where the consultant selects his storm sewer entrance locations. For the purposes of this report it is assumed that runoff from areas 14D and 18D will be carried in the North/South Coors Connection storm sewer".

P.17 & 18

The southeast corner of Area 18D appears to be the intersection of Bridge Boulevard and the North/South Coors Connection. The as-constructed plans for the North/South Coors Connection shows that the storm sewer at that point is a 72" RCP discharging into a retention pond at a slope of 0.0060'/ft. According to Manning' Equation, the capacity is as follows:
Area = $PiD^2/4$ = $Pi(6^2/4)$ = 28.27 SF P = Pi(D) = Pi(6) = 18.84 FT. R = A/P = 28.27 / 18.84 = 1.50
$Q = A(1.486 / N)R^{2/3} S^{1/2}$ = 28.27 (1.486 / 0.013)$1.5^{2/3}$ $0.0060^{1/2}$ = 328 CFS
328 CFS > 188 CFS Capacity is adequate.

The site is adjacent to the North/South Coors Connection at a point where there is no storm sewer. The capacity of the street has been designed for the peak runoff as determined by the HYMO computer program. Runoff quantities are presently being calculated by the AHYMO computer program which yields slightly larger volumes and slightly lower peak flows. The HYMO values of Excess Precipitation, E, and Peak Discharge per Acre, q, that previously were used with the simplified method are tabulated below:

Land Treatment	Excess Precipitation (E) 100-year	10-year	Peak Discharge per Acre (q) 100-year	10-year
A	0.45	0.16	1.61	0.56
B	0.60	0.24	2.30	1.01
C	0.82	0.36	3.15	1.68
D	1.87	1.16	4.80	3.19

VOLUME, 100-YEAR, 6-HOUR (Simplified method corresponding to HYMO)
V_{100} = (0.60 X 13780 + 1.87 X 42935) / 12 = 7380 CF
V_{100} = 7818 CF (AHYMO simplified procedure - See above)
Required pond volume = 7818 - 7380 = 438 CF.

PEAK DISCHARGE, 100-YEAR (Simplified method corresponding to HYMO)
Q_{100} = 2.30 X 0.316 + 4.80 X 0.986 = 5.45 CFS
Q_{100} = 4.95 CFS (AHYMO simplified procedure - See above)
Actual decrease in peak discharge = 5.45 - 4.95 = 0.5 cfs

RESPONSE TO LETTER OF JULY 27, 1994 FROM JOHN P. CURTIN, P.E.

1. The peak flow values quoted were found on page 17 of the Boyle Engineering Investigation Phase Report. In comparing the peak values from Table 4 or 6 with the capacity of the storm sewer outfall (See "Analysis of Downstream Conditions") the capacity appears to be adequate even for the values in Table 4 or 6.

2. The City of Albuquerque Project No. for the North-South Coors Connection is 1893. The first inlets are approximately 1,000 ft. south of Central Avenue, or 420 feet south of the site, although there is one inlet behind the curb approximately 170 feet south of the site. The area north and west of the Coors North-South Connection that would drain to the inlets is conservatively estimated to be 4.5 acres. Assuming 10%, 20% and 70% for Land Treatments B, C and D, respectively, q_{100} = 0.1 X 2.03 + 0.2 X 2.87 + 0.7 X 4.37 = 3.83 cfs/ac. Q_{100} = 4.5 X 3.83 = 17.24 cfs. From page 72 of the DPM, Street Capacity for a 48' street, Q = 9 cfs half street flow, Slope = 0.0050'/ft., the depth of flow is 0.5 ' The velocity is approximately 2.2 fps for that depth of flow. For practically any depth of flow the minimum velocity is about 1.0 fps. Therefore, the site peak discharge would reach the inlet in 420/60 = 7 minutes. The runoff from the site will be in the inlets before peak flow occurs in the street.

3. The total discharge from the site is only 4.95 cfs. Since there is adequate capacity in the street and since the storm inlets are very near the site, ponding a portion of the runoff from this site would not result in any significant downstream flow reduction.

EROSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.

2. 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.

3. 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 SEDIMENTATION ORIGINATING FROM THE SITE.

4. CONTROL OF SEDIMENT-BEARING 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.

SHEET 1 OF 2

FRANK O. LOVELADY NEW MEXICO 8112 REGISTERED PROFESSIONAL ENGINEER
REVISED 8/4/94

GRADING & DRAINAGE PLAN

RAMADA INN

COORS & CENTRAL SW
ALBUQUERQUE, N.M.

RECEIVED AUG 5 1994