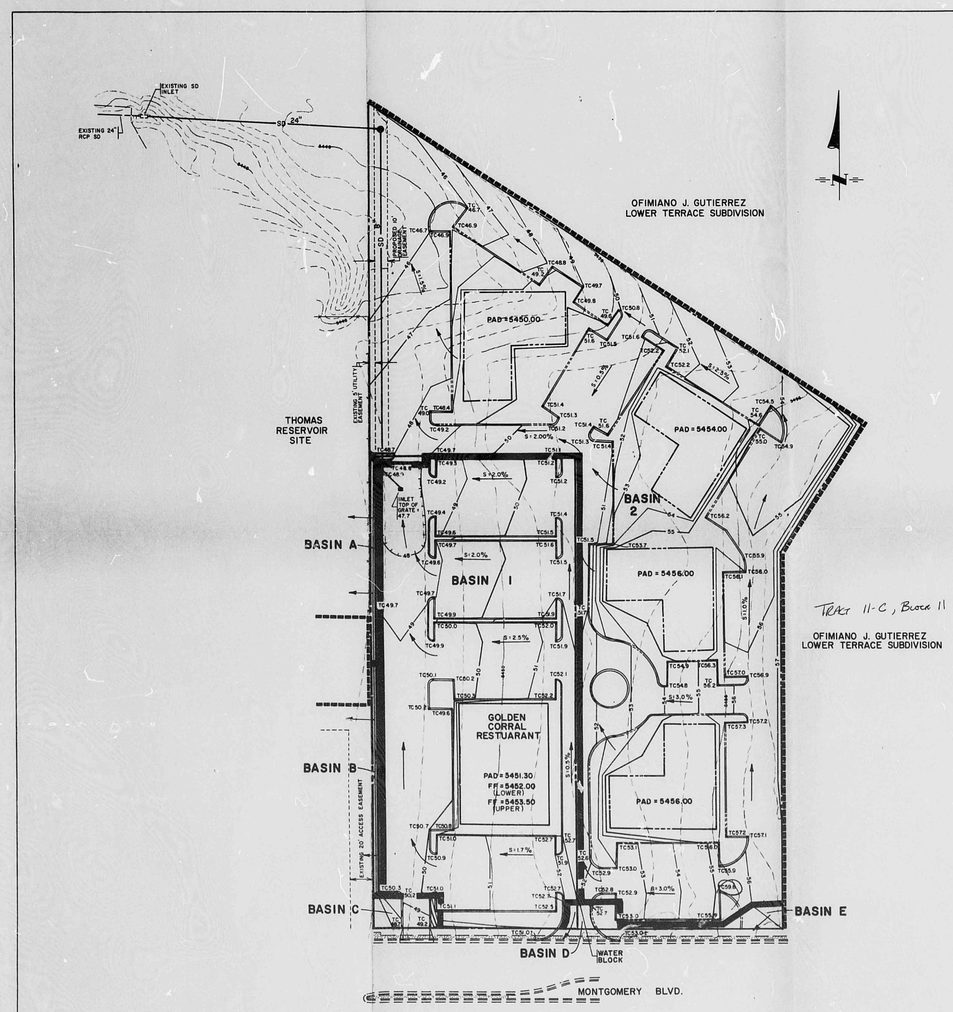
PUBLIC WORKS/HYDROLOGY

1 OF 2

F20/D20



DRAINAGE REPORT

PURPOSE

The purpose of this report is to outline the drainage management plan for a 4.95 acre parcel of land zoned SU/C with the Golden Corral Restaurant as the proposed use. The Drainage Design Criteria Manual (DDCM) was used as a guide in the development of this plan. All of the discharge rates given in this report are for the 5-hour, 100-year storm unless otherwise stated.

INTRODUCTION

The parcel of land is lot 11C, Block 11 of the Ofimiano J. Gutierrez Lower Terrace Addition and is located on the north side of Montgomery Blvd NE between Wyoming Blvd NE and La Morenaza Street. The site is currently undeveloped, contains sparse vegetation and slopes generally from the north side of a residential area, and the south side by Montgomery Blvd. The west boundary is adjacent to commercial property and to the Thomas Reservoir Site.

At this time, the parcel will be further subdivided into two (2) lots with each lot developed separately. A 7800 sq. ft. restaurant is proposed to occupy a 1.81 acre lot on the southwesterly portion of the site. The remaining portion will ultimately accommodate office buildings, but will currently remain undeveloped.

EXISTING CONDITIONS

The underlying soil, as shown on the SCS soil map, is Tijeras gravelly fine sandy loam, which is in soil group "B".

The site is currently undeveloped, contains sparse vegetation, and slopes generally towards the northeast. The site is in a drainage basin that is collected by an inlet structure located at the northwest corner of the City reservoir site and is discharged into the existing storm system in Wyoming Blvd.

According to FEMA, there is a flood plain along Montgomery Blvd to the south of the site. Therefore the finished floor elevations must be designed one foot (1') above the existing TOP of curb elevation. Tijeras Flood Land.

AO-1' ave

DOWNSTREAM CAPACITIES

An existing 24" storm sewer line extends east from Wyoming Blvd, through the Quarter's parking lot, to the northwest corner of the Thomas Reservoir site. The existing system in Wyoming Blvd conveys runoff through a series of pipes into the East Canyon Tributary. The 24" stub services the reservoir site, a portion of the Quarter's, and the proposed development site. From discussions with City officials and designers, it has been determined that the existing system in Wyoming Blvd has the ability to pass discharge rate of the Thomas Reservoir basin (line A 8.2 cfs).

This quantity was determined from previous reports which dealt with similar situations. The calculated runoff from a portion of the Quarter's parking lot, east of the reservoir, that drains into the existing inlet is 2.7 cfs (Using the rational formula: Q=ciA). The remaining 13.1 cfs capacity will be utilized by the proposed site.

PROPOSED CONDITIONS

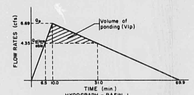
Site grading will be performed in order to move as much approximately 1,000 cubic yards of dirt as possible to obtain approximate grades that will guide the final construction of the restaurant site. The rest of the parcel will remain undeveloped until a future date, however, it will be graded to divert runoff flows around the restaurant site. Please note that the plan for that portion of the site is for conceptual purposes only and the final plan might be altered at the time of development.

The City Engineer has indicated that a previous agreement requiring the Quarter's to accept flows from the Thomas Site, located north of the reservior, ends the proposed development. The majority of onsite runoff will utilize this extension and be discharged into the existing storm system in Wyoming Blvd. A very small amount of free discharge will enter into Montgomery Blvd and the land west of the site.

As mentioned earlier, the existing capacity available is 20 cfs. The portion of the Quarter's parking lot that drains into the system discharges 2.7 cfs, and the Thomas Reservoir each line contributes 8.2 cfs. The proposed discharge for basin 1 is 9.35 cfs the entire site. The proposed discharge available for lot 11c is calculated as 2.70 cfs per acre. Therefore the restaurant site must discharge into the system at a controlled rate of 5.35 cfs and the rest of the site must have a controlled discharge rate of 8.75 cfs.

The following is a summary of flow rates for the basin and the ponding required. Calculations are based on the rational method (Q= CiA).

BASIN	C	I	A	Q
A	0.88	5.07	1.50	6.69 cfs
B	0.95	5.07	0.02	0.01 cfs
C	0.25	5.07	0.03	0.04 cfs
D	0.95	5.07	0.04	0.18 cfs
E	0.95	5.07	0.03	0.14 cfs



Vs=(2.5 in)(1 ft/12 in)x(1.61 ac)(43560 sq ft/1 ac)
Vs= 14,026.3 cu ft

T=2V/Qp =(2(14,026.3 cu ft))x(1 min/60 sec)/(6.69 cfs
T= 69.99 min.

Vip=(13.0 - 6.5)(6.69 - 4.35)/2)x(60 sec/1 min)
Vip= 1,716.9 cu ft

Basin 1 drains to a pond at the northwest corner of the restaurant site and is discharged at a controlled rate of 4.35 cfs. The pond must be large enough to contain at least 1,720 cu ft (Vip).

Basin 2 must discharge at a controlled rate of 8.75 cfs. Runoff may be controlled by a single pond adjacent to the proposed storm sewer or a series of individualized, smaller ponds throughout the basin.

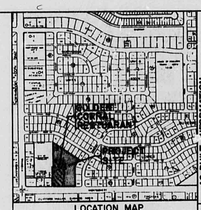
Basin A will discharge a negligible amount of runoff from landscaped area into the existing access easement south of the reservoir site. Basin B will also discharge a minimal amount of runoff from landscaped area directly adjacent to reservoir site. Basin C will discharge a negligible amount of runoff into Montgomery Blvd and be collected in the existing inlet at the northwest corner of Montgomery Blvd and Wyoming Blvd. The total runoff discharged into Montgomery Blvd is 0.52 cfs.

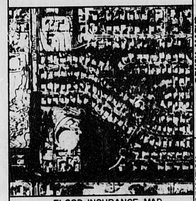
SUMMARY

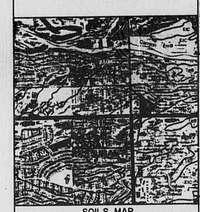
This plan is preliminary for the restaurant site and conceptual for the remaining portion of the site. Approval for the final grading plan will be dependent on the stability of the site and the plan for future development. All drainage of private property cannot be handled under this contract. A temporary berm or another type of diversion structure must be provided to deflect the runoff from Basin 2 around the restaurant site if they are not developed simultaneously.

As mentioned before, there is an agreement with the City to extend a 24" storm sewer line onto the property. A 24" line will be extended from the existing structure in the Quarter's parking lot. A connector pipe will then be extended south to a private drainage easement to the proposed inlet structure at the northwest corner of the restaurant site. The runoff from Basin 1 will be ponded in a landscaped retention area on the restaurant site and be discharged into the proposed inlet at a controlled rate of 4.35 cfs. The runoff from Basin 2 must be discharged into the storm sewer at a controlled rate of 8.75 cfs or less.

BHI JOB Nº 72545
SCALE: 1" = 40'







LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- 54 PROPOSED CONTOUR
- TC56.0 EXISTING SPOT ELEVATION
- TC55.0 PROPOSED SPOT ELEVATION
- EXISTING CURB & GUTTER
- PROPOSED CURB
- DIRECTION OF FLOW
- BASIN BOUNDARY
- EXISTING BASIN NO.

RECEIVED JUL 20 1987 HYDROLOGY SECTION

AS-BUILT INFORMATION

	DATE
CONTRACTOR	
REVISED BY	
ENGINEERING BY	DATE
SURVEYING BY	DATE
CONSTRUCTION BY	DATE
CERTIFIED BY	DATE

MICRO-FILM INFORMATION

	DATE
RECORDED BY	
NO.	

BENCH MARKS

TO REACH THE BENCHMARK FROM THE INTERSECTION OF MONTGOMERY BLVD. & WYOMING BLVD., GO 0.3 MILES EAST TO BARRICAS ST. NE. THE BENCHMARK IS ON THE NORTH SIDE OF THE ROAD. NOSE. THE BENCH MARK IS A STANDARD PIPE BRASS DISK AND STAMPED "W-24, 1975" ELEVATION = 5460.382'

SURVEY INFORMATION

NO.	FIELD NOTES BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS REVISIONS DESCRIBED BY

DESIGNED BY — DATE
DRAWN BY — DATE
CHECKED BY — DATE

CITY OF ALBUQUERQUE

TITLE: GOLDEN CORRAL
PRELIMINARY DRAINAGE/GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING NO. | MAP NO. F-20 | SHEET 1 OF 1

R# 26 DATE 3-26-00 OP

CITY OF ALBUQUERQUE

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DIRECTOR 11-15-82

NOTARY PUBLIC

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Roberta Duran
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STATE OF NEW MEXICO
My Commission Expires 10/10/88

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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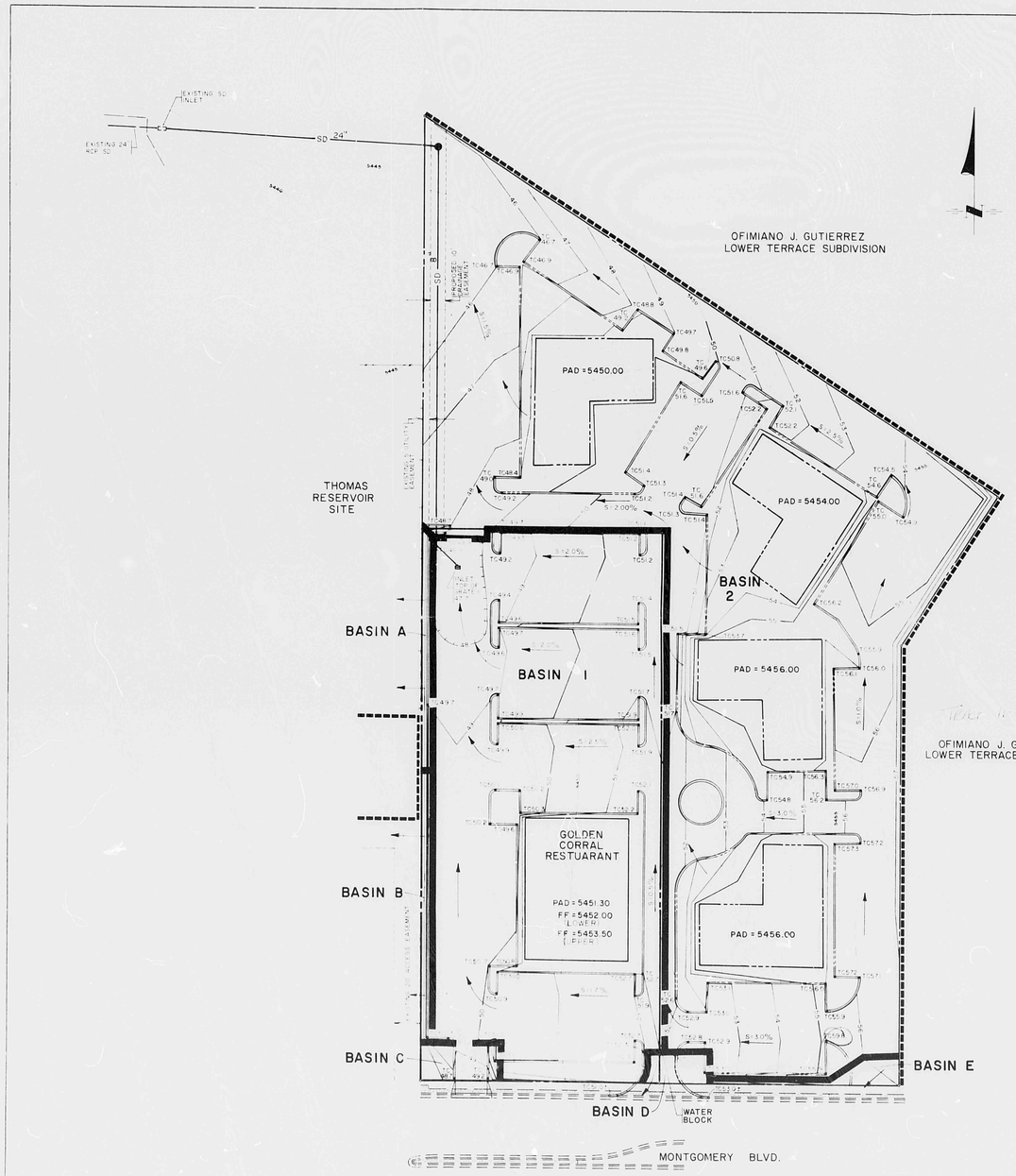
PLANS/PLATS ON FILE

FILE DESC: F20/D20

PLANS/PLATS 3

E 30 D 24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C D F



DRAINAGE REPORT

PURPOSE

The purpose of this report is to outline the drainage management plan for a 4.35 acre parcel of land zoned C-1 with approval for exceptional uses. Chapter 22 of the Development Process Manual (DPM) was used as a guide in the development of this plan. All of the discharge rates given in this report are for the 6-hour, 100-year storm unless otherwise stated.

INTRODUCTION

The parcel of land in lot 11C, Block 11 of the Ofimiano J. Gutierrez Lower Terrace Addition and is located on the north side of Montgomery Blvd. NE between Wyoming Blvd NE and La Morenita Avenue NE (see location map this sheet). The north and east sides of the parcel are bounded by the block wall of a residential area, and the south side by Montgomery Blvd. The west boundary is adjacent to commercial property and to the Thomas Reservoir Site.

At this time, the parcel will be further subdivided into two lots with each lot developed separately. A 7800 sq. ft. restaurant is proposed to occupy a 1.91 acre lot in the southwesterly portion of the site. The remaining portion will eventually accommodate office buildings, but will currently remain undeveloped.

EXISTING CONDITIONS

The underlying soil, as shown on the SCS soil map, is listed as Vinton fine sandy loam which is in soil group "B".

The site is currently undeveloped, contains sparse vegetation, and slopes gently towards the northwest. The majority of onsite runoff is presently collected by an inlet structure located at the northwest corner of the City reservoir site and is discharged into the existing storm system in Wyoming Blvd.

According to FEMA, there is a flood plain along Montgomery Blvd to the south of the site. Therefore the finished floor elevations must be required one foot (1') above the existing top of curb.

DOWNSTREAM CAPACITIES

An existing 24" storm sewer line extends east from Wyoming Blvd. to the City reservoir site, terminates at the northwest corner of the Thomas reservoir site. The existing system in Wyoming Blvd. consists of a series of pipes which serve the reservoir site, a large undeveloped area, the Wyoming Shopping Development site, a residential area, and a portion of Ortega Dr. The estimated peak quantity at the Thomas reservoir wash line is 20.0 cfs. This quantity was determined from previous reports which dealt with similar situations. The calculated runoff from a portion of the quarter's parking lot, east of the reservoir, that drains into the existing inlet is 2.7 cfs (using the rational formula method). The remaining 13.3 cfs capacity will be utilized by the proposed site.

PROPOSED CONDITIONS

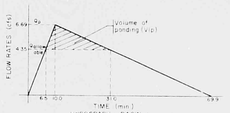
Site grading will be performed in order to more or less approximate the existing terrain. The plan shown indicates approximate grades that will guide the final construction of the restaurant site. The rest of the parcel will remain undeveloped until a future date, however, a berm will be graded to divert runoff flows around the restaurant site. Please note that the plan shown for that portion of the parcel is a conceptual grading plan only and the final plan might be altered at the time of development.

The City Engineer has indicated that a previous agreement requires the owner to extend the existing storm sewer line, located north of the reservoir, onto the proposed development. The majority of onsite runoff will utilize this extension and be discharged into the existing storm system in Wyoming Blvd. A very small amount of free discharge will enter into Montgomery Blvd and the land west of the site.

As mentioned earlier, the existing capacity available is 20 cfs. The portion of the quarter's parking lot that drains into the system discharges 2.7 cfs, and the Thomas Reservoir site discharges 13.3 cfs, leaving a capacity of 3.9 cfs available for the onsite site. The proposed development will produce 14.19 cfs in calculation 1a. 9.75 cfs of which, therefore, the restaurant site must discharge into the system at a controlled rate of 9.75 cfs and the rest of the site must have a controlled discharge rate of 9.75 cfs.

The following is a summary of flow rates for the basins and the ponding required. Calculations are based on the rational method (at bottom).

BASIN	C	I	A	Q
1	0.88	6.37	1.60	9.04 cfs
2	0.88	6.37	2.60	14.69 cfs
A	0.36	6.37	0.02	0.05 cfs
B	0.36	6.37	0.02	0.05 cfs
C	0.36	6.37	0.04	0.09 cfs
D	0.36	6.37	0.04	0.09 cfs
E	0.36	6.37	0.04	0.09 cfs



HYDROGRAPH - BASIN 1

Vi=(2.4 in)(1 ft/12 in)(1.61 ac)(43560 sq ft/1 ac)
Vi = 14,025.3 cu ft

Tp(72-pp)=(3)(14,025.3 cu ft)(1 min/60 sec)/9.04 cfs
Tp = 5.19 min.

Vip=(31.0 - 9.5)(5.19) - (.35)(31.0)(60 sec/1 min)
Vip= 1,779.9 cu ft

Basin 1 drains to a pond at the northwest corner of the restaurant site and is discharged at a controlled rate of 9.75 cfs. The pond must be large enough to contain at least 1,780 cu ft (2%).

Basin 2 must discharge at a controlled rate of 4.75 cfs. Runoff must be controlled by a single pond adjacent to the proposed storm sewer or a series of individualized, smaller ponds throughout the basin.

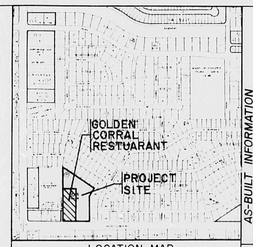
Basin A will discharge a negligible amount of runoff from landscaped area into the existing access easement south of the property line. Basin B will also discharge a similar amount of runoff from landscaped area directly into the reservoir site. Basins C, Basins D, Tract D, will discharge from into Montgomery Blvd and be collected in the existing inlet at the northwest corner of Montgomery Blvd and Wyoming Blvd. The total runoff discharged into Montgomery Blvd is 0.32 cfs.

SUMMARY

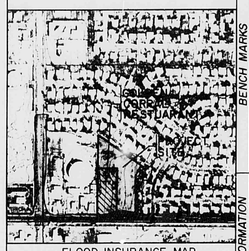
This plan is preliminary for the restaurant site and conceptual for the remaining portion of the site. Approval for the final grading plan will be requested at a later date for the restaurant site only. The development of the remaining site will not be handled under this submittal. A temporary berm or another type of diversion structure must be provided to divert the runoff from basin 2 around the restaurant site if the two are not developed simultaneously.

As mentioned before, there is an agreement with the City to extend the existing line to the property. A 24" line will be extended from the existing structure onto the property. An 18" connection pipe will then be extended south along a private drainage easement to the proposed inlet structure in the northwest corner of the restaurant site. The runoff from basin 1 will be collected at the northwest corner of the restaurant site and be discharged into the proposed inlet at a controlled rate of 9.75 cfs. The runoff from Basin 2 must be discharged into the storm sewer at a controlled rate of 5.75 cfs or less.

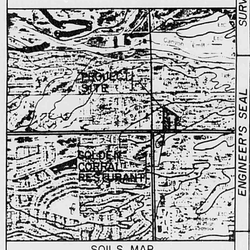
BHI JOB Nº 72545
SCALE: 1" = 40'



LOCATION MAP
ZONE ATLAS MAP NO F-20



FLOOD INSURANCE MAP
REFERENCE: FLOOD INSURANCE STUDY



SOILS MAP
REFERENCE: SCS BERNALILLO COUNTY SOIL SURVEY

AS-BUILT INFORMATION

CONTRACTOR		
WORK STAKED BY		DATE
INSPECTOR'S ACCEPTANCE BY		DATE
FIELD VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE

MICRO-FILM INFORMATION

RECORDED BY		DATE
NO.		

BENCH MARKS

TO REACH THE BENCHMARK FROM THE INTERSECTION OF MONTGOMERY BLVD. & WYOMING BLVD., GO 0.2 MILES EAST TO BARRANCA. THE BENCH MARK IS LOCATED IN THE EAST MEDIAN +22.4' FROM THE NOSE. THE BENCH MARK IS A STANDARD 4"FE BRASS DISK ANL STAMPED "M 24 1975" ELEVATION = 5460.392'

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

Robert M. Brandt
6-23-87

NO.	DATE	REMARKS	BY

REVISIONS

		DATE
DESIGNED BY		DATE
DRAWN BY		DATE
CHECKED BY		DATE

CITY OF ALBUQUERQUE

TITLE: GOLDEN CORRAL
PRELIMINARY DRAINAGE/GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING NO	MAP NO.	SHEET	OF
	F-20	1	1

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- 54 PROPOSED CONTOUR
- TC56.0 EXISTING SPOT ELEVATION
- TC55.0 PROPOSED SPOT ELEVATION
- EXISTING CURB & GUTTER
- PROPOSED CURB
- DIRECTION OF FLOW
- BASIN BOUNDARY
- EXISTING BLOCK WALL

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

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R# 2 DATE 3-26-02 OP

CITY OF ALBUQUERQUE

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DIRECTOR 11/5/02

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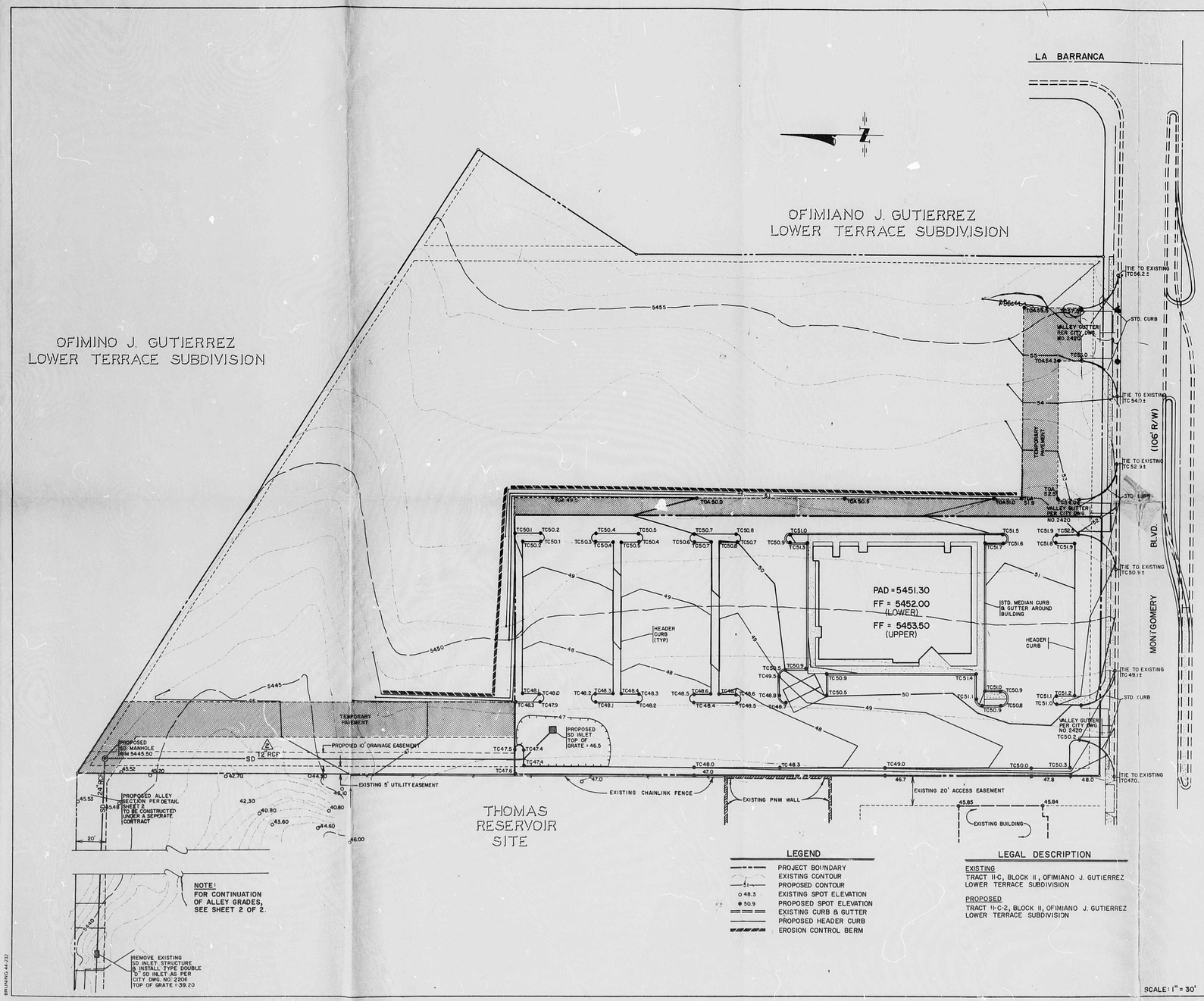
Roberta Duran
NOTARY PUBLIC
07/05/02 Rmd

D 24 C 20 B 16 A 12

CITY OF ALBUQUERQUE C D



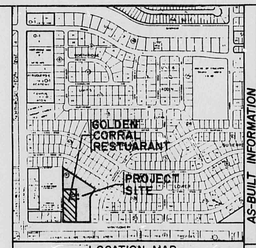
LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CURB & GUTTER
- PROPOSED HEADER CURB
- EROSION CONTROL BERM

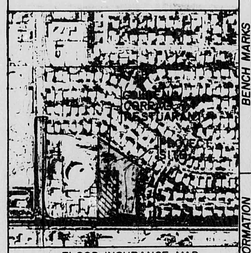
LEGAL DESCRIPTION

EXISTING
TRACT II-C, BLOCK II, OFIMIANO J. GUTIERREZ LOWER TERRACE SUBDIVISION

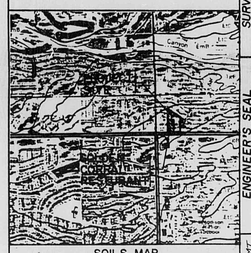
PROPOSED
TRACT II-C-2, BLOCK II, OFIMIANO J. GUTIERREZ LOWER TERRACE SUBDIVISION



LOCATION MAP
ZONE ATLAS MAP NO. F-20



FLOOD INSURANCE MAP
REFERENCE: FLOOD INSURANCE STUDY



SOILS MAP
REFERENCE: SCS BERNALILLO COUNTY SOIL SURVEY

APPROVED FOR DRAINAGE
4/6/88
DATE
Roger A. Green Jr. Hydrology
SIGNATURE TITLE

RECEIVED
MAR 2? 1988
HYDROLOGY SECTION

APPROVED FOR ROUGH GRADING ±1'
Roger A. Green Jr. 12-2-87
HYDROLOGY ENGINEER DATE

AS-BUILT INFORMATION

CONTRACTOR	DATE
INSPECTOR'S STAKED BY	
INSPECTOR'S ACCEPTANCE BY	DATE
INSPECTOR'S VERIFICATION BY	DATE
CONTRACTOR'S CERTIFICATION BY	DATE
MICRO-FILM INFORMATION	
RECORDED BY	DATE
NO.	

BENCH MARKS

TO REACH THE BENCH MARK FROM THE INTERSECTION OF MONTGOMERY BLVD. & WYOMING BLVD., GO 0.2 MILES EAST TO BARRANCA. THE BENCH MARK IS LOCATED IN THE EAST MEDIAN ±22.4' FROM THE NOSE. THE BENCH MARK IS A STANDARD KPE BRASS DISK AND STAMPED M-24 1975
ELEVATION = 5460.382'

SURVEY INFORMATION

NO.	FIELD NOTES BY	DATE

ENGINEER'S SEAL

Roger A. Green 10/8/87

NO.	DATE	REMARKS	BY
1	10/20/87	Alley Section Detail Dimensions	AMT
2	10/28/87	8" RCP Connector Pipe Changed to 12" RCP	AMT
3	1/25/88	Typical Alley Section Revised	AMT
4	3/16/88	Drainage South Graphs Revised	AMT

REVISIONS

DESIGN		DATE
DESIGNED BY	AMT	8/87
DRAWN BY	TG	8/87
CHECKED BY	BGB	8/87

CITY OF ALBUQUERQUE

TITLE:
GOLDEN CORRAL
FINAL DRAINAGE/GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING NO.	MAP NO.	SHEET	OF
	F-20	1	2

BRUNING 44-232

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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R# 26 DATE 3-26-90 OP ESP

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DIRECTOR

Roberta Duran
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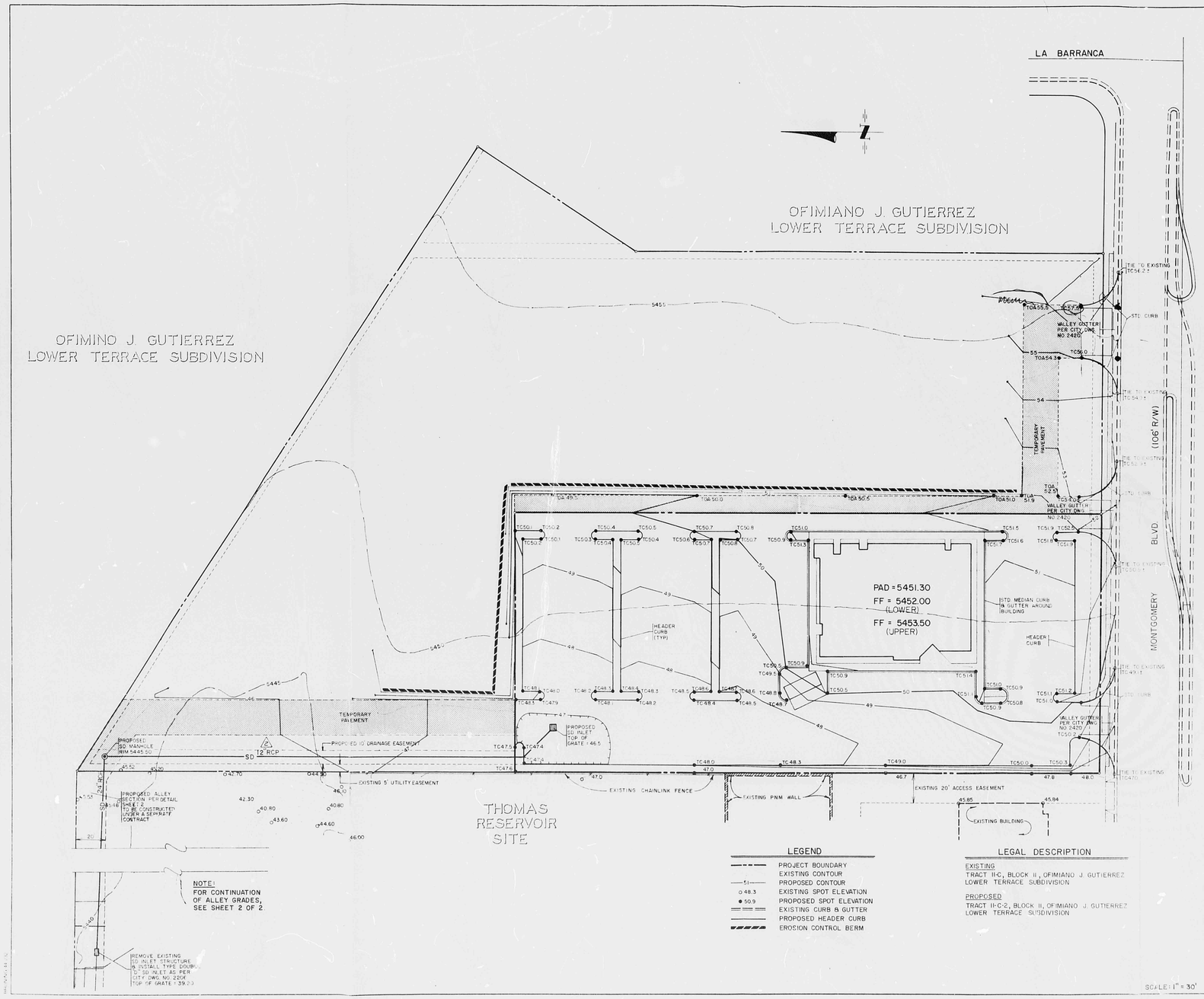
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 8/08/90

B 24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C



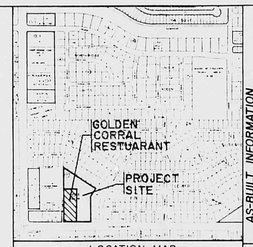
LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CURB & GUTTER
- PROPOSED HEADER CURB
- EROSION CONTROL BERM

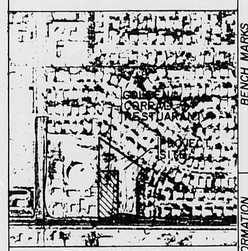
LEGAL DESCRIPTION

EXISTING
TRACT II-C, BLOCK II, OFIMIANO J. GUTIERREZ LOWER TERRACE SUBDIVISION

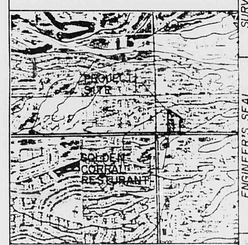
PROPOSED
TRACT II-C-2, BLOCK II, OFIMIANO J. GUTIERREZ LOWER TERRACE SUBDIVISION



LOCATION MAP
ZONE ATLAS MAP NO F-20



FLOOD INSURANCE MAP
REFERENCE FLOOD INSURANCE STUDY



SOILS MAP
REFERENCE SCS BERNALILLO COUNTY SOIL SURVEY

APPROVED FOR DRAINAGE
4/6/87
DATE
Roger A. Green Jr. Hydrology
SIGNATURE TITLE

RECEIVED
MAR 2 1988
HYDROLOGY SECTION

APPROVED FOR ROUGH GRADING ±1'
Roger A. Green Jr. 12-2-87
HYDROLOGY ENGINEER DATE

AS-BUILT INFORMATION

CONTRACTOR
WORK STAKED BY
INSPECTOR'S ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY — DATE
NO.

BENCH MARKS

TO REACH THE BENCH MARK FROM THE INTERSECTION OF MONTGOMERY BLVD. & WYOMING BLVD. GO 0.2 MILES EAST TO BARRANCA. THE BENCH MARK IS LOCATED IN THE EAST MEDIAN +22.4' FROM THE NOSE THE BENCH MARK IS A STANDARD 1/2" BRASS DISK AND STAMPED "M-2A 1975"
ELEVATION = 5460.392'

SURVEY INFORMATION

FIELD NOTES

NO	BY	DATE

ENGINEER'S SEAL

10/8/87

REVISIONS

NO	DATE	REMARKS	BY
1	5-15-87	Drainage Study Graded Revised	AMF

DESIGNED BY AMF — DATE 8/87
DRAWN BY TG — DATE 8/87
CHECKED BY RGB — DATE 8/87

CITY OF ALBUQUERQUE

TITLE:
GOLDEN CORRAL
FINAL DRAINAGE / GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING NO — MAP NO F-20 — SHEET 1 OF 2

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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R# 2 DATE 3-26-02 OP

CITY OF ALBUQUERQUE

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11/5/02
DIRECTOR

NOTARY PUBLIC
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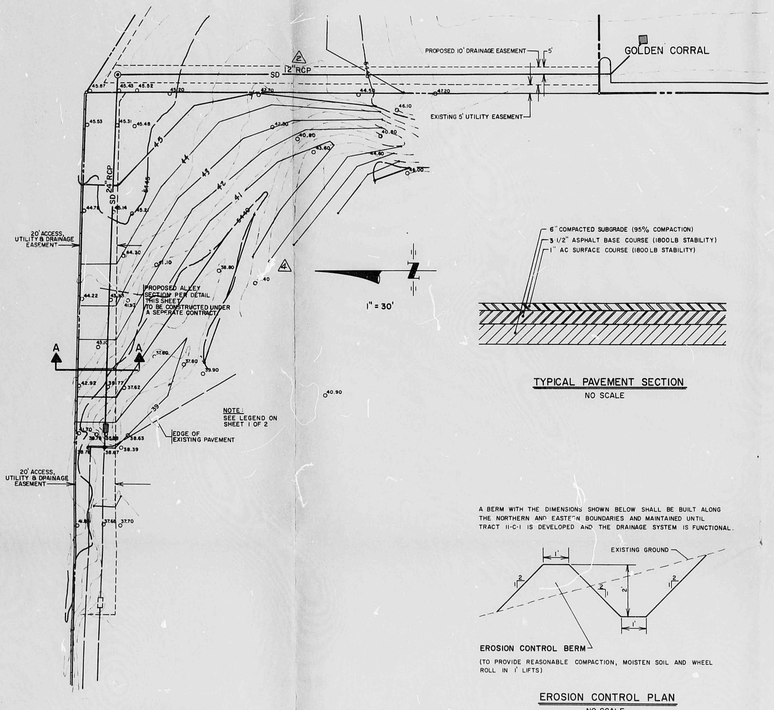
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires
10/10/02

D 24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C D

PUBLIC WORKS/HYDROLOGY

2 OF 2

F20/D20



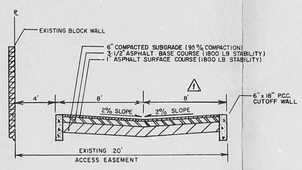
TYPICAL PAVEMENT SECTION
NO SCALE

A BERM WITH THE DIMENSIONS SHOWN BELOW SHALL BE BUILT ALONG THE NORTHERN AND EASTERN BOUNDARIES AND MAINTAINED UNTIL TRACT II-C-1 IS DEVELOPED AND THE DRAINAGE SYSTEM IS FUNCTIONAL.

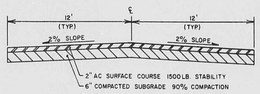
EROSION CONTROL BERM
(TO PROVIDE REASONABLE COMPACTION, MOISTEN SOIL AND WHEEL ROLL IN 1' LIFTS)

EROSION CONTROL PLAN
NO SCALE

ALLEY GRADE DETAIL
SCALE: 1" = 30'



SECTION A-A
TYPICAL ALLEY SECTION
NO SCALE



TEMPORARY PAVEMENT SECTION
NO SCALE

EARTHWORK NOTES

The following recommendations are in accordance with the Report of Subsurface Conditions prepared by ATEC Associates, Inc. for the G. C. Development Corporation under ATEC Job No. 35-7380.

Site Preparation

1. Topsoil will need to be stripped from the areas to be developed and either wasted or stockpiled for later use. Test pits indicate 0.5-1.25 ft of topsoil in the building and parking lot areas, although greater depths of stripping may be required in some areas.

2. If existing fill in the proposed building area is to be totally undercut, then those operations should be completed prior to the general proofrolling operations described below. It appears that the thickness of the silty fill layer is in the range of 2.0 ft to 4.0 ft in the general area of Test Pits B-2, B-3, and B-4, where the building generally is to be located. For this total undercutting procedure, the existing silty fill materials should be removed down to the level of the sandy alluvial soils. Undercutting operations should extend laterally at least 6 inches beyond the exterior footing perimeter for each 1 ft of vertical undercut below proposed foundation levels, but not less than 5 ft beyond the exterior footing perimeter.

3. If a partial undercutting procedure is to be used, then the general proofrolling program described below should be used to assess building slab areas. Any soft areas delineated by the proofrolling program can be treated through selective undercutting and backfilling procedures. Then general slab subgrade levels can be established through general fill operations. During subsequent foundation construction, the foundation excavations should be extended through the fill materials to the firm alluvial soils below, with desired footing grades being restored by backfilling with lean concrete. Undercut excavations need not be extended laterally beyond footing perimeters for this procedure, provided that lean concrete backfill is used.

4. After the initial stripping process is completed, areas of the site to receive fill, or areas of the site at grade where structures or pavements will be located, should be proofrolled. The proofrolling operations should be performed using a 20-ton loaded dump truck or other pneumatic tire vehicle of similar size and weight. The purpose of the proofrolling will be to provide surficial densification and to locate any near-surface pockets of soft or loose soils requiring undercutting. A Geotechnical Engineer or experienced Soils Inspector should witness the proofrolling operations and should delineate any areas requiring undercutting or other improvement.

5. The on-site shallow silty soils may be used for new fill, if desired. However, we suggest that any imported soils to be used for fill materials be low-plasticity soils with plasticity indexes less than 12.

6. Fill materials should be placed in 8 inch maximum loose lifts and compacted with an appropriate roller to achieve at least 95 percent of the standard Proctor maximum dry density (ASTM D-698). During compaction operations, the moisture contents of all fill soils should be maintained within -2 to +3 percentage points of their optimum moisture contents if stable fills with adequate degrees of compaction are to be attained. In any areas where site improvements would be extremely sensitive to swelling soils, moisture contents should be controlled within the range of optimum moisture content to +3 percentage points wet of optimum moisture content.

7. Each lift of fill should be tested by a qualified geotechnical engineer or his representative to confirm that adequate compaction has been achieved. A minimum of two tests per lift and at least one test per 2500 square ft of fill area generally should be performed.

Foundations and Slabs

1. Based on the results of this investigation, the recommended shallow footings be designed utilizing a net allowable soil bearing pressure not to exceed 2500 pounds per square ft. These footings should be supported on firm natural soils or on new engineered fill placed and compacted over firm natural soils. The engineered fill may consist either of lean concrete or approved soil materials, depending on the undercutting details. Footings should not be supported on or over uncontrolled fill materials.

2. Exterior footings and footings in unheated portions of the building should be located a minimum of 18 inches below the finish grades for frost protection, unless local building codes require greater footing depths.

3. To ensure an adequate factor of safety with respect to bearing capacity, column footings should have minimum widths of 24 inches and wall footings should have minimum widths of 18 inches. Also, wall footings should be provided with continuous longitudinal reinforcement consisting of at least two No. 5 or larger reinforcement bars located at mid-depth. This reinforcement will provide wall footings with greater bending strength and thus should aid in minimizing the effects of any differential movements.

4. The soils at the base of each foundation excavation should be hand proofed by a geotechnical engineer prior to placement of the foundation concrete to verify the suitability and densification of the exposed soils. If any soft or loose zones are detected, the unsuitable materials should be removed and the footings should be located on firmer soils at a lower elevations. Alternatively, the original footing elevation can be re-established by backfilling with a lean concrete or with properly placed and compacted fill, as specified in the previous section. If soil backfill is used, the undercutting operations should extend at least 6 inches laterally beyond the edges of the footing for each 1 ft of vertical undercut below the footing bearing level.

5. The ground-supported floor slab can be supported on new or existing fill prepared as described in the previous section. However, the floor slab should be allowed to move independently of the foundation system to accommodate any minor floor movements with minimal cracking.

6. The floor slab should be directly supported on at least 4 inches of washed gravel or screened crushed stone. In addition, we recommend that a single layer of 6-mil polyethylene vapor barrier be provided between the slab concrete and the gravel or stone subbase. The purpose of the subbase layer and the polyethylene sheeting will be to prevent capillary rise and a damp slab. The polyethylene vapor barrier also will aid in proper curing of the concrete slab.

7. On most projects, there is a significant time lag between initial grading and a point where the contractor is ready to place concrete for ground-supported slabs. Environmental conditions and construction traffic often disturb the subgrade soils during the delay. Therefore provisions should be made in the construction specifications for the reconstruction of the subgrade soils to a stable condition prior to concrete placement.

Pavement Areas

1. Pavement areas should be stripped and prepared as described in the previous section. Any fill or backfill should be placed, compacted, and tested as described in the previous section.

2. The on-site silty soils are generally considered to be poor subgrade materials. Based on an estimated California Bearing Ratio (CBR) of 3 and anticipated light traffic conditions, the optional pavement thickness designs given below should be adequate. The flexible pavement design utilizing a crushed stone aggregate base will not perform well unless the soil subgrade beneath the aggregate base is sloped to positively drain. For this reason, the use of aggregate bases should be restricted to designs which can actually accomplish long term positive drainage of the subgrade. If frequent heavy traffic (more than one heavy truck per day) is anticipated, a thicker pavement section will be required and ATEC should be consulted for further consultation.

Material Type (Flexible - Full Depth)	Thickness
Asphalt Concrete - Surface	1.0
Asphalt Concrete - Binder	3.5

(Flexible with Stone Base)	
Asphalt Concrete - Surface	1.0
Asphalt Concrete - Binder	2.5
Stone Base	4.0

3. Asphalt concrete paving and granular bases should be constructed in accordance with the guidelines of the latest applicable "Road and Structure Specifications" of the New Mexico Department of Transportation. Materials, weather limitations, placement and compaction are specified under appropriate sections of the publications.

4. Construction traffic is expected to be much more severe than normal in-use traffic. Therefore, we recommend that paving operations be performed near the end of construction activities.

Groundwater and Drainage

1. At the time of the subsurface exploration, water was not encountered in any of the borings. However, moisture seepage into the footings and utility excavations could occur depending upon the groundwater table at time of construction, the depths of excavations, and the period of time the excavations are open. Moisture seepage through the predominantly fine-grained soils should be relatively slow. If groundwater is encountered during excavation operations, the geotechnical engineer should be consulted for recommendations concerning groundwater control.

2. Prevention of infiltration of water into the pavement subgrade is essential for the successful performance of the pavements. Both the subgrade materials and the pavement surface should have a minimum slope of one-quarter inch per foot to promote adequate surface drainage.

3. The finely-grained silty soils located near the surface could temporarily trap infiltrating precipitation. This water may cause water-related slab problems if moisture and vapor barriers are not provided. Roof drain outlets should discharge water to encourage runoff away from the building area. Care should be exercised in the design and operation of lawn sprinkler systems to prevent water-related problems with the pavement subgrades and building foundation.

4. Drainage patterns comply with the plan approved by City Hydrology on July 21, 1987. Runoff from the restaurant site will be collected by the inlet at the northwest corner of the lot and discharged into the street at a controlled rate of 4.39 cfs or less through the use of a 3" diameter orifice at the opening of the 12" RCP connector pipe.

NO.	DATE	REMARKS	DESIGNED BY	CHECKED BY	DRAWN BY
1	10/20/86	Alley Section Detail Dimensions	AMT	BGB	TG
2	10/24/86	8" Ref. Concrete Pad Changed to 12" Rcp	AMT		
3	2/23/88	Typical Alley Section Revised	AMT		
4	3/25/88	Drainage Swale Grades Revised	AMT		

REVISIONS — DESIGN: DATE 8/87; DRAWN: DATE 8/87; CHECKED: DATE 8/87

RECEIVED MAR 29 1988 PLANNING SECTION

APPROVED FOR ROUGH GRADING BY:
Roger A. Drean Jr. 12-2-87
HYDROLOGY ENGINEER — DATE

CITY OF ALBUQUERQUE

TITLE: GOLDEN CORRAL
FINAL DRAINAGE/GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water		

DRAWING No. | MAP NO. F-20 | SHEET 2 OF 2

SURVEY INFORMATION — FIELD NOTES: NO. / BY / DATE

BENCH MARKS

ENGINEER'S SEAL — Robert Dean 12/1/87

AS-BUILT INFORMATION: CONTRACTOR / WORK STAKED BY / INSPECTOR'S ACCEPTANCE BY / FIELD VERIFICATION BY / DRAWINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION: RECORDED BY / DATE / NO.

BRUNING 44-322

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R# 26 DATE 7-26-2002 BY

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DIRECTOR 11/5/02

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OFFICIAL SEAL Roberta Duran NOTARY PUBLIC STATE OF NEW MEXICO My Commission Expires 8/28/02

24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C D