HYDROLOGY

E18/D38

TWO PLANS

2 PLANS

FOR

E18/D38

CONTINENTAL INN

PROGRESS PRINT
ISSUE DATE :

DRAINAGE PLAN

The following items concerning the Continental Inns Grading and Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located at the southeast corner of the intersection of Harper Road N.E. and the East Frontage Road of Interstate 25. At present, the site is undeveloped and slopes from east to west at approximately four percent. The site currently ponds at the westerly end in the New Mexico State Highway Department right-of-way.

As shown by Plate 10 of Bernalillo County Flood Hazard Boundary Maps, prepared by the National Flood Insurance Program, the site does not lie within a designated Flood Hazard Zone. The existing concrete lined channel lies to the south of the site. The Flood Hazard Zone is confined within the limits of this channel. In Harper Road to the north of the site there currently exists a cattle guard inlet and a 54-inch pipe which outlets beneath Interstate 25. The proposed plan of this site includes discharging to the 54-inch RCP as shown on the attached plan. No offsite flows enter the site. The site to the east is a developed office building which discharges into the channel.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1' 0" intervals, 2) limit and character of the proposed improvements, 3) continuity between existing and proposed grades. As shown by this plan, the proposed improvements include the construction of a five story hotel, a restaraunt, a swimming pool, and associated asphalt paved parking. The parking lot is graded such that it drains to the northwest corner of the site and discharges into a single "D" catch basin at that point. Grade breaks within the building occur such that the east end of building is lower than the west end. This necessitates additional inlets within the landscaped areas to the north and south of the building as per the attached drawing. Gravity flow has been assumed in calculating the capacity of the storm drain system. This is justified due to the downstream location of the site in relation to the drainage basin.

The Calculations which appear below analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with City of Albuquerque Development Process Manual, Volume II. As shown by these calculations, the proposed improvements will decrease the amount of runoff that is discharged from the site and to public right-of-way.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 32:
Etc Soil (Embudo Tijeras Complex)
Hydrologic Soil Group B

Rational Method

Discharge: $Q = CiA$
where C = rational coefficient from DPM Plate 22.2C-1
$i = P_6\,(6.84)\,T_c^{-0.51} = 4.65$ in/hr
P_6 = 2.2 in (DPM Plate 22.2D-1)
T_c = 10 minutes (minimum)
A = area, acres

Volume: $V = CP_6A$
C = rational coefficient from DPM Plate 22.2C-1
A = area, sf

Existing Condition

Site

A_{total} = 130,700 sf = 3.00 = Ac
A_{imp} = 0; % impervious = 0
C = 0.34
Q_{100} = 4.74 cfs
V_{100} = 8,150 cf

Developed Condition

Site

% imp = 90
A = 130,700 sf
C = 0.86
Q_{100} = 12.00 cfs
V_{100} = 20,600 cf

Basin A:

A = 20,200 sf
A_{imp} = 15,200 sf; % impervio
C = 0.72
Q_{100} = 1.5 cfs

Basin B:

A = 19,200
A_{imp} = 14,400 sf; % impervio
C = 0.72
Q_{100} = 1.5

Basin C:

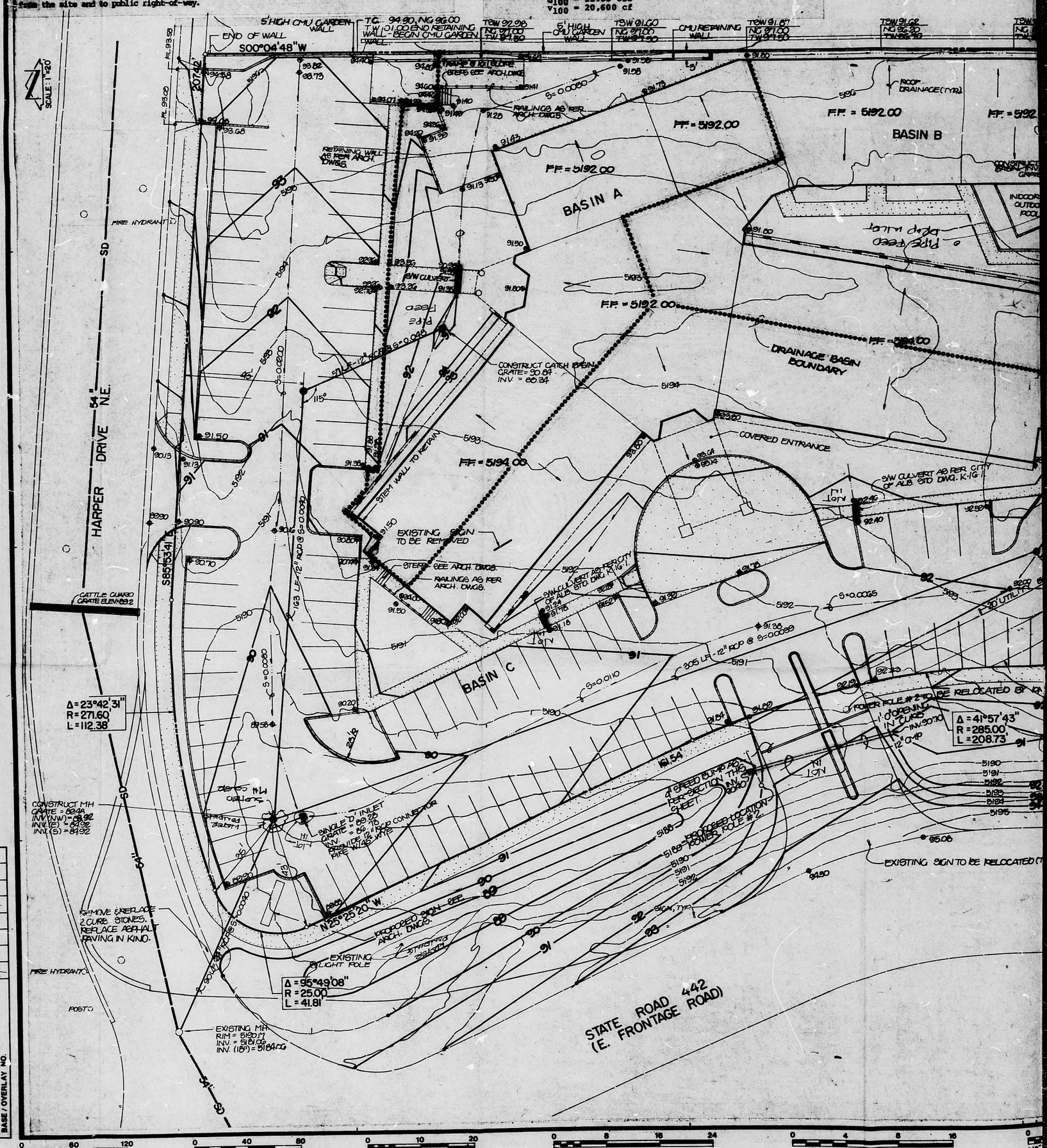
A = 91,300
A_{imp} 3270 sf; % impervious
C = 0.95
Q_{100} = 9.2 cfs

Catch Basin Capacity

Single "D"
Orifice Equation:
$Q = CA\sqrt{2gh}$
C = 0.6
A = 6.15 sf
g = 32.2 ft/sec^2
h = 0.5
Q = 20.5 cfs

Comparison

ΔQ = - 4.74 cfs
ΔV = - 8150 cf



SCREEN VALUE
COMPOSITE INSTRUCTIONS
BASE / OVERLAY NO.

SCALE: 1"=60' 1"=40' 1"=10' 1/8"=1'-0" 1/4"=1'-0" 1/2"

impervious = 75

impervious 75

rvious 0.96

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.

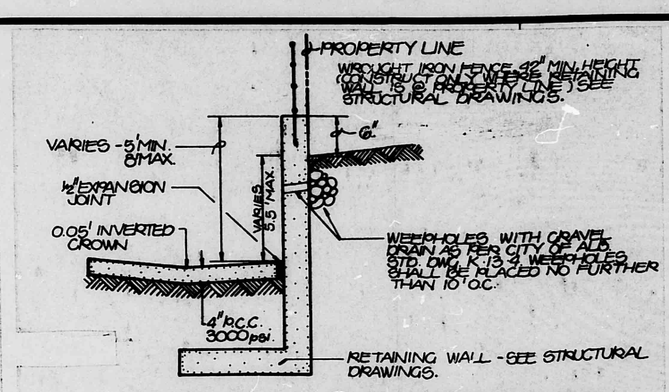
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.

PROJECT BENCHMARK = TBM

A SQUARE □, CHISELED ON TOP OF CURB AT THE SSW CURB RETURN OF SAN MATEO BOULEVARD AND THE EAST FRONTAGE ROAD OF I-25. ELEVATION = 5,192.29 MSLD

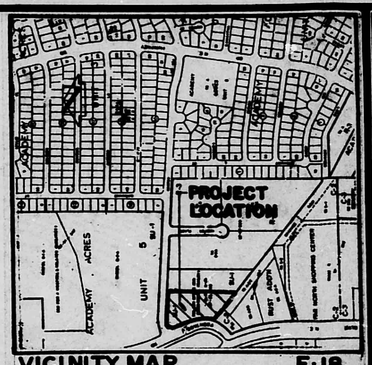
LEGAL DESCRIPTION:

TRACT B-4B ACADEMY ACRES UNIT 5



RETAINING WALL @ EAST PROPERTY LINE

NTS.



VICINITY MAP E-18

SCALE: 1" = 800'

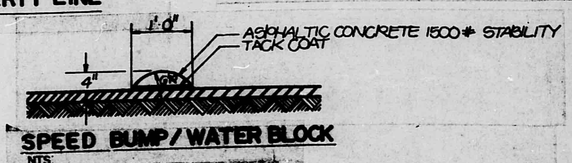
STORM DRAIN CAPACITY

Manning Equation

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

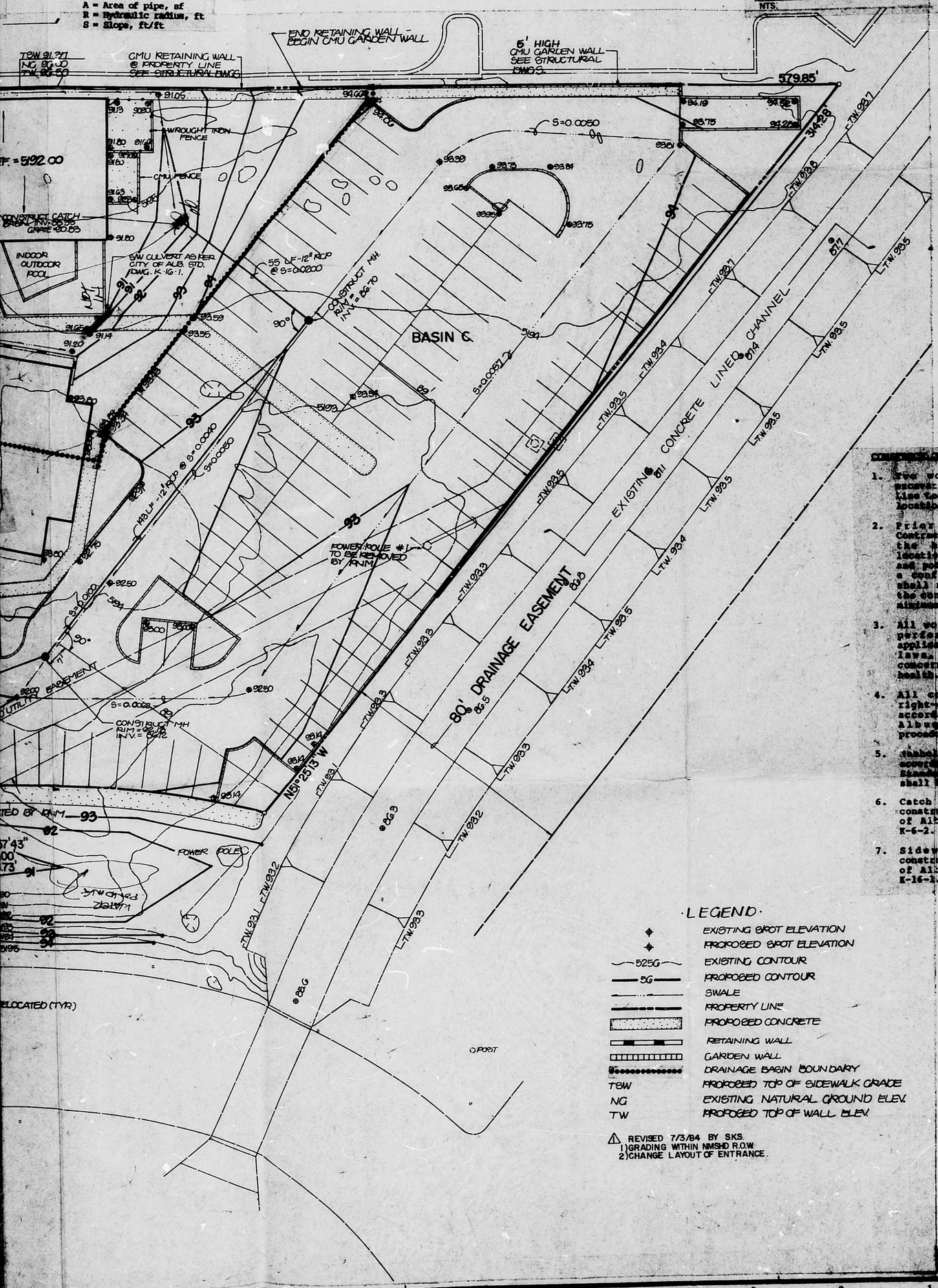
n = 0.013
A = Area of pipe, sf
R = Hydraulic radius, ft
S = Slope, ft/ft

NORTH LEG	SOUTH LEG	WEST LEG
A = 0.785 sf	A = 0.785 sf	A = 3.14 sf
S = 0.0040 (min)	S = 0.0040 (min)	S = 0.0040 (min)
R = 0.25'	R = 0.25'	R = 0.50'
Q = 2.3 cfs	Q = 2.3 cfs	Q = 14.33 cfs



SPEED BUMP / WATER BLOCK

NTS.



LEGEND

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- 5250 — EXISTING CONTOUR
- 5G — PROPOSED CONTOUR
- SWALE
- PROPERTY LINE
- PROPOSED CONCRETE
- RETAINING WALL
- GARDEN WALL
- DRAINAGE BASIN BOUNDARY
- TSW — PROPOSED TOP OF SIDEWALK GRADE
- NG — EXISTING NATURAL GROUND ELEV.
- TW — PROPOSED TOP OF WALL ELEV.

△1 REVISED 7/3/84 BY SKS.
1) GRADING WITHIN NMSHD R.O.W.
2) CHANGE LAYOUT OF ENTRANCE.

CONSTRUCTION NOTES

1. Two working days prior to any excavation, Contracter must contact Line Locating Service, 765-1234, for location of existing utilities.

2. Prior to construction, the Contractor shall excavate and verify the horizontal and vertical locations of all existing utilities and potential obstructions. Should a conflict exist, the Contractor shall notify the Engineer so that the conflict can be resolved with a minimum amount of delay.

3. All work on this project shall be performed in accordance with applicable federal, state, and local laws, rules and regulations concerning construction safety and health.

4. All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and procedures.

5. Manholes shall be constructed in accordance with City of Albuquerque Standard Drawing S-2-3. Manholes shall be 4' diameter type 'E'.

6. Catch basins shall be single 'D' constructed in accordance with City of Albuquerque Standard Drawing K-6-2.

7. Sidewalk culverts shall be constructed in accordance with City of Albuquerque Standard Drawing K-16-1.

REGISTERED PROFESSIONAL ENGINEER STATE OF NEW MEXICO THOMAS W. MANN, JR. 7152 LICENSED PROFESSIONAL SURVEYOR

7/6/84

G.E. HOLGUIN & ASSOCIATES INC.
PHONE: (602) - 628 - 1988
1155 W. GRANT NO. STE. 125 TUCSON, AZ 85745
ASSOCIATE OFFICE WEST PALM BEACH, FLORIDA
ASSOCIATE OFFICE ALBUQUERQUE, NEW MEXICO

RECEIVED JUL 7 1984 HYDROLOGY SECTION

GRADING & DRAINAGE PLAN

CONTINENTAL INNS

REV.	DATE	INIT.
△		
△		
△		
△		

DRAWN:
CHKD:
APPROVED:

PROJECT NO.:
DATE:
SHEET NO.: C-1
OF

1/2"=1'-0" 3/4"=1'-0" 1"=1'-0" 11/2"=1'-0" 3"=1'-0"

E18/D38

SCALE: 1" = 20'

HARPER DRIVE N.E.

STATE ROAD 442 (EAST FRONTAGE ROAD)

EXISTING CONCRETE CHANNEL

T/W 5201.00
T/W 97.50
5' CMU GARDEN WALL
T/W 97.50
T/W 97.50
T/W 96.70
T/W 96.50
T/W 96.12
5' CMU GARDEN WALL

RAMP DOWN
RAISED CONC. PAD
2" DRAIN LINE
DOWNSPOUTS TYP.
POOL

F.F. 5192.00
F.F. 5192.00
F.F. 5192.00
F.F. 5192.00
F.F. 5194.00
F.F. 5194.00

4.
3.
2.
1.

NOTE:
THE ROOF DRAINS IN THIS AREA ARE PIPED DIRECT TO THE STORM SEWER.

CATCH BASIN
GRATE 90.43
INV. 88.43

12" PVC @ S=0.0313

M.H.
RIM 92.95
INV. IN 87.60
INV. OUT 86.80

4" PVC DRAIN LINE W/ 2 INLETS.

CATCH BASIN
GRATE 91.55
INV. 88.15

12" PVC @ S=0.0296

M.H.
RIM 91.80
INV. IN 86.52
INV. OUT 86.26

12" PVC @ S=0.0095

12" PVC @ S=0.0035

M.H.
RIM 92.30
INV. IN 86.30
INV. OUT 86.00

12" PVC @ S=0.0044

54" S.D.

STORM INLET
GRATE EL. 89.2

M.H.
RIM 89.29
INV. E. 84.73
INV. S. 84.87
INV. OUT 84.67

24" R.C.P. @ S=0.0071

M.H.
RIM 5190.62
INV. (54" S.D.) 5181.06
INV. 24" R.C.P. 5184.06

RETENTION POND
RETENTION POND
EDGE OF ASPHALT

T/C 93.8
T/C 93.7
T/C 93.7
T/C 93.4
T/C 93.5
T/C 93.5
T/C 93.3
T/C 93.3
T/C 93.3
T/C 93.2
T/C 93.1
T/C 93.1

94.58
93.82
94.08
95.36
94.19
94.52
93.75
94.28
91.50
91.13
90.90
90.70
92.19
92.23
93.14
91.84
91.89
89.90
89.85

LEGEND

DIRECTION OF FLOW
DRAINAGE DIVIDE
LANDSCAPED AREAS
RETAINING WALL

I, Charles M. Easterling, a New Mexico Registered Professional Engineer in Civil Engineering, certify that the accompanying plans were built in substantial compliance with a plan prepared on July 6, 1984, by Thomas T. Mann, Jr., a New Mexico Registered Professional Engineer, except as noted herein.

Charles M. Easterling, P.E.
N.M. Registered P.E. #6411

7-22-85
Date

PROJECT BENCHMARK:

A SQUARE □, CHISELED ON TOP OF CURB AT THE SSW CURB RETURN OF SAN MATEO BLVD. AND THE EAST FRONTAGE ROAD OF I-25, ELEV. 5192.29

LEGAL DESCRIPTION:

TRACT B-4B ACADEMY ACRES UNIT 5

NOTES

AS-BUILT/CERTIFICATION

The following field changes were made to the existing Grading & Drainage Plan designed by Thomas T. Mann., Jr.

1. The 12" C.M.P. drainline running from the north side of the entrance drive to the south side of the drive has been eliminated as well as the center island in the entrance driveway.
2. All drainage pipe has been changed from R.C.P. to P.V.C.
3. All roof drainage was designed to run overland to the catch basins but was field changed to be piped underground directly to the storm drain.
4. The direction of flow in the sidewalk channel on the east property line has been reversed so that flow that was going to Basin B is now going to Basin A thus changing the size of both basins respectively and the Q_{100} flow to each catch basin, but the developed total Q_{100} leaving the site is virtually the same.

There are several other very minor onsite changes which did not have any effect on the total Q_{100} leaving the site.

GRADING & DRAINAGE PLAN CALCULATIONS

PROPOSED CONDITIONS:

CN = 97
% Impervious = 90%
Area = 130,700 SF or 3.0 acres
C = 0.86
i = 4.65 in./hr.
Q_{100} = 12 c.f.s.
V_{100} 20,600 CF

AS BUILT CONDITIONS:

CN = 92
% Impervious = 90%
Area = 130,700 SF or 3.0 acres
C = 0.86
= 4.80 in./hr.
Q_{100} = 12.4 c.f.s.
V_{100} 15,790 CF

RECEIVED
JUL 22 1985
HYDROLOGY SECTION

NO.	REVISIONS	BY	DATE

CONTINENTAL INNS

AS BUILT / ENGINEERS CERTIFICATION

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
5643 Paradise Blvd. N.W.
Albuquerque, New Mexico 87114

Designed:	Drawn: M.S.	Checked: D.L.S.	Sheet 1 of 1
Job No: 504601		Date: JULY, 1985	

E18/D38