870268

DRAINAGE INFORMATION SHEET

PROJECT TITLE: PRINCESS JEANNE SHOPPING CENTER - PAD SITE #1 ZONE ATLAS/DRNG. FILE #: J-21/D-19

LEGAL DESCRIPTION: TRACT D-2, BLK 7, PRINCESS JEANNE PARK

CITY ADDRESS: _____

ENGINEERING FIRM: JEFF MORTENSEN & ASSOC. CONTACT: JEFF MORTENSEN

ADDRESS: 811 DALLAS NE 87110 PHONE: 265-5611

OWNER: PRINCESS JEANNE AZ. PARTNERSHIP CONTACT: JEFF TIMAN

ADDRESS: 2200 EAST RIVER RD, SUITE 123 TUCSON, AZ PHONE: _____

ARCHITECT: FANNING-BARD-LARSEN CONTACT: CHRIS BARD

ADDRESS: 4600 A MONTGOMERY NE PHONE: 883-5200

SURVEYOR: D.T. MORRISON CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: TOM DUNCAN CONTACT: TOM DUNCAN

ADDRESS: _____ PHONE: _____

RECEIVED
AUG 23 1988
HYDROLOGY SECTION

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 87-577

EPC NO. _____

PROJ. NO. _____

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

X BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

X OTHER SO #19 (SPECIFY)

DATE SUBMITTED: 08-23-88

BY: JEFF MORTENSEN

KEN SCHULTZ
MAYOR

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 9, 1988

Jeff Mortensen, P.E.
Jeff Mortensen & Associates, Inc.
811 Dallas, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR CENTER PAD SITE #1
(J-21/D19) REVISION DATED AUGUST 22, 1988

Dear Mr. Mortensen:
Based on the information provided on your submittal of August 23, 1988, the above referenced plan is approved for Building Permit.

Prior to release of the Certificate of Occupancy, we will need a copy of the approved plat showing the grant of easement.

In order to install the 4" PVC pipe through the curb the contractor will need to remove the complete stone (saw cut is not allowed by spec). A separate permit is required for construction within City right-of-way. The contractor will need a copy of this approval letter when applying for the excavation permit.

Please attach a copy of this plan to the construction sets prior to sign-off by Hydrology.

If I can be of further assistance, please feel free to call me at 768-2650.

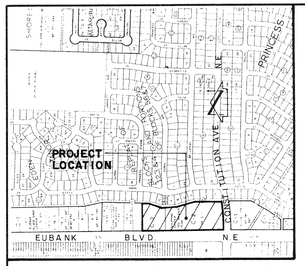
Cordially,

Bernie J. Montoya

Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj

xc: Becky Sandoval
(WP+15)



VICINITY MAP J-21

SCALE: 1" = 800'

SCALE: 1" = 40'

LEGEND

56	PROPOSED CONTOUR
5156	EXISTING CONTOUR
+	PROPOSED SPOT ELEV.
+	EXISTING SPOT ELEV.
TC 61.86	TOP OF CURB
FL 50.97	FLOW LINE
TA 51.90	TOP OF ASPHALT
	PROPOSED CONCRETE
	PROPOSED ASPHALT
	BASIN BOUNDARY

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TRACT D-2, BLOCK 7, PRINCESS JEANNE PARK

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3. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.

APPROVALS	NAME	DATE
A.C.E./DESIGN	Barry Montoya	7/9/88
INSPECTOR		
A.C.E./FIELD		

DRAINAGE PLAN

The following items concerning the Princess Jeanne Shopping Center Grading Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the northeast quadrant of the intersection of Eubank Boulevard N.E. and Constitution Avenue N.E. At present, the site is developed, making this a modification to an existing site. Much of the surrounding area is currently developed, thereby making this an infill site. As shown by Plate J-21 of the Albuquerque Master Drainage Study, a portion of this site lies within a designated Flood Hazard Zone. Also, downstream flooding is apparent in Eubank Boulevard N.E. The decrease in developed runoff from this site will have negligible effect on this existing condition. In addition, an approved drainage plan for this site prepared by C.T.S. (J21-D19), allows for the free discharge of runoff onto Eubank Boulevard N.E. No offsite flows enter the site along the south and west property lines since the existing roads route runoff away from the project site. No offsite flows enter the site along the north property line since the existing site is graded in a manner which will route runoff away from the project site. Some offsite flows are anticipated along the east property line which have been quantified in the calculations which appear hereon, will be accepted and conveyed through this site. Based upon the fact that this site is an infill site and in view of the net decrease in runoff generated by the proposed improvements, the free discharge of runoff from this site is appropriate. The proposed development will also not adversely impact the existing flooding problem.

The Grading Plan shows 1) existing grades indicated by contours at 1'0" intervals taken from a topographic survey from Dewitt T. Morrison, 2) continuity between existing and proposed grades, 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the reconstruction of the existing parking lot along with new landscaping. Also shown is a proposed bushay and Bus Shelter which will be constructed by City Work Order. Future pad sites have been shown and they will be constructed by separate permits at a later date. Flows generated by Basin 1 will be routed from east to west onto Eubank Boulevard N.E. From that point, runoff flows north along the east edge of Eubank Boulevard N.E. to existing storm drain inlets located at the intersection of Eubank Boulevard N.E. and Indian School Road N.E. Flows generated by Basin 2 will be routed from east to west and discharged onto Eubank Boulevard N.E. From that point, runoff will flow south along the east edge of Eubank Boulevard N.E. to existing storm drain inlets located at the intersection of Eubank Boulevard N.E. and Constitution Avenue N.E. This pattern is consistent with existing site drainage.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used to quantify the peak rate of discharge and the SCS Method has been used to quantify the total volume. Both methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, and the Mayor's Emergency Rule adopted January 14, 1986. As shown by these calculations, the proposed improvements by Basin 1 will decrease the discharge by approximately 0.4 cfs, the decrease in runoff by Basin 2, will be approximately 0.5 cfs.

△ PAD SITE #1 (LEASE SPACES 1 & 2)

The Pad Site #1 is located in Basin 1 as shown. All adjacent improvements, i.e. sidewalks, parking, etc. are existing. In the existing condition, the site drains from east to west across existing sidewalk into Eubank Boulevard. The proposed developed condition employs roof drains with drain lines which will discharge the roof runoff onto Eubank Boulevard via drivepads and one drainline through the curb directly west of the site.

No separate calculations are provided because they have already been addressed in the developed condition for Basin A.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate: 32 - Etc - Embudo - Tijeras Complex
Hydrologic Soil Group: B
Existing Pervious CN = 70 (DPM Plate 22.2 C-2
Pasture or Range Land: fair condition)
Developed Pervious CN = 61 (DPM Plate 22.2 C-2)

Time of Concentration/Time to Peak

$T_C = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation)

$T_P = T_C = 10$ min.

Point Rainfall

$P_6 = 2.43$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: Q = CiA

where C varies
i = P_6 (6.84) $T_C^{-0.51}$ = 5.14 in/hr
P_6 = 2.43 in (DPM Plate 22.2D-1)
T_C = 10 min (minimum)
A = area, acres

SCS Method

Volume: V = 3630(DRO) A

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition

Basin 1
A_{total} = 172,525 sf = 3.96 Ac
Roof area = 62,220 sf (0.36)
Paved area = 106,105 sf (0.62)
Landscaped area = 4,200 sf (0.02)
C = 0.91 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.91)(5.14)(3.96) = 18.5 cfs
A_{imp} = 168,325 sf; % impervious = 98 %
Composite CN = 97 (DPM Plate 22.2 C-3)
DRO = 2.2 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO)A = 31,625 cf

Basin 2
A_{total} = 87,960 sf = 2.02 Ac
Roof area = 18,600 sf (0.21)
Paved area = 66,540 sf (0.76)
Landscaped area = 2,820 sf (0.03)
C = 0.92 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.92)(5.14)(2.02) = 9.6 cfs
A_{imp} = 85,140 sf; % impervious = 97 %
Composite CN = 97 (DPM Plate 22.2 C-3)
DRO = 2.2 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO)A = 16,130 cf

Developed Condition

Basin 1
A_{total} = 172,525 sf = 3.96 Ac
Roof area = 63,970 sf (0.37)
Paved area = 98,485 sf (0.57)
Landscaped area = 10,700 sf (0.06)
C = 0.89 (Weighted average per Emergency Rule, 1/14/86)
Pasture or Range Land: fair condition)
Q_{100} = CiA = (0.89)(5.14)(3.96) = 18.1 cfs
A_{imp} = 162,455 sf; % impervious = 94 %
Composite CN = 96 (DPM Plate 22.2 C-3)
DRO = 2.0 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 28,750 cf

Basin 2
A_{total} = 87,960 sf = 2.02 Ac
Roof area = 22,400 sf (0.25)
Paved area = 58,920 sf (0.67)
Landscaped area = 6,640 sf (0.08)
C = 0.88 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.88)(5.14)(2.02) = 9.1 cfs
A_{imp} = 81,320 sf; % impervious = 92 %
Composite CN = 96 (DPM Plate 22.2 C-3)
DRO = 2.0 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 14,665 cf

Analysis Point 1

A_{total} = 56,180 sf = 1.29 Ac
Roof area = 17,045 sf (0.30)
Paved area = 36,095 sf (0.64)
Landscaped area = 3,040 sf (0.06)
C = 0.90 (Weighted average per Emergency Rule, 1/14/86)
i = 3.37 (10-year, 6-hour rainfall event)
Q_{100} = CiA = (0.90)(3.37)(1.29) = 3.9 cfs

Channel Capacity (1'-0" curb opening) Weir Equation

$Q = CLH^{3/2}$ = 1.1 cfs
Where C = 3.09
L = 1'-0"
H = 0.5'
Therefore, construct 2 - 2'-0" sidewalk culverts

Offsite Flows

A_{total} = 1,200,000 sf = 27.55 Ac
Roof area = 193,500 sf (0.16)
Paved area = 227,180 sf (0.20)
Landscaped area = 779,320 sf (0.65)
C = 0.49 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.49)(5.14)(27.55) = 69.4 cfs
A_{imp} = 420,680 sf; % impervious = 36 %
Composite CN = 75 (DPM Plate 22.2 C-3)
DRO = 0.7 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 70,005 cf

Comparison

Basin 1
ΔQ_{100} = 18.5 - 18.1 = 0.4 cfs (decrease)
ΔV_{100} = 31,625 - 28,750 = 2.875 cf (decrease)

Basin 2
ΔQ_{100} = 9.6 - 9.1 = 0.5 cfs (decrease)
ΔV_{100} = 16,130 - 14,665 = 1,465 cf (decrease)

△ SUPPLEMENTAL CALCULATIONS

Basin 1A

A = 19,300 sf = 0.44 Ac
Paved area = 6,600 sf (0.34)
Roof area = 12,700 sf (0.66)
C = 0.92
$Q = CiA = 0.92(5.14)(0.44) = 2.1$ cfs

Basin 3

A = 6,400 sf = 0.15 Ac
$Q = CiA = 0.95(5.14)(0.15) = 0.7$ cfs

Basin 1A + 3

$Q_{1A} + Q_3 = 2.8$ cfs

$Q_{capacity} = (1.49/n)AR^{2/3}s^{1/2}$
n = 0.012
A = 3 x 0.5 = 1.5 sf
R = A/P = 0.75; $R^{2/3} = 0.82$
S = 0.0040
$Q_{capacity} = 9.6$ cfs > $Q_{1A} + Q_3$

	TC	FL
1	72.25	71.58
2	72.43	71.76
3	72.61	71.94

	TC	FL
1	71.66	70.99
2	71.15	70.48
3	70.64	69.97

△ PAD SITE # 2 BY SEPARATE BUILDING PERMIT

	TC	FL
1	69.59	68.92
2	69.82	69.15
3	70.05	69.38

	TC	FL
1	71.35	70.68
2	71.13	70.46
3	70.91	70.24

	TC	FL
1	70.95	70.28
2	71.13	70.46
3	71.31	70.64

	TC	FL
1	69.44	68.77
2	69.21	68.54
3	68.98	68.31

LINE	BEARING	DISTANCE
L1	N 0°00'00" E	11.88
L2	N 90°00'00" E	14.40
L3	N 0°00'00" E	30.00
L4	S 90°00'00" W	10.00

CURVE	ARC	DELTA	RADIUS	TAN LENGTH
C1	47.12	90°00'00"	30.00	30.00
C2	29.31	11°29'04"	143.00	15.01
C3	19.83	19°56'54"	57.00	10.02
C4	32.87	13°10'07"	143.00	16.51

SIDEWALK CULVERT SECTION

ANCHOR DETAIL

DOWEL DETAIL

SIDEWALK CULVERT DETAILS

CONSTRUCTION NOTES:
A. JOIN NEAREST SCORE LINE OR WEAKENED PLANE JOINT, PLACE ½ EXPANSION JOINT MATERIAL.
B. SIDEWALK OR SEIBAIK, (VARIABLE).
C. 3" RADIUS, (TYPICAL).
D. ½ CHECKERED STEEL PLATE CULVERT TOP.
E. ROD ANCHOR, 4 ø.
F. "V" INVERT.
G. SIDEWALK GRADE.
H. DOWEL AND JOINT, (OPTIONAL).
J. GUTTER FLOWLINE ELEV.
K. 3/4" DIA. ANCHOR STAINLESS STL. MACHINE SCREW
L. BOTTOM OF GUTTER.
M. DRAIN BOTH SIDES.
N. SLOPE ¼ PER FT. MIN.

NEATLY SAWCUT, REMOVE & DISPOSE OF EXIST. CURB

SECTION A-A
SCALE: 1" = 2'

PAD SITE #1:
PROPOSED BUILDING PAD SITE DEVELOPMENT FOR BUILDING PERMIT. NOTE ADJACENT SIDEWALK, AND PAVING ARE EXISTING.

GRADING AND DRAINAGE PLAN PREPARED UNDER THE SUPERVISION OF

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

RECEIVED AUG 23 1988 HYDROLOGY SECTION

11-06-87 07-23-88 08-22-88

TOPOGRAPHIC SURVEY PREPARED BY OTHERS AND PROVIDED BY OWNER. ITS ADEQUACY IS HEREBY DISCLAIMED AS IT RELATES TO THIS DRAWING.

JEFF MORTENSEN & ASSOCIATES, INC.
811 DALLAS, N.E. □ ALBUQUERQUE, NM 87110
□ ENGINEERS □ TELEPHONE (505) 265-5611 □

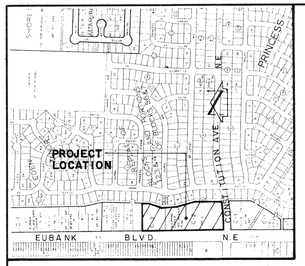
GRADING & DRAINAGE PLAN

PRINCESS JEANNE SHOPPING CENTER

DESIGN BY L.P.U.
DRAWN BY J.M.C.
APPROVED BY J.G.M.

No.	Date	By	Revision
1	11-87	LPU	REVISE BASIN BOUNDARY LOCATION
2	07-88	G.C.J	UPDATE FOR PAD SITE #1
3	08-88	J.G.M.	ADDRESS OFFSITE FLOWS FROM ALLEY

JOB NO. 870268
DATE 9·87
SHEET 1 OF 1



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3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the northeast quadrant of the intersection of Eubank Boulevard N.E. and Constitution Avenue N.E. At present, the site is developed, making this a modification to an existing site. Much of the surrounding area is currently developed, thereby making this an infill site. As shown by Plate J-21 of the Albuquerque Master Drainage Study, a portion of this site lies within a designated Flood Hazard Zone. Also, downstream flooding is apparent in Eubank Boulevard N.E. The decrease in developed runoff from this site will have negligible effect on this existing condition. In addition, an approved drainage plan for this site prepared by C.T.S. (J21-D19), allows for the free discharge of runoff onto Eubank Boulevard N.E. No offsite flows enter the site along the south and west property lines since the existing roads route runoff away from the project site. No offsite flows enter the site along the north property line since the existing site is graded in a manner which will route runoff away from the project site. Some offsite flows are anticipated along the east property line which have been quantified in the calculations which appear hereon, will be accepted and conveyed through this site. Based upon the fact that this site is an infill site and in view of the net decrease in runoff generated by the proposed improvements, the free discharge of runoff from this site is appropriate. The proposed development will also not adversely impact the existing flooding problem.

The Grading Plan shows 1) existing grades indicated by contours at 1'0" intervals taken from a topographic survey from Dewitt T. Morrison, 2) continuity between existing and proposed grades, 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the reconstruction of the existing parking lot along with new landscaping. Also shown is a proposed bushay and Bus Shelter which will be constructed by City Work Order. Future pad sites have been shown and they will be constructed by separate permits at a later date. Flows generated by Basin 1 will be routed from east to west onto Eubank Boulevard N.E. From that point, runoff flows north along the east edge of Eubank Boulevard N.E. to existing storm drain inlets located at the intersection of Eubank Boulevard N.E. and Indian School Road N.E. Flows generated by Basin 2 will be routed from east to west and discharged onto Eubank Boulevard N.E. From that point, runoff will flow south along the east edge of Eubank Boulevard N.E. to existing storm drain inlets located at the intersection of Eubank Boulevard N.E. and Constitution Avenue N.E. This pattern is consistent with existing site drainage.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used to quantify the peak rate of discharge and the SCS Method has been used to quantify the total volume. Both methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, and the Mayor's Emergency Rule adopted January 14, 1986. As shown by these calculations, the proposed improvements by Basin 1 will decrease the discharge by approximately 0.4 cfs, the decrease in runoff by Basin 2, will be approximately 0.5 cfs.

△ PAD SITE #1 (LEASE SPACES 1 & 2)

The Pad Site #1 is located in Basin 1 as shown. All adjacent improvements, i.e. sidewalks, parking, etc. are existing. In the existing condition, the site drains from east to west across existing sidewalk into Eubank Boulevard. The proposed developed condition employs roof drains with drain lines which will discharge the roof runoff onto Eubank Boulevard via drivepads and one drainline through the curb directly west of the site.

No separate calculations are provided because they have already been addressed in the developed condition for Basin A.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate: 32 - Etc - Embudo - Tijeras Complex
Hydrologic Soil Group: B
Existing Pervious CN = 70 (DPM Plate 22.2 C-2
Pasture or Range Land: fair condition)
Developed Pervious CN = 61 (DPM Plate 22.2 C-2)

Time of Concentration/Time to Peak

$T_C = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation)

$T_P = T_C = 10$ min.

Point Rainfall

$P_6 = 2.43$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: Q = CiA

where C varies
i = P_6 (6.84) $T_C^{-0.51}$ = 5.14 in/hr
P_6 = 2.43 in (DPM Plate 22.2D-1)
T_C = 10 min (minimum)
A = area, acres

SCS Method

Volume: V = 3630(DRO) A

Where DRO = Direct runoff in inches
A = area, acres

Existing Condition

Basin 1
A_{total} = 172,525 sf = 3.96 Ac
Roof area = 62,220 sf (0.36)
Paved area = 106,105 sf (0.62)
Landscaped area = 4,200 sf (0.02)
C = 0.91 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.91)(5.14)(3.96) = 18.5 cfs
A_{imp} = 168,325 sf; % impervious = 98 %
Composite CN = 97 (DPM Plate 22.2 C-3)
DRO = 2.2 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO)A = 31,625 cf

Basin 2
A_{total} = 87,960 sf = 2.02 Ac
Roof area = 18,600 sf (0.21)
Paved area = 66,540 sf (0.76)
Landscaped area = 2,820 sf (0.03)
C = 0.92 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.92)(5.14)(2.02) = 9.6 cfs
A_{imp} = 85,140 sf; % impervious = 97 %
Composite CN = 97 (DPM Plate 22.2 C-3)
DRO = 2.2 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO)A = 16,130 cf

Developed Condition

Basin 1
A_{total} = 172,525 sf = 3.96 Ac
Roof area = 63,970 sf (0.37)
Paved area = 98,485 sf (0.57)
Landscaped area = 10,700 sf (0.06)
C = 0.89 (Weighted average per Emergency Rule, 1/14/86)
Pasture or Range Land: fair condition)
Q_{100} = CiA = (0.89)(5.14)(3.96) = 18.1 cfs
A_{imp} = 162,455 sf; % impervious = 94 %
Composite CN = 96 (DPM Plate 22.2 C-3)
DRO = 2.0 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 28,750 cf

Basin 2
A_{total} = 87,960 sf = 2.02 Ac
Roof area = 22,400 sf (0.25)
Paved area = 58,920 sf (0.67)
Landscaped area = 6,640 sf (0.08)
C = 0.88 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.88)(5.14)(2.02) = 9.1 cfs
A_{imp} = 81,320 sf; % impervious = 92 %
Composite CN = 96 (DPM Plate 22.2 C-3)
DRO = 2.0 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 14,665 cf

Analysis Point 1

A_{total} = 56,180 sf = 1.29 Ac
Roof area = 17,045 sf (0.30)
Paved area = 36,095 sf (0.64)
Landscaped area = 3,040 sf (0.06)
C = 0.90 (Weighted average per Emergency Rule, 1/14/86)
i = 3.37 (10-year, 6-hour rainfall event)
Q_{100} = CiA = (0.90)(3.37)(1.29) = 3.9 cfs

Channel Capacity (1'-0" curb opening) Weir Equation

$Q = CLH^{3/2}$ = 1.1 cfs
Where C = 3.09
L = 1'-0"
H = 0.5'
Therefore, construct 2 - 2'-0" sidewalk culverts

Offsite Flows

A_{total} = 1,200,000 sf = 27.55 Ac
Roof area = 193,500 sf (0.16)
Paved area = 227,180 sf (0.20)
Landscaped area = 779,320 sf (0.65)
C = 0.49 (Weighted average per Emergency Rule, 1/14/86)
Q_{100} = CiA = (0.49)(5.14)(27.55) = 69.4 cfs
A_{imp} = 420,680 sf; % impervious = 36 %
Composite CN = 75 (DPM Plate 22.2 C-3)
DRO = 0.7 in (DPM Plate 22.2 C-4)
V_{100} = 3630 (DRO) A = 70,005 cf

Comparison

Basin 1
ΔQ_{100} = 18.5 - 18.1 = 0.4 cfs (decrease)
ΔV_{100} = 31,625 - 28,750 = 2.875 cf (decrease)

Basin 2
ΔQ_{100} = 9.6 - 9.1 = 0.5 cfs (decrease)
ΔV_{100} = 16,130 - 14,665 = 1,465 cf (decrease)

△ SUPPLEMENTAL CALCULATIONS

Basin 1A

A = 19,300 sf = 0.44 Ac
Paved area = 6,600 sf (0.34)
Roof area = 12,700 sf (0.66)
C = 0.92
$Q = CiA = 0.92(5.14)(0.44) = 2.1$ cfs

Basin 3

A = 6,400 sf = 0.15 Ac
$Q = CiA = 0.95(5.14)(0.15) = 0.7$ cfs

Basin 1A + 3

$Q_{1A} + Q_3 = 2.8$ cfs

$Q_{capacity} = (1.49/n)AR^{2/3}s^{1/2}$
n = 0.012
A = 3 x 0.5 = 1.5 sf
R = A/P = 0.75; $R^{2/3} = 0.82$
S = 0.0040
$Q_{capacity} = 9.6$ cfs > $Q_{1A} + Q_3$

	TC	FL
1	72.25	71.58
2	72.43	71.76
3	72.61	71.94

	TC	FL
1	71.66	70.99
2	71.15	70.48
3	70.64	69.97

△ PAD SITE # 2 BY SEPARATE BUILDING PERMIT

	TC	FL
1	69.59	68.92
2	69.82	69.15
3	70.05	69.38

	TC	FL
1	71.35	70.68
2	71.13	70.46
3	70.91	70.24

	TC	FL
1	70.95	70.28
2	71.13	70.46
3	71.31	70.64

	TC	FL
1	69.44	68.77
2	69.21	68.54
3	68.98	68.31

LINE	BEARING	DISTANCE
L1	N 0°00'00" E	11.88
L2	N 90°00'00" E	14.40
L3	N 0°00'00" E	30.00
L4	S 90°00'00" W	10.00

CURVE	ARC	DELTA	RADIUS	TAN LENGTH
C1	47.12	90°00'00"	30.00	30.00
C2	29.31	11°29'04"	143.00	15.01
C3	19.83	19°56'54"	57.00	10.02
C4	32.87	13°10'07"	143.00	16.51

SIDEWALK CULVERT SECTION

ANCHOR DETAIL

DOWEL DETAIL

SIDEWALK CULVERT DETAILS

CONSTRUCTION NOTES:
A. JOIN NEAREST SCORE LINE OR WEAKENED PLANE JOINT, PLACE ½ EXPANSION JOINT MATERIAL.
B. SIDEWALK OR SEIBAIK, (VARIABLE).
C. 3" RADIUS, (TYPICAL).
D. ½ CHECKERED STEEL PLATE CULVERT TOP.
E. ROD ANCHOR, 4 ø.
F. "V" INVERT.
G. SIDEWALK GRADE.
H. DOWEL AND JOINT, (OPTIONAL).
J. GUTTER FLOWLINE ELEV.
K. 3/4" DIA. ANCHOR STAINLESS STL. MACHINE SCREW
L. BOTTOM OF GUTTER.
M. DRAIN BOTH SIDES.
N. SLOPE ¼ PER FT. MIN.

NEATLY SAWCUT, REMOVE & DISPOSE OF EXIST. CURB

SECTION A-A
SCALE: 1" = 2'

PAD SITE #1:
PROPOSED BUILDING PAD SITE DEVELOPMENT FOR BUILDING PERMIT. NOTE ADJACENT SIDEWALK, AND PAVING ARE EXISTING.

GRADING AND DRAINAGE PLAN PREPARED UNDER THE SUPERVISION OF

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

RECEIVED AUG 23 1988 HYDROLOGY SECTION

11-06-87 07-23-88 08-22-88

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GRADING & DRAINAGE PLAN

PRINCESS JEANNE SHOPPING CENTER

DESIGN BY L.P.U.
DRAWN BY J.M.C.
APPROVED BY J.G.M.

No.	Date	By	Revision
1	11-87	LPU	REVISE BASIN BOUNDARY LOCATION
2	07-88	G.C.J	UPDATE FOR PAD SITE #1
3	08-88	J.G.M.	ADDRESS OFFSITE FLOWS FROM ALLEY

JOB NO. 870268
DATE 9·87
SHEET 1 OF 1