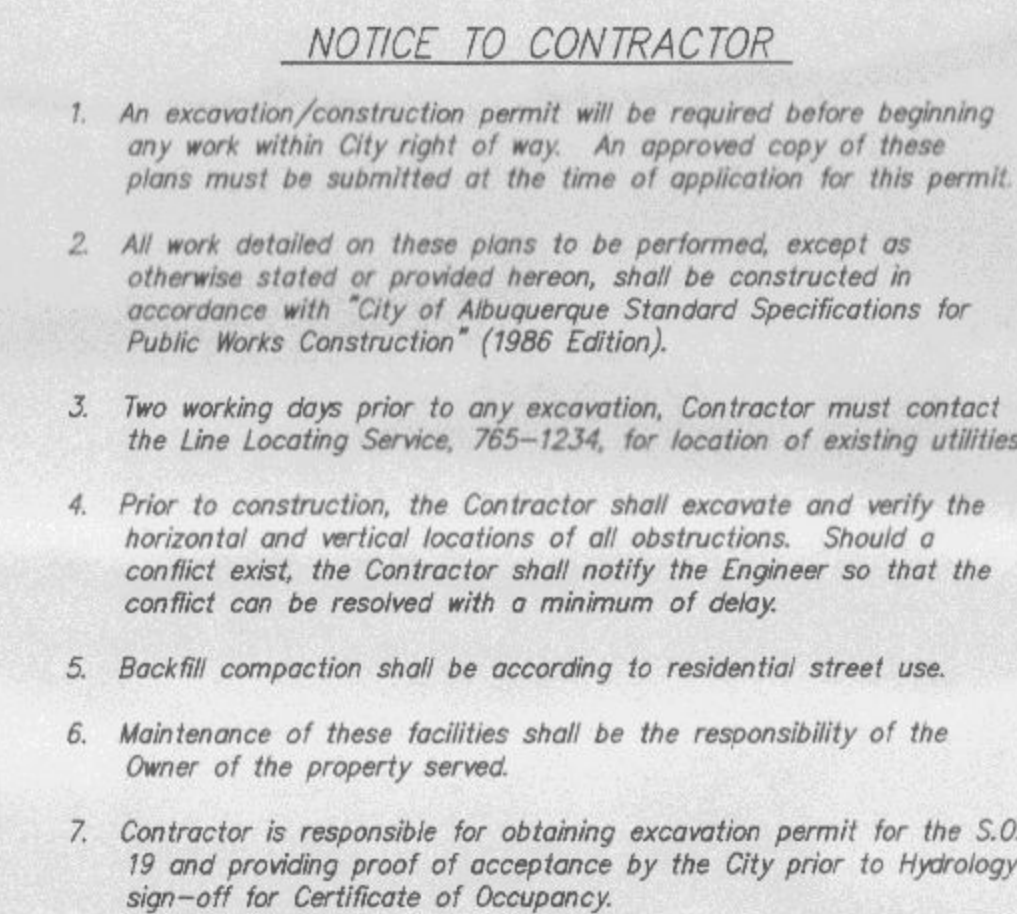
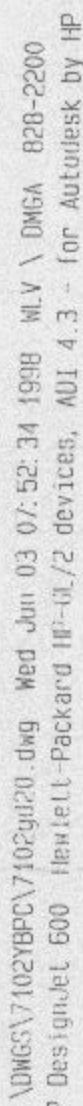




## DRAINAGE CALCULATIONS

$$P(100-6) = 2.34 \text{ IN}$$

### BASIN A

$$\text{AREA} = 1,536 \text{ AC}$$

$$B = 158 \text{ D} = 85\%$$

$$TP = 0.133 \text{ HR}$$

$$Q(100-6) = 6.65 \text{ CFS}$$

$$\text{VOL}(100-6) = 10,633 \text{ CF}$$

### BASIN B

$$\text{AREA} = 0,704 \text{ AC}$$

$$B = 100 \text{ D} = 85\%$$

$$TP = 0.133 \text{ HR}$$

$$Q(100-6) = 3.33 \text{ CFS}$$

$$\text{VOL}(100-6) = 5,316 \text{ CF}$$

### OFF-SITE BASIN 1

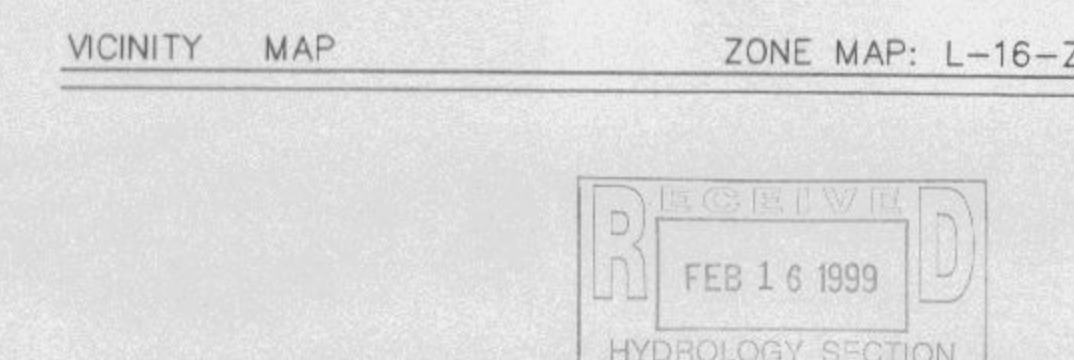
$$\text{AREA} = 0,733 \text{ AC}$$

$$B = 40\% \text{ B} = 60\%$$

$$TP = 0.133 \text{ HR}$$

$$Q(100-6) = 0.78 \text{ CFS}$$

$$Q(100-6) = 0.36 \text{ CFS}$$



**LEGEND**

|  |                                                                  |
|--|------------------------------------------------------------------|
|  | PROPERTY LINE                                                    |
|  | EXISTING CURB AND GUTTER                                         |
|  | PROPOSED CURB AND GUTTER                                         |
|  | EXISTING CONTOUR                                                 |
|  | PROPOSED SWALE                                                   |
|  | PROPOSED RETAINING WALL                                          |
|  | DRAINAGE BASIN BOUNDARY                                          |
|  | PROPOSED FINISH FLOOR                                            |
|  | PROPOSED TOP OF CURB AND<br>FLOWLINE SPOT ELEVATION              |
|  | PROPOSED TOP OF WALL AND<br>BOTTOM WALL TOE ELEVATION            |
|  | PROPOSED 3 TO 1 SLOPE (STABILIZED<br>WITH LANDSCAPING OR GRAVEL) |
|  | EXISTING SWALE                                                   |

RECORD DRAWING

I hereby certify that the information contained on this drawing has been revised in accordance with information furnished by the contractor, and that all prices and by the surveyor, Walker Surveying, and reflects the construction actually accomplished. This plan as constructed is in substantial compliance with the Approved Plan.

*John M. MacKenzie*      2-15-99

John M. MacKenzie      NMRE 11619

RECEIVED  
11619  
FEB 15 1999  
NORTH CAROLINA  
DIVISION OF LAND & WATER

[illegible][illegible]

**dmj**  
MARK GOODWIN & ASSOCIATES, P.A.  
CONSULTING ENGINEERS  
P.O. BOX 90606  
ALBUQUERQUE, NEW MEXICO 87199  
(505) 828-2200

CROSSLAND - 124 UNITS  
YALE BUSINESS PARK  
ALBUQUERQUE, NEW MEXICO

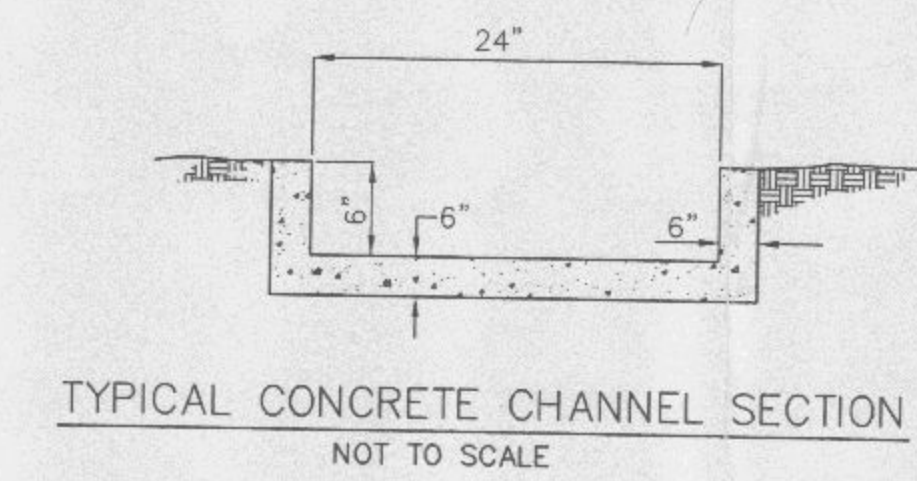
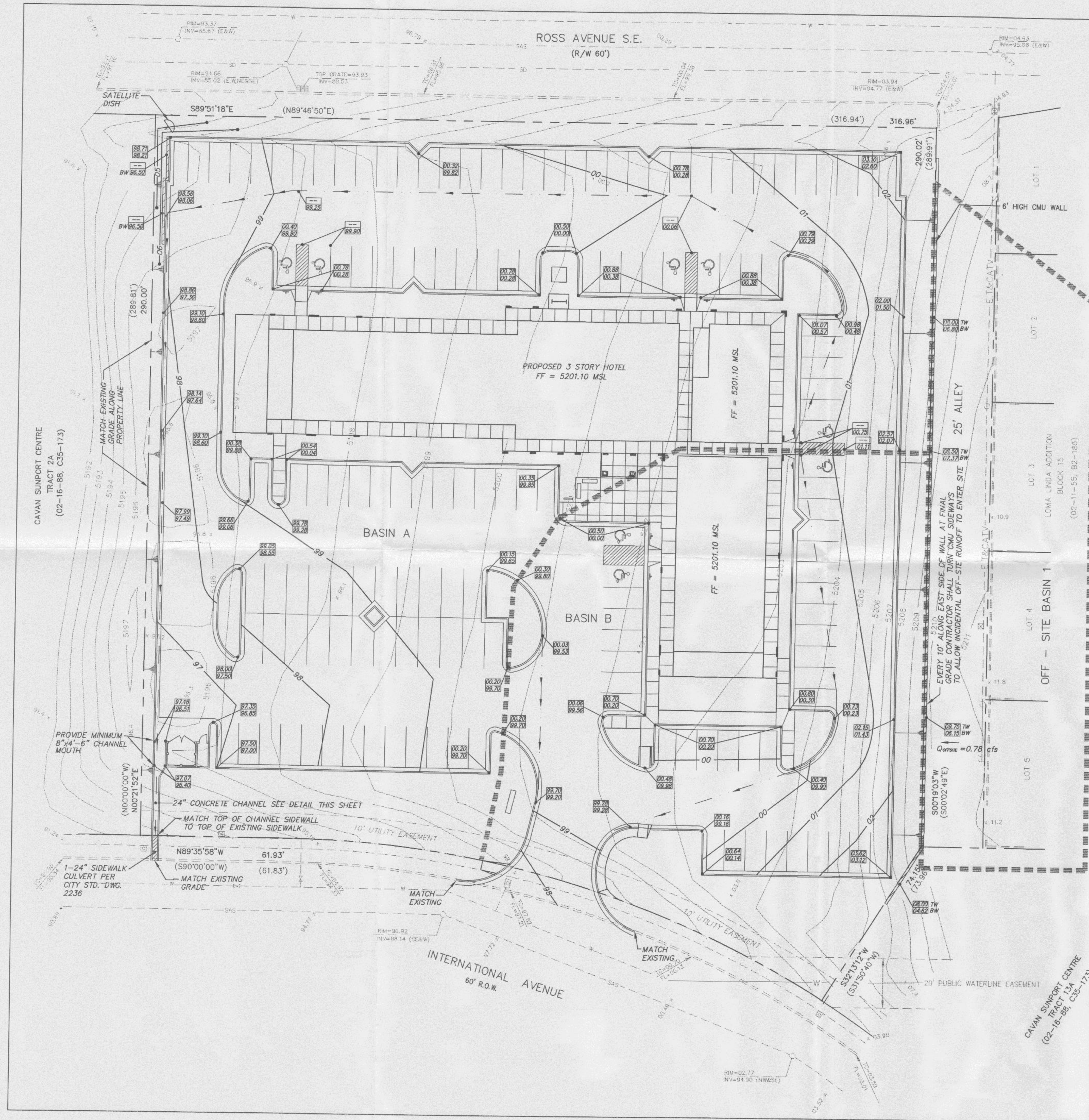
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GRADING AND DRAINAGE PLAN

Launch No. \_\_\_\_\_  
ESA No. \_\_\_\_\_  
Permit \_\_\_\_\_  
Submittal \_\_\_\_\_  
Permit \_\_\_\_\_  
Clearance \_\_\_\_\_  
Bid Issue \_\_\_\_\_  
Construction \_\_\_\_\_  
Issue \_\_\_\_\_

C3.1(I)

SITE PLAN: CREA2-LI.DWG 5-11-98  
BOUNDARY: 9710ALT.DWG 11-05-97  
7102YBPC\7102GD20\06-01-98\WL.V



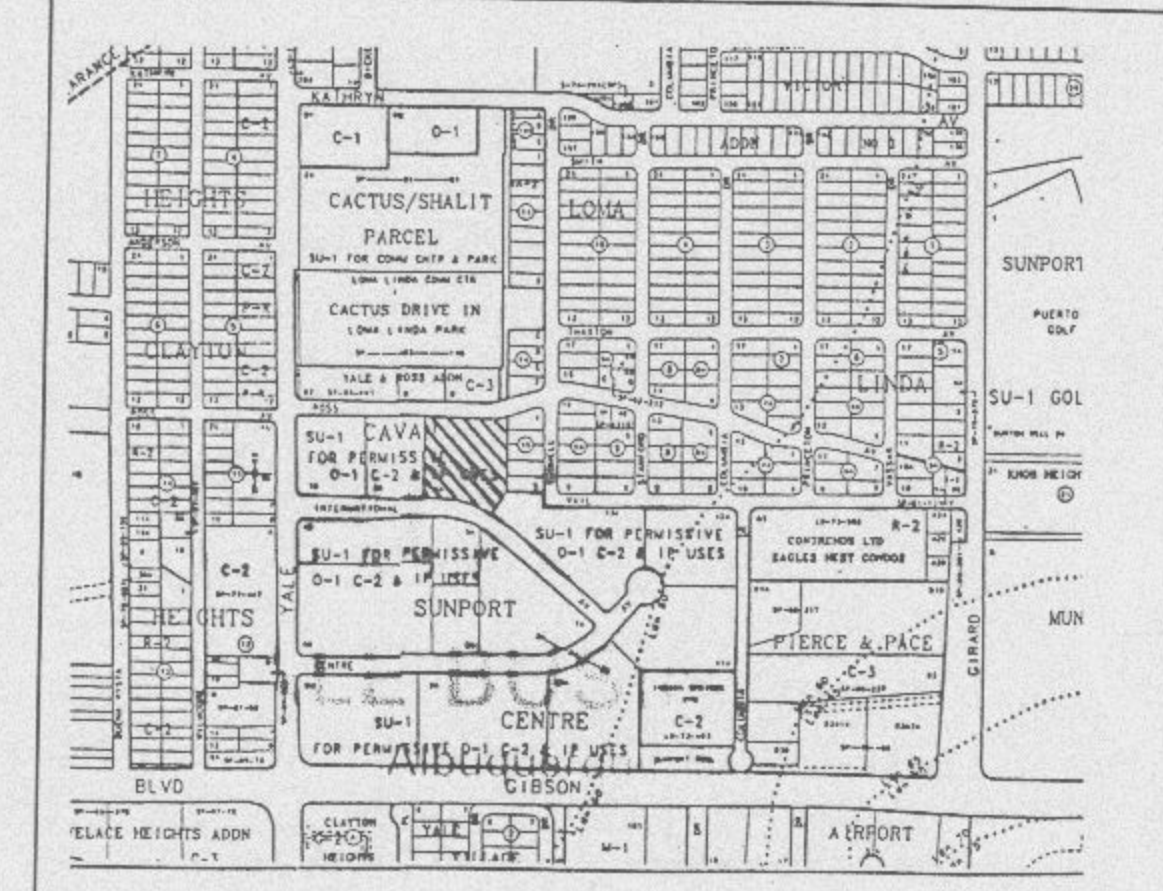
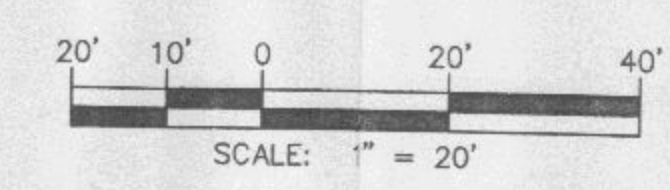
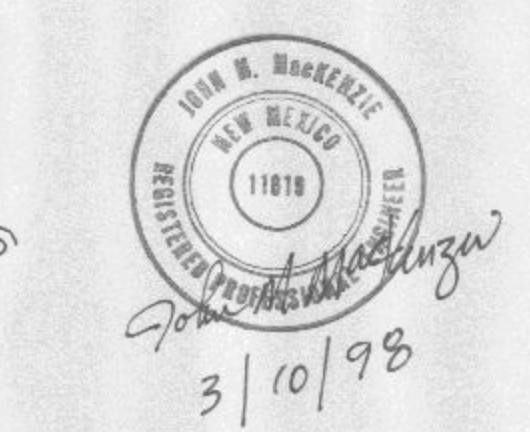
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**DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY**

|                     |                              |         |
|---------------------|------------------------------|---------|
| Design Approval     | <i>[Signature]</i>           | 3-18-98 |
|                     | HYDROLOGY SECTION            | DATE    |
| Inspection Approval |                              |         |
|                     | CONSTRUCTION SECTION         | DATE    |
| Acceptance          |                              |         |
|                     | CONSTRUCTION/SECTION/PERMITS | DATE    |

**DRAINAGE CALCULATIONS**

|                        |                         |
|------------------------|-------------------------|
| $P(100-6) = 2.34$ IN   |                         |
| <b>BASIN A</b>         | <b>BASIN B</b>          |
| AREA = 1.536 AC        | AREA = 0.704 AC         |
| B = 15% D = 85%        | B = 15% D = 85%         |
| TP = 0.133 HR          | TP = 0.133 HR           |
| Q(100-6) = 6.65 cfs    | Q(100-6) = 3.33 cfs     |
| VOL(100-6) = 10,633 CF | VOL(100-6) = 5,319 CF   |
|                        |                         |
|                        | <b>OFF-SITE BASIN 1</b> |
|                        | AREA = 0.373 AC         |
|                        | B = 40% D = 60%         |
|                        | TP = 0.133 HR           |
|                        | Q(100-6) = 0.78 cfs     |
|                        | VOL(100-6) = 936 CF     |



**VICINITY MAP** ZONE MAP: L-16-Z

**LEGAL DESCRIPTION**

LOT 3A, CAVAN SUNPORT ADDITION.

**TBM (TEMPORARY BENCHMARK)**

TOP OF CURB AT SOUTHWEST CORNER OF WATER METER IN INTERNATIONAL AVENUE ELEVATION=5197.82

**ACS BENCHMARK**

"1-M16" Y=1476695.42, X=388843.56, G-G=0.9996659, Δ=111'2"48" CENTRAL ZONE (NAD 1927) ELEVATION=5189.85.

**NOTES**

- THIS SITE DOES NOT LIE WITHIN A 100 YEAR FLOOD ZONE.
- THIS SITE IS ALLOWED FREE DISCHARGE PER MASTER DRAINAGE PLAN (L-16/D23).
- ALL ROOF DRAINS ARE TO DISCHARGE THROUGH OPENINGS IN THE FACE OF CURB.
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- CONTRACTOR MUST PREVENT SEDIMENT FROM WASHING INTO RIGHT OF WAY DURING CONSTRUCTION.

**LEGEND**

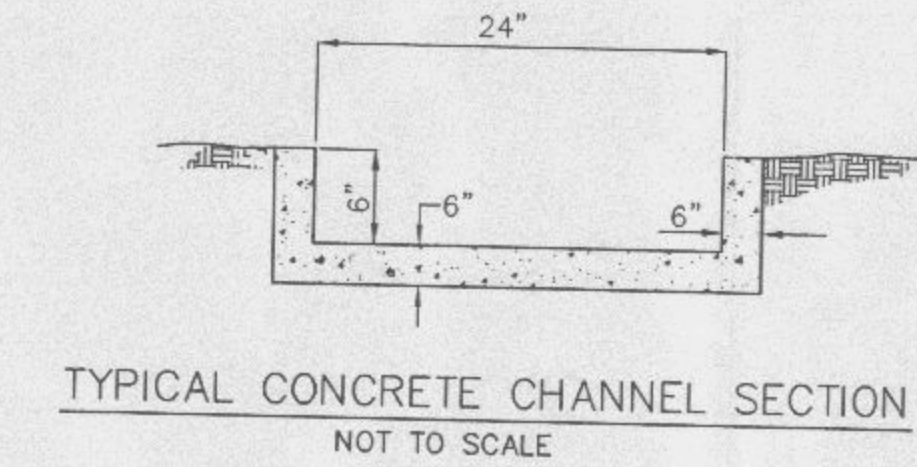
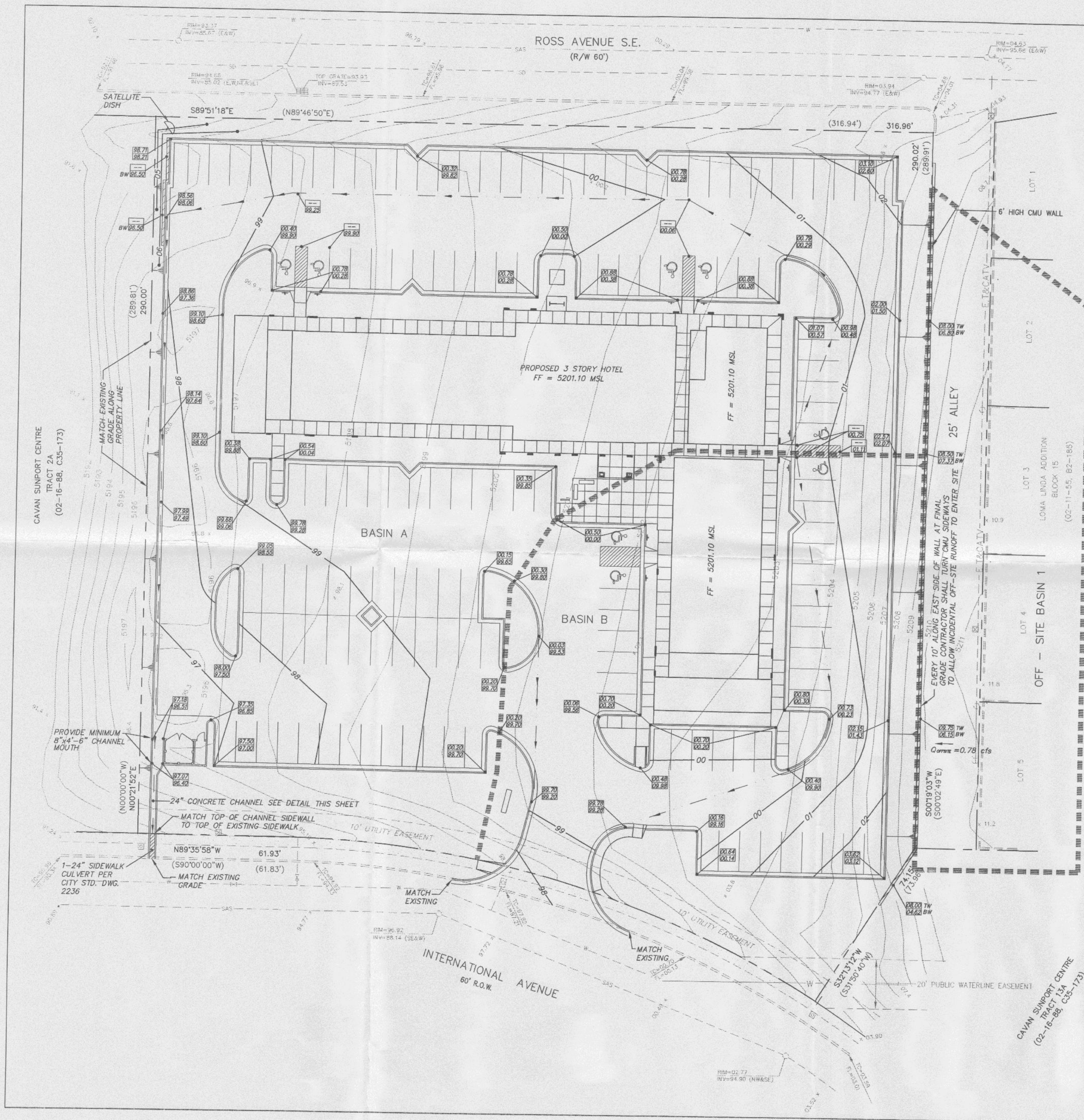
|     |                                                                 |
|-----|-----------------------------------------------------------------|
| --- | PROPERTY LINE                                                   |
| --- | EXISTING CURB AND GUTTER                                        |
| --- | PROPOSED CURB AND GUTTER                                        |
| --- | EXISTING CONTOUR                                                |
| --- | PROPOSED SWALE                                                  |
| --- | PROPOSED RETAINING WALL                                         |
| --- | DRAINAGE BASIN BOUNDARY                                         |
| --- | PROPOSED FINISH FLOOR                                           |
| --- | PROPOSED TOP OF CURB AND FLOWLINE SPOT ELEVATION                |
| --- | PROPOSED TOP OF WALL AND BOTTOM WALL SPOT ELEVATION             |
| --- | PROPOSED 2.5 TO 1 SLOPE (STABILIZED WITH LANDSCAPING OR GRAVEL) |
| --- | EXISTING SIDEWALK                                               |

**CROSSLAND HOTEL-YALE BUSINESS PARK**

**GRADING AND DRAINAGE PLAN**

**dmg** MARK GOODWIN & ASSOCIATES, P.A.  
CONSULTING ENGINEERS  
P.O. BOX 90606  
ALBUQUERQUE, NEW MEXICO 87199  
(505) 828-2200

|                 |             |              |              |
|-----------------|-------------|--------------|--------------|
| Designed: JMM   | Drawn: WLW  | Checked: DMG | Sheet 3 of 6 |
| Scale: 1" = 20' | Date: 09/97 | Job: 97102   |              |



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**DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY**

Design Approval: *[Signature]* 3-18-98  
HYDROLOGY SECTION DATE

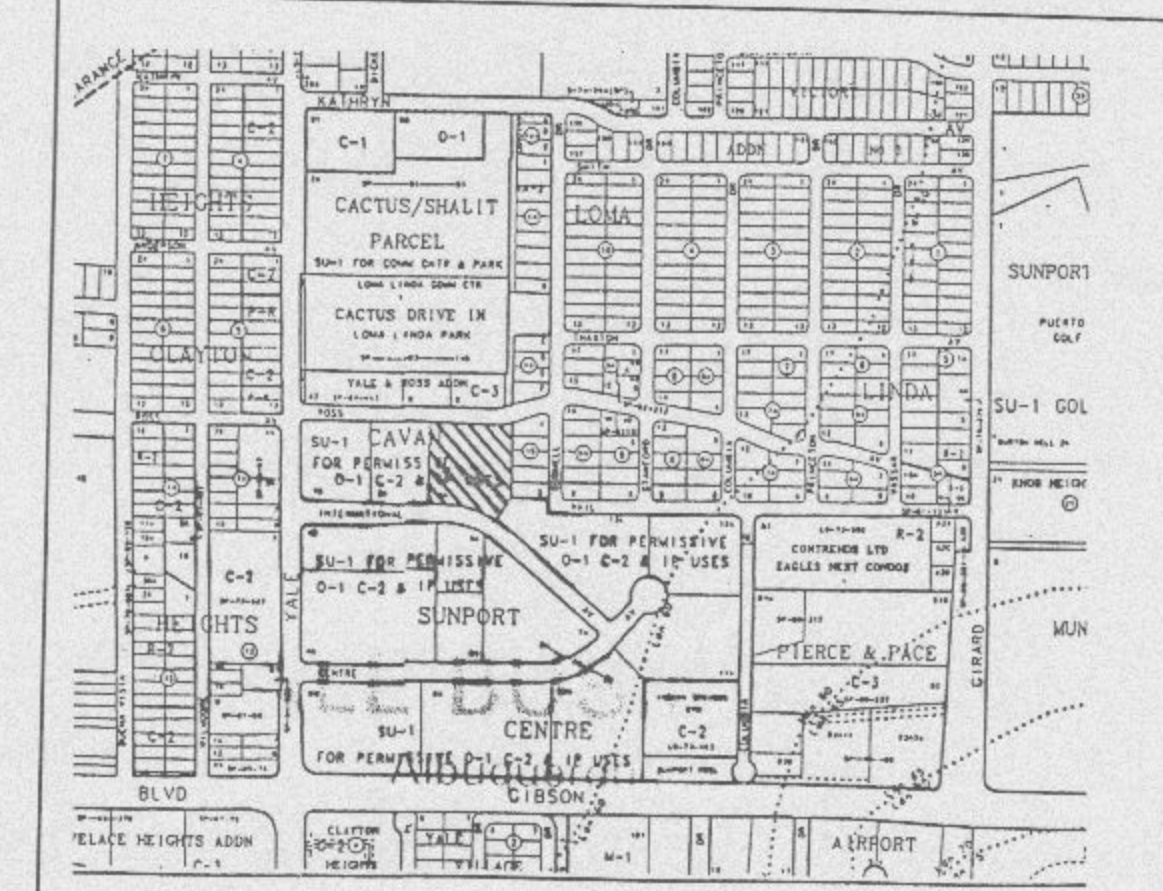
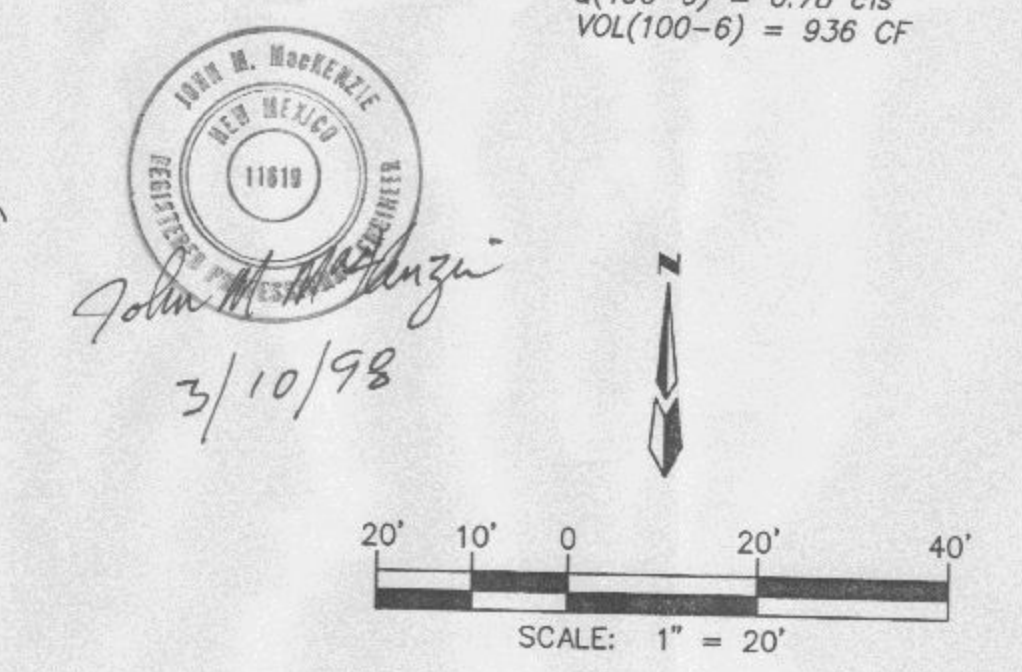
Inspection Approval: \_\_\_\_\_  
CONSTRUCTION SECTION DATE

Acceptance: \_\_\_\_\_  
CONSTRUCTION/SECTION/PERMITS DATE

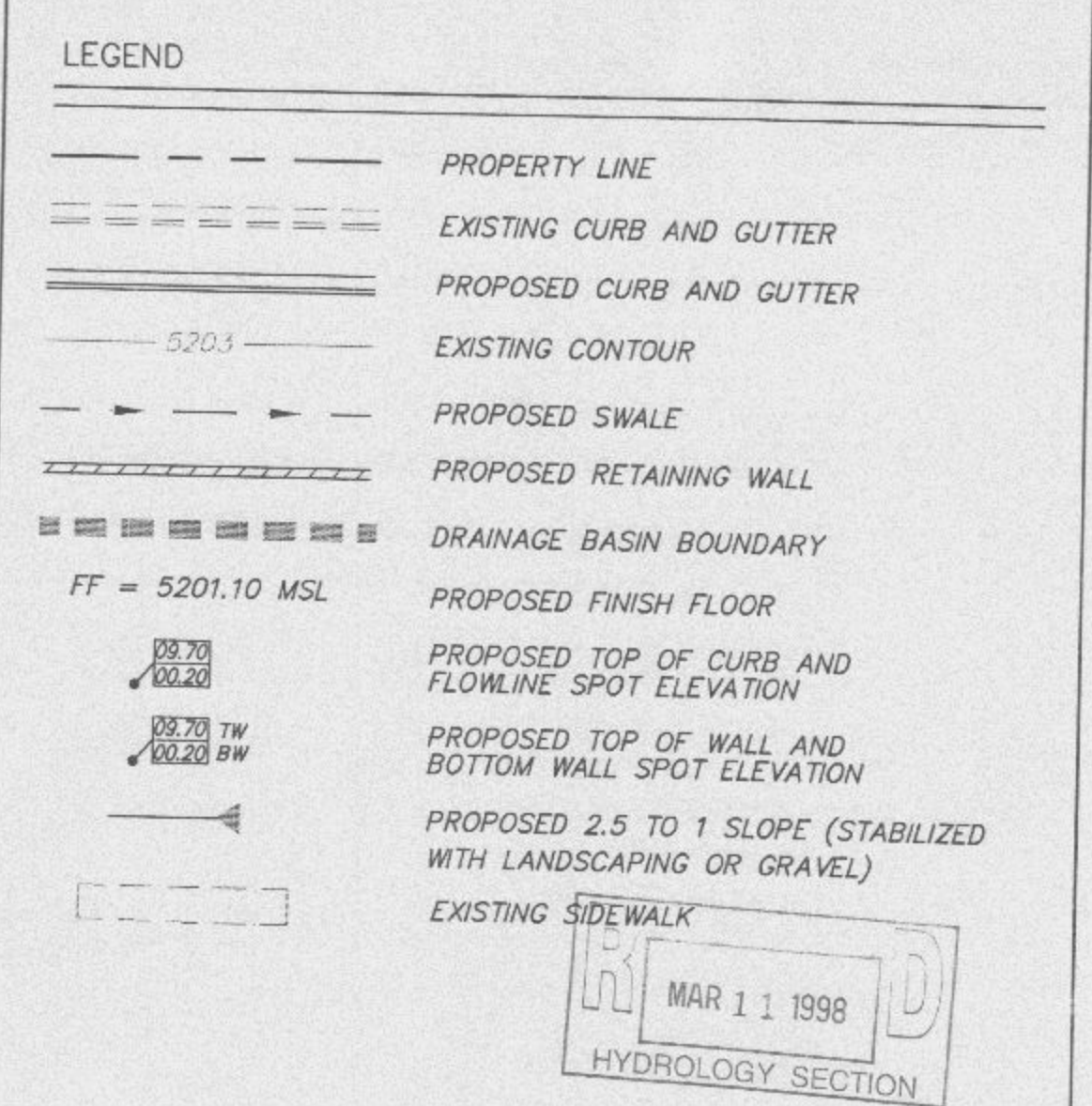
**DRAINAGE CALCULATIONS**

P(100-6) = 2.34 IN

| AREA                   | AREA                  | AREA                |
|------------------------|-----------------------|---------------------|
| BASIN A                | BASIN B               | OFF-SITE BASIN 1    |
| AREA = 1.536 AC        | AREA = 0.704 AC       | AREA = 0.373 AC     |
| B = 15% D = 85%        | B = 15% D = 85%       | B = 40% D = 60%     |
| TP = 0.133 HR          | TP = 0.133 HR         | TP = 0.133 HR       |
| Q(100-6) = 6.65 cfs    | Q(100-6) = 3.33 cfs   | Q(100-6) = 0.78 cfs |
| VOL(100-6) = 10,633 CF | VOL(100-6) = 5,319 CF | VOL(100-6) = 936 CF |



- LEGAL DESCRIPTION**
- LOT 3A, CAVAN SUNPORT ADDITION.
- TBM (TEMPORARY BENCHMARK)**
- TOP OF CURB AT SOUTHWEST CORNER OF WATER METER IN INTERNATIONAL AVENUE ELEVATION=5197.82
- ACS BENCHMARK**
- "1-M16" Y=1476695.42, X=388843.56, G-G=0.9996659, Δ=111°2'48" CENTRAL ZONE (NAD 1927) ELEVATION=5189.85.
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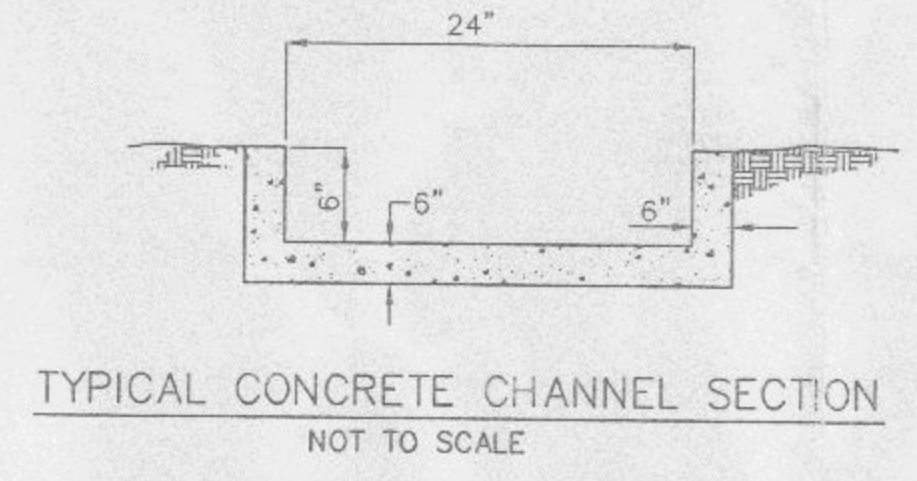
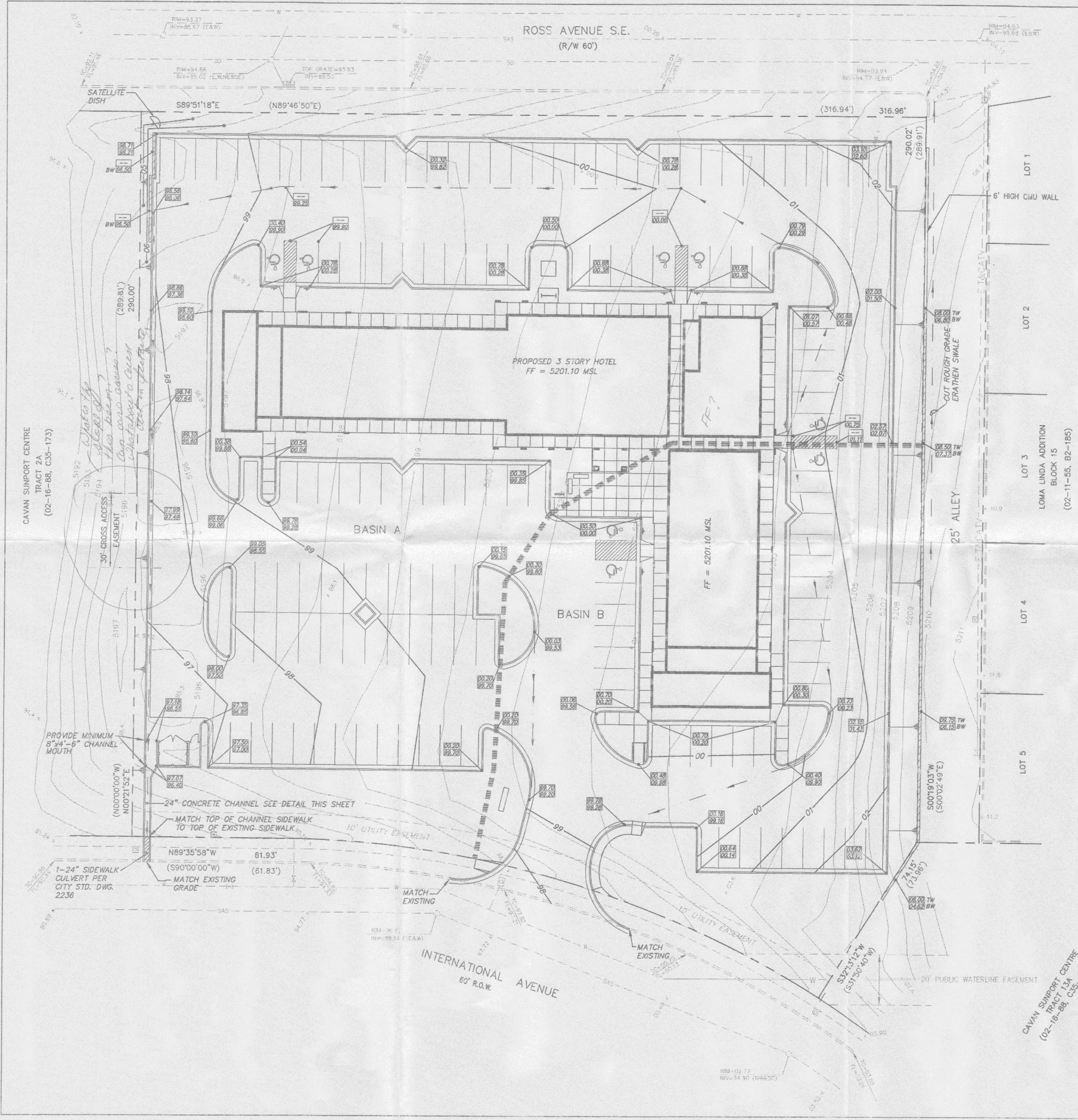


**CROSSLAND HOTEL-YALE BUSINESS PARK**

**GRADING AND DRAINAGE PLAN**

**dmg** MARK GOODWIN & ASSOCIATES, P.A.  
CONSULTING ENGINEERS  
P.O. BOX 90606  
ALBUQUERQUE, NEW MEXICO 87199  
(505) 828-2200

Designed: JMM Drawn: WLW Checked: DMG Sheet 3 of 6  
Scale: 1" = 20' Date: 09/97 Job: 97102



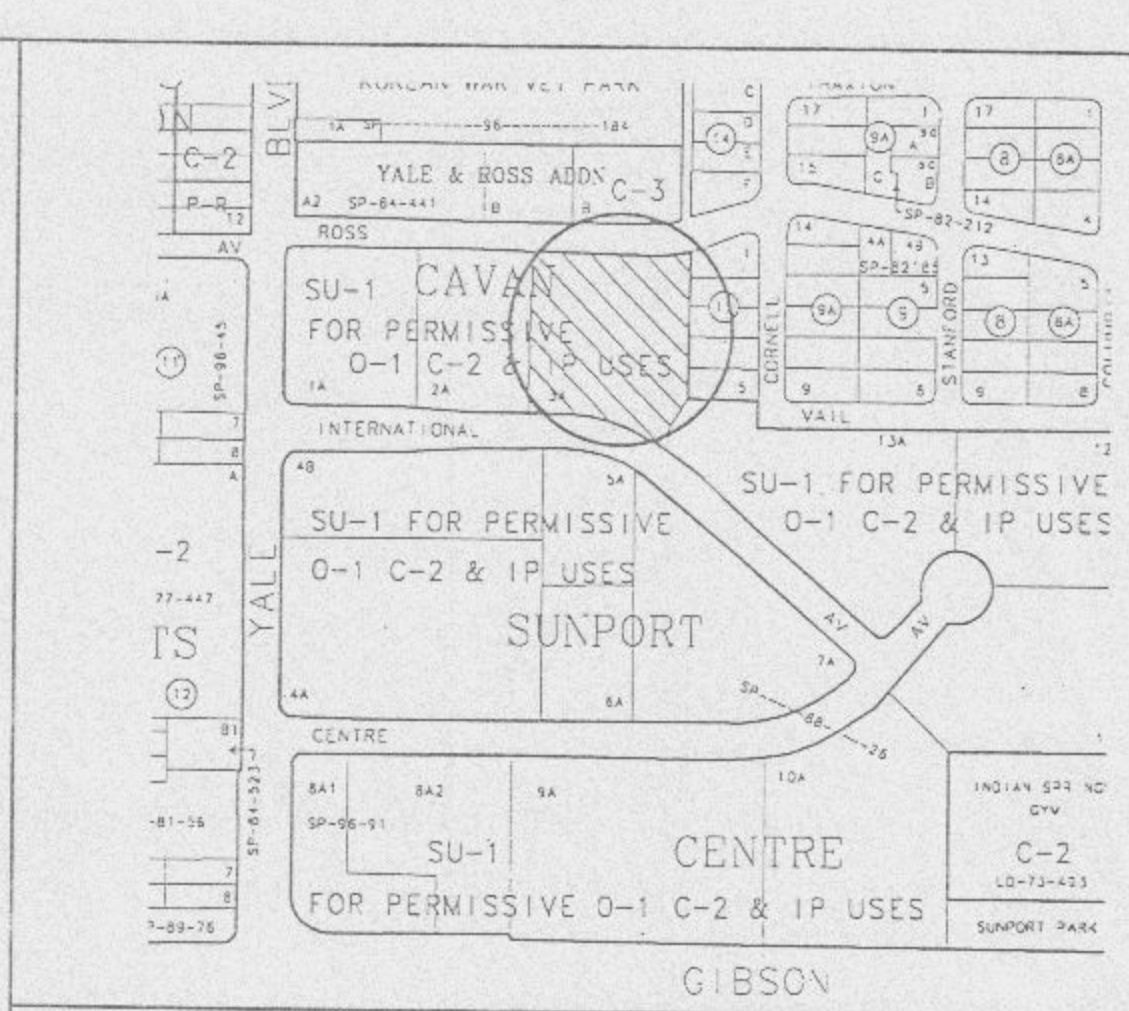
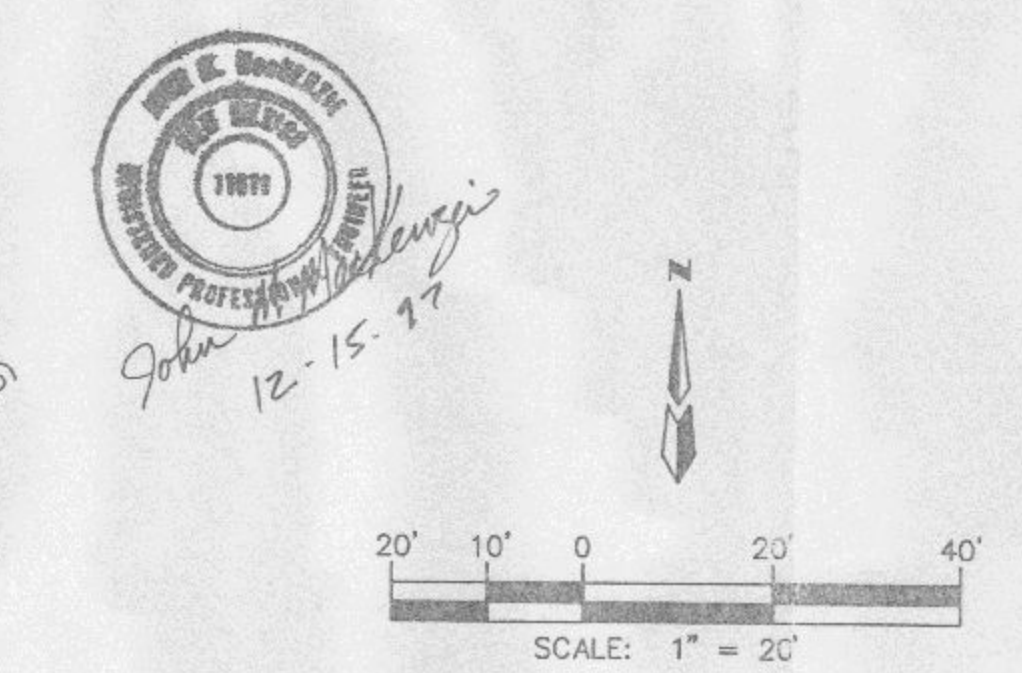
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**DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY**

|                     |                              |      |
|---------------------|------------------------------|------|
| Design Approval     | HYDROLOGY SECTION            | DATE |
| Inspection Approval | CONSTRUCTION SECTION         | DATE |
| Acceptance          | CONSTRUCTION/SECTION/PERMITS | DATE |

**DRAINAGE CALCULATIONS**

|                                  |                                 |
|----------------------------------|---------------------------------|
| $P(100-6) = 2.34 \text{ IN}$     |                                 |
| <b>BASIN A</b>                   | <b>BASIN B</b>                  |
| AREA = 1,536 AC                  | AREA = 0.704 AC                 |
| B = 15% D = 85%                  | B = 15% D = 85%                 |
| TP = 0.133 HR                    | TP = 0.133 HR                   |
| $Q(100-6) = 6.65 \text{ cfs}$    | $Q(100-6) = 3.33 \text{ cfs}$   |
| $VOL(100-6) = 10,633 \text{ CF}$ | $VOL(100-6) = 5,319 \text{ CF}$ |



VICINITY MAP ZONE MAP: L-16-Z

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**LEGEND**

|     |                                                                 |
|-----|-----------------------------------------------------------------|
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| ==  | EXISTING CURB AND GUTTER                                        |
| --- | PROPOSED CURB AND GUTTER                                        |
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Designed: JMM Drawn: WLW Checked: DMG Sheet 3 of 4  
Scale: 1" = 20' Date: 09/97 Job: 97102

ROSS AVENUE S.E.  
(R/W 60')

TYPICAL CONCRETE CHANNEL SECTION  
NOT TO SCALE

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DRAINAGE FACILITIES WITHIN CITY RIGHT OF WAY

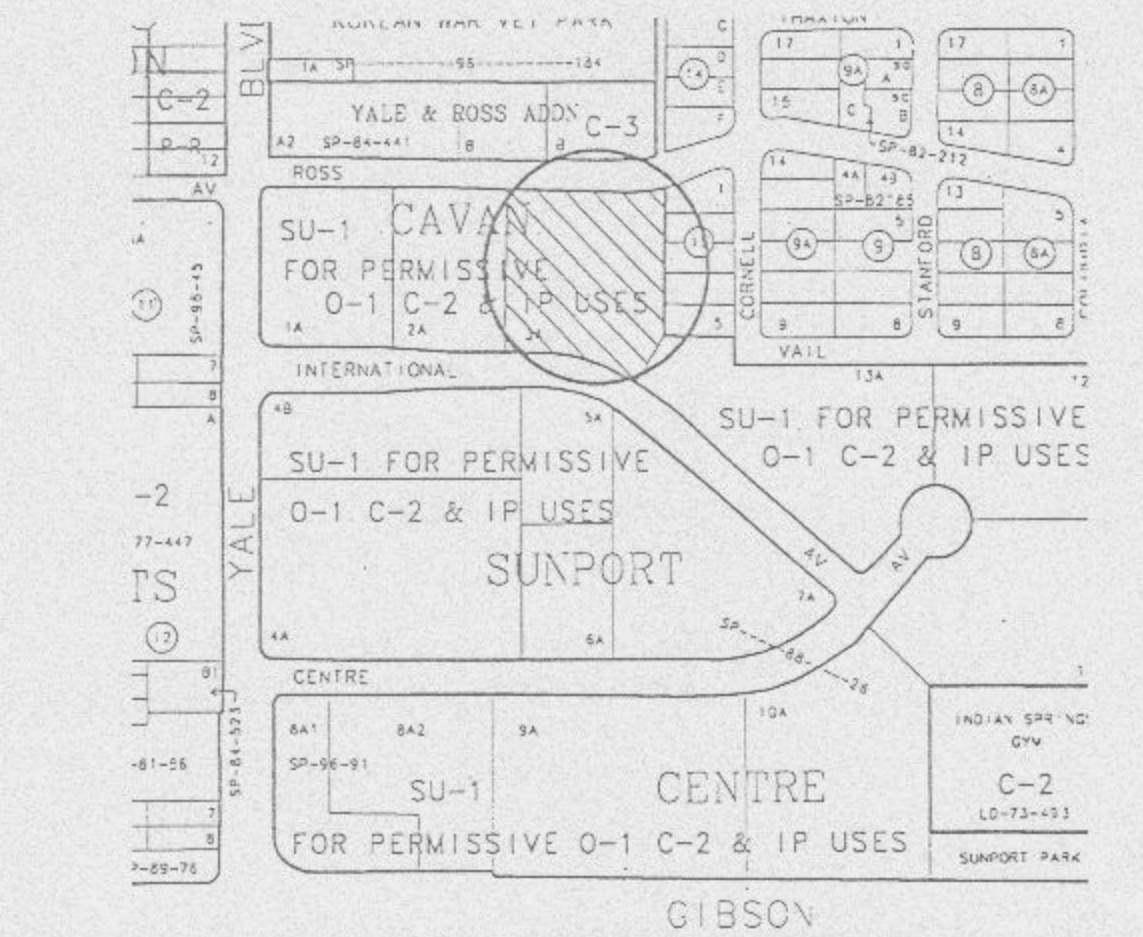
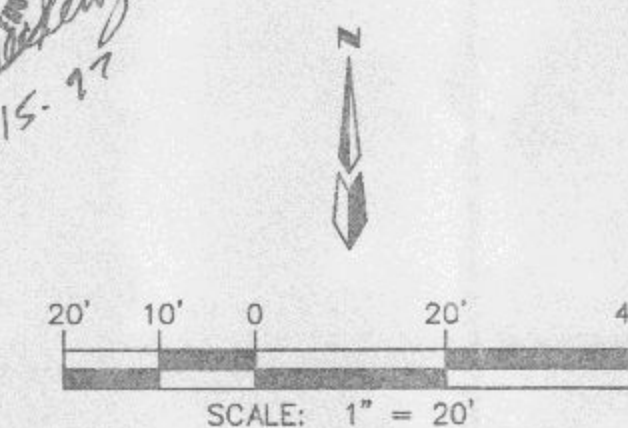
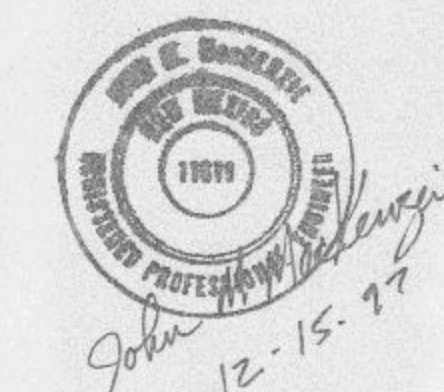
|                     |                              |      |
|---------------------|------------------------------|------|
| Design Approval     | HYDROLOGY SECTION            | DATE |
| Inspection Approval | CONSTRUCTION SECTION         | DATE |
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DRAINAGE CALCULATIONS

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B = 15% D = 85%  
TP = 0.133 HR  
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VOL(100-6) = 10,633 CF

BASIN B  
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B = 15% D = 85%  
TP = 0.133 HR  
 $Q(100-6) = 3.33 \text{ cfs}$   
VOL(100-6) = 5,319 CF



VICINITY MAP ZONE MAP: L-16-Z

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LEGEND

|     |                                                                 |
|-----|-----------------------------------------------------------------|
| --- | PROPERTY LINE                                                   |
| --- | EXISTING CURB AND GUTTER                                        |
| --- | PROPOSED CURB AND GUTTER                                        |
| --- | EXISTING CONTOUR                                                |
| --- | PROPOSED SWALE                                                  |
| --- | PROPOSED RETAINING WALL                                         |
| --- | DRAINAGE BASIN BOUNDARY                                         |
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| --- | EXISTING SIDEWALK                                               |

CROSSLAND HOTEL-YALE BUSINESS PARK  
GRADING AND DRAINAGE PLAN

dmg MARK GOODWIN & ASSOCIATES, P.A.  
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(505) 828-2200

|                 |             |              |              |
|-----------------|-------------|--------------|--------------|
| Designed: JMM   | Drawn: MLV  | Checked: DMG | Sheet 3 of 4 |
| Scale: 1" = 20' | Date: 09/97 | Job: 97102   |              |

7102YBPC\7102GD20\12-15-97\MLV