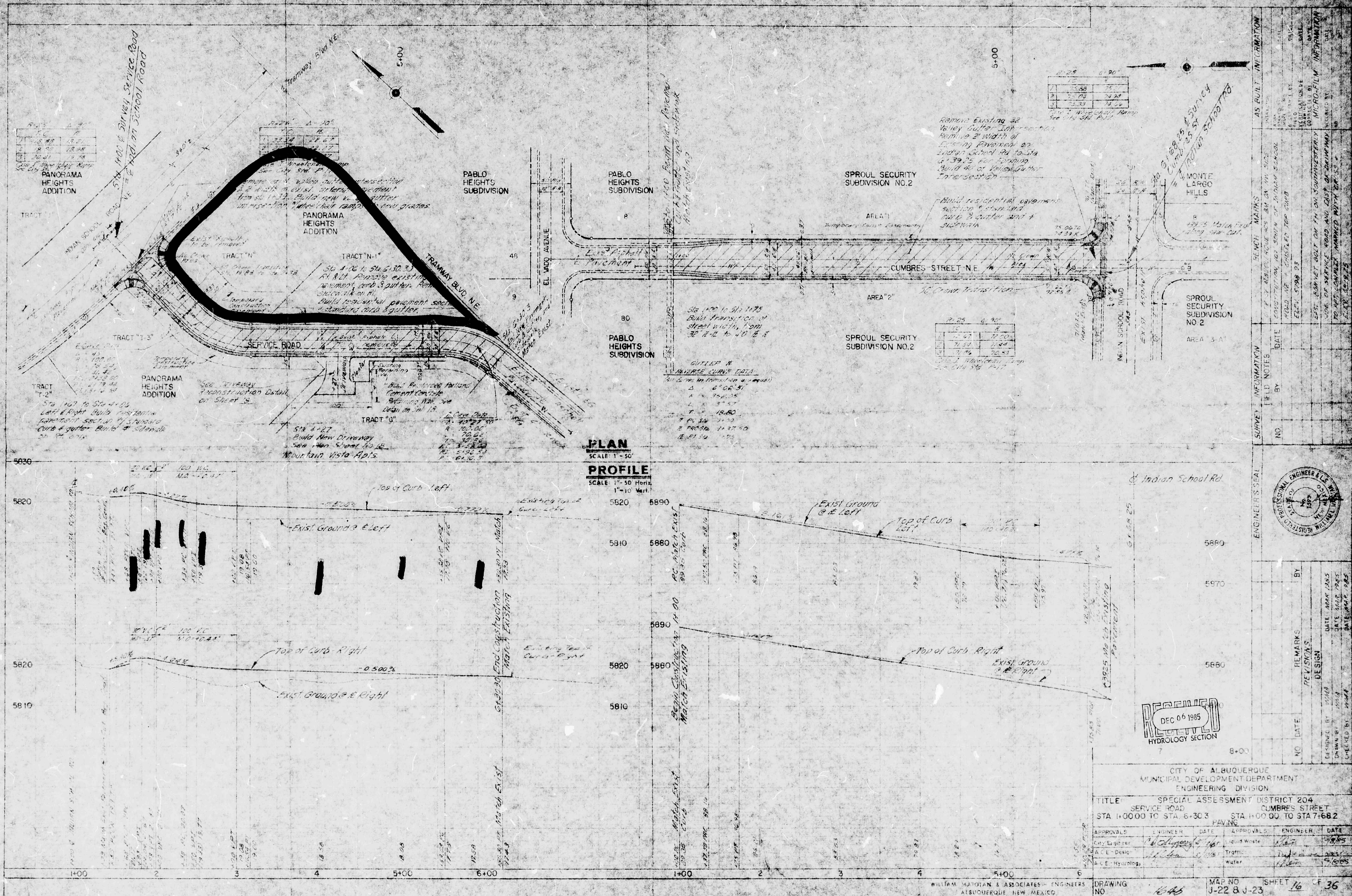
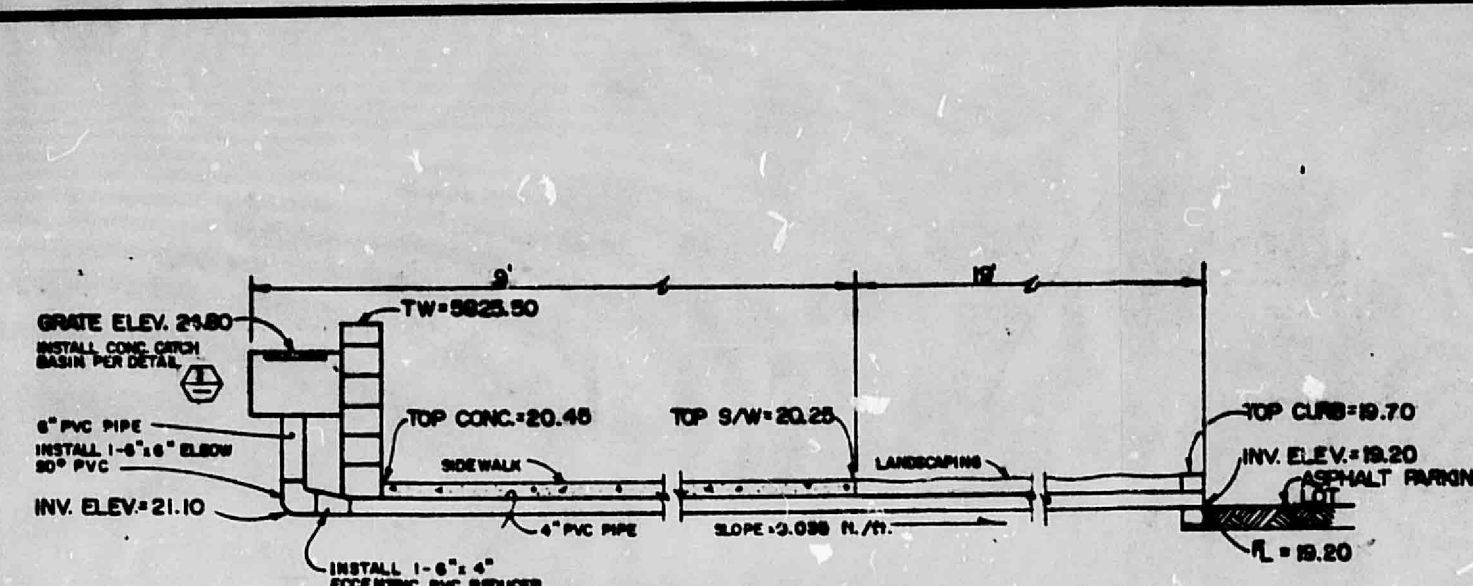


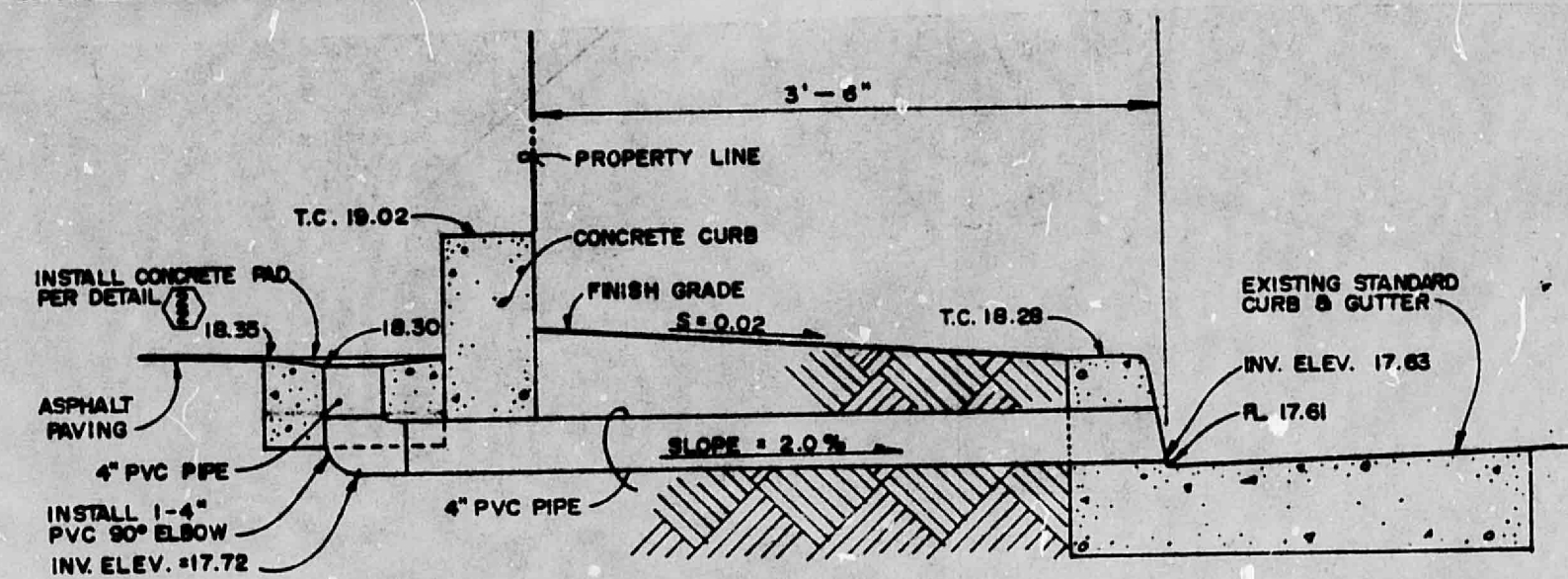


THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT

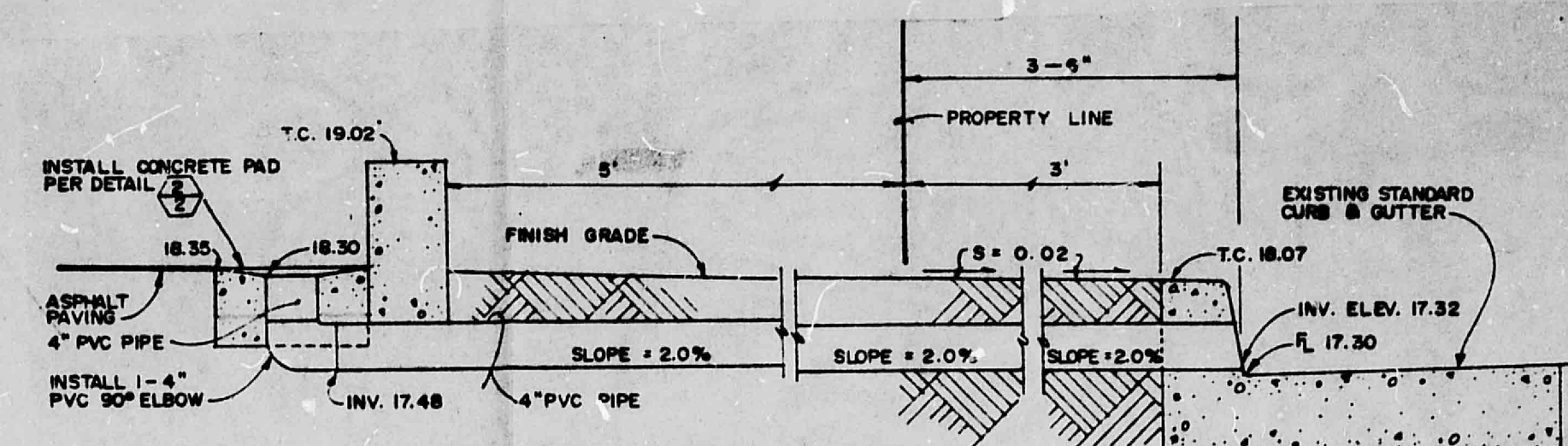
THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT



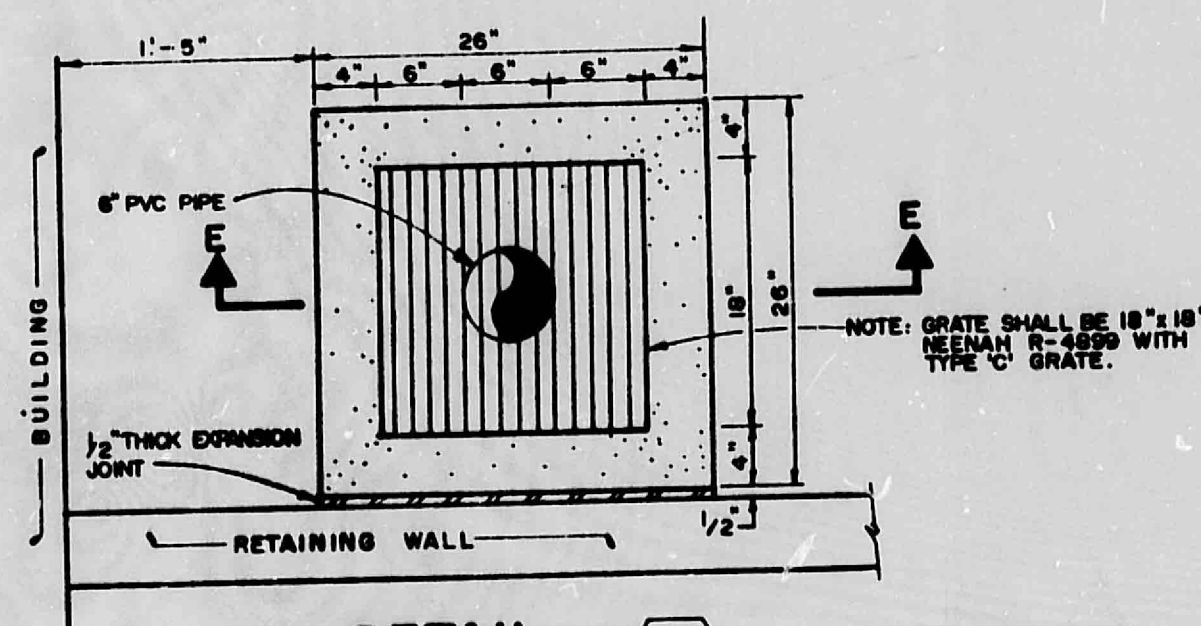
**STORM DRAIN DETAIL  
SECTION A-A**  
NOT TO SCALE



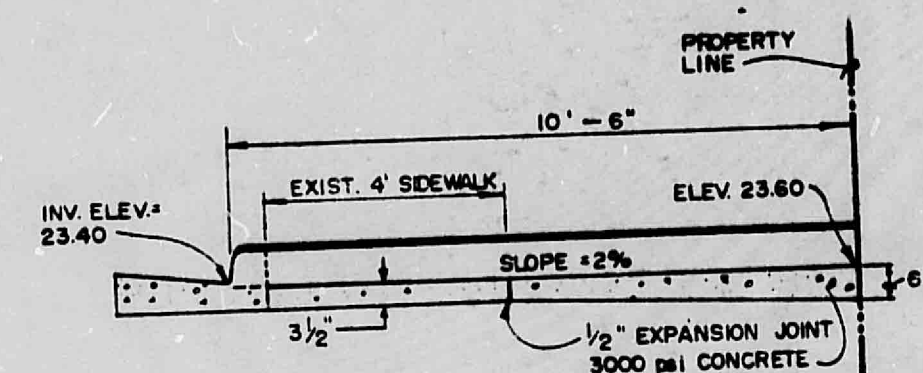
**SECTION B-B**  
SCALE: 1" = 1'-0"



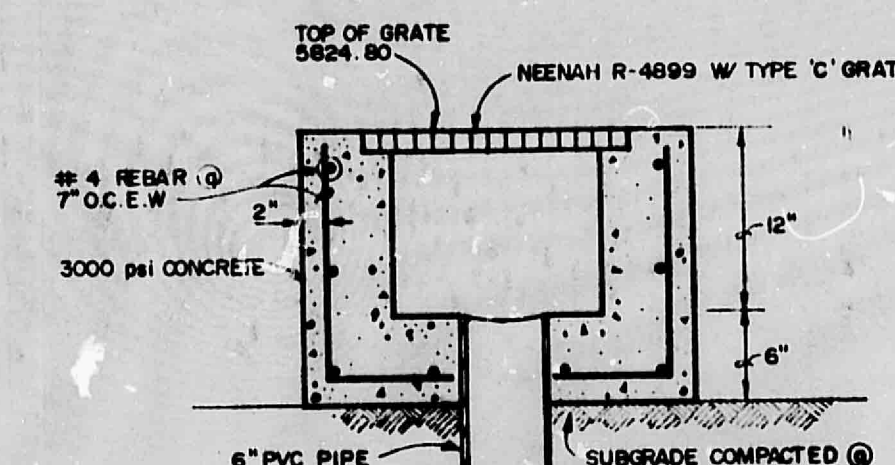
**SECTION C-C**  
SCALE: 1" = 1'-0"



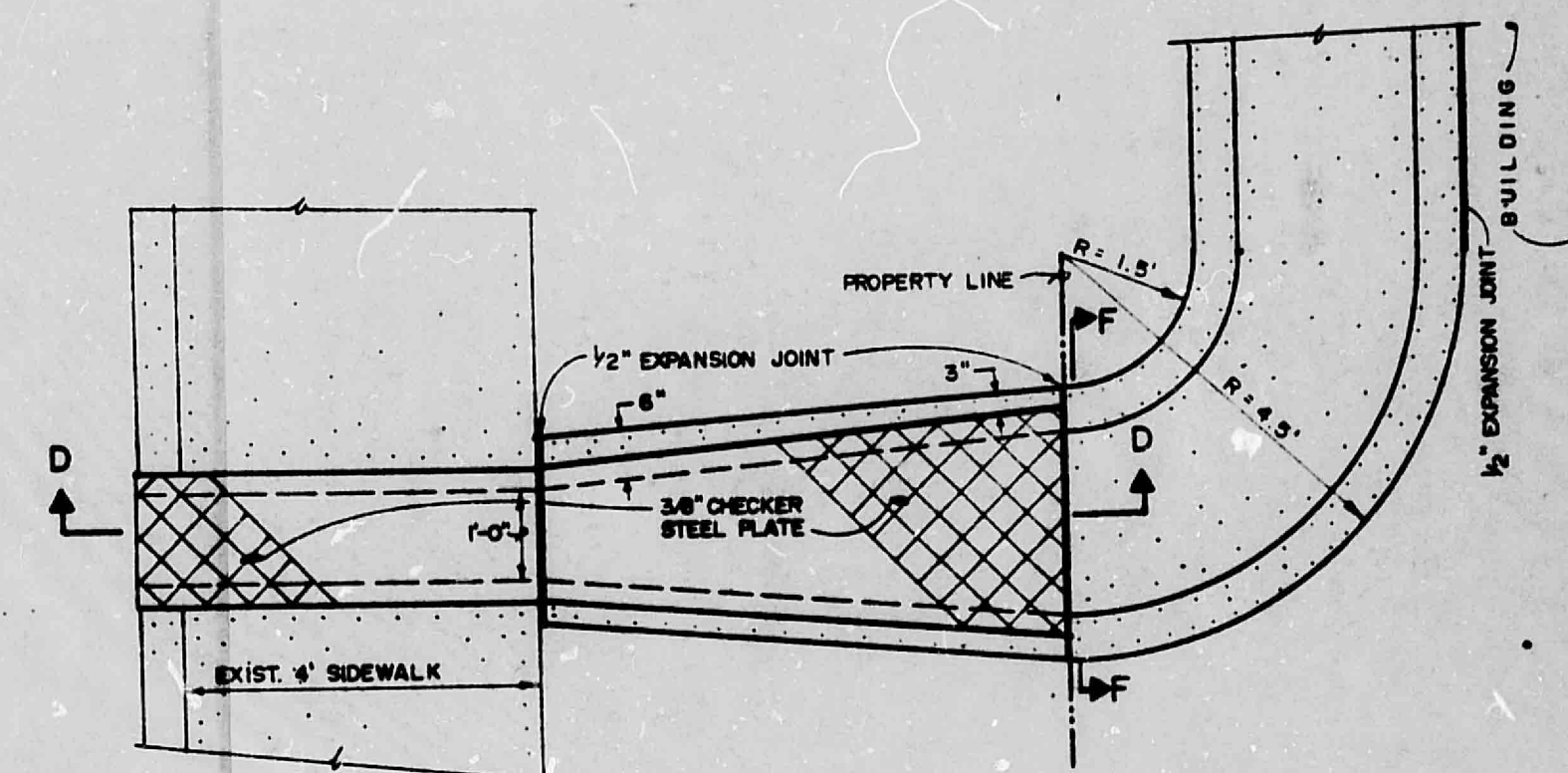
**DETAIL 1**  
SCALE: 1" = 1'-0"



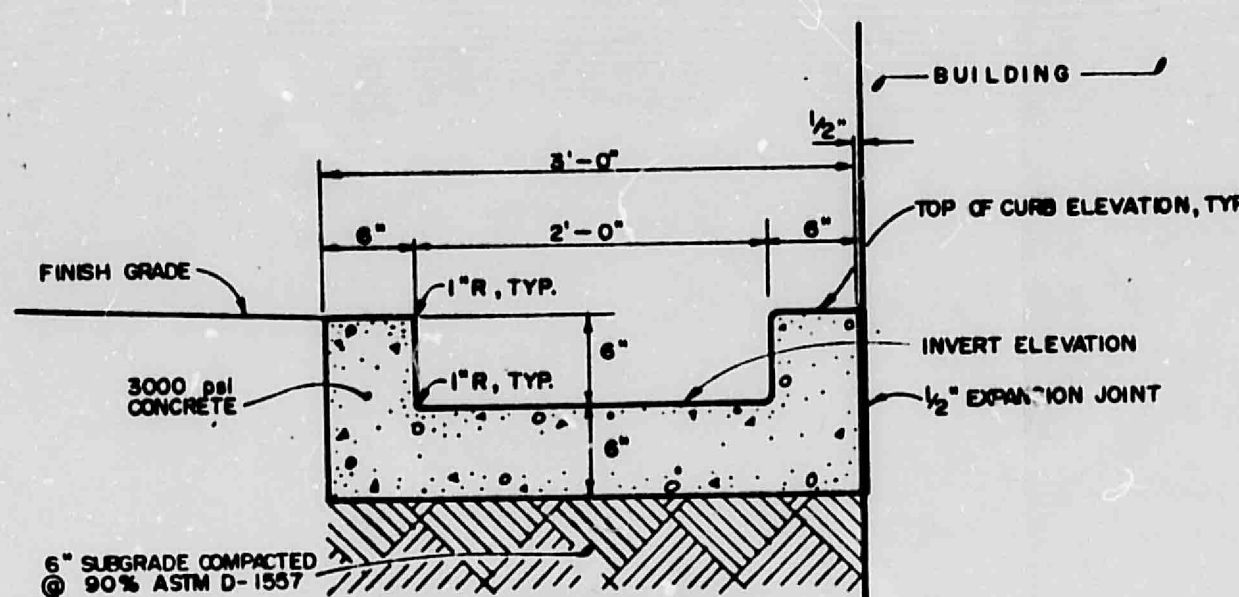
**SECTION D-D**  
SCALE: 1" = 1'-0"



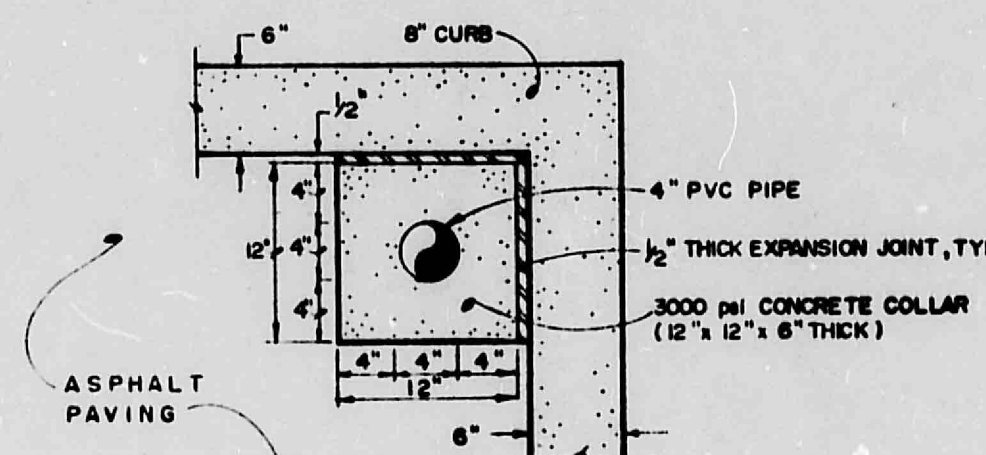
**SECTION E-E**  
SCALE: 1" = 1'-0"



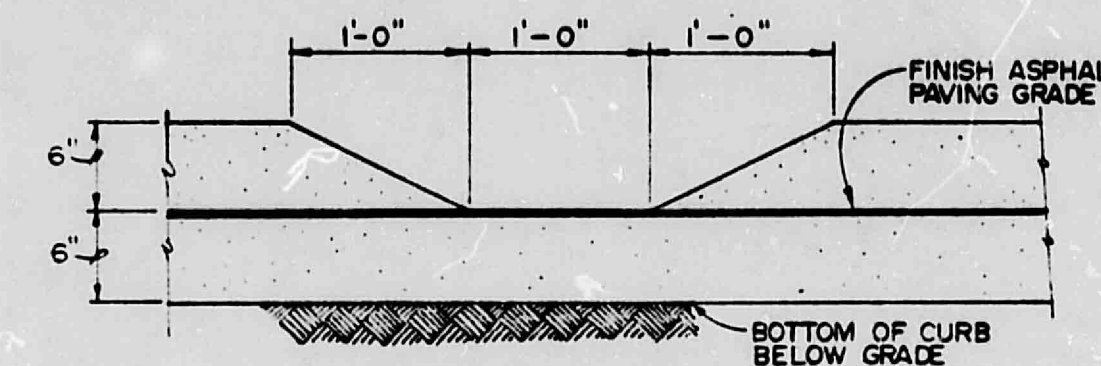
**SIDEWALK CULVERT DETAIL**  
SCALE: 1" = 2'



**SECTION F-F  
CONCRETE TROUGH DETAIL**  
SCALE: 1" = 1'-0"



**CONCRETE PAD DETAIL**  
SCALE: 1" = 1'-0"



**CURB CUT DETAIL**  
SCALE: 1" = 1'-0"



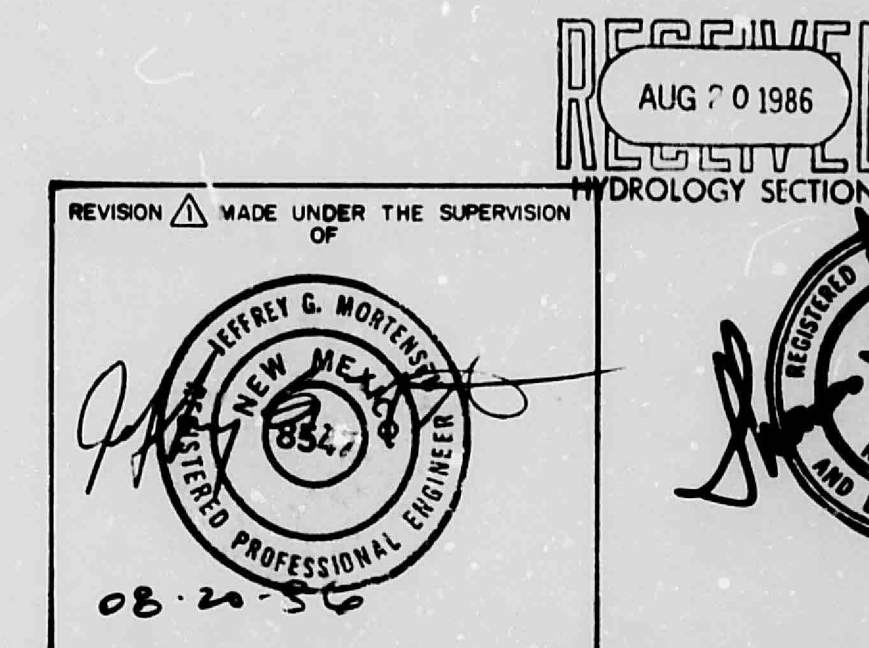
811 DALLAS N.E. - ALBUQUERQUE - NEW MEXICO - 87110  
ENGINEERS

| NO. | DATE | BY | REVISIONS          |
|-----|------|----|--------------------|
| 1   | 8/86 | LR | REVISE SECTION A-A |
|     |      |    |                    |
|     |      |    |                    |

|             |        |
|-------------|--------|
| DESIGNED BY | J.G.M. |
| DRAWN BY    | S.G.H. |
| APPROVED    | T.T.M. |

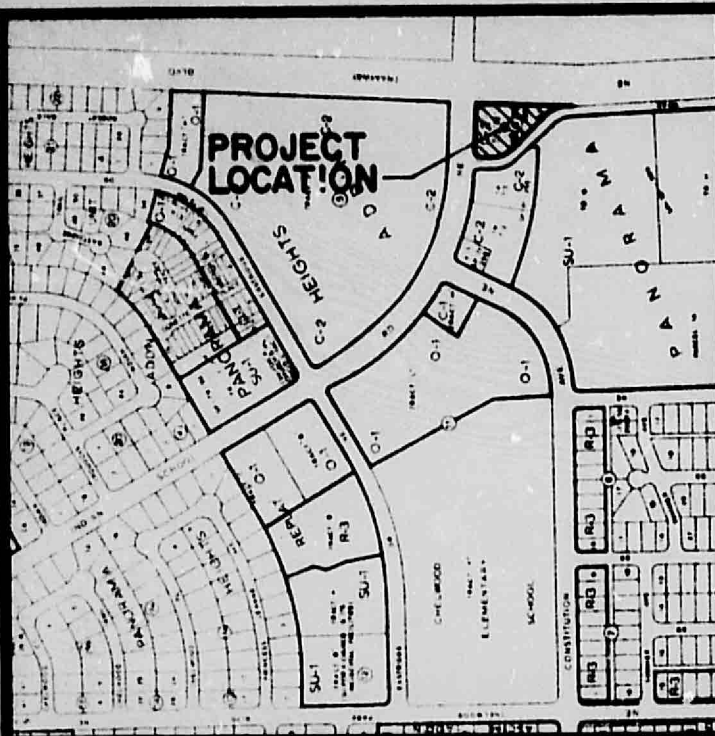
JOB NO.  
**50543**  
DATE  
**11-85**

**DETAILS  
ARMORED MINI-STORAGE**



FILE NO.

SHEET **2** OF **2**



VICINITY MAP  
SCALE: 1" = 800'

J-22

**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- PROPOSED CONCRETE
- TOP OF CURB DATA FROM SURVEY (TC 32.04)
- TOP OF CURB DATA FROM CITY PROJECT #1646 (TC 18.08)

**TEMPORARY BENCHMARK**  
SANITARY SEWER MANHOLE RM ELEVATION AS SHOWN BELOW, MANHOLE LOCATED IN INDIAN SCHOOL ROAD N.E. APPROXIMATELY 200' EAST OF SERVICE ROAD INTERSECTION. ELEVATION = 5552.82 FEET (M.S.L.D.)

**PROJECT BENCHMARK**  
ACS BENCHMARK 12-J22, AN 'X' CHISELED ON TOP OF CONCRETE CURB LOCATED ON THE NORTHWEST SIDE OF CONSTITUTION AVE. N.E. 107 FEET SOUTH OF INDIAN SCHOOL RD. N.E. ELEVATION = 5738.95 FEET (M.S.L.D.)

**LEGAL DESCRIPTION**  
TRACT N-2, BLOCK C1, PANORAMA HEIGHTS ADDITION

**Ground Cover Information**

From SCS Bernalillo County Soil Survey, Plate 32:  
BtC Embudo-Tijeras Complex  
Hydrologic Soil Group B

**Rational Method**

Discharge:  $Q = C_i A$   
where C varies  
 $i = 2.4$  (6.84) in. -0.51 = 5.07 in./hr  
 $P_g = 2.4$  in (DPM Plate 22.2 D-1)  
 $P_c = 3.0$  min (minimum)  
 $A =$  area, acres  
Volume:  $V = C_p A (1/12)$   
where C varies  
 $P_g = 2.4$  in (DPM Plate 22.2 D-1)  
 $A =$  area, acres

**Existing Condition**

$A_{total} = 53,370$  sf = 1.23 Ac  
 $A_{imp} = 0$  sf; % impervious = 0%  
 $C_{imp} = 0.34$  (DPM Plate 22.2 C-1)  
 $Q_{100} = C_i A = 0.34(5.07)(1.23) = 2.1$  cfs  
 $V_{100} = C_p A = 0.34(2.4/12)(53,370) = 3,630$  cf

**CALCULATIONS**

**Developed Condition**

Area A  
 $A_{total} = 18,800$  sf = 0.43 Ac  
 $A_{imp} = 18,800$  sf; % impervious = 100%  
 $C_{imp} = 1.0$  (DPM Plate 22.2 C-1)  
 $Q_{100} = C_i A = 1.0(5.07)(0.43) = 2.2$  cfs  
 $V_{100} = C_p A = 1.0(2.4/12)(18,800) = 3,760$  cf

Area B  
 $A_{total} = 34,570$  sf = 0.79 Ac  
 $A_{imp} = 25,970$  sf; % impervious = 75%  
 $C_{imp} = 0.73$  (DPM Plate 22.2 C-1)  
 $V_{100} = C_p A = 0.73(2.4/12)(34,570) = 5,045$  cf  
Released by pipes = 2 pipes x 0.6 cfs/pipe = 1.2 cfs

**Comparison**

1. Discharge to Indian School Road  
 $\Delta Q_{100} = 2.2 - 0.0 = 2.2$  cfs (increase)  
 $\Delta V_{100} = 3,760 - 0.0 = 3,760$  cf (increase)

2. Discharge to Service Road  
 $\Delta Q_{100} = 1.2 - 2.1 = 0.9$  cfs (decrease)  
 $\Delta V_{100} = 5,045 - 3,760 = 1,285$  cf (increase)

**Concrete Trough Capacity**

$Q = (1.49/n) A R^{2/3} S^{1/2}$  (Manning Equation)  
 $n =$  Manning coefficient = 0.015 (Concrete)  
 $A =$  Area =  $0.5 \times 2.0 = 1.0'$   
 $R =$  Hydraulic radius =  $A/P = 1.0/3.0 = 0.33$   
 $S =$  Slope =  $0.047$  ft/ft  
 $Q = 1.49/0.015 (1.0)(0.33)^{2/3} (0.047)^{1/2}$   
 $Q = 10.2$  cfs capacity  
2.2 cfs needed

**Pond Capacity**

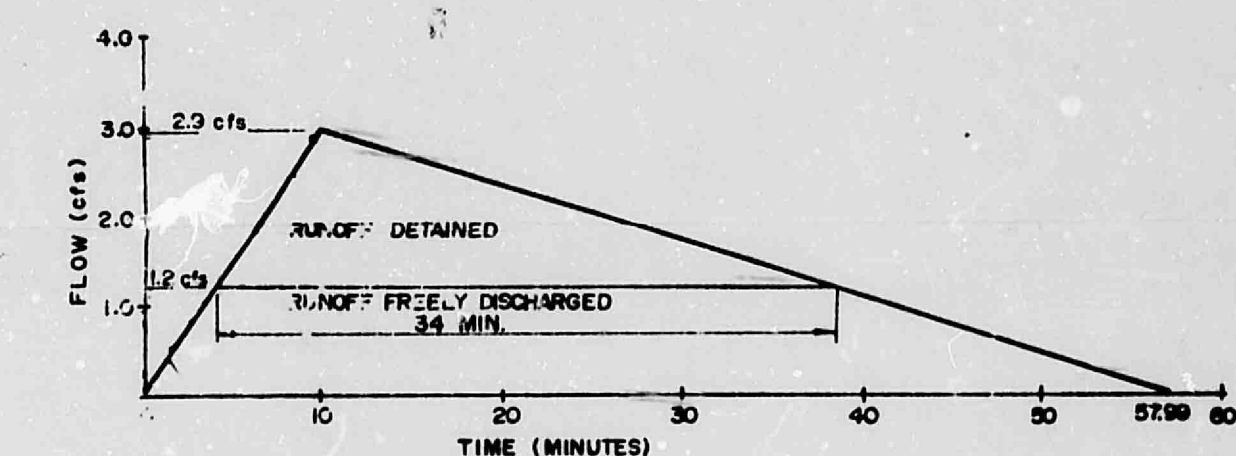
Pond Capacity = Area x Average depth  
Pond A =  $A \times d_{average} = 2,990$  sf x  $(0.67$  ft/2) = 1,000 cf  
Pond B =  $A \times d_{average} = 2,275$  sf x  $(0.67$  ft/2) = 760 cf  
Total Capacity = 1,000 + 760 = 1,760 cf  
Capacity Needed = 1,734 cf

**Pipe Capacity (For 4" Pipe)**

$q = A \sqrt{2gh}$   
 $A = \pi r^2 = \pi (2)^2 = 12.6$  sq in = 0.09 sf  
 $g = 32.2$  ft/s<sup>2</sup>  
 $h = 0.67'$   
 $q = (0.09) \sqrt{2(32.2)(0.67)} = 0.6$  cfs  
Total controlled discharge =  $2q = 1.2$  cfs.

**Offsite Flow**

$A_{total} = 23,100$  sf = 0.53 Ac  
 $A_{imp} = 9,600$  sf; % impervious = 42%  
 $C_{imp} = 0.52$  (DPM Plate 22.2 C-1)  
 $Q_{100} = C_i A = 0.52(5.07)(0.53) = 1.0$  cfs  
 $V_{100} = C_p A = 0.52(2.4/12)(23,100) = 2,450$  cf



VOLUME DETAINED =  $1/2 (2.2 - 1.2)(34) \times 60 = 1,734$  cf.

**INFLOW/OUTFLOW HYDROGRAPH**

**DRAINAGE PLAN**

The following items concerning the Armored Mini Storage Drainage Plan are contained herein:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the southwest corner of Indian School Road N.E. and Tramway Boulevard N.E. At present, the site is undeveloped. Much of the downstream areas are developed making this an infill site.

As shown by Plate J-22 of the Albuquerque Master Drainage Study (AMDS), the site does not lie within a designated Flood Hazard Zone. At present the runoff generated by this site flows southwest to the service road which borders the site to the southwest. The runoff then flows south to Lomas Boulevard N.E. where it turns and flows to Juan Tabo Boulevard N.E. At this point, the AMDS identifies a flood hazard area that appears to be within the street.

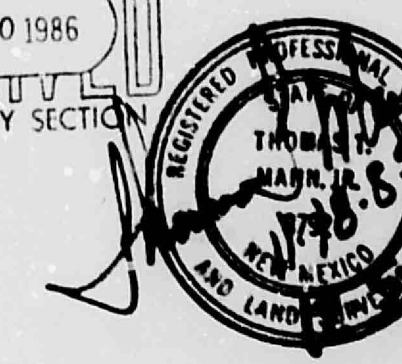
The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1'-0" intervals, 2) continuity between existing and proposed grades, and 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the construction of a single storage building along with adjacent paving and landscaping. Flows generated by Area A will be routed to Indian School Road N.E. via a concrete trough which discharges to a sidewalk culvert. The runoff flows west on Indian School Road N.E. to Chelwood Park Boulevard N.E. and then to the Embudo earth channel which is the outfall for this portion of the site. Flows generated by Area B flow southwest to the service road via two 4-inch pipes, then flow to Lomas Boulevard N.E. via the service road. Because of the current flooding at Lomas Boulevard N.E. and Juan Tabo Boulevard N.E., the runoff from Area B will be controlled to minimize downstream impact. No offsite flows enter the site from the north because of Indian School N.E., or from the southwest because of the service road. These streets intersect the flow to protect the property. Offsite flows generated by Road N.E., or from the southwest because of the service road, Discharge to the service road is the service road. Discharge to the service road has been decreased from 2.1 cfs to 1.2 cfs. The above hydrograph shows that a ponding capacity of 1,734 cfs is needed. The provided ponding capacity of 1,760 cfs exceeds the 1,734 cfs required for the 100-year, 6-hour rainfall event.

The Calculations which appear herein 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 the City of Albuquerque Development Process Manual, Volume II. As shown by the calculations, flows generated by Area A will be routed to Indian School Road N.E. via a concrete trough which discharges to a sidewalk culvert. The runoff flows west on Indian School Road N.E. to Chelwood Park Boulevard N.E. and then to the Embudo earth channel which is the outfall for this portion of the site. Flows generated by Area B flow southwest to the service road via two 4-inch pipes, then flow to Lomas Boulevard N.E. via the service road. Because of the current flooding at Lomas Boulevard N.E. and Juan Tabo Boulevard N.E., the runoff from Area B will be controlled to minimize downstream impact. No offsite flows enter the site from the north because of Indian School N.E., or from the southwest because of the service road. These streets intersect the flow to protect the property. Offsite flows generated by Road N.E., or from the southwest because of the service road, Discharge to the service road is the service road. Discharge to the service road has been decreased from 2.1 cfs to 1.2 cfs. The above hydrograph shows that a ponding capacity of 1,734 cfs is needed. The provided ponding capacity of 1,760 cfs exceeds the 1,734 cfs required for the 100-year, 6-hour rainfall event.

REVISION MADE UNDER THE SUPERVISION OF



AUG 20 1986  
HYDROLOGY SECTION



**GRADING & DRAINAGE PLAN  
ARMORED MINI-STORAGE**

APPROVED FOR DRAINAGE  
8/22/86  
Randy J. Green, PE Hydrology

FILE NO.  
SHEET 1 OF 2



W.M. ASSOCIATES, INC.  
DALLAS, N.E. - ALBUQUERQUE - NEW MEXICO - 87110  
ENGINEERS

| NO. | DATE    | BY   | REVISIONS                              |
|-----|---------|------|----------------------------------------|
| 1   | 8/22/86 | W.M. | SHOW WATER SURFACE LIMIT, POND         |
| 2   | 8/22/86 | W.M. | OVERFLOW, ADJUSTED OFFSITE FLOW, CHECK |
| 3   | 8/22/86 | W.M. | DRAINAGE PLAN NOTES                    |
| 4   | 8/22/86 | W.M. | LOWER FF OF BUILDING, 4 PARKING SPACES |

|             |        |       |
|-------------|--------|-------|
| DESIGNED BY | J.G.M. | 50543 |
| DRAWN BY    | G.D.H. |       |
| APPROVED    | J.T.M. | 11-85 |