**City of Albuquerque**
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 16, 1995

Jeff Mortensen
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

RE: GRADING/PAVING PLAN FOR CIBOLA HIGH SCHOOL PHASE I PARKING MODIFICATIONS (A13-D4) ENGINEER'S STAMP DATED 6/9/95.

Dear Mr. Mortensen:

Based on the information provided on your June 12, 1995 submittal, the above referenced site is approved for Grading/Paving permit.

Please be advised that Engineer Certification per the D.P.M. checklist will be required after construction is completed.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/dl

c: Andrew Garcia
File

## AS-BUILT LEGEND

| | |
|---|---|
| +58.96 | AS-BUILT SPOT ELEVATION |
| 68.85 / 2.51 | AS-BUILT ELEVATION |
| ✓ | AS-BUILT = AS-DESIGNED |

7.5' 15' 0 30'

### ⚠ DRAINAGE CERTIFICATION

As indicated by the as-built information shown hereon, the Cibola High School Phase I Parking Lot Modifications have been constructed in substantial compliance with the approved Grading and Drainage Plan. This certification is submitted in fulfillment of drainage requirements. The as-built information shown hereon has been obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, NMPE 8547 — 11-07-95 Date

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

NOV - 9 1995 HYDROLOGY DIVISION

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 06-09-95

⚠ RECORD DRAWING

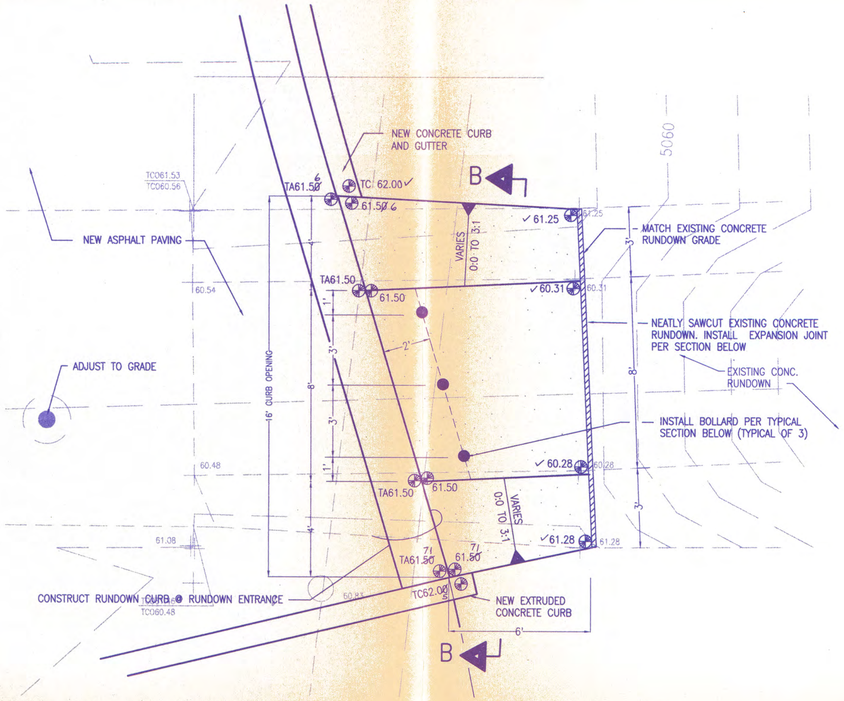
# PHASE I GRADING AND DRAINAGE PLAN
# CIBOLA HIGH SCHOOL
# PARKING LOT MODIFICATIONS

JEFF MORTENSEN & ASSOCIATES, INC.
6010-B MIDWAY PARK BLVD. N.E.
ALBUQUERQUE ☐ NEW MEXICO 87109
ENGINEERS ☐ SURVEYORS (505) 345-4250

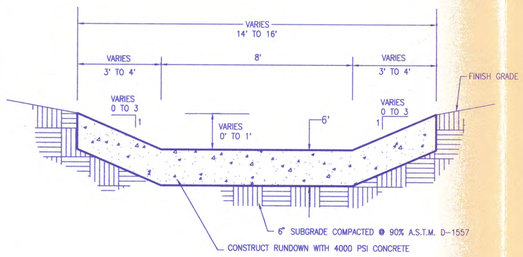
DESIGNED BY J.G.M.
DRAWN BY S.G.H.
APPROVED BY J.G.M.

| NO. | DATE | BY | REVISIONS |
|---|---|---|---|
| ⚠1 | 09/95 | J.G.M. | AS-BUILT AND CERTIFY |

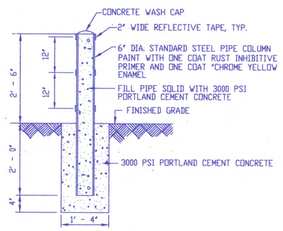
JOB NO. 901824
DATE 03-1995
SHEET 7 OF 9



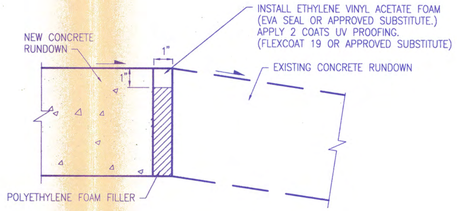

⚠ DETAIL 1/7
SCALE: 1" = 3'




⚠ SECTION B-B ✓
SCALE: 1" = 3' HORIZONTAL
1" = 1' VERTICAL




TYPICAL BOLLARD SECTION
SCALE: 1" = 2' - 0"




TYPICAL EXPANSION JOINT SECTION
SCALE: 1" = 4"

## DRAINAGE PLAN

The following items concerning the Cibola High School Phase I Parking Lot Modifications are contained hereon:

1. Vicinity Map
2. Calculations
3. Grading Plan

As shown by the Vicinity Map, the site is located on the south side of Ellison Drive N.W., directly opposite the intersection with East Cibola Loop N.W.

As shown by Panel 2 of 50 of the National Flood Insurance Program Flood Insurance Rate Map published by F.E.M.A. for the City of Albuquerque, New Mexico, dated October 14, 1983, this site does not lie within nor upstream of a designated Flood Hazard Zone. The site currently drains to an existing public drainage pond being reconstructed as part of SAD 223.

The site is located within Cibola High School, a developed high school campus. The site itself is developed as a partially improved parking area. A portion of the parking lot is paved while another portion is not. The paved section of the parking lot drains to two existing double "D" storm inlets that are connected to the Cibola High School storm drain system. The outfall of the system is a City of Albuquerque Retention Pond located at the southwest corner of Ellison Drive N.W. and Coors By-Pass, located on the east side of the site. As stated above, the existing retention pond currently is being reconstructed as a City detention facility as part of SAD 223. The undeveloped portion of the parking lot drains to a depression where it ponds and infiltrates in the eastern portion of the lot.

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'0" intervals, 2) the limit and character of the existing improvements, 3) the limit and character of the proposed improvements, and 4) continuity between existing and proposed grades. Development of this site consists of the demolition of the existing asphalt parking lot, and the reconfiguration and construction of the parking area to include medians, islands, and concrete sidewalks. The parking lot will continue in its historic drainage patterns to the east side of the lot. Two additional double "D" inlets will be constructed to aid in the drainage of the lot. One of the existing double "D" inlets will lie outside of the developed parking lot, but will remain to mitigate nuisance flows between the parking lot and Ellison Drive N.W. The new entrance, as part of the reconstruction, aligns with the new signalized intersection of Ellison Drive N.W. and Cibola Loop N.W. and has been designed to match grades with plans prepared by Bohannan-Huston, Inc. The new intersection should be constructed during the Summer of 1995. The grading of the lot includes a ponding area with the capacity of 11,440 cf. This ponding area is being provided as a surge basin for the Cibola High School Storm Drain System. In the event runoff volume exceeds the discharge capacity of the system due to potential future onsite development, the runoff will "bubble up" into the parking lot via the double "D" inlets. By doing so, the maximum allowable discharge of 95 cfs (SAD 223 Drainage Management Plan) from the site will not be exceeded. At the elevation of 62.00 feet, the pond will overflow at the southeast corner of the lot and discharge to an existing rundown leading to the Pond. Development of this site will also help to mitigate an existing potential siltation problem in the drainage system associated with the portion of lot currently unpaved. Because this is a modification to an existing site, development will mitigate potential siltation problems, the site currently has free discharge to an existing public drainage facility, and the surge basin is being provided in advance of future development, the continued free discharge to a maximum 95 cfs to the Pond is appropriate.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, an increase of 5,370 cf of runoff with an increase of 2.2 cfs in the peak discharge rate is anticipated due to the proposed construction. The pond volume has been calculated using the average end-area method. These calculations demonstrate that the pond volume provided exceeds the calculated increase in runoff volume. The parking lot overflow hydraulic capacity has been evaluated using the Weir Equation assuming that all of the parking lot runoff would need to be evacuated.?

## CALCULATIONS

Site Characteristics

1. Precipitation Zone = 1
2. $P_{6,100} = P_{360} = 2.20$
3. Total Area ($A_T$) = 3.89 ac.
4. Existing Land Treatment

| Treatment | Area (sf/ac) | % |
|---|---|---|
| C | 77,855/1.79 | 45.9 |
| D | 91,660/2.10 | 54.1 |

5. Developed Land Treatment

| Treatment | Area (sf/ac) | % |
|---|---|---|
| B | 9,510/0.22 | 5.6 |
| D | 160,005/3.67 | 94.4 |

6. Existing Condition

A. Volume

$E_W = (E_A A_A + E_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(0.99)(1.79)+(1.97)(2.10)]/(3.89) = 1.52$ in

$V_{100} = (E_W/12)A_T$

$V_{100} = ((1.52)/12)(3.89) = 0.4927$ ac.ft. = 21,460 cf

B. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$

$Q_p = Q_{100} = (2.87)(1.79)+(4.37)(2.10) = 14.3$ cfs

7. Developed Condition

A. Volume

$E_W = (E_A A_A + E_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(0.67)(0.22)+(1.97)(3.67)]/(3.89) = 1.90$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = ((1.90)/12)(3.89) = 0.6159$ ac.ft. = 26,830 cf

B. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$

$Q_p = Q_{100} = (2.03)(0.22)+(4.37)(3.67) = 16.5$ cfs

8. Comparison

A. $\Delta V_{100} = 26,830 - 21,460 = 5,370$ cf (increase)

B. $\Delta Q_{100} = 16.5 - 14.3 = 2.2$ cfs (increase)

9. Parking Lot Ponding Volume (by end area method)

| Elevation | Area (sf) | Volume (cf) | Σ Volume (cf) |
|---|---|---|---|
| 61.20 | 0 | | |
| | | 11,440.0 | 11,440.0 |
| 62.00 | 28,600.00 | | |

10. Curb Opening Condition (using Weir Equaiton)

$Q = CLH^{1.5}$

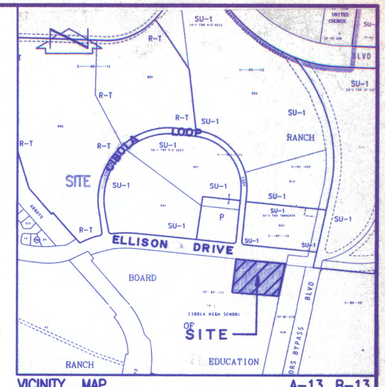
Let: $Q_{100} = 16.5$ cfs

C = 3.0

H = 0.5

Therefore: $L_{REQD} = 15.6$ ft.

$L_{CURB\ OPENING} = 16.0$ ft.




VICINITY MAP A-13, B-13
SCALE: 1" = 750'±

## PROJECT BENCHMARK

AN A.C.S. 1 3/4" ALUMINUM DISK STAMPED "ASC BM 2-A13, SET IN THE TOP OF THE CURB AT THE SSE CURB RETURN OF THE INTERSECTION OF VISTA DEL SOL DR. N.W. AND VISTA DEL SOL COURT N.W.
ELEVATION = 5121.119 FEET (M.S.L.D.)

## T.B.M.

THE NORTH WEST BONNET BOLT OF A FIRE HYDRANT LOCATED ON THE PROJECT SITE AND SHOWN ON THE DRAWING.
ELEVATION = 5067.77 FEET (M.S.L.D.)

## LEGAL DESCRIPTION

TRACT 1, PORTION OF CIBOLA HIGH SCHOOL, BOOK C-21, PAGE 71, FILED MAY 17, 1983

⚠

RECORD DRAWING

**DRAINAGE CERTIFICATION**

**As indicated by the as-built information shown hereon, the Cibola High School Phase I Parking Lot Modifications have been constructed in substantial compliance with the approved Grading and Drainage Plan. This certification is submitted in fulfillment of drainage requirements. The as-built information shown hereon has been obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.**

Jeffrey G. Mortensen, NMPE 8547 — 11-07-95 Date

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

NOV - 9 1995

HYDROLOGY SECTION

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

06-07-95

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ALBUQUERQUE ☐ NEW MEXICO 87109
ENGINEERS ☐ SURVEYORS (505) 345-4250

# PHASE I : DRAINAGE PLAN, CALCULATIONS AND DETAILS
# CIBOLA HIGH SCHOOL
# PARKING LOT MODIFICATIONS

| | NO. | DATE | BY | REVISIONS |
|---|---|---|---|---|
| DESIGNED BY J.G.M. | ⚠ | 10/95 | J.G.M. | RECORD DRAWING |
| DRAWN BY S.G.H. | | | | |
| APPROVED BY J.G.M. | | | | |

JOB NO. 901824
DATE 06-1995
SHEET 8 OF 9