

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

September 11, 2001

Jeff Mortensen Jeff Mortensen and Associates, Inc. 6010B Midway Park Boulevard NE Albuquerque, New Mexico 87109

RE: Grading and Drainage Plan For Bataan Memorial (J16-D15) Dated September 7, 2001

Dear Mr. Mortensen:

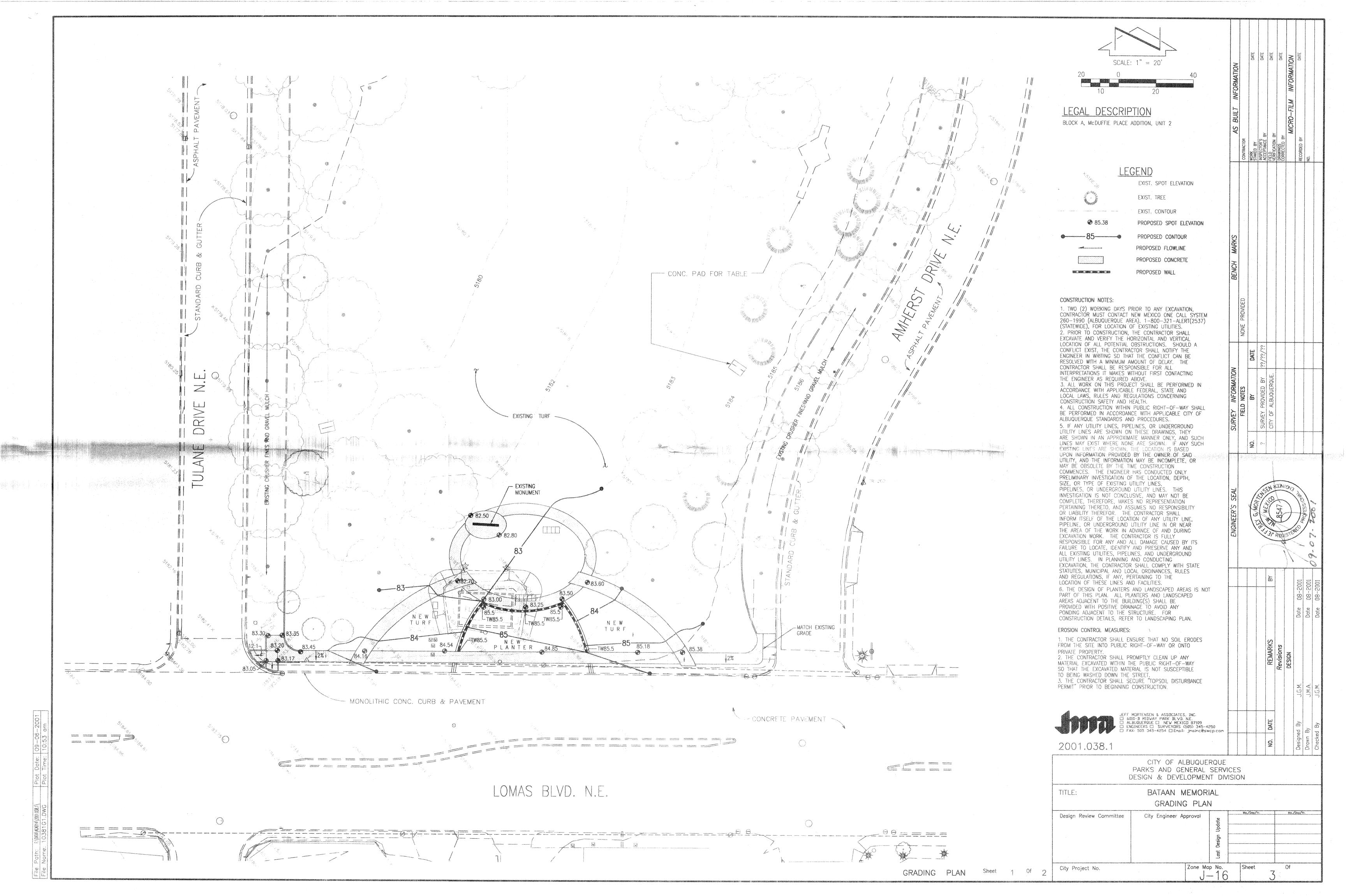
The above referenced drainage plan received September 7, 2001 is approved for DRC approval by Hydrology.

If you have any questions please call me at 924-3982.

Sincerely,

Carlos A. Montoya

City Floodplain Administrator



# I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT, LOCATED IN THE LOWER NORTHEAST HEIGHTS EAST OF THE UNIVERSITY OF NEW MEXICO CAMPUS AND WEST OF CARLISLE NE, REPRESENTS A MODIFICATION TO AN EXISTING CITY PARK WITHIN AN INFILL AREA. THE DRAINAGE CONCEPT WILL BE THE CONTINUED FREE DISCHARGE OF RUNOFF TO THE EXISTING PAVED CITY STREETS THAT SURROUND THE FULLY DEVELOPED, DENSELY LANDSCAPED SITE.

THIS SUBMITTAL IS MADE IN SUPPORT OF A DRC WORK ORDER PROJECT FOR THE RENOVATION OF A RELATIVELY SMALL PORTION OF THIS EXISTING PARK SITE.

#### II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE PARK IS LOCATED ON THE NORTH SIDE OF LOMAS BLVD. NE BETWEEN TULANE DRIVE NE AND AMHERST DRIVE NE. THE CURRENT LEGAL DESCRIPTION IS BLOCK A, MCDUFFIE PLACE ADDITION, UNIT 2. AS SHOWN BY PANEL 353 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, SEPTEMBER 20, 1996, THIS SITE DOES NOT LIE WITHIN OR ADJACENT TO A DESIGNATED FLOOD HAZARD ZONE. AS STATED ABOVE, THIS PROJECT INVOLVES ONLY A SMALL PORTION OF THE EXISTING PARK SITE THAT DOES NOT CONTRIBUTE TO AN EXISTING FLOOD HAZARD ZONE. THE PROJECT CONSISTS OF THE RENOVATION OF EXISTING LANDSCAPING IN AND AROUND THE EXISTING BATAAN MEMORIAL MONUMENT AND SIDEWALK CONSTRUCTION TO ENHANCE ACCESSIBILITY TO THE MONUMENT.

#### III. BACKGROUND DOCUMENTS

RESEARCH WAS CONDUCTED AT THE CITY ENGINEER?S OFFICE REVEALING NO PRIOR DRAINAGE SUBMITTALS FOR THIS SITE. FURTHER RESEARCH AT THE CITY ENGINEER?S OFFICE REVEALED CITY PROJECT NUMBER (CPN) 4981 FOR THE CONSTRUCTION DOCUMENTS PREPARED IN 1997 FOR IMPROVEMENTS TO THE PARK. THE 1997 PLANS WERE PREPARED BY PDS SOUTHWEST LTD. UNDER CONTRACT WITH THE CITY.

#### IV. EXISTING CONDITIONS

AT PRESENT, THE SITE IS ALREADY DEVELOPED AS A CITY PARK. EXISTING CONDITIONS ARE ILLUSTRATED BY THE GRADING PLAN THAT SUPERIMPOSES THE PROPOSED IMPROVEMENTS ONTO THE EXISTING CONDITIONS TAKEN FROM THE CONSTRUCTION PLANS PREPARED FOR THE CITY BY PDS SOUTHWEST, LTD. IN 1997. THOSE PLANS WERE BASED UPON A TOPOGRAPHIC SURVEY PERFORMED BY THE CITY OF ALBUQUERQUE SURVEY SECTION TO SUPPORT THE 1997 PROJECT. RUNOFF GENERATED BY THE PARK DRAINS VIA SHEETFLOW FROM SOUTHEAST TO NORTHWEST EVENTUALLY DISCHARGING INTO TULANE DRIVE NE. THE ABOVE DRAINAGE PATH INVOLVES SHEETFLOW ACROSS HEAVILY LANDSCAPED SURFACES THEREBY AFFORDING MITIGATION OF FLOWS BY ABSTRACTION AND INFILTRATION. TULANE DRIVE NE DRAINS. TO THE NORTH WITH RUNOFF REMAINING WITHIN EXISTING DEVELOPED RESIDENTIAL CITY STREETS AND BEING COLLECTED BY AN EXISTING PUBLIC STORM DRAIN SYSTEM CONTAINED BENEATH THE ROAD SURFACE.

#### V. DEVELOPED CONDITIONS

THE PROPOSED CONSTRUCTION CONSISTS OF THE PAVING AND REGRADING OF A RELATIVELY SMALL PORTION OF THE SITE. THE DEVELOPED RUNGER GENERATED BY THE PROPOSED IMPROVEMENTS WILL CONTINUE TO DISCHARGE FROM THE SITE TO THE EXISTING DOWNSTREAM STREET DESCRIBED ABOVE IN THE PRECEDING SECTION. THE PROPOSED SITE WORK WILL NOT ALTER THE HYDROLOGY OF THE SITE NOR WILL IT HAVE AN ADVERSE IMPACT ON EXISTING ONSITE DRAINAGE CONDITIONS OR EXISTING DOWNSTREAM CONDITIONS.

## VI. GRADING PLAN

THE GRADING PLAN THAT APPEARS HEREWITH SHOWS 1.) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS AS SHOWN ON THE PLANS PREPARED BY PDS SOUTHWEST, LTD. REFERENCED ABOVE (CPN 4981), 2.) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 3.) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS AS TAKEN FROM THE ABOVE REFERENCED PLAN, 4.) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 5.) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. AS SHOWN BY THIS PLAN, THE ENTIRETY OF THE SITE IS ALREADY DEVELOPED. THE PROPOSED IMPROVEMENTS AFFECT ONLY A SMALL PORTION OF THE SITE. THE PLAN FURTHER ILLUSTRATES THAT THE DRAINAGE PATTERNS DESCRIBED IN THE SECTION ABOVE WILL NOT BE ALTERED AND THAT THE PROPOSED GRADING WILL NOT HAVE AN ADVERSE IMPACT ON DOWNSTREAM CONDITIONS.

## VII. CALCULATIONS

CALCULATIONS ANALYZING THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT HAVE BEEN PREPARED FOR THIS PROJECT. 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 THE RESULTS TABULATED HEREON, THERE WILL BE NO INCREASE IN THE PEAK DISCHARGE WITH A NEGLIGIBLE INCREASE IN RUNOFF VOLUME ASSOCIATED WITH THE PROPOSED CONSTRUCTION.

## VIII. CONCLUSION

THE CONTINUED FREE DISCHARGE OF RUNOFF FROM THIS SITE TO TULANE DRIVE NE IS APPROPRIATE DUE TO THE FOLLOWING FACTORS: 1. MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA 2. NO INCREASE IN PEAK DISCHARGE GENERATED BY THE SITE 3. NEGLIGIBLE INCREASE IN DEVELOPED RUNOFF VOLUME GENERATED BY THE SITE

4. APPARENT DOWNSTREAM CAPACITY 5. NO IMPACT ON ADJACENT OR DOWNSTREAM FLOOD ZONES 6. THE EXISTING DRAINAGE PATTERN (STATUS QUO) WILL NOT BE ALTERED AND HENCE MAINTAINED

7. THE PROPOSED DRAINAGE SCHEME IS CONSISTENT WITH THAT APPROVED AT THE DRC AS PART OF CPN 4981 IN 1997

FURTHERMORE, THE ENGINEER HAS PERSONALLY VISITED THIS SITE TO ASCERTAIN THE TOPOGRAPHY AS DEPICTED ON THE GRADING PLAN IS REPRESENTATIVE OF THE EXISTING CONDITIONS. ALL ONSITE IMPROVEMENTS ARE OWNED, OPERATED AND MAINTAINED BY THE CITY PARKS AND GENERAL SERVICES DEPARTMENT. THE DOWNSTREAM STREETS AND STORM DRAINAGE SYSTEMS ARE OWNED, OPERATED AND MAINTAINED BY: THE CITY PUBLIC WORKS DEPARTMENT.

## CALCULATIONS

I. PRECIPITATION ZONE = 2

II.  $P_{6,100} = P_{360} = 2.35$ 

III. TOTAL AREA  $(A_T) = 102705 \text{ SF} / 2.35 \text{ AC}$ 

IV. EXISTING LAND TREATMENT

TREATMENT AREA (SF/AC) 95841/2.20 5993/0.14 871/0.02

V. DEVELOPED LAND TREATMENT

TREATMENT AREA (SF/AC) 92484/2.12 5993/0.014 4228/0.10

VI. EXISTING CONDITION

A. VOLUME

 $E_{W} = (E_{A}A_{A} + E_{B}A_{B} + E_{C}A_{C}E_{D}A_{D})/A_{T}$ 

 $E_{W} = [0.78(2.20) + 1.13(0.14) + 2.12(.02)]/2.36 = 0.81 \text{ IN}$ 

 $V_{100,6-HR} = (E_W/12)A_T$ 

 $V_{100,6-HR} = (0.81/12)2.36 = 0.1593 \text{ AC-FT} = 6940 \text{ CF}$ 

 $V_{100,10-DAY} = V_{100,6-HR} + A_D(P_{10-DAY} - P_{360})/12$ 

 $V_{100,10-DAY} = 0.1593 + .02(3.95 ? 2.35)/12 = 0.1619 AC-FT = 7055 CF$ 

B. PEAK DISCHARGE

 $Q_{P} = Q_{PA}A_{A} + Q_{PB}A_{B} + Q_{PC}A_{C} + Q_{PD}A_{D}$ 

 $Q_p = Q_{100} = 2.28(2.20) + 3.14(0.14) + 4.70(0.02) = 5.6 CFS$ 

VII. DEVELOPED CONDITION

A. VOLUME

 $E_{W} = (E_{A}A_{A} + E_{B}A_{B} + E_{C}A_{C}E_{D}A_{D})/A_{T}$ 

 $E_W = [.78(2.12) + 1.13(0.14) + 2.12(.10)]/2.36 = 0.86 \text{ IN}$ 

 $V_{100,6-HR} = (E_W/12)A_T$ 

 $V_{100,6-HR} = (0.86/12)2.36 = 0.1691 \text{ AC-FT} = 7370 \text{ CF}$ 

B. PEAK DISCHARGE

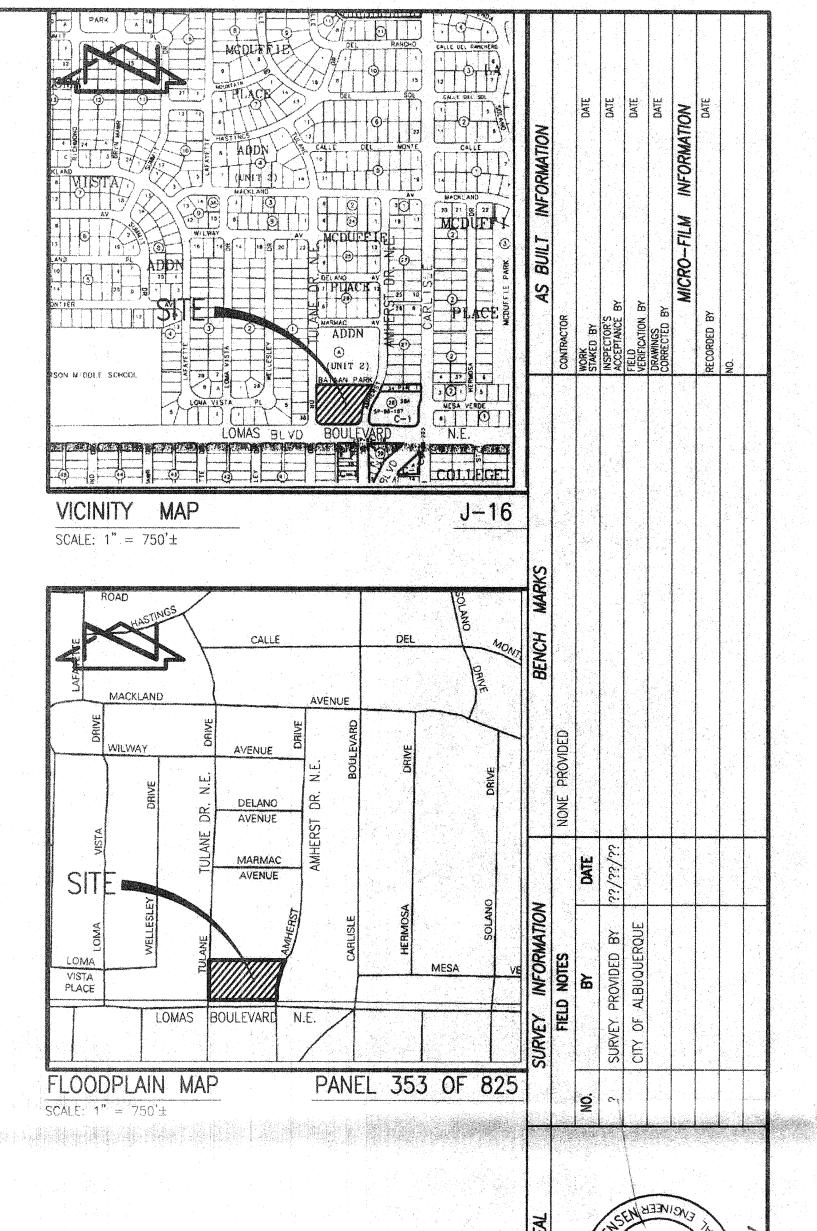
 $Q_{P} = Q_{PA}A_{A} + Q_{PB}A_{B} + Q_{PC}A_{C} + Q_{PD}A_{D}$ 

 $Q_P = Q_{100} = 2.28(2.12) + 3.14(0.14) + 4.70(0.10) = 5.7 CFS$ 

## VIII. COMPARISON

 $\Delta V_{100} = 7370 - 6940 = 430 \text{ CF (INCREASE)}$ 

 $\Delta Q_{100} = 5.7 - 5.6 = 0.1 \text{ CFS (INCREASE)}$ 



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JEFF MORTENSEN & ASSOCIATES, INC.

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□ ENGINEERS □ SURVEYORS (505) 345-4250

□ FAX: 505 345-4254 □ Email: jmainc@swcp.c

CITY OF ALBUQUERQUE PARKS AND GENERAL SERVICES DESIGN & DEVELOPMENT DIVISION

TITLE: BATAAN MEMORIAL DRAINAGE PLAN AND CALCULATIONS Design Review Committee City Engineer Approval

Zone Map No. Sheet City Project No.