A14/D8

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A14/D8

25×10 32×10

0000 0000 1470

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

May 13, 1997

Robert E. Gurulé, Director

Roger Martinez
Mark Goodwin & Associates
P. O. Box 90606
Albuquerque, New Mexico 87199

RE: **Informational Report for NM 528 Deceleration Lanes (A14/D8) Engineer's Stamp Dated 4/18/97.**

Dear Roger:

The Informational Report and HEC-RAS analysis for the deceleration lanes and channel on NM 528 adjacent to the Discount Tire project is acceptable to City Hydrology. The construction plans for the lanes, along with the channel improvements, must be approved by the NM State Highway Department.

If the plans are to go through the City's Work Order process, then the hydraulic grade line for the channel should be shown on the channel profile.

If you should have any questions, you may contact me at 924-3982.

Sincerely,

Susan Calongne

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Raymunda Van Hoven, NMSH&TD
File

25×10 32×10

DRAINAGE INFORMATION SHEET

PROJECT TITLE: NM 528 Decoration Lanes ZONE ATLAS/DRNG,FILE#: A-14/D8

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Seven Bar Ranch Tracts C-3A & C-3B

CITY ADDRESS: _____

ENGINEERING FIRM: D. Mark Goodwin & Assoc. CONTACT: Roger Martinez

ADDRESS: P.O. Box 90606 PHONE: 345-2010

OWNER: Las Colinas Realty CONTACT: Greg Foltz

ADDRESS: 10200 Corrales Rd NW PHONE: 897-7227

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
X OTHER

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATION OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
X OTHER INFORMATIONAL REPORT (Specify)

DATE SUBMITTED: 18 APR 97

BY: [signature]

RECEIVED
APR 22 1997
HYDROLOGY SECTION

0000 0000 1472

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

June 17, 1994

R.P. Bohannan
Easterling & Associates Inc.
10131 Coors Rd. NW Suite H-7
Albuquerque, NM 87114

RE: ENGINEER CERTIFICATION FOR OCTUPUS CAR WASH @ SEVEN BAR RANCH TRACT C-3-B (A14-D8) CERTIFICATION STATEMENT DATED 6/9/94.

Dear Mr. Bohannan:

Based on the information provided on your June 9, 1994 resubmittal, Engineer Certification for the above referenced site is acceptable.

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

Sincerely,

Bernie J. Montoya

Bernie J. Montoya, CE
Engineering Associate

BJM/dl/WPHYD/7552

c: Andrew Garcia
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

25×10 32×10

0000 0000 1473

EASTERLING & ASSOCIATES, INC.
10131 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114-4048

(505) 898-8021
FAX (505) 898-8501

LETTER OF TRANSMITTAL

DATE	6/9/94	JOB NO	3530.1
ATTENTION	Bernie Montoya		
RE	Octopus Car Wash Grading & Drainage Certification A14-D8		

TO City of Albuquerque
PWD / Hydrology
One Civic Plaza, Rm 302

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via Courier the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6/9/94		Drainage Information Sheet
1	6/9/94		Certification of Completed Grading & Drainage Improvements A14-D8

THESE ARE TRANSMITTED as checked below:

☑ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Bernie:
Please call me if you have any questions.
Please release the permanent Certificate of Occupancy.
Thanks
RP Bohannan

JUN - 9

c: Joel Jenkins, Octopus Car Wash
Matt Martin, Martin Construction

COPY TO _____

SIGNED: Paul Bohannan

40% Pre-Consumer Content + 10% Post-Consumer Content

If enclosures are not as noted, kindly notify us at once.

PRODUCT 240 NEBS Inc. Groton, Mass. 01471

25×10 32×10

0000 0000 1474

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Octopus Car Wash ZONE ATLAS/DRNG. FILE #: A-14/D8

DRB #: 93-121 EPC #: _____ WORK ORDER #: 4709

LEGAL DESCRIPTION: Seven Bar Ranch Tract C-3-B

CITY ADDRESS: East Side NMSR 528 North of Ellison

ENGINEERING FIRM: Easterling & Assoc., Inc. CONTACT: RP Bohannan

ADDRESS: 10131 Coors Rd. NW, Ste H-7 Albuquerque, NM 87114 PHONE: 898-8821

OWNER: Octopus Car Wash CONTACT: Joel Jurkens

ADDRESS: 5805 Central Ave SE Albuquerque, NM 87108 PHONE: 265-1507

ARCHITECT: De la Torre & Rainhart CONTACT: George Rainhart

ADDRESS: 7801 Academy Rd NE Bldg 2, Ste 200 Albuquerque NM 87109 PHONE: 828-9611

SURVEYOR: Surv-Tek, Inc. CONTACT: Garry Hugg

ADDRESS: 5643 Paradise Blvd NW Albuquerque NM 87114 PHONE: 897-3366

CONTRACTOR: Gerald Martin, Gen. Contr. CONTACT: Mark Martin Pete call w/ pager

ADDRESS: P.O. Box 91450 Albuquerque NM 87199-1450 PHONE: 828-1144 224-0909

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
✓ ENGINEER'S CERTIFICATION 6/9/94
___ OTHER _____

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY PROVIDED

JUN - 9 1994

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
✓ CERTIFICATE OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 6/9/94

BY: RP Bohannan

17-8

25×10 32×10

0000 0000 1475

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 19, 1994

CERTIFICATE OF COMPLETION AND ACCEPTANCE

A14-D8

Joan Black
Joel J.L. Jill A, and Jody Jurkens
5308 Central Avenue S.E.
Albuquerque, New Mexico 87108

RE: PROJECT NO. 4709.80 OCTOPUS CAR WASH

Dear Joan Black,

This is to certify that the City of Albuquerque accepts Project No. 4709.80 as being completed according to approved plans and construction specifications.

Please be advised this certificate of completion and acceptance shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

- Construction of medians and turnbay on NMSR 528 for the Octopus Car Wash.

The contractor's correction period begins the date of this letter and will be effective for a period of one (1) year.

Sincerely,

Rick Roybal, PE
City Engineer,
Engineering Group
Public Works Department

Sincerely,

Russell B. Givler, PE
Chief Construction Engineer,
Engineering Group
Public Works Department

RECEIVED
APR 25 1994
HYDROLOGY DIVISION

25×10 32×10

cc: Easterling & Assoc.
Gerald Martin Const.
Fred Aguirre, Engineering Group, PWD
Lynda Michelle DeVanti, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Martin Barker, Engineering Group, PWD
Steve Gonzales, Special Assessments, DFM
A.N. Gaume, Operations Group, PWD
Sam Hall, Operations Group, PWD
Jim Fink, Operations Group, PWD
Ray Chavez, Engineering Group, PWD
Stuart Reeder, Water/Wastewater Group, PWD
Dave Parks, Engineering Group, PWD
Bill Coleman, Engineering Group, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Richard Zamora, Engineering Group, PWD
f/Project No. 4709.80
f/Readers
f/Warranty:Contract

0000 0000 1477

DANIEL W. COOK, CHAIRMAN
PAT D. HIGDON, VICE-CHAIRMAN
RONALD BROWN, SECRETARY-TREASURER
GENEVA MEEKER, ASST. SECRETARY-TREASURER
MICHAEL MURPHY, DIRECTOR

LARRY A. BLAIR
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N.E. - ALBUQUERQUE, N.M. 87107
TELEPHONE (505) 884-2215

A14 D8

April 18, 1994

Mr. Bernie Montoya
Hydrology Division
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

FAX 768-3629

Re: Octopus Car Wash, 3625 NMSR 528

Dear Mr. Montoya:

This is to confirm that AMAFCA concurs with the determination of substantial completion of the drainage improvements associated with the Octopus Car Wash. We also concur with the punchlist items as listed.

Easterling & Associates is inspecting this project on behalf of AMAFCA under separate contract with AMAFCA. I would anticipate that their certification of final completion will be suitable for the permanent Certificate of Occupancy.

Please contact me if you have any questions.

Sincerely
AMAFCA

John Kelly
Field Engineer

cc R.P. Bohannan, Easterling & Associates

RECEIVED
APR 20 1994
HYDROLOGY DIVISION

25×10 32×10

0000 0000 1478

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-0021
FAX (505) 898-8501

April 18, 1994

VIA FAX AND MAIL

Mr. John Kelly
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue, NE
Albuquerque, NM 87107

RECEIVED
APR 18 1994
AMAFCA

RE: Octopus Car Wash/3625 NMSR 528
Crossing Structure and Channel Construction

Dear John:

Gerald Martin General Contractor has substantially completed construction of the referenced improvements in accordance with the approved plans. Work remaining to be completed includes additional compacted fill on the berm south of the channel and cleanup. The Contractor has requested and Easterling & Associates, Inc. has provided a grading and drainage certification for a Temporary 30-Day Certificate of Occupancy. The remaining berm and cleanup work must be completed before a final certification and permanent Certificate of Occupancy can be issued. We will complete the as-built drawings and transmit them to you after all work has been completed.

Bernie Montoya (768-2667) has requested that you confirm that the crossing structure and channel work are acceptable to AMAFCA before he issues the Temporary Certificate of Occupancy. The Octopus Car Wash scheduled opening is today. Your help in this regard could be greatly appreciated by Martin Construction and Octopus Car Wash.

Sincerely,

R. P. Bohannan, P.E.
Senior Engineer

RPB/das
Job No. 3760

cc: Matt Martin, Gerald Martin General Contractor
Bernie Montoya, City of Albuquerque, PWD/Hydrology

25×10 32×10

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A14-D8

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

April 18, 1994

VIA FAX AND MAIL

Mr. John Kelly
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue, NE
Albuquerque, NM 87107

RE: Octopus Car Wash/3625 NMSR 528
Crossing Structure and Channel Construction

Dear John:

Gerald Martin General Contractor has substantially completed construction of the referenced improvements in accordance with the approved plans. Work remaining to be completed includes additional compacted fill on the berm south of the channel and cleanup. The Contractor has requested and Easterling & Associates, Inc. has provided a grading and drainage certification for a Temporary 30–Day Certificate of Occupancy. The remaining berm and cleanup work must be completed before a final certification and permanent Certificate of Occupancy can be issued. We will complete the as–built drawings and transmit them to you after all work has been completed.

Bernie Montoya (768–2667) has requested that you confirm that the crossing structure and channel work are acceptable to AMAFCA before he issues the Temporary Certificate of Occupancy. The Octopus Car Wash scheduled opening is today. Your help in this regard could be greatly appreciated by Martin Construction and Octopus Car Wash.

Sincerely,

R. P. Bohannan, P.E.
Senior Engineer

RPB/das
Job No. 3760

cc: Matt Martin, Gerald Martin General Contractor
Bernie Montoya, City of Albuquerque, PWD/Hydrology

RECEIVED
APR 20 1994
HYDROLOGY DIVISION

— CONSULTING ENGINEERS —

25×10 32×10

0000 0000 1480

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

July 22, 1993

Bernie J. Montoya, C.E.
Engineering Assistant
PWD/Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RE: Octopus Car Wash
Seven Bar Ranch Tract C–3–B
Detailed Site Grading and Drainage Plan

Dear Mr. Montoya:

This letter is transmitted in response to the questions and comments in your approval letter dated March 1, 1993 regarding the Conceptual Drainage Plan for Octopus Car Wash (A14–D8). Along with this letter, we are also submitting a Detailed Site Grading and Drainage Plan for the Octopus Car Wash and Construction Plans which include proposed channel improvements. The detailed plan addresses most of your comments. The construction plans are for your information only and will be submitted to AMAFCA and the DRC for review and approval.

Responses to Comments are as follows:

1. The site specific plan is included in the Detailed Site Grading and Drainage Plan. The scale is 1″ = 30′ to allow all of the proposed improvements to be shown on one sheet, as we discussed in our telephone conversation on June 22, 1993.

2. The ACS and TBM bench marks are shown on Sheet 1 of the Detailed Site Grading and Drainage Plan.

3. The hydraulics for all proposed channels, swales, pond and pipes are shown on Sheet 2 of the Detailed Site Grading and Drainage Plan.

4. We now propose a single detention pond for the site as shown on Sheet 1 and detailed on Sheet 2. Erosion and sediment control features are included in the details.

5. The Detailed Site Grading and Drainage Plan shows the detention pond area up to the Loma Larga right–of–way. Enclosed with this letter are copies of plans prepared by Molzen–Corbin & Associates which show pond improvements proposed in connection with Loma Larga roadway improvements. Construction of the Loma Larga and pond

JUL 23 1993
HYDROLOGY DIVISION

25×10 32×10

improvements is expected to begin as soon as remaining easement acquisitions are completed.

6. The desilting pond will be improved somewhat by proposed channel and road improvements, however maintenance of the basin is an AMAFCA responsibility.

7. The 160.1 cfs along NM 528 does not enter the site. It enters the channel along the south boundary of the site. The 11.4 cfs in the graded swale originates on Tract C–3–A.

8. A copy of the Detailed Site Grading and Drainage Plan and the Construction Plans for the proposed drainage plan are being submitted to AMAFCA for review concurrent with this submittal to the City.

We trust that the plans and the response to comments are satisfactory. Please call me if you have any additional questions or comments.

Sincerely,

R. P. Bohannan, P.E.

RPB/das
Job No. 3530.1

Enclosure

cc: Cliff Anderson, Albuquerque Metropolitan Arroyo Flood Control Authority

0000 0000 1482

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 18, 1994

R.P. Bohannan
Easterling & Associates Inc.
10131 Coors Rd. NW Suite H-7
Albuquerque, NM 87114

RE: TEMPORARY ENGINEER CERTIFICATION FOR OCTOPUS CAR WASH @ SEVEN BAR RANCH TRACT C-3-B (A14-D8) CERTIFICATION STATEMENT DATED 4/14/94.

Dear Mr. Bohannan:

Based on the information provided on your April 14, 1994 submittal, temporary Certificate of Occupancy is acceptable for the above referenced site. Please be advised that the following will need to be included with your resubmittal for the permanent Certificate of Occupancy:

1. Letter of concurrence from AMAFCA for the work performed within their Right-of-Way.

2. All the listed concerns on the temporary certification statement must be addressed.

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

Sincerely,

Bernie J. Montoya

Bernie J. Montoya, CE
Engineering Associate

BJM/dl/WPHYD/7552

c: Andrew Garcia
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

25×10 32×10

A14-D8

DANIEL W. COOK, CHAIRMAN
PAT D. HIGDON, VICE-CHAIRMAN
RONALD BROWN, SECRETARY-TREASURER
EVA MOSKER, ASST. SECRETARY-TREASURER
MICHAEL MURPHY, DIRECTOR

LARRY A. BLAIR
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 PROSPECT N.E. - ALBUQUERQUE, N.M. 87107
TELEPHONE (505) 884-2215

April 18, 1994

Mr. Bernie Montoya
Hydrology Division
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

FAX 768-3629

Re: Octopus Car Wash, 3625 NMSR 528

Dear Mr. Montoya:

This is to confirm that AMAFCA concurs with the determination of substantial completion of the drainage improvements associated with the Octopus Car Wash. We also concur with the punchlist items as listed.

Easterling & Associates is inspecting this project on behalf of AMAFCA under separate contract with AMAFCA. I would anticipate that their certification of final completion will be suitable for the permanent Certificate of Occupancy.

Please contact me if you have any questions.

Sincerely
AMAFCA

John Kelly
Field Engineer

cc R.P. Bohannan, Easterling & Associates

RECEIVED
APR 19 1994
HYDROLOGY

25×10 32×10

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Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-9021
FAX (505) 898-8501

April 18, 1994

VIA FAX AND MAIL

Mr. John Kelly
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue, NE
Albuquerque, NM 87107

RECEIVED
APR 18 1994
AMAFCA

RE: Octopus Car Wash/3625 NMSR 528
Crossing Structure and Channel Construction

Dear John:

Gerald Martin General Contractor has substantially completed construction of the referenced improvements in accordance with the approved plans. Work remaining to be completed includes additional compacted fill on the berm south of the channel and cleanup. The Contractor has requested and Easterling & Associates, Inc. has provided a grading and drainage certification for a Temporary 30-Day Certificate of Occupancy. The remaining berm and cleanup work must be completed before a final certification and permanent Certificate of Occupancy can be issued. We will complete the as-built drawings and transmit them to you after all work has been completed.

Bernie Montoya (768-2667) has requested that you confirm that the crossing structure and channel work are acceptable to AMAFCA before he issues the Temporary Certificate of Occupancy. The Octopus Car Wash scheduled opening is today. Your help in this regard could be greatly appreciated by Martin Construction and Octopus Car Wash.

Sincerely,

R. P. Bohannan, P.E.
Senior Engineer

RPB/das
Job No. 3760

cc: Matt Martin, Gerald Martin General Contractor
Bernie Montoya, City of Albuquerque, PWD/Hydrology

RECEIVED
APR 19 1994
HYDROLOGY DIVISION

— CONSULTING ENGINEERS —

25×10 32×10

DANIEL W. COOK, CHAIRMAN
PAT D. HIGDON, VICE CHAIRMAN
RONALD BROWN, SECRETARY-TREASURER
ENEIDA MEEKER, ASST. SECRETARY-TREASURER
MICHAEL MURPHY, DIRECTOR

LARRY A. BLAIR
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N.E. - ALBUQUERQUE, N.M. 87107
TELEPHONE (505) 884-2215

April 19, 1994

FAX 768-3629

Mr. Bernie Montoya
Hydrology Division
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

Re: 6111 Taylor Ranch Rd. N.,W., Willoughby Dentist Office

Dear Mr. Montoya:

This is to confirm that AMAFCA has inspected and accepted the pipe penetration into the Mariposa Diversion Channel constructed in our right-of-way at this location.

Please contact me if you have any questions.

Sincerely
AMAFCA

John Kelly
Field Engineer

cc Robert Carver
Wilger Enterprises
3515 Mateo Prado N.W,
Albuquerque, New Mexico 87107

25×10 32×10

0000 0000 1486

EASTERLING & ASSOCIATES, INC.
10131 Coors Rd., NW, Suite H-7
ALBUQUERQUE, NEW MEXICO 87114-4048

(505) 898-8021
FAX (505) 898-8501

LETTER OF TRANSMITTAL

DATE 4/14/94 JOB NO 3530.2
ATTENTION Bernie Montoya
RE Octopus Car Wash

TO City of Albuquerque
AMD/Hydrology
One Civic Plaza 3rd Floor

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via courier the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	4/14/94		Engineer's Certification of Site Grading & Drainage for 30 Day Temporary Certificate of Occupancy
1	4/14/94		Drainage Information Sheet for Above

THESE ARE TRANSMITTED as checked below:

☑ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Bernie:
Please call me ASAP if you need anything else. The Car Wash is trying to open on Monday 4/18/94.
Thanks
RJ Bohannan

COPY TO Matt Martin, Martin Construction

SIGNED: _____

40% Pre-Consumer Content + 10% Post-Consumer Content

If enclosures are not as noted, kindly notify us at once.

25×10 32×10

0000 0000 1487

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Octopus Car Wash ZONE ATLAS/DRNG. FILE #: A-14/D8

DRB #: 93-121 EPC #: _____ WORK ORDER #: 4709

LEGAL DESCRIPTION: Seven Bar Ranch Tract C-3-B

CITY ADDRESS: East Side NMSR 528 North of Ellison

ENGINEERING FIRM: Easterling & Assoc., Inc. CONTACT: RP Bohannan

ADDRESS: 10131 Coors Rd. NW, Ste A-7 Albuquerque, NM 87114 PHONE: 898-8021

OWNER: Octopus Car Wash CONTACT: Joel Jorkens

ADDRESS: 5808 Central Ave SE Albuquerque, NM 87108 PHONE: 265-1507

ARCHITECT: De la Torre & Rainhart CONTACT: George Rainhart

ADDRESS: 7801 Academy Rd NE Bldg 2, Ste 200 Albuquerque NM 87109 PHONE: 828-9611

SURVEYOR: Surv-Tek, Inc. CONTACT: Garry Hugg

ADDRESS: 5643 Paradise Blvd NW Albuquerque NM 87114 PHONE: 897-3366

CONTRACTOR: Gerald Martin, Gen. Contr. CONTACT: Matt Martin

ADDRESS: P.O. Box 91450 Albuquerque NM 87199-1450 PHONE: 828-1144

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
✓ ENGINEER'S CERTIFICATION
___ OTHER _____

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
✓ CERTIFICATE OF OCCUPANCY APPROVAL (30 Day Temporary)
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (SPECIFY)

RECEIVED
APR 14
HYDROLOGY

DATE SUBMITTED: 4/14/94

BY: RP Bohannan

17-8

Rev 1/90

25×10 32×10

0000 0000 1488

Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

September 13, 1993

HAND DELIVER

Bernie J. Montoya, C.E.
Engineer Associate
PWD/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RECEIVED
SEP 14 1993
HYDROLOGY DIVISION

RE: Octopus Car Wash
Drainage Plan A-14/D8

Dear Mr. Montoya:

Attached is one set of blueline prints for the Octopus Car Wash Utility, NMSR 528 Median and Channel Improvements. These plans have been submitted for DRC review and approval. The review meeting is scheduled for September 22, 1993 at 1:30 p.m.

The Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) has already approved the plans as indicted by John Kelly's signature on Sheets 2 and 3. I believe this confirms AMAFCA's acceptance of the concept for the desilting pond. Please grant building permit approval as indicated in your letter dated July 28, 1993.

Please call me if you have any questions or need any additional information.

Sincerely,

R P Bohannan

R. P. Bohannan, P.E.

RPB/das
Job No. 3530.2

Attachment

cc: Joel Jurkens, Octopus Car Wash w/o attachment
George Rainhart, De La Torre-Rainhart w/o attachment
Matt Martin, Gerald F. Martin Construction w/o attachment

25×10 32×10

0000 0000 1489

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

September 16, 1993

R.P. Bohannan
Easterling & Associates Inc.
10131 Coors Rd. NW Suite H-7
Albuquerque, NM 87114

RE: OCTOPUS CAR WASH (A14-D8)

Dear Mr. Bohannan:

I am in receipt of the additional information for the above referenced site.

Please be advised that prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. checklist and concurrence from AMAFCA will be required.

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

Sincerely,

Bernie J. Montoya, CE
Engineer Associate

BJM/dl/WPHYD/7552

xc: Alan Martinez
File

PUBLIC WORKS DEPARTMENT
Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works
ENGINEERING GROUP
Telephone (505) 768-2500

25×10 32×10

0000 0000 1490

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Octopus Car Wash ZONE ATLAS/DRNG. FILE #: A-14/D8

DRB #: 93-121 EPC #: _____ WORK ORDER #: 4709

LEGAL DESCRIPTION: Seven Bar Ranch Tract C-3-B

CITY ADDRESS: East Side NMSR 528 North of Ellison

ENGINEERING FIRM: Easterling & Assoc., Inc. CONTACT: RP Bohannan

ADDRESS: 10131 Coors Rd. NW, Ste A-7 Albuquerque, NM 87114 PHONE: 898-8021

OWNER: Octopus Car Wash CONTACT: Joel Jerkens

ADDRESS: 5805 Central Ave SE Albuquerque, NM 87108 PHONE: 265-1507

ARCHITECT: De La Torre & Rainhart CONTACT: George Rainhart

ADDRESS: 7801 Academy Rd NE Bldg 2, Ste 200 Albuquerque NM 87109 PHONE: 828-9611

SURVEYOR: Surv-Tek, Inc. CONTACT: Garry Hugg

ADDRESS: 5643 Paradise Blvd NW Albuquerque NM 87114 PHONE: 897-3366

CONTRACTOR: Gerald Martin, Gen. Contr. CONTACT: Matt Martin

ADDRESS: P.O. Box 91450 Albuquerque NM 87199-1450 PHONE: 828-1144

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
✓ OTHER Improvement Plans

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
✓ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 9/13/93

BY: RP Bohannan

RECEIVED
SEP 14 1993
HYDROLOGY DIVISION

17-8

Rev 1/90

25×10 32×10

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EASTERLING & ASSOCIATES, INC.
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114

(505) 898-8021
FAX (505) 898-8501

LETTER OF TRANSMITTAL

DATE 9/13/93 JOB NO 3530.2

ATTENTION BERNIE MONTOYA

RE: OCTOPUS CAR WASH
DRAINAGE PLAN A-14/D8

TO COA
HYDROLOGY

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via Courier the following items:

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications
☒ Copy of letter ☐ Change order ☒ DRAINAGE INFORMATION SHEET

COPIES	DATE	NO.	DESCRIPTION
1	9/13/93		LETTER
1	"		DR. INFO SHEET
1	"	3 Pgs.	SET OF PLANS

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

RECEIVED
SEP 14 1993
HYDROLOGY DIVISION

COPY TO _____

SIGNED: R. P. Bohannan
by MKE

If enclosures are not as noted, kindly notify us at once.

25×10 32×10

0000 0000 1492

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

March 1, 1993

R.P. Bohannan
Easterling & Associates Inc.
10131 Coors Rd. NW Suite H-7
Albuquerque, NM 87120

RE: CONCEPTUAL DRAINAGE PLAN FOR OCTOPUS CAR WASH (A14-D8) ENGINEER'S STAMP DATED 1/29/93.

Dear Mr. Bohannan:

Based on the information provided on your February 1, 1993 submittal, the above referenced site is approved for Site Development.

Please be advised that prior to Building Permit release, the following must be addressed:

1. Site specific plan scale 1"=20'.
2. Bench marks- location, description and elevation of the:
   a. Albuquerque Control Survey Vertical Datam.
   b. T.B.M. on-site permanently marked.
3. Hydraulics for all the proposed asphalt channels ponds and pipes.
4. Cross-section for each pond including erosion and sediment control features.
5. Include portion where the run-off enters the desilting basin and exits onto the down stream Cabezon Channel.
6. Field inspection reveals that some maintenance work will need to be done within the desilting basin. Please address.
7. At what point does the 160.1 cfs from the existing asphalt channel along New Mexico State Highway 528 enter the site? You indicate that the temporary graded swale only carries 11.4 cfs.

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

25×10 32×10

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8. You will need to submit a copy of this plan to Cliff Anderson from AMAFCA for concurrence of the proposed design.

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

Sincerely,

Barnie J. Montoya

Barnie J. Montoya, CE
Engineering Assistant

BJM/dl/WPHYD/7552

xc: File

25×10 32×10

0000 0000 1494

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 28, 1993

R.P. Bohannan
Easterling & Associates, Inc.
10131 Coors Rd. N.W., Suite H-7
Albuquerque, NM 87114

RE: DRAINAGE PLAN FOR OCTOPUS CAR WASH (A-14/D8) ENGINEER'S STAMP DATED 7/22/93

Dear Mr. Bohannan:

Based on the information provided on your July 23, 1993 submittal, the above referenced site is approved for Building Permit.

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

Also, prior to Certificate of Occupancy release, Engineer Certification per the D.P.M. checklist will be required.

Please be advised that once AMAFCA accepts the concept for the desilting pond, building permit approval will be granted by Hydrology.

If I can be of further assistance, please feel free to contact me at 768-2657.

Sincerely,

Bernie J. Montoya

Bernie J. Montoya, CE
Engineer Associate

BJM/ses/WPHYD7875

cc: Alan Martinez
File

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

25×10 32×10

0000 0000 1495

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Octopus Car Wash ZONE ATLAS/DRNG. FILE #: A14-D8

LEGAL DESCRIPTION: Seven Bar Ranch Tract C-3-B

CITY ADDRESS: East side of NM 528, North of Ellison Dr.

ENGINEERING FIRM: Easterling & Associates, Inc. CONTACT: RP Bohannan

ADDRESS: 10131 Colors Rd NW Ste A-7 Albuquerque, NM 87114 PHONE: 873-5021

OWNER: Octopus Car Wash CONTACT: Joel Jurkens

ADDRESS: 5805 Central Ave SE Albuquerque, NM 87108 PHONE: 265-1507

ARCHITECT: DeLa Torre & Rainhart, P.A. CONTACT: George Rainhart

ADDRESS: 7501 Academy Rd. NE Bldg 2, STE 200 Albuquerque, NM 87109 PHONE: 828-9611

SURVEYOR: Surv-Tek, Inc. CONTACT: Garry Hagg

ADDRESS: 5643 Paradise Blvd NW Albuquerque NM 87114 PHONE: 877-3360

CONTRACTOR: Not yet selected CONTACT: _____

ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

___ YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 93-121

EPC NO. _____

PROJ. NO. 4709

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

✓ DRAINAGE PLAN

___ CONCEPTUAL GRADING & DRAINAGE PLAN

✓ 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

✓ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 7/23/93

BY: RP Bohannan

RECEIVED
JUL 23 1993
HYDROLOGY DIVISION

25×10 32×10

0000 0000 1496

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 14, 1993

R.P. Bohannan
Easterling & Associates, Inc.
10131 Coors Rd. NW Suite H-7
Albuquerque, NM 87120

RE: CONCEPTUAL DRAINAGE PLAN FOR OCTOPUS CAR WASH (A14-D8) REVISION BLOCK DATED 7/21/93.

Dear Mr. Bohannan:

Based on the information provided on your July 2, 1993 resubmittal, the above referenced site is approved for Site Development.

Please be advised that the comments on the March 1, 1993 comment letter for Building Permit approval are still valid, and must be addressed prior to Building Permit approval.

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

Sincerely,

Bernie J. Montoya, CE
Engineer Associate

BJM/dl/WPHYD/7552

xc: Alan Martinez
File

PUBLIC WORKS DEPARTMENT
Walter H. Nickerson, Jr., P.E.
Assistant Director Public Works
ENGINEERING GROUP
Telephone (505) 768-2500

25×10 32×10

0000 0000 1497

TRANSMITTAL LETTER

de la torre • rainhart pa
architects aia
north louisiana office park 7801 academy rd ne building 2 • suite 200
albuquerque, nm 87109-3805 828 9611 Fax 828 9644

PROJECT: Octopus Car Wash PROJECT NO. _____

TO: Cat Hydraloop DATE July 1 93

ATTN: Bernice to review for Feds signature
For Telecon w/ RP Blum
Zastrow

WE TRANSMIT:
( )Federal Express ( )U.S. Mail
( )In accordance with your request _____

COPIES	DATE	DESCRIPTION

REMARKS: SIA Complete & granted Neal for signature for Development pla

COPY TO: _____ BY: GEORGE RAINHART

JUL 2 1993

828 9611

25×10 32×10

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

ENGINEERING GROUP

INTER-OFFICE CORRESPONDENCE June 23, 1993

TO: Claire Koopman, Board Secretary, Dev. Review Board

FROM: Fred J. Aguirre, City Hydrologist

SUBJECT: PUBLIC HEARING COMMENTS FOR JUNE 29, 1993

DRB-93-198 An approved Conceptual Grading and Drainage Plan is required for Site Development Plan sign-off.

25×10 32×10

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NOTICE OF PUBLIC HEARING--DEVELOPMENT REVIEW BOARD
CITY OF ALBUQUERQUE

Notice is hereby given that the Development Review Board, City of Albuquerque, will hold a public hearing in the City Council Committee Room, Ninth Floor, Albuquerque/Bernalillo County Government Center, One Civic Plaza NW, on Tuesday, June 29, 1993, beginning at 9:00 a.m., for the purpose of considering the following:

#9

DRB-93-198 (NE) Claudio Vigil Architects, agents for George Brunacini, request Site Development Plan approval for Lots 13A and 13B, Midway Business Park, zoned IP (City) and located on the north side of Midway Pl NE between Office Blvd NE and Midway Park Blvd NE, containing approximately 2.0 acres. (E-17)

Details of the application(s) may be examined at the Planning Division of the Planning Department, Fourth Floor, Albuquerque/Bernalillo County Government Center, One Civic Plaza NW, between 8:00 a.m. and 5:00 p.m., Monday through Friday except holidays. Individuals with disabilities who need special assistance to benefit from this hearing should contact Claire Koopman, Planning Department, 768-3946 or TDD - 768-2478.

Jack Cloud, Chairman
Development Review Board

TO BE PUBLISHED IN THE ALBUQUERQUE JOURNAL ON MONDAY, June 14, 1993

25×10 32×10

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DRAINAGE INFORMATION SHEET

PROJECT TITLE: 7 Bar Tract C-3 Octopus Car Wash ZONE ATLAS/DRNG. FILE #: A-14 / D8

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Seven Bar Ranch Tract C-3

CITY ADDRESS: NMSH 528 at Ellison Drive

ENGINEERING FIRM: Easterling & Assoc. Inc CONTACT: R.P. Bohannan
ADDRESS: 10131 Coors Rd. NW Ste H7 Albuquerque, NM 87114 PHONE: 898-8021

OWNER: Seven Bar Land & Cattle Co. CONTACT: John Black
ADDRESS: 10200 Corrales Rd NW Ste B3 Albuquerque, NM 87048 PHONE: 897-7227

ARCHITECT: DeLa Torre & Rainhart, PA CONTACT: George Rainhart
ADDRESS: 7801 Academy Rd NE Bldg 2, Ste 200 Albuquerque, NM 87109 PHONE: 828-9611

SURVEYOR: Surv-Tek, Inc. CONTACT: Garry Hugg
ADDRESS: 5643 Paradise Blvd NW Albuquerque, NM 87114 PHONE: 897-3366

CONTRACTOR: Not Yet Selected CONTACT: _____
ADDRESS: _____ PHONE: _____

RECEIVED
FEB - 1 1993
HYDROLOGY

TYPE OF SUBMITTAL:
___ DRAINAGE REPORT
___ DRAINAGE PLAN
✓ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
___ OTHER _____

PRE-DESIGN MEETING:
___ YES
✓ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
✓ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: ~~4/29/93~~ 2/1/93 RAS
BY: RP Bohannan

17-8

Rev 1/90

25×10 32×10

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EASTERLING & ASSOCIATES, INC.
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114

(505) 898-8021
FAX (505) 898-8501

LETTER OF TRANSMITTAL

DATE 01FEB93 | JOB NO. 3530

ATTENTION Bernie Montoya

RE Seven Bar Ranch Tract C-3
Octopus Car Wash
Conceptual Grading & Drainage Plan

TO City of Albuquerque
AMD / Hydrology Division
One Civic Plaza Rm 301

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via courier the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	2/1/93		Drainage Information Sheet
1	1/93		Conceptual Grading & Drainage Plan for Seven Bar Ranch Tract C-3 Proposed Octopus Car Wash

THESE ARE TRANSMITTED as checked below:

☑ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☑ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

RECEIVED
FEB - 1 1993
HYDROLOGY DIV.

John Black, Seven Bar Land & Cattle Co.
Joel Jerkens, Octopus Car Wash

COPY TO George Rainhart, Bohannan Huston Inc.
Andrew Garcia

SIGNED: R. Bohannan

If enclosures are not as noted, kindly notify us at once.

25×10 32×10

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EASTERLING & ASSOCIATES, INC.
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114

(505) 898-8021
FAX (505) 898-8501

LETTER OF TRANSMITTAL

TO COA HYDROLOGY

DATE	JOB NO.
7-2-93	3530.1

ATTENTION BERNIE MONTOYA

RE OCTOPOS CAR WASH
A-14-D8
GRADING/DRAINAGE PLANS

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			DRAINAGE INFO SHEET
1			1 OF 2 EXISTING & OFFSITE DRAINAGE
1			2 OF 2 FIRST PHASE DEVELOPMENT

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

RECEIVED
JUL - 2 1993

COPY TO George Reinhart, R.A.

SIGNED: DOUG ORENSE

If enclosures are not as noted, kindly notify us at once.

25×10 32×10

DRAINAGE INFORMATION SHEET

PROJECT TITLE: OCTOPUS CAR WASH ZONE ATLAS/DRNG. FILE #: A14-D8

LEGAL DESCRIPTION: TRACT C-3-B, 7 BAR RANCH

CITY ADDRESS: _____

ENGINEERING FIRM: ESTORINO & ASSOC CONTACT: RP BOHANNAN

ADDRESS: 10131 COORS NW SUIT H-7/8 87114 PHONE: 898-8021

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: DELA TORRE & RANHART CONTACT: GEORGE RANHART

ADDRESS: _____ PHONE: 828-9611

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

PRE-DESIGN MEETING:

___ YES
___ NO
___ COPY OF CONFERENCE RECAP SHEET PROVIDED

DRB NO. 93-121
EPC NO. _____
PROJ. NO. 4709

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
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 7-2-93

BY: RP BOHANNAN

25×10 32×10

0000 0000 1504

DRAINAGE REPORT
on
NM 528 Northside Channel
Adjacent to Tracts C-3A &C-3B

RECEIVED
APR 9 8 1997
HYDROLOGY SECTION

Prepared for Las Colinas Realty
Greg Foltz

April 1997

D. MARK GOODWIN & ASSOCIATES

25×10 32×10

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PROJECT DESCRIPTION

The portion of the project entails construction of new deceleration lanes and drainage channel reconstruction. The joint access between the proposed commercial sites shall be constructed with this project. Detailed drawings for the driveways, deceleration lanes, and channel are contained within this submittal.

DRAINAGE MANAGEMENT PLAN

EXISTING SITE CONDITIONS

NM 528 currently has two westbound lanes adjacent to vacant lots and an existing channel. The area of proposed improvements contain sandy soils and native vegetation typical of Albuquerque's Westside. The existing storm runoff drains overland via the existing channel from west to east into a confluence and continues north through a bridge crossing to a detention pond then into the Cabezon Drain.

PROPOSED CONDITIONS

The submitted plans propose to directionally alter the existing asphalt channel and add three new driveways with deceleration lanes. The driveways must traverse the proposed channel prior to entering the vacant lots. Culverts, 4 barrels Arch CMP, shall be installed at the driveway traverse points. Details for all improvements are on the attached plans, sheets 1 and 2 of 2. The concerns outlined by AMAFCA, NMSH&TD, and the City of Albuquerque where the channel flow remains confined to the channel and the flow fails to change direction and overtops the channel at the confluence.

The channel was analyzed with Flow(Q) = 160cfs then increased to Q = 215cfs at the confluence. The amount of channel flow conflicts with the report done for AMAFCA by Dr. Heggen, "Car Wash Channel"(see Appendix A) The flow amount is confirmed by R.P. Bohannan of Easterling & Associates, Inc. and supporting documentation is included within this submittal (see Appendix A). The proposed asphalt channel is trapezoidal with 2:1 side slopes. The floor width is 8' and the top width is 16' and increases to a floor width of 20' at the culverts. There is a 50' transition from 16' to 20' channel upstream and downstream of the culverts. Please see sheet 2 of 2 for HEC cross section placement and report for the analysis. The confluence was analyzed through the HEC-RAS interpolation for cross section 120 to 100. The analysis shows concurrence with the "Car Wash Channel" for the flow entering and exiting the confluence without overtopping the channel.

CONCLUSION

The analysis shows the flow is confined to the channel thus protecting private property and is capable of flowing through a clean confluence. The construction contract for the proposed construction shall include removing any sediment and debris from the confluence. HEC-RAS latest edition was used and fully developed conditions were assumed to analyze the developed flows.

25×10 32×10

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HEC-RAS Version 1.1 January 1996
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X   X XXXXXX  XXXX     XXXX    XX   XXXX
X   X X     X  X    X  X  X X  X
X   X X     X       X  X  X X  X
XXXXXXX XXXX  X    XXX XXXX  XXXXXX  XXXX
X   X X     X       X X  X  X    X
X   X X     X  X    X  X  X  X    X
X   X XXXXXX  XXXX     X  X  X  X XXXXX
```

PROJECT DATA
Project Title: DISCOUNT TIRE 528 FUTURE
Project File : dscft528.prj
Run Date and Time: 4/16/97 7:57:20 AM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : c:\hec\ras\dscft528.p01

Geometry Title: Plan 01
Geometry File : c:\hec\ras\dscft528.p01

Flow Title : Plan 01
Flow File : c:\hec\ras\dscft528.p01

Plan Summary Information:
Number of: Cross Sections = 28 Mulitple Openings = 0
Culverts = 3 Inline Weirs = 0
Bridges = 0

Computational Information
Water surface calculation tolerance = .01
Critical depth calculaton tolerance = .01
Maximum number of interations = 40
Maximum difference tolerance = .3
Flow tolerance factor = .001

Computational Flow Regime: Mixed Flow

Encroachment Data: None

25×10 32×10

Flow Distribution Locations

Reach	RS Start	RS End	LOB	Channel	ROB
NM528	155	100	1	1	1

****

FLOW DATA

Flow Title: Flow 01
Flow File : c:\hec\ras\dscft528.f01

Flow Data (cfs)

Reach	Riv Sta	PF#1
NM528	300	160
NM528	115.*	215

Boundary Conditions

Reach	Profile	Upstream	Downstream
NM528	1	Critical	Critical

****

GEOMETRY DATA

Geometry Title: DISCOUNT TIRE NM 528
Geometry File : c:\hec\ras\dscft528.g01

CROSS SECTION INPUT Reach: NM528 River Station: 300
Description:

Station Elevation Data, num = 10

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	53	10	52	25	51	30	47.84	32	45.84
40	45.84	42	47.84	65	50.5	111	48.47	111.1	48.97

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	30	.015	42	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
30	42	45	52	66	.1	.3

CROSS SECTION INPUT Reach: NM528 River Station: 290
Description:

Station Elevation Data, num = 8

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	50.56	18	46.26	22	44.26	30	44.26	34	46.26
50	48.04	117	46.49	117.1	46.99				

Manning's n Values, num = 3

0000 0000 1508

```
  Sta.  Value   Sta.  Value   Sta.  Value
    0   .03     18   .015     34   .03

Bank Sta: Left  Right   Lengths: Left Channel  Right   Coeff Contr.  Expan.
        18     34            57     50    15          .1     .3

CROSS SECTION INPUT   Reach: NM528        River Station: 280
Description:

Station Elevation Data,  num = 7
  Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.
    0   44.9     2   42.9     22   42.9     24   44.9     56   46.39
  111   46.58  111.1  46.98

Manning's n Values,  num = 3
  Sta.  Value   Sta.  Value   Sta.  Value
    0   .03      0   .015     24   .03

Bank Sta: Left  Right   Lengths: Left Channel  Right   Coeff Contr.  Expan.
        0      24            40     40    37          .1     .3
Ineffective Flow Areas,  num = 1
  Sta L  Sta R   Elev
**********
   24   111.1   46.98

CULVERT INPUT        Reach: NM528        River Station: 275
Description:
Distance from Upstream XS =      5
Deck/Roadway Width       =     30
Weir Coefficient         =    2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates,  num = 2
  Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**********
    0   47.48            24   47.48
Downstream Deck/Roadway Coordinates,  num = 2
  Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**********
    0   47.08            24   47.08
Elevation at which weir flow begins       =
Maximum allowable submergence for weir flow =     .95
Submergence criteria :Broad Crested

Number of Culverts =  1

Culvert Name    Shape    Rise   Span
Culvert #1    Pipe Arch  2.583
FHWA Chart # 34- 18 inch corner radius; Corrugated metal
FHWA Scale # 2 - Mitered to slope
Culvert Length   n Value  Entrance Loss Coef   Exit Loss Coef
       39.9      .021              1                 1
Number of Barrels =  4
Upstream  Elevation =  42.9
Centerline Stations
   Sta.   Sta.   Sta.   Sta.
  4.75   9.58   14.42  19.25
```

25×10 32×10

Downstream Elevation = 42.5
Centerline Stations
Sta. Sta. Sta. Sta.
4.75 9.58 14.42 19.25

CROSS SECTION INPUT Reach: NM528 River Station: 270
Description:

Station Elevation Data, num = 8
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 44.5 2 42.5 22 42.5 24 44.5 41 46.43
61 46.26 110 45.19 110.1 45.69

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 24 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 24 45 45 40 .1 .3
Ineffective Flow Areas, num = 1
Sta L Sta R Elev
****
24 110.1 45.69

CROSS SECTION INPUT Reach: NM528 River Station: 260
Description:

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 43.04 4 41.04 12 41.04 16 43.04 56 44.95
103 44.74 103.1 45.24

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 16 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 16 69 69 63 .1 .3

CROSS SECTION INPUT Reach: NM528 River Station: 250
Description:

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 41.16 4 39.16 12 39.16 16 41.16 55 43.08
98 43.56 98.1 44.06

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 16 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 16 48 48 44 .1 .3

CROSS SECTION INPUT Reach: NM528 River Station: 240
Description:

25×10 32×10

Station Elevation Data, num = 7

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	39.85	4	37.85	12	37.85	16	39.85	64	41.82
98	42.28	98.1	42.78						

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	0	.015	16	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	16	40	40	36	.1	.3

CROSS SECTION INPUT Reach: NM528 River Station: 230
Description:

Station Elevation Data, num = 7

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	38.76	4	36.76	12	36.76	16	38.76	62	40.37
97	40.69	97.1	41.19						

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	0	.015	16	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	16	49	49	46	.1	.3

CROSS SECTION INPUT Reach: NM528 River Station: 220
Description:

Station Elevation Data, num = 7

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	37.43	4	35.43	12	35.43	16	37.43	61	38.77
96	39.12	96.1	39.62						

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	0	.015	16	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	16	45	45	38	.1	.3

CROSS SECTION INPUT Reach: NM528 River Station: 210
Description:

Station Elevation Data, num = 7

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	36.2	2	34.2	22	34.2	24	36.2	54	37.96
99	38.01	99.1	38.51						

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	0	.015	24	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

```
        0    24          40    40    43          .1     .3

CULVERT INPUT        Reach: NM528        River Station: 205
Description:
Distance from Upstream XS =      5
Deck/Roadway Width       =     30
Weir Coefficient         =    2.6
Bridge Deck/Roadway Skew  =
Upstream Deck/Roadway Coordinates,  num = 2
   Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**************************************************
     0  38.78           24  38.78
Downstream Deck/Roadway Coordinates,  num = 2
   Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**************************************************
     0  38.38           24  38.38
Elevation at which weir flow begins       =
Maximum allowable submergence for weir flow =     .95
Submergence criteria :Broad Crested

Number of Culverts =  1

Culvert Name    Shape     Rise    Span
Culvert #1     Pipe Arch  2.583
FHWA Chart # 34- 18 inch corner radius; Corrugated metal
FHWA Scale # 2 - Mitered to slope
Culvert Length    n Value   Entrance Loss Coef   Exit Loss Coef
       39.9       .021                 1              1
Number of Barrels =  4
Upstream   Elevation =  34.2
Centerline Stations
   Sta.   Sta.   Sta.   Sta.
  4.75   9.58  14.42  19.25
Downstream Elevation =  33.8
Centerline Stations
   Sta.   Sta.   Sta.   Sta.
  4.75   9.58  14.42  19.25

CROSS SECTION INPUT    Reach: NM528        River Station: 200
Description:

Station Elevation Data,  num = 7
   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.
     0   35.8      2   33.8     22   33.8     24   35.8     44   37.27
    58   36.63     98   36.76

Manning's n Values,  num = 3
   Sta.   Value   Sta.   Value   Sta.   Value
     0     .03      0    .015     24     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right    Coeff Contr.   Expan.
          0     24             45     45     46          .1     .3

CROSS SECTION INPUT    Reach: NM528        River Station: 190
Description:
```

25×10 32×10

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 34.48 4 32.48 12 32.48 16 34.48 50 34.64
102 34.94 102.1 35.44

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 16 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 16 35 35 32 .1 .3

CROSS SECTION INPUT Reach: NM528 River Station: 180
Description:

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 33.53 4 31.53 12 31.53 16 33.53 51 33.73
93 34.01 93.1 34.51

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 16 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 16 42 42 38 .1 .3

CROSS SECTION INPUT Reach: NM528 River Station: 170
Description:

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 32.39 4 30.39 12 30.39 16 32.39 57 32.7
103 32.69 103.1 33.19

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 0 .015 16 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 16 45 45 40 .1 .3
Ineffective Flow Areas, num = 2
Sta L Sta R Elev Sta L Sta R Elev
****

0 0 32.39 16 103.1 32.39

CROSS SECTION INPUT Reach: NM528 River Station: 160
Description:

Station Elevation Data, num = 7
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 31.17 2 29.17 22 29.17 24 31.17 54 32.2
102 31.73 102.1 32.23

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value

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```
    0   .03     0   .015    24   .03

Bank Sta: Left  Right   Lengths: Left Channel  Right   Coeff Contr.  Expan.
          0    24          40    40    46          .1     .3
Ineffective Flow Areas,  num = 1
  Sta L  Sta R  Elev
**********************
   24  102.1  32.23

CULVERT INPUT       Reach: NM528       River Station: 155
Description:
Distance from Upstream XS =      5
Deck/Roadway Width       =     30
Weir Coefficient         =    2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates,  num = 2
   Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**********************************************
     0   33.5           24   33.5
Downstream Deck/Roadway Coordinates,  num = 2
   Sta. Hi Cord Lo Cord   Sta. Hi Cord Lo Cord
**********************************************
     0   33.3           24   33.3
Elevation at which weir flow begins       =
Maximum allowable submergence for weir flow =     .95
Submergence criteria :Broad Crested

Number of Culverts =  1

Culvert Name    Shape     Rise   Span
Culvert #1      Pipe Arch  2.583
FHWA Chart # 34- 18 inch corner radius; Corrugated metal
FHWA Scale # 2 - Mitered to slope
Culvert Length   n Value  Entrance Loss Coef   Exit Loss Coef
       39.9      .021                 1                1
Number of Barrels =  4
Upstream  Elevation =  29.17
Centerline Stations
   Sta.   Sta.   Sta.   Sta.
   4.75   9.58  14.42  19.25
Downstream Elevation =  28.77
Centerline Stations
   Sta.   Sta.   Sta.   Sta.
   4.75   9.58  14.42  19.25

CROSS SECTION INPUT   Reach: NM528       River Station: 150
Description:

Station Elevation Data,  num = 8
   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.   Sta.  Elev.
     0  30.77     2  28.77    22  28.77    24  30.77    48  31.3
    63  30.95   103  31.03   103.1  31.13

Manning's n Values,  num = 3
   Sta.  Value   Sta.  Value   Sta.  Value
     0   .03     0   .015    24   .03
```

25×10 32×10

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Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 24 68 64 36 .1 .3
Ineffective Flow Areas, num = 1
Sta L Sta R Elev
24 103.1 31.33

CROSS SECTION INPUT Reach: NM528 River Station: 140
Description:

Station Elevation Data, num = 9
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 29.9 15 29.46 22 29.02 26 27.02 34 27.02
38 29.02 56 29.48 100 29.89 100.1 30.39

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 22 .015 38 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
22 38 35 36 41 .1 .3
Ineffective Flow Areas, num = 2
Sta L Sta R Elev Sta L Sta R Elev
0 22 29.02 38 100.1 29.02

CROSS SECTION INPUT Reach: NM528 River Station: 130
Description:

Station Elevation Data, num = 8
Sta. Elev. Sta Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 26.94 20 27.99 24 25.99 32 25.99 36 27.99
50 28.7 94 28.97 94.1 29.47

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 20 .015 36 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
20 36 56 55 52 .1 .3

CROSS SECTION INPUT Reach: NM528 River Station: 120
Description:

Station Elevation Data, num = 8
Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev. Sta. Elev.
0 25.95 15 26.38 19 24.38 27 24.38 31 26.38
51 27.76 85 27.93 85.1 28.43

Manning's n Values, num = 3
Sta. Value Sta. Value Sta. Value
0 .03 15 .015 31 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
15 31 2 1021.66667 .1 .3

25×10 32×10

Description:

Station Elevation Data, num = 9

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	25.44	16	24.66	20.6	21.99	29.7	21.07	37.1	22.21
45	23.54	47.7	25.28	64.3	24.07	78	23.41		

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	16	.015	47.7	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
16	47.7	10.333339	33333311.66667	.1	.3

CROSS SECTION INPUT Reach: NM528 River Station: 100
Description:

Station Elevation Data, num = 6

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	25.25	12	24.25	17	20.93	27	20.91	37	24.96
67	22.86								

Manning's n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.03	12	.015	37	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
12	37	0	0	.1	.3

****

SUMMARY OF MANNING'S N VALUES

Reach	River Sta.	n1	n2	n3
NM528	300	.03	.015	.03
NM528	290	.03	.015	.03
NM528	280	.03	.015	.03
NM528	275	Culvert		
NM528	270	.03	.015	.03
NM528	260	.03	.015	.03
NM528	250	.03	.015	.03
NM528	240	.03	.015	.03
NM528	230	.03	.015	.03
NM528	220	.03	.015	.03
NM528	210	.03	.015	.03
NM528	205	Culvert		
NM528	200	.03	.015	.03
NM528	190	.03	.015	.03
NM528	180	.03	.015	.03
NM528	170	.03	.015	.03
NM528	160	.03	.015	.03
NM528	155	Culvert		
NM528	150	.03	.015	.03
NM528	140	.03	.015	.03

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*NM528	*	130	*	.03*	.015* .03*
*NM528	*	120	*	.03*	.015* .03*
*NM528	*	118.333**		.03*	.015* .03*
*NM528	*	116.666**		.03*	.015* .03*
*NM528	*	115.*	*	.03*	.015* .03*
*NM528	*	113.333**		.03*	.015* .03*
*NM528	*	111.666**		.03*	.015* .03*
*NM528	*	110	*	.03*	.015* .03*
*NM528	*	106.666**		.03*	.015* .03*
*NM528	*	103.333**		.03*	.015* .03*
*NM528	*	100	*	.03*	.015* .03*

SUMMARY OF REACH LENGTHS

Reach	River Sta.	Left	Channel	Right
*NM528	* 300 *	45*	52*	66*
*NM528	* 290 *	57*	50*	15*
*NM528	* 280 *	40*	40*	37*
*NM528	* 275 *	Culvert*	*	*
*NM528	* 270 *	45*	45*	40*
*NM528	* 260 *	69*	69*	63*
*NM528	* 250 *	48*	48*	44*
*NM528	* 240 *	40*	40*	36*
*NM528	* 230 *	49*	49*	46*
*NM528	* 220 *	45*	45*	38*
*NM528	* 210 *	40*	40*	43*
*NM528	* 205 *	Culvert*	*	*
*NM528	* 200 *	45*	45*	46*
*NM528	* 190 *	35*	35*	32*
*NM528	* 180 *	42*	42*	38*
*NM528	* 170 *	45*	45*	40*
*NM528	* 160 *	40*	40*	46*
*NM528	* 155 *	Culvert*	*	*
*NM528	* 150 *	68*	64*	36*
*NM528	* 140 *	35*	36*	41*
*NM528	* 130 *	56*	55*	52*
*NM528	* 120 *	2*	10*21.66667*	
*NM528	* 118.333**	2*	10*21.66667*	
*NM528	* 116.666**	2*	10*21.66667*	
*NM528	* 115.* *	2*	10*21.66667*	
*NM528	* 113.333**	2*	10*21.66667*	
*NM528	* 111.666**	2*	10*21.66667*	
*NM528	* 110	*10.33333*9.333333*11.66667*		
*NM528	* 106.666**	10.33333*9.333333*11.66667*		
*NM528	* 103.333**	10.33333*9.333333*11.66667*		
*NM528	* 100 *	0*	0*	0*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

25×10 32×10

A14/D8

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Reach	River Sta.	Contr.	Expan.
NM528	300	.1	.3
NM528	290	.1	.3
NM528	280	.1	.3
NM528	275	Culvert	
NM528	270	.1	.3
NM528	260	.1	.3
NM528	250	.1	.3
NM528	240	.1	.3
NM528	230	.1	.3
NM528	220	.1	.3
NM528	210	.1	.3
NM528	205	Culvert	
NM528	200	.1	.3
NM528	190	.1	.3
NM528	180	.1	.3
NM528	170	.1	.3
NM528	160	.1	.3
NM528	155	Culvert	
NM528	150	.1	.3
NM528	140	.1	.3
NM528	130	.1	.3
NM528	120	.1	.3
NM528	118.333**	.1	.3
NM528	116.666**	.1	.3
NM528	115.*	.1	.3
NM528	113.333**	.1	.3
NM528	111.666**	.1	.3
NM528	110	.1	.3
NM528	106.666**	.1	.3
NM528	103.333**	.1	.3
NM528	100	.1	.3

25×10 32×10

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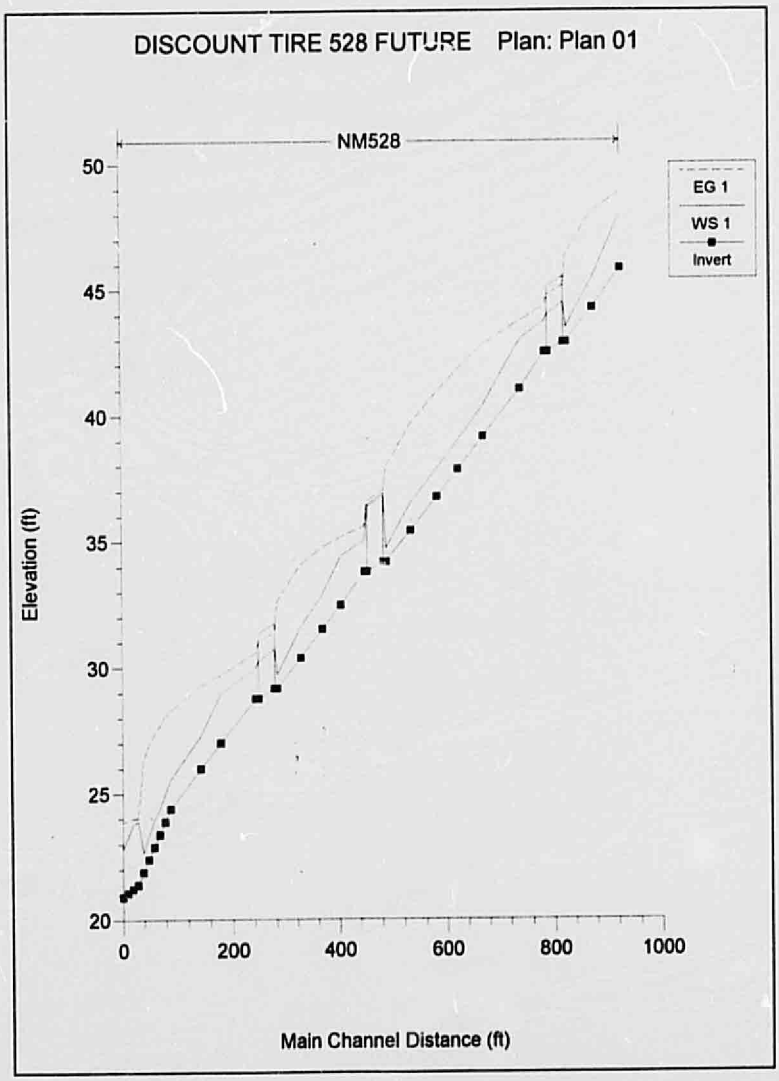

25×10 32×10

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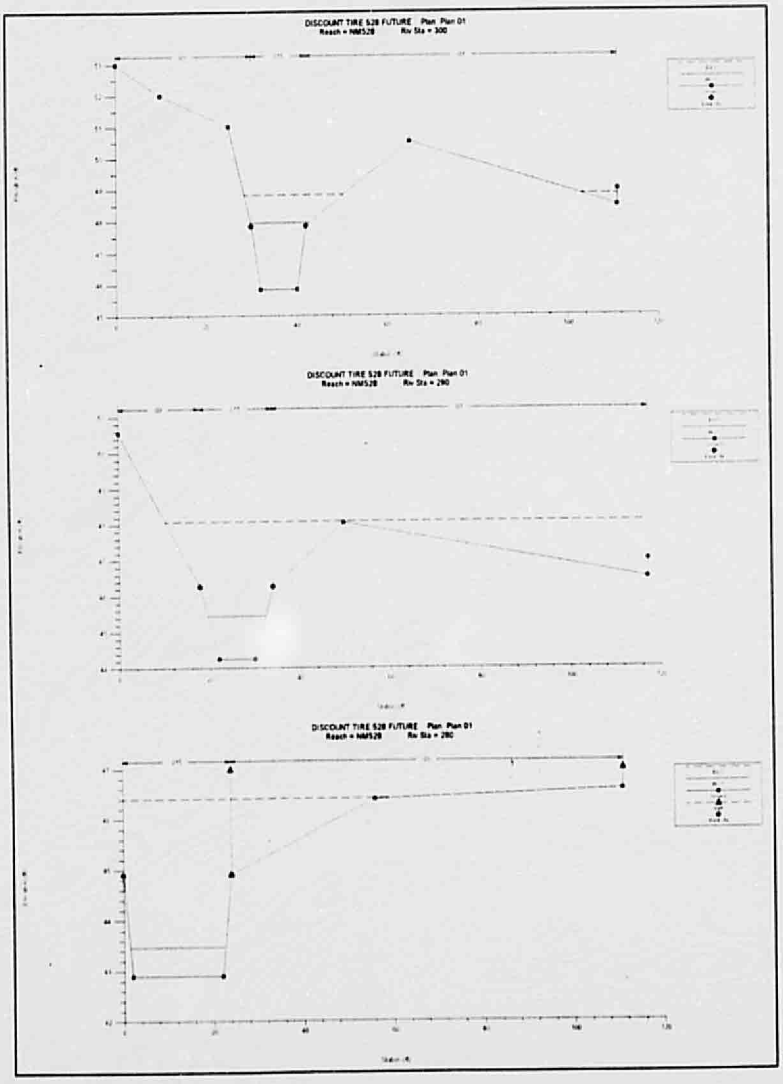

25×10 32×10

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 300 Profile: 1

W.S. Elev (ft)	47.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.030	0.015	0.030
E.G. Elev (ft)	48.82	Reach Len. (ft)	45.00	52.00	66.00
E.G. Slope (ft/ft)	0.003247	Flow Area (sq ft)	0.01	21.16	0.04
Q Total (cfs)	160.00	Flow (cfs)	0.00	159.98	0.02
Top Width (ft)	12.99	Top Width (ft)	0.15	12.00	0.84
Vel Total (ft/s)	7.54	Avg. Vel. (ft/s)	0.34	7.56	0.37
Max Chl Dpth (ft)	2.10	Hydr. Depth (ft)	0.05	1.76	0.05
Crit W.S. (ft)	47.94	Wetted Per. (ft)	0.18	13.66	0.84
Conv. Total (cfs)	2807.9	Conv. (cfs)	0.0	2807.6	0.3

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 290 Profile: 1

W.S. Elev (ft)	45.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.63	Wt. n-Val.		0.015	
E.G. Elev (ft)	48.08	Reach Len. (ft)	57.00	50.00	15.00
E.G. Slope (ft/ft)	0.019216	Flow Area (sq ft)		12.28	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.74	Top Width (ft)		12.74	
Vel Total (ft/s)	13.02	Avg. Vel. (ft/s)		13.02	
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)		0.96	
Crit W.S. (ft)	46.21	Wetted Per. (ft)		13.30	
Conv. Total (cfs)	1154.2	Conv. (cfs)		1154.2	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 280 Profile: 1

W.S. Elev (ft)	43.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.94	Wt. n-Val.		0.015	
E.G. Elev (ft)	46.40	Reach Len. (ft)	40.00	40.00	37.00
E.G. Slope (ft/ft)	0.044002	Flow Area (sq ft)		11.63	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	21.13	Top Width (ft)		21.13	
Vel Total (ft/s)	13.75	Avg. Vel. (ft/s)		13.75	
Max Chl Dpth (ft)	0.57	Hydr. Depth (ft)		0.55	
Crit W.S. (ft)	44.13	Wetted Per. (ft)		21.60	
Conv. Total (cfs)	762.7	Conv. (cfs)		762.7	

25×□ 32×□

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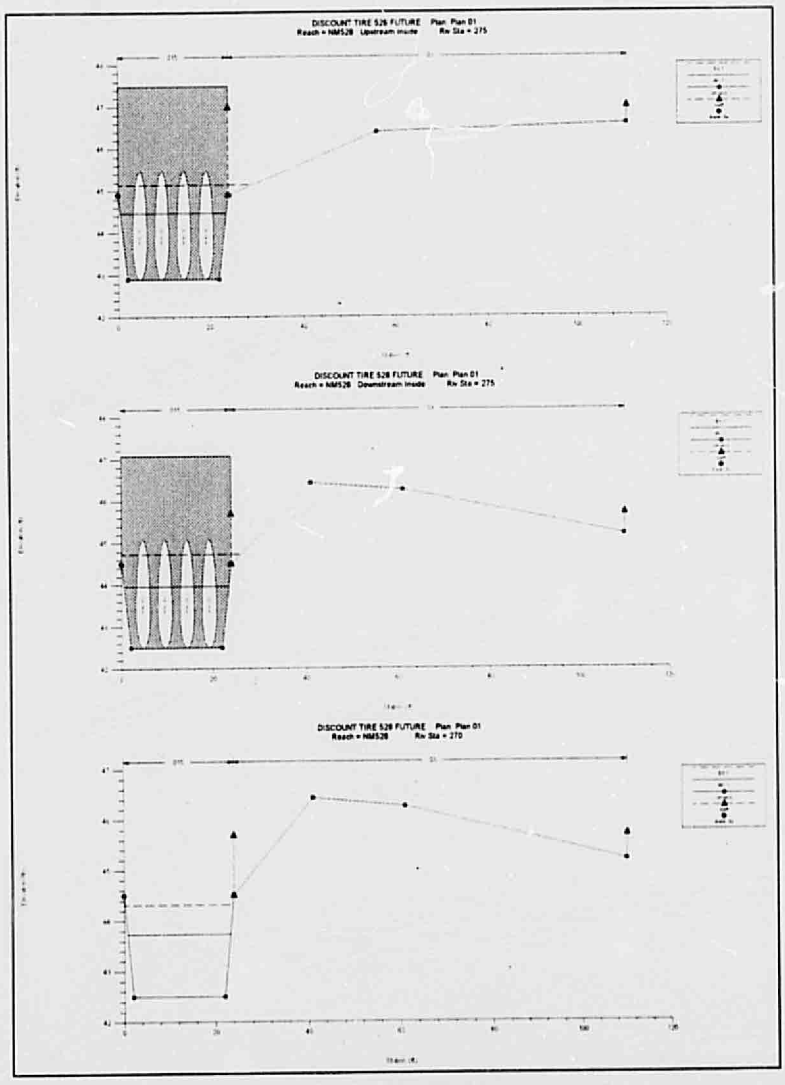

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 275 Profile: 1 Culvert ID: Culvert #1

Culv Q (cfs)	160.00	Culv Ful Lngh (ft)	
# Barrels	4	Culv Vel In (ft/s)	6.60
Q Barrel (cfs)	40.00	Culv Vel Out (ft/s)	7.03
W.S. US. (ft)	45.72	Culv Frctn Ls (ft)	0.00
E.G. US. (ft)	45.82	Culv Ext Lss (ft)	0.42
E.G. IC (ft)	45.37	Culv Ent Lss (ft)	0.68
E.G. OC (ft)	45.82	Q Weir (cfs)	
Culv WS In (ft)	44.47	Weir Sta Lft (ft)	
Culv WS Out (ft)	43.96	Weir Sta Rgt (ft)	
Culv Nml Depth (ft)	1.57	Weir Submerg	
Culv Crt Depth (ft)	1.46	Weir Max Depth (ft)	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 270 Profile: 1

W.S. Elev (ft)	43.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.		0.015	
E.G. Elev (ft)	44.31	Reach Len. (ft)	45.00	45.00	40.00
E.G. Slope (ft/ft)	0.003352	Flow Area (sq ft)		26.03	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	22.45	Top Width (ft)		22.45	
Vel Total (ft/s)	6.15	Avg. Vel. (ft/s)		6.15	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.16	
Crit W.S. (ft)	43.73	Wetted Per. (ft)		23.47	
Conv. Total (cfs)	2763.6	Conv. (cfs)		2763.6	

25×10 32×10

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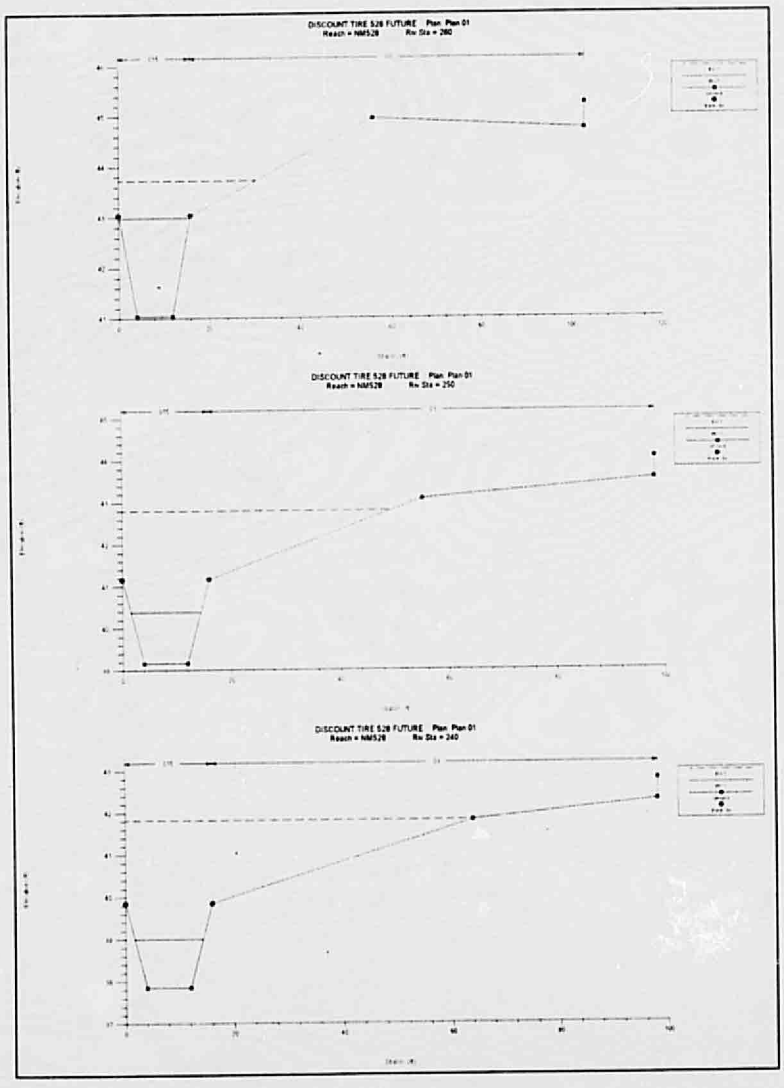

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 260 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	42.99	Element			
Vel Head (ft)	0.74	Wt. n-Val.		0.015	
E.G. Elev (ft)	43.73	Reach Len. (ft)	69.00	69.00	63.00
E.G. Slope (ft/ft)	0.003154	Flow Area (sq ft)		23.14	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	15.78	Top Width (ft)		15.78	
Vel Total (ft/s)	6.91	Avg. Vel. (ft/s)		6.91	
Max Chl Dpth (ft)	1.95	Hydr. Depth (ft)		1.47	
Crit W.S. (ft)	42.99	Wetted Per. (ft)		16.70	
Conv. Total (cfs)	2848.8	Conv. (cfs)		2848.8	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 250 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	40.39	Element			
Vel Head (ft)	2.41	Wt. n-Val.		0.015	
E.G. Elev (ft)	42.80	Reach Len. (ft)	48.00	48.00	44.00
E.G. Slope (ft/ft)	0.016909	Flow Area (sq ft)		12.84	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.91	Top Width (ft)		12.91	
Vel Total (ft/s)	12.46	Avg. Vel. (ft/s)		12.46	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		0.99	
Crit W.S. (ft)	41.11	Wetted Per. (ft)		13.49	
Conv. Total (cfs)	1230.4	Conv. (cfs)		1230.4	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 240 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	39.00	Element			
Vel Head (ft)	2.82	Wt. n-Val.		0.015	
E.G. Elev (ft)	41.82	Reach Len. (ft)	40.00	40.00	36.00
E.G. Slope (ft/ft)	0.021189	Flow Area (sq ft)		11.88	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.61	Top Width (ft)		12.61	
Vel Total (ft/s)	13.47	Avg. Vel. (ft/s)		13.47	
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)		0.94	
Crit W.S. (ft)	39.80	Wetted Per. (ft)		13.15	
Conv. Total (cfs)	1099.2	Conv. (cfs)		1099.2	

25×10 32×10

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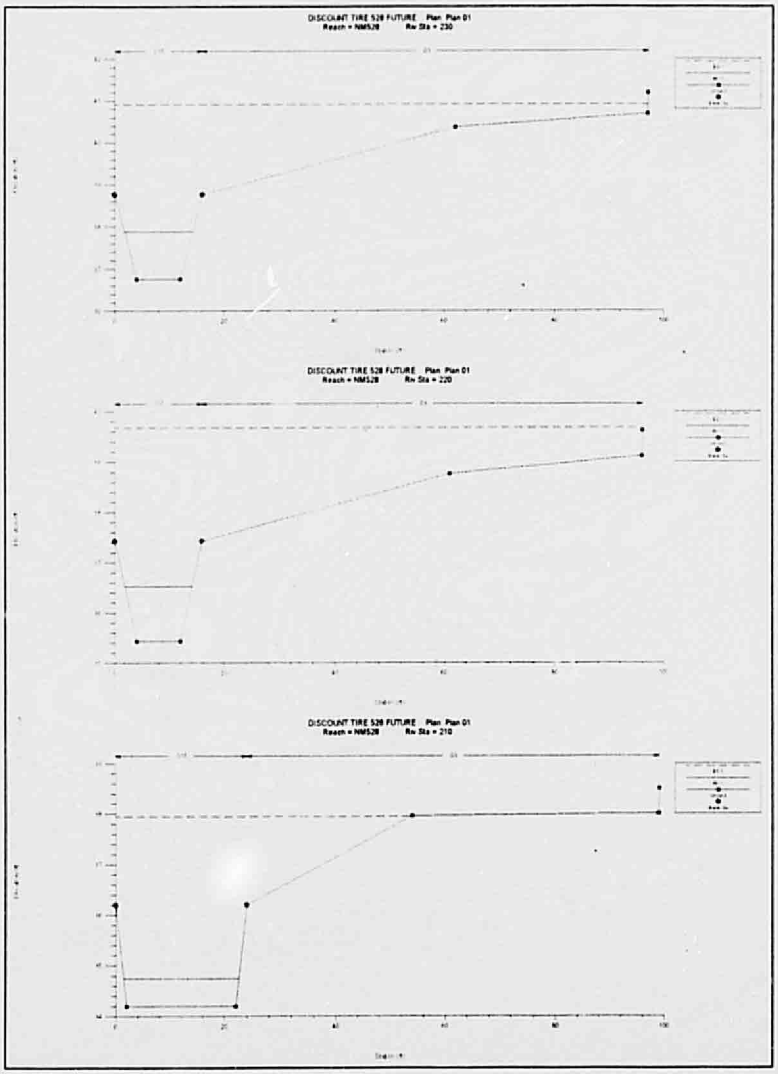

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 230 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	37.88	Element			
Vel Head (ft)	3.03	Wt. n-Val.		0.015	
E.G. Elev (ft)	40.91	Reach Len. (ft)	49.00	49.00	46.00
E.G. Slope (ft/ft)	0.023566	Flow Area (sq ft)		11.45	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.47	Top Width (ft)		12.47	
Vel Total (ft/s)	13.97	Avg. Vel. (ft/s)		13.97	
Max Chl Dpth (ft)	1.12	Hydr. Depth (ft)		0.92	
Crit W.S. (ft)	38.71	Wetted Per. (ft)		13.00	
Conv. Total (cfs)	1042.3	Conv. (cfs)		1042.3	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 220 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	36.53	Element			
Vel Head (ft)	3.15	Wt. n-Val.		0.015	
E.G. Elev (ft)	39.68	Reach Len. (ft)	45.00	45.00	38.00
E.G. Slope (ft/ft)	0.024898	Flow Area (sq ft)		11.24	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.41	Top Width (ft)		12.41	
Vel Total (ft/s)	14.24	Avg. Vel. (ft/s)		14.24	
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)		0.91	
Crit W.S. (ft)	37.38	Wetted Per. (ft)		12.93	
Conv. Total (cfs)	1014.0	Conv. (cfs)		1014.0	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 210 Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	34.74	Element			
Vel Head (ft)	3.21	Wt. n-Val.		0.015	
E.G. Elev (ft)	37.95	Reach Len. (ft)	40.00	40.00	43.00
E.G. Slope (ft/ft)	0.050718	Flow Area (sq ft)		11.13	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	21.08	Top Width (ft)		21.08	
Vel Total (ft/s)	14.37	Avg. Vel. (ft/s)		14.37	
Max Chl Dpth (ft)	0.54	Hydr. Depth (ft)		0.53	
Crit W.S. (ft)	35.43	Wetted Per. (ft)		21.53	
Conv. Total (cfs)	710.5	Conv. (cfs)		710.5	

25×10 32×10

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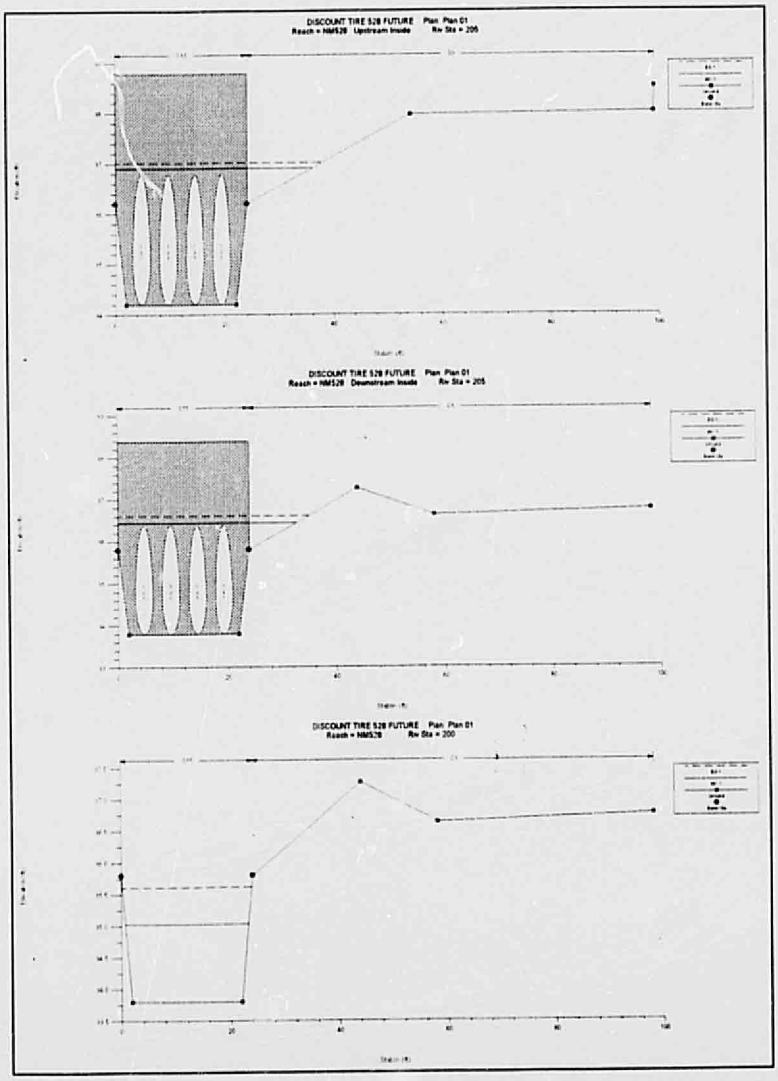

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 205 Profile: 1 Culvert ID: Culvert #1

Culv Q (cfs)	150.97	Culv Ful Lngth (ft)	
# Barrels	4	Culv Vel In (ft/s)	6.51
Q Barrel (cfs)	37.74	Culv Vel Out (ft/s)	6.90
W.S. US. (ft)	36.90	Culv Frctn Ls (ft)	0.00
E.G. US. (ft)	37.01	Culv Ext Lss (ft)	0.33
E.G. IC (ft)	36.57	Culv Ent Lss (ft)	0.66
E.G. OC (ft)	37.01	Q Weir (cfs)	9.03
Culv WS In (ft)	35.69	Weir Sta Lft (ft)	24.00
Culv WS Out (ft)	35.21	Weir Sta Rgt (ft)	37.67
Culv Nml Depth (ft)	1.49	Weir Submerg	0.00
Culv Crt Depth (ft)	1.41	Weir Max Depth (ft)	0.80

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 200 Profile: 1

W.S. Elev (ft)	35.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	W/L n-Val.		0.015	
E.G. Elev (ft)	35.61	Reach Len. (ft)	45.00	45.00	46.00
E.G. Slope (ft/ft)	0.003352	Flow Area (sq ft)		26.03	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	22.45	Top Width (ft)		22.45	
Vel Total (ft/s)	6.15	Avg. Vel. (ft/s)		6.15	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.16	
Crit W.S. (ft)	35.03	Wetted Per. (ft)		23.47	
Conv. Total (cfs)	2763.6	Conv. (cfs)		2763.6	

25×10 32×10

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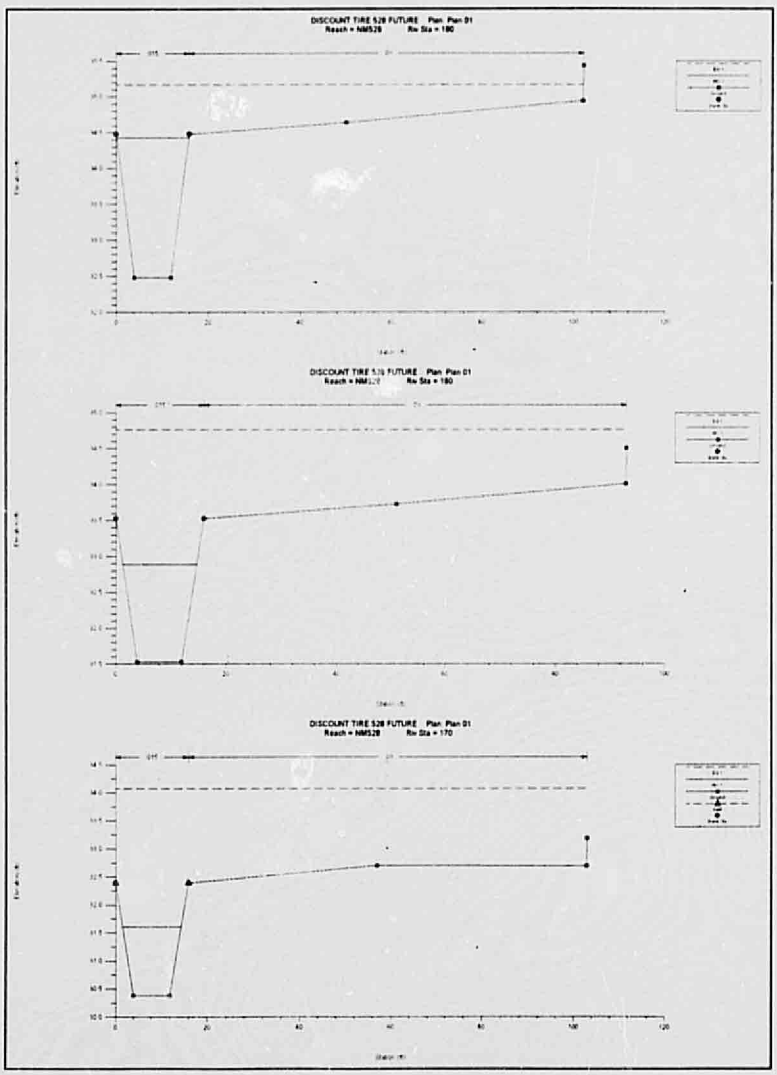

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 190 Profile: 1

W.S. Elev (ft)	34.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.		0.015	
E.G. Elev (ft)	35.17	Reach Len. (ft)	35.00	35.00	32.00
E.G. Slope (ft/ft)	0.003126	Flow Area (sq ft)		23.22	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	15.80	Top Width (ft)		15.80	
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)		6.89	
Max Chl Dpth (ft)	1.95	Hydr. Depth (ft)		1.47	
Crit W.S. (ft)	34.43	Wetted Per. (ft)		16.72	
Conv. Total (cfs)	2861.9	Conv. (cfs)		2861.9	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 180 Profile: 1

W.S. Elev (ft)	32.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.88	Wt. n-Val.		0,015	
E.G. Elev (ft)	34.77	Reach Len. (ft)	42.00	42.00	38.00
E.G. Slope (ft/ft)	0.011791	Flow Area (sq ft)		14.55	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	13.43	Top Width (ft)		13.43	
Vel Total (ft/s)	11.00	Avg. Vel. (ft/s)		11.00	
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)		1.08	
Crit W.S. (ft)	33.48	Wetted Per. (ft)		14.07	
Conv. Total (cfs)	1473.5	Conv. (cfs)		1473.5	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 170 Profile: 1

W.S. Elev (ft)	31.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.47	Wt. n-Val.		0.015	
E.G. Elev (ft)	34.08	Reach Len. (ft)	45.00	45.00	40.00
E.G. Slope (ft/ft)	0.017517	Flow Area (sq ft)		12.68	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.86	Top Width (ft)		12.86	
Vel Total (ft/s)	12.62	Avg. Vel. (ft/s)		12.62	
Max Chl Dpth (ft)	1.22	Hydr. Depth (ft)		0.99	
Crit W.S. (ft)	32.35	Wetted Per. (ft)		13.44	
Conv. Total (cfs)	1208.9	Conv. (cfs)		1208.9	

25×10 32×10

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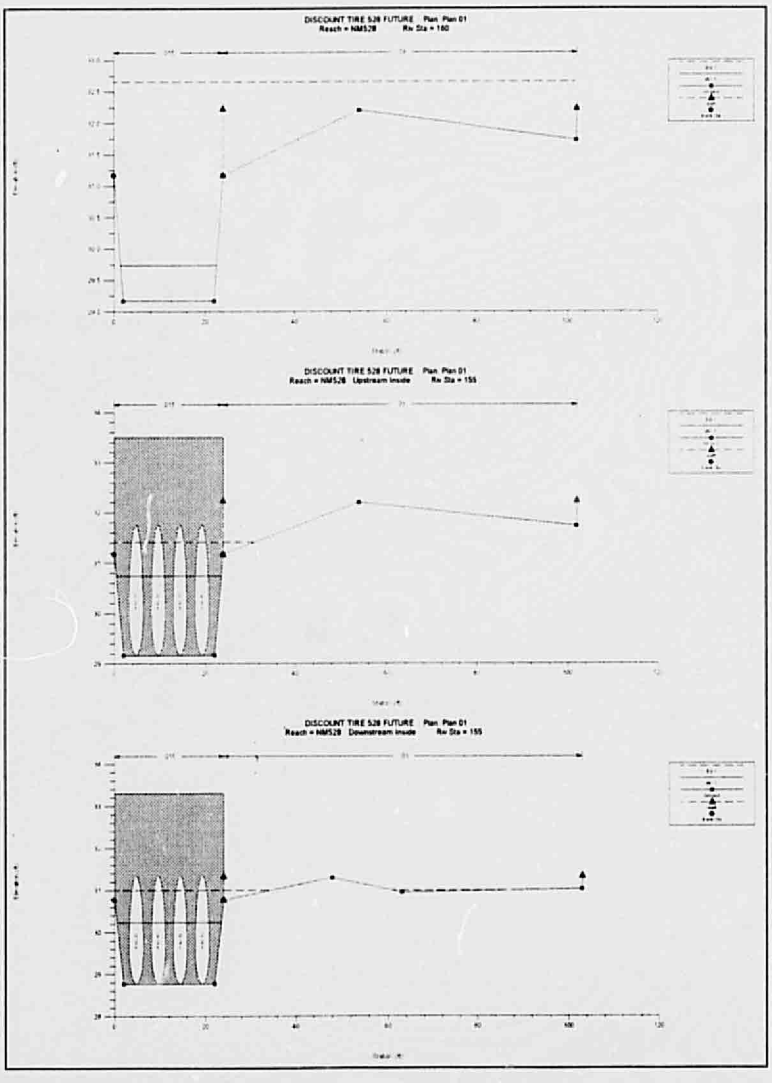

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32×

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 155 Profile: 1 Culvert ID: Culvert #1

Culv Q (cfs)	160.00	Culv Ful Lngh (ft)	
# Barrels	4	Culv Vel In (ft/s)	6.60
Q Barrel (cfs)	40.00	Culv Vel Out (ft/s)	7.03
W.S. US. (ft)	31.99	Culv Frctn Ls (ft)	0.00
E.G. US. (ft)	32.09	Culv Ext Los (ft)	0.42
E.G. IC (ft)	31.64	Culv Ent Los (ft)	0.68
E.G. OC (ft)	32.09	Q Weir (cfs)	
Culv WS In (ft)	30.74	Weir Sta Lft (ft)	
Culv WS Out (ft)	30.23	Weir Sta Rgt (ft)	
Culv Nml Depth (ft)	1.57	Weir Submerg	
Culv Crt Depth (ft)	1.46	Weir Max Depth (ft)	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 160 Profile: 1

W.S. Elev (ft)	29.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.92	Wt. n-Val.		0.015	
E.G. Elev (ft)	32.65	Reach Len. (ft)	40.00	40.00	46.00
E.G. Slope (ft/ft)	0.043482	Flow Area (sq ft)		11.68	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	21.14	Top Width (ft)		21.14	
Vel Total (ft/s)	13.70	Avg. Vel. (ft/s)		13.70	
Max Chl Dpth (ft)	0.57	Hydr. Depth (ft)		0.55	
Crit W.S. (ft)	30.40	Wetted Per. (ft)		21.61	
Conv. Total (cfs)	767.3	Conv. (cfs)		767.3	

25×10 32×10

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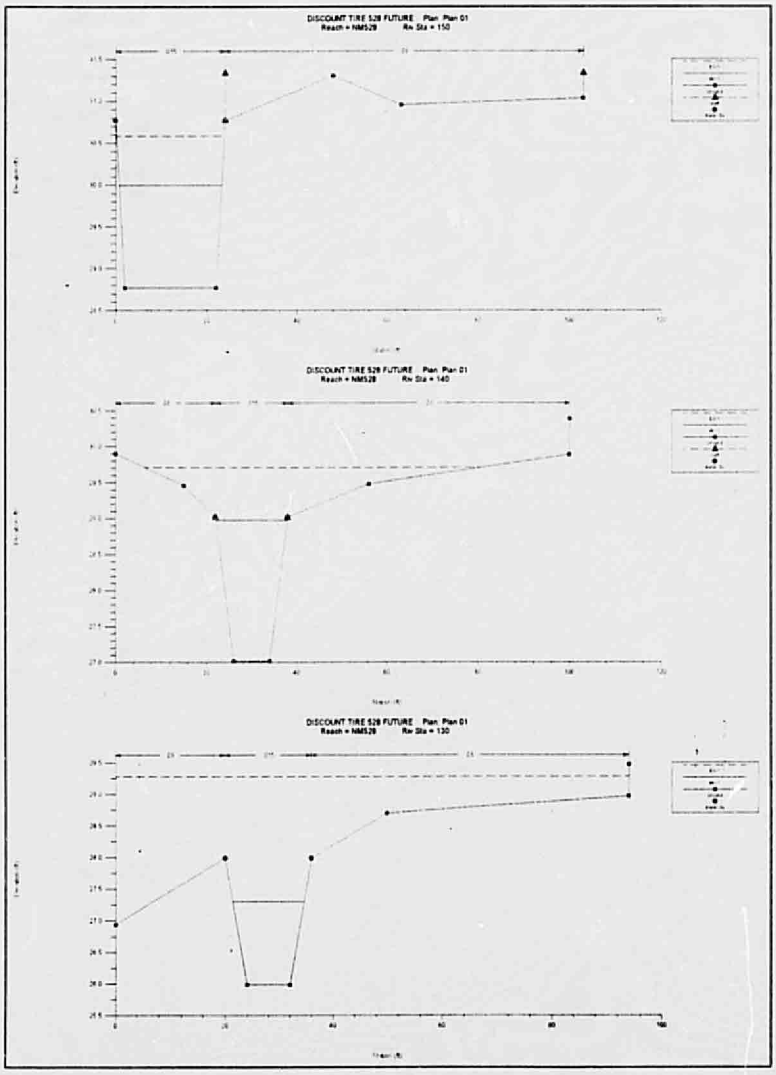

25×10 32×10

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 150 Profile: 1

W.S. Elev (ft)	30.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.		0.015	
E.G. Elev (ft)	30.58	Reach Len. (ft)	68.00	64.00	36.00
E.G. Slope (ft/ft)	0.003345	Flow Area (sq ft)		26.05	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	22.45	Top Width (ft)		22.45	
Vel Total (ft/s)	6.14	Avg. Vel. (ft/s)		6.14	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.16	
Crit W.S. (ft)	30.00	Wetted Per. (ft)		23.47	
Conv. Total (cfs)	2766.6	Conv. (cfs)		2766.6	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 140 Profile: 1

W.S. Elev (ft)	28.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.		0.015	
E.G. Elev (ft)	29.71	Reach Len. (ft)	35.00	36.00	41.00
E.G. Slope (ft/ft)	0.003090	Flow Area (sq ft)		23.31	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	15.83	Top Width (ft)		15.83	
Vel Total (ft/s)	6.86	Avg. Vel. (ft/s)		6.86	
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)		1.47	
Crit W.S. (ft)	28.98	Wetted Per. (ft)		16.75	
Conv. Total (cfs)	2878.1	Conv. (cfs)		2878.1	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 130 Profile: 1

W.S. Elev (ft)	27.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.98	Wt. n-Val.	0.030	0.015	
E.G. Elev (ft)	29.28	Reach Len. (ft)	56.00	55.00	52.00
E.G. Slope (ft/ft)	0.013106	Flow Area (sq ft)	1.22	13.89	
Q Total (cfs)	160.00	Flow (cfs)	2.13	157.87	
Top Width (ft)	20.06	Top Width (ft)	6.83	13.23	
Vel Total (ft/s)	10.58	Avg. Vel. (ft/s)	1.74	11.36	
Max Chl Dpth (ft)	1.31	Hydr. Depth (ft)	0.18	1.05	
Crit W.S. (ft)	27.96	Wetted Per. (ft)	7.20	13.85	
Conv. Total (cfs)	1397.6	Conv. (cfs)	18.6	1379.0	

25×10 32×10

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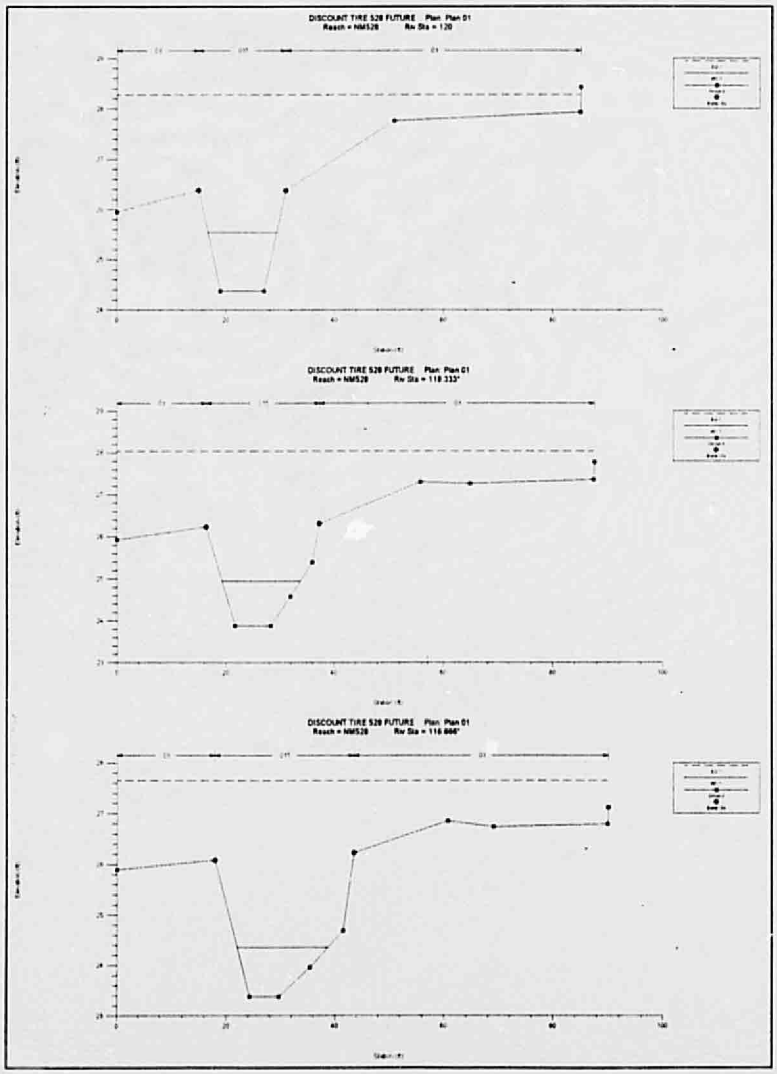

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 120 Profile: 1

W.S. Elev (ft)	25.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.73	Wt. n-Val.		0.015	
E.G. Elev (ft)	28.28	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.020270	Flow Area (sq ft)		12.06	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	12.67	Top Width (ft)		12.67	
Vel Total (ft/s)	13.27	Avg. Vel. (ft/s)		13.27	
Max Chl Dpth (ft)	1.17	Hydr. Depth (ft)		0.95	
Crit W.S. (ft)	26.42	Wetted Per. (ft)		13.22	
Conv. Total (cfs)	1123.8	Conv. (cfs)		1123.8	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 118.333* Profile: 1

W.S. Elev (ft)	24.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.10	Wt. n-Val.		0.015	
E.G. Elev (ft)	28.05	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.029098	Flow Area (sq ft)		11.33	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	14.49	Top Width (ft)		14.49	
Vel Total (ft/s)	14.12	Avg. Vel. (ft/s)		14.12	
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)		0.78	
Crit W.S. (ft)	25.73	Wetted Per. (ft)		14.83	
Conv. Total (cfs)	938.1	Conv. (cfs)		938.1	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 116.666* Profile: 1

W.S. Elev (ft)	24.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.29	Wt. n-Val.		0.015	
E.G. Elev (ft)	27.65	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.038722	Flow Area (sq ft)		10.99	
Q Total (cfs)	160.00	Flow (cfs)		160.00	
Top Width (ft)	16.76	Top Width (ft)		16.76	
Vel Total (ft/s)	14.56	Avg. Vel. (ft/s)		14.56	
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)		0.66	
Crit W.S. (ft)	25.10	Wetted Per. (ft)		17.01	
Conv. Total (cfs)	813.1	Conv. (cfs)		813.1	

25×10 32×10

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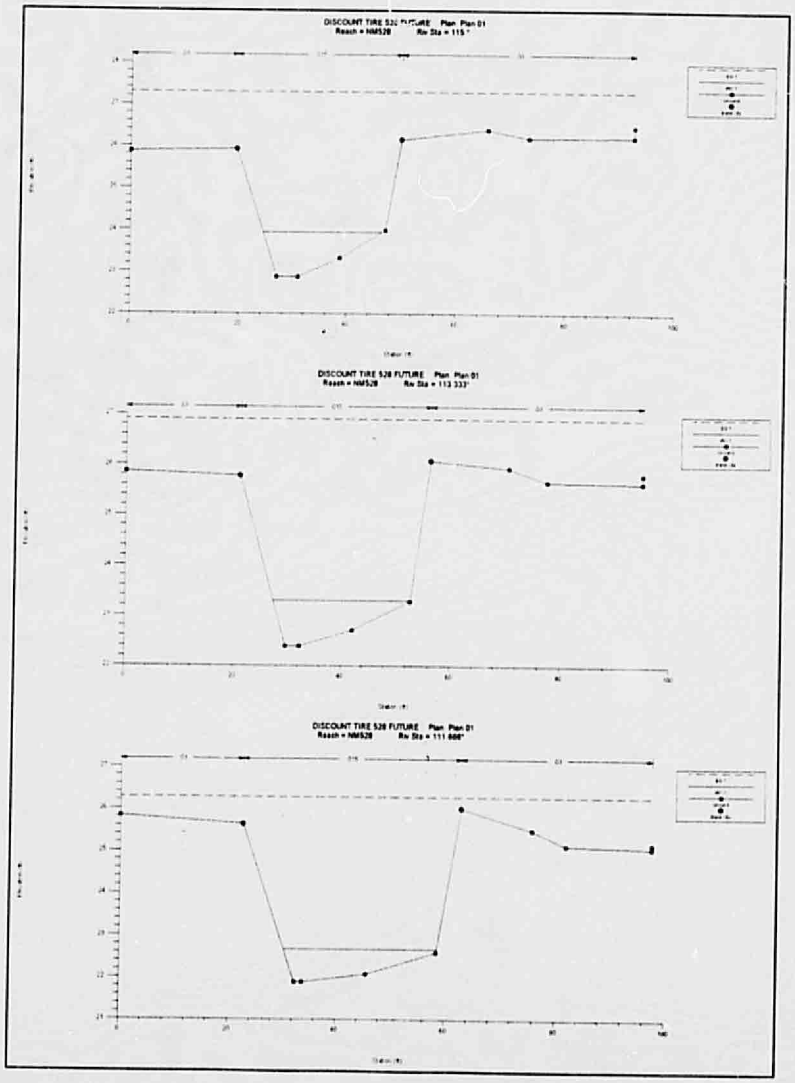

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 115.* Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	23.95	Element			
Vel Head (ft)	3.35	Wt. n-Val.		0.015	
E.G. Elev (ft)	27.30	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.039060	Flow Area (sq ft)		14.63	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	22.26	Top Width (ft)		22.26	
Vel Total (ft/s)	14.69	Avg. Vel. (ft/s)		14.69	
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)		0.66	
Crit W.S. (ft)	24.71	Wetted Per. (ft)		22.50	
Conv. Total (cfs)	1087.9	Conv. (cfs)		1087.9	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 113.333* Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	23.30	Element			
Vel Head (ft)	3.60	Wt. n-Val.		0.015	
E.G. Elev (ft)	26.91	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.052475	Flow Area (sq ft)		14.11	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	25.46	Top Width (ft)		25.46	
Vel Total (ft/s)	15.23	Avg. Vel. (ft/s)		15.23	
Max Chl Dpth (ft)	0.91	Hydr. Depth (ft)		0.55	
Crit W.S. (ft)	24.05	Wetted Per. (ft)		25.66	
Conv. Total (cfs)	938.6	Conv. (cfs)		938.6	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 111.666* Profile: 1

			Left OB	Channel	Right OB
W.S. Elev (ft)	22.66	Element			
Vel Head (ft)	3.61	Wt. n-Val.		0.015	
E.G. Elev (ft)	26.27	Reach Len. (ft)	2.00	10.00	21.67
E.G. Slope (ft/ft)	0.060321	Flow Area (sq ft)		14.09	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	28.21	Top Width (ft)		28.21	
Vel Total (ft/s)	15.25	Avg. Vel. (ft/s)		15.25	
Max Chl Dpth (ft)	0.77	Hydr. Depth (ft)		0.50	
Crit W.S. (ft)	23.38	Wetted Per. (ft)		28.39	
Conv. Total (cfs)	875.4	Conv. (cfs)		875.4	

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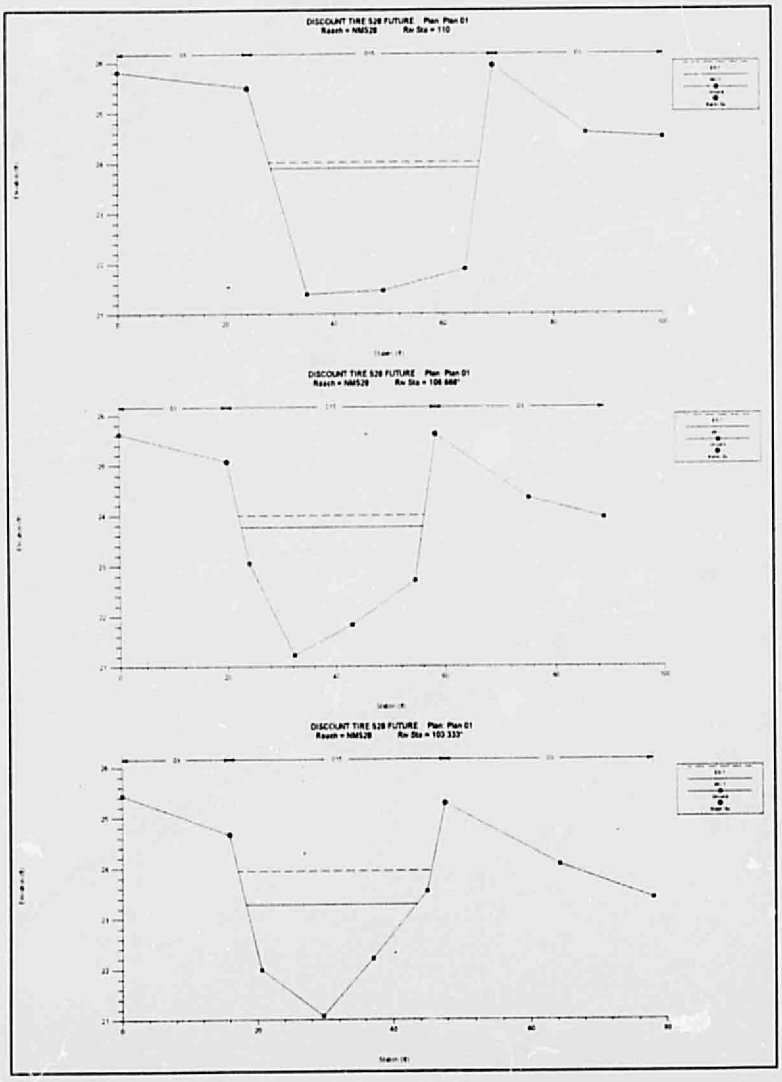

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 110 Profile: 1

W.S. Elev (ft)	23.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.015	
E.G. Elev (ft)	24.01	Reach Len. (ft)	10.33	9.33	11.67
E.G. Slope (ft/ft)	0.000299	Flow Area (sq ft)		78.95	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	38.23	Top Width (ft)		38.23	
Vel Total (ft/s)	2.72	Avg. Vel. (ft/s)		2.72	
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)		2.06	
Crit W.S. (ft)	22.71	Wetted Per. (ft)		39.40	
Conv. Total (cfs)	12429.8	Conv. (cfs)		12429.8	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 106.666* Profile: 1

W.S. Elev (ft)	23.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.		0.015	
E.G. Elev (ft)	24.00	Reach Len. (ft)	10.33	9.33	11.67
E.G. Slope (ft/ft)	0.000786	Flow Area (sq ft)		55.71	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	33.24	Top Width (ft)		33.24	
Vel Total (ft/s)	3.86	Avg. Vel. (ft/s)		3.86	
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)		1.68	
Crit W.S. (ft)	23.14	Wetted Per. (ft)		34.01	
Conv. Total (cfs)	7667.8	Conv. (cfs)		7667.8	

HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 103.333* Profile: 1

W.S. Elev (ft)	23.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.		0.015	
E.G. Elev (ft)	23.94	Reach Len. (ft)	10.33	9.33	11.67
E.G. Slope (ft/ft)	0.003090	Flow Area (sq ft)		33.02	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	25.12	Top Width (ft)		25.12	
Vel Total (ft/s)	6.51	Avg. Vel. (ft/s)		6.51	
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)		1.31	
Crit W.S. (ft)	23.29	Wetted Per. (ft)		25.69	
Conv. Total (cfs)	3867.7	Conv. (cfs)		3867.7	

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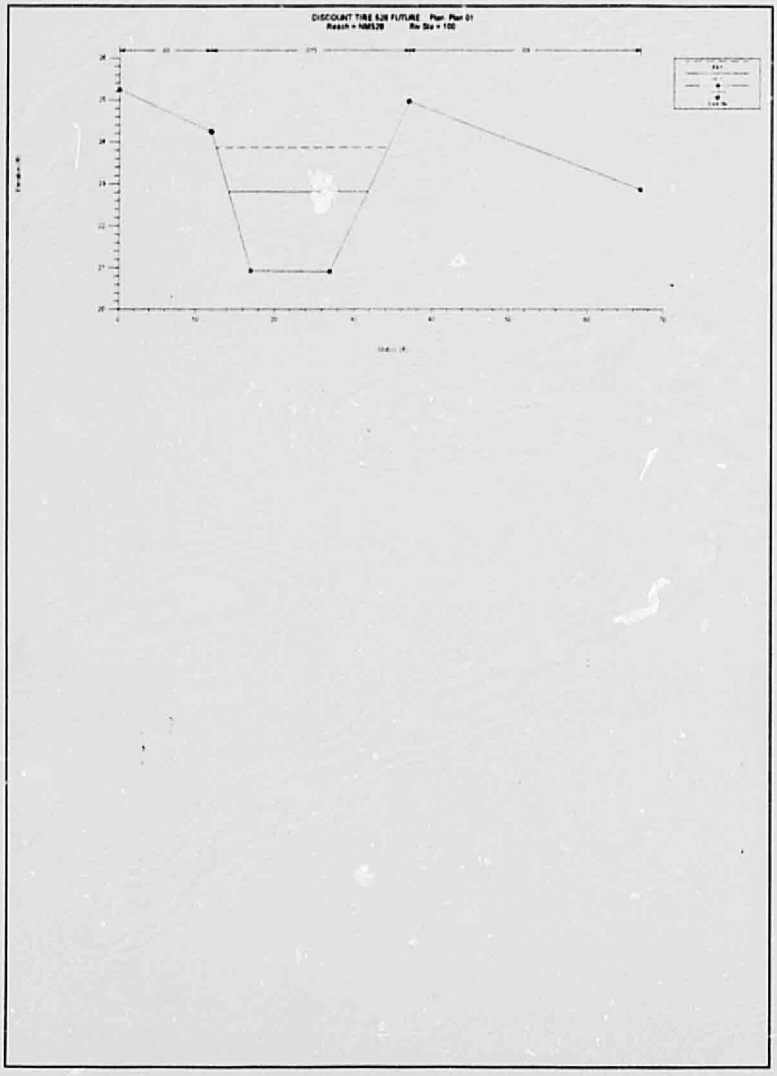

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HEC-RAS Plan: Plan 01 Reach: NM528 Riv Sta: 100 Profile: 1

W.S. Elev (ft)	22.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.05	Wt. n-Val.		0.015	
E.G. Elev (ft)	23.87	Reach Len. (ft)			
E.G. Slope (ft/ft)	0.004340	Flow Area (sq ft)		26.15	
Q Total (cfs)	215.00	Flow (cfs)		215.00	
Top Width (ft)	17.55	Top Width (ft)		17.55	
Vel Total (ft/s)	8.22	Avg. Vel. (ft/s)		8.22	
Max Chl Dpth (ft)	1.91	Hydr. Depth (ft)		1.49	
Crit W.S. (ft)	23.03	Wetted Per. (ft)		18.49	
Conv. Total (cfs)	3263.8	Conv. (cfs)		3263.8	

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APPENDIX A

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THE UNIVERSITY OF NEW MEXICO
CIVIL ENGINEERING

March 11, 1997

Kurt Browning, PE
AMAFCA
2600 Prospect NE
Albuquerque, NM 87107

Dear Kurt:

Enclosed are three copies of my report *Car Wash Channel*. Were the confluence clean, the hydraulics are satisfactory.

Inspection, however, indicates that the confluence is filling with sediment. The three CMP's are half plugged at the outlet. I thus modified the model to better move flow through the confluence and decrease the sedimentation.

If the sediment problem is temporary due to the local development, the channel might be left as is, with special attention paid to cleaning. If ~~AMAFCA~~ COA or NMSHTD wants a more-maintainable structure, the confluence should be narrowed.

Yours truly,

RJH

Richard J. Heggen

Richard J. Heggen, Civil Engineering, University of New Mexico, Albuquerque, NM 87131-1351
(505) 277-5737, 277-2722, FAX (505) 277-1988, e-mail rheggen@unm.edu

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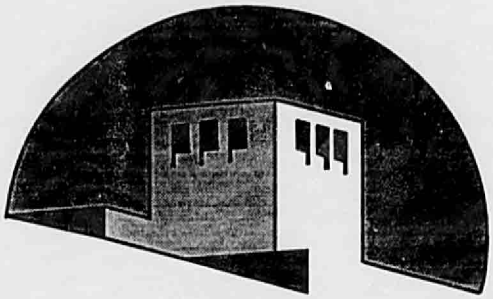

University of New Mexico
Department of Civil Engineering

Car Wash Channel

Richard J. Heggen

March 11, 1997

A Report Prepared for the
Albuquerque Metropolitan Arroyo Flood Control Authority

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Car Wash Channel

Richard J. Heggen
Department of Civil Engineering
University of New Mexico

March 11, 1997

Introduction

The Car Wash Channel consists of:

An asphalt swale (175 cfs) along NM 528 in front of Octopus Car Wash,
The confluence of three CMP's (40 cfs total) crossing NM 528, and
A concrete trapezoidal channel (215 cfs) transitioning to and from a rectangular bridge crossing on the east.

The asphalt swale and CMP's terminate in a confluence basin of roughly 30x50x5 cubic feet. Outflow turns and enters the trapezoid. In general aspect, the confluence appears to be an ad-hoc intersection of the three conveyances, essentially what could be inexpensively fit into the alignment. Fig. 1 illustrates the configuration. Table 1 summarizes the conveyance geometrics and capacities.

Two sets of problems may exist at the confluence. Inflows are supercritical. While the trapezoidal outlet and downstream bridge crossing are of adequate capacity, inflow might fail to make the turn and overtop the confluence's south sideslope. This sideslope is reinforced with survey-designated crap-rap, a designation which may have acronymic meaning, or may simply be descriptive of mortared stones and rubble.

Apart from (but related to) hydraulic overtopping, the confluence is a sediment trap. The confluence floor is covered by approximately one foot of recent deposition. The CMP outlets are approximately half blocked. The reason for deposition is apparent: inflows from both the swale and the CMP's decelerate in the confluence and the suspended load settles. The sediment source appears to be upstream construction. Without maintenance, the CMP's will plug.

Problem Statement

The Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) authorized UNM to model the confluence to:

1) Analyze hydraulic conditions, and
2) Recommend confluence modifications as needed.

The Model

The study employed the UNM Civil Engineering/AMAFCA Open Channel Test Facility. The 50 foot articulated table served as a platform for a three-dimensional model constructed of sheet metal, wood, PVC pipe and plastic sheeting.

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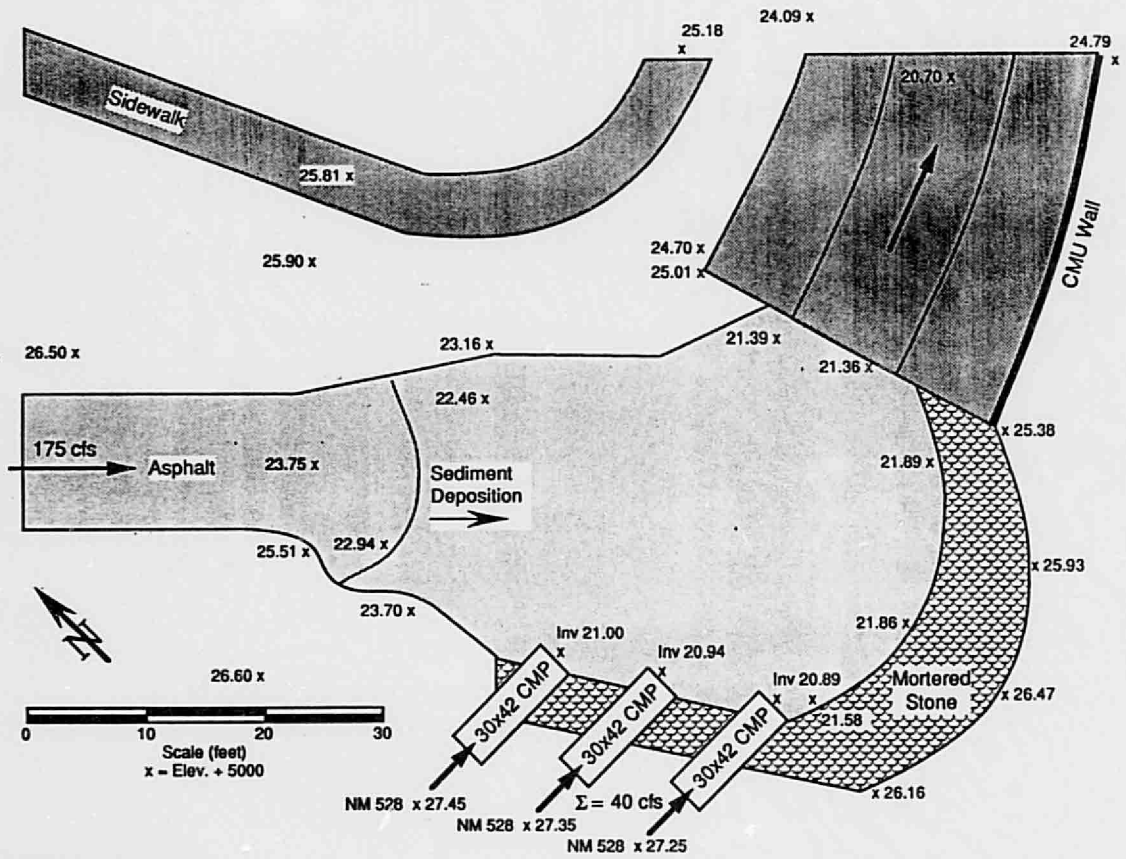

Figure 1. Configuration 1

Channel	Asphalt Swale			NM 528 Culverts			Car Wash Bridge			AMAFCA		
Shape	Parabolic			Squash Pipe			Rectangle			Trapazoid		
	w	12	ft.	3 -	30 in. x 42 in.		b	10	ft.	b	10	ft.
	h	1.5	ft.	3 -	36 in. (lo analysis)		h	4	ft.	h	3.5	ft.
										Z	2	
Slope	Elev 28.81-26.42	0.0191			0.00444			0.0122			0.0122	
	Elev 26.42-25.32	0.0611										
	Elev 25.32-23.75	0.0357										
n		0.020		CMP	0.013			0.012			0.012	
				Sediment	0.025							
Design		175	cfs		40	cfs (total)		215	cfs		215	cfs
yn	Elev 28.81-26.42	1.79	ft.		1.13	ft. (open pipe)		1.45	ft.		1.25	ft.
	Elev 26.42-25.32	1.36	ft.									
	Elev 25.32-23.75	1.55	ft.									
Froude	Elev 28.81-26.42	1.81			1.06	(open pipe)		2.17			2.37	
	Elev 26.42-25.32	3.11										
	Elev 25.32-23.75	2.42										
yc		2.40	ft.		1.16	ft. (open pipe)		2.43	ft.		2.10	ft.
Capacity	Elev 28.81-26.42	68	cfs		135	cfs (total) open pipe		454	cfs (inlet limited)		1430	cfs
	Elev 26.42-25.32	215	cfs		33	cfs (total) half blocked						
	Elev 25.32-23.75	165	cfs									

Table 1. Capacities

25 X
32 X

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Plastic sheeting lined a wooden confluence basin. Wire mesh on the plastic simulated the roughness. The model terminated with the confluence outlet. The downstream bridge transition does not limit flow leaving the confluence, as indicated in Table 1.

The 30x42-inch CMP's were modeled with round pipe, dimensionally equivalent to 36-inch diameter. (Unless noted otherwise, all dimensions in this report refer to the prototype, not the model.) As the CMP's have ample capacity, ignoring the squash makes negligible hydraulic difference. The reality of half of the pipe cross-section being lost to sediment overrides any error of geometric simplification, in any case.

To better use the lab space, the model was reversed left-to-right from the prototype. Directions in this report refer to the prototype.

The swale model discharge was measured by a pressure differential Annubar Flow Sensor, model GCR25 in the primary pump piping. The CMP model discharge was measured by a McChrometer propeller meter in the auxiliary pump piping.

Geometric similitude was 1:8. The inertial-gravity force ratio was the same for both model and prototype, making Froude numbers equal.

Experiments

Two confluence configurations were modeled. Configuration 1 is the existing structure.

Configuration 2 extends the CMP's roughly 20 feet and pulls the right (south) sideslope out to reduce the "belly" of the confluence. Fig. 2 illustrates the Configuration 2 layout.

Table 2 summarizes the experiments.

Table 2. Experiments

Experiment	Configuration	Discharge (cfs) Swale	CMP's
1	1	175	0
2	1	0	40
3	1	175	40
4	2	175	0
5	2	0	40
6	2	175	40

Depths were recorded along the confluence walls.

Results

Table 3 summarizes experimental results, the critical value being maximum water surface elevation where swale inflow hits the opposite (south) sideslope of the confluence. This high-water location is between the spot elevations 25.38 and 25.93 on the right side of Fig. 1. Elevation datum is 5000 feet. Table 3 elevations represent mean high water. Occasional instabilities deviate the water

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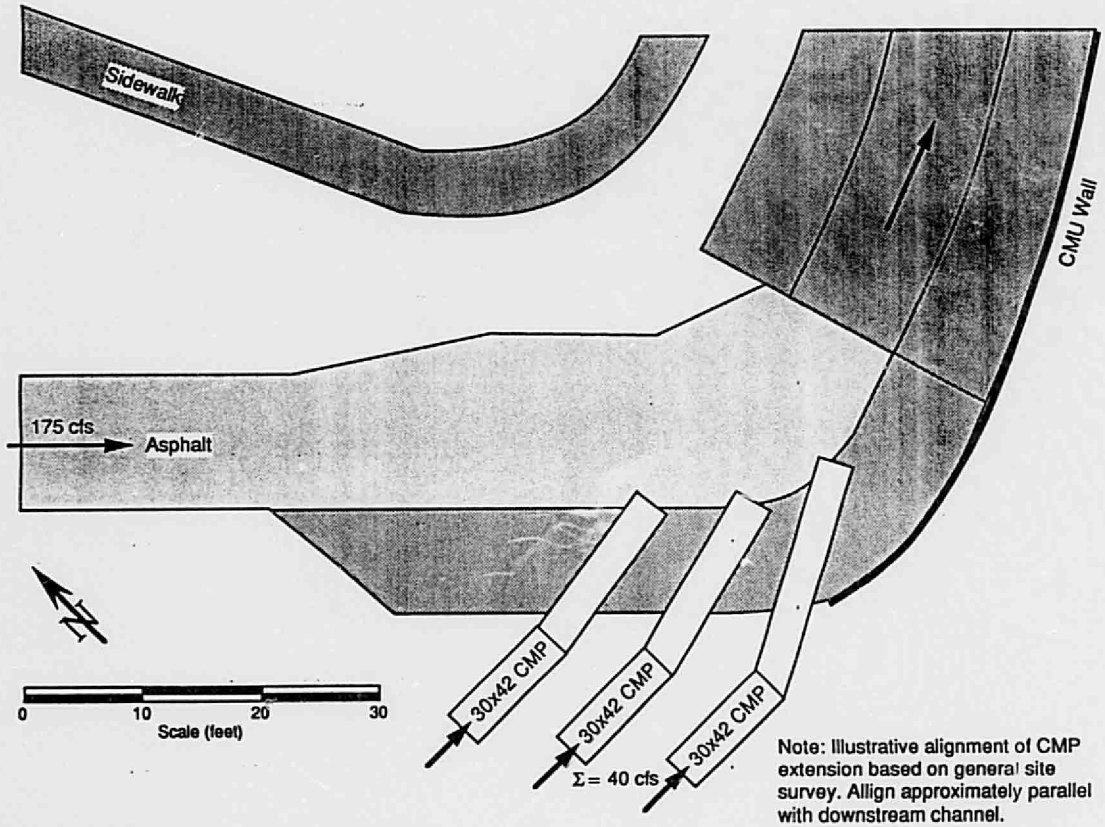

Figure 2. Configuration 2

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surface approximately ± 0.5 feet. Additional water surface elevations are shown in the appended data.

Table 3. Water surface elevations.

Experiment	Water Surface Elevation (ft)
1	24.0
2	22.5
3	24.2
4	24.0
5	22.3
6	24.5

Discussion

Configuration 1 Eddy

Configuration 1 conveys the discharge without hydraulic problem, but creates a large eddy in the south end of the confluence. The eddy behaves as a sediment extractor, a canal desilting structure developed in India, but not what is needed here. Deposition is significant and contributes to CMP blockage. Unless the introduction of upstream sediment can be precluded, Configuration 1 appears to be a self-burying basin.

Configuration 2 Hydraulics

Confluence 2 resembles a sharp channel bend with a relatively small discharge addition aligned with the downstream channel. While this configuration might be unsatisfactory for major channels, it functions adequately in this situation.

Configuration 2 Sedimentation

Configuration 2 maintains a more consistent channel width than that of Configuration 1. The narrowing minimizes eddying along south sideslope, significantly reducing the Configuration 1 propensity for sediment accumulation.

Configuration 2 Alignment

While the Configuration 2 model adequately simulates the hydraulics, its final shaping requires a design-level survey. The existing CMP alignment is not parallel with the outflow channel and the three pipes span approximately 20 feet, twice the 10-foot downstream bed width. Fig. 2 suggests the type of redirection needed, but necessary adjustments are left to the final design.

Configuration 2 Sideslope

While a concrete sideslope is anticipated, any erosion-resistant treatment is adequate. The modeled sideslope was 2:1, but this can be steepened as desired. There is no reason to reconstruct the left sideslope.

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Configuration 2 CMU Wall Extension

The existing 20-inch CMU extension provides freeboard above the right (outside) trapezoidal wall, but does not extend up the curve. Configuration 1, with its larger basin, experiences minimal wave action across the pond surface and has little propensity for waves to override the south sideslope. The CMU wall is prudent, but not absolutely necessary

The existing sideslope height contains the wave action for Configuration 2, but freeboard is minimal. Configuration 2 superelevation may ride higher on the south bank because the channel is narrower. For this reason, the CMU extension illustrated in Fig. 2 is recommended. The existing 20-inch wall height (approximate elevation 26.90) appears to be reasonable.

Downstream Deposition

The Octopus Car Wash staff digs out the channel downstream of the bridge on occasion. Recent cleaning is evident. The model does not address sediment transport in this reach. There is no assurance that confluence reconstruction will eliminate downstream problems. Downstream deposition may thus merit additional review.

Conclusions

1) The existing confluence is satisfactory for a clean channel.
2) The confluence is filling with sediment, plugging the CMP outlets.
3) For a more-maintainable structure, the confluence should be reconstructed to streamline the discharge. Configuration 2 suggests a layout for such improvement.

Notes:

1. Multiply model distances by 8 to get prototype distances.
2. Multiply model velocities by 2.83 to get prototype velocities.
3. Multiply model discharges by 181.02 to get prototype discharges.

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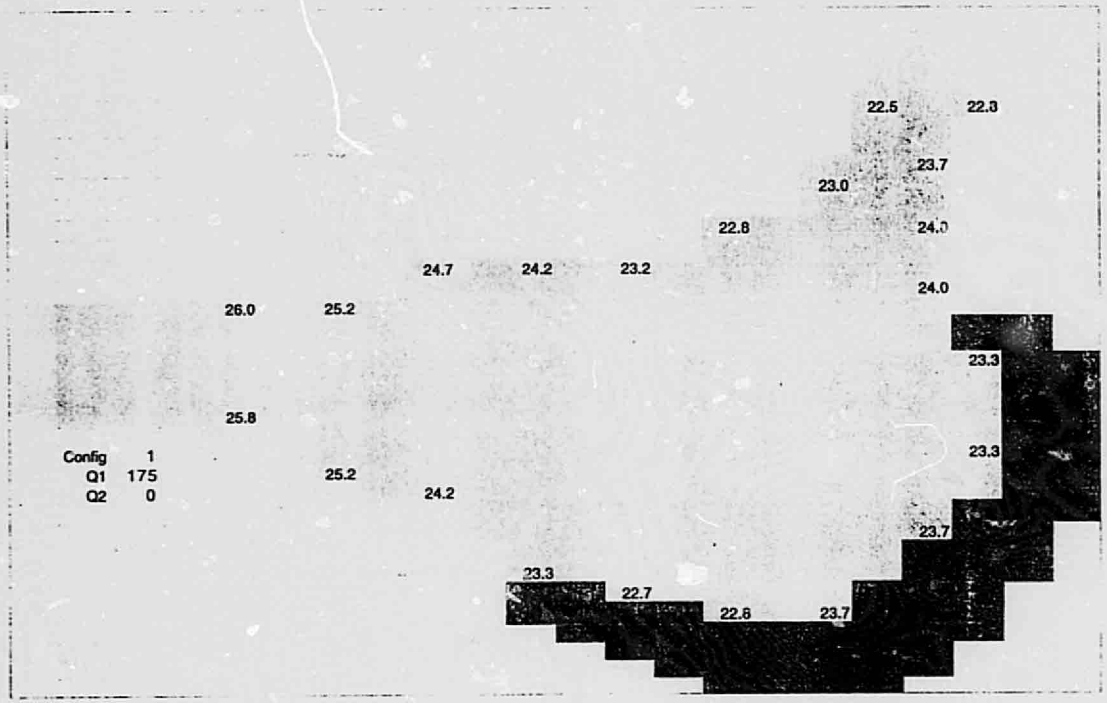
Depths


22.5
22.3
23.7
23.0
22.8
24.0
24.7
24.2
23.2
24.0
26.0
25.2
23.3
25.8
Config 1
Q1 175
Q2 0
25.2
23.3
24.2
23.7
23.3
22.7
22.6
23.7

25×□

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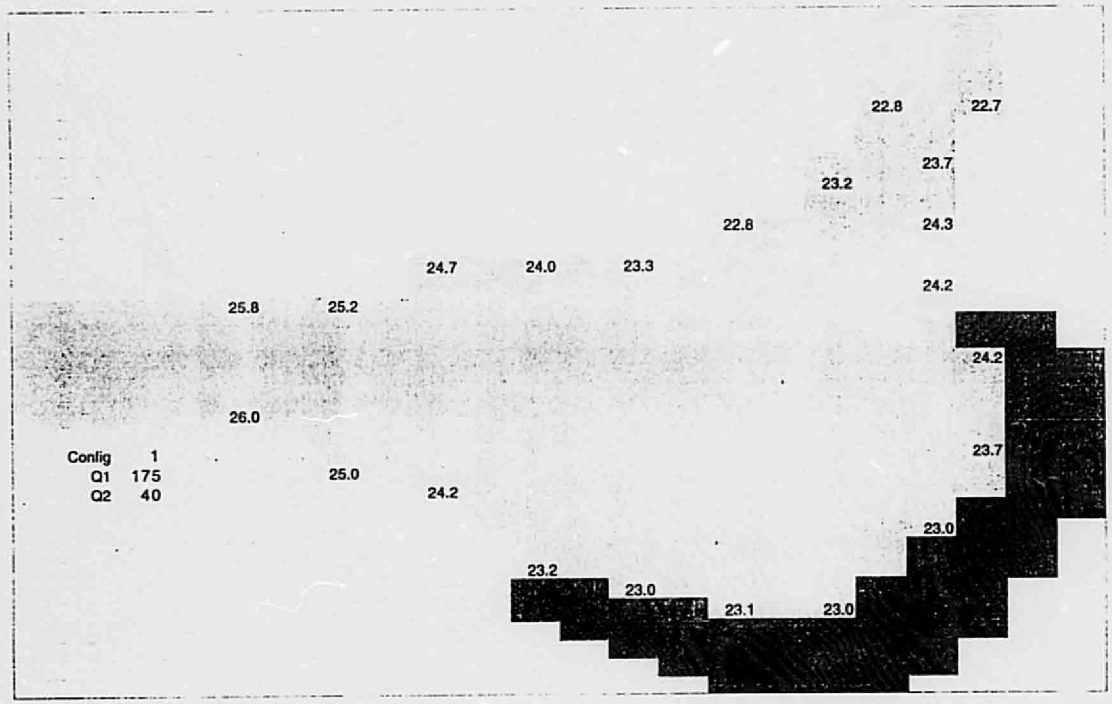
Depths

Config 1
Q1 0
Q2 40
21.5
21.7
22.3
22.0
22.7
22.5
22.5
22.2
22.2
22.3
22.0
22.3
22.3

Depths



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Depths

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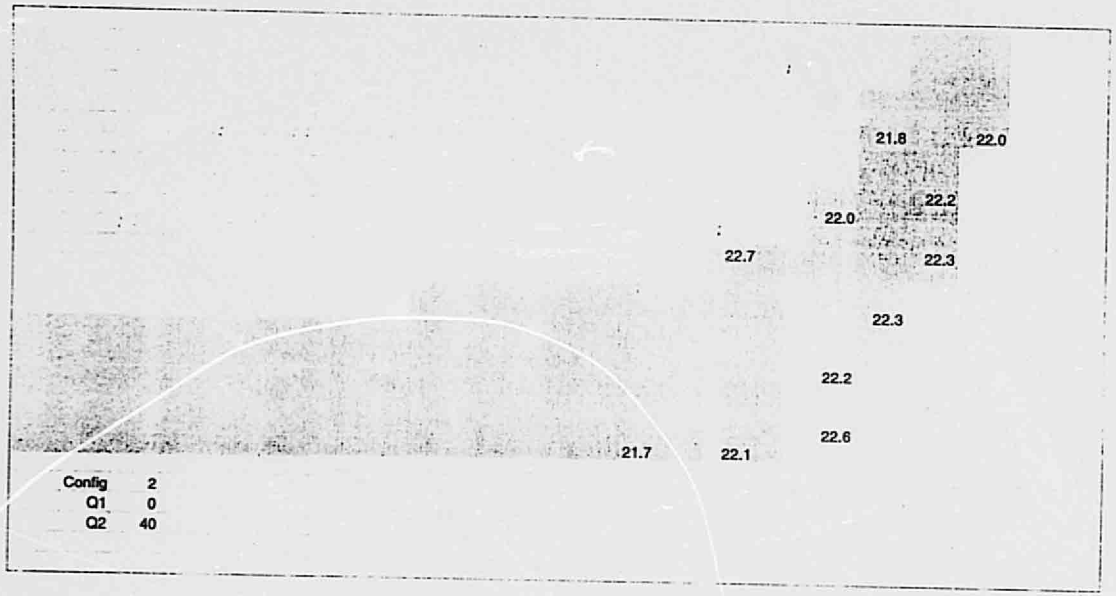
Depths



25×1

32×1

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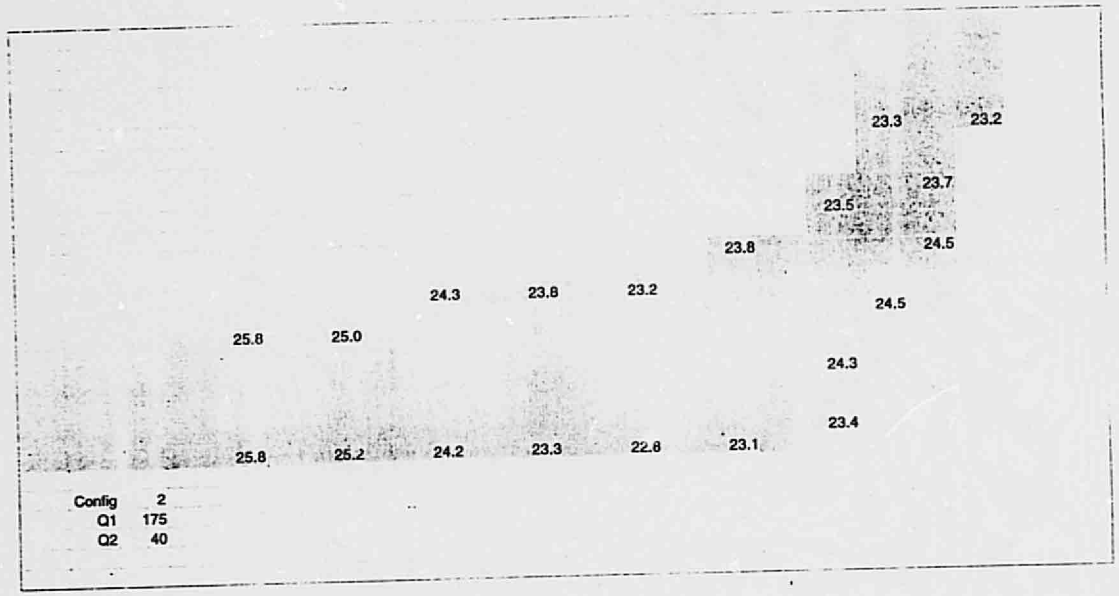
Depths



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Easterling & Associates, Inc.

10131 Coors Rd., NW, Suite H-7
Albuquerque, New Mexico 87114
(505) 898-8021
FAX (505) 898-8501

July 22, 1993

Bernie J. Montoya, C.E.
Engineering Assistant
PWD/Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

RE: Octopus Car Wash
Seven Bar Ranch Tract C–3–B
Detailed Site Grading and Drainage Plan

Dear Mr. Montoya:

This letter is transmitted in response to the questions and comments in your approval letter dated March 1, 1993 regarding the Conceptual Drainage Plan for Octopus Car Wash (A14–D8). Along with this letter, we are also submitting a Detailed Site Grading and Drainage Plan for the Octopus Car Wash and Construction Plans which include proposed channel improvements. The detailed plan addresses most of your comments. The construction plans are for your information only and will be submitted to AMAFCA and the DRC for review and approval.

Responses to Comments are as follows:

1. The site specific plan is included in the Detailed Site Grading and Drainage Plan. The scale is 1″ = 30′ to allow all of the proposed improvements to be shown on one sheet, as we discussed in our telephone conversation on June 22, 1993.

2. The ACS and TBM bench marks are shown on Sheet 1 of the Detailed Site Grading and Drainage Plan.

3. The hydraulics for all proposed channels, swales, pond and pipes are shown on Sheet 2 of the Detailed Site Grading and Drainage Plan.

4. We now propose a single detention pond for the site as shown on Sheet 1 and detailed on Sheet 2. Erosion and sediment control features are included in the details.

5. The Detailed Site Grading and Drainage Plan shows the detention pond area up to the Loma Larga right–of–way. Enclosed with this letter are copies of plans prepared by Molzen–Corbin & Associates which show pond improvements proposed in connection with Loma Larga roadway improvements. Construction of the Loma Larga and pond

JUL 23 1993

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improvements is expected to begin as soon as remaining easement acquisitions are completed.

6. The desilting pond will be improved somewhat by proposed channel and road improvements, however maintenance of the basin is an AMAFCA responsibility.

7. The 160.1 cfs along NM 528 does not enter the site. It enters the channel along the south boundary of the site. The 11.4 cfs in the graded swale originates on Tract C-3-A.

8. A copy of the Detailed Site Grading and Drainage Plan and the Construction Plans for the proposed drainage plan are being submitted to AMAFCA for review concurrent with this submittal to the City.

We trust that the plans and the response to comments are satisfactory. Please call me if you have any additional questions or comments.

Sincerely,

R. P. Bohannan, P.E.

RPB/das
Job No. 3530.1

Enclosure

cc: Cliff Anderson, Albuquerque Metropolitan Arroyo Flood Control Authority

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PLANS/PLATS ON FILE

FILE DESC: A14/08

PLANS/PLATS 5

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